2019 Groundwater Monitoring Report

Kenai Nitrogen Operations Plant

Prepared by

Cook Inlet Environmental Inc.

January 21, 2020

TABLE OF CONTENTS:

LIST OF TABLES:

LIST OF FIGURES:

LIST OF APPENDICES:

1.0 Introduction

This report summarizes the results of groundwater monitoring conducted during June, July, and August of 2019 at the Agrium US Inc. - Kenai Nitrogen Operations (KNO) Facility. This document was prepared on behalf of KNO by Cook Inlet Environmental, Inc. to satisfy the annual monitoring and reporting requirements outlined in the Agrium KNO Remedial Action Plan (RAP) dated December 2006. Additionally, site-specific requirements outlined in the Alaska Department of Environmental Conservation's (ADEC) Conditional Approval letter dated January 10, 2007 have been completed and documented.

2.0 Background & Overview

Figure 1 is a map depicting the geographic location of the KNO facility. KNO production and utility plants have not been in operation since September 2007. Agrium does not currently operate any facilities at the site; however, Homer Electric Association currently operates a combined cycle power generation facility on leased land located at the northwest corner of the site.

Agrium has been implementing the RAP for twelve years. Remedial actions include monitored natural attenuation (MNA) and impact mitigation. Sections 3 and 4 document the field activities and results of annual groundwater monitoring and beach rock removal. Section 5 summarizes the findings and conclusions with respect to the effectiveness of MNA and impact mitigation.

3.0 Groundwater Monitoring

3.1 Objectives and Approach

Groundwater monitoring is performed annually in accordance with an ADEC approved Sampling and Analysis Plan (SAP) revised January 2007. There are three types of groundwater monitoring conducted at the site including; detection, assessment, and compliance monitoring. The following paragraphs describe the rationale and approach for each type of monitoring.

Detection monitoring includes sampling wells located in contaminant source areas to assess the status of ongoing or new releases. Detection monitoring is conducted annually to prevent and eliminate any new contaminant sources.

Assessment monitoring evaluates the performance of MNA and includes annual sampling for contaminants of concern (COCs) at all wells located at the Plant site and selected wells located at the neighboring property North of the Plant site. Assessment monitoring provides a comprehensive data set that is used to evaluate groundwater flow patterns, plume distributions, contaminant trends, and the overall progress of the remedial action. Assessment monitoring data is also used to continuously refine the conceptual site model and assess migration risk to downgradient receptors.

Compliance monitoring evaluates whether groundwater discharge points to Cook Inlet comply with Alaska Water Quality Standards (AWQS) and consists of annual sampling for wells located at the high tide line of Cook Inlet.

Groundwater samples collected in accordance with the SAP are analyzed for the COC's at the Agrium KNO Laboratory as described in the Agrium KNO Laboratory Quality Assurance Plan (Agrium 2009). An ADEC approved third party lab analyzes arsenic samples collected from each well. Duplicate samples, collected from the compliance wells, are also sent to a third-party laboratory for confirmation analysis of ammonia, nitrite, and nitrate.

3.2 Results & Discussion

Table 2 summarizes groundwater analysis results collected during July and August of 2019. Analytical data was validated in accordance with ADEC guidance. Appendix A includes the laboratory reports, and data quality assessments for this monitoring period.

Figures 2 through 23 depict groundwater contours and contaminant distributions for ammonia, urea, nitrite, nitrate, pH, arsenic, and other degradation indicators for the unconfined aquifer (UA) and semi-confined aquifer (SCA). The following paragraphs discuss groundwater flow conditions, and the distributions of these parameters for each aquifer.

3.2.1 Groundwater Flow Conditions

Figure 2 is a map of groundwater flow and ammonia-N concentrations in the UA. Flow in the UA is sensitive to on-site recharge sources. A groundwater recovery and injection system situated north of the KNO site, and operated by the Marathon Kenai Refinery, also has a significant effect on areal flow conditions of the UA. Generally, the northern portion of the UA flows northwest, the central portion flows west, and the southern portion flows west. The groundwater flow tendencies shown on Figure 2 are consistent with previous monitoring events.

Figure 3 is a map of groundwater flow and ammonia plumes in the SCA. This map indicates that the entire SCA has a westward regional flow tendency, which is consistent with previous monitoring events. SCA flow patterns are not influenced significantly by on-site recharge sources, rather SCA flow is controlled by regional flow conditions from Bernice Lake and Cabin Lake, and by tidal influence from Cook Inlet.

3.2.2 Ammonia Plumes

Ammonia is present at the KNO site as product of urea hydrolysis. This microbially mediated processes hydrolyzes urea in groundwater to form ammonium carbonate and elevated pH. Urea hydrolysis is an aerobic process, which is limited by dissolved oxygen levels in groundwater.

There are currently two ammonia plumes in the UA, which are shown in Figure 2. These plumes originate from urea releases in the Plant 2 and Plant 5 urea reclaim systems located in the north and south complexes. Two releases of anhydrous ammonia, documented in 2008, have also contributed to the southern portion of the UA ammonia plume.

The southern UA ammonia plume has migrated downgradient from the Plant 2 source area, where it extends westward and discharges to bluff seeps located 60 feet above the beach surface and near the sheet-pile retaining wall. In previous years, the highest ammonia concentration was located next to the urea prill tower at MW-30. Currently, the highest ammonia levels (985 mg/L) are present downgradient of this area at MW-24.

The northern portion of the UA ammonia plume has migrated downgradient, with the highest ammonia level of 257 mg/L apparent near the Plant 5 reclaim system at MW-25.

Figure 3 depicts the extent of the ammonia plumes in the SCA. The southern SCA ammonia level is highest in the area downgradient of the Plant 2 reclaim system at MW-32. Groundwater in the southern SCA discharges to the beach surface in sub-tidal seeps, located at the southern end of the sheet-pile retaining wall, near MW-35R, where the ammonia concentration is 123 mg/L.

The northern SCA plume extends due west from MW-49 where the highest ammonia level is 300 mg/L, the plume discharges at the beach surface in seeps located approximately 500 feet south of KNO's northern property line near MW-38R, where the ammonia level is 241 mg/L.

3.2.3 Urea Plumes

Figure 4 is a urea concentration map for the UA. The northern UA area showed no detectable urea in 2019. The southern UA urea shows only a small impacted area west of the prill tower at MW-30. The highest urea concentration in the southern UA plume is 105 mg/L at MW-23R.

Figure 5 is a map of urea concentrations in the SCA. In the northern SCA, a residual urea plume is present at MW-49-120 with the highest level of 27.5 mg/L. This plume discharges to the beach at MW-43R at a concentration of 17.6 mg/L. The southern SCA area shows low detectable levels of urea at bluff MW-33 and beach wells MW-37R and MW-35R, with the highest level of 30.4 at MW-37R.

3.2.3.1 Degradation Indicators

Urea hydrolysis and ammonia nitrification are aerobic processes. The limiting factor for the microbial degradation of these contaminants is the concentration of dissolved oxygen (DO) in groundwater. Oxidation-reduction potential (ORP) gives a general indication of oxidative conditions favorable to these processes. Assessment monitoring uses DO and ORP to indicate conditions which limit aerobic degradation.

Figures 6 and 7 depict the distributions of DO in the UA and SCA respectively. DO concentrations in the UA and SCA have decreased, indicating that site wide conditions have become slightly more anaerobic. Both aquifers show DO levels ranging from 0.1 mg/L in impacted areas, to 2.0 mg/L in unimpacted areas.

Figures 8 and 9 depict the distribution of ORP in the UA and SCA respectively. The UA generally shows ORP values ranging from 80-300 mV indicating oxidative conditions due to recharge, and some reductive activity in the southern UA impacted areas. The SCA shows strong reducing conditions with ORP ranging from -100 to 0 mV due to low recharge rates to the SCA. The exceptions to this are the beach wells, where significant recharge occurs, and ORP values range from 100-300 mV.

3.2.4 Nitrite & Nitrate Plumes

Nitrate and nitrite are present in KNO groundwater due to a two-step microbial process where ammonia is nitrified under aerobic conditions to form nitrite, followed by the formation of nitrate. No marine water quality standards currently exist for nitrite or nitrate, and these species are used to document ammonia and urea degradation.

Figures 10 and 12 depict the nitrite and nitrate plumes in the UA. Nitrite is a transient species in the UA and was detected only in MW-19, MW-23R, and MW-26. Nitrate is a considerably more stable degradation product and is present throughout the UA with a maximum level of 216 mg/L present at MW-13.

Figures 11 and 13 show nitrite and nitrate concentrations in the SCA. Nitrite was not detected in any SCA wells during the 2019 sampling event. SCA nitrate levels are highest near the beach in the southern plume area at a level of 166 mg/L at MW-35R.

3.2.5 Arsenic & pH Plumes

Arsenic naturally occurs in soil and groundwater at the KNO site. Elevated pH, associated with urea and ammonia releases, has increased the solubility of naturally occurring arsenic in aquifer sands which has resulted in elevated arsenic levels in groundwater. Two arsenic plumes which correspond to urea and ammonia releases are present in both the UA and SCA. The marine AWQS standard for arsenic is 36 µg/L and the marine AWQS for pH is 6.5 to 8.5 standard units (su).

Figure 14 is a map of pH and arsenic concentrations in the UA. Background pH levels in the UA generally range from 5.5-6.0. Elevate pH levels greater than 8.0 are apparent areas if the UA where ammonia plumes are present. These areas show correspondingly elevated arsenic concentrations above 10 ug/L, with the highest UA arsenic level of 32 ug/L at MW-23R.

Figure 15 is a map pH and arsenic concentrations in the SCA. Areas with pH greater than 8.0 in the SCA generally correspond with arsenic levels greater than 30 µg/L. The highest arsenic level in the SCA is 105 ug/L at MW-50 and the highest arsenic level discharging to the beach is 47 ug/L at MW-38R.

3.2.6 Carbonate Plumes & Beach Rock Formations

Urea hydrolysis forms ammonium carbonate accompanied by an increase in pH. Accordingly, urea degradation has resulted in carbonate ion plumes throughout site. Carbonate rich groundwater discharging sub-tidally from the SCA into Cook Inlet has been found to precipitate in the presence of calcium rich seawater. This process forms slab-like rock concretions, which have a potential to interfere with local fishing activities. There are currently no surface water standards for carbonate.

Figure 16 shows the carbonate plumes in the UA. The northern UA carbonate plume extends from MW-39 northwest from MW-27 to E-156. The southern UA carbonate plume is at its highest level of 4910 mg/L at MW-23R where it extends west to MW-8R and discharges at the bluff.

Figure 17 shows the carbonate plumes in the SCA. The highest carbonate level in the northern SCA is 1070 mg/L at MW-49-120. The northern carbonate plume extends southwest and discharges to the beach at MW-38R. The southern SCA carbonate plume is highest at MW-32 with a level of 977 mg/L and extends southwest and discharges to the beach at MW-35R.

Approximately 5 cubic yards of beach rock was discovered below the high tideline near the south end of the sheet pile wall in May 2019. The rock formations were excavated from the beach in June 2019. Approximately 5 cubic yards of excavated rock was placed on Agrium property above the high tideline to prevent interference with local fishing activities.

3.2.7 Conductivity

Figures 18 and 19 depict conductivity contours for the UA and SCA, respectively. Background conductivity in the UA ranges from 194 uS/cm to 254 uS/cm. Background conductivity in the SCA ranges from 280 uS/cm to 375 uS/cm. There are no marine water quality standards for conductivity. This parameter indicates ionic strength and is used for groundwater and surface water modelling. Conductivity is generally elevated in the groundwater plume areas due to elevated levels of ionic species including ammonia, carbonate, nitrite and nitrate. Conductivity is highly elevated in the beach wells with values ranging from 1,553 uS/cm to 31,349 uS/cm due to sea spray effects, and complete inundation of the beach wells during spring tides and storm surge events.

3.2.8 Temperature Plumes

Figure 20 and 21 depict temperatures in the UA and SCA respectively. Leaking reclaim systems in Plants 2 and 5 resulted in elevated groundwater temperatures in the UA near these source areas.

These systems carried steam condensate, which when released to the UA, raised the temperature of the UA. Minor thermoclines radiating from Plant 2 and 5 are still apparent in the UA.

A thermal plume associated with the Plant is not readily discernable in the SCA, and groundwater temperatures currently comply with the 15°C marine AWQS where the SCA discharges at the beach.

3.2.9 True Color Plumes

Figures 22 and 23 depict true color plumes in the UA and SCA. Elevated color corresponds with elevated ammonia, which mobilizes naturally occurring tannin and lignin from aquifer materials. True color data is collected to evaluate groundwater compliance with the marine AWQS of 50 PCU.

Background true color is generally below 5.0 PCU for the UA and SCA. In the northern UA the highest true color is 255 PCU in MW-54 and a plume greater than 100 PCU extends northwest from Plant 5. The highest true color in the southern UA plume 228 PCU at MW-23R. A color plume greater than 100 PCU extends west from the Plant 2 area to the bluff at MW-8R.

Southern SCA true color values are highest MW-32 with a level 80 PCU. This plume extends west and discharges to the beach. The northern SCA color plume is highest at well MW-49-120 at 142 PCU where it extends west and discharges to the beach at MW-38R at a level of 36 PCU. The northern plume currently meets AWQS standards for color at the beach.

3.2.10 Contaminant Trends

Figures 24 through 34 show ammonia, urea, and nitrate/nitrite time series charts for selected monitoring wells in the UA and SCA plumes.

Figures 24 and 25 depict ammonia and urea trends in the southern UA plume. A substantial release of urea was documented in this area and reported to ADEC in April 2006. Ammonia and urea concentrations have shown stable to decreasing trend since the 2006 release.

Figures 26 and 27 depict ammonia and urea trends in the northern UA plume. Urea and ammonia trends show generally stable to decreasing trends over the duration of monitoring.

Figures 28 and 29 depict ammonia trends in the SCA. The downgradient wells in the SCA show an increase in ammonia levels followed by a decrease which is consistent with migration through this area.

Figure 30 shows urea trends within the southern SCA plume. No urea is currently detectable in the southern SCA suggesting that urea attenuation may be complete in this area.

Figures 31 through 34 depicts nitrate and nitrite trends in the UA and SCA. Nitrate and nitrite show generally stable trends over the past five years indicating that ammonia degradation processes may have slowed with the attenuation of high ammonia levels.

3.2.11 Potentiometric Surface Trends

Figure 35 is a hydrograph of the UA from July 2002 to June 2019. A slight increase in potentiometric surface elevations is observable across the site during this time. The average increase for all UA wells is 1.5 ft during this period.

Figure 36 is a hydrograph of the SCA from July 2005 to June 2019. A slight increase in the potentiometric surface elevations is observable for the SCA during this time. In general, stable readings are apparent from 2017 to 2019. Since 2005 an increasing trend appears in the potentiometric surface with time. The average increase for all SCA wells is 1.8 ft during this period.

4.0 Beach Monitoring and Mitigation

4.1 Cemented Rock Excavation

The purpose of beach rock removal is to prevent cemented rock from interfering with local commercial fishing sites. In May 2019, approximately 5 cubic yards of beach rock was identified. Beach rock was excavated on June 15, 2019. Beach rocks were excavated and placed behind the sheet pile wall at Agrium in accordance with a USACE NW-19 minor dredging permit.

5.0 Monitoring Well Replacement and Decommissioning

Six monitoring wells were replaced in accordance with a workplan submitted to ADEC DSPAR - Contaminated Sites dated May 23, 2019 and approved on May 29, 2019. The replacement wells were surveyed and newly designated as MW-09R, MW-35R, -36R, -37R, -38R, and -43R. Monitoring well as-builts for the new wells are provided in Appendix B.

Attempts to pull the steel casing at MW-09R were unsuccessful. The well was decommissioned by over-drilling the 6" casing with an 8" ID hollow stem auger to a depth of 3 feet. The casing was cut off at approximately 2 feet below grade, and filled with hydrated bentonite chips. An approximately 2-foot diameter by 1.5-foot-thick bentonite cap was installed over the grouted casing to prevent a surface water migration path along the outside of the casing. A 1.5-foot thick protective gravel layer was placed over the bentonite cap.

6.0 Conclusions

Agrium continued to implement the ADEC approved RAP during 2019. Groundwater monitoring was performed in accordance with the RAP. Monitoring results indicate that the contaminant plumes continue to be stable and are attenuating. Newly formed beach rock was removed to prevent interference with local fishing sites.

Agrium will continue to implement monitored natural attenuation with groundwater monitoring and beach rock mitigation measures going forward. A beach rock survey is tentatively scheduled for May 2020, and annual groundwater monitoring is tentatively scheduled to begin in June 2020.

7.0 References

Agrium 2006, Site Investigation Report – Kenai Nitrogen Operations, Agrium U.S., Inc, January 2006.

Agrium 2008, Groundwater Sampling and Analysis Plan – Kenai Nitrogen Operations, Agrium U.S., Inc, January 2008.

Agrium 2009, Laboratory Quality Assurance Plan for Environmental Monitoring Programs – Kenai Nitrogen Operations, Agrium U.S., Inc, December 2009.

CIE 2006, Groundwater Remedial Action Plan, Agrium U.S., Inc. - Kenai Nitrogen Operations Plant, Cook Inlet Environmental, December 2006.

CIE 2019, NWP 19 Minor Dredging Permit Application, Correspondence with US Army Corps of Engineers on behalf of Agrium U.S., Inc. - Kenai Nitrogen Operations Plant, Cook Inlet Environmental, June 2019.

CIE 2019, Workplan for Well Replacement, submitted to ADEC DSPAR Contaminated Sites on behalf of Agrium U.S., Inc. - Kenai Nitrogen Operations Plant, Cook Inlet Environmental, May 23, 2019.

State of Alaska Department of Environmental Conservation, Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances, December 12, 2008.

State of Alaska Department of Environmental Conservation, Oil and Other Hazardous Substances Pollution Control, 18 AAC 75, November 7, 2017.

State of Alaska Department of Environmental Conservation, Water Quality Standards, 18 AAC 70, April 6, 2018.

Tables

Table 1

Groundwater Elevations

June 2019

Agrium U.S., Inc. - KNO Plant

Well No	Gauge Date	Elevation TOC *(ft MLLW)*	DTW *(feet)*	Potentiometric Surface *(ft MLLW)*
E-101B	20-Jun-19	110.02	74.81	35.21
E-121B	26-Jun-19	107.61	39.70	67.91
E-129	29-Jun-19	94.40	65.33	29.07
E-137B	19-Jun-19	118.96	59.39	59.57
E-149	20-Jun-19	106.74	55.05	51.69
E-155	18-Jun-19	93.95	56.33	37.62
E-156	20-Jun-19	122.67	81.90	40.77
E-157	18-Jun-19	125.82	104.16	21.66
E-158	26-Jun-19	113.69	73.85	39.84
E-159	20-Jun-19	115.74	63.36	52.38
E-160	19-Jun-19	121.67	65.46	56.21
E-161	18-Jun-19	99.11	79.54	19.57
E-163	20-Jun-19	94.63	63.68	30.95
E-167	20-Jun-19	93.97	58.83	35.14
E-169	19-Jun-19	121.58	65.04	56.54
E-170	20-Jun-19	119.86	69.42	50.44
E-187B	20-Jun-19	94.70	58.89	35.81
E-190B	20-Jun-19	97.22	60.15	37.07
E-195	20-Jun-19	103.49	62.98	40.51
E-196	20-Jun-19	97.31	63.43	33.88
E-202B	19-Jun-19	99.35	42.03	57.32
E-205	19-Jun-19	98.57	41.18	57.39
E-206	21-Jun-19	114.97	42.05	72.92
E-207	20-Jun-19	103.37	30.84	72.53
E-209	19-Jun-19	96.93	40.92	56.01
E-224	20-Jun-19	106.92	48.46	58.46
E-225	20-Jun-19	96.49	38.96	57.53
MW-03	19-Jun-19	134.39	65.00	69.39
MW-04R	26-Jun-19	128.77	54.31	74.46

Table 1

Groundwater Elevations

June 2019

Agrium U.S., Inc. - KNO Plant

Well No	Gauge Date	Elevation TOC *(ft MLLW)*	DTW *(feet)*	Potentiometric Surface *(ft MLLW)*
MW-07R	19-Jun-19	130.85	65.66	65.19
MW-08R	19-Jun-19	131.77	65.96	65.81
MW-09R	19-Jun-19	132.99	61.75	71.24
MW-13	19-Jun-19	131.79	64.16	67.63
MW-14	19-Jun-19	132.28	69.51	62.77
MW-15	19-Jun-19	131.21	64.23	66.98
MW-16	19-Jun-19	131.09	65.94	65.15
MW-17	19-Jun-19	136.37	67.46	68.91
MW-18A	19-Jun-19	133.93	58.97	74.96
MW-18B	19-Jun-19	133.92	101.00	32.92
MW-19	19-Jun-19	130.80	59.69	71.11
MW-20	19-Jun-19	131.90	58.10	73.80
MW-21	19-Jun-19	129.88	59.29	70.59
MW-22	19-Jun-19	133.17	67.80	65.37
MW-23R	25-Jun-19	132.30	61.76	70.54
MW-24	19-Jun-19	132.27	62.51	69.76
MW-25	19-Jun-19	131.42	61.39	70.03
MW-26	19-Jun-19	131.56	60.44	71.12
MW-27	25-Jun-19	127.97	55.71	72.26
MW-28	19-Jun-19	131.95	61.15	70.80
MW-29	19-Jun-19	132.04	61.41	70.63
MW-30	25-Jun-19	128.04	56.71	71.33
MW-32	18-Jun-19	130.70	110.64	20.06
MW-33	18-Jun-19	129.58	112.11	17.47
MW-34	18-Jun-19	125.82	106.38	19.44
MW-35R	18-Jun-19	22.81	8.62	14.19
MW-36R	18-Jun-19	22.35	6.83	15.52
MW-37R	18-Jun-19	25.01	8.63	16.38
MW-38R	18-Jun-19	24.37	6.16	18.21

Table 1

Groundwater Elevations

June 2019

Agrium U.S., Inc. - KNO Plant

Well No	Gauge Date	Elevation TOC *(ft MLLW)*	DTW *(feet)*	Potentiometric Surface *(ft MLLW)*
MW-39	25-Jun-19	127.63	55.77	71.86
MW-40	19-Jun-19	128.39	57.61	70.78
MW-41	19-Jun-19	127.55	58.42	69.13
MW-42	19-Jun-19	131.29	59.79	71.50
MW-43R	18-Jun-19	24.23	6.60	17.63
MW-44-120	18-Jun-19	129.97	102.34	27.63
MW-45-120	18-Jun-19	131.14	105.22	25.92
MW-46	18-Jun-19	131.84	106.51	25.33
MW-47	18-Jun-19	132.74	104.50	28.24
MW-48-120	18-Jun-19	130.96	108.33	22.63
MW-49-120	18-Jun-19	124.27	99.22	25.05
MW-50	18-Jun-19	130.43	107.50	22.93
MW-51	18-Jun-19	130.61	107.12	23.49
MW-52	18-Jun-19	130.76	101.44	29.32
MW-53	18-Jun-19	129.88	103.12	26.76
MW-54	19-Jun-19	124.89	61.62	63.27
PI-06B	20-Jun-19	94.30	38.25	56.05

TOC Top of casing

DTW Depth to water

MLLW Mean low low water.

Table 2

Groundwater Analysis Results

July - August 2019

Agrium U.S., Inc. - KNO Plant

Well No.	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	pH S.U.	Temp deg C	Conductivity mS/cm	DO mg/L	ORP mV	CT as CO3 mg/L	Arsenic mg/L	Color PCU
Standard	*[NE]*	*[2.5]*	*[NE]*	*[NE]*	*[6.5- 8.5]*	*[15]*	*[NE]*	*[NE]*	*[NE]*	*[NE]*	*[0.035]*	*[50]*
E-121B	10 U	0.77	3 U	3 U	6.55	12	194	0.744	18.1	325	5.67	6
E-155	10 U	17.7	3 U	3 U	6.31	14	481	1.02	37	302	15.3	57
E-156	10 U	5	3 U	3 U	6.19	13.1	606	0.269	6.62	735	16.7	7
E-157	10 U	1.59	3 U	3 U	6.86	13.2	238	0.641	203	229	163	41
E-160	10 U	1.67	3 U	3 U	6.41	11.5	509	0.228	-2.64	378	26.5	60 U
E-161	10 U	9.2	3 U	3 U	7.23	11.7	341	0.338	32	267	30.8	6
E-169	10 U	6.7	3 U	3 U	6.61	12.2	558	0.326	105	274	5 U	6
E-170	10 U	2.13	3 U	3 U	6.42	13.1	408	0.424	14.1	510	14.1	31
E-206	10 U	1.14	3 U	3 U	6.55	12	194	0.744	18.1	579	5 U	25
MW-03	10 U	0.28	3 U	3 U	--	--	--	--	--	147	5 U	5 U
MW-04R	10 U	0.19	3 U	3 U	6.11	7.7	351	0.188	183	289	5 U	5 U
MW-08R	7.79 U	395	196	3.04	9.06	12.4	2790	0.195	168	915	21.6	150
MW-09R	10 U	0.16	6.43	3 U	6.09	10.1	755	0.213	190	40 U	5 U	5 U
MW-13	10 U	130	216	3 U	6.79	11	2160	0.367	251	303	5 U	33
MW-14	10 U	17	42.5	3 U	6.28	8.94	715	0.22	247	235	5 U	5 U
MW-15	10 U	46	112	3 U	6.14	10.1	1130	0.255	223	129	5 U	5 U
MW-16	8.73	133	87.3	3 U	7.57	9.6	1330	0.323	274	573	5.18	7
MW-17	10 U	0.04	3 U	3 U	5.96	11	254	0.427	191	142	5 U	5 U

Table 2

Groundwater Analysis Results

July - August 2019

Agrium U.S., Inc. - KNO Plant

Well No.	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	pH S.U.	Temp deg C	Conductivity mS/cm	DO mg/L	ORP mV	CT as CO3 mg/L	Arsenic mg/L	Color PCU
Standard	*[NE]*	*[2.5]*	*[NE]*	*[NE]*	*[6.5- 8.5]*	*[15]*	*[NE]*	*[NE]*	*[NE]*	*[NE]*	*[0.035]*	*[50]*
MW-18A	10 U	0.09	3 U	3 U	5.86	8.52	195	0.247	138	154	5 U	5 U
MW-18B	10 U	0.08	3 U	3 U	6.53	12.4	375	1.87	76.3	216	5 U	5 U
MW-19	10 U	123	187	7.79	6.5	7.84	2280	0.265	281	460	5 U	5 U
MW-20	10 U	0.06	21	3 U	5.08	9.9	231	5.06	296	67.4 U	5 U	5 U
MW-21	10 U	54	27.7	3 U	6.59	7.3	695	0.191	217	299	5 U	5 U
MW-22	10 U	130	3 U	3 U	8.46	8.4	725	0.694	171	259	5 U	75
MW-23R	165	760	133	19.5	9.66	10.5	7830	0.233	79.9	4910	31.5	228
MW-24	--	985	--	--	--	--	--	--	--	--	--	197
MW-25	10 U	257	16	3 U	7.63	8.1	2170	0.087	221	229	15	217
MW-26	10 U	200	186	4.21	8.34	7.87	2700	0.107	185	292	5 U	11
MW-27	10 U	230	5	3 U	6.71	7.71	1448	0.28	251	250	5 U	157
MW-28	10 U	16.8	24.2	3 U	6.17	9.2	284	0.262	258	229	5 U	5 U
MW-29	10 U	132	172	3 U	7.15	9.57	1980	0.186	220	590	5 U	5 U
MW-30	34.8	203	28.5	3 U	9.32	8.23	1010	0.103	95.9	624	5 U	5 U
MW-32	10 U	645	67	3 U	9.44	12.4	3010	0.295	121	977	41.9	80
MW-33	12.1 U	222	9.33	3 U	9.06	12.4	2790	0.195	168	520	51.2	57
MW-34	10 U	1.68	3 U	3 U	6.94	10.5	426	0.216	199	265	5 U	5 U
MW-35R	11.3	123	166	3 U	9.44	13.4	3430	1.87	294	350	15	30

Table 2

Groundwater Analysis Results

July - August 2019

Agrium U.S., Inc. - KNO Plant

Well No.	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	pH S.U.	Temp deg C	Conductivity mS/cm	DO mg/L	ORP mV	CT as CO3 mg/L	Arsenic mg/L	Color PCU
Standard	*[NE]*	*[2.5]*	*[NE]*	*[NE]*	*[6.5- 8.5]*	*[15]*	*[NE]*	*[NE]*	*[NE]*	*[NE]*	*[0.035]*	*[50]*
MW-36R	10 U	3.1	3 U	3 U	6.65	16.9	31300	0.082	267	40 U	250 U	5 U
MW-37R	30.4	12.8	53.4	3 U	7.05	12.5	13593	4.13	238	221	8.91	5 U
MW-38R	10 U	241	3 U	3 U	9.73	6.2	1540	1.7	104	567	93	36
MW-39	10 U	47	93.4	3 U	6.95	7.55	1920	0.055	193	636	5 U	54
MW-40	10 U	139	8.39	3 U	8.95	7.93	725	0.111	151	1150	13	40
MW-41	10 U	128	22.8	3 U	9.17	7.61	990	0.094	145	251	27.2	82
MW-42	10 U	8	3 U	3 U	6	7.5	263	0.086	197	131	5 U	1 U
MW-43R	17.6	21	5.52	3 U	6.92	10.9	5890	0.103	208	215	50 U	21
MW-44-120	10 U	0.44	3 U	3 U	7.83	8.98	288	0.282	-51.7	232	10.5	5 U
MW-45-120	10 U	1.7	3 U	3 U	7.5	10.7	330	0.314	-0.605	209	8.72	5 U
MW-46	10 U	34	3 U	3 U	8.31	10.61	483	0.192	68	282	7.07	5 U
MW-47	10 U	1.6	3 U	3 U	6.87	8.84	307	0.156	0.563	171	10.1	7
MW-48-120	10 U	235	3 U	3 U	9.45	10.1	1030	0.925	144	423	11.1	49
MW-49-120	27.5	300	8.41	3 U	9.4	8.82	1967	0.152	76.6	1070	46.6	142
MW-50	10 U	190	3	3 U	9.59	8.8	904	0.123	61.3	369	24	72
MW-51	10 U	8.6	3 U	3 U	6.97	10.4	511	1.21	49.9	309	5.12	18
MW-52	10 U	0.22	3 U	3 U	--	--	--	--	--	113	31.6	7
MW-53	10 U	0.44	3 U	3 U	7.11	9.27	360	0.161	-27.7	232	14.2	31

Table 2

Groundwater Analysis Results

July - August 2019

Agrium U.S., Inc. - KNO Plant

Well No.	Urea *mg/L*	Ammonia-N *mg/L*	Nitrate-N *mg/L*	Nitrite-N *mg/L*	pH *S.U.*	Temp *deg C*	Conductivity *mS/cm*	DO *mg/L*	ORP *mV*	CT as CO3 *mg/L*	Arsenic *mg/L*	Color *PCU*
Standard	*[NE]*	*[2.5]*	*[NE]*	*[NE]*	*[6.5- 8.5]*	*[15]*	*[NE]*	*[NE]*	*[NE]*	*[NE]*	*[0.035]*	*[50]*
MW-54	10 U	219	3 U	3 U	9.44	10.4	807	0.926	172	417	10.5	255

Notes:

-- Not analyzed.

U The analyte was not detected at level shown

J The concentration is estimated

NE Not Established

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
E-121B	8/24/2015	10 U	0.02 U	3 U	3 U	0.1 U	6.37	230	5.73	5 U	425	5
	6/29/2016	10 U	0.04	3 U	3 U	0.1 U	6.53	246	5.89	5 U	122.7	0.6
	6/21/2017	10 U	0.12	3 U	3 U	8.51	7.18	357	6.39	5 U	141	0.547
	8/2/2018	10 U	0.62	3 U	3 U	0.083	6.38	283	8.56	5 U	264	5.13
	8/12/2019	10 U	0.77	3 U	3 U	0.744	6.55	194	12	6	325	5.67
E-155	7/1/2014	7.6	20	0.5 U	0.5 U	0.14	6.29	410	6.37	6	315	21.5
	8/26/2015	10 U	11	3 U	3 U	0.1 U	6.39	310	6.5		527	19.7
	6/29/2016	10 U	14.7	3 U	3 U	0.1 U	6.58	351	6.46	5 U	193	13
	6/21/2017	10 U	9.7	3 U	3 U	0.593	6.2	517	6.77	5 U	203	12.4
	8/2/2018	--	--	--	--	--	--	--	--	--	--	7.5
	8/9/2018	10 U	8.8	3 U	3 U	0.07	6.26	565	9.72	5 U	345	--
	8/3/2019	10 U	17.7	3 U	3 U	1.02	6.31	481	14	57	302	15.3
E-156	6/30/2014	5 U	10	0.5 U	0.5 U	0.35	6.22	390	6.46	35	373	27.1
	8/24/2015	10 U	2.12	3 U	3 U	0.1 U	6.16	285	6.63	259	723	10.6
	6/29/2016	10 U	3.7	3 U	3 U	0.1 U	6.34	325	6.59	7	223	4
	6/21/2017	10 U	2	3 U	3 U	0.391	6.1	450	6.89	5 U	287	5.6
	8/3/2018	10.5	2	3 U	3 U	0.059	6.19	542	10.45	9	320	20.8
	8/3/2019	10 U	5	3 U	3 U	0.269	6.19	606	13.1	7	735	16.7
E-157	6/30/2014	5 U	1.6	1.11	0.5 U	0.79	6.13	250	5.65	5 U	167	145
	8/24/2015	10 U	2.29	3 U	3 U	0.17	6.93	220	5.58	30	396	10.7
	6/29/2016	10 U	3.6	6.67	3 U	0.1 U	7.09	273	5.92	5 U	126	61
	6/26/2017	10 U	2.1	3 U	3 U	0.505	6.82	389	6.21	5 U	160	19.8
	8/3/2018	10 U	0.53	3 U	3 U	0.102	7.17	410	10.9	5 U	196	14.8
	8/12/2019	10 U	1.59	3 U	3 U	0.641	6.86	238	13.2	41	229	163
E-159	7/1/2014	5 U	0.21	0.5 U	0.5 U	0.06	6.26	300	6.03	24	365	3.1
E-160	6/21/2017	10 U	0.3	3 U	3 U	0.456	6.17	376	7.44	5 U	197	21.3
	8/2/2018	10.4 U	0.68	3 U	3 U	0.0957	5.87	486	11.9	5 U	265	28.5
	8/9/2019	10 U	1.67	3 U	3 U	0.228	6.41	509	11.5	60 U	378	26.5
E-161	7/1/2014	5.67	3	0.5 U	0.5 U	2.05	6.42	230	5.14	10	160	37
	8/26/2015	10 U	2.3	3 U	3 U	0.17	6.54	204	5.35	14	111	3.6
	6/29/2016	10 U	0.45	3 U	3 U	0.1 U	6.59	276	5.56	5 U	159	32.4
	6/26/2017	10 U	5.5	3 U	3 U	0.449	6.45	438	6.19	5 U	170	23.9

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
E-161	8/2/2018	10 U	1	3 U	3 U	0.122	6.38	511	10.4	12	196	5.18
	8/12/2019	10 U	9.2	3 U	3 U	0.338	7.23	341	11.7	6	267	30.8
E-169	6/30/2014	5.67	1.59	3.19	0.5 U	0.11	6.13	440	7.14	5 U	225	0.5
	8/24/2015	10 U	66	3 U	3 U	1	7.46	562	7.27	30	740	2
	6/29/2016	10 U	78	3 U	3 U	0.12	7.62	804	7.22	5 U	173	1.4
	6/21/2017	10 U	62	3 U	3 U	0.473	7.76	999	7.76	6	283	1.7
	8/2/2018	--	--	--	--	--	--	--	--	--	--	5 U
	8/9/2018	10	23	3 U	3 U	0.105	6.16	612	11	5 U	301	--
	8/9/2019	10 U	6.7	3 U	3 U	0.326	6.61	558	12.2	6	274	5 U
E-170	8/24/2015	10 U	2.22	3 U	3 U	0.1 U	6.05	238	6.75	343	903	4.4
	6/29/2016	10 U	1.94	3 U	3 U	0.1 U	6.2	255	6.68	5 U	194	6.5
	6/21/2017	10 U	1.91	3 U	3 U	0.303	6.1	409	7.32	5 U	251	5.27
	8/3/2018	10 U	1.91	3 U	3 U	0.07	6.04	522	11.29	11	292	8.13
	8/12/2019	10 U	2.13	3 U	3 U	0.424	6.42	408	13.1	31	510	14.1
E-192	8/27/2015	10 U	0.889	0.01 U	0.01 U	0.31	6.34	245	8.35	104	446	19
	7/13/2016	10 U	0.046	0.1	0.1 U	2.02	6.57	308	9	5 U	174	3.5
	7/5/2017	10 U	0.38	3 U	3 U	1.5	6.89	872	7.24	5 U	194	4.28
	7/25/2018	10 U	0.15	3 U	3 U	0.094	7.16	1480	8.01	5	202	5 U
E-193	7/5/2017	--	4.38	2.49	0.1 U	--	--	--	--	--	--	79.89999
	7/25/2018	--	1.86	0.2 U	0.2 U	--	--	--	--	--	--	12.3
E-194	7/1/2014	16.2	3	2.26	0.5 U	--	--	--	--	8	203	110
E-206	8/12/2015	10 U	0.02 U	3 U	3 U	0.1 U	6.15	279	6.57	5 U	648	0.2 U
	7/7/2016	10 U	0.08	3 U	3 U	0.1 U	6.72	305	6.73	5 U	174	0.3
	6/20/2017	10 U	0.97	3 U	3 U	1.19	6.49	356	8.07	5 U	156	1.32
	8/2/2018	10 U	1.21	3 U	3 U	0.056	6.36	673	10.08	23	406	5 U
	8/3/2019	10 U	1.14	3 U	3 U	0.744	6.55	194	12	25	579	5 U
MW-03	9/11/2013	10.1	0.86	0.5 U	0.5 U	--	8.59	230	6.07	--	136	0.5
	6/12/2014	10.6	2.23	1.26	0.5 U	0.12	8.53	230	6.02	--	159	0.3
	8/12/2015	10 U	1.55	3 U	3 U	0.18	8.66	207	5.8	5 U	1793	2
	6/20/2016	10 U	0.26	3 U	3 U	0.36	9.49	214	6.16	5 U	104	0.2 U
	6/20/2017	10 U	0.02	3 U	3 U	0.932	9.34	367	6.34	5 U	82.1	0.164 J
	7/13/2018	10 U	0.1 U	3 U	3 U	0.593	9.61	326	12.4	5 U	124	5 U

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-03	7/23/2019	10 U	0.28	3 U	3 U	--	--	--	--	5 U	147	5 U
MW-04R	9/9/2013	10.4	0.12	0.5 U	0.5 U	--	6.14	200	4.83	--	169	64.5
	6/19/2014	5.44	0.08	0.66	0.5 U	0.08	6.23	200	4.83	--	195	56.3
	8/12/2015	10 U	0.04	3 U	3 U	0.47	6	205	4.51	5 U	1111	19.8
	7/5/2016	10 U	0.05	3 U	3 U	0.52	6.34	227	5.09	5 U	159	15.3
	6/20/2017	10 U	0.39	3 U	3 U	0.856	6.1	349	5.82	5 U	159	--
	7/26/2017	--	--	--	--	--	--	--	--	--	--	3.71
	7/13/2018	10 U	0.13	3 U	3 U	0.102	6.21	379	7.81	5 U	201	5 U
	7/25/2019	10 U	0.19	3 U	3 U	0.188	6.11	351	7.7	5 U	289	5 U
MW-07R	9/9/2013	9.23	0.56	11.6	0.5 U	--	5.42	170	6.37	--	120	17.3
	6/23/2014	5 U	0.07	19.2	0.5 U	0.49	6.11	190	6.48	--	174	14
	8/11/2015	10 U	2.8	21.9	3 U	0.66	5.12	255	6.51	9	444	--
	8/12/2015	--	--	--	--	--	--	--	--	--	--	2.1
	6/30/2016	10 U	1.6	20.4	3 U	0.91	5.4	199	6.73	5 U	94.4	7.4
	6/28/2017	10 U	0.32	20.3	3 U	1.69	5.36	175	7.17	5 U	89.3	1.08
	7/12/2018	10 U	4.6	20.97	3 U	0.259	5.6	475	10.11	6	109.3	5 U
MW-08R	9/3/2013	14.8 J	144	160	2.45	--	6.92	2190	12.7	--	352	15.6
	6/17/2014	6.88	77	61.9	0.5 U	2.8	8.48	980	11.86	--	355	2.1
	8/24/2015	10 U	464	232	4.78	2.01	7.1	2183	10.42	22	1205	4.5
	6/28/2016	17.2	128	205	10.8	0.1 U	7.21	2290	10.21	12	297	9
	6/26/2017	29.4	145	299	7.09	0.432	6.92	2000	9.83	6	436	6.41
	7/17/2018	10 U	295	227	3 U	0.202	9	3630	13.08	325	624	25.1
	7/24/2019	7.79 U	395	196	3.04	0.195	9.06	2790	12.4	150	915	21.6
MW-09	9/4/2013	7.79	0.11	0.5 U	0.5 U	--	8.38	160	8.18	--	20.7 J	0.4
	6/17/2014	5 U	0.34	0.5 U	0.5 U	0.33	9	150	7.3	--	44.2	0.2 U
	8/20/2015	10 U	0.3	3 U	3 U	0.1 U	9.21	129	6.41	69	109	0.2 U
	6/27/2016	10 U	0.3	3 U	3 U	0.1	8.62	140	6.34	5 U	21.7	0.2 U
	6/27/2017	10 U	0.1	3 U	3 U	0.417	8.63	161	6.42	5 U	40 U	0.128 J
	7/27/2018	10 U	0.15	3 U	3 U	0.179	8.45	198	10.2	5 U	40 U	5 U
MW-09R	7/25/2018	10 U	0.16	6.43 U	3 U	########	6.08962	755223.6	0.09663	5 U	40 U	--
	7/25/2019	10 U	0.16	6.43	3 U	0.213	6.09	755	10.1	5 U	40 U	5 U
MW-11	9/9/2013	9.66	5	0.5 U	0.5 U	--	9.02	200	6.07	--	104	0.2 U

