

SEMI-ANNUAL GROUND WATER,  
EFFLUENT AND ENVIRONMENTAL  
MONITORING REPORT

SECOND HALF OF 2016  
(JULY THRU DECEMBER)

# UNITED NUCLEAR CORPORATION



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February 28, 2017  
Ms. Andrea Kock, Deputy Director  
Division of Decommissioning, Uranium Recovery and Waste Programs  
Office of Nuclear Materials Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
11545 Rockville Pike  
Mail Stop T-8F05  
Rockville, MD 20852-2738

40-8907

RE: Second Half - July thru December 2016  
Semi - Annual Ground Water Monitoring Report,  
QA/QC Report and Effluent and Environmental Monitoring Report.

Dear Ms. Kock

The above reports are submitted pursuant to our NRC Source Materials License NO. SUA-1475. Condition 30C and 12; Section V.A. 15 of the EPA Administrative Order for the Church Rock Site.

South West Alluvium point of compliance wells GW-2 and GW-3 were not sampled due to the location hazardous condition (i.e. currently both wells are too close to edge of pipeline arroyo created by erosional factors) and GW-3 is not meeting low-flow sampling method criteria due to very low water volume in well.

Although not part of the performance monitoring program requirement; Zone 3 wells RW-11, PB-3, PB-4, PB-2, NBL-2, RW-A, NW wells 1 thru 5, MW-6, MW7 and IW-A are also included in this report (PB-2, PB-3, PB-4, MW-6 and IW-A are monitored for water level only). Also included the Mill Domestic water well in this reporting period.

If you have any questions or recommendations, please advise.

Sincerely,

Max Chischilly Jr.  
Radiation Safety Officer

dy  
Enclosures

Cc. Robert Warren, Chester Engineers (1 CD)  
Steve Jetter, NMED (1 printed copy, 1 CD)  
Freida White, NNEPA (1 printed copy)  
Jim Smith, NRC (1 printed copy, 1 CD)  
Janet Brooks, USEPA Region 6 (1 flash drive)  
Document Control Desk, NRC (1 printed copy)  
NMSS-DUWP  
Region 4-DNMS

NMSSD1  
IE48  
IE25  
Q004  
NMSS

**QUARTERLY SAMPLING**  
**SEMI-ANNUAL GROUND WATER MONITORING REPORT**  
**JULY TO DECEMBER OF 2016**  
**FIELD DATA SHEET OF**  
**THIRD AND FOURTH QUARTER**

**CONTROLS**

SW ALLUVIUM

ZONE – 1

ZONE – 3

# GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: July QUARTER: Third YEAR: 2016

## SOUTHWEST ALLUVIUM

WELL NO	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF ELEV	TOP OF WATER ELEV	FIELD COND (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)
509-D	7-11 0907	83.25	6949.50	6866.25	6,680	6.45	17.3
624	7-11 1700	54.08	6898.70	6844.62	5,260	6.56	18.7
627	7-12 1040	61.20	6892.40	6831.20	4,380	6.98	18.8
632	7-11 1252	48.40	6903.60	6855.20	6,600	6.49	18.5
801	7-11 1356	55.74	6904.30	6848.56	6,380	6.60	19.7
802	7-11 1209	51.85	6907.10	6855.25	6,520	6.53	18.8
803	7-11 1042	66.40	6922.60	6856.20	6,000	6.54	17.0
808	7-11 1124	53.64	6910.70	6857.06	6,500	6.48	18.7
GW-1	7-11 1450	65.33	6916.50	6851.17	6,210	6.62	19.8
GW-2			6912.90				
GW-3			6910.00				
EPA-23	7-11 0955	59.82	6926.50	6866.68	4,500	6.65	17.6
EPA-25	7-12 0937	57.06	6903.40	6846.34	4,620	6.76	17.3
EPA-28	7-11 1538	66.14	6917.90	6851.76	4,490	6.83	19.6
EPA-28 DUP (QA/QC)	7-11 1615	66.67	6917.90	6851.23	4,590	6.84	18.7
SBL-1	7-12 0830	51.17	6896.30	6845.13	7,200	6.69	17.0
805	7-21 0946	58.40	6915.60	6857.20			
807	7-21 0953	62.88	6923.40	6860.52			

COMMENTS: Well GW-2 and GW-3 are not sampled due to locations hazardous  
conditions (close to edge of pipeline arroya) and GW-3 has very low water volume.  
Well 632 water level dropped 4.06' during sample.



# GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: July QUARTER: Third YEAR: 2016

## ZONE - 1

WELL NO	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV	TOP OF WATER ELEV	FIELD COND (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)
515-A	7-12 1311	106.85	7008.80	6901.95	8,960	6.05	21.3
604	7-12 1414	105.86	7006.00	6900.14	6,230	5.47	18.7
614	7-12 1156	105.81	7012.00	6906.19	7,470	6.38	21.6
TWQ-142	7-13 1102	202.50	6983.40	6780.90	1,884	7.86	17.7
EPA-2	7-13 0942	175.18	7019.50	6844.32	3,030	6.86	17.3
EPA-2 Dup (QA/QC)	7-13 1020	176.04	7019.50	6843.46	3,070	6.85	17.7
EPA-4	7-13 0830	208.94	7069.80	6860.86	4,320	6.71	16.9
EPA-5	7-12 1548	127.52	7011.50	6883.98	4,160	6.37	19.9
EPA-7	7-12 1501	117.22	7011.70	6894.48	6,990	6.13	19.3
Rinsate (QA/QC)	7-13 1150				2	7.69	29.4
Field Blank (QA/QC)	7-13 1200				3	7.57	31.2
TWQ-143	7-21 1412	208.98	6989.60	6780.62			
EPA-8	7-13 0920	217.09	7076.40	6859.31			
505-A	7-21 1039	122.31	6963.10	6840.79			
502-A	7-21 1056	196.66	7025.30	6828.64			
501-A	7-21 1107	213.14	7048.00	6834.86			
504-A	7-21 1306	201.44	7001.40	6799.96			
412	7-21 1245	186.38	6979.40	6793.02			

COMMENTS: Well 515-A water level dropped 6.60 during sample

# GROUND WATER FIELD MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: July QUARTER: Third YEAR: 2016  
**ZONE - 3**

WELL NO	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV	TOP OF WATER ELEV	FIELD COND (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)
504-B	7-19 1431	Dry @ 171	7001.80				
517	7-18 0942	106.35	6971.29	6864.94	5,410	2.80	19.3
EPA-14	7-18 1514	125.34	6963.88	6838.54	3,890	5.13	18.4
420	7-18 1412	156.53	6982.60	6826.07	3,550	6.50	19.2
711	7-18 1222	184.28	7042.75	6858.47	4,440	4.23	18.2
613	7-18 0854	79.95	6961.30	6881.35	8,500	3.06	17.0
708	7-18 1107	158.22	7011.73	6853.51	5,120	3.70	22.1
Rinsate (QA/QC)	7-19 1450				3	7.52	30.1
Field Blank (QA/QC)	7-19 1500				3	7.14	30.6
NBL-1	7-19 1507	Mud @ 197.39	6991.96				
EPA-9	7-13 0915	170.70	7076.60	6905.90			
EPA-13	7-18 1303	169.19	7031.66	6862.47	5,850	5.90	21.3
702	7-21 1018	83.69	6974.20	6890.51			
710	7-21 1126	166.11	7016.36	6850.25			
712	7-21 1147	177.33	7022.16	6844.83			
713	7-21 1156	168.48	7024.19	6855.71			
714	7-21 1043	105.11	6962.54	6857.43			
701	7-21 1029	84.68	6961.30	6876.62			
706	7-21 1049	116.68	6972.12	6855.44			
707	7-21 1132	162.58	7005.20	6842.62			
717	7-19 1050	134.00	6972.07	6838.07	5,850	3.07	19.2
717 DUPL (QA/QC)	7-19 1132	134.94	7042.75	6907.81	5,780	3.07	20.5
719	7-19 0838	170.56	7001.48	6830.92	5,200	5.68	19.3
402	7-21 1219	135.47	6968.20	6832.73			
446	7-22 1415	Crude Oil @ 159.68	6998.30	6838.62			
424**	7-21 1224	142.68	6972.62	6829.94			

COMMENTS: Well 719 initial sample to gradual very low discharge was 2 hrs, and required at least a 6 hr recharge to resume/collect full sample. Well 517 water level dropped 4.42' during sample and required a 6.3 hr. recharge to resume/collect full sample.

## GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: July QUARTER: Third YEAR: 2016

**\*SUPPLEMENTAL\***

**ZONE -3**

[illegible]

COMMENTS:

# GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: October      QUARTER: Fourth      YEAR: 2016

## SOUTHWEST ALLUVIUM

WELL NO	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF ELEV	TOP OF WATER ELEV	FIELD COND (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)
509-D	10-3 0830	83.25	6949.50	6866.25	6,480	6.59	14.2
624	10-3 1630	54.27	6898.70	6844.43	5,330	6.72	14.5
627	10-4 1114	61.16	6892.40	6831.24	4,250	7.08	16.0
632	10-3 1220	48.65	6903.60	6854.95	6,480	6.58	16.0
801	10-3 1300	55.96	6904.30	6848.34	6,340	6.70	16.1
802	10-3 1138	52.06	6907.10	6855.04	6,390	6.63	16.1
803	10-3 1000	66.46	6922.60	6856.14	5,760	6.68	15.2
808	10-3 1055	53.69	6910.70	6857.01	6,000	6.59	16.3
GW-1	10-3 1350	65.56	6916.50	6850.94	6,070	6.78	15.4
GW-2			6912.90				
GW-3			6910.00				
EPA-23	10-3 0916	59.86	6926.50	6866.64	4,360	6.79	14.4
EPA-25	10-4 0947	57.20	6903.40	6846.20	4,390	6.87	15.7
EPA-28	10-3 1440	66.31	6917.90	6851.59	4,530	7.01	15.2
EPA-28 DUP (QA/QC)	10-3 1530	66.81	6917.90	6851.09	4,580	7.05	14.5
SBL-1	10-4 0841	51.07	6896.30	6845.23	7,280	6.87	14.0
805	10-13 0930	58.53	6915.60	6857.07			
807	10-13 0925	62.98	6923.40	6860.42			

COMMENTS: Well GW-2 and GW-3 are not sampled due to locations hazardous conditions (close to edge of pipeline arroya) and GW-3 has very low water volume. Well 632 water level dropped 4.74' during sampling.

# GROUND WATER FIELD MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: October      QUARTER: Fourth      YEAR: 2016

## ZONE - 1

WELL NO	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV	TOP OF WATER ELEV	FIELD COND (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)
515-A	10-4 1352	106.72	7008.80	6902.08	8,980	6.14	17.6
604	10-4 1446	105.77	7006.00	6900.23	6,020	5.50	16.1
614	10-4 1235	105.64	7012.00	6906.36	7,430	6.49	16.5
TWQ-142	10-5 1105	202.26	6983.40	6781.14	1,823	7.96	15.4
EPA-2	10-5 0945	175.03	7019.50	6844.47	3,070	6.93	13.9
EPA-2 DUP (QA/QC)	10-5 1025	175.78	7019.50	6843.72	3,190	6.94	15.0
EPA-4	10-5 0830	208.75	7069.80	6861.05	4,210	6.84	15.0
EPA-5	10-4 1627	127.38	7011.50	6884.12	4,070	6.56	15.8
EPA-7	10-4 1545	117.08	7011.70	6894.62	6,800	6.26	15.7
Rinsate (QA/QC)	10-5 1146				2	8.33	16.3
Field Blank (QA/QC)	10-5 1150				1	7.88	17.6
TWQ-143	10-13 1427	208.93	6989.60	6780.67			
EPA-8	10-5 0924	216.87	7076.40	6859.53			
505-A	10-13 1022	122.26	6963.10	6840.84			
502-A	10-13 1041	196.57	7025.30	6828.73			
501-A	10-13 1051	213.02	7048.00	6834.98			
504-A	10-13 1159	201.24	7001.40	6800.16			
412	10-13 1147	186.28	6979.40	6793.12			

COMMENTS: Well 515-A water level dropped 6.64' during sample.

# GROUND WATER FIELD MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: October QUARTER: Fourth YEAR: 2016  
**ZONE - 3**

WELL NO	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV	TOP OF WATER ELEV	FIELD COND (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)
504-B	10-13 1156	DRY @ 171	7001.80				
517	10-10 0919	106.41	6971.29	6864.88	5,480	2.83	14.2
EPA-14	10-10 1535	125.38	6963.88	6838.50	3,800	5.22	17.3
420	10-10 1438	156.62	6982.60	6825.98	3,430	6.58	18.2
711	10-10 1228	184.32	7042.75	6858.43	4,320	4.15	17.1
613	10-10 0828	79.95	6961.30	6881.35	8,350	3.01	14.3
708	10-10 1052	158.31	7011.73	6853.42	5,120	3.73	18.8
Rinsate (QA/QC)	10-11 1525				7	7.58	29.8
Field Blank (QA/QC)	10-11 1530				1	7.05	20.3
NBL-1	10-13 1330	Mud @ 197.33	6991.96				
EPA-9	10-5 0922	170.60	7076.60	6906.00			
EPA-13	10-10 1325	169.24	7031.66	6862.42	5,820	5.98	19.4
702	10-13 1013	83.59	6974.20	6890.61			
710	10-13 1104	166.09	7016.36	6850.27			
712	10-13 1107	177.19	7022.16	6844.97			
713	10-13 1113	168.36	7024.19	6855.83			
714	10-13 1027	105.10	6962.54	6857.44			
701	10-13 1018	84.42	6961.30	6876.88			
706	10-13 1033	116.65	6972.12	6855.47			
707	10-13 1058	162.39	7005.20	6842.81			
717	10-11 1050	134.09	6972.07	6837.98	5,580	3.04	17.8
717 DUPL (QA/QC)	10-11 1132	135.09	7042.75	6907.66	5,640	3.05	17.1
719	10-11 0850	170.50	7001.48	6830.98	5,120	5.76	19.3
402	10-13 1131	135.51	6968.20	6832.69			
446	10-13 1440	159.07	6998.30	6839.23			
424**	10-13 1139	142.58	6972.62	6830.04			

COMMENTS: Well 517 water level dropped 4.45' during sample and required a 7.2 hr. recharge to resume/collect full sample.

# GROUND WATER FIELD MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY AND TEMPERATURE

MONTH: October QUARTER: Fourth YEAR: 2016

**\*SUPPLEMENTAL\***

**ZONE -3**

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP. (°C)
PB-2	10-12 1150	189.90	6989.70	6799.80			
PB-3	10-12 1136	193.16	6990.23	6797.07			
NBL-2	10-11 1215	170.87	6975.61	6804.74	3,230	6.57	16.8
RW-A	10-11 1220	175.29	6983.23	6807.94	4,590	6.05	15.1
RW-11	10-11 1305	170.25	6983.73	6813.48	4,470	6.20	17.0
PB-4	10-12 1143	192.95	6990.18	6797.23			
MW-6	10-12 1130	199.60	6990.94	6791.34			
MW-7	10-11 1326	197.23	6988.82	6791.59	3,850	6.39	19.8
MW-2	10-13 1246	160.84	6996.94	6836.10			
MW-3	10-13 1308	172.24	6986.38	6814.14			
NW-1	10-11 0930	198.73	6997.15	6798.42	3,700	7.36	15.1
703	10-13 1008	91.15	6978.92	6887.77			
709	10-13 1231	160.79	7003.54	6842.75			
715	10-13 1224	117.68	6963.90	6846.24			
716	10-13 1220	126.68	6964.94	6838.26			
718	10-13 1240	163.77	6995.06	6831.29			
IW-A	10-13 1336	200.55	6992.77	6792.22			
RW-16	10-13 1410	150.73	6979.73	6829.00			
RW-17	10-13 1404	173.86	7012.78	6838.92			
NW-2	10-11 1040	198.39	6989.76	6791.37	4,500	6.20	16.5
NW-3	10-11 1120	191.51	6985.57	6794.06	4,300	7.24	15.7
NW-4	10-11 1015	196.61	6990.13	6793.52	4,040	6.80	13.1
NW-5	10-11 1100	191.28	6985.85	6794.57	4,720	6.08	16.0
Z3M-1	10-13 0958	67.80	6996.30	6928.50			
Z3M-2	10-13 0944	77.78	7009.30	6931.52			

COMMENTS: Extraction wells RW-16 & RW-17 pumps were active when water level was recorded. Other sample included mill domestic water well on 10-12 @ 0935: Cond.=3,260, pH= 8.02 & Temp.=17.0.

# NBL-1, NBL-2, RW-A & PB WELL GROUND WATER MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: July, August & September QUARTER: Third YEAR: 2016

## ZONE - 3

WELL NO	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV	TOP OF WATER ELEV	FIELD COND (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)	HCO3 mg/1	Chl mg/1
NBL-1			6991.96						
NBL-2	7-19 1214	170.38	6975.61	6805.23	3,350	6.90	19.8	319	37
PB-2	7-19 1530	189.93	6989.70	6799.77					
PB-3	7-19 1550	193.25	6990.23	6796.98					
PB-4	7-19 1540	192.72	6990.18	6797.46					
RW-A	7-19 1310	176.52	6983.23	6806.71	4,820	6.10	17.4	101	28
NBL-1			6991.96						
NBL-2	8-25 1015	170.43	6975.61	6805.18	3,270	6.99	15.3	322	35
PB-2	8-25 1146	190.10	6989.70	6799.60					
PB-3	8-25 1205	192.74	6990.23	6797.49					
PB-4	8-25 1158	191.36	6990.18	6798.82					
RW-A	8-25 1054	177.49	6983.23	6805.74	4,600	6.05	21.8	101	29
NBL-1			6991.96						
NBL-2	9-22 0945	170.61	6975.61	6805.00	3,340	6.94	12.9	324	38
PB-2	9-22 1035	189.87	6989.70	6799.83					
PB-3	9-22 1045	193.29	6990.23	6796.94					
PB-4	9-22 1040	192.89	6990.18	6797.29					
RW-A	9-22 1034	176.73	6983.23	6806.50	4,690	6.00	21.0	99	29
NBL-1			6991.96						
NBL-2			6975.61						
PB-2			6989.70						
PB-3			6990.23						
PB-4			6990.18						
RW-A			6983.23						

COMMENTS: \_\_\_\_\_



# MW & NW WELL GROUND WATER MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: July, August & September

QUARTER: Third

YEAR: 2016

### ZONE - 3

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND. (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)	HCO3 mg/l	Chl mg/l
NW-1	7-19 1107	198.63	6997.15	6798.52	3,730	7.50	18.0	459	15
NW-2	7-19 1242	198.37	6989.76	6791.39	4,550	6.26	15.5	160	29
NW-3	7-19 1205	191.07	6985.57	6794.50	4,400	7.40	15.9	437	35
NW-4	7-19 1130	196.50	6990.13	6793.63	4,060	6.63	14.2	79	20
NW-5	7-19 1229	191.38	6985.85	6794.47	4,800	6.10	17.3	98	30
MW-6	7-19 1555	199.40	6990.94	6791.54					
MW-7	7-19 1237	197.13	6988.82	6791.69	3,860	6.50	19.5	239	34
NW-1	8-25 1004	198.77	6997.15	6798.38	3,440	7.56	17.9	430	14
NW-2	8-25 1118	198.94	6989.76	6790.82	4,300	6.19	20.7	163	29
NW-3	8-25 1027	191.40	6985.57	6794.17	4,010	7.14	18.5	239	33
NW-4	8-25 1016	196.54	6990.13	6793.59	3,840	6.67	14.9	82	21
NW-5	8-25 1105	191.77	6985.85	6794.08	4,530	6.04	19.8	106	30
MW-6	8-25 1221	199.30	6990.94	6791.64					
MW-7	8-25 1114	197.24	6988.82	6791.58	3,840	7.92	15.2	223	34
NW-1	9-22 0935	198.69	6997.15	6798.46	3,520	7.54	17.6	442	16
NW-2	9-22 1023	198.26	6989.76	6791.50	4,370	6.24	19.7	165	29
NW-3	9-22 1000	191.36	6985.57	6794.21	4,170	7.26	17.0	427	32
NW-4	9-22 0946	196.55	6990.13	6793.58	3,920	6.78	13.8	79	21
NW-5	9-22 1012	191.72	6985.85	6794.13	4,590	6.05	18.7	113	30
MW-6	9-22 1235	199.54	6990.94	6791.40					
MW-7	9-22 1010	197.13	6988.82	6791.69	3,820	7.99	16.3	227	34
NW-1			6997.15						
NW-2			6989.76						
NW-3			6985.57						
NW-4			6990.13						
NW-5			6985.85						
MW-6			6990.94						
MW-7			6988.82						

COMMENTS: \_\_\_\_\_

# NBL-1, NBL-2, RW-A & PB WELL GROUND WATER MONITORING WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: October, November & December

QUARTER: Fouth

YEAR: 2016

## ZONE - 3

WELL NO	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV	TOP OF WATER ELEV	FIELD COND (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)	HCO3 mg/1	Chl mg/1
NBL-1			6991.96						
NBL-2	10-11 1215	170.87	6975.61	6804.74	3,230	6.57	16.8	317	39
PB-2	10-12 1150	189.90	6989.70	6799.80					
PB-3	10-12 1136	193.16	6990.23	6797.07					
PB-4	10-12 1143	192.95	6990.18	6797.23					
RW-A	10-11 1220	175.29	6983.23	6807.94	4,590	6.05	15.1	77	29
NBL-1			6991.96						
NBL-2	11-22 1021	171.01	6975.61	6804.60	3,300	6.84	11.0	315	39
PB-2	11-22 1143	189.95	6989.70	6799.75					
PB-3	11-22 1130	193.65	6990.23	6796.58					
PB-4	11-22 1136	193.04	6990.18	6797.14					
RW-A	11-22 1130	177.32	6983.23	6805.91	4,850	6.09	15.8	84	31
NBL-1			6991.96						
NBL-2	12-20 1033	171.72	6975.61	6803.89	3,230	6.61	11.4	299	40
PB-2	12-20 1218	189.90	6989.70	6799.80					
PB-3	12-20 1158	193.72	6990.23	6796.51					
PB-4	12-20 1205	193.09	6990.18	6797.09					
RW-A	12-20 1228	177.11	6983.23	6806.12	4,840	6.00	15.8	76	31
NBL-1			6991.96						
NBL-2			6975.61						
PB-2			6989.70						
PB-3			6990.23						
PB-4			6990.18						
RW-A			6983.23						

COMMENTS: \_\_\_\_\_

# MW & NW WELL GROUND WATER MONITORING

## WATER ELEVATIONS, pH, CONDUCTIVITY, TITRATION AND TEMPERATURE

MONTH: October, November & December

QUARTER: Fourth

YEAR: 2016

### ZONE - 3

WELL NO.	DEPTH SAMPLE DATE/TIME	DEPTH TO WATER (FT)	REF. ELEV.	TOP OF WATER ELEV.	FIELD COND (US/CM)	FIELD pH (UNITS)	FIELD TEMP (°C)	HCO3 mg/l	Chl mg/l
NW-1	10-11 0930	198.73	6997.15	6798.42	3,700	7.36	15.1	449	15
NW-2	10-11 1040	198.39	6989.76	6791.37	4,500	6.20	16.5	159	30
NW-3	10-11 1120	191.51	6985.57	6794.06	4,300	7.24	15.7	434	32
NW-4	10-11 1015	196.61	6990.13	6793.52	4,040	6.80	13.1	71	20
NW-5	10-11 1100	191.28	6985.85	6794.57	4,720	6.08	16.0	101	30
MW-6	10-12 1130	199.60	6990.94	6791.34					
MW-7	10-11 1326	197.23	6988.82	6791.59	3,850	6.39	19.8	229	34
NW-1	11-22 1015	198.77	6997.15	6798.38	3,610	7.35	11.0	467	15
NW-2	11-22 1047	199.20	6989.76	6790.56	4,430	6.24	16.0	156	31
NW-3	11-22 1120	191.64	6985.57	6793.93	4,160	7.42	12.5	445	33
NW-4	11-22 1030	196.70	6990.13	6793.43	3,980	6.50	12.5	55	22
NW-5	11-22 1105	191.82	6985.85	6794.03	4,730	6.10	15.6	99	30
MW-6	11-22 1122	199.75	6990.94	6791.19					
MW-7	11-22 1052	197.65	6988.82	6791.17	3,900	7.92	10.8	213	35
NW-1	12-20 1040	198.76	6997.15	6798.39	3,390	7.29	4.1	427	15
NW-2	10-20 1115	199.29	6989.76	6790.47	4,420	6.26	13.9	145	31
NW-3	12-20 1204	192.00	6985.57	6793.57	3,910	7.37	5.6	429	33
NW-4	12-20 1105	197.02	6990.13	6793.11	3,950	6.18	12.4	55	22
NW-5	11-20 1134	192.00	6985.85	6793.85	4,690	5.98	13.9	80	31
MW-6	12-20 1148	199.88	6990.94	6791.06					
MW-7	12-20 1113	198.00	6988.82	6790.82	3,830	7.32	10.7	201	35
NW-1			6997.15						
NW-2			6989.76						
NW-3			6985.57						
NW-4			6990.13						
NW-5			6985.85						
MW-6			6990.94						
MW-7			6988.82						

COMMENTS: \_\_\_\_\_

**QUARTERLY SAMPLING**  
**SEMI-ANNUAL GROUND WATER MONITORING REPORT**

**JULY TO DECEMBER OF 2016**

**SOUTH WEST ALLUVIUM**

\*509-D

624

627

\*632

801

802

803

808

\*GW-1

\*EPA-23

EPA-25

\*EPA-28

SBL-1

**LEVELS ONLY**

805

807

**NOTE: \*POINT OF COMPLIANCE WELLS  
WATER LEVEL ONLY IS IN FIELD DATA SHEET**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-001  
**Client Sample ID:** 509-D

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 09:07  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	2470	mg/L		5		A2320 B	07/19/16 19:29 / wc
Calcium	852	mg/L		1		E200.7	07/19/16 17:50 / sf
Chloride	372	mg/L	D	2		E300.0	07/20/16 04:36 / wc
Magnesium	352	mg/L		1		E200.7	07/19/16 17:50 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:15 / ljl
Nitrogen, Nitrate+Nitrite as N	6.5	mg/L	D	0.5		E353.2	07/15/16 16:23 / ljl
Potassium	12	mg/L		1		E200.7	07/19/16 17:50 / sf
Sodium	403	mg/L		1		E200.7	07/19/16 17:50 / sf
Sulfate	2030	mg/L	D	8		E300.0	07/20/16 04:36 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.57	s.u.	H	0.01		A4500-H B	07/15/16 16:22 / wc
Solids, Total Dissolved TDS @ 180 C	5460	mg/L	D	100		A2540 C	07/15/16 17:45 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	07/21/16 19:32 / sf
Beryllium	ND	mg/L		0.001		E200.8	07/21/16 19:32 / sf
Cadmium	ND	mg/L		0.005		E200.8	07/21/16 19:32 / sf
Cobalt	0.01	mg/L		0.01		E200.8	07/21/16 19:32 / sf
Lead	ND	mg/L		0.001		E200.8	07/21/16 19:32 / sf
Manganese	4.00	mg/L		0.01		E200.8	07/21/16 19:32 / sf
Molybdenum	ND	mg/L		0.1		E200.8	07/21/16 19:32 / sf
Nickel	ND	mg/L		0.05		E200.8	07/21/16 19:32 / sf
Uranium	0.276	mg/L		0.0003		E200.8	07/21/16 19:32 / sf
Vanadium	ND	mg/L		0.1		E200.8	07/21/16 19:32 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/20/16 23:10 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 09:48 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	0.9	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	-0.04	pCi/L	U			E909.0	09/21/16 02:42 / eli-cs
Lead 210 precision (±)	0.9	pCi/L				E909.0	09/21/16 02:42 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/21/16 02:42 / eli-cs
Radium 226	0.44	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 precision (±)	0.15	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 MDC	0.12	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 228	2.0	pCi/L				RA-05	08/09/16 10:35 / plj
Radium 228 precision (±)	0.82	pCi/L				RA-05	08/09/16 10:35 / plj

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16070451-001  
Client Sample ID: 509-D

Report Date: 09/26/16  
Collection Date: 07/11/16 09:07  
Date Received: 07/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	08/09/16 10:35 / plj
Thorium 230	0.02	pCi/L	U			E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5300	mg/L				A1030 E	07/26/16 08:28 / kbh
A/C Balance	-2.41	%				A1030 E	07/26/16 08:28 / kbh
Anions	93.8	meq/L				A1030 E	07/26/16 08:28 / kbh
Cations	89.3	meq/L				A1030 E	07/26/16 08:28 / kbh
TDS Ratio	1.03	unitless				A1030 E	07/26/16 08:28 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/22/16 09:41 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 09:41 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 09:41 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 09:41 / dm
Chloroform	ND	ug/L		0.50		E624	07/22/16 09:41 / dm
Surr: Dibromofluoromethane	110	%REC		64.4-131		E624	07/22/16 09:41 / dm
Surr: p-Bromofluorobenzene	141	%REC	S	67.1-133		E624	07/22/16 09:41 / dm
Surr: Toluene-d8	106	%REC		79.7-125		E624	07/22/16 09:41 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-001  
**Client Sample ID:** 509-D

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 08:30  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	2380	mg/L		5		A2320 B	10/14/16 18:47 / wc
Calcium	820	mg/L		1		E200.7	10/14/16 19:07 / sf
Chloride	345	mg/L	D	5		E300.0	10/28/16 05:05 / ljl
Magnesium	356	mg/L		1		E200.7	10/14/16 19:07 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:04 / ljl
Nitrogen, Nitrate+Nitrite as N	6.7	mg/L	D	0.5		E353.2	10/13/16 18:01 / ljl
Potassium	12	mg/L		1		E200.7	10/14/16 19:07 / sf
Sodium	409	mg/L		1		E200.7	10/14/16 19:07 / sf
Sulfate	2250	mg/L	D	20		E300.0	10/28/16 05:05 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.61	s.u.	H	0.01		A4500-H B	10/10/16 11:17 / bah
Solids, Total Dissolved TDS @ 180 C	5730	mg/L	H	100		A2540 C	10/11/16 08:42 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 04:11 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 04:11 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 04:11 / sf
Cobalt	0.01	mg/L		0.01		E200.8	10/15/16 04:11 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 04:11 / sf
Manganese	3.07	mg/L		0.01		E200.8	10/15/16 04:11 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 04:11 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 04:11 / sf
Uranium	0.213	mg/L		0.0003		E200.8	10/15/16 04:11 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 04:11 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 19:59 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:11 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	9.5	pCi/L				E900.1	10/21/16 23:42 / cng
Gross Alpha minus Rn & U Precision (±)	2.6	pCi/L				E900.1	10/21/16 23:42 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:42 / cng
Lead 210	0.1	pCi/L	U			E909.0	10/23/16 22:40 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	10/23/16 22:40 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/23/16 22:40 / eli-cs
Radium 226	0.33	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.15	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.18	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	4.2	pCi/L				RA-05	10/28/16 10:36 / plj
Radium 228 precision (±)	1.2	pCi/L				RA-05	10/28/16 10:36 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-001  
**Client Sample ID:** 509-D

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 08:30  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	10/28/16 10:36 / plj
Thorium 230	0.03	pCi/L	U			E908.0	10/25/16 18:10 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	10/25/16 18:10 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	10/25/16 18:10 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5400	mg/L				A1030 E	11/01/16 16:16 / sec
A/C Balance	-4.50	%				A1030 E	11/01/16 16:16 / sec
Anions	96.6	meq/L				A1030 E	11/01/16 16:16 / sec
Cations	88.3	meq/L				A1030 E	11/01/16 16:16 / sec
TDS Ratio	1.05	unitless				A1030 E	11/01/16 16:16 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 20:38 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 20:38 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 20:38 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/16 20:38 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	10/14/16 20:38 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/14/16 20:38 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	10/14/16 20:38 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		509-D	509-D	509-D	509-D
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		10/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-001	C16070451-001	C16040219-001	C16010153-001
Bicarbonate as HCO <sub>3</sub>	mg/L	2380	2470	2360	2560
Calcium	mg/L	820	852	830	854
Chloride	mg/L	345	372	352	462
Magnesium	mg/L	356	352	372	353
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	0.09	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	6.7	6.5	6.9	7.1
Potassium	mg/L	12	12	12	12
Sodium	mg/L	409	403	421	393
Sulfate	mg/L	2250	2030	2060	1920
pH	s.u.	6.61	6.57	6.61	6.50
Solids, Total Dissolved TDS @ 180 C	mg/L	5730	5460	5540	5360
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.01	0.01	ND(0.01)	0.01
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.07	4.00	2.19	3.87
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.213	0.276	0.289	0.258
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	9.5	1.5	1.4	1.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.6	0.9	1.1	1.1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.6	1.2
Lead 210	pCi/L	0.1	-0.04	1.1	0.4
Lead 210 precision (±)	pCi/L	0.7	0.9	0.9	0.9
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.33	0.44	0.53	0.46
Radium 226 precision (±)	pCi/L	0.15	0.15	0.20	0.17
Radium 226 MDC	pCi/L	0.18	0.12	0.21	0.17
Radium 228	pCi/L	4.2	2.0	2.5	1.5
Radium 228 precision (±)	pCi/L	1.2	0.82	0.89	0.92
Radium 228 MDC	pCi/L	1.2	1.2	1.1	1.0
Thorium 230	pCi/L	0.03	0.02	0.2	0.1
Thorium 230 precision (±)	pCi/L	0.06	0.06	0.1	0.1
Thorium 230 MDC	pCi/L	0.1	0.1	0.1	0.2
A/C Balance	%	-4.50	-2.41	-0.73	-3.43
Anions	meq/L	96.6	93.8	91.9	95.4
Cations	meq/L	88.3	89.3	90.6	89.1
Solids, Total Dissolved - Calculated	mg/L	5400	5300	5300	5300
TDS Ratio	unitless	1.05	1.03	1.05	1.01
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-011  
**Client Sample ID:** 624

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 17:00  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1590	mg/L		5		A2320 B	07/19/16 22:01 / wc
Calcium	638	mg/L		1		E200.7	07/19/16 19:31 / sf
Chloride	221	mg/L	D	2		E300.0	07/20/16 08:40 / wc
Magnesium	416	mg/L		1		E200.7	07/19/16 19:31 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:20 / ljl
Nitrogen, Nitrate+Nitrite as N	77	mg/L	D	5.0		E353.2	07/15/16 16:40 / ljl
Potassium	6	mg/L		1		E200.7	07/19/16 19:31 / sf
Sodium	296	mg/L		1		E200.7	07/19/16 19:31 / sf
Sulfate	2170	mg/L	D	8		E300.0	07/20/16 08:40 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.60	s.u.	H	0.01		A4500-H B	07/15/16 17:04 / wc
Solids, Total Dissolved TDS @ 180 C	5240	mg/L	D	40		A2540 C	07/15/16 17:49 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/21/16 15:37 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/21/16 15:37 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/21/16 15:37 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/25/16 23:08 / sf
Lead	ND	mg/L		0.001		E200.8	07/23/16 08:32 / sf
Manganese	0.08	mg/L		0.01		E200.7	07/21/16 15:37 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/21/16 15:37 / sf
Nickel	ND	mg/L		0.05		E200.8	07/23/16 08:32 / sf
Uranium	0.0339	mg/L		0.0003		E200.8	07/23/16 08:32 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/21/16 15:37 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 17:04 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:08 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.6	pCi/L	U			E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	1	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	-0.4	pCi/L	U			E909.0	09/20/16 15:15 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/20/16 15:15 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/20/16 15:15 / eli-cs
Radium 226	0.26	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 precision (±)	0.13	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 MDC	0.12	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 228	2.2	pCi/L				RA-05	08/09/16 12:09 / plj
Radium 228 precision (±)	1.0	pCi/L				RA-05	08/09/16 12:09 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-011  
**Client Sample ID:** 624

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 17:00  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	08/09/16 12:09 / plj
Thorium 230	0.02	pCi/L	U			E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4900	mg/L				A1030 E	07/26/16 08:31 / kbh
A/C Balance	-2.32	%				A1030 E	07/26/16 08:31 / kbh
Anions	82.9	meq/L				A1030 E	07/26/16 08:31 / kbh
Cations	79.1	meq/L				A1030 E	07/26/16 08:31 / kbh
TDS Ratio	1.07	unitless				A1030 E	07/26/16 08:31 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/22/16 19:34 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 19:34 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 19:34 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 19:34 / dm
Chloroform	ND	ug/L		0.50		E624	07/22/16 19:34 / dm
Surr: Dibromofluoromethane	110	%REC		64.4-131		E624	07/22/16 19:34 / dm
Surr: p-Bromofluorobenzene	148	%REC	S	67.1-133		E624	07/22/16 19:34 / dm
Surr: Toluene-d8	112	%REC		79.7-125		E624	07/22/16 19:34 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-011  
**Client Sample ID:** 624

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 16:30  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1610	mg/L		5		A2320 B	10/14/16 20:44 / wc
Calcium	664	mg/L		1		E200.7	10/14/16 20:10 / sf
Chloride	216	mg/L	D	2		E300.0	10/13/16 13:37 / ljl
Magnesium	423	mg/L		1		E200.7	10/14/16 20:10 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:20 / ljl
Nitrogen, Nitrate+Nitrite as N	75	mg/L	D	5.0		E353.2	10/13/16 18:18 / ljl
Potassium	6	mg/L		1		E200.7	10/14/16 20:10 / sf
Sodium	303	mg/L		1		E200.7	10/14/16 20:10 / sf
Sulfate	2290	mg/L	D	8		E300.0	10/13/16 13:37 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.60	s.u.	H	0.01		A4500-H B	10/10/16 11:59 / bah
Solids, Total Dissolved TDS @ 180 C	5260	mg/L	H	40		A2540 C	10/11/16 08:46 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 05:38 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 05:38 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 05:38 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 05:38 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 05:38 / sf
Manganese	0.04	mg/L		0.01		E200.8	10/15/16 05:38 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 05:38 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 05:38 / sf
Uranium	0.0323	mg/L		0.0003		E200.8	10/15/16 05:38 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 05:38 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 22:47 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:48 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.3	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U Precision (±)	1.0	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:43 / cng
Lead 210	0.3	pCi/L	U			E909.0	10/24/16 21:18 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/24/16 21:18 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 21:18 / eli-cs
Radium 226	0.29	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.15	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.18	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	0.41	pCi/L	U			RA-05	12/13/16 12:47 / plj
Radium 228 precision (±)	0.90	pCi/L				RA-05	12/13/16 12:47 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-011  
**Client Sample ID:** 624

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 16:30  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	12/13/16 12:47 / plj
Thorium 230	0.4	pCi/L				E908.0	11/02/16 09:35 / cng
Thorium 230 precision (±)	0.2	pCi/L				E908.0	11/02/16 09:35 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	11/02/16 09:35 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5000	mg/L				A1030 E	10/18/16 15:14 / sec
A/C Balance	-2.52	%				A1030 E	10/18/16 15:14 / sec
Anions	85.5	meq/L				A1030 E	10/18/16 15:14 / sec
Cations	81.3	meq/L				A1030 E	10/18/16 15:14 / sec
TDS Ratio	1.04	unitless				A1030 E	10/18/16 15:14 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 18:41 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 18:41 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 18:41 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/16 18:41 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	10/14/16 18:41 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	10/14/16 18:41 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	10/14/16 18:41 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		624	624	624	624
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-011	C16070451-011	C16040219-011	C16010153-011
Bicarbonate as HCO <sub>3</sub>	mg/L	1610	1590	1590	1640
Calcium	mg/L	664	638	698	687
Chloride	mg/L	216	221	211	217
Magnesium	mg/L	423	416	420	416
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	75	77	72	73
Potassium	mg/L	6	6	6	6
Sodium	mg/L	303	296	310	292
Sulfate	mg/L	2290	2170	2220	2290
pH	s.u.	6.60	6.60	6.77	6.61
Solids, Total Dissolved TDS @ 180 C	mg/L	5260	5240	5270	5250
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.04	0.08	0.10	0.11
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0323	0.0339	0.0378	0.0394
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	2.3	0.6	0.08	1.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.0	1	0.9	1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	0.3	-0.4	0.04	0.03
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.29	0.26	0.37	0.48
Radium 226 precision (±)	pCi/L	0.15	0.13	0.18	0.17
Radium 226 MDC	pCi/L	0.18	0.12	0.20	0.17
Radium 228	pCi/L	0.41	2.2	1.8	0.94
Radium 228 precision (±)	pCi/L	2.9	1.0	0.79	0.77
Radium 228 MDC	pCi/L	1.5	1.5	1.1	1.2
Thorium 230	pCi/L	0.4	0.02	0.05	0.05
Thorium 230 precision (±)	pCi/L	0.2	0.08	0.08	0.09
Thorium 230 MDC	pCi/L	0.2	0.2	0.1	0.2
A/C Balance	%	-2.52	-2.32	-0.21	-2.74
Anions	meq/L	85.5	82.9	83.4	85.9
Cations	meq/L	81.3	79.1	83.0	81.3
Solids, Total Dissolved - Calculated	mg/L	5000	4900	5000	5100
TDS Ratio	unitless	1.04	1.07	1.06	1.04
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16070513-003  
Client Sample ID: 627

Report Date: 09/26/16  
Collection Date: 07/12/16 10:40  
Date Received: 07/15/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	602	mg/L		5		A2320 B	07/21/16 18:29 / ljl
Calcium	542	mg/L		1		E200.7	07/19/16 21:14 / sf
Chloride	37	mg/L	D	2		E300.0	07/23/16 05:30 / ljl
Magnesium	231	mg/L		1		E200.7	07/19/16 21:14 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:07 / ljl
Nitrogen, Nitrate+Nitrite as N	86	mg/L	D	5.0		E353.2	07/20/16 13:30 / ljl
Potassium	5	mg/L		1		E200.7	07/19/16 21:14 / sf
Sodium	383	mg/L		1		E200.7	07/19/16 21:14 / sf
Sulfate	2450	mg/L	D	8		E300.0	07/23/16 05:30 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.90	s.u.	H	0.01		A4500-H B	07/18/16 11:58 / wc
Solids, Total Dissolved TDS @ 180 C	4280	mg/L		40		A2540 C	07/18/16 14:49 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/27/16 03:17 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 03:17 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 03:17 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/27/16 22:34 / sf
Lead	ND	mg/L		0.001		E200.8	07/27/16 22:34 / sf
Manganese	0.18	mg/L		0.01		E200.7	07/27/16 03:17 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 03:17 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 03:17 / sf
Uranium	0.0190	mg/L		0.0003		E200.8	07/27/16 22:34 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 03:17 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 22:40 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:46 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.9	pCi/L	U			E900.1	08/02/16 22:07 / trs
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	08/02/16 22:07 / trs
Gross Alpha minus Rn & U MDC	1.7	pCi/L				E900.1	08/02/16 22:07 / trs
Lead 210	0.3	pCi/L	U			E909.0	09/12/16 06:27 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/12/16 06:27 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/12/16 06:27 / eli-cs
Radium 226	0.20	pCi/L				E903.0	08/15/16 13:02 / dmf
Radium 226 precision (±)	0.12	pCi/L				E903.0	08/15/16 13:02 / dmf
Radium 226 MDC	0.15	pCi/L				E903.0	08/15/16 13:02 / dmf
Radium 228	3.6	pCi/L				RA-05	08/09/16 13:50 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/09/16 13:50 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16070513-003  
Client Sample ID: 627

Report Date: 09/26/16  
Collection Date: 07/12/16 10:40  
Date Received: 07/15/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	08/09/16 13:50 / plj
Thorium 230	0.06	pCi/L	U			E908.0	08/10/16 09:19 / cng
Thorium 230 precision (±)	0.09	pCi/L				E908.0	08/10/16 09:19 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/10/16 09:19 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4400	mg/L				A1030 E	07/26/16 08:34 / kbh
A/C Balance	-4.02	%				A1030 E	07/26/16 08:34 / kbh
Anions	68.1	meq/L				A1030 E	07/26/16 08:34 / kbh
Cations	62.8	meq/L				A1030 E	07/26/16 08:34 / kbh
TDS Ratio	0.98	unitless				A1030 E	07/26/16 08:34 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/26/16 10:38 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/16 10:38 / dm
Bromoform	ND	ug/L		0.50		E624	07/26/16 10:38 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/16 10:38 / dm
Chloroform	ND	ug/L		0.50		E624	07/26/16 10:38 / dm
Surr: Dibromofluoromethane	127	%REC		64.4-131		E624	07/26/16 10:38 / dm
Surr: p-Bromofluorobenzene	150	%REC	S	67.1-133		E624	07/26/16 10:38 / dm
Surr: Toluene-d8	114	%REC		79.7-125		E624	07/26/16 10:38 / dm

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16100241-003  
Client Sample ID: 627

Report Date: 12/03/16  
Collection Date: 10/04/16 11:14  
Date Received: 10/07/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	608	mg/L		5		A2320 B	10/14/16 18:34 / wc
Calcium	539	mg/L		1		E200.7	10/14/16 19:03 / sf
Chloride	34	mg/L	D	2		E300.0	10/13/16 09:01 / ljl
Magnesium	235	mg/L		1		E200.7	10/14/16 19:03 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:02 / ljl
Nitrogen, Nitrate+Nitrite as N	84	mg/L	D	5.0		E353.2	10/13/16 18:00 / ljl
Potassium	5	mg/L		1		E200.7	10/14/16 19:03 / sf
Sodium	385	mg/L		1		E200.7	10/14/16 19:03 / sf
Sulfate	2380	mg/L	D	8		E300.0	10/13/16 09:01 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.93	s.u.	H	0.01		A4500-H B	10/10/16 11:14 / bah
Solids, Total Dissolved TDS @ 180 C	4180	mg/L		40		A2540 C	10/11/16 08:41 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 04:05 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 04:05 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 04:05 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 04:05 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 04:05 / sf
Manganese	0.05	mg/L		0.01		E200.8	10/15/16 04:05 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 04:05 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 04:05 / sf
Uranium	0.0181	mg/L		0.0003		E200.8	10/15/16 04:05 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 04:05 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 19:47 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:09 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.4	pCi/L				E900.1	10/12/16 00:09 / cng
Gross Alpha minus Rn & U Precision (±)	1	pCi/L				E900.1	10/12/16 00:09 / cng
Gross Alpha minus Rn & U MDC	1.2	pCi/L				E900.1	10/12/16 00:09 / cng
Lead 210	1.3	pCi/L				E909.0	10/23/16 20:24 / eli-cs
Lead 210 precision (±)	0.9	pCi/L				E909.0	10/23/16 20:24 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/23/16 20:24 / eli-cs
Radium 226	0.26	pCi/L				E903.0	11/01/16 10:13 / plj
Radium 226 precision (±)	0.15	pCi/L				E903.0	11/01/16 10:13 / plj
Radium 226 MDC	0.19	pCi/L				E903.0	11/01/16 10:13 / plj
Radium 228	0.73	pCi/L	U			RA-05	10/27/16 13:43 / plj
Radium 228 precision (±)	0.78	pCi/L				RA-05	10/27/16 13:43 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16100241-003  
Client Sample ID: 627

Report Date: 12/03/16  
Collection Date: 10/04/16 11:14  
Date Received: 10/07/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	10/27/16 13:43 / plj
Thorium 230	-0.004	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.04	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4300	mg/L				A1030 E	10/18/16 15:12 / sec
A/C Balance	-2.50	%				A1030 E	10/18/16 15:12 / sec
Anions	66.3	meq/L				A1030 E	10/18/16 15:12 / sec
Cations	63.1	meq/L				A1030 E	10/18/16 15:12 / sec
TDS Ratio	0.98	unitless				A1030 E	10/18/16 15:12 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 20:09 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 20:09 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 20:09 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/16 20:09 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	10/14/16 20:09 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	10/14/16 20:09 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	10/14/16 20:09 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		627	627	627	627
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100241-003	C16070513-003	C16040305-003	C16010177-014
Bicarbonate as HCO <sub>3</sub>	mg/L	608	602	594	615
Calcium	mg/L	539	542	541	530
Chloride	mg/L	34	37	34	34
Magnesium	mg/L	235	231	235	233
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	84	86	82	83
Potassium	mg/L	5	5	5	5
Sodium	mg/L	385	383	387	390
Sulfate	mg/L	2380	2450	2350	2340
pH	s.u.	6.93	6.90	7.09	6.89
Solids, Total Dissolved TDS @ 180 C	mg/L	4180	4280	4200	4210
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.1	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.05	0.18	0.05	0.26
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0181	0.0190	0.0201	0.0206
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	1.4	0.9	1.7	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	1	1.1	1.0	0.9
Gross Alpha minus Rn & U MDC	pCi/L	1.2	1.7	1.3	1.3
Lead 210	pCi/L	1.3	0.3	0.1	0.2
Lead 210 precision (±)	pCi/L	0.9	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.2	1.4	1.3	1.0
Radium 226	pCi/L	0.26	0.20	0.24	0.18
Radium 226 precision (±)	pCi/L	0.15	0.12	0.12	0.11
Radium 226 MDC	pCi/L	0.19	0.15	0.16	0.14
Radium 228	pCi/L	0.73	3.6	0.59	0.32
Radium 228 precision (±)	pCi/L	0.78	1.3	0.58	0.64
Radium 228 MDC	pCi/L	1.3	1.5	0.91	1.1
Thorium 230	pCi/L	-0.004	0.06	0.06	-0.006
Thorium 230 precision (±)	pCi/L	0.04	0.09	0.07	0.1
Thorium 230 MDC	pCi/L	0.1	0.1	0.1	0.2
A/C Balance	%	-2.50	-4.02	-1.65	-2.11
Anions	meq/L	66.3	68.1	65.4	65.4
Cations	meq/L	63.1	62.8	63.3	62.7
Solids, Total Dissolved - Calculated	mg/L	4300	4400	4200	4200
TDS Ratio	unitless	0.98	0.98	1.00	1.00
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-006  
**Client Sample ID:** 632

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 12:52  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1820	mg/L		5		A2320 B	07/19/16 21:00 / wc
Calcium	570	mg/L		1		E200.8	08/15/16 15:06 / smm
Chloride	231	mg/L	DH	2		E300.0	08/23/16 20:10 / wc
Magnesium	801	mg/L		1		E200.7	08/24/16 12:10 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:26 / ljl
Nitrogen, Nitrate+Nitrite as N	54	mg/L	D	5.0		E353.2	07/15/16 16:34 / ljl
Potassium	10	mg/L		1		E200.8	08/15/16 15:06 / smm
Sodium	396	mg/L	D	2		E200.7	08/24/16 12:10 / sf
Sulfate	3180	mg/L	DH	8		E300.0	08/23/16 20:10 / wc
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	6.55	s.u.	H	0.01		A4500-H B	07/15/16 16:40 / wc
Solids, Total Dissolved TDS @ 180 C	7000	mg/L	D	90		A2540 C	07/15/16 17:47 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/21/16 15:03 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/21/16 15:03 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/21/16 15:03 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/25/16 22:11 / sf
Lead	ND	mg/L		0.001		E200.8	07/23/16 07:35 / sf
Manganese	2.07	mg/L		0.01		E200.7	07/21/16 15:03 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/21/16 15:03 / sf
Nickel	ND	mg/L		0.05		E200.8	07/23/16 07:35 / sf
Uranium	0.0688	mg/L		0.0003		E200.8	07/23/16 07:35 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/21/16 15:03 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/21/16 00:34 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:00 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.4	pCi/L	U			E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	1.3	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	0.4	pCi/L	U			E909.0	09/20/16 02:11 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	09/20/16 02:11 / eli-cs
Lead 210 MDC	1.1	pCi/L				E909.0	09/20/16 02:11 / eli-cs
Radium 226	0.69	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 precision (±)	0.19	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 MDC	0.13	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 228	2.3	pCi/L				RA-05	08/09/16 10:35 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-006  
**Client Sample ID:** 632

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 12:52  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/09/16 10:35 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	08/09/16 10:35 / plj
Thorium 230	-0.007	pCi/L	U			E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5400	mg/L				A1030 E	08/10/16 14:02 / smm
A/C Balance	-0.59	%				A1030 E	08/16/16 12:44 / sec
Anions	98.1	meq/L				A1030 E	08/16/16 12:44 / sec
Cations	96.9	meq/L				A1030 E	08/16/16 12:44 / sec
TDS Ratio	1.22	unitless				A1030 E	08/16/16 12:44 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	1.15	ug/L		0.50		E624	07/22/16 12:36 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 12:36 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 12:36 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 12:36 / dm
Chloroform	1.15	ug/L		0.50		E624	07/22/16 12:36 / dm
Surr: Dibromofluoromethane	119	%REC		64.4-131		E624	07/22/16 12:36 / dm
Surr: p-Bromofluorobenzene	149	%REC	S	67.1-133		E624	07/22/16 12:36 / dm
Surr: Toluene-d8	112	%REC		79.7-125		E624	07/22/16 12:36 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-006  
**Client Sample ID:** 632

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 12:20  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	2120	mg/L		5		A2320 B	10/14/16 19:56 / wc
Calcium	546	mg/L		1		E200.7	10/14/16 19:48 / sf
Chloride	184	mg/L	D	5		E300.0	10/13/16 12:05 / ljl
Magnesium	787	mg/L		1		E200.7	10/14/16 19:48 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:13 / ljl
Nitrogen, Nitrate+Nitrite as N	49	mg/L	DH	5.0		E353.2	12/06/16 12:09 / ljl
Potassium	10	mg/L		1		E200.7	10/14/16 19:48 / sf
Sodium	389	mg/L		1		E200.7	10/14/16 19:48 / sf
Sulfate	3130	mg/L	D	20		E300.0	10/13/16 12:05 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.54	s.u.	H	0.01		A4500-H B	10/10/16 11:32 / bah
Solids, Total Dissolved TDS @ 180 C	6780	mg/L	H	100		A2540 C	10/11/16 08:43 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 04:42 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 04:42 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 04:42 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 04:42 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 04:42 / sf
Manganese	0.92	mg/L		0.01		E200.8	12/05/16 16:37 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 04:42 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 04:42 / sf
Uranium	0.0597	mg/L		0.0003		E200.8	10/15/16 04:42 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 04:42 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 21:47 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:26 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	5.5	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U Precision (±)	1.7	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:43 / cng
Lead 210	-0.3	pCi/L	U			E909.0	10/24/16 09:59 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	10/24/16 09:59 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 09:59 / eli-cs
Radium 226	0.65	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.19	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.19	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	7.3	pCi/L				RA-05	10/28/16 12:10 / plj
Radium 228 precision (±)	1.8	pCi/L				RA-05	10/28/16 12:10 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-006  
**Client Sample ID:** 632

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 12:20  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.6	pCi/L				RA-05	10/28/16 12:10 / plj
Thorium 230	0.04	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6400	mg/L				A1030 E	10/18/16 15:13 / sec
A/C Balance	-0.63	%				A1030 E	10/18/16 15:13 / sec
Anions	111	meq/L				A1030 E	10/18/16 15:13 / sec
Cations	109	meq/L				A1030 E	10/18/16 15:13 / sec
TDS Ratio	1.05	unitless				A1030 E	10/18/16 15:13 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 16:15 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 16:15 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 16:15 / eli-b
Chloroform	0.84	ug/L		0.50		E624	10/14/16 16:15 / eli-b
Trihalomethanes, Total	0.84	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	10/14/16 16:15 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	10/14/16 16:15 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	10/14/16 16:15 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		632	632	632	632
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUUnits	C16100246-006	C16070451-006	C16040219-006	C16010153-006
Bicarbonate as HCO <sub>3</sub>	mg/L	2120	1820	1800	1880
Calcium	mg/L	546	570	585	578
Chloride	mg/L	184	231	239	249
Magnesium	mg/L	787	801	786	787
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	0.10	0.12
Nitrogen, Nitrate+Nitrite as N	mg/L	49	54	50	52
Potassium	mg/L	10	10	9	9
Sodium	mg/L	389	396	406	380
Sulfate	mg/L	3130	3180	3380	3520
pH	s.u.	6.54	6.55	6.60	6.49
Solids, Total Dissolved TDS @ 180 C	mg/L	6780	7000	7090	7010
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.92	2.07	2.81	2.72
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0597	0.0688	0.0754	0.0744
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	5.5	1.4	4.0	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.7	1.3	1.6	0.9
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	-0.3	0.4	0.4	-0.05
Lead 210 precision (±)	pCi/L	0.7	0.6	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.1	1.4	1.4
Radium 226	pCi/L	0.65	0.69	0.84	0.90
Radium 226 precision (±)	pCi/L	0.19	0.19	0.23	0.22
Radium 226 MDC	pCi/L	0.19	0.13	0.21	0.18
Radium 228	pCi/L	7.3	2.3	3.3	1.3
Radium 228 precision (±)	pCi/L	1.8	1.1	1.1	0.77
Radium 228 MDC	pCi/L	1.6	1.3	1.1	1.3
Thorium 230	pCi/L	0.04	-0.007	0.03	-0.01
Thorium 230 precision (±)	pCi/L	0.08	0.08	0.09	0.06
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
A/C Balance	%	-0.63	-0.59	0.67	-1.97
Anions	meq/L	111	98.1	110	115
Cations	meq/L	109	96.9	112	110
Solids, Total Dissolved - Calculated	mg/L	6400	5400	6500	6700
TDS Ratio	unitless	1.05	1.22	1.08	1.05
Trihalomethanes, Total	ug/L	0.84	1.15	1.29	1.68

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-007  
**Client Sample ID:** 801

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 13:56  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1490	mg/L		5		A2320 B	07/19/16 21:22 / wc
Calcium	563	mg/L		1		E200.7	07/19/16 18:35 / sf
Chloride	220	mg/L	D	2		E300.0	07/20/16 06:56 / wc
Magnesium	767	mg/L		1		E200.7	07/19/16 18:35 / sf
Nitrogen, Ammonia as N	2.9	mg/L	D	0.2		A4500-NH <sub>3</sub> G	07/18/16 16:27 / ljl
Nitrogen, Nitrate+Nitrite as N	54	mg/L	D	5.0		E353.2	07/15/16 16:35 / ljl
Potassium	12	mg/L		1		E200.7	07/19/16 18:35 / sf
Sodium	366	mg/L		1		E200.7	07/19/16 18:35 / sf
Sulfate	3390	mg/L	D	8		E300.0	07/20/16 06:56 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.74	s.u.	H	0.01		A4500-H B	07/15/16 16:43 / wc
Solids, Total Dissolved TDS @ 180 C	6670	mg/L	D	100		A2540 C	07/15/16 17:47 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/21/16 15:07 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/21/16 15:07 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/21/16 15:07 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/25/16 22:18 / sf
Lead	ND	mg/L		0.001		E200.8	07/23/16 07:41 / sf
Manganese	3.97	mg/L		0.01		E200.7	08/24/16 13:01 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/21/16 15:07 / sf
Nickel	ND	mg/L		0.05		E200.8	07/23/16 07:41 / sf
Uranium	0.0341	mg/L		0.0003		E200.8	07/23/16 07:41 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/21/16 15:07 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/21/16 00:46 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:01 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.6	pCi/L	U			E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	0.9	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	0.6	pCi/L	U			E909.0	09/20/16 05:22 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	09/20/16 05:22 / eli-cs
Lead 210 MDC	1.1	pCi/L				E909.0	09/20/16 05:22 / eli-cs
Radium 226	0.41	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 precision (±)	0.15	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 MDC	0.12	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 228	2.5	pCi/L				RA-05	08/09/16 10:35 / plj
Radium 228 precision (±)	1.0	pCi/L				RA-05	08/09/16 10:35 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-007  
**Client Sample ID:** 801

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 13:56  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	08/09/16 10:35 / plj
Thorium 230	0.005	pCi/L	U			E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6300	mg/L				A1030 E	07/26/16 08:30 / kbh
A/C Balance	1.14	%				A1030 E	07/26/16 08:30 / kbh
Anions	105	meq/L				A1030 E	07/26/16 08:30 / kbh
Cations	108	meq/L				A1030 E	07/26/16 08:30 / kbh
TDS Ratio	1.05	unitless				A1030 E	07/26/16 08:30 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	1.53	ug/L		0.50		E624	07/22/16 17:15 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 17:15 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 17:15 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 17:15 / dm
Chloroform	1.53	ug/L		0.50		E624	07/22/16 17:15 / dm
Surr: Dibromofluoromethane	109	%REC		64.4-131		E624	07/22/16 17:15 / dm
Surr: p-Bromofluorobenzene	143	%REC	S	67.1-133		E624	07/22/16 17:15 / dm
Surr: Toluene-d8	111	%REC		79.7-125		E624	07/22/16 17:15 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-007  
**Client Sample ID:** 801

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 13:00  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1580	mg/L		5		A2320 B	10/14/16 20:06 / wc
Calcium	485	mg/L		1		E200.7	10/14/16 19:53 / sf
Chloride	210	mg/L	D	5		E300.0	10/13/16 12:24 / ljl
Magnesium	734	mg/L		1		E200.7	10/14/16 19:53 / sf
Nitrogen, Ammonia as N	6.3	mg/L	D	0.2		A4500-NH <sub>3</sub> G	10/12/16 13:16 / ljl
Nitrogen, Nitrate+Nitrite as N	53	mg/L	D	5.0		E353.2	10/13/16 18:13 / ljl
Potassium	12	mg/L		1		E200.7	10/14/16 19:53 / sf
Sodium	341	mg/L		1		E200.7	10/14/16 19:53 / sf
Sulfate	3560	mg/L	D	20		E300.0	10/13/16 12:24 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.69	s.u.	H	0.01		A4500-H B	10/10/16 11:35 / bah
Solids, Total Dissolved TDS @ 180 C	6970	mg/L	H	100		A2540 C	10/11/16 08:46 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 04:48 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 04:48 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 04:48 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 04:48 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 04:48 / sf
Manganese	3.54	mg/L		0.01		E200.8	10/15/16 04:48 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 04:48 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 04:48 / sf
Uranium	0.0315	mg/L		0.0003		E200.8	10/15/16 04:48 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 04:48 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 21:59 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:42 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	5.9	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U Precision (±)	1.8	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:43 / cng
Lead 210	0.1	pCi/L	U			E909.0	10/24/16 12:15 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	10/24/16 12:15 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 12:15 / eli-cs
Radium 226	0.54	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.19	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.20	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	-4	pCi/L	U			RA-05	09/27/16 11:46 / plj
Radium 228 precision (±)	2.8	pCi/L				RA-05	09/27/16 11:46 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16100246-007  
Client Sample ID: 801

Report Date: 12/15/16  
Collection Date: 10/03/16 13:00  
Date Received: 10/06/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	09/27/16 11:46 / plj
Thorium 230	0.006	pCi/L	U			E908.0	11/02/16 09:36 / cng
Thorium 230 precision (±)	0.05	pCi/L				E908.0	11/02/16 09:36 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	11/02/16 09:36 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6400	mg/L				A1030 E	10/18/16 15:13 / sec
A/C Balance	-4.40	%				A1030 E	10/18/16 15:13 / sec
Anions	109	meq/L				A1030 E	10/18/16 15:13 / sec
Cations	100	meq/L				A1030 E	10/18/16 15:13 / sec
TDS Ratio	1.09	unitless				A1030 E	10/18/16 15:13 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 16:45 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 16:45 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 16:45 / eli-b
Chloroform	1.2	ug/L		0.50		E624	10/14/16 16:45 / eli-b
Trihalomethanes, Total	1.2	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	10/14/16 16:45 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	10/14/16 16:45 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	10/14/16 16:45 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		801	801	801	801
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-007	C16070451-007	C16040219-007	C16010153-007
Bicarbonate as HCO <sub>3</sub>	mg/L	1580	1490	1570	1600
Calcium	mg/L	485	563	557	557
Chloride	mg/L	210	220	221	226
Magnesium	mg/L	734	767	782	808
Nitrogen, Ammonia as N	mg/L	6.3	2.9	4.2	4.5
Nitrogen, Nitrate+Nitrite as N	mg/L	53	54	49	50
Potassium	mg/L	12	12	13	12
Sodium	mg/L	341	366	368	358
Sulfate	mg/L	3560	3390	3590	3750
pH	s.u.	6.69	6.74	6.72	6.69
Solids, Total Dissolved TDS @ 180 C	mg/L	6970	6670	6900	7080
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.003
Manganese	mg/L	3.54	3.97	5.55	5.09
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0315	0.0341	0.0408	0.0408
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	5.9	0.6	1	1.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.8	0.9	1.0	1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	0.1	0.6	0.3	-0.1
Lead 210 precision (±)	pCi/L	0.7	0.7	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.1	1.4	1.4
Radium 226	pCi/L	0.54	0.41	0.39	0.22
Radium 226 precision (±)	pCi/L	0.19	0.15	0.18	0.14
Radium 226 MDC	pCi/L	0.20	0.12	0.21	0.19
Radium 228	pCi/L	-4	2.5	2.0	0.46
Radium 228 precision (±)	pCi/L	2.8	1.0	0.90	0.83
Radium 228 MDC	pCi/L	1.3	1.3	1.1	1.3
Thorium 230	pCi/L	0.006	0.005	0.1	0.05
Thorium 230 precision (±)	pCi/L	0.05	0.06	0.1	0.09
Thorium 230 MDC	pCi/L	0.1	0.1	0.1	0.2
A/C Balance	%	-4.40	1.14	-0.83	-1.74
Anions	meq/L	109	105	110	114
Cations	meq/L	100	108	108	110
Solids, Total Dissolved - Calculated	mg/L	6400	6300	6600	6800
TDS Ratio	unitless	1.09	1.05	1.05	1.05
Trihalomethanes, Total	ug/L	1.2	1.53	1.58	1.00

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16070451-005  
Client Sample ID: 802

Report Date: 09/26/16  
Collection Date: 07/11/16 12:09  
Date Received: 07/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	2130	mg/L		5		A2320 B	07/19/16 20:35 / wc
Calcium	647	mg/L		1		E200.7	07/19/16 18:18 / sf
Chloride	202	mg/L	D	2		E300.0	07/20/16 06:21 / wc
Magnesium	759	mg/L		1		E200.7	07/19/16 18:18 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:16 / ljl
Nitrogen, Nitrate+Nitrite as N	86	mg/L	D	5.0		E353.2	07/15/16 16:32 / ljl
Potassium	5	mg/L		1		E200.7	07/19/16 18:18 / sf
Sodium	330	mg/L		1		E200.7	07/19/16 18:18 / sf
Sulfate	2930	mg/L	DH	8		E300.0	08/23/16 19:52 / wc
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	6.56	s.u.	H	0.01		A4500-H B	07/15/16 16:37 / wc
Solids, Total Dissolved TDS @ 180 C	6860	mg/L	D	100		A2540 C	07/15/16 17:47 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/21/16 14:58 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/21/16 14:58 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/21/16 14:58 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/25/16 22:05 / sf
Lead	ND	mg/L		0.001		E200.8	07/23/16 07:29 / sf
Manganese	1.10	mg/L		0.01		E200.7	07/21/16 14:58 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/21/16 14:58 / sf
Nickel	ND	mg/L		0.05		E200.8	07/23/16 07:29 / sf
Uranium	0.126	mg/L		0.0003		E200.8	07/23/16 07:29 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/21/16 14:58 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/21/16 00:22 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 09:58 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.3	pCi/L	U			E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	0.9	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	0.3	pCi/L	U			E909.0	09/20/16 20:20 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/20/16 20:20 / eli-cs
Lead 210 MDC	1.3	pCi/L				E909.0	09/20/16 20:20 / eli-cs
Radium 226	0.23	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 precision (±)	0.13	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 MDC	0.13	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 228	3.5	pCi/L				RA-05	08/09/16 10:35 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-005  
**Client Sample ID:** 802

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 12:09  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.2	pCi/L				RA-05	08/09/16 10:35 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	08/09/16 10:35 / plj
Thorium 230	0.04	pCi/L	U			E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6800	mg/L				A1030 E	07/26/16 08:29 / kbh
A/C Balance	-4.07	%				A1030 E	07/26/16 08:29 / kbh
Anions	118	meq/L				A1030 E	07/26/16 08:29 / kbh
Cations	109	meq/L				A1030 E	07/26/16 08:29 / kbh
TDS Ratio	1.00	unitless				A1030 E	07/26/16 08:29 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	5.20	ug/L		0.50		E624	07/22/16 12:01 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 12:01 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 12:01 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 12:01 / dm
Chloroform	5.20	ug/L		0.50		E624	07/22/16 12:01 / dm
Surr: Dibromofluoromethane	114	%REC		64.4-131		E624	07/22/16 12:01 / dm
Surr: p-Bromofluorobenzene	150	%REC	S	67.1-133		E624	07/22/16 12:01 / dm
Surr: Toluene-d8	114	%REC		79.7-125		E624	07/22/16 12:01 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-005  
**Client Sample ID:** 802

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 11:38  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1780	mg/L		5		A2320 B	10/14/16 19:43 / wc
Calcium	641	mg/L		1		E200.7	10/14/16 19:33 / sf
Chloride	234	mg/L	D	5		E300.0	10/13/16 11:47 / ljl
Magnesium	761	mg/L		1		E200.7	10/14/16 19:33 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:15 / ljl
Nitrogen, Nitrate+Nitrite as N	76	mg/L	DH	10		E353.2	12/06/16 12:13 / ljl
Potassium	5	mg/L		1		E200.7	10/14/16 19:33 / sf
Sodium	337	mg/L		1		E200.7	10/14/16 19:33 / sf
Sulfate	3470	mg/L	D	20		E300.0	10/13/16 11:47 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.57	s.u.	H	0.01		A4500-H B	10/10/16 11:29 / bah
Solids, Total Dissolved TDS @ 180 C	6990	mg/L	H	100		A2540 C	10/11/16 08:43 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 04:36 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 04:36 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 04:36 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 04:36 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 04:36 / sf
Manganese	1.15	mg/L		0.01		E200.8	10/15/16 04:36 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 04:36 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 04:36 / sf
Uranium	0.118	mg/L		0.0003		E200.8	10/15/16 04:36 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 04:36 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 21:11 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:25 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	4.7	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U Precision (±)	1.6	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:43 / cng
Lead 210	0.8	pCi/L	U			E909.0	10/24/16 07:43 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/24/16 07:43 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 07:43 / eli-cs
Radium 226	0.38	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.15	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.18	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	0.35	pCi/L	U			RA-05	10/28/16 12:10 / plj
Radium 228 precision (±)	0.88	pCi/L				RA-05	10/28/16 12:10 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-005  
**Client Sample ID:** 802

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 11:38  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	10/28/16 12:10 / plj
Thorium 230	-0.005	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6600	mg/L				A1030 E	10/18/16 15:13 / sec
A/C Balance	-0.94	%				A1030 E	10/18/16 15:13 / sec
Anions	111	meq/L				A1030 E	10/18/16 15:13 / sec
Cations	109	meq/L				A1030 E	10/18/16 15:13 / sec
TDS Ratio	1.07	unitless				A1030 E	10/18/16 15:13 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 15:46 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 15:46 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 15:46 / eli-b
Chloroform	3.9	ug/L		0.50		E624	10/14/16 15:46 / eli-b
Trihalomethanes, Total	3.9	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	10/14/16 15:46 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/14/16 15:46 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	10/14/16 15:46 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		802	802	802	802
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-005	C16070451-005	C16040219-005	C16010153-005
Bicarbonate as HCO <sub>3</sub>	mg/L	1780	2130	2080	2180
Calcium	mg/L	641	647	640	644
Chloride	mg/L	234	202	185	191
Magnesium	mg/L	761	759	747	751
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	76	86	82	83
Potassium	mg/L	5	5	5	5
Sodium	mg/L	337	330	340	327
Sulfate	mg/L	3470	2930	3050	3090
pH	s.u.	6.57	6.56	6.68	6.53
Solids, Total Dissolved TDS @ 180 C	mg/L	6990	6860	6880	6740
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	0.001	ND(0.001)
Manganese	mg/L	1.15	1.10	1.22	1.14
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.118	0.126	0.134	0.131
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	4.7	0.3	1.2	1.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.6	0.9	1.2	1.0
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.6	1.2
Lead 210	pCi/L	0.8	0.3	0.09	0.1
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.3	1.4	1.4
Radium 226	pCi/L	0.38	0.23	0.30	0.45
Radium 226 precision (±)	pCi/L	0.15	0.13	0.16	0.17
Radium 226 MDC	pCi/L	0.18	0.13	0.19	0.17
Radium 228	pCi/L	0.35	3.5	2.3	-0.2
Radium 228 precision (±)	pCi/L	0.88	1.2	0.88	0.72
Radium 228 MDC	pCi/L	1.5	1.3	1.0	1.2
Thorium 230	pCi/L	-0.005	0.04	0.008	0.02
Thorium 230 precision (±)	pCi/L	0.08	0.07	0.05	0.07
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
A/C Balance	%	-0.94	-4.07	-0.17	-1.32
Anions	meq/L	111	118	109	111
Cations	meq/L	109	109	108	108
Solids, Total Dissolved - Calculated	mg/L	6600	6800	6400	6500
TDS Ratio	unitless	1.07	1.00	1.08	1.04
Trihalomethanes, Total	ug/L	3.9	5.20	5.68	6.40

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16070451-003  
Client Sample ID: 803

Report Date: 09/26/16  
Collection Date: 07/11/16 10:42  
Date Received: 07/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1700	mg/L		5		A2320 B	07/19/16 19:50 / wc
Calcium	628	mg/L		1		E200.7	07/19/16 18:10 / sf
Chloride	153	mg/L	DH	2		E300.0	08/11/16 10:44 / wc
Magnesium	701	mg/L		1		E200.7	07/19/16 18:10 / sf
Nitrogen, Ammonia as N	0.76	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:23 / ljl
Nitrogen, Nitrate+Nitrite as N	34	mg/L	D	5.0		E353.2	07/15/16 16:30 / ljl
Potassium	12	mg/L		1		E200.7	07/19/16 18:10 / sf
Sodium	267	mg/L		1		E200.7	07/19/16 18:10 / sf
Sulfate	3150	mg/L	DH	8		E300.0	08/11/16 10:44 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.60	s.u.	H	0.01		A4500-H B	07/15/16 16:31 / wc
Solids, Total Dissolved TDS @ 180 C	6420	mg/L	D	100		A2540 C	07/15/16 17:46 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/21/16 14:49 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/21/16 14:49 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/21/16 14:49 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/25/16 21:53 / sf
Lead	ND	mg/L		0.001		E200.8	07/23/16 07:16 / sf
Manganese	2.60	mg/L		0.01		E200.7	07/21/16 14:49 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/21/16 14:49 / sf
Nickel	ND	mg/L		0.05		E200.8	07/23/16 07:16 / sf
Uranium	0.104	mg/L		0.0003		E200.8	07/23/16 07:16 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/21/16 14:49 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/20/16 23:58 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 09:52 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.1	pCi/L	U			E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	1.2	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	0.1	pCi/L	U			E909.0	09/20/16 17:09 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	09/20/16 17:09 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	09/20/16 17:09 / eli-cs
Radium 226	0.28	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 precision (±)	0.15	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 MDC	0.14	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 228	2.3	pCi/L				RA-05	08/09/16 10:35 / plj
Radium 228 precision (±)	0.93	pCi/L				RA-05	08/09/16 10:35 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-003  
**Client Sample ID:** 803

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 10:42  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.4	pCi/L				RA-05	08/09/16 10:35 / plj
Thorium 230	-0.001	pCi/L	U			E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.09	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5900	mg/L				A1030 E	08/15/16 13:00 / sec
A/C Balance	0.44	%				A1030 E	08/15/16 13:00 / sec
Anions	100	meq/L				A1030 E	08/15/16 13:00 / sec
Cations	101	meq/L				A1030 E	08/15/16 13:00 / sec
TDS Ratio	1.09	unitless				A1030 E	08/15/16 13:00 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/22/16 10:51 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 10:51 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 10:51 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 10:51 / dm
Chloroform	ND	ug/L		0.50		E624	07/22/16 10:51 / dm
Surr: Dibromofluoromethane	111	%REC		64.4-131		E624	07/22/16 10:51 / dm
Surr: p-Bromofluorobenzene	144	%REC	S	67.1-133		E624	07/22/16 10:51 / dm
Surr: Toluene-d8	113	%REC		79.7-125		E624	07/22/16 10:51 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16100246-003  
Client Sample ID: 803

Report Date: 12/15/16  
Collection Date: 10/03/16 10:00  
Date Received: 10/06/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1640	mg/L		5		A2320 B	10/14/16 19:08 / wc
Calcium	612	mg/L		1		E200.7	10/14/16 19:24 / sf
Chloride	156	mg/L	D	2		E300.0	10/13/16 10:33 / ljl
Magnesium	685	mg/L		1		E200.7	10/14/16 19:24 / sf
Nitrogen, Ammonia as N	0.40	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:06 / ljl
Nitrogen, Nitrate+Nitrite as N	32	mg/L	D	2.5		E353.2	10/13/16 18:04 / ljl
Potassium	11	mg/L		1		E200.7	10/14/16 19:24 / sf
Sodium	263	mg/L		1		E200.7	10/14/16 19:24 / sf
Sulfate	3340	mg/L	D	8		E300.0	10/13/16 10:33 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.61	s.u.	H	0.01		A4500-H B	10/10/16 11:23 / bah
Solids, Total Dissolved TDS @ 180 C	6230	mg/L	H	100		A2540 C	10/11/16 08:42 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 04:24 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 04:24 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 04:24 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 04:24 / sf
Lead	0.001	mg/L		0.001		E200.8	10/15/16 04:24 / sf
Manganese	3.10	mg/L		0.01		E200.8	10/15/16 04:24 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 04:24 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 04:24 / sf
Uranium	0.0653	mg/L		0.0003		E200.8	10/15/16 04:24 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 04:24 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 20:23 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:22 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	7.1	pCi/L				E900.1	10/21/16 23:42 / cng
Gross Alpha minus Rn & U Precision (±)	2.1	pCi/L				E900.1	10/21/16 23:42 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:42 / cng
Lead 210	-0.2	pCi/L	U			E909.0	10/24/16 03:11 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	10/24/16 03:11 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 03:11 / eli-cs
Radium 226	0.23	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.14	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.19	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	0.27	pCi/L	U			RA-05	10/28/16 12:10 / plj
Radium 228 precision (±)	0.93	pCi/L				RA-05	10/28/16 12:10 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-003  
**Client Sample ID:** 803

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 10:00  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	10/28/16 12:10 / plj
Thorium 230	0.0008	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6000	mg/L				A1030 E	10/18/16 15:12 / sec
A/C Balance	-2.17	%				A1030 E	10/18/16 15:12 / sec
Anions	103	meq/L				A1030 E	10/18/16 15:12 / sec
Cations	98.7	meq/L				A1030 E	10/18/16 15:12 / sec
TDS Ratio	1.03	unitless				A1030 E	10/18/16 15:12 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 21:36 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 21:36 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 21:36 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/16 21:36 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	10/14/16 21:36 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/14/16 21:36 / eli-b
Surr: Toluene-d8	105	%REC		80-123		E624	10/14/16 21:36 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		803	803	803	803
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-003	C16070451-003	C16040219-003	C16010153-003
Bicarbonate as HCO <sub>3</sub>	mg/L	1640	1700	1750	1790
Calcium	mg/L	612	628	641	636
Chloride	mg/L	156	153	166	166
Magnesium	mg/L	685	701	713	709
Nitrogen, Ammonia as N	mg/L	0.40	0.76	0.94	1.0
Nitrogen, Nitrate+Nitrite as N	mg/L	32	34	36	16
Potassium	mg/L	11	12	12	13
Sodium	mg/L	263	267	294	275
Sulfate	mg/L	3340	3150	3290	3300
pH	s.u.	6.61	6.60	6.64	6.51
Solids, Total Dissolved TDS @ 180 C	mg/L	6230	6420	6560	6530
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.001	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.10	2.60	2.27	2.67
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0653	0.104	0.0862	0.0802
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	7.1	1.1	3.9	1.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.1	1.2	1.6	0.9
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.6	1.2
Lead 210	pCi/L	-0.2	0.1	0.5	0.6
Lead 210 precision (±)	pCi/L	0.7	0.7	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.2	1.4	1.4
Radium 226	pCi/L	0.23	0.28	0.16	0.27
Radium 226 precision (±)	pCi/L	0.14	0.15	0.15	0.15
Radium 226 MDC	pCi/L	0.19	0.14	0.21	0.19
Radium 228	pCi/L	0.27	2.3	2.1	0.55
Radium 228 precision (±)	pCi/L	0.93	0.93	0.78	0.83
Radium 228 MDC	pCi/L	1.5	1.4	1.1	1.3
Thorium 230	pCi/L	0.0008	-0.001	-0.02	0.02
Thorium 230 precision (±)	pCi/L	0.07	0.09	0.06	0.08
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
A/C Balance	%	-2.17	0.44	-0.29	-1.25
Anions	meq/L	103	100	104	105
Cations	meq/L	98.7	101	104	102
Solids, Total Dissolved - Calculated	mg/L	6000	5900	6200	6100
TDS Ratio	unitless	1.03	1.09	1.06	1.06
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-004  
**Client Sample ID:** 808

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 11:24  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	2090	mg/L		5		A2320 B	07/19/16 20:03 / wc
Calcium	646	mg/L		1		E200.7	07/19/16 18:14 / sf
Chloride	184	mg/L	DH	2		E300.0	08/23/16 18:56 / wc
Magnesium	775	mg/L		1		E200.7	07/19/16 18:14 / sf
Nitrogen, Ammonia as N	0.56	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:24 / ljl
Nitrogen, Nitrate+Nitrite as N	37	mg/L	D	5.0		E353.2	07/15/16 16:31 / ljl
Potassium	8	mg/L		1		E200.7	07/19/16 18:14 / sf
Sodium	350	mg/L		1		E200.7	07/19/16 18:14 / sf
Sulfate	3130	mg/L	D	8		E300.0	07/20/16 06:03 / wc
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	6.58	s.u.	H	0.01		A4500-H B	07/15/16 16:34 / wc
Solids, Total Dissolved TDS @ 180 C	6910	mg/L	D	100		A2540 C	07/15/16 17:46 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/21/16 14:54 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/21/16 14:54 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/21/16 14:54 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/25/16 21:59 / sf
Lead	0.002	mg/L		0.001		E200.8	07/23/16 07:22 / sf
Manganese	1.68	mg/L		0.01		E200.7	07/21/16 14:54 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/21/16 14:54 / sf
Nickel	ND	mg/L		0.05		E200.8	07/23/16 07:22 / sf
Uranium	0.0894	mg/L		0.0003		E200.8	07/23/16 07:22 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/21/16 14:54 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/21/16 00:10 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 09:56 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.8	pCi/L	U			E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	1.0	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	-0.2	pCi/L	U			E909.0	09/20/16 23:31 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/20/16 23:31 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/20/16 23:31 / eli-cs
Radium 226	0.28	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 precision (±)	0.14	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 MDC	0.12	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 228	2.6	pCi/L				RA-05	08/09/16 10:35 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-004  
**Client Sample ID:** 808

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 11:24  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	0.97	pCi/L				RA-05	08/09/16 10:35 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	08/09/16 10:35 / plj
Thorium 230	-0.003	pCi/L	U			E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6300	mg/L				A1030 E	07/26/16 08:29 / kbh
A/C Balance	2.28	%				A1030 E	07/26/16 08:29 / kbh
Anions	107	meq/L				A1030 E	07/26/16 08:29 / kbh
Cations	112	meq/L				A1030 E	07/26/16 08:29 / kbh
TDS Ratio	1.10	unitless				A1030 E	07/26/16 08:29 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	1.79	ug/L		0.50		E624	07/22/16 11:26 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 11:26 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 11:26 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 11:26 / dm
Chloroform	1.79	ug/L		0.50		E624	07/22/16 11:26 / dm
Surr: Dibromofluoromethane	112	%REC		64.4-131		E624	07/22/16 11:26 / dm
Surr: p-Bromofluorobenzene	148	%REC	S	67.1-133		E624	07/22/16 11:26 / dm
Surr: Toluene-d8	113	%REC		79.7-125		E624	07/22/16 11:26 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-004  
**Client Sample ID:** 808

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 10:55  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	2000	mg/L		5		A2320 B	10/14/16 19:20 / wc
Calcium	635	mg/L		1		E200.7	10/14/16 19:28 / sf
Chloride	184	mg/L	D	2		E300.0	10/13/16 11:29 / ljl
Magnesium	697	mg/L		1		E200.7	10/14/16 19:28 / sf
Nitrogen, Ammonia as N	0.57	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:10 / ljl
Nitrogen, Nitrate+Nitrite as N	22	mg/L	D	2.5		E353.2	10/13/16 18:05 / ljl
Potassium	9	mg/L		1		E200.7	10/14/16 19:28 / sf
Sodium	355	mg/L		1		E200.7	10/14/16 19:28 / sf
Sulfate	3340	mg/L	D	8		E300.0	10/13/16 11:29 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.53	s.u.	H	0.01		A4500-H B	10/10/16 11:26 / bah
Solids, Total Dissolved TDS @ 180 C	6650	mg/L	H	90		A2540 C	10/11/16 08:42 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 04:30 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 04:30 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 04:30 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 04:30 / sf
Lead	0.001	mg/L		0.001		E200.8	10/15/16 04:30 / sf
Manganese	1.90	mg/L		0.01		E200.8	10/15/16 04:30 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 04:30 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 04:30 / sf
Uranium	0.0729	mg/L		0.0003		E200.8	10/15/16 04:30 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 04:30 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 20:35 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:23 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	3.8	pCi/L				E900.1	10/21/16 23:42 / cng
Gross Alpha minus Rn & U Precision (±)	1.3	pCi/L				E900.1	10/21/16 23:42 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:42 / cng
Lead 210	-0.2	pCi/L	U			E909.0	10/24/16 05:27 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	10/24/16 05:27 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 05:27 / eli-cs
Radium 226	0.37	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.14	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.20	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	1.4	pCi/L	U			RA-05	10/28/16 12:10 / plj
Radium 228 precision (±)	1.0	pCi/L				RA-05	10/28/16 12:10 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-004  
**Client Sample ID:** 808

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 10:55  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.6	pCi/L				RA-05	10/28/16 12:10 / plj
Thorium 230	-0.009	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6300	mg/L				A1030 E	10/18/16 15:13 / sec
A/C Balance	-2.09	%				A1030 E	10/18/16 15:13 / sec
Anions	109	meq/L				A1030 E	10/18/16 15:13 / sec
Cations	105	meq/L				A1030 E	10/18/16 15:13 / sec
TDS Ratio	1.05	unitless				A1030 E	10/18/16 15:13 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 22:07 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 22:07 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 22:07 / eli-b
Chloroform	1.2	ug/L		0.50		E624	10/14/16 22:07 / eli-b
Trihalomethanes, Total	1.2	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	10/14/16 22:07 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/14/16 22:07 / eli-b
Surr: Toluene-d8	105	%REC		80-123		E624	10/14/16 22:07 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		808	808	808	808
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-004	C16070451-004	C16040219-004	C16010153-004
Bicarbonate as HCO <sub>3</sub>	mg/L	2000	2090	2020	2120
Calcium	mg/L	635	646	636	640
Chloride	mg/L	184	184	191	196
Magnesium	mg/L	697	775	817	790
Nitrogen, Ammonia as N	mg/L	0.57	0.56	0.12	0.7
Nitrogen, Nitrate+Nitrite as N	mg/L	22	37	49	36
Potassium	mg/L	9	8	6	7
Sodium	mg/L	355	350	355	338
Sulfate	mg/L	3340	3130	3390	3440
pH	s.u.	6.53	6.58	6.66	6.48
Solids, Total Dissolved TDS @ 180 C	mg/L	6650	6910	7140	7020
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.001	0.002	0.001	0.001
Manganese	mg/L	1.90	1.68	1.43	1.57
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0729	0.0894	0.114	0.103
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.8	0.8	-0.3	0.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.3	1.0	0.9	0.8
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.6	1.2
Lead 210	pCi/L	-0.2	-0.2	-0.4	-0.5
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.37	0.28	0.25	0.19
Radium 226 precision (±)	pCi/L	0.14	0.14	0.16	0.14
Radium 226 MDC	pCi/L	0.20	0.12	0.20	0.19
Radium 228	pCi/L	1.4	2.6	1.6	0.36
Radium 228 precision (±)	pCi/L	1.0	0.97	0.76	0.82
Radium 228 MDC	pCi/L	1.6	1.3	1.1	1.3
Thorium 230	pCi/L	-0.009	-0.003	0.03	-0.008
Thorium 230 precision (±)	pCi/L	0.08	0.06	0.06	0.07
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
A/C Balance	%	-2.09	2.28	0.98	-1.33
Anions	meq/L	109	107	112	115
Cations	meq/L	105	112	115	112
Solids, Total Dissolved - Calculated	mg/L	6300	6300	6600	6700
TDS Ratio	unitless	1.05	1.10	1.08	1.05
Trihalomethanes, Total	ug/L	1.2	1.79	2.51	2.51

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-008  
**Client Sample ID:** GW-1

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 14:50  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1850	mg/L		5		A2320 B	07/19/16 21:34 / wc
Calcium	628	mg/L		1		E200.7	08/24/16 12:14 / sf
Chloride	245	mg/L	D	2		E300.0	07/20/16 07:13 / wc
Magnesium	577	mg/L		1		E200.7	07/19/16 18:39 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:18 / ljl
Nitrogen, Nitrate+Nitrite as N	92	mg/L	D	5.0		E353.2	07/15/16 16:36 / ljl
Potassium	8	mg/L		1		E200.7	07/19/16 18:39 / sf
Sodium	400	mg/L		1		E200.7	07/19/16 18:39 / sf
Sulfate	2710	mg/L	D	8		E300.0	07/20/16 07:13 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.70	s.u.	H	0.01		A4500-H B	07/15/16 16:46 / wc
Solids, Total Dissolved TDS @ 180 C	6200	mg/L	D	100		A2540 C	07/15/16 17:47 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/21/16 15:12 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/21/16 15:12 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/21/16 15:12 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/25/16 22:24 / sf
Lead	ND	mg/L		0.001		E200.8	07/23/16 08:13 / sf
Manganese	0.10	mg/L		0.01		E200.7	08/24/16 13:05 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/21/16 15:12 / sf
Nickel	ND	mg/L		0.05		E200.8	07/23/16 08:13 / sf
Uranium	0.0894	mg/L		0.0003		E200.8	07/23/16 08:13 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/21/16 15:12 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 16:04 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:03 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.8	pCi/L	U			E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	0.4	pCi/L	U			E909.0	09/20/16 08:33 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	09/20/16 08:33 / eli-cs
Lead 210 MDC	1.1	pCi/L				E909.0	09/20/16 08:33 / eli-cs
Radium 226	0.18	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 precision (±)	0.11	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 MDC	0.12	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 228	2.7	pCi/L				RA-05	08/09/16 10:35 / plj
Radium 228 precision (±)	1.0	pCi/L				RA-05	08/09/16 10:35 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-008  
**Client Sample ID:** GW-1

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 14:50  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	08/09/16 10:35 / plj
Thorium 230	-0.007	pCi/L	U		E908.0		08/09/16 10:50 / cng
Thorium 230 precision (±)	0.06	pCi/L			E908.0		08/09/16 10:50 / cng
Thorium 230 MDC	0.2	pCi/L			E908.0		08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5900	mg/L				A1030 E	07/26/16 08:30 / kbh
A/C Balance	-2.44	%				A1030 E	07/26/16 08:30 / kbh
Anions	100	meq/L				A1030 E	07/26/16 08:30 / kbh
Cations	95.4	meq/L				A1030 E	07/26/16 08:30 / kbh
TDS Ratio	1.05	unitless				A1030 E	07/26/16 08:30 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	2.70	ug/L		0.50		E624	07/22/16 17:49 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 17:49 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 17:49 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 17:49 / dm
Chloroform	2.70	ug/L		0.50		E624	07/22/16 17:49 / dm
Surr: Dibromofluoromethane	125	%REC		64.4-131		E624	07/22/16 17:49 / dm
Surr: p-Bromofluorobenzene	142	%REC	S	67.1-133		E624	07/22/16 17:49 / dm
Surr: Toluene-d8	113	%REC		79.7-125		E624	07/22/16 17:49 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-008  
**Client Sample ID:** GW-1

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 13:50  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1790	mg/L		5		A2320 B	10/14/16 20:18 / wc
Calcium	681	mg/L		1		E200.7	10/14/16 19:57 / sf
Chloride	247	mg/L	D	2		E300.0	10/13/16 12:42 / ljl
Magnesium	570	mg/L		1		E200.7	10/14/16 19:57 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:17 / ljl
Nitrogen, Nitrate+Nitrite as N	89	mg/L	D	5.0		E353.2	10/13/16 18:14 / ljl
Potassium	8	mg/L		1		E200.7	10/14/16 19:57 / sf
Sodium	412	mg/L		1		E200.7	10/14/16 19:57 / sf
Sulfate	2860	mg/L	D	8		E300.0	10/13/16 12:42 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.69	s.u.	H	0.01		A4500-H B	10/10/16 11:38 / bah
Solids, Total Dissolved TDS @ 180 C	6210	mg/L	H	100		A2540 C	10/11/16 08:46 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 05:20 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 05:20 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 05:20 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 05:20 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 05:20 / sf
Manganese	0.13	mg/L		0.01		E200.8	10/15/16 05:20 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 05:20 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 05:20 / sf
Uranium	0.0832	mg/L		0.0003		E200.8	10/15/16 05:20 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 05:20 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 22:11 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:43 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	3.0	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U Precision (±)	1.2	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:43 / cng
Lead 210	0.7	pCi/L	U			E909.0	10/24/16 14:31 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/24/16 14:31 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 14:31 / eli-cs
Radium 226	0.26	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.14	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.18	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	7.6	pCi/L				RA-05	09/27/16 11:46 / plj
Radium 228 precision (±)	2.9	pCi/L				RA-05	09/27/16 11:46 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-008  
**Client Sample ID:** GW-1

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 13:50  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	09/27/16 11:46 / plj
Thorium 230	0.06	pCi/L	U			E908.0	11/02/16 09:35 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	11/02/16 09:35 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	11/02/16 09:35 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6100	mg/L				A1030 E	10/18/16 15:14 / sec
A/C Balance	-1.55	%				A1030 E	10/18/16 15:14 / sec
Anions	102	meq/L				A1030 E	10/18/16 15:14 / sec
Cations	99.0	meq/L				A1030 E	10/18/16 15:14 / sec
TDS Ratio	1.02	unitless				A1030 E	10/18/16 15:14 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 17:14 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 17:14 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 17:14 / eli-b
Chloroform	1.7	ug/L		0.50		E624	10/14/16 17:14 / eli-b
Trihalomethanes, Total	1.7	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	99.0	%REC		71-139		E624	10/14/16 17:14 / eli-b
Surr: p-Bromofluorobenzene	101	%REC		80-127		E624	10/14/16 17:14 / eli-b
Surr: Toluene-d8	105	%REC		80-123		E624	10/14/16 17:14 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		GW-1	GW-1	GW-1	GW-1
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-008	C16070451-008	C16040219-008	C16010153-008
Bicarbonate as HCO <sub>3</sub>	mg/L	1790	1850	1870	1950
Calcium	mg/L	681	628	707	720
Chloride	mg/L	247	245	240	244
Magnesium	mg/L	570	577	587	588
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	89	92	85	84
Potassium	mg/L	8	8	8	8
Sodium	mg/L	412	400	413	400
Sulfate	mg/L	2860	2710	2820	2880
pH	s.u.	6.69	6.70	6.82	6.64
Solids, Total Dissolved TDS @ 180 C	mg/L	6210	6200	6430	6450
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.13	0.10	0.21	0.23
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0832	0.0894	0.103	0.0992
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.0	0.8	1.0	0.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.2	1.1	0.9	0.9
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	0.7	0.4	-0.3	-0.4
Lead 210 precision (±)	pCi/L	0.8	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.1	1.4	1.4
Radium 226	pCi/L	0.26	0.18	0.23	0.12
Radium 226 precision (±)	pCi/L	0.14	0.11	0.15	0.12
Radium 226 MDC	pCi/L	0.18	0.12	0.19	0.17
Radium 228	pCi/L	7.6	2.7	1.6	-0.2
Radium 228 precision (±)	pCi/L	2.9	1.0	0.78	0.69
Radium 228 MDC	pCi/L	1.5	1.2	1.0	1.2
Thorium 230	pCi/L	0.06	-0.007	0.04	0.04
Thorium 230 precision (±)	pCi/L	0.08	0.06	0.09	0.09
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.2
A/C Balance	%	-1.55	-2.44	-0.25	-1.49
Anions	meq/L	102	100	102	105
Cations	meq/L	99.0	95.4	102	102
Solids, Total Dissolved - Calculated	mg/L	6100	5900	6100	6200
TDS Ratio	unitless	1.02	1.05	1.05	1.04
Trihalomethanes, Total	ug/L	1.7	2.70	2.25	2.67

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-002  
**Client Sample ID:** EPA-23

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 09:55  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1330	mg/L		5		A2320 B	07/19/16 19:39 / wc
Calcium	671	mg/L		1		E200.7	07/19/16 18:06 / sf
Chloride	125	mg/L	D	2		E300.0	07/22/16 19:40 / ljl
Magnesium	390	mg/L		1		E200.7	07/19/16 18:06 / sf
Nitrogen, Ammonia as N	0.40	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:21 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/15/16 16:26 / ljl
Potassium	11	mg/L		1		E200.7	07/19/16 18:06 / sf
Sodium	151	mg/L		1		E200.7	07/19/16 18:06 / sf
Sulfate	2540	mg/L	D	8		E300.0	07/22/16 19:40 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.69	s.u.	H	0.01		A4500-H B	07/15/16 16:28 / wc
Solids, Total Dissolved TDS @ 180 C	4640	mg/L	D	40		A2540 C	07/15/16 17:46 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	07/21/16 20:04 / sf
Beryllium	ND	mg/L		0.001		E200.8	07/21/16 20:04 / sf
Cadmium	ND	mg/L		0.005		E200.8	07/21/16 20:04 / sf
Cobalt	0.01	mg/L		0.01		E200.8	07/21/16 20:04 / sf
Lead	ND	mg/L		0.001		E200.8	07/21/16 20:04 / sf
Manganese	6.16	mg/L		0.01		E200.8	07/21/16 20:04 / sf
Molybdenum	ND	mg/L		0.1		E200.8	07/21/16 20:04 / sf
Nickel	ND	mg/L		0.05		E200.8	07/21/16 20:04 / sf
Uranium	0.0291	mg/L		0.0003		E200.8	07/21/16 20:04 / sf
Vanadium	ND	mg/L		0.1		E200.8	07/21/16 20:04 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/20/16 23:46 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 09:50 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.6	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	0.4	pCi/L	U			E909.0	09/21/16 05:53 / eli-cs
Lead 210 precision (±)	0.9	pCi/L				E909.0	09/21/16 05:53 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/21/16 05:53 / eli-cs
Radium 226	0.56	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 precision (±)	0.20	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 226 MDC	0.17	pCi/L				E903.0	08/15/16 11:18 / dmf
Radium 228	2.2	pCi/L				RA-05	08/26/16 11:28 / plj
Radium 228 precision (±)	0.78	pCi/L				RA-05	08/26/16 11:28 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-002  
**Client Sample ID:** EPA-23

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 09:55  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.0	pCi/L				RA-05	08/26/16 11:28 / plj
Thorium 230	-0.01	pCi/L	U			E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4600	mg/L				A1030 E	07/26/16 08:28 / kbh
A/C Balance	-3.85	%				A1030 E	07/26/16 08:28 / kbh
Anions	78.3	meq/L				A1030 E	07/26/16 08:28 / kbh
Cations	72.5	meq/L				A1030 E	07/26/16 08:28 / kbh
TDS Ratio	1.02	unitless				A1030 E	07/26/16 08:28 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/22/16 10:16 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 10:16 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 10:16 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 10:16 / dm
Chloroform	ND	ug/L		0.50		E624	07/22/16 10:16 / dm
Surr: Dibromofluoromethane	131	%REC		64.4-131		E624	07/22/16 10:16 / dm
Surr: p-Bromofluorobenzene	142	%REC	S	67.1-133		E624	07/22/16 10:16 / dm
Surr: Toluene-d8	108	%REC		79.7-125		E624	07/22/16 10:16 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-002  
**Client Sample ID:** EPA-23

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 09:16  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1300	mg/L		5		A2320 B	10/14/16 18:57 / wc
Calcium	660	mg/L		1		E200.7	10/14/16 19:20 / sf
Chloride	114	mg/L	D	2		E300.0	10/13/16 09:38 / ljl
Magnesium	393	mg/L		1		E200.7	10/14/16 19:20 / sf
Nitrogen, Ammonia as N	0.30	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:05 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	10/13/16 18:03 / ljl
Potassium	11	mg/L		1		E200.7	10/14/16 19:20 / sf
Sodium	153	mg/L		1		E200.7	10/14/16 19:20 / sf
Sulfate	2460	mg/L	D	8		E300.0	10/13/16 09:38 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.67	s.u.	H	0.01		A4500-H B	10/10/16 11:20 / bah
Solids, Total Dissolved TDS @ 180 C	4640	mg/L	H	40		A2540 C	10/11/16 08:42 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 04:17 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 04:17 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 04:17 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 04:17 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 04:17 / sf
Manganese	5.84	mg/L		0.01		E200.8	10/15/16 04:17 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 04:17 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 04:17 / sf
Uranium	0.0284	mg/L		0.0003		E200.8	10/15/16 04:17 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 04:17 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 20:11 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:13 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.5	pCi/L	U			E900.1	12/07/16 22:22 / cng
Gross Alpha minus Rn & U Precision (±)	2.1	pCi/L				E900.1	12/07/16 22:22 / cng
Gross Alpha minus Rn & U MDC	3.5	pCi/L				E900.1	12/07/16 22:22 / cng
Lead 210	0.7	pCi/L	U			E909.0	10/24/16 00:55 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/24/16 00:55 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 00:55 / eli-cs
Radium 226	0.55	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.17	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.18	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	5.5	pCi/L				RA-05	10/28/16 10:36 / plj
Radium 228 precision (±)	1.6	pCi/L				RA-05	10/28/16 10:36 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-002  
**Client Sample ID:** EPA-23