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-11	6/19/2014	8.89	13	0.5 U	0.5 U	0.4	9.19	210	6.01	--	137	0.2 U
MW-13	9/3/2013	12.4 J	142	224	0.73	--	6.61	2230	11.3	--	308	4.4
	6/17/2014	9.85 J	197	21.7	0.5 U	0.28	7.35	2040	10.23	--	359	4.4
	8/20/2015	10 U	150	169	3 U	0.12	6.77	1587	8.94	36	1199	2.3
	6/28/2016	19.6	220	288	3 U	0.1	6.81	2157	8.41	15	319	3
	6/26/2017	10 U	132	240	3 U	0.34	6.67	2480	7.83	9	354	2.18
	7/27/2018	13.2	123	145	3 U	0.202	6.88	2390	11.68	15	560	5.6
	7/24/2019	10 U	130	216	3 U	0.367	6.79	2160	11	33	303	5 U
MW-14	9/9/2013	11.2	43	43.3	0.5 U	--	6.41	740	6.24	--	274	2.8
	6/23/2014	5.74	42	69.2	0.5 U	0.24	6.27	750	6.49	--	325	4.3
	8/11/2015	10 U	63	58.7	3 U	0.49	6.25	731	6.05	5 U	1853	--
	8/12/2015	--	--	--	--	--	--	--	--	--	--	0.3
	6/30/2016	10 U	35	56.3	3 U	0.1 U	6.57	749	6.26	5 U	243	1.9
	6/28/2017	10 U	33	66.2	3 U	0.29	6.53	1220	6.43	5 U	284	0.762
	7/13/2018	10 U	31	47.1	3 U	0.334	6.34	1010	9.56	5 U	211	5 U
	7/23/2019	10 U	17	42.5	3 U	0.22	6.28	715	8.94	5 U	235	5 U
MW-15	9/4/2013	5.84 J	21	99.9	0.5 U	--	5.29	1310	8.26	--	86.8	3
	6/17/2014	6.32	95	45.9	0.67	0.44	5.3	830	7.73	--	291	4
	8/20/2015	10 U	140	85.5	3 U	0.31	6.53	1145	7.72	154	900	1.9
	6/27/2016	10 U	90	136	3 U	0.11	5.68	1054	7.19	10	207	3.7
	6/27/2017	10 U	104	139	3 U	0.656	6.17	1530	6.64	14	291	2.41
	7/27/2018	10 U	74	109	3 U	0.366	6.1	1700	10.5	5 U	271	5 U
	7/25/2019	10 U	46	112	3 U	0.255	6.14	1130	10.1	5 U	129	5 U
MW-16	9/3/2013	14.7 J	172	181	0.5 U	--	6.94	2300	10.6	--	603	4.7
	6/16/2014	--	--	--	--	--	--	--	--	--	--	3.4
	6/17/2014	10 U	200	223	0.5 U	0.24	6.23	2380	10.03	--	716	--
	8/24/2015	10 U	366	173	3 U	0.16	6.94	1524	9.27	8	1222	2.1
	6/28/2016	10 U	130	151	3 U	0.1 U	6.92	1506	9.2	7	327	3.5
	6/26/2017	10 U	86	188	3 U	0.336	6.74	1880	8.66	5 U	493	3.18
	7/17/2018	10 U	83	138	3 U	0.226	7.11	1990	12.1	6	498	8.469999
	7/24/2019	8.73	133	87.3	3 U	0.323	7.57	1330	9.6	7	573	5.18
MW-17	9/9/2013	9.74	0.1	25.4	0.5 U	--	5.52	360	6.03	--	166	2.6

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-17	6/19/2014	6.82	0.07	15.2	0.5 U	2.82	5.91	200	5.69	--	166	4.8
	6/30/2016	10 U	0.02 U	3 U	3 U	0.1 U	6.09	222	6.13	5 U	172	6.1
	6/20/2017	10 U	0.02 U	3 U	3 U	2.8	6.21	412	6.64	5 U	166	31.9
	7/12/2018	10 U	0.1 U	3 U	3 U	0.256	5.91	325	10.6	5 U	162.8	5 U
	7/25/2019	10 U	0.04	3 U	3 U	0.427	5.96	254	11	5 U	142	5 U
MW-18A	9/9/2013	8.87	0.07	0.5 U	0.5 U	--	5.88	160	4.73	--	132	21.5
	6/19/2014	8.04	0.08	0.5 U	0.5 U	0.18	5.9	170	4.83	--	186	15.2
	8/11/2015	10 U	0.18	3 U	3 U	0.1 U	5.59	146	4.56	5 U	1070	2.9
	6/28/2016	10 U	0.28	3 U	3 U	0.1 U	6.38	165	4.38	5 U	130	8.9
	6/20/2017	10 U	0.08	413	3 U	0.519	5.89	257	5.98	5 U	151	109
	7/12/2018	10 U	0.13	3 U	3 U	0.115	5.53	228	8.23	5 U	128	5 U
	7/23/2019	10 U	0.09	3 U	3 U	0.247	5.86	195	8.52	5 U	154	5 U
MW-18B	9/9/2013	10.1	0.07	0.5 U	0.5 U	--	6.53	310	3.77	--	173	0.7
	6/19/2014	7.85	0.07	0.5 U	0.5 U	0.61	6.58	280	3.96	--	243	4
	8/11/2015	--	--	--	--	--	--	--	--	--	--	0.4
	8/12/2015	10 U	0.22	3 U	3 U	0.21	6.34	220	4.17	5 U	1323	--
	6/28/2016	--	--	--	--	--	--	--	--	--	--	0.3
	6/29/2016	10 U	0.15	5.09	3 U	0.1 U	7.2	323	4.14	5 U	177	--
	6/20/2017	10 U	0.81	3 U	3 U	0.665	6.69	452	4.42	5 U	228	3.24
	7/12/2018	10 U	1.32	3 U	3 U	9.36	7.12	7.5	17.85	5 U	200	5 U
	7/23/2019	10 U	0.08	3 U	3 U	1.87	6.53	375	12.4	5 U	216	5 U
MW-19	9/11/2013	13.4	50	133	0.5 U	--	6.88	1390	8.6	--	103	5.3
	6/16/2014	12.3 J	310	94.6	1.22	0.11	8.42	1660	7.21	--	852	28.6
	8/20/2015	10 U	120	67.9	3 U	0.31	7.59	119	6.31	145	786	9.1
	6/20/2016	10 U	195	139	11	0.1 U	7.14	1517	6.01	19	413	--
	6/21/2016	--	--	--	--	--	--	--	--	--	--	5.1
	6/27/2017	10 U	68	191	3 U	0.857	6.79	1560	6.06	5	330	4.97
	7/16/2018	10 U	95	263	3 U	0.094	6.49	2550	11.01	5 U	201	5 U
	7/24/2019	10 U	123	187	7.79	0.265	6.5	2280	7.84	5 U	460	5 U
MW-20	8/29/2013	5 U	0.2	41.3	0.5 U	--	4.89	340	5.66	--	84.5	0.8
	6/12/2014	8.98	0.04	26.7	0.5 U	4.07	5.1	280	5.62	--	151	0.9
	8/10/2015	10 U	0.03	29.7	3 U	2.09	4.94	255	5.62	139	222	--

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-20	6/23/2016	10 U	0.07	38.1	3 U	3.36	5.12	284	5.85	5 U	90.1	0.5
	6/28/2017	10 U	0.04	25.7	3 U	5.02	5.23	273	6.54	5 U	40 U	0.735
	7/12/2018	10 U	0.1 U	7.08	3 U	4.72	5.34	167	9.62	7	40 U	5 U
	7/23/2019	10 U	0.06	21	3 U	5.06	5.08	231	9.9	5 U	67.4 U	5 U
MW-21	9/5/2013	6.54	51	17.9	0.5 U	--	6.83	620	7.31	--	234	1.6
	6/18/2014	5.43	36	13.1	0.5 U	0.33	7.24	440	6.6	--	312	4.2
	8/17/2015	10 U	27	8.22	3 U	0.1 U	6.67	400	5.84	5 U	1136	0.6
	6/21/2016	10 U	24	21.8	3 U	0.1 U	6.62	475	5.52	5 U	145	0.5
	6/28/2017	10 U	38	47.8	3 U	0.322	6.61	1020	7.35	5 U	211	0.736
	7/27/2018	10 U	35	22.6	3 U	0.107	6.51	818	9.69	5 U	249	5 U
	7/26/2019	10 U	54	27.7	3 U	0.191	6.59	695	7.3	5 U	299	5 U
MW-22	9/9/2013	16 J	70	9.79	0.5 U	--	8.21	490	5.95	--	259 J	19.7
	6/23/2014	7.57	20	0.77	0.5 U	0.43	7.44	230	6.31	--	198	13.8
	8/24/2015	10 U	73.5	6.58	3 U	0.12	8.95	474	6.28	240	610	7.4
	6/27/2016	10 U	66	4.33	3 U	0.1 U	8.85	392	6.25	32	154	8
	6/28/2017	10 U	65	8.89	3 U	0.378	8.31	699	6.76	65	247	7.04
	7/26/2018	10 U	75	4.9	3 U	1.86	8.61	812	8.3	57	370	6.14
	8/3/2019	10 U	130	3 U	3 U	0.694	8.46	725	8.4	75	259	5 U
MW-23R	9/3/2013	21.7 J	2380	41	7.6	--	9.21	4540	10.2	--	523	6
	6/16/2014	17.2	150	24.9	3.35	0.44	9.63	3620	8.85	--	352	3.5
	8/24/2015	10 U	100	23	3 U	0.41	9.83	2288	7.49	47	671	4.6
	6/20/2016	10 U	405	22.6	3 U	0.16	9.8	1512	6.68	520	650	9.2
	6/27/2017	21.1	260	33.7	3 U	0.433	9.33	2360	6.47	786	766	11
	7/16/2018	93.5	1235	162.4	18.65	0.0617	9.39	8880	9.08	272	3605	24
	7/24/2019	165	760	133	19.5	0.233	9.66	7830	10.5	228	4910	31.5
MW-24	6/16/2014	349 J	2000	88	9.7	0.21	10.25	7420	8.82	--	4035	95.2
	8/12/2015	30.7	3300	134	11.6	0.45	9.64	2914	7.69	446	17673	44.6
	6/21/2016	140	1240	116	27.1	0.21	9.81	5580	7.58	592	1802	59.7
	6/27/2017	--	--	--	--	--	--	--	--	--	--	47.1
	7/26/2017	207	990	226	11.9	--	--	--	--	518	3020	--
	7/16/2018	38	630	168	12.9	--	--	--	--	134	895	26.6
	10/25/2019	--	985	--	--	--	--	--	--	197	--	--

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-25	9/5/2013	8.26	65	128	0.5 U	--	7.18	2010	8.71	--	65.9	5.2
	6/17/2014	7.71	125	122	0.5 U	0.3	8.3	1820	8.36	--	191	6.6
	8/20/2015	10 U	40	201	3 U	0.18	6.33	1332	8.07	7	257	3.1
	6/24/2016	10 U	60	136	3 U	0.1 U	6.86	1461	7.84	10	96.6	4.7
	6/28/2017	10 U	51	269	3 U	0.503	6.17	1970	7.75	5 U	112	3.51
	7/27/2018	22.7	101	135	3 U	0.163	6.87	2050	12.1	12	378	8.97
	7/31/2019	10 U	257	16	3 U	0.087	7.63	2170	8.1	217	229	15
MW-26	9/5/2013	23 J	510	51.9	2.21	--	9.37	2020	7.98	--	916	24.3
	6/23/2014	5 U	30	324	0.5 U	4.22	5.5	1940	9.43	--	134	4
	8/17/2015	10 U	350	145	3 U	0.11	9.04	2267	7.56	258	653	45.4
	6/21/2016	10 U	445	137	5.39	0.1 U	9.28	3944	7.22	41	852	9.9
	6/28/2017	181	575	4.9	92.2	1.93	7.62	3790	8.36	34	2370	--
	7/26/2017	--	--	--	--	--	--	--	--	--	--	5.62
	7/26/2018	76.9	330	192.5	8	0.146	9.03	3480	8.76	37	368	10.1
	7/31/2019	10 U	200	186	4.21	0.107	8.34	2700	7.87	11	292	5 U
MW-27	9/11/2013	7.97	111	29.9	0.6	--	7.23	890	8.13	--	263	12.7
	6/25/2014	8.07	55	13.9	0.5 U	0.17	6.93	430	7.35	--	169	13.8
	8/17/2015	10 U	105	30	3 U	0.1 U	6.19	489	6.72	32	1618	1.4
	6/21/2016	10 U	165	109	3 U	0.1 U	6.74	1221	6.5	55	255	2.7
	6/28/2017	10 U	70	76.3	3 U	0.389	6.55	940	6.89	22	175	1.7
	7/26/2018	13.7	98	47.65	3 U	0.701	6.64	1970	8.35	68	450	--
	7/27/2018	--	--	--	--	--	--	--	--	--	--	5 U
	7/31/2019	10 U	230	5	3 U	0.28	6.71	1448	7.71	157	250	5 U
MW-28	8/29/2013	5 U	21.8	103	0.5 U	--	5.8	820	7.03	--	32.4	2
	6/12/2014	8.84	23.8	35.1	0.5 U	0.1	6.04	370	6.38	--	167	6
	8/12/2015	10 U	11.2	14.7	3 U	0.32	5.72	250	5.84	5 U	642	0.7
	6/23/2016	10 U	7.7	16.4	3 U	0.1 U	6.07	268	5.81	5 U	96.8	2.2
	6/27/2017	10 U	2.6	3 U	3 U	0.156	6.51	291	5.9	5 U	205	2.43
	7/13/2018	10 U	3.3	8.63	3 U	0.084	6.25	462	8.62	5 U	155	5 U
	7/23/2019	10 U	16.8	24.2	3 U	0.262	6.17	284	9.2	5 U	229	5 U
MW-29	9/3/2013	5 U	101	130	0.5 U	--	7.24	1450	8.95	--	230	6.9
	6/16/2014	8.68	107	111	0.5 U	0.04	7.21	1000	7.72	--	385	8.2

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-29	8/20/2015	10 U	80	139	3 U	1.82	6.86	1254	7.21	8	687	3.5
	6/23/2016	10 U	150	144	3 U	0.1 U	7.44	1409	6.82	14	279	8.6
	6/27/2017	10 U	153	175	3 U	0.347	7.52	1870	7.17	7	427	13.2
	7/13/2018	32.3	122	120	3 U	0.779	7.41	2100	11.3	5 U	456	5 U
	7/23/2019	10 U	132	172	3 U	0.186	7.15	1980	9.57	5 U	590	5 U
MW-30	9/17/2013	117 J	1490	80.8	0.78	--	9.66	2340	7.69	--	1049	15.8
	6/16/2014	53.8	410	2237	0.5 U	0	9.28	1090	6.77	--	331	10.9
	8/12/2015	28.8	241	14.7	3 U	0.1 U	9.09	644	5.75	5 U	1962	3.7
	6/21/2016	28.3	79	17.5	3 U	0.1 U	8.68	507	5.84	5 U	207	2.1
	6/27/2017	--	--	--	--	--	--	--	--	--	--	1.47
	6/28/2017	10 U	43	31.6	3 U	0.276	9.48	2390	7.67	5 U	249	--
	7/16/2018	22.3	62	20.8	3 U	0.127	9.04	792	8.49	5 U	220	5 U
	7/23/2019	34.8	203	28.5	3 U	0.103	9.32	1010	8.23	5 U	624	5 U
MW-32	9/3/2013	18.1 J	214	19.1	26.9	--	9.53	2960	9.53	--	549	26.9
	6/17/2014	14.7	310	13.9	3.38	0.15	9.81	2370	8.86	--	666	48.5
	8/24/2015	10 U	280	7.5	4.3	0.1 U	9.7	2297	7.86	255	1334	40.9
	7/5/2016	--	--	--	--	--	--	--	--	--	--	46.1
	7/6/2016	10 U	400	17.91	3 U	0.13	9.81	1910	7.37	158	730	--
	6/30/2017	14.1	215	11.9	3.35	1.66	9.2	1560	7.49	193	671	32.5
	7/17/2018	10 U	500	36.8	3 U	0.172	9.43	2810	12.47	356	920	51.3
	7/17/2019	10 U	645	67	3 U	0.295	9.44	3010	12.4	80	977	41.9
MW-33	9/3/2013	11.9	130	5.11	0.62	--	9.21	1600	9.28	--	324	19
	6/17/2014	16.8	111	11.2	0.5 U	0.07	9.41	840	8.18	--	477	21.2
	8/24/2015	10 U	97.5	10.5	3 U	0.1 U	9.37	1557	7.69	37	1101	19.5
	7/6/2016	10 U	76	5.78	3 U	0.1 U	9.29	996	7.27	5 U	340	--
	7/7/2016	--	--	--	--	--	--	--	--	--	--	18.8
	6/30/2017	10 U	120	11.6	3 U	0.632	8.81	1110	6.88	56	489	27.1
	7/17/2018	10 U	99	8.05	3 U	0.126	8.72	1010	11.9	25	438	27.1
	7/18/2019	12.1 U	222	9.33	3 U	0.195	9.06	2790	12.4	57	520	51.2
MW-34	9/3/2013	9.54	0.72	1.69	0.5 U	--	7.13	300	7.65	--	170	4.5
	6/16/2014	--	--	--	--	--	--	--	--	--	--	4
	6/17/2014	6.58	0.43	2.12	0.5 U	0.97	7.84	270	7.2	--	227	--

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-34	8/24/2015	10 U	4	3 U	3 U	0.1 U	7.13	271	6.62	5 U	650	1.7
	6/23/2016	10 U	0.2	3 U	3 U	0.1 U	7.09	307	6.71	5 U	183	1.9
	6/30/2017	10 U	0.12	3 U	3 U	0.749	7.02	330	6.54	5 U	236	2.03
	7/17/2018	10 U	1.52	3 U	3 U	0.944	7.05	535	11.6	5 U	318	5 U
	7/17/2019	10 U	1.68	3 U	3 U	0.216	6.94	426	10.5	5 U	265	5 U
MW-35R	9/17/2013	5 U	89	287	0.5 U	--	--	--	--	10	156	1.6
	6/24/2014	18	73	254	0.5 U	0.05	4.69	1590	9.2	8	129	1.5
	8/27/2015	10 U	66	230	0.01 U	0.24	4.53	1507	9.93	101	411	3.6
	7/13/2016	10 U	46.7	196	0.1 U	0.1 U	4.33	1303	8.48	5 U	86.7	1.3
	7/5/2017	42.6	42	297	3 U	0.823	4.35	2700	10	5 U	40 U	0.5
	7/25/2018	10 U	37	237.2	3 U	2.31	3.79	2280	9.88	5 U	54.75	5 U
	8/1/2019	11.3	123	166	3 U	1.87	9.44	3430	13.4	30	350	15
MW-36R	9/17/2013	14.4	13.3	85.9	0.5 U	--	--	--	--	5	17.3	0.2
	6/24/2014	11	11	61.6	0.5 U	0.88	4.13	670	9.2	5 U	20 U	0.2 U
	8/27/2015	10 U	0.325	32.8	0.01 U	4.13	4.09	655	10.15	5 U	40 U	0.3
	7/13/2016	10 U	1.56	60.1	0.1 U	0.81	5.79	633	7.65	5 U	40 U	0.2
	7/26/2017	10 U	0.24	75.1	3 U	5.46	4.47	702	11.8	5 U	40 U	0.281
	7/25/2018	10 U	2.5	90.7	3 U	0.168	3.64	1040	7.99	5 U	40 U	5 U
	8/13/2019	10 U	3.1	3 U	3 U	0.082	6.65	31300	16.9	5 U	40 U	250 U
MW-37R	9/17/2013	11.7	57	161	0.5 U	--	--	--	--	5	83.3	2.1
	6/24/2014	5 U	33	125	0.5 U	0.05	4.29	24100	6.52	10	112 J	1.1
	8/27/2015	10 U	13	161	0.029	0.17	4.97	1377	9.06	6	419	0.6
	7/13/2016	10 U	17.8	121	1 U	1.38	5.47	1070	9.1	9	40 U	0.5
	8/13/2019	--	9.21	51.4	20 U	--	--	--	--	--	--	8.91
	8/14/2019	30.4	12.8	53.4	3 U	4.13	7.05	13593	12.5	5 U	221	--
MW-38R	9/17/2013	5 U	135	0.5 U	0.68	--	--	--	--	200	279	75.7
	6/24/2014	15.5	119	0.63	3.82	0	9.24	1320	5.47	51	373	80.2
	8/27/2015	10 U	78.6	0.61	8.81	0.1 U	9.51	979	5.95	45	504	32.4
	7/13/2016	10 U	66.5	0.4	0.6	0.1 U	9.7	799	5.29	11	184	37.9
	7/5/2017	10 U	63	3 U	3 U	0.463	9.11	899	7.19	12	225	24.3
	7/25/2018	10 U	147	3 U	3 U	0.376	8.93	1390	9.66	160	298	46.6
	8/1/2019	10 U	241	3 U	3 U	1.7	9.73	1540	6.2	36	567	--

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-38R	8/13/2019	--	136	1 U	1 U	--	--	--	--	--	--	93
MW-39	9/13/2013	--	--	--	--	--	--	--	--	--	--	33.2
	9/17/2013	14.4 J	330	2.55	3.85	--	9.36	1140	8.52	--	601	--
	6/25/2014	9	60	0.5 U	1.36	1.69	8.75	440	7.68	--	324	3.3
	8/20/2015	10 U	13	3 U	7.22	0.21	8.18	413	6.92	85	714	4.2
	6/21/2016	10 U	43	3.73	3 U	0.1 U	8.01	495	6.71	7	182	3.7
	6/28/2017	10 U	32	13.3	3 U	9.48	7.14	108	7.13	20	258	--
	6/29/2017	--	--	--	--	--	--	--	--	--	--	3.72
	7/26/2018	19.57	32	147	3 U	0.067	7.36	2401	7.97	5 U	413	5 U
	7/31/2019	--	--	--	--	--	--	--	--	--	--	5 U
	8/3/2019	10 U	47	93.4	3 U	0.055	6.95	1920	7.55	54	636	--
MW-40	9/9/2013	6.43 J	134	15	18.4	--	8.93	820	7.1	--	233	22.9
	6/23/2014	9.68 J	128	30	9.03	0.27	9.54	790	6.87	--	310	17.7
	8/20/2015	10 U	80	3 U	3 U	0.24	8.8	524	6.62	85	764	15.8
	6/22/2016	10 U	110	3 U	12.4	0.1 U	8.97	501	6.43	6	235	13.9
	6/28/2017	10 U	88	165	3 U	0.838	8.51	836	6.81	5 U	40 U	12.8
	7/26/2018	10 U	97	16.2	3 U	0.072	8.77	556	8.09	6	387	12
	7/31/2019	10 U	139	8.39	3 U	0.111	8.95	725	7.93	40	1150	13
MW-41	9/9/2013	16.3 J	250	64.3	2.23	--	9.15	1260	7.31	--	262	70.3
	6/23/2014	12.3 J	180	89.1	1	0.27	9.28	1070	6.88	--	326	42.2
	8/20/2015	10 U	145	62.7	3.75	0.13	8.92	867	6.55	122	641	33.6
	7/7/2016	10 U	160	52.8	3 U	0.1 U	9.08	893	6.68	23	288	25.6
	6/28/2017	10 U	137	86.3	3 U	0.382	8.8	1460	6.45	43	282	24.3
	7/26/2018	10.15	129	63.1	3 U	0.071	8.72	1630	7.83	15	324	18.1
	7/31/2019	10 U	128	22.8	3 U	0.094	9.17	990	7.61	82	251	27.2
MW-42	9/11/2013	9.9	19.1	16.8	0.5 U	--	6.33	420	7.15	--	25.7	2.5
	6/23/2014	8.18	21	16.6	0.5 U	0.32	7.08	320	6.93	--	39.7	1.9
	8/17/2015	10 U	23	18.3	3 U	0.21	6.14	219	6.03	10	140	2.7
	6/23/2016	--	--	--	--	--	--	--	--	--	--	1.1
	6/24/2016	10 U	22	10.6	3 U	0.81	6.54	228	5.73	6	59	--
	6/28/2017	10 U	17	3 U	3 U	0.51	6.14	350	6.58	5 U	112	1.7
	7/26/2018	10 U	4.7	3 U	3 U	0.07	6.09	356	8.01	5 U	135	5 U

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-42	7/25/2019	10 U	8	3 U	3 U	0.086	6	263	7.5	1 U	131	5 U
MW-43R	9/17/2013	10	53	0.5 U	0.92	--	--	--	--	15	139	23.6
	6/24/2014	8.45	33	0.54	8.05	0	8.54	470	5.07	5 U	113	23.7
	8/27/2015	10 U	27.5	0.9	15.1	0.1 U	8.46	288	5.12	23	147	16.2
	7/13/2016	10 U	15.8	5.7	16.2	0.14	8.23	357	5.18	5 U	40 U	14.3
	7/5/2017	10 U	6	6.47	15.9	1.95	6.52	308	7.43	5 U	40 U	6.99
	7/25/2018	10 U	31	3 U	3 U	0.188	7.05	347	6.97	5 U	221	6.85
	8/13/2019	17.6	21	5.52	3 U	0.103	6.92	5890	10.9	21	215	50 U
MW-44-120	9/5/2013	8.82	0.18	0.5 U	0.5 U	--	7.8	160	5.14	--	92	8.9
	6/18/2014	6.65	0.06	0.5 U	0.5 U	0.62	9.88	150	5.14	--	126	10.8
	8/17/2015	10 U	0.02 U	3 U	3 U	0.26	7.43	151	4.73	5 U	539	7.9
	6/22/2016	10 U	0.08	3 U	3 U	0.1 U	7.87	210	5.04	5 U	76.4	9
	6/29/2017	10 U	0.03	86.6	3 U	1.27	7.55	236	5.46	5 U	137	9.89
	7/20/2018	10 U	0.11	3 U	3 U	0.109	7.53	347	9.73	5 U	149	10.6
	7/26/2019	10 U	0.44	3 U	3 U	0.282	7.83	288	8.98	5 U	232	10.5
MW-45-120	8/29/2013	5 U	0.4	0.5 U	0.5 U	--	6.44	230	5.42	--	145	1.4
	6/16/2014	--	--	--	--	--	--	--	--	--	--	1.4
	6/18/2014	6.15	0.23	0.52	0.5 U	0.41	6.33	220	5.68	--	168	--
	8/12/2015	10 U	0.8	3 U	3 U	0.14	6.35	215	5.04	5 U	787	2.6
	6/20/2016	10 U	0.22	3 U	3 U	0.1 U	6.71	224	4.8	5 U	139	1.7
	6/30/2017	10 U	1.58	3 U	3 U	0.686	6.31	313	5.06	5 U	207	12.8
	7/16/2018	10 U	1.98	3 U	3 U	0.056	6.61	391	13.7	5 U	127	8.530001
	7/16/2019	10 U	1.7	3 U	3 U	0.314	7.5	330	10.7	5 U	209	8.72
MW-46	9/3/2013	9.69	91	5.8	1.86	--	8.98	400	5.59	--	190	4.4
	6/16/2014	--	--	--	--	--	--	--	--	--	--	4.4
	6/17/2014	9.12	65	9.6	3.78	0.36	9.83	370	5.31	--	234	--
	8/20/2015	10 U	40	18.3	3 U	0.1	8.53	377	5.25	11	239	4.7
	6/21/2016	10 U	75	10.2	3 U	0.1 U	8.57	343	4.59	5 U	156	4.7
	6/30/2017	10 U	52	9.73	3 U	0.46	8.35	663	5.46	5 U	235	4.65
	7/16/2018	10 U	48	53.05	3 U	0.9997	8.15	855	7.67	5 U	195	5.13
	7/16/2019	10 U	34	3 U	3 U	0.192	8.31	483	10.61	5 U	282	7.07
MW-47	8/29/2013	5 U	0.08	0.5 U	0.5 U	--	6.52	200	4.6	--	123	1.6

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-47	6/12/2014	9.22	0.04	0.5 U	0.5 U	0.9	6.51	190	4.45	--	163	1.4
	8/12/2015	10 U	0.6	3 U	3 U	1.87	6.4	187	4.38	5 U	765	1.6
	6/20/2016	10 U	0.3	3 U	3 U	0.1 U	6.93	203	4.25	5 U	120	1.2
	6/30/2017	10 U	0.22	3 U	3 U	0.811	6.4	226	5.52	5 U	114	2.12
	7/17/2018	10 U	1.9	3 U	3 U	0.097	6.6	373	10.7	5 U	180	9.46
	7/16/2019	10 U	1.6	3 U	3 U	0.156	6.87	307	8.84	7	171	10.1
MW-48-120	9/3/2013	12.9	97	2.17	12	--	9.62	1140	7.51	--	269	9.8
	6/18/2014	14.5 J	119	1.65	4.58	1.05	10.26	630	6.82	--	377	8.4
	8/20/2015	10 U	90	3 U	10.6	0.37	9.01	542	6.7	10	71.2	4.7
	6/23/2016	10 U	100	3 U	5.49	0.1 U	9.63	998	5.61	5 U	192	4.5
	6/30/2017	10 U	85	3 U	3 U	0.539	8.61	12	7.89	5 U	298	3.09
	7/16/2018	10 U	67	3 U	3 U	0.081	8.77	672	11.2	5 U	232	7.11
	7/17/2019	10 U	235	3 U	3 U	0.925	9.45	1030	10.1	49	423	11.1
MW-49-120	9/9/2013	30.7 J	205	1.08	2.94	--	9.64	660	5.96	--	326	44.6
	6/23/2014	28.1 J	176	1.42	0.5 U	0.48	10.04	810	6.21	--	463	50.9
	8/20/2015	10 U	130	3 U	3 U	2.67	9.48	552	5.52	83	809	25.3
	6/27/2016	10 U	80	3 U	3 U	0.31	9.29	507	5.85	5 U	172	29.1
	6/29/2017	10 U	65	3 U	3 U	0.625	8.73	674	5.82	5 U	40 U	16.9
	7/24/2018	19.1	159	3.29	3 U	0.128	9.12	1410	10.47	38	343	29
	7/31/2019	27.5	300	8.41	3 U	0.152	9.4	1967	8.82	142	1070	46.6
MW-50	9/4/2013	15.7	260	0.5 U	0.5 U	--	9.6	660	6.84	--	331	76.7
	6/17/2014	16.6 J	270	0.98	6.61	0.81	10.18	730	6.61	--	257	109
	8/24/2015	10 U	135	3 U	17.8	0.22	9.25	735	6.42	72	913	82.3
	6/27/2016	10 U	145	3 U	36.8	0.1 U	9.78	1014	6.01	30	347	85.7
	6/29/2017	10 U	125	3 U	3 U	0.542	8.11	1390	6.29	22	40 U	93.9
	7/20/2018	61.1	495	6.92	3 U	0.105	9.27	3230	11.4	422	1788	105
	7/30/2019	10 U	190	3	3 U	0.123	9.59	904	8.8	72	369	24
MW-51	9/9/2013	10.5	33	9.06	4.71	--	8.16	340	5.6	--	129	9.700001
	6/23/2014	7.36	27	13.4	5.11	1.68	8.79	350	5.43	--	124	9.2
	8/24/2015	10 U	11.5	25.5	3 U	0.36	7.61	304	5.38	42	156	6.6
	6/27/2016	10 U	19	11.4	3 U	0.1 U	7.43	296	5.78	5 U	136	4.6
	6/29/2017	10 U	12.1	3 U	3 U	0.499	7.64	557	5.94	5 U	40 U	5.77

Table 3

Historical Data June 2014 to August 2019

Groundwater Contaminants of Concern

Agrium U.S., Inc. - KNO Plant

Well No.	Sample Date	Urea mg/L	Ammonia-N mg/L	Nitrate-N mg/L	Nitrite-N mg/L	DO mg/L	pH S.U.	Conductivity mS/cm	Temp deg C	Color PCU	CT as CO3 mg/L	Arsenic mg/L
MW-51	7/24/2018	10 U	4.7	3 U	3 U	0.124	6.95	486	11.7	5 U	287	5 U
	7/30/2019	10 U	8.6	3 U	3 U	1.21	6.97	511	10.4	18	309	5.12
MW-52	9/11/2013	8.51	0.07	0.5 U	0.5 U	--	8.04	150	4.65	--	92.1	8
	6/25/2014	7.88	0.02 U	0.5 U	0.5 U	0.47	8.48	140	4.65	--	128	8.7
	8/17/2015	10 U	0.3	3 U	3 U	1.73	7.19	141	4.61	100	530	8.9
	6/24/2016	10 U	0.07	3 U	3 U	0.1 U	7.94	203	4.54	5 U	73.9	8.6
	6/29/2017	10 U	0.04	6.19	5.77	0.648	7.79	183	6.19	5 U	84.6	9.85
	7/20/2018	10 U	0.12	3 U	3 U	0.203	7.69	267	10.1	5 U	117	10.4
	7/18/2019	10 U	0.22	3 U	3 U	--	--	--	--	7	113	31.6
MW-53	9/5/2013	6.59	0.32	0.5 U	0.5 U	--	7.48	190	5.56	--	113	10.2
	6/23/2014	6.4	0.15	0.5 U	0.5 U	0.66	8.24	190	5.6	--	169	9.4
	8/20/2015	10 U	4	3 U	3 U	0.38	7.09	185	5.23	5 U	239	6.1
	6/22/2016	10 U	0.2	3 U	3 U	0.1 U	7.35	221	5.09	5 U	92.4	6
	6/29/2017	10 U	0.02 U	3 U	3 U	2.18	7.26	320	5.81	5 U	112	6.28
	7/20/2018	10 U	0.33	3 U	3 U	0.135	6.75	447	12.2	5 U	232	15.8
	8/29/2019	10 U	0.44	3 U	3 U	0.161	7.11	360	9.27	31	232	14.2
MW-54	9/9/2013	16.2 J	500	79.3	1.7	--	8.6	2670	6.51	--	1161	3.1
	6/25/2014	14.2	330	42.1	1.51	0.24	9.76	1850	6.34	--	1181	4
	6/29/2016	10 U	183	7.52	4.18	0.1 U	9.21	1097	6.42	534	377	6.5
	6/21/2017	10 U	149	15.5	3 U	0.507	9.09	1390	8.55	414	461	--
	7/26/2017	--	--	--	--	--	--	--	--	--	--	7.94
	7/27/2018	13	138	6.66	3 U	0.077	9.11	1330	9.08	334	562	7.79
	8/12/2019	10 U	219	3 U	3 U	0.926	9.44	807	10.4	255	417	10.5
MW-55	7/13/2016	10 U	19.2	3.2	0.1 U	0.1 U	6.84	565	5.06	5 U	405	0.3
	7/26/2017	10 U	14.2	7.87	3 U	0.676	7.06	431	6.98	5 U	228	0.58
	7/25/2018	10 U	21.7	40.6	3 U	0.056	6.89	1304	5.03	5 U	349	5 U

Notes:

-- Not analyzed.

U The analyte was not detected at the level shown.

J The concentration was estimated.

Figures

VICINITY MAP NOT TO SCALE

NORTH

0 800 1600 Ft.

FIGURE 1

Site Location Map

AGRIUM U.S., INC.
KENAI NITROGEN OPERATIONS PLANT
KENAI, ALASKA

Cook Inlet Environmental Inc.

DATE August 2018
CHKD
DRAWN AC

FIGURE 2

Water Elevation and Ammonia-N Concentration Map
Unconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

N. Miller Loop Rd

Kenai Spur Highway

MW-18A 74.96 0.10 U
MW-20 73.80 0.10 U
MW-17 68.91 0.10 U
MW-3 68.39 0.280
MW-4R 74.46 0.190
MW-28 70.80 16.8
MW-30 71.33 203
MW-29 70.53 132
MW-19 71.1 123
MW-23R 70.54 760
MW-24 69.76 985
MW-7R 65.19
MW-14 62.77 17
E-206 72.92 1.14
E-207 72.53
MW-27 72.26 256
MW-39 71.86 47.0
MW-42 71.50 8.0
MW-21 70.59 54.0
MW-26 71.12 200
MW-9R 71.03 0.16
MW-13 67.93 130
MW-8R 65.81 395
MW-16 65.15 133
E-121B 67.91 0.77
MW-40 70.78 139
MW-25 70.03 257
MW-15 66.98 46.0
MW-41 (69.15) 128
MW-54 (63.27) 219
MW-22 65.37 130
E-160 56.21 1.67
E-169 56.54 6.7
E-137B 59.57
E-224 58.46
E-202B 57.32
E-170 50.44 2.13
E-205 57.39
E-225 57.53
E-159 52.38
E-209 56.01
PI-06B 56.05
E-149 51.69
E-156 40.77 5.0
E-158 39.84
E-195 40.51
E-155 37.82 17.7
E-101B 35.21
E-190B 37.07
E-187B 35.81
E-196 33.88
E-167 35.14
E-163 30.95
E-192 23.5
E-193 20.9
E-129 29.07

UREA PRILL STORAGE
UREA GRANULE STORAGE
GE PONDS
AMMONIA STORAGE TANKS
LNG STORAGE TANKS
South Fuel
Sheetpile wall
TO DOCK
COOK INLET

EXPLANATION

18.68 Groundwater Elevation (ft. MLLW)

Groundwater Contour (ft. MLLW)

MW-39 Unconfined Aquifer Monitoring Well

100 Ammonia-N (mg/L)

Ammonia-N Contour (mg/L)

0 400 Ft.

North

Cook Inlet Environmental, Inc.