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 09:16  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	10/28/16 10:36 / plj
Thorium 230	0.04	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.09	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4400	mg/L				A1030 E	10/18/16 15:12 / sec
A/C Balance	-2.32	%				A1030 E	10/18/16 15:12 / sec
Anions	75.7	meq/L				A1030 E	10/18/16 15:12 / sec
Cations	72.3	meq/L				A1030 E	10/18/16 15:12 / sec
TDS Ratio	1.04	unitless				A1030 E	10/18/16 15:12 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 21:07 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 21:07 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 21:07 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/16 21:07 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	10/14/16 21:07 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	10/14/16 21:07 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	10/14/16 21:07 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		EPA-23	EPA-23	EPA-23	EPA-23
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUUnits	C16100246-002	C16070451-002	C16040219-002	C16010153-002
Bicarbonate as HCO <sub>3</sub>	mg/L	1300	1330	1290	1340
Calcium	mg/L	660	671	670	673
Chloride	mg/L	114	125	110	119
Magnesium	mg/L	393	390	386	390
Nitrogen, Ammonia as N	mg/L	0.30	0.40	0.35	0.5
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	11	11	11	11
Sodium	mg/L	153	151	157	150
Sulfate	mg/L	2460	2540	2360	2440
pH	s.u.	6.67	6.69	6.79	6.73
Solids, Total Dissolved TDS @ 180 C	mg/L	4640	4640	4640	4660
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	0.01	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	5.84	6.16	5.67	5.57
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0284	0.0291	0.0326	0.0292
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	0.6	1.6	1.8	1.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.1	1.1	1.1	0.9
Gross Alpha minus Rn & U MDC	pCi/L	3.5	1.5	1.6	1.2
Lead 210	pCi/L	0.7	0.4	0.2	-0.5
Lead 210 precision (±)	pCi/L	0.8	0.9	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.55	0.56	0.41	0.53
Radium 226 precision (±)	pCi/L	0.17	0.20	0.18	0.18
Radium 226 MDC	pCi/L	0.18	0.17	0.20	0.18
Radium 228	pCi/L	5.5	2.2	2.1	1.1
Radium 228 precision (±)	pCi/L	1.6	0.78	0.84	0.85
Radium 228 MDC	pCi/L	1.2	1.0	1.0	1.3
Thorium 230	pCi/L	0.04	-0.01	0.03	0.01
Thorium 230 precision (±)	pCi/L	0.09	0.06	0.07	0.08
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
A/C Balance	%	-2.32	-3.85	-0.72	-2.44
Anions	meq/L	75.7	78.3	73.4	76.2
Cations	meq/L	72.3	72.5	72.3	72.6
Solids, Total Dissolved - Calculated	mg/L	4400	4600	4300	4500
TDS Ratio	unitless	1.04	1.02	1.07	1.04
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070513-002  
**Client Sample ID:** EPA-25

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 09:37  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1390	mg/L		5		A2320 B	07/21/16 18:21 / ljl
Calcium	785	mg/L		1		E200.7	07/19/16 21:10 / sf
Chloride	147	mg/L	D	2		E300.0	07/23/16 05:12 / ljl
Magnesium	240	mg/L		1		E200.7	07/19/16 21:10 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:30 / ljl
Nitrogen, Nitrate+Nitrite as N	71	mg/L	D	5.0		E353.2	07/20/16 13:29 / ljl
Potassium	8	mg/L		1		E200.7	07/19/16 21:10 / sf
Sodium	206	mg/L		1		E200.7	07/19/16 21:10 / sf
Sulfate	2020	mg/L	D	8		E300.0	07/23/16 05:12 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.80	s.u.	H	0.01		A4500-H B	07/18/16 11:55 / wc
Solids, Total Dissolved TDS @ 180 C	4490	mg/L		40		A2540 C	07/18/16 14:49 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/27/16 03:12 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 03:12 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 03:12 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/27/16 22:28 / sf
Lead	ND	mg/L		0.001		E200.8	07/27/16 22:28 / sf
Manganese	0.85	mg/L		0.01		E200.7	07/27/16 03:12 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 03:12 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 03:12 / sf
Uranium	0.113	mg/L		0.0003		E200.8	07/27/16 22:28 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 03:12 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 22:28 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:44 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.2	pCi/L	U			E900.1	08/02/16 22:07 / trs
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	08/02/16 22:07 / trs
Gross Alpha minus Rn & U MDC	1.7	pCi/L				E900.1	08/02/16 22:07 / trs
Lead 210	-0.1	pCi/L	U			E909.0	09/12/16 04:44 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/12/16 04:44 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/12/16 04:44 / eli-cs
Radium 226	0.09	pCi/L	U			E903.0	08/15/16 13:02 / dmf
Radium 226 precision (±)	0.11	pCi/L				E903.0	08/15/16 13:02 / dmf
Radium 226 MDC	0.15	pCi/L				E903.0	08/15/16 13:02 / dmf
Radium 228	1.8	pCi/L				RA-05	08/26/16 11:28 / plj
Radium 228 precision (±)	0.99	pCi/L				RA-05	08/26/16 11:28 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070513-002  
**Client Sample ID:** EPA-25

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 09:37  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.4	pCi/L				RA-05	08/26/16 11:28 / plj
Thorium 230	0.1	pCi/L	U			E908.0	08/10/16 09:19 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/10/16 09:19 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/10/16 09:19 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4400	mg/L				A1030 E	07/26/16 08:34 / kbh
A/C Balance	-4.24	%				A1030 E	07/26/16 08:34 / kbh
Anions	74.2	meq/L				A1030 E	07/26/16 08:34 / kbh
Cations	68.1	meq/L				A1030 E	07/26/16 08:34 / kbh
TDS Ratio	1.01	unitless				A1030 E	07/26/16 08:34 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L	H	0.50		E624	07/26/16 10:03 / dm
Bromodichloromethane	ND	ug/L	H	0.50		E624	07/26/16 10:03 / dm
Bromoform	ND	ug/L	H	0.50		E624	07/26/16 10:03 / dm
Chlorodibromomethane	ND	ug/L	H	0.50		E624	07/26/16 10:03 / dm
Chloroform	ND	ug/L	H	0.50		E624	07/26/16 10:03 / dm
Surr: Dibromofluoromethane	112	%REC	H	64.4-131		E624	07/26/16 10:03 / dm
Surr: p-Bromofluorobenzene	144	%REC	SH	67.1-133		E624	07/26/16 10:03 / dm
Surr: Toluene-d8	116	%REC	H	79.7-125		E624	07/26/16 10:03 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
S - Spike recovery outside of advisory limits.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16100241-002  
Client Sample ID: EPA-25

Report Date: 12/03/16  
Collection Date: 10/04/16 09:47  
Date Received: 10/07/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	1400	mg/L		5		A2320 B	10/14/16 18:26 / wc
Calcium	773	mg/L		1		E200.7	10/14/16 18:59 / sf
Chloride	136	mg/L	D	2		E300.0	10/13/16 08:43 / ljl
Magnesium	245	mg/L		1		E200.7	10/14/16 18:59 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:01 / ljl
Nitrogen, Nitrate+Nitrite as N	70	mg/L	D	5.0		E353.2	10/13/16 17:59 / ljl
Potassium	8	mg/L		1		E200.7	10/14/16 18:59 / sf
Sodium	217	mg/L		1		E200.7	10/14/16 18:59 / sf
Sulfate	1940	mg/L	D	8		E300.0	10/13/16 08:43 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.84	s.u.	H	0.01		A4500-H B	10/10/16 11:08 / bah
Solids, Total Dissolved TDS @ 180 C	4420	mg/L		40		A2540 C	10/11/16 08:41 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 03:59 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 03:59 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 03:59 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 03:59 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 03:59 / sf
Manganese	0.87	mg/L		0.01		E200.8	10/15/16 03:59 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 03:59 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 03:59 / sf
Uranium	0.109	mg/L		0.0003		E200.8	10/15/16 03:59 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 03:59 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 19:35 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:08 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.8	pCi/L	U			E900.1	10/12/16 00:09 / cng
Gross Alpha minus Rn & U Precision (±)	1.0	pCi/L				E900.1	10/12/16 00:09 / cng
Gross Alpha minus Rn & U MDC	1.2	pCi/L				E900.1	10/12/16 00:09 / cng
Lead 210	-0.07	pCi/L	U			E909.0	10/23/16 18:08 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	10/23/16 18:08 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/23/16 18:08 / eli-cs
Radium 226	0.11	pCi/L	U			E903.0	11/01/16 10:13 / plj
Radium 226 precision (±)	0.11	pCi/L				E903.0	11/01/16 10:13 / plj
Radium 226 MDC	0.17	pCi/L				E903.0	11/01/16 10:13 / plj
Radium 228	0.46	pCi/L	U			RA-05	10/27/16 13:43 / plj
Radium 228 precision (±)	0.71	pCi/L				RA-05	10/27/16 13:43 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100241-002  
**Client Sample ID:** EPA-25

**Report Date:** 12/03/16  
**Collection Date:** 10/04/16 09:47  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	10/27/16 13:43 / plj
Thorium 230	0.04	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.09	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4300	mg/L				A1030 E	10/18/16 15:11 / sec
A/C Balance	-2.59	%				A1030 E	10/18/16 15:11 / sec
Anions	72.0	meq/L				A1030 E	10/18/16 15:11 / sec
Cations	68.4	meq/L				A1030 E	10/18/16 15:11 / sec
TDS Ratio	1.02	unitless				A1030 E	10/18/16 15:11 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 19:40 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 19:40 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 19:40 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/16 19:40 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	10/14/16 19:40 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	10/14/16 19:40 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	10/14/16 19:40 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		EPA-25	EPA-25	EPA-25	EPA-25
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUUnits	C16100241-002	C16070513-002	C16040305-002	C16010177-013
Bicarbonate as HCO <sub>3</sub>	mg/L	1400	1390	1250	1410
Calcium	mg/L	773	785	785	785
Chloride	mg/L	136	147	137	135
Magnesium	mg/L	245	240	238	243
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	70	71	66	67
Potassium	mg/L	8	8	8	8
Sodium	mg/L	217	206	210	211
Sulfate	mg/L	1940	2020	1940	1890
pH	s.u.	6.84	6.80	6.92	6.80
Solids, Total Dissolved TDS @ 180 C	mg/L	4420	4490	4390	4390
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.1	0.1
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.87	0.85	0.50	0.51
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.109	0.113	0.124	0.114
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	0.8	0.2	0.2	-0.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.0	1.1	0.8	0.7
Gross Alpha minus Rn & U MDC	pCi/L	1.2	1.7	1.3	1.3
Lead 210	pCi/L	-0.07	-0.1	-0.4	-0.2
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.2	1.4	1.3	1.0
Radium 226	pCi/L	0.11	0.09	0.16	0.09
Radium 226 precision (±)	pCi/L	0.11	0.11	0.12	0.10
Radium 226 MDC	pCi/L	0.17	0.15	0.16	0.15
Radium 228	pCi/L	0.46	1.8	0.89	0.07
Radium 228 precision (±)	pCi/L	0.71	0.99	0.60	0.65
Radium 228 MDC	pCi/L	1.2	1.4	0.92	1.1
Thorium 230	pCi/L	0.04	0.1	0.02	0.06
Thorium 230 precision (±)	pCi/L	0.09	0.1	0.07	0.1
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
A/C Balance	%	-2.59	-4.24	-1.04	-1.73
Anions	meq/L	72.0	74.2	69.6	70.9
Cations	meq/L	68.4	68.1	68.1	68.5
Solids, Total Dissolved - Calculated	mg/L	4300	4400	4200	4300
TDS Ratio	unitless	1.02	1.01	1.03	1.03
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-009  
**Client Sample ID:** EPA-28

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 15:38  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	408	mg/L		5		A2320 B	07/19/16 21:42 / wc
Calcium	494	mg/L		1		E200.7	07/19/16 18:43 / sf
Chloride	99	mg/L	D	2		E300.0	07/20/16 07:30 / wc
Magnesium	460	mg/L		1		E200.7	07/19/16 18:43 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:19 / ljl
Nitrogen, Nitrate+Nitrite as N	8.8	mg/L	D	1.0		E353.2	07/15/16 16:37 / ljl
Potassium	11	mg/L		1		E200.7	07/19/16 18:43 / sf
Sodium	252	mg/L		1		E200.7	07/19/16 18:43 / sf
Sulfate	2950	mg/L	D	8		E300.0	07/20/16 07:30 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.90	s.u.	H	0.01		A4500-H B	07/15/16 16:49 / wc
Solids, Total Dissolved TDS @ 180 C	4970	mg/L	D	40		A2540 C	07/15/16 17:48 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/21/16 15:28 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/21/16 15:28 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/21/16 15:28 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/25/16 22:56 / sf
Lead	ND	mg/L		0.001		E200.8	07/25/16 22:56 / sf
Manganese	0.25	mg/L		0.01		E200.8	08/24/16 22:48 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/21/16 15:28 / sf
Nickel	ND	mg/L		0.05		E200.8	07/23/16 08:19 / sf
Uranium	0.0205	mg/L		0.0003		E200.8	08/24/16 22:48 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/21/16 15:28 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 16:40 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:04 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.2	pCi/L	U			E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	1.2	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	0.8	pCi/L	U			E909.0	09/20/16 11:27 / eli-cs
Lead 210 precision (±)	0.9	pCi/L				E909.0	09/20/16 11:27 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/20/16 11:27 / eli-cs
Radium 226	0.35	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 precision (±)	0.15	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 MDC	0.12	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 228	3.4	pCi/L				RA-05	08/09/16 10:35 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/09/16 10:35 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-009  
**Client Sample ID:** EPA-28

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 15:38  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	08/09/16 10:35 / plj
Thorium 230	0.2	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4500	mg/L				A1030 E	07/26/16 08:30 / kbh
A/C Balance	1.49	%				A1030 E	07/26/16 08:30 / kbh
Anions	71.6	meq/L				A1030 E	07/26/16 08:30 / kbh
Cations	73.7	meq/L				A1030 E	07/26/16 08:30 / kbh
TDS Ratio	1.10	unitless				A1030 E	07/26/16 08:30 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/22/16 18:24 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 18:24 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 18:24 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 18:24 / dm
Chloroform	ND	ug/L		0.50		E624	07/22/16 18:24 / dm
Surr: Dibromofluoromethane	119	%REC		64.4-131		E624	07/22/16 18:24 / dm
Surr: p-Bromofluorobenzene	150	%REC	S	67.1-133		E624	07/22/16 18:24 / dm
Surr: Toluene-d8	98.0	%REC		79.7-125		E624	07/22/16 18:24 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-009  
**Client Sample ID:** EPA-28

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 14:40  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	403	mg/L		5		A2320 B	10/14/16 20:25 / wc
Calcium	490	mg/L		1		E200.7	10/14/16 20:02 / sf
Chloride	101	mg/L	D	2		E300.0	10/13/16 13:01 / ljl
Magnesium	466	mg/L		1		E200.7	10/14/16 20:02 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:18 / ljl
Nitrogen, Nitrate+Nitrite as N	8.1	mg/L	D	0.5		E353.2	10/13/16 18:16 / ljl
Potassium	11	mg/L		1		E200.7	10/14/16 20:02 / sf
Sodium	252	mg/L		1		E200.7	10/14/16 20:02 / sf
Sulfate	3290	mg/L	D	8		E300.0	10/13/16 13:01 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.91	s.u.	H	0.01		A4500-H B	10/10/16 11:50 / bah
Solids, Total Dissolved TDS @ 180 C	5010	mg/L	H	40		A2540 C	10/11/16 08:46 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 05:26 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 05:26 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 05:26 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 05:26 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 05:26 / sf
Manganese	0.47	mg/L		0.01		E200.8	10/15/16 05:26 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 05:26 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 05:26 / sf
Uranium	0.0171	mg/L		0.0003		E200.8	10/15/16 05:26 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 05:26 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 22:23 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:45 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	3.3	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U Precision (±)	1.3	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:43 / cng
Lead 210	-0.3	pCi/L	U			E909.0	10/24/16 16:47 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	10/24/16 16:47 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 16:47 / eli-cs
Radium 226	0.37	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.15	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.18	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	2.5	pCi/L				RA-05	12/13/16 12:47 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	12/13/16 12:47 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-009  
**Client Sample ID:** EPA-28

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 14:40  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	12/13/16 12:47 / plj
Thorium 230	0.09	pCi/L				E908.0	11/02/16 09:35 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	11/02/16 09:35 / cng
Thorium 230 MDC	0.08	pCi/L				E908.0	11/02/16 09:35 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4800	mg/L				A1030 E	10/18/16 15:14 / sec
A/C Balance	-2.89	%				A1030 E	10/18/16 15:14 / sec
Anions	78.4	meq/L				A1030 E	10/18/16 15:14 / sec
Cations	74.0	meq/L				A1030 E	10/18/16 15:14 / sec
TDS Ratio	1.03	unitless				A1030 E	10/18/16 15:14 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 17:43 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 17:43 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 17:43 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/16 17:43 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	10/14/16 17:43 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/14/16 17:43 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	10/14/16 17:43 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		EPA-28	EPA-28	EPA-28	EPA-28
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUUnits	C16100246-009	C16070451-009	C16040219-009	C16010153-009
Bicarbonate as HCO <sub>3</sub>	mg/L	403	408	404	425
Calcium	mg/L	490	494	495	487
Chloride	mg/L	101	99	96	101
Magnesium	mg/L	466	460	464	461
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	8.1	8.8	8.1	8.7
Potassium	mg/L	11	11	11	10
Sodium	mg/L	252	252	252	238
Sulfate	mg/L	3290	2950	3060	3140
pH	s.u.	6.91	6.90	6.97	6.82
Solids, Total Dissolved TDS @ 180 C	mg/L	5010	4970	5010	5020
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	0.1
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.47	0.25	0.50	0.49
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0171	0.0205	0.0192	0.0156
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.3	1.2	2.7	2.0
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.3	1.2	1.5	1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	-0.3	0.8	0.3	-0.5
Lead 210 precision (±)	pCi/L	0.7	0.9	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.37	0.35	0.57	0.61
Radium 226 precision (±)	pCi/L	0.15	0.15	0.20	0.18
Radium 226 MDC	pCi/L	0.18	0.12	0.20	0.17
Radium 228	pCi/L	2.5	3.4	2.7	2.0
Radium 228 precision (±)	pCi/L	2.5	1.3	1.1	0.94
Radium 228 MDC	pCi/L	1.3	1.3	1.1	1.2
Thorium 230	pCi/L	0.09	0.2	0.04	0.01
Thorium 230 precision (±)	pCi/L	0.07	0.1	0.08	0.06
Thorium 230 MDC	pCi/L	0.08	0.1	0.1	0.2
A/C Balance	%	-2.89	1.49	0.36	-2.00
Anions	meq/L	78.4	71.6	73.6	75.9
Cations	meq/L	74.0	73.7	74.1	72.9
Solids, Total Dissolved - Calculated	mg/L	4800	4500	4600	4700
TDS Ratio	unitless	1.03	1.10	1.08	1.07
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070513-001,  
**Client Sample ID:** SBL-1

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 08:30  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	460	mg/L		5		A2320 B	07/21/16 18:11 / ljl
Calcium	486	mg/L		1		E200.7	07/19/16 20:54 / sf
Chloride	86	mg/L	D	5		E300.0	07/23/16 04:53 / ljl
Magnesium	1230	mg/L		1		E200.7	07/19/16 20:54 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:28 / ljl
Nitrogen, Nitrate+Nitrite as N	38	mg/L	D	5.0		E353.2	07/20/16 13:27 / ljl
Potassium	13	mg/L		1		E200.7	07/19/16 20:54 / sf
Sodium	287	mg/L		1		E200.7	07/19/16 20:54 / sf
Sulfate	5840	mg/L	DH	20		E300.0	08/23/16 21:05 / wc
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	6.76	s.u.	H	0.01		A4500-H B	07/18/16 11:52 / wc
Solids, Total Dissolved TDS @ 180 C	9380	mg/L		100		A2540 C	07/18/16 14:49 / wc
<b>METALS, TOTAL</b>							
Aluminum	0.2	mg/L		0.1		E200.7	07/27/16 02:28 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 02:28 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 02:28 / sf
Cobalt	0.03	mg/L		0.01		E200.8	07/27/16 22:21 / sf
Lead	ND	mg/L		0.001		E200.8	07/27/16 22:21 / sf
Manganese	3.44	mg/L		0.01		E200.7	07/27/16 02:28 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 02:28 / sf
Nickel	0.07	mg/L		0.05		E200.7	07/27/16 02:28 / sf
Uranium	0.0098	mg/L		0.0003		E200.8	07/27/16 22:21 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 02:28 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	0.001	mg/L		0.001		E1632AM	07/22/16 22:16 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:42 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.8	pCi/L	U			E900.1	08/02/16 22:07 / trs
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	08/02/16 22:07 / trs
Gross Alpha minus Rn & U MDC	1.7	pCi/L				E900.1	08/02/16 22:07 / trs
Lead 210	-0.04	pCi/L	U			E909.0	09/11/16 23:36 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/11/16 23:36 / eli-cs
Lead 210 MDC	1.3	pCi/L				E909.0	09/11/16 23:36 / eli-cs
Radium 226	0.43	pCi/L				E903.0	08/15/16 13:02 / dmf
Radium 226 precision (±)	0.18	pCi/L				E903.0	08/15/16 13:02 / dmf
Radium 226 MDC	0.22	pCi/L				E903.0	08/15/16 13:02 / dmf
Radium 228	1.9	pCi/L	U			RA-05	08/09/16 13:50 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070513-001  
**Client Sample ID:** SBL-1

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 08:30  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/09/16 13:50 / plj
Radium 228 MDC	2.2	pCi/L				RA-05	08/09/16 13:50 / plj
Thorium 230	0.03	pCi/L	U			E908.0	08/09/16 15:03 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/09/16 15:03 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/09/16 15:03 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	8900	mg/L				A1030 E	07/26/16 08:34 / kbh
A/C Balance	-2.80	%				A1030 E	07/26/16 08:34 / kbh
Anions	146	meq/L				A1030 E	07/26/16 08:34 / kbh
Cations	138	meq/L				A1030 E	07/26/16 08:34 / kbh
TDS Ratio	1.05	unitless				A1030 E	07/26/16 08:34 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L	H	0.50		E624	07/26/16 12:23 / dm
Bromodichloromethane	ND	ug/L	H	0.50		E624	07/26/16 12:23 / dm
Bromoform	ND	ug/L	H	0.50		E624	07/26/16 12:23 / dm
Chlorodibromomethane	ND	ug/L	H	0.50		E624	07/26/16 12:23 / dm
Chloroform	ND	ug/L	H	0.50		E624	07/26/16 12:23 / dm
Surr: Dibromofluoromethane	118	%REC	H	64.4-131		E624	07/26/16 12:23 / dm
Surr: p-Bromofluorobenzene	148	%REC	SH	67.1-133		E624	07/26/16 12:23 / dm
Surr: Toluene-d8	116	%REC	H	79.7-125		E624	07/26/16 12:23 / dm

**Report /  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
S - Spike recovery outside of advisory limits.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: SW Alluvium  
Lab ID: C16100241-001  
Client Sample ID: SBL-1

Report Date: 12/03/16  
Collection Date: 10/04/16 08:41  
Date Received: 10/07/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	440	mg/L		5		A2320 B	10/14/16 18:16 / wc
Calcium	490	mg/L		1		E200.7	10/14/16 18:55 / sf
Chloride	78	mg/L	D	5		E300.0	10/13/16 08:24 / ljl
Magnesium	1240	mg/L		1		E200.7	10/14/16 18:55 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:00 / ljl
Nitrogen, Nitrate+Nitrite as N	38	mg/L	D	5.0		E353.2	10/13/16 17:58 / ljl
Potassium	14	mg/L		1		E200.7	10/14/16 18:55 / sf
Sodium	293	mg/L		1		E200.7	10/14/16 18:55 / sf
Sulfate	6150	mg/L	D	20		E300.0	10/13/16 08:24 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.77	s.u.	H	0.01		A4500-H B	10/10/16 11:05 / bah
Solids, Total Dissolved TDS @ 180 C	9070	mg/L		100		A2540 C	10/11/16 08:41 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.7	mg/L		0.1		E200.8	10/29/16 06:29 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/29/16 06:29 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 01:41 / sf
Cobalt	0.03	mg/L		0.01		E200.8	10/29/16 06:29 / smm
Lead	0.001	mg/L		0.001		E200.8	10/15/16 01:41 / sf
Manganese	3.97	mg/L		0.01		E200.8	10/29/16 06:29 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 01:41 / sf
Nickel	0.09	mg/L		0.05		E200.8	10/15/16 01:41 / sf
Uranium	0.0097	mg/L		0.0003		E200.8	10/15/16 01:41 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 01:41 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 19:23 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:06 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	4.6	pCi/L				E900.1	10/12/16 00:09 / cng
Gross Alpha minus Rn & U Precision (±)	1.7	pCi/L				E900.1	10/12/16 00:09 / cng
Gross Alpha minus Rn & U MDC	1.2	pCi/L				E900.1	10/12/16 00:09 / cng
Lead 210	0.3	pCi/L	U			E909.0	10/23/16 11:21 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	10/23/16 11:21 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/23/16 11:21 / eli-cs
Radium 226	0.41	pCi/L				E903.0	11/01/16 10:13 / plj
Radium 226 precision (±)	0.16	pCi/L				E903.0	11/01/16 10:13 / plj
Radium 226 MDC	0.19	pCi/L				E903.0	11/01/16 10:13 / plj
Radium 228	1.8	pCi/L				RA-05	10/27/16 13:43 / plj
Radium 228 precision (±)	0.89	pCi/L				RA-05	10/27/16 13:43 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100241-001  
**Client Sample ID:** SBL-1

**Report Date:** 12/03/16  
**Collection Date:** 10/04/16 08:41  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	10/27/16 13:43 / plj
Thorium 230	-0.01	pCi/L	U			E908.0	10/25/16 18:10 / cng
Thorium 230 precision (±)	0.05	pCi/L				E908.0	10/25/16 18:10 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	10/25/16 18:10 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	8700	mg/L				A1030 E	10/18/16 15:11 / sec
A/C Balance	-0.12	%				A1030 E	10/18/16 15:11 / sec
Anions	140	meq/L				A1030 E	10/18/16 15:11 / sec
Cations	140	meq/L				A1030 E	10/18/16 15:11 / sec
TDS Ratio	1.05	unitless				A1030 E	10/18/16 15:11 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 19:11 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 19:11 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 19:11 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/16 19:11 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	10/14/16 19:11 / eli-b
Surr: p-Bromofluorobenzene	97.0	%REC		80-127		E624	10/14/16 19:11 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	10/14/16 19:11 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		SBL-1	SBL-1	SBL-1	SBL-1
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100241-001	C16070513-001	C16040305-001	C16010177-012
Bicarbonate as HCO <sub>3</sub>	mg/L	440	460	442	473
Calcium	mg/L	490	486	498	484
Chloride	mg/L	78	86	77	80
Magnesium	mg/L	1240	1230	1250	1250
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	38	38	35	38
Potassium	mg/L	14	13	13	14
Sodium	mg/L	293	287	282	285
Sulfate	mg/L	6150	5840	6180	6130
pH	s.u.	6.77	6.76	6.84	6.73
Solids, Total Dissolved TDS @ 180 C	mg/L	9070	9380	9300	9350
Aluminum	mg/L	0.7	0.2	0.3	0.6
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.03	0.03	0.02	0.02
Lead	mg/L	0.001	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.97	3.44	3.76	3.66
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.09	0.07	0.07	0.07
Uranium	mg/L	0.0097	0.0098	0.0112	0.0097
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	4.6	0.8	1.4	2.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.7	1.1	1.1	1.2
Gross Alpha minus Rn & U MDC	pCi/L	1.2	1.7	1.3	1.3
Lead 210	pCi/L	0.3	-0.04	0.3	0.1
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.2	1.3	1.3	1.0
Radium 226	pCi/L	0.41	0.43	0.50	0.38
Radium 226 precision (±)	pCi/L	0.16	0.18	0.20	0.16
Radium 226 MDC	pCi/L	0.19	0.22	0.23	0.17
Radium 228	pCi/L	1.8	1.9	1.9	1.5
Radium 228 precision (±)	pCi/L	0.89	1.1	0.66	0.86
Radium 228 MDC	pCi/L	1.3	2.2	1.3	1.3
Thorium 230	pCi/L	-0.01	0.03	0.03	0.2
Thorium 230 precision (±)	pCi/L	0.05	0.1	0.2	0.2
Thorium 230 MDC	pCi/L	0.1	0.2	0.5	0.3
A/C Balance	%	-0.12	-2.80	-0.12	-0.02
Anions	meq/L	140	146	141	140
Cations	meq/L	140	138	140	140
Solids, Total Dissolved - Calculated	mg/L	8700	8900	8700	8700
TDS Ratio	unitless	1.05	1.05	1.07	1.08
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

**QUARTERLY SAMPLING**  
**SEMI-ANNUAL GROUND WATER MONITORING REPORT**  
**JULY TO DECEMBER OF 2016**

**ZONE - 1**

515-A

\*604

\*614

TWQ-142

EPA-2

\*EPA-4

\*EPA-5

\*EPA-7

**LEVELS ONLY**

TWQ-143

EPA-8

505-A

502-A

501-A

504-A

412

**NOTE: \*POINT OF COMPLIANCE WELLS  
WATER LEVEL ONLY IS IN FIELD DATA SHEET**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-002  
**Client Sample ID:** 515-A

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 13:11  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	880	mg/L		5		A2320 B	07/21/16 16:47 / ljl
Calcium	435	mg/L		1		E200.7	07/19/16 19:47 / sf
Chloride	406	mg/L	D	5		E300.0	07/23/16 00:35 / ljl
Magnesium	1340	mg/L		1		E200.7	07/19/16 19:47 / sf
Nitrogen, Ammonia as N	24	mg/L	D	1		A4500-NH <sub>3</sub> G	07/18/16 16:45 / ljl
Nitrogen, Nitrate+Nitrite as N	40	mg/L	D	5.0		E353.2	07/20/16 13:11 / ljl
Potassium	17	mg/L		1		E200.7	07/19/16 19:47 / sf
Sodium	588	mg/L		1		E200.7	07/19/16 19:47 / sf
Sulfate	6750	mg/L	D	20		E300.0	07/23/16 00:35 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.16	s.u.	H	0.01		A4500-H B	07/18/16 11:19 / wc
Solids, Total Dissolved TDS @ 180 C	11000	mg/L		100		A2540 C	07/18/16 14:47 / wc
<b>METALS, TOTAL</b>							
Aluminum	0.4	mg/L		0.1		E200.7	07/27/16 01:24 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 01:24 / sf
Cadmium	ND	mg/L		0.005		E200.8	07/27/16 19:31 / sf
Cobalt	0.02	mg/L		0.01		E200.8	07/27/16 19:31 / sf
Lead	0.002	mg/L		0.001		E200.8	07/27/16 19:31 / sf
Manganese	7.86	mg/L		0.01		E200.7	07/27/16 01:24 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 01:24 / sf
Nickel	0.11	mg/L		0.05		E200.7	07/27/16 01:24 / sf
Uranium	0.0085	mg/L		0.0003		E200.8	07/27/16 19:31 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 01:24 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 19:28 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	0.002	mg/L		0.001		A3114 B	08/12/16 10:15 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	6.4	pCi/L				E900.1	08/02/16 22:04 / trs
Gross Alpha minus Rn & U Precision (±)	2.2	pCi/L				E900.1	08/02/16 22:04 / trs
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	08/02/16 22:04 / trs
Lead 210	-0.2	pCi/L	U			E909.0	09/13/16 18:07 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/13/16 18:07 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/13/16 18:07 / eli-cs
Radium 226	2.1	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.53	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.27	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	5.9	pCi/L				RA-05	08/11/16 08:23 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/11/16 08:23 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-002  
**Client Sample ID:** 515-A

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 13:11  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	08/11/16 08:23 / plj
Thorium 230	0.1	pCi/L	U			E908.0	08/10/16 15:09 / cng
Thorium 230 precision (±)	0.2	pCi/L				E908.0	08/10/16 15:09 / cng
Thorium 230 MDC	0.3	pCi/L				E908.0	08/10/16 15:09 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	10000	mg/L				A1030 E	07/26/16 08:32 / kbh
A/C Balance	-2.89	%				A1030 E	07/26/16 08:32 / kbh
Anions	169	meq/L				A1030 E	07/26/16 08:32 / kbh
Cations	160	meq/L				A1030 E	07/26/16 08:32 / kbh
TDS Ratio	1.08	unitless				A1030 E	07/26/16 08:32 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	236	ug/L		0.50		E624	07/22/16 21:54 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 21:54 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 21:54 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 21:54 / dm
Chloroform	251	ug/L		5.0		E624	07/26/16 02:30 / dm
Surr: Dibromofluoromethane	124	%REC		64.4-131		E624	07/22/16 21:54 / dm
Surr: p-Bromofluorobenzene	153	%REC	S	67.1-133		E624	07/22/16 21:54 / dm
Surr: Toluene-d8	114	%REC		79.7-125		E624	07/22/16 21:54 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-002  
**Client Sample ID:** 515-A

**Report Date:** 12/14/16  
**Collection Date:** 10/04/16 13:52  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	835	mg/L		5		A2320 B	10/14/16 16:22 / wc
Calcium	458	mg/L		1		E200.7	10/14/16 17:16 / sf
Chloride	381	mg/L	D	5		E300.0	10/13/16 04:06 / ljl
Magnesium	1370	mg/L		1		E200.7	10/14/16 17:16 / sf
Nitrogen, Ammonia as N	23	mg/L	D	2		A4500-NH <sub>3</sub> G	10/12/16 12:43 / ljl
Nitrogen, Nitrate+Nitrite as N	40	mg/L	D	5.0		E353.2	10/13/16 17:41 / ljl
Potassium	17	mg/L		1		E200.7	10/14/16 17:16 / sf
Sodium	599	mg/L	D	2		E200.7	10/21/16 15:17 / sf
Sulfate	6590	mg/L	D	20		E300.0	10/13/16 04:06 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.13	s.u.	H	0.01		A4500-H B	10/10/16 10:19 / bah
Solids, Total Dissolved TDS @ 180 C	10200	mg/L		100		A2540 C	10/11/16 08:38 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.3	mg/L		0.1		E200.8	10/13/16 08:18 / smm
Beryllium	0.002	mg/L		0.001		E200.8	10/18/16 17:17 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/13/16 08:18 / smm
Cobalt	0.02	mg/L		0.01		E200.8	10/13/16 08:18 / smm
Lead	0.002	mg/L		0.001		E200.8	10/13/16 08:18 / smm
Manganese	7.55	mg/L		0.01		E200.8	10/13/16 08:18 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/13/16 08:18 / smm
Nickel	0.10	mg/L		0.05		E200.8	10/13/16 08:18 / smm
Uranium	0.0079	mg/L		0.0003		E200.8	10/13/16 08:18 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 08:18 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 16:34 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:44 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	6.4	pCi/L				E900.1	10/24/16 21:36 / cng
Gross Alpha minus Rn & U Precision (±)	1.9	pCi/L				E900.1	10/24/16 21:36 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 21:36 / cng
Lead 210	0.3	pCi/L	U			E909.0	10/19/16 04:26 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 04:26 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 04:26 / eli-cs
Radium 226	2.2	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.53	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.22	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	2.6	pCi/L				RA-05	10/28/16 08:57 / plj
Radium 228 precision (±)	0.85	pCi/L				RA-05	10/28/16 08:57 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-002  
**Client Sample ID:** 515-A

**Report Date:** 12/14/16  
**Collection Date:** 10/04/16 13:52  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	10/28/16 08:57 / plj
Thorium 230	0.08	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	10000	mg/L				A1030 E	10/24/16 11:42 / sec
A/C Balance	-0.26	%				A1030 E	10/24/16 11:42 / sec
Anions	164	meq/L				A1030 E	10/24/16 11:42 / sec
Cations	163	meq/L				A1030 E	10/24/16 11:42 / sec
TDS Ratio	1.01	unitless				A1030 E	10/24/16 11:42 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		50		E624	10/14/16 14:19 / eli-b
Bromoform	ND	ug/L		50		E624	10/14/16 14:19 / eli-b
Chlorodibromomethane	ND	ug/L		50		E624	10/14/16 14:19 / eli-b
Chloroform	329	ug/L		50		E624	10/14/16 14:19 / eli-b
Trihalomethanes, Total	329	ug/L		0.50		E624	12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	96.0	%REC		71-139		E624	10/14/16 14:19 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/14/16 14:19 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	10/14/16 14:19 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		515-A	515-A	515-A	515-A
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-002	C16070512-002	C16040269-002	C16010177-002
Bicarbonate as HCO <sub>3</sub>	mg/L	835	880	827	893
Calcium	mg/L	458	435	449	458
Chloride	mg/L	381	406	390	383
Magnesium	mg/L	1370	1340	1330	1390
Nitrogen, Ammonia as N	mg/L	23	24	23	23
Nitrogen, Nitrate+Nitrite as N	mg/L	40	40	37	40
Potassium	mg/L	17	17	17	17
Sodium	mg/L	599	588	582	605
Sulfate	mg/L	6590	6750	6610	6360
pH	s.u.	6.13	6.16	6.41	6.09
Solids, Total Dissolved TDS @ 180 C	mg/L	10200	11000	10500	10500
Aluminum	mg/L	0.3	0.4	0.3	0.3
Beryllium	mg/L	0.002	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.02	0.02	0.02	0.02
Lead	mg/L	0.002	0.002	0.002	ND(0.001)
Manganese	mg/L	7.55	7.86	7.58	7.34
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.10	0.11	0.11	0.07
Uranium	mg/L	0.0079	0.0085	0.0097	0.0104
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	0.001	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	0.002	0.003	0.002
Gross Alpha minus Rn & U	pCi/L	6.4	6.4	8.2	9.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.9	2.2	2.3	2.4
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.3	-0.2	0.0	-0.1
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	2.2	2.1	1.9	1.8
Radium 226 precision (±)	pCi/L	0.53	0.53	0.47	0.44
Radium 226 MDC	pCi/L	0.22	0.27	0.23	0.18
Radium 228	pCi/L	2.6	5.9	4.2	4.6
Radium 228 precision (±)	pCi/L	0.85	1.3	0.99	1.1
Radium 228 MDC	pCi/L	1.3	1.5	1.1	1.1
Thorium 230	pCi/L	0.08	0.1	-0.01	0.2
Thorium 230 precision (±)	pCi/L	0.1	0.2	0.09	0.1
Thorium 230 MDC	pCi/L	0.2	0.3	0.2	0.2
A/C Balance	%	-0.26	-2.89	-1.83	1.69
Anions	meq/L	164	169	165	160
Cations	meq/L	163	160	159	166
Solids, Total Dissolved - Calculated	mg/L	10000	10000	10000	9800
TDS Ratio	unitless	1.01	1.08	1.05	1.07
Trihalomethanes, Total	ug/L	329	236	23.5	155

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone-1  
Lab ID: C16070512-003  
Client Sample ID: 604

Report Date: 09/26/16  
Collection Date: 07/12/16 14:14  
Date Received: 07/15/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	31	mg/L		5		A2320 B	07/21/16 17:03 / ljl
Calcium	444	mg/L		1		E200.7	07/19/16 19:59 / sf
Chloride	94	mg/L	D	2		E300.0	07/23/16 00:54 / ljl
Magnesium	822	mg/L		1		E200.7	07/19/16 19:59 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:47 / ljl
Nitrogen, Nitrate+Nitrite as N	65	mg/L	D	10		E353.2	07/20/16 13:12 / ljl
Potassium	12	mg/L		1		E200.7	07/19/16 19:59 / sf
Sodium	307	mg/L		1		E200.7	07/19/16 19:59 / sf
Sulfate	4510	mg/L	DH	8		E300.0	08/23/16 20:29 / wc
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	5.49	s.u.	H	0.01		A4500-H B	07/18/16 11:22 / wc
Solids, Total Dissolved TDS @ 180 C	7290	mg/L		100		A2540 C	07/18/16 14:47 / wc
<b>METALS, TOTAL</b>							
Aluminum	0.5	mg/L		0.1		E200.7	07/27/16 01:28 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 01:28 / sf
Cadmium	ND	mg/L		0.005		E200.8	07/27/16 19:37 / sf
Cobalt	0.10	mg/L		0.01		E200.8	07/27/16 19:37 / sf
Lead	0.001	mg/L		0.001		E200.8	07/27/16 19:37 / sf
Manganese	3.63	mg/L		0.01		E200.7	07/27/16 01:28 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 01:28 / sf
Nickel	0.18	mg/L		0.05		E200.7	07/27/16 01:28 / sf
Uranium	ND	mg/L		0.0003		E200.8	07/27/16 19:37 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 01:28 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 19:40 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:16 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	3.9	pCi/L				E900.1	08/02/16 22:04 / trs
Gross Alpha minus Rn & U Precision (±)	1.6	pCi/L				E900.1	08/02/16 22:04 / trs
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	08/02/16 22:04 / trs
Lead 210	0.2	pCi/L	U			E909.0	09/13/16 20:23 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/13/16 20:23 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/13/16 20:23 / eli-cs
Radium 226	1.1	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.31	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.22	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	6.5	pCi/L				RA-05	08/11/16 08:23 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
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MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-003  
**Client Sample ID:** 604

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 14:14  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.4	pCi/L				RA-05	08/11/16 08:23 / plj
Radium 228 MDC	1.2	pCi/L				RA-05	08/11/16 08:23 / plj
Thorium 230	0.09	pCi/L	U			E908.0	08/09/16 15:02 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/09/16 15:02 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/09/16 15:02 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7000	mg/L				A1030 E	07/26/16 08:32 / kbh
A/C Balance	-3.79	%				A1030 E	07/26/16 08:32 / kbh
Anions	112	meq/L				A1030 E	07/26/16 08:32 / kbh
Cations	103	meq/L				A1030 E	07/26/16 08:32 / kbh
TDS Ratio	1.04	unitless				A1030 E	07/26/16 08:32 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	11.8	ug/L		0.50		E624	07/22/16 22:28 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 22:28 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 22:28 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 22:28 / dm
Chloroform	11.8	ug/L		0.50		E624	07/22/16 22:28 / dm
Surr: Dibromofluoromethane	115	%REC		64.4-131		E624	07/22/16 22:28 / dm
Surr: p-Bromofluorobenzene	147	%REC	S	67.1-133		E624	07/22/16 22:28 / dm
Surr: Toluene-d8	113	%REC		79.7-125		E624	07/22/16 22:28 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-003  
**Client Sample ID:** 604

**Report Date:** 12/14/16  
**Collection Date:** 10/04/16 14:46  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	30	mg/L		5		A2320 B	10/14/16 16:29 / wc
Calcium	461	mg/L		1		E200.7	10/14/16 17:20 / sf
Chloride	87	mg/L	D	2		E300.0	10/13/16 04:25 / ljl
Magnesium	836	mg/L		1		E200.7	10/14/16 17:20 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 12:44 / ljl
Nitrogen, Nitrate+Nitrite as N	63	mg/L	D	5.0		E353.2	10/13/16 17:42 / ljl
Potassium	11	mg/L		1		E200.7	10/14/16 17:20 / sf
Sodium	310	mg/L	D	2		E200.7	10/21/16 15:21 / sf
Sulfate	4800	mg/L	D	8		E300.0	10/13/16 04:25 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	5.57	s.u.	H	0.01		A4500-H B	10/10/16 10:22 / bah
Solids, Total Dissolved TDS @ 180 C	7120	mg/L		100		A2540 C	10/11/16 08:38 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.6	mg/L		0.1		E200.8	10/13/16 08:24 / smm
Beryllium	0.005	mg/L		0.001		E200.8	10/18/16 17:24 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/13/16 08:24 / smm
Cobalt	0.09	mg/L		0.01		E200.8	10/13/16 08:24 / smm
Lead	ND	mg/L		0.001		E200.8	10/13/16 08:24 / smm
Manganese	3.85	mg/L		0.01		E200.8	10/13/16 08:24 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/13/16 08:24 / smm
Nickel	0.20	mg/L		0.05		E200.8	10/13/16 08:24 / smm
Uranium	0.0006	mg/L	B	0.0003		E200.8	11/07/16 23:24 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 08:24 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 16:46 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:45 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	4.5	pCi/L				E900.1	10/24/16 21:36 / cng
Gross Alpha minus Rn & U Precision (±)	1.6	pCi/L				E900.1	10/24/16 21:36 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 21:36 / cng
Lead 210	0.4	pCi/L	U			E909.0	10/19/16 06:41 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 06:41 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 06:41 / eli-cs
Radium 226	1.4	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.36	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.21	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	4.2	pCi/L				RA-05	10/28/16 08:57 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	10/28/16 08:57 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 B - The analyte was detected in the method blank.  
 H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-003  
**Client Sample ID:** 604

**Report Date:** 12/14/16  
**Collection Date:** 10/04/16 14:46  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	10/28/16 08:57 / plj
Thorium 230	0.03	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6900	mg/L				A1030 E	10/24/16 11:42 / sec
A/C Balance	-0.77	%				A1030 E	10/24/16 11:42 / sec
Anions	107	meq/L				A1030 E	10/24/16 11:42 / sec
Cations	106	meq/L				A1030 E	10/24/16 11:42 / sec
TDS Ratio	1.03	unitless				A1030 E	10/24/16 11:42 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 14:48 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 14:48 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 14:48 / eli-b
Chloroform	13	ug/L		0.50		E624	10/14/16 14:48 / eli-b
Trihalomethanes, Total	13	ug/L		0.50		E624	12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	96.0	%REC		71-139		E624	10/14/16 14:48 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	10/14/16 14:48 / eli-b
Surr: Toluene-d8	99.0	%REC		80-123		E624	10/14/16 14:48 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		604	604	604	604
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUUnits	C16100237-003	C16070512-003	C16040269-003	C16010177-003
Bicarbonate as HCO <sub>3</sub>	mg/L	30	31	29	29
Calcium	mg/L	461	444	453	447
Chloride	mg/L	87	94	83	82
Magnesium	mg/L	836	822	810	850
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	63	65	60	64
Potassium	mg/L	11	12	11	12
Sodium	mg/L	310	307	300	307
Sulfate	mg/L	4800	4510	4710	4630
pH	s.u.	5.57	5.49	5.57	5.50
Solids, Total Dissolved TDS @ 180 C	mg/L	7120	7290	7050	7070
Aluminum	mg/L	0.6	0.5	1.0	1.1
Beryllium	mg/L	0.005	ND(0.001)	0.001	0.001
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.09	0.10	0.10	0.09
Lead	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Manganese	mg/L	3.85	3.63	3.86	3.68
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.20	0.18	0.21	0.17
Uranium	mg/L	0.0006	ND(0.0003)	0.0006	ND(0.0003)
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	4.5	3.9	4.0	7.8
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.6	1.6	1.5	2.2
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.4	0.2	0.0	-0.04
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.4	1.1	1.7	1.3
Radium 226 precision (±)	pCi/L	0.36	0.31	0.44	0.34
Radium 226 MDC	pCi/L	0.21	0.22	0.22	0.16
Radium 228	pCi/L	4.2	6.5	3.4	4.4
Radium 228 precision (±)	pCi/L	1.1	1.4	0.88	1.1
Radium 228 MDC	pCi/L	1.2	1.2	1.1	0.99
Thorium 230	pCi/L	0.03	0.09	0.06	0.1
Thorium 230 precision (±)	pCi/L	0.06	0.1	0.1	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.1
A/C Balance	%	-0.77	-3.79	-0.01	1.14
Anions	meq/L	107	112	103	104
Cations	meq/L	106	103	103	106
Solids, Total Dissolved - Calculated	mg/L	6900	7000	6500	6600
TDS Ratio	unitless	1.03	1.04	1.08	1.06
Trihalomethanes, Total	ug/L	ND(50)	11.8	7.84	12.8

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-001  
**Client Sample ID:** 614

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 11:56  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	979	mg/L		5		A2320 B	07/21/16 16:27 / ljl
Calcium	549	mg/L		1		E200.7	07/19/16 19:43 / sf
Chloride	305	mg/L	D	5		E300.0	07/23/16 00:17 / ljl
Magnesium	711	mg/L		1		E200.7	07/19/16 19:43 / sf
Nitrogen, Ammonia as N	70	mg/L	DH	5		A4500-NH <sub>3</sub> G	08/25/16 16:47 / ljl
Nitrogen, Nitrate+Nitrite as N	200	mg/L	DH	20		E353.2	08/24/16 17:18 / ljl
Potassium	15	mg/L		1		E200.7	07/19/16 19:43 / sf
Sodium	476	mg/L		1		E200.7	07/19/16 19:43 / sf
Sulfate	3900	mg/L	D	20		E300.0	07/23/16 00:17 / ljl
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	6.50	s.u.	H	0.01		A4500-H B	07/18/16 11:16 / wc
Solids, Total Dissolved TDS @ 180 C	7350	mg/L		100		A2540 C	07/18/16 14:47 / wc
<b>METALS, TOTAL</b>							
Aluminum	0.1	mg/L		0.1		E200.7	07/27/16 01:19 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 01:19 / sf
Cadmium	ND	mg/L		0.005		E200.8	07/27/16 18:59 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/27/16 18:59 / sf
Lead	0.006	mg/L		0.001		E200.8	07/27/16 18:59 / sf
Manganese	1.02	mg/L		0.01		E200.7	07/27/16 01:19 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 01:19 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 01:19 / sf
Uranium	0.0389	mg/L		0.0003		E200.8	07/27/16 18:59 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 01:19 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 18:52 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:13 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.3	pCi/L				E900.1	08/23/16 23:55 / trs
Gross Alpha minus Rn & U Precision (±)	1.0	pCi/L				E900.1	08/23/16 23:55 / trs
Gross Alpha minus Rn & U MDC	0.9	pCi/L				E900.1	08/23/16 23:55 / trs
Lead 210	0.3	pCi/L	U			E909.0	09/13/16 11:22 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/13/16 11:22 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/13/16 11:22 / eli-cs
Radium 226	0.73	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.20	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.20	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	6.0	pCi/L				RA-05	08/11/16 08:23 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-001  
**Client Sample ID:** 614

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 11:56  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/11/16 08:23 / plj
Radium 228 MDC	1.1	pCi/L				RA-05	08/11/16 08:23 / plj
Thorium 230	0.1	pCi/L	U			E908.0	08/10/16 15:09 / cng
Thorium 230 precision (±)	0.09	pCi/L				E908.0	08/10/16 15:09 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/10/16 15:09 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7300	mg/L				A1030 E	07/26/16 08:32 / kbh
A/C Balance	-2.88	%				A1030 E	07/26/16 08:32 / kbh
Anions	119	meq/L				A1030 E	07/26/16 08:32 / kbh
Cations	113	meq/L				A1030 E	07/26/16 08:32 / kbh
TDS Ratio	1.01	unitless				A1030 E	07/26/16 08:32 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	97.2	ug/L		0.50		E624	07/22/16 21:19 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 21:19 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 21:19 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 21:19 / dm
Chloroform	97.2	ug/L		0.50		E624	07/22/16 21:19 / dm
Surr: Dibromofluoromethane	121	%REC		64.4-131		E624	07/22/16 21:19 / dm
Surr: p-Bromofluorobenzene	152	%REC	S	67.1-133		E624	07/22/16 21:19 / dm
Surr: Toluene-d8	113	%REC		79.7-125		E624	07/22/16 21:19 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-001  
**Client Sample ID:** 614

**Report Date:** 12/14/16  
**Collection Date:** 10/04/16 12:35  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	879	mg/L		5		A2320 B	10/14/16 16:14 / wc
Calcium	552	mg/L		1		E200.7	10/14/16 17:12 / sf
Chloride	291	mg/L	D	5		E300.0	10/13/16 03:48 / ljl
Magnesium	703	mg/L		1		E200.7	10/14/16 17:12 / sf
Nitrogen, Ammonia as N	60	mg/L	D	10		A4500-NH <sub>3</sub> G	10/12/16 12:42 / ljl
Nitrogen, Nitrate+Nitrite as N	200	mg/L	D	5.0		E353.2	10/13/16 17:40 / ljl
Potassium	14	mg/L		1		E200.7	10/14/16 17:12 / sf
Sodium	463	mg/L	D	2		E200.7	10/21/16 15:13 / sf
Sulfate	3760	mg/L	D	20		E300.0	10/13/16 03:48 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.61	s.u.	H	0.01		A4500-H B	10/10/16 10:16 / bah
Solids, Total Dissolved TDS @ 180 C	7070	mg/L		100		A2540 C	10/11/16 08:38 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/13/16 08:12 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/18/16 17:11 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/13/16 08:12 / smm
Cobalt	ND	mg/L		0.01		E200.8	10/13/16 08:12 / smm
Lead	0.003	mg/L		0.001		E200.8	10/13/16 08:12 / smm
Manganese	0.94	mg/L		0.01		E200.8	10/13/16 08:12 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/13/16 08:12 / smm
Nickel	ND	mg/L		0.05		E200.8	10/13/16 08:12 / smm
Uranium	0.0374	mg/L		0.0003		E200.8	10/13/16 08:12 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 08:12 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 16:22 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:42 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	3.5	pCi/L				E900.1	10/24/16 21:36 / cng
Gross Alpha minus Rn & U Precision (±)	1.3	pCi/L				E900.1	10/24/16 21:36 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 21:36 / cng
Lead 210	0.8	pCi/L	U			E909.0	10/19/16 02:10 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 02:10 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 02:10 / eli-cs
Radium 226	0.80	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.20	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.20	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	3.8	pCi/L				RA-05	10/28/16 08:57 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	10/28/16 08:57 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-001  
**Client Sample ID:** 614

**Report Date:** 12/14/16  
**Collection Date:** 10/04/16 12:35  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	10/28/16 08:57 / plj
Thorium 230	0.04	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7200	mg/L				A1030 E	10/24/16 11:42 / sec
A/C Balance	-2.09	%				A1030 E	10/24/16 11:42 / sec
Anions	115	meq/L				A1030 E	10/24/16 11:42 / sec
Cations	110	meq/L				A1030 E	10/24/16 11:42 / sec
TDS Ratio	0.98	unitless				A1030 E	10/24/16 11:42 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		5.0		E624	10/14/16 12:51 / eli-b
Bromoform	ND	ug/L		5.0		E624	10/14/16 12:51 / eli-b
Chlorodibromomethane	ND	ug/L		5.0		E624	10/14/16 12:51 / eli-b
Chloroform	32	ug/L		5.0		E624	10/14/16 12:51 / eli-b
Trihalomethanes, Total	32	ug/L		0.50		E624	12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	95.0	%REC		71-139		E624	10/14/16 12:51 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	10/14/16 12:51 / eli-b
Surr: Toluene-d8	100	%REC		80-123		E624	10/14/16 12:51 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		614	614	614	614
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-001	C16070512-001	C16040269-001	C16010177-001
Bicarbonate as HCO <sub>3</sub>	mg/L	879	979	815	1220
Calcium	mg/L	552	549	545	543
Chloride	mg/L	291	305	285	279
Magnesium	mg/L	703	711	693	726
Nitrogen, Ammonia as N	mg/L	60	70	103	125
Nitrogen, Nitrate+Nitrite as N	mg/L	200	200	168	156
Potassium	mg/L	14	15	14	15
Sodium	mg/L	463	476	456	472
Sulfate	mg/L	3760	3900	3750	3680
pH	s.u.	6.61	6.50	6.66	6.41
Solids, Total Dissolved TDS @ 180 C	mg/L	7070	7350	7210	7130
Aluminum	mg/L	ND(0.1)	0.1	0.5	0.3
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.003	0.006	0.006	0.004
Manganese	mg/L	0.94	1.02	0.95	0.83
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0374	0.0389	0.0417	0.0397
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.001
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	0.002	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.5	2.3	4.4	5.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.3	1.0	1.6	1.8
Gross Alpha minus Rn & U MDC	pCi/L	1.0	0.9	1.4	1.3
Lead 210	pCi/L	0.8	0.3	0.2	0.03
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	0.80	0.73	0.96	0.89
Radium 226 precision (±)	pCi/L	0.20	0.20	0.21	0.21
Radium 226 MDC	pCi/L	0.20	0.20	0.17	0.17
Radium 228	pCi/L	3.8	6.0	4.2	3.7
Radium 228 precision (±)	pCi/L	1.1	1.3	0.95	0.95
Radium 228 MDC	pCi/L	1.2	1.1	0.80	1.0
Thorium 230	pCi/L	0.04	0.1	0.01	0.09
Thorium 230 precision (±)	pCi/L	0.1	0.09	0.09	0.1
Thorium 230 MDC	pCi/L	0.2	0.1	0.2	0.2
A/C Balance	%	-2.09	-2.88	-1.08	1.08
Anions	meq/L	115	119	114	114
Cations	meq/L	110	113	112	117
Solids, Total Dissolved - Calculated	mg/L	7200	7300	7000	6700
TDS Ratio	unitless	0.98	1.01	1.02	1.06
Trihalomethanes, Total	ug/L	32	97.2	12.4	41.2

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-009  
**Client Sample ID:** TWQ-142

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 11:02  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	320	mg/L		5		A2320 B	07/21/16 17:50 / ljl
Calcium	69	mg/L		1		E200.7	07/19/16 20:35 / sf
Chloride	18	mg/L		1		E300.0	07/23/16 03:58 / ljl
Magnesium	35	mg/L		1		E200.7	07/19/16 20:35 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:24 / ljl
Nitrogen, Nitrate+Nitrite as N	0.5	mg/L		0.1		E353.2	07/20/16 13:24 / ljl
Potassium	4	mg/L		1		E200.7	07/19/16 20:35 / sf
Sodium	328	mg/L		1		E200.7	07/19/16 20:35 / sf
Sulfate	762	mg/L	D	2		E300.0	07/23/16 03:58 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	7.35	s.u.	H	0.01		A4500-H B	07/18/16 11:43 / wc
Solids, Total Dissolved TDS @ 180 C	1360	mg/L		10		A2540 C	07/18/16 14:48 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/27/16 02:15 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 02:15 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 02:15 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/27/16 22:02 / sf
Lead	ND	mg/L		0.001		E200.8	07/27/16 22:02 / sf
Manganese	0.01	mg/L		0.01		E200.7	07/27/16 02:15 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 02:15 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 02:15 / sf
Uranium	0.0003	mg/L		0.0003		E200.8	07/27/16 22:02 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 02:15 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 20:52 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:30 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.5	pCi/L				E900.1	08/02/16 23:46 / trs
Gross Alpha minus Rn & U Precision (±)	1.7	pCi/L				E900.1	08/02/16 23:46 / trs
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	08/02/16 23:46 / trs
Lead 210	-0.3	pCi/L	U			E909.0	09/14/16 09:57 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/14/16 09:57 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/14/16 09:57 / eli-cs
Radium 226	0.83	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.21	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.19	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	9.5	pCi/L				RA-05	08/11/16 08:23 / plj
Radium 228 precision (±)	2.0	pCi/L				RA-05	08/11/16 08:23 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-009  
**Client Sample ID:** TWQ-142

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 11:02  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	0.99	pCi/L				RA-05	08/11/16 08:23 / plj
Thorium 230	0.05	pCi/L	U			E908.0	08/09/16 15:03 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/09/16 15:03 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/09/16 15:03 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	1400	mg/L				A1030 E	07/26/16 08:33 / kbh
A/C Balance	-2.22	%				A1030 E	07/26/16 08:33 / kbh
Anions	21.7	meq/L				A1030 E	07/26/16 08:33 / kbh
Cations	20.7	meq/L				A1030 E	07/26/16 08:33 / kbh
TDS Ratio	0.98	unitless				A1030 E	07/26/16 08:33 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/26/16 11:13 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/16 11:13 / dm
Bromoform	ND	ug/L		0.50		E624	07/26/16 11:13 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/16 11:13 / dm
Chloroform	ND	ug/L		0.50		E624	07/26/16 11:13 / dm
Surr: Dibromofluoromethane	150	%REC	S	64.4-131		E624	07/26/16 11:13 / dm
Surr: p-Bromofluorobenzene	155	%REC	S	67.1-133		E624	07/26/16 11:13 / dm
Surr: Toluene-d8	108	%REC		79.7-125		E624	07/26/16 11:13 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-009  
**Client Sample ID:** TWQ-142

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 11:05  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	310	mg/L		5		A2320 B	10/14/16 17:51 / wc
Calcium	69	mg/L		1		E200.7	10/14/16 18:04 / sf
Chloride	17	mg/L		1		E300.0	10/13/16 07:29 / ljl
Magnesium	36	mg/L		1		E200.7	10/14/16 18:04 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 12:57 / ljl
Nitrogen, Nitrate+Nitrite as N	0.5	mg/L		0.1		E353.2	10/13/16 17:49 / ljl
Potassium	4	mg/L		1		E200.7	10/14/16 18:04 / sf
Sodium	321	mg/L		1		E200.7	10/14/16 18:04 / sf
Sulfate	768	mg/L	D	2		E300.0	10/13/16 07:29 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	7.49	s.u.	H	0.01		A4500-H B	10/10/16 10:52 / bah
Solids, Total Dissolved TDS @ 180 C	1340	mg/L		20		A2540 C	10/11/16 08:40 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/13/16 09:27 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/13/16 09:27 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/13/16 09:27 / smm
Cobalt	ND	mg/L		0.01		E200.8	10/13/16 09:27 / smm
Lead	ND	mg/L		0.001		E200.8	10/13/16 09:27 / smm
Manganese	0.03	mg/L		0.01		E200.8	10/13/16 09:27 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/13/16 09:27 / smm
Nickel	ND	mg/L		0.05		E200.8	10/13/16 09:27 / smm
Uranium	ND	mg/L		0.0003		E200.8	10/13/16 09:27 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 09:27 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 18:22 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:55 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.5	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U Precision (±)	0.7	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 23:14 / cng
Lead 210	0.1	pCi/L	U			E909.0	10/19/16 18:00 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 18:00 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 18:00 / eli-cs
Radium 226	0.79	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.21	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.19	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	0.95	pCi/L	U			RA-05	10/28/16 10:35 / plj
Radium 228 precision (±)	0.85	pCi/L				RA-05	10/28/16 10:35 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-009  
**Client Sample ID:** TWQ-142

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 11:05  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	10/28/16 10:35 / plj
Thorium 230	0.08	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	1400	mg/L				A1030 E	10/18/16 15:11 / sec
A/C Balance	-2.63	%				A1030 E	10/18/16 15:11 / sec
Anions	21.6	meq/L				A1030 E	10/18/16 15:11 / sec
Cations	20.5	meq/L				A1030 E	10/18/16 15:11 / sec
TDS Ratio	0.97	unitless				A1030 E	10/18/16 15:11 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/15/16 03:28 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/16 03:28 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/15/16 03:28 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/15/16 03:28 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139		E624	10/15/16 03:28 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/15/16 03:28 / eli-b
Surr: Toluene-d8	98.0	%REC		80-123		E624	10/15/16 03:28 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		TWQ-142	TWQ-142	TWQ-142	TWQ-142
Collection Date:		10/5/2016	7/13/2016	4/6/2016	1/6/2016
Receive Date:		10/7/2016	7/15/2016	4/5/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-009	C16070512-009	C16040269-009	C16010177-009
Bicarbonate as HCO <sub>3</sub>	mg/L	310	320	306	313
Calcium	mg/L	69	69	69	67
Chloride	mg/L	17	18	17	17
Magnesium	mg/L	36	35	36	35
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	0.13
Nitrogen, Nitrate+Nitrite as N	mg/L	0.5	0.5	0.5	0.4
Potassium	mg/L	4	4	4	4
Sodium	mg/L	321	328	338	334
Sulfate	mg/L	768	762	713	729
pH	s.u.	7.49	7.35	7.47	7.42
Solids, Total Dissolved TDS @ 180 C	mg/L	1340	1360	1330	1330
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.2	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.03	0.01	0.07	0.04
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	ND(0.0003)	0.0003	0.0005	0.0004
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	1.5	2.5	3.8	1.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.7	1.7	1.5	1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.1	-0.3	0.7	-0.04
Lead 210 precision (±)	pCi/L	0.6	0.8	0.9	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	0.79	0.83	1.0	0.45
Radium 226 precision (±)	pCi/L	0.21	0.21	0.27	0.16
Radium 226 MDC	pCi/L	0.19	0.19	0.16	0.16
Radium 228	pCi/L	0.95	9.5	3.0	1.5
Radium 228 precision (±)	pCi/L	0.85	2.0	0.80	0.76
Radium 228 MDC	pCi/L	1.3	0.99	0.77	1.2
Thorium 230	pCi/L	0.08	0.05	0.1	0.04
Thorium 230 precision (±)	pCi/L	0.08	0.1	0.09	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.1	0.2
A/C Balance	%	-2.63	-2.22	1.92	0.10
Anions	meq/L	21.6	21.7	20.4	20.9
Cations	meq/L	20.5	20.7	21.2	20.9
Solids, Total Dissolved - Calculated	mg/L	1400	1400	1300	1400
TDS Ratio	unitless	0.97	0.98	0.99	0.98
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-007  
**Client Sample ID:** EPA-2

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 09:42  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	292	mg/L		5		A2320 B	07/21/16 17:34 / ljl
Calcium	386	mg/L		1		E200.7	07/19/16 20:27 / sf
Chloride	25	mg/L		1		E300.0	07/23/16 02:07 / ljl
Magnesium	176	mg/L		1		E200.7	07/19/16 20:27 / sf
Nitrogen, Ammonia as N	0.13	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:56 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/20/16 13:17 / ljl
Potassium	7	mg/L		1		E200.7	07/19/16 20:27 / sf
Sodium	202	mg/L		1		E200.7	07/19/16 20:27 / sf
Sulfate	2010	mg/L	D	4		E300.0	07/23/16 02:07 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	7.00	s.u.	H	0.01		A4500-H B	07/18/16 11:37 / wc
Solids, Total Dissolved TDS @ 180 C	3070	mg/L		20		A2540 C	07/18/16 14:48 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/27/16 02:06 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 02:06 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 02:06 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/27/16 21:50 / sf
Lead	0.001	mg/L		0.001		E200.8	07/27/16 21:50 / sf
Manganese	1.33	mg/L		0.01		E200.7	07/27/16 02:06 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 02:06 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 02:06 / sf
Uranium	0.0018	mg/L		0.0003		E200.8	07/27/16 21:50 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 02:06 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 20:28 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:27 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.6	pCi/L	U			E900.1	08/02/16 23:45 / trs
Gross Alpha minus Rn & U Precision (±)	1.5	pCi/L				E900.1	08/02/16 23:45 / trs
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	08/02/16 23:45 / trs
Lead 210	0.4	pCi/L	U			E909.0	09/14/16 05:25 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/14/16 05:25 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/14/16 05:25 / eli-cs
Radium 226	1.5	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.36	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.19	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	3.8	pCi/L				RA-05	08/26/16 11:28 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/26/16 11:28 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-007  
**Client Sample ID:** EPA-2

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 09:42  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	08/26/16 11:28 / plj
Thorium 230	0.05	pCi/L	U			E908.0	08/09/16 15:03 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/09/16 15:03 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/09/16 15:03 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3000	mg/L				A1030 E	08/10/16 14:06 / smm
A/C Balance	-4.89	%				A1030 E	08/10/16 14:06 / smm
Anions	47.4	meq/L				A1030 E	08/10/16 14:06 / smm
Cations	43.0	meq/L				A1030 E	08/10/16 14:06 / smm
TDS Ratio	1.03	unitless				A1030 E	08/10/16 14:06 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/26/16 12:58 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/16 12:58 / dm
Bromoform	ND	ug/L		0.50		E624	07/26/16 12:58 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/16 12:58 / dm
Chloroform	ND	ug/L		0.50		E624	07/26/16 12:58 / dm
Surr: Dibromofluoromethane	117	%REC		64.4-131		E624	07/26/16 12:58 / dm
Surr: p-Bromofluorobenzene	149	%REC	S	67.1-133		E624	07/26/16 12:58 / dm
Surr: Toluene-d8	110	%REC		79.7-125		E624	07/26/16 12:58 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-007  
**Client Sample ID:** EPA-2

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 09:45  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	285	mg/L		5		A2320 B	10/14/16 16:59 / wc
Calcium	407	mg/L		1		E200.7	10/14/16 17:56 / sf
Chloride	21	mg/L	H	1		E300.0	12/06/16 04:42 / jcg
Magnesium	193	mg/L		1		E200.7	10/14/16 17:56 / sf
Nitrogen, Ammonia as N	0.13	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 12:49 / ljl
Nitrogen, Nitrate+Nitrite as N	0.2	mg/L		0.1		E353.2	10/13/16 17:47 / ljl
Potassium	7	mg/L		1		E200.7	10/14/16 17:56 / sf
Sodium	207	mg/L		1		E200.7	10/14/16 17:56 / sf
Sulfate	1910	mg/L	D	4		E300.0	10/13/16 06:15 / ljl
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	7.13	s.u.	H	0.01		A4500-H B	10/10/16 10:46 / bah
Solids, Total Dissolved TDS @ 180 C	3050	mg/L		20		A2540 C	10/11/16 08:39 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/13/16 09:15 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/13/16 09:15 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/13/16 09:15 / smm
Cobalt	ND	mg/L		0.01		E200.8	10/13/16 09:15 / smm
Lead	ND	mg/L		0.001		E200.8	10/13/16 09:15 / smm
Manganese	1.68	mg/L		0.01		E200.8	10/13/16 09:15 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/13/16 09:15 / smm
Nickel	ND	mg/L		0.05		E200.8	10/13/16 09:15 / smm
Uranium	0.0018	mg/L		0.0003		E200.8	10/13/16 09:15 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 09:15 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 17:34 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:52 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	5.0	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U Precision (±)	1.7	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 23:14 / cng
Lead 210	0.3	pCi/L	U			E909.0	10/19/16 13:28 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 13:28 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 13:28 / eli-cs
Radium 226	1.5	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.38	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.20	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	6.0	pCi/L				RA-05	10/28/16 08:57 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-007  
**Client Sample ID:** EPA-2

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 09:45  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.4	pCi/L				RA-05	10/28/16 08:57 / plj
Radium 228 MDC	1.2	pCi/L				RA-05	10/28/16 08:57 / plj
Thorium 230	0.04	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.09	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	2900	mg/L				A1030 E	10/18/16 15:10 / sec
A/C Balance	-0.58	%				A1030 E	10/18/16 15:10 / sec
Anions	45.9	meq/L				A1030 E	10/18/16 15:10 / sec
Cations	45.4	meq/L				A1030 E	10/18/16 15:10 / sec
TDS Ratio	1.04	unitless				A1030 E	10/18/16 15:10 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/15/16 02:30 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/16 02:30 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/15/16 02:30 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/15/16 02:30 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	10/15/16 02:30 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/15/16 02:30 / eli-b
Surr: Toluene-d8	106	%REC		80-123		E624	10/15/16 02:30 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-2	EPA-2	EPA-2	EPA-2
Collection Date:		10/5/2016	7/13/2016	4/6/2016	1/6/2016
Receive Date:		10/7/2016	7/15/2016	4/5/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUUnits	C16100237-007	C16070512-007	C16040269-007	C16010177-007
Bicarbonate as HCO <sub>3</sub>	mg/L	285	292	298	324
Calcium	mg/L	407	386	409	417
Chloride	mg/L	21	25	22	24
Magnesium	mg/L	193	176	191	203
Nitrogen, Ammonia as N	mg/L	0.13	0.13	0.18	0.39
Nitrogen, Nitrate+Nitrite as N	mg/L	0.2	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	7-	7	7	7
Sodium	mg/L	207	202	204	214
Sulfate	mg/L	1910	2010	1880	2010
pH	s.u.	7.13	7.00	6.92	6.89
Solids, Total Dissolved TDS @ 180 C	mg/L	3050	3070	3030	3110
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Manganese	mg/L	1.68	1.33	1.61	1.68
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0018	0.0018	0.0012	0.0013
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	5.0	1.6	2.4	4.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.7	1.5	1.2	1.6
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.3	0.4	0.4	-0.5
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.5	1.5	1.2	1.1
Radium 226 precision (±)	pCi/L	0.38	0.36	0.30	0.29
Radium 226 MDC	pCi/L	0.20	0.19	0.16	0.15
Radium 228	pCi/L	6.0	3.8	3.7	3.0
Radium 228 precision (±)	pCi/L	1.4	1.1	0.96	0.97
Radium 228 MDC	pCi/L	1.2	1.2	0.74	1.1
Thorium 230	pCi/L	0.04	0.05	0.02	0.08
Thorium 230 precision (±)	pCi/L	0.09	0.1	0.08	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
A/C Balance	%	-0.58	-4.89	0.59	-0.84
Anions	meq/L	45.9	47.4	44.7	47.8
Cations	meq/L	45.4	43.0	45.2	47.0
Solids, Total Dissolved - Calculated	mg/L	2900	3000	2900	3100
TDS Ratio	unitless	1.04	1.03	1.05	1.02
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-006  
**Client Sample ID:** EPA-4

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 08:30  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	151	mg/L		5		A2320 B	07/21/16 17:26 / ljl
Calcium	492	mg/L		1		E200.7	07/19/16 20:23 / sf
Chloride	41	mg/L	D	2		E300.0	07/23/16 01:49 / ljl
Magnesium	389	mg/L		1		E200.7	07/19/16 20:23 / sf
Nitrogen, Ammonia as N	0.10	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:55 / ljl
Nitrogen, Nitrate+Nitrite as N	0.4	mg/L		0.1		E353.2	07/20/16 13:15 / ljl
Potassium	8	mg/L		1		E200.7	07/19/16 20:23 / sf
Sodium	180	mg/L		1		E200.7	07/19/16 20:23 / sf
Sulfate	2940	mg/L	DH	8		E300.0	08/23/16 20:47 / wc
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	6.91	s.u.	H	0.01		A4500-H B	07/18/16 11:34 / wc
Solids, Total Dissolved TDS @ 180 C	4550	mg/L		40		A2540 C	07/18/16 14:48 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/27/16 02:02 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 02:02 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 02:02 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/27/16 21:44 / sf
Lead	ND	mg/L		0.001		E200.8	07/27/16 21:44 / sf
Manganese	2.52	mg/L		0.01		E200.7	07/27/16 02:02 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 02:02 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 02:02 / sf
Uranium	ND	mg/L		0.0003		E200.8	07/27/16 21:44 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 02:02 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 20:16 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:25 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.5	pCi/L				E900.1	08/23/16 23:55 / trs
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	08/23/16 23:55 / trs
Gross Alpha minus Rn & U MDC	0.9	pCi/L				E900.1	08/23/16 23:55 / trs
Lead 210	0.3	pCi/L	U			E909.0	09/14/16 03:10 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/14/16 03:10 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/14/16 03:10 / eli-cs
Radium 226	1.4	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.37	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.18	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	4.3	pCi/L				RA-05	08/26/16 11:28 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-006  
**Client Sample ID:** EPA-4

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 08:30  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.0	pCi/L				RA-05	08/26/16 11:28 / plj
Radium 228 MDC	0.97	pCi/L				RA-05	08/26/16 11:28 / plj
Thorium 230	0.1	pCi/L	U			E908.0	08/09/16 15:02 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/09/16 15:02 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/09/16 15:02 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4600	mg/L				A1030 E	08/10/16 14:05 / smm
A/C Balance	-4.82	%				A1030 E	08/10/16 14:05 / smm
Anions	73.0	meq/L				A1030 E	08/10/16 14:05 / smm
Cations	66.3	meq/L				A1030 E	08/10/16 14:05 / smm
TDS Ratio	1.00	unitless				A1030 E	08/10/16 14:05 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/26/16 09:28 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/16 09:28 / dm
Bromoform	ND	ug/L		0.50		E624	07/26/16 09:28 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/16 09:28 / dm
Chloroform	ND	ug/L		0.50		E624	07/26/16 09:28 / dm
Surr: Dibromofluoromethane	110	%REC		64.4-131		E624	07/26/16 09:28 / dm
Surr: p-Bromofluorobenzene	144	%REC	S	67.1-133		E624	07/26/16 09:28 / dm
Surr: Toluene-d8	114	%REC		79.7-125		E624	07/26/16 09:28 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-006  
**Client Sample ID:** EPA-4

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 08:30  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	138	mg/L		5		A2320 B	10/14/16 16:51 / wc
Calcium	490	mg/L		1		E200.7	10/14/16 17:51 / sf
Chloride	37	mg/L	D	2		E300.0	10/13/16 05:20 / ljl
Magnesium	392	mg/L		1		E200.7	10/14/16 17:51 / sf
Nitrogen, Ammonia as N	0.27	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 12:48 / ljl
Nitrogen, Nitrate+Nitrite as N	0.3	mg/L		0.1		E353.2	10/13/16 17:46 / ljl
Potassium	8	mg/L		1		E200.7	10/14/16 17:51 / sf
Sodium	179	mg/L		1		E200.7	10/14/16 17:51 / sf
Sulfate	3130	mg/L	D	8		E300.0	10/13/16 05:20 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	7.16	s.u.	H	0.01		A4500-H B	10/10/16 10:43 / bah
Solids, Total Dissolved TDS @ 180 C	4450	mg/L		40		A2540 C	10/11/16 08:39 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/13/16 09:08 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/13/16 09:08 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/13/16 09:08 / smm
Cobalt	ND	mg/L		0.01		E200.8	10/13/16 09:08 / smm
Lead	ND	mg/L		0.001		E200.8	10/13/16 09:08 / smm
Manganese	2.50	mg/L		0.01		E200.8	10/13/16 09:08 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/13/16 09:08 / smm
Nickel	ND	mg/L		0.05		E200.8	10/13/16 09:08 / smm
Uranium	ND	mg/L		0.0003		E200.8	10/13/16 09:08 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 09:08 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 17:22 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:50 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.7	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U Precision (±)	1.2	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 23:14 / cng
Lead 210	0.2	pCi/L	U			E909.0	10/19/16 11:13 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 11:13 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 11:13 / eli-cs
Radium 226	1.2	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.33	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.19	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	3.1	pCi/L				RA-05	10/28/16 08:57 / plj
Radium 228 precision (±)	1.0	pCi/L				RA-05	10/28/16 08:57 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-006  
**Client Sample ID:** EPA-4

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 08:30  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.1	pCi/L				RA-05	10/28/16 08:57 / plj
Thorium 230	0.03	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4300	mg/L				A1030 E	10/18/16 15:10 / sec
A/C Balance	-2.72	%				A1030 E	10/18/16 15:10 / sec
Anions	68.4	meq/L				A1030 E	10/18/16 15:10 / sec
Cations	64.8	meq/L				A1030 E	10/18/16 15:10 / sec
TDS Ratio	1.03	unitless				A1030 E	10/18/16 15:10 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/15/16 02:01 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/16 02:01 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/15/16 02:01 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/15/16 02:01 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	10/15/16 02:01 / eli-b
Surr: p-Bromofluorobenzene	101	%REC		80-127		E624	10/15/16 02:01 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	10/15/16 02:01 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-4	EPA-4	EPA-4	EPA-4
Collection Date:		10/5/2016	7/13/2016	4/6/2016	1/6/2016
Receive Date:		10/7/2016	7/15/2016	4/5/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-006	C16070512-006	C16040269-006	C16010177-006
Bicarbonate as HCO <sub>3</sub>	mg/L	138	151	155	176
Calcium	mg/L	490	492	494	482
Chloride	mg/L	37	41	35	37
Magnesium	mg/L	392	389	383	395
Nitrogen, Ammonia as N	mg/L	0.27	0.10	0.34	0.28
Nitrogen, Nitrate+Nitrite as N	mg/L	0.3	0.4	0.2	0.3
Potassium	mg/L	8	8	8	8
Sodium	mg/L	179	180	179	180
Sulfate	mg/L	3130	2940	3060	3080
pH	s.u.	7.16	6.91	6.88	6.74
Solids, Total Dissolved TDS @ 180 C	mg/L	4450	4550	4520	4560
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	2.50	2.52	3.26	3.39
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	ND(0.0003)	ND(0.0003)	ND(0.0003)	ND(0.0003)
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	2.7	2.5	3.7	5.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.2	1.1	1.6	1.6
Gross Alpha minus Rn & U MDC	pCi/L	1.0	0.9	1.4	1.3
Lead 210	pCi/L	0.2	0.3	0.8	0.2
Lead 210 precision (±)	pCi/L	0.6	0.8	0.9	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.2	1.4	1.3	1.3
Radium 226 precision (±)	pCi/L	0.33	0.37	0.33	0.32
Radium 226 MDC	pCi/L	0.19	0.18	0.18	0.15
Radium 228	pCi/L	3.1	4.3	3.6	3.1
Radium 228 precision (±)	pCi/L	1.0	1.0	0.91	1.0
Radium 228 MDC	pCi/L	1.1	0.97	0.86	0.89
Thorium 230	pCi/L	0.03	0.1	0.03	0.06
Thorium 230 precision (±)	pCi/L	0.07	0.1	0.1	0.08
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.1
A/C Balance	%	-2.72	-4.82	-2.35	-2.91
Anions	meq/L	68.4	73.0	67.3	68.5
Cations	meq/L	64.8	66.3	64.2	64.6
Solids, Total Dissolved - Calculated	mg/L	4300	4600	4300	4300
TDS Ratio	unitless	1.03	1.00	1.06	1.06
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-005  
**Client Sample ID:** EPA-5

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 15:48  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	71	mg/L		5		A2320 B	07/21/16 17:18 / ljl
Calcium	468	mg/L		1		E200.7	07/19/16 20:19 / sf
Chloride	41	mg/L	D	2		E300.0	07/23/16 01:30 / ljl
Magnesium	485	mg/L		1		E200.7	07/19/16 20:19 / sf
Nitrogen, Ammonia as N	1.99	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:54 / ljl
Nitrogen, Nitrate+Nitrite as N	6.0	mg/L	D	1.0		E353.2	07/20/16 13:14 / ljl
Potassium	6	mg/L		1		E200.7	07/19/16 20:19 / sf
Sodium	105	mg/L		1		E200.7	07/19/16 20:19 / sf
Sulfate	3410	mg/L	D	8		E300.0	07/23/16 01:30 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.38	s.u.	H	0.01		A4500-H B	07/18/16 11:28 / wc
Solids, Total Dissolved TDS @ 180 C	4730	mg/L		40		A2540 C	07/18/16 14:47 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/27/16 01:49 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 01:49 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 01:49 / sf
Cobalt	0.03	mg/L		0.01		E200.8	07/27/16 19:50 / sf
Lead	ND	mg/L		0.001		E200.8	07/27/16 19:50 / sf
Manganese	0.26	mg/L		0.01		E200.7	07/27/16 01:49 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 01:49 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 01:49 / sf
Uranium	0.0009	mg/L		0.0003		E200.8	07/27/16 19:50 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 01:49 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 20:04 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:23 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	4.1	pCi/L				E900.1	08/02/16 23:45 / trs
Gross Alpha minus Rn & U Precision (±)	1.7	pCi/L				E900.1	08/02/16 23:45 / trs
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	08/02/16 23:45 / trs
Lead 210	0.3	pCi/L	U			E909.0	09/14/16 00:54 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/14/16 00:54 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/14/16 00:54 / eli-cs
Radium 226	1.5	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.38	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.20	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	4.2	pCi/L				RA-05	08/11/16 08:23 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/11/16 08:23 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-005  
**Client Sample ID:** EPA-5

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 15:48  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.0	pCi/L				RA-05	08/11/16 08:23 / plj
Thorium 230	0.04	pCi/L	U			E908.0	08/09/16 15:02 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	08/09/16 15:02 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 15:02 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4600	mg/L				A1030 E	07/26/16 08:33 / kbh
A/C Balance	-4.02	%				A1030 E	07/26/16 08:33 / kbh
Anions	73.8	meq/L				A1030 E	07/26/16 08:33 / kbh
Cations	68.1	meq/L				A1030 E	07/26/16 08:33 / kbh
TDS Ratio	1.03	unitless				A1030 E	07/26/16 08:33 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/26/16 08:53 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/16 08:53 / dm
Bromoform	ND	ug/L		0.50		E624	07/26/16 08:53 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/16 08:53 / dm
Chloroform	ND	ug/L		0.50		E624	07/26/16 08:53 / dm
Surr: Dibromofluoromethane	117	%REC		64.4-131		E624	07/26/16 08:53 / dm
Surr: p-Bromofluorobenzene	147	%REC	S	67.1-133		E624	07/26/16 08:53 / dm
Surr: Toluene-d8	108	%REC		79.7-125		E624	07/26/16 08:53 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 1  
Lab ID: C16100237-005  
Client Sample ID: EPA-5

Report Date: 12/14/16  
Collection Date: 10/04/16 16:27  
Date Received: 10/07/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	64	mg/L		5		A2320 B	10/14/16 16:44 / wc
Calcium	473	mg/L		1		E200.7	10/14/16 17:39 / sf
Chloride	38	mg/L	D	2		E300.0	10/13/16 05:02 / ljl
Magnesium	494	mg/L		1		E200.7	10/14/16 17:39 / sf
Nitrogen, Ammonia as N	2.0	mg/L	D	0.2		A4500-NH <sub>3</sub> G	10/12/16 12:47 / ljl
Nitrogen, Nitrate+Nitrite as N	7.1	mg/L	D	1.0		E353.2	10/13/16 17:45 / ljl
Potassium	7	mg/L		1		E200.7	10/14/16 17:39 / sf
Sodium	104	mg/L		1		E200.7	10/14/16 17:39 / sf
Sulfate	3330	mg/L	D	8		E300.0	10/13/16 05:02 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.58	s.u.	H	0.01		A4500-H B	10/10/16 10:40 / bah
Solids, Total Dissolved TDS @ 180 C	4690	mg/L		40		A2540 C	10/11/16 08:39 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/13/16 09:02 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/13/16 09:02 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/13/16 09:02 / smm
Cobalt	0.02	mg/L		0.01		E200.8	10/13/16 09:02 / smm
Lead	ND	mg/L		0.001		E200.8	10/13/16 09:02 / smm
Manganese	0.24	mg/L		0.01		E200.8	10/13/16 09:02 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/13/16 09:02 / smm
Nickel	ND	mg/L		0.05		E200.8	10/13/16 09:02 / smm
Uranium	0.0007	mg/L		0.0003		E200.8	10/13/16 09:02 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 09:02 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 17:10 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:48 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.9	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U Precision (±)	1.2	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 23:14 / cng
Lead 210	-0.03	pCi/L	U			E909.0	10/18/16 19:59 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/18/16 19:59 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/18/16 19:59 / eli-cs
Radium 226	1.3	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.34	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.20	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	2.7	pCi/L				RA-05	10/28/16 08:57 / plj
Radium 228 precision (±)	1.0	pCi/L				RA-05	10/28/16 08:57 / plj

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-005  
**Client Sample ID:** EPA-5

**Report Date:** 12/14/16  
**Collection Date:** 10/04/16 16:27  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	10/28/16 08:57 / plj
Thorium 230	0.05	pCi/L		U		E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.09	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4500	mg/L				A1030 E	10/18/16 15:09 / sec
A/C Balance	-2.18	%				A1030 E	10/18/16 15:09 / sec
Anions	72.2	meq/L				A1030 E	10/18/16 15:09 / sec
Cations	69.1	meq/L				A1030 E	10/18/16 15:09 / sec
TDS Ratio	1.04	unitless				A1030 E	10/18/16 15:09 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/15/16 01:32 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/16 01:32 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/15/16 01:32 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/15/16 01:32 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	97.0	%REC		71-139		E624	10/15/16 01:32 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	10/15/16 01:32 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	10/15/16 01:32 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-5	EPA-5	EPA-5	EPA-5
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		10/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-005	C16070512-005	C16040269-005	C16010177-005
Bicarbonate as HCO <sub>3</sub>	mg/L	64	71	76	65
Calcium	mg/L	473	468	470	459
Chloride	mg/L	38	41	37	37
Magnesium	mg/L	494	485	476	492
Nitrogen, Ammonia as N	mg/L	2.0	1.99	3.0	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	7.1	6.0	3.7	5.7
Potassium	mg/L	7	6	6	7
Sodium	mg/L	104	105	104	108
Sulfate	mg/L	3330	3410	3270	3170
pH	s.u.	6.58	6.38	6.15	6.08
Solids, Total Dissolved TDS @ 180 C	mg/L	4690	4730	4680	4670
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.02	0.03	0.04	0.05
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.010
Manganese	mg/L	0.24	0.26	0.38	0.46
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	0.05	0.06
Uranium	mg/L	0.0007	0.0009	0.0005	0.0006
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	2.9	4.1	3.6	4.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.2	1.7	1.5	1.6
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	-0.03	0.3	0.0	-0.4
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.3	1.5	1.3	1.1
Radium 226 precision (±)	pCi/L	0.34	0.38	0.33	0.28
Radium 226 MDC	pCi/L	0.20	0.20	0.16	0.15
Radium 228	pCi/L	2.7	4.2	2.7	2.8
Radium 228 precision (±)	pCi/L	1.0	1.1	0.77	0.85
Radium 228 MDC	pCi/L	1.2	1.0	0.77	0.91
Thorium 230	pCi/L	0.05	0.04	-0.03	0.05
Thorium 230 precision (±)	pCi/L	0.06	0.07	0.05	0.09
Thorium 230 MDC	pCi/L	0.09	0.1	0.1	0.2
A/C Balance	%	-2.18	-4.02	-2.30	-0.06
Anions	meq/L	72.2	73.8	70.7	68.4
Cations	meq/L	69.1	68.1	67.6	68.3
Solids, Total Dissolved - Calculated	mg/L	4500	4600	4400	4300
TDS Ratio	unitless	1.04	1.03	1.05	1.08
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-004  
**Client Sample ID:** EPA-7

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 15:01  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	667	mg/L		5		A2320 B	07/21/16 17:11 / ljl
Calcium	495	mg/L		1		E200.7	07/19/16 20:03 / sf
Chloride	259	mg/L	D	5		E300.0	07/23/16 01:12 / ljl
Magnesium	905	mg/L		1		E200.7	07/19/16 20:03 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:50 / ljl
Nitrogen, Nitrate+Nitrite as N	132	mg/L	D	30		E353.2	07/20/16 13:13 / ljl
Potassium	9	mg/L		1		E200.7	07/19/16 20:03 / sf
Sodium	389	mg/L		1		E200.7	07/19/16 20:03 / sf
Sulfate	4490	mg/L	D	20		E300.0	07/23/16 01:12 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.34	s.u.	H	0.01		A4500-H B	07/18/16 11:25 / wc
Solids, Total Dissolved TDS @ 180 C	7900	mg/L		100		A2540 C	07/18/16 14:47 / wc
<b>METALS, TOTAL</b>							
Aluminum	0.3	mg/L		0.1		E200.7	07/27/16 01:32 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 01:32 / sf
Cadmium	ND	mg/L		0.005		E200.8	07/27/16 19:44 / sf
Cobalt	0.05	mg/L		0.01		E200.8	07/27/16 19:44 / sf
Lead	ND	mg/L		0.001		E200.8	07/27/16 19:44 / sf
Manganese	1.34	mg/L		0.01		E200.7	07/27/16 01:32 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 01:32 / sf
Nickel	0.06	mg/L		0.05		E200.7	07/27/16 01:32 / sf
Uranium	0.0015	mg/L		0.0003		E200.8	07/27/16 19:44 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 01:32 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 19:52 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:21 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.2	pCi/L				E900.1	08/02/16 22:04 / trs
Gross Alpha minus Rn & U Precision (±)	1.4	pCi/L				E900.1	08/02/16 22:04 / trs
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	08/02/16 22:04 / trs
Lead 210	-0.4	pCi/L	U			E909.0	09/13/16 22:38 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/13/16 22:38 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/13/16 22:38 / eli-cs
Radium 226	0.66	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.21	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.22	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	3.4	pCi/L				RA-05	08/11/16 08:23 / plj
Radium 228 precision (±)	0.96	pCi/L				RA-05	08/11/16 08:23 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-004  
**Client Sample ID:** EPA-7

**Report Date:** 09/26/16  
**Collection Date:** 07/12/16 15:01  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.1	pCi/L				RA-05	08/11/16 08:23 / plj
Thorium 230	-0.03	pCi/L	U		E908.0		08/10/16 15:09 / cng
Thorium 230 precision (±)	0.06	pCi/L			E908.0		08/10/16 15:09 / cng
Thorium 230 MDC	0.2	pCi/L			E908.0		08/10/16 15:09 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7400	mg/L			A1030 E		07/26/16 08:32 / kbh
A/C Balance	-1.94	%			A1030 E		07/26/16 08:32 / kbh
Anions	121	meq/L			A1030 E		07/26/16 08:32 / kbh
Cations	116	meq/L			A1030 E		07/26/16 08:32 / kbh
TDS Ratio	1.06	unitless			A1030 E		07/26/16 08:32 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	1.48	ug/L		0.50	E624		07/26/16 08:19 / dm
Bromodichloromethane	ND	ug/L		0.50	E624		07/26/16 08:19 / dm
Bromoform	ND	ug/L		0.50	E624		07/26/16 08:19 / dm
Chlorodibromomethane	ND	ug/L		0.50	E624		07/26/16 08:19 / dm
Chloroform	1.48	ug/L		0.50	E624		07/26/16 08:19 / dm
Surr: Dibromofluoromethane	114	%REC		64.4-131	E624		07/26/16 08:19 / dm
Surr: p-Bromofluorobenzene	143	%REC	S	67.1-133	E624		07/26/16 08:19 / dm
Surr: Toluene-d8	114	%REC		79.7-125	E624		07/26/16 08:19 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 1  
Lab ID: C16100237-004  
Client Sample ID: EPA-7

Report Date: 12/14/16  
Collection Date: 10/04/16 15:45  
Date Received: 10/07/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	659	mg/L		5		A2320 B	10/14/16 16:37 / wc
Calcium	507	mg/L		1		E200.7	10/14/16 17:35 / sf
Chloride	245	mg/L	D	5		E300.0	10/13/16 04:43 / ljl
Magnesium	906	mg/L		1		E200.7	10/14/16 17:35 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 12:46 / ljl
Nitrogen, Nitrate+Nitrite as N	135	mg/L	D	5.0		E353.2	10/13/16 17:43 / ljl
Potassium	9	mg/L		1		E200.7	10/14/16 17:35 / sf
Sodium	388	mg/L	D	2		E200.7	10/21/16 15:25 / sf
Sulfate	4420	mg/L	D	20		E300.0	10/13/16 04:43 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.37	s.u.	H	0.01		A4500-H B	10/10/16 10:34 / bah
Solids, Total Dissolved TDS @ 180 C	7710	mg/L		100		A2540 C	10/11/16 08:38 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.2	mg/L		0.1		E200.8	10/13/16 08:56 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/13/16 08:56 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/13/16 08:56 / smm
Cobalt	0.05	mg/L		0.01		E200.8	10/13/16 08:56 / smm
Lead	ND	mg/L		0.001		E200.8	10/13/16 08:56 / smm
Manganese	1.33	mg/L		0.01		E200.8	10/13/16 08:56 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/13/16 08:56 / smm
Nickel	0.06	mg/L		0.05		E200.8	10/13/16 08:56 / smm
Uranium	0.0014	mg/L		0.0003		E200.8	10/13/16 08:56 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 08:56 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 16:58 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:47 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	3.1	pCi/L				E900.1	10/24/16 21:36 / cng
Gross Alpha minus Rn & U Precision (±)	1.2	pCi/L				E900.1	10/24/16 21:36 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 21:36 / cng
Lead 210	0.2	pCi/L	U			E909.0	10/19/16 08:57 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 08:57 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 08:57 / eli-cs
Radium 226	0.62	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.21	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.22	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	2.0	pCi/L				RA-05	10/28/16 08:57 / plj
Radium 228 precision (±)	0.85	pCi/L				RA-05	10/28/16 08:57 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-004  
**Client Sample ID:** EPA-7

**Report Date:** 12/14/16  
**Collection Date:** 10/04/16 15:45  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	10/28/16 08:57 / plj
Thorium 230	-0.03	pCi/L	U		E908.0		10/25/16 09:54 / cng
Thorium 230 precision (±)	0.09	pCi/L			E908.0		10/25/16 09:54 / cng
Thorium 230 MDC	0.3	pCi/L			E908.0		10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7400	mg/L				A1030 E	10/24/16 11:42 / sec
A/C Balance	-0.76	%				A1030 E	10/24/16 11:42 / sec
Anions	119	meq/L				A1030 E	10/24/16 11:42 / sec
Cations	117	meq/L				A1030 E	10/24/16 11:42 / sec
TDS Ratio	1.05	unitless				A1030 E	10/24/16 11:42 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		10/14/16 15:17 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/14/16 15:17 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/14/16 15:17 / eli-b
Chloroform	1.1	ug/L		0.50	E624		10/14/16 15:17 / eli-b
Trihalomethanes, Total	1.1	ug/L		0.50	E624		12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139	E624		10/14/16 15:17 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127	E624		10/14/16 15:17 / eli-b
Surr: Toluene-d8	100	%REC		80-123	E624		10/14/16 15:17 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-7	EPA-7	EPA-7	EPA-7
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-004	C16070512-004	C16040269-004	C16010177-004
Bicarbonate as HCO <sub>3</sub>	mg/L	659	667	653	670
Calcium	mg/L	507	495	492	485
Chloride	mg/L	245	259	245	244
Magnesium	mg/L	906	905	873	916
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	135	132	124	128
Potassium	mg/L	9	9	8	9
Sodium	mg/L	388	389	376	386
Sulfate	mg/L	4420	4490	4380	4300
pH	s.u.	6.37	6.34	6.40	6.31
Solids, Total Dissolved TDS @ 180 C	mg/L	7710	7900	7570	7600
Aluminum	mg/L	0.2	0.3	0.2	0.3
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.05	0.05	0.05	0.04
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	1.33	1.34	1.45	1.30
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.06	0.06	0.07	ND(0.05)
Uranium	mg/L	0.0014	0.0015	0.0017	0.0018
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.1	2.2	2.8	3.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.2	1.4	1.4	1.4
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.2	-0.4	0.03	-0.4
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	0.62	0.66	0.82	0.46
Radium 226 precision (±)	pCi/L	0.21	0.21	0.20	0.17
Radium 226 MDC	pCi/L	0.22	0.22	0.20	0.18
Radium 228	pCi/L	2.0	3.4	2.4	1.4
Radium 228 precision (±)	pCi/L	0.85	0.96	0.70	0.72
Radium 228 MDC	pCi/L	1.3	1.1	0.96	1.1
Thorium 230	pCi/L	-0.03	-0.03	0.08	0.1
Thorium 230 precision (±)	pCi/L	0.09	0.06	0.07	0.1
Thorium 230 MDC	pCi/L	0.3	0.2	0.1	0.2
A/C Balance	%	-0.76	-1.94	-2.08	0.23
Anions	meq/L	119	121	118	116
Cations	meq/L	117	116	113	117
Solids, Total Dissolved - Calculated	mg/L	7400	7400	7300	7200
TDS Ratio	unitless	1.05	1.06	1.04	1.05
Trihalomethanes, Total	ug/L	1.1	1.48	1.19	1.56

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

**QUARTERLY SAMPLING**  
**SEMI-ANNUAL GROUND WATER MONITORING REPORT**  
**JULY TO DECEMBER OF 2016**

**ZONE-3**

\*517

EPA-14

420

\*711

\*613

\*708

EPA-13

717

719

**LEVELS ONLY**

EPA-9

702

710

712

713

714

701

706

707

402

446

424

**NOTE: \*POINT OF COMPLIANCE WELLS  
WATER LEVEL ONLY IS IN FIELD DATA SHEET**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-002  
**Client Sample ID:** 517

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/18/16 09:42  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	572	mg/L		5		A2310 B	07/27/16 14:15 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/25/16 20:01 / wc
Calcium	444	mg/L		1		E200.7	07/26/16 17:15 / sf
Chloride	37	mg/L	D	2		E300.0	07/28/16 09:04 / wc
Magnesium	551	mg/L		1		E200.7	07/26/16 17:15 / sf
Nitrogen, Ammonia as N	8.6	mg/L	D	0.5		A4500-NH <sub>3</sub> G	07/26/16 12:42 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/25/16 15:11 / ljl
Potassium	12	mg/L		1		E200.7	07/26/16 17:15 / sf
Sodium	141	mg/L		1		E200.7	07/26/16 17:15 / sf
Sulfate	3950	mg/L	D	8		E300.0	07/30/16 05:01 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	3.11	s.u.	H	0.01		A4500-H B	07/22/16 16:48 / ljl
Solids, Total Dissolved TDS @ 180 C	5930	mg/L	DH	40		A2540 C	07/25/16 14:37 / wc
<b>METALS, TOTAL</b>							
Aluminum	18.6	mg/L		0.1		E200.7	08/06/16 02:37 / sf
Beryllium	0.016	mg/L		0.001		E200.7	08/06/16 02:37 / sf
Cadmium	0.005	mg/L		0.005		E200.7	08/06/16 02:37 / sf
Cobalt	0.82	mg/L		0.01		E200.7	08/06/16 02:37 / sf
Lead	0.052	mg/L		0.001		E200.8	08/08/16 22:25 / smm
Manganese	12.0	mg/L		0.01		E200.7	08/06/16 02:37 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/06/16 02:37 / sf
Nickel	0.86	mg/L		0.05		E200.7	08/06/16 02:37 / sf
Uranium	0.401	mg/L		0.0003		E200.8	08/08/16 22:25 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 02:37 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/03/16 01:03 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:52 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	56.1	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U Precision (±)	11.4	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U MDC	1.7	pCi/L				E900.1	08/02/16 23:42 / trs
Lead 210	2.4	pCi/L				E909.0	09/12/16 09:52 / eli-cs
Lead 210 precision (±)	1.1	pCi/L				E909.0	09/12/16 09:52 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/12/16 09:52 / eli-cs
Radium 226	5.6	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	1.1	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.18	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	11	pCi/L				RA-05	08/16/16 12:04 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-002  
Client Sample ID: 517

Revised Date: 01/24/17  
Report Date: 09/28/16  
Collection Date: 07/18/16 09:42  
Date Received: 07/22/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	2.5	pCi/L				RA-05	08/16/16 12:04 / plj
Radium 228 MDC	1.4	pCi/L				RA-05	08/16/16 12:04 / plj
Thorium 230	20.7	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 precision (±)	3.9	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 MDC	0.3	pCi/L				E908.0	08/18/16 08:53 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5200	mg/L				A1030 E	08/02/16 14:14 / smm
A/C Balance	1.44	%				A1030 E	08/02/16 14:14 / smm
Anions	83.6	meq/L				A1030 E	08/02/16 14:14 / smm
Cations	86.0	meq/L				A1030 E	08/02/16 14:14 / smm
TDS Ratio	1.15	unitless				A1030 E	08/02/16 14:14 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/16 21:54 / dm
Bromoform	ND	ug/L		0.50		E624	07/26/16 21:54 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/16 21:54 / dm
Chloroform	5.68	ug/L		0.50		E624	07/26/16 21:54 / dm
Trihalomethanes, Total	5.7	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	120	%REC		64.4-131		E624	07/26/16 21:54 / dm
Surr: p-Bromofluorobenzene	150	%REC	S	67.1-133		E624	07/26/16 21:54 / dm
Surr: Toluene-d8	117	%REC		79.7-125		E624	07/26/16 21:54 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-002  
**Client Sample ID:** 517

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 09:19  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	559	mg/L	H	5		A2310 B	10/26/16 12:34 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/18/16 01:05 / wc
Calcium	441	mg/L		1		E200.7	10/28/16 15:34 / sf
Chloride	37	mg/L	D	2		E300.0	11/02/16 00:20 / ljl
Magnesium	565	mg/L		1		E200.7	10/28/16 15:34 / sf
Nitrogen, Ammonia as N	8.2	mg/L	D	0.5		A4500-NH <sub>3</sub> G	11/02/16 18:08 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:24 / ljl
Potassium	13	mg/L		1		E200.7	10/28/16 15:34 / sf
Sodium	147	mg/L		1		E200.7	10/28/16 15:34 / sf
Sulfate	4420	mg/L	D	8		E300.0	11/02/16 00:20 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	2.98	s.u.	H	0.01		A4500-H B	10/17/16 09:46 / bah
Solids, Total Dissolved TDS @ 180 C	5870	mg/L	H	40		A2540 C	10/21/16 12:33 / bah
<b>METALS, TOTAL</b>							
Aluminum	18.1	mg/L		0.1		E200.8	10/28/16 19:13 / smm
Beryllium	0.018	mg/L		0.001		E200.8	10/28/16 19:13 / smm
Cadmium	0.007	mg/L		0.005		E200.8	10/28/16 19:13 / smm
Cobalt	0.88	mg/L		0.01		E200.8	10/28/16 19:13 / smm
Lead	0.020	mg/L		0.001		E200.8	10/28/16 19:13 / smm
Manganese	13.2	mg/L		0.01		E200.8	10/28/16 19:13 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/28/16 19:13 / smm
Nickel	0.87	mg/L		0.05		E200.8	10/28/16 19:13 / smm
Uranium	0.374	mg/L		0.0003		E200.8	10/28/16 19:13 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 19:13 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/31/16 22:03 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:51 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	41.7	pCi/L				E900.1	10/27/16 12:45 / cng
Gross Alpha minus Rn & U Precision (±)	8.5	pCi/L				E900.1	10/27/16 12:45 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 12:45 / cng
Lead 210	1.7	pCi/L				E909.0	11/05/16 01:22 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	11/05/16 01:22 / plj
Lead 210 MDC	1.0	pCi/L				E909.0	11/05/16 01:22 / plj
Radium 226	6.0	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	1.2	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.20	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	8.1	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-002  
**Client Sample ID:** 517

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 09:19  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.7	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 MDC	1.2	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	17.1	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 precision (±)	3.3	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 MDC	2.5	pCi/L				E908.0	11/15/16 09:45 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5700	mg/L				A1030 E	11/03/16 11:19 / sec
A/C Balance	-3.64	%				A1030 E	11/03/16 11:19 / sec
Anions	93.6	meq/L				A1030 E	11/03/16 11:19 / sec
Cations	87.0	meq/L				A1030 E	11/03/16 11:19 / sec
TDS Ratio	1.04	unitless				A1030 E	11/03/16 11:19 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/16 17:31 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/16 17:31 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/16 17:31 / eli-b
Chloroform	3.4	ug/L		0.50		E624	10/19/16 17:31 / eli-b
Trihalomethanes, Total	3.4	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	10/19/16 17:31 / eli-b
Surr: p-Bromofluorobenzene	105	%REC		80-127		E624	10/19/16 17:31 / eli-b
Surr: Toluene-d8	110	%REC		80-123		E624	10/19/16 17:31 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report** RL - Analyte reporting limit.

**Definitions:** QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		517	517	517	517
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-002	C16070706-002	C16040481-002	C16010374-002
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	441	444	472	439
Chloride	mg/L	37	37	37	39
Magnesium	mg/L	565	551	580	516
Nitrogen, Ammonia as N	mg/L	8.2	8.6	8.9	8.8
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	13	12	13	14
Sodium	mg/L	147	141	160	143
Sulfate	mg/L	4420	3950	4250	4140
pH	s.u.	2.98	3.11	2.88	2.92
Solids, Total Dissolved TDS @ 180 C	mg/L	5870	5930	5830	5870
Aluminum	mg/L	18.1	18.6	18.8	17.4
Beryllium	mg/L	0.018	0.016	0.017	0.016
Cadmium	mg/L	0.007	0.005	0.007	0.009
Cobalt	mg/L	0.88	0.82	0.87	0.83
Lead	mg/L	0.020	0.052	0.021	0.045
Manganese	mg/L	13.2	12.0	12.8	11.5
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.87	0.86	0.94	0.87
Uranium	mg/L	0.374	0.401	0.361	0.308
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	0.001	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	41.7	56.1	92.4	89.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	8.5	11.4	18.2	17.6
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.2
Lead 210	pCi/L	1.7	2.4	1.9	2.5
Lead 210 precision (±)	pCi/L	0.8	1.1	1.1	0.9
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.2
Radium 226	pCi/L	6.0	5.6	7.9	4.3
Radium 226 precision (±)	pCi/L	1.2	1.1	1.7	0.88
Radium 226 MDC	pCi/L	0.20	0.18	0.36	0.13
Radium 228	pCi/L	8.1	11	7.8	4.4
Radium 228 precision (±)	pCi/L	1.7	2.5	1.9	0.99
Radium 228 MDC	pCi/L	1.2	1.4	1.4	0.76
Thorium 230	pCi/L	17.1	20.7	11.6	16.0
Thorium 230 precision (±)	pCi/L	3.3	3.9	2.2	3.0
Thorium 230 MDC	pCi/L	2.5	0.3	0.5	0.3
A/C Balance	%	-3.64	1.44	-0.36	-2.78
Anions	meq/L	93.6	83.6	89.7	87.6
Cations	meq/L	87.0	86.0	89.1	82.9
Solids, Total Dissolved - Calculated	mg/L	5700	5200	5600	5300
TDS Ratio	unitless	1.04	1.15	1.05	
Trihalomethanes, Total	ug/L	3.4	5.7	3.54	2.27

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-007  
**Client Sample ID:** EPA-14

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/18/16 15:14  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/25/16 20:55 / wc
Calcium	489	mg/L		1		E200.7	07/26/16 18:15 / sf
Chloride	56	mg/L	D	2		E300.0	07/28/16 10:37 / wc
Magnesium	368	mg/L		1		E200.7	07/26/16 18:15 / sf
Nitrogen, Ammonia as N	27	mg/L	D	1		A4500-NH <sub>3</sub> G	07/26/16 12:48 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/27/16 12:58 / ljl
Potassium	13	mg/L		1		E200.7	07/26/16 18:15 / sf
Sodium	162	mg/L		1		E200.7	07/26/16 18:15 / sf
Sulfate	3050	mg/L	D	8		E300.0	07/30/16 07:03 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	4.61	s.u.	H	0.01		A4500-H B	07/22/16 17:07 / ljl
Solids, Total Dissolved TDS @ 180 C	4560	mg/L	D	40		A2540 C	07/25/16 14:38 / wc
<b>METALS, TOTAL</b>							
Aluminum	20.7	mg/L		0.1		E200.7	08/06/16 02:58 / sf
Beryllium	0.028	mg/L		0.001		E200.7	08/06/16 02:58 / sf
Cadmium	ND	mg/L		0.005		E200.7	08/06/16 02:58 / sf
Cobalt	0.46	mg/L		0.01		E200.7	08/06/16 02:58 / sf
Lead	0.014	mg/L		0.001		E200.8	08/08/16 22:35 / smm
Manganese	9.71	mg/L		0.01		E200.7	08/06/16 02:58 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/06/16 02:58 / sf
Nickel	0.46	mg/L		0.05		E200.7	08/06/16 02:58 / sf
Uranium	0.123	mg/L		0.0003		E200.8	08/08/16 22:35 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 02:58 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/03/16 02:03 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 11:03 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	16.6	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U Precision (±)	3.8	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U MDC	1.4	pCi/L				E900.1	08/09/16 21:27 / trs
Lead 210	1.2	pCi/L	U			E909.0	09/12/16 18:26 / eli-cs
Lead 210 precision (±)	0.9	pCi/L				E909.0	09/12/16 18:26 / eli-cs
Lead 210 MDC	1.3	pCi/L				E909.0	09/12/16 18:26 / eli-cs
Radium 226	5.4	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	1.1	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.20	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	13	pCi/L				RA-05	08/16/16 13:38 / plj
Radium 228 precision (±)	2.9	pCi/L				RA-05	08/16/16 13:38 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 01/24/17

Report Date: 09/28/16

Collection Date: 07/18/16 15:14

Date Received: 07/22/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-007  
Client Sample ID: EPA-14

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.9	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	-0.09	pCi/L	U			E908.0	08/11/16 09:46 / cng
Thorium 230 precision (±)	0.3	pCi/L				E908.0	08/11/16 09:46 / cng
Thorium 230 MDC	0.7	pCi/L				E908.0	08/11/16 09:46 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4200	mg/L				A1030 E	08/02/16 14:16 / smm
A/C Balance	-1.07	%				A1030 E	08/02/16 14:16 / smm
Anions	65.4	meq/L				A1030 E	08/02/16 14:16 / smm
Cations	64.0	meq/L				A1030 E	08/02/16 14:16 / smm
TDS Ratio	1.10	unitless				A1030 E	08/02/16 14:16 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/27/16 04:53 / dm
Bromoform	ND	ug/L		0.50		E624	07/27/16 04:53 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/27/16 04:53 / dm
Chloroform	ND	ug/L		0.50		E624	07/27/16 04:53 / dm
Trihalomethanes, Total	ND	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	116	%REC		64.4-131		E624	07/27/16 04:53 / dm
Surr: p-Bromofluorobenzene	148	%REC	S	67.1-133		E624	07/27/16 04:53 / dm
Surr: Toluene-d8	116	%REC		79.7-125		E624	07/27/16 04:53 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-007  
**Client Sample ID:** EPA-14

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 15:35  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/18/16 01:32 / wc
Calcium	495	mg/L		1		E200.7	10/28/16 16:06 / sf
Chloride	57	mg/L	D	2		E300.0	11/02/16 02:57 / ljl
Magnesium	342	mg/L		1		E200.7	10/28/16 16:06 / sf
Nitrogen, Ammonia as N	23	mg/L	D	2		A4500-NH3 G	11/02/16 18:14 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:35 / ljl
Potassium	11	mg/L		1		E200.7	10/28/16 16:06 / sf
Sodium	156	mg/L		1		E200.7	10/28/16 16:06 / sf
Sulfate	3230	mg/L	D	8		E300.0	11/02/16 02:57 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	4.76	s.u.	H	0.01		A4500-H B	10/17/16 10:01 / bah
Solids, Total Dissolved TDS @ 180 C	4440	mg/L	H	40		A2540 C	10/21/16 12:34 / bah
<b>METALS, TOTAL</b>							
Aluminum	20.8	mg/L		0.1		E200.7	11/01/16 22:56 / sf
Beryllium	0.027	mg/L		0.001		E200.7	11/01/16 22:56 / sf
Cadmium	ND	mg/L		0.005		E200.7	11/01/16 22:56 / sf
Cobalt	0.43	mg/L		0.01		E200.7	11/01/16 22:56 / sf
Lead	0.015	mg/L		0.001		E200.8	11/16/16 03:56 / smm
Manganese	8.90	mg/L		0.01		E200.7	11/01/16 22:56 / sf
Molybdenum	ND	mg/L		0.1		E200.7	11/01/16 22:56 / sf
Nickel	0.41	mg/L		0.05		E200.7	11/01/16 22:56 / sf
Uranium	0.106	mg/L		0.0003		E200.8	11/16/16 03:56 / smm
Vanadium	ND	mg/L		0.1		E200.7	11/01/16 22:56 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/31/16 23:03 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:02 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	18.9	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U Precision (±)	4.2	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 12:46 / cng
Lead 210	1.2	pCi/L				E909.0	11/05/16 15:47 / plj
Lead 210 precision (±)	0.7	pCi/L				E909.0	11/05/16 15:47 / plj
Lead 210 MDC	1.0	pCi/L				E909.0	11/05/16 15:47 / plj
Radium 226	4.8	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	0.99	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.17	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	11	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 precision (±)	2.2	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-007  
**Client Sample ID:** EPA-14

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 15:35  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.0	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	0.2	pCi/L				E908.0	11/21/16 11:10 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	11/21/16 11:10 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	11/21/16 11:10 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4300	mg/L				A1030 E	11/04/16 10:25 / sec
A/C Balance	-3.58	%				A1030 E	11/04/16 10:25 / sec
Anions	69.4	meq/L				A1030 E	11/04/16 10:25 / sec
Cations	64.6	meq/L				A1030 E	11/04/16 10:25 / sec
TDS Ratio	1.03	unitless				A1030 E	11/04/16 10:25 / sec
- Cation/Anion Balance includes selected metals							
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/16 19:45 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/16 19:45 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/16 19:45 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/16 19:45 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	101	%REC		71-139		E624	10/19/16 19:45 / eli-b
Surr: p-Bromofluorobenzene	103	%REC		80-127		E624	10/19/16 19:45 / eli-b
Surr: Toluene-d8	98.0	%REC		80-123		E624	10/19/16 19:45 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		EPA-14	EPA-14	EPA-14	EPA-14
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-007	C16070706-007	C16040481-003	C16010374-003
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	495	489	514	485
Chloride	mg/L	57	56	61	78
Magnesium	mg/L	342	368	419	434
Nitrogen, Ammonia as N	mg/L	23	27	32	38
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	11	13	13	16
Sodium	mg/L	156	162	184	164
Sulfate	mg/L	3230	3050	3450	3970
pH	s.u.	4.76	4.61	4.57	4.41
Solids, Total Dissolved TDS @ 180 C	mg/L	4440	4560	4830	5590
Aluminum	mg/L	20.8	20.7	23.0	63.6
Beryllium	mg/L	0.027	0.028	0.034	0.072
Cadmium	mg/L	ND(0.005)	ND(0.005)	0.006	0.009
Cobalt	mg/L	0.43	0.46	0.53	0.84
Lead	mg/L	0.015	0.014	0.023	0.030
Manganese	mg/L	8.90	9.71	11.6	14.9
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.41	0.46	0.54	0.89
Uranium	mg/L	0.106	0.123	0.129	0.199
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	18.9	16.6	52.8	45.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.2	3.8	10.7	9.4
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.4	1.1	1.2
Lead 210	pCi/L	1.2	1.2	1.9	1.2
Lead 210 precision (±)	pCi/L	0.7	0.9	1.1	0.8
Lead 210 MDC	pCi/L	1.0	1.3	1.4	1.2
Radium 226	pCi/L	4.8	5.4	8.5	6.0
Radium 226 precision (±)	pCi/L	0.99	1.1	1.7	1.2
Radium 226 MDC	pCi/L	0.17	0.20	0.13	0.13
Radium 228	pCi/L	11	13	13	12
Radium 228 precision (±)	pCi/L	2.2	2.9	2.4	2.3
Radium 228 MDC	pCi/L	1.0	1.9	0.96	0.75
Thorium 230	pCi/L	0.2	-0.09	-0.2	0.4
Thorium 230 precision (±)	pCi/L	0.1	0.3	0.7	0.5
Thorium 230 MDC	pCi/L	0.2	0.7	1.6	0.8
A/C Balance	%	-3.58	-1.07	0.19	
Anions	meq/L	69.4	65.4	73.8	85.4
Cations	meq/L	64.6	64.0	74.1	77.5
Solids, Total Dissolved - Calculated	mg/L	4300	4200	4700	5200
TDS Ratio	unitless	1.03	1.10	1.04	1.08
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-006  
**Client Sample ID:** 420

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/18/16 14:12  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	377	mg/L		5		A2320 B	07/25/16 20:43 / wc
Calcium	705	mg/L		1		E200.7	07/26/16 18:11 / sf
Chloride	47	mg/L		1		E300.0	07/28/16 10:18 / wc
Magnesium	173	mg/L		1		E200.7	07/26/16 18:11 / sf
Nitrogen, Ammonia as N	0.08	mg/L		0.05		A4500-NH <sub>3</sub> G	07/26/16 12:47 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/27/16 12:57 / ljl
Potassium	7	mg/L		1		E200.7	07/26/16 18:11 / sf
Sodium	150	mg/L		1		E200.7	07/26/16 18:11 / sf
Sulfate	2310	mg/L	D	4		E300.0	07/30/16 06:46 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	7.07	s.u.	H	0.01		A4500-H B	07/22/16 17:03 / ljl
Solids, Total Dissolved TDS @ 180 C	3870	mg/L	DH	40		A2540 C	07/25/16 14:37 / wc
<b>METALS, TOTAL</b>							
Aluminum	1.4	mg/L		0.1		E200.7	08/06/16 02:54 / sf
Beryllium	ND	mg/L		0.001		E200.7	08/06/16 02:54 / sf
Cadmium	ND	mg/L		0.005		E200.7	08/06/16 02:54 / sf
Cobalt	ND	mg/L		0.01		E200.7	08/06/16 02:54 / sf
Lead	0.003	mg/L		0.001		E200.8	08/08/16 22:33 / smm
Manganese	1.70	mg/L		0.01		E200.7	08/06/16 02:54 / sf
Molybdenum	0.6	mg/L		0.1		E200.7	08/06/16 02:54 / sf
Nickel	ND	mg/L		0.05		E200.7	08/06/16 02:54 / sf
Uranium	0.260	mg/L		0.0003		E200.8	08/08/16 22:33 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 02:54 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	0.001	mg/L		0.001		E1632AM	08/03/16 01:51 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	0.001	mg/L		0.001		A3114 B	08/12/16 11:02 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	7.4	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U Precision (±)	2.3	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U MDC	1.7	pCi/L				E900.1	08/02/16 23:42 / trs
Lead 210	1.9	pCi/L				E909.0	09/15/16 05:53 / eli-cs
Lead 210 precision (±)	1.0	pCi/L				E909.0	09/15/16 05:53 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/15/16 05:53 / eli-cs
Radium 226	4.1	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	0.84	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.18	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	5.1	pCi/L				RA-05	08/16/16 13:38 / plj
Radium 228 precision (±)	1.4	pCi/L				RA-05	08/16/16 13:38 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 01/24/17

Report Date: 09/28/16

Collection Date: 07/18/16 14:12

Date Received: 07/22/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-006  
Client Sample ID: 420

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.7	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	0.1	pCi/L	U			E908.0	08/18/16 08:53 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/18/16 08:53 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3600	mg/L				A1030 E	08/02/16 14:16 / smm
A/C Balance	0.48	%				A1030 E	08/02/16 14:16 / smm
Anions	55.6	meq/L				A1030 E	08/02/16 14:16 / smm
Cations	56.2	meq/L				A1030 E	08/02/16 14:16 / smm
TDS Ratio	1.08	unitless				A1030 E	08/02/16 14:16 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/27/16 04:18 / dm
Bromoform	ND	ug/L		0.50		E624	07/27/16 04:18 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/27/16 04:18 / dm
Chloroform	ND	ug/L		0.50		E624	07/27/16 04:18 / dm
Trihalomethanes, Total	ND	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	117	%REC		64.4-131		E624	07/27/16 04:18 / dm
Surr: p-Bromofluorobenzene	146	%REC	S	67.1-133		E624	07/27/16 04:18 / dm
Surr: Toluene-d8	118	%REC		79.7-125		E624	07/27/16 04:18 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-006  
**Client Sample ID:** 420

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 14:38  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	376	mg/L		5		A2320 B	10/18/16 01:27 / wc
Calcium	689	mg/L		1		E200.7	10/28/16 16:02 / sf
Chloride	46	mg/L		1		E300.0	11/02/16 02:39 / ljl
Magnesium	177	mg/L		1		E200.7	10/28/16 16:02 / sf
Nitrogen, Ammonia as N	0.41	mg/L		0.05		A4500-NH <sub>3</sub> G	11/02/16 18:13 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:34 / ljl
Potassium	8	mg/L		1		E200.7	10/28/16 16:02 / sf
Sodium	149	mg/L		1		E200.7	10/28/16 16:02 / sf
Sulfate	2380	mg/L	D	4		E300.0	11/02/16 02:39 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	7.00	s.u.	H	0.01		A4500-H B	10/17/16 09:58 / bah
Solids, Total Dissolved TDS @ 180 C	3820	mg/L	H	40		A2540 C	10/21/16 12:34 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.4	mg/L		0.1		E200.7	11/03/16 20:02 / sf
Beryllium	ND	mg/L		0.001		E200.7	11/01/16 22:51 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/28/16 20:04 / smm
Cobalt	0.01	mg/L		0.01		E200.8	11/19/16 04:28 / smm
Lead	0.001	mg/L		0.001		E200.8	10/28/16 20:04 / smm
Manganese	2.35	mg/L		0.01		E200.7	11/01/16 22:51 / sf
Molybdenum	0.4	mg/L		0.1		E200.8	10/28/16 20:04 / smm
Nickel	ND	mg/L		0.05		E200.8	10/28/16 20:04 / smm
Uranium	0.244	mg/L		0.0003		E200.8	10/28/16 20:04 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 20:04 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/31/16 22:51 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:00 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	8.2	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U Precision (±)	2.6	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U MDC	2.0	pCi/L				E900.1	10/27/16 12:46 / cng
Lead 210	1.5	pCi/L				E909.0	11/05/16 13:01 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	11/05/16 13:01 / plj
Lead 210 MDC	1.0	pCi/L				E909.0	11/05/16 13:01 / plj
Radium 226	4.4	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	0.92	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.18	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	6.0	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 precision (±)	1.4	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-006  
**Client Sample ID:** 420

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 14:38  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.1	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	0.3	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 precision (±)	0.2	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	11/15/16 09:45 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3600	mg/L				A1030 E	11/03/16 11:20 / sec
A/C Balance	-1.20	%				A1030 E	11/03/16 11:20 / sec
Anions	57.0	meq/L				A1030 E	11/03/16 11:20 / sec
Cations	55.6	meq/L				A1030 E	11/03/16 11:20 / sec
TDS Ratio	1.05	unitless				A1030 E	11/03/16 11:20 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/16 19:18 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/16 19:18 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/16 19:18 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/16 19:18 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	105	%REC		71-139		E624	10/19/16 19:18 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	10/19/16 19:18 / eli-b
Surr: Toluene-d8	97.0	%REC		80-123		E624	10/19/16 19:18 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		420	420	420	420
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-006	C16070706-006	C16040481-006	C16010374-008
Bicarbonate as HCO <sub>3</sub>	mg/L	376	377	351	379
Calcium	mg/L	689	705	710	736
Chloride	mg/L	46	47	47	57
Magnesium	mg/L	177	173	177	173
Nitrogen, Ammonia as N	mg/L	0.41	0.08	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	0.1	0.1
Potassium	mg/L	8	7	7	8
Sodium	mg/L	149	150	156	154
Sulfate	mg/L	2380	2310	2300	2540
pH	s.u.	7.00	7.07	6.87	6.77
Solids, Total Dissolved TDS @ 180 C	mg/L	3820	3870	3960	3990
Aluminum	mg/L	0.4	1.4	1.4	0.7
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.01	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.001	0.003	0.004	0.002
Manganese	mg/L	2.35	1.70	1.98	1.92
Molybdenum	mg/L	0.4	0.6	0.7	0.6
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.244	0.260	0.268	0.288
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	8.2	7.4	29.9	29.1
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.6	2.3	6.4	6.3
Gross Alpha minus Rn & U MDC	pCi/L	2.0	1.7	1.1	1.1
Lead 210	pCi/L	1.5	1.9	1.3	1.3
Lead 210 precision (±)	pCi/L	0.8	1.0	1	0.8
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.2
Radium 226	pCi/L	4.4	4.1	5.5	3.5
Radium 226 precision (±)	pCi/L	0.92	0.84	1.3	0.73
Radium 226 MDC	pCi/L	0.18	0.18	0.59	0.13
Radium 228	pCi/L	6.0	5.1	4.4	3.4
Radium 228 precision (±)	pCi/L	1.4	1.4	1.2	0.90
Radium 228 MDC	pCi/L	1.1	1.7	1.0	0.75
Thorium 230	pCi/L	0.3	0.1	2.6	0.1
Thorium 230 precision (±)	pCi/L	0.2	0.1	0.5	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	5.4	0.2
A/C Balance	%	-1.20	0.48	1.70	-2.51
Anions	meq/L	57.0	55.6	55.1	60.8
Cations	meq/L	55.6	56.2	57.0	57.8
Solids, Total Dissolved - Calculated	mg/L	3600	3600	3600	3900
TDS Ratio	unitless	1.05	1.08	1.10	1.03
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-004  
**Client Sample ID:** 711

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/18/16 12:22  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	306	mg/L		5		A2310 B	07/27/16 14:54 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/25/16 20:07 / wc
Calcium	456	mg/L		1		E200.7	07/26/16 18:03 / sf
Chloride	27	mg/L	D	2		E300.0	07/28/16 09:41 / wc
Magnesium	494	mg/L		1		E200.7	07/26/16 18:03 / sf
Nitrogen, Ammonia as N	2.13	mg/L		0.05		A4500-NH <sub>3</sub> G	07/26/16 12:45 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/25/16 15:14 / ljl
Potassium	13	mg/L		1		E200.7	07/26/16 18:03 / sf
Sodium	117	mg/L		1		E200.7	07/26/16 18:03 / sf
Sulfate	3520	mg/L	D	8		E300.0	07/30/16 06:11 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	3.30	s.u.	H	0.01		A4500-H B	07/22/16 16:57 / ljl
Solids, Total Dissolved TDS @ 180 C	5150	mg/L	DH	40		A2540 C	07/25/16 14:37 / wc
<b>METALS, TOTAL</b>							
Aluminum	7.3	mg/L		0.1		E200.7	08/06/16 02:45 / sf
Beryllium	0.017	mg/L		0.001		E200.7	08/06/16 02:45 / sf
Cadmium	ND	mg/L		0.005		E200.7	08/06/16 02:45 / sf
Cobalt	0.63	mg/L		0.01		E200.7	08/06/16 02:45 / sf
Lead	0.006	mg/L		0.001		E200.8	08/08/16 22:30 / srm
Manganese	8.84	mg/L		0.01		E200.7	08/06/16 02:45 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/06/16 02:45 / sf
Nickel	0.76	mg/L		0.05		E200.7	08/06/16 02:45 / sf
Uranium	0.120	mg/L		0.0003		E200.8	08/08/16 22:30 / srm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 02:45 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	0.002	mg/L		0.001		E1632AM	08/03/16 01:27 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:55 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	19.4	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U Precision (±)	4.5	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U MDC	1.7	pCi/L				E900.1	08/02/16 23:42 / trs
Lead 210	0.2	pCi/L	U			E909.0	09/12/16 13:18 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/12/16 13:18 / eli-cs
Lead 210 MDC	1.3	pCi/L				E909.0	09/12/16 13:18 / eli-cs
Radium 226	4.8	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	0.98	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.18	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	8.2	pCi/L				RA-05	08/16/16 13:38 / plj

**Report** RL - Analyte reporting limit.

**Definitions:** QCL - Quality control limit.

MDC - Minimum detectable concentration

H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

D - RL increased due to sample matrix.

U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 01/24/17

Report Date: 09/28/16

Collection Date: 07/18/16 12:22

Date Received: 07/22/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-004  
Client Sample ID: 711

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.9	pCi/L				RA-05	08/16/16 13:38 / plj
Radium 228 MDC	1.8	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	0.04	pCi/L	U			E908.0	08/10/16 14:55 / cng
Thorium 230 precision (±)	0.2	pCi/L				E908.0	08/10/16 14:55 / cng
Thorium 230 MDC	0.4	pCi/L				E908.0	08/10/16 14:55 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4700	mg/L				A1030 E	08/02/16 14:15 / smm
A/C Balance	0.53	%				A1030 E	08/02/16 14:15 / smm
Anions	74.3	meq/L				A1030 E	08/02/16 14:15 / smm
Cations	75.1	meq/L				A1030 E	08/02/16 14:15 / smm
TDS Ratio	1.11	unitless				A1030 E	08/02/16 14:15 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/27/16 03:08 / dm
Bromoform	ND	ug/L		0.50		E624	07/27/16 03:08 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/27/16 03:08 / dm
Chloroform	ND	ug/L		0.50		E624	07/27/16 03:08 / dm
Trihalomethanes, Total	ND	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	115	%REC		64.4-131		E624	07/27/16 03:08 / dm
Surr: p-Bromofluorobenzene	142	%REC	S	67.1-133		E624	07/27/16 03:08 / dm
Surr: Toluene-d8	115	%REC		79.7-125		E624	07/27/16 03:08 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-004  
**Client Sample ID:** 711

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 12:28  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	290	mg/L	H	5		A2310 B	10/26/16 13:01 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/18/16 01:11 / wc
Calcium	458	mg/L		1		E200.7	10/28/16 15:54 / sf
Chloride	28	mg/L	D	2		E300.0	11/02/16 02:04 / ljl
Magnesium	500	mg/L		1		E200.7	10/28/16 15:54 / sf
Nitrogen, Ammonia as N	2.2	mg/L	D	0.2		A4500-NH <sub>3</sub> G	11/05/16 22:05 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:29 / ljl
Potassium	13	mg/L		1		E200.7	10/28/16 15:54 / sf
Sodium	116	mg/L		1		E200.7	10/28/16 15:54 / sf
Sulfate	3690	mg/L	D	8		E300.0	11/02/16 02:04 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	2.93	s.u.	H	0.01		A4500-H B	10/17/16 09:52 / bah
Solids, Total Dissolved TDS @ 180 C	5000	mg/L	H	40		A2540 C	10/21/16 12:33 / bah
<b>METALS, TOTAL</b>							
Aluminum	10.0	mg/L		0.1		E200.8	10/28/16 19:52 / smm
Beryllium	0.023	mg/L		0.001		E200.8	10/28/16 19:52 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/28/16 19:52 / smm
Cobalt	0.71	mg/L		0.01		E200.8	10/28/16 19:52 / smm
Lead	0.004	mg/L		0.001		E200.8	10/28/16 19:52 / smm
Manganese	9.64	mg/L		0.01		E200.8	10/28/16 19:52 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/28/16 19:52 / smm
Nickel	0.85	mg/L		0.05		E200.8	10/28/16 19:52 / smm
Uranium	0.125	mg/L		0.0003		E200.8	10/28/16 19:52 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 19:52 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	0.002	mg/L		0.001		E1632AM	10/31/16 22:27 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:54 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	16.6	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U Precision (±)	3.8	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 12:46 / cng
Lead 210	0.2	pCi/L	U			E909.0	11/05/16 06:56 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/05/16 06:56 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/05/16 06:56 / plj
Radium 226	6.1	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	1.2	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.22	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	11	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-004  
**Client Sample ID:** 711

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 12:28  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	2.2	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	0.1	pCi/L	U			E908.0	11/09/16 10:02 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	11/09/16 10:02 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	11/09/16 10:02 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4800	mg/L				A1030 E	11/03/16 11:20 / sec
A/C Balance	-3.01	%				A1030 E	11/03/16 11:20 / sec
Anions	79.8	meq/L				A1030 E	11/03/16 11:20 / sec
Cations	75.1	meq/L				A1030 E	11/03/16 11:20 / sec
TDS Ratio	1.03	unitless				A1030 E	11/03/16 11:20 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/16 18:25 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/16 18:25 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/16 18:25 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/16 18:25 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	96.0	%REC		71-139		E624	10/19/16 18:25 / eli-b
Surr: p-Bromofluorobenzene	98.0	%REC		80-127		E624	10/19/16 18:25 / eli-b
Surr: Toluene-d8	106	%REC		80-123		E624	10/19/16 18:25 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		711	711	711	711
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-004	C16070706-004	C16040481-005	C16010374-007
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	458	456	458	462
Chloride	mg/L	28	27	24	27
Magnesium	mg/L	500	494	496	437
Nitrogen, Ammonia as N	mg/L	2.2	2.13	2.3	2.0
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	13	13	13	16
Sodium	mg/L	116	117	117	103
Sulfate	mg/L	3690	3520	3500	3440
pH	s.u.	2.93	3.30	3.35	3.34
Solids, Total Dissolved TDS @ 180 C	mg/L	5000	5150	5220	5080
Aluminum	mg/L	10.0	7.3	4.9	1.9
Beryllium	mg/L	0.023	0.017	0.013	0.009
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.71	0.63	0.58	0.54
Lead	mg/L	0.004	0.006	0.003	0.002
Manganese	mg/L	9.64	8.84	8.83	7.72
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.85	0.76	0.71	0.63
Uranium	mg/L	0.125	0.120	0.0840	0.0504
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.002	0.002	0.002	0.004
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	16.6	19.4	36.2	30.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	3.8	4.5	7.6	6.5
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.1
Lead 210	pCi/L	0.2	0.2	0.7	0.2
Lead 210 precision (±)	pCi/L	0.6	0.8	0.9	0.7
Lead 210 MDC	pCi/L	1	1.3	1.4	1.2
Radium 226	pCi/L	6.1	4.8	6.1	5.0
Radium 226 precision (±)	pCi/L	1.2	0.98	1.2	1.0
Radium 226 MDC	pCi/L	0.22	0.18	0.14	0.13
Radium 228	pCi/L	11	8.2	8.0	8.8
Radium 228 precision (±)	pCi/L	2.2	1.9	1.7	1.8
Radium 228 MDC	pCi/L	1.3	1.8	1.1	0.73
Thorium 230	pCi/L	0.1	0.04	0.01	0.3
Thorium 230 precision (±)	pCi/L	0.08	0.2	0.3	0.2
Thorium 230 MDC	pCi/L	0.1	0.4	0.7	0.2
A/C Balance	%	-3.01	0.53	0.86	-1.55
Anions	meq/L	79.8	74.3	73.8	72.6
Cations	meq/L	75.1	75.1	75.0	70.3
Solids, Total Dissolved - Calculated	mg/L	4800	4700	4600	4500
TDS Ratio	unitless	1.03	1.11	1.13	1.13
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-001  
**Client Sample ID:** 613

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/18/16 08:54  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	3730	mg/L	D	20		A2310 B	07/27/16 14:26 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/25/16 19:58 / wc
Calcium	430	mg/L		1		E200.7	07/26/16 17:11 / sf
Chloride	128	mg/L	D	5		E300.0	07/28/16 08:46 / wc
Magnesium	719	mg/L		1		E200.7	07/26/16 17:11 / sf
Nitrogen, Ammonia as N	154	mg/L	D	10		A4500-NH <sub>3</sub> G	07/26/16 12:41 / ljl
Nitrogen, Nitrate+Nitrite as N	2.4	mg/L	D	0.5		E353.2	07/25/16 15:10 / ljl
Potassium	ND	mg/L		1		E200.7	07/26/16 17:11 / sf
Sodium	234	mg/L		1		E200.7	07/26/16 17:11 / sf
Sulfate	8980	mg/L	D	20		E300.0	07/30/16 04:09 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	3.02	s.u.	H	0.01		A4500-H B	07/22/16 16:45 / ljl
Solids, Total Dissolved TDS @ 180 C	11400	mg/L	DH	100		A2540 C	07/25/16 14:36 / wc
<b>METALS, TOTAL</b>							
Aluminum	550	mg/L		0.1		E200.7	08/06/16 02:33 / sf
Beryllium	0.158	mg/L		0.001		E200.7	08/06/16 02:33 / sf
Cadmium	0.026	mg/L	D	0.006		E200.7	08/06/16 02:33 / sf
Cobalt	1.67	mg/L	D	0.03		E200.7	08/06/16 02:33 / sf
Lead	0.007	mg/L		0.001		E200.8	08/08/16 22:23 / smm
Manganese	45.2	mg/L		0.01		E200.7	08/06/16 02:33 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/06/16 02:33 / sf
Nickel	1.71	mg/L		0.05		E200.7	08/06/16 02:33 / sf
Uranium	0.792	mg/L		0.0003		E200.8	08/08/16 22:23 / smm
Vanadium	1.3	mg/L		0.1		E200.7	08/06/16 02:33 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/03/16 00:51 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:50 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	104	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U Precision (±)	20.5	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U MDC	1.7	pCi/L				E900.1	08/02/16 23:42 / trs
Lead 210	0	pCi/L	U			E909.0	09/12/16 08:10 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/12/16 08:10 / eli-cs
Lead 210 MDC	1.3	pCi/L				E909.0	09/12/16 08:10 / eli-cs
Radium 226	10	pCi/L				E903.0	08/22/16 12:37 / dmf
Radium 226 precision (±)	2.0	pCi/L				E903.0	08/22/16 12:37 / dmf
Radium 226 MDC	0.23	pCi/L				E903.0	08/22/16 12:37 / dmf
Radium 228	1.4	pCi/L	U			RA-05	08/16/16 12:04 / plj

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-001  
**Client Sample ID:** 613

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/18/16 08:54  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.0	pCi/L				RA-05	08/16/16 12:04 / plj
Radium 228 MDC	1.9	pCi/L				RA-05	08/16/16 12:04 / plj
Thorium 230	600	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 precision (±)	114	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 MDC	15.0	pCi/L				E908.0	08/18/16 08:53 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	11000	mg/L				A1030 E	08/09/16 17:31 / smm
A/C Balance	-4.11	%				A1030 E	08/09/16 17:31 / smm
Anions	191	meq/L				A1030 E	08/09/16 17:31 / smm
Cations	176	meq/L				A1030 E	08/09/16 17:31 / smm
TDS Ratio	1.07	unitless				A1030 E	08/09/16 17:31 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/16 21:19 / dm
Bromoform	ND	ug/L		0.50		E624	07/26/16 21:19 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/16 21:19 / dm
Chloroform	100	ug/L		0.50		E624	07/26/16 21:19 / dm
Trihalomethanes, Total	100	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	124	%REC		64.4-131		E624	07/26/16 21:19 / dm
Surr: p-Bromofluorobenzene	146	%REC	S	67.1-133		E624	07/26/16 21:19 / dm
Surr: Toluene-d8	115	%REC		79.7-125		E624	07/26/16 21:19 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100488-001  
Client Sample ID: 613

Report Date: 12/03/16  
Collection Date: 10/10/16 08:28  
Date Received: 10/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	3690	mg/L	D	30		A2310 B	10/19/16 18:25 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/18/16 00:59 / wc
Calcium	429	mg/L		1		E200.7	10/28/16 15:30 / sf
Chloride	129	mg/L	D	5		E300.0	11/02/16 00:02 / ljl
Magnesium	719	mg/L		1		E200.7	10/28/16 15:30 / sf
Nitrogen, Ammonia as N	166	mg/L	D	5		A4500-NH <sub>3</sub> G	11/02/16 18:07 / ljl
Nitrogen, Nitrate+Nitrite as N	2.3	mg/L	D	0.5		E353.2	11/04/16 18:23 / ljl
Potassium	1	mg/L		1		E200.7	10/28/16 15:30 / sf
Sodium	232	mg/L	D	2		E200.7	10/28/16 15:30 / sf
Sulfate	8890	mg/L	D	20		E300.0	11/02/16 00:02 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	2.98	s.u.	H	0.01		A4500-H B	10/17/16 09:40 / bah
Solids, Total Dissolved TDS @ 180 C	11200	mg/L		100		A2540 C	10/14/16 17:24 / bah
<b>METALS, TOTAL</b>							
Aluminum	540	mg/L	D	0.2		E200.7	11/01/16 22:39 / sf
Beryllium	0.175	mg/L		0.001		E200.8	10/28/16 18:48 / smm
Cadmium	0.041	mg/L		0.005		E200.8	10/28/16 18:48 / smm
Cobalt	2.09	mg/L		0.01		E200.8	10/28/16 18:48 / smm
Lead	0.006	mg/L		0.001		E200.8	10/28/16 18:48 / smm
Manganese	50.3	mg/L		0.01		E200.8	10/28/16 18:48 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/28/16 18:48 / smm
Nickel	1.89	mg/L		0.05		E200.8	10/28/16 18:48 / smm
Uranium	0.754	mg/L		0.0003		E200.8	10/28/16 18:48 / smm
Vanadium	1.5	mg/L		0.1		E200.8	10/28/16 18:48 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/31/16 21:26 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:50 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	89.5	pCi/L				E900.1	10/27/16 12:45 / cng
Gross Alpha minus Rn & U Precision (±)	17.5	pCi/L				E900.1	10/27/16 12:45 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 12:45 / cng
Lead 210	0.7	pCi/L	U			E909.0	11/04/16 20:27 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/04/16 20:27 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/04/16 20:27 / plj
Radium 226	12	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	2.4	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.24	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	2.9	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100488-001  
Client Sample ID: 613

Report Date: 12/03/16  
Collection Date: 10/10/16 08:28  
Date Received: 10/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	0.86	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 MDC	1.4	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	666	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 precision (±)	126	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 MDC	9.8	pCi/L				E908.0	11/15/16 09:45 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	11000	mg/L				A1030 E	11/04/16 10:06 / sec
A/C Balance	-3.80	%				A1030 E	11/04/16 10:06 / sec
Anions	190	meq/L				A1030 E	11/04/16 10:06 / sec
Cations	176	meq/L				A1030 E	11/04/16 10:06 / sec
TDS Ratio	1.06	unitless				A1030 E	11/04/16 10:06 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/16 17:04 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/16 17:04 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/16 17:04 / eli-b
Chloroform	73	ug/L		5.0		E624	10/20/16 16:53 / eli-b
Trihalomethanes, Total	73	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	10/19/16 17:04 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	10/19/16 17:04 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	10/19/16 17:04 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		613	613	613	613
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/16/2016
Analyte	Units	C16100488-001	C16070706-001	C16040481-001	C16010374-001
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	429	430	450	409
Chloride	mg/L	129	128	125	139
Magnesium	mg/L	719	719	755	618
Nitrogen, Ammonia as N	mg/L	166	154	159	165
Nitrogen, Nitrate+Nitrite as N	mg/L	2.3	2.4	2.3	2.4
Potassium	mg/L	1	ND(1)	1	3
Sodium	mg/L	232	234	259	226
Sulfate	mg/L	8890	8980	8480	8240
pH	s.u.	2.98	3.02	3.01	3.01
Solids, Total Dissolved TDS @ 180 C	mg/L	11200	11400	11400	11100
Aluminum	mg/L	540	550	555	557
Beryllium	mg/L	0.175	0.158	0.167	0.163
Cadmium	mg/L	0.041	0.026	0.032	0.037
Cobalt	mg/L	2.09	1.67	1.61	1.95
Lead	mg/L	0.006	0.007	0.005	0.004
Manganese	mg/L	50.3	45.2	49.7	45.9
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	1.89	1.71	1.63	1.72
Uranium	mg/L	0.754	0.792	0.756	0.764
Vanadium	mg/L	1.5	1.3	1.5	1.5
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	89.5	104	102	120
Gross Alpha minus Rn & U Precision (±)	pCi/L	17.5	20.5	19.9	23.4
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.2
Lead 210	pCi/L	0.7	0	1.3	0.2
Lead 210 precision (±)	pCi/L	0.6	0.8	1	0.7
Lead 210 MDC	pCi/L	1	1.3	1.4	1.2
Radium 226	pCi/L	12	10	25	6.8
Radium 226 precision (±)	pCi/L	2.4	2.0	4.9	1.4
Radium 226 MDC	pCi/L	0.24	0.23	0.36	0.17
Radium 228	pCi/L	2.9	1.4	1.4	1.7
Radium 228 precision (±)	pCi/L	0.86	1.0	0.91	0.57
Radium 228 MDC	pCi/L	1.4	1.9	1.4	0.96
Thorium 230	pCi/L	666	600	604	553
Thorium 230 precision (±)	pCi/L	126	114	115	105
Thorium 230 MDC	pCi/L	9.8	15.0	5.0	13.7
A/C Balance	%	-3.80	-4.11	-2.04	-3.20
Anions	meq/L	190	191	181	176
Cations	meq/L	176	176	174	165
Solids, Total Dissolved - Calculated	mg/L	11000	11000	10000	9800
TDS Ratio	unitless	1.06	1.07	1.12	1.13
Trihalomethanes, Total	ug/L	73	100	121	92.8

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-003  
**Client Sample ID:** 708

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/18/16 11:07  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	916	mg/L		5		A2310 B	07/27/16 14:46 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/25/16 20:04 / wc
Calcium	430	mg/L		1		E200.7	07/26/16 17:59 / sf
Chloride	29	mg/L	D	2		E300.0	07/28/16 09:23 / wc
Magnesium	594	mg/L		1		E200.7	07/26/16 17:59 / sf
Nitrogen, Ammonia as N	0.9	mg/L	D	0.1		A4500-NH <sub>3</sub> G	07/26/16 12:43 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/25/16 15:12 / ljl
Potassium	13	mg/L		1		E200.7	07/26/16 17:59 / sf
Sodium	120	mg/L		1		E200.7	07/26/16 17:59 / sf
Sulfate	4590	mg/L	D	8		E300.0	07/30/16 05:54 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	3.60	s.u.	H	0.01		A4500-H B	07/22/16 16:51 / ljl
Solids, Total Dissolved TDS @ 180 C	6540	mg/L	DH	90		A2540 C	07/25/16 14:37 / wc
<b>METALS, TOTAL</b>							
Aluminum	45.5	mg/L		0.1		E200.7	08/06/16 02:41 / sf
Beryllium	0.065	mg/L		0.001		E200.7	08/06/16 02:41 / sf
Cadmium	ND	mg/L		0.005		E200.7	08/06/16 02:41 / sf
Cobalt	0.47	mg/L		0.01		E200.7	08/06/16 02:41 / sf
Lead	0.009	mg/L		0.001		E200.8	08/08/16 22:28 / smm
Manganese	12.9	mg/L		0.01		E200.7	08/06/16 02:41 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/06/16 02:41 / sf
Nickel	0.55	mg/L		0.05		E200.7	08/06/16 02:41 / sf
Uranium	0.122	mg/L		0.0003		E200.8	08/08/16 22:28 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 02:41 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	0.001	mg/L		0.001		E1632AM	08/03/16 01:15 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:54 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	36.3	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U Precision (±)	7.7	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U MDC	1.7	pCi/L				E900.1	08/02/16 23:42 / trs
Lead 210	0.6	pCi/L	U			E909.0	09/12/16 11:35 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/12/16 11:35 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/12/16 11:35 / eli-cs
Radium 226	7.8	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	1.5	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.18	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	4.5	pCi/L				RA-05	08/16/16 13:38 / plj

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 01/24/17

Report Date: 09/28/16

Collection Date: 07/18/16 11:07

Date Received: 07/22/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-003  
Client Sample ID: 708

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/16/16 13:38 / plj
Radium 228 MDC	1.8	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	0.4	pCi/L				E908.0	08/11/16 09:46 / cng
Thorium 230 precision (±)	0.3	pCi/L				E908.0	08/11/16 09:46 / cng
Thorium 230 MDC	0.4	pCi/L				E908.0	08/11/16 09:46 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5800	mg/L				A1030 E	08/02/16 14:15 / smm
A/C Balance	-1.55	%				A1030 E	08/02/16 14:15 / smm
Anions	97.2	meq/L				A1030 E	08/02/16 14:15 / smm
Cations	94.3	meq/L				A1030 E	08/02/16 14:15 / smm
TDS Ratio	1.12	unitless				A1030 E	08/02/16 14:15 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/27/16 02:33 / dm
Bromoform	ND	ug/L		0.50		E624	07/27/16 02:33 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/27/16 02:33 / dm
Chloroform	ND	ug/L		0.50		E624	07/27/16 02:33 / dm
Trihalomethanes, Total	ND	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	111	%REC		64.4-131		E624	07/27/16 02:33 / dm
Surr: p-Bromofluorobenzene	144	%REC	S	67.1-133		E624	07/27/16 02:33 / dm
Surr: Toluene-d8	113	%REC		79.7-125		E624	07/27/16 02:33 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-003  
**Client Sample ID:** 708

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 10:52  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	837	mg/L	H	5		A2310 B	10/26/16 12:53 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/18/16 01:08 / wc
Calcium	433	mg/L		1		E200.7	10/28/16 15:38 / sf
Chloride	29	mg/L	D	2		E300.0	11/02/16 01:12 / ljl
Magnesium	603	mg/L		1		E200.7	10/28/16 15:38 / sf
Nitrogen, Ammonia as N	0.8	mg/L	D	0.1		A4500-NH <sub>3</sub> G	11/02/16 18:09 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:25 / ljl
Potassium	13	mg/L		1		E200.7	10/28/16 15:38 / sf
Sodium	120	mg/L		1		E200.7	10/28/16 15:38 / sf
Sulfate	4700	mg/L	D	8		E300.0	11/02/16 01:12 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	2.95	s.u.	H	0.01		A4500-H B	10/17/16 09:49 / bah
Solids, Total Dissolved TDS @ 180 C	6220	mg/L	H	100		A2540 C	10/21/16 12:33 / bah
<b>METALS, TOTAL</b>							
Aluminum	45.9	mg/L		0.1		E200.8	10/28/16 19:45 / smm
Beryllium	0.075	mg/L		0.001		E200.8	10/28/16 19:45 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/28/16 19:45 / smm
Cobalt	0.52	mg/L		0.01		E200.8	10/28/16 19:45 / smm
Lead	0.024	mg/L		0.001		E200.8	10/28/16 19:45 / smm
Manganese	14.3	mg/L		0.01		E200.8	10/28/16 19:45 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/28/16 19:45 / smm
Nickel	0.59	mg/L		0.05		E200.8	10/28/16 19:45 / smm
Uranium	0.126	mg/L		0.0003		E200.8	10/28/16 19:45 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 19:45 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/31/16 22:15 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:53 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	37.5	pCi/L				E900.1	10/27/16 12:45 / cng
Gross Alpha minus Rn & U Precision (±)	7.7	pCi/L				E900.1	10/27/16 12:45 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 12:45 / cng
Lead 210	1.2	pCi/L				E909.0	11/05/16 04:05 / plj
Lead 210 precision (±)	0.7	pCi/L				E909.0	11/05/16 04:05 / plj
Lead 210 MDC	1.0	pCi/L				E909.0	11/05/16 04:05 / plj
Radium 226	8.8	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	1.8	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.23	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	3.1	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100488-003  
Client Sample ID: 708

Report Date: 12/03/16  
Collection Date: 10/10/16 10:52  
Date Received: 10/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	0.90	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 MDC	1.4	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	0.2	pCi/L	U			E908.0	11/21/16 11:10 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	11/21/16 11:10 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	11/21/16 11:10 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6000	mg/L				A1030 E	11/03/16 11:19 / sec
A/C Balance	-3.02	%				A1030 E	11/03/16 11:19 / sec
Anions	99.4	meq/L				A1030 E	11/03/16 11:19 / sec
Cations	93.6	meq/L				A1030 E	11/03/16 11:19 / sec
TDS Ratio	1.04	unitless				A1030 E	11/03/16 11:19 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/16 17:58 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/16 17:58 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/16 17:58 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/16 17:58 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	10/19/16 17:58 / eli-b
Surr: p-Bromofluorobenzene	102	%REC		80-127		E624	10/19/16 17:58 / eli-b
Surr: Toluene-d8	110	%REC		80-123		E624	10/19/16 17:58 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		708	708	708	708
Collection Date:		10/10/2016	7/18/2016	4/12/2016	1/12/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-003	C16070706-003	C16040481-011	C16010374-011
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	433	430	443	491
Chloride	mg/L	29	29	29	34
Magnesium	mg/L	603	594	617	598
Nitrogen, Ammonia as N	mg/L	0.8	0.9	0.87	0.9
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	13	13	14	20
Sodium	mg/L	120	120	122	122
Sulfate	mg/L	4700	4590	4540	4550
pH	s.u.	2.95	3.60	3.76	3.72
Solids, Total Dissolved TDS @ 180 C	mg/L	6220	6540	6720	6580
Aluminum	mg/L	45.9	45.5	45.7	33.6
Beryllium	mg/L	0.075	0.065	0.068	0.068
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.52	0.47	0.49	0.50
Lead	mg/L	0.024	0.009	0.009	0.012
Manganese	mg/L	14.3	12.9	14.0	12.9
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	0.1
Nickel	mg/L	0.59	0.55	0.61	0.59
Uranium	mg/L	0.126	0.122	0.118	0.117
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	37.5	36.3	60.2	53.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	7.7	7.7	12.1	10.9
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.1
Lead 210	pCi/L	1.2	0.6	0.8	1.6
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.0	1.4	1.3	1.2
Radium 226	pCi/L	8.8	7.8	11	9.5
Radium 226 precision (±)	pCi/L	1.8	1.5	2.2	1.9
Radium 226 MDC	pCi/L	0.23	0.18	0.15	0.14
Radium 228	pCi/L	3.1	4.5	1.5	3.3
Radium 228 precision (±)	pCi/L	0.90	1.3	0.73	0.92
Radium 228 MDC	pCi/L	1.4	1.8	1.1	0.97
Thorium 230	pCi/L	0.2	0.4	1.4	0.6
Thorium 230 precision (±)	pCi/L	0.1	0.3	0.3	0.6
Thorium 230 MDC	pCi/L	0.2	0.4	0.9	0.9
A/C Balance	%	-3.02	-1.55	-1.22	0.29
Anions	meq/L	99.4	97.2	96.3	96.4
Cations	meq/L	93.6	94.3	93.9	97.0
Solids, Total Dissolved - Calculated	mg/L	6000	5800	5800	5900
TDS Ratio	unitless	1.04	1.12	1.15	1.12
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 01/24/17

Report Date: 09/28/16

Collection Date: 07/18/16 13:03

Date Received: 07/22/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-005  
Client Sample ID: EPA-13

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	50	mg/L		5		A2320 B	07/25/16 20:14 / wc
Calcium	454	mg/L		1		E200.7	07/26/16 18:07 / sf
Chloride	43	mg/L	D	5		E300.0	07/28/16 10:00 / wc
Magnesium	976	mg/L		1		E200.7	07/26/16 18:07 / sf
Nitrogen, Ammonia as N	0.06	mg/L		0.05		A4500-NH <sub>3</sub> G	07/26/16 12:46 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/27/16 12:56 / ljl
Potassium	14	mg/L		1		E200.7	07/26/16 18:07 / sf
Sodium	178	mg/L		1		E200.7	07/26/16 18:07 / sf
Sulfate	5420	mg/L	D	20		E300.0	07/30/16 06:28 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.19	s.u.	H	0.01		A4500-H B	07/22/16 17:00 / ljl
Solids, Total Dissolved TDS @ 180 C	7450	mg/L	DH	100		A2540 C	07/25/16 14:37 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	08/06/16 02:50 / sf
Beryllium	ND	mg/L		0.001		E200.7	08/06/16 02:50 / sf
Cadmium	ND	mg/L		0.005		E200.8	08/13/16 05:16 / sf
Cobalt	0.07	mg/L	D	0.03		E200.7	08/06/16 02:50 / sf
Lead	ND	mg/L		0.001		E200.8	08/13/16 05:16 / sf
Manganese	6.30	mg/L		0.01		E200.7	08/06/16 02:50 / sf
Molybdenum	0.2	mg/L		0.1		E200.7	08/06/16 02:50 / sf
Nickel	0.23	mg/L		0.05		E200.7	08/06/16 02:50 / sf
Uranium	0.0074	mg/L		0.0003		E200.8	08/15/16 16:35 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 02:50 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	0.006	mg/L	D	0.005		E1632AM	08/03/16 01:39 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:57 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	14.7	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U Precision (±)	3.6	pCi/L				E900.1	08/02/16 23:42 / trs
Gross Alpha minus Rn & U MDC	1.7	pCi/L				E900.1	08/02/16 23:42 / trs
Lead 210	0.4	pCi/L	U			E909.0	09/12/16 15:01 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/12/16 15:01 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/12/16 15:01 / eli-cs
Radium 226	4.8	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	0.98	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.20	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	7.2	pCi/L				RA-05	08/16/16 13:38 / plj
Radium 228 precision (±)	1.8	pCi/L				RA-05	08/16/16 13:38 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.  
 U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-005  
**Client Sample ID:** EPA-13

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/18/16 13:03  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.9	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	0.4	pCi/L				E908.0	08/10/16 14:55 / cng
Thorium 230 precision (±)	0.3	pCi/L				E908.0	08/10/16 14:55 / cng
Thorium 230 MDC	0.4	pCi/L				E908.0	08/10/16 14:55 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7100	mg/L				A1030 E	08/02/16 14:15 / smm
A/C Balance	-1.75	%				A1030 E	08/02/16 14:15 / smm
Anions	115	meq/L				A1030 E	08/02/16 14:15 / smm
Cations	111	meq/L				A1030 E	08/02/16 14:15 / smm
TDS Ratio	1.04	unitless				A1030 E	08/02/16 14:15 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/28/16 02:50 / dm
Bromoform	ND	ug/L		0.50		E624	07/28/16 02:50 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/28/16 02:50 / dm
Chloroform	0.70	ug/L		0.50		E624	07/28/16 02:50 / dm
Trihalomethanes, Total	0.70	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	1110	%REC	S	64.4-131		E624	07/28/16 02:50 / dm
Surr: p-Bromofluorobenzene	135	%REC	S	67.1-133		E624	07/28/16 02:50 / dm
Surr: Toluene-d8	45.0	%REC	S	79.7-125		E624	07/28/16 02:50 / dm

- S=Surrogate recovery outside QC advisory limits due to sample matrix interference.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-005  
**Client Sample ID:** EPA-13

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 13:25  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	58	mg/L		5		A2320 B	10/18/16 01:18 / wc
Calcium	438	mg/L		1		E200.7	10/28/16 15:58 / sf
Chloride	44	mg/L	D	5		E300.0	11/02/16 02:22 / ljl
Magnesium	981	mg/L		1		E200.7	10/28/16 15:58 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	11/02/16 18:12 / ljl
Nitrogen, Nitrate+Nitrite as N	0.1	mg/L		0.1		E353.2	11/04/16 18:33 / ljl
Potassium	14	mg/L		1		E200.7	10/28/16 15:58 / sf
Sodium	177	mg/L		1		E200.7	10/28/16 15:58 / sf
Sulfate	5380	mg/L	D	20		E300.0	11/02/16 02:22 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.22	s.u.	H	0.01		A4500-H B	10/17/16 09:55 / bah
Solids, Total Dissolved TDS @ 180 C	7220	mg/L	H	100		A2540 C	10/21/16 12:33 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/28/16 19:58 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/28/16 19:58 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/28/16 19:58 / smm
Cobalt	0.11	mg/L		0.01		E200.8	10/28/16 19:58 / smm
Lead	ND	mg/L		0.001		E200.8	10/28/16 19:58 / smm
Manganese	6.90	mg/L		0.01		E200.8	10/28/16 19:58 / smm
Molybdenum	0.2	mg/L		0.1		E200.8	10/28/16 19:58 / smm
Nickel	0.27	mg/L		0.05		E200.8	10/28/16 19:58 / smm
Uranium	0.0102	mg/L		0.0003		E200.8	10/28/16 19:58 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 19:58 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	0.001	mg/L		0.001		E1632AM	10/31/16 22:39 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:56 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	11.4	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U Precision (±)	2.8	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 12:46 / cng
Lead 210	0.6	pCi/L	U			E909.0	11/05/16 09:59 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/05/16 09:59 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/05/16 09:59 / plj
Radium 226	5.2	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	1.1	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.25	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	7.7	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 precision (±)	1.6	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-005  
**Client Sample ID:** EPA-13

**Report Date:** 12/03/16  
**Collection Date:** 10/10/16 13:25  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	0.2	pCi/L				E908.0	11/09/16 10:02 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	11/09/16 10:02 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	11/09/16 10:02 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	7100	mg/L				A1030 E	11/03/16 11:20 / sec
A/C Balance	-1.88	%				A1030 E	11/03/16 11:20 / sec
Anions	115	meq/L				A1030 E	11/03/16 11:20 / sec
Cations	111	meq/L				A1030 E	11/03/16 11:20 / sec
TDS Ratio	1.02	unitless				A1030 E	11/03/16 11:20 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/16 18:51 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/16 18:51 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/16 18:51 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/16 18:51 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	100	%REC		71-139		E624	10/19/16 18:51 / eli-b
Surr: p-Bromofluorobenzene	107	%REC		80-127		E624	10/19/16 18:51 / eli-b
Surr: Toluene-d8	109	%REC		80-123		E624	10/19/16 18:51 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		EPA-13	EPA-13	EPA-13	EPA-13
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-005	C16070706-005	C16040481-004	C16010374-006
Bicarbonate as HCO <sub>3</sub>	mg/L	58	50	49	63
Calcium	mg/L	438	454	508	471
Chloride	mg/L	44	43	42	48
Magnesium	mg/L	981	976	1010	862
Nitrogen, Ammonia as N	mg/L	ND(0.05)	0.06	0.09	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	0.1	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	14	14	14	14
Sodium	mg/L	177	178	175	163
Sulfate	mg/L	5380	5420	5010	5090
pH	s.u.	6.22	6.19	6.30	6.08
Solids, Total Dissolved TDS @ 180 C	mg/L	7220	7450	7530	7080
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.1	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	0.001	0.001
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.11	0.07	0.09	0.10
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	6.90	6.30	6.65	6.14
Molybdenum	mg/L	0.2	0.2	0.2	0.2
Nickel	mg/L	0.27	0.23	0.24	0.29
Uranium	mg/L	0.0102	0.0074	0.0075	0.0082
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.001	0.006	0.001	0.014
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	11.4	14.7	28.8	27.0
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.8	3.6	6.2	5.9
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.2
Lead 210	pCi/L	0.6	0.4	0.8	0.1
Lead 210 precision (±)	pCi/L	0.6	0.8	0.9	0.7
Lead 210 MDC	pCi/L	1	1.4	1.4	1.2
Radium 226	pCi/L	5.2	4.8	5.8	5.9
Radium 226 precision (±)	pCi/L	1.1	0.98	1.2	1.2
Radium 226 MDC	pCi/L	0.25	0.20	0.18	0.15
Radium 228	pCi/L	7.7	7.2	7.4	7.2
Radium 228 precision (±)	pCi/L	1.6	1.8	1.5	1.5
Radium 228 MDC	pCi/L	1.5	1.9	0.96	0.85
Thorium 230	pCi/L	0.2	0.4	0.2	0.6
Thorium 230 precision (±)	pCi/L	0.1	0.3	0.3	0.4
Thorium 230 MDC	pCi/L	0.2	0.4	0.6	0.4
A/C Balance	%	-1.88	-1.75	4.56	-3.09
Anions	meq/L	115	115	106	108
Cations	meq/L	111	111	117	102
Solids, Total Dissolved - Calculated	mg/L	7100	7100	6800	6700
TDS Ratio	unitless	1.02	1.04	1.10	1.06
Trihalomethanes, Total	ug/L	ND(0.50)	0.70	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-009  
**Client Sample ID:** 717

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/19/16 10:50  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	1710	mg/L		5		A2310 B	07/27/16 15:11 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/25/16 21:12 / wc
Calcium	469	mg/L		1		E200.7	07/26/16 18:30 / sf
Chloride	64	mg/L	D	2		E300.0	07/28/16 11:50 / wc
Magnesium	496	mg/L		1		E200.7	07/26/16 18:30 / sf
Nitrogen, Ammonia as N	42	mg/L	D	2		A4500-NH <sub>3</sub> G	07/26/16 12:55 / ljl
Nitrogen, Nitrate+Nitrite as N	20	mg/L	D	2.5		E353.2	07/27/16 13:01 / ljl
Potassium	3	mg/L		1		E200.7	07/26/16 18:30 / sf
Sodium	171	mg/L		1		E200.7	07/26/16 18:30 / sf
Sulfate	5260	mg/L	D	8		E300.0	07/30/16 07:38 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	3.05	s.u.	H	0.01		A4500-H B	07/22/16 17:12 / ljl
Solids, Total Dissolved TDS @ 180 C	7350	mg/L	D	100		A2540 C	07/25/16 14:39 / wc
<b>METALS, TOTAL</b>							
Aluminum	216	mg/L		0.1		E200.7	08/06/16 03:07 / sf
Beryllium	0.129	mg/L		0.001		E200.7	08/06/16 03:07 / sf
Cadmium	0.010	mg/L		0.005		E200.7	08/06/16 03:07 / sf
Cobalt	0.87	mg/L		0.01		E200.7	08/06/16 03:07 / sf
Lead	0.031	mg/L		0.001		E200.8	08/08/16 22:50 / smm
Manganese	16.7	mg/L		0.01		E200.7	08/06/16 03:07 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/06/16 03:07 / sf
Nickel	0.89	mg/L		0.05		E200.7	08/06/16 03:07 / sf
Uranium	0.355	mg/L		0.0003		E200.8	08/08/16 22:50 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 03:07 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/03/16 03:15 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 11:06 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	164	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U Precision (±)	31.5	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U MDC	1.4	pCi/L				E900.1	08/09/16 21:27 / trs
Lead 210	1.8	pCi/L				E909.0	09/12/16 21:52 / eli-cs
Lead 210 precision (±)	1.0	pCi/L				E909.0	09/12/16 21:52 / eli-cs
Lead 210 MDC	1.3	pCi/L				E909.0	09/12/16 21:52 / eli-cs
Radium 226	9.2	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	1.8	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.21	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	3.4	pCi/L				RA-05	08/16/16 13:38 / plj

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-009  
**Client Sample ID:** 717

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/19/16 10:50  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/16/16 13:38 / plj
Radium 228 MDC	2.0	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	17.2	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 precision (±)	3.3	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 MDC	1.1	pCi/L				E908.0	08/18/16 08:53 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6700	mg/L				A1030 E	08/02/16 14:16 / smm
A/C Balance	-1.94	%				A1030 E	08/02/16 14:16 / smm
Anions	113	meq/L				A1030 E	08/02/16 14:16 / smm
Cations	109	meq/L				A1030 E	08/02/16 14:16 / smm
TDS Ratio	1.10	unitless				A1030 E	08/02/16 14:16 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/27/16 06:02 / dm
Bromoform	ND	ug/L		0.50		E624	07/27/16 06:02 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/27/16 06:02 / dm
Chloroform	3.19	ug/L		0.50		E624	07/27/16 06:02 / dm
Trihalomethanes, Total	3.2	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	117	%REC		64.4-131		E624	07/27/16 06:02 / dm
Surr: p-Bromofluorobenzene	152	%REC	S	67.1-133		E624	07/27/16 06:02 / dm
Surr: Toluene-d8	116	%REC		79.7-125		E624	07/27/16 06:02 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-009  
**Client Sample ID:** 717

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 10:50  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	1720	mg/L	H	5		A2310 B	10/26/16 13:17 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/18/16 01:42 / wc
Calcium	466	mg/L		1		E200.7	10/28/16 16:22 / sf
Chloride	62	mg/L	D	2		E300.0	11/02/16 03:31 / ljl
Magnesium	497	mg/L		1		E200.7	10/28/16 16:22 / sf
Nitrogen, Ammonia as N	40	mg/L	D	2		A4500-NH <sub>3</sub> G	11/02/16 18:16 / ljl
Nitrogen, Nitrate+Nitrite as N	20	mg/L	D	2.5		E353.2	11/04/16 18:37 / ljl
Potassium	3	mg/L		1		E200.7	10/28/16 16:22 / sf
Sodium	170	mg/L		1		E200.7	10/28/16 16:22 / sf
Sulfate	5250	mg/L	D	8		E300.0	11/02/16 03:31 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	2.98	s.u.	H	0.01		A4500-H B	10/17/16 10:07 / bah
Solids, Total Dissolved TDS @ 180 C	7120	mg/L	H	100		A2540 C	10/21/16 12:34 / bah
<b>METALS, TOTAL</b>							
Aluminum	219	mg/L		0.1		E200.7	11/01/16 23:16 / sf
Beryllium	0.133	mg/L		0.001		E200.7	11/01/16 23:16 / sf
Cadmium	0.012	mg/L		0.005		E200.7	11/01/16 23:16 / sf
Cobalt	0.91	mg/L		0.01		E200.7	11/01/16 23:16 / sf
Lead	0.031	mg/L		0.001		E200.8	10/28/16 20:23 / smm
Manganese	16.9	mg/L		0.01		E200.7	11/01/16 23:16 / sf
Molybdenum	ND	mg/L		0.1		E200.7	11/01/16 23:16 / sf
Nickel	0.92	mg/L		0.05		E200.8	10/28/16 20:23 / smm
Uranium	0.306	mg/L		0.0003		E200.8	10/28/16 20:23 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 20:23 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/31/16 23:27 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:05 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	156	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U Precision (±)	30.1	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 12:46 / cng
Lead 210	3.2	pCi/L				E909.0	11/05/16 21:40 / plj
Lead 210 precision (±)	1.2	pCi/L				E909.0	11/05/16 21:40 / plj
Lead 210 MDC	1.1	pCi/L				E909.0	11/05/16 21:40 / plj
Radium 226	15	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	3.0	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.27	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	6.6	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100488-009  
Client Sample ID: 717

Report Date: 12/03/16  
Collection Date: 10/11/16 10:50  
Date Received: 10/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.5	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 MDC	1.6	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	23.7	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 precision (±)	4.5	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 MDC	2.8	pCi/L				E908.0	11/15/16 09:45 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6700	mg/L				A1030 E	11/03/16 11:21 / sec
A/C Balance	-1.87	%				A1030 E	11/03/16 11:21 / sec
Anions	113	meq/L				A1030 E	11/03/16 11:21 / sec
Cations	109	meq/L				A1030 E	11/03/16 11:21 / sec
TDS Ratio	1.07	unitless				A1030 E	11/03/16 11:21 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/16 23:46 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/16 23:46 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/16 23:46 / eli-b
Chloroform	2.4	ug/L		0.50		E624	10/19/16 23:46 / eli-b
Trihalomethanes, Total	2.4	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	10/19/16 23:46 / eli-b
Surr: p-Bromofluorobenzene	120	%REC		80-127		E624	10/19/16 23:46 / eli-b
Surr: Toluene-d8	107	%REC		80-123		E624	10/19/16 23:46 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		717	717	717	717
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-009	C16070706-009	C16040481-007	C16010374-004
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	466	469	470	462
Chloride	mg/L	62	64	61	69
Magnesium	mg/L	497	496	503	436
Nitrogen, Ammonia as N	mg/L	40	42	43	47
Nitrogen, Nitrate+Nitrite as N	mg/L	20	20	20	19
Potassium	mg/L	3	3	4	8
Sodium	mg/L	170	171	172	150
Sulfate	mg/L	5250	5260	4920	4910
pH	s.u.	2.98	3.05	3.07	3.17
Solids, Total Dissolved TDS @ 180 C	mg/L	7120	7350	7130	6810
Aluminum	mg/L	219	216	216	203
Beryllium	mg/L	0.133	0.129	0.141	0.137
Cadmium	mg/L	0.012	0.010	0.013	0.015
Cobalt	mg/L	0.91	0.87	0.90	0.89
Lead	mg/L	0.031	0.031	0.042	0.052
Manganese	mg/L	16.9	16.7	18.1	16.4
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.92	0.89	0.94	0.97
Uranium	mg/L	0.306	0.355	0.277	0.229
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	156	164	513	459
Gross Alpha minus Rn & U Precision (±)	pCi/L	30.1	31.5	97.4	87.4
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.4	1.1	1.2
Lead 210	pCi/L	3.2	1.8	4.9	4.0
Lead 210 precision (±)	pCi/L	1.2	1.0	1.8	1.2
Lead 210 MDC	pCi/L	1.1	1.3	1.4	1.6
Radium 226	pCi/L	15	9.2	22	17
Radium 226 precision (±)	pCi/L	3.0	1.8	4.3	3.3
Radium 226 MDC	pCi/L	0.27	0.21	0.19	0.15
Radium 228	pCi/L	6.6	3.4	5.3	5.7
Radium 228 precision (±)	pCi/L	1.5	1.3	1.3	1.2
Radium 228 MDC	pCi/L	1.6	2.0	1.0	0.87
Thorium 230	pCi/L	23.7	17.2	16.9	22.9
Thorium 230 precision (±)	pCi/L	4.5	3.3	3.2	4.4
Thorium 230 MDC	pCi/L	2.8	1.1	1.9	5.8
A/C Balance	%	-1.87	-1.94	-0.31	-3.34
Anions	meq/L	113	113	106	106
Cations	meq/L	109	109	105	99.0
Solids, Total Dissolved - Calculated	mg/L	6700	6700	6400	6200
TDS Ratio	unitless	1.07	1.10	1.12	1.09
Trihalomethanes, Total	ug/L	2.4	3.2	3.72	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 01/24/17

Report Date: 09/28/16

Collection Date: 07/19/16 08:38

Date Received: 07/22/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-008  
Client Sample ID: 719

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	6	mg/L		5		A2320 B	07/25/16 21:09 / wc
Calcium	474	mg/L		1		E200.7	07/26/16 18:26 / sf
Chloride	32	mg/L	D	2		E300.0	07/28/16 10:55 / wc
Magnesium	723	mg/L		1		E200.7	07/26/16 18:26 / sf
Nitrogen, Ammonia as N	0.52	mg/L		0.05		A4500-NH <sub>3</sub> G	07/26/16 12:52 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/27/16 12:59 / ljl
Potassium	13	mg/L		1		E200.7	07/26/16 18:26 / sf
Sodium	145	mg/L		1		E200.7	07/26/16 18:26 / sf
Sulfate	4620	mg/L	D	8		E300.0	07/30/16 07:21 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	5.72	s.u.	H	0.01		A4500-H B	07/22/16 17:10 / ljl
Solids, Total Dissolved TDS @ 180 C	6170	mg/L	D	40		A2540 C	07/25/16 14:38 / wc
<b>METALS, TOTAL</b>							
Aluminum	0.1	mg/L		0.1		E200.7	08/06/16 03:03 / sf
Beryllium	ND	mg/L		0.001		E200.7	08/06/16 03:03 / sf
Cadmium	ND	mg/L		0.005		E200.7	08/06/16 03:03 / sf
Cobalt	0.24	mg/L		0.01		E200.7	08/06/16 03:03 / sf
Lead	ND	mg/L		0.001		E200.8	08/08/16 22:37 / smm
Manganese	5.47	mg/L		0.01		E200.7	08/06/16 03:03 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/06/16 03:03 / sf
Nickel	0.32	mg/L		0.05		E200.7	08/06/16 03:03 / sf
Uranium	0.0050	mg/L		0.0003		E200.8	08/08/16 22:37 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 03:03 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/03/16 02:39 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 11:05 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	6.6	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U Precision (±)	1.9	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U MDC	1.4	pCi/L				E900.1	08/09/16 21:27 / trs
Lead 210	0.2	pCi/L	U			E909.0	09/12/16 20:09 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/12/16 20:09 / eli-cs
Lead 210 MDC	1.3	pCi/L				E909.0	09/12/16 20:09 / eli-cs
Radium 226	3.6	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	0.76	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.19	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	9.8	pCi/L				RA-05	08/16/16 13:38 / plj
Radium 228 precision (±)	2.2	pCi/L				RA-05	08/16/16 13:38 / plj

**Report** RL - Analyte reporting limit.

**Definitions:** QCL - Quality control limit.

MDC - Minimum detectable concentration

H - Analysis performed past recommended holding time:

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

D - RL increased due to sample matrix.

U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-008  
Client Sample ID: 719

Revised Date: 01/24/17  
Report Date: 09/28/16  
Collection Date: 07/19/16 08:38  
Date Received: 07/22/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.8	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	0.8	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 precision (±)	0.4	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 MDC	0.3	pCi/L				E908.0	08/18/16 08:53 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6000	mg/L				A1030 E	08/02/16 14:16 / smm
A/C Balance	-3.99	%				A1030 E	08/02/16 14:16 / smm
Anions	97.3	meq/L				A1030 E	08/02/16 14:16 / smm
Cations	89.8	meq/L				A1030 E	08/02/16 14:16 / smm
TDS Ratio	1.02	unitless				A1030 E	08/02/16 14:16 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/27/16 05:27 / dm
Bromoform	ND	ug/L		0.50		E624	07/27/16 05:27 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/27/16 05:27 / dm
Chloroform	ND	ug/L		0.50		E624	07/27/16 05:27 / dm
Trihalomethanes, Total	ND	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	112	%REC		64.4-131		E624	07/27/16 05:27 / dm
Surr: p-Bromofluorobenzene	144	%REC	S	67.1-133		E624	07/27/16 05:27 / dm
Surr: Toluene-d8	117	%REC		79.7-125		E624	07/27/16 05:27 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-008  
**Client Sample ID:** 719

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 08:50  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	19	mg/L		5		A2320 B	10/18/16 01:39 / wc
Calcium	478	mg/L		1		E200.7	10/28/16 16:10 / sf
Chloride	32	mg/L	D	2		E300.0	11/02/16 03:14 / ljl
Magnesium	734	mg/L		1		E200.7	10/28/16 16:10 / sf
Nitrogen, Ammonia as N	0.56	mg/L		0.05		A4500-NH <sub>3</sub> G	11/02/16 18:15 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:36 / ljl
Potassium	13	mg/L		1		E200.7	10/28/16 16:10 / sf
Sodium	146	mg/L		1		E200.7	10/28/16 16:10 / sf
Sulfate	4330	mg/L	D	8		E300.0	11/02/16 03:14 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	5.91	s.u.	H	0.01		A4500-H B	10/17/16 10:04 / bah
Solids, Total Dissolved TDS @ 180 C	6080	mg/L	H	100		A2540 C	10/21/16 12:34 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.3	mg/L		0.1		E200.7	11/01/16 23:12 / sf
Beryllium	ND	mg/L		0.001		E200.7	11/01/16 23:12 / sf
Cadmium	ND	mg/L		0.005		E200.7	11/01/16 23:12 / sf
Cobalt	0.23	mg/L		0.01		E200.7	11/01/16 23:12 / sf
Lead	ND	mg/L		0.001		E200.8	10/28/16 20:17 / smm
Manganese	5.53	mg/L		0.01		E200.7	11/01/16 23:12 / sf
Molybdenum	ND	mg/L		0.1		E200.7	11/01/16 23:12 / sf
Nickel	0.30	mg/L		0.05		E200.8	10/28/16 20:17 / smm
Uranium	0.0032	mg/L		0.0003		E200.8	10/28/16 20:17 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 20:17 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/31/16 23:15 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:04 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	7.1	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U Precision (±)	2.4	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U MDC	1.9	pCi/L				E900.1	10/27/16 12:46 / cng
Lead 210	0.5	pCi/L	U			E909.0	11/05/16 18:37 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/05/16 18:37 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/05/16 18:37 / plj
Radium 226	4.4	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	0.94	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.25	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	15	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 precision (±)	3.0	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-008  
**Client Sample ID:** 719

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 08:50  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.5	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	0.5	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 precision (±)	0.3	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	11/15/16 09:45 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	5800	mg/L				A1030 E	11/03/16 11:21 / sec
A/C Balance	-0.23	%				A1030 E	11/03/16 11:21 / sec
Anions	91.4	meq/L				A1030 E	11/03/16 11:21 / sec
Cations	91.0	meq/L				A1030 E	11/03/16 11:21 / sec
TDS Ratio	1.06	unitless				A1030 E	11/03/16 11:21 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/19/16 23:19 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/19/16 23:19 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/19/16 23:19 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/19/16 23:19 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	108	%REC		71-139		E624	10/19/16 23:19 / eli-b
Surr: p-Bromofluorobenzene	110	%REC		80-127		E624	10/19/16 23:19 / eli-b
Surr: Toluene-d8	101	%REC		80-123		E624	10/19/16 23:19 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		719	719	719	719
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/12/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-008	C16070706-008	C16040481-009	C16010374-009
Bicarbonate as HCO <sub>3</sub>	mg/L	19	6	ND(5)	6
Calcium	mg/L	478	474	483	482
Chloride	mg/L	32	32	30	34
Magnesium	mg/L	734	723	737	727
Nitrogen, Ammonia as N	mg/L	0.56	0.52	0.28	0.47
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	0.2	ND(0.1)
Potassium	mg/L	13	13	13	17
Sodium	mg/L	146	145	149	151
Sulfate	mg/L	4330	4620	4220	4250
pH	s.u.	5.91	5.72	5.37	5.58
Solids, Total Dissolved TDS @ 180 C	mg/L	6080	6170	6150	6050
Aluminum	mg/L	0.3	0.1	0.8	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.23	0.24	0.25	0.27
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	5.53	5.47	5.91	5.50
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.30	0.32	0.35	0.35
Uranium	mg/L	0.0032	0.0050	0.0183	0.0117
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	7.1	6.6	27.3	23.8
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.4	1.9	5.9	5.3
Gross Alpha minus Rn & U MDC	pCi/L	1.9	1.4	1.1	1.1
Lead 210	pCi/L	0.5	0.2	0.3	-0.3
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.7
Lead 210 MDC	pCi/L	1	1.3	1.3	1.2
Radium 226	pCi/L	4.4	3.6	5.3	4.4
Radium 226 precision (±)	pCi/L	0.94	0.76	1.1	0.91
Radium 226 MDC	pCi/L	0.25	0.19	0.15	0.14
Radium 228	pCi/L	15	9.8	4.3	7.6
Radium 228 precision (±)	pCi/L	3.0	2.2	1.2	1.5
Radium 228 MDC	pCi/L	1.5	1.8	0.95	0.79
Thorium 230	pCi/L	0.5	0.8	0.6	0.07
Thorium 230 precision (±)	pCi/L	0.3	0.4	0.3	0.09
Thorium 230 MDC	pCi/L	0.2	0.3	0.3	0.2
A/C Balance	%	-0.23	-3.99	1.55	0.79
Anions	meq/L	91.4	97.3	88.8	89.5
Cations	meq/L	91.0	89.8	91.6	90.9
Solids, Total Dissolved - Calculated	mg/L	5800	6000	5600	5700
TDS Ratio	unitless	1.06	1.02	1.09	1.07
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

**SEMI-ANNUAL GROUND WATER MONITORING REPORT**  
**SUPPLEMENTAL QUARTERLY/ MONTHLY SAMPLING**  
**JULY TO DECEMBER OF 2016**

**ZONE-3 & MILL**

NBL-2  
RW-A  
NW-1  
NW-2  
NW-3  
NW-4  
NW-5  
MW-7  
RW-11 (OCTOBER ONLY)  
MILL DOMESTIC (OCTOBER ONLY)

**LEVELS ONLY**

PB-2  
PB-3  
PB-4  
MW-6  
IW-A  
MW-2  
MW-3  
703  
709  
715  
716  
718  
RW-16  
RW-17  
Z3M-1  
Z3M-2

NOTE: WATER LEVEL ONLY IS IN FIELD DATA SHEET



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-3  
**Lab ID:** C16070724-001  
**Client Sample ID:** NBL-2

**Report Date:** 09/26/16  
**Collection Date:** 07/19/16 12:14  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	363	mg/L		5		A2320 B	07/25/16 23:12 / wc
Chloride	39	mg/L		1		E300.0	07/28/16 18:18 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.86	s.u.	H	0.01		A4500-H B	07/22/16 18:28 / ljl
Solids, Total Dissolved TDS @ 180 C	3450	mg/L	D	40		A2540 C	07/25/16 14:42 / wc

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-011  
**Client Sample ID:** NBL-2

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 12:15  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	332	mg/L		5		A2320 B	10/18/16 01:56 / wc
Calcium	591	mg/L		1		E200.7	10/28/16 16:30 / sf
Chloride	41	mg/L		1		E300.0	11/02/16 04:06 / ljl
Magnesium	181	mg/L		1		E200.7	10/28/16 16:30 / sf
Nitrogen, Ammonia as N	0.06	mg/L		0.05		A4500-NH <sub>3</sub> G	11/04/16 12:06 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:40 / ljl
Potassium	7	mg/L		1		E200.7	10/28/16 16:30 / sf
Sodium	143	mg/L		1		E200.7	10/28/16 16:30 / sf
Sulfate	2210	mg/L	D	4		E300.0	11/02/16 04:06 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.66	s.u.	H	0.01		A4500-H B	10/17/16 10:13 / bah
Solids, Total Dissolved TDS @ 180 C	3420	mg/L		40		A2540 C	10/18/16 08:49 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.1	mg/L		0.1		E200.7	11/01/16 23:25 / sf
Beryllium	ND	mg/L		0.001		E200.7	11/01/16 23:25 / sf
Cadmium	ND	mg/L		0.005		E200.7	11/01/16 23:25 / sf
Cobalt	0.02	mg/L		0.01		E200.7	11/01/16 23:25 / sf
Lead	ND	mg/L		0.001		E200.8	10/28/16 20:36 / smm
Manganese	2.14	mg/L		0.01		E200.7	11/01/16 23:25 / sf
Molybdenum	ND	mg/L		0.1		E200.7	11/01/16 23:25 / sf
Nickel	ND	mg/L		0.05		E200.7	11/01/16 23:25 / sf
Uranium	0.129	mg/L		0.0003		E200.8	10/28/16 20:36 / smm
Vanadium	ND	mg/L		0.1		E200.7	11/01/16 23:25 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/16 00:15 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:09 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	9.0	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U Precision (±)	2.4	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 14:21 / cng
Lead 210	0.5	pCi/L	U			E909.0	11/06/16 01:23 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/06/16 01:23 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/06/16 01:23 / plj
Radium 226	4.6	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	0.94	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.17	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	15	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 precision (±)	2.9	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100488-011  
Client Sample ID: NBL-2

Report Date: 12/03/16  
Collection Date: 10/11/16 12:15  
Date Received: 10/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	0.98	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	0.2	pCi/L	U			E908.0	11/16/16 09:40 / cng
Thorium 230 precision (±)	0.2	pCi/L				E908.0	11/16/16 09:40 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	11/16/16 09:40 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	3400	mg/L				A1030 E	11/03/16 11:22 / sec
A/C Balance	-1.72	%				A1030 E	11/03/16 11:22 / sec
Anions	52.6	meq/L				A1030 E	11/03/16 11:22 / sec
Cations	50.8	meq/L				A1030 E	11/03/16 11:22 / sec
TDS Ratio	1.02	unitless				A1030 E	11/03/16 11:22 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/16 00:40 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/16 00:40 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/16 00:40 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/20/16 00:40 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	10/20/16 00:40 / eli-b
Surr: p-Bromofluorobenzene	118	%REC		80-127		E624	10/20/16 00:40 / eli-b
Surr: Toluene-d8	93.0	%REC		80-123		E624	10/20/16 00:40 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		NBL-2	NBL-2	NBL-2	NBL-2
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/12/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100488-011	C16070724-001	C16040479-007	C16010383-001
Bicarbonate as HCO <sub>3</sub>	mg/L	332	363	350	375
Calcium	mg/L	591			
Chloride	mg/L	41	39	36	43
Magnesium	mg/L	181			
Nitrogen, Ammonia as N	mg/L	0.06			
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)			
Potassium	mg/L	7			
Sodium	mg/L	143			
Sulfate	mg/L	2210			
pH	s.u.	6.66	6.86	6.85	6.53
Solids, Total Dissolved TDS @ 180 C	mg/L	3420	3450	3460	3430
Aluminum	mg/L	0.1			
Beryllium	mg/L	ND(0.001)			
Cadmium	mg/L	ND(0.005)			
Cobalt	mg/L	0.02			
Lead	mg/L	ND(0.001)			
Manganese	mg/L	2.14			
Molybdenum	mg/L	ND(0.1)			
Nickel	mg/L	ND(0.05)			
Uranium	mg/L	0.129			
Vanadium	mg/L	ND(0.1)			
Arsenic-III	mg/L	ND(0.001)			
Selenium-IV	mg/L	ND(0.001)			
Gross Alpha minus Rn & U	pCi/L	9.0			
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.4			
Gross Alpha minus Rn & U MDC	pCi/L	1.3			
Lead 210	pCi/L	0.5			
Lead 210 precision (±)	pCi/L	0.6			
Lead 210 MDC	pCi/L	1			
Radium 226	pCi/L	4.6			
Radium 226 precision (±)	pCi/L	0.94			
Radium 226 MDC	pCi/L	0.17			
Radium 228	pCi/L	15			
Radium 228 precision (±)	pCi/L	2.9			
Radium 228 MDC	pCi/L	0.98			
Thorium 230	pCi/L	0.2			
Thorium 230 precision (±)	pCi/L	0.2			
Thorium 230 MDC	pCi/L	0.2			
A/C Balance	%	-1.72			
Anions	meq/L	52.6			
Cations	meq/L	50.8			
Solids, Total Dissolved - Calculated	mg/L	3400			
TDS Ratio	unitless	1.02			
Trihalomethanes, Total	ug/L	ND(0.50)			

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone-3  
Lab ID: C16070724-007  
Client Sample ID: RW-A

Report Date: 09/26/16  
Collection Date: 07/19/16 13:10  
Date Received: 07/22/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	92	mg/L		5		A2320 B	07/26/16 00:33 / wc
Chloride	31	mg/L	D	2		E300.0	07/28/16 21:41 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.12	s.u.	H	0.01		A4500-H B	07/22/16 18:49 / ljl
Solids, Total Dissolved TDS @ 180 C	5540	mg/L	D	40		A2540 C	07/25/16 14:44 / wc

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-014  
**Client Sample ID:** RW-A

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 12:20  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	72	mg/L		5		A2320 B	10/18/16 02:18 / wc
Calcium	522	mg/L		1		E200.7	10/28/16 16:54 / sf
Chloride	29	mg/L	D	2		E300.0	11/02/16 06:08 / ljl
Magnesium	496	mg/L		1		E200.7	10/28/16 16:54 / sf
Nitrogen, Ammonia as N	0.8	mg/L	D	0.2		A4500-NH <sub>3</sub> G	11/04/16 12:12 / ljl
Nitrogen, Nitrate+Nitrite as N	0.4	mg/L		0.1		E353.2	11/04/16 18:46 / ljl
Potassium	9	mg/L		1		E200.7	10/28/16 16:54 / sf
Sodium	135	mg/L		1		E200.7	10/28/16 16:54 / sf
Sulfate	3630	mg/L	D	8		E300.0	11/02/16 06:08 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	5.96	s.u.	H	0.01		A4500-H B	10/17/16 10:25 / bah
Solids, Total Dissolved TDS @ 180 C	5240	mg/L		40		A2540 C	10/18/16 08:50 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.2	mg/L		0.1		E200.7	11/03/16 00:52 / sf
Beryllium	ND	mg/L		0.001		E200.7	11/03/16 00:52 / sf
Cadmium	ND	mg/L		0.005		E200.7	11/03/16 00:52 / sf
Cobalt	0.47	mg/L		0.01		E200.8	11/17/16 20:51 / smm
Lead	ND	mg/L		0.001		E200.8	11/17/16 20:51 / smm
Manganese	6.30	mg/L		0.01		E200.7	11/03/16 00:52 / sf
Molybdenum	ND	mg/L		0.1		E200.7	11/03/16 00:52 / sf
Nickel	0.44	mg/L		0.05		E200.7	11/03/16 00:52 / sf
Uranium	0.0139	mg/L		0.0003		E200.8	11/17/16 20:51 / smm
Vanadium	ND	mg/L		0.1		E200.7	11/03/16 00:52 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/16 01:15 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:16 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	26.0	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U Precision (±)	5.6	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 14:21 / cng
Lead 210	0.5	pCi/L	U			E909.0	11/06/16 10:12 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/06/16 10:12 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/06/16 10:12 / plj
Radium 226	12	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 226 precision (±)	2.4	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 226 MDC	0.19	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 228	16	pCi/L				RA-05	11/04/16 10:32 / plj
Radium 228 precision (±)	3.0	pCi/L				RA-05	11/04/16 10:32 / plj

**Report** RL - Analyte reporting limit.

**Definitions:** QCL - Quality control limit.

MDC - Minimum detectable concentration

H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

D - RL increased due to sample matrix.

U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-014  
**Client Sample ID:** RW-A

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 12:20  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	11/04/16 10:32 / plj
Thorium 230	-0.004	pCi/L	U			E908.0	11/15/16 15:13 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	11/15/16 15:13 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	11/15/16 15:13 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4900	mg/L				A1030 E	11/03/16 11:22 / sec
A/C Balance	-3.09	%				A1030 E	11/03/16 11:22 / sec
Anions	77.6	meq/L				A1030 E	11/03/16 11:22 / sec
Cations	73.0	meq/L				A1030 E	11/03/16 11:22 / sec
TDS Ratio	1.07	unitless				A1030 E	11/03/16 11:22 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/16 02:00 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/16 02:00 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/16 02:00 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/20/16 02:00 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	103	%REC		71-139		E624	10/20/16 02:00 / eli-b
Surr: p-Bromofluorobenzene	116	%REC		80-127		E624	10/20/16 02:00 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	10/20/16 02:00 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		RW-A	RW-A	RW-A	RW-A
Collection Date:		10/11/2016	7/19/2016	4/13/2016	1/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100488-014	C16070724-007	C16040479-006	C16010383-007
Bicarbonate as HCO <sub>3</sub>	mg/L	72	92	98	131
Calcium	mg/L	522			
Chloride	mg/L	29	31	28	33
Magnesium	mg/L	496			
Nitrogen, Ammonia as N	mg/L	0.8			
Nitrogen, Nitrate+Nitrite as N	mg/L	0.4			
Potassium	mg/L	9			
Sodium	mg/L	135			
Sulfate	mg/L	3630			
pH	s.u.	5.96	6.12	6.20	6.26
Solids, Total Dissolved TDS @ 180 C	mg/L	5240	5540	5420	5110
Aluminum	mg/L	0.2			
Beryllium	mg/L	ND(0.001)			
Cadmium	mg/L	ND(0.005)			
Cobalt	mg/L	0.47			
Lead	mg/L	ND(0.001)			
Manganese	mg/L	6.30			
Molybdenum	mg/L	ND(0.1)			
Nickel	mg/L	0.44			
Uranium	mg/L	0.0139			
Vanadium	mg/L	ND(0.1)			
Arsenic-III	mg/L	ND(0.001)			
Selenium-IV	mg/L	ND(0.001)			
Gross Alpha minus Rn & U	pCi/L	26.0			
Gross Alpha minus Rn & U Precision (±)	pCi/L	5.6			
Gross Alpha minus Rn & U MDC	pCi/L	1.3			
Lead 210	pCi/L	0.5			
Lead 210 precision (±)	pCi/L	0.6			
Lead 210 MDC	pCi/L	1			
Radium 226	pCi/L	12			
Radium 226 precision (±)	pCi/L	2.4			
Radium 226 MDC	pCi/L	0.19			
Radium 228	pCi/L	16			
Radium 228 precision (±)	pCi/L	3.0			
Radium 228 MDC	pCi/L	1.3			
Thorium 230	pCi/L	-0.004			
Thorium 230 precision (±)	pCi/L	0.07			
Thorium 230 MDC	pCi/L	0.1			
A/C Balance	%	-3.09			
Anions	meq/L	77.6			
Cations	meq/L	73.0			
Solids, Total Dissolved - Calculated	mg/L	4900			
TDS Ratio	unitless	1.07			
Trihalomethanes, Total	ug/L	ND(0.50)			

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone-3  
Lab ID: C16070724-002  
Client Sample ID: NW-1

Report Date: 09/26/16  
Collection Date: 07/19/16 11:07  
Date Received: 07/22/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	482	mg/L		5		A2320 B	07/25/16 23:20 / wc
Chloride	16	mg/L		1		E300.0	07/28/16 18:36 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	7.13	s.u.	H	0.01		A4500-H B	07/22/16 18:32 / ljl
Solids, Total Dissolved TDS @ 180 C	3740	mg/L	D	40		A2540 C	07/25/16 14:43 / wc

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100496-001  
**Client Sample ID:** NW-1

**Revised Date:** 02/07/17  
**Report Date:** 12/15/16  
**Collection Date:** 10/11/16 09:30  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	469	mg/L		5		A2320 B	10/21/16 20:39 / wc
Chloride	16	mg/L		1		E300.0	10/20/16 12:54 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	7.26	s.u.	H	0.01		A4500-H B	10/17/16 11:01 / bah
Solids, Total Dissolved TDS @ 180 C	3650	mg/L		40		A2540 C	10/18/16 08:53 / bah

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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UNC Mining and Milling ChurchRock Operations				
GroundWater Monitoring Summary: Zone 3 Monitor Wells				
Well ID:	NW-1		NW-1	
Collection Date:	10/11/2016		7/19/2016	
Receive Date:	10/14/2016		4/13/2016	
Report Date:	2/7/2017		1/13/2016	
Analyte	Units	C16100496-001	C16070724-002	C16040479-001
Bicarbonate as HCO <sub>3</sub>	mg/L	469	482	486
Chloride	mg/L	16	16	16
pH	s.u.	7.26	7.13	7.04
Solids, Total Dissolved TDS @ 180 C	mg/L	3650	3740	3870
				3640

NOTE: The data presented on this form is intended for summary only. Laboratory approved data is contained within the database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-3  
**Lab ID:** C16070724-006  
**Client Sample ID:** NW-2

**Report Date:** 09/26/16  
**Collection Date:** 07/19/16 12:42  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	144	mg/L		5		A2320 B	07/26/16 00:26 / wc
Chloride	31	mg/L	D	2		E300.0	07/28/16 20:45 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.21	s.u.	H	0.01		A4500-H B	07/22/16 18:46 / ljl
Solids, Total Dissolved TDS @ 180 C	5070	mg/L	D	40		A2540 C	07/25/16 14:44 / wc

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100496-003  
**Client Sample ID:** NW-2

**Revised Date:** 02/07/17  
**Report Date:** 12/15/16  
**Collection Date:** 10/11/16 10:40  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	122	mg/L		5		A2320 B	10/21/16 20:54 / wc
Chloride	32	mg/L	D	2		E300.0	10/20/16 13:29 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.17	s.u.	H	0.01		A4500-H B	10/17/16 11:07 / bah
Solids, Total Dissolved TDS @ 180 C	4960	mg/L		40		A2540 C	10/18/16 08:53 / bah

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.

UNC Mining and Milling ChurchRock Operations				
GroundWater Monitoring Summary: Zone 3 Monitor Wells				
Well ID:		NW-2	NW-2	NW-2
Collection Date:		10/11/016	7/19/2016	4/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016
Report Date:		2/7/2017	9/26/2016	6/9/2016
Analyte:	Units	C16100496-003	C16070724-006	C16040479-005
Bicarbonate as HCO <sub>3</sub>	mg/L	122	144	137
Chloride	mg/L	32	31	28
pH	s.u.	6.17	6.21	6.20
Solids, Total Dissolved TDS @ 180 C	mg/L	4960	5070	5020

NOTE: The data presented on this form is intended for summary only. Laboratory approved data is contained within the database reports.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-3  
**Lab ID:** C16070724-004  
**Client Sample ID:** NW-3

**Report Date:** 09/26/16  
**Collection Date:** 07/19/16 12:05  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	420	mg/L		5		A2320 B	07/26/16 00:04 / wc
Chloride	35	mg/L	D	2		E300.0	07/28/16 19:13 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.82	s.u.	H	0.01		A4500-H B	07/22/16 18:39 / ljl
Solids, Total Dissolved TDS @ 180 C	4620	mg/L	D	40		A2540 C	07/25/16 14:44 / wc

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100488-013  
Client Sample ID: NW-3

Report Date: 12/03/16  
Collection Date: 10/11/16 11:20  
Date Received: 10/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	402	mg/L		5		A2320 B	10/18/16 02:11 / wc
Calcium	601	mg/L		1		E200.7	10/28/16 16:50 / sf
Chloride	35	mg/L	D	2		E300.0	11/02/16 05:16 / ljl
Magnesium	351	mg/L		1		E200.7	10/28/16 16:50 / sf
Nitrogen, Ammonia as N <sup>-</sup>	0.51	mg/L		0.05		A4500-NH <sub>3</sub> G	11/04/16 12:08 / ljl
Nitrogen, Nitrate+Nitrite as N <sup>-</sup>	ND	mg/L		0.1		E353.2	11/04/16 18:42 / ljl
Potassium	9	mg/L		1		E200.7	10/28/16 16:50 / sf
Sodium	163	mg/L		1		E200.7	10/28/16 16:50 / sf
Sulfate	2920	mg/L	D	8		E300.0	11/02/16 05:16 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.76	s.u.	H	0.01		A4500-H <sup>+</sup> B	10/17/16 10:22 / bah
Solids, Total Dissolved TDS @ 180 C	4480	mg/L		40		A2540 C	10/18/16 08:50 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.1	mg/L		0.1		E200.7	11/03/16 20:06 / sf
Beryllium	ND	mg/L		0.001		E200.7	11/01/16 23:34 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/28/16 21:15 / smm
Cobalt	0.03	mg/L		0.01		E200.8	10/28/16 21:15 / smm
Lead	ND	mg/L		0.001		E200.8	10/28/16 21:15 / smm
Manganese	3.26	mg/L		0.01		E200.8	10/28/16 21:15 / smm
Molybdenum	0.5	mg/L		0.1		E200.8	10/28/16 21:15 / smm
Nickel	ND	mg/L		0.05		E200.8	10/28/16 21:15 / smm
Uranium	0.346	mg/L		0.0003		E200.8	10/28/16 21:15 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 21:15 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	0.005	mg/L		0.001		E1632AM	11/01/16 01:03 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:15 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	18.5	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U Precision (±)	4.1	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 14:21 / cng
Lead 210	1.6	pCi/L				E909.0	11/06/16 07:28 / plj
Lead 210 precision (±)	0.8	pCi/L				E909.0	11/06/16 07:28 / plj
Lead 210 MDC	1.0	pCi/L				E909.0	11/06/16 07:28 / plj
Radium 226	15	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 226 precision (±)	2.9	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 226 MDC	0.17	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 228	8.7	pCi/L				RA-05	11/04/16 10:32 / plj
Radium 228 precision (±)	1.8	pCi/L				RA-05	11/04/16 10:32 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-013  
**Client Sample ID:** NW-3

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 11:20  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	11/04/16 10:32 / plj
Thorium 230	0.01	pCi/L	U			E908.0	11/15/16 15:13 / cng
Thorium 230 precision (±)	0.05	pCi/L				E908.0	11/15/16 15:13 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	11/15/16 15:13 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4300	mg/L				A1030 E	11/03/16 11:22 / sec
A/C Balance	-1.66	%				A1030 E	11/03/16 11:22 / sec
Anions	68.4	meq/L				A1030 E	11/03/16 11:22 / sec
Cations	66.2	meq/L				A1030 E	11/03/16 11:22 / sec
TDS Ratio	1.04	unitless				A1030 E	11/03/16 11:22 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/16 01:33 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/16 01:33 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/16 01:33 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/20/16 01:33 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	106	%REC		71-139		E624	10/20/16 01:33 / eli-b
Surr: p-Bromofluorobenzene	109	%REC		80-127		E624	10/20/16 01:33 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	10/20/16 01:33 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations				
GroundWater Monitoring Summary: Zone 3 Monitor Wells				
Well ID:		NW-3	NW-3	NW-3
Collection Date:		10/11/2016	7/19/2016	4/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016
Analyte	Units	C16100488-013	C16070724-004	C16040479-003
Bicarbonate as HCO <sub>3</sub>	mg/L	402	420	412
Calcium	mg/L	601		
Chloride	mg/L	35	35	34
Magnesium	mg/L	351		
Nitrogen, Ammonia as N	mg/L	0.51		
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)		
Potassium	mg/L	9		
Sodium	mg/L	163		
Sulfate	mg/L	2920		
pH	s.u.	6.76	6.82	6.78
Solids, Total Dissolved TDS @ 180 C	mg/L	4480	4620	4710
Aluminum	mg/L	0.1		
Beryllium	mg/L	ND(0.001)		
Cadmium	mg/L	ND(0.005)		
Cobalt	mg/L	0.03		
Lead	mg/L	ND(0.001)		
Manganese	mg/L	3.26		
Molybdenum	mg/L	0.5		
Nickel	mg/L	ND(0.05)		
Uranium	mg/L	0.346		
Vanadium	mg/L	ND(0.1)		
Arsenic-III	mg/L	0.005		
Selenium-IV	mg/L	ND(0.001)		
Gross Alpha minus Rn & U	pCi/L	18.5		
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.1		
Gross Alpha minus Rn & U MDC	pCi/L	1.3		
Lead 210	pCi/L	1.6		
Lead 210 precision (±)	pCi/L	0.8		
Lead 210 MDC	pCi/L	1.0		
Radium 226	pCi/L	15		
Radium 226 precision (±)	pCi/L	2.9		
Radium 226 MDC	pCi/L	0.17		
Radium 228	pCi/L	8.7		
Radium 228 precision (±)	pCi/L	1.8		
Radium 228 MDC	pCi/L	1.2		
Thorium 230	pCi/L	0.01		
Thorium 230 precision (±)	pCi/L	0.05		
Thorium 230 MDC	pCi/L	0.1		
A/C Balance	%	-1.66		
Anions	meq/L	68.4		
Cations	meq/L	66.2		
Solids, Total Dissolved - Calculated	mg/L	4300		
TDS Ratio	unitless	1.04		
Trihalomethanes, Total	ug/L	ND(0.50)		

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-3  
**Lab ID:** C16070724-003  
**Client Sample ID:** NW-4

**Report Date:** 09/26/16  
**Collection Date:** 07/19/16 11:30  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	78	mg/L		5		A2320 B	07/25/16 23:48 / wc
Chloride	20	mg/L	D	2		E300.0	07/28/16 18:55 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.55	s.u.	H	0.01		A4500-H B	07/22/16 18:35 / ljl
Solids, Total Dissolved TDS @ 180 C	4480	mg/L	D	40		A2540 C	07/25/16 14:43 / wc

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 02/07/17

Report Date: 12/15/16

Collection Date: 10/11/16 10:15

Date Received: 10/14/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100496-002  
Client Sample ID: NW-4

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	74	mg/L		5		A2320 B	10/21/16 20:47 / wc
Chloride	21	mg/L	D	2		E300.0	10/20/16 13:11 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.75	s.u.	H	0.01		A4500-H B	10/17/16 11:04 / bah
Solids, Total Dissolved TDS @ 180 C	4380	mg/L		40		A2540 C	10/18/16 08:53 / bah

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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UNC Mining and Milling ChurchRock Operations				
GroundWater Monitoring Summary: Zone 3 Monitor Wells				
Well ID:		NW-4	NW-4	NW-4
Collection Date:		10/11/2016	7/19/2016	4/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016
Report Date:		2/7/2017	9/26/2016	6/9/2016
Analyte	Units	C16100496-002	C16070724-003	C16040479-002
Bicarbonate as HCO <sub>3</sub>	mg/L	74	78	84
Chloride	mg/L	21	20	19
pH	s.u.	6.75	6.55	6.71
Solids, Total Dissolved TDS @ 180 C	mg/L	4380	4480	4540
				4620

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone-3  
Lab ID: C16070724-005  
Client Sample ID: NW-5

Report Date: 09/26/16  
Collection Date: 07/19/16 12:29  
Date Received: 07/22/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	69	mg/L		5		A2320 B	07/26/16 00:18 / wc
Chloride	30	mg/L	D	2		E300.0	07/28/16 19:32 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	5.96	s.u.	H	0.01		A4500-H B	07/22/16 18:43 / ljl
Solids, Total Dissolved TDS @ 180 C	5430	mg/L	D	40		A2540 C	07/25/16 14:44 / wc

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100496-004  
Client Sample ID: NW-5

Revised Date: 02/07/17  
Report Date: 12/15/16  
Collection Date: 10/11/16 11:00  
Date Received: 10/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	101	mg/L		5		A2320 B	10/21/16 21:00 / wc
Chloride	31	mg/L	D	2		E300.0	10/20/16 13:46 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.09	s.u.	H	0.01		A4500-H B	10/17/16 11:10 / bah
Solids, Total Dissolved TDS @ 180 C	5340	mg/L		40		A2540 C	10/18/16 08:53 / bah

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.