DATE August 2018
CHKD JW
DRAWN AC

FIGURE 3

Water Elevation and Ammonia-N Concentration Map
Semiconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Kenai Spur Highway

N. Miller Loop

MW-18B
32.92
0.080

MW-52
29.32
0.220

MW-47
28.24
1.60

MW-45-120
25.92
1.70

MW-46
25.33
34.0

MW-48-120
22.63
235

MW-34
19.44
1.68

MW-32
20.06
845

MW-35R
14.19
123

MW-33
17.47
222

MW-44-120
27.63
0.11

MW-53
26.76
0.440

MW-49-120
25.05
300

MW-50
22.93
190

MW-51
23.49
5.80

MW-36R
15.23
3.10

MW-37R
16.12
12.8

MW-38R
17.66
241

MW-43R
17.66
21.0

E-157
21.66
1.59

E-161
19.57
9.20

URFA PRILL STORAGE

UREA GRANULE STORAGE

GE PONDS

AMMONIA STORAGE TANKS

LNG STORAGE TANKS

Sheetpile Wall

TO DOCK

EXPLANATION

18.7 Groundwater Elevation (ft. MLLW)

Groundwater Contour (ft. MLLW)

MW-34 Semiconfined Aquifer Monitoring Well

100 Ammonia-N (mg/L)

Ammonia-N Contour (mg/L)

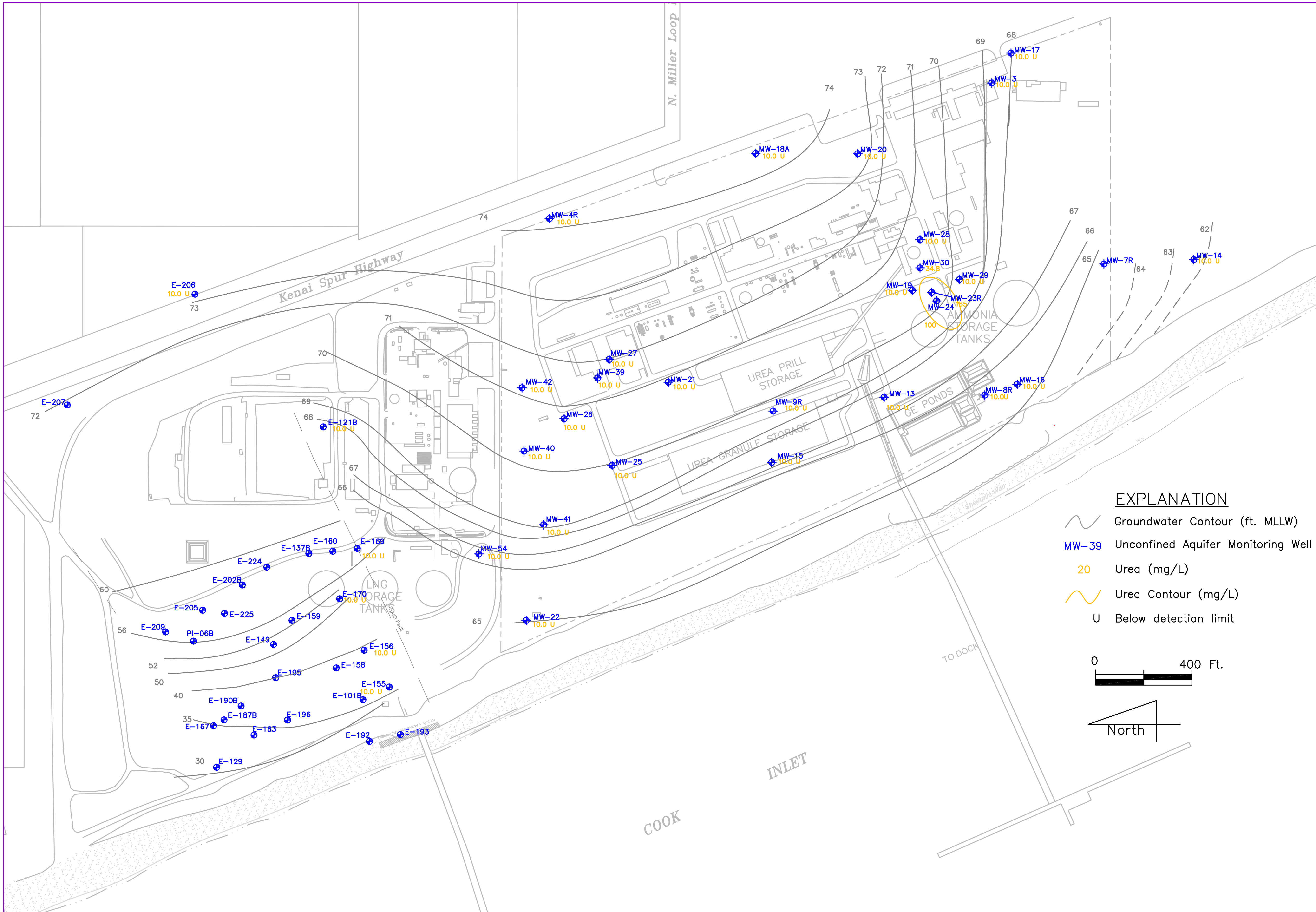
U Below detection limit

0 400 Ft.

North

Cook Inlet Environmental, Inc.

DATE August 2019
CHKD JW
DRAWN CUK


EXPLANATION
Groundwater Contour (ft. MLLW)
MW-39 Unconfined Aquifer Monitoring Well
20 Urea (mg/L)
Urea Contour (mg/L)
U Below detection limit
0
400 Ft.
North
Kenai Spur Highway
N. Miller Loop
COOK
INLET
TO DOCK
UREA PRILL STORAGE
UREA GRANULE STORAGE
AMMONIA STORAGE TANKS
LNG STORAGE TANKS
MW-17 10.0 U
MW-3 10.0 U
MW-18A 10.0 U
MW-20 10.0 U
MW-4R 10.0 U
MW-28 10.0 U
MW-30 34.6
MW-29 10.0 U
MW-19 10.0 U
MW-23R
MW-24
MW-7R
MW-14 10.0 U
MW-27 10.0 U
MW-39 10.0 U
MW-42 10.0 U
MW-21 10.0 U
MW-9R 10.0 U
MW-13 10.0 U
MW-8R 10.0 U
MW-16 10.0 U
MW-26 10.0 U
MW-40 10.0 U
MW-25 10.0 U
MW-15 10.0 U
MW-41 10.0 U
MW-54 10.0 U
MW-22 10.0 U
E-206 10.0 U
E-207
E-121B 10.0 U
E-160
E-169 10.0 U
E-137B
E-224
E-202B
E-170 10.0 U
E-205
E-225
E-159
E-209
PI-06B
E-149
E-156 10.0 U
E-195
E-158
E-155 10.0 U
E-190B
E-101B
E-187B
E-196
E-167
E-163
E-192
E-193
E-129

Urea Concentration Map
Unconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

FIGURE 4

Cook Inlet Environmental, Inc.

DATE August 2018
CHKD JW
DRAWN AC

FIGURE 5

Urea Concentration Map
Semiconfined Aquifer - June - August 2018

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Kenai Spur Highway

N. Miller Lo

MW-18B 10.0 U
MW-47 10.0 U
MW-52 10.0 U
MW-45-120 10.0 U
MW-46 10.0 U
MW-48-120 10.0 U
MW-34 10.0 U
MW-44-120 10.0 U
MW-32 10.0 U
MW-53 10.0 U
MW-35R 11.3
MW-33 12.1
MW-49-120 27.5
MW-50 10.0 U
MW-36R 10.0 U
MW-51 10.0 U
MW-37R 30.4
MW-38R 10.0 U
E-157 10.0 U
E-161 10.0 U
MW-43R 17.6

AMMONIA STORAGE TANKS
UREA PRILL STORAGE
UREA GRANULE STORAGE
GE PONDS
LNG STORAGE TANKS
Sheetpile Wall
TO DOCK

EXPLANATION

- Groundwater Contour (ft. MLLW)
- MW-34 Semiconfined Aquifer Monitoring Well
- 0.16 Urea (mg/L)
- Urea Contour (mg/L)
- U Below detection limit

0 400 Ft.

North

Cook Inlet Environmental, Inc.

DATE August 2019
CHKD JW
DRAWN CUK

FIGURE 6

Dissolved Oxygen Map
Unconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

N. Miller Loop Rd.
Kenai Spur Highway
AMMONIA STORAGE TANKS
UREA PRILL STORAGE
UREA GRANULE STORAGE
GE PONDS
LNG STORAGE TANKS
South Fault
Sheetpile Wall
TO DOCK
COOK INLET

E-206 0.10 U
E-207
E-121B 0.10 U
E-129
E-137B
E-160
E-169 0.327
E-224
E-202B
E-205
E-225
E-159
E-209
PI-06B
E-149
E-170 0.424
E-156 0.27
E-158
E-195
E-155 1.02
E-101B
E-190B
E-187B
E-196
E-167
E-163
E-192
E-193
MW-4R 0.188
MW-18A 1.88
MW-20 5.06
MW-17 0.427
MW-3
MW-28 0.262
MW-30 0.103
MW-29 0.188
MW-19 0.265
MW-23R 0.233
MW-24
MW-7R
MW-14 0.220
MW-27 0.281
MW-39 0.10 U
MW-42 0.10 U
MW-21 0.191
MW-26 0.11
MW-40 0.11
MW-25 0.10 U
MW-41 0.10 U
MW-54 0.53
MW-22 0.694
MW-9R 0.213
MW-13 0.367
MW-8R 0.202
MW-16 0.226
MW-15 0.255

1.0
0.2
0.1

EXPLANATION

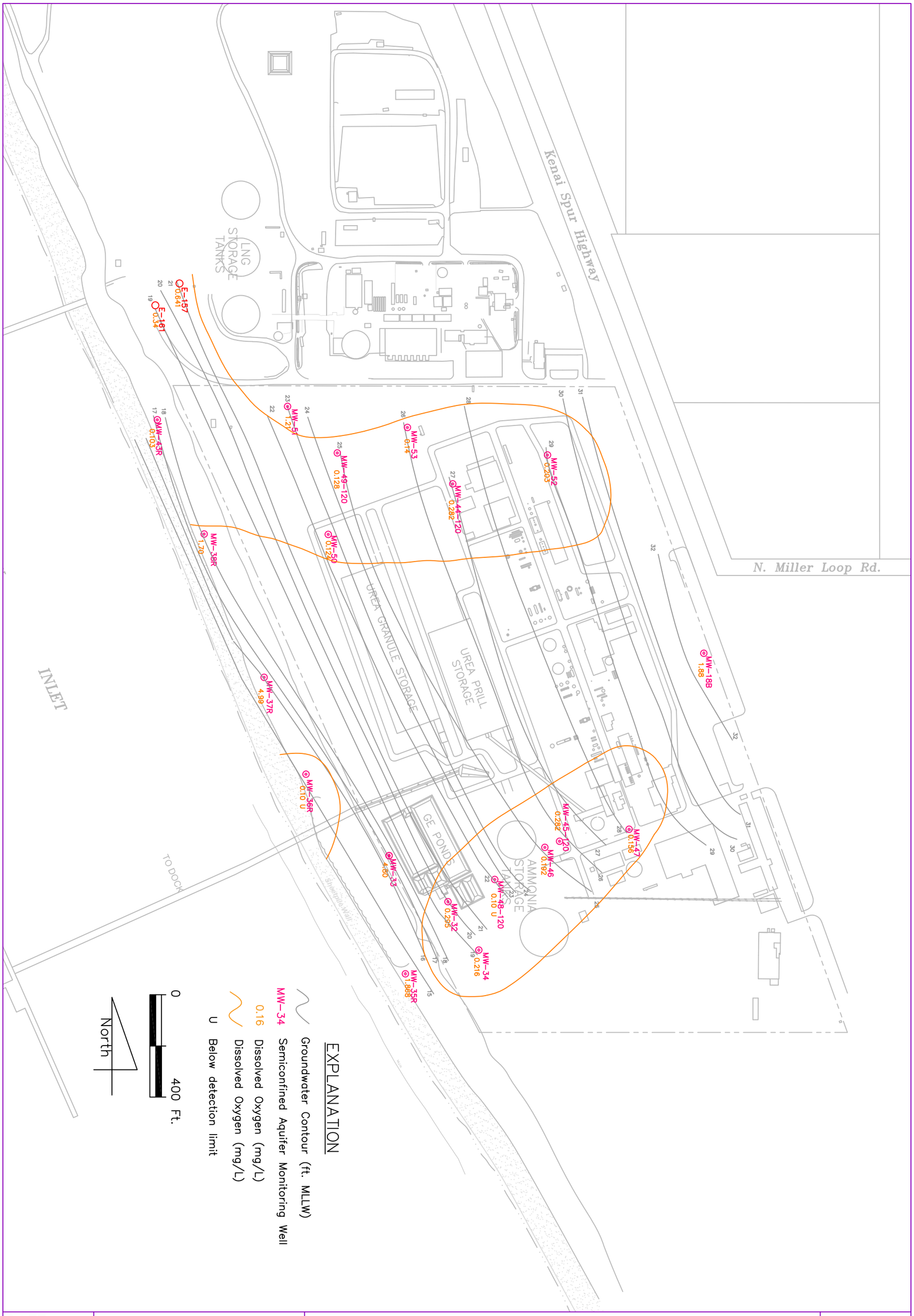
- Groundwater Contour (ft. MLLW)
- MW-39 Unconfined Aquifer Monitoring Well
- 1.50 Dissolved Oxygen (mg/L)
- Dissolved Oxygen Contour (mg/L)
- U Below detection limit

0 400 Ft.

North

Cook Inlet Environmental, Inc.

DATE August 2018
CHKD JW
DRAWN AC



DATE August 2019 CHKD JW DRAWN CUK	Cook Inlet Environmental, Inc.	**Dissolved Oxygen Map** **Semiconfined Aquifer - June - August 2019** AGRIUM US, INC. KENAI NITROGEN OPERATIONS PLANT	FIGURE **7**

FIGURE 8

ORP Map
Unconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

N. Miller Loop Rd.
Kenai Spur Highway
UREA PRILL STORAGE
UREA GRANULE STORAGE
AMMONIA STORAGE TANKS
LNG STORAGE TANKS
GE BONDS
Sheetpile Wall
South Fault
TO DOCK
COOK INLET

MW-17 191 | 200
MW-3
MW-18A 138
MW-20 296
MW-4R 183
MW-28 258
MW-30 96.0
MW-29 147
MW-19 281
MW-24
MW-23R 79.9
MW-7R
MW-14 247
MW-27 251
MW-39 193
MW-42 197
MW-21 217
MW-9R 190
MW-13 251
MW-8R 168
MW-16 274
MW-26 186
MW-40 151
MW-25 221
MW-15 223
MW-41 145
MW-54 172
MW-22 171
E-206 18
E-207
E-121B
E-137B
E-160 -2.64
E-169 105
E-224
E-202B
E-205
E-225
E-170 14.1
E-159
E-209
PI-06B
E-149
E-156 6.62
E-158
E-195
E-155 37.0
E-101B
E-190B
E-187B
E-196
E-167
E-163
E-192
E-193
E-129

EXPLANATION

- Groundwater Contour (ft. MLLW)
- MW-39 Unconfined Aquifer Monitoring Well
- 200 ORP (mV)
- ORP Contour (mV)
- U Below detection limit

0 400 Ft.

North

Cook Inlet Environmental, Inc.

DATE August 2018
CHKD JW
DRAWN AC

FIGURE 9

ORP Map
Semiconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Cook Inlet Environmental, Inc.

DATE August 2019
CHKD JW
DRAWN CUK

FIGURE 10

Nitrite-N Concentration Map
Unconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

N. Miller Loop Rd.

Kenai Spur Highway

E-206 3.00 U
E-207
E-121B 3.00 U
MW-18A 3.00 U
MW-20 3.00 U
MW-17 3.00 U
MW-3 3.00 U
MW-4R 3.00 U
MW-28 3.00 U
MW-30 3.00 U
MW-29 3.00 U
MW-19 7.79
MW-23R 20
MW-24
MW-7R
MW-14 3.00 U
MW-27 3.00 U
MW-39 3.00 U
MW-42 3.00 U
MW-21 3.00 U
MW-26 4.21
MW-40 3.00 U
MW-9R 3.00 U
MW-13 3.00 U
MW-8R 3.04
MW-16 3.00 U
MW-25 3.00 U
MW-15 3.00 U
MW-41 3.00 U
MW-54 3.00 U
MW-22 3.00 U
E-160 3.00 U
E-169 3.00 U
E-137B
E-224
E-202B
E-170 3.00 U
E-205
E-225
E-159
E-209
PI-06B
E-149
E-156 3.00 U
E-158
E-195
E-155
E-101B 3.00 U
E-190B
E-187B
E-196
E-167
E-163
E-192
E-193
E-129

UREA PRILL STORAGE
UREA GRANULE STORAGE
AMMONIA STORAGE TANKS
GC PONDS
LNG STORAGE TANKS
TO DOCK
COOK INLET

EXPLANATION

- Groundwater Contour (ft. MLLW)
- MW-39 Unconfined Aquifer Monitoring Well
- 0.16 Nitrite-N (mg/L)
- Nitrite-N Contour (mg/L)
- U Below detection limit

0 400 Ft.

North

Cook Inlet Environmental, Inc.

DATE August 2018
CHKD JW
DRAWN AC

N. Miller Loop Rd

Kenai Spur Highway

MW-18B 3.00 U

MW-47 3.00 U

MW-52 3.00 U

MW-45-120 3.00 U

MW-46 3.00 U

AMMONIA STORAGE TANKS

MW-48-120 3.00 U

MW-34 3.00 U

UREA PRILL STORAGE

GE PONDS

MW-44-120 3.00 U

MW-32 3.00 U

MW-53 3.00 U

MW-35R 3.00 U

UREA GRANULE STORAGE

MW-33 3.00 U

MW-49-120 3.00 U

MW-50 3.00 U

Sheetpile Wall

MW-36R 3.00 U

MW-51 3.00 U

MW-37R 3.00 U

LNG STORAGE TANKS

MW-38R 3.00 U

E-157 3.00 U

E-161 3.00 U

MW-43R 3.00 U

TO DOCK

EXPLANATION

- Groundwater Contour (ft. MLLW)
- MW-34 Semiconfined Aquifer Monitoring Well
- 5.0 Nitrite-N (mg/L)
- Nitrite-N Contour (mg/L)
- U Below detection limit

0 400 Ft.

North

FIGURE 11

Nitrite-N Concentration Map
Semiconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

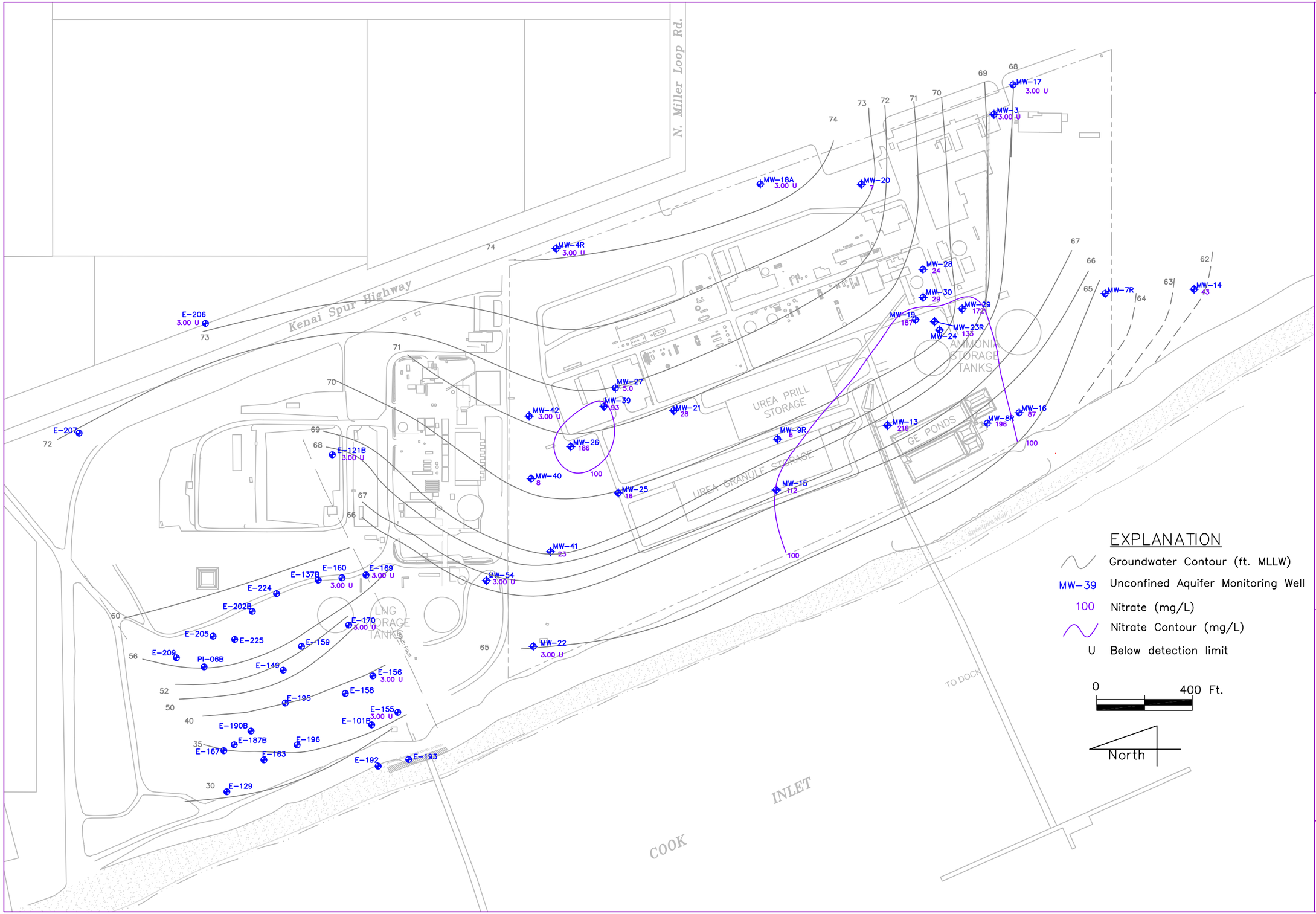
Cook Inlet Environmental, Inc.

DATE August 2019
CHKD JW
DRAWN CUK

FIGURE 12

Nitrate Concentration Map
Unconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT



Cook Inlet Environmental, Inc.

DATE August 2018
CHKD JW
DRAWN AC

FIGURE 13

Nitrate Concentration Map
Semiconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Kenai Spur Highway

N. Miller

MW-18B 3.00 U
MW-47 3.00 U
MW-52 3.00 U
MW-45-120 3.00 U
MW-46 3.00 8.31 556
MW-48-120 3.00 U
MW-34 3.00 U
MW-32 36.8
MW-35R 166
MW-33 9.33
MW-44-120 3.00 U
MW-53 3.00 U
MW-49-120 8.41
MW-50 3.00
MW-51 3.00 U
MW-38R 3.000
MW-37R 53.4
MW-38R 3.00 U
MW-43R 5.52
E-157 3.00 U
E-161 3.00 U

UREA PRILL STORAGE
UREA GRANULE STORAGE
GE PONDS
AMMONIA STORAGE TANKS
LNG STORAGE TANKS
Sheetpile Wall
TO DOCK

EXPLANATION

- Groundwater Contour (ft. MLLW)
- MW-34 Semiconfined Aquifer Monitoring Well
- 10.0 Nitrate (mg/L)
- Nitrate Contour (mg/L)
- U Below detection limit

0 400 Ft.

North

Cook Inlet Environmental, Inc.

DATE August 2019
CHKD JW
DRAWN CJK

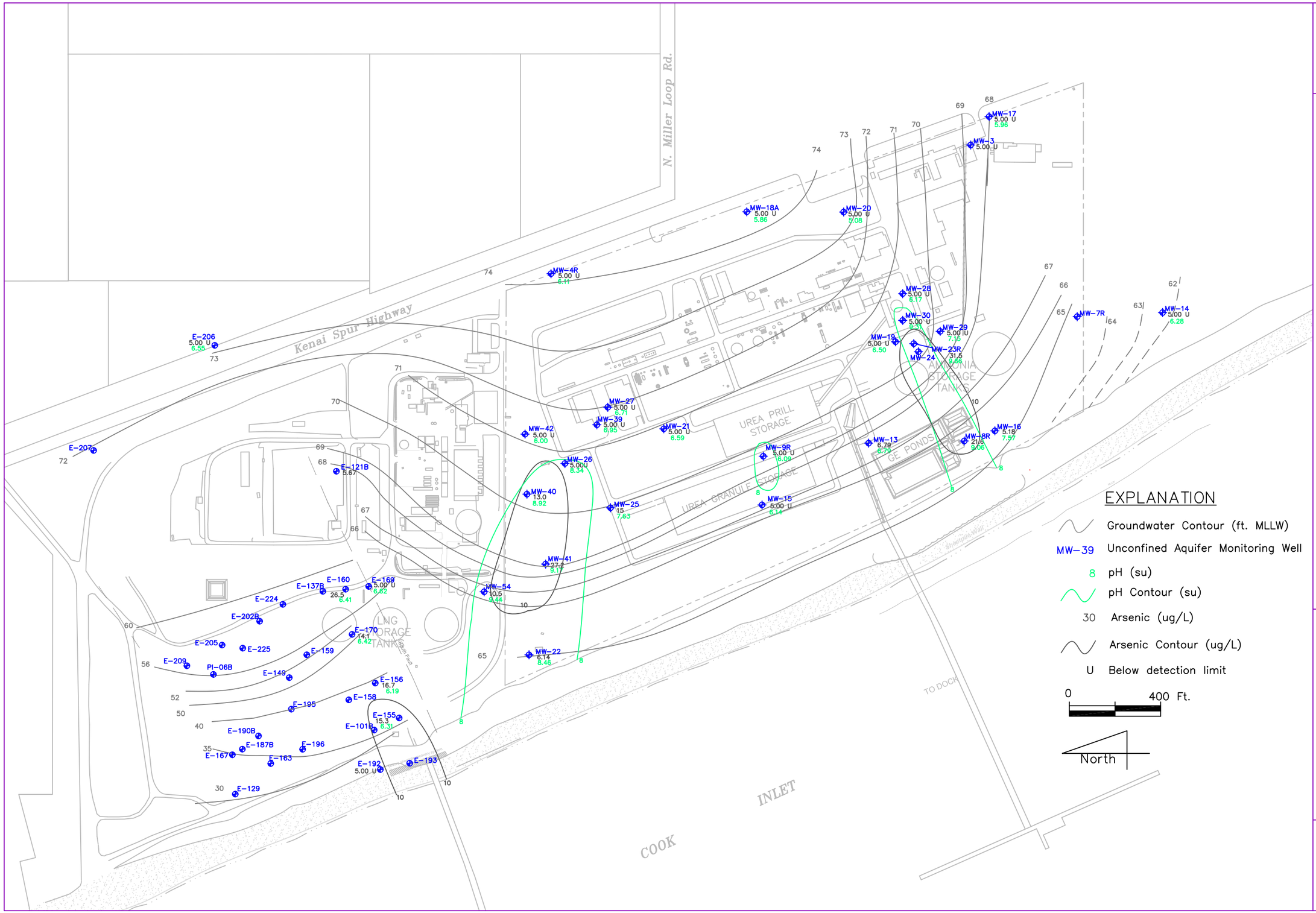


FIGURE 14

pH & Arsenic Concentration Map
Unconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Cook Inlet Environmental, Inc.

DATE August 2018
CHKD JW
DRAWN AC

Kenai Spur Highway

N. Miller

MW-18B
5.00 U
6.53

MW-47
9.46
6.87

MW-52
10.4

MW-45-120
8.53
7.81

MW-46
5.13
8.31

AMMONIA STORAGE TANKS

MW-48-120
7.11
9.46

MW-34
5.00 U
6.94

UREA PRILL STORAGE

GE PONDS

MW-32
51.3
9.40

MW-44-120
10.6
7.83

MW-53
15.8
7.11

MW-35R
5.00 U
5.79

UREA GRANULE STORAGE

MW-33
27.1
9.21

MW-49-120
29.0
9.40

MW-50
105
9.59

Sheetpile Wall

MW-51
5.00U
6.95

MW-36R
5.00 U
6.65

MW-37R
5.00 U
6.97

LNG STORAGE TANKS

MW-38R
9.73
46.6

E-157
14.8
6.68

E-161
5.18
7.23

MW-43R
6.85
6.92

TO DOCK

EXPLANATION

- Groundwater Contour (ft. MLLW)
- MW-34 Semiconfined Aquifer Monitoring Well
- 8 pH (su)
- pH Contour (su)
- 10 Arsenic (ug/L)
- Arsenic Contour (ug/L)
- U Below detection limit

0 400 Ft.

North

FIGURE 15

pH & Arsenic Concentration Map
Semiconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Cook Inlet Environmental, Inc.

DATE August 2019
CHKD JW
DRAWN CUK

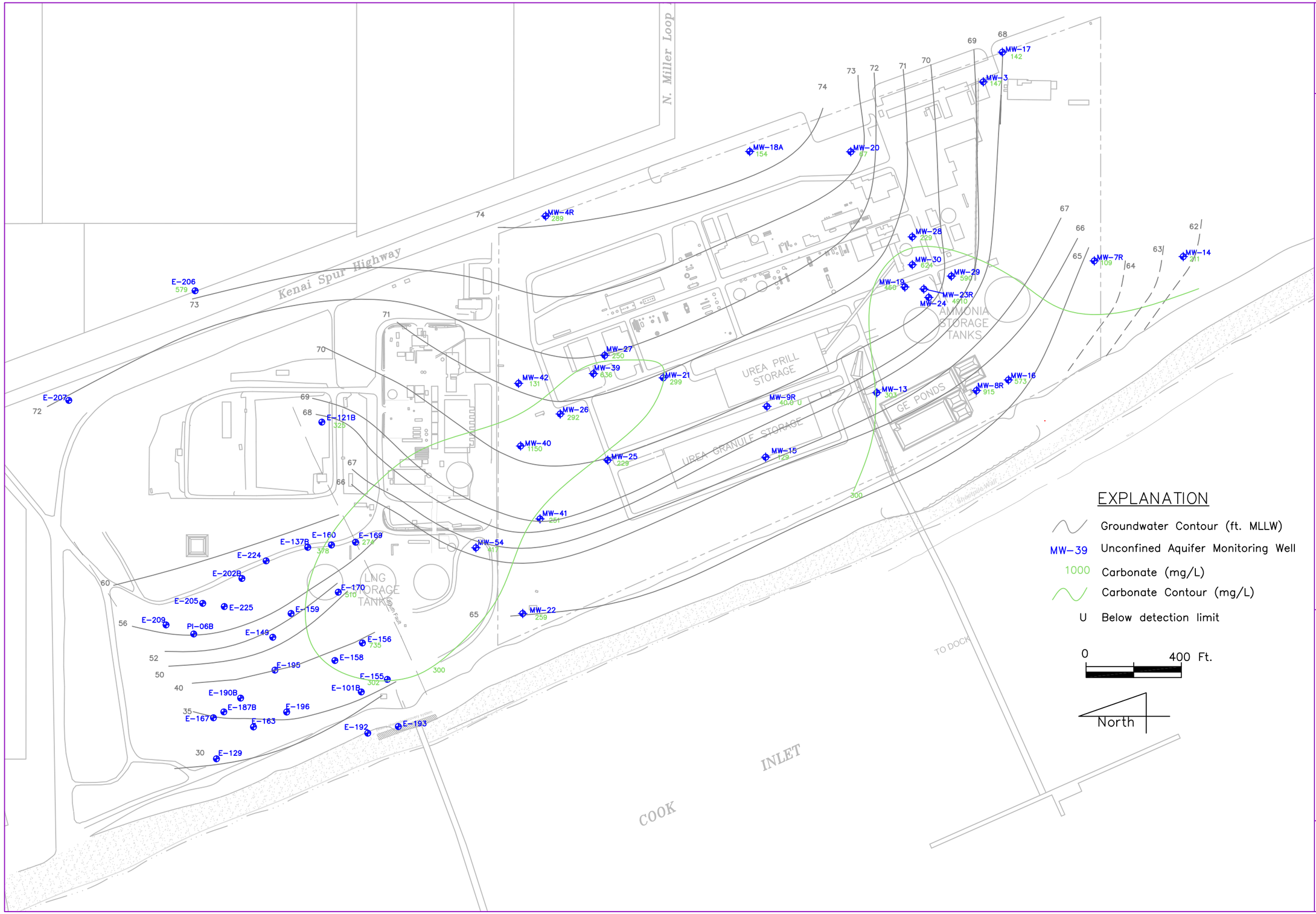
FIGURE 16

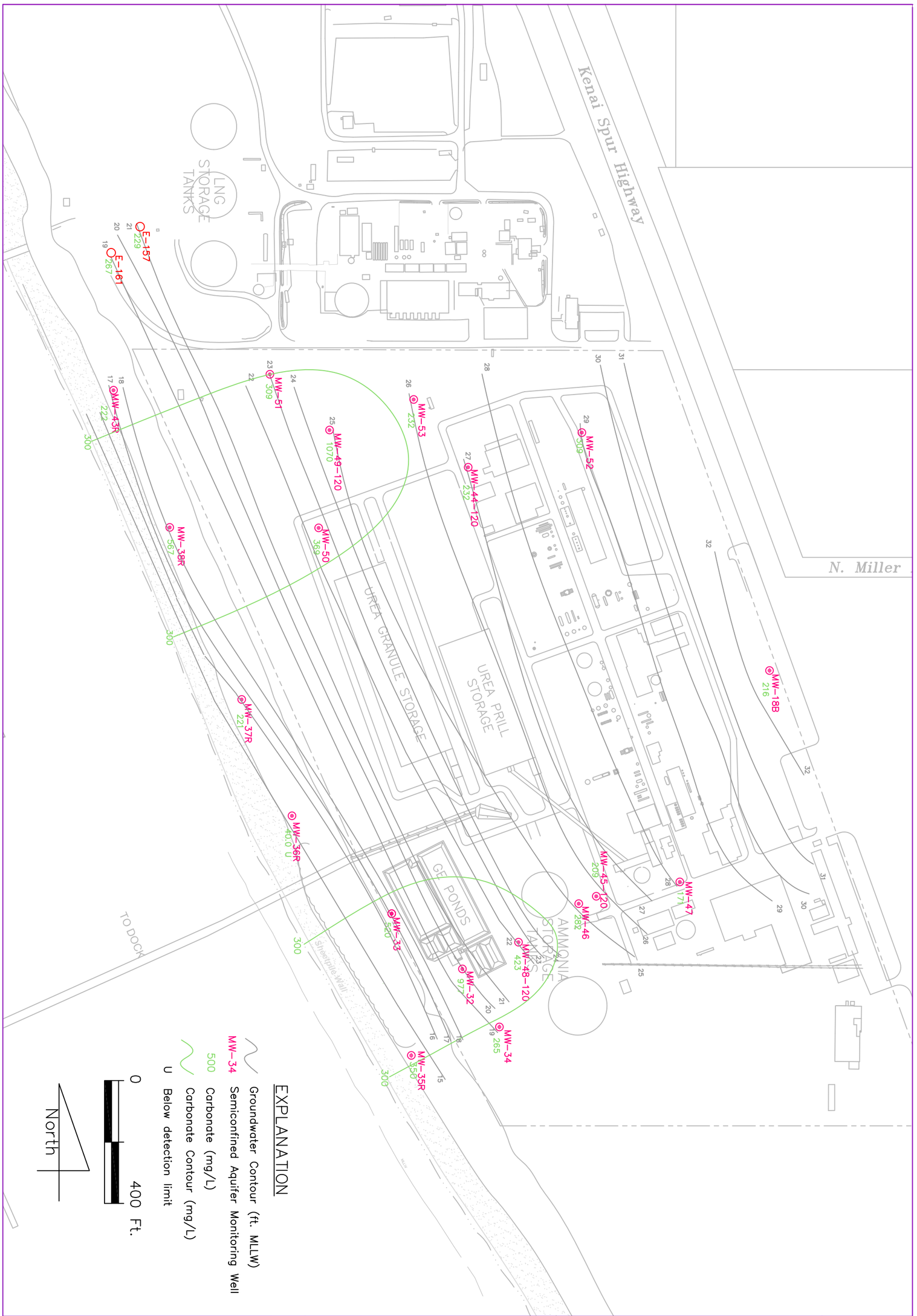
Carbonate Concentration Map
Unconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Cook Inlet Environmental, Inc.

DATE August 2018
CHKD JW
DRAWN AC





DATE August 2019 CHKD JW DRAWN CUK	Cook Inlet Environmental, Inc.	**Carbonate Concentration Map** **Semiconfined Aquifer - June - August 2019** AGRIUM US, INC. KENAI NITROGEN OPERATIONS PLANT	FIGURE **17**

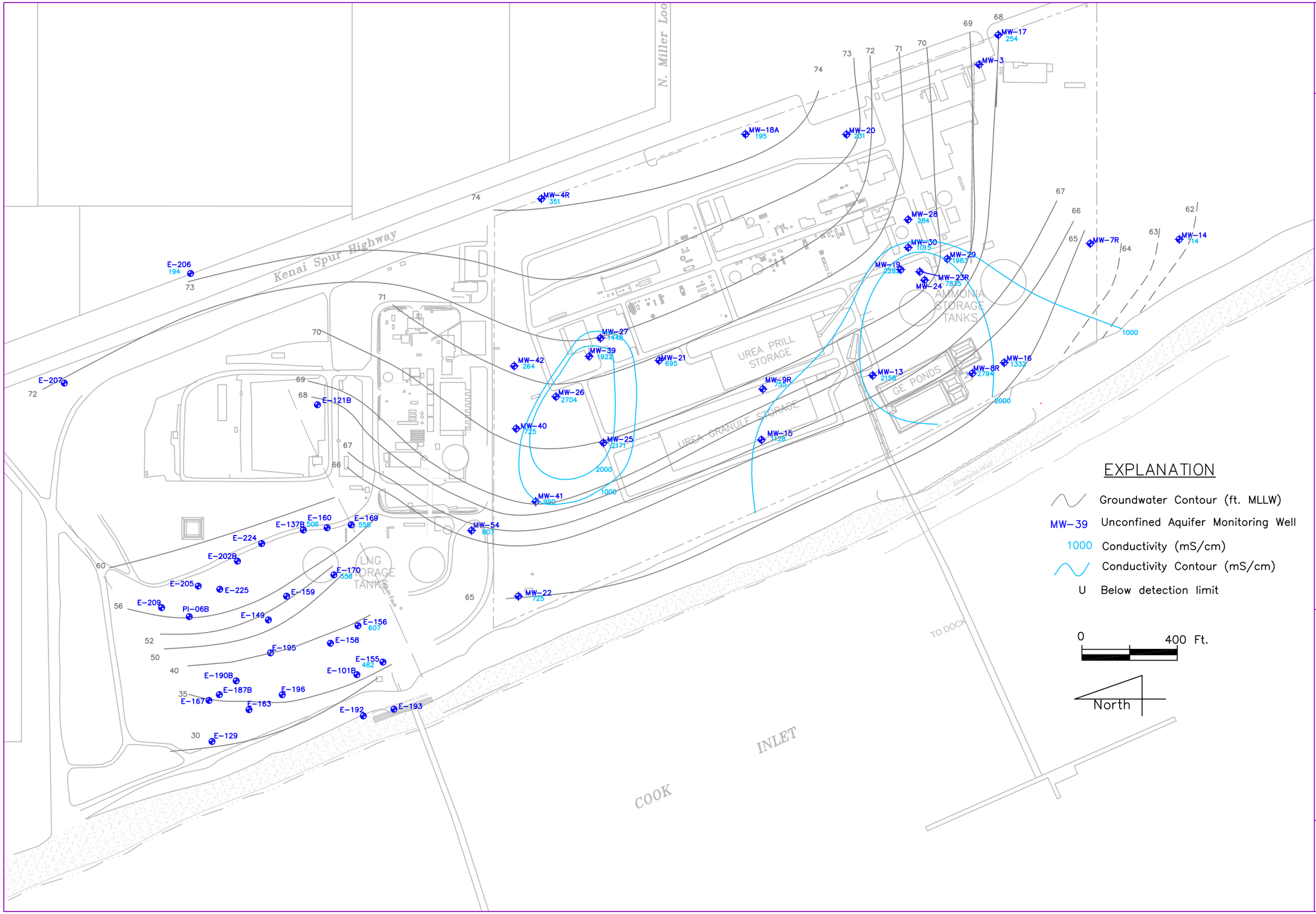
FIGURE 18

Conductivity Map
Unconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Cook Inlet Environmental, Inc.