UNC Mining and Milling ChurchRock Operations				
GroundWater Monitoring Summary: Zone 3 Monitor Wells				
Well ID:	NW-5	NW-5	NW-5	NW-5
Collection Date:	10/11/2016	7/19/2016	4/13/2016	1/13/2016
Receive Date:	10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:	2/7/2017	9/26/2016	6/9/2016	2/12/2016
Analyte	Units	C16100496-004	C16070724-005	C16040479-004
Bicarbonate as HCO <sub>3</sub>	mg/L	101	69	91
Chloride	mg/L	31	30	28
pH	s.u.	6.09	5.96	6.04
Solids, Total Dissolved TDS @ 180 C	mg/L	5340	5430	5490

NOTE: The data presented on this form is intended for summary only. Laboratory approved data is contained within the database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 01/24/17

Report Date: 09/28/16

Collection Date: 07/19/16 12:37

Date Received: 07/22/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-011  
Client Sample ID: MW-7

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	247	mg/L		5		A2320 B	07/25/16 21:23 / wc
Calcium	609	mg/L		1		E200.7	07/26/16 18:50 / sf
Chloride	37	mg/L	D	2		E300.0	07/28/16 13:04 / wc
Magnesium	318	mg/L		1		E200.7	07/26/16 18:50 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/26/16 12:58 / ljl
Nitrogen, Nitrate+Nitrite as N	0.3	mg/L		0.1		E353.2	07/27/16 13:03 / ljl
Potassium	9	mg/L		1		E200.7	07/26/16 18:50 / sf
Sodium	145	mg/L		1		E200.7	07/26/16 18:50 / sf
Sulfate	2840	mg/L	D	8		E300.0	07/30/16 08:13 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.92	s.u.	H	0.01		A4500-H B	07/22/16 17:19 / ljl
Solids, Total Dissolved TDS @ 180 C	4340	mg/L	D	40		A2540 C	07/25/16 14:39 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	08/06/16 03:36 / sf
Beryllium	ND	mg/L		0.001		E200.7	08/06/16 03:36 / sf
Cadmium	ND	mg/L		0.005		E200.7	08/06/16 03:36 / sf
Cobalt	0.06	mg/L		0.01		E200.7	08/06/16 03:36 / sf
Lead	ND	mg/L		0.001		E200.8	08/08/16 23:02 / smm
Manganese	3.19	mg/L		0.01		E200.7	08/06/16 03:36 / sf
Molybdenum	0.4	mg/L		0.1		E200.7	08/06/16 03:36 / sf
Nickel	0.08	mg/L		0.05		E200.7	08/06/16 03:36 / sf
Uranium	0.0592	mg/L		0.0003		E200.8	08/08/16 23:02 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 03:36 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	0.001	mg/L		0.001		E1632AM	08/03/16 03:39 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 11:10 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	11.3	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U Precision (±)	2.8	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U MDC	1.4	pCi/L				E900.1	08/09/16 21:27 / trs
Lead 210	0.2	pCi/L	U			E909.0	09/13/16 01:18 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/13/16 01:18 / eli-cs
Lead 210 MDC	1.3	pCi/L				E909.0	09/13/16 01:18 / eli-cs
Radium 226	8.4	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	1.6	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.18	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	15	pCi/L				RA-05	08/16/16 13:38 / plj
Radium 228 precision (±)	3.2	pCi/L				RA-05	08/16/16 13:38 / plj

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-011  
Client Sample ID: MW-7

Revised Date: 01/24/17  
Report Date: 09/28/16  
Collection Date: 07/19/16 12:37  
Date Received: 07/22/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.8	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	-0.008	pCi/L	U			E908.0	08/10/16 14:55 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	08/10/16 14:55 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/10/16 14:55 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4100	mg/L				A1030 E	08/02/16 14:17 / smm
A/C Balance	-0.86	%				A1030 E	08/02/16 14:17 / smm
Anions	64.2	meq/L				A1030 E	08/02/16 14:17 / smm
Cations	63.1	meq/L				A1030 E	08/02/16 14:17 / smm
TDS Ratio	1.06	unitless				A1030 E	08/02/16 14:17 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/27/16 07:12 / dm
Bromoform	ND	ug/L		0.50		E624	07/27/16 07:12 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/27/16 07:12 / dm
Chloroform	ND	ug/L		0.50		E624	07/27/16 07:12 / dm
Trihalomethanes, Total	ND	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	120	%REC		64.4-131		E624	07/27/16 07:12 / dm
Surr: p-Bromofluorobenzene	151	%REC	S	67.1-133		E624	07/27/16 07:12 / dm
Surr: Toluene-d8	118	%REC		79.7-125		E624	07/27/16 07:12 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100488-012  
Client Sample ID: MW-7

Report Date: 12/03/16  
Collection Date: 10/11/16 13:26  
Date Received: 10/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	234	mg/L		5		A2320 B	10/18/16 02:04 / wc
Calcium	589	mg/L		1		E200.7	10/28/16 16:46 / sf
Chloride	34	mg/L	D	2		E300.0	11/02/16 04:24 / ljl
Magnesium	334	mg/L		1		E200.7	10/28/16 16:46 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	11/04/16 12:07 / ljl
Nitrogen, Nitrate+Nitrite as N	0.5	mg/L		0.1		E353.2	11/04/16 18:41 / ljl
Potassium	9	mg/L		1		E200.7	10/28/16 16:46 / sf
Sodium	144	mg/L		1		E200.7	10/28/16 16:46 / sf
Sulfate	2870	mg/L	D	8		E300.0	11/02/16 04:24 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.86	s.u.	H	0.01		A4500-H B	10/17/16 10:19 / bah
Solids, Total Dissolved TDS @ 180 C	4310	mg/L		40		A2540 C	10/18/16 08:49 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	11/01/16 23:29 / sf
Beryllium	ND	mg/L		0.001		E200.7	11/01/16 23:29 / sf
Cadmium	ND	mg/L		0.005		E200.7	11/01/16 23:29 / sf
Cobalt	0.13	mg/L		0.01		E200.7	11/01/16 23:29 / sf
Lead	ND	mg/L		0.001		E200.8	11/16/16 04:02 / smm
Manganese	4.15	mg/L		0.01		E200.7	11/01/16 23:29 / sf
Molybdenum	0.3	mg/L		0.1		E200.7	11/01/16 23:29 / sf
Nickel	0.15	mg/L		0.05		E200.8	10/28/16 21:09 / smm
Uranium	0.0465	mg/L		0.0003		E200.8	11/16/16 04:02 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 21:09 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/16 00:51 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:13 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	18.7	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U Precision (±)	4.2	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 14:21 / cng
Lead 210	0.3	pCi/L	U			E909.0	11/06/16 04:26 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/06/16 04:26 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/06/16 04:26 / plj
Radium 226	9.3	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	1.8	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.17	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	12	pCi/L				RA-05	11/04/16 10:32 / plj
Radium 228 precision (±)	2.5	pCi/L				RA-05	11/04/16 10:32 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-012  
**Client Sample ID:** MW-7

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 13:26  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	11/04/16 10:32 / plj
Thorium 230	0.03	pCi/L	U		E908.0		11/08/16 14:17 / cng
Thorium 230 precision (±)	0.08	pCi/L			E908.0		11/08/16 14:17 / cng
Thorium 230 MDC	0.1	pCi/L			E908.0		11/08/16 14:17 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4100	mg/L				A1030 E	11/03/16 11:22 / sec
A/C Balance	-0.93	%				A1030 E	11/03/16 11:22 / sec
Anions	64.6	meq/L				A1030 E	11/03/16 11:22 / sec
Cations	63.4	meq/L				A1030 E	11/03/16 11:22 / sec
TDS Ratio	1.05	unitless				A1030 E	11/03/16 11:22 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50	E624		10/20/16 01:07 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/20/16 01:07 / eli-b
Chlorodibromomethane	ND	ug/L		0.50	E624		10/20/16 01:07 / eli-b
Chloroform	ND	ug/L		0.50	E624		10/20/16 01:07 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50	E624		11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	106	%REC		71-139	E624		10/20/16 01:07 / eli-b
Surr: p-Bromofluorobenzene	115	%REC		80-127	E624		10/20/16 01:07 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123	E624		10/20/16 01:07 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations				
GroundWater Monitoring Summary: Zone 3 Monitor Wells				
Well ID:	MW-7	MW-7	MW-7	MW-7
Collection Date:	10/11/2016	7/19/2016	4/12/2016	1/12/2016
Receive Date:	10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:	12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-012	C16070706-011	C16040481-010
Bicarbonate as HCO <sub>3</sub>	mg/L	234	247	241
Calcium	mg/L	589	609	629
Chloride	mg/L	34	37	34
Magnesium	mg/L	334	318	319
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	0.13
Nitrogen, Nitrate+Nitrite as N	mg/L	0.5	0.3	0.3
Potassium	mg/L	9	9	9
Sodium	mg/L	144	145	148
Sulfate	mg/L	2870	2840	2840
pH	s.u.	6.86	6.92	7.07
Solids, Total Dissolved TDS @ 180 C	mg/L	4310	4340	4390
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.1
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.13	0.06	0.10
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	4.15	3.19	4.67
Molybdenum	mg/L	0.3	0.4	0.4
Nickel	mg/L	0.15	0.08	0.12
Uranium	mg/L	0.0465	0.0592	0.0479
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	0.001
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	18.7	11.3	42.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.2	2.8	8.8
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.4	1.1
Lead 210	pCi/L	0.3	0.2	0.9
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8
Lead 210 MDC	pCi/L	1	1.3	1.3
Radium 226	pCi/L	9.3	8.4	8.9
Radium 226 precision (±)	pCi/L	1.8	1.6	1.7
Radium 226 MDC	pCi/L	0.17	0.18	0.13
Radium 228	pCi/L	12	15	17
Radium 228 precision (±)	pCi/L	2.5	3.2	3.6
Radium 228 MDC	pCi/L	1.2	1.8	1.8
Thorium 230	pCi/L	0.03	-0.008	0.05
Thorium 230 precision (±)	pCi/L	0.08	0.08	0.09
Thorium 230 MDC	pCi/L	0.1	0.2	0.2
A/C Balance	%	-0.93	-0.86	0.20
Anions	meq/L	64.6	64.2	64.1
Cations	meq/L	63.4	63.1	64.3
Solids, Total Dissolved - Calculated	mg/L	4100	4100	4100
TDS Ratio	unitless	1.05	1.06	1.07
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)

\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16100488-015  
Client Sample ID: RW-11

Report Date: 12/03/16  
Collection Date: 10/11/16 13:05  
Date Received: 10/14/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	130	mg/L		5		A2320 B	10/18/16 02:26 / wc
Calcium	522	mg/L		1		E200.7	10/28/16 16:58 / sf
Chloride	32	mg/L	D	2		E300.0	11/02/16 06:26 / ljl
Magnesium	459	mg/L		1		E200.7	10/28/16 16:58 / sf
Nitrogen, Ammonia as N	3.1	mg/L	D	0.2		A4500-NH <sub>3</sub> G	11/04/16 12:16 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:49 / ljl
Potassium	11	mg/L		1		E200.7	10/28/16 16:58 / sf
Sodium	129	mg/L		1		E200.7	10/28/16 16:58 / sf
Sulfate	3390	mg/L	D	8		E300.0	11/02/16 06:26 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.12	s.u.	H	0.01		A4500-H B	10/17/16 10:28 / bah
Solids, Total Dissolved TDS @ 180 C	4970	mg/L		40		A2540 C	10/18/16 08:51 / bah
<b>METALS, TOTAL</b>							
Aluminum	0.1	mg/L		0.1		E200.7	11/03/16 00:56 / sf
Beryllium	0.002	mg/L		0.001		E200.7	11/03/16 00:56 / sf
Cadmium	ND	mg/L		0.005		E200.7	11/03/16 00:56 / sf
Cobalt	0.36	mg/L		0.01		E200.8	11/17/16 20:58 / smm
Lead	0.002	mg/L		0.001		E200.8	11/17/16 20:58 / smm
Manganese	5.71	mg/L		0.01		E200.7	11/03/16 00:56 / sf
Molybdenum	0.3	mg/L		0.1		E200.7	11/03/16 00:56 / sf
Nickel	0.35	mg/L		0.05		E200.7	11/03/16 00:56 / sf
Uranium	0.0774	mg/L		0.0003		E200.8	11/17/16 20:58 / smm
Vanadium	ND	mg/L		0.1		E200.7	11/03/16 00:56 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	0.002	mg/L		0.001		E1632AM	11/01/16 01:27 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:18 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	19.2	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U Precision (±)	4.3	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 14:21 / cng
Lead 210	0.9	pCi/L	U			E909.0	11/06/16 13:14 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/06/16 13:14 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/06/16 13:14 / plj
Radium 226	8.7	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 226 precision (±)	1.7	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 226 MDC	0.18	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 228	18	pCi/L				RA-05	11/04/16 10:32 / plj
Radium 228 precision (±)	3.4	pCi/L				RA-05	11/04/16 10:32 / plj

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-015  
**Client Sample ID:** RW-11

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 13:05  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.3	pCi/L				RA-05	11/04/16 10:32 / plj
Thorium 230	-0.04	pCi/L	U			E908.0	11/15/16 15:13 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	11/15/16 15:13 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	11/15/16 15:13 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4600	mg/L				A1030 E	11/03/16 11:23 / sec
A/C Balance	-2.79	%				A1030 E	11/03/16 11:23 / sec
Anions	73.7	meq/L				A1030 E	11/03/16 11:23 / sec
Cations	69.7	meq/L				A1030 E	11/03/16 11:23 / sec
TDS Ratio	1.07	unitless				A1030 E	11/03/16 11:23 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/16 02:27 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/16 02:27 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/16 02:27 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/20/16 02:27 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	103	%REC		71-139		E624	10/20/16 02:27 / eli-b
Surr: p-Bromofluorobenzene	128	%REC	S	80-127		E624	10/20/16 02:27 / eli-b
Surr: Toluene-d8	96.0	%REC		80-123		E624	10/20/16 02:27 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		RW-11	RW-11	RW-11	RW-11
Collection Date:		10/11/2016	10/14/2015	10/14/2014	10/15/2013
Receive Date:		10/14/2016	10/16/2015	10/17/2014	10/18/2013
Report Date:		12/2/2016	11/13/2015	11/24/2014	11/25/2013
Analyte	RUnits	C16100488-015	C15100581-013	C14100818-004	C13100698-003
Bicarbonate as HCO <sub>3</sub>	mg/L	130	150	156	192
Calcium	mg/L	522	531	542	556
Chloride	mg/L	32	36	37	37
Magnesium	mg/L	459	429	419	390
Nitrogen, Ammonia as N	mg/L	3.1	3.1	2.74	2.02
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	11	12	11	11
Sodium	mg/L	129	134	133	139
Sulfate	mg/L	3390	3320	3240	3170
pH	s.u.	6.12	6.11	6.42	6.22
Solids, Total Dissolved TDS @ 180 C	mg/L	4970	5020	4860	4700
Aluminum	mg/L	0.1	ND(0.1)	0.2	ND(0.1)
Beryllium	mg/L	0.002	0.001	0.002	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.36	0.32	0.32	0.30
Lead	mg/L	0.002	0.002	0.032	0.059
Manganese	mg/L	5.71	5.94	6.01	5.99
Molybdenum	mg/L	0.3	0.2	0.5	0.2
Nickel	mg/L	0.35	0.34	0.34	0.34
Uranium	mg/L	0.0774	0.0808	0.142	0.139
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.002	ND(0.001)	0.004	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	19.2	23.2	14.7	14.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.3	4.8	1.1	1.5
Gross Alpha minus Rn & U MDC	pCi/L	1.3	0.7	0.4	0.7
Lead 210	pCi/L	0.9	2.6	2.4	0.3
Lead 210 precision (±)	pCi/L	0.6	1	0.9	0.5
Lead 210 MDC	pCi/L	1	1.4	1.3	0.9
Radium 226	pCi/L	8.7	12	10	10
Radium 226 precision (±)	pCi/L	1.7	2.3	0.51	0.64
Radium 226 MDC	pCi/L	0.18	0.15	0.09	0.16
Radium 228	pCi/L	18	23	33	13
Radium 228 precision (±)	pCi/L	3.4	4.3	2.3	1.3
Radium 228 MDC	pCi/L	1.3	1.3	1.8	1.3
Thorium 230	pCi/L	-0.04	0.7	0.4	0.5
Thorium 230 precision (±)	pCi/L	0.07	0.4	0.3	0.2
Thorium 230 MDC	pCi/L	0.2	0.4	0.4	0.2
A/C Balance	%	-2.79			
Anions	meq/L	73.7	72.5	71.0	70.2
Cations	meq/L	69.7	68.1	67.6	66.3
Solids, Total Dissolved - Calculated	mg/L	4600			
TDS Ratio	unitless	1.07			
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Mill  
**Lab ID:** C16100493-001  
**Client Sample ID:** Domestic Water Well

**Report Date:** 12/03/16  
**Collection Date:** 10/12/16 09:35  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	253	mg/L	H	5		A2320 B	11/05/16 21:26 / ljl
Calcium	20	mg/L		1		E200.7	11/07/16 17:16 / sf
Chloride	155	mg/L		1		E300.0	11/07/16 19:00 / ljl
Magnesium	6	mg/L		1		E200.7	11/07/16 17:16 / sf
Nitrogen, Ammonia as N	0.57	mg/L		0.05		A4500-NH <sub>3</sub> G	11/05/16 22:06 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/08/16 16:31 / ljl
Potassium	3	mg/L		1		E200.7	11/07/16 17:16 / sf
Sodium	761	mg/L		1		E200.7	11/07/16 17:16 / sf
Sulfate	1340	mg/L	D	4		E300.0	11/07/16 19:00 / ljl
- H-Original analysis was done within hold time. Data is from recheck analysis.							
<b>PHYSICAL PROPERTIES</b>							
pH	8.35	s.u.	H	0.01		A4500-H B	10/17/16 10:43 / bah
Solids, Total Dissolved TDS @ 180 C	2310	mg/L		20		A2540 C	10/18/16 08:52 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	10/25/16 22:14 / sf
Beryllium	ND	mg/L		0.001		E200.7	10/25/16 22:14 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/25/16 09:52 / sf
Cobalt	ND	mg/L		0.01		E200.8	11/19/16 05:00 / smm
Lead	ND	mg/L		0.001		E200.8	10/25/16 09:52 / sf
Manganese	0.03	mg/L		0.01		E200.7	10/25/16 22:14 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/25/16 09:52 / sf
Nickel	ND	mg/L		0.05		E200.8	10/25/16 09:52 / sf
Uranium	0.0068	mg/L		0.0003		E200.8	10/25/16 09:52 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/25/16 09:52 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/16 02:03 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:53 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.4	pCi/L				E900.1	11/04/16 21:20 / cng
Gross Alpha minus Rn & U Precision (±)	1.5	pCi/L				E900.1	11/04/16 21:20 / cng
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	11/04/16 21:20 / cng
Lead 210	0.3	pCi/L	U			E909.0	11/02/16 07:41 / plj
Lead 210 precision (±)	0.5	pCi/L				E909.0	11/02/16 07:41 / plj
Lead 210 MDC	0.8	pCi/L				E909.0	11/02/16 07:41 / plj
Radium 226	0.69	pCi/L				E903.0	11/02/16 09:19 / plj
Radium 226 precision (±)	0.18	pCi/L				E903.0	11/02/16 09:19 / plj
Radium 226 MDC	0.18	pCi/L				E903.0	11/02/16 09:19 / plj
Radium 228	3.4	pCi/L				RA-05	09/27/16 11:46 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Mill  
**Lab ID:** C16100493-001  
**Client Sample ID:** Domestic Water Well

**Report Date:** 12/03/16  
**Collection Date:** 10/12/16 09:35  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	2.6	pCi/L				RA-05	09/27/16 11:46 / plj
Radium 228 MDC	1.3	pCi/L				RA-05	09/27/16 11:46 / plj
Thorium 230	0.02	pCi/L	U			E908.0	11/18/16 09:37 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	11/18/16 09:37 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	11/18/16 09:37 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	2400	mg/L				A1030 E	11/08/16 12:34 / sec
A/C Balance	-2.44	%				A1030 E	11/08/16 12:34 / sec
Anions	36.5	meq/L				A1030 E	11/08/16 12:34 / sec
Cations	34.8	meq/L				A1030 E	11/08/16 12:34 / sec
TDS Ratio	0.95	unitless				A1030 E	11/08/16 12:34 / sec

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

**SEMI-ANNUAL**  
**EFFLUENT AND ENVIRONMENTAL MONITORING REPORT**  
**JULY TO DECEMBER OF 2016**

**AVAILABLE MONITORING DATA**

- **ENVIRONMENTAL INSPECTION REPORT (continued this procedure to show and maintain the integrity of the tailings area).**

## **ENVIRONMENTAL INSPECTION REPORTS**

ENVIRONMENTAL INSPECTION

DATE: 7-29-16

TIME START: 0949

INSPECTOR: Waf Churchill Jr.

TIME END: 1137

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>	<u>  </u>	<u>  </u>
2. Air Monitors	<u>- NA</u>	<u>-</u>	<u>Under RWP</u>
3. Radiation Warning Signs	<u>✓</u>	<u>  </u>	<u>  </u>
4. Locked Gates	<u>✓</u>	<u>  </u>	<u>  </u>

OTHER COMMENTS OR

ACTION TAKEN: Zone 3 extraction well water is discharging into N. pond  
but not the domestic well water since 7-8-16 due to pump malfunction  
repair.

ENVIRONMENTAL INSPECTION

DATE: 8-30-16

TIME START: 1348

INSPECTOR: Map Chiodella J.

TIME END: 1502

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>	<u>      </u>	<u>      </u>
2. Air Monitors	<u>-</u>	<u>NA</u>	<u>Under RWP if needed</u>
3. Radiation Warning Signs	<u>✓</u>	<u>      </u>	<u>      </u>
4. Locked Gates	<u>✓</u>	<u>      </u>	<u>      </u>

OTHER COMMENTS OR

ACTION TAKEN: Domestic water is being discharged into south pond  
and about 1/2" depth of water is in north pond.

Domestic water well pump was repaired on 8-10-16 @ 1410 and resumed  
discharge into north pond.

Two weather worn radioactive material caution signs were  
replaced at tailings material storage area on 8-10-16.



ENVIRONMENTAL INSPECTION

DATE: 9-30-16

TIME START: 1130

INSPECTOR: Map Chisholm J.

TIME END: 1238

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>	<u>      </u>	<u>      </u>
2. Air Monitors	<u>-</u>	<u>NA</u>	<u>Under RWP as needed</u>
3. Radiation Warning Signs	<u>✓</u>	<u>      </u>	<u>      </u>
4. Locked Gates	<u>✓</u>	<u>      </u>	<u>      </u>

OTHER COMMENT OR

ACTION TAKEN: Domestic water is discharging into north pond  
during inspection.

ENVIRONMENTAL INSPECTION

DATE: 10-24-16

TIME START: 1108

INSPECTOR: Waf Churchill J.

TIME END: 1230

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>		
2. Air Monitors	<u>-</u>	<u>NA</u>	<u>Under RWP</u>
3. Radiation Warning Signs	<u>✓</u>		
4. Locked Gates	<u>✓</u>		

ACTION TAKEN: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# ENVIRONMENTAL INSPECTION

DATE: 11-28-16

TIME START: 1155

INSPECTOR: Waf Christalby J.

TIME END: 1258

TAILINGS AREA:

OKAY

## PROBLEM

### COMMENTS

- |                            |   |    |             |
|----------------------------|---|----|-------------|
| 1. Fences                  | ✓ |    |             |
| 2. Air Monitors            | - | NA | - Under RWP |
| 3. Radiation Warning Signs | ✓ |    |             |
| 4. Locked Gates            | ✓ |    |             |

**ACTION TAKEN:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

---

\_\_\_\_\_

\_\_\_\_\_

ENVIRONMENTAL INSPECTION

DATE: 12-29-16

TIME START: 0950

INSPECTOR: May Chubbly J.

TIME END: 1050

TAILINGS AREA:

	<u>OKAY</u>	<u>PROBLEM</u>	<u>COMMENTS</u>
1. Fences	<u>✓</u>		
2. Air Monitors	<u>-</u>	<u>NA</u>	<u>Under RWP</u>
3. Radiation Warning Signs	<u>✓</u>		
4. Locked Gates	<u>✓</u>		

ACTION TAKEN: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SEMI-ANNUAL GROUND WATER  
QUALITY ASSURANCE REPORT

SECOND HALF OF 2016  
(JULY THRU DECEMBER)

**SEMI – ANNUAL QUALITY ASSURANCE**

**CHURCH ROCK SITE**

**JULY TO DECEMBER OF 2016 SAMPLING EVENTS**

**FEBRUARY - 2017**

## **TABLE OF CONTENTS**

- 1.0 Requirements
- 2.0 Field Sampling Procedures and QA/QC Report
- 3.0 Chain of Custody
- 4.0 Laboratory Quality Control
- 5.0 Data Validation

Appendix – A: Quarterly Field data sheet

Appendix – B: Quarterly AQ/QC Field Blank and Duplicate Sample Report

Appendix – C: Quarterly Chain of Custody

Appendix – D: Quarterly Laboratory Quality Control and Performance Report

(1 of 2&2 of 2)

## 1.0 REQUIREMENTS

The quality assurance and control procedures are contained in Sec. 3.0 of the Remedial Action Plan of Church Rock Site dated April 1989. The procedure addresses sampling, chain of custody, laboratory quality control, and data validation. These requirements became effective July 3, 1989, when United Nuclear received the Administrative Order on the Church Rock Site from the U.S. Environmental Protection Agency (USEPA).

## 2.0 FIELD SAMPLING PROCEDURES AND QA/QC REPORT

Copies of the 2016 quarterly (3rd and 4th) field low flow purging and sampling data sheets are included in Appendix A. These sheets indicate the field parameter of pH, temperature, conductivity and the water level drop in the well if any, during the sampling. The quarterly QA/QC Field Blank, Rinsate and Duplicate analysis report are included in Appendix B.

## 3.0 CHAIN OF CUSTODY

Copies of the quarterly Chain of Custody report are included in Appendix C. Energy Laboratories, Inc., our contract laboratory is located in Casper, Wyoming. Energy Labs inspect the sample shipment upon arrival to verify the information of the Chain of Custody form and to determine if sample arrive at the appropriate temperature and preservation.

## 4.0 LABORATORY CONTROL

Copies of the quarterly internal Quality Control reports prepared by Energy Laboratories and associated EPA performance evaluations are included in Appendix D (1 of 2 and 2 of 2).

## 5.0 DATA EVALUATION

Analytical reports are reviewed by the Remedial Project Managers and site Radiation Safety Officer after receipt from Energy Labs. Significant increase or decrease and out of range values are identified and the laboratory is requested to recheck the suspect values. The laboratory responds by checking transcription for these items, and where necessary, repeats the analysis. A revised report is then issued for that sample if an error is discovered.



**APPENDIX – A**

**QUARTERLY**

**FIELD DATA SHEET**

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 3 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.04 7-12-16/0753    THIRD QUARTER 2016 1413  $\mu$ S/cm 1431 7-12-16/0754     
 7-Buffer 7.04 7-12-16/0752    SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-12-16	SBL-1	51.17'	52.27'	1st pH 7.37	2nd pH 7.35	Stable pH 7.30	Ending pH 6.69
	Time 0830	Bubbler Start 3.533'	Bubbler End 2.426'	1st Temp. 17.0	2nd Temp. 16.8	Stable Temp. 16.4	Ending Temp. 17.0
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-12-16	EPA-25	57.06'	57.17'	1st pH 6.98	2nd pH 6.95	Stable pH 6.93	Ending pH 6.76
	Time 0937	Bubbler Start 3.833'	Bubbler End 3.741'	1st Temp. 17.4	2nd Temp. 17.1	Stable Temp. 17.0	Ending Temp. 17.3
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-12-16	627	61.20'	61.28'	1st pH 7.04	2nd pH 7.02	Stable pH 6.99	Ending pH 6.98
	Time 1040	Bubbler Start 1.352'	Bubbler End 1.264'	1st Temp. 20.1	2nd Temp. 19.5	Stable Temp. 19.3	Ending Temp. 18.8
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-12-16	614	105.81'	106.62'	1st pH 6.96	2nd pH 6.96	Stable pH 6.98	Ending pH 6.38
	Time 1156	Bubbler Start 0.647'	Bubbler End 0.193'	1st Temp. 20.9	2nd Temp. 20.2	Stable Temp. 19.8	Ending Temp. 21.6
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-12-16	515-A	106.85'	113.45'	1st pH 7.40	2nd pH 7.40	Stable pH 7.40	Ending pH 6.05
	Time 1311	Bubbler Start 6.157'	Bubbler End 0.239'	1st Temp. 22.7	2nd Temp. 22.0	Stable Temp. 20.9	Ending Temp. 21.3
				Comments: Water level dropped 6.60' during sample. Increased psi to 60 in order to pump out water sample.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-12-16	604	105.86'	106.64'	1st pH 6.16	2nd pH 6.12	Stable pH 6.07	Ending pH 5.47
	Time 1414	Bubbler Start 3.560'	Bubbler End 2.810'	1st Temp. 18.2	2nd Temp. 17.8	Stable Temp. 17.4	Ending Temp. 18.7
				Comments:			

PH Standard Verification Check (Quar. Performance Monitoring-- Pg. 4 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.03 7-13-16/0757 4.8 THIRD QUARTER 20 16 1413  $\mu$ S/cm 1433 7-13-16/0757 8.1  
 7-Buffer 7.04 7-13-16/0753 7.1 SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-12-16	EPA-7	117.22'	119.19'	6,320	6,700	6,750	6,990
	Time	Bubbler Start	Bubbler End	1st pH 8.08	2nd pH 8.10	Stable pH 8.11	Ending pH 6.13
	1501	9.882'	7.965'	1st Temp. 19.6	2nd Temp. 19.3	Stable Temp. 18.9	Ending Temp. 19.3
				Comments:			
7-12-16	EPA-5	127.52'	128.27'	4,000	4,060	4,050	4,160
	Time	Bubbler Start	Bubbler End	1st pH 7.23	2nd pH 7.24	Stable pH 7.24	Ending pH 6.37
	1548	3.278'	2.582'	1st Temp. 20.4	2nd Temp. 20.1	Stable Temp. 19.9	Ending Temp. 19.9
				Comments:			
7-13-16	EPA-4	208.94'	209.51'	3,760	3,960	4,030	4,320
	Time	Bubbler Start	Bubbler End	1st pH 7.19	2nd pH 7.26	Stable pH 7.33	Ending pH 6.71
	0830	14.430'	13.517'	1st Temp. 18.8	2nd Temp. 18.3	Stable Temp. 17.6	Ending Temp. 16.9
				Comments:			
7-13-16	EPA-2	175.18'	176.04'	3,030	3,040	3,120	3,030
	Time	Bubbler Start	Bubbler End	1st pH 7.68	2nd pH 7.70	Stable pH 7.73	Ending pH 6.86
	0942	6.276'	5.505'	1st Temp. 17.0	2nd Temp. 16.4	Stable Temp. 15.9	Ending Temp. 17.3
				Comments:			
7-13-16	EPA-2 DUPLICATE	176.04'	176.15'	3,040	3,050	3,060	3,070
	Time	Bubbler Start	Bubbler End	1st pH 6.82	2nd pH 6.82	Stable pH 6.81	Ending pH 6.85
	1020	5.505'	5.319'	1st Temp. 16.6	2nd Temp. 16.3	Stable Temp. 16.4	Ending Temp. 17.7
				Comments:			
7-13-16	TWQ-142	202.50'	203.22'	1,708	1,765	1,814	1,884
	Time	Bubbler Start	Bubbler End	1st pH 7.81	2nd pH 7.79	Stable pH 7.78	Ending pH 7.86
	1102	18.394'	17.506'	1st Temp. 19.8	2nd Temp. 19.6	Stable Temp. 19.5	Ending Temp. 17.7
				Comments:			

## PH Standard Verification Check

STD.	PH Reading	Date/Time	Initial
4-Buffer	4.01	7-11-16/0752	7.12
7-Buffer	7.01	7-11-16/0800	4.4

## (Quar. Performance Monitoring - Pg. 1 of 7)

## GROUND WATER MONITORING FIELD DATA SHEET

THIRD QUARTER 2016  
SAMPLING

## Cond. Standard Verification Check

STD.	μS/cm Reading	Date/Time	Initial
1413 μS/cm	1423	7-11-16/0753	7.13

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-11-16	509-D	83.25'	83.34'	1st pH 6.82	2nd pH 6.78	Stable pH 6.71	Ending pH 6.45
	Time 0907	Bubbler Start 0.180'	Bubbler End 0.200'	1st Temp. 19.3	2nd Temp. 18.6	Stable Temp. 17.7	Ending Temp. 17.3
				Comments: Conductivity is in μS/cm Temperature is in °C pH is in std. units			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-11-16	EPA-23	59.82'	60.17'	1st pH 7.08	2nd pH 7.03	Stable pH 6.99	Ending pH 6.65
	Time 0955	Bubbler Start 2.114'	Bubbler End 1.759'	1st Temp. 18.9	2nd Temp. 18.1	Stable Temp. 17.6	Ending Temp. 17.6
				Comments: Adjusted discharge time to 14 sec. and refill time to 15 sec. resulting in purge rate of 272 ml./min. to meet SOP of 100 ml. to 300 ml. per minute.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-11-16	803	66.40'	66.53'	1st pH 6.64	2nd pH 6.60	Stable pH 6.58	Ending pH 6.54
	Time 1042	Bubbler Start 10.372'	Bubbler End 10.245'	1st Temp. 20.0	2nd Temp. 19.3	Stable Temp. 18.4	Ending Temp. 17.0
				Comments: Adjusted discharge time to 14 sec. and refill time to 15 sec. resulting in purge rate of 271 ml./min. to meet SOP of 100 ml. to 300 ml. per minute.			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-11-16	808	53.64'	53.83'	1st pH 8.71	2nd pH 6.62	Stable pH 6.59	Ending pH 6.48
	Time 1124	Bubbler Start 10.008'	Bubbler End 9.840'	1st Temp. 17.3	2nd Temp. 16.9	Stable Temp. 16.6	Ending Temp. 18.7
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-11-16	802	51.85'	51.92'	1st pH 6.60	2nd pH 6.60	Stable pH 6.58	Ending pH 6.53
	Time 1209	Bubbler Start 15.862'	Bubbler End 15.807'	1st Temp. 20.7	2nd Temp. 19.8	Stable Temp. 19.0	Ending Temp. 18.8
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-11-16	632	48.40'	52.46'	1st pH 6.98	2nd pH 6.90	Stable pH 6.81	Ending pH 6.49
	Time 1252	Bubbler Start 8.657'	Bubbler End 4.597'	1st Temp. 19.1	2nd Temp. 18.6	Stable Temp. 18.2	Ending Temp. 18.5
				Comments: Water level dropped 4.06' during sample.			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 2 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu\text{S/cm}$  Reading Date/Time Initial  
 4-Buffer 7-Buffer  
 THIRD QUARTER 2016 1413  $\mu\text{S/cm}$   
 SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
7-11-16	801	55.74'	57.34'	6.030	6.080	6.210	6.380
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1356	5.999'	4.377'	6.81	6.79	6.80	6.60
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				20.8	20.4	20.1	19.7
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
7-11-16	GW-1	65.33'	65.42'	5.210	5.410	5.490	6.210
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1450	5.394'	5.304'	7.39	7.34	7.25	6.62
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				21.1	20.5	19.9	19.8
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
7-11-16	EPA-28	66.14'	66.67'	4.370	4.440	4.490	4.490
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1538	4.256'	3.717'	7.61	7.61	7.57	6.83
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				21.0	20.4	19.8	19.6
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
7-11-16	EPA-28 DUPLICATE	66.67'	66.72'	4.500	4.610	4.640	4.590
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1615	3.717'	3.637'	6.83	6.83	6.83	6.84
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				19.2	19.0	18.9	18.7
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
7-11-16	624	54.08'	54.14'	5.010	5.100	5.410	5.260
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1700	8.413'	8.377'	6.67	6.67	6.63	6.56
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				19.2	18.8	18.3	18.7
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			

## PH Standard Verification Check

(Quar. Performance Monitoring - Pg. 5 of 7)

## Cond. Standard Verification Check

STD.	PH Reading	Date/Time	Initial
4-Buffer	4.03	7-18-16/0744	12
7-Buffer	7.01	7-18-16/0743	12

GROUND WATER MONITORING FIELD DATA SHEET
THIRD QUARTER 2016
SAMPLING

STD.	μS/cm Reading	Date/Time	Initial
1413 μS/cm	1424	7-18-16/0745	12

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-13-16	RINSATE			1st pH 2.69	2nd pH	Stable pH	Ending pH
	Time 1150	Bubbler Start	Bubbler End	1st Temp. 29.4	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
7-13-16	FIELD BLANK			1st Cond. 3	2nd Cond.	Stable Cond.	Ending Cond.
	Time 1200	Bubbler Start	Bubbler End	1st pH 7.57	2nd pH	Stable pH	Ending pH
				1st Temp. 31.2	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
7-18-16	613			1st Cond. 8,450	2nd Cond. 8,380	Stable Cond. 8,370	Ending Cond. 8,500
	Time 0854	Bubbler Start	Bubbler End	1st pH 3.02	2nd pH 3.01	Stable pH 3.01	Ending pH 3.06
				1st Temp. 17.7	2nd Temp. 17.3	Stable Temp. 16.9	Ending Temp. 17.0
				Comments:			
7-18-16	517			1st Cond. 4,890	2nd Cond. 5,280	Stable Cond. 5,390	Ending Cond. 5,410
	Time 0942	Bubbler Start	Bubbler End	1st pH 2.82	2nd pH 2.81	Stable pH 2.80	Ending pH 2.80
				1st Temp. 20.2	2nd Temp. 19.6	Stable Temp. 19.5	Ending Temp. 19.3
				Comments: Water level dropped 4.42' during sample. Needed a 6 hr. recharge to resume/collect required volume sample due to low water volume in well.			
7-18-16	708			1st Cond. 4,890	2nd Cond. 4,940	Stable Cond. 5,110	Ending Cond. 5,120
	Time 1107	Bubbler Start	Bubbler End	1st pH 3.06	2nd pH 3.15	Stable pH 3.20	Ending pH 3.70
				1st Temp. 22.2	2nd Temp. 21.1	Stable Temp. 20.6	Ending Temp. 22.1
				Comments: Increased pressure to 80 psi in order to pump out water sample.			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 6 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.03 7-19-16/0752 12 THIRD QUARTER 2016 1413  $\mu$ S/cm 1420 7-19-16/0756 12  
 7-Buffer 7.04 7-19-16/0755 12 SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-18-16	711			1st pH 3.06	2nd pH 3.02	Stable pH 3.00	Ending pH 4.23
		184.28'	185.74'	1st Temp 19.0	2nd Temp 18.6	Stable Temp 18.1	Ending Temp 18.2
		Bubbler Start	Bubbler End	Comments:			
		7.840'	6.439'				
7-18-16	EPA-13			1st Cond. 5.380	2nd Cond. 5.530	Stable Cond. 5.590	Ending Cond. 5.850
				1st pH 6.78	2nd pH 6.77	Stable pH 6.80	Ending pH 5.90
		169.19'	170.31'	1st Temp 21.8	2nd Temp 21.3	Stable Temp 20.9	Ending Temp 21.3
		Bubbler Start	Bubbler End	Comments:			
		2.389'	1.375'				
7-18-16	420			1st Cond. 3.090	2nd Cond. 3.350	Stable Cond. 3.470	Ending Cond. 3.550
				1st pH 7.47	2nd pH 7.50	Stable pH 7.51	Ending pH 6.50
		156.53'	157.71'	1st Temp 21.3	2nd Temp 21.0	Stable Temp 20.9	Ending Temp 19.2
		Bubbler Start	Bubbler End	Comments:			
		0.279'	0.302'				
7-18-16	EPA-14			1st Cond. 3.530	2nd Cond. 3.840	Stable Cond. 3.910	Ending Cond. 3.890
				1st pH 4.64	2nd pH 4.64	Stable pH 4.64	Ending pH 5.13
		125.34'	126.10'	1st Temp 20.9	2nd Temp 20.3	Stable Temp 19.7	Ending Temp 18.4
		Bubbler Start	Bubbler End	Comments:			
		0.236'	0.276'				
7-19-16	719			1st Cond. 5.000	2nd Cond. 5.060	Stable Cond. 5.160	Ending Cond. 5.200
				1st pH 5.65	2nd pH 5.66	Stable pH 5.67	Ending pH 5.68
		170.56'	170.74'	1st Temp 19.1	2nd Temp 19.1	Stable Temp 19.2	Ending Temp 19.3
		Bubbler Start	Bubbler End	Comments: Needed a 6.3 hr. recharge to resume / collect required volume sample due to low water volume in well.			
		0.317'	0.187'				
7-19-16	717			1st Cond. 5.130	2nd Cond. 5.430	Stable Cond. 5.660	Ending Cond. 5.850
				1st pH 2.97	2nd pH 2.95	Stable pH 2.96	Ending pH 3.07
		134.00'	134.94'	1st Temp 22.1	2nd Temp 21.9	Stable Temp 21.2	Ending Temp 19.2
		Bubbler Start	Bubbler End	Comments:			
		0.228'	0.220'				





PH Standard Verification Check (Monthly/Quar. Supplemental - Pg. 1 of 2) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.03 7-19-16/0757 MC THIRD QUARTER 2016 1413  $\mu$ S/cm 1420 7-19-16/0756 MC  
 7-Buffer 7.04 7-19-16/0755 MC SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-19-16	NBL-2	170.38'	170.42'	3,130	3,200	3,250	3,350
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1214	9.902'	9.823'	6.90	7.23	7.27	6.90
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				21.5	19.8	19.8	19.8
				Comments:			
7-19-16	MW-7	197.13'	197.14'	3,340	3,470	3,700	3,860
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1237			7.85	7.83	7.84	6.50
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				24.4	24.0	23.4	19.5
				Comments:			
7-19-16	PB-2	189.93'		1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1530						
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments: water level only.			
7-19-16	PB-4	192.72'		1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1540						
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments: No sample due to very low water volume in well.			
7-19-16	PB-3	193.25'		1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1550						
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments: As well PB-4 above			
7-19-16	MW-6	199.40'		1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1555						
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments: As above			

PH Standard Verification Check (Monthly/Quar. Supplemental - Pg. 2 of 2) Cond. Standard Verification Check

STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial

4-Buffer 4.06 7-19-16/0807 MC THIRD QUARTER 2016 1413  $\mu$ S/cm 1413 7-19-16/0808 MC

7-Buffer 7.08 7-19-16/0806 MC SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
7-19-16	NW-1	198.63'	198.94'	3,550	3,680	3,690	3,730
	Time 1107	Bubbler Start	Bubbler End	1st pH 6.80	2nd pH 7.19	Stable pH 7.34	Ending pH 7.50
				1st Temp. 18.3	2nd Temp. 18.2	Stable Temp. 18.2	Ending Temp. 18.0
				Comments:			
7-19-16	NW-4	196.50'	197.98'	3,750	4,000	4,060	4,060
	Time 1130	Bubbler Start	Bubbler End	1st pH 6.51	2nd pH 6.67	Stable pH 6.66	Ending pH 6.63
				1st Temp. 15.2	2nd Temp. 15.1	Stable Temp. 15.1	Ending Temp. 14.2
				Comments:			
7-19-16	NW-3	191.07'	191.18'	4,050	4,350	4,390	4,400
	Time 1205	Bubbler Start	Bubbler End	1st pH 6.88	2nd pH 7.19	Stable pH 7.33	Ending pH 7.40
				1st Temp. 16.2	2nd Temp. 16.0	Stable Temp. 15.9	Ending Temp. 15.9
				Comments:			
7-19-16	NW-5	191.38'	191.52'	4,500	4,700	4,770	4,800
	Time 1229	Bubbler Start	Bubbler End	1st pH 6.38	2nd pH 6.17	Stable pH 6.12	Ending pH 6.10
				1st Temp. 17.8	2nd Temp. 17.5	Stable Temp. 17.4	Ending Temp. 17.3
				Comments:			
7-19-16	NW-2	198.37'	199.04'	4,850	4,460	4,510	4,550
	Time 1242	Bubbler Start	Bubbler End	1st pH 6.25	2nd pH 6.21	Stable pH 6.22	Ending pH 6.26
				1st Temp. 16.4	2nd Temp. 16.2	Stable Temp. 15.8	Ending Temp. 15.5
				Comments:			
7-19-16	AW-A	176.52'	177.16'	4,390	4,710	4,800	4,820
	Time 1310	Bubbler Start	Bubbler End	1st pH 6.11	2nd pH 6.07	Stable pH 6.07	Ending pH 6.10
				1st Temp. 18.0	2nd Temp. 17.7	Stable Temp. 17.4	Ending Temp. 17.4
				Comments:			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 1 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu\text{S/cm}$  Reading Date/Time Initial  
 4-Buffer 4.02 10-3-16/0756    Fourth QUARTER 2016 1413  $\mu\text{S/cm}$  1427 10-3-16/0755     
 7-Buffer 7.04 10-3-16/0754    SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
10-3-16	509-D	83.25'	83.33'	1st pH 7.32	2nd pH 7.30	Stable pH 7.24	Ending pH 6.59
	Time	Bubbler Start	Bubbler End	1st Temp. 14.9	2nd Temp. 14.3	Stable Temp. 14.4	Ending Temp. 14.2
	0830	0.207'	0.213'	Comments: Conductivity is in $\mu\text{S/cm}$ Temperature is in $^{\circ}\text{C}$ pH is in std. units			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
10-3-16	EPA-23	59.86'	60.21'	1st pH 6.89	2nd pH 6.88	Stable pH 6.87	Ending pH 6.79
	Time	Bubbler Start	Bubbler End	1st Temp. 14.3	2nd Temp. 14.3	Stable Temp. 13.9	Ending Temp. 14.4
	0916	2.101'	1.754'	Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
10-3-16	803	66.46'	66.58'	1st pH 6.64	2nd pH 6.65	Stable pH 6.65	Ending pH 6.68
	Time	Bubbler Start	Bubbler End	1st Temp. 15.8	2nd Temp. 15.5	Stable Temp. 15.1	Ending Temp. 15.2
	1000	10.318'	10.217'	Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
10-3-16	808	53.69'	53.96'	1st pH 7.10	2nd pH 7.05	Stable pH 6.97	Ending pH 6.59
	Time	Bubbler Start	Bubbler End	1st Temp. 15.8	2nd Temp. 15.7	Stable Temp. 15.3	Ending Temp. 16.3
	1055	9.982'	9.718'	Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
10-3-16	802	52.06'	52.12'	1st pH 6.65	2nd pH 6.67	Stable pH 6.67	Ending pH 6.63
	Time	Bubbler Start	Bubbler End	1st Temp. 16.7	2nd Temp. 16.2	Stable Temp. 15.9	Ending Temp. 16.1
	1138	15.655'	15.602'	Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
10-3-16	632	48.65'	53.39'	1st pH 7.21	2nd pH 7.22	Stable pH 7.12	Ending pH 6.58
	Time	Bubbler Start	Bubbler End	1st Temp. 16.5	2nd Temp. 16.3	Stable Temp. 15.9	Ending Temp. 16.0
	1220	8.407'	3.549'	Comments: Water level dropped 4.74' during sample.			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 2 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 1413  $\mu$ S/cm  
 7-Buffer

Fourth, QUARTER 2016  
 SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-3-16	801			5,630	5,900	5,960	6,340
				1st pH 6.96	2nd pH 6.95	Stable pH 6.93	Ending pH 6.70
				1st Temp. 18.3	2nd Temp. 18.0	Stable Temp. 17.7	Ending Temp. 16.1
				Comments: Need to tighten fitting at pressure in port underneath cap. Increased psi to 36.			
10-3-16	GW-1			5,290	5,400	5,540	6,070
				1st pH 7.50	2nd pH 7.46	Stable pH 7.35	Ending pH 6.78
				1st Temp. 16.9	2nd Temp. 16.6	Stable Temp. 16.1	Ending Temp. 15.4
				Comments:			
10-3-16	EPA-28			4,410	4,470	4,500	4,530
				1st pH 7.74	2nd pH 7.75	Stable pH 7.75	Ending pH 7.01
				1st Temp. 16.3	2nd Temp. 16.2	Stable Temp. 15.8	Ending Temp. 15.2
				Comments:			
10-3-16	EPA-28 DUPLICATE			4,570	4,550	4,580	4,580
				1st pH 7.00	2nd pH 7.00	Stable pH 7.00	Ending pH 7.05
				1st Temp. 14.9	2nd Temp. 14.9	Stable Temp. 14.6	Ending Temp. 14.5
				Comments:			
10-3-16	624			4,730	4,870	4,970	5,330
				1st pH 7.09	2nd pH 6.94	Stable pH 6.90	Ending pH 6.72
				1st Temp. 14.8	2nd Temp. 14.7	Stable Temp. 14.2	Ending Temp. 14.5
				Comments:			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 3 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.00 10-4-16/0755    FOURTH QUARTER 2016 1413  $\mu$ S/cm 1441 10-4-16/0754     
 7-Buffer 7.03 10-4-16/0753    SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-4-16	SBL-1	51.07'	52.15'	1st pH 6.78	2nd pH 6.80	Stable pH 6.81	Ending pH 6.87
		3.664'	2.579'	1st Temp. 13.4	2nd Temp. 13.3	Stable Temp. 13.1	Ending Temp. 14.0
				Comments:			
10-4-16	EPA-25	57.20'	57.34'	1st Cond. 4,250	2nd Cond. 4,300	Stable Cond. 4,360	Ending Cond. 4,390
		3.729'	3.620'	1st pH 6.92	2nd pH 6.92	Stable pH 6.92	Ending pH 6.87
				1st Temp. 14.7	2nd Temp. 14.5	Stable Temp. 14.5	Ending Temp. 15.7
				Comments:			
10-4-16	627	61.16'	61.25'	1st Cond. 4,080	2nd Cond. 4,130	Stable Cond. 4,210	Ending Cond. 4,250
		1.415'	1.322'	1st pH 7.61	2nd pH 7.52	Stable pH 7.40	Ending pH 7.08
				1st Temp. 15.9	2nd Temp. 15.4	Stable Temp. 15.3	Ending Temp. 16.0
				Comments:			
10-4-16	614	105.64'	106.45'	1st Cond. 6,570	2nd Cond. 6,670	Stable Cond. 6,850	Ending Cond. 7,430
		0.826'	0.209'	1st pH 6.99	2nd pH 7.02	Stable pH 7.04	Ending pH 6.49
				1st Temp. 17.4	2nd Temp. 17.2	Stable Temp. 16.9	Ending Temp. 16.5
				Comments:			
10-4-16	515-A	106.72'	113.36'	1st Cond. 8,710	2nd Cond. 8,750	Stable Cond. 8,920	Ending Cond. 8,980
		6.301'	0.254'	1st pH 7.44	2nd pH 7.45	Stable pH 7.46	Ending pH 6.14
				1st Temp. 16.3	2nd Temp. 16.0	Stable Temp. 15.7	Ending Temp. 17.6
				Comments: water level dropped 6.64' during sample.			
10-4-16	604	105.77'	106.53'	1st Cond. 5,770	2nd Cond. 5,920	Stable Cond. 5,960	Ending Cond. 6,020
		2.122'	2.340'	1st pH 6.19	2nd pH 6.13	Stable pH 6.12	Ending pH 5.50
				1st Temp. 16.4	2nd Temp. 16.1	Stable Temp. 15.7	Ending Temp. 16.1
				Comments:			

## PH-Standard Verification Check

(Quar Performance Monitoring - Pg. 4 of 7)

## Cond. Standard Verification Check

STD.	PH Reading	Date/Time	Initial
4-Buffer	4.03	10-5-16/0752	<u>  </u>
7-Buffer	7.03	10-5-16/0750	<u>  </u>

GROUND WATER MONITORING FIELD DATA SHEET
Fourth QUARTER 2016
SAMPLING

STD.	µS/cm Reading	Date/Time	Initial
1413 µS/cm	1448	10-5-16/0751	<u>  </u>

Date	Well Number	WL w/Probe	WL w/Probe	1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
10-4-16	EPA-7	Pre-Sample	Post Sample	1st pH 7.95	2nd pH 7.98	Stable pH 8.01	Ending pH 6.26
		117.08'	119.10'	1st Temp. 16.3	2nd Temp. 16.0	Stable Temp. 15.7	Ending Temp. 15.7
		Bubbler Start	Bubbler End	Comments: Water level dropped 2.02' during sample.			
		9.988'	7.947'				
10-4-16	EPA-5	Pre-Sample	Post Sample	1st Cond. 3.950	2nd Cond. 3.950	Stable Cond. 4.030	Ending Cond. 4.070
		127.38'	128.10'	1st pH 7.01	2nd pH 7.03	Stable pH 7.05	Ending pH 6.56
		Bubbler Start	Bubbler End	1st Temp. 17.0	2nd Temp. 16.6	Stable Temp. 16.2	Ending Temp. 15.8
		3.408'	2.694'	Comments:			
10-5-16	EPA-4	Pre-Sample	Post Sample	1st Cond. 3.700	2nd Cond. 3.780	Stable Cond. 3.910	Ending Cond. 4.210
		208.75'	209.30'	1st pH 6.16	2nd pH 6.98	Stable pH 7.07	Ending pH 6.84
		Bubbler Start	Bubbler End	1st Temp. 16.7	2nd Temp. 15.6	Stable Temp. 15.2	Ending Temp. 15.0
		14.160'	13.610'	Comments:			
10-5-16	EPA-2	Pre-Sample	Post Sample	1st Cond. 3.040	2nd Cond. 3.060	Stable Cond. 3.070	Ending Cond. 3.070
		175.03'	175.78'	1st pH 7.60	2nd pH 7.64	Stable pH 7.67	Ending pH 6.93
		Bubbler Start	Bubbler End	1st Temp. 15.1	2nd Temp. 14.5	Stable Temp. 14.2	Ending Temp. 13.9
		6.504'	5.642'	Comments:			
10-5-16	EPA-2 DUPLICATE	Pre-Sample	Post Sample	1st Cond. 3.070	2nd Cond. 3.070	Stable Cond. 3.070	Ending Cond. 3.190
		175.78'	176.00'	1st pH 6.93	2nd pH 6.93	Stable pH 6.93	Ending pH 6.94
		Bubbler Start	Bubbler End	1st Temp. 13.9	2nd Temp. 13.7	Stable Temp. 13.7	Ending Temp. 15.0
		5.642'	1.778'	Comments:			
10-5-16	TWQ-142	Pre-Sample	Post Sample	1st Cond. 1.756	2nd Cond. 1.813	Stable Cond. 1.805	Ending Cond. 1.823
		202.26'	202.94'	1st pH 7.92	2nd pH 7.91	Stable pH 7.88	Ending pH 7.96
		Bubbler Start	Bubbler End	1st Temp. 15.6	2nd Temp. 15.2	Stable Temp. 15.0	Ending Temp. 15.4
		18.545'	17.865'	Comments:			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 5 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.03 10-10-16/0752    1413  $\mu$ S/cm 1441 10-10-16/0751     
 7-Buffer 7.01 10-10-16/0750    **FOURTH QUARTER 2016**  
**SAMPLING**

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-5-16	RINSATE			1st pH 8.33	2nd pH	Stable pH	Ending pH
	Time 1146	Bubbler Start	Bubbler End	1st Temp. 16.3	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
10-5-16	FIELD BLANK			1st Cond. 1	2nd Cond.	Stable Cond.	Ending Cond.
	Time 1150	Bubbler Start	Bubbler End	1st pH 7.88	2nd pH	Stable pH	Ending pH
				1st Temp. 17.6	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
10-10-16	613			1st Cond. 8,350	2nd Cond. 8,390	Stable Cond. 8,410	Ending Cond. 8,350
	Time 0828	79.95'	81.11'	1st pH 3.01	2nd pH 3.01	Stable pH 3.00	Ending pH 3.01
		Bubbler Start	Bubbler End	1st Temp. 14.1	2nd Temp. 13.9	Stable Temp. 13.7	Ending Temp. 14.3
		4.863'	3.680'	Comments:			
10-10-16	517			1st Cond. 4,460	2nd Cond. 5,120	Stable Cond. 5,360	Ending Cond. 5,480
	Time 0919	106.41'	110.86'	1st pH 2.84	2nd pH 2.83	Stable pH 2.83	Ending pH 2.83
		Bubbler Start	Bubbler End	1st Temp. 14.7	2nd Temp. 14.6	Stable Temp. 14.4	Ending Temp. 14.2
		0.262'	0.269'	Comments: Water level dropped 4.45' during sample and required a 7.18 hr. recharge to resume/collect full sample.			
10-10-16	708			1st Cond. 5,040	2nd Cond. 5,180	Stable Cond. 5,320	Ending Cond. 5,120
	Time 1052	158.31'	159.37'	1st pH 2.83	2nd pH 2.82	Stable pH 2.82	Ending pH 3.73
		Bubbler Start	Bubbler End	1st Temp. 19.6	2nd Temp. 19.4	Stable Temp. 19.1	Ending Temp. 18.8
		0.327'	0.252'	Comments:			
10-10-16	711			1st Cond. 4,310	2nd Cond. 4,470	Stable Cond. 4,580	Ending Cond. 4,320
	Time 1228	184.32'	185.61'	1st pH 2.98	2nd pH 3.02	Stable pH 2.96	Ending pH 4.15
		Bubbler Start	Bubbler End	1st Temp. 18.2	2nd Temp. 17.8	Stable Temp. 17.3	Ending Temp. 17.1
		7.808'	6.449'	Comments:			

PH Standard Verification Check (Quar. Performance Monitoring - Pg. 6 of 7) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 3.98 10-11-16/0757 AC Fourth QUARTER 20 16 1413  $\mu$ S/cm 1436 10-11-16/0755 AC  
 7-Buffer 7.02 10-11-16/0756 AC SAMPLING

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-10-16	EPA-13			1st pH 6.64	2nd pH 6.67	Stable pH 6.70	Ending pH 5.98
		169.24'	170.23'	1st Temp. 19.5	2nd Temp. 19.2	Stable Temp. 18.7	Ending Temp. 19.4
		Bubbler Start	Bubbler End	Comments:			
		1325	2.516'				
10-10-16	420			1st Cond. 3,240	2nd Cond. 3,300	Stable Cond. 3,400	Ending Cond. 3,430
				1st pH 7.43	2nd pH 7.46	Stable pH 7.47	Ending pH 6.58
		156.62'	157.94'	1st Temp. 19.0	2nd Temp. 18.4	Stable Temp. 18.4	Ending Temp. 18.2
		Bubbler Start	Bubbler End	Comments:			
		1438	0.279'				
10-10-16	EPA-14			1st Cond. 3,360	2nd Cond. 3,590	Stable Cond. 3,800	Ending Cond. 3,800
				1st pH 5.21	2nd pH 5.17	Stable pH 5.05	Ending pH 5.22
		125.38'	126.19'	1st Temp. 18.8	2nd Temp. 18.5	Stable Temp. 16.9	Ending Temp. 17.3
		Bubbler Start	Bubbler End	Comments:			
		1535	0.252'				
10-11-16	719			1st Cond. 5,020	2nd Cond. 5,080	Stable Cond. 5,060	Ending Cond. 5,120
				1st pH 5.94	2nd pH 5.97	Stable pH 5.98	Ending pH 5.76
		170.50'	170.89'	1st Temp. 15.6	2nd Temp. 15.4	Stable Temp. 15.3	Ending Temp. 19.3
		Bubbler Start	Bubbler End	Comments: Took about 2 hrs. to collect full sample			
		0850	0.374'				
10-11-16	717			1st Cond. 5,290	2nd Cond. 5,580	Stable Cond. 5,570	Ending Cond. 5,580
				1st pH 2.96	2nd pH 2.98	Stable pH 3.00	Ending pH 3.04
		134.09'	135.09'	1st Temp. 17.6	2nd Temp. 17.1	Stable Temp. 17.1	Ending Temp. 17.8
		Bubbler Start	Bubbler End	Comments:			
		1050	0.290'				
10-11-16	717 DUPLICATE			1st Cond. 5,660	2nd Cond. 5,680	Stable Cond. 5,780	Ending Cond. 5,640
				1st pH 3.04	2nd pH 3.04	Stable pH 3.04	Ending pH 3.05
		135.09'	135.85'	1st Temp. 17.0	2nd Temp. 16.7	Stable Temp. 16.2	Ending Temp. 17.1
		Bubbler Start	Bubbler End	Comments:			
		1132	0.323'				



PH Standard Verification Check (Quar. Performance Monitoring - Pg 7 of 7) Cond. Standard Verification Check

STD.	PH Reading	Date/Time	Initial	GROUND WATER MONITORING FIELD DATA SHEET	STD.	µS/cm Reading	Date/Time	Initial
4-Buffer	4.02	10-12-16/0856	✓	Fourth QUARTER 2016	1413 µS/cm	1428	10-12-16/0855	✓
7-Buffer	7.03	10-12-16/0854	✓	SAMPLING				

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-11-16	RINSE			1st pH 7.58	2nd pH	Stable pH	Ending pH
	Time 1525	Bubbler Start	Bubbler End	1st Temp. 29.8	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-11-16	FIELD BLANK			1st pH 7.05	2nd pH	Stable pH	Ending pH
	Time 1530	Bubbler Start	Bubbler End	1st Temp. 20.3	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
				1st pH	2nd pH	Stable pH	Ending pH
	Time	Bubbler Start	Bubbler End	1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments:			

PH Standard Verification Check (Monthly/Quar. Supplemental - Pg. 1 of 3) Cond. Standard Verification Check

STD.	PH Reading	Date/Time	Initial	GROUND WATER MONITORING FIELD DATA SHEET	STD.	μS/cm Reading	Date/Time	Initial
4-Buffer	3.98	10-11-16/0759	re	Fourth QUARTER 2016	1413 μS/cm	1436	10-11-16/0755	re
7-Buffer	7.02	10-11-16/0756	re	SAMPLING	CPH/Cond. meter #2)			

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-11-16	NBL-2	170.87'	171.22'	1st pH 6.87	2nd pH 6.88	Stable pH 6.88	Ending pH 6.57
	Time 1215	Bubbler Start 9.402'	Bubbler End 8.157'	1st Temp. 17.8	2nd Temp. 17.7	Stable Temp. 17.6	Ending Temp. 16.8
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-11-16	NW-7	197.23'	197.25'	1st pH 7.74	2nd pH 7.74	Stable pH 7.74	Ending pH 6.39
	Time 1326	Bubbler Start	Bubbler End	1st Temp. 20.5	2nd Temp. 20.3	Stable Temp. 20.4	Ending Temp. 19.8
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-11-16	NW-1	198.73'	199.09'	1st pH 6.41	2nd pH 6.88	Stable pH 7.11	Ending pH 7.36
	Time 0930	Bubbler Start	Bubbler End	1st Temp. 15.3	2nd Temp. 15.2	Stable Temp. 15.2	Ending Temp. 15.1
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-11-16	NW-4	196.61	197.64'	1st pH 6.89	2nd pH 6.86	Stable pH 6.83	Ending pH 6.80
	Time 1015	Bubbler Start	Bubbler End	1st Temp. 13.2	2nd Temp. 13.3	Stable Temp. 13.3	Ending Temp. 13.1
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-11-16	NW-2	198.39'	198.59'	1st pH 5.97	2nd pH 6.11	Stable pH 6.16	Ending pH 6.20
	Time 1040	Bubbler Start	Bubbler End	1st Temp. 16.6	2nd Temp. 16.5	Stable Temp. 16.6	Ending Temp. 16.5
				Comments:			
Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	1st Cond. Reading	2nd Cond. Reading	Stable Cond. Reading	Ending Cond. Reading
10-11-16	NW-5	191.28'	191.36'	1st pH 6.33	2nd pH 6.15	Stable pH 6.10	Ending pH 6.08
	Time 1100	Bubbler Start	Bubbler End	1st Temp. 16.5	2nd Temp. 16.5	Stable Temp. 16.3	Ending Temp. 16.0
				Comments:			

PH Standard Verification Check (Monthly/Quar. Supplemental - Pg. 2 of 3) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 4.01 10-11-16/0813    Fourth QUARTER 20 16 1413  $\mu$ S/cm 1521 10-11-16/0811     
 7-Buffer 7.05 10-11-16/0812    SAMPLING (PH/Cond. meter # 1)

Date	Well Number	WL w/Probe Pre-Sample	WL w/Probe Post Sample	Reading 1st Cond.	Reading 2nd Cond.	Reading Stable Cond.	Reading Ending Cond.
10-11-16	NW-3	191.51'	191.98'	4,160	4,260	4,270	4,300
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1120			6.66	6.92	7.08	7.24
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				15.9	15.8	15.8	15.7
				Comments: Sample collected for full analysis.			
10-11-16	RW-A	175.29'	176.64'	4,330	4,510	4,560	4,590
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1220			6.89	6.54	6.28	6.05
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				15.6	15.5	15.3	15.1
				Comments: Sample collected for full analysis.			
10-11-16	RW-11	170.25'	171.72'	4,420	4,430	4,450	4,470
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1305			6.22	6.20	6.19	6.20
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				17.3	17.3	17.3	17.0
				Comments: Sample collected for full analysis.			
10-12-16	MW-6	199.60'		1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1130						
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments: Water level only and no sample due to very low water volume in well.			
10-12-16	PB-3	193.16'		1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1136						
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments: As well mw-6 above.			
10-12-16	PB-4	192.95'		1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
	Time	Bubbler Start	Bubbler End	1st pH	2nd pH	Stable pH	Ending pH
	1143						
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
				Comments: As above.			

PH Standard Verification Check (Monthly/Quar. Supplemental - Rg. 3101(3)) Cond. Standard Verification Check  
 STD. PH Reading Date/Time Initial GROUND WATER MONITORING FIELD DATA SHEET STD.  $\mu$ S/cm Reading Date/Time Initial  
 4-Buffer 9.02 10-12-16/0855    Fourth QUARTER 20 16 1413  $\mu$ S/cm 1428 10-12-16/0855     
 7-Buffer 7.03 10-12-16/0854    SAMPLING (pH/Cond. meter #2)

Date	Well Number	WL w/Probe	WL w/Probe	Reading	Reading	Reading	Reading
		Pre-Sample	Post Sample	1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
10-12-16	PB-2			1st pH	2nd pH	Stable pH	Ending pH
		189.90'		1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
		Bubbler Start	Bubbler End	Comments: Water level only.			
		Time 1150					
10-12-16	DOMESTIC WATER WELL			1st Cond. 3,250	2nd Cond. 3,250	Stable Cond. 3,250	Ending Cond. 3,260
				1st pH 7.62	2nd pH 7.86	Stable pH 7.94	Ending pH 8.02
				1st Temp. 17.1	2nd Temp. 17.1	Stable Temp. 17.1	Ending Temp. 17.0
		Bubbler Start	Bubbler End	Comments: This sample was collected as requested for full analysis and location is in the mill area.			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
		Bubbler Start	Bubbler End	Comments:			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
		Bubbler Start	Bubbler End	Comments:			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
		Bubbler Start	Bubbler End	Comments:			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
		Bubbler Start	Bubbler End	Comments:			
				1st Cond.	2nd Cond.	Stable Cond.	Ending Cond.
				1st pH	2nd pH	Stable pH	Ending pH
				1st Temp.	2nd Temp.	Stable Temp.	Ending Temp.
		Bubbler Start	Bubbler End	Comments:			

APPENDIX B

QUARTERLY SAMPLING

SEMI-ANNUAL GROUND WATER MONITORING REPORT

JULY TO DECEMBER OF 2016

QA/QC CONTROLS

FIELD BLANKS  
RINSATES

EPA-28 AND EPA-28 DUPLICATE FOR SW ALLUVIUM

EPA-2 AND EPA-2 DUPLICATES FOR ZONE – 1

717 AND 717 DUPLICATES FOR ZONE - 3

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-011  
**Client Sample ID:** Field Blank

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 12:00  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/21/16 18:03 / ljl
Calcium	ND	mg/L		1		E200.7	07/19/16 20:43 / sf
Chloride	ND	mg/L		1		E300.0	07/23/16 04:35 / ljl
Magnesium	ND	mg/L		1		E200.7	07/19/16 20:43 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:01 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/20/16 13:26 / ljl
Potassium	ND	mg/L		1		E200.7	07/19/16 20:43 / sf
Sodium	ND	mg/L		1		E200.7	07/19/16 20:43 / sf
Sulfate	ND	mg/L		1		E300.0	07/23/16 04:35 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.10	s.u.	H	0.01		A4500-H B	07/18/16 11:49 / wc
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	H	10		A2540 C	07/22/16 16:53 / smm
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/27/16 02:23 / sf
Beryllium	ND	mg/L		0.001		E200.8	07/27/16 22:15 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 02:23 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/27/16 22:15 / sf
Lead	ND	mg/L		0.001		E200.8	07/27/16 22:15 / sf
Manganese	ND	mg/L		0.01		E200.7	07/27/16 02:23 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 02:23 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 02:23 / sf
Uranium	ND	mg/L		0.0003		E200.8	07/27/16 22:15 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 02:23 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 21:40 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:38 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.9	pCi/L	U			E900.1	08/02/16 23:46 / trs
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	08/02/16 23:46 / trs
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	08/02/16 23:46 / trs
Lead 210	-0.06	pCi/L	U			E909.0	09/16/16 18:53 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/16/16 18:53 / eli-cs
Lead 210 MDC	1.3	pCi/L				E909.0	09/16/16 18:53 / eli-cs
Radium 226	0.1	pCi/L	U			E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.14	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.21	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	3.8	pCi/L				RA-05	08/11/16 08:23 / plj
Radium 228 precision (±)	0.98	pCi/L				RA-05	08/11/16 08:23 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-011  
**Client Sample ID:** Field Blank

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 12:00  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.1	pCi/L				RA-05	08/11/16 08:23 / plj
Thorium 230	0.07	pCi/L	U			E908.0	08/09/16 15:03 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/09/16 15:03 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/09/16 15:03 / cng
<b>DATA QUALITY</b>							
A/C Balance	55.7	%				A1030 E	07/26/16 08:34 / kbh
Anions	0	meq/L				A1030 E	07/26/16 08:34 / kbh
Cations	0.03	meq/L				A1030 E	07/26/16 08:34 / kbh
Cation/Anion Balance <±0.2 meq/L Difference							
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	4.55	ug/L		0.50		E624	07/26/16 17:50 / dm
Bromodichloromethane	0.81	ug/L		0.50		E624	07/26/16 17:50 / dm
Bromoform	0.96	ug/L		0.50		E624	07/26/16 17:50 / dm
Chlorodibromomethane	1.08	ug/L		0.50		E624	07/26/16 17:50 / dm
Chloroform	1.70	ug/L		0.50		E624	07/26/16 17:50 / dm
Surr: Dibromofluoromethane	114	%REC		64.4-131		E624	07/26/16 17:50 / dm
Surr: p-Bromofluorobenzene	138	%REC	S	67.1-133		E624	07/26/16 17:50 / dm
Surr: Toluene-d8	117	%REC		79.7-125		E624	07/26/16 17:50 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 01/24/17

Report Date: 09/28/16

Collection Date: 07/19/16 15:00

Date Received: 07/22/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-013  
Client Sample ID: Field Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/25/16 21:31 / wc
Calcium	ND	mg/L		1		E200.7	07/26/16 18:58 / sf
Chloride	ND	mg/L		1		E300.0	07/28/16 13:41 / wc
Magnesium	ND	mg/L		1		E200.7	07/26/16 18:58 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/26/16 13:00 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/27/16 13:10 / ljl
Potassium	ND	mg/L		1		E200.7	07/26/16 18:58 / sf
Sodium	ND	mg/L		1		E200.7	07/26/16 18:58 / sf
Sulfate	ND	mg/L		1		E300.0	07/30/16 09:57 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.06	s.u.	H	0.01		A4500-H B	07/22/16 17:36 / ljl
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	07/25/16 14:40 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	08/05/16 22:20 / sf
Beryllium	ND	mg/L		0.001		E200.7	08/05/16 22:20 / sf
Cadmium	ND	mg/L		0.005		E200.7	08/05/16 22:20 / sf
Cobalt	ND	mg/L		0.01		E200.7	08/05/16 22:20 / sf
Lead	ND	mg/L		0.001		E200.8	08/08/16 16:52 / smm
Manganese	ND	mg/L		0.01		E200.7	08/05/16 22:20 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/05/16 22:20 / sf
Nickel	ND	mg/L		0.05		E200.7	08/05/16 22:20 / sf
Uranium	0.0013	mg/L	B	0.0003		E200.8	08/08/16 16:52 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/05/16 22:20 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/03/16 04:03 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 11:13 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.0	pCi/L	U			E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U Precision (±)	1.1	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U MDC	1.4	pCi/L				E900.1	08/09/16 21:27 / trs
Lead 210	-0.2	pCi/L	U			E909.0	09/13/16 04:43 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/13/16 04:43 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/13/16 04:43 / eli-cs
Radium 226	0.09	pCi/L	U			E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	0.12	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.18	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	0.22	pCi/L	U			RA-05	08/16/16 13:38 / plj
Radium 228 precision (±)	1.1	pCi/L				RA-05	08/16/16 13:38 / plj

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
B - The analyte was detected in the method blank.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-013  
**Client Sample ID:** Field Blank

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/19/16 15:00  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.8	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	-0.01	pCi/L	U			E908.0	08/10/16 14:55 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	08/10/16 14:55 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/10/16 14:55 / cng
<b>DATA QUALITY</b>							
A/C Balance	-45.5	%				A1030 E	08/02/16 14:17 / smm
Anions	0.05	meq/L				A1030 E	08/02/16 14:17 / smm
Cations	0.02	meq/L				A1030 E	08/02/16 14:17 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	0.84	ug/L		0.50		E624	07/27/16 08:22 / dm
Bromoform	0.92	ug/L		0.50		E624	07/27/16 08:22 / dm
Chlorodibromomethane	1.11	ug/L		0.50		E624	07/27/16 08:22 / dm
Chloroform	1.64	ug/L		0.50		E624	07/27/16 08:22 / dm
Trihalomethanes, Total	4.5	ug/L		0.50		E624	09/26/16 11:38 / sec
Trihalomethanes, Total	4.5	ug/L		0.50		E624	12/02/16 10:29 / sec
Surr: Dibromofluoromethane	115	%REC		64.4-131		E624	07/27/16 08:22 / dm
Surr: p-Bromofluorobenzene	143	%REC	S	67.1-133		E624	07/27/16 08:22 / dm
Surr: Toluene-d8	118	%REC		79.7-125		E624	07/27/16 08:22 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 1  
Lab ID: C16100237-011  
Client Sample ID: Field Blank

Report Date: 12/14/16  
Collection Date: 10/05/16 11:50  
Date Received: 10/07/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/14/16 18:08 / wc
Calcium	ND	mg/L		1		E200.7	10/14/16 18:12 / sf
Chloride	ND	mg/L		1		E300.0	10/13/16 08:06 / ljl
Magnesium	ND	mg/L		1		E200.7	10/14/16 18:12 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 12:59 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	10/13/16 17:57 / ljl
Potassium	ND	mg/L		1		E200.7	10/14/16 18:12 / sf
Sodium	ND	mg/L		1		E200.7	10/14/16 18:12 / sf
Sulfate	ND	mg/L		1		E300.0	10/13/16 08:06 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	5.90	s.u.	H	0.01		A4500-H B	10/10/16 10:58 / bah
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	10/11/16 08:41 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/18/16 17:37 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/18/16 17:37 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/18/16 17:37 / smm
Cobalt	ND	mg/L		0.01		E200.8	10/18/16 17:37 / smm
Lead	ND	mg/L		0.001		E200.8	10/18/16 17:37 / smm
Manganese	ND	mg/L		0.01		E200.8	10/18/16 17:37 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/18/16 17:37 / smm
Nickel	ND	mg/L		0.05		E200.8	10/13/16 09:40 / smm
Uranium	ND	mg/L		0.0003		E200.8	10/18/16 17:37 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 09:40 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 19:11 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:05 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.4	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U Precision (±)	0.8	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 23:14 / cng
Lead 210	0.1	pCi/L	U			E909.0	10/19/16 22:31 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 22:31 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 22:31 / eli-cs
Radium 226	0.15	pCi/L	U			E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.14	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.20	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	1.7	pCi/L				RA-05	10/28/16 08:57 / plj
Radium 228 precision (±)	0.73	pCi/L				RA-05	10/28/16 08:57 / plj

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-011  
**Client Sample ID:** Field Blank

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 11:50  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.2	pCi/L				RA-05	10/28/16 08:57 / plj
Thorium 230	0.04	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
A/C Balance	60.4	%				A1030 E	10/18/16 15:11 / sec
Anions	0	meq/L				A1030 E	10/18/16 15:11 / sec
Cations	0.04	meq/L				A1030 E	10/18/16 15:11 / sec
Cation/Anion Balance <±0.2 meq/L Difference							
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	0.86	ug/L		0.50		E624	10/15/16 04:27 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/16 04:27 / eli-b
Chlorodibromomethane	0.91	ug/L		0.50		E624	10/15/16 04:27 / eli-b
Chloroform	1.8	ug/L		0.50		E624	10/15/16 04:27 / eli-b
Trihalomethanes, Total	4.0	ug/L		0.50		E624	12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	94.0	%REC		71-139		E624	10/15/16 04:27 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/15/16 04:27 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	10/15/16 04:27 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-017  
**Client Sample ID:** Field Blank

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 15:30  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/18/16 02:35 / wc
Calcium	ND	mg/L		1		E200.7	10/28/16 17:06 / sf
Chloride	ND	mg/L		1		E300.0	11/02/16 07:01 / ljl
Magnesium	ND	mg/L		1		E200.7	10/28/16 17:06 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	11/04/16 12:18 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:52 / ljl
Potassium	ND	mg/L		1		E200.7	10/28/16 17:06 / sf
Sodium	ND	mg/L		1		E200.7	10/28/16 17:06 / sf
Sulfate	ND	mg/L		1		E300.0	11/02/16 07:01 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.02	s.u.	H	0.01		A4500-H B	10/17/16 10:34 / bah
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	10/18/16 08:51 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	11/03/16 01:12 / sf
Beryllium	ND	mg/L		0.001		E200.7	11/03/16 01:12 / sf
Cadmium	ND	mg/L		0.005		E200.7	11/03/16 01:12 / sf
Cobalt	ND	mg/L		0.01		E200.8	11/17/16 21:11 / smm
Lead	ND	mg/L		0.001		E200.8	11/17/16 21:11 / smm
Manganese	ND	mg/L		0.01		E200.7	11/03/16 01:12 / sf
Molybdenum	ND	mg/L		0.1		E200.7	11/03/16 01:12 / sf
Nickel	ND	mg/L		0.05		E200.7	11/03/16 01:12 / sf
Uranium	ND	mg/L		0.0003		E200.8	11/17/16 21:11 / smm
Vanadium	ND	mg/L		0.1		E200.7	11/03/16 01:12 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/16 01:51 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:46 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.4	pCi/L	U			E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U Precision (±)	0.8	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 14:21 / cng
Lead 210	0.2	pCi/L	U			E909.0	11/06/16 19:14 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/06/16 19:14 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/06/16 19:14 / plj
Radium 226	0.10	pCi/L	U			E903.0	11/10/16 13:44 / dmf
Radium 226 precision (±)	0.12	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 226 MDC	0.20	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 228	0.91	pCi/L	U			RA-05	11/04/16 10:33 / plj
Radium 228 precision (±)	0.88	pCi/L				RA-05	11/04/16 10:33 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-017  
**Client Sample ID:** Field Blank

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 15:30  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.4	pCi/L				RA-05	11/04/16 10:33 / plj
Thorium 230	0.08	pCi/L	U			E908.0	11/15/16 09:43 / cng
Thorium 230 precision (±)	0.09	pCi/L				E908.0	11/15/16 09:43 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	11/15/16 09:43 / cng
<b>DATA QUALITY</b>							
A/C Balance	-17.8	%				A1030 E	11/03/16 11:23 / sec
Anions	0.03	meq/L				A1030 E	11/03/16 11:23 / sec
Cations	0.02	meq/L				A1030 E	11/03/16 11:23 / sec
Cation/Anion Balance <±0.2 meq/L Difference							
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	1.1	ug/L		0.50		E624	10/19/16 22:52 / eli-b
Bromoform	0.65	ug/L		0.50		E624	10/19/16 22:52 / eli-b
Chlorodibromomethane	1.2	ug/L		0.50		E624	10/19/16 22:52 / eli-b
Chloroform	2.5	ug/L		0.50		E624	10/19/16 22:52 / eli-b
Trihalomethanes, Total	5.6	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139		E624	10/19/16 22:52 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/19/16 22:52 / eli-b
Surr: Toluene-d8	98.0	%REC		80-123		E624	10/19/16 22:52 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-010  
**Client Sample ID:** Rinsate

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 11:50  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/21/16 17:54 / ljl
Calcium	ND	mg/L		1		E200.7	07/19/16 20:39 / sf
Chloride	ND	mg/L		1		E300.0	07/23/16 04:16 / ljl
Magnesium	ND	mg/L		1		E200.7	07/19/16 20:39 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 17:27 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/20/16 13:25 / ljl
Potassium	ND	mg/L		1		E200.7	07/19/16 20:39 / sf
Sodium	ND	mg/L		1		E200.7	07/19/16 20:39 / sf
Sulfate	ND	mg/L		1		E300.0	07/23/16 04:16 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.60	s.u.	H	0.01		A4500-H B	07/18/16 11:46 / wc
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	07/18/16 14:49 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/27/16 02:19 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 02:19 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 02:19 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/27/16 22:09 / sf
Lead	ND	mg/L		0.001		E200.8	07/27/16 22:09 / sf
Manganese	ND	mg/L		0.01		E200.7	07/27/16 02:19 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 02:19 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 02:19 / sf
Uranium	ND	mg/L		0.0003		E200.8	07/27/16 22:09 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 02:19 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 21:04 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:36 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	-0.4	pCi/L	U			E900.1	08/02/16 23:46 / trs
Gross Alpha minus Rn & U Precision (±)	0.9	pCi/L				E900.1	08/02/16 23:46 / trs
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	08/02/16 23:46 / trs
Lead 210	-0.4	pCi/L	U			E909.0	09/14/16 12:13 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/14/16 12:13 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/14/16 12:13 / eli-cs
Radium 226	0.14	pCi/L	U			E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.14	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.21	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	0.51	pCi/L	U			RA-05	08/11/16 10:01 / plj
Radium 228 precision (±)	0.84	pCi/L				RA-05	08/11/16 10:01 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-010  
**Client Sample ID:** Rinsate

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 11:50  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.4	pCi/L				RA-05	08/11/16 10:01 / plj
Thorium 230	0.05	pCi/L	U			E908.0	08/09/16 15:03 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	08/09/16 15:03 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 15:03 / cng
<b>DATA QUALITY</b>							
A/C Balance	1.82	%				A1030 E	07/26/16 08:34 / kbh
Anions	0.06	meq/L				A1030 E	07/26/16 08:34 / kbh
Cations	0.06	meq/L				A1030 E	07/26/16 08:34 / kbh
Cation/Anion Balance <±0.2 meq/L Difference							
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	4.10	ug/L		0.50		E624	07/26/16 11:48 / dm
Bromodichloromethane	0.74	ug/L		0.50		E624	07/26/16 11:48 / dm
Bromoform	0.92	ug/L		0.50		E624	07/26/16 11:48 / dm
Chlorodibromomethane	0.93	ug/L		0.50		E624	07/26/16 11:48 / dm
Chloroform	1.51	ug/L		0.50		E624	07/26/16 11:48 / dm
Surr: Dibromofluoromethane	112	%REC		64.4-131		E624	07/26/16 11:48 / dm
Surr: p-Bromofluorobenzene	147	%REC	S	67.1-133		E624	07/26/16 11:48 / dm
Surr: Toluene-d8	115	%REC		79.7-125		E624	07/26/16 11:48 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Revised Date: 01/24/17

Report Date: 09/28/16

Collection Date: 07/19/16 14:50

Date Received: 07/22/16

Matrix: Aqueous

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-012  
Client Sample ID: Rinsate

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/25/16 21:27 / wc
Calcium	ND	mg/L		1		E200.7	07/26/16 18:54 / sf
Chloride	ND	mg/L		1		E300.0	07/28/16 13:23 / wc
Magnesium	ND	mg/L		1		E200.7	07/26/16 18:54 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/26/16 12:59 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/27/16 13:06 / ljl
Potassium	ND	mg/L		1		E200.7	07/26/16 18:54 / sf
Sodium	ND	mg/L		1		E200.7	07/26/16 18:54 / sf
Sulfate	ND	mg/L		1		E300.0	07/30/16 09:05 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.21	s.u.	H	0.01		A4500-H B	07/22/16 17:22 / ljl
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	07/25/16 14:40 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	08/06/16 03:40 / sf
Beryllium	ND	mg/L		0.001		E200.7	08/06/16 03:40 / sf
Cadmium	ND	mg/L		0.005		E200.7	08/06/16 03:40 / sf
Cobalt	ND	mg/L		0.01		E200.7	08/06/16 03:40 / sf
Lead	ND	mg/L		0.001		E200.8	08/08/16 23:04 / smm
Manganese	ND	mg/L		0.01		E200.7	08/06/16 03:40 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/06/16 03:40 / sf
Nickel	ND	mg/L		0.05		E200.7	08/06/16 03:40 / sf
Uranium	ND	mg/L		0.0003		E200.8	08/08/16 23:04 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 03:40 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/03/16 03:51 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 11:11 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.9	pCi/L	U			E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U Precision (±)	1.0	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U MDC	1.4	pCi/L				E900.1	08/09/16 21:27 / trs
Lead 210	0.2	pCi/L	U			E909.0	09/13/16 03:00 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/13/16 03:00 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/13/16 03:00 / eli-cs
Radium 226	0.15	pCi/L	U			E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	0.14	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.21	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	3.0	pCi/L				RA-05	08/16/16 12:03 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	08/16/16 12:03 / plj

**Report Definitions:**  
 RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 MDC - Minimum detectable concentration  
 U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.  
 H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-012  
**Client Sample ID:** Rinsate

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/19/16 14:50  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.7	pCi/L				RA-05	08/16/16 12:03 / plj
Thorium 230	0.008	pCi/L	U			E908.0	08/10/16 14:55 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	08/10/16 14:55 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	08/10/16 14:55 / cng
<b>DATA QUALITY</b>							
A/C Balance	-32.2	%				A1030 E	08/02/16 14:17 / smm
Anions	0.07	meq/L				A1030 E	08/02/16 14:17 / smm
Cations	0.03	meq/L				A1030 E	08/02/16 14:17 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	0.88	ug/L		0.50		E624	07/27/16 07:47 / dm
Bromoform	0.99	ug/L		0.50		E624	07/27/16 07:47 / dm
Chlorodibromomethane	1.07	ug/L		0.50		E624	07/27/16 07:47 / dm
Chloroform	1.78	ug/L		0.50		E624	07/27/16 07:47 / dm
Trihalomethanes, Total	4.7	ug/L		0.50		E624	09/26/16 11:38 / sec
Trihalomethanes, Total	4.7	ug/L		0.50		E624	12/02/16 10:29 / sec
Surr: Dibromofluoromethane	116	%REC		64.4-131		E624	07/27/16 07:47 / dm
Surr: p-Bromofluorobenzene	146	%REC	S	67.1-133		E624	07/27/16 07:47 / dm
Surr: Toluene-d8	118	%REC		79.7-125		E624	07/27/16 07:47 / dm

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-010  
**Client Sample ID:** Rinsate

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 11:46  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/14/16 18:03 / wc
Calcium	ND	mg/L		1		E200.7	10/14/16 18:08 / sf
Chloride	ND	mg/L		1		E300.0	10/13/16 07:47 / ljl
Magnesium	ND	mg/L		1		E200.7	10/14/16 18:08 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 12:58 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	10/13/16 17:53 / ljl
Potassium	ND	mg/L		1		E200.7	10/14/16 18:08 / sf
Sodium	2	mg/L		1		E200.7	10/14/16 18:08 / sf
Sulfate	2	mg/L		1		E300.0	10/13/16 07:47 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.41	s.u.	H	0.01		A4500-H B	10/10/16 10:55 / bah
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	10/11/16 08:40 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/18/16 17:30 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/18/16 17:30 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/18/16 17:30 / smm
Cobalt	ND	mg/L		0.01		E200.8	10/18/16 17:30 / smm
Lead	ND	mg/L		0.001		E200.8	10/18/16 17:30 / smm
Manganese	0.02	mg/L		0.01		E200.8	10/18/16 17:30 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/18/16 17:30 / smm
Nickel	ND	mg/L		0.05		E200.8	10/13/16 09:34 / smm
Uranium	ND	mg/L		0.0003		E200.8	10/18/16 17:30 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 09:34 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 18:58 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:57 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.1	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U Precision (±)	1	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 23:14 / cng
Lead 210	0.2	pCi/L	U			E909.0	10/19/16 20:16 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 20:16 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 20:16 / eli-cs
Radium 226	0.07	pCi/L	U			E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.12	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.20	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	0.76	pCi/L	U			RA-05	10/28/16 10:35 / plj
Radium 228 precision (±)	0.89	pCi/L				RA-05	10/28/16 10:35 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-010  
**Client Sample ID:** Rinsate

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 11:46  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.4	pCi/L				RA-05	10/28/16 10:35 / plj
Thorium 230	0.07	pCi/L	U		E908.0		10/25/16 18:10 / cng
Thorium 230 precision (±)	0.05	pCi/L			E908.0		10/25/16 18:10 / cng
Thorium 230 MDC	0.07	pCi/L			E908.0		10/25/16 18:10 / cng
<b>DATA QUALITY</b>							
A/C Balance	3.26	%			A1030 E		10/18/16 15:11 / sec
Anions	0.10	meq/L			A1030 E		10/18/16 15:11 / sec
Cations	0.11	meq/L			A1030 E		10/18/16 15:11 / sec
Cation/Anion Balance <±0.2 meq/L Difference							
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	0.91	ug/L		0.50	E624		10/15/16 03:58 / eli-b
Bromoform	ND	ug/L		0.50	E624		10/15/16 03:58 / eli-b
Chlorodibromomethane	0.99	ug/L		0.50	E624		10/15/16 03:58 / eli-b
Chloroform	2.0	ug/L		0.50	E624		10/15/16 03:58 / eli-b
Trihalomethanes, Total	4.3	ug/L		0.50	E624		12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	93.0	%REC		71-139	E624		10/15/16 03:58 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127	E624		10/15/16 03:58 / eli-b
Surr: Toluene-d8	104	%REC		80-123	E624		10/15/16 03:58 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-016  
**Client Sample ID:** Rinsate

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 15:25  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	10/18/16 02:30 / wc
Calcium	ND	mg/L		1		E200.7	10/28/16 17:02 / sf
Chloride	ND	mg/L		1		E300.0	11/02/16 06:43 / ljl
Magnesium	ND	mg/L		1		E200.7	10/28/16 17:02 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	11/04/16 12:17 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	11/04/16 18:50 / ljl
Potassium	ND	mg/L		1		E200.7	10/28/16 17:02 / sf
Sodium	ND	mg/L		1		E200.7	10/28/16 17:02 / sf
Sulfate	16	mg/L		1		E300.0	11/02/16 06:43 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.34	s.u.	H	0.01		A4500-H B	10/17/16 10:31 / bah
Solids, Total Dissolved TDS @ 180 C	19	mg/L		10		A2540 C	10/18/16 08:51 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	11/03/16 01:08 / sf
Beryllium	ND	mg/L		0.001		E200.7	11/03/16 01:08 / sf
Cadmium	ND	mg/L		0.005		E200.7	11/03/16 01:08 / sf
Cobalt	ND	mg/L		0.01		E200.8	11/17/16 21:04 / smm
Lead	ND	mg/L		0.001		E200.8	11/17/16 21:04 / smm
Manganese	0.01	mg/L		0.01		E200.7	11/03/16 01:08 / sf
Molybdenum	ND	mg/L		0.1		E200.7	11/03/16 01:08 / sf
Nickel	ND	mg/L		0.05		E200.8	11/17/16 21:04 / smm
Uranium	ND	mg/L		0.0003		E200.8	11/17/16 21:04 / smm
Vanadium	ND	mg/L		0.1		E200.7	11/03/16 01:08 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	11/01/16 01:39 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 16:43 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	0.3	pCi/L	U			E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U Precision (±)	0.8	pCi/L				E900.1	10/27/16 14:21 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 14:21 / cng
Lead 210	ND	pCi/L	U			E909.0	11/06/16 16:11 / plj
Lead 210 precision (±)	0.6	pCi/L				E909.0	11/06/16 16:11 / plj
Lead 210 MDC	1	pCi/L				E909.0	11/06/16 16:11 / plj
Radium 226	0.18	pCi/L	U			E903.0	11/10/16 13:44 / dmf
Radium 226 precision (±)	0.14	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 226 MDC	0.19	pCi/L				E903.0	11/10/16 13:44 / dmf
Radium 228	5.8	pCi/L				RA-05	11/04/16 10:32 / plj
Radium 228 precision (±)	1.5	pCi/L				RA-05	11/04/16 10:32 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
H - Analysis performed past recommended holding time.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-016  
**Client Sample ID:** Rinsate

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 15:25  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.4	pCi/L				RA-05	11/04/16 10:32 / plj
Thorium 230	-0.0001	pCi/L	U		E908.0		11/15/16 09:43 / cng
Thorium 230 precision (±)	0.09	pCi/L			E908.0		11/15/16 09:43 / cng
Thorium 230 MDC	0.2	pCi/L			E908.0		11/15/16 09:43 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	20	mg/L			A1030 E		11/04/16 10:26 / sec
A/C Balance	-65.1	%			A1030 E		11/04/16 10:26 / sec
Anions	0.41	meq/L			A1030 E		11/04/16 10:26 / sec
Cations	0.09	meq/L			A1030 E		11/04/16 10:26 / sec
TDS Ratio	0.95	unitless			A1030 E		11/04/16 10:26 / sec
- The ion balance is not appropriate for samples having a conductivity less than 300 umhos/cm.							
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	1.3	ug/L		0.50	E624		10/20/16 02:54 / eli-b
Bromoform	0.83	ug/L		0.50	E624		10/20/16 02:54 / eli-b
Chlorodibromomethane	1.4	ug/L		0.50	E624		10/20/16 02:54 / eli-b
Chloroform	3.4	ug/L		0.50	E624		10/20/16 02:54 / eli-b
Trihalomethanes, Total	6.9	ug/L		0.50	E624		11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	102	%REC		71-139	E624		10/20/16 02:54 / eli-b
Surr: p-Bromofluorobenzene	104	%REC		80-127	E624		10/20/16 02:54 / eli-b
Surr: Toluene-d8	92.0	%REC		80-123	E624		10/20/16 02:54 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		EPA-28	EPA-28	EPA-28	EPA-28
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-009	C16070451-009	C16040219-009	C16010153-009
Bicarbonate as HCO <sub>3</sub>	mg/L	403	408	404	425
Calcium	mg/L	490	494	495	487
Chloride	mg/L	101	99	96	101
Magnesium	mg/L	466	460	464	461
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	8.1	8.8	8.1	8.7
Potassium	mg/L	11	11	11	10
Sodium	mg/L	252	252	252	238
Sulfate	mg/L	3290	2950	3060	3140
pH	s.u.	6.91	6.90	6.97	6.82
Solids, Total Dissolved TDS @ 180 C	mg/L	5010	4970	5010	5020
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	0.1
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.47	0.25	0.50	0.49
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0171	0.0205	0.0192	0.0156
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.3	1.2	2.7	2.0
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.3	1.2	1.5	1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	-0.3	0.8	0.3	-0.5
Lead 210 precision (±)	pCi/L	0.7	0.9	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.37	0.35	0.57	0.61
Radium 226 precision (±)	pCi/L	0.15	0.15	0.20	0.18
Radium 226 MDC	pCi/L	0.18	0.12	0.20	0.17
Radium 228	pCi/L	2.5	3.4	2.7	2.0
Radium 228 precision (±)	pCi/L	2.5	1.3	1.1	0.94
Radium 228 MDC	pCi/L	1.3	1.3	1.1	1.2
Thorium 230	pCi/L	0.09	0.2	0.04	0.01
Thorium 230 precision (±)	pCi/L	0.07	0.1	0.08	0.06
Thorium 230 MDC	pCi/L	0.08	0.1	0.1	0.2
A/C Balance	%	-2.89	1.49	0.36	-2.00
Anions	meq/L	78.4	71.6	73.6	75.9
Cations	meq/L	74.0	73.7	74.1	72.9
Solids, Total Dissolved - Calculated	mg/L	4800	4500	4600	4700
TDS Ratio	unitless	1.03	1.10	1.08	1.07
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations				
GroundWater Monitoring Summary: Alluvium Monitor Wells				
Well ID:		EPA-28 Duplicate	EPA-28 Duplicate	EPA-28 Duplicate
Collection Date:		10/3/2016	7/11/2016	4/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016
Analyte	RUUnits	C16100246-010	C16070451-010	C16040219-010
Bicarbonate as HCO <sub>3</sub>	mg/L	416	413	400
Calcium	mg/L	489	493	494
Chloride	mg/L	99	102	97
Magnesium	mg/L	461	464	464
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	8.0	8.7	8.3
Potassium	mg/L	11	11	11
Sodium	mg/L	247	251	255
Sulfate	mg/L	3190	3010	3080
pH	s.u.	6.91	6.85	6.95
Solids, Total Dissolved TDS @ 180 C	mg/L	4970	4980	5000
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.44	0.46	0.50
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0177	0.0178	0.0193
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	2.1	1.1	3.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.0	1.4	1.5
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5
Lead 210	pCi/L	0.1	0.6	-0.3
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.4	1.4
Radium 226	pCi/L	0.52	0.33	0.71
Radium 226 precision (±)	pCi/L	0.18	0.14	0.21
Radium 226 MDC	pCi/L	0.18	0.12	0.20
Radium 228	pCi/L	1.3	1.7	0.79
Radium 228 precision (±)	pCi/L	2.6	1.0	0.78
Radium 228 MDC	pCi/L	1.4	1.4	1.2
Thorium 230	pCi/L	0.1	0.05	0.04
Thorium 230 precision (±)	pCi/L	0.1	0.08	0.09
Thorium 230 MDC	pCi/L	0.2	0.1	0.2
A/C Balance	%	-2.09	0.65	0.16
Anions	meq/L	76.5	73.0	74.0
Cations	meq/L	73.4	74.0	74.2
Solids, Total Dissolved - Calculated	mg/L	4800	4600	4600
TDS Ratio	unitless	1.05	1.08	1.08
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-010  
**Client Sample ID:** EPA-28 Duplicate

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 16:15  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	413	mg/L		5		A2320 B	07/19/16 21:50 / wc
Calcium	493	mg/L		1		E200.7	07/19/16 19:27 / sf
Chloride	102	mg/L	D	2		E300.0	07/20/16 07:48 / wc
Magnesium	464	mg/L		1		E200.7	07/19/16 19:27 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:33 / ljl
Nitrogen, Nitrate+Nitrite as N	8.7	mg/L	D	1.0		E353.2	07/15/16 16:38 / ljl
Potassium	11	mg/L		1		E200.7	07/19/16 19:27 / sf
Sodium	251	mg/L		1		E200.7	07/19/16 19:27 / sf
Sulfate	3010	mg/L	D	8		E300.0	07/20/16 07:48 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	6.85	s.u.	H	0.01		A4500-H B	07/15/16 16:52 / wc
Solids, Total Dissolved TDS @ 180 C	4980	mg/L	D	40		A2540 C	07/15/16 17:48 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/21/16 15:32 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/21/16 15:32 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/21/16 15:32 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/25/16 23:02 / sf
Lead	ND	mg/L		0.001		E200.8	07/23/16 08:26 / sf
Manganese	0.46	mg/L		0.01		E200.7	07/21/16 15:32 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/21/16 15:32 / sf
Nickel	ND	mg/L		0.05		E200.8	07/23/16 08:26 / sf
Uranium	0.0178	mg/L		0.0003		E200.8	07/23/16 08:26 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/21/16 15:32 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 16:52 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:06 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	1.1	pCi/L	U			E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U Precision (±)	1.4	pCi/L				E900.1	07/29/16 01:00 / trs
Gross Alpha minus Rn & U MDC	1.5	pCi/L				E900.1	07/29/16 01:00 / trs
Lead 210	0.6	pCi/L	U			E909.0	09/20/16 13:21 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/20/16 13:21 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/20/16 13:21 / eli-cs
Radium 226	0.33	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 precision (±)	0.14	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 226 MDC	0.12	pCi/L				E903.0	08/15/16 12:55 / dmf
Radium 228	1.7	pCi/L				RA-05	08/09/16 12:09 / plj
Radium 228 precision (±)	1.0	pCi/L				RA-05	08/09/16 12:09 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16070451-010  
**Client Sample ID:** EPA-28 Duplicate

**Report Date:** 09/26/16  
**Collection Date:** 07/11/16 16:15  
**Date Received:** 07/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.4	pCi/L				RA-05	08/09/16 12:09 / plj
Thorium 230	0.05	pCi/L	U			E908.0	08/09/16 10:50 / cng
Thorium 230 precision (±)	0.08	pCi/L				E908.0	08/09/16 10:50 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 10:50 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4600	mg/L				A1030 E	07/26/16 08:30 / kbh
A/C Balance	0.65	%				A1030 E	07/26/16 08:30 / kbh
Anions	73.0	meq/L				A1030 E	07/26/16 08:30 / kbh
Cations	74.0	meq/L				A1030 E	07/26/16 08:30 / kbh
TDS Ratio	1.08	unitless				A1030 E	07/26/16 08:30 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/22/16 18:59 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/22/16 18:59 / dm
Bromoform	ND	ug/L		0.50		E624	07/22/16 18:59 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/22/16 18:59 / dm
Chloroform	ND	ug/L		0.50		E624	07/22/16 18:59 / dm
Surr: Dibromofluoromethane	150	%REC	S	64.4-131		E624	07/22/16 18:59 / dm
Surr: p-Bromofluorobenzene	152	%REC	S	67.1-133		E624	07/22/16 18:59 / dm
Surr: Toluene-d8	56.0	%REC	S	79.7-125		E624	07/22/16 18:59 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-010  
**Client Sample ID:** EPA-28 Duplicate

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 15:30  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	416	mg/L		5		A2320 B	10/14/16 20:33 / wc
Calcium	489	mg/L		1		E200.7	10/14/16 20:06 / sf
Chloride	99	mg/L	D	2		E300.0	10/13/16 13:19 / ljl
Magnesium	461	mg/L		1		E200.7	10/14/16 20:06 / sf
Nitrogen, Ammonia as N	ND	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 13:19 / ljl
Nitrogen, Nitrate+Nitrite as N	8.0	mg/L	D	0.5		E353.2	10/13/16 18:17 / ljl
Potassium	11	mg/L		1		E200.7	10/14/16 20:06 / sf
Sodium	247	mg/L		1		E200.7	10/14/16 20:06 / sf
Sulfate	3190	mg/L	D	8		E300.0	10/13/16 13:19 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.91	s.u.	H	0.01		A4500-H B	10/10/16 11:56 / bah
Solids, Total Dissolved TDS @ 180 C	4970	mg/L	H	40		A2540 C	10/11/16 08:46 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/15/16 05:32 / sf
Beryllium	ND	mg/L		0.001		E200.8	10/15/16 05:32 / sf
Cadmium	ND	mg/L		0.005		E200.8	10/15/16 05:32 / sf
Cobalt	ND	mg/L		0.01		E200.8	10/15/16 05:32 / sf
Lead	ND	mg/L		0.001		E200.8	10/15/16 05:32 / sf
Manganese	0.44	mg/L		0.01		E200.8	10/15/16 05:32 / sf
Molybdenum	ND	mg/L		0.1		E200.8	10/15/16 05:32 / sf
Nickel	ND	mg/L		0.05		E200.8	10/15/16 05:32 / sf
Uranium	0.0177	mg/L		0.0003		E200.8	10/15/16 05:32 / sf
Vanadium	ND	mg/L		0.1		E200.8	10/15/16 05:32 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 22:35 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 15:46 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.1	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U Precision (±)	1.0	pCi/L				E900.1	10/21/16 23:43 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/21/16 23:43 / cng
Lead 210	0.1	pCi/L	U			E909.0	10/24/16 19:02 / eli-cs
Lead 210 precision (±)	0.7	pCi/L				E909.0	10/24/16 19:02 / eli-cs
Lead 210 MDC	1.2	pCi/L				E909.0	10/24/16 19:02 / eli-cs
Radium 226	0.52	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 precision (±)	0.18	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 226 MDC	0.18	pCi/L				E903.0	11/02/16 06:58 / plj
Radium 228	1.3	pCi/L				RA-05	09/27/16 11:46 / plj
Radium 228 precision (±)	2.6	pCi/L				RA-05	09/27/16 11:46 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Lab ID:** C16100246-010  
**Client Sample ID:** EPA-28 Duplicate

**Report Date:** 12/15/16  
**Collection Date:** 10/03/16 15:30  
**Date Received:** 10/06/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.4	pCi/L				RA-05	09/27/16 11:46 / plj
Thorium 230	0.1	pCi/L	U			E908.0	11/02/16 09:35 / cng
Thorium 230 precision (±)	0.1	pCi/L				E908.0	11/02/16 09:35 / cng
Thorium 230 MDC	0.2	pCi/L				E908.0	11/02/16 09:35 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	4800	mg/L				A1030 E	10/18/16 15:14 / sec
A/C Balance	-2.09	%				A1030 E	10/18/16 15:14 / sec
Anions	76.5	meq/L				A1030 E	10/18/16 15:14 / sec
Cations	73.4	meq/L				A1030 E	10/18/16 15:14 / sec
TDS Ratio	1.05	unitless				A1030 E	10/18/16 15:14 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/14/16 18:12 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/14/16 18:12 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/14/16 18:12 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/14/16 18:12 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	98.0	%REC		71-139		E624	10/14/16 18:12 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	10/14/16 18:12 / eli-b
Surr: Toluene-d8	102	%REC		80-123		E624	10/14/16 18:12 / eli-b
- The sample was received in the laboratory with a pH > 2. The pH was 7.							

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-2	EPA-2	EPA-2	EPA-2
Collection Date:		10/5/2016	7/13/2016	4/6/2016	1/6/2016
Receive Date:		10/7/2016	7/15/2016	4/5/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	Units	C16100237-007	C16070512-007	C16040269-007	C16010177-007
Bicarbonate as HCO <sub>3</sub>	mg/L	285	292	298	324
Calcium	mg/L	407	386	409	417
Chloride	mg/L	21	25	22	24
Magnesium	mg/L	193	176	191	203
Nitrogen, Ammonia as N	mg/L	0.13	0.13	0.18	0.39
Nitrogen, Nitrate+Nitrite as N	mg/L	0.2	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	7	7	7	7
Sodium	mg/L	207	202	204	214
Sulfate	mg/L	1910	2010	1880	2010
pH	s.u.	7.13	7.00	6.92	6.89
Solids, Total Dissolved TDS @ 180 C	mg/L	3050	3070	3030	3110
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Manganese	mg/L	1.68	1.33	1.61	1.68
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0018	0.0018	0.0012	0.0013
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	5.0	1.6	2.4	4.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.7	1.5	1.2	1.6
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.3	0.4	0.4	-0.5
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.5	1.5	1.2	1.1
Radium 226 precision (±)	pCi/L	0.38	0.36	0.30	0.29
Radium 226 MDC	pCi/L	0.20	0.19	0.16	0.15
Radium 228	pCi/L	6.0	3.8	3.7	3.0
Radium 228 precision (±)	pCi/L	1.4	1.1	0.96	0.97
Radium 228 MDC	pCi/L	1.2	1.2	0.74	1.1
Thorium 230	pCi/L	0.04	0.05	0.02	0.08
Thorium 230 precision (±)	pCi/L	0.09	0.1	0.08	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
A/C Balance	%	-0.58	-4.89	0.59	-0.84
Anions	meq/L	45.9	47.4	44.7	47.8
Cations	meq/L	45.4	43.0	45.2	47.0
Solids, Total Dissolved - Calculated	mg/L	2900	3000	2900	3100
TDS Ratio	unitless	1.04	1.03	1.05	1.02
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-2 Duplicate	EPA-2 Duplicate	EPA-2 Duplicate	EPA-2 Duplicate
Collection Date:		10/5/2016	7/13/2016	4/6/2016	1/6/2016
Receive Date:		10/7/2016	7/15/2016	4/5/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte:	RUUnits	C16100237-008	C16070512-008	C16040269-008	C16010177-008
Bicarbonate as HCO <sub>3</sub>	mg/L	303	313	305	317
Calcium	mg/L	399	387	396	393
Chloride	mg/L	22	24	22	24
Magnesium	mg/L	186	176	183	188
Nitrogen, Ammonia as N	mg/L	0.31	0.26	0.38	0.44
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	7	7	7	7
Sodium	mg/L	201	201	209	204
Sulfate	mg/L	1830	1890	1860	1940
pH	s.u.	6.78	6.72	6.82	6.77
Solids, Total Dissolved TDS @ 180 C	mg/L	3020	2970	2990	3010
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	0.002	ND(0.001)	ND(0.001)
Manganese	mg/L	1.73	1.50	1.64	1.59
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0017	0.0017	0.0014	0.0015
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	4.3	2.8	3.1	3.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.5	1.5	1.3	1.4
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.2	0.3	0.4	-0.5
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.8	1.8	1.4	1.1
Radium 226 precision (±)	pCi/L	0.44	0.44	0.35	0.28
Radium 226 MDC	pCi/L	0.19	0.19	0.16	0.15
Radium 228	pCi/L	4.4	2.4	4.0	1.8
Radium 228 precision (±)	pCi/L	1.3	0.88	0.98	0.76
Radium 228 MDC	pCi/L	1.1	1.1	0.76	1.1
Thorium 230	pCi/L	0.01	0.04	0.03	0.08
Thorium 230 precision (±)	pCi/L	0.06	0.07	0.05	0.1
Thorium 230 MDC	pCi/L	0.1	0.1	0.08	0.2
A/C Balance	%	0.48	-2.83	-0.30	-2.24
Anions	meq/L	43.7	45.3	44.3	46.2
Cations	meq/L	44.1	42.8	44.1	44.2
Solids, Total Dissolved - Calculated	mg/L	2800	2900	2900	2900
TDS Ratio	unitless	1.07	1.03	1.05	1.02
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-008  
**Client Sample ID:** EPA-2 Duplicate

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 10:20  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	313	mg/L		5		A2320 B	07/21/16 17:41 / ljl
Calcium	387	mg/L		1		E200.7	07/19/16 20:31 / sf
Chloride	24	mg/L		1		E300.0	07/23/16 03:03 / ljl
Magnesium	176	mg/L		1		E200.7	07/19/16 20:31 / sf
Nitrogen, Ammonia as N	0.26	mg/L		0.05		A4500-NH <sub>3</sub> G	07/18/16 16:57 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	07/20/16 13:20 / ljl
Potassium	7	mg/L		1		E200.7	07/19/16 20:31 / sf
Sodium	201	mg/L		1		E200.7	07/19/16 20:31 / sf
Sulfate	1890	mg/L	D	4		E300.0	07/23/16 03:03 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.72	s.u.	H	0.01		A4500-H B	07/18/16 11:40 / wc
Solids, Total Dissolved TDS @ 180 C	2970	mg/L		20		A2540 C	07/18/16 14:48 / wc
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.7	07/27/16 02:11 / sf
Beryllium	ND	mg/L		0.001		E200.7	07/27/16 02:11 / sf
Cadmium	ND	mg/L		0.005		E200.7	07/27/16 02:11 / sf
Cobalt	ND	mg/L		0.01		E200.8	07/27/16 21:56 / sf
Lead	0.002	mg/L		0.001		E200.8	07/27/16 21:56 / sf
Manganese	1.50	mg/L		0.01		E200.7	07/27/16 02:11 / sf
Molybdenum	ND	mg/L		0.1		E200.7	07/27/16 02:11 / sf
Nickel	ND	mg/L		0.05		E200.7	07/27/16 02:11 / sf
Uranium	0.0017	mg/L		0.0003		E200.8	07/27/16 21:56 / sf
Vanadium	ND	mg/L		0.1		E200.7	07/27/16 02:11 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	07/22/16 20:40 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 10:28 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	2.8	pCi/L				E900.1	08/02/16 23:45 / trs
Gross Alpha minus Rn & U Precision (±)	1.5	pCi/L				E900.1	08/02/16 23:45 / trs
Gross Alpha minus Rn & U MDC	1.8	pCi/L				E900.1	08/02/16 23:45 / trs
Lead 210	0.3	pCi/L	U			E909.0	09/14/16 07:41 / eli-cs
Lead 210 precision (±)	0.8	pCi/L				E909.0	09/14/16 07:41 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/14/16 07:41 / eli-cs
Radium 226	1.8	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 precision (±)	0.44	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 226 MDC	0.19	pCi/L				E903.0	08/16/16 07:21 / trs
Radium 228	2.4	pCi/L				RA-05	08/26/16 11:28 / plj
Radium 228 precision (±)	0.88	pCi/L				RA-05	08/26/16 11:28 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone-1  
**Lab ID:** C16070512-008  
**Client Sample ID:** EPA-2 Duplicate

**Report Date:** 09/26/16  
**Collection Date:** 07/13/16 10:20  
**Date Received:** 07/15/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.1	pCi/L				RA-05	08/26/16 11:28 / plj
Thorium 230	0.04	pCi/L	U			E908.0	08/09/16 15:03 / cng
Thorium 230 precision (±)	0.07	pCi/L				E908.0	08/09/16 15:03 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	08/09/16 15:03 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	2900	mg/L				A1030 E	07/26/16 08:33 / kbh
A/C Balance	-2.83	%				A1030 E	07/26/16 08:33 / kbh
Anions	45.3	meq/L				A1030 E	07/26/16 08:33 / kbh
Cations	42.8	meq/L				A1030 E	07/26/16 08:33 / kbh
TDS Ratio	1.03	unitless				A1030 E	07/26/16 08:33 / kbh
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Trihalomethanes, Total	ND	ug/L		0.50		E624	07/26/16 13:33 / dm
Bromodichloromethane	ND	ug/L		0.50		E624	07/26/16 13:33 / dm
Bromoform	ND	ug/L		0.50		E624	07/26/16 13:33 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/26/16 13:33 / dm
Chloroform	ND	ug/L		0.50		E624	07/26/16 13:33 / dm
Surr: Dibromofluoromethane	114	%REC		64.4-131		E624	07/26/16 13:33 / dm
Surr: p-Bromofluorobenzene	148	%REC	S	67.1-133		E624	07/26/16 13:33 / dm
Surr: Toluene-d8	116	%REC		79.7-125		E624	07/26/16 13:33 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.





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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-008  
**Client Sample ID:** EPA-2 Duplicate

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 10:25  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Bicarbonate as HCO <sub>3</sub>	303	mg/L		5		A2320 B	10/14/16 17:26 / wc
Calcium	399	mg/L		1		E200.7	10/14/16 18:00 / sf
Chloride	22	mg/L		1		E300.0	10/13/16 07:11 / ljl
Magnesium	186	mg/L		1		E200.7	10/14/16 18:00 / sf
Nitrogen, Ammonia as N	0.31	mg/L		0.05		A4500-NH <sub>3</sub> G	10/12/16 12:53 / ljl
Nitrogen, Nitrate+Nitrite as N	ND	mg/L		0.1		E353.2	10/13/16 17:48 / ljl
Potassium	7	mg/L		1		E200.7	10/14/16 18:00 / sf
Sodium	201	mg/L		1		E200.7	10/14/16 18:00 / sf
Sulfate	1830	mg/L	D	4		E300.0	10/13/16 07:11 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	6.78	s.u.	H	0.01		A4500-H B	10/10/16 10:49 / bah
Solids, Total Dissolved TDS @ 180 C	3020	mg/L		20		A2540 C	10/11/16 08:39 / bah
<b>METALS, TOTAL</b>							
Aluminum	ND	mg/L		0.1		E200.8	10/13/16 09:21 / smm
Beryllium	ND	mg/L		0.001		E200.8	10/13/16 09:21 / smm
Cadmium	ND	mg/L		0.005		E200.8	10/13/16 09:21 / smm
Cobalt	ND	mg/L		0.01		E200.8	10/13/16 09:21 / smm
Lead	ND	mg/L		0.001		E200.8	10/13/16 09:21 / smm
Manganese	1.73	mg/L		0.01		E200.8	10/13/16 09:21 / smm
Molybdenum	ND	mg/L		0.1		E200.8	10/13/16 09:21 / smm
Nickel	ND	mg/L		0.05		E200.8	10/13/16 09:21 / smm
Uranium	0.0017	mg/L		0.0003		E200.8	10/13/16 09:21 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/13/16 09:21 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/14/16 17:46 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/02/16 15:53 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	4.3	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U Precision (±)	1.5	pCi/L				E900.1	10/24/16 23:14 / cng
Gross Alpha minus Rn & U MDC	1.0	pCi/L				E900.1	10/24/16 23:14 / cng
Lead 210	0.2	pCi/L	U			E909.0	10/19/16 15:44 / eli-cs
Lead 210 precision (±)	0.6	pCi/L				E909.0	10/19/16 15:44 / eli-cs
Lead 210 MDC	1.0	pCi/L				E909.0	10/19/16 15:44 / eli-cs
Radium 226	1.8	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 precision (±)	0.44	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 226 MDC	0.19	pCi/L				E903.0	11/02/16 05:27 / plj
Radium 228	4.4	pCi/L				RA-05	10/28/16 08:57 / plj
Radium 228 precision (±)	1.3	pCi/L				RA-05	10/28/16 08:57 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.  
U - Not detected at minimum detectable concentration



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 1  
**Lab ID:** C16100237-008  
**Client Sample ID:** EPA-2 Duplicate

**Report Date:** 12/14/16  
**Collection Date:** 10/05/16 10:25  
**Date Received:** 10/07/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 MDC	1.1	pCi/L				RA-05	10/28/16 08:57 / plj
Thorium 230	0.01	pCi/L	U			E908.0	10/25/16 09:54 / cng
Thorium 230 precision (±)	0.06	pCi/L				E908.0	10/25/16 09:54 / cng
Thorium 230 MDC	0.1	pCi/L				E908.0	10/25/16 09:54 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	2800	mg/L				A1030 E	10/18/16 15:10 / sec
A/C Balance	0.48	%				A1030 E	10/18/16 15:10 / sec
Anions	43.7	meq/L				A1030 E	10/18/16 15:10 / sec
Cations	44.1	meq/L				A1030 E	10/18/16 15:10 / sec
TDS Ratio	1.07	unitless				A1030 E	10/18/16 15:10 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/15/16 02:59 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/15/16 02:59 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/15/16 02:59 / eli-b
Chloroform	ND	ug/L		0.50		E624	10/15/16 02:59 / eli-b
Trihalomethanes, Total	ND	ug/L		0.50		E624	12/02/16 09:15 / sec
Surr: 1,2-Dichloroethane-d4	96.0	%REC		71-139		E624	10/15/16 02:59 / eli-b
Surr: p-Bromofluorobenzene	99.0	%REC		80-127		E624	10/15/16 02:59 / eli-b
Surr: Toluene-d8	98.0	%REC		80-123		E624	10/15/16 02:59 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
U - Not detected at minimum detectable concentration

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		717	717	717	717
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-009	C16070706-009	C16040481-007	C16010374-004
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	466	469	470	462
Chloride	mg/L	62	64	61	69
Magnesium	mg/L	497	496	503	436
Nitrogen, Ammonia as N	mg/L	40	42	43	47
Nitrogen, Nitrate+Nitrite as N	mg/L	20	20	20	19
Potassium	mg/L	3	3	4	8
Sodium	mg/L	170	171	172	150
Sulfate	mg/L	5250	5260	4920	4910
pH	s.u.	2.98	3.05	3.07	3.17
Solids, Total Dissolved TDS @ 180 C	mg/L	7120	7350	7130	6810
Aluminum	mg/L	219	216	216	203
Beryllium	mg/L	0.133	0.129	0.141	0.137
Cadmium	mg/L	0.012	0.010	0.013	0.015
Cobalt	mg/L	0.91	0.87	0.90	0.89
Lead	mg/L	0.031	0.031	0.042	0.052
Manganese	mg/L	16.9	16.7	18.1	16.4
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.92	0.89	0.94	0.97
Uranium	mg/L	0.306	0.355	0.277	0.229
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	156	164	513	459
Gross Alpha minus Rn & U Precision (±)	pCi/L	30.1	31.5	97.4	87.4
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.4	1.1	1.2
Lead 210	pCi/L	3.2	1.8	4.9	4.0
Lead 210 precision (±)	pCi/L	1.2	1.0	1.8	1.2
Lead 210 MDC	pCi/L	1.1	1.3	1.4	1.6
Radium 226	pCi/L	15	9.2	22	17
Radium 226 precision (±)	pCi/L	3.0	1.8	4.3	3.3
Radium 226 MDC	pCi/L	0.27	0.21	0.19	0.15
Radium 228	pCi/L	6.6	3.4	5.3	5.7
Radium 228 precision (±)	pCi/L	1.5	1.3	1.3	1.2
Radium 228 MDC	pCi/L	1.6	2.0	1.0	0.87
Thorium 230	pCi/L	23.7	17.2	16.9	22.9
Thorium 230 precision (±)	pCi/L	4.5	3.3	3.2	4.4
Thorium 230 MDC	pCi/L	2.8	1.1	1.9	5.8
A/C Balance	%	-1.87	-1.94	-0.31	-3.34
Anions	meq/L	113	113	106	106
Cations	meq/L	109	109	105	99.0
Solids, Total Dissolved - Calculated	mg/L	6700	6700	6400	6200
TDS Ratio	unitless	1.07	1.10	1.12	1.09
Trihalomethanes, Total	ug/L	2.4	3.2	3.72	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		717 Duplicate	717 Duplicate	717 Duplicate	717 Duplicate
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-010	C16070706-010	C16040481-008	C16010374-005
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	465	471	471	478
Chloride	mg/L	63	62	62	72
Magnesium	mg/L	496	497	504	433
Nitrogen, Ammonia as N	mg/L	39	42	41	47
Nitrogen, Nitrate+Nitrite as N	mg/L	20	20	20	20
Potassium	mg/L	3	3	4	9
Sodium	mg/L	169	170	172	150
Sulfate	mg/L	5320	5690	5020	5000
pH	s.u.	2.98	3.05	3.11	3.20
Solids, Total Dissolved TDS @ 180 C	mg/L	7040	7220	7170	6810
Aluminum	mg/L	222	213	212	209
Beryllium	mg/L	0.134	0.128	0.138	0.141
Cadmium	mg/L	0.011	0.011	0.014	0.015
Cobalt	mg/L	0.93	0.87	0.90	0.88
Lead	mg/L	0.022	0.023	0.026	0.030
Manganese	mg/L	17.0	16.6	18.1	16.3
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.92	0.90	0.94	0.94
Uranium	mg/L	0.308	0.292	0.248	0.244
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	0.001	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	165	150	530	454
Gross Alpha minus Rn & U Precision (±)	pCi/L	31.7	29.0	101	86.4
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.3	1.1	1.2
Lead 210	pCi/L	3.0	2.1	5.0	4.4
Lead 210 precision (±)	pCi/L	1.1	1.1	1.8	1.1
Lead 210 MDC	pCi/L	1.1	1.4	1.4	1.2
Radium 226	pCi/L	11	8.8	21	16
Radium 226 precision (±)	pCi/L	2.2	1.7	3.9	3.0
Radium 226 MDC	pCi/L	0.25	0.21	0.21	0.15
Radium 228	pCi/L	3.7	7.9	5.9	6.1
Radium 228 precision (±)	pCi/L	1.0	2.0	1.3	1.3
Radium 228 MDC	pCi/L	1.5	2.0	0.99	0.87
Thorium 230	pCi/L	21.5	27.6	19.0	14.9
Thorium 230 precision (±)	pCi/L	4.1	5.2	3.6	2.9
Thorium 230 MDC	pCi/L	2.5	1.4	3.3	5.4
A/C Balance	%	-4.16	-0.90	-1.26	-3.78
Anions	meq/L	114	108	108	108
Cations	meq/L	105	106	105	100
Solids, Total Dissolved - Calculated	mg/L	6800	6400	6400	6400
TDS Ratio	unitless	1.04	1.14	1.11	1.07
Trihalomethanes, Total	ug/L	2.6	3.3	4.44	3.18

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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16070706-010  
**Client Sample ID:** 717 Duplicate

**Revised Date:** 01/24/17  
**Report Date:** 09/28/16  
**Collection Date:** 07/19/16 11:32  
**Date Received:** 07/22/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	1710	mg/L		5		A2310 B	07/27/16 15:27 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L		5		A2320 B	07/25/16 21:15 / wc
Calcium	471	mg/L		1		E200.7	07/26/16 18:34 / sf
Chloride	62	mg/L	D	2		E300.0	07/28/16 12:46 / wc
Magnesium	497	mg/L		1		E200.7	07/26/16 18:34 / sf
Nitrogen, Ammonia as N	42	mg/L	D	2		A4500-NH <sub>3</sub> G	07/26/16 12:56 / ljl
Nitrogen, Nitrate+Nitrite as N	20	mg/L	D	2.5		E353.2	07/27/16 13:02 / ljl
Potassium	3	mg/L		1		E200.7	07/26/16 18:34 / sf
Sodium	170	mg/L		1		E200.7	07/26/16 18:34 / sf
Sulfate	5690	mg/L	D	8		E300.0	07/30/16 07:55 / wc
<b>PHYSICAL PROPERTIES</b>							
pH	3.05	s.u.	H	0.01		A4500-H B	07/22/16 17:16 / ljl
Solids, Total Dissolved TDS @ 180 C	7220	mg/L	D	100		A2540 C	07/25/16 14:39 / wc
<b>METALS, TOTAL</b>							
Aluminum	213	mg/L		0.1		E200.7	08/06/16 03:11 / sf
Beryllium	0.128	mg/L		0.001		E200.7	08/06/16 03:11 / sf
Cadmium	0.011	mg/L		0.005		E200.7	08/06/16 03:11 / sf
Cobalt	0.87	mg/L		0.01		E200.7	08/06/16 03:11 / sf
Lead	0.023	mg/L		0.001		E200.8	08/08/16 22:52 / smm
Manganese	16.6	mg/L		0.01		E200.7	08/06/16 03:11 / sf
Molybdenum	ND	mg/L		0.1		E200.7	08/06/16 03:11 / sf
Nickel	0.90	mg/L		0.05		E200.7	08/06/16 03:11 / sf
Uranium	0.292	mg/L		0.0003		E200.8	08/08/16 22:52 / smm
Vanadium	ND	mg/L		0.1		E200.7	08/06/16 03:11 / sf
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	08/03/16 03:27 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	08/12/16 11:08 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	150	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U Precision (±)	29.0	pCi/L				E900.1	08/09/16 21:27 / trs
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	08/09/16 21:27 / trs
Lead 210	2.1	pCi/L				E909.0	09/12/16 23:35 / eli-cs
Lead 210 precision (±)	1.1	pCi/L				E909.0	09/12/16 23:35 / eli-cs
Lead 210 MDC	1.4	pCi/L				E909.0	09/12/16 23:35 / eli-cs
Radium 226	8.8	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 precision (±)	1.7	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 226 MDC	0.21	pCi/L				E903.0	08/22/16 14:39 / dmf
Radium 228	7.9	pCi/L				RA-05	08/16/16 13:38 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: United Nuclear Corporation  
Project: Zone 3  
Lab ID: C16070706-010  
Client Sample ID: 717 Duplicate

Revised Date: 01/24/17  
Report Date: 09/28/16  
Collection Date: 07/19/16 11:32  
Date Received: 07/22/16  
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	2.0	pCi/L				RA-05	08/16/16 13:38 / plj
Radium 228 MDC	2.0	pCi/L				RA-05	08/16/16 13:38 / plj
Thorium 230	27.6	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 precision (±)	5.2	pCi/L				E908.0	08/18/16 08:53 / cng
Thorium 230 MDC	1.4	pCi/L				E908.0	08/18/16 08:53 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6400	mg/L				A1030 E	08/10/16 14:16 / smm
A/C Balance	-0.90	%				A1030 E	08/10/16 14:16 / smm
Anions	108	meq/L				A1030 E	08/10/16 14:16 / smm
Cations	106	meq/L				A1030 E	08/10/16 14:16 / smm
TDS Ratio	1.14	unitless				A1030 E	08/10/16 14:16 / smm
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	07/27/16 06:37 / dm
Bromoform	ND	ug/L		0.50		E624	07/27/16 06:37 / dm
Chlorodibromomethane	ND	ug/L		0.50		E624	07/27/16 06:37 / dm
Chloroform	3.28	ug/L		0.50		E624	07/27/16 06:37 / dm
Trihalomethanes, Total	3.3	ug/L		0.50		E624	09/26/16 11:38 / sec
Surr: Dibromofluoromethane	118	%REC		64.4-131		E624	07/27/16 06:37 / dm
Surr: p-Bromofluorobenzene	138	%REC	S	67.1-133		E624	07/27/16 06:37 / dm
Surr: Toluene-d8	118	%REC		79.7-125		E624	07/27/16 06:37 / dm

**Report  
Definitions:**

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
S - Spike recovery outside of advisory limits.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-010  
**Client Sample ID:** 717 Duplicate

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 11:32  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>MAJOR IONS</b>							
Acidity, Total as CaCO <sub>3</sub>	1690	mg/L	H	5		A2310 B	10/26/16 13:34 / wc
Bicarbonate as HCO <sub>3</sub>	ND	mg/L	H	5		A2320 B	10/18/16 01:45 / wc
Calcium	465	mg/L		1		E200.7	10/28/16 16:26 / sf
Chloride	63	mg/L	D	2		E300.0	11/02/16 03:49 / ljl
Magnesium	496	mg/L		1		E200.7	10/28/16 16:26 / sf
Nitrogen, Ammonia as N	39	mg/L	D	2		A4500-NH <sub>3</sub> G	11/04/16 12:05 / ljl
Nitrogen, Nitrate+Nitrite as N	20	mg/L	D	2.5		E353.2	11/04/16 18:38 / ljl
Potassium	3	mg/L		1		E200.7	10/28/16 16:26 / sf
Sodium	169	mg/L		1		E200.7	10/28/16 16:26 / sf
Sulfate	5320	mg/L	D	8		E300.0	11/02/16 03:49 / ljl
<b>PHYSICAL PROPERTIES</b>							
pH	2.98	s.u.	H	0.01		A4500-H B	10/17/16 10:10 / bah
Solids, Total Dissolved TDS @ 180 C	7040	mg/L	H	100		A2540 C	10/21/16 12:35 / bah
<b>METALS, TOTAL</b>							
Aluminum	222	mg/L		0.1		E200.7	11/01/16 23:20 / sf
Beryllium	0.134	mg/L		0.001		E200.7	11/01/16 23:20 / sf
Cadmium	0.011	mg/L		0.005		E200.7	11/01/16 23:20 / sf
Cobalt	0.93	mg/L		0.01		E200.7	11/01/16 23:20 / sf
Lead	0.022	mg/L		0.001		E200.8	10/28/16 20:30 / smm
Manganese	17.0	mg/L		0.01		E200.7	11/01/16 23:20 / sf
Molybdenum	ND	mg/L		0.1		E200.7	11/01/16 23:20 / sf
Nickel	0.92	mg/L		0.05		E200.8	10/28/16 20:30 / smm
Uranium	0.308	mg/L		0.0003		E200.8	10/28/16 20:30 / smm
Vanadium	ND	mg/L		0.1		E200.8	10/28/16 20:30 / smm
<b>METALS - SPECIATED</b>							
Arsenic-III	ND	mg/L		0.001		E1632AM	10/31/16 23:39 / eli-h
<b>METALS - SPECIATED</b>							
Selenium-IV	ND	mg/L		0.001		A3114 B	11/03/16 16:07 / rso
<b>RADIONUCLIDES - TOTAL</b>							
Gross Alpha minus Rn & U	165	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U Precision (±)	31.7	pCi/L				E900.1	10/27/16 12:46 / cng
Gross Alpha minus Rn & U MDC	1.3	pCi/L				E900.1	10/27/16 12:46 / cng
Lead 210	3.0	pCi/L				E909.0	11/06/16 00:00 / plj
Lead 210 precision (±)	1.1	pCi/L				E909.0	11/06/16 00:00 / plj
Lead 210 MDC	1.1	pCi/L				E909.0	11/06/16 00:00 / plj
Radium 226	11	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 precision (±)	2.2	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 226 MDC	0.25	pCi/L				E903.0	11/10/16 12:10 / dmf
Radium 228	3.7	pCi/L				RA-05	11/04/16 08:59 / plj

**Report Definitions:**  
RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration  
H - Analysis performed past recommended holding time.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.  
D - RL increased due to sample matrix.



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## LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation  
**Project:** Zone 3  
**Lab ID:** C16100488-010  
**Client Sample ID:** 717 Duplicate

**Report Date:** 12/03/16  
**Collection Date:** 10/11/16 11:32  
**Date Received:** 10/14/16  
**Matrix:** Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>RADIONUCLIDES - TOTAL</b>							
Radium 228 precision (±)	1.0	pCi/L				RA-05	11/04/16 08:59 / plj
Radium 228 MDC	1.5	pCi/L				RA-05	11/04/16 08:59 / plj
Thorium 230	21.5	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 precision (±)	4.1	pCi/L				E908.0	11/15/16 09:45 / cng
Thorium 230 MDC	2.5	pCi/L				E908.0	11/15/16 09:45 / cng
<b>DATA QUALITY</b>							
Solids, Total Dissolved - Calculated	6800	mg/L				A1030 E	11/03/16 11:21 / sec
A/C Balance	-4.16	%				A1030 E	11/03/16 11:21 / sec
Anions	114	meq/L				A1030 E	11/03/16 11:21 / sec
Cations	105	meq/L				A1030 E	11/03/16 11:21 / sec
TDS Ratio	1.04	unitless				A1030 E	11/03/16 11:21 / sec
<b>VOLATILE ORGANIC COMPOUNDS</b>							
Bromodichloromethane	ND	ug/L		0.50		E624	10/20/16 00:13 / eli-b
Bromoform	ND	ug/L		0.50		E624	10/20/16 00:13 / eli-b
Chlorodibromomethane	ND	ug/L		0.50		E624	10/20/16 00:13 / eli-b
Chloroform	2.6	ug/L		0.50		E624	10/20/16 00:13 / eli-b
Trihalomethanes, Total	2.6	ug/L		0.50		E624	11/05/16 15:03 / sec
Surr: 1,2-Dichloroethane-d4	105	%REC		71-139		E624	10/20/16 00:13 / eli-b
Surr: p-Bromofluorobenzene	100	%REC		80-127		E624	10/20/16 00:13 / eli-b
Surr: Toluene-d8	103	%REC		80-123		E624	10/20/16 00:13 / eli-b

- The sample was received in the laboratory with a pH > 2. The pH was 7.

### Report Definitions:

RL - Analyte reporting limit.  
QCL - Quality control limit.  
MDC - Minimum detectable concentration

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



**APPENDIX – C**

**QUARTERLY  
CHAIN OF CUSTODY REPORT**

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-805-6851

CHAIN OF CUSTODY

SW Alluvium

All analysis will be performed in accordance with EPA approved procedures and/or 15th Edition of Standard Methods

UNC Submittal No. TE-7-7-2016

9.8°C Ice Malted  
IR-2  
Cust Seal yes

UPS Ground  
RS-yes x6

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

Sample Description	Date	Time	PRESERVATION & NUMBER OF CONTAINERS					HCl	Preserved By	Analysis Required (For all samples listed)
			Filter 0.45u HNO <sub>3</sub>	plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>			
509-D	7-11-16	0907	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
EPA-23	7-11-16	0955	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
803	7-11-16	1042	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			NO <sub>3</sub> , Pb, Pb-210, pH, Se,
808	7-11-16	1124	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			SO <sub>4</sub> , TDS, Th-230, U, V,
802	7-11-16	1209	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			Chloroform, Gross
632	7-11-16	1252	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			Alpha (-) U & Rn,
801	7-11-16	1356	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			Combined Ra-226 & Ra-228, Al,
GW-1	7-11-16	1450	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			Co, Mo & Total Trihalomethanes (TTHMs)
EPA-28	7-11-16	1538	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			
EPA-28 DUPLICATE	7-11-16	1615	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			
624	7-11-16	1700	1-(8oz)✓	2-✓	4-✓	1-✓	3-✓			

Sampled by: M. Chischilly Jr.

Received by: David Clark

Dispatched by: David Clark

Date: 7-12-16 Time: 9:18

Carrier: UPS-Ground

6 iced cooler

Method of Shipment

Date: 7-11-16 Time: 1745

Signature: [Signature]

Date: 7/14/16 Time: 17:20

The above analysis to be performed is authorized by:

Signature: M. Chischilly Jr.

Date: 7-12-2016



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College Station, TX 888.690.2218 • Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

## Work Order Receipt Checklist

United Nuclear Corporation

C16070451

Login completed by: Corinne Wagner

Date Received: 7/14/2016

Reviewed by: Tessa Parke

Received by: dcj

Reviewed Date: 7/15/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	9.8°C Melted Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>

---

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

---

### Contact and Corrective Action Comments:

None

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-905-6851

CHAIN OF CUSTODY

SW Alluvium

All analysis will be performed in accordance with EPA approved procedures and/or 15th Edition of Standard Methods

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

UNC Submittal No. TE-8-7-2016 (Pg. 1 of 2)

Sample Description	Date	Time	Filter	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
			0.45u HNO <sub>3</sub>	plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	HCl		
SBL-1	7-12-16	0830	1-(802)✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
EPA-25	7-12-16	0937	1-(802)✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
627	7-12-16	1040	1-(802)✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	NO <sub>3</sub> , Pb, Pb-210, pH, Se,
										SO <sub>4</sub> , TDS, Th-230, U, V,
										Chloroform, Gross
										Alpha (-) U & Rn,
										Combined Ra-226 & Ra-228, Al,
										Co, Mo & Total Trihalomethanes (TTHMs)
										C16070513

Sampled by: M. Chischilly J.

Received by: [Signature]

Dispatched by: [Signature]

Date: 7/13/16 Time: 1:00

Carrier: UPS - Ground

Method of Shipment: 7 ice cooler

Date: 7-12-16 Time: 1650

Lab Receipt Signature: [Signature]

Date: 7/13/16 Time: 1125

The above analysis to be performed is authorized by:

Signature: M. Chischilly J.

Date: 7-13-2016



## Work Order Receipt Checklist

United Nuclear Corporation

C16070513

Login completed by: Dorian Quis

Date Received: 7/15/2016

Reviewed by: Steve Dobos

Received by: dcq

Reviewed Date: 7/19/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	14.6°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-805-6851

CHAIN OF CUSTODY

ZONE - 1

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

All analysis will be performed in accordance with EPA approved  
procedures and/or 15th Edition of Standard Methods.

UNC Submittal No. TE-8-7-2016 (Pg. 2 of 2)

Sample Description	Date	Time	Filter	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
			0.45u HNO <sub>3</sub>	plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	HCl		
614	7-12-16	1156	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub>
S15-A	7-12-16	1311	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
604	7-12-16	1414	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			NO <sub>3</sub> , Pb, Pb-210, pH, Se,
EPA-7	7-12-16	1501	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			SO <sub>4</sub> , TDS, Th-230, U, V,
EPA-S	7-12-16	1548	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Chloroform, Gross
EPA-4	7-13-16	0830	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Alpha (-) U & Rn,
EPA-2	7-13-16	0942	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Combined Ra-226 & Ra-228, Al,
EPA-2 DUPLICATE	7-13-16	1020	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Co, Mo & Total Trihalomethanes (TTHMs)
TWA-142	7-13-16	1102	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			
RINSE	7-13-16	1150	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			C16070512
FIELD BLANK	7-13-16	1200	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			

Sampled by: M. Chischilly J.

Dispatched by: [Signature]

Carrier: UPS - Ground

7 iced cooler

Method of Shipment

Received by: [Signature]

Date: 07/13/16 Time: 13:00

Date: 7/15/16 Time: 11:25

Lab Receipt Signature

Date: 7-12-16 @ 1650

Date: 7-13-16 @ 1250

Date: 7/15/16 Time: 11:25

Date: 7-13-2016

Date: 7-13-2016

Date: 7-13-2016

7-12-16 @ 1650

7-13-16 @ 1250

Date Time

Lab Receipt Signature

7/15/16 11:25

Date Time

Date Time

Date Time

Date Time

Date Time

Date Time

Date Time

The above analysis to be performed is  
authorized by:

M. Chischilly J.

Signature

7-13-2016

Date

Cooler spec

Temp = 14.6

IR-2

no ice

Date

Date



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College Station, TX 888.690.2218 • Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

# Work Order Receipt Checklist

United Nuclear Corporation

C16070512

Login completed by: Dorian Quis

Date Received: 7/15/2016

Reviewed by: Steve Dobos

Received by: res

Reviewed Date: 7/19/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	14.6°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

None

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-905-8851

CHAIN OF CUSTODY

ZONE - 3

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

All analysis will be performed in accordance with EPA approved  
procedures and/or 15th Edition of Standard Methods

UNC Submittal No. TE-9-7-2016

Sample Description	Date	Time	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
			Filter 0.45u	plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		
613	7-18-16	0854	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓	M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub> ,
517	7-18-16	0942	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
708	7-18-16	1107	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		NO <sub>3</sub> , Pb, Pb-210, pH, Se,
711	7-18-16	1222	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		SO <sub>4</sub> , TDS, Th-230, U, V,
EPA-13	7-18-16	1303	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		Chloroform, Gross
420	7-18-16	1412	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		Alpha (-) U & Rn,
EPA-14	7-18-16	1514	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		Combined Ra-226 & Ra-228, Al,
719	7-19-16	0838	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		Co, Mo & Total Trihalomethanes (TTHMs)
717	7-19-16	1050	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		
717 DUPLICATE	7-19-16	1132	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		
MDO-7	7-19-16	1237	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		
RINSE	7-19-16	1450	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		
FIELD BLANK	7-19-16	1500	1-(8oz.) ✓	2- ✓	4- ✓	1- ✓	3- ✓		

Sampled by: M. Chischilly

Received by: Travis H. H. H.

Dispatched by: [Signature]

Date: 7-20-16 Time: 10:31

Carrier: UPS - Ground

Date: 7-22-16 Time: 10:20

Method of Shipment: 6 iced cooler

Date: 7-22-16 Time: 10:20

The above analysis to be performed is  
authorized by:

M. Chischilly  
Signature

Date: 7-20-2016

Date: 7-20-2016

C16070706

< 504F/W  
UPS-G





## Work Order Receipt Checklist

United Nuclear Corporation

C16070706

Login completed by: Corinne Wagner

Date Received: 7/22/2016

Reviewed by: Corinne Wagner

Received by: ckw

Reviewed Date: 7/22/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	7.6°C		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

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# Work Order Receipt Checklist

United Nuclear Corporation

C16070724

Login completed by: Corinne Wagner

Date Received: 7/22/2016

Reviewed by: Corinne Wagner

Received by: ckw

Reviewed Date: 7/22/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	7.6°C Melted Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

None

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-805-6651

CHAIN OF CUSTODY

Energy Laboratories, Inc.  
Laboratory

SW Alluvium

2393 N. Salt Creek Highway  
Address

All analysis will be performed in accordance with EPA approved  
procedures and/or 15th Edition of Standard Methods

Casper WY 82601  
City State Zip

UNC Submittal No. TE-10-10-2016

307-235-0515  
Phone No.

Sample Description	Date	Time	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
			Filter 0.45u HNO <sub>3</sub>	plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		
✓ 509-D	10-3-16	0830	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓	M. Chischilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub>
✓ EPA-23	10-3-16	0916	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		K, Mg, Mn, Na, NH <sub>4</sub> , Ni,
✓ 803	10-3-16	1000	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		NO <sub>3</sub> , Pb, Pb-210, pH, Se,
✓ 808	10-3-16	1055	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		SO <sub>4</sub> , TDS, Th-230, U, V,
✓ 802	10-3-16	1138	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		Chloroform, Gross
✓ 632	10-3-16	1220	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		Alpha (-) U & Rn,
✓ 801	10-3-16	1300	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		Combined Ra-226 & Ra-228, Al,
✓ GW-1	10-3-16	1350	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		Co, Mo & Total Trihalomethanes (TTHMs)
✓ EPA-28	10-3-16	1440	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		
✓ EPA-28 DUPLICATE	10-3-16	1530	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		
✓ 624	10-3-16	1630	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓	✓	

Samples  
not lab'd  
10/16/16

Sampled by M. Chischilly Jr.

Received by [Signature]

Dispatched by [Signature]

Date 10-4-16 Time 10:46

Carrier: UPS - Ground

Date 10-4-16 Time 10:46

Method of Shipment 5 iced cooler

Date 10-4-16 Time 10:46

Method of Shipment

Date 10-4-16 Time 10:46

NOTE: vials need 10/16/16

C16160246

10-3-16 1715  
Date Time

[Signature]  
Lab Receipt Signature

10/4/16 10:46  
Date Time

RG-1-5 (incoming 10/7/16)  
ups-Gn JRL  
117

The above analysis to be performed is  
authorized by:

M. Chischilly Jr.  
Signature

10-4-2016  
Date



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## Work Order Receipt Checklist

United Nuclear Corporation

C16100246

Login completed by: Corinne Wagner

Date Received: 10/6/2016

Reviewed by: Terry Friedlan

Received by: tjp

Reviewed Date: 10/14/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	4.2°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

Did not received the VOC samples til Friday 10/7/16.

### CHAIN OF CUSTODY

All analysis will be performed in accordance with EPA approved procedures and/or 15th Edition of Standard Methods.

2393 N. Salt Creek Highway  
Address

Casper	WY	82601
City	State	Zip

307-235-0515  
Phone No.

UNC Submittal No. TE-11-10-2016 (PG. 1 OF 2)

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## Work Order Receipt Checklist

United Nuclear Corporation

C16100241

Login completed by: Corinne Wagner

Date Received: 10/7/2016

Reviewed by: Terry Friedlan

Received by: ckw

Reviewed Date: 10/14/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	8.4°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

### CHAIN OF CUSTODY

UNC Submittal No. TE-11-10-2016 (PG. 2 OF 2)

The above analysis to be performed is  
authorized by:  
Max Charney, Jr.  
Signature  
10-5-2016  
Date

Page 58 of 58





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## Work Order Receipt Checklist

United Nuclear Corporation

C16100237

Login completed by: Corinne Wagner

Date Received: 10/7/2016

Reviewed by: Terry Friedlan

Received by: ckw

Reviewed Date: 10/14/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	8.4°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

UNITED NUCLEAR CORPORATION  
(State Road 566 - 21 Miles NE of Gallup)  
P.O. Box 1088  
Gallup, NM 87305-1088  
505-905-6851

CHAIN OF CUSTODY

ZONE - 3

Energy Laboratories, Inc.  
Laboratory

2393 N. Salt Creek Highway  
Address

Casper WY 82601  
City State Zip

307-235-0515  
Phone No.

All analysis will be performed in accordance with EPA approved  
procedures and/or 15th Edition of Standard Methods

UNC Submittal No. TE-12-10-2016 (Pg. 1 of 3)

Sample Description	Date	Time	Filter 0.45u HNO <sub>3</sub>	PRESERVATION & NUMBER OF CONTAINERS					Preserved By	Analysis Required (For all samples listed)
				plain	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	HCl		
613	10-10-16	0828	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓		M. Chishilly	As, Be, Ca, Cd, Cl, HCO <sub>3</sub>
517	10-10-16	0919	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			K, Hg, Mn, Na, NH <sub>4</sub> , Ni
708	10-10-16	1052	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			NO <sub>3</sub> , Pb, Pb-210, pH, Se,
711	10-10-16	1228	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			SO <sub>4</sub> , TDS, Th-230, U, V,
EPA-13	10-10-16	1325	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Chloroform, Cross
420	10-10-16	1438	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Alpha (-) U & Rn,
EPA-14	10-10-16	1595	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Combined Ra-226 & Ra-228, Al,
719	10-11-16	0850	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			Co, Mo & Total Trihalomethanes (THMs)
717	10-11-16	1050	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			
717 DUPLICATE	10-11-16	1132	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			
NBL-2	10-11-16	1215	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			
NW-7	10-11-16	1326	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			
NW-3	10-11-16	1120	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			
RWA	10-11-16	1220	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			
RW-11	10-11-16	1305	1-(8oz.)✓	2-✓	4-✓	1-✓	3-✓			

Sampled by: M. Chishilly

Received by: John J. Helms

Dispatched by: Daniel S.

Date: 10-12-16 Time: 10:38

Carrier: UPS-Ground

Date: 10-14-16 Time: 1130

Method of Shipment: 7 iced cooler

Date: 10-10-16 @ 1630  
10-11-16 @ 1600

The above analysis to be performed is  
authorized by:

Signature: M. Chishilly

Date: 10-12-2016

RS-Y-7  
IR-2  
CSOUC/nr

016100488



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## Work Order Receipt Checklist

United Nuclear Corporation

C16100488

Login completed by: Corinne Wagner

Date Received: 10/14/2016

Reviewed by: BL2000\sdobos

Received by: ckw

Reviewed Date: 10/18/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	6.8°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

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## Work Order Receipt Checklist

United Nuclear Corporation

C16100496

Login completed by: Corinne Wagner

Date Received: 10/14/2016

Reviewed by: BL2000\sdobos

Received by: ckw

Reviewed Date: 10/18/2016

Carrier name: Ground

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	6.8°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

### Contact and Corrective Action Comments:

None

**APPENDIX – D ( 1 OF 2 )**

**THIRD QUARTER  
LABORATORY QUALITY CONTROL AND  
PERFORMANCE REPORT**



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## ANALYTICAL SUMMARY REPORT

September 26, 2016

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16070451      Quote ID: C129 - Quarterly Long List  
Project Name: SW Alluvium

Energy Laboratories, Inc. Casper WY received the following 11 samples for United Nuclear Corporation on 7/14/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16070451-001	509-D	07/11/16 9:07	07/14/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Preservation by the Laboratory Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics
C16070451-002	EPA-23	07/11/16 9:55	07/14/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics
C16070451-003	803	07/11/16 10:42	07/14/16	Aqueous	Same As Above
C16070451-004	808	07/11/16 11:24	07/14/16	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C16070451-005	802	07/11/16 12:09 07/14/16	Aqueous	Same As Above
C16070451-006	632	07/11/16 12:52 07/14/16	Aqueous	Same As Above
C16070451-007	801	07/11/16 13:56 07/14/16	Aqueous	Same As Above
C16070451-008	GW-1	07/11/16 14:50 07/14/16	Aqueous	Same As Above
C16070451-009	EPA-28	07/11/16 15:38 07/14/16	Aqueous	Same As Above
C16070451-010	EPA-28 Duplicate	07/11/16 16:15 07/14/16	Aqueous	Same As Above
C16070451-011	624	07/11/16 17:00 07/14/16	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Client Services Supervisor

Digitally signed by  
Steve Dobos  
Date: 2016.09.26 16:15:12 -06:00





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**CLIENT:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Work Order:** C16070451

**Report Date:** 09/26/16

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

Prep Comments for Sample C16070451-001B, Test PRESERVATION: The sample fraction submitted for Metals Analysis was received in the laboratory with a pH of 7. This is outside of the method specified requirement of pH < 2. Proper preservation was added before sample analysis.

Prep Comments for Sample C16070451-001C, Test PRESERVATION: The sample fraction submitted for Metals Analysis was received in the laboratory with a pH of 7. This is outside of the method specified requirement of pH < 2. Proper preservation was added before sample analysis.

Tests associated with analyst identified as ELI-CS were subcontracted to Energy Laboratories, 415 Graham Rd., College Station, TX, EPA Number TX01520.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2320 B										Batch: R213490
<b>Lab ID:</b> MBLK		Method Blank					Run: MANTECH_160719B			07/19/16 16:38
Bicarbonate as HCO <sub>3</sub>	2		mg/L	1						
<b>Lab ID:</b> C16070451-005ADUP		Sample Duplicate					Run: MANTECH_160719B			07/19/16 20:48
Bicarbonate as HCO <sub>3</sub>	2150		mg/L	5.0				0.9	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2540 C										Batch: TDS160715A
<b>Lab ID:</b> MB-1_160715A		Method Blank					Run: BAL-18_160715B			07/15/16 17:44
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	8						
<b>Lab ID:</b> LCS-2_160715A		Laboratory Control Sample					Run: BAL-18_160715B			07/15/16 17:45
Solids, Total Dissolved TDS @ 180 C		1100	mg/L	11	99	90	110			
<b>Lab ID:</b> C16070451-001A DUP		Sample Duplicate					Run: BAL-18_160715B			07/15/16 17:45
Solids, Total Dissolved TDS @ 180 C		5470	mg/L	95				0.1	5	
<b>Lab ID:</b> C16070451-011A DUP		Sample Duplicate					Run: BAL-18_160715B			07/15/16 17:49
Solids, Total Dissolved TDS @ 180 C		5240	mg/L	40				0.0	5	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 09/26/16

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 B										Analytical Run: CVAA-C202_160812A
<b>Lab ID:</b> ICV		Initial Calibration Verification Standard								08/12/16 09:43
Selenium		0.0253	mg/L	0.0010	104	90	110			
<b>Method:</b> A3114 B										Batch: 48084
<b>Lab ID:</b> MB-48084		Method Blank								Run: CVAA-C202_160812A
Selenium		ND	mg/L	0.0003						08/12/16 09:45
<b>Lab ID:</b> LCS-48084		Laboratory Control Sample								Run: CVAA-C202_160812A
Selenium		0.0249	mg/L	0.0010	102	90	110			08/12/16 09:47
<b>Lab ID:</b> C16070451-003CMS		Sample Matrix Spike								Run: CVAA-C202_160812A
Selenium		0.0240	mg/L	0.0010	98	85	115			08/12/16 09:53
<b>Lab ID:</b> C16070451-003CMSD		Sample Matrix Spike Duplicate								Run: CVAA-C202_160812A
Selenium		0.0242	mg/L	0.0010	99	85	115	0.8	15	08/12/16 09:55

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A4500-H B										
Analytical Run: PHSC_101-C_160715A										
<b>Lab ID:</b> CCV - pH 7	Continuing Calibration Verification Standard									
pH		7.03	s.u.	0.010	100	98	102			07/15/16 16:55
<b>Method:</b> A4500-H B										
Batch: R213363										
<b>Lab ID:</b> C16070451-001ADUP	Sample Duplicate									
pH		6.57	s.u.	0.010				0.0		07/15/16 16:25
Run: PHSC_101-C_160715A										
<b>Lab ID:</b> C16070451-011ADUP	Sample Duplicate									
pH		6.61	s.u.	0.010				0.2		07/15/16 17:07
Run: PHSC_101-C_160715A										

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G										Analytical Run: FIA201-C_160718A
Lab ID: CCV_160520	Continuing Calibration Verification Standard									07/18/16 16:14
Nitrogen, Ammonia as N		0.985	mg/L	0.050	99	90	110			
Lab ID: CCV_160520	Continuing Calibration Verification Standard									07/18/16 16:31
Nitrogen, Ammonia as N		0.963	mg/L	0.050	96	90	110			
Lab ID: CCV_160520	Continuing Calibration Verification Standard									07/18/16 17:04
Nitrogen, Ammonia as N		0.963	mg/L	0.050	96	90	110			
Method: A4500-NH3 G										Batch: R213433
Lab ID: MBLK	Method Blank									Run: FIA201-C_160718A 07/18/16 15:37
Nitrogen, Ammonia as N		ND	mg/L	0.003						
Lab ID: LFB	Laboratory Fortified Blank									Run: FIA201-C_160718A 07/18/16 15:40
Nitrogen, Ammonia as N		0.978	mg/L	0.050	99	90	110			
Lab ID: C16070420-003CMS	Sample Matrix Spike									Run: FIA201-C_160718A 07/18/16 16:18
Nitrogen, Ammonia as N		0.946	mg/L	0.050	94	90	110			
Lab ID: C16070420-003CMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160718A 07/18/16 16:19
Nitrogen, Ammonia as N		0.974	mg/L	0.050	96	90	110	2.9	10	
Lab ID: C16070451-010DMS	Sample Matrix Spike									Run: FIA201-C_160718A 07/18/16 16:35
Nitrogen, Ammonia as N		0.936	mg/L	0.050	93	90	110			
Lab ID: C16070451-010DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160718A 07/18/16 16:36
Nitrogen, Ammonia as N		0.954	mg/L	0.050	94	90	110	1.9	10	
Lab ID: C16070513-003DMS	Sample Matrix Spike									Run: FIA201-C_160718A 07/18/16 17:08
Nitrogen, Ammonia as N		0.885	mg/L	0.050	88	90	110			S
Lab ID: C16070513-003DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160718A 07/18/16 17:09
Nitrogen, Ammonia as N		0.921	mg/L	0.050	91	90	110	4.0	10	
Lab ID: C16070512-009DMS	Sample Matrix Spike									Run: FIA201-C_160718A 07/18/16 17:25
Nitrogen, Ammonia as N		0.865	mg/L	0.050	85	90	110			S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Lab ID: C16070512-009DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160718A 07/18/16 17:26
Nitrogen, Ammonia as N		0.860	mg/L	0.050	85	90	110	0.6	10	S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 09/26/16

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E1632AM							Analytical Run: SUB-H116993		
Lab ID:	AS-ICV 25ppb-7/20/20	Initial Calibration Verification Standard								07/20/16 21:22
Arsenic-III		24.3	ug/L	5.0	97	87.6	114			
Lab ID:	AS-50.0-7/20/2016	Continuing Calibration Verification Standard								07/20/16 21:34
Arsenic-III		50.3	ug/L	5.0	101	85	115			
Lab ID:	AS-50.0-7/20/2016	Continuing Calibration Verification Standard								07/21/16 00:58
Arsenic-III		47.4	ug/L	5.0	95	85	115			
Method:	E1632AM							Batch: H_R116993		
Lab ID:	AS-LFB 50ppb-7//201	Laboratory Fortified Blank				Run: SUB-H116993			07/20/16 21:58	
Arsenic-III		48.4	ug/L	5.0	97	55	146			
Lab ID:	ICB	Method Blank				Run: SUB-H116993			07/20/16 22:10	
Arsenic-III		ND	ug/L	0.2						
Lab ID:	C16070451-001E	Sample Matrix Spike				Run: SUB-H116993			07/20/16 23:22	
Arsenic-III		50.8	ug/L	5.0	102	55	146			
Lab ID:	C16070451-001E	Sample Matrix Spike Duplicate				Run: SUB-H116993			07/20/16 23:34	
Arsenic-III		50.4	ug/L	5.0	101	55	146	0.9	20	
Method:	E1632AM							Analytical Run: SUB-H117244		
Lab ID:	AS-ICV 25ppb-7/22/20	Initial Calibration Verification Standard								07/22/16 15:03
Arsenic-III		24.9	ug/L	5.0	100	87.6	114			
Lab ID:	AS-50.0-7/22/2016	Continuing Calibration Verification Standard								07/22/16 15:16
Arsenic-III		50.5	ug/L	5.0	101	85	115			
Method:	E1632AM							Batch: H_R117244		
Lab ID:	AS-LFB 50ppb-7/22/2	Laboratory Fortified Blank				Run: SUB-H117244			07/22/16 15:40	
Arsenic-III		65.6	ug/L	5.0	131	55	146			
Lab ID:	ICB	Method Blank				Run: SUB-H117244			07/22/16 15:52	
Arsenic-III		ND	ug/L	0.2						
Lab ID:	C16070451-008E	Sample Matrix Spike				Run: SUB-H117244			07/22/16 16:16	
Arsenic-III		49.5	ug/L	5.0	99	55	146			
Lab ID:	C16070451-008E	Sample Matrix Spike Duplicate				Run: SUB-H117244			07/22/16 16:28	
Arsenic-III		54.0	ug/L	5.0	108	55	146	8.8	20	
Lab ID:	C16070512-001E	Sample Matrix Spike				Run: SUB-H117244			07/22/16 19:04	
Arsenic-III		50.8	ug/L	5.0	102	55	146			
Lab ID:	C16070512-001E	Sample Matrix Spike Duplicate				Run: SUB-H117244			07/22/16 19:16	
Arsenic-III		50.0	ug/L	5.0	100	55	146	1.5	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7 Analytical Run: ICP4-C_160719A										
Lab ID: ICV	4	Initial Calibration Verification Standard								07/19/16 12:37
Calcium		49.8	mg/L	1.0	100	95	105			
Magnesium		49.7	mg/L	1.0	99	95	105			
Potassium		49.8	mg/L	1.0	100	95	105			
Sodium		49.8	mg/L	1.0	100	95	105			
Lab ID: ICSA	4	Interference Check Sample A								07/19/16 12:57
Calcium		458	mg/L	1.0	92	80	120			
Magnesium		498	mg/L	1.0	100	80	120			
Potassium		-0.00530	mg/L	1.0						
Sodium		0.0881	mg/L	1.0						
Lab ID: ICSAB	4	Interference Check Sample AB								07/19/16 13:01
Calcium		457	mg/L	1.0	91	80	120			
Magnesium		497	mg/L	1.0	99	80	120			
Potassium		-0.00726	mg/L	1.0						
Sodium		0.0443	mg/L	1.0						
Method: E200.7 Batch: R213494										
Lab ID: MB-160719A	4	Method Blank Run: ICP4-C_160719A								07/19/16 13:21
Calcium		0.05	mg/L	0.003						
Magnesium		ND	mg/L	0.002						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.1						
Lab ID: LFB-160719A	4	Laboratory Fortified Blank Run: ICP4-C_160719A								07/19/16 13:25
Calcium		47.6	mg/L	1.0	95	85	115			
Magnesium		48.0	mg/L	1.0	96	85	115			
Potassium		50.3	mg/L	1.0	101	85	115			
Sodium		48.9	mg/L	1.0	98	85	115			
Lab ID: C16070440-002CMS2	4	Sample Matrix Spike Run: ICP4-C_160719A								07/19/16 17:31
Calcium		282	mg/L	1.0	88	70	130			
Magnesium		110	mg/L	1.0	95	70	130			
Potassium		103	mg/L	1.0	97	70	130			
Sodium		152	mg/L	1.0	95	70	130			
Lab ID: C16070440-002CMSD	4	Sample Matrix Spike Duplicate Run: ICP4-C_160719A								07/19/16 17:35
Calcium		281	mg/L	1.0	88	70	130	0.1	20	
Magnesium		110	mg/L	1.0	95	70	130	0.3	20	
Potassium		104	mg/L	1.0	98	70	130	1.0	20	
Sodium		153	mg/L	1.0	96	70	130	0.6	20	
Lab ID: C16070451-006BMS2	4	Sample Matrix Spike Run: ICP4-C_160719A								07/19/16 18:26
Calcium		796	mg/L	1.0	88	70	130			
Magnesium		1020	mg/L	1.0	93	70	130			
Potassium		253	mg/L	1.0	95	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7										Batch: R213494
<b>Lab ID:</b> C16070451-006BMS2 4 Sample Matrix Spike										Run: ICP4-C_160719A 07/19/16 18:26
Sodium		627	mg/L	1.2	94	70	130			
<b>Lab ID:</b> C16070451-006BMSD 4 Sample Matrix Spike Duplicate										Run: ICP4-C_160719A 07/19/16 18:30
Calcium		792	mg/L	1.0	87	70	130	0.4	20	
Magnesium		1020	mg/L	1.0	91	70	130	0.5	20	
Potassium		248	mg/L	1.0	94	70	130	1.8	20	
Sodium		621	mg/L	1.2	91	70	130	1.0	20	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7 Analytical Run: ICP4-C_160721A										
Lab ID: ICV	6	Initial Calibration Verification Standard								07/21/16 12:56
Aluminum		4.97	mg/L	0.10	99	95	105			
Beryllium		0.496	mg/L	0.010	99	95	105			
Cadmium		0.477	mg/L	0.010	95	95	105			
Manganese		4.77	mg/L	0.010	95	95	105			
Molybdenum		0.976	mg/L	0.10	98	95	105			
Vanadium		0.976	mg/L	0.10	98	95	105			
Lab ID: ICSA	6	Interference Check Sample A								07/21/16 13:16
Aluminum		482	mg/L	0.10	96	80	120			
Beryllium		5.00E-05	mg/L	0.010						
Cadmium		0.00112	mg/L	0.010						
Manganese		-0.0147	mg/L	0.010						
Molybdenum		0.00839	mg/L	0.10						
Vanadium		0.000830	mg/L	0.10						
Lab ID: ICSAB	6	Interference Check Sample AB								07/21/16 13:20
Aluminum		475	mg/L	0.10	95	80	120			
Beryllium		0.457	mg/L	0.010	91	80	120			
Cadmium		0.906	mg/L	0.010	91	80	120			
Manganese		0.418	mg/L	0.010	84	80	120			
Molybdenum		0.00338	mg/L	0.10						
Vanadium		0.473	mg/L	0.10	95	80	120			
Method: E200.7 Batch: 47886										
Lab ID: MB-47886	6	Method Blank								Run: ICP4-C_160721A 07/21/16 14:12
Aluminum		ND	mg/L	0.01						
Beryllium		7E-05	mg/L	7E-05						
Cadmium		ND	mg/L	0.0006						
Manganese		ND	mg/L	0.002						
Molybdenum		0.005	mg/L	0.004						
Vanadium		ND	mg/L	0.004						
Lab ID: LCS3-47886	6	Laboratory Control Sample								Run: ICP4-C_160721A 07/21/16 14:16
Aluminum		2.69	mg/L	0.030	108	85	115			
Beryllium		0.259	mg/L	0.0010	104	85	115			
Cadmium		0.258	mg/L	0.0012	103	85	115			
Manganese		2.50	mg/L	0.0012	100	85	115			
Molybdenum		0.482	mg/L	0.0053	95	85	115			
Vanadium		0.524	mg/L	0.010	105	85	115			
Lab ID: C16070451-002CMS3	6	Sample Matrix Spike								Run: ICP4-C_160721A 07/21/16 14:41
Aluminum		2.45	mg/L	0.030	96	70	130			
Beryllium		0.217	mg/L	0.0010	87	70	130			
Cadmium		0.210	mg/L	0.0012	84	70	130			
Manganese		7.42	mg/L	0.0012	82	70	130			
Molybdenum		0.429	mg/L	0.0053	86	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7										Batch: 47886
<b>Lab ID:</b> C16070451-002CMS3	6	Sample Matrix Spike		Run: ICP4-C_160721A						07/21/16 14:41
Vanadium		0.459	mg/L	0.010	92	70	130			
<b>Lab ID:</b> C16070451-002CMSD										07/21/16 14:45
	6	Sample Matrix Spike Duplicate		Run: ICP4-C_160721A						
Aluminum		2.47	mg/L	0.030	97	70	130	0.7	20	
Beryllium		0.218	mg/L	0.0010	87	70	130	0.5	20	
Cadmium		0.210	mg/L	0.0012	84	70	130	0.2	20	
Manganese		7.56	mg/L	0.0012	88	70	130	1.8	20	
Molybdenum		0.444	mg/L	0.0053	89	70	130	3.4	20	
Vanadium		0.461	mg/L	0.010	92	70	130	0.3	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Analytical Run: ICP4-C_160824A
<b>Lab ID: ICV</b>	4	Initial Calibration Verification Standard								08/24/16 11:18
Calcium		50.1	mg/L	1.0	100	95	105			
Magnesium		50.1	mg/L	1.0	100	95	105			
Manganese		4.84	mg/L	0.010	97	95	105			
Sodium		49.9	mg/L	1.0	100	95	105			
<b>Lab ID: ICSA</b>	4	Interference Check Sample A								08/24/16 11:38
Calcium		465	mg/L	1.0	93	80	120			
Magnesium		506	mg/L	1.0	101	80	120			
Manganese		-0.0156	mg/L	0.010						
Sodium		0.123	mg/L	1.0						
<b>Lab ID: ICSAB</b>	4	Interference Check Sample AB								08/24/16 11:42
Calcium		455	mg/L	1.0	91	80	120			
Magnesium		496	mg/L	1.0	99	80	120			
Manganese		0.428	mg/L	0.010	86	80	120			
Sodium		-0.000780	mg/L	1.0						
<b>Lab ID: ICSA</b>	4	Interference Check Sample A								08/24/16 22:27
Calcium		467	mg/L	1.0	93	80	120			
Magnesium		506	mg/L	1.0	101	80	120			
Manganese		-0.0142	mg/L	0.010						
Sodium		0.150	mg/L	1.0						
<b>Lab ID: ICSAB</b>	4	Interference Check Sample AB								08/24/16 22:31
Calcium		457	mg/L	1.0	91	80	120			
Magnesium		496	mg/L	1.0	99	80	120			
Manganese		0.424	mg/L	0.010	85	80	120			
Sodium		-0.0430	mg/L	1.0						
<b>Method: E200.7</b>										Batch: 47886
<b>Lab ID: MB-47886</b>	6	Method Blank								Run: ICP4-C_160824A 08/24/16 12:53
Aluminum		ND	mg/L	0.01						
Beryllium		ND	mg/L	7E-05						
Cadmium		ND	mg/L	0.0006						
Manganese		ND	mg/L	0.002						
Molybdenum		0.007	mg/L	0.004						
Vanadium		ND	mg/L	0.004						
<b>Lab ID: LCS3-47886</b>	6	Laboratory Control Sample								Run: ICP4-C_160824A 08/24/16 12:57
Aluminum		2.69	mg/L	0.030	108	85	115			
Beryllium		0.262	mg/L	0.0010	105	85	115			
Cadmium		0.251	mg/L	0.0012	101	85	115			
Manganese		2.60	mg/L	0.0012	104	85	115			
Molybdenum		0.473	mg/L	0.0053	93	85	115			
Vanadium		0.515	mg/L	0.010	103	85	115			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Batch: R214635
<b>Lab ID: MB-160824A</b>	3	Method Blank					Run: ICP4-C_160824A			08/24/16 12:02
Calcium		0.005	mg/L	0.003						
Magnesium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.01						
<b>Lab ID: LFB-160824A</b>	3	Laboratory Fortified Blank					Run: ICP4-C_160824A			08/24/16 12:06
Calcium		48.5	mg/L	1.0	97	85	115			
Magnesium		48.2	mg/L	1.0	96	85	115			
Sodium		49.6	mg/L	1.0	99	85	115			
<b>Lab ID: C16080586-003BMS2</b>	3	Sample Matrix Spike					Run: ICP4-C_160824A			08/24/16 12:22
Calcium		176	mg/L	1.0	92	70	130			
Magnesium		119	mg/L	1.0	94	70	130			
Sodium		140	mg/L	1.0	93	70	130			
<b>Lab ID: C16080586-003BMSD</b>	3	Sample Matrix Spike Duplicate					Run: ICP4-C_160824A			08/24/16 12:25
Calcium		177	mg/L	1.0	93	70	130	0.5	20	
Magnesium		120	mg/L	1.0	96	70	130	0.9	20	
Sodium		141	mg/L	1.0	94	70	130	1.1	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8				Analytical Run: ICPMS4-C_160720A						
Lab ID: ICV	10	Initial Calibration Verification Standard						07/20/16 14:26		
Aluminum		0.0471	mg/L	0.0010	94	90	110			
Beryllium		0.0500	mg/L	0.0010	100	90	110			
Cadmium		0.0505	mg/L	0.0010	101	90	110			
Cobalt		0.0477	mg/L	0.0010	95	90	110			
Lead		0.0499	mg/L	0.0010	100	90	110			
Manganese		0.0482	mg/L	0.0010	96	90	110			
Molybdenum		0.0491	mg/L	0.0010	98	90	110			
Nickel		0.0500	mg/L	0.0010	100	90	110			
Uranium		0.0456	mg/L	0.00030	91	90	110			
Vanadium		0.0470	mg/L	0.0010	94	90	110			
Method: E200.8				Batch: 47886						
Lab ID: MB-47886	10	Method Blank						Run: ICPMS4-C_160720A 07/21/16 19:07		
Aluminum		0.002	mg/L	0.0001						
Beryllium		1E-05	mg/L	6E-06						
Cadmium		0.0002	mg/L	3E-06						
Cobalt		2E-05	mg/L	5E-06						
Lead		6E-05	mg/L	2E-05						
Manganese		0.0005	mg/L	7E-05						
Molybdenum		0.0001	mg/L	4E-05						
Nickel		0.0002	mg/L	2E-05						
Uranium		4E-05	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
Lab ID: LCS3-47886	10	Laboratory Control Sample						Run: ICPMS4-C_160720A 07/21/16 19:14		
Aluminum		2.66	mg/L	0.030	106	85	115			
Beryllium		0.258	mg/L	0.0010	103	85	115			
Cadmium		0.268	mg/L	0.0010	107	85	115			
Cobalt		0.544	mg/L	0.0050	109	85	115			
Lead		0.540	mg/L	0.0010	108	85	115			
Manganese		2.57	mg/L	0.0010	103	85	115			
Molybdenum		0.514	mg/L	0.0010	103	85	115			
Nickel		0.532	mg/L	0.0050	106	85	115			
Uranium		0.985	mg/L	0.00030	98	85	115			
Vanadium		0.545	mg/L	0.010	109	85	115			
Lab ID: C16070451-002CMS3	10	Sample Matrix Spike						Run: ICPMS4-C_160720A 07/21/16 20:10		
Aluminum		2.50	mg/L	0.030	100	70	130			
Beryllium		0.220	mg/L	0.0010	88	70	130			
Cadmium		0.255	mg/L	0.0010	102	70	130			
Cobalt		0.510	mg/L	0.0050	100	70	130			
Lead		0.506	mg/L	0.0010	101	70	130			
Manganese		8.47	mg/L	0.0010	92	70	130			
Molybdenum		0.517	mg/L	0.0010	103	70	130			
Nickel		0.516	mg/L	0.0050	102	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 47886
Lab ID: C16070451-002CMS3	10	Sample Matrix Spike		Run: ICPMS4-C_160720A			07/21/16 20:10			
Uranium		1.04	mg/L	0.00030	101	70	130			
Vanadium		0.525	mg/L	0.010	105	70	130			
Lab ID: C16070451-002CMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS4-C_160720A			07/21/16 20:16			
Aluminum		2.52	mg/L	0.030	100	70	130	0.5	20	
Beryllium		0.219	mg/L	0.0010	87	70	130	0.7	20	
Cadmium		0.254	mg/L	0.0010	102	70	130	0.4	20	
Cobalt		0.510	mg/L	0.0050	100	70	130	0.1	20	
Lead		0.509	mg/L	0.0010	102	70	130	0.5	20	
Manganese		8.71	mg/L	0.0010	102	70	130	2.8	20	
Molybdenum		0.528	mg/L	0.0010	106	70	130	2.2	20	
Nickel		0.522	mg/L	0.0050	103	70	130	1.1	20	
Uranium		1.04	mg/L	0.00030	101	70	130	0.3	20	
Vanadium		0.532	mg/L	0.010	106	70	130	1.3	20	
Method: E200.8										Analytical Run: ICPMS4-C_160722A
Lab ID: ICV	3	Initial Calibration Verification Standard		Run: ICPMS4-C_160722A			07/22/16 13:35			
Lead		0.0496	mg/L	0.0010	99	90	110			
Nickel		0.0487	mg/L	0.0010	97	90	110			
Uranium		0.0449	mg/L	0.00030	90	90	110			
Method: E200.8										Batch: 47886
Lab ID: MB-47886	3	Method Blank		Run: ICPMS4-C_160722A			07/23/16 06:51			
Lead		4E-05	mg/L	2E-05						
Nickel		0.0001	mg/L	2E-05						
Uranium		1E-05	mg/L	4E-06						
Lab ID: LCS3-47886	3	Laboratory Control Sample		Run: ICPMS4-C_160722A			07/23/16 06:57			
Lead		0.541	mg/L	0.0010	108	85	115			
Nickel		0.508	mg/L	0.0050	102	85	115			
Uranium		0.990	mg/L	0.00030	99	85	115			
Lab ID: C16070451-011CMS3	3	Sample Matrix Spike		Run: ICPMS4-C_160722A			07/23/16 08:38			
Lead		0.502	mg/L	0.0010	100	70	130			
Nickel		0.448	mg/L	0.0050	89	70	130			
Uranium		1.04	mg/L	0.00030	202	70	130			S
Lab ID: C16070451-011CMSD	3	Sample Matrix Spike Duplicate		Run: ICPMS4-C_160722A			07/23/16 08:45			
Lead		0.501	mg/L	0.0010	100	70	130	0.1	20	
Nickel		0.454	mg/L	0.0050	90	70	130	1.4	20	
Uranium		1.05	mg/L	0.00030	203	70	130	0.4	20	S

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 09/26/16

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Analytical Run: ICPMS4-C_160725A										
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
Cobalt		0.0470	mg/L	0.0010	94	90	110			07/25/16 13:36
<b>Method: E200.8</b>										
Batch: 47886										
<b>Lab ID:</b> MB-47886	Method Blank									
Cobalt		ND	mg/L	5E-06						Run: ICPMS4-C_160725A 07/25/16 21:46
<b>Method: E200.8</b>										
Analytical Run: ICPMS4-C_160815A										
<b>Lab ID:</b> ICV	4	Initial Calibration Verification Standard								
										08/15/16 12:34
Calcium		9.58	mg/L	0.0066	96	90	110			
Magnesium		9.58	mg/L	0.0027	96	90	110			
Potassium		9.58	mg/L	0.0041	96	90	110			
Sodium		9.67	mg/L	0.0043	97	90	110			
<b>Method: E200.8</b>										
Batch: R214295										
<b>Lab ID:</b> LRB	4	Method Blank								
										Run: ICPMS4-C_160815A 08/15/16 13:43
Calcium		0.03	mg/L	0.01						
Magnesium		0.003	mg/L	0.0009						
Potassium		0.05	mg/L	0.02						
Sodium		ND	mg/L	0.007						
<b>Lab ID:</b> LFB	4	Laboratory Fortified Blank								
										Run: ICPMS4-C_160815A 08/15/16 13:49
Calcium		11.8	mg/L	0.0066	94	85	115			
Magnesium		11.6	mg/L	0.0027	93	85	115			
Potassium		11.8	mg/L	0.0041	94	85	115			
Sodium		11.7	mg/L	0.0043	94	85	115			
<b>Lab ID:</b> C16070441-002CMS4	4	Sample Matrix Spike								
										Run: ICPMS4-C_160815A 08/15/16 14:15
Calcium		26.6	mg/L	1.0	80	70	130			
Magnesium		11.8	mg/L	1.0	88	70	130			
Potassium		13.0	mg/L	1.0	94	70	130			
Sodium		48.5	mg/L	1.0	58	70	130			S
<b>Lab ID:</b> C16070441-002CMSD	4	Sample Matrix Spike Duplicate								
										Run: ICPMS4-C_160815A 08/15/16 14:21
Calcium		26.4	mg/L	1.0	79	70	130	0.5	20	
Magnesium		11.7	mg/L	1.0	87	70	130	0.6	20	
Potassium		13.0	mg/L	1.0	94	70	130	0.2	20	
Sodium		47.6	mg/L	1.0	51	70	130	1.9	20	S

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## QA/QC Summary Report

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Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Analytical Run: ICPMS4-C_160824A
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								08/24/16 13:18
Manganese		0.0490	mg/L	0.0010	98	90	110			
Uranium		0.0487	mg/L	0.00030	97	90	110			
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								08/24/16 19:33
Manganese		0.0501	mg/L	0.0010	100	90	110			
Uranium		0.0498	mg/L	0.00030	100	90	110			
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								08/25/16 01:47
Manganese		0.0509	mg/L	0.0010	102	90	110			
Uranium		0.0491	mg/L	0.00030	98	90	110			
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								08/25/16 08:55
Manganese		0.0509	mg/L	0.0010	102	90	110			
Uranium		0.0496	mg/L	0.00030	99	90	110			
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								08/25/16 16:20
Manganese		0.0516	mg/L	0.0010	103	90	110			
Uranium		0.0502	mg/L	0.00030	100	90	110			
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								08/25/16 23:41
Manganese		0.0503	mg/L	0.0010	101	90	110			
Uranium		0.0484	mg/L	0.00030	97	90	110			
<b>Method: E200.8</b>										Batch: 47886
<b>Lab ID: MB-47886</b>	10	Method Blank								Run: ICPMS4-C_160824A 08/24/16 22:04
Aluminum		0.001	mg/L	0.0001						
Beryllium		ND	mg/L	6E-06						
Cadmium		0.0002	mg/L	3E-06						
Cobalt		2E-05	mg/L	5E-06						
Lead		5E-05	mg/L	2E-05						
Manganese		0.0005	mg/L	7E-05						
Molybdenum		ND	mg/L	4E-05						
Nickel		0.0001	mg/L	2E-05						
Uranium		0.0002	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
<b>Lab ID: LCS3-47886</b>	10	Laboratory Control Sample								Run: ICPMS4-C_160824A 08/24/16 22:10
Aluminum		2.40	mg/L	0.030	96	85	115			
Beryllium		0.253	mg/L	0.0010	101	85	115			
Cadmium		0.273	mg/L	0.0010	109	85	115			
Cobalt		0.490	mg/L	0.0050	98	85	115			
Lead		0.522	mg/L	0.0010	104	85	115			
Manganese		2.46	mg/L	0.0010	98	85	115			
Molybdenum		0.520	mg/L	0.0010	104	85	115			
Nickel		0.521	mg/L	0.0050	104	85	115			
Uranium		1.02	mg/L	0.00030	102	85	115			

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: 47886
<b>Lab ID:</b> LCS3-47886	10	Laboratory Control Sample				Run: ICPMS4-C_160824A				08/24/16 22:10
Vanadium		0.520	mg/L	0.010	104	85	115			
<b>Lab ID:</b> C16070451-011CMS3	10	Sample Matrix Spike				Run: ICPMS4-C_160824A				08/24/16 23:00
Aluminum		2.27	mg/L	0.030	90	70	130			
Beryllium		0.227	mg/L	0.0010	91	70	130			
Cadmium		0.254	mg/L	0.0010	102	70	130			
Cobalt		0.476	mg/L	0.0050	95	70	130			
Lead		0.515	mg/L	0.0010	103	70	130			
Manganese		2.39	mg/L	0.0010	92	70	130			
Molybdenum		0.508	mg/L	0.0010	102	70	130			
Nickel		0.477	mg/L	0.0050	95	70	130			
Uranium		1.08	mg/L	0.00030	207	70	130			S
Vanadium		0.491	mg/L	0.010	98	70	130			
<b>Lab ID:</b> C16070451-011CMSD	10	Sample Matrix Spike Duplicate				Run: ICPMS4-C_160824A				08/24/16 23:06
Aluminum		2.32	mg/L	0.030	93	70	130	2.3	20	
Beryllium		0.228	mg/L	0.0010	91	70	130	0.4	20	
Cadmium		0.262	mg/L	0.0010	105	70	130	2.9	20	
Cobalt		0.476	mg/L	0.0050	95	70	130	0.1	20	
Lead		0.528	mg/L	0.0010	106	70	130	2.6	20	
Manganese		2.45	mg/L	0.0010	94	70	130	2.3	20	
Molybdenum		0.531	mg/L	0.0010	106	70	130	4.3	20	
Nickel		0.480	mg/L	0.0050	95	70	130	0.7	20	
Uranium		1.11	mg/L	0.00030	213	70	130	2.8	20	S
Vanadium		0.496	mg/L	0.010	99	70	130	0.9	20	

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S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_160722A
Lab ID: ICV	2	Initial Calibration Verification Standard								07/22/16 17:13
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
Lab ID: CCV072216-1	2	Continuing Calibration Verification Standard								07/22/16 18:08
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.5	mg/L	1.0	101	90	110			
Method: E300.0										Batch: R213616
Lab ID: ICB	2	Method Blank								Run: IC2-C_160722A 07/22/16 17:31
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.05						
Lab ID: LFB	2	Laboratory Fortified Blank								Run: IC2-C_160722A 07/22/16 17:50
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
Lab ID: C16070287-001AMS	2	Sample Matrix Spike								Run: IC2-C_160722A 07/22/16 18:45
Chloride		52.3	mg/L	1.0	103	90	110			
Sulfate		190	mg/L	1.0	105	90	110			
Lab ID: C16070287-001AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_160722A 07/22/16 19:03
Chloride		52.6	mg/L	1.0	105	90	110	0.6	20	
Sulfate		191	mg/L	1.0	106	90	110	0.5	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 09/26/16

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E300.0</b>										Analytical Run: IC2-C_160810A
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								08/10/16 17:09
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		42.2	mg/L	1.0	106	90	110			
<b>Lab ID: CCV-081016-4</b>										08/11/16 06:44
	2	Continuing Calibration Verification Standard								
Chloride		9.90	mg/L	1.0	99	90	110			
Sulfate		40.2	mg/L	1.0	100	90	110			
<b>Method: E300.0</b>										Batch: R214198
<b>Lab ID: ICB</b>	2	Method Blank								Run: IC2-C_160810A 08/10/16 17:28
Chloride		ND	mg/L	0.04						
Sulfate		0.07	mg/L	0.05						
<b>Lab ID: LFB-081016-1</b>										Run: IC2-C_160810A 08/10/16 17:46
	2	Laboratory Fortified Blank								
Chloride		9.69	mg/L	1.0	97	90	110			
Sulfate		39.5	mg/L	1.0	98	90	110			
<b>Lab ID: C16080354-001AMS</b>										Run: IC2-C_160810A 08/11/16 07:39
	2	Sample Matrix Spike								
Chloride		218	mg/L	1.0	95	90	110			
Sulfate		907	mg/L	2.1	96	90	110			
<b>Lab ID: C16080354-001AMSD</b>										Run: IC2-C_160810A 08/11/16 07:58
	2	Sample Matrix Spike Duplicate								
Chloride		219	mg/L	1.0	97	90	110	0.6	20	
Sulfate		913	mg/L	2.1	98	90	110	0.6	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_160825A
Lab ID: ICV	2	Initial Calibration Verification Standard								08/23/16 17:43
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
Lab ID: CCV-160823-1	2	Continuing Calibration Verification Standard								08/23/16 18:38
Chloride		10.0	mg/L	1.0	100	90	110			
Sulfate		39.9	mg/L	1.0	100	90	110			
Method: E300.0										Batch: R214632
Lab ID: ICB	2	Method Blank								Run: IC2-C_160825A 08/23/16 18:01
Chloride		ND	mg/L	0.04						
Sulfate		0.08	mg/L	0.05						
Lab ID: LFB-160823-1	2	Laboratory Fortified Blank								Run: IC2-C_160825A 08/23/16 18:20
Chloride		9.57	mg/L	1.0	96	90	110			
Sulfate		38.2	mg/L	1.0	95	90	110			
Lab ID: C16070451-004AMS	2	Sample Matrix Spike								Run: IC2-C_160825A 08/23/16 19:15
Chloride		385	mg/L	2.1	100	90	110			
Sulfate		3970	mg/L	8.3	101	90	110			
Lab ID: C16070451-004AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_160825A 08/23/16 19:33
Chloride		385	mg/L	2.1	101	90	110	0.2	20	
Sulfate		4000	mg/L	8.3	104	90	110	0.6	20	
Lab ID: LFB-160823-2	2	Laboratory Fortified Blank								Run: IC2-C_160825A 08/24/16 12:09
Chloride		9.64	mg/L	1.0	96	90	110			
Sulfate		38.3	mg/L	1.0	95	90	110			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC3-C_160719A
Lab ID: ICV	2	Initial Calibration Verification Standard								07/19/16 15:15
Chloride		10.6	mg/L	1.0	106	90	110			
Sulfate		42.3	mg/L	1.0	106	90	110			
Lab ID: CCV	2	Continuing Calibration Verification Standard								07/20/16 04:01
Chloride		10.6	mg/L	1.0	106	90	110			
Sulfate		43.1	mg/L	1.0	108	90	110			
Lab ID: CCV	2	Continuing Calibration Verification Standard								07/20/16 08:05
Chloride		10.6	mg/L	1.0	106	90	110			
Sulfate		43.5	mg/L	1.0	109	90	110			
Method: E300.0										Batch: R213507
Lab ID: LFB	2	Laboratory Fortified Blank								Run: IC3-C_160719A 07/19/16 15:50
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.4	mg/L	1.0	101	90	110			
Lab ID: C16070451-001AMS	2	Sample Matrix Spike								Run: IC3-C_160719A 07/20/16 04:54
Chloride		570	mg/L	2.1	98	90	110			
Sulfate		2730	mg/L	8.3	87	90	110			S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Lab ID: C16070451-001AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_160719A 07/20/16 05:11
Chloride		564	mg/L	2.1	96	90	110	1.0	20	
Sulfate		2720	mg/L	8.3	85	90	110	0.6	20	S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Lab ID: C16070451-011AMS	2	Sample Matrix Spike								Run: IC3-C_160719A 07/20/16 08:58
Chloride		427	mg/L	2.1	103	90	110			
Sulfate		2930	mg/L	8.3	95	90	110			
Lab ID: C16070451-011AMSD	2	Sample Matrix Spike Duplicate								Run: IC3-C_160719A 07/20/16 09:15
Chloride		420	mg/L	2.1	99	90	110	1.6	20	
Sulfate		2870	mg/L	8.3	87	90	110	2.0	20	S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										

### Qualifiers:

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S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E353.2</b>										Analytical Run: FIA201-C_160715A
<b>Lab ID: CCV_160628</b>	Continuing Calibration Verification Standard									
Nitrogen, Nitrate+Nitrite as N		2.10	mg/L	0.10	105	90	110			07/15/16 16:07
<b>Lab ID: CCV_160628</b>										07/15/16 16:24
Continuing Calibration Verification Standard										
Nitrogen, Nitrate+Nitrite as N		2.21	mg/L	0.10	110	90	110			
<b>Method: E353.2</b>										Batch: R213385
<b>Lab ID: MBLK</b>	Method Blank									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						07/15/16 15:47
<b>Lab ID: LFB</b>										07/15/16 15:48
Laboratory Fortified Blank										
Nitrogen, Nitrate+Nitrite as N		2.01	mg/L	0.10	103	90	110			
<b>Lab ID: C16070451-002DMS</b>										07/15/16 16:28
Sample Matrix Spike										
Nitrogen, Nitrate+Nitrite as N		1.92	mg/L	0.10	96	90	110			
<b>Lab ID: C16070451-002DMSD</b>										07/15/16 16:29
Sample Matrix Spike Duplicate										
Nitrogen, Nitrate+Nitrite as N		1.95	mg/L	0.10	98	90	110	1.6	10	
<b>Lab ID: C16070463-001CMS</b>										07/15/16 16:44
Sample Matrix Spike										
Nitrogen, Nitrate+Nitrite as N		2.27	mg/L	0.10	107	90	110			
<b>Lab ID: C16070463-001CMSD</b>										07/15/16 16:46
Sample Matrix Spike Duplicate										
Nitrogen, Nitrate+Nitrite as N		2.29	mg/L	0.10	108	90	110	0.9	10	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>										Analytical Run: R213617
<b>Lab ID: 21-Jul-16_CCV_36</b>	9	Continuing Calibration Verification Standard								07/22/16 05:37
Bromodichloromethane		10.5	ug/L	1.0	105	70	130			
Bromoform		9.40	ug/L	1.0	94	70	130			
Chlorodibromomethane		9.56	ug/L	1.0	96	70	130			
Chloroform		9.56	ug/L	1.0	96	70	130			
Trihalomethanes, Total		39.0	ug/L	1.0	98	70	130			
Surr: Dibromofluoromethane				1.0	105	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	93	70	130			
Surr: p-Bromofluorobenzene				1.0	119	70	130			
Surr: Toluene-d8				1.0	116	70	130			
<b>Lab ID: 21-Jul-16_CCV_54</b>	9	Continuing Calibration Verification Standard								07/22/16 16:05
Bromodichloromethane		9.60	ug/L	1.0	96	70	130			
Bromoform		8.68	ug/L	1.0	87	70	130			
Chlorodibromomethane		8.60	ug/L	1.0	86	70	130			
Chloroform		8.96	ug/L	1.0	90	70	130			
Trihalomethanes, Total		35.8	ug/L	1.0	90	70	130			
Surr: Dibromofluoromethane				1.0	105	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	91	70	130			
Surr: p-Bromofluorobenzene				1.0	119	70	130			
Surr: Toluene-d8				1.0	115	70	130			
<b>Method: E624</b>										Batch: R213617
<b>Lab ID: 21-Jul-16_LCS_37</b>	9	Laboratory Control Sample								07/22/16 06:12
					Run: 5975VOC1_160722C					
Bromodichloromethane		10.9	ug/L	1.0	109	70	130			
Bromoform		10.4	ug/L	1.0	104	76	136			
Chlorodibromomethane		10.0	ug/L	1.0	100	70	130			
Chloroform		11.3	ug/L	1.0	113	70	130			
Trihalomethanes, Total		42.7	ug/L	1.0	107	70	130			
Surr: Dibromofluoromethane				1.0	111	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	94	70	130			
Surr: p-Bromofluorobenzene				1.0	118	70	130			
Surr: Toluene-d8				1.0	112	70	130			
- Response is above standard QA limit. This could indicate a high bias for the sample results. Since there were no detectable analyte responses, and the remainder of the run QA is within acceptance range, this batch is approved.										
<b>Lab ID: 21-Jul-16_MBLK_39</b>	9	Method Blank								07/22/16 07:22
					Run: 5975VOC1_160722C					
Bromodichloromethane		ND	ug/L	1.0						
Bromoform		ND	ug/L	1.0						
Chlorodibromomethane		ND	ug/L	1.0						
Chloroform		ND	ug/L	1.0						
Trihalomethanes, Total		ND	ug/L	1.0						
Surr: Dibromofluoromethane				1.0	108	64.4	131			
Surr: 1,2-Dichloroethane-d4				1.0	104	70	130			
Surr: p-Bromofluorobenzene				1.0	136	67.1	133			S
Surr: Toluene-d8				1.0	112	79.7	125			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>										Batch: R213617
<b>Lab ID: C16070456-001AMS</b>	9	Sample Matrix Spike		Run: 5975VOC1_160722C				07/22/16 14:20		
Bromodichloromethane		186	ug/L	10	93	70	130			
Bromoform		184	ug/L	10	92	76	136			
Chlorodibromomethane		170	ug/L	10	85	70	130			
Chloroform		194	ug/L	10	97	70	130			
Trihalomethanes, Total		734	ug/L	10	92	70	130			
Surr: Dibromofluoromethane				1.0	110	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	95	70	130			
Surr: p-Bromofluorobenzene				1.0	119	77	137			
Surr: Toluene-d8				1.0	114	70	130			
<b>Lab ID: C16070456-001AMSD</b>	9	Sample Matrix Spike Duplicate		Run: 5975VOC1_160722C				07/22/16 14:55		
Bromodichloromethane		202	ug/L	10	101	70	130	8.2	20	
Bromoform		218	ug/L	10	109	76	136	17	20	
Chlorodibromomethane		199	ug/L	10	100	70	130	16	20	
Chloroform		210	ug/L	10	105	70	130	7.9	20	
Trihalomethanes, Total		829	ug/L	10	104	70	130	12	20	
Surr: Dibromofluoromethane				1.0	108	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	94	70	130			
Surr: p-Bromofluorobenzene				1.0	122	77	137			
Surr: Toluene-d8				1.0	109	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-0957
<b>Lab ID: MB-GA-0957</b>	3	Method Blank					Run: G542M_160728B			07/28/16 23:18
Gross Alpha minus Rn & U		0.7	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		1	pCi/L							
Gross Alpha minus Rn & U MDC		2	pCi/L							
<b>Lab ID: LCS-GA-0957</b>		Laboratory Control Sample					Run: G542M_160728B			07/28/16 23:18
Gross Alpha minus Rn & U		33.3	pCi/L		95	80	120			
<b>Lab ID: C16070220-004DMS</b>		Sample Matrix Spike					Run: G542M_160728B			07/28/16 23:18
Gross Alpha minus Rn & U		63.2	pCi/L		91	70	130			
<b>Lab ID: C16070220-004DMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_160728B			07/28/16 23:18
Gross Alpha minus Rn & U		27.1	pCi/L		76	70	130	80	52.7	R
- Due to nonhomogeneity of the sample the Duplicate RPD is outside of the acceptance range for this analysis.										
<b>Lab ID: C16070451-011GMS</b>		Sample Matrix Spike					Run: G542M_160728B			07/29/16 01:00
Gross Alpha minus Rn & U		59.6	pCi/L		86	70	130			
<b>Lab ID: C16070451-011GMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_160728B			07/29/16 01:00
Gross Alpha minus Rn & U		59.4	pCi/L		86	70	130	0.3	52.7	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: RA226-8188
Lab ID: LCS-RA226-8188	Laboratory Control Sample			Run: G5000W_160802C			08/15/16 11:18			
Radium 226		8.6	pCi/L	83		80	120			
Lab ID: MB-RA226-8188	3	Method Blank			Run: G5000W_160802C			08/15/16 11:18		
Radium 226		0.08	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.1	pCi/L							
Lab ID: C16070451-009GMS	Sample Matrix Spike			Run: G5000W_160802C			08/15/16 12:55			
Radium 226		19	pCi/L	79		70	130			
Lab ID: C16070451-009GMSD	Sample Matrix Spike Duplicate			Run: G5000W_160802C			08/15/16 12:55			
Radium 226		20	pCi/L	82		70	130	-4.8	49	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 09/26/16

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E908.0</b>										Batch: RA-TH-ISO-2443
<b>Lab ID: LCS-RA-TH-ISO-2443</b>	Laboratory Control Sample			Run: EGG-ORTEC_160802A			08/09/16 10:50			
Thorium 230		5.8	pCi/L	102		80	120			
<b>Lab ID: C16070451-008GMS</b>	Sample Matrix Spike			Run: EGG-ORTEC_160802A			08/09/16 10:50			
Thorium 230		12.5	pCi/L	100		70	130			
<b>Lab ID: C16070451-008GMSD</b>	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_160802A			08/09/16 10:50			
Thorium 230		10.9	pCi/L	87		70	130	14	48	
<b>Lab ID: MB-RA-TH-ISO-2443</b>	3	Method Blank		Run: EGG-ORTEC_160802A			08/09/16 15:01			
Thorium 230		0.004	pCi/L							U
Thorium 230 precision (±)		0.08	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

### Qualifiers:

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ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E909.0</b>										Batch: T_PB-210-0687
<b>Lab ID: MB-PB-210-0687</b>	3	Method Blank					Run: SUB-T69784			09/19/16 09:48
Lead 210		-0.2	pCi/L							U
Lead 210 precision (±)		0.7	pCi/L							
Lead 210 MDC		1	pCi/L							
<b>Lab ID: LCS-PB-210-0687</b>										09/19/16 09:20
		Laboratory Control Sample					Run: SUB-T69784			
Lead 210		81	pCi/L		76	80	120			S
- LCS response is outside of the acceptance range for this analysis. Since the MB, MS, and MSD are acceptable the batch is approved.										
<b>Lab ID: C16080202-001D</b>										09/19/16 18:26
		Sample Matrix Spike					Run: SUB-T69784			
Lead 210		21	pCi/L		95	70	130			
<b>Lab ID: C16080202-001D</b>										09/19/16 20:50
		Sample Matrix Spike Duplicate					Run: SUB-T69784			
Lead 210		25	pCi/L		111	70	130	15	70.8	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070451

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05								Batch: RA228-5277		
Lab ID: LCS-228-RA226-8188	Laboratory Control Sample			Run: TENNELEC-3_160802A			08/09/16 10:35			
Radium 228		8.2	pCi/L	86	80	120				
Lab ID: MB-RA226-818B	3	Method Blank			Run: TENNELEC-3_160802A			08/09/16 10:35		
Radium 228		0.6	pCi/L				U			
Radium 228 precision (±)		0.9	pCi/L							
Radium 228 MDC		2	pCi/L							
Lab ID: C16071017-008BMS	Sample Matrix Spike			Run: TENNELEC-3_160802A			08/09/16 10:35			
Radium 228		22	pCi/L	101	70	130				
Lab ID: C16071017-008BMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_160802A			08/09/16 10:35			
Radium 228		20	pCi/L	91	70	130	10	51.2		
Method: RA-05								Batch: RA228-5300		
Lab ID: LCS-228-RA228-5300	Laboratory Control Sample			Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		10.1	pCi/L	113	80	120				
Lab ID: MB-228-RA228-5300	3	Method Blank			Run: TENNELEC-3_160823B			08/26/16 11:28		
Radium 228		0.3	pCi/L				U			
Radium 228 precision (±)		0.6	pCi/L							
Radium 228 MDC		1.0	pCi/L							
Lab ID: C16070512-007GMS	Sample Matrix Spike			Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		24	pCi/L	81	70	130				
Lab ID: C16070512-007GMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		24	pCi/L	81	70	130	1.9	50.7		

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## ANALYTICAL SUMMARY REPORT

September 26, 2016

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16070513      Quote ID: C129 - Quarterly Long List  
Project Name: SW Alluvium

Energy Laboratories, Inc. Casper WY received the following 3 samples for United Nuclear Corporation on 7/15/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16070513-001	SBL-1	07/12/16 8:30	07/15/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics
C16070513-002	EPA-25	07/12/16 9:37	07/15/16	Aqueous	Same As Above
C16070513-003	627	07/12/16 10:40	07/15/16	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Client Services Supervisor

Digitally signed by  
Steve Dobos  
Date: 2016.09.26 12:43:05 -06:00



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**CLIENT:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Work Order:** C16070513

**Report Date:** 09/26/16

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CS were subcontracted to Energy Laboratories, 415 Graham Rd., College Station, TX, EPA Number TX01520.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2320 B										Batch: R213580
<b>Lab ID:</b> MBLK		Method Blank								07/21/16 15:57
Bicarbonate as HCO <sub>3</sub>		1	mg/L	1						

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 09/26/16

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C								Batch: TDS160718A		
Lab ID: MB-1_160718A	Method Blank		Run: BAL-18_160718C					07/18/16 14:45		
Solids, Total Dissolved TDS @ 180 C	10	mg/L	8							
Lab ID: LCS-2_160718A	Laboratory Control Sample		Run: BAL-18_160718C					07/18/16 14:45		
Solids, Total Dissolved TDS @ 180 C	1100	mg/L	11	98	90	110				

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 09/26/16

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	A3114 B							Analytical Run: CVAA-C202_160812A		
Lab ID:	ICV	Initial Calibration Verification Standard							08/12/16 09:43	
Selenium		0.0253	mg/L	0.0010	104	90	110			
Method:	A3114 B							Batch: 48085		
Lab ID:	MB-48085	Method Blank							Run: CVAA-C202_160812A 08/12/16 10:32	
Selenium		ND	mg/L	0.0003						
Lab ID:	LCS-48085	Laboratory Control Sample							Run: CVAA-C202_160812A 08/12/16 10:34	
Selenium		0.0245	mg/L	0.0010	101	90	110			
Lab ID:	C16070513-003CMS	Sample Matrix Spike							Run: CVAA-C202_160812A 08/12/16 10:47	
Selenium		0.0232	mg/L	0.0010	95	85	115			
Lab ID:	C16070513-003CMSD	Sample Matrix Spike Duplicate							Run: CVAA-C202_160812A 08/12/16 10:49	
Selenium		0.0243	mg/L	0.0010	100	85	115	4.7	15	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B Analytical Run: PHSC_101-C_160718A										
Lab ID: pH 6.86		Initial Calibration Verification Standard 07/18/16 09:24								
pH		6.87	s.u.	0.010	100	98	102			
Lab ID: CCV - pH 7		Continuing Calibration Verification Standard 07/18/16 10:45								
pH		7.01	s.u.	0.010	100	98	102			
Lab ID: pH 6.86		Initial Calibration Verification Standard 07/18/16 14:25								
pH		6.87	s.u.	0.010	100	98	102			

### Qualifiers:

RL - Analyte reporting limit.