DATE August 2018
CHKD JW
DRAWN AC



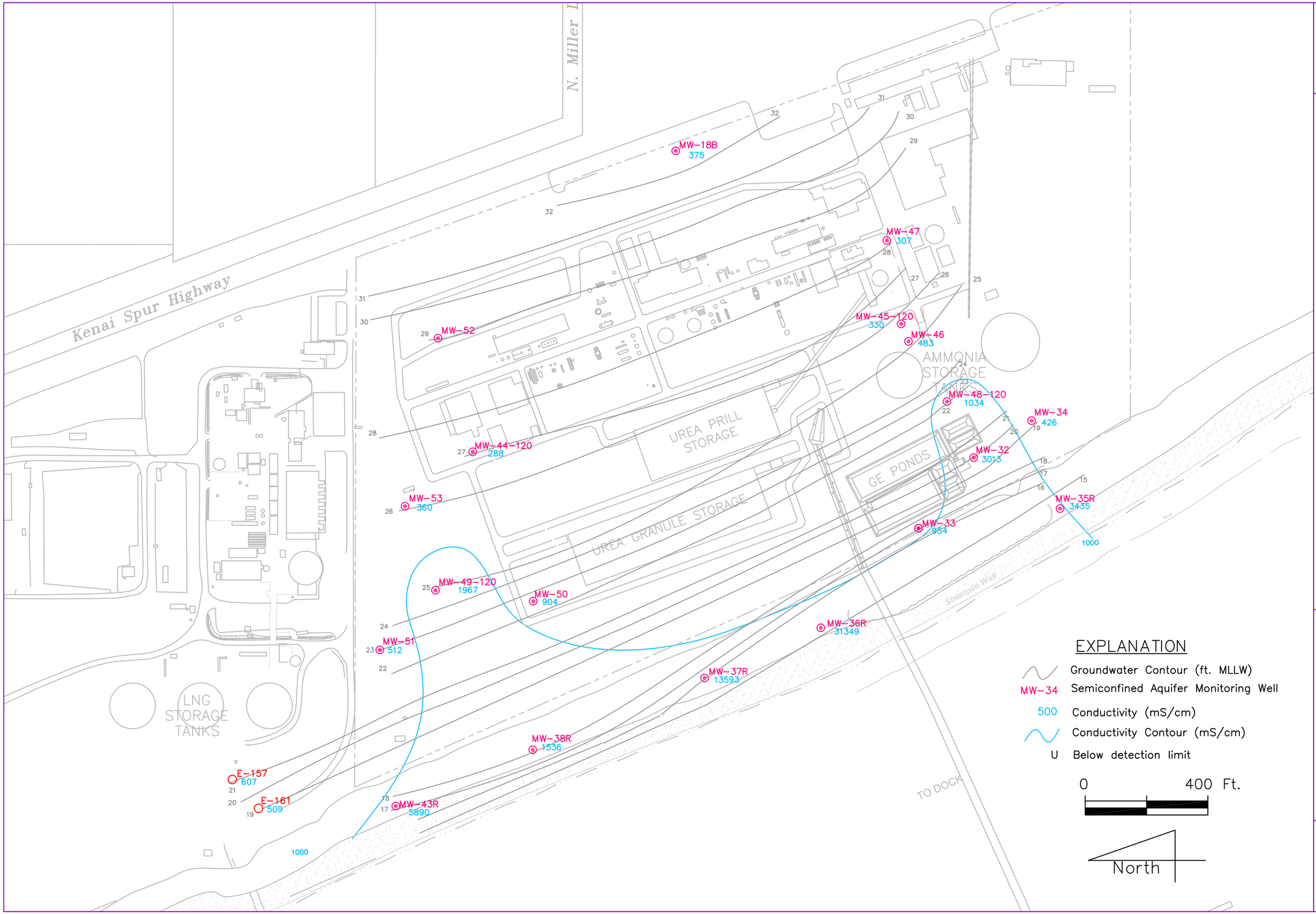


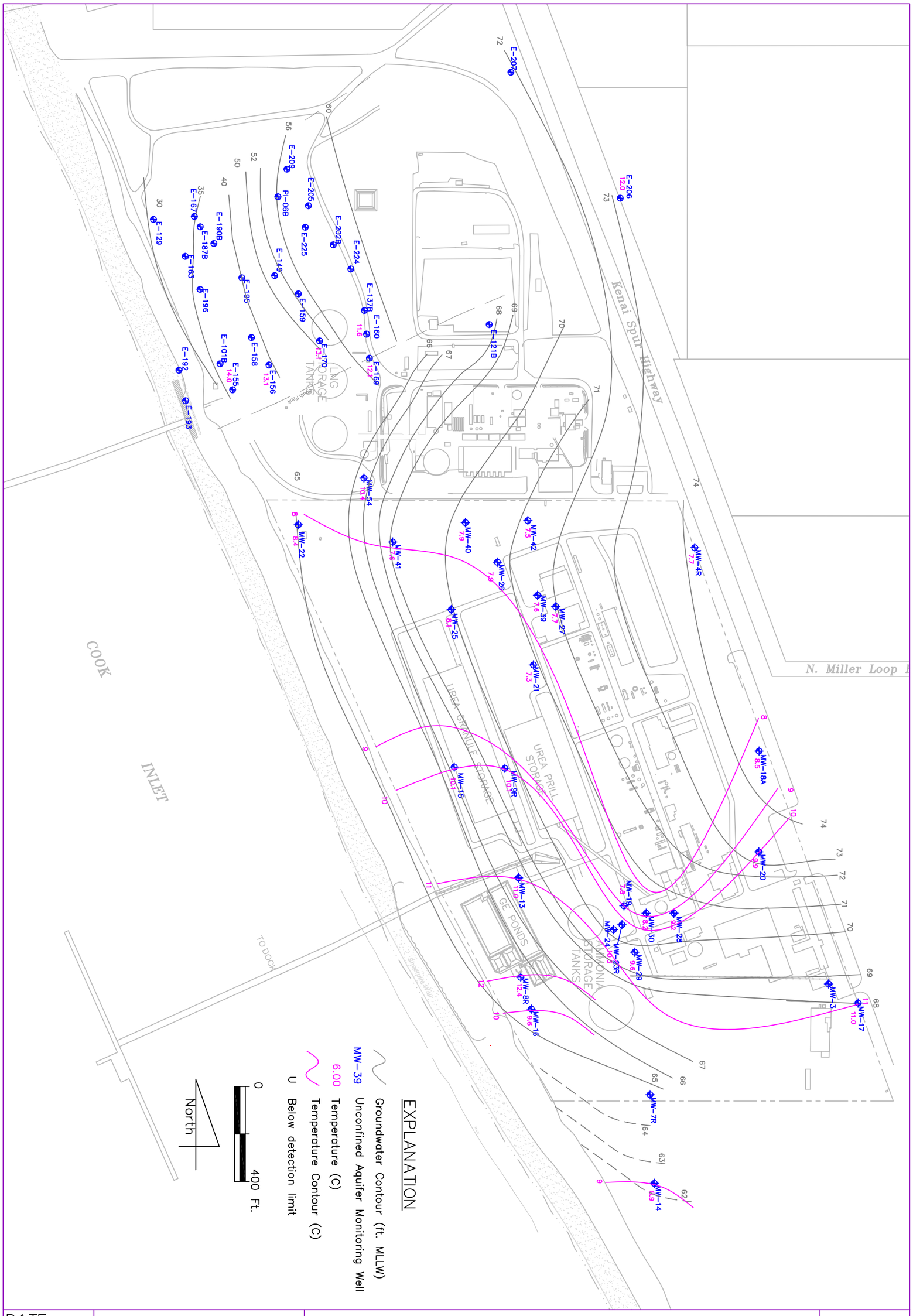
FIGURE 19

Conductivity Map
Semiconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Cook Inlet Environmental, Inc.

DATE August 2019
CHKD JW
DRAWN CUK



DATE August 2018 CHKD JW DRAWN AC	Cook Inlet Environmental, Inc.	**Temperature Map** **Unconfined Aquifer - June - August 2019** AGRIUM US, INC. KENAI NITROGEN OPERATIONS PLANT	FIGURE **20**

FIGURE 21

Temperature Map
Semiconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT

Cook Inlet Environmental, Inc.

DATE August 2019
CHKD JW
DRAWN CUK

Kenai Spur Highway

N. Miller Loop

MW-18B 12.4
MW-47 10.6
MW-52
MW-45-120 9.0
MW-46 10.7
MW-48-120 10.2
MW-34 9.8
MW-44-120 10.9
MW-32 8.2
MW-53
MW-35R 10.5
MW-33 12.4
MW-49-120 10.2
MW-50 8.8
MW-51 8.8
MW-36R 13.4
MW-37R 16.9
MW-38R 12.0
E-157 13.1
E-161 11.6
MW-43R 7.5

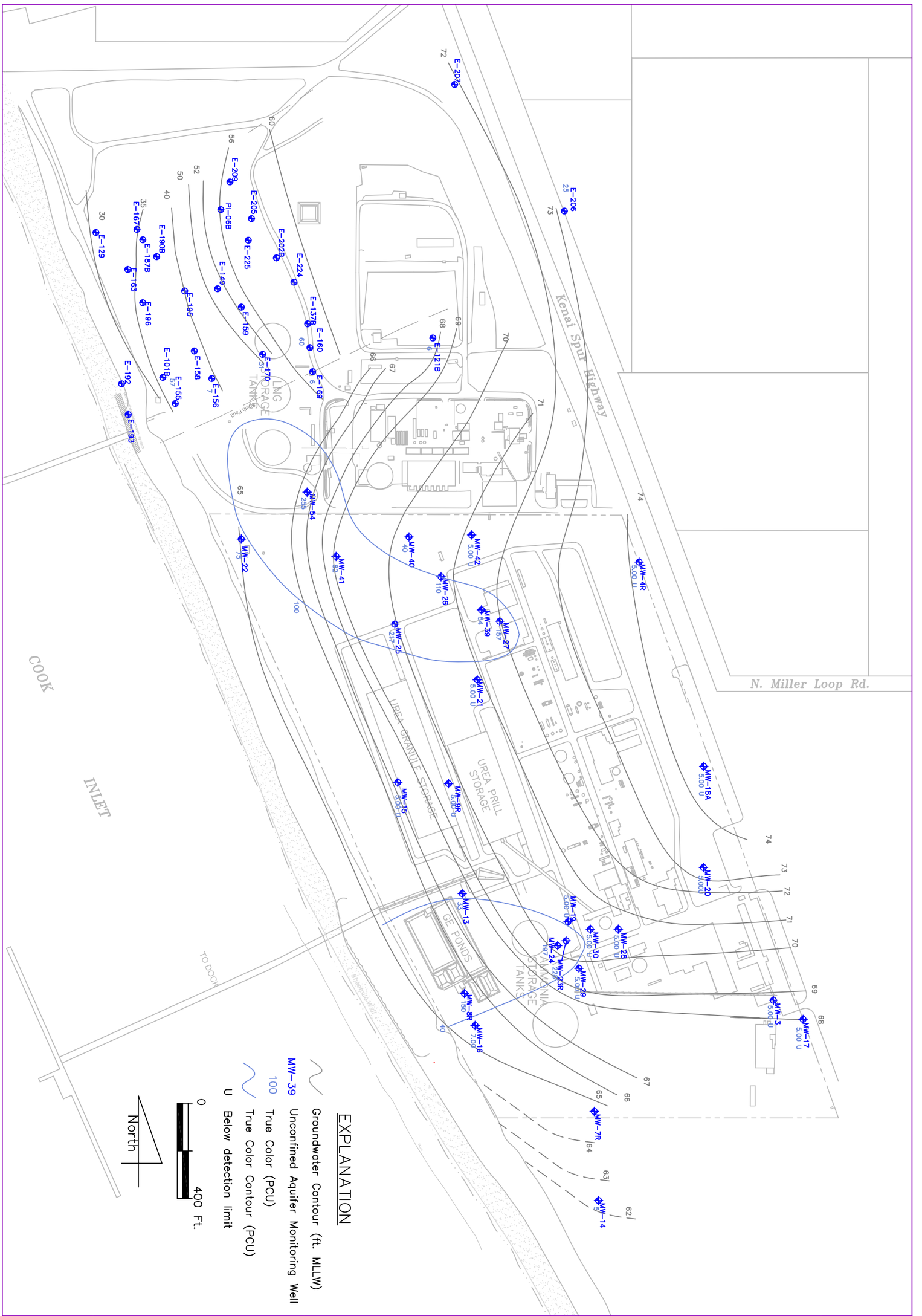
AMMONIA STORAGE TANKS
UREA PRILL STORAGE
UREA GRANULE STORAGE
GE PONDS
LNG STORAGE TANKS
Sheetpile Wall
TO DOCK

EXPLANATION

- Groundwater Contour (ft. MLLW)
- MW-34 Semiconfined Aquifer Monitoring Well
- 6.0 Temperature (C)
- Temperature Contour (C)
- U Below detection limit

0 400 Ft.

North

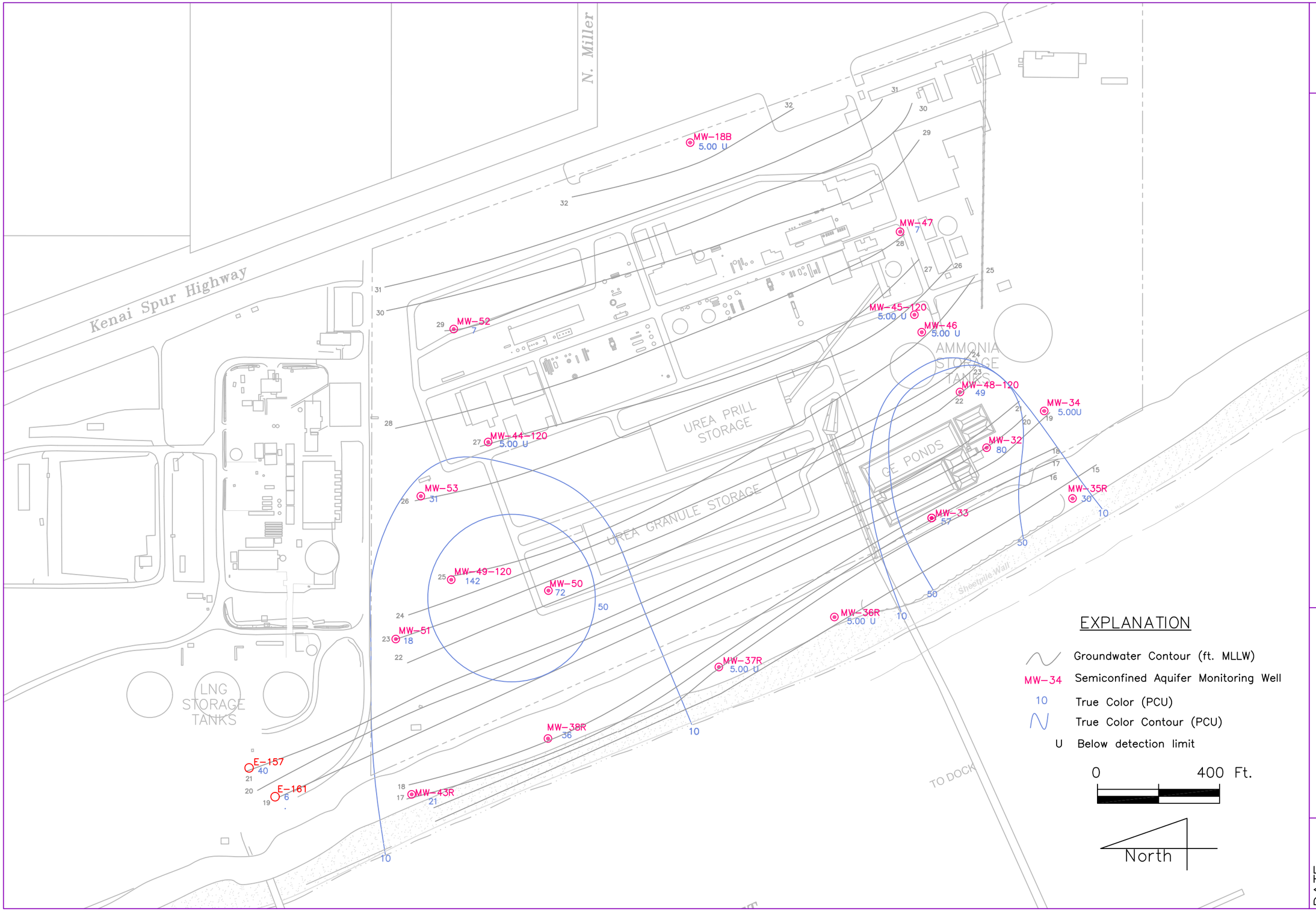


DATE August 2018 CHKD JW DRAWN AC	Cook Inlet Environmental, Inc.	**Color Concentration Map** **Unconfined Aquifer - June - August 2018** AGRIUM US, INC. KENAI NITROGEN OPERATIONS PLANT	FIGURE **22**

FIGURE 23

Color Concentration Map
Semiconfined Aquifer - June - August 2019

AGRIUM US, INC.
KENAI NITROGEN OPERATIONS PLANT



Cook Inlet Environmental, Inc.

DATE August 2019
CHKD JW
DRAWN CUK

Figure 24
Time Series Plots
S. UA Ammonia Plume

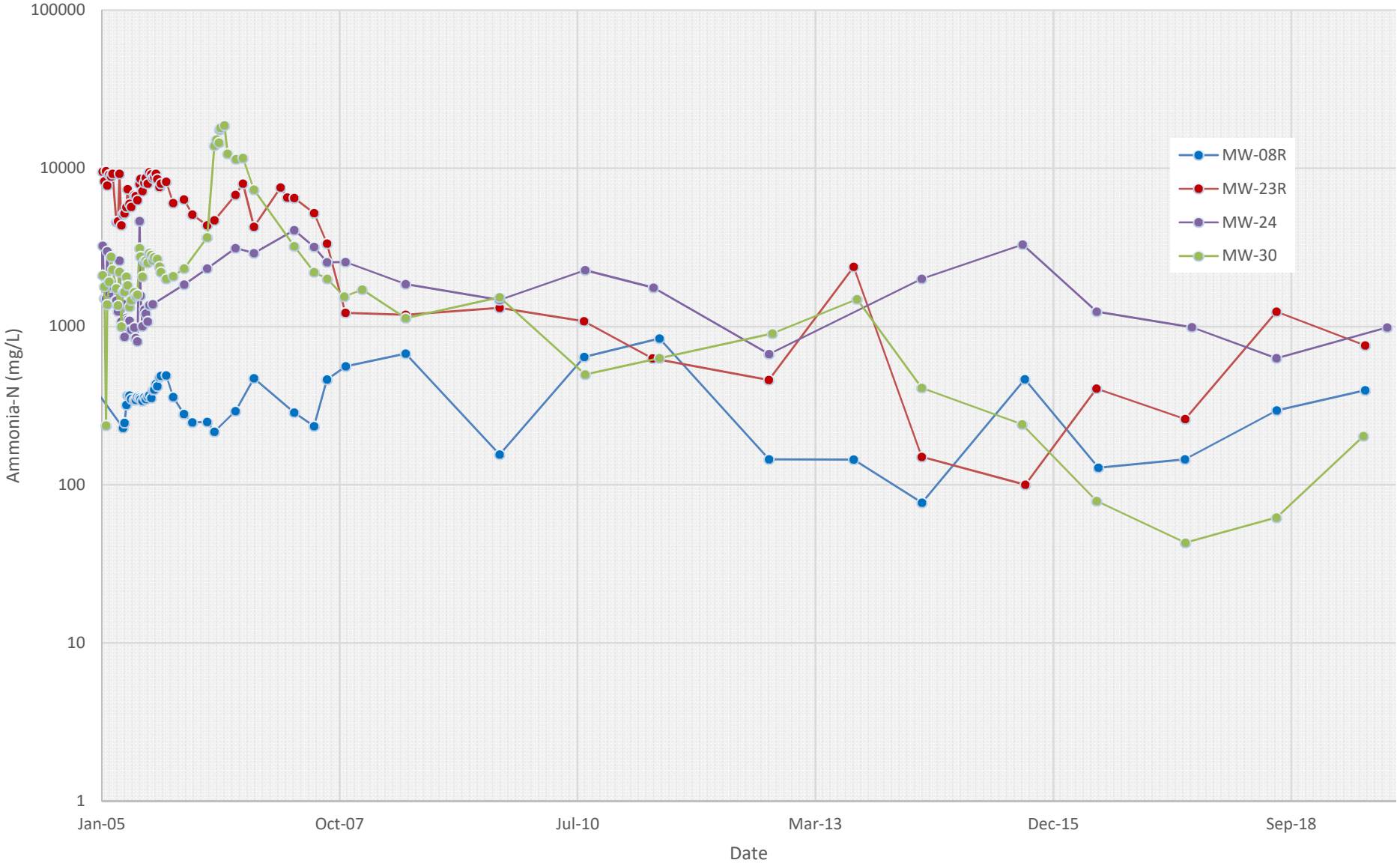


Figure 25
Time Series Plots
S. UA Urea Plume

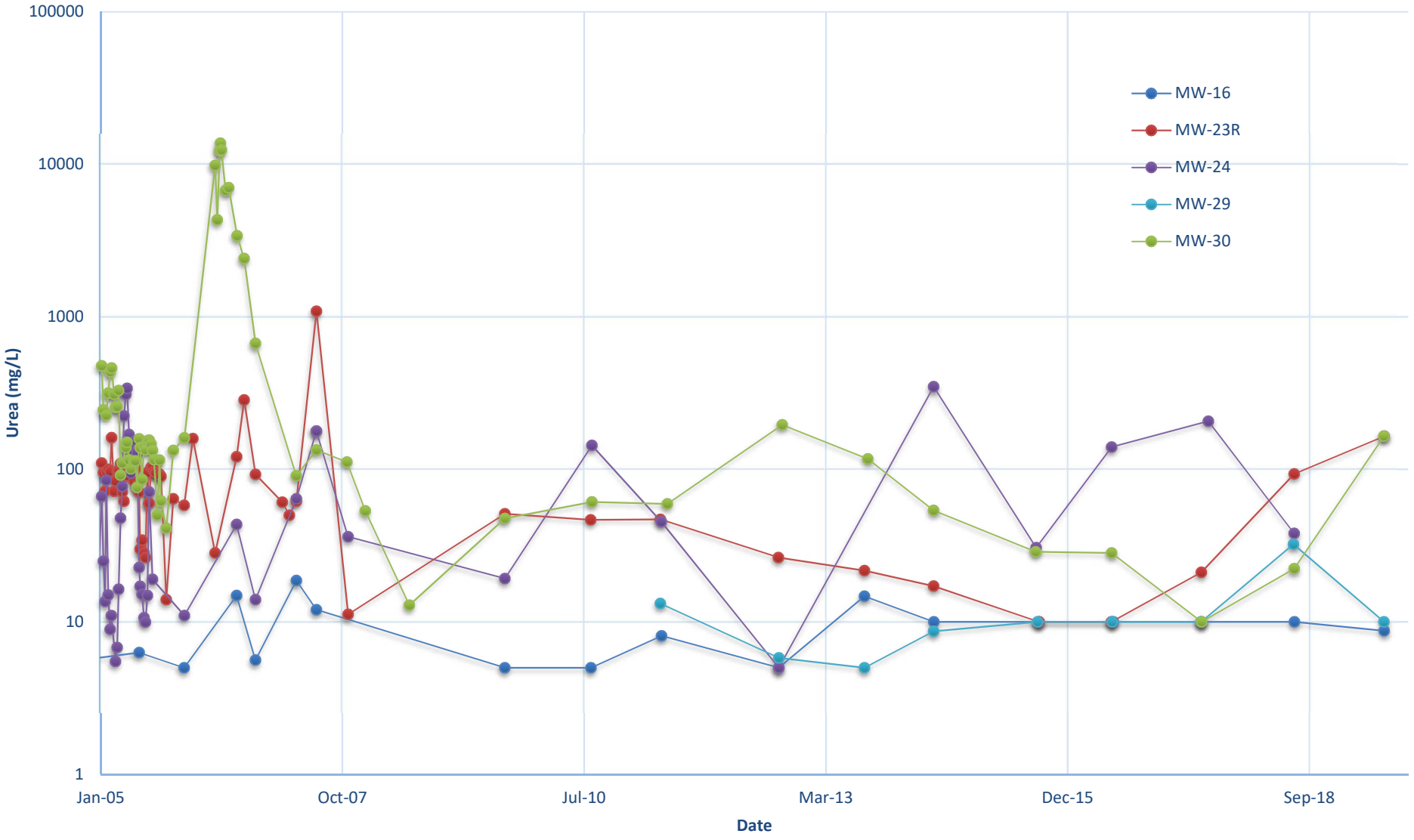


Figure 26
Time Series Plots
N. UA Ammonia Plume

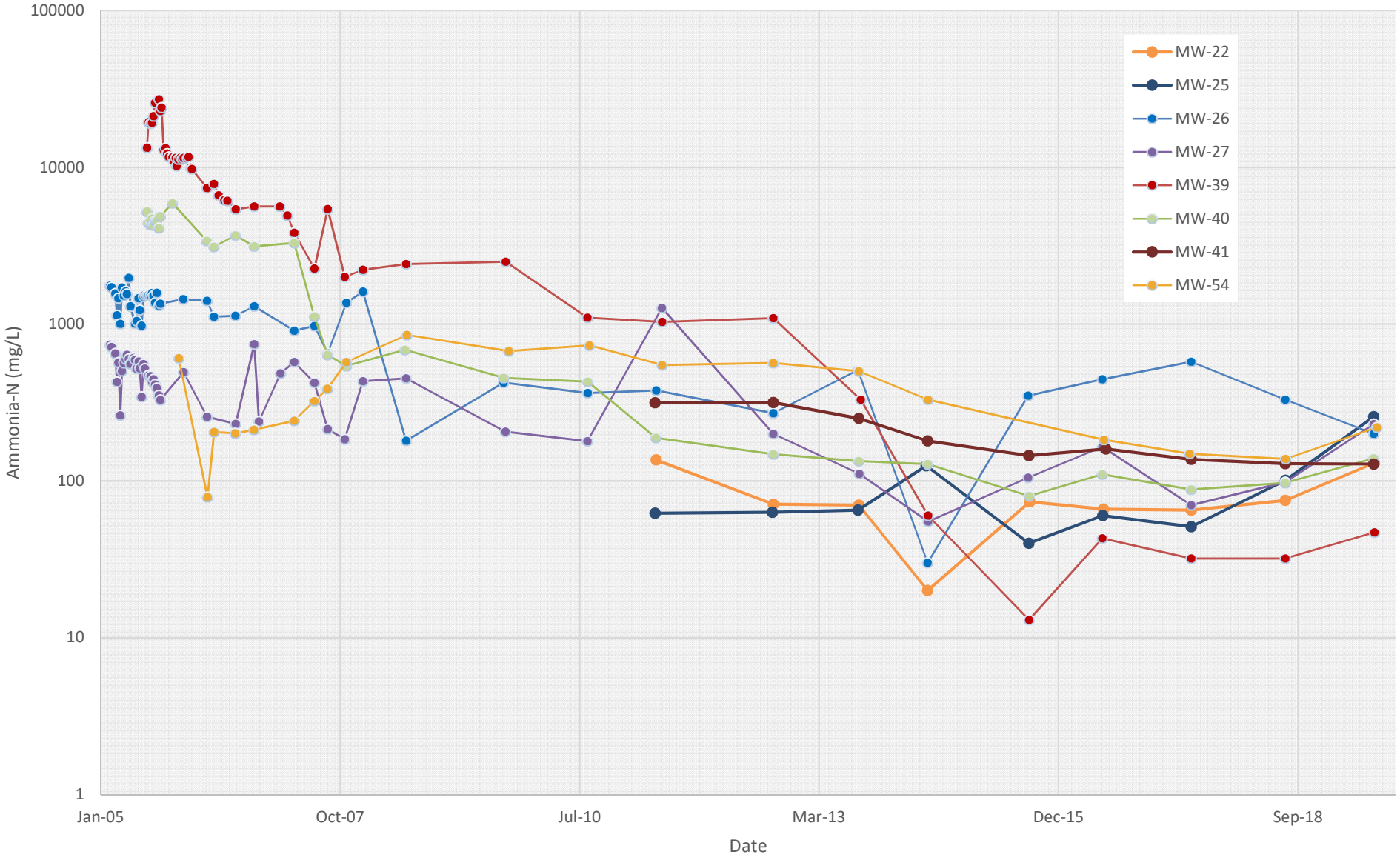


Figure 27
Time Series Plots
N. UA Urea Plume

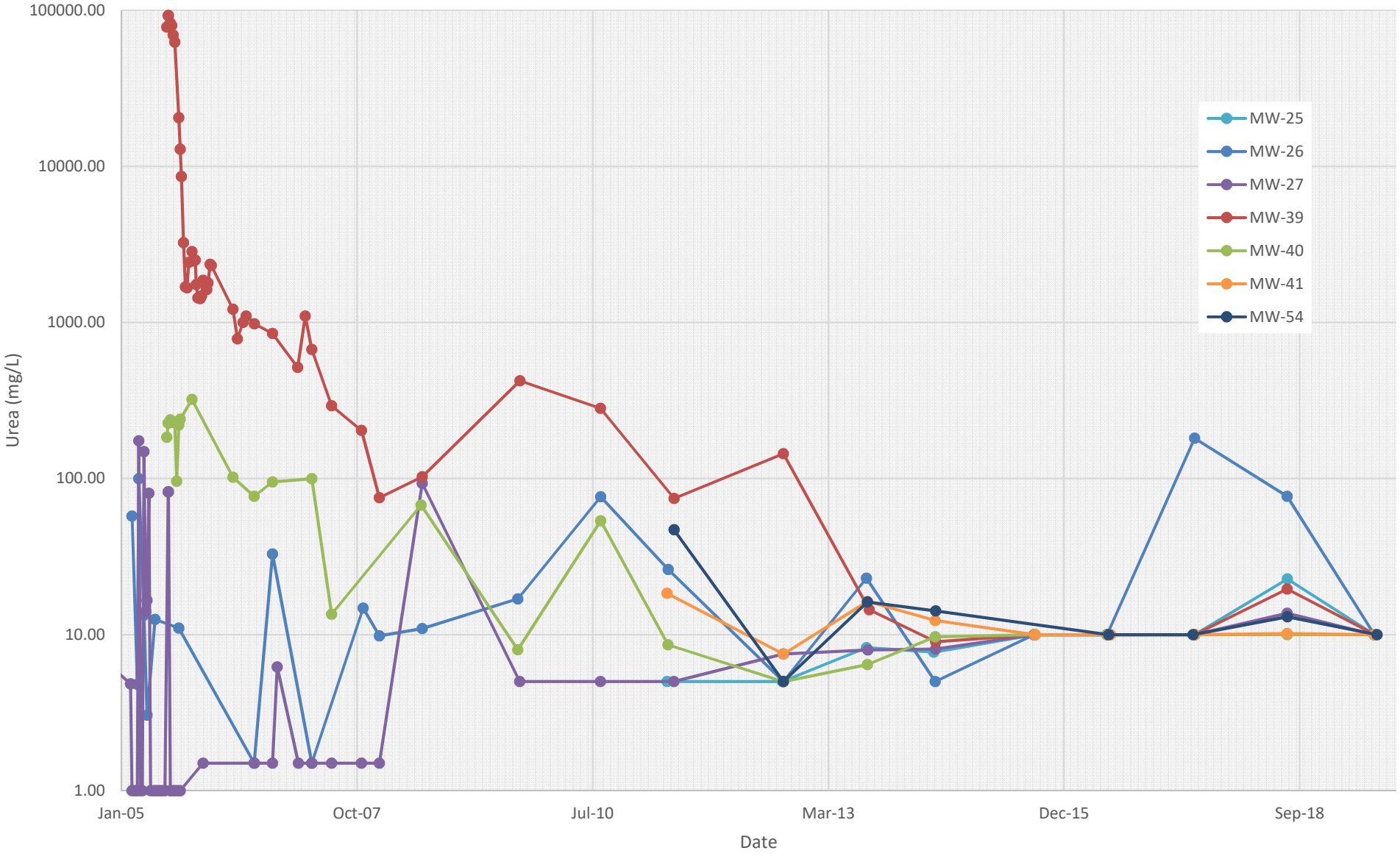


Figure 28
Time Series Plots
S. SCA Ammonia Plume

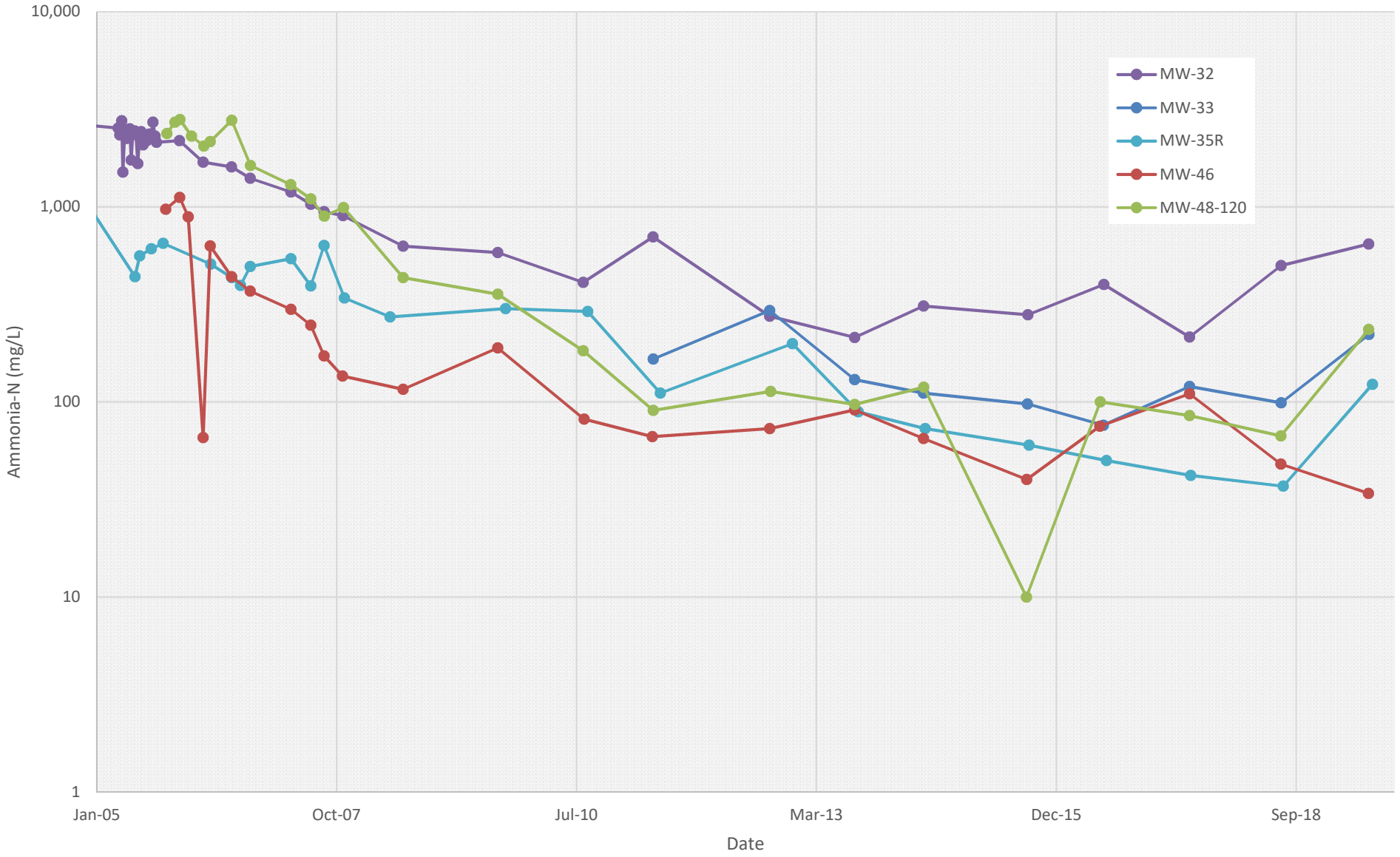


Figure 29
Time Series Plots
N. SCA Ammonia Plume

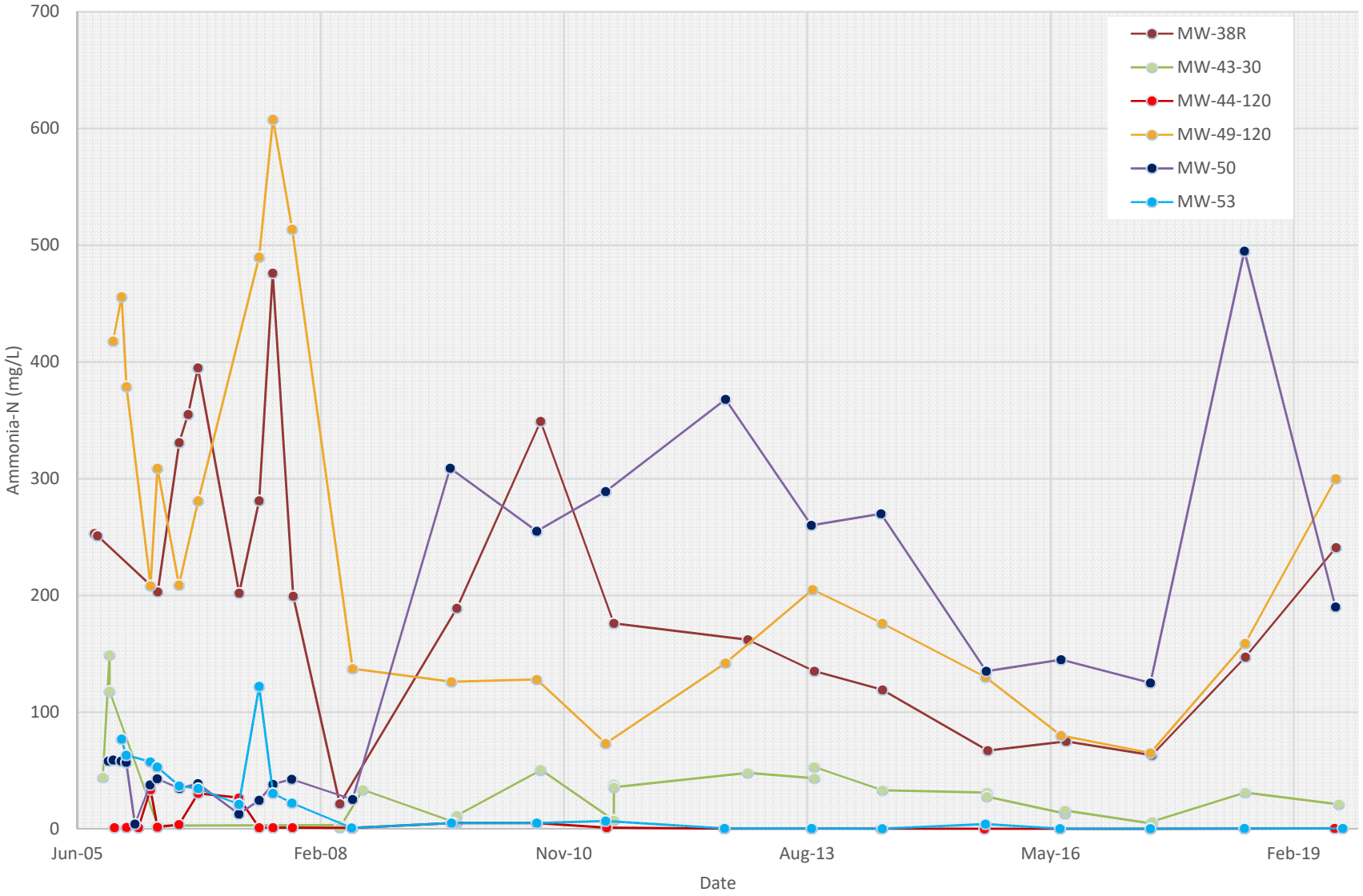


Figure 30
Time Series Plots
SCA Urea Plume

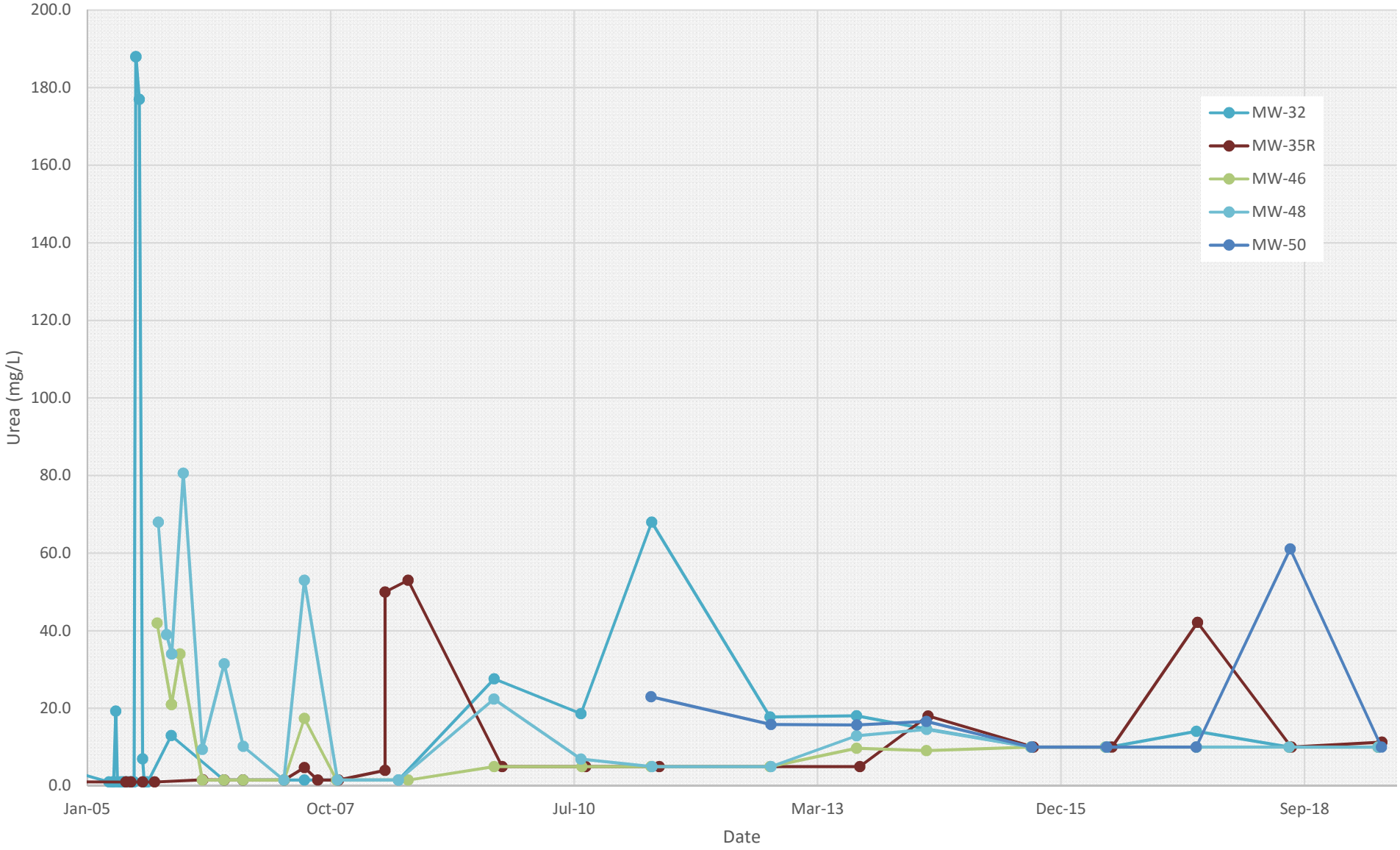


Figure 31
Time Series Plots
S. UA Nitrate-N + Nitrite-N Plume

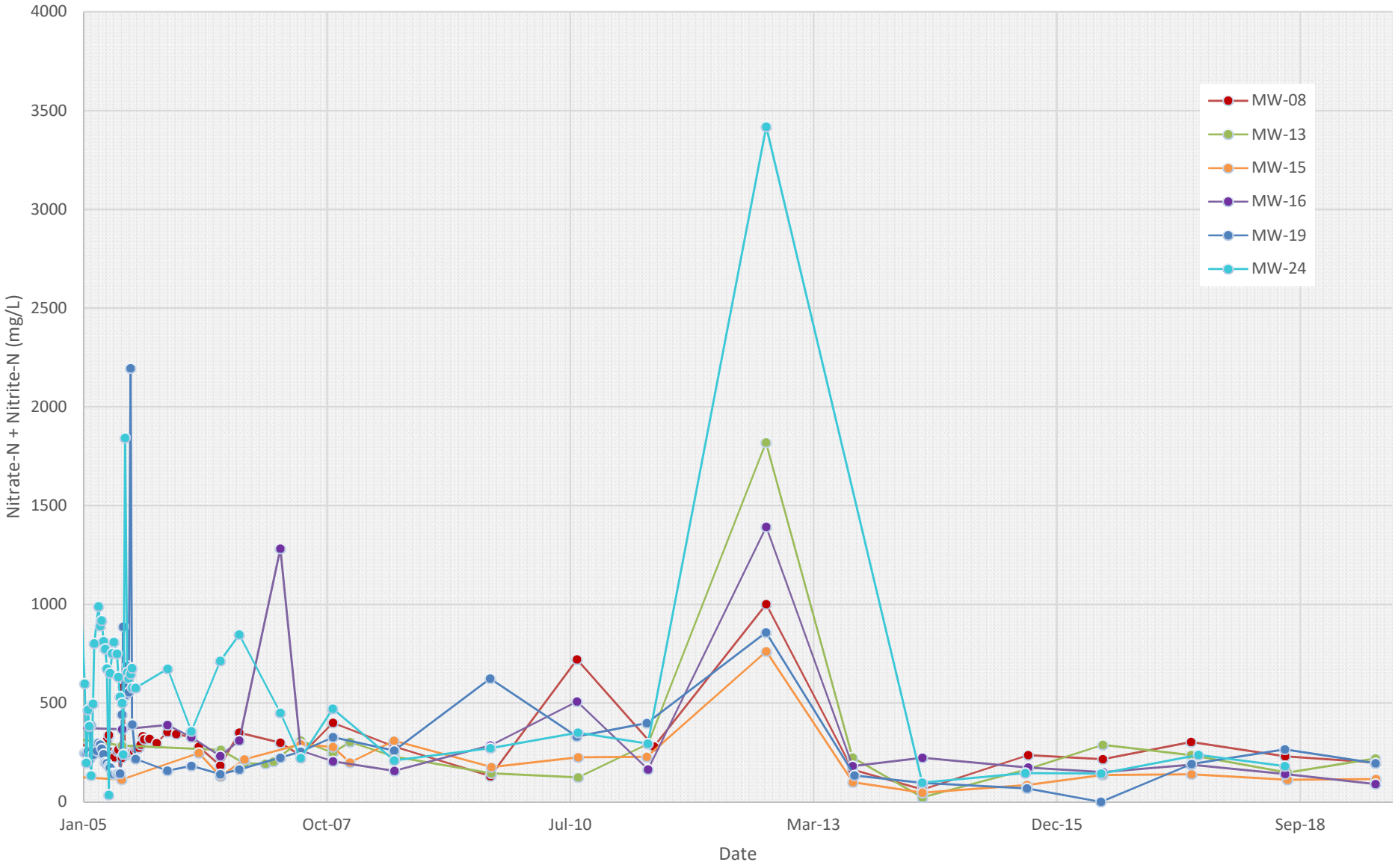


Figure 32
Time Series Plots
N. UA Nitrate-N + Nitrite-N Plume

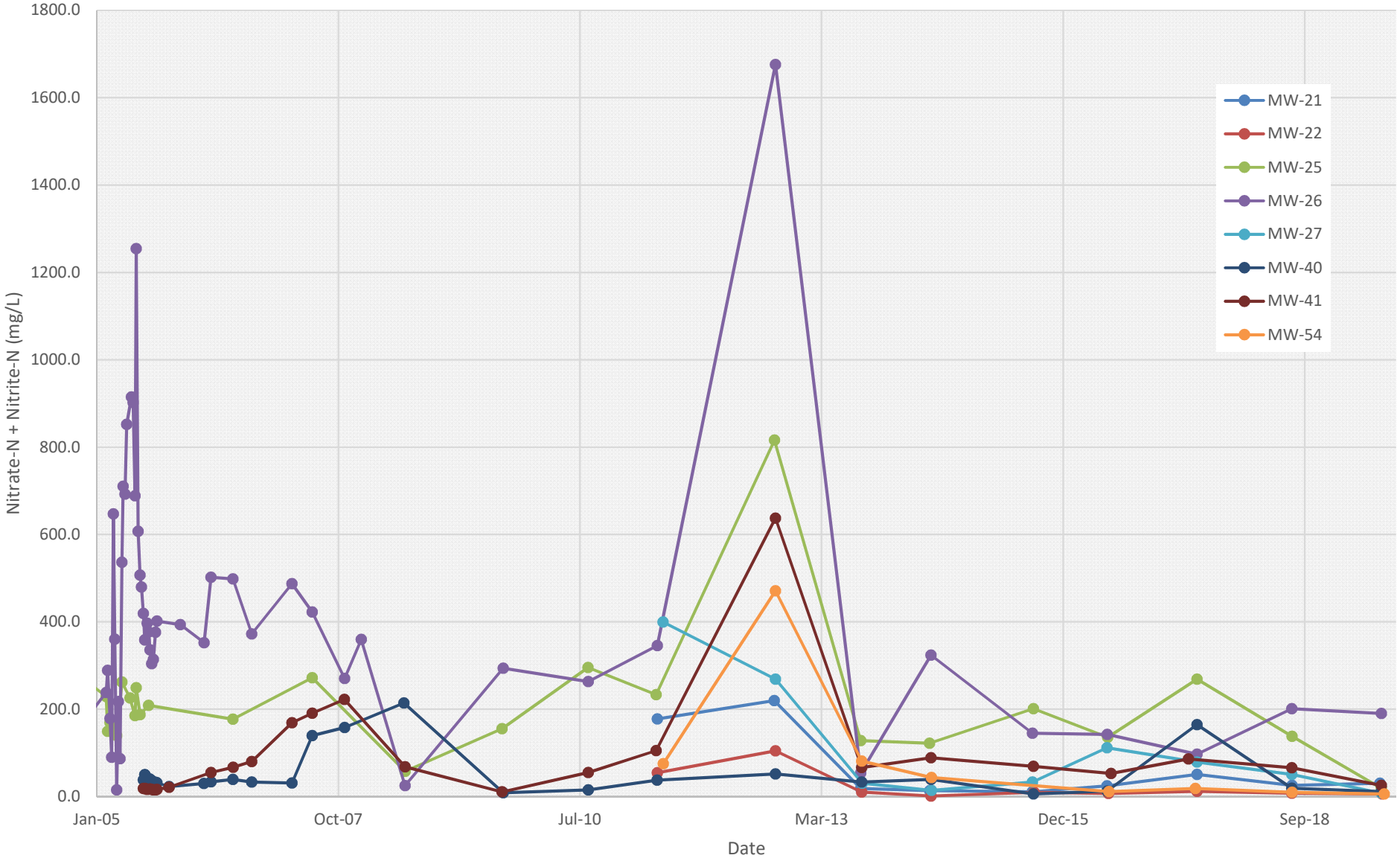


Figure 33
Time Series Plots
S. SCA Nitrate-N + Nitrite-N Plume

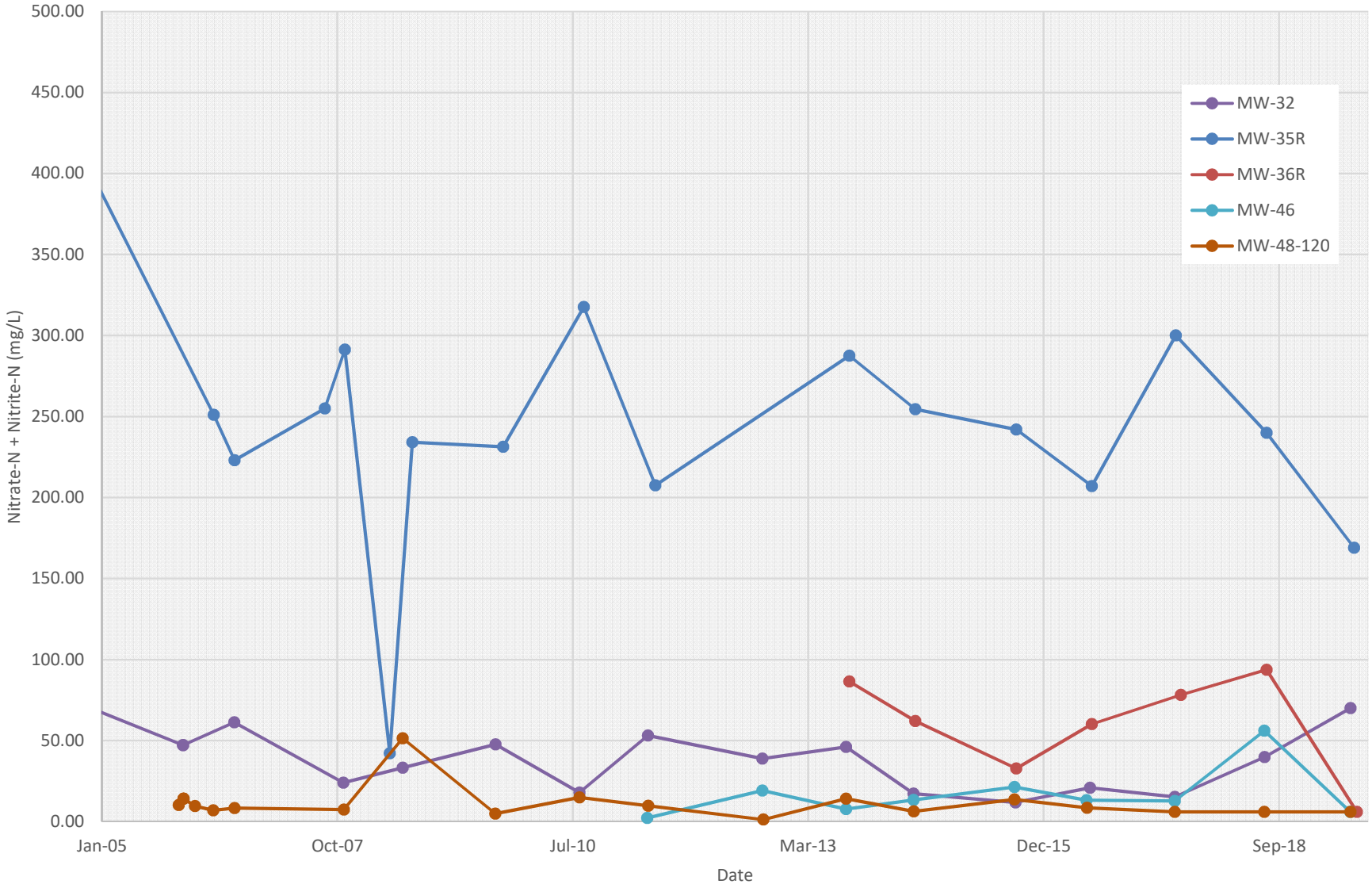


Figure 34
Time Series Plots
N. SCA Nitrate-N + Nitrite-N Plume

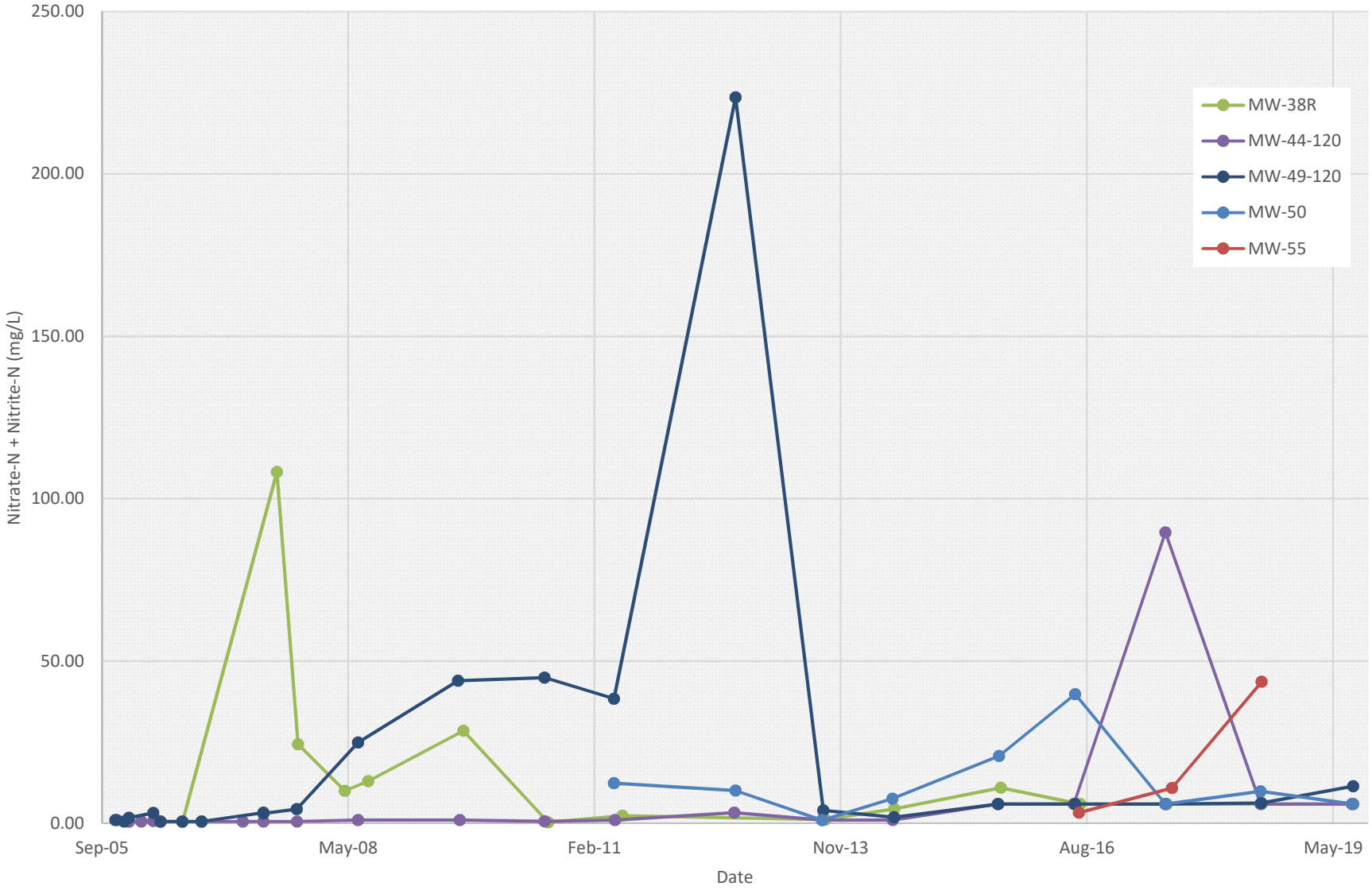


Figure 35
Hydrograph
Unconfined Aquifer

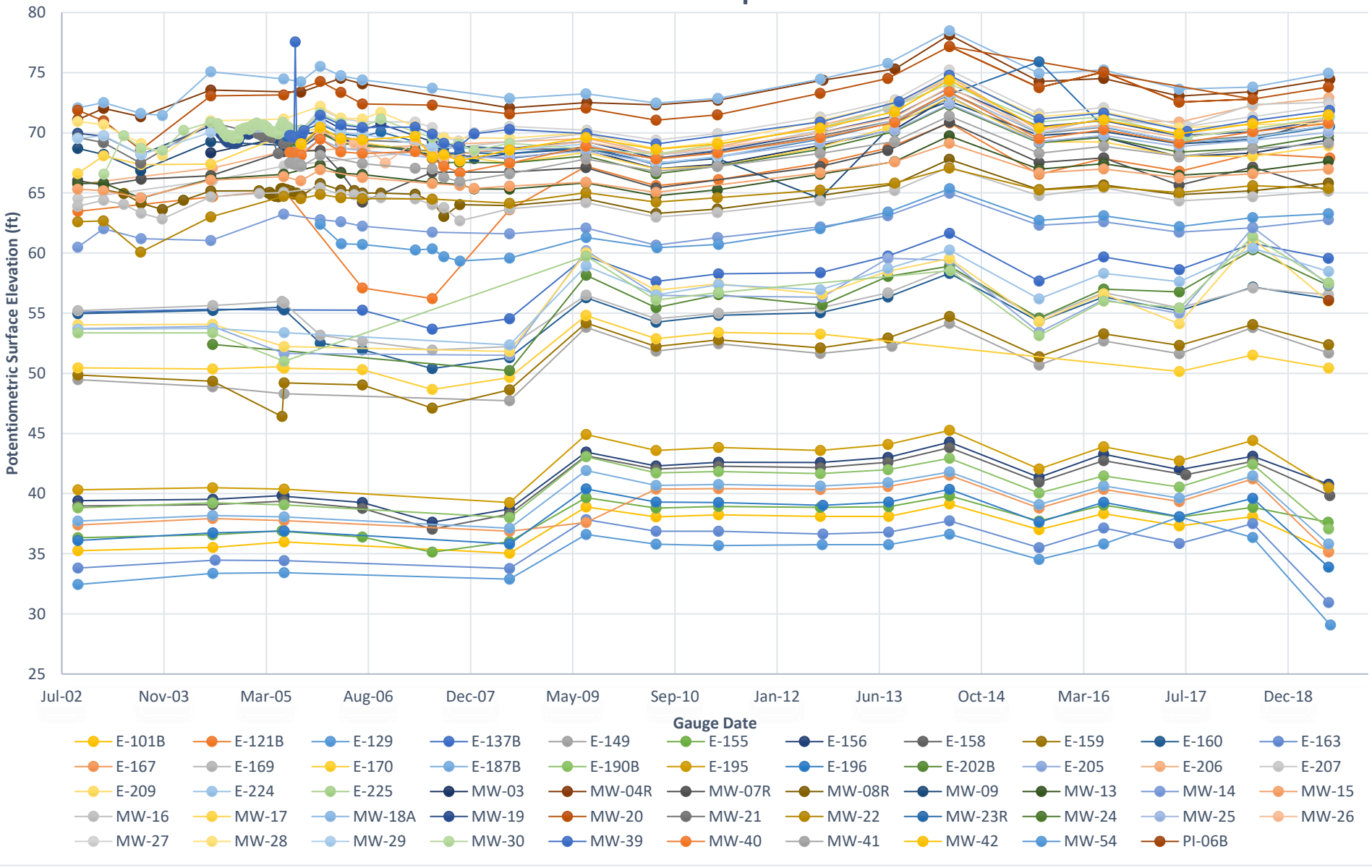
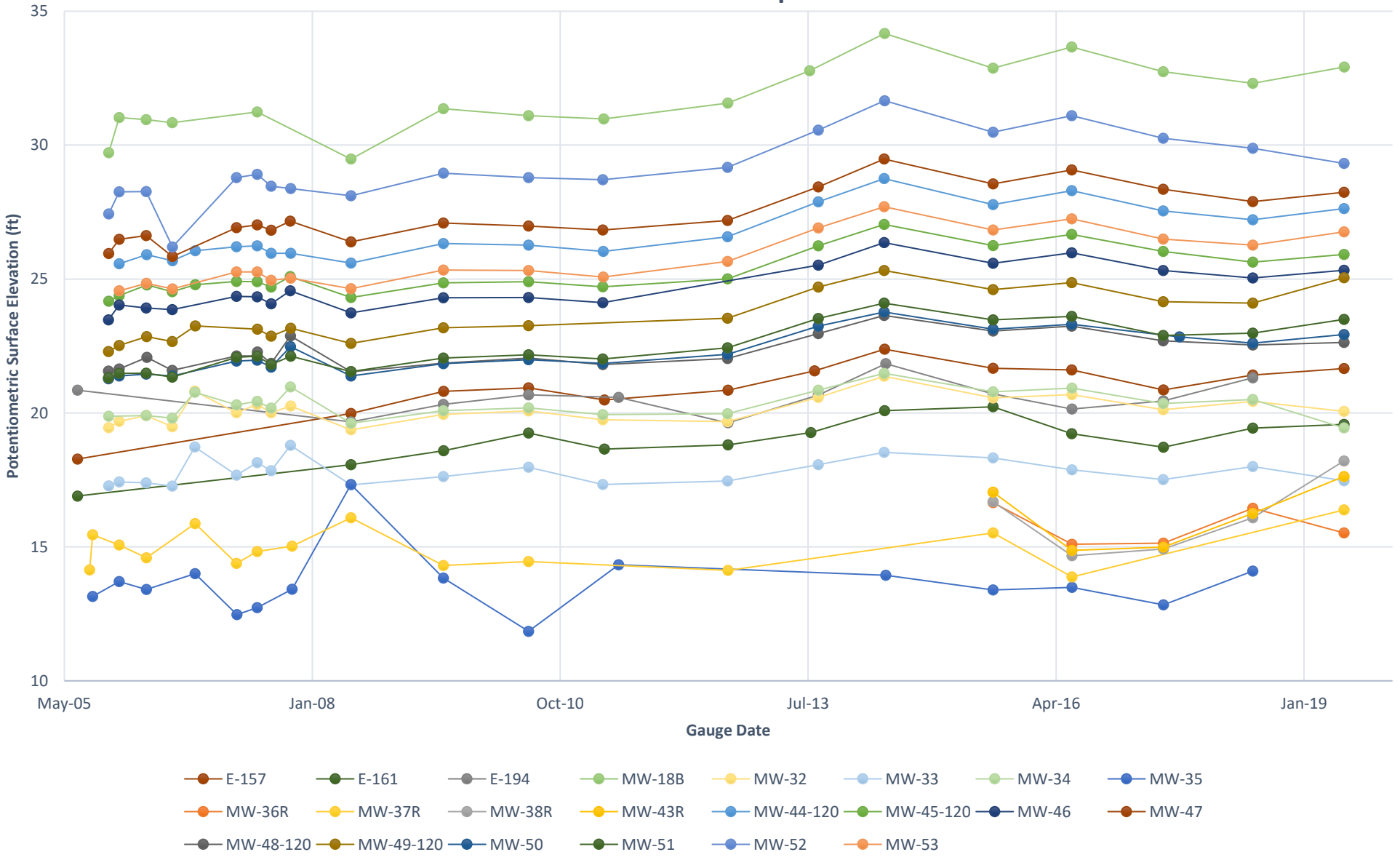


Figure 36
Hydrograph
Semiconfined Aquifer



Appendix A

Laboratory Data Review Checklist

Completed By:

J. Worley

Title:

Principal Chemist

Date:

12/16/19

CS Report Name:

2019 Groundwater Monitoring Report

Report Date:

8/1/19

Consultant Firm:

Cook Inlet Environmental

Laboratory Name:

SGS North America Inc.

Laboratory Report Number:

1194101

ADEC File Number:

2323.38.032

Hazard Identification Number:

465

1194101

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   (•) Yes ( ) No Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ( ) Yes (•) No Comments:

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   (•) Yes ( ) No Comments:

   b. Correct Analyses requested?

   (•) Yes ( ) No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   (•) Yes ( ) No Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   (•) Yes ( ) No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   (•) Yes ( ) No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

(•) Yes ( ) No Comments:

e. Data quality or usability affected?

Comments:

No

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

( ) Yes (•) No Comments:

c. Were all corrective actions documented?

(•) Yes ( ) No Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

None

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(•) Yes ( ) No Comments:

b. All applicable holding times met?

(•) Yes ( ) No Comments:

1194101

c. All soils reported on a dry weight basis?

○ Yes ○ No Comments:

N/A

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

◉ Yes ○ No Comments:

e. Data quality or usability affected?

○ Yes ◉ No Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

◉ Yes ○ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

v. Data quality or usability affected?

Comments:

N/A

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

○ Yes ○ No Comments:

N/A

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

N/A

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

○ Yes ○ No Comments:

N/A

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

○ Yes ○ No Comments:

N/A

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

iv. Data quality or usability affected?

Comments:

N/A

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

○ Yes ◉ No Comments:

N/A

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

○ Yes ○ No Comments:

N/A

iii. All results less than LOQ?

○ Yes ○ No Comments:

N/A

iv. If above LOQ, what samples are affected?

Comments:

N/A

v. Data quality or usability affected?

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

(•) Yes ( ) No Comments:

ii. Submitted blind to lab?

(•) Yes ( ) No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

(•) Yes ( ) No Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

N/A

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

( ) Yes ( ) No (•) Not Applicable

Disposable equipment used.

1194101

i. All results less than LOQ?

○ Yes ○ No Comments:

N/A

ii. If above LOQ, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected?

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No Comments:

Laboratory Report of Analysis

To: Cook Inlet Environmental
1545 Windward Dr.
Kenai, AK 996116607
(907)776-5373

Report Number: **1194101**

Client Project: **Agrium Groundwater**

Dear Jene Worley,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jillian at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Jillian Janssen Date
Project Manager
Jillian.Janssen@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Cook Inlet Environmental**
SGS Project: **1194101**
Project Name/Site: **Agrium Groundwater**
Project Contact: **Jene Worley**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indenmification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry (DW Chemistry (Provisionally Certified as of 6/20/19 for Turbidity by SM 2130B, and Copper by EPA 200.8) & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification, and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW-48	1194101001	07/17/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-20	1194101002	07/22/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-34	1194101003	07/17/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-46	1194101004	07/16/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-32	1194101005	07/17/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-03	1194101006	07/23/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-30	1194101007	07/23/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-17	1194101008	07/23/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-18A	1194101009	07/22/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-18B	1194101010	07/22/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-33	1194101011	07/17/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-14	1194101012	07/23/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-28	1194101013	07/23/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-04	1194101014	07/22/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-29	1194101015	07/23/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-47	1194101016	07/16/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-45	1194101017	07/16/2019	07/24/2019	Water (Surface, Eff., Ground)
MW-52	1194101018	07/18/2019	07/24/2019	Water (Surface, Eff., Ground)

Method	Method Description
EP200.8	Metals in Water by 200.8 ICP-MS

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Detectable Results Summary

Client Sample ID: **MW-48**			
Lab Sample ID: 1194101001	Parameter	Result	Units
Metals by ICP/MS	Arsenic	11.1	ug/L
Client Sample ID: **MW-46**			
Lab Sample ID: 1194101004	Parameter	Result	Units
Metals by ICP/MS	Arsenic	7.07	ug/L
Client Sample ID: **MW-32**			
Lab Sample ID: 1194101005	Parameter	Result	Units
Metals by ICP/MS	Arsenic	41.9	ug/L
Client Sample ID: **MW-33**			
Lab Sample ID: 1194101011	Parameter	Result	Units
Metals by ICP/MS	Arsenic	51.2	ug/L
Client Sample ID: **MW-47**			
Lab Sample ID: 1194101016	Parameter	Result	Units
Metals by ICP/MS	Arsenic	10.1	ug/L
Client Sample ID: **MW-45**			
Lab Sample ID: 1194101017	Parameter	Result	Units
Metals by ICP/MS	Arsenic	8.72	ug/L
Client Sample ID: **MW-52**			
Lab Sample ID: 1194101018	Parameter	Result	Units
Metals by ICP/MS	Arsenic	31.6	ug/L

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW-48**

Client Sample ID: **MW-48**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101001
Lab Project ID: 1194101

Collection Date: 07/17/19 11:20
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	11.1		5.00	1.50	ug/L	1		07/31/19 12:43

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 12:43
Container ID: 1194101001-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-20**

Client Sample ID: **MW-20**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101002
Lab Project ID: 1194101

Collection Date: 07/22/19 15:00
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 12:49

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 12:49
Container ID: 1194101002-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-34**

Client Sample ID: **MW-34**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101003
Lab Project ID: 1194101

Collection Date: 07/17/19 13:10
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 12:52

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 12:52
Container ID: 1194101003-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-46**

Client Sample ID: **MW-46**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101004
Lab Project ID: 1194101

Collection Date: 07/16/19 15:10
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	7.07		5.00	1.50	ug/L	1		07/31/19 12:55

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 12:55
Container ID: 1194101004-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-32**

Client Sample ID: **MW-32**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101005
Lab Project ID: 1194101

Collection Date: 07/17/19 12:36
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	41.9		5.00	1.50	ug/L	1		07/31/19 12:58

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 12:58
Container ID: 1194101005-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-03**

Client Sample ID: **MW-03**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101006
Lab Project ID: 1194101

Collection Date: 07/23/19 14:25
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 13:01

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:01
Container ID: 1194101006-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-30**

Client Sample ID: **MW-30**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101007
Lab Project ID: 1194101

Collection Date: 07/23/19 14:30
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 13:10

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:10
Container ID: 1194101007-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-17**

Client Sample ID: **MW-17**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101008
Lab Project ID: 1194101

Collection Date: 07/23/19 10:55
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 13:13

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:13
Container ID: 1194101008-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-18A**

Client Sample ID: **MW-18A**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101009
Lab Project ID: 1194101

Collection Date: 07/22/19 15:50
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 13:15

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:15
Container ID: 1194101009-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-18B**

Client Sample ID: **MW-18B**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101010
Lab Project ID: 1194101

Collection Date: 07/22/19 15:20
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 13:18

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:18
Container ID: 1194101010-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-33**

Client Sample ID: **MW-33**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101011
Lab Project ID: 1194101

Collection Date: 07/17/19 15:00
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	51.2		5.00	1.50	ug/L	1		07/31/19 13:21

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:21
Container ID: 1194101011-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-14**

Client Sample ID: **MW-14**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101012
Lab Project ID: 1194101

Collection Date: 07/23/19 12:20
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 13:27

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:27
Container ID: 1194101012-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-28**

Client Sample ID: **MW-28**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101013
Lab Project ID: 1194101

Collection Date: 07/23/19 13:00
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 13:30

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:30
Container ID: 1194101013-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-04**

Client Sample ID: **MW-04**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101014
Lab Project ID: 1194101

Collection Date: 07/22/19 10:15
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 13:33

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:33
Container ID: 1194101014-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-29**

Client Sample ID: **MW-29**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101015
Lab Project ID: 1194101

Collection Date: 07/23/19 13:30
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		07/31/19 13:36

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:36
Container ID: 1194101015-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-47**

Client Sample ID: **MW-47**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101016
Lab Project ID: 1194101

Collection Date: 07/16/19 14:00
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	10.1		5.00	1.50	ug/L	1		07/31/19 13:46

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:46
Container ID: 1194101016-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-45**

Client Sample ID: **MW-45**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101017
Lab Project ID: 1194101

Collection Date: 07/16/19 14:35
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	8.72		5.00	1.50	ug/L	1		07/31/19 13:49

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:49
Container ID: 1194101017-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Results of **MW-52**

Client Sample ID: **MW-52**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194101018
Lab Project ID: 1194101

Collection Date: 07/18/19 11:30
Received Date: 07/24/19 08:24
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	31.6		5.00	1.50	ug/L	1		07/31/19 13:52

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 07/31/19 13:52
Container ID: 1194101018-A

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 07/30/19 09:13
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 07/31/2019 4:49:59PM

Method Blank

Blank ID: MB for HBN 1797087 [MXX/32618]
Blank Lab ID: 1521961

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1194101001, 1194101002, 1194101003, 1194101004, 1194101005, 1194101006, 1194101007, 1194101008, 1194101009, 1194101010, 1194101011, 1194101012, 1194101013, 1194101014, 1194101015, 1194101016, 1194101017, 1194101018

Results by **EP200.8**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexlon P5
Analyst: DSH
Analytical Date/Time: 7/31/2019 12:34:12PM

Prep Batch: MXX32618
Prep Method: E200.2
Prep Date/Time: 7/30/2019 9:13:52AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1194101 [MXX32618]
Blank Spike Lab ID: 1521962
Date Analyzed: 07/31/2019 12:37

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194101001, 1194101002, 1194101003, 1194101004, 1194101005, 1194101006, 1194101007, 1194101008, 1194101009, 1194101010, 1194101011, 1194101012, 1194101013, 1194101014, 1194101015, 1194101016, 1194101017, 1194101018

Results by **EP200.8**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1000	1040	104	(85-115)

Batch Information

Analytical Batch: **MMS10579**
Analytical Method: **EP200.8**
Instrument: **Perkin Elmer Nexion P5**
Analyst: **DSH**

Prep Batch: **MXX32618**
Prep Method: **E200.2**
Prep Date/Time: **07/30/2019 09:13**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1521964
MS Sample ID: 1521965 MS
MSD Sample ID:

Analysis Date: 07/31/2019 12:43
Analysis Date: 07/31/2019 12:46
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194101001, 1194101002, 1194101003, 1194101004, 1194101005, 1194101006, 1194101007, 1194101008, 1194101009, 1194101010, 1194101011

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	11.1	1000	1060	104				70-130		

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DSH
Analytical Date/Time: 7/31/2019 12:46:08PM

Prep Batch: MXX32618
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 7/30/2019 9:13:52AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 07/31/2019 4:50:05PM

Matrix Spike Summary

Original Sample ID: 1521966
MS Sample ID: 1521967 MS
MSD Sample ID:

Analysis Date: 07/31/2019 13:21
Analysis Date: 07/31/2019 13:24
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194101002, 1194101003, 1194101004, 1194101005, 1194101006, 1194101007, 1194101008, 1194101009, 1194101010, 1194101011, 1194101012, 1194101013, 1194101014, 1194101015, 1194101016, 1194101017, 1194101018

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	51.2	1000	1100	104				70-130		

Batch Information

Analytical Batch: MMS10579
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DSH
Analytical Date/Time: 7/31/2019 1:24:56PM

Prep Batch: MXX32618
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 7/30/2019 9:13:52AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 07/31/2019 4:50:05PM

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1194101

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virgina	Kentucky

www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 1

CLIENT: Cook Inlet Environmental, Inc.

CONTACT: J. Worley — PHONE NO: 907-283-5373

PROJECT NAME: Agrium Groundwater — PROJECT/ PWSID/ PERMIT#:

REPORTS TO: J. Worley — E-MAIL: jene@cienv.com

INVOICE TO: CIENV — QUOTE #: — P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: HNO3	Preservative: EPA 200.8 Arsenic	REMARKS/ LOC ID
1A	MW-48	7-17-19	1120	H_2O	1	G	X		
2A	MW-20	7-22-19	1500	H_2O	1	G	X		
3A	MW-34	7-17-19	1310	H_2O	1	G	X		
4A	MW-46	7-16-19	1510	H_2O	1	G	X		
5A	MW-32	7-17-19	1236	H_2O	1	G	X		
6A	MW-03	7-23-19	1425	H_2O	1	G	X		
7A	MW-30	7-23-19	1430	H_2O	1	G	X		
8A	MW-17	7-23-19	1055	H_2O	1	G	X		
9A	MW-18A	7-22-19	1550	H_2O	1	G	X		
10A	MW-18B	7-22-19	1520	H_2O	1	G	X		

Section 5

	Date	Time	
Relinquished By: (1) Hunter Havenberg	07-23-19	1630	Received By:
Relinquished By: (2)			Received By:
Relinquished By: (3)			Received By:
Relinquished By: (4)	7-24-19	8:24	Received For Laboratory By:

Section 4

DOD Project? Yes (No)

Data Deliverable Requirements: Standard EDD

Cooler ID:

Requested Turnaround Time and/or Special Instructions: Standard

Temp Blank °C: 4.7 D52 or Ambient [ ] (See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT (See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1194101

Locations Nationwide
Alaska Maryland
New Jersey New York
North Carolina Indiana
West Virginia Kentucky
www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 1

CLIENT: Cook Inlet Environmental, Inc
CONTACT: J. Worley PHONE NO: 907-258-3373
PROJECT NAME: Agrium Groundwater PROJECT/ PWSID/ PERMIT#:
REPORTS TO: J. Worley E-MAIL: jene@cienv.com
INVOICE TO: Cienv QUOTE #:
P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: HNO3	Preservative: EPA 200.8 Antimony	REMARKS/ LOC ID
11A	MW-33	07-17-19	1500	H_2O	1	G	X		
12A	MW-14	07-23-19	1220	H_2O	1	G	X		
13A	MW-28	07-23-19	1300	H_2O	1	G	X		
14A	MW-04	07-22-19	1015	H_2O	1	G	X		
15A	MW-20	07-23-19	1330	H_2O	1	G	X		
16A	MW-47	07-16-19	1400	H_2O	1	G	X		
17A	MW-45	07-16-19	1435	H_2O	1	G	X		
18A	MW-52	07-18-19	1130	H_2O	1	G	X		

Section 5

	Date	Time	
Relinquished By: (1) Hunter Holmberg	07-23-19	1630	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 7.24.19	Time 8:24	Received For Laboratory By: MA

Section 4

DOD Project? Yes No

Cooler ID:

Data Deliverable Requirements: Standard EDD

Requested Turnaround Time and/or Special Instructions: Standard.

Temp Blank °C: DS2 or Ambient [ ] (See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT (See attached Sample Receipt Form)

808 - 1050 2844 **Air Freight** **808 ENA 1050 2844**

Shipper's Name and Address
COOK INLET ENVIRONMENTAL 40312
612 LAUREL DR.
KENAI , AK 99611
907, 2835373

Consignee: SGS ENVIRONMENTAL 50012
200 W POTTER DR
ANCHORAGE, AK 99518
562, 2343

RAVN AIR
4700 OLD INTERNATIONAL AIRPORT ROAD
ANCHORAGE AK. 99502

It is agreed that the goods described herein are accepted in good order and undamaged condition (except as noted) for carriage SUBJECT TO THE "TERMS OF CONTRACT". The Shippers attention is drawn to the "TERMS OF CONTRACT LIMIT OF LIABILITY". The maximum liability by declaring a value of the goods and paying a supplemental charge of $0.75 per $100.00 up to a maximum of $5,000.00 declared value.

Accounting Information
GEN - GENERAL FREIGHT

Origin	ENA	Currency	USD
Destination	ANC	Charge Code	PX
Handling Information DEPTS 841 ARVS 7:00P ///CHILL CHILL CHILL		Declared Value for Carriage	0

1194101

Pieces	Gross Weight	Nature of Goods	Chargeable Weight	Rate/Charge	Total	Length	Width	Height	Dim Weight
1		GEN // LAB SAMPLES				18	12	10	12

1	20	20	12

Fee	Prepaid	Collect
Weight Charge	29.18	
Valuation Charge	0.00	
Tax	1.82	
Total Other Charges Due Agent	0.00	
Total Other Charges Due Carrier	0.00	
Total	31.00	
Signature of Issuing Carrier or its Agent	WB Date	WB Time
GREGORY FITE	23-JUL-19	1655

Other Charges			
FSC Fee	0.00	SSC Fee	0.00
DOC Fees	0.00	DG Fee	0.00
OTH Fees	0.00	P/U Fee	0.00
DEL Fees	0.00	TSC Fees	0.00

The shipper certifies that the particulars on the face hereof are correct, and that the shipment does not contain dangerous goods, and that all ITEMS ARE ACCEPTED AT SHIPPER'S RISK.

hunter hollenberg lis# 7156147

(Shipper's printed name and signature)

The consignee certifies that the shipment is received in good order except where noted below.

(Consignee's printed name and signature)

CARRIAGE SUBJECT TO "TERMS OF CONTRACT" found at https://www.flyravn.com/cargo-services/cargo-contract-carriage

Alert Expeditors Inc. #39

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 7-24-19

From Cook Inlet Envi

To SGS Labs Anc

Collect ☐	Prepay ☐ Account ☐	Advance Charges
Job # ENV	PO# Run 1050-28	

Samples

1194101

Shipped Signature

Received By:

Total Charge

e-Sample Receipt Form

SGS Workorder #: **1194101**

1 1 9 4 1 0 1

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	N/A	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 4.7 °C Therm. ID: D52
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
	Yes	***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	No	**Sample 5A is not preserved. ~~Left unpreserved.~~** Sample 5A is preserved with 2mL of HNO3 from LW09-0465-16-08.
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1194101001-A	HNO3 to pH < 2	OK			
1194101002-A	HNO3 to pH < 2	OK			
1194101003-A	HNO3 to pH < 2	OK			
1194101004-A	HNO3 to pH < 2	OK			
1194101005-A	HNO3 to pH < 2	PA			
1194101006-A	HNO3 to pH < 2	OK			
1194101007-A	HNO3 to pH < 2	OK			
1194101008-A	HNO3 to pH < 2	OK			
1194101009-A	HNO3 to pH < 2	OK			
1194101010-A	HNO3 to pH < 2	OK			
1194101011-A	HNO3 to pH < 2	OK			
1194101012-A	HNO3 to pH < 2	OK			
1194101013-A	HNO3 to pH < 2	OK			
1194101014-A	HNO3 to pH < 2	OK			
1194101015-A	HNO3 to pH < 2	OK			
1194101016-A	HNO3 to pH < 2	OK			
1194101017-A	HNO3 to pH < 2	OK			
1194101018-A	HNO3 to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Laboratory Data Review Checklist

Completed By:

Jene' Worley

Title:

Principal Chemist

Date:

11/30/19

CS Report Name:

2019 Groundwater Monitoring Report

Report Date:

8/8/19

Consultant Firm:

Cook Inlet Environmental

Laboratory Name:

SGS North America Inc.

Laboratory Report Number:

1194252

ADEC File Number:

2323.38.032

Hazard Identification Number:

465

1194252

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ○ Yes ◉ No Comments:

ADEC has no method of approving laboratories who analyze nitrogen in groundwater.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ○ Yes ◉ No Comments:

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   ◉ Yes ○ No Comments:

   b. Correct Analyses requested?

   ◉ Yes ○ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ◉ Yes ○ No Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ◉ Yes ○ No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ◉ Yes ○ No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

○ Yes ◉ No Comments:

e. Data quality or usability affected?

Comments:

No.

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

○ Yes ◉ No Comments:

c. Were all corrective actions documented?

◉ Yes ○ No Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

N/A

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

◉ Yes ○ No Comments:

b. All applicable holding times met?

◉ Yes ○ No Comments:

1194252

c. All soils reported on a dry weight basis?

○ Yes ○ No Comments:

N/A

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

◉ Yes ○ No Comments:

e. Data quality or usability affected?

○ Yes ◉ No Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

◉ Yes ○ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

v. Data quality or usability affected?

Comments:

N/A

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

○ Yes ○ No Comments:

N/A

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

N/A

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

○ Yes ○ No Comments:

N/A

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

○ Yes ○ No Comments:

N/A

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

iv. Data quality or usability affected?

Comments:

N/A

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

○ Yes ◉ No Comments:

N/A

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

○ Yes ○ No Comments:

N/A

iii. All results less than LOQ?

○ Yes ○ No Comments:

N/A

iv. If above LOQ, what samples are affected?

Comments:

N/A

v. Data quality or usability affected?

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

(•) Yes ( ) No Comments:

ii. Submitted blind to lab?

(•) Yes ( ) No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

(•) Yes ( ) No Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

N/A

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

( ) Yes ( ) No (•) Not Applicable

Disposable equipment used.

i. All results less than LOQ?

○ Yes ○ No Comments:

N/A

ii. If above LOQ, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected?

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No Comments:

Laboratory Report of Analysis

To: Cook Inlet Environmental
1545 Windward Dr.
Kenai, AK 996116607
(907)776-5373

Report Number: **1194252**

Client Project: **Agrium Groundwater**

Dear Jene Worley,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jillian at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Jillian Janssen Date
Project Manager
Jillian.Janssen@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Cook Inlet Environmental**
SGS Project: **1194252**
Project Name/Site: **Agrium Groundwater**
Project Contact: **Jene Worley**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indenmification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification, and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW-42	1194252001	07/25/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-15	1194252002	07/25/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-9R	1194252003	07/25/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-19	1194252004	07/24/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-23	1194252005	07/24/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-13	1194252006	07/24/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-8R	1194252007	07/24/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-16	1194252008	07/24/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-44	1194252009	07/26/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-21	1194252010	07/26/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-50	1194252011	07/29/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-51	1194252012	07/29/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-53	1194252013	07/29/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-49	1194252014	07/29/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-40	1194252015	07/30/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-26	1194252016	07/30/2019	07/31/2019	Water (Surface, Eff., Ground)
MW-25	1194252017	07/30/2019	07/31/2019	Water (Surface, Eff., Ground)

Method	Method Description
EP200.8	Metals in Water by 200.8 ICP-MS

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Detectable Results Summary

Client Sample ID: **MW-23**			
Lab Sample ID: 1194252005	Parameter	Result	Units
Metals by ICP/MS	Arsenic	31.5	ug/L
Client Sample ID: **MW-8R**			
Lab Sample ID: 1194252007	Parameter	Result	Units
Metals by ICP/MS	Arsenic	21.6	ug/L
Client Sample ID: **MW-16**			
Lab Sample ID: 1194252008	Parameter	Result	Units
Metals by ICP/MS	Arsenic	5.18	ug/L
Client Sample ID: **MW-44**			
Lab Sample ID: 1194252009	Parameter	Result	Units
Metals by ICP/MS	Arsenic	10.5	ug/L
Client Sample ID: **MW-50**			
Lab Sample ID: 1194252011	Parameter	Result	Units
Metals by ICP/MS	Arsenic	24.0	ug/L
Client Sample ID: **MW-51**			
Lab Sample ID: 1194252012	Parameter	Result	Units
Metals by ICP/MS	Arsenic	5.12	ug/L
Client Sample ID: **MW-53**			
Lab Sample ID: 1194252013	Parameter	Result	Units
Metals by ICP/MS	Arsenic	14.2	ug/L
Client Sample ID: **MW-49**			
Lab Sample ID: 1194252014	Parameter	Result	Units
Metals by ICP/MS	Arsenic	46.6	ug/L
Client Sample ID: **MW-40**			
Lab Sample ID: 1194252015	Parameter	Result	Units
Metals by ICP/MS	Arsenic	13.0	ug/L
Client Sample ID: **MW-25**			
Lab Sample ID: 1194252017	Parameter	Result	Units
Metals by ICP/MS	Arsenic	15.0	ug/L

Results of **MW-42**

Client Sample ID: **MW-42**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252001
Lab Project ID: 1194252

Collection Date: 07/25/19 14:20
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/06/19 13:38

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 13:38
Container ID: 1194252001-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-15**

Client Sample ID: **MW-15**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252002
Lab Project ID: 1194252

Collection Date: 07/25/19 13:15
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/06/19 13:44

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 13:44
Container ID: 1194252002-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-9R**

Client Sample ID: **MW-9R**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252003
Lab Project ID: 1194252

Collection Date: 07/25/19 10:30
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/06/19 14:02

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 14:02
Container ID: 1194252003-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-19**

Client Sample ID: **MW-19**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252004
Lab Project ID: 1194252

Collection Date: 07/24/19 15:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/06/19 14:05

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 14:05
Container ID: 1194252004-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-23**

Client Sample ID: **MW-23**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252005
Lab Project ID: 1194252

Collection Date: 07/24/19 13:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	31.5		5.00	1.50	ug/L	1		08/06/19 14:08

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 14:08
Container ID: 1194252005-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-13**

Client Sample ID: **MW-13**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252006
Lab Project ID: 1194252

Collection Date: 07/24/19 10:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/06/19 14:11

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 14:11
Container ID: 1194252006-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-8R**

Client Sample ID: **MW-8R**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252007
Lab Project ID: 1194252

Collection Date: 07/24/19 13:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	21.6		5.00	1.50	ug/L	1		08/06/19 14:14

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 14:14
Container ID: 1194252007-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-16**

Client Sample ID: **MW-16**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252008
Lab Project ID: 1194252

Collection Date: 07/24/19 12:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.18		5.00	1.50	ug/L	1		08/06/19 14:17

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 14:17
Container ID: 1194252008-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-44**

Client Sample ID: **MW-44**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252009
Lab Project ID: 1194252

Collection Date: 07/26/19 15:30
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	10.5		5.00	1.50	ug/L	1		08/06/19 14:20

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 14:20
Container ID: 1194252009-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-21**

Client Sample ID: **MW-21**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252010
Lab Project ID: 1194252

Collection Date: 07/26/19 15:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/06/19 14:29

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 14:29
Container ID: 1194252010-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-50**

Client Sample ID: **MW-50**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252011
Lab Project ID: 1194252

Collection Date: 07/29/19 16:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	24.0		5.00	1.50	ug/L	1		08/06/19 17:11

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 17:11
Container ID: 1194252011-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-51**

Client Sample ID: **MW-51**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252012
Lab Project ID: 1194252

Collection Date: 07/29/19 16:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.12		5.00	1.50	ug/L	1		08/06/19 17:17

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 17:17
Container ID: 1194252012-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-53**

Client Sample ID: **MW-53**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252013
Lab Project ID: 1194252

Collection Date: 07/29/19 12:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	14.2		5.00	1.50	ug/L	1		08/06/19 17:20

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 17:20
Container ID: 1194252013-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-49**

Client Sample ID: **MW-49**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252014
Lab Project ID: 1194252

Collection Date: 07/29/19 13:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	46.6		5.00	1.50	ug/L	1		08/06/19 17:23

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 17:23
Container ID: 1194252014-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-40**

Client Sample ID: **MW-40**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252015
Lab Project ID: 1194252

Collection Date: 07/30/19 13:50
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	13.0		5.00	1.50	ug/L	1		08/06/19 17:26

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 17:26
Container ID: 1194252015-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-26**

Client Sample ID: **MW-26**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252016
Lab Project ID: 1194252

Collection Date: 07/30/19 14:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/06/19 17:29

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 17:29
Container ID: 1194252016-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Results of **MW-25**

Client Sample ID: **MW-25**
Client Project ID: **Agrium Groundwater**
Lab Sample ID: 1194252017
Lab Project ID: 1194252

Collection Date: 07/30/19 13:00
Received Date: 07/31/19 10:00
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	15.0		5.00	1.50	ug/L	1		08/06/19 17:32

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/06/19 17:32
Container ID: 1194252017-A

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 08/05/19 10:22
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/08/2019 9:03:34AM

Method Blank

Blank ID: MB for HBN 1797388 [MXX/32634]
Blank Lab ID: 1523183

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1194252001, 1194252002, 1194252003, 1194252004, 1194252005, 1194252006, 1194252007, 1194252008, 1194252009, 1194252010, 1194252011, 1194252012, 1194252013, 1194252014, 1194252015, 1194252016, 1194252017

Results by **EP200.8**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexlon P5
Analyst: DSH
Analytical Date/Time: 8/6/2019 1:53:49PM

Prep Batch: MXX32634
Prep Method: E200.2
Prep Date/Time: 8/5/2019 10:22:41AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1194252 [MXX32634]
Blank Spike Lab ID: 1523184
Date Analyzed: 08/06/2019 13:56

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194252001, 1194252002, 1194252003, 1194252004, 1194252005, 1194252006, 1194252007, 1194252008, 1194252009, 1194252010, 1194252011, 1194252012, 1194252013, 1194252014, 1194252015, 1194252016, 1194252017

Results by **EP200.8**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1000	1020	102	(85-115)

Batch Information

Analytical Batch: **MMS10583**
Analytical Method: **EP200.8**
Instrument: **Perkin Elmer Nexion P5**
Analyst: **DSH**

Prep Batch: **MXX32634**
Prep Method: **E200.2**
Prep Date/Time: **08/05/2019 10:22**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1523195
MS Sample ID: 1523196 MS
MSD Sample ID:

Analysis Date: 08/06/2019 13:38
Analysis Date: 08/06/2019 13:41
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194252001, 1194252002, 1194252003, 1194252004, 1194252005, 1194252006, 1194252007, 1194252008, 1194252009, 1194252010, 1194252011

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	2.50U	1000	1000	100				70-130		

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DSH
Analytical Date/Time: 8/6/2019 1:41:52PM

Prep Batch: MXX32634
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/5/2019 10:22:41AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 08/08/2019 9:03:39AM

Matrix Spike Summary

Original Sample ID: 1523197
MS Sample ID: 1523198 MS
MSD Sample ID:

Analysis Date: 08/06/2019 17:11
Analysis Date: 08/06/2019 17:14
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194252002, 1194252003, 1194252004, 1194252005, 1194252006, 1194252007, 1194252008, 1194252009, 1194252010, 1194252011, 1194252012, 1194252013, 1194252014, 1194252015, 1194252016, 1194252017

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	24.0	1000	1050	103				70-130		

Batch Information

Analytical Batch: MMS10583
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DSH
Analytical Date/Time: 8/6/2019 5:14:14PM

Prep Batch: MXX32634
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/5/2019 10:22:41AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 08/08/2019 9:03:39AM

SGS **1194252**

SGS North America Inc.
CHAIN OF CUSTODY RECORD

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virgina	Kentucky

www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page 1 of 2

Section 1

CLIENT: Cook Inlet Environmental Inc.

CONTACT: Jene Worley PHONE NO: 9072521810

PROJECT NAME: Agnium groundwater PROJECT/ PWSID/ PERMIT#:

REPORTS TO: Jene Worley E-MAIL: jene@cienv.com

INVOICE TO: Cienv QUOTE #: P.O. #:

Section 3

Preservative: HNO3; Arsenic EPA 200.8

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incre-mental Soils	HNO3	Arsenic EPA 200.8	REMARKS/ LOC ID
	~~MW - 44~~	~~07/24/19~~	~~1500~~	~~W~~	1	G		x	
1 A	MW - 42	07/25/19	1420	W	1	G		x	
2 A	MW - 15	07/25/19	1315	W	1	G		x	
3 A	MW - 9R	07/25/19	1030	W	1	G		x	
4 A	MW - 19	07/24/19	1500	W	1	G		x	
5 A	MW - 23	07/24/19	1300	W	1	G		x	
6 A	MW - 13	07/24/19	1000	W	1	G		x	
7 A	MW - 8R	07/24/19	1300	W	1	G		x	
8 A	MW - 16	07/24/19	1200	W	1	G		x	
	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~		~~[illegible]~~	

Section 5

	Date	Time	Received By:
Relinquished By: (1) Hunter Tidlenberg	07/25/19	1600	
Relinquished By: (2)			
Relinquished By: (3)			
Relinquished By: (4)	7.31.19	1000	Received For Laboratory By: BT

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements: Standard Edd

Requested Turnaround Time and/or Special Instructions: Standard Profile: 334055 JKJ

Temp Blank °C: 5.3°C D57 or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) INTACT BROKEN ~~ABSENT~~

(See attached Sample Receipt Form)

SGS 1194252

SGS North America Inc.
CHAIN OF CUSTODY RECORD

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virgina	Kentucky

www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 1

CLIENT: Cook Inlet Environmental

CONTACT: Jene Worley PHONE NO: 9072521810

PROJECT NAME: Agrium Groundwater PROJECT/ PWSID/ PERMIT#:

REPORTS TO: Jene Worley E-MAIL: jene@cienv.com

INVOICE TO: CIENV QUOTE #: P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: HNO3	Preservative: Arsenic EPA 200.8	REMARKS/ LOC ID
(9) A	MW-HH	07/26/19	1530	W	1	G	X		
(10) A	MW-21	07/26/19	1500	W	1	G	X		
(11) A	MW-50	7/30/19	1400	W	1	G	X		
(12) A	MW-51	7/30/19	1600	W	1	G	X		
(13) A	MW-53	7/30/19	1200	W	1	G	X		
(14) A	MW-49	7/29/19	1300	W	1	G	X		
(15) A	MW-40	7/30/19	1350	W	1	G	X		
(16) A	MW-216	7/30/19	1400	W	1	G	X		
(17) A	MW-45	7/30/19	1300	W	1	G	X		

Section 5

	Date	Time	
Relinquished By: (1) Hunter Florence	07/31/19	1400	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 7.31.19	Time 1000	Received For Laboratory By:

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements: Standard EDD

Requested Turnaround Time and/or Special Instructions: Standard

Temp Blank °C: 5.3°C DS7 JAW or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) INTACT BROKEN (ABSENT)

(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

Shipper's Name and Address
COOK INLET ENVIRONMENTAL 40312
612 LAUREL DR.
KENAI , AK 99611
907, 2835373

Consignee: SGS ENVIRONMENTAL 50012
200 W POTTER DR
ANCHORAGE, AK 99518
562, 2343

RAVN AIR
4700 OLD INTERNATIONAL AIRPORT ROAD
ANCHORAGE AK. 99502

It is agreed that the goods described herein are accepted in good order and undamaged condition (except as noted) for carriage SUBJECT TO THE "TERMS OF CONTRACT". The Shippers attention is drawn to the "TERMS OF CONTRACT LIMIT OF LIABILITY". The maximum liability by declaring a value of the goods and paying a supplemental charge of $0.75 per $100.00 up to a maximum of $5,000.00 declared value.

Accounting Information
GEN - GENERAL FREIGHT

Origin	ENA	Currency	USD
Destination	ANC	Charge Code	PX
Handling Information		Declared Value for Carriage	0

Pieces	Gross Weight	Nature of Goods	Chargeable Weight	Rate/Charge	Total	Length	Width	Height	Dim Weight
1		GEN // WATER SAMPLES				15	10	7	6
1	23		23						6

Fee	Prepaid	Collect
Weight Charge	29.18	
Valuation Charge	0.00	
Tax	1.82	
Total Other Charges Due Agent	0.00	
Total Other Charges Due Carrier	0.00	
Total	31.00	
Signature of Issuing Carrier or its Agent	WB Date	WB Time
GREGORY FITE	30-JUL-19	1639

Other Charges			
FSC Fee	0.00	SSC Fee	0.00
DOC Fees	0.00	DG Fee	0.00
OTH Fees	0.00	P/U Fee	0.00
DEL Fees	0.00	TSC Fees	0.00

The shipper certifies that the particulars on the face hereof are correct, and that the shipment does not contain dangerous goods, and that all ITEMS ARE ACCEPTED AT SHIPPER'S RISK.

HUNTER HOLLENBERG
(Shipper's printed name and signature)

The consignee certifies that the shipment is received in good order except where noted below.

(Consignee's printed name and signature)

CARRIAGE SUBJECT TO "TERMS OF CONTRACT" found at https://www.flyravn.com/cargo-services/cargo-contract-carriage

Alert Expeditors Inc. **#397026**

Citywide Delivery • 440-3351
1 Flamingo Drive • Anchorage, Alaska 99502

7-31-19 Cook Inlet Enviro

SGS Labs

ct ☐	Prepay ☐ Account ☐	Advance Charges ☐
# EVH	PO# Rcvn 1050-3824	

Samples

ped Signature

Total Charge

eived By: _____

e-Sample Receipt Form

SGS Workorder #: 1194252

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?		
**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 5.3 °C Therm. ID: D57
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
		***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	Yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

One sample received out of PH range and in house preservation was attempted. Sample pH remained above the recommended range (sample MW-23, 5A)

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1194252001-A	HNO3 to pH < 2	OK			
1194252002-A	HNO3 to pH < 2	OK			
1194252003-A	HNO3 to pH < 2	OK			
1194252004-A	HNO3 to pH < 2	OK			
1194252005-A	HNO3 to pH < 2	PH			
1194252006-A	HNO3 to pH < 2	OK			
1194252007-A	HNO3 to pH < 2	OK			
1194252008-A	HNO3 to pH < 2	OK			
1194252009-A	HNO3 to pH < 2	OK			
1194252010-A	HNO3 to pH < 2	OK			
1194252011-A	HNO3 to pH < 2	OK			
1194252012-A	HNO3 to pH < 2	OK			
1194252013-A	HNO3 to pH < 2	OK			
1194252014-A	HNO3 to pH < 2	OK			
1194252015-A	HNO3 to pH < 2	OK			
1194252016-A	HNO3 to pH < 2	OK			
1194252017-A	HNO3 to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Laboratory Data Review Checklist

Completed By:

Jene' Worley

Title:

Principal Chemist

Date:

11/30/19

CS Report Name:

2019 Groundwater Monitoring Report

Report Date:

8/16/19

Consultant Firm:

Cook Inlet Environmental

Laboratory Name:

SGS North America Inc.

Laboratory Report Number:

1194445

ADEC File Number:

2323.38.032

Hazard Identification Number:

465

1194445

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ○ Yes ◉ No Comments:

ADEC has no method of approving laboratories who analyze nitrogen in groundwater.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ○ Yes ◉ No Comments:

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   ◉ Yes ○ No Comments:

   b. Correct Analyses requested?

   ◉ Yes ○ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ◉ Yes ○ No Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ◉ Yes ○ No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ◉ Yes ○ No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

○ Yes ◉ No Comments:

e. Data quality or usability affected?

Comments:

No.

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

○ Yes ◉ No Comments:

c. Were all corrective actions documented?

◉ Yes ○ No Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

N/A

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

◉ Yes ○ No Comments:

b. All applicable holding times met?

◉ Yes ○ No Comments:

1194445

c. All soils reported on a dry weight basis?

○ Yes ○ No Comments:

N/A

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

◉ Yes ○ No Comments:

e. Data quality or usability affected?

○ Yes ◉ No Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

◉ Yes ○ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

v. Data quality or usability affected?

Comments:

N/A

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

○ Yes ○ No Comments:

N/A

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

N/A

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

○ Yes ○ No Comments:

N/A

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

○ Yes ○ No Comments:

N/A

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

iv. Data quality or usability affected?

Comments:

N/A

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

○ Yes ◉ No Comments:

N/A

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

○ Yes ○ No Comments:

N/A

iii. All results less than LOQ?

○ Yes ○ No Comments:

N/A

iv. If above LOQ, what samples are affected?

Comments:

N/A

v. Data quality or usability affected?

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

(•) Yes ( ) No Comments:

ii. Submitted blind to lab?

(•) Yes ( ) No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

(•) Yes ( ) No Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

N/A

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

( ) Yes ( ) No (•) Not Applicable

Disposable equipment used.

i. All results less than LOQ?

○ Yes ○ No Comments:

N/A

ii. If above LOQ, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected?

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No Comments:

Laboratory Report of Analysis

To: Cook Inlet Environmental
1545 Windward Dr.
Kenai, AK 996116607
(907)776-5373

Report Number: **1194445**

Client Project: **Groundwater**

Dear Jene Worley,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jillian at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Jillian Janssen Date
Project Manager
Jillian.Janssen@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Cook Inlet Environmental**
SGS Project: **1194445**
Project Name/Site: **Groundwater**
Project Contact: **Jene Worley**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indenmification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification, and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW22	1194445001	07/31/2019	08/08/2019	Water (Surface, Eff., Ground)
MW27	1194445002	07/31/2019	08/08/2019	Water (Surface, Eff., Ground)
MW41	1194445003	07/31/2019	08/08/2019	Water (Surface, Eff., Ground)
MW39	1194445004	07/31/2019	08/08/2019	Water (Surface, Eff., Ground)
E-169	1194445005	08/05/2019	08/08/2019	Water (Surface, Eff., Ground)
E-155	1194445006	08/02/2019	08/08/2019	Water (Surface, Eff., Ground)
E-206	1194445007	08/01/2019	08/08/2019	Water (Surface, Eff., Ground)
E-160	1194445008	08/01/2019	08/08/2019	Water (Surface, Eff., Ground)
E-156	1194445009	08/01/2019	08/08/2019	Water (Surface, Eff., Ground)
MW-22 Dup	1194445010	07/31/2019	08/08/2019	Water (Surface, Eff., Ground)
MW-40 Dup	1194445011	07/31/2019	08/08/2019	Water (Surface, Eff., Ground)
MW-26 Dup	1194445012	07/31/2019	08/08/2019	Water (Surface, Eff., Ground)
MW-39 Dup	1194445013	07/31/2019	08/08/2019	Water (Surface, Eff., Ground)

Method	Method Description
EP200.8	Metals in Water by 200.8 ICP-MS

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Detectable Results Summary

Client Sample ID: **MW41**
Lab Sample ID: 1194445003

Metals by ICP/MS	Parameter	Result	Units
	Arsenic	27.2	ug/L

Client Sample ID: **E-155**
Lab Sample ID: 1194445006

Metals by ICP/MS	Parameter	Result	Units
	Arsenic	15.3	ug/L

Client Sample ID: **E-160**
Lab Sample ID: 1194445008

Metals by ICP/MS	Parameter	Result	Units
	Arsenic	26.5	ug/L

Client Sample ID: **E-156**
Lab Sample ID: 1194445009

Metals by ICP/MS	Parameter	Result	Units
	Arsenic	16.7	ug/L

Client Sample ID: **MW-40 Dup**
Lab Sample ID: 1194445011

Metals by ICP/MS	Parameter	Result	Units
	Arsenic	12.7	ug/L

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW22**

Client Sample ID: **MW22**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445001
Lab Project ID: 1194445

Collection Date: 07/31/19 13:00
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/14/19 18:38

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 18:38
Container ID: 1194445001-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **MW27**

Client Sample ID: **MW27**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445002
Lab Project ID: 1194445

Collection Date: 07/31/19 10:30
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/14/19 18:41

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 18:41
Container ID: 1194445002-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **MW41**

Client Sample ID: **MW41**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445003
Lab Project ID: 1194445

Collection Date: 07/31/19 11:15
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	27.2		5.00	1.50	ug/L	1		08/14/19 18:50

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 18:50
Container ID: 1194445003-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **MW39**

Client Sample ID: **MW39**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445004
Lab Project ID: 1194445

Collection Date: 07/31/19 12:00
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/14/19 18:53

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 18:53
Container ID: 1194445004-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **E-169**

Client Sample ID: **E-169**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445005
Lab Project ID: 1194445

Collection Date: 08/05/19 15:30
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/14/19 18:56

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 18:56
Container ID: 1194445005-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **E-155**

Client Sample ID: **E-155**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445006
Lab Project ID: 1194445

Collection Date: 08/02/19 13:00
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	15.3		5.00	1.50	ug/L	1		08/14/19 18:59

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 18:59
Container ID: 1194445006-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **E-206**

Client Sample ID: **E-206**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445007
Lab Project ID: 1194445

Collection Date: 08/01/19 14:00
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/14/19 19:02

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 19:02
Container ID: 1194445007-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **E-160**

Client Sample ID: **E-160**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445008
Lab Project ID: 1194445

Collection Date: 08/01/19 14:15
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	26.5		5.00	1.50	ug/L	1		08/14/19 19:08

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 19:08
Container ID: 1194445008-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **E-156**

Client Sample ID: **E-156**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445009
Lab Project ID: 1194445

Collection Date: 08/01/19 15:00
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	16.7		5.00	1.50	ug/L	1		08/14/19 19:11

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 19:11
Container ID: 1194445009-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **MW-22 Dup**

Client Sample ID: **MW-22 Dup**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445010
Lab Project ID: 1194445

Collection Date: 07/31/19 13:00
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/14/19 19:14

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 19:14
Container ID: 1194445010-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **MW-40 Dup**

Client Sample ID: **MW-40 Dup**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445011
Lab Project ID: 1194445

Collection Date: 07/31/19 15:00
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	12.7		5.00	1.50	ug/L	1		08/14/19 19:17

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 19:17
Container ID: 1194445011-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **MW-26 Dup**

Client Sample ID: **MW-26 Dup**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445012
Lab Project ID: 1194445

Collection Date: 07/31/19 15:15
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/14/19 19:26

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 19:26
Container ID: 1194445012-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/16/2019 8:45:11AM

Results of **MW-39 Dup**

Client Sample ID: **MW-39 Dup**
Client Project ID: **Groundwater**
Lab Sample ID: 1194445013
Lab Project ID: 1194445

Collection Date: 07/31/19 14:00
Received Date: 08/08/19 08:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.00	U	5.00	1.50	ug/L	1		08/14/19 19:29

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Analyst: DSH
Analytical Date/Time: 08/14/19 19:29
Container ID: 1194445013-A

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 08/13/19 09:55
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1797787 [MXX/32661]
Blank Lab ID: 1524904

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1194445001, 1194445002, 1194445003, 1194445004, 1194445005, 1194445006, 1194445007, 1194445008, 1194445009, 1194445010, 1194445011, 1194445012, 1194445013

Results by **EP200.8**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexlon P5
Analyst: DSH
Analytical Date/Time: 8/14/2019 6:14:59PM

Prep Batch: MXX32661
Prep Method: E200.2
Prep Date/Time: 8/13/2019 9:55:41AM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1194445 [MXX32661]
Blank Spike Lab ID: 1524905
Date Analyzed: 08/14/2019 18:17

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194445001, 1194445002, 1194445003, 1194445004, 1194445005, 1194445006, 1194445007, 1194445008, 1194445009, 1194445010, 1194445011, 1194445012, 1194445013

Results by **EP200.8**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1000	992	99	(85-115)

Batch Information

Analytical Batch: **MMS10590**
Analytical Method: **EP200.8**
Instrument: **Perkin Elmer Nexion P5**
Analyst: **DSH**

Prep Batch: **MXX32661**
Prep Method: **E200.2**
Prep Date/Time: **08/13/2019 09:55**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1524911
MS Sample ID: 1524912 MS
MSD Sample ID:

Analysis Date: 08/14/2019 18:23
Analysis Date: 08/14/2019 18:26
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194445001, 1194445002, 1194445003, 1194445004, 1194445005, 1194445006, 1194445007

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	4.70J	1000	994	99				70-130		

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DSH
Analytical Date/Time: 8/14/2019 6:26:54PM

Prep Batch: MXX32661
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/13/2019 9:55:41AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 08/16/2019 8:45:15AM

Matrix Spike Summary

Original Sample ID: 1524914
MS Sample ID: 1524915 MS
MSD Sample ID:

Analysis Date: 08/14/2019 19:02
Analysis Date: 08/14/2019 19:05
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194445001, 1194445002, 1194445003, 1194445004, 1194445005, 1194445006, 1194445007, 1194445008, 1194445009, 1194445010, 1194445011, 1194445012, 1194445013

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	1.64J	1000	1000	100				70-130		

Batch Information

Analytical Batch: MMS10590
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: DSH
Analytical Date/Time: 8/14/2019 7:05:40PM

Prep Batch: MXX32661
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/13/2019 9:55:41AM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 08/16/2019 8:45:15AM

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1194445

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virgina	Kentucky

www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 1

CLIENT: Cook Inlet Environmental
CONTACT: Jene Worley PHONE NO: 9072526810
PROJECT NAME: Groundwater PROJECT/ PWSID/ PERMIT#:
REPORTS TO: Jene Worley E-MAIL: jene@cienv.com
INVOICE TO: CIENV QUOTE #: P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: EPA 200.8 Total Arsenic	REMARKS/ LOC ID
(1) A	MW22	7/31/19	1300	W	1	G	X	
(2) A	MW27	7/31/19	1030	W	1	G	X	
(3) A	MW41	7/31/19	1115	W	1	G	X	
(4) A	MW39	7/31/19	1200	W	1	G	X	
(5) A	E-169	8-5-19	1530	W	1	G	X	
(6) A	E-155	8-2-19	1300	W	1	G	X	
(7) A	E-246	8-1-19	1400	W	1	G	X	
(8) A	E-160	8-1-19	1415	W	1	G	X	
(9) A	E-156	8-5-19	1500	W	1	G	X	

Section 5

	Date	Time	
Relinquished By: (1)	08-07-19	1630	Received By:
Relinquished By: (2)			Received By:
Relinquished By: (3)			Received By:
Relinquished By: (4)	8/8/19	8:28	Received For Laboratory By:

Section 4

DOD Project? Yes No

Cooler ID:

Data Deliverable Requirements: Standard Edel

Requested Turnaround Time and/or Special Instructions: Standard Profile: 334655 (JK)

Temp Blank °C: 3.3 °C D58
or Ambient [ ]
(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT
(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms-and-conditions

F083-Kit_Request_and_COC_Templates-Blank
Revised 2013-03-24

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1194445

Locations Nationwide
Alaska, Maryland, New Jersey, New York, North Carolina, Indiana, West Virgina, Kentucky
www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 1

CLIENT: Cook Inlet Environmental

CONTACT: Jene Worley PHONE NO: 9012552810

PROJECT NAME: Groundwater PROJECT/PWSID/PERMIT#:

REPORTS TO: Jene Worley E-MAIL: jene@cienv.com

INVOICE TO: Cienv QUOTE #:

P.O. #:

Section 2 / Section 3

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Arsenic 200.8									REMARKS/ LOC ID
10 A	mw-22 dup	07/31/19	1300	W	1	G	X									
11 A	mw-40 dup	07/31/19	1500	W	1	G	X									
12 A	mw-26 dup	07/31/19	1515	W	1	G	X									
13 A	mw-39 dup	07/31/19	1400	W	1	G	X									

Preservative

Section 5

Relinquished By	Date	Time	Received By
(1) [signature]	08-07-19	1630	Received By:
(2)			Received By:
(3)			Received By:
(4)	8/8/19	8:28	Received For Laboratory By: [signature]

Section 4 DOD Project? Yes No

Cooler ID:

Data Deliverable Requirements: Standard edd

Requested Turnaround Time and/or Special Instructions: Standard

Temp Blank °C:

or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms-and-conditions

F083-Kit_Request_and_COC_Templates-Blank
Revised 2013-03-24

Shipper's Name and Address
COOK INLET ENVIRONMENTAL 40312
612 LAUREL DR.
KENAI , AK 99611
907, 2835373

Consignee: SGS ENVIRONMENTAL 50012
200 W POTTER DR
ANCHORAGE, AK 99518
562, 2343

RAVN AIR
4700 OLD INTERNATIONAL
AIRPORT ROAD
ANCHORAGE AK. 99502

It is agreed that the goods described herein are accepted in good order and undamaged condition (except as noted) for carriage SUBJECT TO THE "TERMS OF CONTRACT". The Shippers attention is drawn to the "TERMS OF CONTRACT LIMIT OF LIABILITY". The maximum liability by declaring a value of the goods and paying a supplemental charge of $0.75 per $100.00 up to a maximum of $5,000.00 declared value.

Accounting Information
GEN - GENERAL FREIGHT

Origin	ENA	Currency	USD
Destination	ANC	Charge Code	PX
Handling Information		Declared Value for Carriage	0

Pieces	Gross Weight	Nature of Goods	Chargeable Weight	Rate/Charge	Total	Length	Width	Height	Dim Weight
1		GEN // WATER SAMPLES				30	16	10	25

1194445

1	28		28		25

Fee	Prepaid	Collect
Weight Charge	29.18	
Valuation Charge	0.00	
Tax	1.82	
Total Other Charges Due Agent	0.00	
Total Other Charges Due Carrier	0.00	
Total	31.00	
Signature of Issuing Carrier or its Agent	WB Date	WB Time
GREGORY FITE	07-AUG-19	1648

Other Charges			
FSC Fee	0.00	SSC Fee	0.00
DOC Fees	0.00	DG Fee	0.00
OTH Fees	0.00	P/U Fee	0.00
DEL Fees	0.00	TSC Fees	0.00

The shipper certifies that the particulars on the face hereof are correct, and that the shipment does not contain dangerous goods, and that all ITEMS ARE ACCEPTED AT SHIPPER'S RISK.

hunter hollenberg
(Shipper's printed name and signature)

The consignee certifies that the shipment is received in good order except where noted below.

(Consignee's printed name and signature)

CARRIAGE SUBJECT TO "TERMS OF CONTRACT" found at https://www.flyravn.com/cargo-services/cargo-contract-carriage

Alert Expeditors Inc.

#397099

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 8-8-19

From Cook Inlet Enviro

To SGS Labs Anc

Collect ❐	Prepay ❐ Account ❐	Advance Charges ❐
Job # ENV	PO# Run 1050-5202	

Samples

1194445

Shipped Signature

Total Charge

Received By: 828

e-Sample Receipt Form

SGS Workorder #: 1194445

1 1 9 4 4 4 5

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		Yes — Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
	N/A	**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 3.3 °C Therm. ID: D58
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
	N/A	***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	Yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1194445001-A	HNO3 to pH < 2	OK			
1194445002-A	HNO3 to pH < 2	OK			
1194445003-A	HNO3 to pH < 2	OK			
1194445004-A	HNO3 to pH < 2	OK			
1194445005-A	HNO3 to pH < 2	OK			
1194445006-A	HNO3 to pH < 2	OK			
1194445007-A	HNO3 to pH < 2	OK			
1194445008-A	HNO3 to pH < 2	OK			
1194445009-A	HNO3 to pH < 2	OK			
1194445010-A	HNO3 to pH < 2	OK			
1194445011-A	HNO3 to pH < 2	OK			
1194445012-A	HNO3 to pH < 2	OK			
1194445013-A	HNO3 to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Laboratory Data Review Checklist

Completed By:

Jene' Worley

Title:

Principal Chemist

Date:

11/30/19

CS Report Name:

2019 Groundwater Monitoring Report

Report Date:

8/28/19

Consultant Firm:

Cook Inlet Environmental

Laboratory Name:

SGS North America Inc.

Laboratory Report Number:

1194603

ADEC File Number:

2323.38.032

Hazard Identification Number:

465

1194603

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ○ Yes ◉ No Comments:

ADEC has no method of approving laboratories who analyze nitrogen in groundwater.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ○ Yes ◉ No Comments:

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   ◉ Yes ○ No Comments:

   b. Correct Analyses requested?

   ◉ Yes ○ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ◉ Yes ○ No Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ◉ Yes ○ No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ◉ Yes ○ No Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

○ Yes ◉ No Comments:

e. Data quality or usability affected?

Comments:

No.

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

○ Yes ◉ No Comments:

c. Were all corrective actions documented?

◉ Yes ○ No Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

N/A

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

◉ Yes ○ No Comments:

b. All applicable holding times met?

◉ Yes ○ No Comments:

1194603

c. All soils reported on a dry weight basis?

○ Yes ○ No Comments:

N/A

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

◉ Yes ○ No Comments:

e. Data quality or usability affected?

○ Yes ◉ No Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

◉ Yes ○ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

v. Data quality or usability affected?

Comments:

N/A

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

○ Yes ○ No Comments:

N/A

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

N/A

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

○ Yes ○ No Comments:

N/A

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

○ Yes ○ No Comments:

N/A

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No Comments:

N/A

iv. Data quality or usability affected?

Comments:

N/A

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

○ Yes ◉ No Comments:

N/A

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

○ Yes ○ No Comments:

N/A

iii. All results less than LOQ?

○ Yes ○ No Comments:

N/A

iv. If above LOQ, what samples are affected?

Comments:

N/A

v. Data quality or usability affected?

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

(•) Yes ( ) No Comments:

ii. Submitted blind to lab?

(•) Yes ( ) No Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

(•) Yes ( ) No Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

N/A

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

( ) Yes ( ) No (•) Not Applicable

Disposable equipment used.

1194603

i. All results less than LOQ?

○ Yes ○ No Comments:

N/A

ii. If above LOQ, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected?

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No Comments:

Laboratory Report of Analysis

To: Cook Inlet Environmental
1545 Windward Dr.
Kenai, AK 996116607
(907)776-5373

Report Number: **1194603**

Client Project: **Agrium Ground Water**

Dear Jene Worley,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jillian at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Jillian Janssen Date
Project Manager
Jillian.Janssen@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Cook Inlet Environmental**
SGS Project: **1194603**
Project Name/Site: **Agrium Ground Water**
Project Contact: **Jene Worley**

Refer to sample receipt form for information on sample condition.

MW-35R (1194603006) PS

300.0 - Anions - The LOQ for Nitrite was raised due to matrix interference.

MW-36R (1194603007) PS

200.8 - The metals LOQ for arsenic was elevated due to matrix interference.
300.0 - Anions - The LOQs for Nitrate and Nitrite were raised due to matrix interference.

MW-37R (1194603008) PS

300.0 - Anions - The LOQs for Nitrite were raised due to matrix interference.

MW-38R (1194603009) PS

300.0 - Anions - The LOQs for Nitrate and Nitrite were raised due to matrix interference.

MW-43R (1194603010) PS

200.8 - The metals LOQ for arsenic was elevated due to matrix interference.
300.0 - Anions - The LOQs for Nitrate and Nitrite were raised due to matrix interference.

Duplicate 5 (1194603011) PS

200.8 - The metals LOQ for arsenic was elevated due to matrix interference.
300.0 - Anions - The LOQs for Nitrate and Nitrite were raised due to matrix interference.

1194365001MSD (1525819) MSD

4500NH3-G - Ammonia - MSD recovery is outside of QC criteria. Refer to LCS for accuracy requirements.
4500NH3-G - Ammonia - MS/MSD RPD was outside of QC criteria. Refer to the LCS/LCSD RPD for precision requirement.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indenmification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification, and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
E-157	1194603001	08/12/2019	08/14/2019	Water (Surface, Eff., Ground)
E-161	1194603002	08/12/2019	08/14/2019	Water (Surface, Eff., Ground)
E-170	1194603003	08/09/2019	08/14/2019	Water (Surface, Eff., Ground)
E-121	1194603004	08/09/2019	08/14/2019	Water (Surface, Eff., Ground)
MW-54	1194603005	08/12/2019	08/14/2019	Water (Surface, Eff., Ground)
MW-35R	1194603006	08/13/2019	08/14/2019	Water (Surface, Eff., Ground)
MW-36R	1194603007	08/13/2019	08/14/2019	Water (Surface, Eff., Ground)
MW-37R	1194603008	08/13/2019	08/14/2019	Water (Surface, Eff., Ground)
MW-38R	1194603009	08/13/2019	08/14/2019	Water (Surface, Eff., Ground)
MW-43R	1194603010	08/13/2019	08/14/2019	Water (Surface, Eff., Ground)
Duplicate 5	1194603011	08/13/2019	08/14/2019	Water (Surface, Eff., Ground)

Method	Method Description
SM21 4500-NH3 G	Ammonia-N (W) SM21 4500-NH3 G
EPA 300.0	Ion Chromatographic Analysis
EP200.8	Metals in Water by 200.8 ICP-MS

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Detectable Results Summary

Client Sample ID: **E-157**			
Lab Sample ID: 1194603001	Parameter	Result	Units
Metals by ICP/MS	Arsenic	163	ug/L
Client Sample ID: **E-161**			
Lab Sample ID: 1194603002	Parameter	Result	Units
Metals by ICP/MS	Arsenic	30.8	ug/L
Client Sample ID: **E-170**			
Lab Sample ID: 1194603003	Parameter	Result	Units
Metals by ICP/MS	Arsenic	14.1	ug/L
Client Sample ID: **E-121**			
Lab Sample ID: 1194603004	Parameter	Result	Units
Metals by ICP/MS	Arsenic	5.67	ug/L
Client Sample ID: **MW-54**			
Lab Sample ID: 1194603005	Parameter	Result	Units
Metals by ICP/MS	Arsenic	10.5	ug/L
Client Sample ID: **MW-35R**			
Lab Sample ID: 1194603006	Parameter	Result	Units
Metals by ICP/MS	Arsenic	15.0	ug/L
Waters Department	Ammonia-N	72.1	mg/L
	Nitrate-N	156	mg/L
Client Sample ID: **MW-36R**			
Lab Sample ID: 1194603007	Parameter	Result	Units
Waters Department	Ammonia-N	0.517	mg/L
Client Sample ID: **MW-37R**			
Lab Sample ID: 1194603008	Parameter	Result	Units
Metals by ICP/MS	Arsenic	8.91	ug/L
Waters Department	Ammonia-N	9.21	mg/L
	Nitrate-N	51.4	mg/L
Client Sample ID: **MW-38R**			
Lab Sample ID: 1194603009	Parameter	Result	Units
Metals by ICP/MS	Arsenic	93.0	ug/L
Waters Department	Ammonia-N	136	mg/L
Client Sample ID: **MW-43R**			
Lab Sample ID: 1194603010	Parameter	Result	Units
Waters Department	Ammonia-N	0.764	mg/L
Client Sample ID: **Duplicate 5**			
Lab Sample ID: 1194603011	Parameter	Result	Units
Waters Department	Ammonia-N	0.469	mg/L

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **E-157**

Client Sample ID: **E-157**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603001
Lab Project ID: 1194603

Collection Date: 08/12/19 12:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	163		5.00	1.50	ug/L	1		08/16/19 19:45

Batch Information

Analytical Batch: MMS10593
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/16/19 19:45
Container ID: 1194603001-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **E-161**

Client Sample ID: **E-161**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603002
Lab Project ID: 1194603

Collection Date: 08/12/19 13:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	30.8		5.00	1.50	ug/L	1		08/16/19 20:09

Batch Information

Analytical Batch: MMS10593
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/16/19 20:09
Container ID: 1194603002-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **E-170**

Client Sample ID: **E-170**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603003
Lab Project ID: 1194603

Collection Date: 08/09/19 12:43
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	14.1		5.00	1.50	ug/L	1		08/16/19 20:12

Batch Information

Analytical Batch: MMS10593
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/16/19 20:12
Container ID: 1194603003-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **E-121**

Client Sample ID: **E-121**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603004
Lab Project ID: 1194603

Collection Date: 08/09/19 13:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	5.67		5.00	1.50	ug/L	1		08/16/19 20:15

Batch Information

Analytical Batch: MMS10593
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/16/19 20:15
Container ID: 1194603004-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **MW-54**

Client Sample ID: **MW-54**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603005
Lab Project ID: 1194603

Collection Date: 08/12/19 11:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	10.5		5.00	1.50	ug/L	1		08/16/19 20:18

Batch Information

Analytical Batch: MMS10593
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/16/19 20:18
Container ID: 1194603005-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **MW-35R**

Client Sample ID: **MW-35R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603006
Lab Project ID: 1194603

Collection Date: 08/13/19 10:20
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	15.0		5.00	1.50	ug/L	1		08/16/19 20:21

Batch Information

Analytical Batch: MMS10593
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/16/19 20:21
Container ID: 1194603006-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **MW-35R**

Client Sample ID: **MW-35R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603006
Lab Project ID: 1194603

Collection Date: 08/13/19 10:20
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Nitrate-N	156		20.0	5.00	mg/L	100		08/14/19 16:33
Nitrite-N	20.0 U		20.0	5.00	mg/L	100		08/14/19 16:33

Batch Information

Analytical Batch: WIC5950
Analytical Method: EPA 300.0
Analyst: DMM
Analytical Date/Time: 08/14/19 16:33
Container ID: 1194603006-C

Prep Batch: WXX12982
Prep Method: METHOD
Prep Date/Time: 08/14/19 14:30
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Ammonia-N	72.1		10.0	3.10	mg/L	100		08/16/19 18:22

Batch Information

Analytical Batch: WDA4628
Analytical Method: SM21 4500-NH3 G
Analyst: DMM
Analytical Date/Time: 08/16/19 18:22
Container ID: 1194603006-B

Prep Batch: WXX12971
Prep Method: METHOD
Prep Date/Time: 08/16/19 11:30
Prep Initial Wt./Vol.: 6 mL
Prep Extract Vol: 6 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW-36R**

Client Sample ID: **MW-36R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603007
Lab Project ID: 1194603

Collection Date: 08/13/19 10:45
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	250	U	250	75.0	ug/L	50		08/24/19 15:00

Batch Information

Analytical Batch: MMS10603
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/24/19 15:00
Container ID: 1194603007-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **MW-36R**

Client Sample ID: **MW-36R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603007
Lab Project ID: 1194603

Collection Date: 08/13/19 10:45
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Nitrate-N	20.0 U		20.0	5.00	mg/L	100		08/14/19 16:52
Nitrite-N	20.0 U		20.0	5.00	mg/L	100		08/14/19 16:52

Batch Information

Analytical Batch: WIC5950
Analytical Method: EPA 300.0
Analyst: DMM
Analytical Date/Time: 08/14/19 16:52
Container ID: 1194603007-C

Prep Batch: WXX12982
Prep Method: METHOD
Prep Date/Time: 08/14/19 14:30
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Ammonia-N	0.517		0.100	0.0310	mg/L	1		08/16/19 16:27

Batch Information

Analytical Batch: WDA4628
Analytical Method: SM21 4500-NH3 G
Analyst: DMM
Analytical Date/Time: 08/16/19 16:27
Container ID: 1194603007-B

Prep Batch: WXX12971
Prep Method: METHOD
Prep Date/Time: 08/16/19 11:30
Prep Initial Wt./Vol.: 6 mL
Prep Extract Vol: 6 mL

Print Date: 08/27/2019 2:21:47PM

Results of **MW-37R**

Client Sample ID: **MW-37R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603008
Lab Project ID: 1194603

Collection Date: 08/13/19 11:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	8.91		5.00	1.50	ug/L	1		08/16/19 20:24

Batch Information

Analytical Batch: MMS10593
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/16/19 20:24
Container ID: 1194603008-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **MW-37R**

Client Sample ID: **MW-37R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603008
Lab Project ID: 1194603

Collection Date: 08/13/19 11:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Nitrate-N	51.4		20.0	5.00	mg/L	100		08/14/19 17:11
Nitrite-N	20.0 U		20.0	5.00	mg/L	100		08/14/19 17:11

Batch Information

Analytical Batch: WIC5950
Analytical Method: EPA 300.0
Analyst: DMM
Analytical Date/Time: 08/14/19 17:11
Container ID: 1194603008-C

Prep Batch: WXX12982
Prep Method: METHOD
Prep Date/Time: 08/14/19 14:30
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Ammonia-N	9.21		1.00	0.310	mg/L	10		08/16/19 17:56

Batch Information

Analytical Batch: WDA4628
Analytical Method: SM21 4500-NH3 G
Analyst: DMM
Analytical Date/Time: 08/16/19 17:56
Container ID: 1194603008-B

Prep Batch: WXX12971
Prep Method: METHOD
Prep Date/Time: 08/16/19 11:30
Prep Initial Wt./Vol.: 6 mL
Prep Extract Vol: 6 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW-38R**

Client Sample ID: **MW-38R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603009
Lab Project ID: 1194603

Collection Date: 08/13/19 12:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	93.0		50.0	15.0	ug/L	10		08/24/19 15:06

Batch Information

Analytical Batch: MMS10603
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/24/19 15:06
Container ID: 1194603009-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **MW-38R**

Client Sample ID: **MW-38R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603009
Lab Project ID: 1194603

Collection Date: 08/13/19 12:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Nitrate-N	1.00 U		1.00	0.250	mg/L	5		08/14/19 17:49
Nitrite-N	1.00 U		1.00	0.250	mg/L	5		08/14/19 17:49

Batch Information

Analytical Batch: WIC5950
Analytical Method: EPA 300.0
Analyst: DMM
Analytical Date/Time: 08/14/19 17:49
Container ID: 1194603009-C

Prep Batch: WXX12982
Prep Method: METHOD
Prep Date/Time: 08/14/19 14:30
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Ammonia-N	136		10.0	3.10	mg/L	100		08/16/19 18:24

Batch Information

Analytical Batch: WDA4628
Analytical Method: SM21 4500-NH3 G
Analyst: DMM
Analytical Date/Time: 08/16/19 18:24
Container ID: 1194603009-B

Prep Batch: WXX12971
Prep Method: METHOD
Prep Date/Time: 08/16/19 11:30
Prep Initial Wt./Vol.: 6 mL
Prep Extract Vol: 6 mL

Print Date: 08/27/2019 2:21:47PM

Results of **MW-43R**

Client Sample ID: **MW-43R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603010
Lab Project ID: 1194603

Collection Date: 08/13/19 12:30
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	50.0	U	50.0	15.0	ug/L	10		08/24/19 15:09

Batch Information

Analytical Batch: MMS10603
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/24/19 15:09
Container ID: 1194603010-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **MW-43R**

Client Sample ID: **MW-43R**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603010
Lab Project ID: 1194603

Collection Date: 08/13/19 12:30
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Nitrate-N	20.0 U		20.0	5.00	mg/L	100		08/14/19 18:08
Nitrite-N	20.0 U		20.0	5.00	mg/L	100		08/14/19 18:08

Batch Information

Analytical Batch: WIC5950
Analytical Method: EPA 300.0
Analyst: DMM
Analytical Date/Time: 08/14/19 18:08
Container ID: 1194603010-C

Prep Batch: WXX12982
Prep Method: METHOD
Prep Date/Time: 08/14/19 14:30
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Ammonia-N	0.764		0.100	0.0310	mg/L	1		08/16/19 16:35

Batch Information

Analytical Batch: WDA4628
Analytical Method: SM21 4500-NH3 G
Analyst: DMM
Analytical Date/Time: 08/16/19 16:35
Container ID: 1194603010-B

Prep Batch: WXX12971
Prep Method: METHOD
Prep Date/Time: 08/16/19 11:30
Prep Initial Wt./Vol.: 6 mL
Prep Extract Vol: 6 mL

Print Date: 08/27/2019 2:21:47PM

Results of **Duplicate 5**

Client Sample ID: **Duplicate 5**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603011
Lab Project ID: 1194603

Collection Date: 08/13/19 13:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	250	U	250	75.0	ug/L	50		08/24/19 15:12

Batch Information

Analytical Batch: MMS10603
Analytical Method: EP200.8
Analyst: ACF
Analytical Date/Time: 08/24/19 15:12
Container ID: 1194603011-A

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 08/15/19 12:48
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Print Date: 08/27/2019 2:21:47PM

Results of **Duplicate 5**

Client Sample ID: **Duplicate 5**
Client Project ID: **Agrium Ground Water**
Lab Sample ID: 1194603011
Lab Project ID: 1194603

Collection Date: 08/13/19 13:00
Received Date: 08/14/19 08:40
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Waters Department**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Nitrate-N	20.0	U	20.0	5.00	mg/L	100		08/14/19 18:27
Nitrite-N	20.0	U	20.0	5.00	mg/L	100		08/14/19 18:27

Batch Information

Analytical Batch: WIC5950
Analytical Method: EPA 300.0
Analyst: DMM
Analytical Date/Time: 08/14/19 18:27
Container ID: 1194603011-C

Prep Batch: WXX12982
Prep Method: METHOD
Prep Date/Time: 08/14/19 14:30
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Ammonia-N	0.469		0.100	0.0310	mg/L	1		08/16/19 16:37

Batch Information

Analytical Batch: WDA4628
Analytical Method: SM21 4500-NH3 G
Analyst: DMM
Analytical Date/Time: 08/16/19 16:37
Container ID: 1194603011-B

Prep Batch: WXX12971
Prep Method: METHOD
Prep Date/Time: 08/16/19 11:30
Prep Initial Wt./Vol.: 6 mL
Prep Extract Vol: 6 mL

Print Date: 08/27/2019 2:21:47PM

Method Blank

Blank ID: MB for HBN 1797960 [MXX/32674]
Blank Lab ID: 1525586

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1194603001, 1194603002, 1194603003, 1194603004, 1194603005, 1194603006, 1194603007, 1194603008, 1194603009, 1194603010, 1194603011

Results by **EP200.8**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	2.50U	5.00	1.50	ug/L

Batch Information

Analytical Batch: MMS10593
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexlon P5
Analyst: ACF
Analytical Date/Time: 8/16/2019 7:57:36PM

Prep Batch: MXX32674
Prep Method: E200.2
Prep Date/Time: 8/15/2019 12:48:18PM
Prep Initial Wt./Vol.: 20 mL
Prep Extract Vol: 50 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1194603 [MXX32674]
Blank Spike Lab ID: 1525587
Date Analyzed: 08/16/2019 20:00

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194603001, 1194603002, 1194603003, 1194603004, 1194603005, 1194603006, 1194603007, 1194603008, 1194603009, 1194603010, 1194603011

Results by **EP200.8**

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1000	1020	102	(85-115)

Batch Information

Analytical Batch: **MMS10593**
Analytical Method: **EP200.8**
Instrument: **Perkin Elmer Nexion P5**
Analyst: **ACF**

Prep Batch: **MXX32674**
Prep Method: **E200.2**
Prep Date/Time: **08/15/2019 12:48**
Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1525595
MS Sample ID: 1525599 MS
MSD Sample ID:

Analysis Date: 08/16/2019 20:03
Analysis Date: 08/16/2019 20:06
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194603001, 1194603002, 1194603003, 1194603004, 1194603005, 1194603006, 1194603007

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	2.50U	1000	1030	103				70-130		

Batch Information

Analytical Batch: MMS10593
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: ACF
Analytical Date/Time: 8/16/2019 8:06:32PM

Prep Batch: MXX32674
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/15/2019 12:48:18PM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 08/27/2019 2:21:54PM

Matrix Spike Summary

Original Sample ID: 1525600
MS Sample ID: 1525601 MS
MSD Sample ID:

Analysis Date: 08/24/2019 15:00
Analysis Date: 08/24/2019 15:03
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194603001, 1194603002, 1194603003, 1194603004, 1194603005, 1194603006, 1194603007, 1194603008, 1194603009, 1194603010, 1194603011

Results by **EP200.8**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	76.2J	1000	1090	102				70-130		

Batch Information

Analytical Batch: MMS10603
Analytical Method: EP200.8
Instrument: Perkin Elmer NexIon P5
Analyst: ACF
Analytical Date/Time: 8/24/2019 3:03:14PM

Prep Batch: MXX32674
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 8/15/2019 12:48:18PM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 08/27/2019 2:21:54PM

Method Blank

Blank ID: MB for HBN 1798022 [WXX/12971]
Blank Lab ID: 1525815

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1194603006, 1194603007, 1194603008, 1194603009, 1194603010, 1194603011

Results by **SM21 4500-NH3 G**

Parameter	Results	LOQ/CL	DL	Units
Ammonia-N	0.0500U	0.100	0.0310	mg/L

Batch Information

Analytical Batch: WDA4628
Analytical Method: SM21 4500-NH3 G
Instrument: Discrete Analyzer 2
Analyst: DMM
Analytical Date/Time: 8/16/2019 11:17:29AM

Prep Batch: WXX12971
Prep Method: METHOD
Prep Date/Time: 8/16/2019 9:30:00AM
Prep Initial Wt./Vol.: 6 mL
Prep Extract Vol: 6 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1194603 [WXX12971]
Blank Spike Lab ID: 1525816
Date Analyzed: 08/16/2019 11:19

Spike Duplicate ID: LCSD for HBN 1194603 [WXX12971]
Spike Duplicate Lab ID: 1525817
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194603006, 1194603007, 1194603008, 1194603009, 1194603010, 1194603011

Results by **SM21 4500-NH3 G**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Ammonia-N	1	1.02	102	1	0.987	99	(75-125)	3.40	(< 25)

Batch Information

Analytical Batch: **WDA4628**
Analytical Method: **SM21 4500-NH3 G**
Instrument: **Discrete Analyzer 2**
Analyst: **DMM**

Prep Batch: **WXX12971**
Prep Method: **METHOD**
Prep Date/Time: **08/16/2019 09:30**
Spike Init Wt./Vol.: 1 mg/L Extract Vol: 6 mL
Dupe Init Wt./Vol.: 1 mg/L Extract Vol: 6 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1194365001
MS Sample ID: 1525818 MS
MSD Sample ID: 1525819 MSD

Analysis Date: 08/16/2019 11:24
Analysis Date: 08/16/2019 11:25
Analysis Date: 08/16/2019 11:27
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194603006, 1194603007, 1194603008, 1194603009, 1194603010, 1194603011

Results by **SM21 4500-NH3 G**

		Matrix Spike (mg/L)			Spike Duplicate (mg/L)						
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
Ammonia-N	0.0331J	1.00	1.25	122	1.00	0.740	71	*	75-125	51.10 *	(< 25)

Batch Information

Analytical Batch: WDA4628
Analytical Method: SM21 4500-NH3 G
Instrument: Discrete Analyzer 2
Analyst: DMM
Analytical Date/Time: 8/16/2019 11:25:43AM

Prep Batch: WXX12971
Prep Method: Ammonia by SM21 4500F prep (W)
Prep Date/Time: 8/16/2019 9:30:00AM
Prep Initial Wt./Vol.: 6.00mL
Prep Extract Vol: 6.00mL

Print Date: 08/27/2019 2:21:57PM

Method Blank

Blank ID: MB for HBN 1798419 [WXX/12982]
Blank Lab ID: 1527544

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1194603006, 1194603007, 1194603008, 1194603009, 1194603010, 1194603011

Results by **EPA 300.0**

Parameter	Results	LOQ/CL	DL	Units
Nitrate-N	0.100U	0.200	0.0500	mg/L
Nitrite-N	0.100U	0.200	0.0500	mg/L
Total Nitrate/Nitrite-N	0.100U	0.200	0.0500	mg/L

Batch Information

Analytical Batch: WIC5950
Analytical Method: EPA 300.0
Instrument: 930 Metrohm compact IC flex
Analyst: DMM
Analytical Date/Time: 8/14/2019 3:55:08PM

Prep Batch: WXX12982
Prep Method: METHOD
Prep Date/Time: 8/14/2019 2:30:00PM
Prep Initial Wt./Vol.: 10 mL
Prep Extract Vol: 10 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1194603 [WXX12982]
Blank Spike Lab ID: 1527545
Date Analyzed: 08/14/2019 16:14

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194603006, 1194603007, 1194603008, 1194603009, 1194603010, 1194603011

Results by **EPA 300.0**

Blank Spike (mg/L)

Parameter	Spike	Result	Rec (%)	CL
Nitrate-N	5	4.90	98	(90-110)
Nitrite-N	5	5.09	102	(90-110)
Total Nitrate/Nitrite-N	10	9.99	100	(90-110)

Batch Information

Analytical Batch: **WIC5950**
Analytical Method: **EPA 300.0**
Instrument: **930 Metrohm compact IC flex**
Analyst: **DMM**

Prep Batch: **WXX12982**
Prep Method: **METHOD**
Prep Date/Time: **08/14/2019 14:30**
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 10 mL
Dupe Init Wt./Vol.: Extract Vol:

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Matrix Spike Summary

Original Sample ID: 1527543
MS Sample ID: 1527546 MS
MSD Sample ID: 1527547 MSD

Analysis Date: 08/14/2019 19:43
Analysis Date: 08/14/2019 20:02
Analysis Date: 08/14/2019 20:21
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1194603006, 1194603007, 1194603008, 1194603009, 1194603010, 1194603011

Results by **EPA 300.0**

		Matrix Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Nitrate-N	0.109J	5.00	5.2	102	5.00	5.10	100	90-110	1.80	(< 15)
Nitrite-N	0.100U	5.00	4.77	95	5.00	4.88	98	90-110	2.30	(< 15)

Batch Information

Analytical Batch: WIC5950
Analytical Method: EPA 300.0
Instrument: 930 Metrohm compact IC flex
Analyst: DMM
Analytical Date/Time: 8/14/2019 8:02:10PM

Prep Batch: WXX12982
Prep Method: EPA 300.0 Extraction Waters/Liquids
Prep Date/Time: 8/14/2019 2:30:00PM
Prep Initial Wt./Vol.: 10.00mL
Prep Extract Vol: 10.00mL

Print Date: 08/27/2019 2:22:01PM

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECOR

1194603

Locations Nationwide
Alaska | Maryland
New Jersey | New York
North Carolina | Indiana
West Virgina | Kentucky
www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out.
Omissions may delay the onset of analysis.

Page 1 of 2

Section 1

CLIENT: Cook Inlet Environmental

CONTACT: Jene Warley | PHONE NO: 9072835373

PROJECT NAME: Agrium Groundwater | PROJECT/ PWSID/ PERMIT#:

REPORTS TO: Jene Warley | E-MAIL: Jene@cienv.com

INVOICE TO: Cienv | QUOTE #: | P.O. #:

Section 3

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: HNO3 / EPA 200.8 Arsenic	Preservative: H2SO4 / SM 4500 NH3 G Ammonia	Preservative: None / EPA 300.0 Nitrate/Nitrite	REMARKS/ LOC ID
(1) A	E-157	08/12/19	12:00	W	1	G	X			
(2) A	E-161	08/12/19	13:00	W	1	G	X			
(3) A	E-170	08/09/19	12:43	W	1	G	X			
(4) A	E-121	08/09/19	13:00	W	1	G	X			
(5) A	MW-54	08/12/19	11:00	W	1	G	X			
(6) A-C	MW-35R	08/13/19	1020	W	3	G	X	X	X	
(7) A-C	MW-36R	08/13/19	~~1200~~ 1045	W	3	G	X	X	X	
(8) A-C	MW-37R	08/13/19	1100	W	3	G	X	X	X	
(9) A-C	MW-38R	08/13/19	1200	W	3	G	X	X	X	
(10) A-C	MW-42R	08/13/19	1230	W	3	G	X	X	X	

Section 5

Relinquished By:	Date	Time	Received By:
(1) Hunter Holenberg	08/13/19	1259	
(2)			
(3)			
(4)	8/14/19	0840	Received For Laboratory By:

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements: Standard EDD

Requested Turnaround Time and/or Special Instructions:

Standard Profile: 334655

Temp Blank °C: 5.5/0.5 (Cooler temp) or Ambient [ ]
(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)
INTACT BROKEN (ABSENT)
(See attached Sample Receipt Form)

SGS

SGS North America Inc
CHAIN OF CUSTODY REC

1194603

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virgina	Kentucky

www.us.sgs.com

Instructi... Sections 1 - 5 must be filled out.
Omissions may delay the onset of analysis.

Page 2 of 2

Section 1

CLIENT: Cook Inlet Environmental

CONTACT: Jené Workley PHONE NO: 907-283-5373

PROJECT NAME: Agrium Groundwater PROJECT/ PWSID/ PERMIT#:

REPORTS TO: Jené Workley E-MAIL: jene@cienv.com

INVOICE TO: CIENV QUOTE #:

P.O. #:

Section 3

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incre-mental Soils	Preservative: HNO3	Preservative: H2SO4	Preservative: None	REMARKS/ LOC ID
(1) AC	Duplicate 5	08/13/19	1300	W	3	G	X	X	X	
							EPA 200.8 Arsenic	SM4500 NH3G Ammonia	EPA 300.0 Nitrate/Nitrite	

Section 5

	Date	Time	
Relinquished By: (1) Hunter Hollenberg	08/13/19	12:59	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 8.16.19	Time 8:40	Received For Laboratory By:

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements: Standard EDD

Requested Turnaround Time and/or Special Instructions: Standard

Temp Blank °C: _____ or Ambient [ ] (See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT (See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms-and-conditions

F083-Kit_Request_and_COC_Templates-Blank
Revised 2013-03-24

Shipper's Name and Address
COOK INLET ENVIRONMENTAL 40312
612 LAUREL DR.
KENAI , AK 99611
907, 2835373

Consignee: SGS ENVIRONMENTAL 50012
200 W POTTER DR
ANCHORAGE, AK 99518
562, 2343

RAVN AIR
4700 OLD INTERNATIONAL ROAD
ANCHORAGE, AK. 99502

It is agreed that the goods described herein are accepted in good order and undamaged condition (except as noted) for carriage SUBJECT TO THE "TERMS OF CONTRACT". The Shippers attention is drawn to the "TERMS OF CONTRACT LIMIT OF LIABILITY". The maximum liability by declaring a value of the goods and paying a supplemental charge of $0.75 per $100.00 up to a maximum of $5,000.00 declared value.

Accounting Information
GEN - GENERAL FREIGHT

1194603

Origin	ENA	Currency	USD
Destination	ANC	Charge Code	PX
Handling Information DEPTS 837 ARVS 5:00P ESTIMATED		Declared Value for Carriage	0

Pieces	Gross Weight	Nature of Goods	Chargeable Weight	Rate/Charge	Total	Length	Width	Height	Dim Weight
1	34	LAB SAMPLES	34		54.59				34
1	34		34		54.59				34

Fee	Prepaid	Collect
Weight Charge	54.59	
Valuation Charge	0.00	
Tax	3.41	
Total Other Charges Due Agent	0.00	
Total Other Charges Due Carrier	0.00	
Total	58.00	
Signature of Issuing Carrier or its Agent	WB Date	WB Time
GREGORY FITE	13-AUG-19	1420

Other Charges			
FSC Fee	0.00	SSC Fee	0.00
DOC Fees	0.00	DG Fee	0.00
OTH Fees	0.00	P/U Fee	0.00
DEL Fees	0.00	TSC Fees	0.00

The shipper certifies that the particulars on the face hereof are correct, and that the shipment does not contain dangerous goods, and that all ITEMS ARE ACCEPTED AT SHIPPER'S RISK.

(Shipper's printed name and signature)

The consignee certifies that the shipment is received in good order except where noted below.

(Consignee's printed name and signature)

CARRIAGE SUBJECT TO "TERMS OF CONTRACT" found at https://www.flyravn.com/cargo-services/cargo-contract-carriage

Alert Expeditors Inc. **#396020**

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 8-14-19

From Cook Inlet Enviro

To SGS Labs Anc

Collect ❐	Prepay ❐ Account ❐	Advance Charges ❐
Job # ENV	PO# Rain 1350-6053	

Samples

1194603

Shipped Signature

Total Charge

Received By:

e-Sample Receipt Form

SGS Workorder #: 1194603

1 1 9 4 6 0 3

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		N/A Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	absent
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
	N/A	**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 5.5 °C Therm. ID: D58
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
	Yes	***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	No	Sample 3A received underpreserved. Preserved with 4mL HNO3 (lot #LW09-0463-16-8). Sample meets preservation requirements.
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

F102b_SRFpm_20190325

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1194603001-A	HNO3 to pH < 2	OK			
1194603002-A	HNO3 to pH < 2	OK			
1194603003-A	HNO3 to pH < 2	PA			
1194603004-A	HNO3 to pH < 2	OK			
1194603005-A	HNO3 to pH < 2	OK			
1194603006-A	HNO3 to pH < 2	OK			
1194603006-B	H2SO4 to pH < 2	OK			
1194603006-C	No Preservative Required	OK			
1194603007-A	HNO3 to pH < 2	OK			
1194603007-B	H2SO4 to pH < 2	OK			
1194603007-C	No Preservative Required	OK			
1194603008-A	HNO3 to pH < 2	OK			
1194603008-B	H2SO4 to pH < 2	OK			
1194603008-C	No Preservative Required	OK			
1194603009-A	HNO3 to pH < 2	OK			
1194603009-B	H2SO4 to pH < 2	OK			
1194603009-C	No Preservative Required	OK			
1194603010-A	HNO3 to pH < 2	OK			
1194603010-B	H2SO4 to pH < 2	OK			
1194603010-C	No Preservative Required	OK			
1194603011-A	HNO3 to pH < 2	OK			
1194603011-B	H2SO4 to pH < 2	OK			
1194603011-C	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Case Narrative

Data Narrative Statements

All wells were sampled for total recoverable arsenic and sent to SGS North America Inc.

MW-22, MW-40, MW-09, MW-26, and MW-54 were used as field duplicates for true color, ammonia-N, and HPLC analysis.

In-Situ data, urea, carbonate, nitrite and nitrate were not collected for MW-24 and MW-52. There was an obstruction that did not allow the pump or insitu instrument to go down well.

No other data discrepancies were noted

Nessler's method detection reporting limits
Ammonia-N 0.02-2.50 mg/L

True Color method detection reporting limits
True Color 5.00 PCU

HPLC method detection reporting limits
Urea 10.0 - 100 mg/L
Carbonate 40.0 - 4000 mg/L
Nitrite-N 3.00 - 30.0 mg/L
Nitrate-N 3.00 - 30.0 mg/L
Dissolved Oxygen 0.1 mg/L

Sample Summary

54	Total Samples
5	Field Duplicates
43	Method Blanks
2	Matrix Spike(s)
11	Quality Control Standards

Reviewed and approved by:
Lead Chemist / Quality Assurance Officer_____

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-03
Sample Date: 7/23/2019
Analysis Date: 7/23/2019
Matrix: GW

Lab ID: A07231901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.280		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	147		1	mg/L
pH	SM 4500-H+	N/A			su
Conductivity	SM 2510	N/A			mS/cm
Dissolved Oxygen	SM 4500-O	N/A			mg/L
ORP	SM 2580	N/A			mV
Temperature	SM 2550	N/A			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-04R
Lab ID: A07231901
Sample Date: 7/25/2019
Analyst: J. Worley
Analysis Date: 7/25/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.190		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	289		1	mg/L
pH	SM 4500-H+	6.11			su
Conductivity	SM 2510	351			mS/cm
Dissolved Oxygen	SM 4500-O	0.188			mg/L
ORP	SM 2580	183			mV
Temperature	SM 2550	7.7			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-08R
Sample Date: 7/24/2019
Analysis Date: 7/24/2019
Matrix: GW

Lab ID: A07241901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	7.8	U	1	mg/L
NH3-N	Nessler's	395.000		500	mg/L
NO2-N	HPLC/UV	3.04		1	mg/L
NO3-N	HPLC/UV	196.00		10	mg/L
CT as CO3	HPLC/UV	915		10	mg/L
pH	SM 4500-H+	9.06			su
Conductivity	SM 2510	2794			mS/cm
Dissolved Oxygen	SM 4500-O	0.195			mg/L
ORP	SM 2580	168			mV
Temperature	SM 2550	12.4			deg. C
True Color	SM 2120C	150.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-09R
Lab ID: A07251902
Sample Date: 7/25/2018
Analyst: J. Worley
Analysis Date: 7/25/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.160		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	6.43	U	10	mg/L
CT as CO3	HPLC/UV	40	U	1	mg/L
pH	SM 4500-H+	6.32			su
Conductivity	SM 2510	#REF!			mS/cm
Dissolved Oxygen	SM 4500-O	1.744	749.24		mg/L
ORP	SM 2580	167			mV
Temperature	SM 2550	11.5			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-13
Sample Date: 7/24/2019
Analysis Date: 7/24/2019
Matrix: GW

Lab ID: A07241901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	130		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	216		10	mg/L
CT as CO3	HPLC/UV	303		10	mg/L
pH	SM 4500-H+	6.79			su
Conductivity	SM 2510	2158			mS/cm
Dissolved Oxygen	SM 4500-O	0.367			mg/L
ORP	SM 2580	251			mV
Temperature	SM 2550	11.0			deg. C
True Color	SM 2120C	33.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-14
Sample Date: 7/23/2019
Analysis Date: 7/24/2019
Matrix: GW

Lab ID: A07231903
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	17		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	42.5		10	mg/L
CT as CO3	HPLC/UV	235		1	mg/L
pH	SM 4500-H+	6.28			su
Conductivity	SM 2510	715			mS/cm
Dissolved Oxygen	SM 4500-O	0.220			mg/L
ORP	SM 2580	247			mV
Temperature	SM 2550	8.9			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-15
Sample Date: 7/25/2019
Analysis Date: 7/25/2019
Matrix: GW

Lab ID: A07251903
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	46.0		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	112		10	mg/L
CT as CO3	HPLC/UV	129		10	mg/L
pH	SM 4500-H+	6.14			su
Conductivity	SM 2510	1128			mS/cm
Dissolved Oxygen	SM 4500-O	0.255			mg/L
ORP	SM 2580	223			mV
Temperature	SM 2550	10.1			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-16
Sample Date: 7/24/2019
Analysis Date: 7/24/2019
Matrix: GW

Lab ID: A07241902
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	8.7		1	mg/L
NH3-N	Nessler's	133		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	87.3		10	mg/L
CT as CO3	HPLC/UV	573		10	mg/L
pH	SM 4500-H+	7.57			su
Conductivity	SM 2510	1332			mS/cm
Dissolved Oxygen	SM 4500-O	0.323			mg/L
ORP	SM 2580	274			mV
Temperature	SM 2550	9.6			deg. C
True Color	SM 2120C	7.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-17
Sample Date: 7/25/2019
Analysis Date: 7/25/2019
Matrix: GW

Lab ID: A07251904
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.040		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	142		10	mg/L
pH	SM 4500-H+	5.96			su
Conductivity	SM 2510	254			mS/cm
Dissolved Oxygen	SM 4500-O	0.427			mg/L
ORP	SM 2580	191			mV
Temperature	SM 2550	11.0			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-18A
Sample Date: 7/23/2019
Analysis Date: 7/23/2019
Matrix: GW

Lab ID: A07231905
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.090		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	154		1	mg/L
pH	SM 4500-H+	5.86			su
Conductivity	SM 2510	195			mS/cm
Dissolved Oxygen	SM 4500-O	0.247			mg/L
ORP	SM 2580	138			mV
Temperature	SM 2550	8.5			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-18B
Sample Date: 7/23/2019
Analysis Date: 7/23/2019
Matrix: GW

Lab ID: A07231906
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.080		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3	U	1	mg/L
CT as CO3	HPLC/UV	216		1	mg/L
pH	SM 4500-H+	6.53			su
Conductivity	SM 2510	375			mS/cm
Dissolved Oxygen	SM 4500-O	1.875			mg/L
ORP	SM 2580	76			mV
Temperature	SM 2550	12.4			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-19
Sample Date: 7/24/2019
Analysis Date: 7/24/2019
Matrix: GW

Lab ID: A07241903
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	123		100	mg/L
NO2-N	HPLC/UV	7.79		1	mg/L
NO3-N	HPLC/UV	187		10	mg/L
CT as CO3	HPLC/UV	460		10	mg/L
pH	SM 4500-H+	6.50			su
Conductivity	SM 2510	2282			mS/cm
Dissolved Oxygen	SM 4500-O	0.265			mg/L
ORP	SM 2580	281			mV
Temperature	SM 2550	7.8			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-20
Sample Date: 7/23/2019
Analysis Date: 7/23/2019
Matrix: GW

Lab ID: A07231907
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.060		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	21.0		1	mg/L
CT as CO3	HPLC/UV	67.4	U	1	mg/L
pH	SM 4500-H+	5.08			su
Conductivity	SM 2510	231			mS/cm
Dissolved Oxygen	SM 4500-O	5.060			mg/L
ORP	SM 2580	296			mV
Temperature	SM 2550	9.9			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-21
Sample Date: 7/26/2019
Analysis Date: 7/26/2019
Matrix: GW

Lab ID: A07261901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	54		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	28		1	mg/L
CT as CO3	HPLC/UV	299		1	mg/L
pH	SM 4500-H+	6.59			su
Conductivity	SM 2510	695			mS/cm
Dissolved Oxygen	SM 4500-O	0.191			mg/L
ORP	SM 2580	217			mV
Temperature	SM 2550	7.3			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-22
Sample Date: 8/3/2019
Analysis Date: 8/3/2019
Matrix: 1/10/1900

Lab ID: A08031901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	130		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	259		10	mg/L
pH	SM 4500-H+	8.46			su
Conductivity	SM 2510	725			mS/cm
Dissolved Oxygen	SM 4500-O	0.694			mg/L
ORP	SM 2580	171			mV
Temperature	SM 2550	8.4			deg. C
True Color	SM 2120C	75.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-23R
Sample Date: 7/24/2019
Analysis Date: 7/24/2019
Matrix: GW

Lab ID: A07241904
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	165		1	mg/L
NH3-N	Nessler's	760		500	mg/L
NO2-N	HPLC/UV	19.5		1	mg/L
NO3-N	HPLC/UV	133		10	mg/L
CT as CO3	HPLC/UV	4910		10	mg/L
pH	SM 4500-H+	9.66			su
Conductivity	SM 2510	7835			mS/cm
Dissolved Oxygen	SM 4500-O	0.233			mg/L
ORP	SM 2580	79.9			mV
Temperature	SM 2550	10.5			deg. C
True Color	SM 2120C	228		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-24
Lab ID: A10251901
Sample Date: 10/25/2019
Analyst: J. Worley
Analysis Date: 10/25/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	NA			mg/L
NH3-N	Nessler's	985		500	mg/L
NO2-N	HPLC/UV	NA			mg/L
NO3-N	HPLC/UV	NA			mg/L
CT as CO3	HPLC/UV	NA			mg/L
pH	SM 4500-H+	NA			su
Conductivity	SM 2510	NA			mS/cm
Dissolved Oxygen	SM 4500-O	NA			mg/L
ORP	SM 2580	NA			mV
Temperature	SM 2550	NA			deg. C
True Color	SM 2120C	197.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-25
Sample Date: 7/31/2019
Analysis Date: 7/31/2019
Matrix: GW

Lab ID: A07311901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	257		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	16.0		10	mg/L
CT as CO3	HPLC/UV	229		10	mg/L
pH	SM 4500-H+	7.63			su
Conductivity	SM 2510	2171			mS/cm
Dissolved Oxygen	SM 4500-O	0.087			mg/L
ORP	SM 2580	221			mV
Temperature	SM 2550	8.1			deg. C
True Color	SM 2120C	217		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-26
Sample Date: 7/31/2019
Analysis Date: 7/31/2019
Matrix: GW

Lab ID: A07311902
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	200		500	mg/L
NO2-N	HPLC/UV	4.21		1	mg/L
NO3-N	HPLC/UV	186		10	mg/L
CT as CO3	HPLC/UV	292		10	mg/L
pH	SM 4500-H+	8.34			su
Conductivity	SM 2510	2704			mS/cm
Dissolved Oxygen	SM 4500-O	0.107			mg/L
ORP	SM 2580	186			mV
Temperature	SM 2550	7.9			deg. C
True Color	SM 2120C	11.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-27
Sample Date: 7/31/2019
Analysis Date: 7/31/2019
Matrix: GW

Lab ID: A07311903
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	230		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	5.00		10	mg/L
CT as CO3	HPLC/UV	250		10	mg/L
pH	SM 4500-H+	6.71			su
Conductivity	SM 2510	1448			mS/cm
Dissolved Oxygen	SM 4500-O	0.281			mg/L
ORP	SM 2580	251			mV
Temperature	SM 2550	7.7			deg. C
True Color	SM 2120C	157		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-28
Sample Date: 7/23/2019
Analysis Date: 7/24/2019
Matrix: GW

Lab ID: A07231904
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	16.8		10	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	24.2		1	mg/L
CT as CO3	HPLC/UV	229		1	mg/L
pH	SM 4500-H+	6.17			su
Conductivity	SM 2510	284			mS/cm
Dissolved Oxygen	SM 4500-O	0.262			mg/L
ORP	SM 2580	258			mV
Temperature	SM 2550	9.2			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-29
Sample Date: 7/23/2019
Analysis Date: 7/24/2019
Matrix: GW

Lab ID: A07231908
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	132		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	172		10	mg/L
CT as CO3	HPLC/UV	590		10	mg/L
pH	SM 4500-H+	7.15			su
Conductivity	SM 2510	1983			mS/cm
Dissolved Oxygen	SM 4500-O	0.186			mg/L
ORP	SM 2580	220			mV
Temperature	SM 2550	9.6			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-30
Sample Date: 7/23/2019
Analysis Date: 7/24/2019
Matrix: GW

Lab ID: A07231909
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	34.8		1	mg/L
NH3-N	Nessler's	203		100	mg/L
NO2-N	HPLC/UV	3	U	1	mg/L
NO3-N	HPLC/UV	29		10	mg/L
CT as CO3	HPLC/UV	624		1	mg/L
pH	SM 4500-H+	9.31			su
Conductivity	SM 2510	1015			mS/cm
Dissolved Oxygen	SM 4500-O	0.103			mg/L
ORP	SM 2580	96			mV
Temperature	SM 2550	8.2			deg. C
True Color	SM 2120C	5	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-32
Sample Date: 7/17/2019
Analysis Date: 7/17/2019
Matrix: GW

Lab ID: A07171902
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	645		500	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	67.0		10	mg/L
CT as CO3	HPLC/UV	977		10	mg/L
pH	SM 4500-H+	9.44			su
Conductivity	SM 2510	3013			mS/cm
Dissolved Oxygen	SM 4500-O	0.295			mg/L
ORP	SM 2580	122			mV
Temperature	SM 2550	12.4			deg. C
True Color	SM 2120C	80.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-33
Sample Date: 7/18/2019
Analysis Date: 7/23/2019
Matrix: GW

Lab ID: A07181901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	12.1	U	1	mg/L
NH3-N	Nessler's	222		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	9.33		1	mg/L
CT as CO3	HPLC/UV	520		1	mg/L
pH	SM 4500-H+	9.06			su
Conductivity	SM 2510	2794			mS/cm
Dissolved Oxygen	SM 4500-O	0.195			mg/L
ORP	SM 2580	168			mV
Temperature	SM 2550	12.4			deg. C
True Color	SM 2120C	57.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-34
Sample Date: 7/17/2019
Analysis Date: 7/17/2019
Matrix: GW

Lab ID: A07171903
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	1.68		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	265		1	mg/L
pH	SM 4500-H+	6.94			su
Conductivity	SM 2510	426			mS/cm
Dissolved Oxygen	SM 4500-O	0.216			mg/L
ORP	SM 2580	199			mV
Temperature	SM 2550	10.5			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-35R
Sample Date: 8/1/2019
Analysis Date: 8/1/2019
Matrix: GW

Lab ID: A08011902
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	11.3		1	mg/L
NH3-N	Nessler's	123		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	166		10	mg/L
CT as CO3	HPLC/UV	350		10	mg/L
pH	SM 4500-H+	9.44			su
Conductivity	SM 2510	3435			mS/cm
Dissolved Oxygen	SM 4500-O	1.87			mg/L
ORP	SM 2580	294			mV
Temperature	SM 2550	13.4			deg. C
True Color	SM 2120C	30.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-36R
Sample Date: 8/1/2019
Analysis Date: 8/1/2019
Matrix: GW

Lab ID: A08011903
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	3.10		10	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	40.0	U	1	mg/L
pH	SM 4500-H+	6.65			su
Conductivity	SM 2510	31349			mS/cm
Dissolved Oxygen	SM 4500-O	0.082			mg/L
ORP	SM 2580	267			mV
Temperature	SM 2550	16.9			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-37R
Lab ID: A08141922
Sample Date: 8/14/2019
Analyst: J. Worley
Analysis Date: 8/14/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	30.4		1	mg/L
NH3-N	Nessler's	12.8		10	mg/L
NO2-N	HPLC/UV	1.00	U	1	mg/L
NO3-N	HPLC/UV	53.4		10	mg/L
CT as CO3	HPLC/UV	221		10	mg/L
pH	SM 4500-H+	7.05			su
Conductivity	SM 2510	#REF!			mS/cm
Dissolved Oxygen	SM 4500-O	4.128			mg/L
ORP	SM 2580	238			mV
Temperature	SM 2550	12.5			deg. C
True Color	SM 2120C	4.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-38R
Sample Date: 8/1/2019
Analysis Date: 8/1/2019
Matrix: GW

Lab ID: A08011904
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	241		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	567		1	mg/L
pH	SM 4500-H+	9.73			su
Conductivity	SM 2510	1536			mS/cm
Dissolved Oxygen	SM 4500-O	1.70			mg/L
ORP	SM 2580	104			mV
Temperature	SM 2550	6.2			deg. C
True Color	SM 2120C	36.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-39
Sample Date: 8/3/2019
Analysis Date: 8/3/2019
Matrix: GW

Lab ID: A08031902
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	47.0		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	93.4		10	mg/L
CT as CO3	HPLC/UV	636		10	mg/L
pH	SM 4500-H+	6.95			su
Conductivity	SM 2510	1922			mS/cm
Dissolved Oxygen	SM 4500-O	0.055			mg/L
ORP	SM 2580	193			mV
Temperature	SM 2550	7.6			deg. C
True Color	SM 2120C	54.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-40
Sample Date: 7/31/2019
Analysis Date: 7/31/2019
Matrix: GW

Lab ID: A07311904
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	139		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	8.39		1	mg/L
CT as CO3	HPLC/UV	1150		10	mg/L
pH	SM 4500-H+	8.95			su
Conductivity	SM 2510	725			mS/cm
Dissolved Oxygen	SM 4500-O	0.111			mg/L
ORP	SM 2580	151			mV
Temperature	SM 2550	7.9			deg. C
True Color	SM 2120C	40.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-41
Sample Date: 7/31/2019
Analysis Date: 7/31/2019
Matrix: GW

Lab ID: A10251905
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	128		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	22.8		1	mg/L
CT as CO3	HPLC/UV	251		10	mg/L
pH	SM 4500-H+	9.17			su
Conductivity	SM 2510	990			mS/cm
Dissolved Oxygen	SM 4500-O	0.094			mg/L
ORP	SM 2580	145			mV
Temperature	SM 2550	7.6			deg. C
True Color	SM 2120C	82.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-42
Sample Date: 7/25/2019
Analysis Date: 7/25/2019
Matrix: GW

Lab ID: A07251905
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	8.00		10	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	131		10	mg/L
pH	SM 4500-H+	6.00			su
Conductivity	SM 2510	264			mS/cm
Dissolved Oxygen	SM 4500-O	0.086			mg/L
ORP	SM 2580	197			mV
Temperature	SM 2550	7.5			deg. C
True Color	SM 2120C	1.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-43R
Lab ID: A08131901
Sample Date: 8/13/2019
Analyst: J. Worley
Analysis Date: 8/13/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	17.6		1	mg/L
NH3-N	Nessler's	21.0		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	5.52		1	mg/L
CT as CO3	HPLC/UV	215		1	mg/L
pH	SM 4500-H+	6.92			su
Conductivity	SM 2510	5890			mS/cm
Dissolved Oxygen	SM 4500-O	0.103			mg/L
ORP	SM 2580	208			mV
Temperature	SM 2550	10.9			deg. C
True Color	SM 2120C	21.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-44-120
Sample Date: 7/26/2019
Analysis Date: 7/26/2019
Matrix: GW

Lab ID: A07261902
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.440		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	232		1	mg/L
pH	SM 4500-H+	7.83			su
Conductivity	SM 2510	288			mS/cm
Dissolved Oxygen	SM 4500-O	0.282			mg/L
ORP	SM 2580	-51.7			mV
Temperature	SM 2550	9.0			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-45-120
Lab ID: A07161901
Sample Date: 7/16/2019
Analyst: J. Worley
Analysis Date: 7/16/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	1.70		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	209		1	mg/L
pH	SM 4500-H+	7.51			su
Conductivity	SM 2510	330			mS/cm
Dissolved Oxygen	SM 4500-O	0.314			mg/L
ORP	SM 2580	-0.61			mV
Temperature	SM 2550	10.7			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-46
Sample Date: 7/16/2019
Analysis Date: 7/16/2019
Matrix: GW

Lab ID: A07161902
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	34.0		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	282		1	mg/L
pH	SM 4500-H+	8.31			su
Conductivity	SM 2510	483			mS/cm
Dissolved Oxygen	SM 4500-O	0.192			mg/L
ORP	SM 2580	68.0			mV
Temperature	SM 2550	10.6			deg. C
True Color	SM 2120C	5.00	U	1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-47
Sample Date: 7/16/2019
Analysis Date: 7/16/2019
Matrix: GW

Lab ID: A07161903
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	1.60		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	171		1	mg/L
pH	SM 4500-H+	6.87			su
Conductivity	SM 2510	307			mS/cm
Dissolved Oxygen	SM 4500-O	0.156			mg/L
ORP	SM 2580	0.563			mV
Temperature	SM 2550	8.8			deg. C
True Color	SM 2120C	7.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-48-120
Sample Date: 7/17/2019
Analysis Date: 7/16/2019
Matrix: GW

Lab ID: A07171901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	235		500	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	423		10	mg/L
pH	SM 4500-H+	9.46			su
Conductivity	SM 2510	1034			mS/cm
Dissolved Oxygen	SM 4500-O	0.925			mg/L
ORP	SM 2580	144			mV
Temperature	SM 2550	10.2			deg. C
True Color	SM 2120C	49.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-49-120
Sample Date: 7/31/2019
Analysis Date: 7/31/2019
Matrix: GW

Lab ID: A07311906
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	27.5		1	mg/L
NH3-N	Nessler's	300		500	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	8.41		1	mg/L
CT as CO3	HPLC/UV	1070		1	mg/L
pH	SM 4500-H+	9.40			su
Conductivity	SM 2510	1967			mS/cm
Dissolved Oxygen	SM 4500-O	0.152			mg/L
ORP	SM 2580	76.6			mV
Temperature	SM 2550	8.8			deg. C
True Color	SM 2120C	142		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-50
Sample Date: 7/30/2019
Analysis Date: 7/30/2019
Matrix: GW

Lab ID: A07301903
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	190		500	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00		1	mg/L
CT as CO3	HPLC/UV	369		10	mg/L
pH	SM 4500-H+	9.59			su
Conductivity	SM 2510	904			mS/cm
Dissolved Oxygen	SM 4500-O	0.124			mg/L
ORP	SM 2580	61.3			mV
Temperature	SM 2550	8.8			deg. C
True Color	SM 2120C	72.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-51
Sample Date: 7/30/2019
Analysis Date: 7/30/2019
Matrix: GW

Lab ID: A07301904
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	8.60		10	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	309		1	mg/L
pH	SM 4500-H+	6.97			su
Conductivity	SM 2510	512			mS/cm
Dissolved Oxygen	SM 4500-O	1.214			mg/L
ORP	SM 2580	49.9			mV
Temperature	SM 2550	10.4			deg. C
True Color	SM 2120C	18.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-52
Sample Date: 7/18/2019
Analysis Date: 7/23/2019
Matrix: GW

Lab ID: A07171905
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	113		1	mg/L
pH	SM 4500-H+	N/A			su
Conductivity	SM 2510	N/A			mS/cm
Dissolved Oxygen	SM 4500-O	N/A			mg/L
ORP	SM 2580	N/A			mV
Temperature	SM 2550	N/A			deg. C
True Color	SM 2120C	7.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-53
Sample Date: 8/29/2019
Analysis Date: 8/29/2019
Matrix: GW

Lab ID: A08291901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.440		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	232		1	mg/L
pH	SM 4500-H+	7.11			su
Conductivity	SM 2510	360			mS/cm
Dissolved Oxygen	SM 4500-O	0.161			mg/L
ORP	SM 2580	-27.7			mV
Temperature	SM 2550	9.3			deg. C
True Color	SM 2120C	31.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: MW-54
Sample Date: 8/12/2019
Analysis Date: 8/12/2019
Matrix: GW

Lab ID: A08121901
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	219		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	417		10	mg/L
pH	SM 4500-H+	9.44			su
Conductivity	SM 2510	807			mS/cm
Dissolved Oxygen	SM 4500-O	0.926			mg/L
ORP	SM 2580	172			mV
Temperature	SM 2550	10.4			deg. C
True Color	SM 2120C	255		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: E-121B
Sample Date: 8/12/2019
Analysis Date: 8/12/2019
Matrix: GW

Lab ID: A08121905
Analyst: J. Worley
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	0.770		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	325		1	mg/L
pH	SM 4500-H+	6.55	18.10	0.744	su
Conductivity	SM 2510	#REF!			mS/cm
Dissolved Oxygen	SM 4500-O	0.744	194.43	#REF!	mg/L
ORP	SM 2580	18	0.744	194.434	mV
Temperature	SM 2550	12.0	6.54856	18.1	deg. C
True Color	SM 2120C	6.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: E-155
Lab ID: A08051903
Sample Date: 8/3/2019
Analyst: J. Worley
Analysis Date: 8/3/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	17.7		10	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	302		1	mg/L
pH	SM 4500-H+	6.31			su
Conductivity	SM 2510	482			mS/cm
Dissolved Oxygen	SM 4500-O	1.02			mg/L
ORP	SM 2580	37.0			mV
Temperature	SM 2550	14.0			deg. C
True Color	SM 2120C	57.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: E-156
Lab ID: A08051904
Sample Date: 8/3/2019
Analyst: J. Worley
Analysis Date: 8/3/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	u	1	mg/L
NH3-N	Nessler's	5.00		10	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	735		1	mg/L
pH	SM 4500-H+	6.19			su
Conductivity	SM 2510	607			mS/cm
Dissolved Oxygen	SM 4500-O	0.269			mg/L
ORP	SM 2580	6.62			mV
Temperature	SM 2550	13.1			deg. C
True Color	SM 2120C	7.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: E-157
Lab ID: A08121902
Sample Date: 8/12/2019
Analyst: J. Worley
Analysis Date: 8/12/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	1.59		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	229		1	mg/L
pH	SM 4500-H+	6.86			su
Conductivity	SM 2510	238			mS/cm
Dissolved Oxygen	SM 4500-O	0.641			mg/L
ORP	SM 2580	203.62			mV
Temperature	SM 2550	13.2			deg. C
True Color	SM 2120C	41.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: E-160
Lab ID: A08071901
Sample Date: 8/9/2019
Analyst: J. Worley
Analysis Date: 8/9/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	1.67		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	378		1	mg/L
pH	SM 4500-H+	6.41			su
Conductivity	SM 2510	509			mS/cm
Dissolved Oxygen	SM 4500-O	0.228			mg/L
ORP	SM 2580	-2.64			mV
Temperature	SM 2550	11.6			deg. C
True Color	SM 2120C	60.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: E-161
Lab ID: A08121903
Sample Date: 8/12/2019
Analyst: J. Worley
Analysis Date: 8/12/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	9.20		10	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	267		1	mg/L
pH	SM 4500-H+	7.23			su
Conductivity	SM 2510	341			mS/cm
Dissolved Oxygen	SM 4500-O	0.338			mg/L
ORP	SM 2580	32.0			mV
Temperature	SM 2550	11.7			deg. C
True Color	SM 2120C	6.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: E-169
Lab ID: A08071902
Sample Date: 8/9/2019
Analyst: J. Worley
Analysis Date: 8/9/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	6.70		100	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	274		10	mg/L
pH	SM 4500-H+	6.62			su
Conductivity	SM 2510	558			mS/cm
Dissolved Oxygen	SM 4500-O	0.327			mg/L
ORP	SM 2580	105.1			mV
Temperature	SM 2550	12.2			deg. C
True Color	SM 2120C	6.00		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: E-170
Lab ID: A08121904
Sample Date: 8/12/2019
Analyst: J. Worley
Analysis Date: 8/12/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	2.13		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	510		1	mg/L
pH	SM 4500-H+	6.42			su
Conductivity	SM 2510	408			mS/cm
Dissolved Oxygen	SM 4500-O	0.424			mg/L
ORP	SM 2580	14.1			mV
Temperature	SM 2550	13.1			deg. C
True Color	SM 2120C	31.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

Kenai Nitrogen Operations Laboratory
P.O. Box 575
Kenai, Alaska 99611

Water Sample Analysis Results

Sample ID: E-206
Lab ID: A08051905
Sample Date: 8/3/2019
Analyst: J. Worley
Analysis Date: 8/3/2019
Matrix: GW
Report Date: 10/28/19

Analyte	Method	Result	Q	Dil Factor	Units
Urea	HPLC/UV	10.0	U	1	mg/L
NH3-N	Nessler's	1.14		1	mg/L
NO2-N	HPLC/UV	3.00	U	1	mg/L
NO3-N	HPLC/UV	3.00	U	1	mg/L
CT as CO3	HPLC/UV	579		1	mg/L
pH	SM 4500-H+	5.67			su
Conductivity	SM 2510	#REF!			mS/cm
Dissolved Oxygen	SM 4500-O	3.896			mg/L
ORP	SM 2580	313.1			mV
Temperature	SM 2550	13.2			deg. C
True Color	SM 2120C	25.0		1	PCU

Notes:
U - The analyte was not detected at the level shown.
J - Indicates quantitation is an estimate.
NA - Not analyzed.

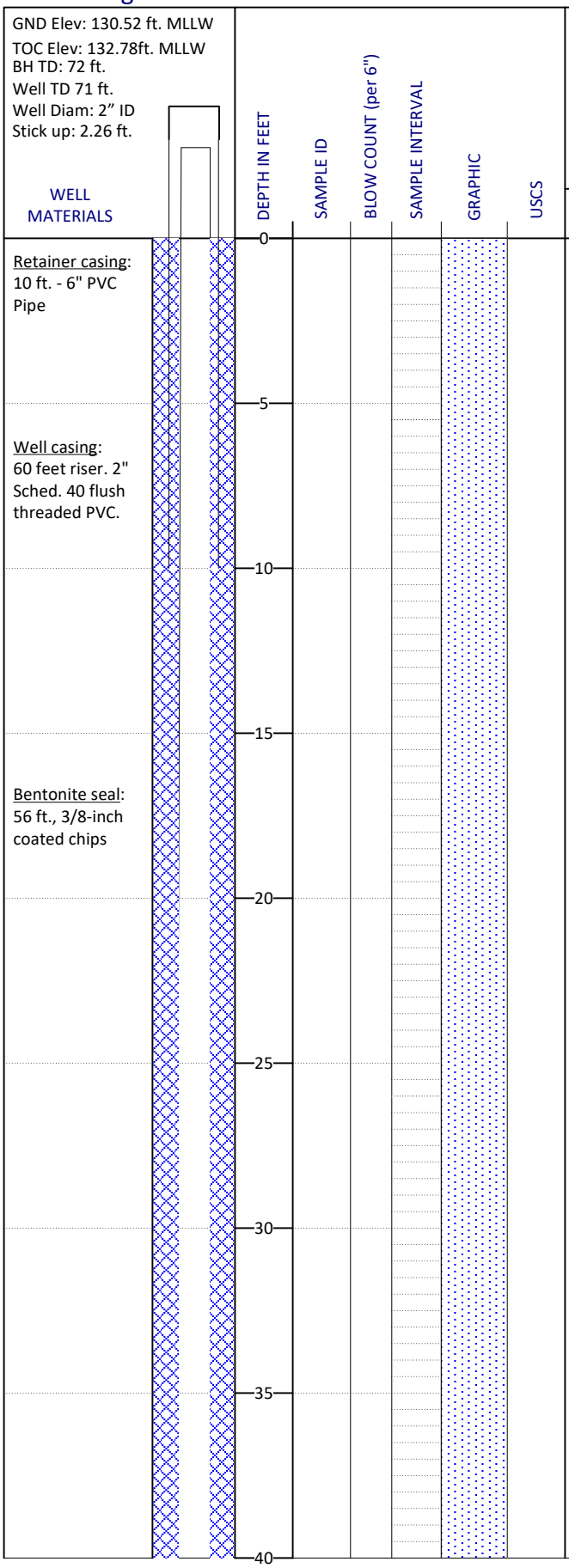
Appendix B

Monitoring Well As-Built

MW-9R

GND Elev: 130.52 ft. MLLW
TOC Elev: 132.78ft. MLLW
BH TD: 72 ft.
Well TD 71 ft.
Well Diam: 2" ID
Stick up: 2.26 ft.

Client: Agrium US, Inc.
Site: KNO Plant
Start Date: 06/05/19
End Date: 06/05/19
Driller: Discovery Drilling
Drilling Method: CME 75 with hollow stem auger
Logged By: Hunter Hollenberg
Area: Beach



SOIL DESCRIPTION

SP

No sampling

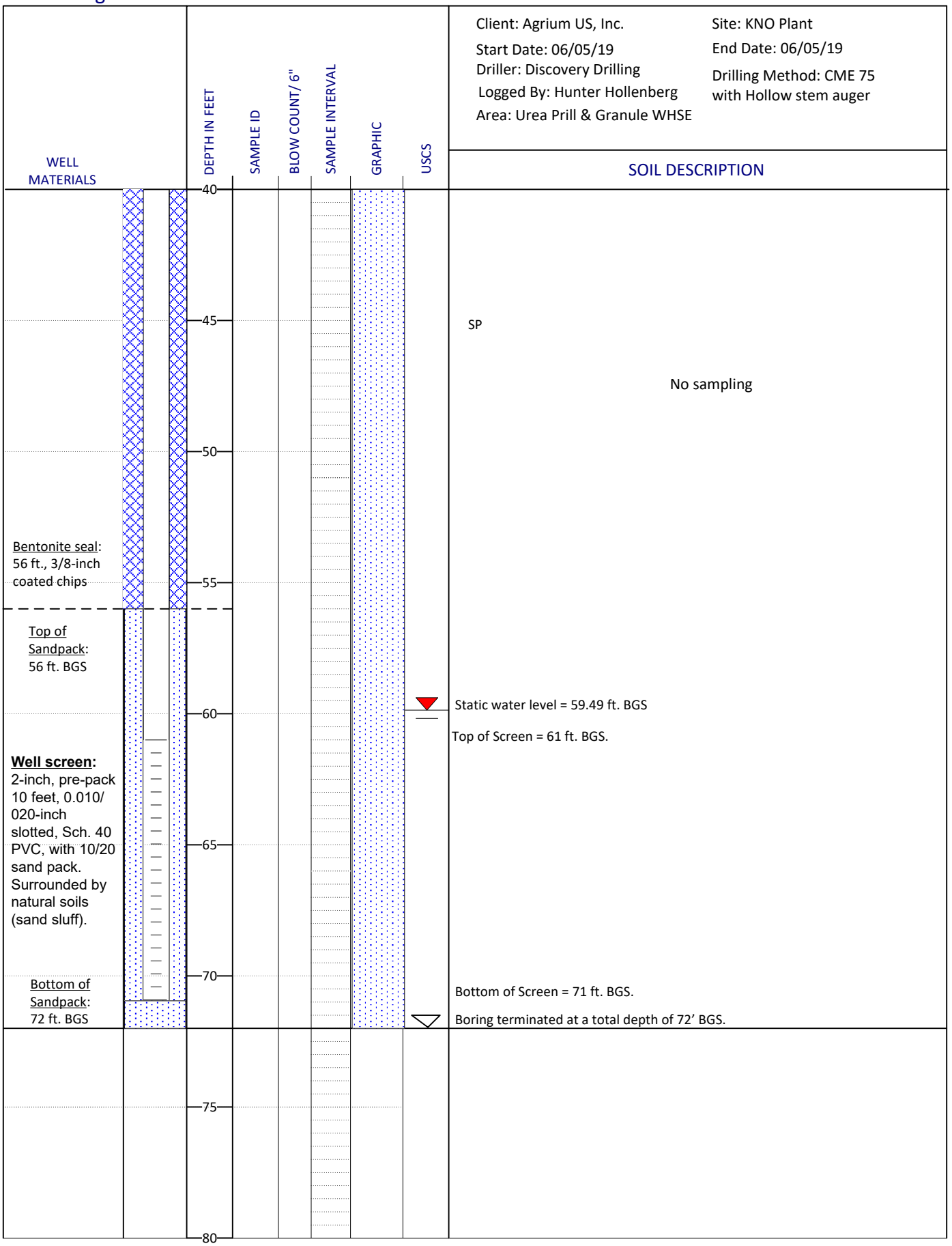
Client: Agrium US, Inc. Site: KNO Plant

Start Date: 06/05/19 End Date: 06/05/19

Driller: Discovery Drilling Drilling Method: CME 75 with Hollow stem auger

Logged By: Hunter Hollenberg

Area: Urea Prill & Granule WHSE



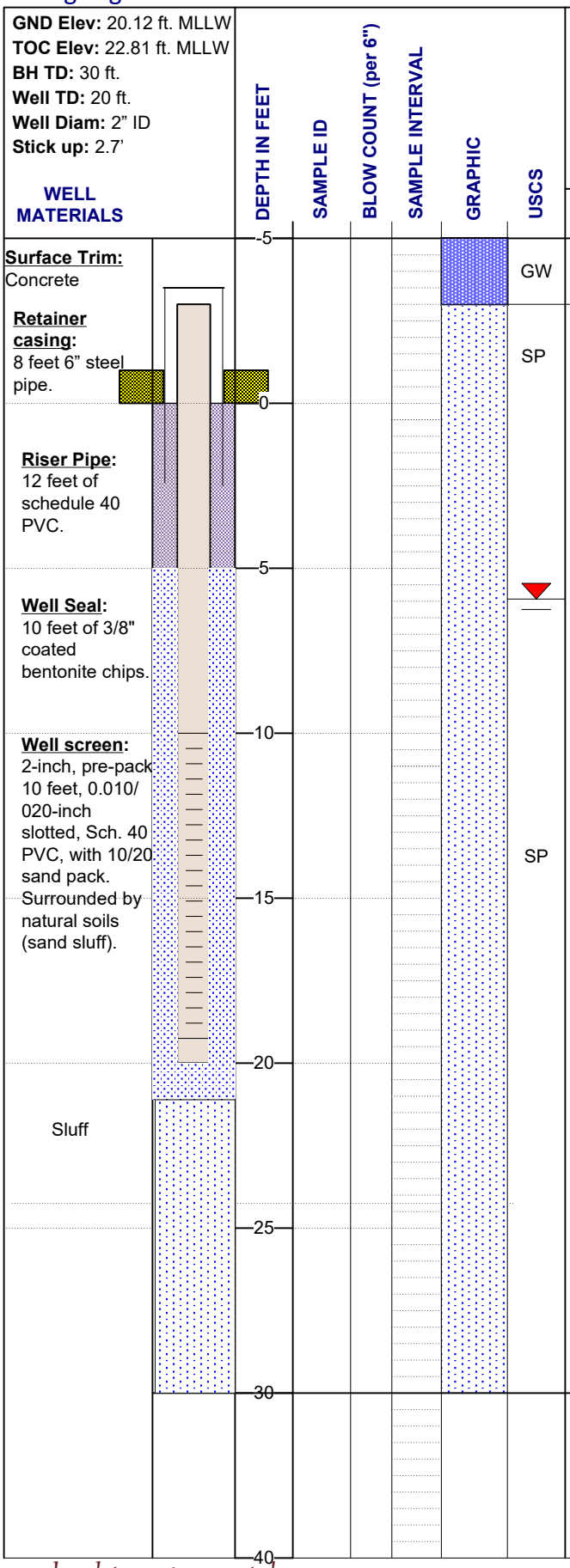
Boring Log and Well As-Built

MW-35R

GND Elev: 20.12 ft. MLLW
TOC Elev: 22.81 ft. MLLW
BH TD: 30 ft.
Well TD: 20 ft.
Well Diam: 2" ID
Stick up: 2.7'

Client: Agrium US, Inc.
Start Date: 6/03/19
Logged By: Hunter Hollenberg
Driller: Discovery Drilling
Area: S. Beach

Site: KNO Plant
End Date: 6/03/19
Method: CME-55B 6" hollow stem auger.



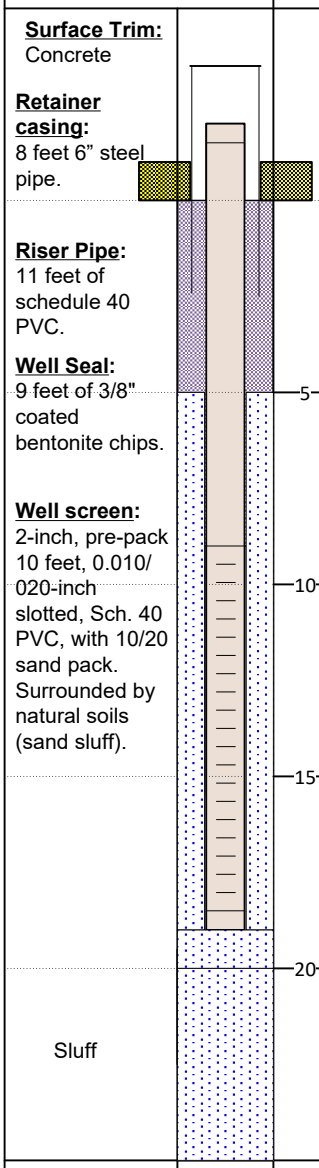
USCS	SOIL DESCRIPTION
GW	GRAVEL, coarse, well-sorted, rounded, dry.
SP	Fine SAND, dry.
	Static water level at low tide = 5.93 ft BGS
	Top of Screen= 10 ft. BGS.
SP	Same as above, saturated.
	Bottom of Screen = 20 ft. BGS.
	Sand down to 20 ft.
SP	
	Boring terminated at a total depth of 30 ft. BGS.

Boring Log and Well As-Built

MW-36R

GND Elev: 19.32 ft. MLLW
TOC Elev: 22.06 ft. MLLW
BH TD: 25 ft.
Well TD: 19 ft.
Well Diam: 2" ID
Stick up: 2.6'

Client: Agrium US, Inc.
Site: KNO Plant
Start Date: 6/03/19
End Date: 6/03/19
Logged By: Hunter Hollenberg
Driller: Discovery Drilling
Method: CME-55B 6" hollow stem auger.
Area: Beach



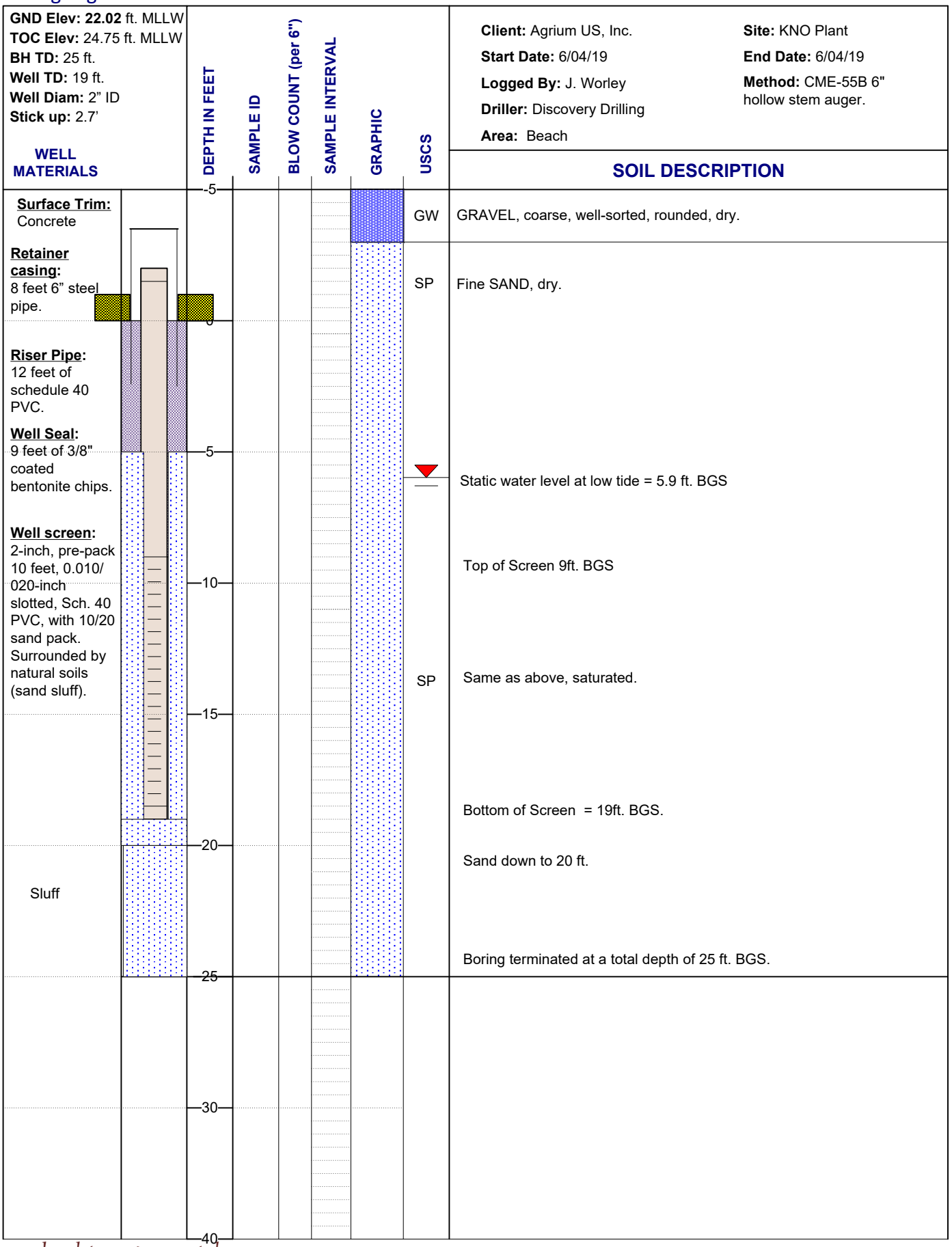
DEPTH IN FEET	SAMPLE ID	BLOW COUNT (per 6")	SAMPLE INTERVAL	GRAPHIC	USCS	SOIL DESCRIPTION
					GW	GRAVEL, coarse, well-sorted, rounded, dry.
					SP	Fine SAND, dry.
						Static water level at low tide = 4.09 ft. BGS
5						
10						Top of Screen 9ft. BGS
					SP	Same as above, saturated.
15						
						Bottom of Screen = 19ft. BGS. Sand down to 20 ft.
20						
						Boring terminated at a total depth of 25 ft. BGS.

Boring Log and Well As-Built

MW-37R

GND Elev: 22.02 ft. MLLW
TOC Elev: 24.75 ft. MLLW
BH TD: 25 ft.
Well TD: 19 ft.
Well Diam: 2" ID
Stick up: 2.7'

Client: Agrium US, Inc.
Site: KNO Plant
Start Date: 6/04/19
End Date: 6/04/19
Logged By: J. Worley
Method: CME-55B 6" hollow stem auger.
Driller: Discovery Drilling
Area: Beach



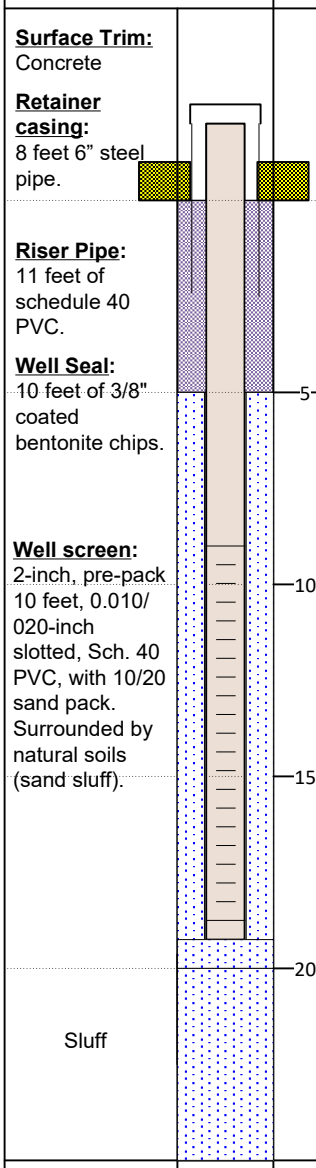
Cook Inlet Environmental, Inc.

Boring Log and Well As-Built

MW-38R

GND Elev: 21.62 ft. MLLW
TOC Elev: 23.82 ft. MLLW
BH TD: 25 ft.
Well TD: 19 ft.
Well Diam: 2" ID
Stick up: 2.2'

Client: Agrium US, Inc.
Site: KNO Plant
Start Date: 6/04/19
End Date: 6/04/19
Logged By: Hunter Hollenberg
Method: CME-55B 6" hollow stem auger.
Driller: Discovery Drilling
Area: Beach



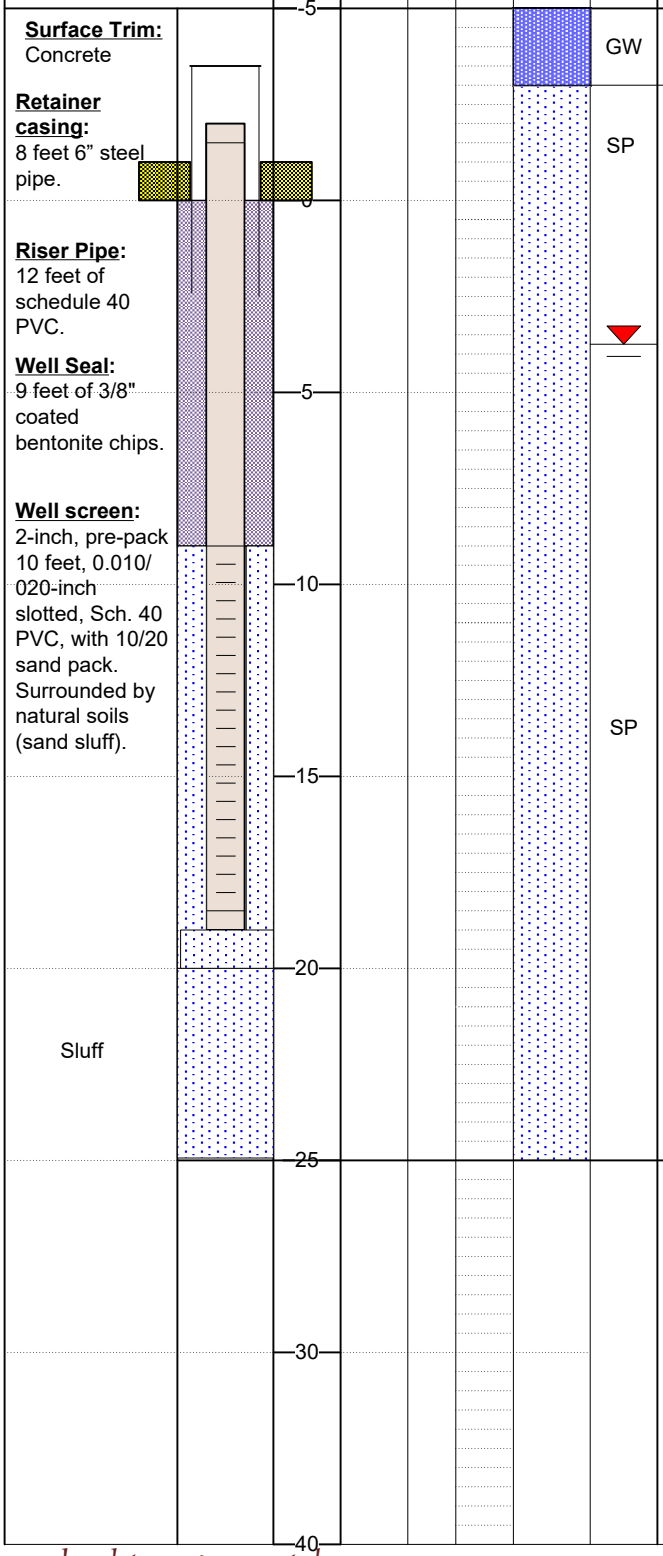
DEPTH IN FEET	SAMPLE ID	BLOW COUNT (per 6")	SAMPLE INTERVAL	GRAPHIC	USCS	SOIL DESCRIPTION
					GW	GRAVEL, coarse, well-sorted, rounded, dry.
					SP	Fine SAND, dry.
						Static water level at low tide = 3.96ft. BGS
						Top of Screen 9 ft. BGS
					SP	Same as above, saturated.
						Bottom of Screen 19 ft. BGS
						Sand down to 20 ft.
						Boring terminated at a total depth of 25 ft. BGS.

Boring Log and Well As-Built

MW-43R

GND Elev: 21.42 ft. MLLW
TOC Elev: 24.28ft. MLLW
BH TD: 25 ft.
Well TD: 19 ft.
Well Diam: 2" ID
Stick up: 2.7'

Client: Agrium US, Inc.
Site: KNO Plant
Start Date: 6/04/19
End Date: 6/04/19
Logged By: Hunter Hollenberg
Method: CME-55B 6" hollow stem auger.
Driller: Discovery Drilling
Area: Beach



USCS	SOIL DESCRIPTION
GW	GRAVEL, coarse, well-sorted, rounded, dry.
SP	Fine SAND, dry.
	Static water level at low tide = 3.74 ft. BGS
	Top of Screen 9ft. BGS
SP	Same as above, saturated.
	Bottom of Screen = 19ft. BGS.
	Sand down to 20 ft.
SP	
	Boring terminated at a total depth of 25 ft. BGS.