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G										Analytical Run: FIA201-C_160718A
Lab ID: CCV_160520	Continuing Calibration Verification Standard									07/18/16 16:48
Nitrogen, Ammonia as N		0.990	mg/L	0.050	99	90	110			
Lab ID: CCV_160520	Continuing Calibration Verification Standard									07/18/16 17:04
Nitrogen, Ammonia as N		0.963	mg/L	0.050	96	90	110			
Lab ID: CCV_160520	Continuing Calibration Verification Standard									07/18/16 17:21
Nitrogen, Ammonia as N		0.968	mg/L	0.050	97	90	110			
Method: A4500-NH3 G										Batch: R213433
Lab ID: MBLK	Method Blank									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		ND	mg/L	0.003						07/18/16 15:37
Lab ID: LFB	Laboratory Fortified Blank									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.978	mg/L	0.050	99	90	110			07/18/16 15:40
Lab ID: C16070513-003DMS	Sample Matrix Spike									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.885	mg/L	0.050	88	90	110			07/18/16 17:08
										S
Lab ID: C16070513-003DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.921	mg/L	0.050	91	90	110	4.0	10	07/18/16 17:09
Lab ID: C16070512-009DMS	Sample Matrix Spike									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.865	mg/L	0.050	85	90	110			07/18/16 17:25
										S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Lab ID: C16070512-009DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.860	mg/L	0.050	85	90	110	0.6	10	07/18/16 17:26
										S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E1632AM										Analytical Run: SUB-H117244
<b>Lab ID:</b> AS-ICV 25ppb-7/22/20	Initial Calibration Verification Standard									
Arsenic-III		24.9	ug/L	5.0	100	87.6	114			07/22/16 15:03
<b>Lab ID:</b> AS-50.0-7/22/2016										07/22/16 21:16
Continuing Calibration Verification Standard										
Arsenic-III		49.5	ug/L	5.0	99	85	115			
<b>Method:</b> E1632AM										Batch: H_R117244
<b>Lab ID:</b> AS-LFB 50ppb-7/22/2	Laboratory Fortified Blank									
Arsenic-III		65.6	ug/L	5.0	131	55	146	Run: SUB-H117244		07/22/16 15:40
<b>Lab ID:</b> ICB	Method Blank									
Arsenic-III		ND	ug/L	0.2				Run: SUB-H117244		07/22/16 15:52
<b>Lab ID:</b> H16070348-011E MS	Sample Matrix Spike									
Arsenic-III		46.5	ug/L	5.0	93	55	146	Run: SUB-H117244		07/22/16 21:52
<b>Lab ID:</b> H16070348-011E MSD	Sample Matrix Spike Duplicate									
Arsenic-III		50.6	ug/L	5.0	101	55	146	Run: SUB-H117244	8.5	07/22/16 22:04 20

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP4-C_160719A		
Lab ID: ICV	4	Initial Calibration Verification Standard						07/19/16 12:37		
Calcium		49.8	mg/L	1.0	100	95	105			
Magnesium		49.7	mg/L	1.0	99	95	105			
Potassium		49.8	mg/L	1.0	100	95	105			
Sodium		49.8	mg/L	1.0	100	95	105			
Lab ID: ICSA	4	Interference Check Sample A						07/19/16 12:57		
Calcium		458	mg/L	1.0	92	80	120			
Magnesium		498	mg/L	1.0	100	80	120			
Potassium		-0.00530	mg/L	1.0						
Sodium		0.0881	mg/L	1.0						
Lab ID: ICSAB	4	Interference Check Sample AB						07/19/16 13:01		
Calcium		457	mg/L	1.0	91	80	120			
Magnesium		497	mg/L	1.0	99	80	120			
Potassium		-0.00726	mg/L	1.0						
Sodium		0.0443	mg/L	1.0						
Method: E200.7								Batch: R213494		
Lab ID: MB-160719A	4	Method Blank				Run: ICP4-C_160719A			07/19/16 13:21	
Calcium		0.05	mg/L	0.003						
Magnesium		ND	mg/L	0.002						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.1						
Lab ID: LFB-160719A	4	Laboratory Fortified Blank				Run: ICP4-C_160719A			07/19/16 13:25	
Calcium		47.6	mg/L	1.0	95	85	115			
Magnesium		48.0	mg/L	1.0	96	85	115			
Potassium		50.3	mg/L	1.0	101	85	115			
Sodium		48.9	mg/L	1.0	98	85	115			
Lab ID: C16070512-011BMS2	4	Sample Matrix Spike				Run: ICP4-C_160719A			07/19/16 20:47	
Calcium		99.2	mg/L	1.0	97	70	130			
Magnesium		98.2	mg/L	1.0	96	70	130			
Potassium		96.6	mg/L	1.0	95	70	130			
Sodium		97.9	mg/L	1.0	96	70	130			
Lab ID: C16070512-011BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_160719A			07/19/16 20:51	
Calcium		99.4	mg/L	1.0	97	70	130	0.3	20	
Magnesium		98.5	mg/L	1.0	97	70	130	0.4	20	
Potassium		96.5	mg/L	1.0	95	70	130	0.1	20	
Sodium		98.1	mg/L	1.0	96	70	130	0.3	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP4-C_160726A		
Lab ID: ICV	7	Initial Calibration Verification Standard							07/26/16 11:10	
Aluminum		5.02	mg/L	0.10	100	95	105			
Beryllium		0.494	mg/L	0.010	99	95	105			
Cadmium		0.492	mg/L	0.010	98	95	105			
Manganese		4.77	mg/L	0.010	95	95	105			
Molybdenum		0.965	mg/L	0.10	97	95	105			
Nickel		0.946	mg/L	0.050	95	95	105			
Vanadium		0.974	mg/L	0.10	97	95	105			
Lab ID: ICSA	7	Interference Check Sample A							07/26/16 11:30	
Aluminum		479	mg/L	0.10	96	80	120			
Beryllium		4.00E-05	mg/L	0.010						
Cadmium		0.000140	mg/L	0.010						
Manganese		-0.0159	mg/L	0.010						
Molybdenum		0.00304	mg/L	0.10						
Nickel		0.00544	mg/L	0.050						
Vanadium		0.00409	mg/L	0.10						
Lab ID: ICSAB	7	Interference Check Sample AB							07/26/16 11:34	
Aluminum		486	mg/L	0.10	97	80	120			
Beryllium		0.454	mg/L	0.010	91	80	120			
Cadmium		0.902	mg/L	0.010	90	80	120			
Manganese		0.422	mg/L	0.010	84	80	120			
Molybdenum		0.00179	mg/L	0.10						
Nickel		0.843	mg/L	0.050	84	80	120			
Vanadium		0.472	mg/L	0.10	94	80	120			
Method: E200.7								Batch: 47931		
Lab ID: MB-47931	7	Method Blank				Run: ICP4-C_160726A			07/27/16 01:11	
Aluminum		ND	mg/L	0.01						
Beryllium		ND	mg/L	7E-05						
Cadmium		ND	mg/L	0.0006						
Manganese		ND	mg/L	0.002						
Molybdenum		0.05	mg/L	0.004						
Nickel		ND	mg/L	0.003						
Vanadium		ND	mg/L	0.004						
Lab ID: LCS3-47931	7	Laboratory Control Sample				Run: ICP4-C_160726A			07/27/16 01:15	
Aluminum		2.60	mg/L	0.030	104	85	115			
Beryllium		0.251	mg/L	0.0010	101	85	115			
Cadmium		0.243	mg/L	0.0012	97	85	115			
Manganese		2.48	mg/L	0.0012	99	85	115			
Molybdenum		0.488	mg/L	0.0053	88	85	115			
Nickel		0.491	mg/L	0.0050	98	85	115			
Vanadium		0.504	mg/L	0.010	101	85	115			

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: 47931
Lab ID: C16070512-005CMS3	7	Sample Matrix Spike		Run: ICP4-C_160726A			07/27/16 01:53			
Aluminum		2.46	mg/L	0.030	97	70	130			
Beryllium		0.222	mg/L	0.0010	89	70	130			
Cadmium		0.211	mg/L	0.0012	83	70	130			
Manganese		2.49	mg/L	0.0012	89	70	130			
Molybdenum		0.429	mg/L	0.0053	86	70	130			
Nickel		0.461	mg/L	0.0050	85	70	130			
Vanadium		0.452	mg/L	0.010	90	70	130			
Lab ID: C16070512-005CMSD	7	Sample Matrix Spike Duplicate		Run: ICP4-C_160726A			07/27/16 01:58			
Aluminum		2.45	mg/L	0.030	97	70	130	0.5	20	
Beryllium		0.220	mg/L	0.0010	88	70	130	1.0	20	
Cadmium		0.209	mg/L	0.0012	82	70	130	0.5	20	
Manganese		2.46	mg/L	0.0012	88	70	130	1.1	20	
Molybdenum		0.435	mg/L	0.0053	87	70	130	1.4	20	
Nickel		0.457	mg/L	0.0050	84	70	130	0.7	20	
Vanadium		0.451	mg/L	0.010	90	70	130	0.2	20	
Lab ID: C16070513-003CMS3	7	Sample Matrix Spike		Run: ICP4-C_160726A			07/27/16 03:21			
Aluminum		2.56	mg/L	0.030	100	70	130			
Beryllium		0.229	mg/L	0.0010	92	70	130			
Cadmium		0.212	mg/L	0.0012	83	70	130			
Manganese		2.43	mg/L	0.0012	90	70	130			
Molybdenum		0.438	mg/L	0.0053	88	70	130			
Nickel		0.433	mg/L	0.0050	87	70	130			
Vanadium		0.470	mg/L	0.010	94	70	130			
Lab ID: C16070513-003CMSD	7	Sample Matrix Spike Duplicate		Run: ICP4-C_160726A			07/27/16 03:25			
Aluminum		2.55	mg/L	0.030	100	70	130	0.1	20	
Beryllium		0.229	mg/L	0.0010	92	70	130	0.1	20	
Cadmium		0.214	mg/L	0.0012	84	70	130	1.0	20	
Manganese		2.42	mg/L	0.0012	89	70	130	0.4	20	
Molybdenum		0.455	mg/L	0.0053	91	70	130	3.9	20	
Nickel		0.436	mg/L	0.0050	87	70	130	0.8	20	
Vanadium		0.471	mg/L	0.010	94	70	130	0.3	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8 Analytical Run: ICPMS4-C_160727A										
Lab ID: ICV	3	Initial Calibration Verification Standard								07/27/16 15:44
Cobalt		0.0493	mg/L	0.0010	99	90	110			
Lead		0.0496	mg/L	0.0010	99	90	110			
Uranium		0.0454	mg/L	0.00030	91	90	110			
Method: E200.8 Batch: 47931										
Lab ID: MB-47931	3	Method Blank								Run: ICPMS4-C_160727A 07/27/16 18:41
Cobalt		ND	mg/L	5E-06						
Lead		7E-05	mg/L	2E-05						
Uranium		ND	mg/L	4E-06						
Lab ID: LCS3-47931	3	Laboratory Control Sample								Run: ICPMS4-C_160727A 07/27/16 18:47
Cobalt		0.511	mg/L	0.0050	102	85	115			
Lead		0.528	mg/L	0.0010	106	85	115			
Uranium		0.508	mg/L	0.00030	102	85	115			
Lab ID: C16070513-003CMS3	3	Sample Matrix Spike								Run: ICPMS4-C_160727A 07/27/16 23:06
Cobalt		0.497	mg/L	0.0050	99	70	130			
Lead		0.505	mg/L	0.0010	101	70	130			
Uranium		0.548	mg/L	0.00030	106	70	130			
Lab ID: C16070513-003CMSD	3	Sample Matrix Spike Duplicate								Run: ICPMS4-C_160727A 07/27/16 23:12
Cobalt		0.501	mg/L	0.0050	100	70	130	0.9	20	
Lead		0.510	mg/L	0.0010	102	70	130	1.0	20	
Uranium		0.548	mg/L	0.00030	106	70	130	0.1	20	

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0 Analytical Run: IC2-C_160722A										
Lab ID: ICV	2	Initial Calibration Verification Standard								07/22/16 17:13
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
Lab ID: CCV072216-3	2	Continuing Calibration Verification Standard								07/23/16 02:26
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.7	mg/L	1.0	102	90	110			
Method: E300.0 Batch: R213616										
Lab ID: ICB	2	Method Blank								07/22/16 17:31
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.05						
Lab ID: LFB	2	Laboratory Fortified Blank								07/22/16 17:50
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
Lab ID: C16070512-008AMS	2	Sample Matrix Spike								07/23/16 03:21
Chloride		129	mg/L	1.0	105	90	110			
Sulfate		2250	mg/L	4.2		90	110			A
Lab ID: C16070512-008AMSD	2	Sample Matrix Spike Duplicate								07/23/16 03:40
Chloride		130	mg/L	1.0	106	90	110	0.6	20	
Sulfate		2240	mg/L	4.2		90	110	0.5	20	A
Lab ID: C16070517-004AMS	2	Sample Matrix Spike								07/23/16 07:40
Chloride		167	mg/L	1.0	103	90	110			
Sulfate		1560	mg/L	2.1		90	110			A
Lab ID: C16070517-004AMSD	2	Sample Matrix Spike Duplicate								07/23/16 07:58
Chloride		168	mg/L	1.0	105	90	110	0.5	20	
Sulfate		1570	mg/L	2.1		90	110	0.2	20	A

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 09/26/16

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E300.0										Analytical Run: IC2-C_160825A
<b>Lab ID:</b> ICV	Initial Calibration Verification Standard									
Sulfate		41.3	mg/L	1.0	103	90	110			08/23/16 17:43
<b>Lab ID:</b> CCV-160823-1										Continuing Calibration Verification Standard
Sulfate		39.9	mg/L	1.0	100	90	110			08/23/16 18:38
<b>Method:</b> E300.0										Batch: R214632
<b>Lab ID:</b> ICB	Method Blank									
Sulfate		0.08	mg/L	0.05						Run: IC2-C_160825A 08/23/16 18:01
<b>Lab ID:</b> LFB-160823-1	Laboratory Fortified Blank									
Sulfate		38.2	mg/L	1.0	95	90	110			Run: IC2-C_160825A 08/23/16 18:20
<b>Lab ID:</b> C16070451-004AMS	Sample Matrix Spike									
Sulfate		3970	mg/L	8.3	101	90	110			Run: IC2-C_160825A 08/23/16 19:15
<b>Lab ID:</b> C16070451-004AMSD	Sample Matrix Spike Duplicate									
Sulfate		4000	mg/L	8.3	104	90	110	0.6	20	Run: IC2-C_160825A 08/23/16 19:33
<b>Lab ID:</b> LFB-160823-2	Laboratory Fortified Blank									
Sulfate		38.3	mg/L	1.0	95	90	110			Run: IC2-C_160825A 08/24/16 12:09

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 09/26/16

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA201-C_160720A
Lab ID: CCV_160628		Continuing Calibration Verification Standard								07/20/16 13:18
Nitrogen, Nitrate+Nitrite as N		2.08	mg/L	0.10	104	90	110			
Method: E353.2										Batch: R213509
Lab ID: MBLK		Method Blank								Run: FIA201-C_160720A
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						07/20/16 12:41
Lab ID: LFB		Laboratory Fortified Blank								Run: FIA201-C_160720A
Nitrogen, Nitrate+Nitrite as N		2.03	mg/L	0.10	104	90	110			07/20/16 12:42
Lab ID: C16070512-008DMS		Sample Matrix Spike								Run: FIA201-C_160720A
Nitrogen, Nitrate+Nitrite as N		1.99	mg/L	0.10	98	90	110			07/20/16 13:21
Lab ID: C16070512-008DMSD		Sample Matrix Spike Duplicate								Run: FIA201-C_160720A
Nitrogen, Nitrate+Nitrite as N		1.99	mg/L	0.10	98	90	110	0.0	10	07/20/16 13:23
Lab ID: C16070517-002EMS		Sample Matrix Spike								Run: FIA201-C_160720A
Nitrogen, Nitrate+Nitrite as N		2.08	mg/L	0.10	103	90	110			07/20/16 13:38
Lab ID: C16070517-002EMSD		Sample Matrix Spike Duplicate								Run: FIA201-C_160720A
Nitrogen, Nitrate+Nitrite as N		2.12	mg/L	0.10	105	90	110	1.9	10	07/20/16 13:39

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>										Analytical Run: R213645
<b>Lab ID: 25-Jul-16_CCV_36</b>	9	Continuing Calibration Verification Standard								07/26/16 07:09
Bromodichloromethane		11.0	ug/L	1.0	110	70	130			
Bromoform		9.64	ug/L	1.0	96	70	130			
Chlorodibromomethane		9.60	ug/L	1.0	96	70	130			
Chloroform		9.88	ug/L	1.0	99	70	130			
Trihalomethanes, Total		40.1	ug/L	1.0	100	70	130			
Surr: Dibromofluoromethane				1.0	106	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	93	70	130			
Surr: p-Bromofluorobenzene				1.0	120	70	130			
Surr: Toluene-d8				1.0	116	70	130			
<b>Method: E624</b>										Batch: R213645
<b>Lab ID: 25-Jul-16_LCS_19</b>	9	Laboratory Control Sample								Run: 5975VOC1_160725B 07/25/16 21:16
Bromodichloromethane		9.92	ug/L	1.0	99	70	130			
Bromoform		10.9	ug/L	1.0	109	76	136			
Chlorodibromomethane		9.64	ug/L	1.0	96	70	130			
Chloroform		10.1	ug/L	1.0	101	70	130			
Trihalomethanes, Total		40.5	ug/L	1.0	101	70	130			
Surr: Dibromofluoromethane				1.0	99	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	83	70	130			
Surr: p-Bromofluorobenzene				1.0	121	70	130			
Surr: Toluene-d8				1.0	104	70	130			
<b>Lab ID: 25-Jul-16_MBLK_21</b>	9	Method Blank								Run: 5975VOC1_160725B 07/25/16 22:26
Bromodichloromethane		ND	ug/L	1.0						
Bromoform		ND	ug/L	1.0						
Chlorodibromomethane		ND	ug/L	1.0						
Chloroform		ND	ug/L	1.0						
Trihalomethanes, Total		ND	ug/L	1.0						
Surr: Dibromofluoromethane				1.0	120	64.4	131			
Surr: 1,2-Dichloroethane-d4				1.0	121	70	130			
Surr: p-Bromofluorobenzene				1.0	136	67.1	133			S
Surr: Toluene-d8				1.0	112	79.7	125			
<b>Lab ID: C16070595-001BMS</b>	9	Sample Matrix Spike								Run: 5975VOC1_160725B 07/26/16 05:24
Bromodichloromethane		269	ug/L	10	134	70	130			S
Bromoform		232	ug/L	10	116	76	136			
Chlorodibromomethane		226	ug/L	10	113	70	130			
Chloroform		270	ug/L	10	135	70	130			S
Trihalomethanes, Total		996	ug/L	10	125	70	130			
Surr: Dibromofluoromethane				1.0	123	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	114	70	130			
Surr: p-Bromofluorobenzene				1.0	118	77	137			
Surr: Toluene-d8				1.0	118	70	130			

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Batch: R213645
Lab ID: C16070595-001BMSD 9 Sample Matrix Spike Duplicate										Run: 5975VOC1_160725B 07/26/16 05:59
Bromodichloromethane		234	ug/L	10	117	70	130	14	20	
Bromoform		218	ug/L	10	109	76	136	6.0	20	
Chlorodibromomethane		211	ug/L	10	106	70	130	6.6	20	
Chloroform		246	ug/L	10	123	70	130	9.0	20	
Trihalomethanes, Total		910	ug/L	10	114	70	130	9.0	20	
Surr: Dibromofluoromethane				1.0	109	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	92	70	130			
Surr: p-Bromofluorobenzene				1.0	119	77	137			
Surr: Toluene-d8				1.0	112	70	130			

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 09/26/16

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-0959
<b>Lab ID: MB-GA-0959</b>	3	Method Blank					Run: G542M_160802A			08/02/16 22:07
Gross Alpha minus Rn & U		0.5	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		1	pCi/L							
Gross Alpha minus Rn & U MDC		2	pCi/L							
<b>Lab ID: LCS-GA-0959</b>		Laboratory Control Sample					Run: G542M_160802A			08/02/16 22:07
Gross Alpha minus Rn & U		35.7	pCi/L		103	80	120			
<b>Lab ID: C16070706-006GMS</b>		Sample Matrix Spike					Run: G542M_160802A			08/02/16 23:42
Gross Alpha minus Rn & U		71.0	pCi/L		96	70	130			
<b>Lab ID: C16070706-006GMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_160802A			08/02/16 23:42
Gross Alpha minus Rn & U		76.0	pCi/L		102	70	130	6.7	52.1	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E903.0										Batch: RA226-8189
<b>Lab ID:</b> LCS-RA226-8189	Laboratory Control Sample					Run: G542M_160803B				08/15/16 11:21
Radium 226		10	pCi/L		99	80	120			
<b>Lab ID:</b> MB-RA226-8189	3	Method Blank				Run: G542M_160803B				08/15/16 11:21
Radium 226		0.1	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
<b>Lab ID:</b> C16070513-001GMS	Sample Matrix Spike					Run: G542M_160803B				08/15/16 13:02
Radium 226		18	pCi/L		86	70	130			
<b>Lab ID:</b> C16070513-001GMSD	Sample Matrix Spike Duplicate					Run: G542M_160803B				08/15/16 13:02
Radium 226		20	pCi/L		94	70	130	9.1	49.2	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: SW Alluvium

Work Order: C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: E908.0								Batch: RA-TH-ISO-2444			
Lab ID: LCS-RA-TH-ISO-2444	Laboratory Control Sample			Run: EGG-ORTEC_160803A			08/09/16 15:03				
Thorium 230		5.8	pCi/L	102	80	120					
Lab ID: C16070517-001DMS	Sample Matrix Spike			Run: EGG-ORTEC_160803A			08/10/16 09:19				
Thorium 230		11	pCi/L	98	70	130					
Lab ID: C16070517-001DMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_160803A			08/10/16 09:19				
Thorium 230		12	pCi/L	103	70	130	4.8	48			
Lab ID: MB-RA-TH-ISO-2444	3	Method Blank			Run: EGG-ORTEC_160803A			08/10/16 09:19			
Thorium 230		0.02	pCi/L	U							
Thorium 230 precision (±)		0.10	pCi/L								
Thorium 230 MDC		0.2	pCi/L								

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U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E909.0										Batch: T_PB-210-0686
<b>Lab ID:</b> MB-PB-210-0686	3	Method Blank					Run: SUB-T69662			09/11/16 20:10
Lead 210		-0.2	pCi/L							U
Lead 210 precision (±)		0.8	pCi/L							
Lead 210 MDC		1	pCi/L							
<b>Lab ID:</b> LCS-PB-210-0686		Laboratory Control Sample					Run: SUB-T69662			09/11/16 21:53
Lead 210		11	pCi/L		96	80	120			
<b>Lab ID:</b> T16090039-001FMS		Sample Matrix Spike					Run: SUB-T69662			09/12/16 01:18
Lead 210		13	pCi/L		63	70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the MS MSD pair are acceptable, the response is considered to be matrix related. The batch is approved.										
<b>Lab ID:</b> T16090039-001FMSD		Sample Matrix Spike Duplicate					Run: SUB-T69662			09/12/16 03:01
Lead 210		12	pCi/L		57	70	130	10	75.4	S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the MS MSD pair are acceptable, the response is considered to be matrix related. The batch is approved.										

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MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** SW Alluvium

**Work Order:** C16070513

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: RA-05</b>										Batch: RA228-5278
<b>Lab ID: LCS-228-RA226-8189</b>	Laboratory Control Sample			Run: TENNELEC-3_160803A			08/09/16 12:09			
Radium 228		7.7	pCi/L	84		80	120			
<b>Lab ID: MB-RA226-8189</b>	3	Method Blank		Run: TENNELEC-3_160803A			08/09/16 12:09			
Radium 228		0.3	pCi/L							U
Radium 228 precision (±)		0.8	pCi/L							
Radium 228 MDC		1	pCi/L							
<b>Lab ID: C16070513-002GMS</b>	Sample Matrix Spike			Run: TENNELEC-3_160803A			08/09/16 12:09			
Radium 228		17.7	pCi/L	82		70	130			
<b>Lab ID: C16070513-002GMSD</b>	Sample Matrix Spike Duplicate			Run: TENNELEC-3_160803A			08/09/16 12:09			
Radium 228		20.8	pCi/L	101		70	130	16	54.5	
<b>Method: RA-05</b>										Batch: RA228-5300
<b>Lab ID: LCS-228-RA228-5300</b>	Laboratory Control Sample			Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		10.1	pCi/L	113		80	120			
<b>Lab ID: MB-228-RA228-5300</b>	3	Method Blank		Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		0.3	pCi/L							U
Radium 228 precision (±)		0.6	pCi/L							
Radium 228 MDC		1.0	pCi/L							
<b>Lab ID: C16070512-007GMS</b>	Sample Matrix Spike			Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		24	pCi/L	81		70	130			
<b>Lab ID: C16070512-007GMSD</b>	Sample Matrix Spike Duplicate			Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		24	pCi/L	81		70	130	1.9	50.7	

### Qualifiers:

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## ANALYTICAL SUMMARY REPORT

September 26, 2016

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16070512      Quote ID: C129 - Quarterly Long List  
Project Name: Zone-1

Energy Laboratories, Inc. Casper WY received the following 11 samples for United Nuclear Corporation on 7/15/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16070512-001	614	07/12/16 11:56	07/15/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics
C16070512-002	515-A	07/12/16 13:11	07/15/16	Aqueous	Same As Above
C16070512-003	604	07/12/16 14:14	07/15/16	Aqueous	Same As Above
C16070512-004	EPA-7	07/12/16 15:01	07/15/16	Aqueous	Same As Above
C16070512-005	EPA-5	07/12/16 15:48	07/15/16	Aqueous	Same As Above
C16070512-006	EPA-4	07/13/16 8:30	07/15/16	Aqueous	Same As Above
C16070512-007	EPA-2	07/13/16 9:42	07/15/16	Aqueous	Same As Above
C16070512-008	EPA-2 Duplicate	07/13/16 10:20	07/15/16	Aqueous	Same As Above
C16070512-009	TWQ-142	07/13/16 11:02	07/15/16	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C16070512-010	Rinsate	07/13/16 11:50 07/15/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved 624-Purgeable Organics
C16070512-011	Field Blank	07/13/16 12:00 07/15/16	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Client Services Supervisor

Digitally signed by  
Steve Dobos  
Date: 2016.09.26 14:13:20 -06:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone-1  
**Work Order:** C16070512

**Report Date:** 09/26/16

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CS were subcontracted to Energy Laboratories, 415 Graham Rd., College Station, TX, EPA Number TX01520.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R213580
Lab ID: MBLK		Method Blank					Run: MANTECH_160721A			07/21/16 15:57
Bicarbonate as HCO <sub>3</sub>		1	mg/L	1						
Lab ID: C16070512-001ADUP		Sample Duplicate					Run: MANTECH_160721A			07/21/16 16:38
Bicarbonate as HCO <sub>3</sub>		990	mg/L	5.0				1.1	10	
Lab ID: C16070512-010ADUP		Sample Duplicate					Run: MANTECH_160721A			07/21/16 17:59
Bicarbonate as HCO <sub>3</sub>		1.93	mg/L	5.0					10	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS160718A
Lab ID: MB-1_160718A		Method Blank					Run: BAL-18_160718C			07/18/16 14:45
Solids, Total Dissolved TDS @ 180 C		10	mg/L	8						
Lab ID: LCS-2_160718A										07/18/16 14:45
		Laboratory Control Sample					Run: BAL-18_160718C			
Solids, Total Dissolved TDS @ 180 C		1100	mg/L	11	98	90	110			
Lab ID: C16070512-005A DUP										07/18/16 14:48
		Sample Duplicate					Run: BAL-18_160718C			
Solids, Total Dissolved TDS @ 180 C		4770	mg/L	40				0.9	5	
Method: A2540 C										Batch: TDS160722A
Lab ID: MB-1_160722A		Method Blank					Run: BAL-18_160722B			07/22/16 16:52
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	8						
Lab ID: LCS-2_160722A										07/22/16 16:52
		Laboratory Control Sample					Run: BAL-18_160722B			
Solids, Total Dissolved TDS @ 180 C		1090	mg/L	11	98	90	110			
Lab ID: C16070481-002A DUP										07/22/16 16:53
		Sample Duplicate					Run: BAL-18_160722B			
Solids, Total Dissolved TDS @ 180 C		1800	mg/L	19				0.1	5	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-1

Report Date: 09/26/16

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 B										Analytical Run: CVAA-C202_160812A
Lab ID: ICV		Initial Calibration Verification Standard								08/12/16 09:43
Selenium		0.0253	mg/L	0.0010	104	90	110			
Method: A3114 B										Batch: 48084
Lab ID: MB-48084		Method Blank								Run: CVAA-C202_160812A 08/12/16 09:45
Selenium		ND	mg/L	0.0003						
Lab ID: LCS-48084		Laboratory Control Sample								Run: CVAA-C202_160812A 08/12/16 09:47
Selenium		0.0249	mg/L	0.0010	102	90	110			
Lab ID: C16070451-003CMS		Sample Matrix Spike								Run: CVAA-C202_160812A 08/12/16 09:53
Selenium		0.0240	mg/L	0.0010	98	85	115			
Lab ID: C16070451-003CMSD		Sample Matrix Spike Duplicate								Run: CVAA-C202_160812A 08/12/16 09:55
Selenium		0.0242	mg/L	0.0010	99	85	115	0.8	15	
Method: A3114 B										Batch: 48085
Lab ID: MB-48085		Method Blank								Run: CVAA-C202_160812A 08/12/16 10:32
Selenium		ND	mg/L	0.0003						
Lab ID: LCS-48085		Laboratory Control Sample								Run: CVAA-C202_160812A 08/12/16 10:34
Selenium		0.0245	mg/L	0.0010	101	90	110			
Lab ID: C16070513-003CMS		Sample Matrix Spike								Run: CVAA-C202_160812A 08/12/16 10:47
Selenium		0.0232	mg/L	0.0010	95	85	115			
Lab ID: C16070513-003CMSD		Sample Matrix Spike Duplicate								Run: CVAA-C202_160812A 08/12/16 10:49
Selenium		0.0243	mg/L	0.0010	100	85	115	4.7	15	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_160718A
Lab ID: pH 6.86		Initial Calibration Verification Standard								07/18/16 09:24
pH		6.87	s.u.	0.010	100	-98	102			
Lab ID: CCV - pH 7		Continuing Calibration Verification Standard								07/18/16 10:45
pH		7.01	s.u.	0.010	100	98	102			
Lab ID: pH 6.86		Initial Calibration Verification Standard								07/18/16 14:25
pH		6.87	s.u.	0.010	100	98	102			
Method: A4500-H B										Batch: R213400
Lab ID: C16070512-005ADUP		Sample Duplicate								07/18/16 11:31
pH		6.37	s.u.	0.010				0.2	3	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-1

Report Date: 09/26/16

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G										Analytical Run: FIA201-C_160718A
Lab ID: CCV_160520	Continuing Calibration Verification Standard									07/18/16 16:31
Nitrogen, Ammonia as N		0.963	mg/L	0.050	96	90	110			
Lab ID: CCV_160520	Continuing Calibration Verification Standard									07/18/16 16:48
Nitrogen, Ammonia as N		0.990	mg/L	0.050	99	90	110			
Lab ID: CCV_160520	Continuing Calibration Verification Standard									07/18/16 17:21
Nitrogen, Ammonia as N		0.968	mg/L	0.050	97	90	110			
Method: A4500-NH3 G										Batch: R213433
Lab ID: MBLK	Method Blank									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		ND	mg/L	0.003						07/18/16 15:37
Lab ID: LFB	Laboratory Fortified Blank									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.978	mg/L	0.050	99	90	110			07/18/16 15:40
Lab ID: C16070512-004DMS	Sample Matrix Spike									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.902	mg/L	0.050	89	90	110			07/18/16 16:51 S
Lab ID: C16070512-004DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.948	mg/L	0.050	94	90	110	5.0	10	07/18/16 16:53
Lab ID: C16070513-003DMS	Sample Matrix Spike									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.885	mg/L	0.050	88	90	110			07/18/16 17:08 S
Lab ID: C16070513-003DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.921	mg/L	0.050	91	90	110	4.0	10	07/18/16 17:09
Lab ID: C16070512-009DMS	Sample Matrix Spike									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.865	mg/L	0.050	85	90	110			07/18/16 17:25 S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Lab ID: C16070512-009DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160718A
Nitrogen, Ammonia as N		0.860	mg/L	0.050	85	90	110	0.6	10	07/18/16 17:26 S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Method: A4500-NH3 G										Batch: R214649
Lab ID: MBLK	Method Blank									Run: FIA201-C_160825A
Nitrogen, Ammonia as N		ND	mg/L	0.003						08/25/16 16:41
Lab ID: LFB	Laboratory Fortified Blank									Run: FIA201-C_160825A
Nitrogen, Ammonia as N		0.944	mg/L	0.050	95	90	110			08/25/16 16:43
Lab ID: C16070512-001DMS	Sample Matrix Spike									Run: FIA201-C_160825A
Nitrogen, Ammonia as N		169	mg/L	5.0	98	90	110			08/25/16 16:48
Lab ID: C16070512-001DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_160825A
Nitrogen, Ammonia as N		167	mg/L	5.0	96	90	110	1.2	10	08/25/16 16:49

### Qualifiers:

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S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1632AM										Analytical Run: SUB-H117244
Lab ID: AS-ICV 25ppb-7/22/20	Initial Calibration Verification Standard									07/22/16 15:03
Arsenic-III		24.9	ug/L	5.0	100	87.6	114			
Lab ID: AS-50.0-7/22/2016	Continuing Calibration Verification Standard									07/22/16 18:28
Arsenic-III		48.7	ug/L	5.0	97	85	115			
Lab ID: AS-50.0-7/22/2016	Continuing Calibration Verification Standard									07/22/16 21:16
Arsenic-III		49.5	ug/L	5.0	99	85	115			
Method: E1632AM										Batch: H_R117244
Lab ID: AS-LFB 50ppb-7/22/2	Laboratory Fortified Blank									Run: SUB-H117244 07/22/16 15:40
Arsenic-III		65.6	ug/L	5.0	131	55	146			
Lab ID: ICB	Method Blank									Run: SUB-H117244 07/22/16 15:52
Arsenic-III		ND	ug/L	0.2						
Lab ID: C16070451-008E	Sample Matrix Spike									Run: SUB-H117244 07/22/16 16:16
Arsenic-III		49.5	ug/L	5.0	99	55	146			
Lab ID: C16070451-008E	Sample Matrix Spike Duplicate									Run: SUB-H117244 07/22/16 16:28
Arsenic-III		54.0	ug/L	5.0	108	55	146	8.8	20	
Lab ID: C16070512-001E	Sample Matrix Spike									Run: SUB-H117244 07/22/16 19:04
Arsenic-III		50.8	ug/L	5.0	102	55	146			
Lab ID: C16070512-001E	Sample Matrix Spike Duplicate									Run: SUB-H117244 07/22/16 19:16
Arsenic-III		50.0	ug/L	5.0	100	55	146	1.5	20	
Lab ID: H16070348-011E MS	Sample Matrix Spike									Run: SUB-H117244 07/22/16 21:52
Arsenic-III		46.5	ug/L	5.0	93	55	146			
Lab ID: H16070348-011E MSD	Sample Matrix Spike Duplicate									Run: SUB-H117244 07/22/16 22:04
Arsenic-III		50.6	ug/L	5.0	101	55	146	8.5	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-1

Report Date: 09/26/16

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP4-C_160719A										
<b>Lab ID: ICV</b>	4	Initial Calibration Verification Standard								07/19/16 12:37
Calcium		49.8	mg/L	1.0	100	95	105			
Magnesium		49.7	mg/L	1.0	99	95	105			
Potassium		49.8	mg/L	1.0	100	95	105			
Sodium		49.8	mg/L	1.0	100	95	105			
<b>Lab ID: ICSA</b>	4	Interference Check Sample A								07/19/16 12:57
Calcium		458	mg/L	1.0	92	80	120			
Magnesium		498	mg/L	1.0	100	80	120			
Potassium		-0.00530	mg/L	1.0						
Sodium		0.0881	mg/L	1.0						
<b>Lab ID: ICSAB</b>	4	Interference Check Sample AB								07/19/16 13:01
Calcium		457	mg/L	1.0	91	80	120			
Magnesium		497	mg/L	1.0	99	80	120			
Potassium		-0.00726	mg/L	1.0						
Sodium		0.0443	mg/L	1.0						
<b>Method: E200.7</b> Batch: R213494										
<b>Lab ID: MB-160719A</b>	4	Method Blank								Run: ICP4-C_160719A 07/19/16 13:21
Calcium		0.05	mg/L	0.003						
Magnesium		ND	mg/L	0.002						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.1						
<b>Lab ID: LFB-160719A</b>	4	Laboratory Fortified Blank								Run: ICP4-C_160719A 07/19/16 13:25
Calcium		47.6	mg/L	1.0	95	85	115			
Magnesium		48.0	mg/L	1.0	96	85	115			
Potassium		50.3	mg/L	1.0	101	85	115			
Sodium		48.9	mg/L	1.0	98	85	115			
<b>Lab ID: C16070512-002BMS2</b>	4	Sample Matrix Spike								Run: ICP4-C_160719A 07/19/16 19:51
Calcium		657	mg/L	1.0	87	70	130			
Magnesium		1550	mg/L	1.0		70	130			A
Potassium		253	mg/L	1.0	93	70	130			
Sodium		811	mg/L	1.2	88	70	130			
<b>Lab ID: C16070512-002BMSD</b>	4	Sample Matrix Spike Duplicate								Run: ICP4-C_160719A 07/19/16 19:55
Calcium		658	mg/L	1.0	87	70	130	0.1	20	
Magnesium		1550	mg/L	1.0		70	130	0.1	20	A
Potassium		253	mg/L	1.0	92	70	130	0.3	20	
Sodium		810	mg/L	1.2	87	70	130	0.1	20	
<b>Lab ID: C16070512-011BMS2</b>	4	Sample Matrix Spike								Run: ICP4-C_160719A 07/19/16 20:47
Calcium		99.2	mg/L	1.0	97	70	130			
Magnesium		98.2	mg/L	1.0	96	70	130			
Potassium		96.6	mg/L	1.0	95	70	130			

### Qualifiers:

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ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R213494
Lab ID: C16070512-011BMS2	4	Sample Matrix Spike								07/19/16 20:47
Sodium		97.9	mg/L	1.0	96	70	130			
Run: ICP4-C_160719A										
Lab ID: C16070512-011BMSD	4	Sample Matrix Spike Duplicate								07/19/16 20:51
Calcium		99.4	mg/L	1.0	97	70	130	0.3	20	
Magnesium		98.5	mg/L	1.0	97	70	130	0.4	20	
Potassium		96.5	mg/L	1.0	95	70	130	0.1	20	
Sodium		98.1	mg/L	1.0	96	70	130	0.3	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-1

Report Date: 09/26/16

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Analytical Run: ICP4-C_160726A
<b>Lab ID: ICV</b>	7 Initial Calibration Verification Standard									07/26/16 11:10
Aluminum		5.02	mg/L	0.10	100	95	105			
Beryllium		0.494	mg/L	0.010	99	95	105			
Cadmium		0.492	mg/L	0.010	98	95	105			
Manganese		4.77	mg/L	0.010	95	95	105			
Molybdenum		0.965	mg/L	0.10	97	95	105			
Nickel		0.946	mg/L	0.050	95	95	105			
Vanadium		0.974	mg/L	0.10	97	95	105			
<b>Lab ID: ICSA</b>	7 Interference Check Sample A									07/26/16 11:30
Aluminum		479	mg/L	0.10	96	80	120			
Beryllium		4.00E-05	mg/L	0.010						
Cadmium		0.000140	mg/L	0.010						
Manganese		-0.0159	mg/L	0.010						
Molybdenum		0.00304	mg/L	0.10						
Nickel		0.00544	mg/L	0.050						
Vanadium		0.00409	mg/L	0.10						
<b>Lab ID: ICSAB</b>	7 Interference Check Sample AB									07/26/16 11:34
Aluminum		486	mg/L	0.10	97	80	120			
Beryllium		0.454	mg/L	0.010	91	80	120			
Cadmium		0.902	mg/L	0.010	90	80	120			
Manganese		0.422	mg/L	0.010	84	80	120			
Molybdenum		0.00179	mg/L	0.10						
Nickel		0.843	mg/L	0.050	84	80	120			
Vanadium		0.472	mg/L	0.10	94	80	120			
<b>Method: E200.7</b>										Batch: 47931
<b>Lab ID: MB-47931</b>	7 Method Blank									Run: ICP4-C_160726A 07/27/16 01:11
Aluminum		ND	mg/L	0.01						
Beryllium		ND	mg/L	7E-05						
Cadmium		ND	mg/L	0.0006						
Manganese		ND	mg/L	0.002						
Molybdenum		0.05	mg/L	0.004						
Nickel		ND	mg/L	0.003						
Vanadium		ND	mg/L	0.004						
<b>Lab ID: LCS3-47931</b>	7 Laboratory Control Sample									Run: ICP4-C_160726A 07/27/16 01:15
Aluminum		2.60	mg/L	0.030	104	85	115			
Beryllium		0.251	mg/L	0.0010	101	85	115			
Cadmium		0.243	mg/L	0.0012	97	85	115			
Manganese		2.48	mg/L	0.0012	99	85	115			
Molybdenum		0.488	mg/L	0.0053	88	85	115			
Nickel		0.491	mg/L	0.0050	98	85	115			
Vanadium		0.504	mg/L	0.010	101	85	115			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: 47931
Lab ID: C16070512-005CMS3	7	Sample Matrix Spike				Run: ICP4-C_160726A				07/27/16 01:53
Aluminum		2.46	mg/L	0.030	97	70	130			
Beryllium		0.222	mg/L	0.0010	89	70	130			
Cadmium		0.211	mg/L	0.0012	83	70	130			
Manganese		2.49	mg/L	0.0012	89	70	130			
Molybdenum		0.429	mg/L	0.0053	86	70	130			
Nickel		0.461	mg/L	0.0050	85	70	130			
Vanadium		0.452	mg/L	0.010	90	70	130			
Lab ID: C16070512-005CMSD	7	Sample Matrix Spike Duplicate				Run: ICP4-C_160726A				07/27/16 01:58
Aluminum		2.45	mg/L	0.030	97	70	130	0.5	20	
Beryllium		0.220	mg/L	0.0010	88	70	130	1.0	20	
Cadmium		0.209	mg/L	0.0012	82	70	130	0.5	20	
Manganese		2.46	mg/L	0.0012	88	70	130	1.1	20	
Molybdenum		0.435	mg/L	0.0053	87	70	130	1.4	20	
Nickel		0.457	mg/L	0.0050	84	70	130	0.7	20	
Vanadium		0.451	mg/L	0.010	90	70	130	0.2	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> Analytical Run: ICPMS4-C_160727A										
<b>Lab ID: ICV</b>	5	Initial Calibration Verification Standard								07/27/16 15:44
Beryllium		0.0511	mg/L	0.0010	102	90	110			
Cadmium		0.0505	mg/L	0.0010	101	90	110			
Cobalt		0.0493	mg/L	0.0010	99	90	110			
Lead		0.0496	mg/L	0.0010	99	90	110			
Uranium		0.0454	mg/L	0.00030	91	90	110			
<b>Method: E200.8</b> Batch: 47931										
<b>Lab ID: MB-47931</b>	5	Method Blank								07/27/16 18:41
Beryllium		ND	mg/L	6E-06						
Cadmium		ND	mg/L	3E-06						
Cobalt		ND	mg/L	5E-06						
Lead		7E-05	mg/L	2E-05						
Uranium		ND	mg/L	4E-06						
<b>Lab ID: LCS3-47931</b>	5	Laboratory Control Sample								07/27/16 18:47
Beryllium		0.258	mg/L	0.0010	103	85	115			
Cadmium		0.260	mg/L	0.0010	104	85	115			
Cobalt		0.511	mg/L	0.0050	102	85	115			
Lead		0.528	mg/L	0.0010	106	85	115			
Uranium		0.508	mg/L	0.00030	102	85	115			
<b>Lab ID: C16070512-005CMS3</b>	5	Sample Matrix Spike								07/27/16 19:56
Beryllium		0.227	mg/L	0.0010	91	70	130			
Cadmium		0.251	mg/L	0.0010	100	70	130			
Cobalt		0.491	mg/L	0.0050	93	70	130			
Lead		0.505	mg/L	0.0010	101	70	130			
Uranium		0.513	mg/L	0.00030	103	70	130			
<b>Lab ID: C16070512-005CMSD</b>	5	Sample Matrix Spike Duplicate								07/27/16 20:02
Beryllium		0.225	mg/L	0.0010	90	70	130	0.9	20	
Cadmium		0.252	mg/L	0.0010	101	70	130	0.4	20	
Cobalt		0.496	mg/L	0.0050	94	70	130	1.0	20	
Lead		0.502	mg/L	0.0010	100	70	130	0.7	20	
Uranium		0.514	mg/L	0.00030	103	70	130	0.2	20	
<b>Lab ID: C16070513-003CMS3</b>	5	Sample Matrix Spike								07/27/16 23:06
Beryllium		0.238	mg/L	0.0010	95	70	130			
Cadmium		0.247	mg/L	0.0010	99	70	130			
Cobalt		0.497	mg/L	0.0050	99	70	130			
Lead		0.505	mg/L	0.0010	101	70	130			
Uranium		0.548	mg/L	0.00030	106	70	130			
<b>Lab ID: C16070513-003CMSD</b>	5	Sample Matrix Spike Duplicate								07/27/16 23:12
Beryllium		0.239	mg/L	0.0010	96	70	130	0.3	20	
Cadmium		0.252	mg/L	0.0010	101	70	130	1.9	20	
Cobalt		0.501	mg/L	0.0050	100	70	130	0.9	20	

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 47931
Lab ID: C16070513-003CMSD	5	Sample Matrix Spike Duplicate				Run: ICPMS4-C_160727A				07/27/16 23:12
Lead		0.510	mg/L	0.0010	102	70	130	1.0	20	
Uranium		0.548	mg/L	0.00030	106	70	130	0.1	20	

### Qualifiers:

RL - Analyte reporting limit.

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-1

Report Date: 09/26/16

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E300.0</b>										Analytical Run: IC2-C_160722A
<b>Lab ID: ICV</b>	2	Initial Calibration Verification Standard								07/22/16 17:13
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
<b>Lab ID: CCV072216-2</b>	2	Continuing Calibration Verification Standard								07/22/16 22:08
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.7	mg/L	1.0	102	90	110			
<b>Lab ID: CCV072216-3</b>	2	Continuing Calibration Verification Standard								07/23/16 02:26
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.7	mg/L	1.0	102	90	110			
<b>Method: E300.0</b>										Batch: R213616
<b>Lab ID: ICB</b>	2	Method Blank								Run: IC2-C_160722A 07/22/16 17:31
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.05						
<b>Lab ID: LFB</b>	2	Laboratory Fortified Blank								Run: IC2-C_160722A 07/22/16 17:50
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
<b>Lab ID: C16070482-002AMS</b>	2	Sample Matrix Spike								Run: IC2-C_160722A 07/22/16 23:03
Chloride		899	mg/L	1.0		90	110			A
Sulfate		1170	mg/L	4.2	107	90	110			
<b>Lab ID: C16070482-002AMSD</b>	2	Sample Matrix Spike Duplicate								Run: IC2-C_160722A 07/22/16 23:21
Chloride		922	mg/L	1.0		90	110	2.5	20	A
Sulfate		1200	mg/L	4.2	114	90	110	2.4	20	S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
<b>Lab ID: C16070512-008AMS</b>	2	Sample Matrix Spike								Run: IC2-C_160722A 07/23/16 03:21
Chloride		129	mg/L	1.0	105	90	110			
Sulfate		2250	mg/L	4.2		90	110			A
<b>Lab ID: C16070512-008AMSD</b>	2	Sample Matrix Spike Duplicate								Run: IC2-C_160722A 07/23/16 03:40
Chloride		130	mg/L	1.0	106	90	110	0.6	20	
Sulfate		2240	mg/L	4.2		90	110	0.5	20	A

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_160825A
Lab ID: ICV		Initial Calibration Verification Standard								08/23/16 17:43
Sulfate		41.3	mg/L	1.0	103	90	110			
Lab ID: CCV-160823-1		Continuing Calibration Verification Standard								08/23/16 18:38
Sulfate		39.9	mg/L	1.0	100	90	110			
Method: E300.0										Batch: R214632
Lab ID: ICB		Method Blank								Run: IC2-C_160825A 08/23/16 18:01
Sulfate		0.08	mg/L	0.05						
Lab ID: LFB-160823-1		Laboratory Fortified Blank								Run: IC2-C_160825A 08/23/16 18:20
Sulfate		38.2	mg/L	1.0	95	90	110			
Lab ID: C16070451-004AMS		Sample Matrix Spike								Run: IC2-C_160825A 08/23/16 19:15
Sulfate		3970	mg/L	8.3	101	90	110			
Lab ID: C16070451-004AMSD		Sample Matrix Spike Duplicate								Run: IC2-C_160825A 08/23/16 19:33
Sulfate		4000	mg/L	8.3	104	90	110	0.6	20	
Lab ID: LFB-160823-2		Laboratory Fortified Blank								Run: IC2-C_160825A 08/24/16 12:09
Sulfate		38.3	mg/L	1.0	95	90	110			

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-1

Report Date: 09/26/16

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA201-C_160720A
Lab ID: CCV_160628	Continuing Calibration Verification Standard									07/20/16 13:01
Nitrogen, Nitrate+Nitrite as N		2.06	mg/L	0.10	103	90	110			
Lab ID: CCV_160628	Continuing Calibration Verification Standard									07/20/16 13:18
Nitrogen, Nitrate+Nitrite as N		2.08	mg/L	0.10	104	90	110			
Method: E353.2										Batch: R213509
Lab ID: MBLK	Method Blank									Run: FIA201-C_160720A 07/20/16 12:41
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						
Lab ID: LFB	Laboratory Fortified Blank									Run: FIA201-C_160720A 07/20/16 12:42
Nitrogen, Nitrate+Nitrite as N		2.03	mg/L	0.10	104	90	110			
Lab ID: C16070486-001BMS	Sample Matrix Spike									Run: FIA201-C_160720A 07/20/16 13:05
Nitrogen, Nitrate+Nitrite as N		13.2	mg/L	0.51	103	90	110			
Lab ID: C16070486-001BMDS	Sample Matrix Spike Duplicate									Run: FIA201-C_160720A 07/20/16 13:06
Nitrogen, Nitrate+Nitrite as N		13.5	mg/L	0.51	106	90	110	2.2	10	
Lab ID: C16070512-008DMS	Sample Matrix Spike									Run: FIA201-C_160720A 07/20/16 13:21
Nitrogen, Nitrate+Nitrite as N		1.99	mg/L	0.10	98	90	110			
Lab ID: C16070512-008DMDS	Sample Matrix Spike Duplicate									Run: FIA201-C_160720A 07/20/16 13:23
Nitrogen, Nitrate+Nitrite as N		1.99	mg/L	0.10	98	90	110	0.0	10	
Method: E353.2										Batch: R214618
Lab ID: MBLK	Method Blank									Run: FIA201-C_160824A 08/24/16 17:12
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						
Lab ID: LFB	Laboratory Fortified Blank									Run: FIA201-C_160824A 08/24/16 17:13
Nitrogen, Nitrate+Nitrite as N		2.09	mg/L	0.10	107	90	110			
Lab ID: C16070512-001DMS	Sample Matrix Spike									Run: FIA201-C_160824A 08/24/16 17:19
Nitrogen, Nitrate+Nitrite as N		614	mg/L	20	104	90	110			
Lab ID: C16070512-001DMDS	Sample Matrix Spike Duplicate									Run: FIA201-C_160824A 08/24/16 17:20
Nitrogen, Nitrate+Nitrite as N		599	mg/L	20	100	90	110	2.5	10	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>										Analytical Run: R213617
<b>Lab ID: 21-Jul-16_CCV_54</b>	9	Continuing Calibration Verification Standard								07/22/16 16:05
Bromodichloromethane		9.60	ug/L	1.0	96	70	130			
Bromoform		8.68	ug/L	1.0	87	70	130			
Chlorodibromomethane		8.60	ug/L	1.0	86	70	130			
Chloroform		8.96	ug/L	1.0	90	70	130			
Trihalomethanes, Total		35.8	ug/L	1.0	90	70	130			
Surr: Dibromofluoromethane				1.0	105	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	91	70	130			
Surr: p-Bromofluorobenzene				1.0	119	70	130			
Surr: Toluene-d8				1.0	115	70	130			
<b>Method: E624</b>										Batch: R213617
<b>Lab ID: 21-Jul-16_LCS_37</b>	9	Laboratory Control Sample								07/22/16 06:12
Bromodichloromethane		10.9	ug/L	1.0	109	70	130			
Bromoform		10.4	ug/L	1.0	104	76	136			
Chlorodibromomethane		10.0	ug/L	1.0	100	70	130			
Chloroform		11.3	ug/L	1.0	113	70	130			
Trihalomethanes, Total		42.7	ug/L	1.0	107	70	130			
Surr: Dibromofluoromethane				1.0	111	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	94	70	130			
Surr: p-Bromofluorobenzene				1.0	118	70	130			
Surr: Toluene-d8				1.0	112	70	130			
- Response is above standard QA limit. This could indicate a high bias for the sample results. Since there were no detectable analyte responses, and the remainder of the run QA is within acceptance range, this batch is approved.										
<b>Lab ID: 21-Jul-16_MBLK_39</b>	9	Method Blank								07/22/16 07:22
Bromodichloromethane		ND	ug/L	1.0						
Bromoform		ND	ug/L	1.0						
Chlorodibromomethane		ND	ug/L	1.0						
Chloroform		ND	ug/L	1.0						
Trihalomethanes, Total		ND	ug/L	1.0						
Surr: Dibromofluoromethane				1.0	108	64.4	131			
Surr: 1,2-Dichloroethane-d4				1.0	104	70	130			
Surr: p-Bromofluorobenzene				1.0	136	67.1	133			S
Surr: Toluene-d8				1.0	112	79.7	125			
<b>Lab ID: C16070456-001AMS</b>	9	Sample Matrix Spike								07/22/16 14:20
Bromodichloromethane		186	ug/L	10	93	70	130			
Bromoform		184	ug/L	10	92	76	136			
Chlorodibromomethane		170	ug/L	10	85	70	130			
Chloroform		194	ug/L	10	97	70	130			
Trihalomethanes, Total		734	ug/L	10	92	70	130			
Surr: Dibromofluoromethane				1.0	110	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	95	70	130			
Surr: p-Bromofluorobenzene				1.0	119	77	137			
Surr: Toluene-d8				1.0	114	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Batch: R213617
Lab ID: C16070456-001AMSD	9	Sample Matrix Spike Duplicate				Run: 5975VOC1_160722C			07/22/16 14:55	
Bromodichloromethane		202	ug/L	10	101	70	130	8.2	20	
Bromoform		218	ug/L	10	109	76	136	17	20	
Chlorodibromomethane		199	ug/L	10	100	70	130	16	20	
Chloroform		210	ug/L	10	105	70	130	7.9	20	
Trihalomethanes, Total		829	ug/L	10	104	70	130	12	20	
Surr: Dibromofluoromethane				1.0	108	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	94	70	130			
Surr: p-Bromofluorobenzene				1.0	122	77	137			
Surr: Toluene-d8				1.0	109	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624								Analytical Run: R213645		
Lab ID: 25-Jul-16_CCV_18	9	Continuing Calibration Verification Standard						07/25/16 20:41		
Bromodichloromethane		9.60	ug/L	1.0	96	70	130			
Bromoform		8.52	ug/L	1.0	85	70	130			
Chlorodibromomethane		8.64	ug/L	1.0	86	70	130			
Chloroform		9.48	ug/L	1.0	95	70	130			
Trihalomethanes, Total		36.2	ug/L	1.0	91	70	130			
Surr: Dibromofluoromethane				1.0	105	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	90	70	130			
Surr: p-Bromofluorobenzene				1.0	118	70	130			
Surr: Toluene-d8				1.0	116	70	130			
Lab ID: 25-Jul-16_CCV_36	9	Continuing Calibration Verification Standard						07/26/16 07:09		
Bromodichloromethane		11.0	ug/L	1.0	110	70	130			
Bromoform		9.64	ug/L	1.0	96	70	130			
Chlorodibromomethane		9.60	ug/L	1.0	96	70	130			
Chloroform		9.88	ug/L	1.0	99	70	130			
Trihalomethanes, Total		40.1	ug/L	1.0	100	70	130			
Surr: Dibromofluoromethane				1.0	106	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	93	70	130			
Surr: p-Bromofluorobenzene				1.0	120	70	130			
Surr: Toluene-d8				1.0	116	70	130			
Method: E624								Batch: R213645		
Lab ID: 25-Jul-16_LCS_19	9	Laboratory Control Sample				Run: 5975VOC1_160725B		07/25/16 21:16		
Bromodichloromethane		9.92	ug/L	1.0	99	70	130			
Bromoform		10.9	ug/L	1.0	109	76	136			
Chlorodibromomethane		9.64	ug/L	1.0	96	70	130			
Chloroform		10.1	ug/L	1.0	101	70	130			
Trihalomethanes, Total		40.5	ug/L	1.0	101	70	130			
Surr: Dibromofluoromethane				1.0	99	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	83	70	130			
Surr: p-Bromofluorobenzene				1.0	121	70	130			
Surr: Toluene-d8				1.0	104	70	130			
Lab ID: 25-Jul-16_MBLK_21	9	Method Blank				Run: 5975VOC1_160725B		07/25/16 22:26		
Bromodichloromethane		ND	ug/L	1.0						
Bromoform		ND	ug/L	1.0						
Chlorodibromomethane		ND	ug/L	1.0						
Chloroform		ND	ug/L	1.0						
Trihalomethanes, Total		ND	ug/L	1.0						
Surr: Dibromofluoromethane				1.0	120	64.4	131			
Surr: 1,2-Dichloroethane-d4				1.0	121	70	130			
Surr: p-Bromofluorobenzene				1.0	136	67.1	133			S
Surr: Toluene-d8				1.0	112	79.7	125			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Batch: R213645
Lab ID: C16070595-001BMS	9	Sample Matrix Spike		Run: 5975VOC1_160725B				07/26/16 05:24		
Bromodichloromethane		269	ug/L	10	134	70	130			S
Bromoform		232	ug/L	10	116	76	136			
Chlorodibromomethane		226	ug/L	10	113	70	130			
Chloroform		270	ug/L	10	135	70	130			S
Trihalomethanes, Total		996	ug/L	10	125	70	130			
Surr: Dibromofluoromethane				1.0	123	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	114	70	130			
Surr: p-Bromofluorobenzene				1.0	118	77	137			
Surr: Toluene-d8				1.0	118	70	130			
Lab ID: C16070595-001BMSD	9	Sample Matrix Spike Duplicate		Run: 5975VOC1_160725B				07/26/16 05:59		
Bromodichloromethane		234	ug/L	10	117	70	130	14	20	
Bromoform		218	ug/L	10	109	76	136	6.0	20	
Chlorodibromomethane		211	ug/L	10	106	70	130	6.6	20	
Chloroform		246	ug/L	10	123	70	130	9.0	20	
Trihalomethanes, Total		910	ug/L	10	114	70	130	9.0	20	
Surr: Dibromofluoromethane				1.0	109	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	92	70	130			
Surr: p-Bromofluorobenzene				1.0	119	77	137			
Surr: Toluene-d8				1.0	112	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>										Analytical Run: R213686
<b>Lab ID: 26-Jul-16_CCV_3</b>	9	Continuing Calibration Verification Standard								07/26/16 15:30
Bromodichloromethane		9.92	ug/L	1.0	99	70	130			
Bromoform		7.80	ug/L	1.0	78	70	130			
Chlorodibromomethane		8.16	ug/L	1.0	82	70	130			
Chloroform		9.48	ug/L	1.0	95	70	130			
Trihalomethanes, Total		35.4	ug/L	1.0	88	70	130			
Surr: Dibromofluoromethane				1.0	104	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	88	70	130			
Surr: p-Bromofluorobenzene				1.0	119	70	130			
Surr: Toluene-d8				1.0	118	70	130			
<b>Method: E624</b>										Batch: R213686
<b>Lab ID: 26-Jul-16_LCS_4</b>	9	Laboratory Control Sample								07/26/16 16:05
						Run: 5975VOC1_160726A				
Bromodichloromethane		10.0	ug/L	1.0	100	70	130			
Bromoform		9.56	ug/L	1.0	96	76	136			
Chlorodibromomethane		9.12	ug/L	1.0	91	70	130			
Chloroform		10.1	ug/L	1.0	101	70	130			
Trihalomethanes, Total		38.8	ug/L	1.0	97	70	130			
Surr: Dibromofluoromethane				1.0	100	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	86	70	130			
Surr: p-Bromofluorobenzene				1.0	119	70	130			
Surr: Toluene-d8				1.0	108	70	130			
<b>Lab ID: 26-Jul-16_MBLK_6</b>	9	Method Blank								07/26/16 17:15
						Run: 5975VOC1_160726A				
Bromodichloromethane		ND	ug/L	1.0						
Bromoform		ND	ug/L	1.0						
Chlorodibromomethane		ND	ug/L	1.0						
Chloroform		ND	ug/L	1.0						
Trihalomethanes, Total		ND	ug/L	1.0						
Surr: Dibromofluoromethane				1.0	111	64.4	131			
Surr: 1,2-Dichloroethane-d4				1.0	105	70	130			
Surr: p-Bromofluorobenzene				1.0	138	67.1	133			S
Surr: Toluene-d8				1.0	116	79.7	125			
<b>Lab ID: C16070682-001AMS</b>	9	Sample Matrix Spike								07/26/16 23:38
						Run: 5975VOC1_160726A				
Bromodichloromethane		227	ug/L	10	114	70	130			
Bromoform		208	ug/L	10	104	76	136			
Chlorodibromomethane		200	ug/L	10	100	70	130			
Chloroform		235	ug/L	10	112	70	130			
Trihalomethanes, Total		870	ug/L	10	109	70	130			
Surr: Dibromofluoromethane				1.0	112	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	95	70	130			
Surr: p-Bromofluorobenzene				1.0	119	77	137			
Surr: Toluene-d8				1.0	118	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Batch: R213686
Lab ID: C16070682-001AMSD	9	Sample Matrix Spike Duplicate				Run: 5975VOC1_160726A			07/27/16 00:13	
Bromodichloromethane		222	ug/L	10	111	70	130	2.5	20	
Bromoform		219	ug/L	10	110	76	136	5.2	20	
Chlorodibromomethane		203	ug/L	10	102	70	130	1.6	20	
Chloroform		238	ug/L	10	113	70	130	1.0	20	
Trihalomethanes, Total		882	ug/L	10	110	70	130	1.3	20	
Surr: Dibromofluoromethane				1.0	110	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	93	70	130			
Surr: p-Bromofluorobenzene				1.0	121	77	137			
Surr: Toluene-d8				1.0	113	70	130			

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-0958
<b>Lab ID: MB-GA-0958</b>	3	Method Blank						Run: G5000W_160802A		08/02/16 22:04
Gross Alpha minus Rn & U		1	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		2	pCi/L							
Gross Alpha minus Rn & U MDC		2	pCi/L							
<b>Lab ID: LCS-GA-0958</b>		Laboratory Control Sample						Run: G5000W_160802A		08/02/16 22:04
Gross Alpha minus Rn & U		33.5	pCi/L		95	80	120			
<b>Lab ID: C16070512-011GMS</b>		Sample Matrix Spike						Run: G5000W_160802A		08/02/16 23:46
Gross Alpha minus Rn & U		77.6	pCi/L		112	70	130			
<b>Lab ID: C16070512-011GMSD</b>		Sample Matrix Spike Duplicate						Run: G5000W_160802A		08/02/16 23:46
Gross Alpha minus Rn & U		69.9	pCi/L		101	70	130	11	52.6	
<b>Method: E900.1</b>										Batch: GA-0965
<b>Lab ID: MB-GA-0965</b>	3	Method Blank						Run: TENNELEC-3_160823A		08/23/16 23:55
Gross Alpha minus Rn & U		0.3	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.6	pCi/L							
Gross Alpha minus Rn & U MDC		0.9	pCi/L							
<b>Lab ID: LCS-GA-0965</b>		Laboratory Control Sample						Run: TENNELEC-3_160823A		08/23/16 23:55
Gross Alpha minus Rn & U		34.6	pCi/L		101	80	120			
<b>Lab ID: C16080428-006CMS</b>		Sample Matrix Spike						Run: TENNELEC-3_160823A		08/24/16 01:38
Gross Alpha minus Rn & U		70.7	pCi/L		92	70	130			
<b>Lab ID: C16080428-006CMSD</b>		Sample Matrix Spike Duplicate						Run: TENNELEC-3_160823A		08/24/16 01:38
Gross Alpha minus Rn & U		75.0	pCi/L		98	70	130	6.0	51.6	

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-1

Report Date: 09/26/16

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0								Batch: RA226-8192		
Lab ID: LCS-RA226-8192	Laboratory Control Sample			Run: G542M_160805B			08/16/16 07:21			
Radium 226	11	pCi/L		105	80	120				
Lab ID: MB-RA226-8192	3	Method Blank			Run: G542M_160805B			08/16/16 07:21		
Radium 226		0.09	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
Lab ID: C16070512-001GMS	Sample Matrix Spike			Run: G542M_160805B			08/16/16 07:21			
Radium 226	20	pCi/L		94	70	130				
Lab ID: C16070512-001GMSD	Sample Matrix Spike Duplicate			Run: G542M_160805B			08/16/16 07:21			
Radium 226	19	pCi/L		90	70	130	4.5	49.3		

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U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-1

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0										Batch: RA-TH-ISO-2444
Lab ID: LCS-RA-TH-ISO-2444	Laboratory Control Sample			Run: EGG-ORTEC_160803A			08/09/16 15:03			
Thorium 230		5.8	pCi/L	102		80	120			
Lab ID: C16070517-001DMS	Sample Matrix Spike			Run: EGG-ORTEC_160803A			08/10/16 09:19			
Thorium 230		11	pCi/L	98		70	130			
Lab ID: C16070517-001DMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_160803A			08/10/16 09:19			
Thorium 230		12	pCi/L	103		70	130	4.8	48	
Lab ID: MB-RA-TH-ISO-2444	3	Method Blank		Run: EGG-ORTEC_160803A			08/10/16 09:19			
Thorium 230		0.02	pCi/L							U
Thorium 230 precision ( $\pm$ )		0.10	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
Method: E908.0										Batch: RA-TH-ISO-2444R
Lab ID: LCS-RA-TH-ISO-2444	Laboratory Control Sample			Run: EGG-ORTEC_160803A			08/10/16 15:09			
Thorium 230		5.5	pCi/L	96		80	120			
Lab ID: MB-RA-TH-ISO-2444	3	Method Blank		Run: EGG-ORTEC_160803A			08/10/16 15:09			
Thorium 230		0.03	pCi/L							U
Thorium 230 precision ( $\pm$ )		0.05	pCi/L							
Thorium 230 MDC		0.08	pCi/L							

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-1

Report Date: 09/26/16

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E909.0</b>										Batch: T_PB-210-0683R
<b>Lab ID: MB-PB-210-0683</b>	3	Method Blank					Run: SUB-T69692			09/13/16 06:50
Lead 210		0.2	pCi/L							U
Lead 210 precision (±)		0.8	pCi/L							
Lead 210 MDC		1	pCi/L							
<b>Lab ID: LCS-PB-210-0683</b>		Laboratory Control Sample					Run: SUB-T69692			09/13/16 09:06
Lead 210		11	pCi/L		100	80	120			
<b>Lab ID: C16070512-001F</b>		Sample Matrix Spike					Run: SUB-T69692			09/13/16 13:37
Lead 210		24	pCi/L		114	70	130			
<b>Lab ID: C16070512-001F</b>		Sample Matrix Spike Duplicate					Run: SUB-T69692			09/13/16 15:51
Lead 210		22	pCi/L		105	70	130	8.5	70.8	
<b>Method: E909.0</b>										Batch: T_PB-210-0683RR
<b>Lab ID: MB-PB-210-0683</b>	3	Method Blank					Run: SUB-T69728			09/15/16 10:59
Lead 210		-0.4	pCi/L							U
Lead 210 precision (±)		0.7	pCi/L							
Lead 210 MDC		1	pCi/L							
<b>Lab ID: LCS-PB-210-0683</b>		Laboratory Control Sample					Run: SUB-T69728			09/15/16 13:14
Lead 210		11	pCi/L		98	80	120			
<b>Lab ID: C16070512-001F</b>		Sample Matrix Spike					Run: SUB-T69728			09/15/16 17:46
Lead 210		23	pCi/L		111	70	130			
<b>Lab ID: C16070512-001F</b>		Sample Matrix Spike Duplicate					Run: SUB-T69728			09/15/16 19:55
Lead 210		21	pCi/L		101	70	130	10	71.6	

### Qualifiers:

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MDC - Minimum detectable concentration

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U - Not detected at minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone-1

Report Date: 09/26/16

Work Order: C16070512

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: RA-05</b>										Batch: RA228-5281
<b>Lab ID: LCS-228-RA226-8192</b>	Laboratory Control Sample			Run: TENNELEC-3_160805A			08/11/16 08:23			
Radium 228		8.6	pCi/L	92		80	120			
<b>Lab ID: MB-RA226-8192</b>	3	Method Blank		Run: TENNELEC-3_160805A			08/11/16 08:23			
Radium 228		0.5	pCi/L							U
Radium 228 precision (±)		0.7	pCi/L							
Radium 228 MDC		1	pCi/L							
<b>Lab ID: C16070512-011GMS</b>	Sample Matrix Spike			Run: TENNELEC-3_160805A			08/11/16 08:23			
Radium 228		19	pCi/L	87		70	130			
<b>Lab ID: C16070512-011GMSD</b>	Sample Matrix Spike Duplicate			Run: TENNELEC-3_160805A			08/11/16 08:23			
Radium 228		19	pCi/L	88		70	130	1.6	49.7	
<b>Method: RA-05</b>										Batch: RA228-5300
<b>Lab ID: LCS-228-RA228-5300</b>	Laboratory Control Sample			Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		10.1	pCi/L	113		80	120			
<b>Lab ID: MB-228-RA228-5300</b>	3	Method Blank		Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		0.3	pCi/L							U
Radium 228 precision (±)		0.6	pCi/L							
Radium 228 MDC		1.0	pCi/L							
<b>Lab ID: C16070512-007GMS</b>	Sample Matrix Spike			Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		24	pCi/L	81		70	130			
<b>Lab ID: C16070512-007GMSD</b>	Sample Matrix Spike Duplicate			Run: TENNELEC-3_160823B			08/26/16 11:28			
Radium 228		24	pCi/L	81		70	130	1.9	50.7	

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## ANALYTICAL SUMMARY REPORT

January 24, 2017

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16070706

Quote ID: C129 - Quarterly Long List

Project Name: Zone 3

Energy Laboratories, Inc. Casper WY received the following 13 samples for United Nuclear Corporation on 7/22/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16070706-001	613	07/18/16 08:54	07/22/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Acidity, Total as CaCO <sub>3</sub> Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16070706-002	517	07/18/16 09:42	07/22/16	Aqueous	Same As Above
C16070706-003	708	07/18/16 11:07	07/22/16	Aqueous	Same As Above
C16070706-004	711	07/18/16 12:22	07/22/16	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C16070706-005	EPA-13	07/18/16 13:03 07/22/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16070706-006	420	07/18/16 14:12 07/22/16	Aqueous	Same As Above
C16070706-007	EPA-14	07/18/16 15:14 07/22/16	Aqueous	Same As Above
C16070706-008	719	07/19/16 08:38 07/22/16	Aqueous	Same As Above
C16070706-009	717	07/19/16 10:50 07/22/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16070706-010	717 Duplicate	07/19/16 11:32 07/22/16	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C16070706-011	MW-7	07/19/16 12:37 07/22/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16070706-012	Rinsate	07/19/16 14:50 07/22/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved 624-Purgeable Organics 624-Purgeable Organics
C16070706-013	Field Blank	07/19/16 15:00 07/22/16	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2017.01.24 16:10:43 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 3  
**Work Order:** C16070706

**Revised Date:** 01/24/17

**Report Date:** 09/28/16

## CASE NARRATIVE

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CS were subcontracted to Energy Laboratories, 415 Graham Rd., College Station, TX, EPA Number TX01520.

### REVISED/SUPPLEMENTAL REPORT:

The attached analytical report has been revised from a previously submitted report due to a request on 1/18/2017 to replace a Pb-210 Non-Detect (ND) expression with a numeric value for Sample ID 613 (C16070706-001).

In addition, after reviewing the tracker data for Sample ID 420, it was noted that the data had not been updated to reflect that third quarter sampling and has been corrected.

The report has been revised and replaces any previously issued report in its entirety.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 09/26/16

**Work Order:** C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2310 B</b>										Analytical Run: MANTECH_160727B
<b>Lab ID: ICV-8824</b>	Initial Calibration Verification Standard									
Acidity, Total as CaCO <sub>3</sub>		ND	mg/L	5.0		0	0			07/27/16 12:40
<b>Lab ID: CCV-9072</b>										Continuing Calibration Verification Standard
Acidity, Total as CaCO <sub>3</sub>		ND	mg/L	5.0		0	0			07/27/16 12:43
<b>Method: A2310 B</b>										Batch: R213796
<b>Lab ID: MBLK</b>	Method Blank									
Acidity, Total as CaCO <sub>3</sub>		2	mg/L	1						Run: MANTECH_160727B 07/27/16 12:37
<b>Lab ID: LCS_160208</b>	Laboratory Control Sample									
Acidity, Total as CaCO <sub>3</sub>		1250	mg/L	5.0	103	80	120			Run: MANTECH_160727B 07/27/16 12:57
<b>Lab ID: C16070706-001ADUP</b>	Sample Duplicate									
Acidity, Total as CaCO <sub>3</sub>		3680	mg/L	15				1.3	20	Run: MANTECH_160727B 07/27/16 14:35

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R213642
Lab ID: MBLK		Method Blank					Run: MANTECH_160725A			07/25/16 13:51
Bicarbonate as HCO <sub>3</sub>	2	mg/L		1						
Lab ID: C16070706-006ADUP		Sample Duplicate					Run: MANTECH_160725A			07/25/16 20:50
Bicarbonate as HCO <sub>3</sub>	363	mg/L		5.0				4.0	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS160725A
Lab ID: MB-1_160725A		Method Blank					Run: BAL-18_160725A			07/25/16 14:35
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	8						
Lab ID: LCS-2_160725A		Laboratory Control Sample					Run: BAL-18_160725A			07/25/16 14:36
Solids, Total Dissolved TDS @ 180 C		1070	mg/L	11	96	90	110			
Lab ID: C16070706-001A DUP		Sample Duplicate					Run: BAL-18_160725A			07/25/16 14:36
Solids, Total Dissolved TDS @ 180 C		11300	mg/L	94				0.2	5	
Lab ID: C16070706-011A DUP		Sample Duplicate					Run: BAL-18_160725A			07/25/16 14:39
Solids, Total Dissolved TDS @ 180 C		4320	mg/L	40				0.4	5	

### Qualifiers:

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MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 09/26/16

**Work Order:** C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A3114 B Analytical Run: CVAA-C202_160812A										
<b>Lab ID:</b> ICV		Initial Calibration Verification Standard								
Selenium		0.0253	mg/L	0.0010	104	90	110			08/12/16 09:43
<b>Method:</b> A3114 B Batch: 48085										
<b>Lab ID:</b> MB-48085		Method Blank								
Selenium		ND	mg/L	0.0003						08/12/16 10:32
<b>Lab ID:</b> LCS-48085		Laboratory Control Sample								
Selenium		0.0245	mg/L	0.0010	101	90	110			08/12/16 10:34
<b>Lab ID:</b> C16070513-003CMS		Sample Matrix Spike								
Selenium		0.0232	mg/L	0.0010	95	85	115			08/12/16 10:47
<b>Lab ID:</b> C16070513-003CMSD		Sample Matrix Spike Duplicate								
Selenium		0.0243	mg/L	0.0010	100	85	115	4.7	15	08/12/16 10:49

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B								Analytical Run: PHSC_101-C_160722A		
Lab ID: pH 6.86		Initial Calibration Verification Standard								07/22/16 13:59
pH		6.88	s.u.	0.010	100	98	102			
Lab ID: CCV - pH 7		Continuing Calibration Verification Standard								07/22/16 16:05
pH		7.04	s.u.	0.010	101	98	102			
Lab ID: CCV - pH 7		Continuing Calibration Verification Standard								07/22/16 17:26
pH		7.05	s.u.	0.010	101	98	102			
Method: A4500-H B										Batch: R213598
Lab ID: C16070706-003ADUP		Sample Duplicate				Run: PHSC_101-C_160722A			07/22/16 16:54	
pH		3.60	s.u.	0.010				0.0	3	
Lab ID: C16070706-013ADUP		Sample Duplicate				Run: PHSC_101-C_160722A			07/22/16 17:40	
pH		6.08	s.u.	0.010				0.3	3	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G Analytical Run: FIA201-C_160726A										
Lab ID: CCV		Continuing Calibration Verification Standard								07/26/16 12:33
Nitrogen, Ammonia as N		1.00	mg/L	0.050	100	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								07/26/16 12:49
Nitrogen, Ammonia as N		1.01	mg/L	0.050	101	90	110			
Method: A4500-NH3 G Batch: R213662										
Lab ID: MBLK		Method Blank								07/26/16 11:55
Nitrogen, Ammonia as N		ND	mg/L	0.003						
Lab ID: LFB		Laboratory Fortified Blank								07/26/16 11:58
Nitrogen, Ammonia as N		0.973	mg/L	0.050	98	90	110			
Lab ID: C16070692-003DMS		Sample Matrix Spike								07/26/16 12:36
Nitrogen, Ammonia as N		0.888	mg/L	0.050	88	90	110			S
Lab ID: C16070692-003DMSD		Sample Matrix Spike Duplicate								07/26/16 12:37
Nitrogen, Ammonia as N		0.935	mg/L	0.050	93	90	110	5.2	10	
Lab ID: C16070706-008DMS		Sample Matrix Spike								07/26/16 12:53
Nitrogen, Ammonia as N		1.56	mg/L	0.050	103	90	110			
Lab ID: C16070706-008DMSD		Sample Matrix Spike Duplicate								07/26/16 12:54
Nitrogen, Ammonia as N		1.58	mg/L	0.050	105	90	110	1.3	10	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1632AM										Analytical Run: SUB-H117334
Lab ID: AS-ICV 25ppb-8/2/201	Initial Calibration Verification Standard									
Arsenic-III		24.7	ug/L	5.0	99	87.6	114			08/02/16 20:02
Lab ID: AS-50.0-8/2/2016										08/02/16 23:27
Continuing Calibration Verification Standard										
Arsenic-III		50.5	ug/L	5.0	101	85	115			
Lab ID: AS-50.0-8/2/2016										08/03/16 02:15
Continuing Calibration Verification Standard										
Arsenic-III		50.4	ug/L	5.0	101	85	115			
Method: E1632AM										Batch: H_R117334
Lab ID: AS-LFB 50ppb-8/2/20	Laboratory Fortified Blank									
Arsenic-III		49.4	ug/L	5.0	99	55	146			08/02/16 20:38
Lab ID: ICB										08/02/16 20:50
Method Blank										
Arsenic-III		ND	ug/L	0.2						
Lab ID: H16070431-001A MS										08/03/16 00:27
Sample Matrix Spike										
Arsenic-III		48.0	ug/L	5.0	96	55	146			
Lab ID: H16070431-001A MSD										08/03/16 00:39
Sample Matrix Spike Duplicate										
Arsenic-III		49.0	ug/L	5.0	98	55	146	2.0	20	
Lab ID: C16070706-008E										08/03/16 02:51
Sample Matrix Spike										
Arsenic-III		49.5	ug/L	5.0	99	55	146			
Lab ID: C16070706-008E										08/03/16 03:03
Sample Matrix Spike Duplicate										
Arsenic-III		50.6	ug/L	5.0	101	55	146	2.2	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP4-C_160726A										
<b>Lab ID: ICV</b>	4	Initial Calibration Verification Standard								07/26/16 11:10
Calcium		50.2	mg/L	1.0	100	95	105			
Magnesium		50.1	mg/L	1.0	100	95	105			
Potassium		50.5	mg/L	1.0	101	95	105			
Sodium		50.4	mg/L	1.0	101	95	105			
<b>Lab ID: ICSA</b>	4	Interference Check Sample A								07/26/16 11:30
Calcium		462	mg/L	1.0	92	80	120			
Magnesium		503	mg/L	1.0	101	80	120			
Potassium		-0.0105	mg/L	1.0						
Sodium		0.0856	mg/L	1.0						
<b>Lab ID: ICSAB</b>	4	Interference Check Sample AB								07/26/16 11:34
Calcium		458	mg/L	1.0	92	80	120			
Magnesium		499	mg/L	1.0	100	80	120			
Potassium		-0.00536	mg/L	1.0						
Sodium		0.0869	mg/L	1.0						
<b>Method: E200.7</b> Batch: R213689										
<b>Lab ID: MB-160726A</b>	4	Method Blank				Run: ICP4-C_160726A			07/26/16 11:54	
Calcium		0.01	mg/L	0.003						
Magnesium		0.004	mg/L	0.002						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.1						
<b>Lab ID: LFB-160726A</b>	4	Laboratory Fortified Blank				Run: ICP4-C_160726A			07/26/16 11:58	
Calcium		47.5	mg/L	1.0	95	85	115			
Magnesium		48.3	mg/L	1.0	97	85	115			
Potassium		49.7	mg/L	1.0	99	85	115			
Sodium		48.4	mg/L	1.0	97	85	115			
<b>Lab ID: C16070705-010BMS2</b>	4	Sample Matrix Spike				Run: ICP4-C_160726A			07/26/16 16:56	
Calcium		149	mg/L	1.0	94	70	130			
Magnesium		111	mg/L	1.0	97	70	130			
Potassium		101	mg/L	1.0	97	70	130			
Sodium		103	mg/L	1.0	96	70	130			
<b>Lab ID: C16070705-010BMSD</b>	4	Sample Matrix Spike Duplicate				Run: ICP4-C_160726A			07/26/16 16:59	
Calcium		149	mg/L	1.0	94	70	130	0.2	20	
Magnesium		111	mg/L	1.0	96	70	130	0.1	20	
Potassium		102	mg/L	1.0	98	70	130	0.7	20	
Sodium		104	mg/L	1.0	97	70	130	0.2	20	
<b>Lab ID: C16070706-007BMS2</b>	4	Sample Matrix Spike				Run: ICP4-C_160726A			07/26/16 18:19	
Calcium		709	mg/L	1.0	86	70	130			
Magnesium		604	mg/L	1.0	92	70	130			
Potassium		252	mg/L	1.0	94	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** Zone 3

**Work Order:** C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7										Batch: R213689
<b>Lab ID:</b> C16070706-007BMS2	4	Sample Matrix Spike		Run: ICP4-C_160726A						07/26/16 18:19
Sodium		396	mg/L	1.2	92	70	130			
<b>Lab ID:</b> C16070706-007BMSD	4	Sample Matrix Spike Duplicate		Run: ICP4-C_160726A						07/26/16 18:22
Calcium		708	mg/L	1.0	86	70	130	0.3	20	
Magnesium		600	mg/L	1.0	91	70	130	0.6	20	
Potassium		250	mg/L	1.0	93	70	130	0.6	20	
Sodium		393	mg/L	1.2	91	70	130	0.6	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 09/26/16

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP4-C_160805A		
Lab ID: ICV	8	Initial Calibration Verification Standard							08/05/16 10:39	
Aluminum		5.04	mg/L	0.10	101	95	105			
Beryllium		0.498	mg/L	0.010	100	95	105			
Cadmium		0.473	mg/L	0.010	95	95	105			
Cobalt		0.946	mg/L	0.010	95	95	105			
Manganese		4.80	mg/L	0.010	96	95	105			
Molybdenum		0.977	mg/L	0.10	98	95	105			
Nickel		0.948	mg/L	0.050	95	95	105			
Vanadium		0.971	mg/L	0.10	97	95	105			
Lab ID: ICSA	8	Interference Check Sample A							08/05/16 10:59	
Aluminum		483	mg/L	0.10	97	80	120			
Beryllium		0.000120	mg/L	0.010						
Cadmium		0.00101	mg/L	0.010						
Cobalt		-0.00917	mg/L	0.010						
Manganese		-0.0136	mg/L	0.010						
Molybdenum		-0.00252	mg/L	0.10						
Nickel		0.00403	mg/L	0.050						
Vanadium		0.00352	mg/L	0.10						
Lab ID: ICSAB	8	Interference Check Sample AB							08/05/16 11:03	
Aluminum		478	mg/L	0.10	96	80	120			
Beryllium		0.459	mg/L	0.010	92	80	120			
Cadmium		0.914	mg/L	0.010	91	80	120			
Cobalt		0.414	mg/L	0.010	83	80	120			
Manganese		0.427	mg/L	0.010	85	80	120			
Molybdenum		0.00676	mg/L	0.10						
Nickel		0.839	mg/L	0.050	84	80	120			
Vanadium		0.480	mg/L	0.10	96	80	120			
Method: E200.7								Batch: 48017		
Lab ID: MB-48017	8	Method Blank							08/06/16 01:45	
						Run: ICP4-C_160805A				
Aluminum		ND	mg/L	0.01						
Beryllium		ND	mg/L	7E-05						
Cadmium		ND	mg/L	0.0006						
Cobalt		ND	mg/L	0.002						
Manganese		ND	mg/L	0.002						
Molybdenum		0.005	mg/L	0.004						
Nickel		ND	mg/L	0.003						
Vanadium		ND	mg/L	0.004						
Lab ID: LCS3-48017	8	Laboratory Control Sample							08/06/16 01:49	
						Run: ICP4-C_160805A				
Aluminum		2.58	mg/L	0.030	103	85	115			
Beryllium		0.252	mg/L	0.0010	101	85	115			
Cadmium		0.246	mg/L	0.0012	98	85	115			
Cobalt		0.481	mg/L	0.0052	96	85	115			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Batch: 48017
<b>Lab ID: LCS3-48017</b>	8	Laboratory Control Sample				Run: ICP4-C_160805A				08/06/16 01:49
Manganese		2.48	mg/L	0.0012	99	85	115			
Molybdenum		0.465	mg/L	0.0053	92	85	115			
Nickel		0.488	mg/L	0.0050	98	85	115			
Vanadium		0.507	mg/L	0.010	101	85	115			
<b>Lab ID: C16070706-010CMS3</b>	8	Sample Matrix Spike				Run: ICP4-C_160805A				08/06/16 03:27
Aluminum		217	mg/L	0.030		70	130			A
Beryllium		0.364	mg/L	0.0010	95	70	130			
Cadmium		0.236	mg/L	0.0025	90	70	130			
Cobalt		1.32	mg/L	0.010	90	70	130			
Manganese		19.1	mg/L	0.0023		70	130			A
Molybdenum		0.451	mg/L	0.011	90	70	130			
Nickel		1.36	mg/L	0.0090	91	70	130			
Vanadium		0.474	mg/L	0.010	93	70	130			
<b>Lab ID: C16070706-010CMSD</b>	8	Sample Matrix Spike Duplicate				Run: ICP4-C_160805A				08/06/16 03:31
Aluminum		220	mg/L	0.030		70	130	1.6	20	A
Beryllium		0.365	mg/L	0.0010	95	70	130	0.3	20	
Cadmium		0.236	mg/L	0.0025	90	70	130	0.1	20	
Cobalt		1.36	mg/L	0.010	96	70	130	2.3	20	
Manganese		19.3	mg/L	0.0023		70	130	1.3	20	A
Molybdenum		0.451	mg/L	0.011	90	70	130	0.1	20	
Nickel		1.38	mg/L	0.0090	95	70	130	1.4	20	
Vanadium		0.478	mg/L	0.010	94	70	130	0.8	20	
<b>Method: E200.7</b>										Batch: 48018
<b>Lab ID: MB-48018</b>	8	Method Blank				Run: ICP4-C_160805A				08/05/16 22:12
Aluminum		ND	mg/L	0.01						
Beryllium		ND	mg/L	7E-05						
Cadmium		0.0008	mg/L	0.0006						
Cobalt		ND	mg/L	0.002						
Manganese		ND	mg/L	0.002						
Molybdenum		ND	mg/L	0.004						
Nickel		ND	mg/L	0.003						
Vanadium		ND	mg/L	0.004						
<b>Lab ID: LCS3-48018</b>	8	Laboratory Control Sample				Run: ICP4-C_160805A				08/05/16 22:16
Aluminum		2.53	mg/L	0.030	101	85	115			
Beryllium		0.248	mg/L	0.0010	99	85	115			
Cadmium		0.243	mg/L	0.0012	97	85	115			
Cobalt		0.486	mg/L	0.0052	97	85	115			
Manganese		2.44	mg/L	0.0012	98	85	115			
Molybdenum		0.463	mg/L	0.0053	93	85	115			
Nickel		0.480	mg/L	0.0050	96	85	115			
Vanadium		0.493	mg/L	0.010	99	85	115			

### Qualifiers:

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ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: 48018
Lab ID: C16080055-004AMS3	8	Sample Matrix Spike		Run: ICP4-C_160805A				08/05/16 22:28		
Aluminum		2.54	mg/L	0.030	101	70	130			
Beryllium		0.246	mg/L	0.0010	98	70	130			
Cadmium		0.237	mg/L	0.0012	95	70	130			
Cobalt		0.473	mg/L	0.0052	95	70	130			
Manganese		2.56	mg/L	0.0012	96	70	130			
Molybdenum		0.458	mg/L	0.0053	92	70	130			
Nickel		0.470	mg/L	0.0050	94	70	130			
Vanadium		0.488	mg/L	0.010	98	70	130			
Lab ID: C16080055-004AMS3	8	Sample Matrix Spike Duplicate		Run: ICP4-C_160805A				08/05/16 22:31		
Aluminum		2.53	mg/L	0.030	101	70	130	0.3	20	
Beryllium		0.246	mg/L	0.0010	98	70	130	0.2	20	
Cadmium		0.236	mg/L	0.0012	95	70	130	0.2	20	
Cobalt		0.474	mg/L	0.0052	95	70	130	0.1	20	
Manganese		2.53	mg/L	0.0012	95	70	130	1.0	20	
Molybdenum		0.471	mg/L	0.0053	94	70	130	2.8	20	
Nickel		0.470	mg/L	0.0050	94	70	130	0.1	20	
Vanadium		0.486	mg/L	0.010	97	70	130	0.5	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Analytical Run: ICPMS2-C_160808A
Lab ID: ICV	2	Initial Calibration Verification Standard								08/08/16 14:41
Lead		0.0514	mg/L	0.0010	103	90	110			
Uranium		0.0511	mg/L	0.00030	102	90	110			
Method: E200.8										Batch: 48017
Lab ID: MB-48017	2	Method Blank								Run: ICPMS2-C_160808A 08/08/16 21:31
Lead		0.0001	mg/L	4E-06						
Uranium		3E-05	mg/L	3E-06						
Lab ID: LCS3-48017	2	Laboratory Control Sample								Run: ICPMS2-C_160808A 08/08/16 21:34
Lead		0.484	mg/L	0.0010	97	85	115			
Uranium		0.474	mg/L	0.0010	95	85	115			
Lab ID: C16070674-002BMS3	2	Sample Matrix Spike								Run: ICPMS2-C_160808A 08/08/16 22:03
Lead		0.513	mg/L	0.0010	102	70	130			
Uranium		0.555	mg/L	0.0010	104	70	130			
Lab ID: C16070674-002BMSD	2	Sample Matrix Spike Duplicate								Run: ICPMS2-C_160808A 08/08/16 22:06
Lead		0.503	mg/L	0.0010	100	70	130	2.1	20	
Uranium		0.548	mg/L	0.0010	102	70	130	1.3	20	
Lab ID: C16070706-010CMS3	2	Sample Matrix Spike								Run: ICPMS2-C_160808A 08/08/16 22:55
Lead		0.552	mg/L	0.0010	106	70	130			
Uranium		0.843	mg/L	0.00030	110	70	130			
Lab ID: C16070706-010CMSD	2	Sample Matrix Spike Duplicate								Run: ICPMS2-C_160808A 08/08/16 22:57
Lead		0.614	mg/L	0.0010	118	70	130	10	20	
Uranium		0.943	mg/L	0.00030	130	70	130	11	20	
Method: E200.8										Batch: 48018
Lab ID: MB-48018	2	Method Blank								Run: ICPMS2-C_160808A 08/08/16 16:35
Lead		ND	mg/L	4E-06						
Uranium		0.002	mg/L	3E-06						
Lab ID: LCS3-48018	2	Laboratory Control Sample								Run: ICPMS2-C_160808A 08/08/16 16:37
Lead		0.470	mg/L	0.0010	94	85	115			
Uranium		0.469	mg/L	0.00030	93	85	115			
Lab ID: C16080113-002AMS3	2	Sample Matrix Spike								Run: ICPMS2-C_160808A 08/08/16 17:42
Lead		0.495	mg/L	0.0010	99	70	130			
Uranium		0.494	mg/L	0.00030	99	70	130			
Lab ID: C16080113-002AMSD	2	Sample Matrix Spike Duplicate								Run: ICPMS2-C_160808A 08/08/16 17:44
Lead		0.495	mg/L	0.0010	99	70	130	0.0	20	
Uranium		0.494	mg/L	0.00030	99	70	130	0.1	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Analytical Run: ICPMS2-C_160815A
Lab ID: ICV		Initial Calibration Verification Standard								08/15/16 11:25
Uranium		0.0466	mg/L	0.00030	93	90	110			
Method: E200.8										Batch: 48017
Lab ID: MB-48017		Method Blank								Run: ICPMS2-C_160815A 08/15/16 16:33
Uranium		ND	mg/L	3E-06						
Method: E200.8										Analytical Run: ICPMS4-C_160812A
Lab ID: ICV	2	Initial Calibration Verification Standard								08/12/16 12:51
Cadmium		0.0508	mg/L	0.0010	102	90	110			
Lead		0.0506	mg/L	0.0010	101	90	110			
Method: E200.8										Batch: 48017
Lab ID: MB-48017	2	Method Blank								Run: ICPMS4-C_160812A 08/13/16 04:57
Cadmium		3E-05	mg/L	3E-06						
Lead		4E-05	mg/L	2E-05						
Lab ID: LCS3-48017	2	Laboratory Control Sample								Run: ICPMS4-C_160812A 08/13/16 05:04
Cadmium		0.282	mg/L	0.0010	113	85	115			
Lead		0.563	mg/L	0.0010	113	85	115			
Lab ID: C16070706-010CMS3	2	Sample Matrix Spike								Run: ICPMS4-C_160812A 08/13/16 05:28
Cadmium		0.293	mg/L	0.0010	111	70	130			
Lead		0.630	mg/L	0.0010	121	70	130			
Lab ID: C16070706-010CMSD	2	Sample Matrix Spike Duplicate								Run: ICPMS4-C_160812A 08/13/16 05:34
Cadmium		0.294	mg/L	0.0010	111	70	130	0.2	20	
Lead		0.622	mg/L	0.0010	119	70	130	1.3	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 09/26/16

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_160727B
Lab ID: ICV		Initial Calibration Verification Standard								07/27/16 17:04
Chloride		9.24	mg/L	1.0	92	90	110			
Lab ID: CCV-072716-4		Continuing Calibration Verification Standard								07/28/16 06:36
Chloride		9.92	mg/L	1.0	99	90	110			
Lab ID: CCV-072716-5		Continuing Calibration Verification Standard								07/28/16 11:13
Chloride		10.1	mg/L	1.0	101	90	110			
Method: E300.0										Batch: R213759
Lab ID: ICB		Method Blank								Run: IC2-C_160727B 07/27/16 17:22
Chloride		ND	mg/L	0.04						
Lab ID: LFB-072716-1		Laboratory Fortified Blank								Run: IC2-C_160727B 07/27/16 17:41
Chloride		9.05	mg/L	1.0	90	90	110			
Lab ID: C16070705-011AMS		Sample Matrix Spike								Run: IC2-C_160727B 07/28/16 07:32
Chloride		12.3	mg/L	1.0	105	90	110			
Lab ID: C16070705-011AMSD		Sample Matrix Spike Duplicate								Run: IC2-C_160727B 07/28/16 07:50
Chloride		12.4	mg/L	1.0	106	90	110	1.0	20	
Lab ID: C16070706-009AMS		Sample Matrix Spike								Run: IC2-C_160727B 07/28/16 12:09
Chloride		263	mg/L	2.1	99	90	110			
Lab ID: C16070706-009AMSD		Sample Matrix Spike Duplicate								Run: IC2-C_160727B 07/28/16 12:27
Chloride		263	mg/L	2.1	99	90	110	0.1	20	
Lab ID: LFB-072716-2		Laboratory Fortified Blank								Run: IC2-C_160727B 07/28/16 20:27
Chloride		9.98	mg/L	1.0	100	90	110			

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC3-C_160729A
Lab ID: ICV		Initial Calibration Verification Standard								07/29/16 15:40
Sulfate		43.1	mg/L	1.0	108	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								07/30/16 00:23
Sulfate		42.5	mg/L	1.0	106	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								07/30/16 04:26
Sulfate		43.1	mg/L	1.0	108	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								07/30/16 08:30
Sulfate		43.8	mg/L	1.0	109	90	110			
Method: E300.0										Batch: R213804
Lab ID: LFB		Laboratory Fortified Blank								Run: IC3-C_160729A 07/29/16 16:15
Sulfate		40.6	mg/L	1.0	101	90	110			
Lab ID: C16070706-002AMS		Sample Matrix Spike								Run: IC3-C_160729A 07/30/16 05:19
Sulfate		5010	mg/L	8.3		90	110			A
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Lab ID: C16070706-002AMSD		Sample Matrix Spike Duplicate								Run: IC3-C_160729A 07/30/16 05:36
Sulfate		5010	mg/L	8.3		90	110	0.0	20	A
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Lab ID: C16070706-012AMS		Sample Matrix Spike								Run: IC3-C_160729A 07/30/16 09:23
Sulfate		45.6	mg/L	1.0	113	90	110			S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Lab ID: C16070706-012AMSD		Sample Matrix Spike Duplicate								Run: IC3-C_160729A 07/30/16 09:40
Sulfate		46.2	mg/L	1.0	115	90	110	1.2	20	S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Lab ID: LFB		Laboratory Fortified Blank								Run: IC3-C_160729A 07/30/16 13:09
Sulfate		41.4	mg/L	1.0	104	90	110			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2 Analytical Run: FIA201-C_160725A										
Lab ID: CCV_160628	Continuing Calibration Verification Standard 07/25/16 14:58									
Nitrogen, Nitrate+Nitrite as N		2.13	mg/L	0.10	106	90	110			
Method: E353.2 Batch: R213638										
Lab ID: MBLK	Method Blank Run: FIA201-C_160725A 07/25/16 13:47									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						
Lab ID: LFB	Laboratory Fortified Blank Run: FIA201-C_160725A 07/25/16 13:48									
Nitrogen, Nitrate+Nitrite as N		1.98	mg/L	0.10	101	90	110			
Lab ID: C16070705-004DMS	Sample Matrix Spike Run: FIA201-C_160725A 07/25/16 15:02									
Nitrogen, Nitrate+Nitrite as N		2.12	mg/L	0.10	106	90	110			
Lab ID: C16070705-004DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_160725A 07/25/16 15:03									
Nitrogen, Nitrate+Nitrite as N		2.21	mg/L	0.10	111	90	110	4.2	10	S
Method: E353.2 Analytical Run: FIA201-C_160727A										
Lab ID: CCV_160727	Continuing Calibration Verification Standard 07/27/16 13:04									
Nitrogen, Nitrate+Nitrite as N		2.06	mg/L	0.10	103	90	110			
Method: E353.2 Batch: R213703										
Lab ID: MBLK	Method Blank Run: FIA201-C_160727A 07/27/16 12:44									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						
Lab ID: LFB	Laboratory Fortified Blank Run: FIA201-C_160727A 07/27/16 12:45									
Nitrogen, Nitrate+Nitrite as N		1.99	mg/L	0.10	102	90	110			
Lab ID: C16070721-001BMS	Sample Matrix Spike Run: FIA201-C_160727A 07/27/16 12:51									
Nitrogen, Nitrate+Nitrite as N		5.61	mg/L	0.20	102	90	110			
Lab ID: C16070721-001BMSD	Sample Matrix Spike Duplicate Run: FIA201-C_160727A 07/27/16 12:52									
Nitrogen, Nitrate+Nitrite as N		5.63	mg/L	0.20	103	90	110	0.4	10	
Lab ID: C16070706-012DMS	Sample Matrix Spike Run: FIA201-C_160727A 07/27/16 13:08									
Nitrogen, Nitrate+Nitrite as N		1.98	mg/L	0.10	99	90	110			
Lab ID: C16070706-012DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_160727A 07/27/16 13:09									
Nitrogen, Nitrate+Nitrite as N		2.17	mg/L	0.10	109	90	110	9.2	10	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Analytical Run: R213686
Lab ID: 26-Jul-16_CCV_3	9	Continuing Calibration Verification Standard								07/26/16 15:30
Bromodichloromethane		9.92	ug/L	1.0	99	70	130			
Bromoform		7.80	ug/L	1.0	78	70	130			
Chlorodibromomethane		8.16	ug/L	1.0	82	70	130			
Chloroform		9.48	ug/L	1.0	95	70	130			
Trihalomethanes, Total		35.4	ug/L	1.0	88	70	130			
Surr: Dibromofluoromethane				1.0	104	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	88	70	130			
Surr: p-Bromofluorobenzene				1.0	119	70	130			
Surr: Toluene-d8				1.0	118	70	130			
Lab ID: 26-Jul-16_CCV_20	9	Continuing Calibration Verification Standard								07/27/16 01:23
Bromodichloromethane		11.7	ug/L	1.0	117	70	130			
Bromoform		9.68	ug/L	1.0	97	70	130			
Chlorodibromomethane		9.92	ug/L	1.0	99	70	130			
Chloroform		10.8	ug/L	1.0	108	70	130			
Trihalomethanes, Total		42.2	ug/L	1.0	105	70	130			
Surr: Dibromofluoromethane				1.0	110	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	93	70	130			
Surr: p-Bromofluorobenzene				1.0	120	70	130			
Surr: Toluene-d8				1.0	118	70	130			
Method: E624										Batch: R213686
Lab ID: 26-Jul-16_LCS_4	9	Laboratory Control Sample								Run: 5975VOC1_160726A 07/26/16 16:05
Bromodichloromethane		10.0	ug/L	1.0	100	70	130			
Bromoform		9.56	ug/L	1.0	96	76	136			
Chlorodibromomethane		9.12	ug/L	1.0	91	70	130			
Chloroform		10.1	ug/L	1.0	101	70	130			
Trihalomethanes, Total		38.8	ug/L	1.0	97	70	130			
Surr: Dibromofluoromethane				1.0	100	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	86	70	130			
Surr: p-Bromofluorobenzene				1.0	119	70	130			
Surr: Toluene-d8				1.0	108	70	130			
Lab ID: 26-Jul-16_MBLK_6	9	Method Blank								Run: 5975VOC1_160726A 07/26/16 17:15
Bromodichloromethane		ND	ug/L	1.0						
Bromoform		ND	ug/L	1.0						
Chlorodibromomethane		ND	ug/L	1.0						
Chloroform		ND	ug/L	1.0						
Trihalomethanes, Total		ND	ug/L	0.50						
Surr: Dibromofluoromethane				1.0	111	64.4	131			
Surr: 1,2-Dichloroethane-d4				1.0	105	70	130			
Surr: p-Bromofluorobenzene				1.0	138	67.1	133			S
Surr: Toluene-d8				1.0	116	79.7	125			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Batch: R213686
Lab ID: C16070682-001AMS	9	Sample Matrix Spike		Run: 5975VOC1_160726A				07/26/16 23:38		
Bromodichloromethane		227	ug/L	10	114	70	130			
Bromoform		208	ug/L	10	104	76	136			
Chlorodibromomethane		200	ug/L	10	100	70	130			
Chloroform		235	ug/L	10	112	70	130			
Trihalomethanes, Total		870	ug/L	10	109	70	130			
Surr: Dibromofluoromethane				1.0	112	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	95	70	130			
Surr: p-Bromofluorobenzene				1.0	119	77	137			
Surr: Toluene-d8				1.0	118	70	130			
Lab ID: C16070682-001AMSD	9	Sample Matrix Spike Duplicate		Run: 5975VOC1_160726A				07/27/16 00:13		
Bromodichloromethane		222	ug/L	10	111	70	130	2.5	20	
Bromoform		219	ug/L	10	110	76	136	5.2	20	
Chlorodibromomethane		203	ug/L	10	102	70	130	1.6	20	
Chloroform		238	ug/L	10	113	70	130	1.0	20	
Trihalomethanes, Total		882	ug/L	10	110	70	130	1.3	20	
Surr: Dibromofluoromethane				1.0	110	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	93	70	130			
Surr: p-Bromofluorobenzene				1.0	121	77	137			
Surr: Toluene-d8				1.0	113	70	130			

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 09/26/16

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>										Analytical Run: R213719
<b>Lab ID: 27-Jul-16_CCV_21</b>	9	Continuing Calibration Verification Standard								07/27/16 23:55
Bromodichloromethane		12.3	ug/L	1.0	123	70	130			
Bromoform		9.44	ug/L	1.0	94	70	130			
Chlorodibromomethane		9.92	ug/L	1.0	99	70	130			
Chloroform		11.0	ug/L	1.0	110	70	130			
Trihalomethanes, Total		42.6	ug/L	1.0	106	70	130			
Surr: Dibromofluoromethane				1.0	106	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	89	70	130			
Surr: p-Bromofluorobenzene				1.0	120	70	130			
Surr: Toluene-d8				1.0	114	70	130			
<b>Method: E624</b>										Batch: R213719
<b>Lab ID: 27-Jul-16_LCS_22</b>	9	Laboratory Control Sample								07/28/16 00:30
					Run: 5975VOC1_160727A					
Bromodichloromethane		9.32	ug/L	1.0	93	70	130			
Bromoform		8.76	ug/L	1.0	88	76	136			
Chlorodibromomethane		8.24	ug/L	1.0	82	70	130			
Chloroform		10.0	ug/L	1.0	100	70	130			
Trihalomethanes, Total		36.4	ug/L	1.0	91	70	130			
Surr: Dibromofluoromethane				1.0	105	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	90	70	130			
Surr: p-Bromofluorobenzene				1.0	121	70	130			
Surr: Toluene-d8				1.0	111	70	130			
<b>Lab ID: 27-Jul-16_MBLK_24</b>	9	Method Blank								07/28/16 01:40
					Run: 5975VOC1_160727A					
Bromodichloromethane		ND	ug/L	1.0						
Bromoform		ND	ug/L	1.0						
Chlorodibromomethane		ND	ug/L	1.0						
Chloroform		ND	ug/L	1.0						
Trihalomethanes, Total		ND	ug/L	0.50						
Surr: Dibromofluoromethane				1.0	117	64.4	131			
Surr: 1,2-Dichloroethane-d4				1.0	109	70	130			
Surr: p-Bromofluorobenzene				1.0	142	67.1	133			S
Surr: Toluene-d8				1.0	115	79.7	125			
<b>Lab ID: C16070645-001AMS</b>	9	Sample Matrix Spike								07/28/16 08:39
					Run: 5975VOC1_160727A					
Bromodichloromethane		270	ug/L	5.0	216	70	130			S
Bromoform		147	ug/L	5.0	144	76	136			S
Chlorodibromomethane		170	ug/L	5.0	147	70	130			S
Chloroform		284	ug/L	5.0	175	70	130			S
Trihalomethanes, Total		872	ug/L	5.0	218	70	130			S
Surr: Dibromofluoromethane				1.0	158	70	130			S
Surr: 1,2-Dichloroethane-d4				1.0	170	70	130			S
Surr: p-Bromofluorobenzene				1.0	118	77	137			
Surr: Toluene-d8				1.0	126	70	130			

- Response is outside of acceptance range. The sample meets the remainder of the QA criteria, therefore this batch is approved.

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 09/26/16

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Batch: R213719
Lab ID: C16070645-001AMSD	9	Sample Matrix Spike Duplicate				Run: 5975VOC1_160727A			07/28/16 09:14	
Bromodichloromethane		176	ug/L	5.0	122	70	130	42	20	R
Bromoform		112	ug/L	5.0	108	76	136	27	20	R
Chlorodibromomethane		124	ug/L	5.0	100	70	130	32	20	R
Chloroform		212	ug/L	5.0	102	70	130	29	20	R
Trihalomethanes, Total		624	ug/L	5.0	156	70	130	33	20	SR
Surr: Dibromofluoromethane				1.0	119	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	101	70	130			
Surr: p-Bromofluorobenzene				1.0	117	77	137			
Surr: Toluene-d8				1.0	120	70	130			

- MS/MSD RPD exceeds QA limits, this is matrix related, batch approved.

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 09/26/16

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-0959
<b>Lab ID: MB-GA-0959</b>	3	Method Blank					Run: G542M_160802A			08/02/16 22:07
Gross Alpha minus Rn & U		0.5	pCi/L							U
Gross Alpha minus Rn & U Precision (±)		1	pCi/L							
Gross Alpha minus Rn & U MDC		2	pCi/L							
<b>Lab ID: LCS-GA-0959</b>		Laboratory Control Sample					Run: G542M_160802A			08/02/16 22:07
Gross Alpha minus Rn & U		35.7	pCi/L	103		80	120			
<b>Lab ID: C16070706-006GMS</b>		Sample Matrix Spike					Run: G542M_160802A			08/02/16 23:42
Gross Alpha minus Rn & U		71.0	pCi/L	96		70	130			
<b>Lab ID: C16070706-006GMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_160802A			08/02/16 23:42
Gross Alpha minus Rn & U		76.0	pCi/L	102		70	130	6.7	52.1	
<b>Method: E900.1</b>										Batch: GA-0960
<b>Lab ID: MB-GA-0960</b>	3	Method Blank					Run: G542M_160809A			08/09/16 21:27
Gross Alpha minus Rn & U		-0.2	pCi/L							U
Gross Alpha minus Rn & U Precision (±)		0.8	pCi/L							
Gross Alpha minus Rn & U MDC		1	pCi/L							
<b>Lab ID: LCS-GA-0960</b>		Laboratory Control Sample					Run: G542M_160809A			08/09/16 21:27
Gross Alpha minus Rn & U		33.4	pCi/L	98		80	120			
<b>Lab ID: C16070987-003CMS</b>		Sample Matrix Spike					Run: G542M_160809A			08/09/16 23:10
Gross Alpha minus Rn & U		65.8	pCi/L	95		70	130			
<b>Lab ID: C16070987-003CMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_160809A			08/09/16 23:10
Gross Alpha minus Rn & U		69.5	pCi/L	100		70	130	5.5	51.6	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone 3

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: RA226-8198
Lab ID: LCS-RA226-8198	Laboratory Control Sample			Run: G542M_160810A			08/22/16 12:37			
Radium 226		8.3	pCi/L	79	80	120				S
Lab ID: MB-RA226-8198	3	Method Blank			Run: G542M_160810A			08/22/16 12:37		
Radium 226		0.2	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
Lab ID: C16070706-007GMS	Sample Matrix Spike			Run: G542M_160810A			08/22/16 14:39			
Radium 226		24	pCi/L	72	70	130				
Lab ID: C16070706-007GMSD	Sample Matrix Spike Duplicate			Run: G542M_160810A			08/22/16 14:39			
Radium 226		23	pCi/L	68	70	130	4.9	48.9		S

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 09/26/16

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0								Batch: RA-TH-ISO-2445		
Lab ID: LCS-RA-TH-ISO-2445	Laboratory Control Sample					Run: EGG-ORTEC_160804A		08/10/16 09:20		
Thorium 230		5.5	pCi/L		94	80	120			
Lab ID: C16070517-005DMS	Sample Matrix Spike					Run: EGG-ORTEC_160804A		08/10/16 09:20		
Thorium 230		8.9	pCi/L		80	70	130			
Lab ID: C16070517-005DMSD	Sample Matrix Spike Duplicate					Run: EGG-ORTEC_160804A		08/10/16 09:20		
Thorium 230		9.5	pCi/L		86	70	130	6.9	48	
Lab ID: MB-RA-TH-ISO-2445	3	Method Blank				Run: EGG-ORTEC_160804A		08/10/16 14:55		
Thorium 230		0.07	pCi/L							U
Thorium 230 precision (±)		0.1	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
Method: E908.0								Batch: RA-TH-ISO-2445R		
Lab ID: LCS-RA-TH-ISO-2445	Laboratory Control Sample					Run: EGG-ORTEC_160804A		08/11/16 09:46		
Thorium 230		5.5	pCi/L		96	80	120			
Lab ID: MB-RA-TH-ISO-2445	3	Method Blank				Run: EGG-ORTEC_160804A		08/11/16 09:46		
Thorium 230		-0.04	pCi/L							U
Thorium 230 precision (±)		0.05	pCi/L							
Thorium 230 MDC		0.1	pCi/L							
Method: E908.0								Batch: RA-TH-ISO-2446		
Lab ID: LCS-RA-TH-ISO-2446	Laboratory Control Sample					Run: EGG-ORTEC_160808A		08/18/16 08:53		
Thorium 230		5.3	pCi/L		95	80	120			
Lab ID: C16070987-002CMS	Sample Matrix Spike					Run: EGG-ORTEC_160808A		08/18/16 08:53		
Thorium 230		12	pCi/L		96	70	130			
Lab ID: C16070987-002CMSD	Sample Matrix Spike Duplicate					Run: EGG-ORTEC_160808A		08/18/16 08:53		
Thorium 230		13	pCi/L		104	70	130	7.5	48	
Lab ID: MB-RA-TH-ISO-2446	5	Method Blank				Run: EGG-ORTEC_160808A		08/18/16 08:53		
Thorium 228		0.01	pCi/L							U
Thorium 228 precision (±)		0.06	pCi/L							
Thorium 230		0.02	pCi/L							U
Thorium 230 precision (±)		0.10	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 09/26/16

Work Order: C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E909.0</b>										Batch: T_PB-210-0686
<b>Lab ID: MB-PB-210-0686</b>	3	Method Blank					Run: SUB-T69662			09/11/16 20:10
Lead 210		-0.2	pCi/L							U
Lead 210 precision (±)		0.8	pCi/L							
Lead 210 MDC		1	pCi/L							
<b>Lab ID: LCS-PB-210-0686</b>		Laboratory Control Sample					Run: SUB-T69662			09/11/16 21:53
Lead 210		11	pCi/L		96	80	120			
<b>Lab ID: T16090039-001FMS</b>		Sample Matrix Spike					Run: SUB-T69662			09/12/16 01:18
Lead 210		13	pCi/L		63	70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the MS MSD pair are acceptable, the response is considered to be matrix related. The batch is approved.										
<b>Lab ID: T16090039-001FMSD</b>		Sample Matrix Spike Duplicate					Run: SUB-T69662			09/12/16 03:01
Lead 210		12	pCi/L		57	70	130	10	75.4	S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the MS MSD pair are acceptable, the response is considered to be matrix related. The batch is approved.										
<b>Method: E909.0</b>										Batch: T_PB-210-0686R
<b>Lab ID: MB-PB-210-0686</b>	3	Method Blank					Run: SUB-T69699			09/14/16 14:49
Lead 210		-0.02	pCi/L							U
Lead 210 precision (±)		0.5	pCi/L							
Lead 210 MDC		0.9	pCi/L							
<b>Lab ID: LCS-PB-210-0686</b>		Laboratory Control Sample					Run: SUB-T69699			09/14/16 18:21
Lead 210		11	pCi/L		94	80	120			
<b>Lab ID: T16090039-001FMS</b>		Sample Matrix Spike					Run: SUB-T69699			09/15/16 00:08
Lead 210		14	pCi/L		68	70	130			S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the MS MSD pair are acceptable, the response is considered to be matrix related. The batch is approved.										
<b>Lab ID: T16090039-001FMSD</b>		Sample Matrix Spike Duplicate					Run: SUB-T69699			09/15/16 02:53
Lead 210		12	pCi/L		59	70	130	15	71.9	S
- Spike response is outside of the acceptance range for this analysis. Since the LCS and the RPD for the MS MSD pair are acceptable, the response is considered to be matrix related. The batch is approved.										

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 09/26/16

**Project:** Zone 3

**Work Order:** C16070706

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: RA-05</b>										Batch: RA228-5285
<b>Lab ID: LCS-228-RA226-8198</b>	Laboratory Control Sample									
Radium 228		9.2	pCi/L	94		80	120			08/16/16 12:03
<b>Lab ID: MB-RA226-8198</b>										08/16/16 12:03
Radium 228	3	1.0	pCi/L							U
Radium 228 precision (±)		0.9	pCi/L							
Radium 228 MDC		1	pCi/L							
<b>Lab ID: C16070706-012GMS</b>	Sample Matrix Spike									
Radium 228		26	pCi/L	100		70	130			08/16/16 12:03
<b>Lab ID: C16070706-012GMSD</b>										08/16/16 12:03
Radium 228		25	pCi/L	99		70	130	0.6	54.2	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## ANALYTICAL SUMMARY REPORT

September 26, 2016

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16070724      Quote ID: C129 - Quarterly Long List  
Project Name: Zone-3

Energy Laboratories, Inc. Casper WY received the following 7 samples for United Nuclear Corporation on 7/22/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16070724-001	NBL-2	07/19/16 12:14	07/22/16	Aqueous	Alkalinity E300.0 Anions pH Solids, Total Dissolved
C16070724-002	NW-1	07/19/16 11:07	07/22/16	Aqueous	Same As Above
C16070724-003	NW-4	07/19/16 11:30	07/22/16	Aqueous	Same As Above
C16070724-004	NW-3	07/19/16 12:05	07/22/16	Aqueous	Same As Above
C16070724-005	NW-5	07/19/16 12:29	07/22/16	Aqueous	Same As Above
C16070724-006	NW-2	07/19/16 12:42	07/22/16	Aqueous	Same As Above
C16070724-007	RW-A	07/19/16 13:10	07/22/16	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Client Services Supervisor

Digitally signed by  
Steve Dobos  
Date: 2016.09.26 09:56:14 -06:00





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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone-3

**Report Date:** 09/26/16

**Work Order:** C16070724

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2320 B</b>										Batch: R213642
<b>Lab ID: MBLK</b>		Method Blank					Run: MANTECH_160725A			07/25/16 13:51
Bicarbonate as HCO <sub>3</sub>		2	mg/L	1						
<b>Lab ID: C16070724-003ADUP</b>										
		Sample Duplicate					Run: MANTECH_160725A			07/25/16 23:55
Bicarbonate as HCO <sub>3</sub>		79.0	mg/L	5.0				1.0	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-3

Work Order: C16070724

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS160725A
Lab ID: MB-1_160725A		Method Blank					Run: BAL-18_160725A			07/25/16 14:35
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	8						
Lab ID: LCS-2_160725A		Laboratory Control Sample					Run: BAL-18_160725A			07/25/16 14:36
Solids, Total Dissolved TDS @ 180 C		1070	mg/L	11	96	90	110			
Lab ID: C16070724-001ADUP		Sample Duplicate					Run: BAL-18_160725A			07/25/16 14:43
Solids, Total Dissolved TDS @ 180 C		3510	mg/L	40				1.9	5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-3

Work Order: C16070724

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_160722A
Lab ID: pH 6.86		Initial Calibration Verification Standard								07/22/16 13:59
pH		6.88	s.u.	0.010	100	98	102			
Lab ID: CCV - pH 7		Continuing Calibration Verification Standard								07/22/16 17:26
pH		7.05	s.u.	0.010	101	98	102			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 09/26/16

Project: Zone-3

Work Order: C16070724

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_160727B
Lab ID: ICV		Initial Calibration Verification Standard								07/27/16 17:04
Chloride		9.24	mg/L	1.0	92	90	110			
Lab ID: CCV-072716-6		Continuing Calibration Verification Standard								07/28/16 15:32
Chloride		10.2	mg/L	1.0	102	90	110			
Lab ID: CCV-072716-7		Continuing Calibration Verification Standard								07/28/16 19:50
Chloride		10.2	mg/L	1.0	102	90	110			
Method: E300.0										Batch: R213759
Lab ID: ICB		Method Blank								07/27/16 17:22
Chloride		ND	mg/L	0.04						
Lab ID: LFB-072716-1		Laboratory Fortified Blank								07/27/16 17:41
Chloride		9.05	mg/L	1.0	90	90	110			
Lab ID: C16070722-001AMS		Sample Matrix Spike								07/28/16 16:27
Chloride		207	mg/L	1.0	95	90	110			
Lab ID: C16070722-001AMSD		Sample Matrix Spike Duplicate								07/28/16 16:45
Chloride		207	mg/L	1.0	95	90	110	0.0	20	
Lab ID: LFB-072716-2		Laboratory Fortified Blank								07/28/16 20:27
Chloride		9.98	mg/L	1.0	100	90	110			
Lab ID: C16070724-006AMS		Sample Matrix Spike								07/28/16 21:04
Chloride		226	mg/L	2.1	97	90	110			
Lab ID: C16070724-006AMSD		Sample Matrix Spike Duplicate								07/28/16 21:22
Chloride		229	mg/L	2.1	99	90	110	1.3	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

**APPENDIX – D ( 2 OF 2 )**

**FOURTH QUARTER**

**LABORATORY QUALITY CONTROL AND  
PERFORMANCE REPORT**



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## ANALYTICAL SUMMARY REPORT

December 15, 2016

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16100246      Quote ID: C129 - Quarterly Long List  
Project Name: SW Alluvium

Energy Laboratories, Inc. Casper WY received the following 11 samples for United Nuclear Corporation on 10/6/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16100246-001	509-D	10/03/16 8:30	10/06/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Preservation by the Laboratory Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16100246-002	EPA-23	10/03/16 9:16	10/06/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics



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## ANALYTICAL SUMMARY REPORT

C16100246-003	803	10/03/16 10:00	10/06/16	Aqueous	Same As Above
C16100246-004	808	10/03/16 10:55	10/06/16	Aqueous	Same As Above
C16100246-005	802	10/03/16 11:38	10/06/16	Aqueous	Same As Above
C16100246-006	632	10/03/16 12:20	10/06/16	Aqueous	Same As Above
C16100246-007	801	10/03/16 13:00	10/06/16	Aqueous	Same As Above
C16100246-008	GW-1	10/03/16 13:50	10/06/16	Aqueous	Same As Above
C16100246-009	EPA-28	10/03/16 14:40	10/06/16	Aqueous	Same As Above
C16100246-010	EPA-28 Duplicate	10/03/16 15:30	10/06/16	Aqueous	Same As Above
C16100246-011	624	10/03/16 16:30	10/06/16	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:



HSE/RSO

Digitally signed by  
Steve Dobos  
Date: 2016.12.15 09:59:03 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Work Order:** C16100246

**Report Date:** 12/15/16

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CS were subcontracted to Energy Laboratories, 415 Graham Rd., College Station, TX, EPA Number TX01520.

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

VOC samples received 10/7/16.

Prep Comments for Sample C16100246-001B, Test PRESERVATION: - The sample fraction submitted for Metals Analysis was received in the laboratory with a pH of 7. This is outside of the method specified requirement of pH < 2. Proper preservation was added before sample analysis.

### **ANALYTICAL COMMENTS**

The TDS samples were run past recommended hold time due to analyst error.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/15/16

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2320 B</b>										Batch: R216303
<b>Lab ID: MBLK</b>	2	Method Blank					Run: MANTECH_161014A			10/14/16 13:44
Alkalinity, Total as CaCO <sub>3</sub>		1	mg/L	1						
Bicarbonate as HCO <sub>3</sub>		2	mg/L	1						
<b>Lab ID: LCS_160316</b>										10/14/16 13:57
		Laboratory Control Sample					Run: MANTECH_161014A			
Alkalinity, Total as CaCO <sub>3</sub>		253	mg/L	5.0	100	90	110			
<b>Lab ID: C16100277-001ADUP</b>										10/14/16 14:13
		2 Sample Duplicate					Run: MANTECH_161014A			
Alkalinity, Total as CaCO <sub>3</sub>		161	mg/L	5.0				0.0	10	
Bicarbonate as HCO <sub>3</sub>		189	mg/L	5.0				0.1	10	
<b>Lab ID: C16100220-001EMS</b>										10/14/16 14:31
		Sample Matrix Spike					Run: MANTECH_161014A			
Alkalinity, Total as CaCO <sub>3</sub>		625	mg/L	5.2	99	80	120			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/15/16

**Project:** SW Alluvium

**Work Order:** C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2540 C										Batch: TDS161011A
<b>Lab ID:</b> MB-1_161011A	Method Blank									
Solids, Total Dissolved TDS @ 180 C		8	mg/L	8						Run: BAL-18_161011A 10/11/16 08:34
<b>Lab ID:</b> LCS-2_161011A	Laboratory Control Sample									
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	11	99	90	110			Run: BAL-18_161011A 10/11/16 08:34
<b>Lab ID:</b> C16100246-005A DUP	Sample Duplicate									
Solids, Total Dissolved TDS @ 180 C		.6950	mg/L	95				0.5	5	Run: BAL-18_161011A 10/11/16 08:43

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/15/16

Project: SW Alluvium

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 B Analytical Run: CVAA-C202_161103A										
Lab ID: ICV	Initial Calibration Verification Standard 11/02/16 15:22									
Selenium-IV		0.0262	mg/L	0.0010	107	90	110			
Method: A3114 B Batch: 48679										
Lab ID: MB-48679	Method Blank Run: CVAA-C202_161103A 11/02/16 15:27									
Selenium-IV		ND	mg/L	0.0005						
Lab ID: LCS-48679	Laboratory Control Sample Run: CVAA-C202_161103A 11/02/16 15:40									
Selenium-IV		0.0261	mg/L	0.0010	107	90	110			
Lab ID: C16100246-006CMS	Sample Matrix Spike Run: CVAA-C202_161103A 11/02/16 16:28									
Selenium-IV		0.0185	mg/L	0.0010	76	85	115			S
Lab ID: C16100246-006CMSD	Sample Matrix Spike Duplicate Run: CVAA-C202_161103A 11/02/16 16:30									
Selenium-IV		0.0190	mg/L	0.0010	78	85	115	2.3	10	S
Method: A3114 B Analytical Run: CVAA-C202_161103B										
Lab ID: ICV	Initial Calibration Verification Standard 11/03/16 15:37									
Selenium-IV		0.0242	mg/L	0.0010	99	90	110			
Method: A3114 B Batch: 48680										
Lab ID: MB-48680	Method Blank Run: CVAA-C202_161103B 11/03/16 15:39									
Selenium-IV		ND	mg/L	0.0005						
Lab ID: LCS-48680	Laboratory Control Sample Run: CVAA-C202_161103B 11/03/16 15:40									
Selenium-IV		0.0237	mg/L	0.0010	97	90	110			
Lab ID: C16100488-005CMS	Sample Matrix Spike Run: CVAA-C202_161103B 11/03/16 15:57									
Selenium-IV		0.0237	mg/L	0.0010	97	85	115			
Lab ID: C16100488-005CMSD	Sample Matrix Spike Duplicate Run: CVAA-C202_161103B 11/03/16 15:59									
Selenium-IV		0.0235	mg/L	0.0010	96	85	115	0.7	10	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/15/16

**Project:** SW Alluvium

**Work Order:** C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A4500-H B										
Analytical Run: PHSC_101-C_161010A										
<b>Lab ID:</b> pH 6.86	Initial Calibration Verification Standard									
pH		6.87	s.u.	0.010	100	98	102			10/10/16 08:32
<b>Lab ID:</b> CCV - pH 7	Continuing Calibration Verification Standard									
pH		7.00	s.u.	0.010	100	98	102			10/10/16 10:25
<b>Lab ID:</b> CCV - pH 7	Continuing Calibration Verification Standard									
pH		7.00	s.u.	0.010	100	98	102			10/10/16 11:41
<b>Method:</b> A4500-H B										
Batch: R216077										
<b>Lab ID:</b> C16100246-009ADUP	Sample Duplicate									
pH		6.91	s.u.	0.010				0.0	3	Run: PHSC_101-C_161010A 10/10/16 11:53

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/15/16

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A4500-NH3 G</b>										Analytical Run: FIA201-C_161012A
<b>Lab ID: CCV_160916</b>	Continuing Calibration Verification Standard									
Nitrogen, Ammonia as N		1.02	mg/L	0.050	102	90	110			10/12/16 12:50
<b>Lab ID: CCV_160916</b>										10/12/16 13:07
Continuing Calibration Verification Standard										
Nitrogen, Ammonia as N		0.984	mg/L	0.050	98	90	110			
<b>Method: A4500-NH3 G</b>										Batch: R216197
<b>Lab ID: MBLK</b>	Method Blank									
Nitrogen, Ammonia as N		ND	mg/L	0.003						Run: FIA201-C_161012A 10/12/16 11:40
<b>Lab ID: LFB</b>										10/12/16 11:42
Laboratory Fortified Blank										
Nitrogen, Ammonia as N		1.01	mg/L	0.050	102	90	110			
<b>Lab ID: C16100246-004DMS</b>										10/12/16 13:11
Sample Matrix Spike										
Nitrogen, Ammonia as N		2.52	mg/L	0.050	97	90	110			E
<b>Lab ID: C16100246-004DMSD</b>										10/12/16 13:12
Sample Matrix Spike Duplicate										
Nitrogen, Ammonia as N		2.50	mg/L	0.050	96	90	110	0.8	10	E

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/15/16

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1632AM										Analytical Run: SUB-H119506
Lab ID: AS-ICV 25ppb-10/14/2	Initial Calibration Verification Standard									
Arsenic-III		24.8	ug/L	5.0	99	87.6	114			10/14/16 14:34
Lab ID: AS-50.0-10/14/2016	Continuing Calibration Verification Standard									
Arsenic-III		50.8	ug/L	5.0	102	85	115			10/14/16 17:58
Lab ID: AS-50.0-10/14/2016	Continuing Calibration Verification Standard									
Arsenic-III		52.7	ug/L	5.0	105	85	115			10/14/16 20:47
Method: E1632AM										Batch: H_R119506
Lab ID: AS-LFB 50ppb-10/14/	Laboratory Fortified Blank									
Arsenic-III		49.2	ug/L	5.0	98	55	146			Run: SUB-H119506 10/14/16 15:10
Lab ID: ICB	Method Blank									
Arsenic-III		ND	ug/L	0.2						Run: SUB-H119506 10/14/16 15:22
Lab ID: H16100166-001A MS	Sample Matrix Spike									
Arsenic-III		84.3	ug/L	5.0	111	55	146			Run: SUB-H119506 10/14/16 15:46
Lab ID: H16100166-001A MSD	Sample Matrix Spike Duplicate									
Arsenic-III		77.7	ug/L	5.0	98	55	146	8.2	20	Run: SUB-H119506 10/14/16 15:58
Lab ID: H16100207-009E MS	Sample Matrix Spike									
Arsenic-III		48.9	ug/L	5.0	98	55	146			Run: SUB-H119506 10/14/16 18:34
Lab ID: H16100207-009E MSD	Sample Matrix Spike Duplicate									
Arsenic-III		51.3	ug/L	5.0	103	55	146	4.8	20	Run: SUB-H119506 10/14/16 18:46
Lab ID: C16100246-005E	Sample Matrix Spike									
Arsenic-III		51.4	ug/L	5.0	103	55	146			Run: SUB-H119506 10/14/16 21:23
Lab ID: C16100246-005E	Sample Matrix Spike Duplicate									
Arsenic-III		54.8	ug/L	5.0	110	55	146	6.4	20	Run: SUB-H119506 10/14/16 21:35

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ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/15/16

Project: SW Alluvium

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Analytical Run: ICP4-C_161014A
Lab ID: ICV	4	Initial Calibration Verification Standard								10/14/16 15:10
Calcium		52.3	mg/L	1.0	105	95	105			
Magnesium		52.2	mg/L	1.0	104	95	105			
Potassium		51.8	mg/L	1.0	104	95	105			
Sodium		52.3	mg/L	1.0	105	95	105			
Lab ID: ICSA	4	Interference Check Sample A								10/14/16 15:29
Calcium		442	mg/L	1.0	88	80	120			
Magnesium		503	mg/L	1.0	101	80	120			
Potassium		0.00459	mg/L	1.0						
Sodium		0.221	mg/L	1.0						
Lab ID: ICSAB	4	Interference Check Sample AB								10/14/16 15:34
Calcium		446	mg/L	1.0	89	80	120			
Magnesium		505	mg/L	1.0	101	80	120			
Potassium		0.00956	mg/L	1.0						
Sodium		0.253	mg/L	1.0						
Method: E200.7										Batch: R216311
Lab ID: MB-161014A	4	Method Blank								Run: ICP4-C_161014A 10/14/16 15:53
Calcium		0.007	mg/L	0.003						
Magnesium		ND	mg/L	0.04						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.1						
Lab ID: LFB-161014A	4	Laboratory Fortified Blank								Run: ICP4-C_161014A 10/14/16 15:57
Calcium		48.2	mg/L	1.0	96	85	115			
Magnesium		48.4	mg/L	1.0	97	85	115			
Potassium		50.3	mg/L	1.0	101	85	115			
Sodium		48.9	mg/L	1.0	98	85	115			
Lab ID: C16100246-001BMS2	4	Sample Matrix Spike								Run: ICP4-C_161014A 10/14/16 19:12
Calcium		1020	mg/L	1.0	78	70	130			
Magnesium		590	mg/L	1.0	92	70	130			
Potassium		248	mg/L	1.0	93	70	130			
Sodium		620	mg/L	1.2	83	70	130			
Lab ID: C16100246-001BMSD	4	Sample Matrix Spike Duplicate								Run: ICP4-C_161014A 10/14/16 19:16
Calcium		1020	mg/L	1.0	79	70	130	0.5	20	
Magnesium		592	mg/L	1.0	93	70	130	0.4	20	
Potassium		255	mg/L	1.0	95	70	130	2.9	20	
Sodium		630	mg/L	1.2	87	70	130	1.6	20	
Lab ID: C16100246-011BMS2	4	Sample Matrix Spike								Run: ICP4-C_161014A 10/14/16 20:14
Calcium		874	mg/L	1.0	82	70	130			
Magnesium		659	mg/L	1.0	93	70	130			
Potassium		243	mg/L	1.0	93	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/15/16

**Project:** SW Alluvium

**Work Order:** C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.7										Batch: R216311
<b>Lab ID:</b> C16100246-011BMS2	4	Sample Matrix Spike		Run: ICP4-C_161014A						10/14/16 20:14
Sodium		533	mg/L	1.2	90	70	130			
<b>Lab ID:</b> C16100246-011BMSD	4	Sample Matrix Spike Duplicate		Run: ICP4-C_161014A						10/14/16 20:18
Calcium		871	mg/L	1.0	81	70	130	0.3	20	
Magnesium		661	mg/L	1.0	93	70	130	0.2	20	
Potassium		248	mg/L	1.0	95	70	130	1.9	20	
Sodium		538	mg/L	1.2	92	70	130	1.0	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/15/16

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b> Batch: 48522										
Lab ID: MB-48522	10	Method Blank		Run: ICPMS4-C_161014A			10/15/16 01:16			
Aluminum		0.0008	mg/L	0.0001						
Beryllium		ND	mg/L	6E-06						
Cadmium		6E-06	mg/L	3E-06						
Cobalt		2E-05	mg/L	5E-06						
Lead		2E-05	mg/L	2E-05						
Manganese		0.0002	mg/L	7E-05						
Molybdenum		ND	mg/L	4E-05						
Nickel		0.0001	mg/L	0.0001						
Uranium		2E-05	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
Lab ID: LCS3-48522	10	Laboratory Control Sample		Run: ICPMS4-C_161014A			10/15/16 01:23			
Aluminum		2.2	mg/L	0.10	88	85	115			
Beryllium		0.22	mg/L	0.0010	88	85	115			
Cadmium		0.25	mg/L	0.0010	102	85	115			
Cobalt		0.46	mg/L	0.010	93	85	115			
Lead		0.51	mg/L	0.0010	102	85	115			
Manganese		2.3	mg/L	0.010	91	85	115			
Molybdenum		0.56	mg/L	0.10	112	85	115			
Nickel		0.53	mg/L	0.050	105	85	115			
Uranium		0.48	mg/L	0.00030	96	85	115			
Vanadium		0.55	mg/L	0.10	110	85	115			
Lab ID: C16100241-001CMS3	10	Sample Matrix Spike		Run: ICPMS4-C_161014A			10/15/16 02:12			
Aluminum		2.7	mg/L	0.10	82	70	130			
Beryllium		0.19	mg/L	0.0010	74	70	130			
Cadmium		0.25	mg/L	0.0010	99	70	130			
Cobalt		0.45	mg/L	0.010	85	70	130			
Lead		0.49	mg/L	0.0010	97	70	130			
Manganese		5.4	mg/L	0.010	79	70	130			
Molybdenum		0.50	mg/L	0.10	98	70	130			
Nickel		0.53	mg/L	0.050	89	70	130			
Uranium		0.49	mg/L	0.00030	96	70	130			
Vanadium		0.48	mg/L	0.10	94	70	130			
Lab ID: C16100241-001CMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS4-C_161014A			10/15/16 02:18			
Aluminum		2.6	mg/L	0.10	79	70	130	3.0	20	
Beryllium		0.17	mg/L	0.0010	70	70	130	6.6	20	
Cadmium		0.25	mg/L	0.0010	98	70	130	1.1	20	
Cobalt		0.44	mg/L	0.010	83	70	130	1.9	20	
Lead		0.49	mg/L	0.0010	97	70	130	0.1	20	
Manganese		5.3	mg/L	0.010	74	70	130	2.1	20	
Molybdenum		0.50	mg/L	0.10	99	70	130	0.9	20	
Nickel		0.52	mg/L	0.050	88	70	130	1.4	20	
Uranium		0.49	mg/L	0.00030	96	70	130	0.0	20	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/15/16

**Project:** SW Alluvium

**Work Order:** C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: 48522
<b>Lab ID:</b> C16100241-001CMSD	10	Sample Matrix Spike Duplicate			Run: ICPMS4-C_161014A					10/15/16 02:18
Vanadium		0.48	mg/L	0.10	95	70	130	0.2	20	
<b>Lab ID:</b> C16100247-003DMS3										10/15/16 06:03
10 Sample Matrix Spike										Run: ICPMS4-C_161014A
Aluminum		2.52	mg/L	0.030	100	70	130			
Beryllium		0.245	mg/L	0.0010	98	70	130			
Cadmium		0.256	mg/L	0.0010	102	70	130			
Cobalt		0.497	mg/L	0.0050	99	70	130			
Lead		0.541	mg/L	0.0010	108	70	130			
Manganese		2.44	mg/L	0.0010	95	70	130			
Molybdenum		0.580	mg/L	0.0010	116	70	130			
Nickel		0.488	mg/L	0.0050	97	70	130			
Uranium		1.17	mg/L	0.00030	105	70	130			
Vanadium		0.550	mg/L	0.010	110	70	130			
<b>Lab ID:</b> C16100247-003DMSD										10/15/16 06:09
10 Sample Matrix Spike Duplicate										Run: ICPMS4-C_161014A
Aluminum		2.59	mg/L	0.030	103	70	130	3.0	20	
Beryllium		0.255	mg/L	0.0010	102	70	130	4.0	20	
Cadmium		0.258	mg/L	0.0010	103	70	130	1.0	20	
Cobalt		0.511	mg/L	0.0050	102	70	130	2.7	20	
Lead		0.549	mg/L	0.0010	110	70	130	1.6	20	
Manganese		2.51	mg/L	0.0010	98	70	130	2.7	20	
Molybdenum		0.590	mg/L	0.0010	118	70	130	1.7	20	
Nickel		0.507	mg/L	0.0050	101	70	130	3.8	20	
Uranium		1.17	mg/L	0.00030	106	70	130	0.1	20	
Vanadium		0.578	mg/L	0.010	116	70	130	4.8	20	
<b>Method:</b> E200.8										Batch: R216312
<b>Lab ID:</b> ICV	10	Quality Control Sample			Run: ICPMS4-C_161014A					10/14/16 14:05
Aluminum		0.0492	mg/L	0.0010	98	90	110			
Beryllium		0.0490	mg/L	0.0010	98	90	110			
Cadmium		0.0495	mg/L	0.0010	99	90	110			
Cobalt		0.0465	mg/L	0.0010	93	90	110			
Lead		0.0477	mg/L	0.0010	95	90	110			
Manganese		0.0500	mg/L	0.0010	100	90	110			
Molybdenum		0.0486	mg/L	0.0010	97	90	110			
Nickel		0.0490	mg/L	0.0010	98	90	110			
Uranium		0.0487	mg/L	0.00030	97	90	110			
Vanadium		0.0457	mg/L	0.0010	91	90	110			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/15/16

Project: SW Alluvium

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: 48522
<b>Lab ID: MB-48522</b>	10 Method Blank			Run: ICPMS4-C_161205A				12/05/16 16:19		
Aluminum		0.003	mg/L	0.0001						
Beryllium		ND	mg/L	6E-06						
Cadmium		ND	mg/L	3E-06						
Cobalt		ND	mg/L	5E-06						
Lead		ND	mg/L	2E-05						
Manganese		0.0003	mg/L	7E-05						
Molybdenum		0.0001	mg/L	4E-05						
Nickel		ND	mg/L	2E-05						
Uranium		ND	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
<b>Lab ID: LCS3-48522</b>	10 Laboratory Control Sample			Run: ICPMS4-C_161205A				12/05/16 16:25		
Aluminum		2.24	mg/L	0.030	90	85	115			
Beryllium		0.264	mg/L	0.0010	105	85	115			
Cadmium		0.272	mg/L	0.0010	109	85	115			
Cobalt		0.470	mg/L	0.0050	94	85	115			
Lead		0.535	mg/L	0.0010	107	85	115			
Manganese		2.36	mg/L	0.0010	94	85	115			
Molybdenum		0.546	mg/L	0.0010	109	85	115			
Nickel		0.503	mg/L	0.0050	101	85	115			
Uranium		0.531	mg/L	0.00030	106	85	115			
Vanadium		0.524	mg/L	0.010	105	85	115			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/15/16

Project: SW Alluvium

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_161012A
Lab ID: ICV	2	Initial Calibration Verification Standard								10/12/16 15:31
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		41.1	mg/L	1.0	103	90	110			
Lab ID: CCV-101216-4	2	Continuing Calibration Verification Standard								10/13/16 05:38
Chloride		9.94	mg/L	1.0	99	90	110			
Sulfate		39.0	mg/L	1.0	97	90	110			
Lab ID: CCV-101216-5	2	Continuing Calibration Verification Standard								10/13/16 09:56
Chloride		9.91	mg/L	1.0	99	90	110			
Sulfate		39.1	mg/L	1.0	98	90	110			
Method: E300.0										Batch: R216273
Lab ID: ICB	2	Method Blank								Run: IC2-C_161012A 10/12/16 15:49
Chloride		ND	mg/L	0.04						
Sulfate		0.09	mg/L	0.05						
Lab ID: LFB-101216-1	2	Laboratory Fortified Blank								Run: IC2-C_161012A 10/12/16 16:08
Chloride		9.88	mg/L	1.0	99	90	110			
Sulfate		39.3	mg/L	1.0	98	90	110			
Lab ID: C16100246-003AMS	2	Sample Matrix Spike								Run: IC2-C_161012A 10/13/16 10:52
Chloride		362	mg/L	2.1	103	80	120			
Sulfate		4110	mg/L	8.3		80	120			A
Lab ID: C16100246-003AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_161012A 10/13/16 11:10
Chloride		360	mg/L	2.1	102	80	120	0.6	20	
Sulfate		4050	mg/L	8.3		80	120	1.6	20	A
Lab ID: C16100247-002AMS	2	Sample Matrix Spike								Run: IC2-C_161012A 10/13/16 15:28
Chloride		20.5	mg/L	1.0	99	80	120			
Sulfate		337	mg/L	1.0	98	80	120			
Lab ID: C16100247-002AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_161012A 10/13/16 15:46
Chloride		20.7	mg/L	1.0	100	80	120	1.2	20	
Sulfate		338	mg/L	1.0	99	80	120	0.2	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/15/16

**Project:** SW Alluvium

**Work Order:** C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E300.0										Analytical Run: IC2-C_161027A
<b>Lab ID:</b> ICV	2	Initial Calibration Verification Standard								10/27/16 14:33
Chloride		10.0	mg/L	1.0	100	90	110			
Sulfate		40.7	mg/L	1.0	102	90	110			
<b>Lab ID:</b> CCV-102716-4										10/28/16 03:37
	2	Continuing Calibration Verification Standard								
Chloride		9.82	mg/L	1.0	98	90	110			
Sulfate		39.5	mg/L	1.0	99	90	110			
<b>Method:</b> E300.0										Batch: R216782
<b>Lab ID:</b> ICB	2	Method Blank								Run: IC2-C_161027A 10/27/16 14:51
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.05						
<b>Lab ID:</b> LFB										Run: IC2-C_161027A 10/27/16 15:10
	2	Laboratory Fortified Blank								
Chloride		10.0	mg/L	1.0	100	90	110			
Sulfate		40.6	mg/L	1.0	101	90	110			
<b>Lab ID:</b> C16100859-001AMS										Run: IC2-C_161027A 10/28/16 04:30
	2	Sample Matrix Spike								
Chloride		13.2	mg/L	1.0	104	80	120			
Sulfate		69.3	mg/L	1.0	106	80	120			
<b>Lab ID:</b> C16100859-001AMSD										Run: IC2-C_161027A 10/28/16 04:47
	2	Sample Matrix Spike Duplicate								
Chloride		13.3	mg/L	1.0	105	80	120	1.1	20	
Sulfate		69.9	mg/L	1.0	107	80	120	0.9	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/15/16

Project: SW Alluvium

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2 Analytical Run: FIA201-C_161013B										
Lab ID: CCV_160830	Continuing Calibration Verification Standard									
Nitrogen, Nitrate+Nitrite as N		2.06	mg/L	0.10	103	90	110			10/13/16 17:51
Lab ID: CCV_160830	Continuing Calibration Verification Standard									
Nitrogen, Nitrate+Nitrite as N		2.07	mg/L	0.10	103	90	110			10/13/16 18:07
Method: E353.2 Batch: R216250										
Lab ID: MBLK	Method Blank Run: FIA201-C_161013B									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						10/13/16 16:07
Lab ID: LFB	Laboratory Fortified Blank Run: FIA201-C_161013B									
Nitrogen, Nitrate+Nitrite as N		2.02	mg/L	0.10	103	90	110			10/13/16 16:08
Lab ID: C16100237-010DMS	Sample Matrix Spike Run: FIA201-C_161013B									
Nitrogen, Nitrate+Nitrite as N		2.14	mg/L	0.10	107	90	110			10/13/16 17:54
Lab ID: C16100237-010DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_161013B									
Nitrogen, Nitrate+Nitrite as N		2.11	mg/L	0.10	106	90	110	1.4	10	10/13/16 17:55
Lab ID: C16100246-006DMS	Sample Matrix Spike Run: FIA201-C_161013B									
Nitrogen, Nitrate+Nitrite as N		187	mg/L	5.1	107	90	110			10/13/16 18:11
Lab ID: C16100246-006DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_161013B									
Nitrogen, Nitrate+Nitrite as N		188	mg/L	5.1	108	90	110	0.5	10	10/13/16 18:12
Method: E353.2 Batch: R217848										
Lab ID: MBLK	Method Blank Run: FIA201-C_161206B									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						12/06/16 12:03
Lab ID: LFB	Laboratory Fortified Blank Run: FIA201-C_161206B									
Nitrogen, Nitrate+Nitrite as N		2.03	mg/L	0.10	104	90	110			12/06/16 12:04
Lab ID: C16100246-006DMS	Sample Matrix Spike Run: FIA201-C_161206B									
Nitrogen, Nitrate+Nitrite as N		150	mg/L	5.1	101	90	110			12/06/16 12:10
Lab ID: C16100246-006DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_161206B									
Nitrogen, Nitrate+Nitrite as N		152	mg/L	5.1	103	90	110	1.3	10	12/06/16 12:11

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/15/16

Project: SW Alluvium

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>										Analytical Run: B_R268750
<b>Lab ID: ccv101416</b>	7	Continuing Calibration Verification Standard								10/14/16 10:46
Bromodichloromethane		4.80	ug/L	0.50	96	70	130			
Bromoform		4.84	ug/L	0.50	97	70	130			
Chlorodibromomethane		4.68	ug/L	0.50	94	70	130			
Chloroform		4.88	ug/L	0.50	98	70	130			
Surr: 1,2-Dichloroethane-d4				0.50	98	71	139			
Surr: p-Bromofluorobenzene				0.50	98	80	127			
Surr: Toluene-d8				0.50	103	80	123			
<b>Method: E624</b>										Batch: B_R268750
<b>Lab ID: lcs101416</b>	7	Laboratory Control Sample								10/14/16 11:24
						Run: SUB-B268750				
Bromodichloromethane		5.28	ug/L	0.50	106	74	128			
Bromoform		5.08	ug/L	0.50	102	66	128			
Chlorodibromomethane		5.44	ug/L	0.50	109	74	125			
Chloroform		4.96	ug/L	0.50	99	68	124			
Surr: 1,2-Dichloroethane-d4				0.50	99	71	139			
Surr: p-Bromofluorobenzene				0.50	98	80	127			
Surr: Toluene-d8				0.50	102	80	123			
<b>Lab ID: blk101416</b>	7	Method Blank								10/14/16 12:22
						Run: SUB-B268750				
Bromodichloromethane		ND	ug/L	0.50						
Bromoform		ND	ug/L	0.50						
Chlorodibromomethane		ND	ug/L	0.50						
Chloroform		ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4				0.50	94	71	139			
Surr: p-Bromofluorobenzene				0.50	97	80	127			
Surr: Toluene-d8				0.50	104	80	123			
<b>Lab ID: b16100770-001hms</b>	7	Sample Matrix Spike								10/14/16 13:20
						Run: SUB-B268750				
Bromodichloromethane		50.4	ug/L	5.0	101	74	128			
Bromoform		48.8	ug/L	5.0	98	66	128			
Chlorodibromomethane		50.8	ug/L	5.0	102	74	125			
Chloroform		81.6	ug/L	5.0	99	68	124			
Surr: 1,2-Dichloroethane-d4				5.0	96	71	139			
Surr: p-Bromofluorobenzene				5.0	100	80	127			
Surr: Toluene-d8				5.0	102	80	123			
<b>Lab ID: b16100770-001hmsd</b>	7	Sample Matrix Spike Duplicate								10/14/16 13:50
						Run: SUB-B268750				
Bromodichloromethane		50.8	ug/L	5.0	102	74	128	0.8	20	
Bromoform		48.8	ug/L	5.0	98	66	128	0.0	20	
Chlorodibromomethane		51.2	ug/L	5.0	102	74	125	0.8	20	
Chloroform		82.0	ug/L	5.0	99	68	124	0.5	20	
Surr: 1,2-Dichloroethane-d4				5.0	97	71	139			
Surr: p-Bromofluorobenzene				5.0	97	80	127			
Surr: Toluene-d8				5.0	102	80	123			

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/15/16

Project: SW Alluvium

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-0983
<b>Lab ID: MB-GA-0983</b>	3	Method Blank					Run: G542M_161207A			12/07/16 22:22
Gross Alpha minus Rn & U		0.5	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		1	pCi/L							
Gross Alpha minus Rn & U MDC		2	pCi/L							
<b>Lab ID: LCS-GA-0983</b>		Laboratory Control Sample					Run: G542M_161207A			12/07/16 22:22
Gross Alpha minus Rn & U		37.0	pCi/L	107		80	120			
<b>Lab ID: C16110408-001DMS</b>		Sample Matrix Spike					Run: G542M_161207A			12/07/16 22:22
Gross Alpha minus Rn & U		85.4	pCi/L	122		70	130			
<b>Lab ID: C16110408-001DMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_161207A			12/07/16 22:22
Gross Alpha minus Rn & U		69.6	pCi/L	99		70	130	20	20	
<b>Method: E900.1</b>										Batch: GA-0978
<b>Lab ID: MB-GA-0978</b>	3	Method Blank					Run: TENNELEC-3_161021B			10/21/16 21:38
Gross Alpha minus Rn & U		2	pCi/L							
Gross Alpha minus Rn & U Precision ( $\pm$ )		0.9	pCi/L							
Gross Alpha minus Rn & U MDC		1	pCi/L							
<b>Lab ID: LCS-GA-0978</b>		Laboratory Control Sample					Run: TENNELEC-3_161021B			10/21/16 21:38
Gross Alpha minus Rn & U		33.1	pCi/L	92		80	120			
<b>Lab ID: C16100124-003DMS</b>		Sample Matrix Spike					Run: TENNELEC-3_161021B			10/21/16 21:38
Gross Alpha minus Rn & U		64.9	pCi/L	90		70	130			
<b>Lab ID: C16100124-003DMSD</b>		Sample Matrix Spike Duplicate					Run: TENNELEC-3_161021B			10/21/16 21:38
Gross Alpha minus Rn & U		70.0	pCi/L	98		70	130	7.6	20	

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/15/16

Project: SW Alluvium

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0								Batch: RA226-8292		
Lab ID: LCS-RA226-8292	Laboratory Control Sample			Run: G5000W_161018E			11/02/16 06:58			
Radium 226	10	pCi/L		98	80	120				
Lab ID: MB-RA226-8292	3	Method Blank		Run: G5000W_161018E			11/02/16 06:58			
Radium 226		0.1	pCi/L				U			
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
Lab ID: C16100246-003GMS	Sample Matrix Spike			Run: G5000W_161018E			11/02/16 06:58			
Radium 226	19	pCi/L		90	70	130				
Lab ID: C16100246-003GMSD	Sample Matrix Spike Duplicate			Run: G5000W_161018E			11/02/16 06:58			
Radium 226	16	pCi/L		77	70	130	17	20		

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/15/16

Work Order: C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0								Batch: RA-TH-ISO-2479		
Lab ID: LCS-RA-TH-ISO-2479	Laboratory Control Sample					Run: EGG-ORTEC_2_161020A		10/25/16 09:54		
Thorium 230		5.6	pCi/L		97	80	120			
Lab ID: C16100237-002GMS	Sample Matrix Spike					Run: EGG-ORTEC_2_161020A		10/25/16 09:54		
Thorium 230		23.6	pCi/L		94	70	130			
Lab ID: C16100237-002GMSD	Sample Matrix Spike Duplicate					Run: EGG-ORTEC_2_161020A		10/25/16 09:54		
Thorium 230		22.5	pCi/L		90	70	130	4.8	20	
Lab ID: MB-RA-TH-ISO-2479	3	Method Blank					Run: EGG-ORTEC_2_161020A		10/25/16 09:54	
Thorium 230		0.02	pCi/L							U
Thorium 230 precision (±)		0.08	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
Method: E908.0								Batch: RA-TH-ISO-2479R		
Lab ID: LCS-RA-TH-ISO-2479	Laboratory Control Sample					Run: EGG-ORTEC_2_161020A		10/25/16 18:10		
Thorium 230		5.5	pCi/L		96	80	120			
Lab ID: MB-RA-TH-ISO-2479	3	Method Blank					Run: EGG-ORTEC_2_161020A		10/25/16 18:10	
Thorium 230		-0.01	pCi/L							U
Thorium 230 precision (±)		0.03	pCi/L							
Thorium 230 MDC		0.08	pCi/L							
Method: E908.0								Batch: RA-TH-ISO-2481		
Lab ID: LCS-RA-TH-ISO-2481	Laboratory Control Sample					Run: EGG-ORTEC_2_161026A		11/02/16 09:36		
Thorium 230		6.1	pCi/L		104	80	120			
Lab ID: C16100246-007GMS	Sample Matrix Spike					Run: EGG-ORTEC_2_161026A		11/02/16 09:35		
Thorium 230		11.2	pCi/L		97	70	130			
Lab ID: C16100246-007GMSD	Sample Matrix Spike Duplicate					Run: EGG-ORTEC_2_161026A		11/02/16 09:35		
Thorium 230		11.0	pCi/L		96	70	130	1.9	20	
Lab ID: MB-RA-TH-ISO-2481	3	Method Blank					Run: EGG-ORTEC_2_161026A		11/02/16 09:35	
Thorium 230		0.2	pCi/L							U
Thorium 230 precision (±)		0.2	pCi/L							
Thorium 230 MDC		0.2	pCi/L							

### Qualifiers:

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ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 12/15/16

**Work Order:** C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E909.0</b>									Batch: T_PB-210-0701	
<b>Lab ID: MB-PB-210-0701</b>	3	Method Blank					Run: SUB-T70123		10/23/16 07:04	
Lead 210		0.3	pCi/L							U
Lead 210 precision (±)		0.8	pCi/L							
Lead 210 MDC		1	pCi/L							
<b>Lab ID: LCS-PB-210-0701</b>		Laboratory Control Sample					Run: SUB-T70123		10/23/16 09:20	
Lead 210		14	pCi/L		120	80	120			
<b>Lab ID: T16100059-001FMS</b>		Sample Matrix Spike					Run: SUB-T70123		10/23/16 13:37	
Lead 210		23	pCi/L		103	70	130			
<b>Lab ID: T16100059-001FMSD</b>		Sample Matrix Spike Duplicate					Run: SUB-T70123		10/23/16 15:52	
Lead 210		21	pCi/L		93	70	130	9.9	70.9	

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 12/15/16

**Work Order:** C16100246

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: RA-05</b>										Batch: RA228-5372
<b>Lab ID: LCS-228-RA226-8337</b>		Laboratory Control Sample					Run: G5000W_161208A			12/13/16 11:09
Radium 228		9.1	pCi/L	100		80	120			
<b>Lab ID: MB-RA226-8337</b>	3	Method Blank					Run: G5000W_161208A			12/13/16 12:47
Radium 228		0.7	pCi/L							U
Radium 228 precision (±)		1.0	pCi/L							
Radium 228 MDC		2	pCi/L							
<b>Lab ID: C16110487-002DMS</b>		Sample Matrix Spike					Run: G5000W_161208A			12/13/16 11:09
Radium 228		33.0	pCi/L	83		70	130			
<b>Lab ID: C16110487-002DMSD</b>		Sample Matrix Spike Duplicate					Run: G5000W_161208A			12/13/16 11:09
Radium 228		35.9	pCi/L	97		70	130	8.5	20	
<b>Method: RA-05</b>										Batch: RA228-5343
<b>Lab ID: LCS-228-RA226-8292</b>		Laboratory Control Sample					Run: TENNELEC-3_161018B			10/28/16 10:36
Radium 228		9.8	pCi/L	110		80	120			
<b>Lab ID: MB-RA226-8292</b>	3	Method Blank					Run: TENNELEC-3_161018B			10/28/16 10:36
Radium 228		0.3	pCi/L							U
Radium 228 precision (±)		0.8	pCi/L							
Radium 228 MDC		1	pCi/L							
<b>Lab ID: C16100497-002DMS</b>		Sample Matrix Spike					Run: TENNELEC-3_161018B			10/28/16 10:36
Radium 228		24	pCi/L	117		70	130			
<b>Lab ID: C16100497-002DMSD</b>		Sample Matrix Spike Duplicate					Run: TENNELEC-3_161018B			10/28/16 10:36
Radium 228		21	pCi/L	99		70	130	13	20	

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## ANALYTICAL SUMMARY REPORT

December 03, 2016

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16100241      Quote ID: C129 - Quarterly Long List  
Project Name: SW Alluvium

Energy Laboratories, Inc. Casper WY received the following 3 samples for United Nuclear Corporation on 10/7/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16100241-001	SBL-1	10/04/16 8:41	10/07/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16100241-002	EPA-25	10/04/16 9:47	10/07/16	Aqueous	Same As Above
C16100241-003	627	10/04/16 11:14	10/07/16	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
HSE/RSO

Digitally signed by  
Steve Dobos  
Date: 2016.12.03 15:36:04 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** SW Alluvium  
**Work Order:** C16100241

**Report Date:** 12/03/16

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CS were subcontracted to Energy Laboratories, 415 Graham Rd., College Station, TX, EPA Number TX01520.

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 12/03/16

**Work Order:** C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2320 B										Batch: R216303
<b>Lab ID:</b> MBLK	2	Method Blank								10/14/16 13:44
Alkalinity, Total as CaCO <sub>3</sub>		1	mg/L	1						
Bicarbonate as HCO <sub>3</sub>		2	mg/L	1						
<b>Lab ID:</b> LCS_160316		Laboratory Control Sample								10/14/16 13:57
Alkalinity, Total as CaCO <sub>3</sub>		253	mg/L	5.0	100	90	110			
<b>Lab ID:</b> C16100277-001ADUP	2	Sample Duplicate								10/14/16 14:13
Alkalinity, Total as CaCO <sub>3</sub>		161	mg/L	5.0				0.0	10	
Bicarbonate as HCO <sub>3</sub>		189	mg/L	5.0				0.1	10	
<b>Lab ID:</b> C16100220-001EMS		Sample Matrix Spike								10/14/16 14:31
Alkalinity, Total as CaCO <sub>3</sub>		625	mg/L	5.2	99	80	120			

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** SW Alluvium

**Report Date:** 12/03/16

**Work Order:** C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2540 C										Batch: TDS161011A
<b>Lab ID:</b> MB-1_161011A		Method Blank					Run: BAL-18_161011A			10/11/16 08:34
Solids, Total Dissolved TDS @ 180 C		8	mg/L	8						
<b>Lab ID:</b> LCS-2_161011A		Laboratory Control Sample					Run: BAL-18_161011A			10/11/16 08:34
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	11	99	90	110			
<b>Lab ID:</b> C16100223-001A DUP		Sample Duplicate					Run: BAL-18_161011A			10/11/16 08:35
Solids, Total Dissolved TDS @ 180 C		1440	mg/L	20				4.5	5	

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: SW Alluvium

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 B										Analytical Run: CVAA-C202_161103A
Lab ID: ICV										Initial Calibration Verification Standard
Selenium-IV										0.0262 mg/L 0.0010 107 90 110 11/02/16 15:22
Method: A3114 B										Batch: 48679
Lab ID: MB-48679										Method Blank
Selenium-IV										ND mg/L 0.0005 Run: CVAA-C202_161103A 11/02/16 15:27
Lab ID: LCS-48679										Laboratory Control Sample
Selenium-IV										0.0261 mg/L 0.0010 107 90 110 Run: CVAA-C202_161103A 11/02/16 15:40
Lab ID: C16100237-010CMS										Sample Matrix Spike
Selenium-IV										0.0183 mg/L 0.0010 75 85 115 Run: CVAA-C202_161103A 11/02/16 16:01 S
Lab ID: C16100237-010CMSD										Sample Matrix Spike Duplicate
Selenium-IV										0.0177 mg/L 0.0010 73 85 115 3.0 10 S Run: CVAA-C202_161103A 11/02/16 16:03

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/03/16

**Project:** SW Alluvium

**Work Order:** C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A4500-H B										
Analytical Run: PHSC_101-C_161010A										
<b>Lab ID:</b> pH 6.86	Initial Calibration Verification Standard									
pH		6.87	s.u.	0.010	100	98	102			10/10/16 08:32
<b>Lab ID:</b> CCV - pH 7										
Continuing Calibration Verification Standard										
pH		7.00	s.u.	0.010	100	98	102			10/10/16 10:25
<b>Method:</b> A4500-H B										
Batch: R216077										
<b>Lab ID:</b> C16100241-002ADUP	Sample Duplicate									
pH		6.83	s.u.	0.010				Run: PHSC_101-C_161010A		10/10/16 11:11

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/03/16

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G										Analytical Run: FIA201-C_161012A
Lab ID: CCV_160916										
Continuing Calibration Verification Standard										
Nitrogen, Ammonia as N										
		1.02	mg/L	0.050	102	90	110			10/12/16 12:50
Method: A4500-NH3 G										Batch: R216197
Lab ID: MBLK										
Method Blank										
Run: FIA201-C_161012A										
Nitrogen, Ammonia as N										
		ND	mg/L	0.003						10/12/16 11:40
Lab ID: LFB										
Laboratory Fortified Blank										
Run: FIA201-C_161012A										
Nitrogen, Ammonia as N										
		1.01	mg/L	0.050	102	90	110			10/12/16 11:42
Lab ID: C16100246-004DMS										
Sample Matrix Spike										
Run: FIA201-C_161012A										
Nitrogen, Ammonia as N										
		2.52	mg/L	0.050	97	90	110			10/12/16 13:11 E
Lab ID: C16100246-004DMSD										
Sample Matrix Spike Duplicate										
Run: FIA201-C_161012A										
Nitrogen, Ammonia as N										
		2.50	mg/L	0.050	96	90	110	0.8	10	10/12/16 13:12 E

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

E - Estimated value. Result exceeds the instrument upper quantitation limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/03/16

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1632AM										Analytical Run: SUB-H119506
Lab ID: AS-ICV 25ppb-10/14/2	Initial Calibration Verification Standard									
Arsenic-III		24.8	ug/L	5.0	99	87.6	114			10/14/16 14:34
Lab ID: AS-50.0-10/14/2016										Continuing Calibration Verification Standard
Arsenic-III		50.8	ug/L	5.0	102	85	115			10/14/16 17:58
Method: E1632AM										Batch: H_R119506
Lab ID: AS-LFB 50ppb-10/14/	Laboratory Fortified Blank									
Arsenic-III		49.2	ug/L	5.0	98	55	146			Run: SUB-H119506 10/14/16 15:10
Lab ID: ICB	Method Blank									
Arsenic-III		ND	ug/L	0.2						Run: SUB-H119506 10/14/16 15:22
Lab ID: H16100207-009E MS	Sample Matrix Spike									
Arsenic-III		48.9	ug/L	5.0	98	55	146			Run: SUB-H119506 10/14/16 18:34
Lab ID: H16100207-009E MSD	Sample Matrix Spike Duplicate									
Arsenic-III		51.3	ug/L	5.0	103	55	146	4.8	20	Run: SUB-H119506 10/14/16 18:46

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/03/16

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP4-C_161014A		
Lab ID: ICV	4	Initial Calibration Verification Standard							10/14/16 15:10	
Calcium		52.3	mg/L	1.0	105	95	105			
Magnesium		52.2	mg/L	1.0	104	95	105			
Potassium		51.8	mg/L	1.0	104	95	105			
Sodium		52.3	mg/L	1.0	105	95	105			
Lab ID: ICSA	4	Interference Check Sample A							10/14/16 15:29	
Calcium		442	mg/L	1.0	88	80	120			
Magnesium		503	mg/L	1.0	101	80	120			
Potassium		0.00459	mg/L	1.0						
Sodium		0.221	mg/L	1.0						
Lab ID: ICSAB	4	Interference Check Sample AB							10/14/16 15:34	
Calcium		446	mg/L	1.0	89	80	120			
Magnesium		505	mg/L	1.0	101	80	120			
Potassium		0.00956	mg/L	1.0						
Sodium		0.253	mg/L	1.0						
Method: E200.7								Batch: R216311		
Lab ID: MB-161014A	4	Method Blank				Run: ICP4-C_161014A			10/14/16 15:53	
Calcium		0.007	mg/L	0.003						
Magnesium		ND	mg/L	0.04						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.1						
Lab ID: LFB-161014A	4	Laboratory Fortified Blank				Run: ICP4-C_161014A			10/14/16 15:57	
Calcium		48.2	mg/L	1.0	96	85	115			
Magnesium		48.4	mg/L	1.0	97	85	115			
Potassium		50.3	mg/L	1.0	101	85	115			
Sodium		48.9	mg/L	1.0	98	85	115			
Lab ID: C16100246-001BMS2	4	Sample Matrix Spike				Run: ICP4-C_161014A			10/14/16 19:12	
Calcium		1020	mg/L	1.0	78	70	130			
Magnesium		590	mg/L	1.0	92	70	130			
Potassium		248	mg/L	1.0	93	70	130			
Sodium		620	mg/L	1.2	83	70	130			
Lab ID: C16100246-001BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_161014A			10/14/16 19:16	
Calcium		1020	mg/L	1.0	79	70	130	0.5	20	
Magnesium		592	mg/L	1.0	93	70	130	0.4	20	
Potassium		255	mg/L	1.0	95	70	130	2.9	20	
Sodium		630	mg/L	1.2	87	70	130	1.6	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: SW Alluvium

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: 48522
<b>Lab ID: MB-48522</b>	10 Method Blank			Run: ICPMS4-C_161014A					10/15/16 01:16	
Aluminum		0.0008	mg/L	0.0001						
Beryllium		ND	mg/L	6E-06						
Cadmium		6E-06	mg/L	3E-06						
Cobalt		2E-05	mg/L	5E-06						
Lead		2E-05	mg/L	2E-05						
Manganese		0.0002	mg/L	7E-05						
Molybdenum		ND	mg/L	4E-05						
Nickel		0.0001	mg/L	0.0001						
Uranium		2E-05	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
<b>Lab ID: LCS3-48522</b>	10 Laboratory Control Sample			Run: ICPMS4-C_161014A					10/15/16 01:23	
Aluminum		2.2	mg/L	0.10	88	85	115			
Beryllium		0.22	mg/L	0.0010	88	85	115			
Cadmium		0.25	mg/L	0.0010	102	85	115			
Cobalt		0.46	mg/L	0.010	93	85	115			
Lead		0.51	mg/L	0.0010	102	85	115			
Manganese		2.3	mg/L	0.010	91	85	115			
Molybdenum		0.56	mg/L	0.10	112	85	115			
Nickel		0.53	mg/L	0.050	105	85	115			
Uranium		0.48	mg/L	0.00030	96	85	115			
Vanadium		0.55	mg/L	0.10	110	85	115			
<b>Lab ID: C16100241-001CMS3</b>	10 Sample Matrix Spike			Run: ICPMS4-C_161014A					10/15/16 02:12	
Aluminum		2.7	mg/L	0.10	82	70	130			
Beryllium		0.19	mg/L	0.0010	74	70	130			
Cadmium		0.25	mg/L	0.0010	99	70	130			
Cobalt		0.45	mg/L	0.010	85	70	130			
Lead		0.49	mg/L	0.0010	97	70	130			
Manganese		5.4	mg/L	0.010	79	70	130			
Molybdenum		0.50	mg/L	0.10	98	70	130			
Nickel		0.53	mg/L	0.050	89	70	130			
Uranium		0.49	mg/L	0.00030	96	70	130			
Vanadium		0.48	mg/L	0.10	94	70	130			
<b>Lab ID: C16100241-001CMSD</b>	10 Sample Matrix Spike Duplicate			Run: ICPMS4-C_161014A					10/15/16 02:18	
Aluminum		2.6	mg/L	0.10	79	70	130	3.0	20	
Beryllium		0.17	mg/L	0.0010	70	70	130	6.6	20	
Cadmium		0.25	mg/L	0.0010	98	70	130	1.1	20	
Cobalt		0.44	mg/L	0.010	83	70	130	1.9	20	
Lead		0.49	mg/L	0.0010	97	70	130	0.1	20	
Manganese		5.3	mg/L	0.010	74	70	130	2.1	20	
Molybdenum		0.50	mg/L	0.10	99	70	130	0.9	20	
Nickel		0.52	mg/L	0.050	88	70	130	1.4	20	
Uranium		0.49	mg/L	0.00030	96	70	130	0.0	20	

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: SW Alluvium

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 48522
Lab ID: C16100241-001CMSD	10	Sample Matrix Spike Duplicate				Run: ICPMS4-C_161014A				10/15/16 02:18
Vanadium		0.48	mg/L	0.10	95	70	130	0.2	20	
Method: E200.8										Batch: R216312
Lab ID: ICV	10	Quality Control Sample				Run: ICPMS4-C_161014A				10/14/16 14:05
Aluminum		0.0492	mg/L	0.0010	98	90	110			
Beryllium		0.0490	mg/L	0.0010	98	90	110			
Cadmium		0.0495	mg/L	0.0010	99	90	110			
Cobalt		0.0465	mg/L	0.0010	93	90	110			
Lead		0.0477	mg/L	0.0010	95	90	110			
Manganese		0.0500	mg/L	0.0010	100	90	110			
Molybdenum		0.0486	mg/L	0.0010	97	90	110			
Nickel		0.0490	mg/L	0.0010	98	90	110			
Uranium		0.0487	mg/L	0.00030	97	90	110			
Vanadium		0.0457	mg/L	0.0010	91	90	110			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: SW Alluvium

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: ICPMS4-C_161028A		
Lab ID: ICV	4	Initial Calibration Verification Standard							10/28/16 16:04	
Aluminum		0.0501	mg/L	0.0010	100	90	110			
Beryllium		0.0500	mg/L	0.0010	100	90	110			
Cobalt		0.0496	mg/L	0.0010	99	90	110			
Manganese		0.0495	mg/L	0.0010	99	90	110			
Method: E200.8								Batch: 48522		
Lab ID: MB-48522	10	Method Blank				Run: ICPMS4-C_161028A			10/29/16 05:37	
Aluminum		0.002	mg/L	0.0001						
Beryllium		0.0001	mg/L	6E-06						
Cadmium		8E-05	mg/L	3E-06						
Cobalt		0.0003	mg/L	5E-06						
Lead		0.0001	mg/L	2E-05						
Manganese		0.002	mg/L	7E-05						
Molybdenum		0.001	mg/L	4E-05						
Nickel		0.0003	mg/L	2E-05						
Uranium		0.0003	mg/L	4E-06						
Vanadium		9E-05	mg/L	5E-05						
Lab ID: LCS3-48522	10	Laboratory Control Sample				Run: ICPMS4-C_161028A			10/29/16 05:43	
Aluminum		2.40	mg/L	0.030	96	85	115			
Beryllium		0.243	mg/L	0.0010	97	85	115			
Cadmium		0.259	mg/L	0.0010	104	85	115			
Cobalt		0.528	mg/L	0.0050	106	85	115			
Lead		0.521	mg/L	0.0010	104	85	115			
Manganese		2.47	mg/L	0.0010	99	85	115			
Molybdenum		0.505	mg/L	0.0010	101	85	115			
Nickel		0.502	mg/L	0.0050	100	85	115			
Uranium		0.505	mg/L	0.00030	101	85	115			
Vanadium		0.501	mg/L	0.010	100	85	115			
Lab ID: C16100241-001CMS3	10	Sample Matrix Spike				Run: ICPMS4-C_161028A			10/29/16 06:35	
Aluminum		3.61	mg/L	0.030	117	70	130			
Beryllium		0.270	mg/L	0.0010	108	70	130			
Cadmium		0.267	mg/L	0.0010	107	70	130			
Cobalt		0.509	mg/L	0.0050	96	70	130			
Lead		0.495	mg/L	0.0010	99	70	130			
Manganese		6.38	mg/L	0.0010	97	70	130			
Molybdenum		0.504	mg/L	0.0010	100	70	130			
Nickel		0.598	mg/L	0.0050	102	70	130			
Uranium		0.513	mg/L	0.00030	98	70	130			
Vanadium		0.487	mg/L	0.010	97	70	130			
Lab ID: C16100241-001CMSD	10	Sample Matrix Spike Duplicate				Run: ICPMS4-C_161028A			10/29/16 06:42	
Aluminum		3.51	mg/L	0.030	113	70	130	2.8	20	
Beryllium		0.260	mg/L	0.0010	104	70	130	4.1	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: SW Alluvium

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 48522
Lab ID: C16100241-001CMSD 10 Sample Matrix Spike Duplicate										Run: ICPMS4-C_161028A 10/29/16 06:42
Cadmium		0.257	mg/L	0.0010	103	70	130	3.7	20	
Cobalt		0.508	mg/L	0.0050	96	70	130	0.1	20	
Lead		0.494	mg/L	0.0010	99	70	130	0.3	20	
Manganese		6.21	mg/L	0.0010	90	70	130	2.8	20	
Molybdenum		0.490	mg/L	0.0010	97	70	130	2.7	20	
Nickel		0.584	mg/L	0.0050	99	70	130	2.3	20	
Uranium		0.508	mg/L	0.00030	97	70	130	1.0	20	
Vanadium		0.490	mg/L	0.010	98	70	130	0.6	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/03/16

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_161012A
Lab ID: ICV	2	Initial Calibration Verification Standard								10/12/16 15:31
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		41.1	mg/L	1.0	103	90	110			
Lab ID: CCV-101216-4	2	Continuing Calibration Verification Standard								10/13/16 05:38
Chloride		9.94	mg/L	1.0	99	90	110			
Sulfate		39.0	mg/L	1.0	97	90	110			
Method: E300.0										Batch: R216273
Lab ID: ICB	2	Method Blank								Run: IC2-C_161012A 10/12/16 15:49
Chloride		ND	mg/L	0.04						
Sulfate		0.09	mg/L	0.05						
Lab ID: LFB-101216-1	2	Laboratory Fortified Blank								Run: IC2-C_161012A 10/12/16 16:08
Chloride		9.88	mg/L	1.0	99	90	110			
Sulfate		39.3	mg/L	1.0	98	90	110			
Lab ID: C16100237-007AMS	2	Sample Matrix Spike								Run: IC2-C_161012A 10/13/16 06:34
Chloride		123	mg/L	1.0	71	80	120			S
Sulfate		2250	mg/L	4.2		80	120			A
Lab ID: C16100237-007AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_161012A 10/13/16 06:52
Chloride		123	mg/L	1.0	71	80	120	0.2	20	S
Sulfate		2240	mg/L	4.2		80	120	0.5	20	A

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.  
MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: SW Alluvium

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E353.2</b>										Analytical Run: FIA201-C_161013B
<b>Lab ID: CCV_160830</b>	Continuing Calibration Verification Standard									
Nitrogen, Nitrate+Nitrite as N		2.06	mg/L	0.10	103	90	110			10/13/16 17:51
<b>Method: E353.2</b>										Batch: R216250
<b>Lab ID: MBLK</b>	Method Blank									
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01				Run: FIA201-C_161013B		10/13/16 16:07
<b>Lab ID: LFB</b>	Laboratory Fortified Blank									
Nitrogen, Nitrate+Nitrite as N		2.02	mg/L	0.10	103	90	110	Run: FIA201-C_161013B		10/13/16 16:08
<b>Lab ID: C16100237-010DMS</b>	Sample Matrix Spike									
Nitrogen, Nitrate+Nitrite as N		2.14	mg/L	0.10	107	90	110	Run: FIA201-C_161013B		10/13/16 17:54
<b>Lab ID: C16100237-010DMSD</b>	Sample Matrix Spike Duplicate									
Nitrogen, Nitrate+Nitrite as N		2.11	mg/L	0.10	106	90	110	1.4	10	10/13/16 17:55

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: SW Alluvium

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>										Analytical Run: B_R268750
<b>Lab ID: ccv101416</b>	7	Continuing Calibration Verification Standard								10/14/16 10:46
Bromodichloromethane		4.80	ug/L	0.50	96	70	130			
Bromoform		4.84	ug/L	0.50	97	70	130			
Chlorodibromomethane		4.68	ug/L	0.50	94	70	130			
Chloroform		4.88	ug/L	0.50	98	70	130			
Surr: 1,2-Dichloroethane-d4				0.50	98	71	139			
Surr: p-Bromofluorobenzene				0.50	98	80	127			
Surr: Toluene-d8				0.50	103	80	123			
<b>Method: E624</b>										Batch: B_R268750
<b>Lab ID: lcs101416</b>	7	Laboratory Control Sample								10/14/16 11:24
Bromodichloromethane		5.28	ug/L	0.50	106	74	128			
Bromoform		5.08	ug/L	0.50	102	66	128			
Chlorodibromomethane		5.44	ug/L	0.50	109	74	125			
Chloroform		4.96	ug/L	0.50	99	68	124			
Surr: 1,2-Dichloroethane-d4				0.50	99	71	139			
Surr: p-Bromofluorobenzene				0.50	98	80	127			
Surr: Toluene-d8				0.50	102	80	123			
<b>Lab ID: blk101416</b>	7	Method Blank								10/14/16 12:22
Bromodichloromethane		ND	ug/L	0.50						
Bromoform		ND	ug/L	0.50						
Chlorodibromomethane		ND	ug/L	0.50						
Chloroform		ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4				0.50	94	71	139			
Surr: p-Bromofluorobenzene				0.50	97	80	127			
Surr: Toluene-d8				0.50	104	80	123			
<b>Lab ID: b16100770-001hms</b>	7	Sample Matrix Spike								10/14/16 13:20
Bromodichloromethane		50.4	ug/L	5.0	101	74	128			
Bromoform		48.8	ug/L	5.0	98	66	128			
Chlorodibromomethane		50.8	ug/L	5.0	102	74	125			
Chloroform		81.6	ug/L	5.0	99	68	124			
Surr: 1,2-Dichloroethane-d4				5.0	96	71	139			
Surr: p-Bromofluorobenzene				5.0	100	80	127			
Surr: Toluene-d8				5.0	102	80	123			
<b>Lab ID: b16100770-001hmsd</b>	7	Sample Matrix Spike Duplicate								10/14/16 13:50
Bromodichloromethane		50.8	ug/L	5.0	102	74	128	0.8	20	
Bromoform		48.8	ug/L	5.0	98	66	128	0.0	20	
Chlorodibromomethane		51.2	ug/L	5.0	102	74	125	0.8	20	
Chloroform		82.0	ug/L	5.0	99	68	124	0.5	20	
Surr: 1,2-Dichloroethane-d4				5.0	97	71	139			
Surr: p-Bromofluorobenzene				5.0	97	80	127			
Surr: Toluene-d8				5.0	102	80	123			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/03/16

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-0977
<b>Lab ID: MB-GA-0977</b>	3	Method Blank					Run: TENNELEC-3_161011A		10/11/16 21:43	
Gross Alpha minus Rn & U		0.9	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		1.0	pCi/L							
Gross Alpha minus Rn & U MDC		1	pCi/L							
<b>Lab ID: LCS-GA-0977</b>		Laboratory Control Sample					Run: TENNELEC-3_161011A		10/11/16 21:43	
Gross Alpha minus Rn & U		37.6	pCi/L	107		80	120			
<b>Lab ID: C16100241-001GMS</b>		Sample Matrix Spike					Run: TENNELEC-3_161011A		10/12/16 00:09	
Gross Alpha minus Rn & U		80.7	pCi/L	111		70	130			
<b>Lab ID: C16100241-001GMSD</b>		Sample Matrix Spike Duplicate					Run: TENNELEC-3_161011A		10/12/16 00:09	
Gross Alpha minus Rn & U		85.0	pCi/L	117		70	130	5.2	52.5	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/03/16

**Project:** SW Alluvium

**Work Order:** C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E903.0</b>										Batch: RA226-8288
<b>Lab ID: LCS-RA226-8288</b>	Laboratory Control Sample			Run: G5000W_161013A			11/01/16 07:06			
Radium 226		11	pCi/L		107	80	120			
<b>Lab ID: MB-RA226-8288</b>	3	Method Blank		Run: G5000W_161013A			11/01/16 07:06			
Radium 226		0.1	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
<b>Lab ID: C16100233-001DMS</b>	Sample Matrix Spike			Run: G5000W_161013A			11/01/16 07:06			
Radium 226		23	pCi/L		111	70	130			
<b>Lab ID: C16100233-001DMSD</b>	Sample Matrix Spike Duplicate			Run: G5000W_161013A			11/01/16 07:06			
Radium 226		18	pCi/L		88	70	130	23	20	R

- The RPD for the MSD is high. The individual spike recoveries are within range, the MB is acceptable, and the LCS is acceptable therefore the batch is approved.

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: SW Alluvium

Report Date: 12/03/16

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0										Batch: RA-TH-ISO-2479
Lab ID: LCS-RA-TH-ISO-2479	Laboratory Control Sample			Run: EGG-ORTEC_2_161020A			10/25/16 09:54			
Thorium 230		5.6	pCi/L	97		80	120			
Lab ID: C16100237-002GMS	Sample Matrix Spike			Run: EGG-ORTEC_2_161020A			10/25/16 09:54			
Thorium 230		23.6	pCi/L	94		70	130			
Lab ID: C16100237-002GMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_2_161020A			10/25/16 09:54			
Thorium 230		22.5	pCi/L	90		70	130	4.8	20	
Lab ID: MB-RA-TH-ISO-2479	3	Method Blank		Run: EGG-ORTEC_2_161020A			10/25/16 09:54			
Thorium 230		0.02	pCi/L							U
Thorium 230 precision (±)		0.08	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
Method: E908.0										Batch: RA-TH-ISO-2479R
Lab ID: LCS-RA-TH-ISO-2479	Laboratory Control Sample			Run: EGG-ORTEC_2_161020A			10/25/16 18:10			
Thorium 230		5.5	pCi/L	96		80	120			
Lab ID: MB-RA-TH-ISO-2479	3	Method Blank		Run: EGG-ORTEC_2_161020A			10/25/16 18:10			
Thorium 230		-0.01	pCi/L							U
Thorium 230 precision (±)		0.03	pCi/L							
Thorium 230 MDC		0.08	pCi/L							

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/03/16

**Project:** SW Alluvium

**Work Order:** C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E909.0										Batch: T_PB-210-0701
<b>Lab ID:</b> MB-PB-210-0701	3	Method Blank					Run: SUB-T70123			10/23/16 07:04
Lead 210		0.3	pCi/L							U
Lead 210 precision ( $\pm$ )		0.8	pCi/L							
Lead 210 MDC		1	pCi/L							
<b>Lab ID:</b> LCS-PB-210-0701		Laboratory Control Sample					Run: SUB-T70123			10/23/16 09:20
Lead 210		14	pCi/L	120		80	120			
<b>Lab ID:</b> T16100059-001FMS		Sample Matrix Spike					Run: SUB-T70123			10/23/16 13:37
Lead 210		23	pCi/L	103		70	130			
<b>Lab ID:</b> T16100059-001FMSD		Sample Matrix Spike Duplicate					Run: SUB-T70123			10/23/16 15:52
Lead 210		21	pCi/L	93		70	130	9.9	70.9	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: SW Alluvium

Work Order: C16100241

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05										Batch: RA228-5341
Lab ID: LCS-228-RA226-8288	Laboratory Control Sample			Run: TENNELEC-3_161013A			10/27/16 12:06			
Radium 228		8.2	pCi/L	93		80	120			
Lab ID: MB-RA226-8288	3	Method Blank		Run: TENNELEC-3_161013A			10/27/16 12:06			
Radium 228		0.3	pCi/L							U
Radium 228 precision (±)		0.7	pCi/L							
Radium 228 MDC		1	pCi/L							
Lab ID: C16100233-004DMS	Sample Matrix Spike			Run: TENNELEC-3_161013A			10/27/16 12:06			
Radium 228		25	pCi/L	93		70	130			
Lab ID: C16100233-004DMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_161013A			10/27/16 12:06			
Radium 228		23	pCi/L	82		70	130	8.1	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## ANALYTICAL SUMMARY REPORT

December 14, 2016

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16100237 Quote ID: C129 - Quarterly Long List

Project Name: Zone 1

Energy Laboratories, Inc. Casper WY received the following 11 samples for United Nuclear Corporation on 10/7/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16100237-001	614	10/04/16 12:35	10/07/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16100237-002	515-A	10/04/16 13:52	10/07/16	Aqueous	Same As Above
C16100237-003	604	10/04/16 14:46	10/07/16	Aqueous	Same As Above
C16100237-004	EPA-7	10/04/16 15:45	10/07/16	Aqueous	Same As Above
C16100237-005	EPA-5	10/04/16 16:27	10/07/16	Aqueous	Same As Above
C16100237-006	EPA-4	10/05/16 8:30	10/07/16	Aqueous	Same As Above
C16100237-007	EPA-2	10/05/16 9:45	10/07/16	Aqueous	Same As Above
C16100237-008	EPA-2 Duplicate	10/05/16 10:25	10/07/16	Aqueous	Same As Above
C16100237-009	TWQ-142	10/05/16 11:05	10/07/16	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C16100237-010	Rinsate	10/05/16 11:46 10/07/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved 624-Purgeable Organics 624-Purgeable Organics
C16100237-011	Field Blank	10/05/16 11:50 10/07/16	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
HSE/RSO

Digitally signed by  
Steve Dobos  
Date: 2016.12.14 09:06:25 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 1  
**Work Order:** C16100237

**Report Date:** 12/14/16

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-CS were subcontracted to Energy Laboratories, 415 Graham Rd., College Station, TX, EPA Number TX01520.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2320 B</b>										Batch: R216303
<b>Lab ID: MBLK</b>	2	Method Blank					Run: MANTECH_161014A			10/14/16 13:44
Alkalinity, Total as CaCO <sub>3</sub>		1	mg/L	1						
Bicarbonate as HCO <sub>3</sub>		2	mg/L	1						
<b>Lab ID: LCS_160316</b>										10/14/16 13:57
		Laboratory Control Sample					Run: MANTECH_161014A			
Alkalinity, Total as CaCO <sub>3</sub>		253	mg/L	5.0	100	90	110			
<b>Lab ID: C16100277-001ADUP</b>										10/14/16 14:13
		2 Sample Duplicate					Run: MANTECH_161014A			
Alkalinity, Total as CaCO <sub>3</sub>		161	mg/L	5.0				0.0	10	
Bicarbonate as HCO <sub>3</sub>		189	mg/L	5.0				0.1	10	
<b>Lab ID: C16100220-001EMS</b>										10/14/16 14:31
		Sample Matrix Spike					Run: MANTECH_161014A			
Alkalinity, Total as CaCO <sub>3</sub>		625	mg/L	5.2	99	80	120			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/14/16

**Project:** Zone 1

**Work Order:** C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A2540 C										Batch: TDS161011A
<b>Lab ID:</b> MB-1_161011A	Method Blank									
Solids, Total Dissolved TDS @ 180 C						8	mg/L	8		Run: BAL-18_161011A 10/11/16 08:34
<b>Lab ID:</b> LCS-2_161011A	Laboratory Control Sample									
Solids, Total Dissolved TDS @ 180 C						1110	mg/L	11	99	90 110 10/11/16 08:34
<b>Lab ID:</b> C16100237-010A DUP	Sample Duplicate									
Solids, Total Dissolved TDS @ 180 C						7.97	mg/L	10.0		Run: BAL-18_161011A 10/11/16 08:40

- Since the difference between the analytical result for the sample and its duplicate is less than the reporting limit, the RPD variance is not considered significant.

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 B										Analytical Run: CVAA-C202_161103A
Lab ID: ICV		Initial Calibration Verification Standard								11/02/16 15:22
Selenium-IV		0.0262	mg/L	0.0010	107	90	110			
Method: A3114 B										Batch: 48679
Lab ID: MB-48679		Method Blank								Run: CVAA-C202_161103A
Selenium-IV		ND	mg/L	0.0005						11/02/16 15:27
Lab ID: LCS-48679		Laboratory Control Sample								Run: CVAA-C202_161103A
Selenium-IV		0.0261	mg/L	0.0010	107	90	110			11/02/16 15:40
Lab ID: C16100237-010CMS		Sample Matrix Spike								Run: CVAA-C202_161103A
Selenium-IV		0.0183	mg/L	0.0010	75	85	115			11/02/16 16:01 S
Lab ID: C16100237-010CMSD		Sample Matrix Spike Duplicate								Run: CVAA-C202_161103A
Selenium-IV		0.0177	mg/L	0.0010	73	85	115	3.0	10	11/02/16 16:03 S

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S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/14/16

**Project:** Zone 1

**Work Order:** C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> A4500-H B										
Analytical Run: PHSC_101-C_161010A										
<b>Lab ID:</b> pH 6.86		Initial Calibration Verification Standard								
pH		6.87	s.u.	0.010	100	98	102			10/10/16 08:32
<b>Lab ID:</b> CCV - pH 7										
Continuing Calibration Verification Standard										
pH		7.00	s.u.	0.010	100	98	102			10/10/16 10:25
<b>Method:</b> A4500-H B										
Batch: R216077										
<b>Lab ID:</b> C16100237-004ADUP		Sample Duplicate								
pH		6.38	s.u.	0.010				0.2	3	Run: PHSC_101-C_161010A 10/10/16 10:37

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 12/14/16

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G Analytical Run: FIA201-C_161012A										
Lab ID: CCV_160916	Continuing Calibration Verification Standard 10/12/16 12:34									
Nitrogen, Ammonia as N		1.02	mg/L	0.050	102	90	110			
Lab ID: CCV_160916	Continuing Calibration Verification Standard 10/12/16 12:50									
Nitrogen, Ammonia as N		1.02	mg/L	0.050	102	90	110			
Method: A4500-NH3 G Batch: R216197										
Lab ID: MBLK	Method Blank Run: FIA201-C_161012A 10/12/16 11:40									
Nitrogen, Ammonia as N		ND	mg/L	0.003						
Lab ID: LFB	Laboratory Fortified Blank Run: FIA201-C_161012A 10/12/16 11:42									
Nitrogen, Ammonia as N		1.01	mg/L	0.050	102	90	110			
Lab ID: C16100220-003DMS	Sample Matrix Spike Run: FIA201-C_161012A 10/12/16 12:37									
Nitrogen, Ammonia as N		0.862	mg/L	0.050	85	90	110			S
Lab ID: C16100220-003DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_161012A 10/12/16 12:39									
Nitrogen, Ammonia as N		0.891	mg/L	0.050	88	90	110	3.3	10	S
Lab ID: C16100237-008DMS	Sample Matrix Spike Run: FIA201-C_161012A 10/12/16 12:54									
Nitrogen, Ammonia as N		1.38	mg/L	0.050	106	90	110			
Lab ID: C16100237-008DMSD	Sample Matrix Spike Duplicate Run: FIA201-C_161012A 10/12/16 12:55									
Nitrogen, Ammonia as N		1.39	mg/L	0.050	107	90	110	0.7	10	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/14/16

**Project:** Zone 1

**Work Order:** C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method:	E1632AM								Analytical Run: SUB-H119506		
Lab ID:	AS-ICV 25ppb-10/14/2	Initial Calibration Verification Standard							10/14/16 14:34		
Arsenic-III		24.8	ug/L	5.0	99	87.6	114				
Lab ID:	AS-50.0-10/14/2016	Continuing Calibration Verification Standard							10/14/16 14:46		
Arsenic-III		49.4	ug/L	5.0	99	85	115				
Lab ID:	AS-50.0-10/14/2016	Continuing Calibration Verification Standard							10/14/16 17:58		
Arsenic-III		50.8	ug/L	5.0	102	85	115				
Method:	E1632AM								Batch: H_R119506		
Lab ID:	AS-LFB 50ppb-10/14/	Laboratory Fortified Blank				Run: SUB-H119506			10/14/16 15:10		
Arsenic-III		49.2	ug/L	5.0	98	55	146				
Lab ID:	ICB	Method Blank				Run: SUB-H119506			10/14/16 15:22		
Arsenic-III		ND	ug/L	0.2							
Lab ID:	H16100166-001A MS	Sample Matrix Spike				Run: SUB-H119506			10/14/16 15:46		
Arsenic-III		84.3	ug/L	5.0	111	55	146				
Lab ID:	H16100166-001A MSD	Sample Matrix Spike Duplicate				Run: SUB-H119506			10/14/16 15:58		
Arsenic-III		77.7	ug/L	5.0	98	55	146	8.2	20		
Lab ID:	H16100207-009E MS	Sample Matrix Spike				Run: SUB-H119506			10/14/16 18:34		
Arsenic-III		48.9	ug/L	5.0	98	55	146				
Lab ID:	H16100207-009E MSD	Sample Matrix Spike Duplicate				Run: SUB-H119506			10/14/16 18:46		
Arsenic-III		51.3	ug/L	5.0	103	55	146	4.8	20		
Lab ID:	C16100246-005E	Sample Matrix Spike				Run: SUB-H119506			10/14/16 21:23		
Arsenic-III		51.4	ug/L	5.0	103	55	146				
Lab ID:	C16100246-005E	Sample Matrix Spike Duplicate				Run: SUB-H119506			10/14/16 21:35		
Arsenic-III		54.8	ug/L	5.0	110	55	146	6.4	20		

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Analytical Run: ICP4-C_161014A
<b>Lab ID: ICV</b>	4	Initial Calibration Verification Standard								10/14/16 15:10
Calcium		52.3	mg/L	1.0	105	95	105			
Magnesium		52.2	mg/L	1.0	104	95	105			
Potassium		51.8	mg/L	1.0	104	95	105			
Sodium		52.3	mg/L	1.0	105	95	105			
<b>Lab ID: ICSA</b>	4	Interference Check Sample A								10/14/16 15:29
Calcium		442	mg/L	1.0	88	80	120			
Magnesium		503	mg/L	1.0	101	80	120			
Potassium		0.00459	mg/L	1.0						
Sodium		0.221	mg/L	1.0						
<b>Lab ID: ICSAB</b>	4	Interference Check Sample AB								10/14/16 15:34
Calcium		446	mg/L	1.0	89	80	120			
Magnesium		505	mg/L	1.0	101	80	120			
Potassium		0.00956	mg/L	1.0						
Sodium		0.253	mg/L	1.0						
<b>Method: E200.7</b>										Batch: R216311
<b>Lab ID: MB-161014A</b>	4	Method Blank								Run: ICP4-C_161014A 10/14/16 15:53
Calcium		0.007	mg/L	0.003						
Magnesium		ND	mg/L	0.04						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.1						
<b>Lab ID: LFB-161014A</b>	4	Laboratory Fortified Blank								Run: ICP4-C_161014A 10/14/16 15:57
Calcium		48.2	mg/L	1.0	96	85	115			
Magnesium		48.4	mg/L	1.0	97	85	115			
Potassium		50.3	mg/L	1.0	101	85	115			
Sodium		48.9	mg/L	1.0	98	85	115			
<b>Lab ID: C16100216-002BMS2</b>	4	Sample Matrix Spike								Run: ICP4-C_161014A 10/14/16 16:49
Calcium		133	mg/L	1.0	95	70	130			
Magnesium		118	mg/L	1.0	96	70	130			
Potassium		98.6	mg/L	1.0	95	70	130			
Sodium		101	mg/L	1.0	96	70	130			
<b>Lab ID: C16100216-002BMSD</b>	4	Sample Matrix Spike Duplicate								Run: ICP4-C_161014A 10/14/16 16:52
Calcium		133	mg/L	1.0	94	70	130	0.2	20	
Magnesium		118	mg/L	1.0	96	70	130	0.0	20	
Potassium		97.4	mg/L	1.0	94	70	130	1.1	20	
Sodium		100	mg/L	1.0	95	70	130	0.6	20	
<b>Lab ID: C16100237-005BMS2</b>	4	Sample Matrix Spike								Run: ICP4-C_161014A 10/14/16 17:43
Calcium		688	mg/L	1.0	84	70	130			
Magnesium		729	mg/L	1.0	92	70	130			
Potassium		240	mg/L	1.0	92	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R216311
Lab ID: C16100237-005BMS2	4	Sample Matrix Spike					Run: ICP4-C_161014A			10/14/16 17:43
Sodium		343	mg/L	1.2	94	70	130			
Lab ID: C16100237-005BMSD	4	Sample Matrix Spike Duplicate					Run: ICP4-C_161014A			10/14/16 17:48
Calcium		687	mg/L	1.0	84	70	130	0.2	20	
Magnesium		732	mg/L	1.0	93	70	130	0.4	20	
Potassium		242	mg/L	1.0	92	70	130	0.5	20	
Sodium		344	mg/L	1.2	94	70	130	0.4	20	
Method: E200.7										Analytical Run: ICP4-C_161021A
Lab ID: ICV		Initial Calibration Verification Standard								10/21/16 11:05
Sodium		50.6	mg/L	1.0	101	95	105			
Lab ID: ICSA		Interference Check Sample A								10/21/16 11:25
Sodium		-0.0497	mg/L	1.0						
Lab ID: ICSAB		Interference Check Sample AB								10/21/16 11:29
Sodium		-0.0241	mg/L	1.0						
Method: E200.7										Batch: R216484
Lab ID: MB-161021A		Method Blank					Run: ICP4-C_161021A			10/21/16 11:49
Sodium		ND	mg/L	0.1						
Lab ID: LFB-161021A		Laboratory Fortified Blank					Run: ICP4-C_161021A			10/21/16 11:53
Sodium		49.9	mg/L	1.0	100	85	115			
Lab ID: C16100248-001CMS2		Sample Matrix Spike					Run: ICP4-C_161021A			10/21/16 15:57
Sodium		101	mg/L	1.0	94	70	130			
Lab ID: C16100248-001CMSD		Sample Matrix Spike Duplicate					Run: ICP4-C_161021A			10/21/16 16:00
Sodium		101	mg/L	1.0	95	70	130	0.5	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual.
<b>Method: E200.8</b>										Batch: 48499
<b>Lab ID: MB-48499</b>	10	Method Blank		Run: ICPMS4-C_161012A			10/13/16 06:12			
Aluminum		0.001	mg/L	0.0001						
Beryllium		ND	mg/L	6E-06						
Cadmium		3E-05	mg/L	3E-06						
Cobalt		ND	mg/L	5E-06						
Lead		ND	mg/L	2E-05						
Manganese		0.0001	mg/L	7E-05						
Molybdenum		ND	mg/L	4E-05						
Nickel		ND	mg/L	2E-05						
Uranium		5E-06	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
<b>Lab ID: LCS3-48499</b>	10	Laboratory Control Sample		Run: ICPMS4-C_161012A			10/13/16 06:19			
Aluminum		2.63	mg/L	0.030	105	85	115			
Beryllium		0.256	mg/L	0.0010	103	85	115			
Cadmium		0.253	mg/L	0.0010	101	85	115			
Cobalt		0.536	mg/L	0.0050	107	85	115			
Lead		0.523	mg/L	0.0010	105	85	115			
Manganese		2.59	mg/L	0.0010	104	85	115			
Molybdenum		0.523	mg/L	0.0010	105	85	115			
Nickel		0.501	mg/L	0.0050	100	85	115			
Uranium		0.489	mg/L	0.00030	98	85	115			
Vanadium		0.515	mg/L	0.010	103	85	115			
<b>Lab ID: C16100220-010AMS3</b>	10	Sample Matrix Spike		Run: ICPMS4-C_161012A			10/13/16 07:03			
Aluminum		2.52	mg/L	0.030	100	70	130			
Beryllium		0.232	mg/L	0.0010	93	70	130			
Cadmium		0.251	mg/L	0.0010	100	70	130			
Cobalt		0.526	mg/L	0.0050	105	70	130			
Lead		0.525	mg/L	0.0010	105	70	130			
Manganese		2.52	mg/L	0.0010	101	70	130			
Molybdenum		0.507	mg/L	0.0010	101	70	130			
Nickel		0.494	mg/L	0.0050	99	70	130			
Uranium		0.510	mg/L	0.00030	101	70	130			
Vanadium		0.504	mg/L	0.010	100	70	130			
<b>Lab ID: C16100220-010AMSD</b>	10	Sample Matrix Spike Duplicate		Run: ICPMS4-C_161012A			10/13/16 07:34			
Aluminum		2.59	mg/L	0.030	103	70	130	2.6	20	
Beryllium		0.242	mg/L	0.0010	97	70	130	3.9	20	
Cadmium		0.254	mg/L	0.0010	102	70	130	1.3	20	
Cobalt		0.536	mg/L	0.0050	107	70	130	1.8	20	
Lead		0.532	mg/L	0.0010	106	70	130	1.2	20	
Manganese		2.58	mg/L	0.0010	103	70	130	2.2	20	
Molybdenum		0.513	mg/L	0.0010	102	70	130	1.2	20	
Nickel		0.496	mg/L	0.0050	99	70	130	0.5	20	
Uranium		0.514	mg/L	0.00030	102	70	130	0.7	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 48499
Lab ID: C16100220-010AMSD	10	Sample Matrix Spike Duplicate				Run: ICPMS4-C_161012A			10/13/16 07:34	
Vanadium		0.511	mg/L	0.010	102	70	130	1.4	20	
Method: E200.8										Batch: R216215
Lab ID: ICV	10	Quality Control Sample				Run: ICPMS4-C_161012A			10/12/16 12:14	
Aluminum		0.0454	mg/L	0.0010	91	90	110			
Beryllium		0.0478	mg/L	0.0010	96	90	110			
Cadmium		0.0480	mg/L	0.0010	96	90	110			
Cobalt		0.0458	mg/L	0.0010	92	90	110			
Lead		0.0465	mg/L	0.0010	93	90	110			
Manganese		0.0452	mg/L	0.0010	90	90	110			
Molybdenum		0.0466	mg/L	0.0010	93	90	110			
Nickel		0.0470	mg/L	0.0010	94	90	110			
Uranium		0.0479	mg/L	0.00030	96	90	110			
Vanadium		0.0485	mg/L	0.0010	97	90	110			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: 48499
<b>Lab ID: MB-48499</b>	10	Method Blank		Run: ICPMS4-C_161017A			10/18/16 14:46			
Aluminum		0.001	mg/L	0.0001						
Beryllium		ND	mg/L	6E-06						
Cadmium		ND	mg/L	3E-06						
Cobalt		ND	mg/L	5E-06						
Lead		ND	mg/L	2E-05						
Manganese		0.0001	mg/L	7E-05						
Molybdenum		ND	mg/L	4E-05						
Nickel		ND	mg/L	2E-05						
Uranium		0.0004	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
<b>Lab ID: LCS3-48499</b>	10	Laboratory Control Sample		Run: ICPMS4-C_161017A			10/18/16 14:52			
Aluminum		2.65	mg/L	0.030	106	85	115			
Beryllium		0.275	mg/L	0.0010	110	85	115			
Cadmium		0.251	mg/L	0.0010	101	85	115			
Cobalt		0.555	mg/L	0.0050	111	85	115			
Lead		0.551	mg/L	0.0010	110	85	115			
Manganese		2.65	mg/L	0.0010	106	85	115			
Molybdenum		0.557	mg/L	0.0010	111	85	115			
Nickel		0.527	mg/L	0.0050	105	85	115			
Uranium		0.494	mg/L	0.00030	99	85	115			
Vanadium		0.562	mg/L	0.010	112	85	115			
<b>Lab ID: C16100220-010AMSD</b>	10	Sample Matrix Spike Duplicate		Run: ICPMS4-C_161017A			10/18/16 16:08			
Aluminum		2.68	mg/L	0.030	106	70	130	1.4	20	
Beryllium		0.273	mg/L	0.0010	109	70	130	1.5	20	
Cadmium		0.253	mg/L	0.0010	101	70	130	1.1	20	
Cobalt		0.574	mg/L	0.0050	115	70	130	0.7	20	
Lead		0.552	mg/L	0.0010	110	70	130	1.7	20	
Manganese		2.66	mg/L	0.0010	106	70	130	0.4	20	
Molybdenum		0.580	mg/L	0.0010	116	70	130	1.2	20	
Nickel		0.532	mg/L	0.0050	106	70	130	1.2	20	
Uranium		0.519	mg/L	0.00030	103	70	130	0.6	20	
Vanadium		0.568	mg/L	0.010	113	70	130	3.3	20	
<b>Lab ID: C16100237-011CMS3</b>	10	Sample Matrix Spike		Run: ICPMS4-C_161017A			10/18/16 17:43			
Aluminum		2.51	mg/L	0.030	100	70	130			
Beryllium		0.254	mg/L	0.0010	101	70	130			
Cadmium		0.252	mg/L	0.0010	101	70	130			
Cobalt		0.545	mg/L	0.0050	109	70	130			
Lead		0.549	mg/L	0.0010	110	70	130			
Manganese		2.58	mg/L	0.0010	103	70	130			
Molybdenum		0.557	mg/L	0.0010	111	70	130			
Nickel		0.529	mg/L	0.0050	106	70	130			
Uranium		0.490	mg/L	0.00030	98	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: 48499
Lab ID: C16100237-011CMS3	10	Sample Matrix Spike		Run: ICPMS4-C_161017A						10/18/16 17:43
Vanadium		0.539	mg/L	0.010	108	70	130			
<b>Method: E200.8</b>										Batch: R216319
Lab ID: ICV	8	Quality Control Sample		Run: ICPMS4-C_161017A						10/17/16 15:08
Aluminum		0.0484	mg/L	0.0010	97	90	110			
Beryllium		0.0488	mg/L	0.0010	98	90	110			
Cadmium		0.0484	mg/L	0.0010	97	90	110			
Cobalt		0.0453	mg/L	0.0010	91	90	110			
Lead		0.0460	mg/L	0.0010	92	90	110			
Manganese		0.0499	mg/L	0.0010	100	90	110			
Molybdenum		0.0474	mg/L	0.0010	95	90	110			
Uranium		0.0485	mg/L	0.00030	97	90	110			
<b>Method: E200.8</b>										Analytical Run: ICPMS4-C_161107A
Lab ID: ICV		Initial Calibration Verification Standard								11/07/16 12:27
Uranium		0.0469	mg/L	0.00030	94	90	110			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 12/14/16

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_161012A
Lab ID: ICV	2	Initial Calibration Verification Standard								10/12/16 15:31
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		41.1	mg/L	1.0	103	90	110			
Lab ID: CCV-101216-3	2	Continuing Calibration Verification Standard								10/13/16 01:20
Chloride		9.92	mg/L	1.0	99	90	110			
Sulfate		39.2	mg/L	1.0	98	90	110			
Lab ID: CCV-101216-4	2	Continuing Calibration Verification Standard								10/13/16 05:38
Chloride		9.94	mg/L	1.0	99	90	110			
Sulfate		39.0	mg/L	1.0	97	90	110			
Method: E300.0										Batch: R216273
Lab ID: ICB	2	Method Blank								Run: IC2-C_161012A 10/12/16 15:49
Chloride		ND	mg/L	0.04						
Sulfate		0.09	mg/L	0.05						
Lab ID: LFB-101216-1	2	Laboratory Fortified Blank								Run: IC2-C_161012A 10/12/16 16:08
Chloride		9.88	mg/L	1.0	99	90	110			
Sulfate		39.3	mg/L	1.0	98	90	110			
Lab ID: C16100233-001AMS	2	Sample Matrix Spike								Run: IC2-C_161012A 10/13/16 02:16
Chloride		26.5	mg/L	1.0	103	80	120			
Sulfate		242	mg/L	1.0	104	80	120			
Lab ID: C16100233-001AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_161012A 10/13/16 02:34
Chloride		26.7	mg/L	1.0	103	80	120	0.6	20	
Sulfate		242	mg/L	1.0	104	80	120	0.1	20	
Lab ID: C16100237-007AMS	2	Sample Matrix Spike								Run: IC2-C_161012A 10/13/16 06:34
Chloride		123	mg/L	1.0	71	80	120			S
Sulfate		2250	mg/L	4.2		80	120			A
Lab ID: C16100237-007AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_161012A 10/13/16 06:52
Chloride		123	mg/L	1.0	71	80	120	0.2	20	S
Sulfate		2240	mg/L	4.2		80	120	0.5	20	A

### Qualifiers:

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ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.  
MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_161205A
Lab ID: ICV		Initial Calibration Verification Standard								12/05/16 17:57
Chloride		9.60	mg/L	1.0	96	90	110			
Lab ID: CCV120516-3		Continuing Calibration Verification Standard								12/06/16 03:10
Chloride		9.69	mg/L	1.0	97	90	110			
Method: E300.0										Batch: R217842
Lab ID: ICB		Method Blank								12/05/16 18:15
Chloride		ND	mg/L	0.04						
Lab ID: LFB		Laboratory Fortified Blank								12/05/16 18:33
Chloride		9.23	mg/L	1.0	92	90	110			
Lab ID: C16120053-004AMS		Sample Matrix Spike								12/06/16 04:05
Chloride		24300	mg/L	52	98	80	120			
Lab ID: C16120053-004AMSD		Sample Matrix Spike Duplicate								12/06/16 04:24
Chloride		24500	mg/L	52	101	80	120	0.6	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 12/14/16

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA201-C_161013B
Lab ID: CCV_160830	Continuing Calibration Verification Standard									10/13/16 17:34
Nitrogen, Nitrate+Nitrite as N		2.03	mg/L	0.10	101	90	110			
Lab ID: CCV_160830	Continuing Calibration Verification Standard									10/13/16 17:51
Nitrogen, Nitrate+Nitrite as N		2.06	mg/L	0.10	103	90	110			
Method: E353.2										Batch: R216250
Lab ID: MBLK	Method Blank									Run: FIA201-C_161013B 10/13/16 16:07
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						
Lab ID: LFB	Laboratory Fortified Blank									Run: FIA201-C_161013B 10/13/16 16:08
Nitrogen, Nitrate+Nitrite as N		2.02	mg/L	0.10	103	90	110			
Lab ID: C16100233-004EMS	Sample Matrix Spike									Run: FIA201-C_161013B 10/13/16 17:37
Nitrogen, Nitrate+Nitrite as N		1.95	mg/L	0.10	98	90	110			
Lab ID: C16100233-004EMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_161013B 10/13/16 17:39
Nitrogen, Nitrate+Nitrite as N		1.92	mg/L	0.10	96	90	110	1.6	10	
Lab ID: C16100237-010DMS	Sample Matrix Spike									Run: FIA201-C_161013B 10/13/16 17:54
Nitrogen, Nitrate+Nitrite as N		2.14	mg/L	0.10	107	90	110			
Lab ID: C16100237-010DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_161013B 10/13/16 17:55
Nitrogen, Nitrate+Nitrite as N		2.11	mg/L	0.10	106	90	110	1.4	10	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Analytical Run: B_R268750
Lab ID: ccv101416	7	Continuing Calibration Verification Standard								10/14/16 10:46
Bromodichloromethane		4.80	ug/L	0.50	96	70	130			
Bromoform		4.84	ug/L	0.50	97	70	130			
Chlorodibromomethane		4.68	ug/L	0.50	94	70	130			
Chloroform		4.88	ug/L	0.50	98	70	130			
Surr: 1,2-Dichloroethane-d4				0.50	98	71	139			
Surr: p-Bromofluorobenzene				0.50	98	80	127			
Surr: Toluene-d8				0.50	103	80	123			
Method: E624										Batch: B_R268750
Lab ID: lcs101416	7	Laboratory Control Sample								10/14/16 11:24
Bromodichloromethane		5.28	ug/L	0.50	106	74	128			
Bromoform		5.08	ug/L	0.50	102	66	128			
Chlorodibromomethane		5.44	ug/L	0.50	109	74	125			
Chloroform		4.96	ug/L	0.50	99	68	124			
Surr: 1,2-Dichloroethane-d4				0.50	99	71	139			
Surr: p-Bromofluorobenzene				0.50	98	80	127			
Surr: Toluene-d8				0.50	102	80	123			
Lab ID: blk101416	7	Method Blank								10/14/16 12:22
Bromodichloromethane		ND	ug/L	0.50						
Bromoform		ND	ug/L	0.50						
Chlorodibromomethane		ND	ug/L	0.50						
Chloroform		ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4				0.50	94	71	139			
Surr: p-Bromofluorobenzene				0.50	97	80	127			
Surr: Toluene-d8				0.50	104	80	123			
Lab ID: b16100770-001hms	7	Sample Matrix Spike								10/14/16 13:20
Bromodichloromethane		50.4	ug/L	5.0	101	74	128			
Bromoform		48.8	ug/L	5.0	98	66	128			
Chlorodibromomethane		50.8	ug/L	5.0	102	74	125			
Chloroform		81.6	ug/L	5.0	99	68	124			
Surr: 1,2-Dichloroethane-d4				5.0	96	71	139			
Surr: p-Bromofluorobenzene				5.0	100	80	127			
Surr: Toluene-d8				5.0	102	80	123			
Lab ID: b16100770-001hmsd	7	Sample Matrix Spike Duplicate								10/14/16 13:50
Bromodichloromethane		50.8	ug/L	5.0	102	74	128	0.8	20	
Bromoform		48.8	ug/L	5.0	98	66	128	0.0	20	
Chlorodibromomethane		51.2	ug/L	5.0	102	74	125	0.8	20	
Chloroform		82.0	ug/L	5.0	99	68	124	0.5	20	
Surr: 1,2-Dichloroethane-d4				5.0	97	71	139			
Surr: p-Bromofluorobenzene				5.0	97	80	127			
Surr: Toluene-d8				5.0	102	80	123			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Analytical Run: B_R268751
Lab ID: ccvA101416	7	Continuing Calibration Verification Standard								10/14/16 23:35
Bromodichloromethane		5.36	ug/L	0.50	107	70	130			
Bromoform		5.72	ug/L	0.50	114	70	130			
Chlorodibromomethane		5.28	ug/L	0.50	106	70	130			
Chloroform		5.36	ug/L	0.50	107	70	130			
Surr: 1,2-Dichloroethane-d4				0.50	102	71	139			
Surr: p-Bromofluorobenzene				0.50	100	80	127			
Surr: Toluene-d8				0.50	100	80	123			
Method: E624										Batch: B_R268751
Lab ID: lcsA101416	7	Laboratory Control Sample								Run: SUB-B268751 10/15/16 00:04
Bromodichloromethane		4.96	ug/L	0.50	99	74	128			
Bromoform		5.04	ug/L	0.50	101	66	128			
Chlorodibromomethane		5.12	ug/L	0.50	102	74	125			
Chloroform		4.68	ug/L	0.50	94	68	124			
Surr: 1,2-Dichloroethane-d4				0.50	102	71	139			
Surr: p-Bromofluorobenzene				0.50	98	80	127			
Surr: Toluene-d8				0.50	102	80	123			
Lab ID: blkA101416	7	Method Blank								Run: SUB-B268751 10/15/16 01:02
Bromodichloromethane		ND	ug/L	0.50						
Bromoform		ND	ug/L	0.50						
Chlorodibromomethane		ND	ug/L	0.50						
Chloroform		ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4				0.50	102	71	139			
Surr: p-Bromofluorobenzene				0.50	103	80	127			
Surr: Toluene-d8				0.50	97	80	123			

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Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-0979
<b>Lab ID: MB-GA-0979</b>	3	Method Blank						Run: TENNELEC-3_161024A		10/24/16 21:36
Gross Alpha minus Rn & U		2	pCi/L							
Gross Alpha minus Rn & U Precision (±)		0.9	pCi/L							
Gross Alpha minus Rn & U MDC		1	pCi/L							
<b>Lab ID: LCS-GA-0979</b>		Laboratory Control Sample						Run: TENNELEC-3_161024A		10/24/16 21:36
Gross Alpha minus Rn & U		36.5	pCi/L	102		80	120			
<b>Lab ID: C16100237-004GMS</b>		Sample Matrix Spike						Run: TENNELEC-3_161024A		10/24/16 21:36
Gross Alpha minus Rn & U		59.4	pCi/L	82		70	130			
<b>Lab ID: C16100237-004GMSD</b>		Sample Matrix Spike Duplicate						Run: TENNELEC-3_161024A		10/24/16 23:14
Gross Alpha minus Rn & U		62.3	pCi/L	86		70	130	4.7	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 1

**Report Date:** 12/14/16

**Work Order:** C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E903.0										Batch: RA226-8291
<b>Lab ID:</b> LCS-RA226-8291	Laboratory Control Sample			Run: G542M_161018E			11/02/16 05:27			
Radium 226		9.7	pCi/L	93	80	120				
<b>Lab ID:</b> MB-RA226-8291	3	Method Blank			Run: G542M_161018E			11/02/16 05:27		
Radium 226		0.1	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
<b>Lab ID:</b> C16100237-001GMS	Sample Matrix Spike			Run: G542M_161018E			11/02/16 05:27			
Radium 226		18	pCi/L	82	70	130				
<b>Lab ID:</b> C16100237-001GMSD	Sample Matrix Spike Duplicate			Run: G542M_161018E			11/02/16 05:27			
Radium 226		20	pCi/L	96	70	130	15	20		

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0										Batch: RA-TH-ISO-2479
Lab ID: LCS-RA-TH-ISO-2479	Laboratory Control Sample			Run: EGG-ORTEC_2_161020A			10/25/16 09:54			
Thorium 230		5.6	pCi/L	97		80	120			
Lab ID: C16100237-002GMS	Sample Matrix Spike			Run: EGG-ORTEC_2_161020A			10/25/16 09:54			
Thorium 230		23.6	pCi/L	94		70	130			
Lab ID: C16100237-002GMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_2_161020A			10/25/16 09:54			
Thorium 230		22.5	pCi/L	90		70	130	4.8	20	
Lab ID: MB-RA-TH-ISO-2479	3	Method Blank		Run: EGG-ORTEC_2_161020A			10/25/16 09:54			
Thorium 230		0.02	pCi/L							U
Thorium 230 precision (±)		0.08	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
Method: E908.0										Batch: RA-TH-ISO-2479R
Lab ID: LCS-RA-TH-ISO-2479	Laboratory Control Sample			Run: EGG-ORTEC_2_161020A			10/25/16 18:10			
Thorium 230		5.5	pCi/L	96		80	120			
Lab ID: MB-RA-TH-ISO-2479	3	Method Blank		Run: EGG-ORTEC_2_161020A			10/25/16 18:10			
Thorium 230		-0.01	pCi/L							U
Thorium 230 precision (±)		0.03	pCi/L							
Thorium 230 MDC		0.08	pCi/L							

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 1

Report Date: 12/14/16

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0										Batch: T_PB-210-0700
Lab ID: MB-PB-210-0700	3	Method Blank					Run: SUB-T70073			10/18/16 15:47
Lead 210		0.5	pCi/L							U
Lead 210 precision ( $\pm$ )		0.6	pCi/L							
Lead 210 MDC		1	pCi/L							
Lab ID: LCS-PB-210-0700		Laboratory Control Sample					Run: SUB-T70073			10/18/16 18:03
Lead 210		12	pCi/L	103		80	120			
Lab ID: C16100237-005F		Sample Matrix Spike					Run: SUB-T70073			10/18/16 22:14
Lead 210		22	pCi/L	101		70	130			
Lab ID: C16100237-005F		Sample Matrix Spike Duplicate					Run: SUB-T70073			10/19/16 00:15
Lead 210		24	pCi/L	107		70	130	6.7	70.3	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/14/16

Project: Zone 1

Work Order: C16100237

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05										Batch: RA228-5342
Lab ID: LCS-228-RA226-8291	Laboratory Control Sample			Run: TENNELEC-3_161018A			10/28/16 08:57			
Radium 228		7.8	pCi/L	86	80	120				
Lab ID: MB-RA226-8291	3	Method Blank		Run: TENNELEC-3_161018A			10/28/16 08:57			
Radium 228		0.4	pCi/L							U
Radium 228 precision ( $\pm$ )		0.7	pCi/L							
Radium 228 MDC		1	pCi/L							
Lab ID: C16100237-011GMS	Sample Matrix Spike			Run: TENNELEC-3_161018A			10/28/16 08:57			
Radium 228		14	pCi/L	72	70	130				
Lab ID: C16100237-011GMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_161018A			10/28/16 08:57			
Radium 228		15	pCi/L	75	70	130	4.4	20		

### Qualifiers:

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U - Not detected at minimum detectable concentration



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## ANALYTICAL SUMMARY REPORT

December 03, 2016

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16100488

Quote ID: C129 - Quarterly Long List

Project Name: Zone 3

Energy Laboratories, Inc. Casper WY received the following 17 samples for United Nuclear Corporation on 10/14/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16100488-001	613	10/10/16 8:28	10/14/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16100488-002	517	10/10/16 9:19	10/14/16	Aqueous	Same As Above
C16100488-003	708	10/10/16 10:52	10/14/16	Aqueous	Same As Above
C16100488-004	711	10/10/16 12:28	10/14/16	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C16100488-005	EPA-13	10/10/16 13:25	10/14/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16100488-006	420	10/10/16 14:38	10/14/16	Aqueous	Same As Above
C16100488-007	EPA-14	10/10/16 15:35	10/14/16	Aqueous	Same As Above
C16100488-008	719	10/11/16 8:50	10/14/16	Aqueous	Same As Above
C16100488-009	717	10/11/16 10:50	10/14/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16100488-010	717 Duplicate	10/11/16 11:32	10/14/16	Aqueous	Same As Above



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## ANALYTICAL SUMMARY REPORT

C16100488-011	NBL-2	10/11/16 12:15	10/14/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated 624-Purgeable Organics 624-Purgeable Organics
C16100488-012	MW-7	10/11/16 13:26	10/14/16	Aqueous	Same As Above
C16100488-013	NW-3	10/11/16 11:20	10/14/16	Aqueous	Same As Above
C16100488-014	RW-A	10/11/16 12:20	10/14/16	Aqueous	Same As Above
C16100488-015	RW-11	10/11/16 13:05	10/14/16	Aqueous	Same As Above
C16100488-016	Rinsate	10/11/16 15:25	10/14/16	Aqueous	Same As Above
C16100488-017	Field Blank	10/11/16 15:30	10/14/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved 624-Purgeable Organics 624-Purgeable Organics

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.



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## ANALYTICAL SUMMARY REPORT

Report Approved By:



HSE/RSO

Digitally signed by  
Steve Dobos

Date: 2016.12.03 16:07:51 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 3  
**Work Order:** C16100488

**Report Date:** 12/03/16

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

Tests associated with analyst identified as ELI-CS were subcontracted to Energy Laboratories, 415 Graham Rd., College Station, TX, EPA Number TX01520.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2310 B Analytical Run: MANTECH_161019B										
Lab ID: CCV-9238		Continuing Calibration Verification Standard								10/19/16 12:30
Acidity, Total as CaCO3		ND	mg/L	5.0		0	0			
Lab ID: CCV-9238 Continuing Calibration Verification Standard 10/19/16 17:06										
Acidity, Total as CaCO3		ND	mg/L	5.0		0	0			
Method: A2310 B Batch: R216408										
Lab ID: MBLK		Method Blank						Run: MANTECH_161019B		10/19/16 09:45
Acidity, Total as CaCO3		ND	mg/L	2						
Lab ID: LCS_160812 Laboratory Control Sample Run: MANTECH_161019B 10/19/16 10:03										
Acidity, Total as CaCO3		927	mg/L	5.0	109	80	120			
Lab ID: C16100488-002ADUP Sample Duplicate Run: MANTECH_161019B 10/19/16 14:04										
Acidity, Total as CaCO3		30.8	mg/L	5.0				23	20	R
Method: A2310 B Analytical Run: MANTECH_161026A										
Lab ID: ICV-9186		Initial Calibration Verification Standard								10/26/16 11:44
Acidity, Total as CaCO3		ND	mg/L	5.0		0	0			
Lab ID: CCV-9238 Continuing Calibration Verification Standard 10/26/16 11:47										
Acidity, Total as CaCO3		ND	mg/L	5.0		0	0			
Method: A2310 B Batch: R216673										
Lab ID: MBLK		Method Blank						Run: MANTECH_161026A		10/26/16 11:41
Acidity, Total as CaCO3		2	mg/L	1						
Lab ID: C16100488-002ADUP Sample Duplicate Run: MANTECH_161026A 10/26/16 12:43										
Acidity, Total as CaCO3		579	mg/L	5.0				3.5	20	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R216323
Lab ID: MBLK		Method Blank					Run: MANTECH_161017A			10/17/16 14:46
Bicarbonate as HCO <sub>3</sub>	2		mg/L	1						
Lab ID: C16100488-010ADUP		Sample Duplicate					Run: MANTECH_161017A			10/18/16 01:48
Bicarbonate as HCO <sub>3</sub>	ND		mg/L	5.0						10

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 12/03/16

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS161014A
Lab ID: MB-1_161014A		Method Blank					Run: BAL-18_161014A			10/14/16 16:56
Solids, Total Dissolved TDS @ 180 C		10	mg/L	8						
Lab ID: LCS-2_161014A										Run: BAL-18_161014A
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	11	99	90	110			10/14/16 16:56
Method: A2540 C										Batch: TDS161018A
Lab ID: MB-1_161018A		Method Blank					Run: BAL-18_161018A			10/18/16 08:28
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	8						
Lab ID: LCS-2_161018A										Run: BAL-18_161018A
Solids, Total Dissolved TDS @ 180 C		1090	mg/L	11	98	90	110			10/18/16 08:28
Method: A2540 C										Batch: TDS161021B
Lab ID: MB-1_161021B		Method Blank					Run: BAL-18_161021B			10/21/16 12:31
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	8						
Lab ID: LCS-2_161021B										Run: BAL-18_161021B
Solids, Total Dissolved TDS @ 180 C		1100	mg/L	11	99	90	110			10/21/16 12:31
Lab ID: C16100488-009A DUP										Run: BAL-18_161021B
Solids, Total Dissolved TDS @ 180 C		7140	mg/L	99				0.2	5	10/21/16 12:35

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A3114 B Analytical Run: CVAA-C202_161103A										
Lab ID: ICV	Initial Calibration Verification Standard 11/02/16 15:22									
Selenium-IV		0.0262	mg/L	0.0010	107	90	110			
Method: A3114 B Batch: 48681										
Lab ID: MB-48681	Method Blank Run: CVAA-C202_161103A 11/02/16 16:37									
Selenium-IV		ND	mg/L	0.0005						
Lab ID: LCS-48681	Laboratory Control Sample Run: CVAA-C202_161103A 11/02/16 16:48									
Selenium-IV		0.0251	mg/L	0.0010	103	90	110			
Lab ID: C16100488-017CMS	Sample Matrix Spike Run: CVAA-C202_161103A 11/02/16 16:49									
Selenium-IV		0.0185	mg/L	0.0010	76	85	115			S
Lab ID: C16100488-017CMSD	Sample Matrix Spike Duplicate Run: CVAA-C202_161103A 11/02/16 16:51									
Selenium-IV		0.0174	mg/L	0.0010	71	85	115	5.9	10	S
Method: A3114 B Analytical Run: CVAA-C202_161103B										
Lab ID: ICV	Initial Calibration Verification Standard 11/03/16 15:37									
Selenium-IV		0.0242	mg/L	0.0010	99	90	110			
Method: A3114 B Batch: 48680										
Lab ID: MB-48680	Method Blank Run: CVAA-C202_161103B 11/03/16 15:39									
Selenium-IV		ND	mg/L	0.0005						
Lab ID: LCS-48680	Laboratory Control Sample Run: CVAA-C202_161103B 11/03/16 15:40									
Selenium-IV		0.0237	mg/L	0.0010	97	90	110			
Lab ID: C16100488-005CMS	Sample Matrix Spike Run: CVAA-C202_161103B 11/03/16 15:57									
Selenium-IV		0.0237	mg/L	0.0010	97	85	115			
Lab ID: C16100488-005CMSD	Sample Matrix Spike Duplicate Run: CVAA-C202_161103B 11/03/16 15:59									
Selenium-IV		0.0235	mg/L	0.0010	96	85	115	0.7	10	
Lab ID: C16100488-015CMS	Sample Matrix Spike Run: CVAA-C202_161103B 11/03/16 16:20									
Selenium-IV		0.0243	mg/L	0.0010	100	85	115			
Lab ID: C16100488-015CMSD	Sample Matrix Spike Duplicate Run: CVAA-C202_161103B 11/03/16 16:21									
Selenium-IV		0.0235	mg/L	0.0010	96	85	115	3.4	10	

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_161017A
Lab ID: pH 6.86		Initial Calibration Verification Standard								10/17/16 08:48
pH		6.88	s.u.	0.010	100	98	102			
Lab ID: pH 6.86		Initial Calibration Verification Standard								10/17/16 14:57
pH		6.88	s.u.	0.010	100	98	102			
Method: A4500-H B										Batch: R216302
Lab ID: C16100488-001ADUP		Sample Duplicate					Run: PHSC_101-C_161017A			10/17/16 09:43
pH		2.98	s.u.	0.010				0.0	3	
Lab ID: C16100488-011ADUP		Sample Duplicate					Run: PHSC_101-C_161017A			10/17/16 10:16
pH		6.68	s.u.	0.010				0.3	3	

### Qualifiers:

RL - Analyte reporting limit.

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G								Analytical Run: FIA201-C_161102A		
Lab ID: CCV	Continuing Calibration Verification Standard									11/02/16 18:01
Nitrogen, Ammonia as N		1.01	mg/L	0.050	101	90	110			
Method: A4500-NH3 G								Batch: R216898		
Lab ID: MBLK	Method Blank					Run: FIA201-C_161102A			11/02/16 17:06	
Nitrogen, Ammonia as N		ND	mg/L	0.003						
Lab ID: LFB	Laboratory Fortified Blank					Run: FIA201-C_161102A			11/02/16 17:12	
Nitrogen, Ammonia as N		0.957	mg/L	0.050	97	90	110			
Lab ID: C16100900-016DMS	Sample Matrix Spike					Run: FIA201-C_161102A			11/02/16 18:04	
Nitrogen, Ammonia as N		2.63	mg/L	0.10	96	90	110			
Lab ID: C16100900-016DMSD	Sample Matrix Spike Duplicate					Run: FIA201-C_161102A			11/02/16 18:06	
Nitrogen, Ammonia as N		2.66	mg/L	0.10	97	90	110	1.1	10	
Lab ID: C16100871-003BMS	Sample Matrix Spike					Run: FIA201-C_161102A			11/02/16 18:21	
Nitrogen, Ammonia as N		43.7	mg/L	1.3	95	90	110			
Lab ID: C16100871-003BMSD	Sample Matrix Spike Duplicate					Run: FIA201-C_161102A			11/02/16 18:22	
Nitrogen, Ammonia as N		43.1	mg/L	1.3	93	90	110	1.4	10	
Method: A4500-NH3 G								Analytical Run: FIA201-C_161104A		
Lab ID: CCV	Continuing Calibration Verification Standard									11/04/16 11:53
Nitrogen, Ammonia as N		1.01	mg/L	0.050	101	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard									11/04/16 12:10
Nitrogen, Ammonia as N		1.00	mg/L	0.050	100	90	110			
Method: A4500-NH3 G								Batch: R216956		
Lab ID: MBLK	Method Blank					Run: FIA201-C_161104A			11/04/16 11:16	
Nitrogen, Ammonia as N		ND	mg/L	0.003						
Lab ID: LFB	Laboratory Fortified Blank					Run: FIA201-C_161104A			11/04/16 11:18	
Nitrogen, Ammonia as N		0.971	mg/L	0.050	98	90	110			
Lab ID: C16100459-021DMS	Sample Matrix Spike					Run: FIA201-C_161104A			11/04/16 11:56	
Nitrogen, Ammonia as N		0.965	mg/L	0.050	96	90	110			
Lab ID: C16100459-021DMSD	Sample Matrix Spike Duplicate					Run: FIA201-C_161104A			11/04/16 11:58	
Nitrogen, Ammonia as N		0.956	mg/L	0.050	95	90	110	0.9	10	
Lab ID: C16100488-014DMS	Sample Matrix Spike					Run: FIA201-C_161104A			11/04/16 12:13	
Nitrogen, Ammonia as N		5.70	mg/L	0.25	98	90	110			
Lab ID: C16100488-014DMSD	Sample Matrix Spike Duplicate					Run: FIA201-C_161104A			11/04/16 12:14	
Nitrogen, Ammonia as N		5.70	mg/L	0.25	98	90	110	0.0	10	

### Qualifiers:

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ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G										Batch: R216982
Lab ID: MBLK		Method Blank					Run: FIA201-C_161105A			11/05/16 21:51
Nitrogen, Ammonia as N		ND	mg/L	0.003						
Lab ID: LFB		Laboratory Fortified Blank					Run: FIA201-C_161105A			11/05/16 21:53
Nitrogen, Ammonia as N		0.983	mg/L	0.050	99	90	110			
Lab ID: C16100474-001EMS		Sample Matrix Spike					Run: FIA201-C_161105A			11/05/16 21:58
Nitrogen, Ammonia as N		1.15	mg/L	0.050	108	90	110			
Lab ID: C16100474-001EMSD		Sample Matrix Spike Duplicate					Run: FIA201-C_161105A			11/05/16 21:59
Nitrogen, Ammonia as N		1.15	mg/L	0.050	108	90	110	0.0	10	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 12/03/16

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1632AM										Analytical Run: SUB-H119993
Lab ID: AS-ICV 25ppb-10/31/2	Initial Calibration Verification Standard									
Arsenic-III		26.1	ug/L	5.0	105	87.6	114			10/31/16 17:12
Lab ID: AS-50.0-10/31/2016	Continuing Calibration Verification Standard									
Arsenic-III		53.2	ug/L	5.0	106	85	115			10/31/16 21:02
Lab ID: AS-50.0-10/31/2016	Continuing Calibration Verification Standard									
Arsenic-III		55.6	ug/L	5.0	111	85	115			10/31/16 23:51
Method: E1632AM										Batch: H_R119993
Lab ID: AS-LFB 50ppb-10/31/	Laboratory Fortified Blank									
Arsenic-III		53.6	ug/L	5.0	107	55	146			Run: SUB-H119993 10/31/16 18:14
Lab ID: ICB	Method Blank									
Arsenic-III		ND	ug/L	0.2						Run: SUB-H119993 10/31/16 18:26
Lab ID: C16100488-001E	Sample Matrix Spike									
Arsenic-III		51.7	ug/L	5.0	103	55	146			Run: SUB-H119993 10/31/16 21:38
Lab ID: C16100488-001E	Sample Matrix Spike Duplicate									
Arsenic-III		53.3	ug/L	5.0	107	55	146	3.1	20	Run: SUB-H119993 10/31/16 21:50
Lab ID: C16100488-011E	Sample Matrix Spike									
Arsenic-III		57.6	ug/L	5.0	115	55	146			Run: SUB-H119993 11/01/16 00:27
Lab ID: C16100488-011E	Sample Matrix Spike Duplicate									
Arsenic-III		57.3	ug/L	5.0	115	55	146	0.5	20	Run: SUB-H119993 11/01/16 00:39
Lab ID: H16100490-001A MS	Sample Matrix Spike									
Arsenic-III		146	ug/L	5.0	120	55	146			Run: SUB-H119993 11/01/16 03:15
Lab ID: H16100490-001A MSD	Sample Matrix Spike Duplicate									
Arsenic-III		150	ug/L	5.0	129	55	146	3.0	20	Run: SUB-H119993 11/01/16 03:27

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP4-C_161028A										
<b>Lab ID: ICV</b>	4	Initial Calibration Verification Standard								10/28/16 11:14
Calcium		50.5	mg/L	1.0	101	95	105			
Magnesium		50.4	mg/L	1.0	101	95	105			
Potassium		51.2	mg/L	1.0	102	95	105			
Sodium		50.7	mg/L	1.0	101	95	105			
<b>Lab ID: ICSA</b>	4	Interference Check Sample A								10/28/16 11:34
Calcium		460	mg/L	1.0	92	80	120			
Magnesium		501	mg/L	1.0	100	80	120			
Potassium		0.0158	mg/L	1.0						
Sodium		-0.109	mg/L	1.0						
<b>Lab ID: ICSAB</b>	4	Interference Check Sample AB								10/28/16 11:38
Calcium		460	mg/L	1.0	92	80	120			
Magnesium		501	mg/L	1.0	100	80	120			
Potassium		0.0150	mg/L	1.0						
Sodium		0.00208	mg/L	1.0						
<b>Method: E200.7</b> Batch: R216772										
<b>Lab ID: MB-161028A</b>	4	Method Blank								Run: ICP4-C_161028A 10/28/16 11:58
Calcium		0.1	mg/L	0.003						
Magnesium		ND	mg/L	0.04						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.1						
<b>Lab ID: LFB-161028A</b>	4	Laboratory Fortified Blank								Run: ICP4-C_161028A 10/28/16 12:02
Calcium		48.5	mg/L	1.0	97	85	115			
Magnesium		48.5	mg/L	1.0	97	85	115			
Potassium		51.2	mg/L	1.0	102	85	115			
Sodium		49.1	mg/L	1.0	98	85	115			
<b>Lab ID: C16100462-002CMS2</b>	4	Sample Matrix Spike								Run: ICP4-C_161028A 10/28/16 15:15
Calcium		653	mg/L	1.0	84	70	130			
Magnesium		295	mg/L	1.0	95	70	130			
Potassium		248	mg/L	1.0	95	70	130			
Sodium		321	mg/L	1.2	94	70	130			
<b>Lab ID: C16100462-002CMSD</b>	4	Sample Matrix Spike Duplicate								Run: ICP4-C_161028A 10/28/16 15:19
Calcium		650	mg/L	1.0	83	70	130	0.4	20	
Magnesium		294	mg/L	1.0	94	70	130	0.3	20	
Potassium		247	mg/L	1.0	94	70	130	0.5	20	
Sodium		318	mg/L	1.2	93	70	130	0.9	20	
<b>Lab ID: C16100488-008BMS2</b>	4	Sample Matrix Spike								Run: ICP4-C_161028A 10/28/16 16:14
Calcium		692	mg/L	1.0	84	70	130			
Magnesium		962	mg/L	1.0	89	70	130			
Potassium		251	mg/L	1.0	93	70	130			

### Qualifiers:

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MDC - Minimum detectable concentration





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R216772
Lab ID: C16100488-008BMS2	4	Sample Matrix Spike				Run: ICP4-C_161028A				10/28/16 16:14
Sodium		382	mg/L	1.2	92	70	130			
Lab ID: C16100488-008BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_161028A				10/28/16 16:18
Calcium		692	mg/L	1.0	84	70	130	0.0	20	
Magnesium		961	mg/L	1.0	89	70	130	0.1	20	
Potassium		249	mg/L	1.0	93	70	130	0.9	20	
Sodium		380	mg/L	1.2	92	70	130	0.4	20	
Lab ID: C16100493-001BMS2	4	Sample Matrix Spike				Run: ICP4-C_161028A				10/28/16 17:14
Calcium		246	mg/L	1.0	89	70	130			
Magnesium		238	mg/L	1.0	91	70	130			
Potassium		201	mg/L	1.0	78	70	130			
Sodium		848	mg/L	1.2	70	70	130			
Lab ID: C16100493-001BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_161028A				10/28/16 17:18
Calcium		247	mg/L	1.0	89	70	130	0.6	20	
Magnesium		239	mg/L	1.0	91	70	130	0.3	20	
Potassium		203	mg/L	1.0	79	70	130	1.0	20	
Sodium		856	mg/L	1.2	73	70	130	0.9	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP4-C_161101A										
<b>Lab ID: ICV</b>	8 Initial Calibration Verification Standard									11/01/16 12:26
Aluminum		5.00	mg/L	0.10	100	95	105			
Beryllium		0.499	mg/L	0.010	100	95	105			
Cadmium		0.477	mg/L	0.010	95	95	105			
Cobalt		0.950	mg/L	0.010	95	95	105			
Manganese		4.80	mg/L	0.010	96	95	105			
Molybdenum		0.969	mg/L	0.10	97	95	105			
Nickel		0.946	mg/L	0.050	95	95	105			
Vanadium		0.991	mg/L	0.10	99	95	105			
<b>Lab ID: ICSA</b>	8 Interference Check Sample A									11/01/16 12:45
Aluminum		476	mg/L	0.10	95	80	120			
Beryllium		2.00E-05	mg/L	0.010						
Cadmium		0.00267	mg/L	0.010						
Cobalt		-0.00770	mg/L	0.010						
Manganese		-0.0157	mg/L	0.010						
Molybdenum		0.00583	mg/L	0.10						
Nickel		0.00128	mg/L	0.050						
Vanadium		0.00156	mg/L	0.10						
<b>Lab ID: ICSAB</b>	8 Interference Check Sample AB									11/01/16 12:50
Aluminum		476	mg/L	0.10	95	80	120			
Beryllium		0.464	mg/L	0.010	93	80	120			
Cadmium		0.933	mg/L	0.010	93	80	120			
Cobalt		0.416	mg/L	0.010	83	80	120			
Manganese		0.426	mg/L	0.010	85	80	120			
Molybdenum		0.00421	mg/L	0.10						
Nickel		0.838	mg/L	0.050	84	80	120			
Vanadium		0.500	mg/L	0.10	100	80	120			
<b>Method: E200.7</b> Batch: 48629										
<b>Lab ID: MB-48629</b>	8 Method Blank									Run: ICP4-C_161101A 11/01/16 22:32
Aluminum		ND	mg/L	0.01						
Beryllium		ND	mg/L	7E-05						
Cadmium		ND	mg/L	0.0006						
Cobalt		ND	mg/L	0.002						
Manganese		ND	mg/L	0.002						
Molybdenum		ND	mg/L	0.004						
Nickel		ND	mg/L	0.003						
Vanadium		ND	mg/L	0.004						
<b>Lab ID: LCS3-48629</b>	8 Laboratory Control Sample									Run: ICP4-C_161101A 11/01/16 22:36
Aluminum		2.58	mg/L	0.030	103	85	115			
Beryllium		0.256	mg/L	0.0010	102	85	115			
Cadmium		0.251	mg/L	0.0012	100	85	115			
Cobalt		0.492	mg/L	0.0052	98	85	115			

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: 48629
Lab ID: LCS3-48629	8	Laboratory Control Sample		Run: ICP4-C_161101A				11/01/16 22:36		
Manganese		2.51	mg/L	0.0012	100	85	115			
Molybdenum		0.474	mg/L	0.0053	95	85	115			
Nickel		0.493	mg/L	0.0050	99	85	115			
Vanadium		0.514	mg/L	0.010	103	85	115			
Lab ID: C16100488-001CMS3	8	Sample Matrix Spike		Run: ICP4-C_161101A				11/01/16 22:43		
Aluminum		542	mg/L	0.15		70	130			A
Beryllium		0.415	mg/L	0.0028	101	70	130			
Cadmium		0.267	mg/L	0.012	96	70	130			
Cobalt		2.23	mg/L	0.052	89	70	130			
Manganese		48.5	mg/L	0.012		70	130			A
Molybdenum		0.504	mg/L	0.053	58	70	130			S
Nickel		2.26	mg/L	0.045	88	70	130			
Vanadium		1.97	mg/L	0.034	99	70	130			
Lab ID: C16100488-001CMSD	8	Sample Matrix Spike Duplicate		Run: ICP4-C_161101A				11/01/16 22:47		
Aluminum		529	mg/L	0.15		70	130	2.5	20	A
Beryllium		0.408	mg/L	0.0028	98	70	130	1.8	20	
Cadmium		0.269	mg/L	0.012	97	70	130	0.6	20	
Cobalt		2.19	mg/L	0.052	82	70	130	1.5	20	
Manganese		47.4	mg/L	0.012		70	130	2.1	20	A
Molybdenum		0.446	mg/L	0.053	46	70	130	12	20	S
Nickel		2.20	mg/L	0.045	77	70	130	2.4	20	
Vanadium		1.94	mg/L	0.034	92	70	130	1.8	20	
Lab ID: C16100488-013CMS3	8	Sample Matrix Spike		Run: ICP4-C_161101A				11/01/16 23:38		
Aluminum		2.56	mg/L	0.030	97	70	130			
Beryllium		0.218	mg/L	0.0010	87	70	130			
Cadmium		0.210	mg/L	0.0012	84	70	130			
Cobalt		0.443	mg/L	0.0052	85	70	130			
Manganese		5.13	mg/L	0.0012	86	70	130			
Molybdenum		0.893	mg/L	0.0053	86	70	130			
Nickel		0.432	mg/L	0.0050	83	70	130			
Vanadium		0.462	mg/L	0.010	92	70	130			
Lab ID: C16100488-013CMSD	8	Sample Matrix Spike Duplicate		Run: ICP4-C_161101A				11/01/16 23:42		
Aluminum		2.56	mg/L	0.030	97	70	130	0.0	20	
Beryllium		0.217	mg/L	0.0010	87	70	130	0.4	20	
Cadmium		0.210	mg/L	0.0012	84	70	130	0.1	20	
Cobalt		0.444	mg/L	0.0052	85	70	130	0.2	20	
Manganese		5.15	mg/L	0.0012	87	70	130	0.4	20	
Molybdenum		0.913	mg/L	0.0053	90	70	130	2.3	20	
Nickel		0.432	mg/L	0.0050	83	70	130	0.0	20	
Vanadium		0.460	mg/L	0.010	92	70	130	0.4	20	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP4-C_161102A		
Lab ID: ICV	7	Initial Calibration Verification Standard							11/02/16 14:03	
Aluminum		4.93	mg/L	0.10	99	95	105			
Beryllium		0.493	mg/L	0.010	99	95	105			
Cadmium		0.477	mg/L	0.010	95	95	105			
Manganese		4.77	mg/L	0.010	95	95	105			
Molybdenum		0.970	mg/L	0.10	97	95	105			
Nickel		0.947	mg/L	0.050	95	95	105			
Vanadium		0.976	mg/L	0.10	98	95	105			
Lab ID: ICSA	7	Interference Check Sample A							11/02/16 14:22	
Aluminum		475	mg/L	0.10	95	80	120			
Beryllium		3.00E-05	mg/L	0.010						
Cadmium		0.00337	mg/L	0.010						
Manganese		-0.00671	mg/L	0.010						
Molybdenum		0.00551	mg/L	0.10						
Nickel		-0.000840	mg/L	0.050						
Vanadium		0.00192	mg/L	0.10						
Lab ID: ICSAB	7	Interference Check Sample AB							11/02/16 14:27	
Aluminum		475	mg/L	0.10	95	80	120			
Beryllium		0.460	mg/L	0.010	92	80	120			
Cadmium		0.930	mg/L	0.010	93	80	120			
Manganese		0.435	mg/L	0.010	87	80	120			
Molybdenum		0.00352	mg/L	0.10						
Nickel		0.833	mg/L	0.050	83	80	120			
Vanadium		0.498	mg/L	0.10	100	80	120			
Method: E200.7								Batch: 48671		
Lab ID: MB-48671	7	Method Blank				Run: ICP4-C_161102A			11/03/16 00:44	
Aluminum		ND	mg/L	0.01						
Beryllium		ND	mg/L	7E-05						
Cadmium		ND	mg/L	0.0006						
Manganese		ND	mg/L	0.002						
Molybdenum		0.02	mg/L	0.004						
Nickel		ND	mg/L	0.003						
Vanadium		ND	mg/L	0.004						
Lab ID: LCS3-48671	7	Laboratory Control Sample				Run: ICP4-C_161102A			11/03/16 00:48	
Aluminum		2.61	mg/L	0.030	104	85	115			
Beryllium		0.256	mg/L	0.0010	103	85	115			
Cadmium		0.253	mg/L	0.0012	101	85	115			
Manganese		2.53	mg/L	0.0012	101	85	115			
Molybdenum		0.486	mg/L	0.0053	94	85	115			
Nickel		0.498	mg/L	0.0050	100	85	115			
Vanadium		0.518	mg/L	0.010	104	85	115			

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 12/03/16

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b>										Batch: 48671
<b>Lab ID: C16100488-015CMS3</b>	7	Sample Matrix Spike		Run: ICP4-C_161102A				11/03/16 01:00		
Aluminum		2.62	mg/L	0.030	99	70	130			
Beryllium		0.238	mg/L	0.0010	95	70	130			
Cadmium		0.226	mg/L	0.0025	91	70	130			
Manganese		8.22	mg/L	0.0023	101	70	130			
Molybdenum		0.781	mg/L	0.011	97	70	130			
Nickel		0.802	mg/L	0.0090	91	70	130			
Vanadium		0.491	mg/L	0.010	98	70	130			
<b>Lab ID: C16100488-015CMSD</b>	7	Sample Matrix Spike Duplicate		Run: ICP4-C_161102A				11/03/16 01:04		
Aluminum		2.53	mg/L	0.030	96	70	130	3.5	20	
Beryllium		0.233	mg/L	0.0010	92	70	130	2.3	20	
Cadmium		0.225	mg/L	0.0025	90	70	130	0.6	20	
Manganese		8.02	mg/L	0.0023	93	70	130	2.5	20	
Molybdenum		0.765	mg/L	0.011	94	70	130	2.2	20	
Nickel		0.787	mg/L	0.0090	88	70	130	1.9	20	
Vanadium		0.477	mg/L	0.010	95	70	130	3.0	20	
<b>Method: E200.7</b>										Analytical Run: ICP4-C_161103A
<b>Lab ID: ICV</b>	Initial Calibration Verification Standard									
Aluminum		5.01	mg/L	0.10	100	95	105			11/03/16 13:14
<b>Lab ID: ICSA</b>	Interference Check Sample A									
Aluminum		471	mg/L	0.10	94	80	120			11/03/16 13:33
<b>Lab ID: ICSAB</b>	Interference Check Sample AB									
Aluminum		475	mg/L	0.10	95	80	120			11/03/16 13:37
<b>Method: E200.7</b>										Batch: 48629
<b>Lab ID: MB-48629</b>	Method Blank		Run: ICP4-C_161103A				11/03/16 19:58			
Aluminum		ND	mg/L	0.01						

### Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>		Analytical Run: ICPMS4-C_161028A								
<b>Lab ID: ICV</b>	10	Initial Calibration Verification Standard							10/28/16 16:04	
Aluminum		0.0501	mg/L	0.0010	100	90	110			
Beryllium		0.0500	mg/L	0.0010	100	90	110			
Cadmium		0.0489	mg/L	0.0010	98	90	110			
Cobalt		0.0496	mg/L	0.0010	99	90	110			
Lead		0.0490	mg/L	0.0010	98	90	110			
Manganese		0.0495	mg/L	0.0010	99	90	110			
Molybdenum		0.0469	mg/L	0.0010	94	90	110			
Nickel		0.0503	mg/L	0.0010	101	90	110			
Uranium		0.0470	mg/L	0.00030	94	90	110			
Vanadium		0.0491	mg/L	0.0010	98	90	110			
<b>Method: E200.8</b>		Batch: 48629								
<b>Lab ID: MB-48629</b>	10	Method Blank							Run: ICPMS4-C_161028A 10/28/16 17:20	
Aluminum		0.001	mg/L	0.0001						
Beryllium		ND	mg/L	6E-06						
Cadmium		1E-05	mg/L	3E-06						
Cobalt		ND	mg/L	5E-06						
Lead		ND	mg/L	2E-05						
Manganese		ND	mg/L	7E-05						
Molybdenum		8E-05	mg/L	4E-05						
Nickel		ND	mg/L	2E-05						
Uranium		8E-06	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
<b>Lab ID: LCS3-48629</b>	10	Laboratory Control Sample							Run: ICPMS4-C_161028A 10/28/16 17:26	
Aluminum		2.57	mg/L	0.030	103	85	115			
Beryllium		0.283	mg/L	0.0010	113	85	115			
Cadmium		0.264	mg/L	0.0010	106	85	115			
Cobalt		0.540	mg/L	0.0050	108	85	115			
Lead		0.553	mg/L	0.0010	111	85	115			
Manganese		2.59	mg/L	0.0010	104	85	115			
Molybdenum		0.504	mg/L	0.0010	101	85	115			
Nickel		0.510	mg/L	0.0050	102	85	115			
Uranium		0.514	mg/L	0.00030	103	85	115			
Vanadium		0.534	mg/L	0.010	107	85	115			
<b>Lab ID: C16100488-001CMS3</b>	10	Sample Matrix Spike							Run: ICPMS4-C_161028A 10/28/16 18:54	
Aluminum		527	mg/L	0.030		70	130			A
Beryllium		0.426	mg/L	0.0010	100	70	130			
Cadmium		0.298	mg/L	0.0010	103	70	130			
Cobalt		2.57	mg/L	0.0050		70	130			A
Lead		0.511	mg/L	0.0010	101	70	130			
Manganese		51.2	mg/L	0.0010		70	130			A
Molybdenum		0.486	mg/L	0.0010	93	70	130			
Nickel		2.32	mg/L	0.0050	86	70	130			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/03/16

**Project:** Zone 3

**Work Order:** C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E200.8										Batch: 48629
<b>Lab ID:</b> C16100488-001CMS3	10	Sample Matrix Spike		Run: ICPMS4-C_161028A			10/28/16 18:54			
Uranium		1.25	mg/L	0.00030	99	70	130			
Vanadium		1.94	mg/L	0.010	85	70	130			
<b>Lab ID:</b> C16100488-001CMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS4-C_161028A			10/28/16 19:01			
Aluminum		514	mg/L	0.030		70	130	2.5	20	A
Beryllium		0.419	mg/L	0.0010	98	70	130	1.7	20	
Cadmium		0.299	mg/L	0.0010	103	70	130	0.2	20	
Cobalt		2.53	mg/L	0.0050		70	130	1.6	20	A
Lead		0.504	mg/L	0.0010	100	70	130	1.3	20	
Manganese		50.2	mg/L	0.0010		70	130	1.9	20	A
Molybdenum		0.487	mg/L	0.0010	93	70	130	0.3	20	
Nickel		2.27	mg/L	0.0050	76	70	130	2.3	20	
Uranium		1.23	mg/L	0.00030	96	70	130	1.4	20	
Vanadium		1.90	mg/L	0.010	76	70	130	2.3	20	
<b>Lab ID:</b> C16100488-013CMS3	10	Sample Matrix Spike		Run: ICPMS4-C_161028A			10/28/16 21:22			
Aluminum		2.59	mg/L	0.030	99	70	130			
Beryllium		0.230	mg/L	0.0010	92	70	130			
Cadmium		0.258	mg/L	0.0010	103	70	130			
Cobalt		0.490	mg/L	0.0050	93	70	130			
Lead		0.492	mg/L	0.0010	98	70	130			
Manganese		5.65	mg/L	0.0010	96	70	130			
Molybdenum		0.995	mg/L	0.0010	97	70	130			
Nickel		0.456	mg/L	0.0050	88	70	130			
Uranium		0.867	mg/L	0.00030	104	70	130			
Vanadium		0.465	mg/L	0.010	93	70	130			
<b>Lab ID:</b> C16100488-013CMSD	10	Sample Matrix Spike Duplicate		Run: ICPMS4-C_161028A			10/28/16 21:28			
Aluminum		2.55	mg/L	0.030	98	70	130	1.3	20	
Beryllium		0.227	mg/L	0.0010	91	70	130	1.4	20	
Cadmium		0.258	mg/L	0.0010	103	70	130	0.2	20	
Cobalt		0.494	mg/L	0.0050	94	70	130	0.7	20	
Lead		0.487	mg/L	0.0010	97	70	130	0.9	20	
Manganese		5.60	mg/L	0.0010	94	70	130	0.8	20	
Molybdenum		1.01	mg/L	0.0010	100	70	130	1.6	20	
Nickel		0.456	mg/L	0.0050	88	70	130	0.1	20	
Uranium		0.874	mg/L	0.00030	106	70	130	0.7	20	
Vanadium		0.467	mg/L	0.010	93	70	130	0.5	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										Batch: 48671
<b>Lab ID: MB-48671</b>	4	Method Blank						Run: ICPMS4-C_161114A		11/15/16 03:00
Cobalt		1.0E-05	mg/L	5E-06						
Lead		ND	mg/L	2E-05						
Nickel		3E-05	mg/L	2E-05						
Uranium		ND	mg/L	4E-06						
<b>Lab ID: LCS3-48671</b>	4	Laboratory Control Sample						Run: ICPMS4-C_161114A		11/15/16 03:06
Cobalt		0.456	mg/L	0.0050	91	85	115			
Lead		0.467	mg/L	0.0010	93	85	115			
Nickel		0.452	mg/L	0.0050	90	85	115			
Uranium		0.445	mg/L	0.00030	89	85	115			
<b>Lab ID: C16100488-015CMS3</b>	4	Sample Matrix Spike						Run: ICPMS4-C_161114A		11/15/16 04:28
Cobalt		0.733	mg/L	0.0050	74	70	130			
Lead		0.418	mg/L	0.0010	83	70	130			
Nickel		0.670	mg/L	0.0050	62	70	130			S
Uranium		0.471	mg/L	0.00030	79	70	130			
<b>Lab ID: C16100488-015CMSD</b>	4	Sample Matrix Spike Duplicate						Run: ICPMS4-C_161114A		11/15/16 04:34
Cobalt		0.758	mg/L	0.0050	79	70	130	3.4	20	
Lead		0.451	mg/L	0.0010	90	70	130	7.4	20	
Nickel		0.767	mg/L	0.0050	81	70	130	14	20	
Uranium		0.525	mg/L	0.00030	90	70	130	11	20	

### Qualifiers:

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S - Spike recovery outside of advisory limits.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 12/03/16

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>										
Analytical Run: ICPMS4-C_161115A										
<b>Lab ID: ICV</b>	4	Initial Calibration Verification Standard								11/15/16 14:32
Cobalt		0.0464	mg/L	0.0010	93	90	110			
Lead		0.0480	mg/L	0.0010	96	90	110			
Nickel		0.0497	mg/L	0.0010	99	90	110			
Uranium		0.0499	mg/L	0.00030	100	90	110			
<b>Method: E200.8</b>										
Batch: 48629										
<b>Lab ID: MB-48629</b>	10	Method Blank								Run: ICPMS4-C_161115A 11/16/16 03:44
Aluminum		0.001	mg/L	0.0001						
Beryllium		ND	mg/L	6E-06						
Cadmium		ND	mg/L	3E-06						
Cobalt		ND	mg/L	5E-06						
Lead		ND	mg/L	2E-05						
Manganese		ND	mg/L	7E-05						
Molybdenum		ND	mg/L	4E-05						
Nickel		8E-05	mg/L	2E-05						
Uranium		7E-06	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
<b>Method: E200.8</b>										
Batch: 48671										
<b>Lab ID: MB-48671</b>	4	Method Blank								Run: ICPMS4-C_161115A 11/17/16 20:32
Cobalt		0.0001	mg/L	5E-06						
Lead		0.0001	mg/L	2E-05						
Nickel		0.003	mg/L	2E-05						
Uranium		0.0002	mg/L	4E-06						
<b>Method: E200.8</b>										
Analytical Run: ICPMS4-C_161118A										
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard								11/18/16 14:25
Cobalt		0.0467	mg/L	0.0010	93	90	110			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 12/03/16

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_161101A
Lab ID: ICV	2	Initial Calibration Verification Standard								11/01/16 11:50
Chloride		9.91	mg/L	1.0	99	90	110			
Sulfate		40.1	mg/L	1.0	100	90	110			
Lab ID: CCV-110116-3	2	Continuing Calibration Verification Standard								11/01/16 20:33
Chloride		9.78	mg/L	1.0	98	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Lab ID: CCV-110116-4	2	Continuing Calibration Verification Standard								11/02/16 00:37
Chloride		9.85	mg/L	1.0	98	90	110			
Sulfate		40.1	mg/L	1.0	100	90	110			
Lab ID: CCV-110116-5	2	Continuing Calibration Verification Standard								11/02/16 04:41
Chloride		9.78	mg/L	1.0	98	90	110			
Sulfate		39.7	mg/L	1.0	99	90	110			
Method: E300.0										Batch: R216907
Lab ID: ICB	2	Method Blank								Run: IC2-C_161101A 11/01/16 12:07
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.05						
Lab ID: LFB-110116-1	2	Laboratory Fortified Blank								Run: IC2-C_161101A 11/01/16 12:25
Chloride		9.96	mg/L	1.0	100	90	110			
Sulfate		40.3	mg/L	1.0	101	90	110			
Lab ID: C16100488-003AMS	2	Sample Matrix Spike								Run: IC2-C_161101A 11/02/16 01:29
Chloride		232	mg/L	2.1	101	80	120			
Sulfate		5250	mg/L	8.3		80	120			A
Lab ID: C16100488-003AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_161101A 11/02/16 01:47
Chloride		231	mg/L	2.1	101	80	120	0.5	20	
Sulfate		5220	mg/L	8.3		80	120	0.7	20	A
Lab ID: C16100488-013AMS	2	Sample Matrix Spike								Run: IC2-C_161101A 11/02/16 05:33
Chloride		236	mg/L	2.1	100	80	120			
Sulfate		3680	mg/L	8.3	95	80	120			
Lab ID: C16100488-013AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_161101A 11/02/16 05:51
Chloride		236	mg/L	2.1	101	80	120	0.3	20	
Sulfate		3690	mg/L	8.3	96	80	120	0.1	20	
Lab ID: LFB-110116-2	2	Laboratory Fortified Blank								Run: IC2-C_161101A 11/02/16 09:21
Chloride		9.93	mg/L	1.0	99	90	110			
Sulfate		40.3	mg/L	1.0	101	90	110			

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Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E353.2										Analytical Run: FIA201-C_161104B
Lab ID: CCV_161104	Continuing Calibration Verification Standard									11/04/16 18:10
Nitrogen, Nitrate+Nitrite as N		1.99	mg/L	0.10	100	90	110			
Lab ID: CCV_161104	Continuing Calibration Verification Standard									11/04/16 18:27
Nitrogen, Nitrate+Nitrite as N		1.97	mg/L	0.10	99	90	110			
Lab ID: CCV_161104	Continuing Calibration Verification Standard									11/04/16 18:43
Nitrogen, Nitrate+Nitrite as N		1.97	mg/L	0.10	99	90	110			
Method: E353.2										Batch: R216973
Lab ID: MBLK	Method Blank									Run: FIA201-C_161104B
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						11/04/16 17:16
Lab ID: LFB	Laboratory Fortified Blank									Run: FIA201-C_161104B
Nitrogen, Nitrate+Nitrite as N		2.04	mg/L	0.10	104	90	110			11/04/16 17:17
Lab ID: C16100488-004DMS	Sample Matrix Spike									Run: FIA201-C_161104B
Nitrogen, Nitrate+Nitrite as N		1.77	mg/L	0.10	86	90	110			11/04/16 18:30 S
Lab ID: C16100488-004DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_161104B
Nitrogen, Nitrate+Nitrite as N		1.74	mg/L	0.10	85	90	110	1.7		11/04/16 18:31 10 S
Lab ID: C16100488-014DMS	Sample Matrix Spike									Run: FIA201-C_161104B
Nitrogen, Nitrate+Nitrite as N		2.35	mg/L	0.10	99	90	110			11/04/16 18:47
Lab ID: C16100488-014DMSD	Sample Matrix Spike Duplicate									Run: FIA201-C_161104B
Nitrogen, Nitrate+Nitrite as N		2.35	mg/L	0.10	99	90	110	0.0		11/04/16 18:48 10

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E624										Analytical Run: B_R268971
Lab ID: CCV101916	7	Continuing Calibration Verification Standard								10/19/16 12:37
Bromodichloromethane		5.00	ug/L	0.50	100	70	130			
Bromoform		5.16	ug/L	0.50	103	70	130			
Chlorodibromomethane		5.12	ug/L	0.50	102	70	130			
Chloroform		5.00	ug/L	0.50	100	70	130			
Surr: 1,2-Dichloroethane-d4				0.50	99	71	139			
Surr: p-Bromofluorobenzene				0.50	99	80	127			
Surr: Toluene-d8				0.50	100	80	123			
Method: E624										Batch: B_R268971
Lab ID: blk101916	7	Method Blank								10/19/16 16:11
Bromodichloromethane		ND	ug/L	0.50						
Bromoform		ND	ug/L	0.50						
Chlorodibromomethane		ND	ug/L	0.50						
Chloroform		ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4				0.50	94	71	139			
Surr: p-Bromofluorobenzene				0.50	97	80	127			
Surr: Toluene-d8				0.50	107	80	123			
Lab ID: lcs101916	7	Laboratory Control Sample								10/19/16 16:38
Bromodichloromethane		5.68	ug/L	0.50	114	74	128			
Bromoform		5.40	ug/L	0.50	108	66	128			
Chlorodibromomethane		5.52	ug/L	0.50	110	74	125			
Chloroform		5.48	ug/L	0.50	110	68	124			
Surr: 1,2-Dichloroethane-d4				0.50	107	71	139			
Surr: p-Bromofluorobenzene				0.50	103	80	127			
Surr: Toluene-d8				0.50	101	80	123			
Lab ID: C16100488-002H	7	Sample Matrix Spike								10/20/16 17:19
Bromodichloromethane		5.72	ug/L	0.50	114	74	128			
Bromoform		4.84	ug/L	0.50	97	66	128			
Chlorodibromomethane		5.80	ug/L	0.50	116	74	125			
Chloroform		8.80	ug/L	0.50	108	68	124			
Surr: 1,2-Dichloroethane-d4				0.50	92	71	139			
Surr: p-Bromofluorobenzene				0.50	84	80	127			
Surr: Toluene-d8				0.50	105	80	123			
Lab ID: C16100488-002H	7	Sample Matrix Spike Duplicate								10/20/16 17:46
Bromodichloromethane		5.36	ug/L	0.50	107	74	128	6.5	20	
Bromoform		4.80	ug/L	0.50	96	66	128	0.8	20	
Chlorodibromomethane		5.68	ug/L	0.50	114	74	125	2.1	20	
Chloroform		8.52	ug/L	0.50	103	68	124	3.2	20	
Surr: 1,2-Dichloroethane-d4				0.50	90	71	139			
Surr: p-Bromofluorobenzene				0.50	85	80	127			
Surr: Toluene-d8				0.50	104	80	123			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E624</b>										Analytical Run: B_R268989
<b>Lab ID: ccvA101916</b>	7	Continuing Calibration Verification Standard								10/19/16 21:05
Bromodichloromethane		5.00	ug/L	0.50	100	70	130			
Bromoform		4.72	ug/L	0.50	94	70	130			
Chlorodibromomethane		4.92	ug/L	0.50	98	70	130			
Chloroform		4.96	ug/L	0.50	99	70	130			
Surr: 1,2-Dichloroethane-d4				0.50	103	71	139			
Surr: p-Bromofluorobenzene				0.50	95	80	127			
Surr: Toluene-d8				0.50	96	80	123			
<b>Method: E624</b>										Batch: B_R268989
<b>Lab ID: lcsA101916</b>	7	Laboratory Control Sample								10/19/16 21:32
Bromodichloromethane		5.12	ug/L	0.50	102	74	128			
Bromoform		5.04	ug/L	0.50	101	66	128			
Chlorodibromomethane		5.08	ug/L	0.50	102	74	125			
Chloroform		5.08	ug/L	0.50	102	68	124			
Surr: 1,2-Dichloroethane-d4				0.50	102	71	139			
Surr: p-Bromofluorobenzene				0.50	99	80	127			
Surr: Toluene-d8				0.50	95	80	123			
<b>Lab ID: blkA101916</b>										Run: SUB-B268989
Bromodichloromethane		ND	ug/L	0.50						10/19/16 22:25
Bromoform		ND	ug/L	0.50						
Chlorodibromomethane		ND	ug/L	0.50						
Chloroform		ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4				0.50	101	71	139			
Surr: p-Bromofluorobenzene				0.50	105	80	127			
Surr: Toluene-d8				0.50	96	80	123			
<b>Method: E624</b>										Analytical Run: B_R269059
<b>Lab ID: ccv102016</b>		Continuing Calibration Verification Standard								10/20/16 10:30
Chloroform		4.72	ug/L	0.50	94	70	130			
<b>Method: E624</b>										Batch: B_R269059
<b>Lab ID: lcs102016</b>		Laboratory Control Sample								10/20/16 11:04
Chloroform		4.40	ug/L	0.50	88	68	124			
<b>Lab ID: blk102016</b>										Run: SUB-B269059
Chloroform		ND	ug/L	0.50						10/20/16 11:58

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-0980
<b>Lab ID: MB-GA-0980</b>	3	Method Blank					Run: G5000W_161026A			10/27/16 12:45
Gross Alpha minus Rn & U		0.6	pCi/L							U
Gross Alpha minus Rn & U Precision (±)		0.8	pCi/L							
Gross Alpha minus Rn & U MDC		1	pCi/L							
<b>Lab ID: LCS-GA-0980</b>		Laboratory Control Sample					Run: G5000W_161026A			10/27/16 12:45
Gross Alpha minus Rn & U		35.4	pCi/L	102		80	120			
<b>Lab ID: C16100488-003GMS</b>		Sample Matrix Spike					Run: G5000W_161026A			10/27/16 12:45
Gross Alpha minus Rn & U		98.5	pCi/L	89		70	130			
<b>Lab ID: C16100488-003GMSD</b>		Sample Matrix Spike Duplicate					Run: G5000W_161026A			10/27/16 12:46
Gross Alpha minus Rn & U		85.3	pCi/L	70		70	130	14	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0										Batch: RA226-8307
Lab ID: LCS-RA226-8307		Laboratory Control Sample				Run: G5000W_161031B				11/10/16 12:10
Radium 226	10	pCi/L		98		80	120			
Lab ID: LCS-RA226-8307DUP		Laboratory Control Sample Duplicate				Run: G5000W_161031B				11/10/16 12:10
Radium 226	10	pCi/L		101		80	120	3.6	20	
Lab ID: MB-RA226-8307	3	Method Blank				Run: G5000W_161031B				11/10/16 12:10
Radium 226		0.03	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0										Batch: RA-TH-ISO-2485
Lab ID: LCS-RA-TH-ISO-2485	Laboratory Control Sample			Run: EGG-ORTEC_161108A			11/15/16 09:43			
Thorium 230		5.8	pCi/L	101		80	120			
Lab ID: C16100614-001HMS	Sample Matrix Spike			Run: EGG-ORTEC_161108A			11/15/16 09:43			
Thorium 230		10.7	pCi/L	97		70	130			
Lab ID: C16100614-001HMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_161108A			11/15/16 09:43			
Thorium 230		10.3	pCi/L	94		70	130	4.1	20	
Lab ID: MB-RA-TH-ISO-2485	3	Method Blank		Run: EGG-ORTEC_161108A			11/15/16 09:43			
Thorium 230		0.002	pCi/L							U
Thorium 230 precision (±)		0.07	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
Method: E908.0										Batch: RA-TH-ISO-2485R
Lab ID: LCS-RA-TH-ISO-2485	Laboratory Control Sample			Run: EGG-ORTEC_161108A			11/15/16 15:14			
Thorium 230		5.8	pCi/L	102		80	120			
Lab ID: MB-RA-TH-ISO-2485	3	Method Blank		Run: EGG-ORTEC_161108A			11/15/16 15:13			
Thorium 230		-0.005	pCi/L							U
Thorium 230 precision (±)		0.03	pCi/L							
Thorium 230 MDC		0.07	pCi/L							

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 12/03/16

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0								Batch: RA-TH-ISO-2483		
Lab ID: LCS-RA-TH-ISO-2483	Laboratory Control Sample					Run: EGG-ORTEC_2_161103A			11/08/16 14:17	
Thorium 230		5.1	pCi/L		88	80	120			
Lab ID: C16100488-005GMS	Sample Matrix Spike					Run: EGG-ORTEC_2_161103A			11/08/16 14:17	
Thorium 230		33.1	pCi/L		98	70	130			
Lab ID: C16100488-005GMSD	Sample Matrix Spike Duplicate					Run: EGG-ORTEC_2_161103A			11/08/16 14:17	
Thorium 230		32.7	pCi/L		97	70	130	1.2	20	
Lab ID: MB-RA-TH-ISO-2483	3	Method Blank				Run: EGG-ORTEC_2_161103A			11/08/16 14:17	
Thorium 230		0.06	pCi/L							U
Thorium 230 precision (±)		0.09	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
Lab ID: C16100488-005GMS	Sample Matrix Spike					Run: EGG-ORTEC_2_161103A			11/09/16 10:02	
Thorium 230		30.8	pCi/L		92	70	130			
Method: E908.0								Batch: RA-TH-ISO-2483R		
Lab ID: LCS-RA-TH-ISO-2483	Laboratory Control Sample					Run: EGG-ORTEC_2_161103A			11/09/16 10:02	
Thorium 230		5.5	pCi/L		94	80	120			
Lab ID: C16100488-005GMSD	Sample Matrix Spike Duplicate					Run: EGG-ORTEC_2_161103A			11/09/16 10:02	
Thorium 230		31.2	pCi/L		93	70	130	1.2	20	
Lab ID: MB-RA-TH-ISO-2483	3	Method Blank				Run: EGG-ORTEC_2_161103A			11/09/16 10:02	
Thorium 230		0.06	pCi/L							
Thorium 230 precision (±)		0.03	pCi/L							
Thorium 230 MDC		0.04	pCi/L							

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0										Batch: RA-TH-ISO-2486
Lab ID: LCS-RA-TH-ISO-2486	Laboratory Control Sample			Run: EGG-ORTEC_2_161109A			11/15/16 09:45			
Thorium 230		5.7	pCi/L	100		80	120			
Lab ID: MB-RA-TH-ISO-2486	5	Method Blank			Run: EGG-ORTEC_2_161109A			11/15/16 14:28		
Thorium 228		0.1	pCi/L							U
Thorium 228 precision (±)		0.1	pCi/L							
Thorium 230		0.6	pCi/L							
Thorium 230 precision (±)		0.3	pCi/L							
Thorium 230 MDC		0.2	pCi/L							
Method: E908.0										Batch: RA-TH-ISO-2486R
Lab ID: LCS-RA-TH-ISO-2486	Laboratory Control Sample			Run: EGG-ORTEC_2_161109A			11/16/16 09:41			
Thorium 230		5.9	pCi/L	97		80	120			
Lab ID: C16100488-011GMS	Sample Matrix Spike			Run: EGG-ORTEC_2_161109A			11/16/16 09:40			
Thorium 230		33.4	pCi/L	134		70	130			S
Lab ID: C16100488-011GMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_2_161109A			11/16/16 09:40			
Thorium 230		26.2	pCi/L	105		70	130	0.0	20	
Lab ID: MB-RA-TH-ISO-2486	5	Method Blank			Run: EGG-ORTEC_2_161109A			11/16/16 09:41		
Thorium 228		0.03	pCi/L							U
Thorium 228 precision (±)		0.06	pCi/L							
Thorium 230		0.3	pCi/L							
Thorium 230 precision (±)		0.1	pCi/L							
Thorium 230 MDC		0.1	pCi/L							
Method: E908.0										Batch: RA-TH-ISO-2488R
Lab ID: LCS-RA-TH-ISO-2488	Laboratory Control Sample			Run: EGG-ORTEC_2_161114A			11/21/16 11:10			
Thorium 230		5.3	pCi/L	95		80	120			
Lab ID: MB-RA-TH-ISO-2488	3	Method Blank			Run: EGG-ORTEC_2_161114A			11/21/16 11:10		
Thorium 230		0.05	pCi/L							
Thorium 230 precision (±)		0.03	pCi/L							
Thorium 230 MDC		0.05	pCi/L							

### Qualifiers:

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MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Zone 3

**Report Date:** 12/03/16

**Work Order:** C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E909.0										Batch: PB-210-0796
<b>Lab ID:</b> LCS-PB-210-0796	Laboratory Control Sample			Run: PACKARD 3100TR_161102A			11/04/16 13:20			
Lead 210	19	pCi/L		97	80	120				
<b>Lab ID:</b> MB-PB-210-0796	3	Method Blank		Run: PACKARD 3100TR_161102A			11/04/16 14:18			
Lead 210	0.05	pCi/L								U
Lead 210 precision ( $\pm$ )	0.6	pCi/L								
Lead 210 MDC	0.9	pCi/L								
<b>Lab ID:</b> C16100488-001FMS	Sample Matrix Spike			Run: PACKARD 3100TR_161102A			11/04/16 23:27			
Lead 210	44	pCi/L		102	70	130				
<b>Lab ID:</b> C16100488-001FMSD	Sample Matrix Spike Duplicate			Run: PACKARD 3100TR_161102A			11/05/16 00:22			
Lead 210	39	pCi/L		90	70	130	13	30		

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Zone 3

Work Order: C16100488

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05										Batch: RA228-5353
Lab ID: LCS-228-RA226-8307	Laboratory Control Sample			Run: TENNELEC-3_161031A			11/04/16 08:58			
Radium 228		7.0	pCi/L	83		80	120			
Lab ID: LCS-228-RA226-DUP	Laboratory Control Sample Duplicate			Run: TENNELEC-3_161031A			11/04/16 08:58			
Radium 228		7.9	pCi/L	94		80	120	12	20	
Lab ID: MB-RA226-8307	3 Method Blank			Run: TENNELEC-3_161031A			11/04/16 08:58			
Radium 228		-0.1	pCi/L							U
Radium 228 precision (±)		0.6	pCi/L							
Radium 228 MDC		1	pCi/L							

### Qualifiers:

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## ANALYTICAL SUMMARY REPORT

February 07, 2017

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16100496

Project Name: Zone 3

Energy Laboratories, Inc. Casper WY received the following 4 samples for United Nuclear Corporation on 10/14/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16100496-001	NW-1	10/11/16 09:30	10/14/16	Aqueous	Alkalinity E300.0 Anions pH Sample Filtering, TDS Solids, Total Dissolved
C16100496-002	NW-4	10/11/16 10:15	10/14/16	Aqueous	Same As Above
C16100496-003	NW-2	10/11/16 10:40	10/14/16	Aqueous	Same As Above
C16100496-004	NW-5	10/11/16 11:00	10/14/16	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

  
Project Manager

Digitally signed by  
Tracey Archer  
Date: 2017.02.07 12:27:00 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Zone 3  
**Work Order:** C16100496

**Revised Date:** 02/07/17

**Report Date:** 12/15/16

## **CASE NARRATIVE**

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**Note:**

This report has been revised to include data trackers for each site.

This version replaces any previous report issued in its entirety.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Zone 3

Report Date: 10/29/16

Work Order: C16100496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2320 B</b>										Batch: R216498
<b>Lab ID: MBLK</b>	2	Method Blank					Run: MANTECH_161021A			10/21/16 10:22
Alkalinity, Total as CaCO <sub>3</sub>	1	mg/L	1							
Bicarbonate as HCO <sub>3</sub> <sup>-</sup>	2	mg/L	1							
<b>Lab ID: LCS_160316</b>										10/21/16 10:36
		Laboratory Control Sample					Run: MANTECH_161021A			
Alkalinity, Total as CaCO <sub>3</sub>	258	mg/L	5.0	103	90	110				
<b>Lab ID: C16100197-001ADUP</b>										10/21/16 10:57
	2	Sample Duplicate					Run: MANTECH_161021A			
Alkalinity, Total as CaCO <sub>3</sub>	151	mg/L	5.0					0.0	10	
Bicarbonate as HCO <sub>3</sub> <sup>-</sup>	184	mg/L	5.0					0.0	10	
<b>Lab ID: C16100451-001AMS</b>										10/21/16 11:14
		Sample Matrix Spike					Run: MANTECH_161021A			
Alkalinity, Total as CaCO <sub>3</sub>	521	mg/L	5.2	102	80	120				

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 10/29/16

Project: Zone 3

Work Order: C16100496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS161018A
Lab ID: MB-1_161018A		Method Blank					Run: BAL-18_161018A			10/18/16 08:28
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	8						
Lab ID: LCS-2_161018A		Laboratory Control Sample					Run: BAL-18_161018A			10/18/16 08:28
Solids, Total Dissolved TDS @ 180 C		1090	mg/L	11	98	90	110			
Lab ID: C16100447-001A DUP		Sample Duplicate					Run: BAL-18_161018A			10/18/16 08:29
Solids, Total Dissolved TDS @ 180 C		257	mg/L	10				4.9	5	

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.





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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 10/29/16

Project: Zone 3

Work Order: C16100496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_161017A
Lab ID: pH 6.86		Initial Calibration Verification Standard								
pH		6.88	s.u.	0.010	100	98	102			10/17/16 08:48
Lab ID: CCV - pH 7		Continuing Calibration Verification Standard								
pH		7.01	s.u.	0.010	100	98	102			10/17/16 10:46
Lab ID: pH 6.86		Initial Calibration Verification Standard								
pH		6.88	s.u.	0.010	100	98	102			10/17/16 14:57
Method: A4500-H B										Batch: R216302
Lab ID: C16100488-001ADUP		Sample Duplicate								
pH		2.98	s.u.	0.010				0.0	3	Run: PHSC_101-C_161017A 10/17/16 09:43

### Qualifiers:

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 10/29/16

Project: Zone 3

Work Order: C16100496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_161019A
Lab ID: ICV		Initial Calibration Verification Standard								10/19/16 18:36
Chloride		10.1	mg/L	1.0	101	90	110			
Lab ID: CCV-101916-5		Continuing Calibration Verification Standard								10/20/16 11:26
Chloride		10.3	mg/L	1.0	103	90	110			
Method: E300.0										Batch: R216485
Lab ID: ICB		Method Blank								Run: IC2-C_161019A 10/19/16 18:53
Chloride		ND	mg/L	0.04						
Lab ID: LFB-101916-1		Laboratory Fortified Blank								Run: IC2-C_161019A 10/19/16 19:11
Chloride		10.1	mg/L	1.0	101	90	110			
Lab ID: C16100485-001AMS		Sample Matrix Spike								Run: IC2-C_161019A 10/20/16 12:19
Chloride		80.3	mg/L	1.0	97	80	120			
Lab ID: C16100485-001AMSD		Sample Matrix Spike Duplicate								Run: IC2-C_161019A 10/20/16 12:36
Chloride		80.4	mg/L	1.0	97	80	120	0.1	20	

### Qualifiers:

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## ANALYTICAL SUMMARY REPORT

December 03, 2016

United Nuclear Corporation  
21 Miles NE of Gallup  
Gallup, NM 87305

Work Order: C16100493      Quote ID: C129 - Quarterly Long List  
Project Name: Mill

Energy Laboratories, Inc. Casper WY received the following 1 sample for United Nuclear Corporation on 10/14/2016 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C16100493-001	Domestic Water Well	10/12/16 9:35	10/14/16	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Anion - Cation Balance Arsenic Speciation, Total Selenium-IV, Total CVAA Selenium Prep E300.0 Anions Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite pH Metals Preparation by EPA 200.2 Sample Filtering, TDS Gross Alpha minus Rn222 and Uranium Lead 210, Total Radium 226, Total Radium 228, Total Thorium, Isotopic Solids, Total Dissolved Solids, Total Dissolved - Calculated

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:



HSE/RSO

Digitally signed by  
Steve Dobos  
Date: 2016.12.03 16:12:45 -07:00



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**CLIENT:** United Nuclear Corporation  
**Project:** Mill  
**Work Order:** C16100493

**Report Date:** 12/03/16

## **CASE NARRATIVE**

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 E. Lyndale Ave., Helena, MT, EPA Number MT00945.

Tests associated with analyst identified as ELI-CS were subcontracted to Energy Laboratories, 415 Graham Rd., College Station, TX, EPA Number TX01520.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A2320 B</b>										Batch: R217000
<b>Lab ID: MBLK</b>	2	Method Blank					Run: MANTECH_161105A			11/05/16 21:04
Alkalinity, Total as CaCO <sub>3</sub>		ND	mg/L	1						
Bicarbonate as HCO <sub>3</sub>		1	mg/L	1						
<b>Lab ID: LCS_160316</b>										11/05/16 21:17
		Laboratory Control Sample					Run: MANTECH_161105A			
Alkalinity, Total as CaCO <sub>3</sub>		259	mg/L	5.0	104	90	110			
<b>Lab ID: C16100900-016ADUP</b>										11/05/16 21:44
		2 Sample Duplicate					Run: MANTECH_161105A			
Alkalinity, Total as CaCO <sub>3</sub>		132	mg/L	5.0				0.8	10	
Bicarbonate as HCO <sub>3</sub>		135	mg/L	5.0				0.9	10	
<b>Lab ID: C16100918-001AMS</b>										11/05/16 22:17
		Sample Matrix Spike					Run: MANTECH_161105A			
Alkalinity, Total as CaCO <sub>3</sub>		387	mg/L	5.5	116	80	120			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS161018A
Lab ID: MB-1_161018A		Method Blank					Run: BAL-18_161018A			10/18/16 08:28
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	8						
Lab ID: LCS-2_161018A		Laboratory Control Sample					Run: BAL-18_161018A			10/18/16 08:28
Solids, Total Dissolved TDS @ 180 C		1090	mg/L	11	98	90	110			
Lab ID: C16100447-001A DUP		Sample Duplicate					Run: BAL-18_161018A			10/18/16 08:29
Solids, Total Dissolved TDS @ 180 C		257	mg/L	10				4.9	5	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Project:** Mill

**Report Date:** 12/03/16

**Work Order:** C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: A3114 B</b>										Analytical Run: CVAA-C202_161103A
<b>Lab ID: ICV</b>										11/02/16 15:22
Initial Calibration Verification Standard										
Selenium-IV		0.0262	mg/L	0.0010	107	90	110			
<b>Method: A3114 B</b>										Batch: 48681
<b>Lab ID: MB-48681</b>										11/02/16 16:37
Method Blank										Run: CVAA-C202_161103A
Selenium-IV		ND	mg/L	0.0005						
<b>Lab ID: LCS-48681</b>										11/02/16 16:48
Laboratory Control Sample										Run: CVAA-C202_161103A
Selenium-IV		0.0251	mg/L	0.0010	103	90	110			
<b>Lab ID: C16100488-017CMS</b>										11/02/16 16:49
Sample Matrix Spike										Run: CVAA-C202_161103A
Selenium-IV		0.0185	mg/L	0.0010	76	85	115			S
<b>Lab ID: C16100488-017CMSD</b>										11/02/16 16:51
Sample Matrix Spike Duplicate										Run: CVAA-C202_161103A
Selenium-IV		0.0174	mg/L	0.0010	71	85	115	5.9	10	S

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B										Analytical Run: PHSC_101-C_161017A
Lab ID: pH 6.86		Initial Calibration Verification Standard								10/17/16 08:48
pH		6.88	s.u.	0.010	100	98	102			
Lab ID: pH 6.86		Initial Calibration Verification Standard								10/17/16 14:57
pH		6.88	s.u.	0.010	100	98	102			
Method: A4500-H B										Batch: R216302
Lab ID: C16100488-001ADUP		Sample Duplicate								10/17/16 09:43
pH		2.98	s.u.	0.010				0.0	3	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-NH3 G										Batch: R216982
Lab ID: MBLK		Method Blank					Run: FIA201-C_161105A			11/05/16 21:51
Nitrogen, Ammonia as N		ND	mg/L	0.003						
Lab ID: LFB		Laboratory Fortified Blank					Run: FIA201-C_161105A			11/05/16 21:53
Nitrogen, Ammonia as N		0.983	mg/L	0.050	99	90	110			
Lab ID: C16100474-001EMS		Sample Matrix Spike					Run: FIA201-C_161105A			11/05/16 21:58
Nitrogen, Ammonia as N		1.15	mg/L	0.050	108	90	110			
Lab ID: C16100474-001EMSD		Sample Matrix Spike Duplicate					Run: FIA201-C_161105A			11/05/16 21:59
Nitrogen, Ammonia as N		1.15	mg/L	0.050	108	90	110	0.0	10	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E1632AM										Analytical Run: SUB-H119993
Lab ID: AS-ICV 25ppb-10/31/2		Initial Calibration Verification Standard								10/31/16 17:12
Arsenic-III		26.1	ug/L	5.0	105	87.6	114			
Lab ID: AS-50.0-10/31/2016		Continuing Calibration Verification Standard								10/31/16 23:51
Arsenic-III		55.6	ug/L	5.0	111	85	115			
Method: E1632AM										Batch: H_R119993
Lab ID: AS-LFB 50ppb-10/31/		Laboratory Fortified Blank				Run: SUB-H119993			10/31/16 18:14	
Arsenic-III		53.6	ug/L	5.0	107	55	146			
Lab ID: ICB		Method Blank				Run: SUB-H119993			10/31/16 18:26	
Arsenic-III		ND	ug/L	0.2						
Lab ID: H16100490-001A MS		Sample Matrix Spike				Run: SUB-H119993			11/01/16 03:15	
Arsenic-III		146	ug/L	5.0	120	55	146			
Lab ID: H16100490-001A MSD		Sample Matrix Spike Duplicate				Run: SUB-H119993			11/01/16 03:27	
Arsenic-III		150	ug/L	5.0	129	55	146	3.0	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Analytical Run: ICP4-C_161025A
Lab ID: ICV	3	Initial Calibration Verification Standard								10/25/16 11:18
Aluminum		4.89	mg/L	0.10	98	95	105			
Beryllium		0.497	mg/L	0.010	99	95	105			
Manganese		4.79	mg/L	0.010	96	95	105			
Lab ID: ICSA	3	Interference Check Sample A								10/25/16 11:38
Aluminum		467	mg/L	0.10	93	80	120			
Beryllium		0.000120	mg/L	0.010						
Manganese		-0.0178	mg/L	0.010						
Lab ID: ICSAB	3	Interference Check Sample AB								10/25/16 11:42
Aluminum		463	mg/L	0.10	93	80	120			
Beryllium		0.464	mg/L	0.010	93	80	120			
Manganese		0.426	mg/L	0.010	85	80	120			
Method: E200.7										Batch: 48569
Lab ID: MB-48569	3	Method Blank								Run: ICP4-C_161025A 10/25/16 21:37
Aluminum		ND	mg/L	0.01						
Beryllium		ND	mg/L	7E-05						
Manganese		ND	mg/L	0.002						
Lab ID: LCS3-48569	3	Laboratory Control Sample								Run: ICP4-C_161025A 10/25/16 21:41
Aluminum		2.64	mg/L	0.030	106	85	115			
Beryllium		0.256	mg/L	0.0010	102	85	115			
Manganese		2.52	mg/L	0.0012	101	85	115			
Lab ID: C16100441-001DMS3	3	Sample Matrix Spike								Run: ICP4-C_161025A 10/25/16 22:01
Aluminum		2.44	mg/L	0.030	96	70	130			
Beryllium		0.230	mg/L	0.0010	92	70	130			
Manganese		2.26	mg/L	0.0012	90	70	130			
Lab ID: C16100441-001DMSD	3	Sample Matrix Spike Duplicate								Run: ICP4-C_161025A 10/25/16 22:06
Aluminum		2.47	mg/L	0.030	97	70	130	1.0	20	
Beryllium		0.234	mg/L	0.0010	94	70	130	1.7	20	
Manganese		2.29	mg/L	0.0012	91	70	130	1.1	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Mill

Report Date: 12/03/16

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.7</b> Analytical Run: ICP4-C_161107A										
<b>Lab ID: ICV</b>	4	Initial Calibration Verification Standard								11/07/16 12:38
Calcium		50.1	mg/L	1.0	100	95	105			
Magnesium		50.2	mg/L	1.0	100	95	105			
Potassium		50.7	mg/L	1.0	101	95	105			
Sodium		50.1	mg/L	1.0	100	95	105			
<b>Lab ID: ICSA</b>	4	Interference Check Sample A								11/07/16 12:57
Calcium		459	mg/L	1.0	92	80	120			
Magnesium		499	mg/L	1.0	100	80	120			
Potassium		-0.00180	mg/L	1.0						
Sodium		0.0327	mg/L	1.0						
<b>Lab ID: ICSAB</b>	4	Interference Check Sample AB								11/07/16 13:01
Calcium		458	mg/L	1.0	92	80	120			
Magnesium		497	mg/L	1.0	99	80	120			
Potassium		0.00847	mg/L	1.0						
Sodium		-0.0499	mg/L	1.0						
<b>Method: E200.7</b> Batch: R217038										
<b>Lab ID: MB-161107A</b>	4	Method Blank								11/07/16 13:21
Calcium		0.009	mg/L	0.003						
Magnesium		ND	mg/L	0.04						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.1						
<b>Lab ID: LFB-161107A</b>	4	Laboratory Fortified Blank								11/07/16 13:25
Calcium		48.7	mg/L	1.0	97	85	115			
Magnesium		48.6	mg/L	1.0	97	85	115			
Potassium		51.6	mg/L	1.0	103	85	115			
Sodium		49.0	mg/L	1.0	98	85	115			
<b>Lab ID: C16101028-001BMS2</b>	4	Sample Matrix Spike								11/07/16 16:57
Calcium		155	mg/L	1.0	92	70	130			
Magnesium		116	mg/L	1.0	96	70	130			
Potassium		98.9	mg/L	1.0	95	70	130			
Sodium		129	mg/L	1.0	94	70	130			
<b>Lab ID: C16101028-001BMDS</b>	4	Sample Matrix Spike Duplicate								11/07/16 17:12
Calcium		156	mg/L	1.0	93	70	130	0.3	20	
Magnesium		116	mg/L	1.0	96	70	130	0.4	20	
Potassium		98.4	mg/L	1.0	95	70	130	0.5	20	
Sodium		128	mg/L	1.0	94	70	130	0.2	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: 48569
Lab ID: MB-48569		Method Blank					Run: ICPMS4-C_161020A			10/21/16 01:51
Cobalt		6E-06	mg/L	5E-06						
Lab ID: LCS3-48569		Laboratory Control Sample					Run: ICPMS4-C_161020A			10/21/16 01:57
Cobalt		0.512	mg/L	0.0050	102	85	115			
Lab ID: C16100348-005BMS3		Sample Matrix Spike					Run: ICPMS4-C_161020A			10/21/16 03:06
Cobalt		0.986	mg/L	0.0050	99	70	130			
Lab ID: C16100348-005BMSD		Sample Matrix Spike Duplicate					Run: ICPMS4-C_161020A			10/21/16 03:12
Cobalt		0.993	mg/L	0.0050	99	70	130	0.7	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E200.8</b>		Analytical Run: ICPMS4-C_161024A								
<b>Lab ID: ICV</b>	6	Initial Calibration Verification Standard							10/24/16 13:33	
Cadmium		0.0495	mg/L	0.0010	99	90	110			
Lead		0.0493	mg/L	0.0010	99	90	110			
Molybdenum		0.0482	mg/L	0.0010	96	90	110			
Nickel		0.0499	mg/L	0.0010	100	90	110			
Uranium		0.0478	mg/L	0.00030	96	90	110			
Vanadium		0.0464	mg/L	0.0010	93	90	110			
<b>Method: E200.8</b>		Batch: 48569								
<b>Lab ID: MB-48569</b>	6	Method Blank							Run: ICPMS4-C_161024A 10/25/16 08:35	
Cadmium		9E-06	mg/L	3E-06						
Lead		3E-05	mg/L	2E-05						
Molybdenum		0.002	mg/L	4E-05						
Nickel		3E-05	mg/L	2E-05						
Uranium		0.0002	mg/L	4E-06						
Vanadium		ND	mg/L	5E-05						
<b>Lab ID: LCS3-48569</b>	6	Laboratory Control Sample							Run: ICPMS4-C_161024A 10/25/16 08:41	
Cadmium		0.263	mg/L	0.0010	105	85	115			
Lead		0.567	mg/L	0.0010	113	85	115			
Molybdenum		0.521	mg/L	0.0010	104	85	115			
Nickel		0.489	mg/L	0.0050	98	85	115			
Uranium		0.510	mg/L	0.00030	102	85	115			
Vanadium		0.508	mg/L	0.010	102	85	115			
<b>Lab ID: C16100348-005BMS3</b>	6	Sample Matrix Spike							Run: ICPMS4-C_161024A 10/25/16 09:01	
Cadmium		0.523	mg/L	0.0010	105	70	130			
Lead		1.12	mg/L	0.0010	112	70	130			
Molybdenum		1.03	mg/L	0.0010	103	70	130			
Nickel		0.992	mg/L	0.0050	99	70	130			
Uranium		1.00	mg/L	0.00030	98	70	130			
Vanadium		1.04	mg/L	0.010	103	70	130			
<b>Lab ID: C16100348-005BMSD</b>	6	Sample Matrix Spike Duplicate							Run: ICPMS4-C_161024A 10/25/16 09:07	
Cadmium		0.529	mg/L	0.0010	106	70	130	1.1	20	
Lead		1.12	mg/L	0.0010	112	70	130	0.3	20	
Molybdenum		1.04	mg/L	0.0010	104	70	130	1.0	20	
Nickel		0.981	mg/L	0.0050	98	70	130	1.0	20	
Uranium		1.04	mg/L	0.00030	102	70	130	4.1	20	
Vanadium		1.02	mg/L	0.010	101	70	130	1.9	20	

<b>Method: E200.8</b>		Analytical Run: ICPMS4-C_161118A								
<b>Lab ID: ICV</b>		Initial Calibration Verification Standard							11/18/16 14:25	
Cobalt		0.0467	mg/L	0.0010	93	90	110			

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Analytical Run: IC2-C_161107A
Lab ID: ICB	2	Initial Calibration Verification Standard								11/07/16 17:46
Chloride		9.94	mg/L	1.0	99	90	110			
Sulfate		40.7	mg/L	1.0	102	90	110			
Lab ID: CCV-110716-1	2	Continuing Calibration Verification Standard								11/07/16 18:42
Chloride		9.62	mg/L	1.0	96	90	110			
Sulfate		39.4	mg/L	1.0	99	90	110			
Method: E300.0										Batch: R217042
Lab ID: ICB	2	Method Blank								Run: IC2-C_161107A 11/07/16 18:05
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.05						
Lab ID: LFB	2	Laboratory Fortified Blank								Run: IC2-C_161107A 11/07/16 18:23
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
Lab ID: C16100493-001AMS	2	Sample Matrix Spike								Run: IC2-C_161107A 11/07/16 19:18
Chloride		254	mg/L	1.0	99	80	120			
Sulfate		1710	mg/L	4.2	91	80	120			
Lab ID: C16100493-001AMSD	2	Sample Matrix Spike Duplicate								Run: IC2-C_161107A 11/07/16 19:37
Chloride		251	mg/L	1.0	96	80	120	1.4	20	
Sulfate		1680	mg/L	4.2	85	80	120	1.6	20	

### Qualifiers:

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MDC - Minimum detectable concentration



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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/03/16

**Project:** Mill

**Work Order:** C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method:</b> E353.2										Batch: R217068
<b>Lab ID:</b> MBLK		Method Blank								11/08/16 16:17
Nitrogen, Nitrate+Nitrite as N		ND	mg/L	0.01						
<b>Lab ID:</b> LFB		Laboratory Fortified Blank								11/08/16 16:18
Nitrogen, Nitrate+Nitrite as N		2.02	mg/L	0.10	103	90	110			
<b>Lab ID:</b> C16100474-001EMS		Sample Matrix Spike								11/08/16 16:24
Nitrogen, Nitrate+Nitrite as N		2.04	mg/L	0.10	102	90	110			
<b>Lab ID:</b> C16100474-001EMSD		Sample Matrix Spike Duplicate								11/08/16 16:25
Nitrogen, Nitrate+Nitrite as N		2.03	mg/L	0.10	102	90	110	0.5	10	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Project: Mill

Report Date: 12/03/16

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: E900.1</b>										Batch: GA-0981
<b>Lab ID: MB-GA-0981</b>	3	Method Blank					Run: G542M_161104A			11/04/16 21:20
Gross Alpha minus Rn & U		0.1	pCi/L							U
Gross Alpha minus Rn & U Precision ( $\pm$ )		1	pCi/L							
Gross Alpha minus Rn & U MDC		2	pCi/L							
<b>Lab ID: LCS-GA-0981</b>		Laboratory Control Sample					Run: G542M_161104A			11/04/16 21:20
Gross Alpha minus Rn & U		35.8	pCi/L	104		80	120			
<b>Lab ID: C16100544-002DMS</b>		Sample Matrix Spike					Run: G542M_161104A			11/04/16 21:20
Gross Alpha minus Rn & U		80.2	pCi/L	111		70	130			
<b>Lab ID: C16100544-002DMSD</b>		Sample Matrix Spike Duplicate					Run: G542M_161104A			11/04/16 21:20
Gross Alpha minus Rn & U		77.1	pCi/L	107		70	130	4.0	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

**Client:** United Nuclear Corporation

**Report Date:** 12/03/16

**Project:** Mill

**Work Order:** C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0								Batch: RA226-8292		
Lab ID: LCS-RA226-8292	Laboratory Control Sample			Run: G5000W_161018E			11/02/16 06:58			
Radium 226		10	pCi/L		98	80	120			
Lab ID: MB-RA226-8292	3	Method Blank			Run: G5000W_161018E			11/02/16 06:58		
Radium 226		0.1	pCi/L							U
Radium 226 precision (±)		0.1	pCi/L							
Radium 226 MDC		0.2	pCi/L							
Lab ID: C16100246-003GMS	Sample Matrix Spike			Run: G5000W_161018E			11/02/16 06:58			
Radium 226		19	pCi/L		90	70	130			
Lab ID: C16100246-003GMSD	Sample Matrix Spike Duplicate			Run: G5000W_161018E			11/02/16 06:58			
Radium 226		16	pCi/L		77	70	130	17	20	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E908.0										Batch: RA-TH-ISO-2487
Lab ID: LCS-RA-TH-ISO-2487	Laboratory Control Sample			Run: EGG-ORTEC_161110A			11/18/16 09:37			
Thorium 230		5.5	pCi/L	97		80	120			
Lab ID: C16090035-003DMS	Sample Matrix Spike			Run: EGG-ORTEC_161110A			11/18/16 09:37			
Thorium 230		10	pCi/L	91		70	130			
Lab ID: C16090035-003DMSD	Sample Matrix Spike Duplicate			Run: EGG-ORTEC_161110A			11/18/16 09:37			
Thorium 230		13	pCi/L	111		70	130	20	20	
Lab ID: MB-RA-TH-ISO-2487	3	Method Blank		Run: EGG-ORTEC_161110A			11/18/16 09:37			
Thorium 230		0.009	pCi/L							U
Thorium 230 precision (±)		0.05	pCi/L							
Thorium 230 MDC		0.1	pCi/L							

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E909.0										Batch: PB-210-0795
Lab ID: LCS-PB-210-0795		Laboratory Control Sample								Run: PACKARD 3100TR_161027B 11/01/16 12:21
Lead 210		15	pCi/L	80		80	120			
Lab ID: MB-PB-210-0795	3	Method Blank								Run: PACKARD 3100TR_161027B 11/01/16 13:20
Lead 210		0.06	pCi/L							U
Lead 210 precision (±)		0.5	pCi/L							
Lead 210 MDC		0.8	pCi/L							
Lab ID: C16100493-001FMS		Sample Matrix Spike								Run: PACKARD 3100TR_161027B 11/02/16 10:43
Lead 210		39	pCi/L	90		70	130			
Lab ID: C16100493-001FMSD		Sample Matrix Spike Duplicate								Run: PACKARD 3100TR_161027B 11/02/16 11:36
Lead 210		40	pCi/L	93		70	130	3.1	30	

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## QA/QC Summary Report

Prepared by Casper, WY Branch

Client: United Nuclear Corporation

Report Date: 12/03/16

Project: Mill

Work Order: C16100493

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05										Batch: RA228-5343
Lab ID: LCS-228-RA226-8292	Laboratory Control Sample			Run: TENNELEC-3_161018B			10/28/16 10:36			
Radium 228		9.8	pCi/L	110	80	120				
Lab ID: MB-RA226-8292	3	Method Blank		Run: TENNELEC-3_161018B			10/28/16 10:36			
Radium 228		0.3	pCi/L							U
Radium 228 precision (±)		0.8	pCi/L							
Radium 228 MDC		1	pCi/L							
Lab ID: C16100497-002DMS	Sample Matrix Spike			Run: TENNELEC-3_161018B			10/28/16 10:36			
Radium 228		24	pCi/L	117	70	130				
Lab ID: C16100497-002DMSD	Sample Matrix Spike Duplicate			Run: TENNELEC-3_161018B			10/28/16 10:36			
Radium 228		21	pCi/L	99	70	130	13	20		

### Qualifiers:

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MDC - Minimum detectable concentration

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration