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September 30, 2021

Mr. Adolph Everett, Chief
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US Environmental Protection Agency, Region 2
290 Broadway
New York, New York 10007-1866

Re: St. Croix Alumina Site Administrative Order Docket No. RCRA-0202001-7301
Phase 1 Natural Source Zone Depletion Assessment Report
EPA Facility ID No. VID090302084

Dear Mr. Everett:

The Project Operating Committee (POC) is pleased to provide the enclosed *Phase 1 Natural Source Zone Depletion Assessment Report* for the St. Croix Alumina Site, St. Croix, U.S. Virgin Islands (hereafter 'Site') to the United States Environmental Protection Agency (USEPA).
The primary objective of the Natural Source Zone Depletion (NSZD) study was to refine our understanding of NSZD processes at the site, provide a preliminary quantification of mass losses and aid in the definition of the proposed Phase 2 scope of work. The Phase 1 study has demonstrated using multiple lines of evidence (both qualitative and quantitative) that NSZD processes are robust in both the saturated and unsaturated zones at the Site. Preliminary estimates indicate natural light non-aqueous phase liquid (LNAPL) mass losses through NSZD processes exceed the mass being removed by LNAPL recovery. Both groundwater and soil gas data demonstrate that the dominant mass loss processes are associated with sulfate reduction and methanogenesis with elevated methane and carbon dioxide observed in soil gas.
In accordance with the NSZD Work Plan, two key items need to be agreed with USEPA before implementation of the Phase 2 NSZD scope of work. These include:

1. Which high quality assessment methodology should be used for the assessment (E-Flux or Dynamic Closed Chamber).
2. The final sampling grid to be used for the high-quality assessment.

Given elevated methane concentrations in the unsaturated zone and consistent with the decision logic diagram provided in the NSZD assessment, the use of the E-Flux method (which only quantifies mass losses based on carbon dioxide flux) has the potential to majorly underestimate the natural mass loss rates. Consequently, the Dynamic Closed Chamber (DCC) methodology is proposed for Phase 2 scope

of work. DCC is the preferred method as it is capable of quantifying both carbon dioxide and methane flux from the unsaturated zone.
A sampling grid covering the area of elevated soil gas and considering areas of pavement/accessibility has been developed and included in the report. Based on the ease of implementation of the DCC methodology (and consistent with Triad assessment methodologies) additional sampling locations may be added in the field to validate findings and capture the lateral area of biogenic gas efflux and associated mass losses.

In addition to the primary objective, this report also provides an updated assessment on LNAPL recoverability at the site using the detailed assessment methodologies contained in the LNAPL Conceptual Site Model (CSM) and Remedial Action Plan (EHS Support 2020). Operation of the recovery systems in 2020 and 2021 (and implementing the recommendations in the above report) continue to demonstrate declining recovery rates, with low recovery rates identified in a large number of wells (< 1 gpd) and a significant number having recovered greater than 90% of the theoretically recoverable LNAPL. Further evaluation of the LNAPL recovery data will be provided as part of the Phase 2 NSZD report where formal recommendations (in accordance with the decision logic diagrams provided in the work plan) will be provided.

Sincerely,

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Remediation Manager

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Phase 1 Natural Source Zone Depletion Assessment Report

St. Croix, U.S. Virgin Islands

Prepared for:

St. Croix Alumina Site

Prepared by:

EHS Support

September 2021

Table of Contents

1 Introduction 1
1.1 Decision Logic Process 2

2 Phase 1 Tasks 4

3 Field Measurement and Sampling Procedures 5

4 Data Quality Evaluation and Usability Assessment 7

5 Groundwater Geochemistry Characterisation 8
5.1 Charge Balance 8
5.2 Groundwater Inorganic Chemistry 10
5.3 Summary 12

6 Phase 1 Qualitative NSZD Results 14
6.1 NSZD Assessment Using Well Head Space Gas Data 14
6.2 NSZD Assessment Using the Differential Temperature Method 15
6.3 NSZD Assessment Using Groundwater Field Parameters 18
6.4 Aqueous NSZD Assessment and Preferred Biodegradation Reactions 19
6.5 Redox Processes 22
6.6 Summary of Qualitative Results 23

7 Phase 1 Quantitative NSZD Results 24
7.1 Aqueous NSZD rate estimate 24
7.1.1 Darcy Velocity and Flow Area Calculation 24
7.1.2 Assimilative Capacity Calculation 25
7.1.3 QA/QC of Aqueous NSZD Rate 30
7.2 NSZD Rate Estimate Using Groundwater Temperatures 30
7.3 NSZD Rate Estimate Using the Differential Temperature Method 32
7.4 Summary of Quantitative Results 33

8 Key Study Question Outcomes 35

9 Recovery Data Evaluation 39
9.1 Data Analysis 39

10 Recommendations and Schedule for Phase 2 Work 44
10.1 Recommended Sampling Grid for Phase 2 44
10.2 Schedule 44

11 References 45

List of In-Text Tables

Table 7-1 Average Measured NSZD Indicator Concentrations (mg/L)
Table 7-2 Upper-End, Mean, and Lower-End of Measured NSZD Indicator Concentrations (mg/L)
Table 7-3 Observed Upper-End, Mean, and Lower-End NSZD Indicator Concentrations (mg/L)
Table 7-4 Balanced Biotransformation Reactions
Table 7-5 Molecular Weights
Table 7-6 Stoichiometric Ratio Calculations for Octadecane ($C_{18}H_{38}$) Degradation
Table 7-7 Stoichiometric Ratio Calculations for CO_2 and Alkalinity Production
Table 7-8 Summary of Utilization Factors for Octadecane ($C_{18}H_{38}$) Degradation and CO_2 and Alkalinity Production from Biotransformation Processes
Table 7-9 Computed Changes in Octadecane, CO_2, and Alkalinity for Upper-End AC Values
Table 7-10 Computed Changes in Octadecane, CO_2, and Alkalinity for Mean AC Values
Table 7-11 Computed Changes in Octadecane, CO_2, and Alkalinity for Lower-End AC Values
Table 7-12 Estimated Aqueous NSZD Rates
Table 7-13 Aqueous Rate QA/QC Data
Table 7-14 NSZD Rate Based on Groundwater Temperature
Table 7-15 Summary of NSZD Rates
Table 8-1 Key Investigation Question Outcomes
Table 9-1 Assessment of Recovery Trends for Wells with Solar Sippers Operating
Table 9-2 Comparison of Recovery Rates and Rankings for August 2018 to May 2020 period and June 2020 to July 2021 Period
Table 9-3 Assessment of Recovery Trends

List of Attached Tables

Table 1 Field Measurement Results
Table 2 Stabilized Groundwater Field Parameter Results July 2021
Table 3 Groundwater Analytical Results
Table 4 Statistical Comparison for Well Headspace Gas Readings
Table 5 Temperature Profile Comparisons - Upgradient, Source, and Downgradient Wells
Table 6 Statistical Comparison for Aqueous TEA and Byproduct Results
Table 7 Aqueous NSZD Rate Calculations Based on Groundwater Temperature
Table 8 Unsaturated Zone Temperature Gradient Calculation
Table 9 PSPH Recovery Summary August 2018 – July 2021

List of In-Text Figures

Figure 1-1 Decision flow chart for interpreting Phase 1 Results
Figure 5-1 Cation/Anion Charge Imbalance Assessment
Figure 5-2 Box and Whisker Plots of Sample Geochemical Outliers
Figure 5-3 Piper Plot
Figure 6-1 Box and Whisker Plots of Well Headspace Gas Concentrations
Figure 6-2 Histogram of Minimum, Average, and Maximum Temperature Differences Between Source Area and Background Well Locations 1 Ft Above Water Table and 1 Ft Below Water Table

Figure 6-3 Box and Whisker Plots of Groundwater DO and ORP
Figure 6-4 Box and Whisker Plots of NSZD TEA Concentrations
Figure 6-5 Box and Whisker Plots of NSZD By-Product Concentrations

List of Attached Figures

Figure 1 Site Location Map
Figure 2 Monitoring Well Designations – NSZD Areas
Figure 3 Groundwater Surface Map – July 2021

Field Parameter Contours
Figure 4 LNAPL Thickness – July 2021
Figure 5A Methane (1 Ft Above Groundwater) – July 2021
Figure 5B Carbon Dioxide (1 Ft Above Groundwater) – July 2021
Figure 5C Hydrogen Sulfide (1 Ft Above Groundwater) – July 2021
Figure 5D Temperature (2 Ft Below Ground Surface) – July 2021
Figure 5E Temperature (¼ to Water Table) – July 2021
Figure 5F Temperature (Halfway to Water Table) – July 2021
Figure 5G Temperature (¾ to Water Table) – July 2021
Figure 5H Temperature (1 Ft Above Groundwater) – July 2021
Figure 5I Temperature (1 Ft Below Groundwater) – July 2021
Figure 5J Temperature (5 FtFt Below Groundwater) – July 2021
Figure 5K Temperature (10 Ft Below Groundwater) – July 2021
Figure 5L Oxidation Reduction Potential – July 2021
Figure 5M Dissolved Oxygen – July 2021
Figure 5N Conductivity – July 2021

Electron Acceptor and Byproduct Contours
Figure 6A Nitrate – July 2021
Figure 6B Nitrite – July 2021
Figure 6C Sulfate – July 2021
Figure 6D Dissolved Sulfide – July 2021
Figure 6E Dissolved Manganese – July 2021
Figure 6F Dissolved Iron – July 2021
Figure 6G Dissolved Carbon Dioxide – July 2021
Figure 6H Dissolved Methane – July 2021

Temperature Differential Histograms
Figure 7A Minimum, Average, and Maximum Temperature Differential Between Source and Background Wells Unsaturated Zone July 2021
Figure 7B Minimum, Average, and Maximum Temperature Differential Between Source and Downgradient Wells Unsaturated Zone July 2021
Figure 7C Minimum, Average, and Maximum Temperature Differential Between Source and Background Wells Unsaturated Zone July 2021
Figure 7D Minimum, Average, and Maximum Temperature Differential Between Source and Downgradient Wells Saturated Zone July 2021

Electron Acceptor and Byproduct Cross Plots

Figure 8A Electron Acceptor Cross Plots – July 2021
Figure 8B Measured versus Calculated Redox Potential (Eh) – July 2021

Temperature Calculations

Figure 9 Source Zone Well Temperature Profiles
Figure 10 Areas Used in Gas Gradient Calculations – July 2021
Figure 11 Proposed LI-COR Sampling Locations

List of Appendices

Appendix A Instrument Calibration Records
Appendix B Field Sampling Records
Appendix C Laboratory Analytical Reports
Appendix D Tier II Data Quality Evaluation Report
Appendix E Usability Data Quality Evaluation
Appendix F LNAPL Recovery Data Statistical Analysis

Acronyms

°C	degrees Celsius
µmol	micromoles
AC	assimilative capacity
Ag/AgCl	silver/silver chloride
ALCOA	ALCOA World Alumina, L.L.C.
AOC	Administrative Order on Consent
Ca	calcium
$CaCO_3$	calcite
CH_4	methane
CO_2	carbon dioxide
C-O-C	chain-of-custody
COC	chemical of concern
CRC CARE	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
CSM	conceptual site model
DCC	dynamic closed chamber
DO	dissolved oxygen
DPPHC	Dissolved Phase Petroleum Hydrocarbon Constituents
DQO	data quality objective
eH	Oxidation/Reduction Potential (hydrogen electrode)
Fe	iron
Fe(II)	ferrous iron
Fe_2O_3	hematite
Ft	feet
Ft/ft	feet per foot
g/mol	grams per mole
g/m^3	grams per cubic meter
gpd	gallon per day
GWB	Geochemists' Workbench®
H_2S	hydrogen sulfide
HASP	Health and Safety Plan
HCO_3	bicarbonate
HOVIC	Hess Oil Virgin Islands Corp.
ITRC	Interstate Technology & Regulatory Council
K	Kelvin
kJ	kilojoules
L/min	liter per minute

L	liter
LNAPL	light non-aqueous phase liquid
m^2	square meters
m^3m	meters cubed per meter
Mg	magnesium
mg	milligram
mg/L	milligrams per liter
min	minute
mL	milliliter
mm^3	cubic millimeters
Mn	manganese
MnO_2	pyrolusite
MNA	monitored natural attenuation
mol	moles
msl	mean sea level
mV	millivolt
N_2	dinitrogen gas
Na	sodium
Na- HCO_3	Sodium Bicarbonate
NaCl	sodium chloride
NAPL	non-aqueous phase liquid
NH_3	ammonia
NH_4	ammonium
NO_2	nitrite
NO_3	nitrate
NSZD	natural source zone depletion
NTU	Nephelometric turbidity unit
O_2	oxygen
ORP	oxidation-reduction potential
POC	Project Operating Committee
PSPH	Phase Separated Petroleum Hydrocarbon
Q/K	saturation index
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
SCA	St. Croix Alumina, L.L.C.
SO_4	sulfate
S^{2-}	sulfide

TDS	total dissolved solids
TEA	terminal electron acceptor
USEPA	United States Environmental Protection Agency
VIALCO	Virgin Islands Alumina Company

Trademarks, trade names, company, or product names referenced herein are used for identification purposes only and are the property of their respective owners.

1 Introduction

The following companies entered into an Administrative Order on Consent (AOC), with the United States Environmental Protection Agency (USEPA), Region 2, on May 14, 2001, with an effective date of May 24, 2001:

- St. Croix Alumina, LLC (referred to as SCA)
- ALCOA World Alumina, LLC (formerly known as ALCOA Alumina and Chemical, LLC; referred to as ALCOA)
- Virgin Islands Alumina Company (referred to as VIALCO)
- Century Aluminum Company, Inc.
- Lockheed Martin Corporation (referred to as "Lockheed Martin")
- Hess Oil Virgin Islands Corp. (referred to as HOVIC)
- HOVENSA LLC (referred to as "HOVENSA")

Pursuant to the AOC, these companies have agreed to work together to address Phase Separated Petroleum Hydrocarbon (PSPH) and Dissolved Phase Petroleum Hydrocarbon Constituents (DPPHC) located beneath the St. Croix Alumina facility in St. Croix, U.S. Virgin Islands (attached). As per the AOC, a Project Operating Committee (POC) was formed to design, install, and operate a monitoring and remediation system for the Site.

A Draft PSPH Work Plan was submitted to the USEPA on July 23, 2001 (HOVIC, 2001a). USEPA approved the PSPH Work Plan on August 8, 2001. Implementation of the PSPH Work Plan has been initiated and both PSPH and DPPHC recovery is underway. The initial Draft DPPHC Work Plan was submitted to USEPA on September 21, 2001 (HOVIC, 2001b). The USEPA requested seven items be incorporated into a revised draft. This revised Draft DPPHC Work Plan was submitted to the USEPA on December 21, 2001 (HOVIC, 2001c). USEPA conditionally approved the work plan in a letter dated January 15, 2002, with proposed changes to timeline items (USEPA, 2002). An amended Draft was submitted to the USEPA on February 22, 2002, incorporating the requested USEPA timeline changes (HOVIC, 2002). The POC recommended that the quarterly status reports and the semiannual report be consolidated into one report submitted semiannually. The USEPA approved this recommendation in their letter on March 3, 2005.

The POC submitted a Draft PSPH Pilot Study and DPPHC Sampling Plan Modification to USEPA on May 21, 2018 (HOVIC, 2018a). USEPA provided comments to the proposed plan, which were implemented by the POC, and a final PSPH Pilot Study and DPPHC Sampling Plan Modification was submitted on June 11, 2018 (HOVIC, 2018b). This recovery plan was implemented by the POC over 2018, 2019, and the first quarter of 2020.

Using historical data and the data collected from this modified light non-aqueous phase liquid (LNAPL) recovery program, a detailed assessment of LNAPL recovery/mobility and chemistry data was completed and reported in the July 2020 LNAPL Conceptual Site Model (CSM) and Remedial Action Work Plan (EHS Support LLC ["EHS Support"], 2020). This assessment demonstrated that the majority of LNAPL recovery wells have reached or are approaching a practicality endpoint. In addition, the CSM and Remedial Action Work Plan proposed shutdown criteria for active recovery wells (EHS Support, 2020). However, the report recommended that due to uncertainties and data gaps, recovery operations, including well maintenance and semi-annual groundwater monitoring should continue.

As a supplement to continued routine groundwater sampling activities and the extension of the program of LNAPL recovery activities, EHS Support (2021) proposed that additional analysis be conducted to support the assessment of natural source zone depletion (NSZD) processes in the aquifer. Based on the Site geohydrology and limited geochemical data, a combination of sulfate reduction and methanogenesis processes appear to be active and significant contributors to mass losses at the Site. A program of works was proposed to further define and quantify the processes contributing to such natural mass losses.

As such, EHS Support developed and submitted an NSZD Work Plan ("Work Plan") to USEPA in April 2021 (EHS Support, 2021a). The objective of the Work Plan was to provide the protocols and procedures for a geohydrology and geochemistry assessment to facilitate a better understanding and quantify the natural attenuation degradation of the historical dissolved and phase-separated impacts in the groundwater at the Site. EHS Support proposed an iterative process consisting of two phases that will utilize a combination of existing monitoring well geochemistry data and soil gas flux analysis in accordance with established NSZD and monitored natural attenuation (MNA) technical guidance (Interstate Technology & Regulatory Council [ITRC], 2009; CRC CARE, 2015 and 2018).

The objective of the Phase 1 Natural Source Zone Depletion Study ("Phase 1 NSZD Study") described herein was to develop a better understanding of preliminary quantification of natural attenuation and degradation of the historical dissolved and phase-separated impacts in groundwater at the Site to inform the approach for Phase 2 works.

1.1 Decision Logic Process

The goals of Phase 1 were designed to better constrain Site hydrological complexity by assessing variations in groundwater geochemistry and qualitatively confirm the degree to which NSZD depletion is active at the Site. The following multiple lines of evidence were evaluated to establish evidence for active NSZD:

1. Depletion of terminal electron acceptors (TEAs) relative to background (upgradient) groundwater.
2. Groundwater quality parameter assessment to identify the presence of redox conditions favorable for and indicative of NSZD.
3. Identification of biogenic gases in source area wells (elevated carbon dioxide [CO_2], methane [CH_4], and/or hydrogen sulfide [H_2S]; depleted oxygen [O_2]).
4. Elevated temperature in the unsaturated zone and below the water table as an indicator of aqueous and volatile phase exothermic NSZD reactions.

Sufficient geochemistry data was available to calculate aqueous NSZD mass depletion rates, and sufficient temperature data was available to calculate aqueous and vapor-phase NSZD rates.

A decision flow chart for interpretating of data collected during Phase 1 is provided in **Figure 1-1**.

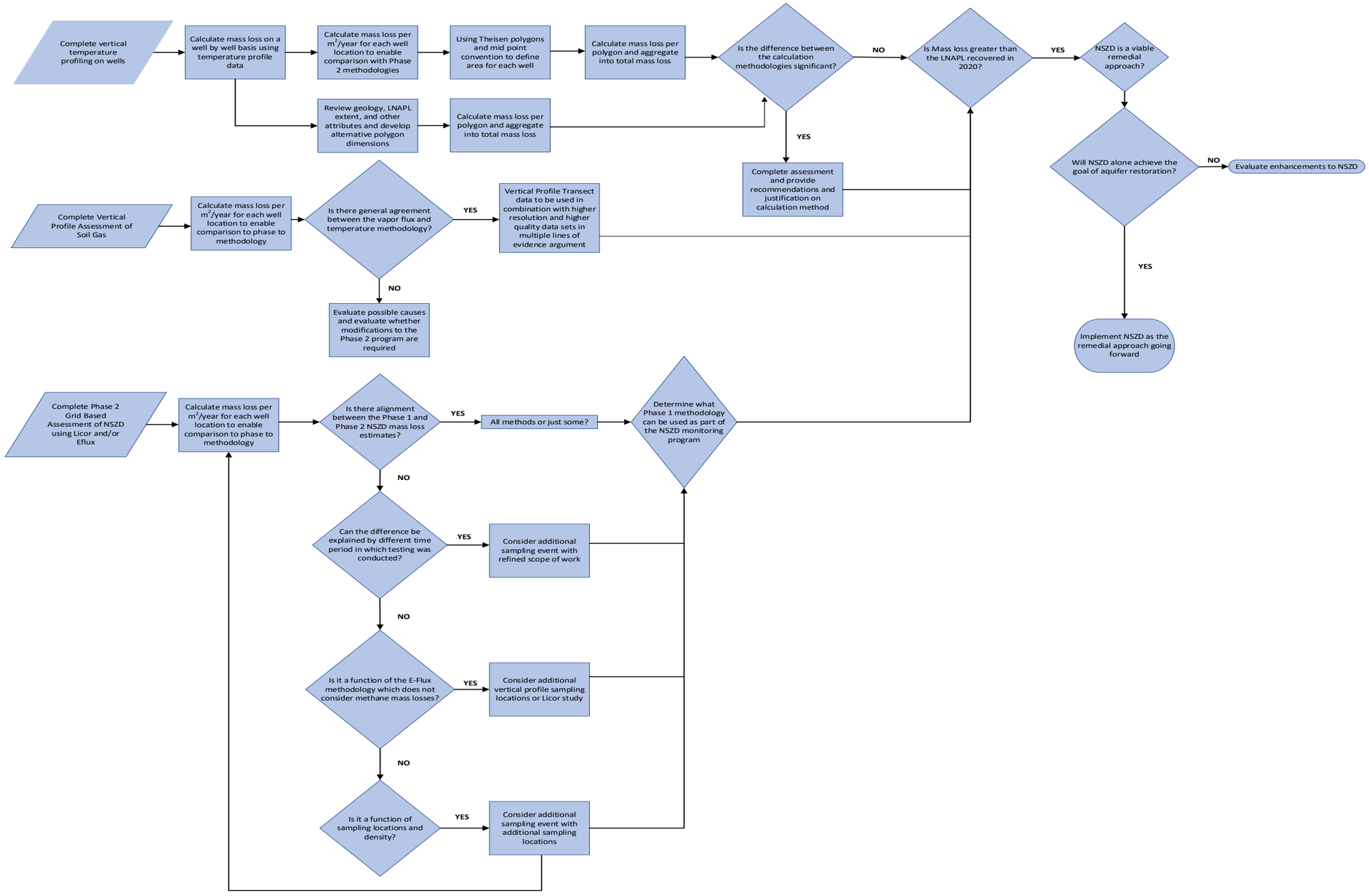


Figure 1-1 Decision flow chart for interpreting Phase 1 Results

2 Phase 1 Tasks

For this Phase-1 program of works, source area wells were designated as those that had LNAPL present during the last quarter of 2019. Upgradient and downgradient wells were selected to be representative of geological and hydrogeological variations across well screen intervals, historical chemistry data; and to provide spatial coverage. Upgradient, source area, and downgradient well designations based on data from the last quarter of 2019 are provided on **Figure 2**.

The Phase 1 work consisted of the following:

- **Groundwater Geochemistry** – Sampling and analysis of groundwater for petroleum hydrocarbon and MNA parameters in 17 wells located beneath the LNAPL-impacted area (VW2, VW5, VW6, VW13, VW13B, VW14, VW20, VW20B, VW21B, VW22, VW23, VW24, VW29, VW30, VW31, VW32 and VW35), 5 upgradient wells (MMX, VW8, MM9, VW11, and VW37[1]), and 6 downgradient wells (VW25, VW27, VW34, GM11, GM14 and GM-22) (**Figure 2** and **Table 1**). Sampling was conducted in conjunction with the July 2021 semi-annual groundwater sampling event. Note: VW22 continued to be dry as it has been for several sampling events.
- **Temperature Profiling for NSZD** – Completion of a downhole temperature profiling assessment in the unsaturated and saturated zones to determine ΔT (temperature gradient for each well).
    - Five unsaturated zone temperature readings (2 feet [ft] from ground surface, 1 ft above groundwater, and three intervals equally spaced in between)
    - Three saturated zone temperature readings (1 ft below the groundwater interface, 5 ft below the groundwater surface, and 10 ft below the groundwater surface.
    - In addition to the wells in which groundwater samples were collected, temperature profiles were obtained from wells VW3, VW9R, VW10, and GM22 to aid with defining background conditions and wells VW4, VW7, VW15, and VW18 to capture spatial variability in and around the source area and to account for potential changes in the LNAPL distribution between the last quarter of 2019 and July 2021 when the study was conducted.
- **Well Head Space Soil Gas** – Measurement of deep vadose CH_4, CO_2, and H_2S gas concentrations was completed in all wells where temperature profiles were measured. This involved covering the well annulus and measuring the headspace gas concentration 1 ft above the water level in the well casing following the technique of Sweeney et al. (2017).

[1] VW-37 was originally designated as a downgradient well. Based on the extreme side gradient location and geochemical results herein, the designation has been revised as 'upgradient'.

3 Field Measurement and Sampling Procedures

Detailed field and sampling procedures are provided in the LNAPL Natural Source Zone Depletion Work Plan ('Work Plan'; EHS Support, 2021a), which was submitted to USEPA in April 2021. The POC lead contractor (Geomonitoring Services [GMS]) performed Site investigation activities in accordance with the Health and Safety Plan (HASP) developed for the Site (GMS, 2020a).

Instruments used to collect data were calibrated according to manufacturer specifications as applicable. Instrument calibration records are provided in **Appendix A**. Reusable and non-dedicated instruments and equipment were decontaminated between sampling locations according to procedures outlined in the Work Plan. Disposable equipment was decontaminated, and decontamination fluid and spoils were managed as investigation derived waste.

Prior to groundwater sample collection, well headspace gas (CO_2, CH_4, and H_2S) concentrations, downhole temperatures, and fluid levels were measured. Results are provided in **Table 1.** Groundwater elevation contours are provided on **Figure 3** and LNAPL thickness contours are provided on **Figure 4**. LNAPL contours have been drawn the adjacent site to be consistent with past maps. Groundwater samples were collected in accordance with the USEPA Low Flow Groundwater Sampling Guidance (USEPA, 1996). Prior to sampling, the following parameters were monitored until the specified stabilization thresholds were achieved.

Water level drawdown	< 0.3 ft
pH	± 0.1 pH unit
Specific conductance	± 3%
Temperature	± 3%
DO	± 10% if DO is > 0.5 mg/L; if DO is < 0.5 mg/L, three consecutive measurements are considered stabilized.
Turbidity	± 10% for values greater than 5 Nephelometric turbidity unit (NTU)
ORP/Eh	± 10 millivolts

Stabilized groundwater field parameter results are provided in **Table 2**, and field sampling records are provided in **Appendix B**. The spatial distribution and contours of key field parameter measurements (well headspace gas, downhole temperature, and groundwater quality) are compared to the July 2021 LNAPL extent on **Figure 5A through Figure 5N**.

Groundwater samples were stored in certified commercially clean sample containers that were obtained from the contracted analytical laboratory. Sample containers were filled to minimize or eliminate headspace when capped. Samples were placed upright and secured in a cooler containing ice packs to maintain the acceptable temperature range. Coolers were shipped and transported by courier and were traceable by chain-of-custody (C-O-C) until analyzed and disposed of by the laboratory. Groundwater samples were analyzed for geochemical parameters at ALS Environmental located in Houston, Texas. Groundwater analytical results are provided in **Table 3** and laboratory analytical reports are provided in **Appendix C**. The spatial distribution and contours of groundwater inorganic chemistry parameters is provided on **Figure 6A through Figure 6H**.

Waste generated from sampling and measurement activities was placed into a recovery drum used in the solar sipper system. Purge water was pumped through the wastewater system at Limetree Bay terminals along with the other fluids recovered by the solar sippers.

4 Data Quality Evaluation and Usability Assessment

Analytical performance objectives are based on analytical methods published by the USEPA to describe quality assurance/quality control (QA/QC) procedures that ensure laboratories provide data of a known and documented quality. In accordance with the Quality Assurance Project Plan (QAPP), EHS Support performed a Tier II Validation on a portion of the data (sample delivery group HS21070773); the remainder of the data underwent a basic usability review. The Tier II Validation Report is provided in **Appendix D** and the Data Usability Report is provided in **Appendix E**. No results were rejected.

5 Groundwater Geochemistry Characterisation

Phase 1 was designed to better constrain Site hydrological complexity by assessing variations in groundwater geochemistry. A primary check on groundwater data variability is seasonal/historical in groundwater elevations. Groundwater elevation data from October 1, 2002, to December 9, 2019, were assessed for variability and the minimum, maximum, and range of elevations are given in **Table 1**. Results show that the average groundwater elevation variation over the 17-year period was 1.27 ft (excluding perched water level measurements from GM22). This average value is less than the groundwater elevation range between upgradient and downgradient wells shown on **Figure 2**. Therefore, seasonal variability in groundwater elevations is assumed to be minimal.

The following sections identify geochemical data usability for this NSZD assessment based on sample quality, and representativeness as background, source area, and downgradient samples.

5.1 Charge Balance

In addition to and beyond USEPA QA/QC procedures and requirements, groundwater samples were assessed for cation/anion charge balance to determine usability for NSZD calculations. Charge balance, and all other geochemical calculations herein were calculated using Geochemists' Workbench® (GWB) software with the default thermodynamic data base (thermo.tdat). Unlike most manual charge balance calculations, this method accounts for pH-dependent carbonate speciation. Charge balance results were compared to the calcite ($CaCO_3$) saturation index (Q/K) and the field pH of each sample (**Figure 5-1)**.

Most samples were within ±5% charge balance error and all but five samples (VW25, VW21B, VW23, VW29, and MM9) were within ±10% charge balance error. All samples with greater (more negative) than -5% charge balance error were supersaturated with respect to calcite (i.e., Q/K is greater than 1; **Figure 5-1A**), the pH was elevated compared to other samples (**Figure 5-1B**), and the dissolved CO_2 concentration is lower compared to other samples (**Figure 5-1C**). Samples with greater than + 10% charge imbalance had among the lowest pH and highest dissolved CO_2 concentrations (**Figure 5-1B** and **Figure 5-1C**). This calcite-pH-CO_2 dependence implicates calcite precipitation as the cause of the charge imbalance based on the following commonly cited carbonate system equations:

$$Ca^{2+} + 2HCO_3^- = CaCO_3 + H_2CO_3 \qquad \text{[\textbf{Equation 1}]}$$

and

$$H_2CO_3 = H_2O + CO_2 \quad \text{[\textbf{Equation 2}]}$$

As shown in **Equation 1**, lowering H_2CO_3 drives the reaction to the right and calcite precipitates (Le Chatelier's principle). H_2CO_3 is directly proportional to CO_2 concentration (**Equation 2**) and is the predominant carbonate species at low pH. Consequently, calcite precipitation leads to a pH increase. Also, CO_2 degassing from a sample leads to calcite precipitation.

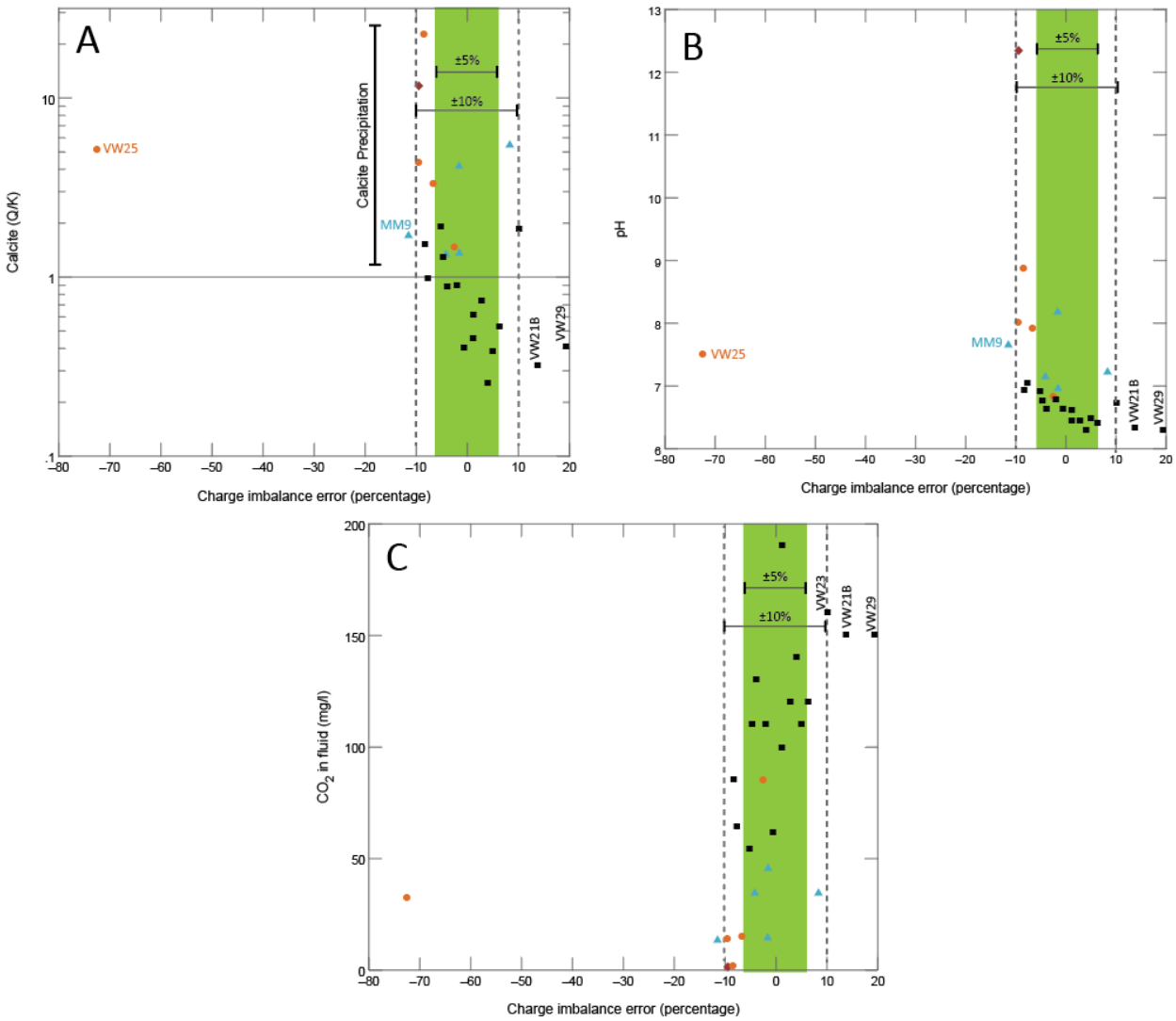


Figure 5-1 Cation/Anion Charge Imbalance Assessment

This imbalance is an artifact of the different preservation methods used for cation versus anions. The cation sample fraction is acidified to at least pH 2 eliminating the possibility of calcite precipitation and cation (positive charge) scavenging. In contrast, the alkalinity sample fraction is unpreserved and sample bottles are not gas tight. As a result, calcite precipitation and the associated pH increase can occur in the unpreserved alkalinity sample fraction leading to charge imbalance when compared to the cation sample fraction. The effects of calcite precipitation on alkalinity are well established (Khan et al., 2020). Based on **Figure 5-1**:

1. Calcite precipitated in the alkalinity sample fraction for samples that were saturated with respect to calcite and with low dissolved CO_2, leading to a negative charge imbalance when alkalinity was recalculated as bicarbonate concentration.

2. Calcite precipitated following CO_2 degassing in the alkalinity sample fraction for samples that were below calcite saturation based on field pH conditions, leading to a positive charge imbalance when alkalinity was recalculated as bicarbonate concentration.

In summary, most samples are within ±10 % charge balance error and usable for a NSZD assessment.

- Samples MM9 (-12.4% error), VW21B (13.7% error), and VW23 (10.1% error) are usable as calcite precipitation does not materially affect the measured concentration of key NSZD electron acceptor and byproduct indicators.
- Samples VW25 (72.6% error) and VW29 (19.4% error) are not usable as the magnitude of the charge imbalance error likely indicates additional deficiencies in the sampling or laboratory analysis.
- Verification of aqueous NSZD rates using alkalinity measurements is limited to samples that have less than ±10 % charge balance error, to minimize uncertainty due to calcite precipitation effects on alkalinity.

5.2 Groundwater Inorganic Chemistry

Groundwater samples with outlier sodium and chloride concentrations were assessed using a box and whisker plot to identify locations not representative of conditions beneath the LNAPL source area (**Figure 5-2**). The results identify samples from VW8 and VW25 as having outlier chloride concentrations, and samples from wells GM11, GM14, and GM22 as having outlier sodium and chloride concentrations. GM22 is screened in a perched zone within a former bauxite residue impoundment, which is distinct from groundwater at other locations. GM11 and GM14 are within 150 ft of the marine shipping canal and represent a seawater-groundwater mixture. VW25 is located in a former drainage channel that likely has a tidal connection to the bay (EHS Support, 2020). VW8 is located upgradient of the source area in lagoon deposits (EHS Support, 2020), with no clear link to marine water. A plausible explanation for elevated chloride at VW8 is the presence of evaporite salts in the formation at this location, consistent with those observed adjacent to and within lagoonal deposits at other site locations (e.g., VW13B). The elevated chloride and sodium (along with other constituents) in these samples make them unsuitable for comparison with source area locations and use in NSZD rate calculations.

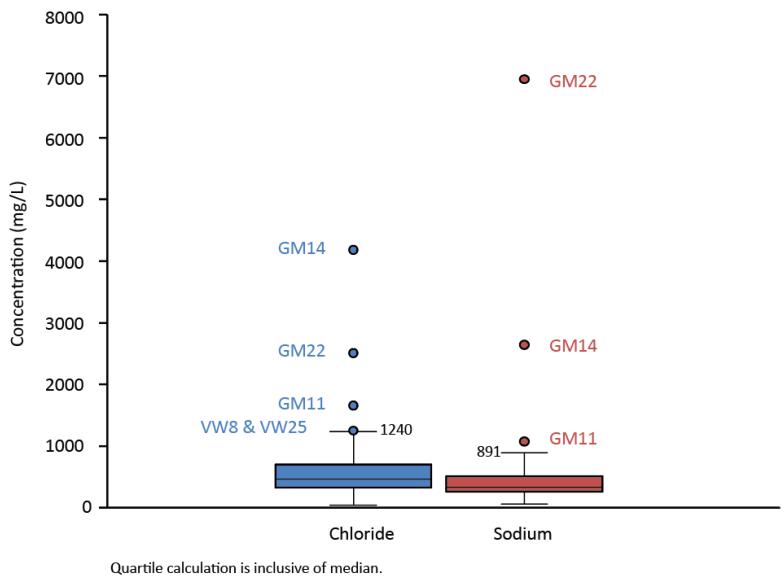


Figure 5-2 Box and Whisker Plots of Sample Geochemical Outliers

Water types were also classified using a Piper plot that accounts for variations in groundwater dissolved solids (**Figure 5-3**). Dissolved solids in the Piper plot were calculated using GWB and magnitude is represented by circle size in the diamond area of the plot. In contrast to results from 1982 (Geraghty and Miller, 1982), no groundwater samples appear influenced by sewage effluent. The following groundwater categories were identified in the context of historical water sampling (Geraghty and Miller, 1982; EHS Support, 2020):

- Regional groundwater is characterized by dilute calcium-bicarbonate (Ca-HCO_3) and dilute sodium-chloride (Na-Cl) type waters with comparatively low dissolved solids.
- Groundwater with a seawater or sea-salt aerosol component is characterized by Na-Cl type waters with elevated dissolved solids. These samples correspond to those with outlier sodium and/or chloride concentrations shown on the box and whisker plot in **Figure 5-2**.
- Perched groundwater is characterized by sodium-bicarbonate (Na- HCO_3) type groundwater with elevated dissolved solids. This composition is unique to well GM-22, which has historically shown anomalously high groundwater elevations.

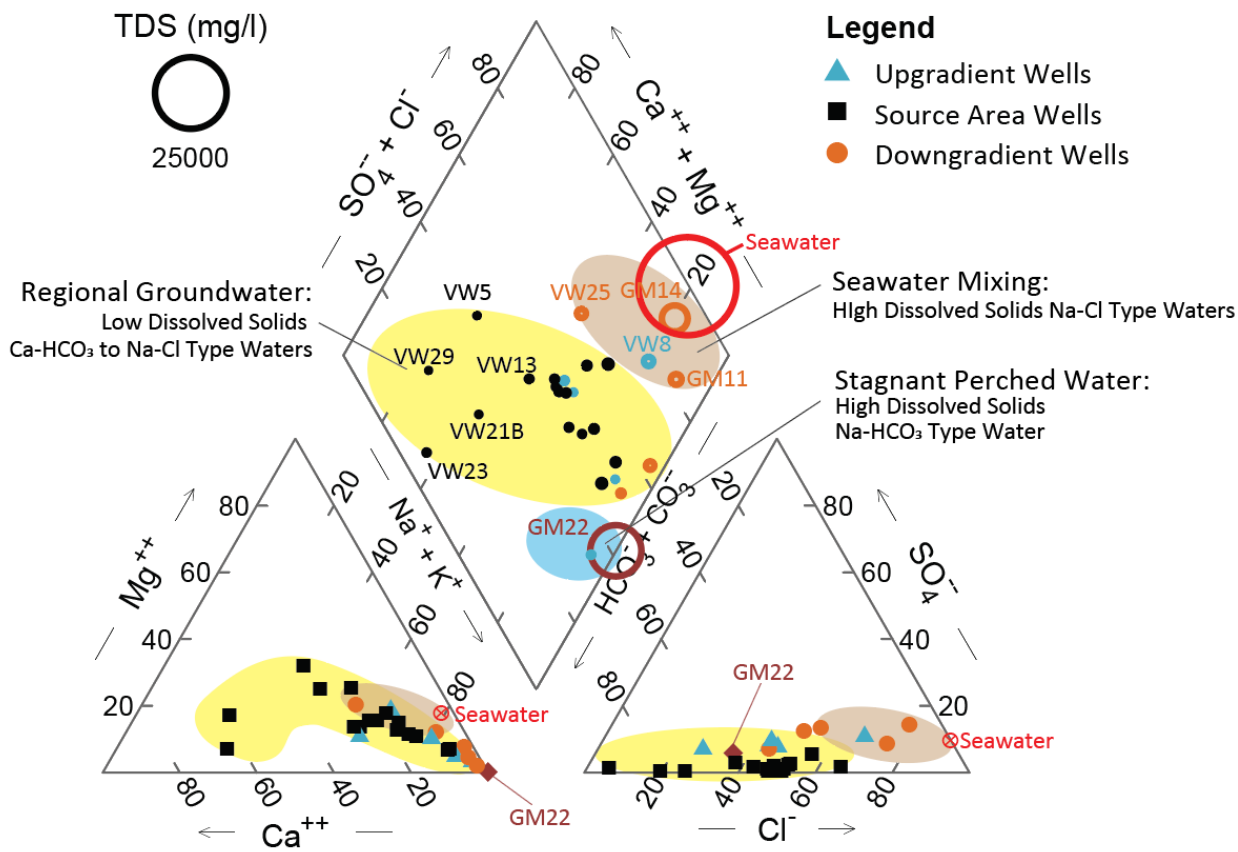


Figure 5-3 Piper Plot

Based on the water classifications, the following samples are unsuitable for this NSZD assessment:

- Wells VW8, VW25, GM11, and GM14 due to high contributions from seawater or sea salt aerosols that are not representative of conditions beneath the LNAPL source zone.
- Well GM22 due to it being screened within a former bauxite residue impoundment that contains perched groundwater, which is not representative of Site groundwater conditions.

5.3 Summary

Review of the geochemistry data indicates the presence of three distinct groundwater settings comprising:

- the fresh regional groundwater system;
- a zone of seawater mixing proximal to the coastline (GM11, GM14 and VW25); and
- a perched system within a former bauxite residue impoundment (GM22).

The area of LNAPL impacts is confined to wells located within the fresh regional groundwater system. The presence of sulfate rich seawater hydraulically downgradient of this area provides additional assimilative capacity for hydrocarbon degradation. However, to accurately assess electron acceptor depletion, only select groundwater data from the regional groundwater system is being considered.

Based on this and other geochemical considerations, the following well locations are unsuitable for use in aqueous NSZD rate estimates:

- Samples VW25 and VW29 due to large charge balance error.
- Samples VW8, VW25, GM11, and GM14 due to the high calculated TDS and sea salt contributions to these samples that make them unrepresentative for comparison to groundwater conditions beneath the LNAPL source area.
- Sample GM22 due to the high TDS and unique character of the groundwater compared to all other site locations.
- Other wells where LNAPL was not present: VW20, VW20B, VW21B, VW23, and VW31.

6 Phase 1 Qualitative NSZD Results

Phase 1 was designed to qualitatively confirm the degree to which NSZD depletion is active at the Site. The following multiple lines of qualitative evidence for active NSZD processes were evaluated:

1. Identification of biogenic gases in source area wells (elevated CO_2, CH_4, and/or H_2S; depleted oxygen [O_2]) (**Figure 5A** through **Figure 5C**).
2. Elevated temperature in the vadose zone as an indicator volatile phase exothermic NSZD reactions (**Figure 5D** through **Figure 5H**).
3. Elevated temperature in the saturated zone as an indicator of aqueous and volatile phase exothermic NSZD reactions (**Figure 5I** through **Figure 5K**).
4. Groundwater quality parameter assessment to identify the presence of redox conditions favorable for and indicative of NSZD (**Figure 5L** through **Figure 5N**).
5. Depletion of terminal electron acceptors (TEAs) relative to background (upgradient) groundwater (**Figure 6A** through **Figure 6H**).

As described in the following section, multiple lines of evidence support the occurrence of robust NSZD processes at the Site with groundwater geochemistry and electron acceptors indicating that sulfate reduction and methanogenesis are the dominant mass loss mechanisms, and calculations of mass loss show significant mass losses in both the saturated and unsaturated zones. Given that geochemical conditions are favorable for methanogenesis, and methane gas rapidly partitions from the dissolved phase into the gaseous phase, highly elevated methane and carbon dioxide gas concentrations and elevated (relative to background) vadose zone temperatures are observed in the vadose zone.

Each of these mechanisms of mass loss have been assessed and where practical were quantified as part of the Phase 1 work, demonstrating that mass losses throughout the plume are approaching 508 gallons/year in the saturated zone and 7,137 gallons per year in the unsaturated zone (total of 7,645 gallons LNAPL degraded per year).

Assessment methods and results are provided in the following sections.

6.1 NSZD Assessment Using Well Head Space Gas Data

Head space readings in background, source area, and downgradient monitoring wells were measured using a calibrated hand-held, multi-gas meter capable of measuring H_2S, CO_2, and CH_4 inserted into each well. One measurement was recorded 2 ft below the top of casing and one measurement 1 ft above the water table. Data from 1 ft above the water table were assessed for this NSZD evaluation.

Qualitative NSZD headspace gas assessment compared gas (CO_2, CH_4, and H_2S) concentrations in background and source areas were assessed to identify statistically significant differences. Elevated concentrations of CH_4, CO_2, and H_2S were identified in the source area compared to background locations (**Figure 5A** through **Figure 5C**). Differences in gas concentrations between background, source area and downgradient wells were assessed using box and whisker plots (**Figure 6-1**). The box and whisker plots indicate elevated concentrations of all three gases in the source area and downgradient wells compared to background wells. Note, the box and whisker plots exclude wells identified as unrepresentative of background and downgradient locations as discussed in **Section 5**.

A non-parametric statistical method (t-test) was used as an additional line of evidence to show that gas concentration differences in source area wells were statistically significant, following the procedures outlined by USEPA (2009). An F-test was used to determine if variances of the two populations (background and source area samples) were equal. The F-test indicated that variances of concentration populations for all three gases are unequal in source area and background wells (**Table 4**). Therefore, a two-sample t-test assuming unequal variances was applied. The two-sample t-tests confirmed a statistically significant difference in the mean concentrations of all three gases in source area compared to background wells (**Table 4**).

In summary, well head space gas measurements provide qualitative evidence for robust NSZD in the LNAPL source area.

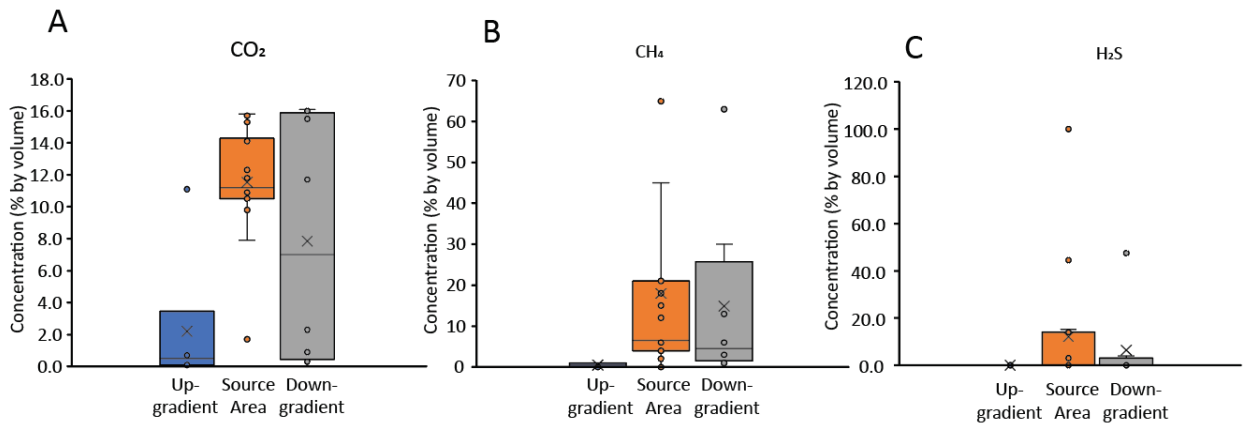


Figure 6-1 Box and Whisker Plots of Well Headspace Gas Concentrations

The presence of % by volume methane and carbon dioxide concentrations and the detection of H_2S (a highly reactive gas) 1 ft above groundwater in source area and downgradient wells is indicative of robust NSZD processes occurring at the Site. As indicated in the aerial photo and gas contours on **Figure 5A** through **Figure 5C**, elevated gas concentrations occur in both vegetated and paved areas of the Site; thus indicating that gas accumulation is not driven by surface cover conditions. The magnitude of methane concentrations 2 ft below the top of casing of up to 1% by volume in source area wells and 76% by volume in downgradient wells indicates CH_4 oxidation to CO_2 in the subsurface is incomplete. This suggests that methods based on temperature and CO_2 flux at ground surface will underestimate NSZD rates, as they will not account for CO_2 and heat produced by methane oxidation. Methods that measure both CO_2 and methane flux at ground surface are expected to provide a more accurate measure of NSZD rates in the unsaturated zone.

6.2 NSZD Assessment Using the Differential Temperature Method

CH_4 produced from LNAPL volatilization and methanogenesis exothermically reacts with O_2 in the unsaturated zone to produce CO_2 (CRC CARE, 2015). Temperature measurements can also be used to identify biogenic (metabolic) heat signatures resulting from CH_4 biodegradation in the source zone as evidence for NSZD (Garg et al., 2017; Newell et al, 2016; Suthersan, 2015; Warren and Bekins, 2015; Sweeney and Ririe, 2014).

Temperatures in background, LNAPL source area, and downgradient locations of the Site were measured using a calibrated thermocouple lowered down the well casing to the intervals specified in **Table 1**. Thermocouples were lowered to the specified monitoring depths within the unsaturated zone for a minimum of 3 minutes and in the saturated zone for a minimum of 1 minute before lowering to the subsequent monitoring depth, following the procedure by Sweeney et al. (2014).

Contour maps of each unsaturated and saturated zone temperature profile interval are provided as **Figure 5D** through **Figure 5K**. The maps indicate elevated unsaturated and saturated zone temperatures in background wells VW3, VW8, VW9R, and VW11. These background wells are adjacent to the eastern property boundary with the Limetree Bay Terminals and likely reflect operations and processes associated with that property. For this reason, VW3, VW8, VW9R, and VW11 are excluded from background well statistics described below.

For the remainder of the wells, net temperature difference (ΔT) was calculated to qualitatively assess metabolic heat signatures from LNAPL degradation by comparing the difference in temperatures at each measurement interval between source and background wells:

$$\Delta T = Ti - Tb$$

Where:
Ti is the temperature of well I
Tb is the temperature of background well

The calculation was also performed to compare ΔT between source and downgradient wells. The calculation was performed for the maximum, average, and minimum background groundwater temperature for all monitoring zones. Results are tabulated in **Table 5** and provided as histograms on **Figure 7A** through **Figure 7D**. Positive values indicate elevated temperatures in the source area relative to both background and downgradient wells.

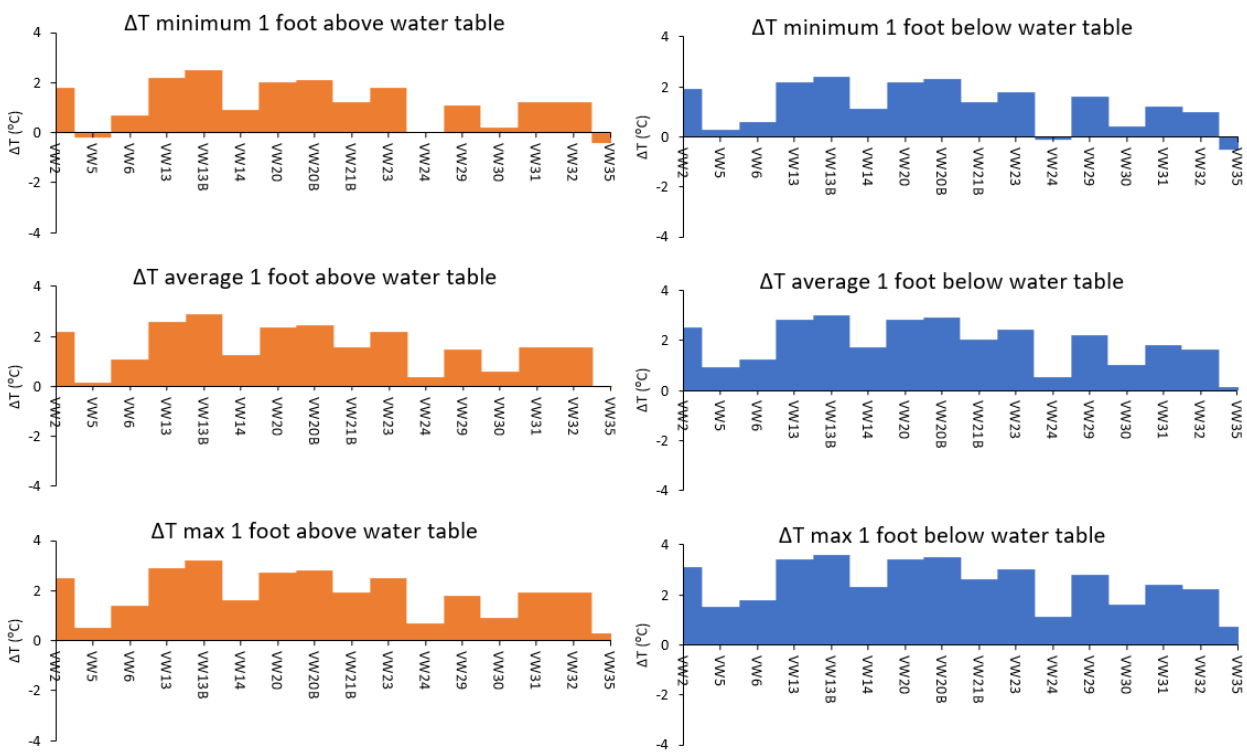


Figure 6-2 Histogram of Minimum, Average, and Maximum Temperature Differences Between Source Area and Background Well Locations 1 Ft Above Water Table and 1 Ft Below Water Table

As indicated on **Figure 6-2**, the most elevated temperatures in the source zone relative to background are present 1 ft above and 1 ft below the water table in the minimum, average, and maximum ΔT scenarios. This result qualitatively supports that methane oxidation is occurring in the source area. The following details identified on **Figure 5D** through **Figure 5K** and **Figure 7A** through **Figure 7D** provide additional lines of evidence that support LNAPL degradation is occurring in the source area due to NSZD processes:

- In the unsaturated zone, temperature differences between source area and background locations increases with increasing depth and reach a maximum 1 ft above the water table (**Figure 7A**), consistent with methane oxidation due to downward oxygen percolation.
- In the unsaturated zone, there are elevated minimum, average, and maximum temperature differences in most source area wells compared to background halfway to the water table, ¾ to the water table, and 1 ft above the water table. The exceptions are VW5, VW24, and VW30, which are located at the background (recharge) edge of the source area where temperatures are expected to be maintained at lower values by influx of cooler recharge water (**Figure 7A**).
- In the unsaturated zone, the greatest temperature differences are in source area wells VW2, VW13, and VW13B where LNAPL is thickest. VW6, which is located between the two areas with thickest LNAPL in July 2021, also had one of the largest temperature difference values (**Figure 7A** and **Figure 7B**).
- In the unsaturated zone, ΔT average 1 ft above the water table is elevated in source area wells VW2, VW13, VW13B, VW20, VW20B, and VW23; and ΔT maximum is elevated in all wells compared to downgradient locations. This indicates elevated temperatures are not due to

systematic increase in vadose temperatures due to mixing with a different water source in the downgradient direction (**Figure 7B**).

- In the saturated zone, temperature differences are elevated in the source area relative to background locations at all intervals (**Figure 7C**).
- In the saturated zone, average temperature differences in the source area are higher in most wells compared to downgradient locations (**Figure 7D**). This indicates elevated temperatures in the source zone are not due to mixing with higher temperature water in the downgradient direction.
- In the saturated zone, the magnitude of elevated temperatures in the source area relative to background locations decreases with increasing depth, indicating LNAPL degradation is the cause (discusses in **Section 7.3** and shown on figures therein).

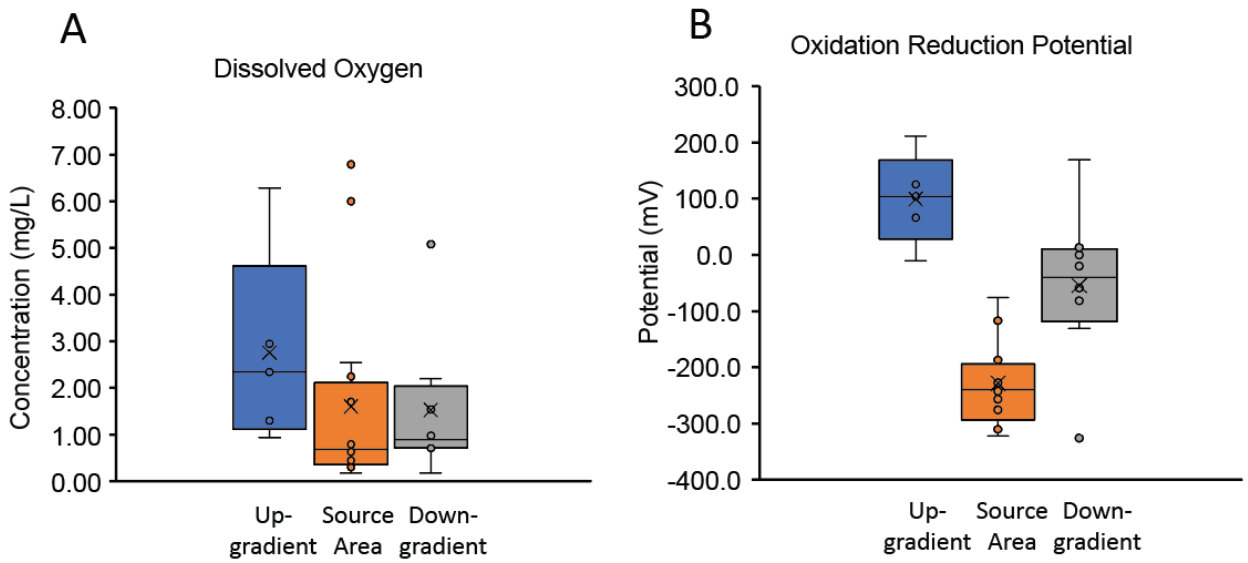
In summary, elevated temperature differences are observed in most source area wells compared to background and downgradient locations in both the saturated and unsaturated zone. Several lines of evidence support that methane oxidation due to NSZD is the cause of elevated temperatures in the source area.

6.3 NSZD Assessment Using Groundwater Field Parameters

Groundwater dissolved oxygen (DO) and oxidation-reduction potential (ORP) measurements were compared between background, source area, and downgradient wells using contour maps (**Figure 5L and Figure 5M**) and box and whisker plots (**Figure 6-3**) as qualitative evidence for NSZD. The median DO concentration in source area wells (0.68 milligrams per liter [mg/L]) is 1.66 mg/L lower than the median DO in background wells (2.34 mg/L). The difference in these median values exceeds the standard precision of most instruments (0.2 mg/L). As is apparent on the box and whisker plot and associated statistics given in **Figure 6-3A**, the upper range (excluding outliers), 3rd quartile, 1st quartile, and lower range of source area values are all lower than for background wells. Therefore, DO depletion in source area wells is a qualitative line of evidence for active NSZD.

ORP values are less than -100 millivolts (mV) (relative to a silver/silver chloride [Ag/AgCl] electrode) in all source area wells except VW35, indicating a reductive pathway is likely (Wiedemeier et al, 1998). ORP values are less than +50 millivolts mV in in VW35, indicating a reductive pathway is possible (**Table 2**). The measured ORP values of source area wells fall in the range indicative of sulfate (SO_4^{2-}) reduction (-50 to -250 mV) and CH_4 production (-175 to -400 mV), consistent with elevated CH_4 and H_2S identified in the headspace of source area wells. As shown on **Figure 6-3B**, ORP values are substantially lower in source area wells than in background and downgradient wells.

In summary, DO and ORP data provide qualitative evidence for active NSZD in the source area.



Statistics (Excluding Outliers)			
Upper Range	6.28	2.55	2.20
3rd Quartile	4.62	2.12	2.04
Median	2.34	0.68	0.89
1st Quartile	1.12	0.36	0.72
Lower Range	0.93	0.18	0.18

Statistics (Excluding Outliers)			
Upper Range	211.4	-75.8	169.3
3rd Quartile	168.4	-194.7	9.9
Median	103.9	-240.0	-39.6
1st Quartile	28.1	-294.0	-118.6
Lower Range	-10.0	-322.1	-131.0

Figure 6-3 Box and Whisker Plots of Groundwater DO and ORP

6.4 Aqueous NSZD Assessment and Preferred Biodegradation Reactions

LNAPL biodegradation in the saturated zone utilizes and depletes TEAs, which are redox-sensitive compounds (including O_2, nitrate $[NO_3]^-$, SO_4^{2-}, iron $[Fe]^{3+}$, manganese $[Mn]^{4+}$, CO_2, and CH_4) that are consumed as they are reduced through microbial redox reactions (CRC CARE, 2015; **Table 2**). The order of preferential electron acceptor utilization — $O_2 > NO_3^- >$ Mn(IV) >Fe(III) $> SO_4^{2-} > CO_2$ — is referred to as the ecological succession of TEA processes (McMahon and Chapelle, 2008). Given the sequential nature of TEA utilization, identification of the end products of redox processes (ammonium $[NH_4^+]$, ferrous iron [Fe(II)], H_2S, CO_2, and CH_4), and depleted TEAs (SO_4^{2-}, NO_3^-,) through water quality sampling provides a qualitative measure of NSZD, and can be used to quantify the aqueous portion of NSZD rates.

Table 6-1 Preferred Biodegradation Reactions

Type of Microbial Respiration	Electron Acceptor	Metabolic By-Product	Geochemical Indicator Response		Redox Potential, eH (mV @pH 7, 25 °C)	
Aerobic (Oxidation)	Oxygen	CO_2	O_2 ↓	CO_2 ↑	+820	Most preferred
Anaerobic (Reduction)	Nitrate (NO_3^-)	N_2	NO_3^- ↓	CO_2 ↑	+720	↓
	Manganese (Mn^{4+})	Mn^{2+}	Mn^{2+} ↑	CO_2 ↑	+520	
	Ferric iron (Fe^{3+})	Ferrous iron (Fe^{2+})	Fe^{2+} ↑	CO_2 ↑	-50	
	Sulfate (SO_4^{2-})	H_2S	SO_4^{2-} ↓	CO_2 ↑	-220	
	Carbon dioxide (CO_2)	Methane (CH_4)	CH_4 ↑	CO_2 ↑	-240	Least preferred

Source: Beck, P & Mann, B., 2010
Notes:
°C = degrees Celsius
eH = Oxidation/reduction potential relative to hydrogen electrode
mV = millivolts

Differences in TEA and by-product concentrations in groundwater samples collected from background, source area and downgradient wells were qualitatively assessed using concentration cross-plots (**Figure 8A**) and by comparing median concentrations using box and whisker plots (**Figure 6-4** and **Figure 6-5**). The cross-plots qualitatively confirm TEA utilization and by-product production by showing lower TEA and elevated by-product concentrations in the source area compared to the background wells. The box and whisker plots further indicate differences in TEA and by-product concentrations between source area and background locations.

A non-parametric statistical method (t-test) was applied to each aqueous component to confirm the statistical significance of differences in median concentrations between source area and background wells, following the procedures outlined by USEPA (2009). Values equal to half the reporting limit were used for concentrations less than the laboratory reporting limit. An F-test was used to determine if the variance of the two populations (background and source area samples) were equal. The F-test indicated that variances of populations for all components were unequal (**Table 6**). Therefore, a two-sample t-test assuming unequal variances was applied. The two-sample t-tests confirmed a significant statistical difference in the medians between background and downgradient wells for all aqueous components, except iron and sulfate (**Table 6**).

The causes for statistically insignificant differences between the median iron and sulfate concentrations in background and source wells were assessed using concentration cross plots (**Figure 8A**). Concentration cross plots given in **Figure 8A** show clear depletions of TEAs (sulfate and nitrate) compared to background locations except for sulfate in VW13B (75.8 mg/L) and for dissolved iron overall.

As noted in the LNAPL Conceptual Site Model (CSM) and Remedial Action Work Plan (EHS Support, 2020), the log for VW13B indicates abundant gypsum ($CaSO_4 \cdot 2H_2O$) deposits that span the water table and likely contribute to dissolved sulfate in that location. Coupled with the high headspace H_2S (44.5 ppm) and dissolved sulfide (11.7 mg/L), sulfate reduction is clearly occurring at this location but being replenished by gypsum dissolution in the aquifer. Additionally, VW13B is the only Site location where active groundwater pumping is occurring, thereby replenishing the location with cleaner sulfate-bearing groundwater. Consequently, the statistical comparison of sulfate concentrations in background and source area wells incorrectly indicates no statistical significance due to geological complexity.

Dissolved iron results are affected by the necessary mixed usage of values below the reporting limit for background locations, compared to 'J-level' detections for dissolved iron in many source wells. J-level refers to a concentration that is below the reporting limit but above the (lower) method detection limit. As a result, the absence of detectable dissolved iron in background wells is designated a larger number (the reporting limit) than for source area wells where dissolved iron is detected and provided at a lower value than the reporting limit. This is reflected on **Figure 8A**, where concentrations plotted at the reporting limit are indicated with a downward arrow. Thus, visual techniques for assessing data are preferrable for interpreting dissolved iron data rather than use of statistical methods.

In summary, there is qualitative evidence from aqueous TEA and byproduct concentration data that robust NSZD is occurring in the saturated zone.

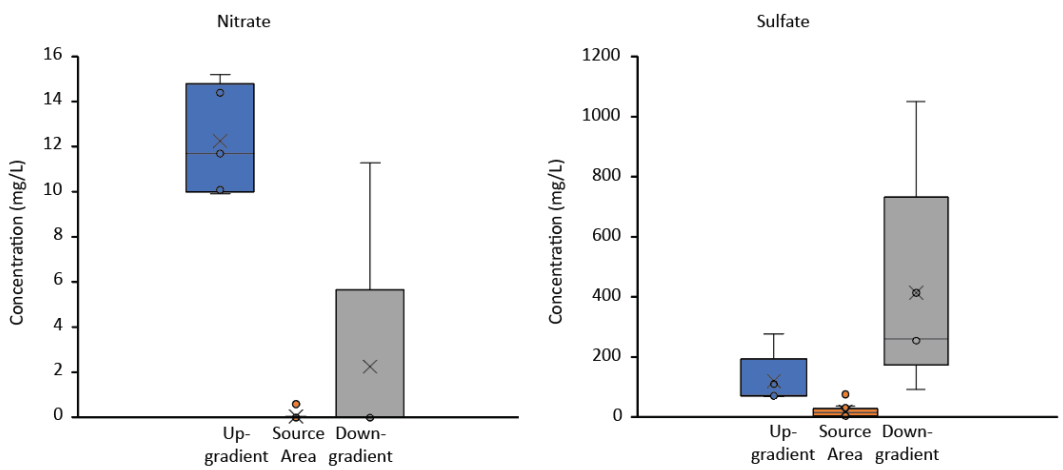


Figure 6-4 Box and Whisker Plots of NSZD TEA Concentrations

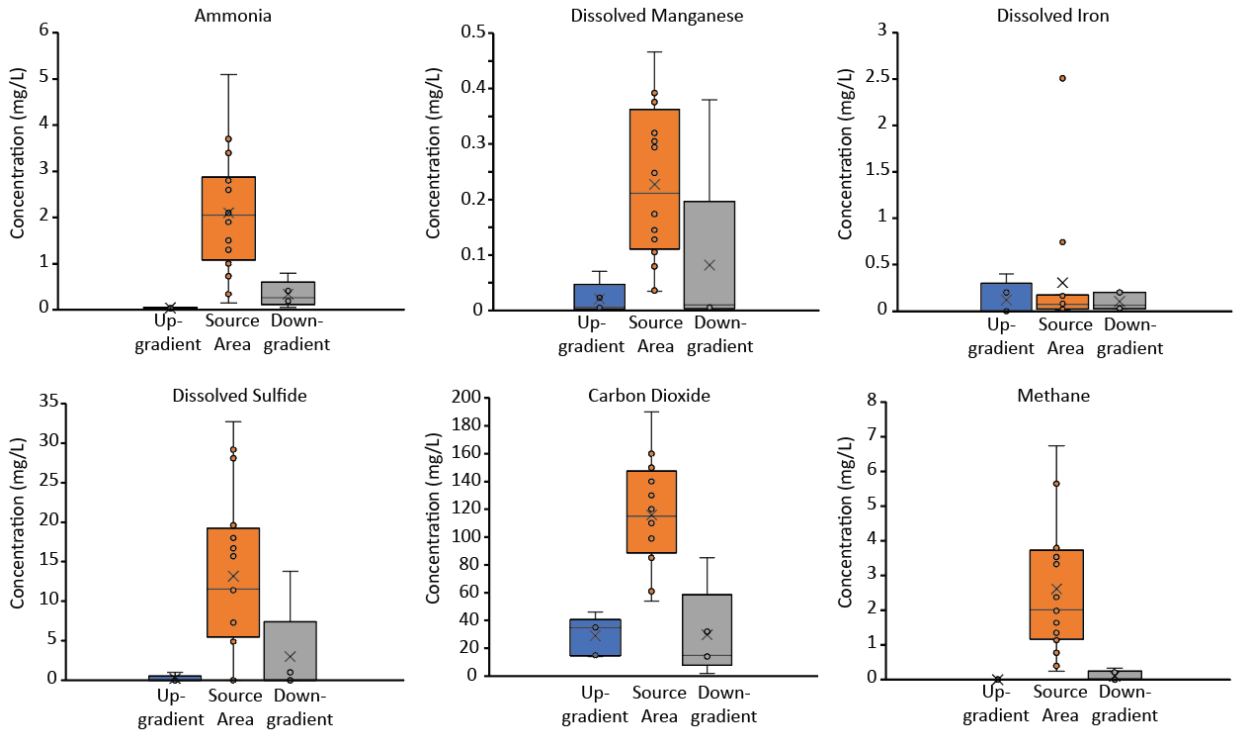


Figure 6-5 Box and Whisker Plots of NSZD By-Product Concentrations

6.5 Redox Processes

The primary redox processes that utilize TEAs were evaluated by comparing measured Eh (ORP converted to Eh by adding 200 mV) to Eh calculated for various redox pairs using GWB (**Figure 8B**). Concentration data for redox pairs given on **Figure 8B** was available from the July 2021 groundwater analytical data for all aqueous components (DO, NO_2, NO_3, NH_3, SO_4, sulfide [S^{2-}], CH_4, and CO_2) except Mn^{4+} and Fe^{3+}, which are present in typical groundwater at immeasurably low concentrations.

To assess Mn^{2+}/Mn^{4+} and Fe^{2+}/Fe^{3+} controls, on-site groundwater redox conditions, oxidized manganese and iron (Mn^{4+} and Fe^{3+}) concentrations were calculated using GWB by assuming equilibrium with MnO_2 (pyrolusite) and Fe_2O_3 (hematite), respectively. The redox pair responsible for measured Eh conditions is assumed to fall on the black 1:1 measured/calculated redox line shown on plots on **Figure 8B**.

GWB calculations confirmed that dissolved concentrations of oxidized iron and manganese (Mn^{4+} and Fe^{3+} are immeasurably low, approximately 10^{-24} and 10^{-8} mg/L, respectively. Therefore, dissolved iron and manganese concentrations measured by the lab on filtered samples are assumed to reflect reduced forms of these elements (Fe^{2+} and Mn^{2+}). The presence of reduced forms of iron and manganese (NSZD byproducts) are qualitative evidence for NSZD.

The measured Eh results show that background and downgradient redox conditions are largely buffered at relatively oxidizing values by the nitrate/ammonium (NO_3^-/NH_4^+) redox pair. In contrast, redox conditions in the source area are substantially more reducing and largely controlled by iron reduction with a shift toward sulfate reduction in several samples. These results clearly show progressive

utilization of TEAs in the source area along the ecological succession, which is a key line of evidence for aqueous-phase NSZD depletion.

The source of iron is apparent in the total iron data (**Table 3**). Total iron concentrations are all higher than dissolved concentrations, except where J-level detections of total iron are compared to non-detect dissolved iron concentrations provided at the higher reporting limit. Thus, total iron results indicate that particulate iron is available in Site groundwater and is an important control on measured redox conditions. In several source area samples, measured redox falls below the 1:1 line drawn for Fe^{2+}/Fe^{3+} on **Figure 8B**. This indicates that sulfate reduction, bicarbonate reduction, and/or methanogenesis are driving redox conditions beyond the Fe^{2+}/Fe^{3+} redox buffer, although they have not achieved redox equilibrium, indicating these components are driving redox conditions in many locations. This finding is consistent with elevated dissolved and headspace methane and hydrogen sulfide concentrations that are the byproducts of sulfate reduction and methanogenesis.

6.6 Summary of Qualitative Results

- Well headspace measurements of CO_2, CH_4, and H_2S are elevated in source area wells compared to background wells, confirming active NSZD.
- Elevated unsaturated and saturated zone temperatures in the source area compared to background locations qualitatively indicate robust LNAPL degradation is occurring.
- Groundwater DO and ORP are statistically lower in source area wells compared to background wells, confirming active NSZD.
- TEAs are depleted and byproducts are elevated in source zone groundwater, indicating robust aqueous NSZD processes are occurring.
- Calculated redox conditions indicate microbial utilization of TEAs has led to more reducing conditions in the LNAPL source area compared to background locations, and redox conditions are driven by methanogenesis and sulfate reduction.

7 Phase 1 Quantitative NSZD Results

The following quantitative assessments of aqueous NSZD depletion rates were completed:

1. Aqueous NSZD rate estimation using groundwater geochemistry results.
2. Aqueous NSZD rate estimation using groundwater temperature data.
3. Vadose NSZD rate estimation using vadose temperature data.

Calculations used for NSZD rates (R_{aq}) yield units of grams LNPAL per day. R_{aq} was divided by the estimated LNAPL density to obtain units of 'volume LNAPL depleted/year' and were converted to and reported as gallons/year using standard conversion factors. Calculation methods and results are provided in the following sections.

7.1 Aqueous NSZD rate estimate

The aqueous NSZD rate was calculated following the methods outlined in CRC CARE (2018) and IRTC (2009). The calculation utilized the following equation:

$$R_{aq} = V_D(YZ)(AC)$$

Where:
R_{aq} = the aqueous NSZD rate (grams/day)
V_D = Darcy velocity of groundwater flow (meters [m]/day)
YZ = the area perpendicular to groundwater flow (square meters [m^2])
AC = the assimilative capacity (grams/cubic meter [g/m^3])

The resulting aqueous NSZD rate (R_{aq}) is then computed in units of grams/day.

7.1.1 Darcy Velocity and Flow Area Calculation

Darcy velocity (seepage velocity) is used in the aqueous NSZD rate estimate as a key variable is rate of constituent transport. Darcy velocity was calculated using the following equation:

$$V_D = \frac{K \times i}{\eta}$$

Where:
K = the average hydraulic conductivity (meters/day)
i = the hydraulic gradient (unitless)
η = the effective porosity (unitless)

Hydraulic conductivity (K) values were previously calculated from slug test data obtained from five site monitoring wells in different lithologies (GES, 2017) as discussed in the LNAPL CSM and Remedial Action Work Plan (EHS Support 2020). For NSZD rate calculations, the geometric mean of slug test data was calculated using the Bower and Rice method (50.4 ft/day [15.4 m/day]) were used in NSZD rate calculations.

The hydraulic gradient was calculated using water level elevations determined during the July 2021 groundwater monitoring event. The result yields an average hydraulic gradient of 0.001 feet per foot (ft/ft). Effective porosity is not reported for the Kingshill Limestone, however total porosity data are available for several locations at and around the Site and averages about 15 percent (Gill and Hubbard, 1985). Given that fractured intervals contribute to the Gill and Hubbard (1985) porosity estimates for Kingshill limestone, effective and total porosity are not expected to differ greatly. Therefore, the total porosity estimate was used in the Darcy velocity calculation in lieu of effective porosity. The Darcy velocity was calculated to be 0.336 ft/day (0.103 m/day).

The YZ term is calculated from the following information:

- Average width of the LNAPL footprint (*Y*)
- Average height of groundwater supplying electron acceptors (*Z*)

The width of the LNAPL footprint was measured as the distance between the westernmost (VW32) and easternmost (VW4) wells where LNAPL was measured in July 2021 (2396 ft [730.3 m]). The height of the groundwater flow zone supplying electron acceptors was assumed to be 10 ft (3.048 m), which is based on the interval of elevated temperatures measured beneath the source area described in **Section 6.2**.

7.1.2 Assimilative Capacity Calculation

Wells described in **Section 5.3** were excluded from the assimilative capacity (AC) assessment due their unrepresentative conditions. Additionally, the suspect sulfate value for VW13B where gypsum is identified in the log was not utilized. The remaining downgradient wells (VW27 and VW34) are unsuitable for use as downgradient points they are distil from the leading edge of the LNAPL plume. Therefore, the following approach was applied to data for background and source wells as all downgradient points were unsuitable for inclusion.

The average values of measured NSZD indicator concentrations were calculated for background and source area wells (**Table 7-1**). Maximum, average, and minimum measured NSZD indicator concentrations at source area wells were compared to the average of measured background concentrations to obtain upper end, mean, and lower end estimates of assimilative (biodegradation) capacity (**Table 7-2**). The calculation was performed as follows:

1. The source area well concentration value in **Table 7-1** that gives the maximum concentration difference when compared to the average background well concentration. These are minimum concentrations of NSZD indicators that are consumed when biodegradation occurs (O_2, NO_3^-, SO_4^{2-}), and maximum concentrations of NSZD indicators that are produced when biodegradation occurs (CH_4, Fe^{2+}, CO_2, and alkalinity).
2. The average source area NSZD indicator concentration compared to the average background concentration given in **Table 7-1**.
3. The source area well concentration value in **Table 7-1** that gives the minimum concentration when compared to the average background well concentration. These are maximum concentrations of NSZD indicators that are consumed when biodegradation occurs, and minimum concentrations of NSZD indicators that are produced when biodegradation occurs.

Using observed NSZD indicator changes between source and background wells given in **Table 7-2**, the total amount of available electron acceptors for biological reactions (for the upper-end, mean, and

lower-end scenarios) was calculated and results are provided in **Table 7-3**. The total amount of available electron acceptors for biological reactions (for the upper-end, mean, and lower-end scenarios) was calculated based on:

- The difference between background concentrations and source zone concentrations of O_2, NO_3^-, and SO_4^{2-}.
- The concentration of metabolic by-products (Fe^{2+}, CH_4, and alkalinity) in the source zone. Results for dissolved iron were assumed equal to Fe^{2+}.

Considering the dominant LNAPL components at the Site are middle distillates (EHS Support, 2020), stoichiometric conversions of TEAs and resulting byproducts (utilization factors) were calculated for octadecane ($C_{18}H_{38}$). Calculations were based on the theory of Wiedemeier et al. (1995) and using the method outlined in by Beck and Mann (2010). The balanced biotransformation chemical reactions and octadecane utilization factor calculations are summarized in **Table 7-4** through **Table 7-8**.

Octadecane degradation potential was then computed for the lower end, mean, and upper end scenarios (**Table 7-9**through **Table 7-11**). Calculations were based on observed changes in TEAs/byproducts across the LNAPL source area using the following equation:

Assimilative or biodegradation capacity (mg/L) =
[(av. upgradient O_2 concentration) –- (source zone O_2 concentration)] ÷ O_2 $C_{18}H_{38}$ UF
+ [(av. upgradient NO_3^- concentration) –- (source zone NO_3^- concentration)] ÷ NO_3^- $C_{18}H_{38}$ UF
+ [(av. upgradient SO_4^{2-} concentration) –- (source zone SO_4^{2-} concentration)] ÷ SO_4^{2-} $C_{18}H_{38}$ UF
+ [(Fe(II) concentration in source area) ÷ Fe(II) $C_{18}H_{38}$ UF
+ [(CH_4 concentration in source area) ÷ CH_4 $C_{18}H_{38}$ UF

Alkalinity provides a lumped estimate of AC, therefore, is treated independently of other components. Results for changes lower end, mean, and upper end estimate of TEA/byproduct utilization across the LNAPL source area are provided in **Table 7-9**, **Table 7-10**, and **Table 7-11**, respectively.

The range of NSZD rates is then calculated using the equation provided above in **Section 7.1**, using total computed octadecane degradation potentials given in **Table 7-9**, **Table 7-10**, and **Table 7-11** as the assimilative capacity value**.** The resulting aqueous NSZD rate estimates are provided in **Table 7-12**, and QA/QC measures are discussed in **Section 7.1.3.**

It should be noted that the estimates of mass loss using electron acceptor concentrations are likely a gross underestimate of mass loss in the saturated zone. A key contributor to this low bias includes diffusion of sulfate from proximal and deeper portions of the aquifer into the zone where NSZD is occurring and loss of dissolved methane into the unsaturated zone.

Table 7-1 Average Measured NSZD Indicator Concentrations (mg/L)

	O_2	CH_4	Fe^{2+}	CO_2	NO_3^-	SO_4^{2-}	$CaCO_3$
Background	3.2	0.00	0.13	24.8	12.8	80.3	520
Source	1.7	2.35	0.32	113.5	0.4	15.9	663

Table 7-2 Upper-End, Mean, and Lower-End of Measured NSZD Indicator Concentrations (mg/L)

	O_2	CH_4	Fe^{2+}	CO_2	NO_3^-	SO_4^{2-}	$CaCO_3$
Upper-End AC values	0.2	5.7	2.5	190.0	0.0	3.1	914.0
Mean AC Values	1.7	2.3	0.3	113.5	0.4	15.9	662.6
Lower-End AC Values	6.8	0.2	0.0	54.0	0.6	36.8	511.0

Table 7-3 Observed Upper-End, Mean, and Lower-End NSZD Indicator Concentrations (mg/L)

Constituent	Background	Mean AC values	Change from Background - Mean values	Indicator of AC Process	Upper-End AC Values	Change from Background	Lower-End AC Values	Change from Background
O_2	3.22	1.7	-1.5	Yes	0.2	-3.0	6.8	3.6
NO_3^-	12.8	0.39	-12.4	Yes	0.0	-12.8	0.6	-12.2
SO_4^{2-}	80.3	15.9	-64.4	Yes	3	-77.2	36.8	-43.5
Fe^{2+}	0.13	0.32	0.20	Yes	2.5	2.4	0.0	-0.1
CH_4	0.00	2.3	2.34	Yes	5.7	5.7	0.2	0.2
$CaCO_3$	520	663	143	Yes	914	394	511.0	-8.8
CO_2	24.75	114	89	Yes	190	165	54.0	29.3

Table 7-4 Balanced Biotransformation Reactions

Biotransformation Process	TEA/By-Product	Balanced Equation
Aerobic	O_2	$2C_{18}H_{38} + 55O_2 \rightarrow 36CO_2 + 38H_2O$
Denitrification	NO_3^-	$C_{18}H_{38} + 22NO_3^- + 22H^+ \rightarrow 18CO_2 + 11N_{2(g)} + 30H_2O$
Sulfate reduction	SO_4^{2-}	$4C_{18}H_{38} + 55SO_4^{2-} + 110H^+ \rightarrow 72CO_2 + 55H_2S_{(g)} + 76H_2O$
Iron reduction	$Fe(OH)_{3(s)}$	$C_{18}H_{38} + 110Fe(OH)_{3(s)} + 220H^+ \rightarrow 18CO_2 + 110Fe^{2+} + 294H_2O$
Methanogenesis	CO_2 and CH_4	$4C_{18}H_{38} + 34H_2O \rightarrow 17CO_2 + 55CH_4$

TEA = terminal electron acceptor

Table 7-5 Molecular Weights

NSZD Indicator	Molecular Weight (g/mol)
O_2	32.00
NO_3^-	62.01
SO_4^{2-}	96.06
Fe^{2+}	55.84
CH_4	16.05
CO_2	44.01

NSZD Indicator	Molecular Weight (g/mol)
$CaCO_3$	100.09
$C_{18}H_{38}$	254.50

g/mol = grams per mole
NSZD = natural source zone depletion

Table 7-6 Stoichiometric Ratio Calculations for Octadecane ($C_{18}H_{38}$) Degradation

Biotransformation process	TEA/Byproduct	Moles $C_{18}H_{38}$	Grams $C_{18}H_{38}$	Moles TEA/byproduct	Grams TEA/byproduct	Grams $C_{18}H_{38}$
Aerobic	O_2	2	509	55	1760	0.29
Denitrification	NO_3^-	1	254.5	22	1364.22	0.19
Sulfate reduction	SO_4^{2-}	4	1018	55	5283.3	0.19
Iron reduction	$Fe(OH)_{3(s)}$	1	254.5	110	6142.4	0.04
Methanogenesis	CO_2 and CH_4	4	1018	55	882.75	1.15

TEA = terminal electron acceptor

Table 7-7 Stoichiometric Ratio Calculations for CO_2 and Alkalinity Production

Biotransformation Process	TEA/Byproduct	Moles CO_2	Grams CO_2	Grams CO_2/ Grams TEA/byproduct	Moles $CaCO_3$	Grams $CaCO_3$ - C	Grams $CaCO_3$ /Grams TEA/byproduct
Aerobic	O_2	36	1584.36	0.90	0	0	0
Denitrification	NO_3^-	18	792.18	0.58	18	1801.62	1.32
Sulfate reduction	SO_4^{2-}	72	3168.72	0.60	72	7206.48	1.36
Iron reduction	$Fe(OH)_{3(s)}$	18	792.18	0.13	18	1801.62	0.29
Methanogenesis	CO_2 and CH_4	17	748.17	0.85	0	0	0

TEA = terminal electron acceptor

Table 7-8 Summary of Utilization Factors for Octadecane ($C_{18}H_{38}$) Degradation and CO_2 and Alkalinity Production from Biotransformation Processes

Biotransformation Process	TEA/By-Product	Grams $C_{18}H_{38}$ /Grams TEA	Grams CO_2 /Grams TEA	Grams $CaCO_3$ /Grams TEA
Aerobic	O_2 Consumed	0.29	-0.90	0.00
Denitrification	NO_3^- Consumed	0.19	-0.58	-1.32
Sulfate reduction	SO_4^{2-} Consumed	0.19	-0.60	-1.36
Iron reduction	Fe^{2+} Produced	0.04	0.13	0.29
Methanogenesis	CH_4 Produced	-1.15	0.85	0.00

TEA = terminal electron acceptor

Table 7-9 Computed Changes in Octadecane, CO_2, and Alkalinity for Upper-End AC Values

Biotransformation Process	Observed Change in NSZD Indicator (mg/L)	Computed Changes		
		CO_2 (mg/L)	Alkalinity (mg/L as $CaCO_3$)	$C_{18}H_{38}$ (mg/L)
Aerobic	-3.0	2.7	0.0	-0.9
Denitrification	-12.8	7.4	16.9	-2.4
Sulfate reduction	-77.2	46.3	105.3	-14.9
Iron reduction	2.4	0.3	0.7	-0.1
Methanogenesis	5.7	4.8	0.0	-6.5
Total		**61.6**	**122.9**	**-24.8**

Table 7-10 Computed Changes in Octadecane, CO_2, and Alkalinity for Mean AC Values

Biotransformation Process	Observed Change in NSZD Indicator (mg/L)	Computed Changes		
		CO_2 (mg/L)	Alkalinity (mg/L as $CaCO_3$)	$C_{18}H_{38}$ (mg/L)
Aerobic	-1.5	1.4	0.0	-0.4
Denitrification	-12.4	7.2	16.4	-2.3
Sulfate reduction	-64.4	38.6	87.9	-12.4
Iron reduction	0.2	0.0	0.1	0.0
Methanogenesis	2.3	2.0	0.0	-2.7
Total		**49.2**	**104.3**	**-17.9**

Table 7-11 Computed Changes in Octadecane, CO_2, and Alkalinity for Lower-End AC Values

Biotransformation Process	Observed Change in NSZD Indicator (mg/L)	Computed Changes		
		CO_2 (mg/L)	Alkalinity (mg/L as $CaCO_3$)	$C_{18}H_{38}$ (mg/L)
Aerobic	3.6	0.0	0.0	0.0
Denitrification	-12.2	7.1	16.1	-2.3
Sulfate reduction	-43.5	26.1	59.3	-8.4
Iron reduction	-0.1	0.0	0.0	0.0
Methanogenesis	0.2	0.2	0.0	-0.3
Total		**33.4**	**75.4**	**-10.9**

Table 7-12 Estimated Aqueous NSZD Rates

	Gallons per year
Upper-End NSZD Rate:	703
Mean NSZD Rate:	508
Lower-End NSZD Rate:	310

7.1.3 QA/QC of Aqueous NSZD Rate

The primary QA/QC check compares measured changes in CO_2 and alkalinity concentrations between background and source area wells to calculated changes in CO_2 and alkalinity concentrations. Calculated CO_2 and alkalinity changes are based on the sum of NSZD ratios for each TEA given in **Table 7-9**, **Table 7-10**, and **Table 7-11**.

- If the computed CO_2 and alkalinity falls within the observed range of measured values, AC and NSZD rate calculations will be assumed valid.
- If the computed CO_2 and alkalinity is higher than the observed concentrations, the calculated NSZD rates will be assumed estimates with potential high bias.
- If the computed CO_2 and alkalinity is lower than the observed concentrations, the calculated NSZD rates will be assumed estimates with potential low bias.

A summary of observed versus computed CO_2 and alkalinity concentrations is provided in **Table 7-13**. Results show that measured CO_2 and alkalinity concentrations fall within the range of measured values. Therefore, the computed results are assumed to be valid.

Table 7-13 Aqueous Rate QA/QC Data

	Computed Values		Measured Values	
	CO_2 (mg/L)	Alkalinity (mg/L as $CaCO_3$)	CO_2 (mg/L)	Alkalinity (mg/L as $CaCO_3$)
Upper-End NSZD Rate:	62	123	165	394
Mean NSZD Rate:	49	104	89	143
Lower-End NSZD Rate:	33	75	29	-9

7.2 NSZD Rate Estimate Using Groundwater Temperatures

NSZD rate methods generally focus on methane oxidation in the unsaturated zone, however, methane oxidation is also possible in the saturated zone (Smith et al., 1991). The NSZD rate can be estimated from groundwater temperature data by calculating the power needed to heat a flowing volume of water. The method assumes homogenous and isotropic soil, a steady-state biogenic heat source, conductive heat transfer, and instantaneous and complete reaction. The equation is widely utilized in geothermal heat pump applications (Arola et al., 2014; Herez et al., 2017):

$$P = \dot{m} \times C_p \times \Delta T$$

Where:

P = power required in Watts (Joules [J]/sec)
$\dot{m}$ = the groundwater mass flow rate (kg/sec)
C_p = the specific heat of water (4184 J/kg/Kelvin)
ΔT = the groundwater temperature difference between source and background well groundwater 1 ft below the water table

In contrast to the aqueous NSZD calculation, mass flow rate rather than seepage is considered in this equation because a key parameter is the enthalpy required to heat a given volume of water. Three scenarios were evaluated using the maximum (31.3°C), average (30.1°C), and minimum (28.4°C) source area groundwater temperatures 1 ft below the water table compared to the average background groundwater temperature (28.3°C) 1 ft below the water table. The groundwater mass flow rate ($\dot{m}$) is the volumetric flow rate $(Q) = K \times i \times YZ$ in units of m^3·second multiplied by the density of water:

$$\dot{m} = K \times i \times YZ \times \rho$$

Where:

K = the average hydraulic conductivity (m/sec)
i = the hydraulic gradient (unitless)
Y = Average width of the LNAPL footprint
Z = Average thickness of the LNAPL smear zone
ρ = Density of water (ρ; assumed to be 1000 kg·m^3)

Using the aquifer parameters given in **Section 7.1.1** combined with the data above yields a mass flow rate of $\dot{m}$ = 0.396 kg/sec and required power to heat flowing groundwater of *P* = 166 J/sec (low estimate), *P* = 2,981 J/sec (average estimate), and *P* = 4,968 J/sec (upper estimate).

It is assumed that methane oxidation in the vadose zone provides the power source following the reaction (Warren and Bekins, 2015):

$$CH_{4(aq)} + 2O_{2(aq)} \rightarrow HCO_{3(aq)} + H^+ + H_2O + Heat$$

Which has an exothermic heat of reaction ΔH_r^o = -865.4 kilojoules (kJ)/mol (Warren and Bekins, 2015). When corrected for the molar weight of methane, this yields 53,952.62 J/g methane oxidized.

Dividing the power (J/sec) by energy from methane oxidation (J/g) gives the methane flux need to heat groundwater by the observed temperature change (i.e., methane degradation rate) in units of g/sec. Multiplying the result by the stoichiometric ratio of 1.15 grams $C_{18}H_{38}$ degraded for each gram of methane produced given in **Table 7-6** gives LNAPL degradation potential in units of grams per second. Multiplying this value by the density of $C_{18}H_{38}$ (0.777 g/mL) gives the result in units of mL/second, which can be converted into other units using standard conversion factors. Lower end, mean, and upper end aqueous NSZD rate results based on this method are given units of gallons per year in **Table 7-14**. A detailed outline of the calculation method is provided in **Table 7**.

Table 7-14 NSZD Rate Based on Groundwater Temperature

Aqueous NSZD Rates - Groundwater Temperature	Upper-End NSZD Rate	Mean NSZD Rate	Lower-End NSZD Rate
ΔT Value Utilized	3.0	1.8	0.1
Gallons per Year	1,139	683	38

These results account for heat loss to groundwater, which is not included in the unsaturated zone temperature gradient method and are additive. Notably, the calculated values are a similar order of magnitude as aqueous rates calculated using TEA data.

7.3 NSZD Rate Estimate Using the Differential Temperature Method

NSZD rates were calculated using the differential temperature method as described by CRC CARE (2018) and IRTC (2009 and 2018). The method assumes homogenous and isotropic soil, a steady-state biogenic heat source, conductive heat transfer, and instantaneous and complete reaction. Complications with this method as applied to the Site may require 'parceling' areas for distinct calculations based on areas of distinct lithology.

Heat flux is estimated using Fournier's first law of conduction, that is modified to estimate heat flux (q_H [J/m^2-soil/s]:

$$q_H = K_T \left(\frac{\Delta T}{\Delta Z}\right)$$

Where:

$\frac{\Delta T}{\Delta Z}$ = the temperature gradient (^{o}K/m)

K_T = the thermal conductivity of the soil (J/m/s/K or W/m/K) in the hydrocarbon oxidation zone

Given high precipitation levels in the tropical climate, the average thermal conductivity for water-sorbed carbonate rocks of 3.54 W/m/K at 40.5 °C from Thomas Jr. et al. (1973) was used in the calculation.

The thermal gradient was be calculated from measured temperature profiles shown on **Figure 9**. The temperature profiles show that the shallowest depth interval in most wells is affected by surface temperature, resulting in a flattening of the profile at ground surface that would result in overestimation of the rate. Therefore, the shallowest temperature was visually estimated from **Figure 9** that would result in an approximately linear temperature gradient was selected. The highest temperatures were generally 1 ft above the water table, except VW15. VW15 is located at the upgradient extent and temperatures are likely influenced by cold groundwater recharge at the water table in this location. Input for the $\frac{\Delta T}{\Delta Z}$ are given in **Table 8**.

The NSZD rate (R_{NSZD}) is then calculated by dividing the calculated heat flux by the enthalpy (ΔH^o) of octadecane ($C_{18}H_{38}$) oxidation. The enthalpy of octadecane oxidation is calculated utilizing the stoichiometry of octadecane oxidation following the method described in Sweeney et al (2014) that is based on the following equation:

$$C_{18}H_{38} + 27.5O_2 = 18CO_2 + 19H_2O$$

The following enthalpies of formation at standard state of the reaction components (in kilojoules per mole [kJ/mol] at 298.15 Kelvin [K]): $\Delta H_f{}^o{}_{C18H38}$ = -414.6; $\Delta H_f{}^o{}_{O2}$ = 0; $\Delta H_f{}^o{}_{CO2}$ = -393.5; $\Delta H_f{}^o{}_{H2O}$ = -285.8. By solving for the standard enthalpy of the reaction, (i.e., $\Delta_r H^\circ = \Sigma v\ \Delta_f H^\circ$(products)–– $\Sigma v\ \Delta_f H^\circ$(reactants), $\Delta H_r{}^o$ of the above reaction is -12092.9 kJ/mol, which when divided by the molar weight of octadecane (254.5 g/mol) gives 47.5 kJ/g of heat released. Therefore, the NSZD degradation rate (in grams/m^2/day) is:

$$R_{NSZD} = \frac{q_H}{47500\ kJ/g} \times \frac{86{,}400\ s}{1\ d}$$

Calculation results are given in **Table 8**.

R_{NSZD} was then multiplied by an area representative of each location. The area representative of each location was determined by calculating Thiessen polygons for the monitoring well network and clipping or expanding polygons to match the July 2021 LNAPL extent shown on **Figure 4**. The resulting polygons are shown on **Figure 10**. The area of the resulting polygons was then extracted from the geographic information systems (GIS) shapefile and multiplied by the value of R_{NSZD} to give a value for each location of LNAPL degraded in g/day (**Table 7-15**). The sum of g/day values was then converted to units of gallons/year using the LNAPL density as described in **Section 7**. Results are given in **Table 8** and indicate an unsaturated zone NSZD rate of 7137 gallons per year.

The following assumptions were utilized in the rate estimates:

- Several locations in the source area were not measured for temperature profiles (VW17, VW19, VW21, VW26, VW28, and VW38). For these locations, the average rate calculated from adjacent polygons specified in **Table 8** were utilized in the calculation.
- The following locations had vertical or reverse temperature gradients: VW4, VW6, VW7, VW13B, and VW18. Therefore, NSZD rates could not be directly calculated. In all cases, the overall temperature was substantially elevated over background and detectable methane and/or hydrogen sulfide was present in the wells confirming active NSZD. The cause is likely a combination of pumping for LNAPL recovery perturbing temperature profiles, or substantial temperature excursions. For these wells, the rate was estimated by averaging the value from adjoining polygon(s).
- Wells VW24 and VW35 had-near vertical gradients; however, temperature gradients were able to be calculated. These rates are likely underestimates for the reasons in the above bullet point.
- VW31 was a designated source area well, but no LNAPL was measured in July 2021, so it was excluded, along with the associated polygon, from the analysis.

In summary, vadose temperature profiles indicate active, robust LNAPL NSZD is occurring, and the magnitude is substantially higher than calculated for the saturated zone, which is in concurrence with values obtained for sites elsewhere (Garg et al., 2017).

7.4 Summary of Quantitative Results

Quantitative NSZD Rate calculations confirm qualitative evidence that active, robust NSZD is occurring at the Site (**Table 7-15**). LNAPL recovery at the Site between 2016 and 2020 (normalized to an annual rate) was 1,204.2 gallons/year. Total NSZD rates (calculated as the sum of results from both temperature methods) ranged from 7,125 to 8,276 gallons per year.

Table 7-15 Summary of NSZD Rates

	Aqueous NSZD Rate (Assimilative Capacity)	Groundwater Temperature NSZD Rate	Unsaturated Zone Temperature Gradient Method	Total NSZD Rate (Sum of Temperature Methods)
	Gallons per year			
Upper-End NSZD Rate	703	1,139	7,137	8,276
Mean NSZD Rate	508	683		7,820
Lower-End NSZD Rate	310	38		7,175

8 Key Study Question Outcomes

Key study questions were developed to guide assessment activities and aid in developing Data Quality Objectives (DQOs). DQOs are presented in the QAPP (EHS Support, 2021b). The work tasks and assessment program were developed to address the key questions listed in **Table 8-1**, which were originally provided in the NSZD Workplan (EHS Support, 2021a). The results of the activities described in this Phase 1 NSZD Report and summarized in **Table 8-1** are used to guide additional scopes of work and, ultimately, to prepare the final LNAPL CSM and Management Plan.

Table 8-1 Key Investigation Question Outcomes

Topic	Key Investigation Questions to Answer as Part of NSZD/MNA Assessment Activities	Question Outcomes Based on Phase 1 NSZD Study
Soil Gas Flux Assessment	1. Are soil gas locations representative of the geological and hydrological Site conditions? If not, is further assessment and evaluation warranted? 2. If statistically significant differences in gas concentrations at multiple adjacent wells are identified, additional soil gas monitoring points between monitoring wells may be necessary. 3. Statistically indistinguishable soil gas concentrations between sampling points will provide confidence that geological variations have little effect on soil gas measurements.	1. Surface conditions in the source area include vegetated and paved areas. Recommendations are provided in **Section 10** account for surface conditions. 2. Elevated gas concentrations are focused in the source area. Gas concentrations broadly coincide with locations where LNAPL is thickest (**Figure 4 and Figure 5A**), which can be adequately accounted for using the proposed Phase 2 sampling grid in **Section 10**. 3. Correspondence between elevated gas concentrations and LNAPL thickness indicate geological variations are of limited concern in planning the grid.
	Do groundwater MNA data results indicate that methane sampling is required during subsequent phases? If so, what instrumentation and methods will be used to collect methane (e.g., LI-COR 7810 meter)? If methane is detected above the method detection limit in groundwater samples, then use of a LI-COR meter or installation of soil gas probes will be recommended.	Elevated methane was detected in groundwater samples (**Figure 6H**). Coupled with elevated methane in well headspace 1 ft above the water table and 2 ft below ground surface indicates methane flux to ground surface is likely. Thus, a LI-COR meter capable of CO_2 and CH_4 measurement is recommended.

Topic	Key Investigation Questions to Answer as Part of NSZD/MNA Assessment Activities	Question Outcomes Based on Phase 1 NSZD Study
	Have Site conditions at sample locations (e.g., gravel, concrete) affected the gas readings (CO_2, etc.), requiring additional evaluation (e.g., probe sampling)? If there is a correlation between well headspace gas concentrations and cemented areas, then installation of soil gas probes may be recommended in cemented areas as they will be inaccessible to dynamic closed chamber (DCC) or passive trap methods.	Locations with the highest vadose methane concentrations are in vegetated areas (**Figure 5A**), thus, Li-COR measurements are recommended in lieu of gas probe sampling.
	Have Site hydrogeologic conditions (e.g., limestone, perched groundwater) affected soil gas flux results and if so, to what extent? What supplementary methods have been applied to existing data results and is further assessment required? If cation/anion fingerprinting results from GM-22 and Site wells indicate variable groundwater conditions at the site, then soil gas flux spatial variability will be assessed.	Groundwater geochemistry assessment indicates that source groundwater arrives from the upgradient direction, and a seawater mixing zone is present downgradient of the source zone and adjacent to the shoreline. Complexities in groundwater flow are not expected. GM-22 is the only location with variable groundwater, due its location in a former bauxite residue pond. Therefore, spatial variability in groundwater composition is not a metric that will drive selection of sampling locations.
Groundwater MNA Assessment	Have the monitoring wells selected for MNA analyses adequately met DQOs, and are MNA analyses representative of the potential range of NSZD rates at the Site? If DQO's are not met, then an additional round of sampling or additional lines of evidence for NSZD may be proposed.	MNA analyses are representative of aqueous NSZD rates, as confirmed by NSZD rates calculated from groundwater temperature data. Groundwater MNA data is considered representative of background and source areas, and additional rounds of measurements are not recommended at this time.

Topic	Key Investigation Questions to Answer as Part of NSZD/MNA Assessment Activities	Question Outcomes Based on Phase 1 NSZD Study
	Do monitoring well locations include a minimum of one well in upgradient (background, clean) source and dissolved phase impacted downgradient areas? If data indicate the background well(s) do not adequately reflect upgradient groundwater conditions, then an aqueous NSZD rate calculation may not be possible.	Adequate background monitoring wells were identified. A valid aqueous NSZD rate was calculated that met the QA/QC criteria proposed in the workplan.
	Have standard and appropriate practices been followed for groundwater sampling? If groundwater data fail QA/QC criteria contained within a revised QAPP, then the data will not be used to calculate an aqueous NSZD rate.	Groundwater samples were collected according to the workplan and data was assessed per the QAPP. No results were rejected.
	Have monitoring wells screened solely across the stratigraphy where the NAPL smear zone exists, and wells demonstrated to provide representative water quality, been used to avoid bias in the analysis? If representative data for calculating NSZD rates is not available, then results for NSZD rate(s) will be flagged as having a high/low bias.	As outlined in the workplan, wells with submerged screens were avoided. No bias flag is recommended based on screen intervals.
	Have seasonal changes in the groundwater table and quality been assessed to determine if multiple rounds of data collection are necessary? If data indicate substantial seasonal variability in the water table elevation, then an additional round of data collection may be proposed.	Seasonal changes were evaluated by looking at the historical range of groundwater elevations in each well (**Table 1**). Variability is shown to be minimal and large variations in groundwater chemistry due to seasonality are not expected.

Topic	Key Investigation Questions to Answer as Part of NSZD/MNA Assessment Activities	Question Outcomes Based on Phase 1 NSZD Study
Overall NSZD Evaluation (Geochemistry and Stoichiometry)	Has the hydrogeochemistry been assessed and the primary mass transfer processes been determined? Have sufficient measures been performed to estimate the phase transfers (i.e., non-advection contributions)? If study results are inconsistent with the site CSM, an update to the CSM will be proposed.	The primary mass loss process is determined to be methane oxidation in the unsaturated zone. The primary aqueous mass loss processes are methanogenesis and sulfate reduction. NSZD processes are understood and accounted for.
	Is the magnitude of the results intuitive and consistent with expectations, published literature, and/or known Site conditions? If results for calculated NSZD rates are inconsistent with literature values, then underlying assumptions about key parameters and hydrogeologic conceptualizations will be revised.	The magnitude of preliminary (Phase 1) results are wait the lower end of published values (Garg et al., 2017). It is understood that Phase 1 results overall have a low bias largely due to incomplete oxidation of methane in the subsurface.
	Has spatial variability been adequately explained? If the cause of spatial variability is inconclusive, additional data collection may be proposed.	Spatial variability is consistent with source, background, and downgradient area designations, and the known location of the LNAPL footprint.

CO2 = carbon dioxide
COCs = chemicals of concern
CSM = conceptual site model
DCC = dynamic closed chamber
DQO = data quality objective
LNAPL = light non-aqueous phase liquid
MNA = monitored natural attenuation
NAPL = non-aqueous phase liquid
NSZD = natural source zone depletion
QAPP = Quality Assurance Project Plan
QA/QC = quality assurance/ quality control

9 Recovery Data Evaluation

In the LNAPL CSM and Remedial Action Plan developed by EHS Support (2020), a detailed analysis of all historical LNAPL recovery data was completed from inception of recovery actions through to May 30, 2020. This analysis included assessment of LNAPL recovery rates and the use of LNAPL reservoir/recovery decline curve analysis to assess theoretical LNAPL recovery volumes, as described by ITRC (2018). This analysis noted the presence of low recovery rates in a large number of wells (< 1 gpd), which is indicative of low LNAPL transmissivities, strong downward trends in LNAPL recovery rates from select recovery wells, and a high percentage of wells where most theoretical recoverable LNAPL has already been recovered (> 90%).

Based on this assessment, it was recommended that operation of the solar sipper skimmers be continued in wells VW5, VW6, VW13, VW13B, VW14, VW20, VW20B, VW21B, VW23, VW24, VW29, VW31, and VW32. The additional data collection was designed to verify and validate the findings from the assessment discussed above, as well as to further optimize skimmer operation at these wells to aid in future review and analysis of data.

In accordance with the recommendations included in the Remedial Action Plan (EHS Support, 2020), these wells have been in operation continuously since approval of the plan with optimized LNAPL recovery activities to ensure oil/water cuts are maintained as high as possible to demonstrate efficient recovery.

The following section provides an update of the analysis included in LNAPL CSM and Remedial Action Plan (EHS Support, 2020), leveraging an additional 14 months of data (up to July 31, 2021).

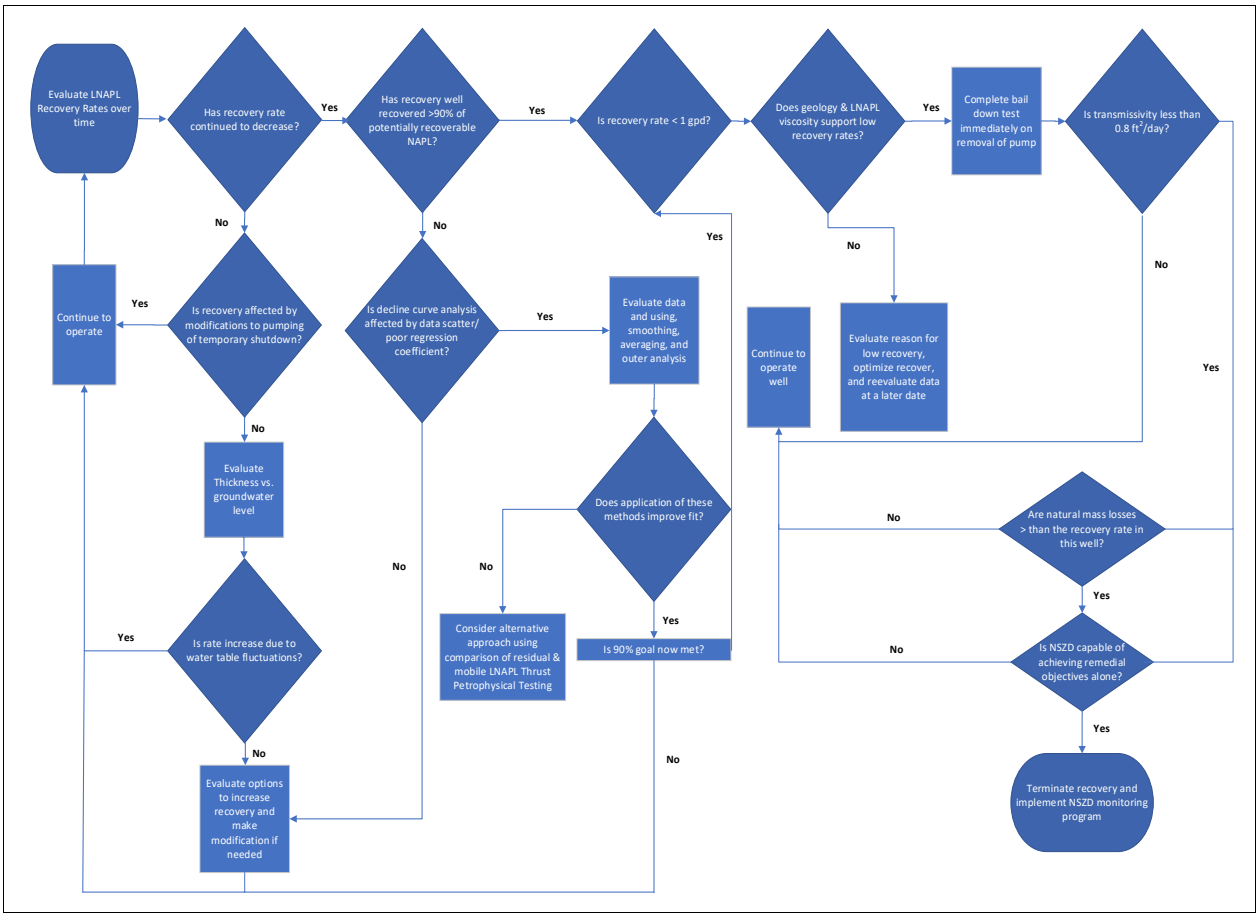
9.1 Data Analysis

In accordance with the preliminary decision logic diagram for LNAPL recovery wells (Figure 6-3 from LNAPL CSM and Remedial Action Plan [EHS Support, 2020], replicated below), the key metrics utilized include:

- Observation of declining recovery rates;
- Recovery of 90% of the potentially recoverable LNAPL volume as determined by recovery decline curve analysis;
- LNAPL recovery rates of less than 1 gpd; and
- LNAPL transmissivities of less than 0.8 ft^2/day.

A technical memo of the supplemental analysis with supporting figures and tables is provided as **Appendix F**.

For aid of comparison, three key tables (Tables 5-5, 5-6 and 5-7) from the LNAPL CSM and Remedial Action Plan (EHS Support, 2020) have been updated and are provided as **Table 9-1, Table 9-2, and Table 9-3** below.



Inclusion of new data and updates to the analysis methods (as described in **Appendix F** has generally improved the quality of fit. In general, the majority (9 of 13 wells) of recovery wells with solar sippers continue to exhibit declining LNAPL recovery volume trends over time (refer to **Table 9-1** below). Both the linear slope (OLS Slope) and Theil-Sen Slope are negative values indicating decreasing trends.

Table 9-1 Assessment of Recovery Trends for Wells with Solar Sippers Operating

Well	OLS Slope	OLS Intercept	R2	OLS p-Value	Theil-Sen Slope	Theil-Sen Intercept	Kendall's Tau	Man-Kendall P-Value	Peak Recovery (gpd)	Latest Date >1 gpd
VW5	0.85	0.16	0.12	0.06	0.53	0.15	0.17	0.19	0.44	2020-07-01
VW6	**-0.66**	58.58	0.62	0.00	**-0.49**	43.43	-0.42	0.00	114.01	2021-05-01
VW13	**-0.30**	28.51	0.35	0.00	**-0.30**	25.51	-0.54	0.00	98.93	2019-10-01
VW13B	**-0.29**	7.64	0.12	0.01	**-0.11**	3.50	-0.14	0.16	21.91	2021-05-01
VW14	**-0.36**	49.42	0.57	0.00	**-0.31**	40.80	-0.39	0.00	87.30	2021-05-01
VW20	**-0.12**	9.43	0.06	0.05	**-0.19**	10.18	-0.38	0.00	44.66	2013-07-01

Well	OLS Slope	OLS Intercept	R2	OLS p-Value	Theil-Sen Slope	Theil-Sen Intercept	Kendall's Tau	Man-Kendall P-Value	Peak Recovery (gpd)	Latest Date >1 gpd
VW20B	**-0.34**	24.38	0.23	0.00	**-1.07**	65.65	-0.45	0.00	61.62	2016-07-01
VW21B	0.01	0.93	0.00	0.97	0.00	0.13	-0.09	0.43	11.93	2017-01-01
VW23	1.45	0.04	0.07	0.19	0.60	0.03	0.18	0.22	0.58	PSPH Recovery Rate Never > 1
VW24	**-1.93**	0.38	0.16	0.11	**-2.76**	0.40	-0.48	0.01	0.60	PSPH Recovery Rate Never > 1
VW29	**-0.54**	0.56	0.34	0.00	**-0.66**	0.61	-0.45	0.00	0.80	PSPH Recovery Rate Never > 1
VW30	**-0.19**	0.10	0.03	0.38	**-0.31**	0.12	-0.15	0.29	0.19	PSPH Recovery Rate Never > 1
VW31	1.07	0.31	0.36	0.00	0.95	0.37	0.29	0.02	1.25	2021-04-01
VW32	1.90	0.06	0.70	0.00	1.76	0.05	0.59	0.00	0.78	PSPH Recovery Rate Never > 1

Source: EHS Support, 2020

Comparison of the recovery well performance between the previously assessed August 2018 to May 2020 period and June 2020 to the end of July 2021 (refer to **Table 9-2**) continues to demonstrate that recovery wells VW6, VW14, VW13B, VW31 and VW13 (in order of highest to lowest) continue to make up the top five wells for LNAPL recovery. The total recovery from these wells makes up 83.62% of the total volume recovered. Improvements in recovery rates were achieved in wells VW6 and VW31 over the period as shown in **Table 9** (attached).

Table 9-2 Comparison of Recovery Rates and Rankings for August 2018 to May 2020 period and June 2020 to July 2021 Period

Well	August 2018-May 2020				June 2020-July 2021			
	Total PSPH Recovered (gal)	LNAPL Recovery Rank	% of Total LNAPL	Oil/Water Cut (%)	Total PSPH Recovered (gal)	LNAPL Recovery Rank	% of Total LNAPL	Oil/Water Cut (%)
VW2	18.72	15	0.41%	38.37%	0			
VW4	0.81	22	0.02%	5.41%	0			
VW5	168.83	6	3.70%	58.58%	162.9	7	4.11%	61.53%
VW6	643.12	3	14.08%	97.98%	1033.6	1	26.10%	94.95%
VW7	1.6	20	0.04%	44.44%	0.0			
VW13	449.69	4	9.85%	84.12%	233.0	5	5.88%	70.96%
VW13B*	1,197.10	1	26.22%	0.14%	704.7	3	17.79%	0.13%
VW14	923.69	2	20.23%	99.78%	869.0	2	21.94%	97.53%
VW15	6.12	17	0.13%	20.72%	44.1	11	1.11%	22.40%
VW18	16.06	16	0.35%	11.79%	0.0			

Well	August 2018-May 2020				June 2020-July 2021			
	Total PSPH Recovered (gal)	LNAPL Recovery Rank	% of Total LNAPL	Oil/Water Cut (%)	Total PSPH Recovered (gal)	LNAPL Recovery Rank	% of Total LNAPL	Oil/Water Cut (%)
VW19	5	19	0.11%	16.62%	0.0			
VW20	99.69	11	2.18%	86.71%	62.6	8	1.58%	48.07%
VW20B	157.79	7	3.46%	59.84%	41.5	12	1.05%	17.07%
VW21	5.94	18	0.13%	21.71%	1.4	14	0.04%	9.33%
VW21B	48.66	12	1.07%	36.34%	19.4	13	0.49%	22.92%
VW23	47.49	13	1.04%	25.96%	51.8	10	1.31%	26.83%
VW24	127.26	8	2.79%	39.88%	0.0			
VW29	113.62	10	2.49%	41.86%	56.8	9	1.43%	21.00%
VW30	34.67	14	0.76%	17.81%	0.0			
VW31	374.29	5	8.20%	85.53%	471.9	4	11.92%	96.90%
VW32	124.6	9	2.73%	78.81%	208.0	6	5.25%	88.31%
VW35	0.61	23	0.01%	2.44%	0.0			
VW38	1	21	0.02%	16.39%	0.0			
Total	4,566.37			0.53%	3960.7488			0.74%

Notes:
*Submersible pump installed: reported values account for water recovery from the submersible pump.

In terms of the criteria contained within the decision logic diagram above, **Table 9-3** below provides a preliminary assessment. Nine wells were identified as having decreasing trends, with five wells (VW6, VW13, VW14, VW20, VW20b) achieving the > 90% of theoretical LNAPL recovery volume metric and two wells (VW24 and VW29) being close to the 90% of theoretical LNAPL recovery volume. Of these seven wells, three wells had not recovered more than 1 gpd for a year (wells VW13, VW20 and VW20B) with wells VW24 and VW29 never having recovered > 1 gpd of LNAPL.

Several recovery wells with very low total cumulative recovery (< 1000 gallons) and recovery rates (< 1 gpd) were identified (wells VW5, VW23, VW24, VW29, VW30) with many never having recovered more than 1 gpd of LNAPL. These included wells with both positive or decreasing recovery trends with many of the increasing trends identified as statistical anomalies.

Table 9-3 Assessment of Recovery Trends

Well	Theil-Sen Intercept (Thousands of US Gallons)	Theil-Sen Slope	Cumulative PSPH Recovered to July 2021 (Thousands of US Gallons)	Theoretical Maximum (Thousands of US Gallons)	% of Theoretical Maximum Recovered	Decreasing Theil-Sen Trend	Last Date LNAPL Recovery Rate > 1 gpd
VW5	0.15	0.53	0.30	-0.28	-106.88		2020-07-01
VW6	43.43	**-0.49**	87.49	88.79	98.54	Yes	**2021-05-01**
VW13	25.51	**-0.30**	83.94	85.25	98.47	Yes	2019-10-01

Well	Theil-Sen Intercept (Thousands of US Gallons)	Theil-Sen Slope	Cumulative PSPH Recovered to July 2021 (Thousands of US Gallons)	Theoretical Maximum (Thousands of US Gallons)	% of Theoretical Maximum Recovered	Decreasing Theil-Sen Trend	Last Date LNAPL Recovery Rate > 1 gpd
VW13B	3.50	**-0.11**	20.01	32.35	61.88	Yes	**2021-05-01**
VW14	40.80	**-0.31**	127.32	130.95	97.23	Yes	**2021-05-01**
VW20	10.18	**-0.19**	52.13	53.05	98.26	Yes	2013-07-01
VW20B	65.65	**-1.07**	61.12	61.19	99.89	Yes	2016-07-01
VW21B	0.13	0.00	6.36	349.09	1.82		2017-01-01
VW23	0.03	0.60	0.08	-0.05	-141.69		PSPH Recovery Rate Never > 1
VW24	0.40	**-2.76**	0.13	0.14	88.47	Yes	PSPH Recovery Rate Never > 1
VW29	0.61	**-0.66**	0.82	0.93	87.69	Yes	PSPH Recovery Rate Never > 1
VW30	0.12	**-0.31**	0.20	0.39	50.24	Yes	PSPH Recovery Rate Never > 1
VW31	0.37	0.95	0.71	-0.39	-182.57		**2021-04-01**
VW32	0.05	1.76	0.29	-0.03	-1108.83		PSPH Recovery Rate Never > 1

Note: Yellow Highlights meet criteria in decision logic

Based on this assessment, most of the recovery wells likely meet the shutdown criteria proposed for the Site. The final step in the evaluation process (refer to decision logic diagram above) requires completion of the Phase 2 NSZD assessment as described in the following section. Where robust NSZD processes are identified and mass losses are quantified to be larger than LNAPL recovery rates, a recommendation will be provided to transition away from active LNAPL recovery.

10 Recommendations and Schedule for Phase 2 Work

Findings and recommendations of this Phase 1 report include:

1. The temperature and soil gas data show active, robust NSZD is occurring at the Site.
2. Preliminary estimates of mass losses using temperature data are between 7,175 gallons and 8,275 gallons per year. NSZD rates currently exceed LNAPL recovery rates (3,384 gallons of LNAPL recovered in the last 12 months).
3. The high methane detections on-site warrant the use of a LI-COR meter equipped with a methane sensor rather than a passive E-Flux CO_2 trap to quantify mass loss more accurately in the unsaturated zone.
4. It is anticipated that the Licor meter will facilitate a higher sampling grid at limited additional cost.
5. The re-analysis of the recovery data indicates that most wells have met the triggers contained in the decision logic diagrams. New statistical methods have improved the fit and aided in demonstrating we have met the 90% recovery threshold in five wells and two wells are close to approaching the 90% threshold.
6. Preliminary assessment (as noted above) demonstrates that NSZD rates exceed mass removal through active LNAPL recovery. Termination of active LNAPL recovery operations is likely given the expected Phase 2 NSZD results of confirming that NSZD losses are much greater than what can be currently recovered.

10.1 Recommended Sampling Grid for Phase 2

A proposed LI-COR sampling grid is provided as **Figure 11**. Three background locations (DCC-1 through DCC-3) are proposed to be representative of different surface cover (vegetation) types. Proposed source area and downgradient locations (DCC-4 through DCC-30) were selected to be representative of high and low methane areas, surface cover type, and the known distribution of LNAPL. Paved areas were avoided to minimize potential high bias in results from gas accumulation.

10.2 Schedule

EHS Support proposes the following schedule:

- Submit this Phase 1 Report with plans for Phase 2 Testing and confirmation of wells meeting criteria for shutdown.
- Complete Phase 2 NSZD Assessment Work
- Submit a Phase 2 Report with a detailed assessment, refined estimates of NSZD rates, and recommendations for transition to a monitoring-only program for the Site.

The proposed schedule is subject to change based on weather conditions, personnel availability, and USEPA approvals. The intended plan for the Phase 2 work is to begin sampling in December 2021, evaluate results during the first and second quarters of 2022, and submit the Phase 2 Report shortly thereafter.

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Tables

Table 1
Field Measurent Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well ID	Well Gauging		Well Headspace Readings						Temperature Profiles								Minimum Groundwater Elevation	Maximum Groundwater Elevation	Groundwater Elevation Range
	Depth to First Fluid (ft)	Depth to Second Fluid (ft)	2 ft Below Top of Casing			1 ft above Groundwater			2 ft bgs (°C)	1/4 to Water Table (°C)	Halfway to Water Table (°C)	3/4 to Water Table (°C)	1 ft above groundwater (°C)	1 ft below groundwater (°C)	5 ft below groundwater (°C)	10 ft below groundwater (°C)	10/1/2002 to 12/9/2019 ft msl		
			CH_4 (% Vol)	CO_2 (% Vol)	H_2S (ppm)	CH_4 (% Vol)	CO_2 (% Vol)	H_2S (ppm)											
Upgradient Wells																			
MMX	-	62.35	0	1.5	0.0	0	11.1	0.0	30.3	30.4	28.0	28.1	28.2	28.2	28.2	28.2	2.15	3.13	0.98
MM9	-	31.00	0	0.1	0.0	1	0.7	0.0	28.8	29.1	29.2	29.2	28.9	28.9	27.7	27.6	2.86	4.88	2.02
VW3 (not sampled)	-	75.17	1	0.3	0.0	0	0.9	0.0	31.6	31.7	31.6	30.8	30.5	30.1	28.4	28.1	2.96	6.10	3.14
VW8	-	57.49	0	1.1	0.0	1	2.5	0.0	32	31.4	30.6	30	29.7	29.5	27.9	27.7	2.11	2.83	0.72
VW9R (not sampled)	-	78.04	1	0.3	0.0	1	0.1	0.0	32.8	32.7	32.4	31.4	30.8	28.2	27.9	27.8	2.25	4.20	1.95
VW10 (not sampled)	-	88.06	0	0.1	0.0	1	0.3	0.0	28	28.4	28.6	28.7	28.5	27.7	27.6	27.6	2.98	4.70	1.72
VW11	-	71.81	0	0.0	0.0	0	0.1	0.0	34.5	33	32.6	32.1	31.8	28.7	28.5	28.5	3.21	5.43	2.22
VW37	-	49.51	2	1.5	0	3	2.3	0	26.9	27.5	27.8	28	28.1	27.9	27.9	27.9	1.86	2.83	0.97
Source Area Wells																			
VW2	41.27	42.00	0.0	7.6	0.0	12.0	9.8	0.0	28.7	29.6	30.1	30.4	30.7	30.8	30.9	30.8	2.08	3.53	1.45
VW5	37.57	37.72	1.0	0.0	0.0	6.0	7.9	0.0	26.1	27.2	27.7	28.2	28.7	29.2	29.3	29.3	2.08	2.84	0.76
VW6	27.77	27.90	0.0	0.0	0.0	6.5	15.7	0.0	30.6	30.6	30.6	30.3	29.6	29.5	29.5	29.5	2.14	2.77	0.63
VW13	30.24	30.78	0.0	0.3	0.0	18.0	15.3	15.1	29.6	30.3	30.7	31.0	31.1	31.1	30.9	30.8	1.72	2.57	0.85
VW13B	31.20	32.05	0.0	0.0	0.0	65.0	14.3	44.5	31.6	31.6	31.6	31.4	31.4	31.3	30.9	30.6	1.75	2.52	0.77
VW14	33.01	33.59	0.0	0.0	0.0	65.0	15.8	0.0	28.3	29.1	29.4	29.6	29.8	30.0	29.8	29.6	2.06	2.57	0.51
VW20	-	37.30	1.0	0.0	0.0	21.0	1.7	3.0	28.7	29.6	30.0	30.4	30.9	31.1	31.1	30.8	2.83	3.32	0.49
VW20B	-	37.79	1.0	1.5	0.0	5.0	11.1	5.0	30.2	29.9	29.9	30.1	31.0	31.2	31.0	30.7	2.54	2.92	0.38
VW21B	-	37.05	0.0	0.0	0.0	15.0	11.2	0.0	27.9	28.7	29.3	29.7	30.1	30.3	30.2	30.0	2.62	2.79	0.17
VW23	-	29.41	0.0	0.7	3.5	45.0	10.5	>100	28.0	29.5	30.1	30.5	30.7	30.7	30.6	30.6	2.08	2.79	0.71
VW24	67.22	67.55	0	0.3	0	2	10.6	0	28.8	28.9	28.7	28.7	28.9	28.8	28.6	28.6	1.21	2.56	1.35
VW29	36.95	36.97	1	0	0	48	15.7	24.5	27.5	28.3	29	29.4	30	30.5	30.4	30.4	2.29	3.20	0.91
VW30	37.91	38.42	0	0.1	0	0	12.3	0	28	28.3	28.5	28.8	29.1	29.3	29.2	29	2.15	3.36	1.21
VW31	-	38.34	1	7.9	0	4	10.9	0	30	30.1	30.2	30.3	30.1	30.1	30.1	30.1	1.50	2.73	1.23
VW32	38.98	39.1	0	0	0	5	11.8	14	29.4	29.7	29.8	30	30.1	29.9	29.7	29.6	1.48	2.78	1.30
VW35	57.02	57.03	0	0	0	0	14.1	0	27.5	28.6	28.7	28.7	28.5	28.4	28.4	28.4	2.10	3.29	1.19

Table 1
Field Measurent Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well ID	Well Gauging		Well Headspace Readings						Temperature Profiles								Minimum Groundwater Elevation	Maximum Groundwater Elevation	Groundwater Elevation Range
	Depth to First Fluid (ft)	Depth to Second Fluid (ft)	2 ft Below Top of Casing			1 ft above Groundwater			2 ft bgs (°C)	1/4 to Water Table (°C)	Halfway to Water Table (°C)	3/4 to Water Table (°C)	1 ft above groundwater (°C)	1 ft below groundwater (°C)	5 ft below groundwater (°C)	10 ft below groundwater (°C)	10/1/2002 to 12/9/2019 ft msl		
			CH_4 (% Vol)	CO_2 (% Vol)	H_2S (ppm)	CH_4 (% Vol)	CO_2 (% Vol)	H_2S (ppm)											
Downgradient Wells																			
VW4 (not sampled)	41.32	41.62	76	16.6	0	63	16	0	31.3	31.3	30.9	30.8	31	31	31.1	31.1	2.04	2.79	0.75
VW7 (not sampled)	51.17	51.45	3	15.2	0	3	16.1	0	30.8	30.8	30.6	30.5	30.3	30.3	30.3	30.3	2.10	2.86	0.76
VW15 (not sampled)	43.27	43.47	22	14.4	22.5	30	15.5	47.5	30.3	31.6	32.5	32.6	32.1	30.7	30.4	30.1	2.08	3.69	1.61
VW16	-	29.95	1	0.8	0	1	0.9	0	29.8	30.1	30.2	30.3	30.3	29.7	29.6	29.6	1.66	2.49	0.83
VW18 (not sampled)	36.1	36.59	13	11.7	0	13	11.7	4	30.8	30.8	30.7	30.6	30.7	30.7	30.7	30.6	2.15	2.91	0.76
VW25	-	35.57	0	0	0	0	2.9	0	32.8	33	32.9	32.4	31.9	29	28.8	28.8	1.95	2.75	0.80
VW27	-	35.53	0	0.1	0	0	0.3	0	32.6	32.6	32.5	32.1	32	31.8	30	29.8	1.42	2.68	1.26
VW34	-	24.04	1	0	0	6	0	0	27.6	28	28.3	28.4	28.6	28.6	28.6	28.6	1.89	3.23	1.34
GM11	-	35.71	0	0	0	1	0.2	0	28.9	30.3	31	31.6	31.6	30.1	30	29.9	1.44	3.53	2.09
GM14	-	8.57	0	0	0	0	0	0	28.8	28.8	29.3	29.6	29.6	29.8	29.3	29.2	1.37	4.94	3.57
GM22	-	25.00	2	0	0	2	0	0	27.4	28.2	28.4	28.6	28.8	28.8	28.8	28.7	-0.19	19.30	19.49
Gauge Only																			
GM7	NG	NG															Typically Dry		
VW1	-	29.16															1.59	2.87	1.28
VW3	-	75.14															2.96	6.10	3.14
VW12	-	71.94															3.21	5.51	2.30
VW17	-	36.35															1.85	2.89	1.04
VW19	49.4	49.7															2.05	2.87	0.82
VW21	37.22	37.57															1.59	2.76	1.17
VW26	37.12	37.18															2.18	2.99	0.81
VW28	35.4	35.58															2.16	3.02	0.86
VW33	-	81.14															1.96	4.13	2.17
VW36	-	50.02															2.63	4.14	1.51
VW38	35.98	36.18															2.53	3.03	0.50
																		Average	**1.27**

Notes:
- = not measured
°C = degrees Celsius
bgs = below ground surface
CH_4 = methane
CO_2 = carbon dioxide
ft = feet/foot
H_2S = hydrogen sulfide
msl = mean sea level
ppm = parts per million
Vol = volume

EHS Support

Table 2
Stabilized Groundwater Field Parameter Results July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well ID	Temperature (°C)	pH ($-\log_{10}[H^+]$)	Conductivity (mS/cm)	Turbidity (NTU)	DO (mg/L)	ORP (mV)
Upgradient Wells						
MMX	28.8	7.15	1.825	14.55	2.95	103.9
MM9	29.3	7.67	1.875	6.09	2.34	125.4
VW8	29.0	6.98	5.859	2.40	0.93	-10.0
VW11	29.6	8.19	1.671	20.00	1.30	66.2
VW37	29.8	7.24	2.271	204.65	6.28	211.4
Source Area Wells						
VW2	30.7	6.89	3.514	131	6.79	-105.1
VW5	28.8	6.43	1.584	19.03	1.70	-227.6
VW6	29.4	6.39	2.235	13.52	0.32	-275.6
VW13	31.8	6.62	1.780	67.00	0.45	-322.1
VW13B	30.5	6.92	2.818	342	0.30	-217.3
VW14	32.2	6.75	2.369	10.16	0.18	-257.0
VW20	28.7	6.27	2.299	40.25	6.00	-187.1
VW20B	29.6	6.47	2.340	57.69	0.79	-242.3
VW21B	30.0	6.31	1.522	13.43	0.63	-117.1
VW23	30.1	6.70	1.600	208	2.24	-237.6
VW24	29.2	6.62	2.019	42.10	0.43	-305.1
VW29	30.1	6.27	1.224	48.78	0.47	-252.8
VW30	29.7	6.43	2.541	30.77	2.55	-219.0
VW31	30.0	6.59	3.291	11.92	0.34	-310.4
VW32	30.0	7.03	2.993	14.48	0.73	-300.1
VW35	29.1	6.76	2.832	33.76	1.75	-75.8
Downgradient Wells						
VW1	29.6	6.80	2.024	135.14	0.79	-81.5
VW16	30.7	7.10	0.777	18.00	1.54	-59.0
VW25	28.4	7.50	5.850	60.07	5.08	169.3
VW27	31.5	7.91	3.051	15.88	2.20	-20.2
VW34	28.3	8.87	4.299	41.20	0.75	-0.2
GM11	31.3	8.00	6.494	3.01	0.18	-326.2
GM14	29.3	6.83	12.930	2.30	0.71	13.3
GM22	29.8	12.33	36.275	155	0.98	-131.0

Notes:
°C = degrees Celsius
DO = dissolved oxygen
$-\log_{10}[H^+]$ = standard pH units
mg/L = milligrams per liter
mS/cm = millisiemens per centimeter
mV = millivolts
NTU = Nephelometric turbidity units
ORP = oxidation reduction potential

EHS Support

Table 3
Groundwater Analytical Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

			Location	GM11		GM14		GM22		MM9		MMX		VW1		VW11		VW13		VW13B		VW14		VW16		VW2		VW20	
			Sample Date	07/12/2021		07/12/2021		07/13/2021		07/12/2021		07/12/2021		07/13/2021		07/12/2021		07/14/2021		07/14/2021		07/14/2021		07/12/2021		07/13/2021		07/14/2021	
			Sample Type	N		N		N		N		N		N		N		N		N		N		N		N		N	
Chemical	**cas rn**	**Fraction**	**Unit**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
DISSOLVED GASES																													
Carbon Dioxide	124-38-9	N	µg/L	14000		85000		1000	U	14000		35000				15000		130000		85000		110000				54000		140000	
Methane	74-82-8	N	µg/L	336		2.14		211		1.58		1.6				1.5		5650		2040		1640				243		1140	
GENERAL CHEMISTRY																													
Alkalinity, Bicarbonate (As CaCO3)	ALKB	N	µg/L	544000		649000		100000	U	438000		430000				645000		677000		581000		647000				629000		614000	
Alkalinity, Carbonate (As CaCO3)	ALKC	N	µg/L	5000	U	5000	U	1.2E+07		5000	U	5000	U			23000		5000	U	5000	U	5000	U			5000	U	5000	U
Alkalinity, Hydroxide (As CaCO3)	ALKH	N	µg/L	5000	U	5000	U	3600000		5000	U	5000	U			5000	U	5000	U	5000	U	5000	U			5000	U	5000	U
Alkalinity, Total (As CaCO3)	ALK	N	µg/L	544000		649000		1.5E+07		442000		430000				668000		677000		581000		647000				629000		614000	
Ammonia as N	7664-41-7N	N	µg/L	790		260		4100		28	J	33	J			50	U	2800		2100		1900				1500		3400	
Chloride (As Cl)	16887-00-6	N	µg/L	1660000		4180000		2510000		283000		308000				193000		374000		606000		492000				899000		439000	
Dissolved Organic Carbon	DOC	D	µg/L	4400		3510		231000		758	J	1040				1330		12000		5420		6560				4980		8520	
Nitrate as N	14797-55-8N	N	µg/L	500	U	500	U	1000	HU	14400		9910	H			11700	H	100	U	100	U	100	U			200	U	100	U
Nitrite as N	14797-65-0N	N	µg/L	500	U	500	U	328	JH	100	U	100	HU			100	HU	100	U	100	U	100	U			200	U	100	U
Sulfate (As SO4)	14808-79-8	N	µg/L	254000		1050000		540000		71800		70400				69000		18200		75800		10900				29500		5870	
Sulfide	18496-25-8	N	µg/L	13800		1000	U	5000	U	1000	U	1000	U			1000	U	28100		11700		15700				1000	U	7280	
Sum nitrate as N + nitrite as N	NO3N_NO2NSum	N	µg/L	1000	U	1000	U	2000	U	14000		9960				11800		1000	U	1000	U	1000	U			1000	U	1000	U
Total Kjeldahl Nitrogen	TKN	N	µg/L	1600		750		5900		1900		2300				360	J	3600		2600		2400				1600		4400	
METALS																													
Calcium	7440-70-2	T	µg/L	24900		216000		1920	J	17300		52200				9360		86800		85000		92300				114000		92500	
Iron	7439-89-6	D	µg/L	200	U	64.8	J	1000	U	200	U	200	U			200	U	37.5	J	103	J	104	J			766		66.8	J
Iron	7439-89-6	T	µg/L	16.2	J	378		1480	J	48.4	J	200	U			4320		66	J	143	J	93.4	J			2210		99.7	J
Magnesium	7439-95-4	T	µg/L	49000		209000		598	J	8680		38100				8340		58200		51300		40900				49600		37100	
Manganese	7439-96-5	D	µg/L	13.2		380		25	U	5	U	5	U			23.2		128		248		294				398		392	
Manganese	7439-96-5	T	µg/L	15.8		502		13.1	J	1.5	J	5	U			110		73.4		279		279				407		391	
Potassium	7440-09-7	T	µg/L	24400		14000		54200		9380		12400				7970		7850		9700		9430				12100		13700	
Sodium	7440-23-5	T	µg/L	1070000		2640000		6950000		291000		240000				419000		220000		351000		312000				517000		272000	
SVOC																													
Naphthalene	91-20-3	N	µg/L	0.101	U	0.103	U	0.101	U	0.107	U	0.101	U	0.101	U	0.105	U	13		0.899		1.05		0.105	U	0.941		0.102	
TPH																													
Diesel Range Organics	68334-30-5	N	µg/L	67		51	U	290		52	U	52	U	75		52	U	56000		4000		110000		52	U	6200		1600	
VOC																													
Benzene	71-43-2	N	µg/L	1	U	1	U	25	U	1	U	1	U	1	U	1	U	1	U	5	U	1	U	1	U	1	U	1	U
Ethylbenzene	100-41-4	N	µg/L	1	U	1	U	25	U	1	U	1	U	1	U	1	U	1	U	5	U	1	U	1	U	1	U	1	U
M,P-Xylene	179601-23-1	N	µg/L	2	U	2	U	50	U	2	U	2	U	2	U	2	U	2	U	10	U	2	U	2	U	2	U	2	U
O-Xylene (1,2-Dimethylbenzene)	95-47-6	N	µg/L	1	U	1	U	25	U	1	U	1	U	1	U	1	U	0.69	J	5	U	0.57	J	1	U	1	U	1	U
Toluene	108-88-3	N	µg/L	1	U	1	U	25	U	1	U	1	U	1	U	1	U	1	U	5	U	1	U	1	U	1	U	1	U
Xylenes	1330-20-7	N	µg/L	1	U	1	U	25	U	1	U	1	U	1	U	1	U	0.69	J	5	U	0.57	J	1	U	1	U	1	U

Table 3
Groundwater Analytical Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

			Location	VW20B		VW21B		VW23		VW24		VW25		VW27		VW27		VW29		VW30		VW31		VW32		VW34		VW35		VW37	
			Sample Date	07/14/2021		07/14/2021		07/14/2021		07/13/2021		07/13/2021		07/12/2021		07/12/2021		07/14/2021		07/13/2021		07/13/2021		07/13/2021		07/13/2021		07/13/2021		07/13/2021	
			Sample Type	N		N		N		N		N		FD		N		N		N		N		N		N		N		FD	
Chemical	**cas rn**	**Fraction**	**Unit**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
DISSOLVED GASES																															
Carbon Dioxide	124-38-9	N	µg/L	110000		150000		160000		61000		32000		12000		15000		150000		190000		99000		64000		1900		110000		30000	
Methane	74-82-8	N	µg/L	3800		1350		3540		777		1.6		380		21.8		6740		5660		2380		1250		27.6		398		1.49	
GENERAL CHEMISTRY																															
Alkalinity, Bicarbonate (As CaCO3)	ALKB	N	µg/L	640000		615000		894000		519000		1030000		565000		657000		550000		682000		914000		715000		717000		683000		537000	
Alkalinity, Carbonate (As CaCO3)	ALKC	N	µg/L	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U	16200		5000	U	5000	U	5000	U	5000	U	188000		5000	U	5000	U
Alkalinity, Hydroxide (As CaCO3)	ALKH	N	µg/L	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U
Alkalinity, Total (As CaCO3)	ALK	N	µg/L	640000		615000		894000		519000		1030000		565000		673000		550000		682000		914000		715000		905000		683000		537000	
Ammonia as N	7664-41-7N	N	µg/L	2600		730		3700		150		47	J	680		190		5100		1300		2900		2000		410		340		46	J
Chloride (As Cl)	16887-00-6	N	µg/L	412000		153000		39000		355000		1250000		1720000		430000		95000		490000		582000		583000		790000		545000		380000	
Dissolved Organic Carbon	DOC	D	µg/L	7850		11200		18400		2840		12300		4390		4540		16200		33000				7460		6470		7580		1770	
Nitrate as N	14797-55-8N	N	µg/L	100	U	100	U	35.1	J	100	U	11300	H	500	HU	100	U	100	U	60.4	J	100	HU	100	HU	200	HU	604		15300	H
Nitrite as N	14797-65-0N	N	µg/L	100	U	83.3	J	189		100	U	500	HU	500	HU	100	U	100		100	U	100	HU	100	HU	200	HU	100	U	100	HU
Sulfate (As SO4)	14808-79-8	N	µg/L	3490		3070		11800		20300		413000		264000		91400		1840		6190		16700		36800		259000		32100		118000	
Sulfide	18496-25-8	N	µg/L	4880		1000	U	32700		29200		5000	U	13400		1000	U	7680		11400		18000		19600		1000	U	1000	U	1000	U
Sum nitrate as N + nitrite as N	NO3N_NO2NSum	N	µg/L	1000	U	1000	U	1000	U	1000	U	11200		1000	U	1000	U	1000	U	1000	U	1000	U	182	J	1000	U	492	J	15200	
Total Kjeldahl Nitrogen	TKN	N	µg/L	3500		960		5000		410	J	2200		1600		650		6800		1800		3900		2700		1100		650		1400	
METALS																															
Calcium	7440-70-2	T	µg/L	67300		87000		113000		52500		54300		23800		13900		136000		119000		42200		33500		15100		67700		55300	
Iron	7439-89-6	D	µg/L	15.6	J	2510		22.2	J	23	J	28.8	J	200	U	23.4	J	41.8	J	22.3	J	78.3	J	19	J	200	U	744		200	U
Iron	7439-89-6	T	µg/L	59	J	2610		180	J	120	J	4450		24.8	J	92.7	J	69.2	J	75.3	J	224		78.7	J	272		1340		1870	
Magnesium	7439-95-4	T	µg/L	38600		41800		68400		24300		27400		49800		12800		24000		37100		24300		21000		8870		32500		29600	
Manganese	7439-96-5	D	µg/L	320		305		36.1		34.2		9.91		12.6		5.38		145		133		105		79.4		0.952	J	174		2	J
Manganese	7439-96-5	T	µg/L	314		315		45.8		35.4		34		12.7		8.15		141		134		99.9		86		7.84		202		37.5	
Potassium	7440-09-7	T	µg/L	14000		7260		4100		11200		10600		25100		4850		2850		24300		16700		17000		21500		15700		11000	
Sodium	7440-23-5	T	µg/L	331000		136000		144000		291000		136000		1180000		504000		63100		295000		579000		496000		827000		432000		336000	
SVOC																															
Naphthalene	91-20-3	N	µg/L	0.0992	J	1.9		1		2.44		0.106	U	0.105	U	0.106	U	8.52		0.977		0.386		0.576		0.107	U	0.105	U	0.102	U
TPH																															
Diesel Range Organics	68334-30-5	N	µg/L	1700		4100		4800		11000		52	U	92		40	J	5400		2700		2700		3400		52	U	1800		25	J
VOC																															
Benzene	71-43-2	N	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Ethylbenzene	100-41-4	N	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.43	J	1	U	1	U	1	U	1	U	1	U	1	U
M,P-Xylene	179601-23-1	N	µg/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
O-Xylene (1,2-Dimethylbenzene)	95-47-6	N	µg/L	1	U	1	U	0.73	J	0.54	J	1	U	1	U	1	U	0.77	J	0.78	J	1	U	1	U	1	U	1	U	1	U
Toluene	108-88-3	N	µg/L	1	U	1	U	0.31	J	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Xylenes	1330-20-7	N	µg/L	1	U	1	U	0.73	J	0.54	J	1	U	1	U	1	U	0.77	J	0.78	J	1	U	1	U	1	U	1	U	1	U

Table 3
Groundwater Analytical Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

			Location	VW37		VW5		VW6		VW8		Trip Blank		Trip Blank 01		Trip Blank 01		Trip Blank 02		Trip Blank 02		Trip Blank 03		Trip Blank 03		Trip Blank 04		Trip Blank 04	
			Sample Date	07/13/2021		07/14/2021		07/14/2021		07/12/2021		07/12/2021		07/12/2021		07/14/2021		07/12/2021		07/14/2021		07/12/2021		07/14/2021		07/12/2021		07/14/2021	
			Sample Type	N		N		N		N		TB		TB		TB		TB		TB		TB		TB		TB		TB	
Chemical	**cas rn**	**Fraction**	**Unit**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
DISSOLVED GASES																													
Carbon Dioxide	124-38-9	N	µg/L	35000		120000		120000		46000																			
Methane	74-82-8	N	µg/L	1.34		3330		1980		1.13																			
GENERAL CHEMISTRY																													
Alkalinity, Bicarbonate (As CaCO3)	ALKB	N	µg/L	539000		511000		618000		565000																			
Alkalinity, Carbonate (As CaCO3)	ALKC	N	µg/L	5000	U	5000	U	5000	U	5000	U																		
Alkalinity, Hydroxide (As CaCO3)	ALKH	N	µg/L	5000	U	5000	U	5000	U	5000	U																		
Alkalinity, Total (As CaCO3)	ALK	N	µg/L	539000		511000		618000		565000																			
Ammonia as N	7664-41-7N	N	µg/L	51		1000		2100		50	U																		
Chloride (As Cl)	16887-00-6	N	µg/L	359000		230000		458000		1240000																			
Dissolved Organic Carbon	DOC	D	µg/L	1380		5640		11800		1440																			
Nitrate as N	14797-55-8N	N	µg/L	15200	H	100	U	100	U	10100																			
Nitrite as N	14797-65-0N	N	µg/L	100	HU	100	U	100	U	500	U																		
Sulfate (As SO4)	14808-79-8	N	µg/L	110000		24000		3200		276000																			
Sulfide	18496-25-8	N	µg/L	20000	U	7480		16700		1000	U																		
Sum nitrate as N + nitrite as N	NO3N_NO2NSum	N	µg/L	15500		1000	U	1000	U																				
Total Kjeldahl Nitrogen	TKN	N	µg/L	1400		3200		2100		300	J																		
METALS																													
Calcium	7440-70-2	T	µg/L	149000		175000		127000		92900																			
Iron	7439-89-6	D	µg/L	200	U	163	J	174	J	401																			
Iron	7439-89-6	T	µg/L	10300		235		292		606																			
Magnesium	7439-95-4	T	µg/L	36300		11700		37300		61900																			
Manganese	7439-96-5	D	µg/L	6.05		466		376		70.6																			
Manganese	7439-96-5	T	µg/L	231		470		410		76.5																			
Potassium	7440-09-7	T	µg/L	13900		1760		7690		14700																			
Sodium	7440-23-5	T	µg/L	368000		88700		298000		891000																			
SVOC																													
Naphthalene	91-20-3	N	µg/L	0.105	U	0.313		0.846		0.106	U																		
TPH																													
Diesel Range Organics	68334-30-5	N	µg/L	52	U	1300		5000		52	U																		
VOC																													
Benzene	71-43-2	N	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Ethylbenzene	100-41-4	N	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
M,P-Xylene	179601-23-1	N	µg/L	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
O-Xylene (1,2-Dimethylbenzene)	95-47-6	N	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Toluene	108-88-3	N	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Xylenes	1330-20-7	N	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U

Table 4
Statistical Comparison for Well Headspace Gas Readings
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Well Head Carbon Dioxide

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	2.2	11.533333
Variance	19.116	12.870952
Observations	6	15
df	5	14
F	1.4852048	
P(F<=f) one-tail	0.2563671	
F Critical one-tail	2.9582489	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	2.2	11.533333
Variance	19.116	12.870952
Observations	6	15
Hypothesized Mean Difference	0	
df	8	
t Stat	-4.641173	
P(T<=t) one-tail	0.0008318	
t Critical one-tail	1.859548	
P(T<=t) two-tail	0.0016637	
t Critical two-tail	2.3060041	

The two means are unequal: t Stat < (-) t critical two-tail or t Stat > t Critical two-tail.

Table 4
Statistical Comparison for Well Headspace Gas Readings
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Well Head Methane

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	17.966667	0.5
Variance	493.94524	0.3
Observations	15	6
df	14	5
F	1646.4841	
P(F<=f) one-tail	3.45E-08	
F Critical one-tail	4.6357677	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	0.5	17.966667
Variance	0.3	493.94524
Observations	6	15
Hypothesized Mean Difference	0	
df	14	
t Stat	-3.041493	
P(T<=t) one-tail	0.0043985	
t Critical one-tail	1.7613101	
P(T<=t) two-tail	0.008797	
t Critical two-tail	2.1447867	

The two means are unequal: t Stat < (-) t critical two-tail or t Stat > t Critical two-tail.

Table 4
Statistical Comparison for Well Headspace Gas Readings
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Well Head Hydrogen Sulfide

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	12.106667	0
Variance	731.40638	0
Observations	15	6
df	14	5
F	65535	
P(F<=f) one-tail	#DIV/0!	
F Critical one-tail	4.6357677	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	0	12.106667
Variance	0	731.40638
Observations	6	15
Hypothesized Mean Difference	0	
df	14	
t Stat	-1.733767	
P(T<=t) one-tail	0.0524574	
t Critical one-tail	1.7613101	
P(T<=t) two-tail	0.1049148	
t Critical two-tail	2.1447867	

The two means are unequal: t Stat < (-) t critical two-tail or t Stat > t Critical two-tail.

Table 5
Temperature Profile Comparisons - Upgradient, Source, and Downgradient Wells
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	T Minimum (°C)	T Average (°C)	T Maximum (°C)
Background wells (MMX, MM9, and VW10)			
2 ft bgs	28.0	29.0	30.3
1/4 to Water Table	28.4	29.3	30.4
Halfway to Water Table	28.0	28.6	29.2
3/4 to Water Table	28.1	28.7	29.2
1 ft Above Groundwater	28.2	28.5	28.9
1 ft Below Groundwater	27.7	28.3	28.9
5 ft Below Groundwater	27.6	27.8	28.2
10 ft Below Groundwater	27.6	27.8	28.2
Downgradient wells (VW25, VW27, VW34, VW37, GM11, and GM14)			
2 ft bgs	26.9	29.8	32.8
1/4 to Water Table	27.5	30.3	33.0
Halfway to Water Table	27.8	30.4	32.9
3/4 to Water Table	28.0	30.5	32.6
1 ft Above Groundwater	28.1	30.4	32.1
1 ft Below Groundwater	27.9	29.9	31.8
5 ft Below Groundwater	27.9	29.6	31.1
10 ft Below Groundwater	27.9	29.6	31.1

Well	T. (°C) [Measured = Ti]	ΔT (Min.) [Relative to Background]	ΔT (Av.) [Relative to Background]	ΔT (Max.) [Relative to Background]	ΔT (Min.) [Relative to Downgradient]	ΔT (Av.) [Relative to Downgradient]	ΔT (Max.) [Relative to Downgradient]
Source Area Well VW-2							
2 ft bgs	28.7	-1.6	-0.3	0.7	-4.1	-1.1	1.8
1/4 to Water Table	29.6	-0.8	0.3	1.2	-3.4	-0.7	2.1
Halfway to Water Table	30.1	0.9	1.5	2.1	-2.8	-0.3	2.3
3/4 to Water Table	30.4	1.2	1.7	2.3	-2.2	-0.1	2.4
1 ft Above Groundwater	30.7	1.8	2.2	2.5	-1.4	0.3	2.6
1 ft Below Groundwater	30.8	1.9	2.5	3.1	-1.0	0.9	2.9
5 ft Below Groundwater	30.9	2.7	3.1	3.3	-0.2	1.3	3.0
10 ft Below Groundwater	30.8	2.6	3.0	3.2	-0.3	1.3	2.9

Table 5
Temperature Profile Comparisons - Upgradient, Source, and Downgradient Wells
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	T. (°C) [Measured = Ti]	ΔT (Min.) [Relative to Background]	ΔT (Av.) [Relative to Background]	ΔT (Max.) [Relative to Background]	ΔT (Min.) [Relative to Downgradient]	ΔT (Av.) [Relative to Downgradient]	ΔT (Max.) [Relative to Downgradient]
Source Area Well VW-5							
2 ft bgs	26.1	-4.2	-2.9	-1.9	-6.7	-3.7	-0.8
1/4 to Water Table	27.2	-3.2	-2.1	-1.2	-5.8	-3.1	-0.3
Halfway to Water Table	27.7	-1.5	-0.9	-0.3	-5.2	-2.7	-0.1
3/4 to Water Table	28.2	-1.0	-0.5	0.1	-4.4	-2.3	0.2
1 ft Above Groundwater	28.7	-0.2	0.2	0.5	-3.4	-1.7	0.6
1 ft Below Groundwater	29.2	0.3	0.9	1.5	-2.6	-0.7	1.3
5 ft Below Groundwater	29.3	1.1	1.5	1.7	-1.8	-0.3	1.4
10 ft Below Groundwater	29.3	1.1	1.5	1.7	-1.8	-0.2	1.4
Source Area Well VW-6							
2 ft bgs	30.6	0.3	1.6	2.6	-2.2	0.8	3.7
1/4 to Water Table	30.6	0.2	1.3	2.2	-2.4	0.3	3.1
Halfway to Water Table	30.6	1.4	2.0	2.6	-2.3	0.2	2.8
3/4 to Water Table	30.3	1.1	1.6	2.2	-2.3	-0.2	2.3
1 ft Above Groundwater	29.6	0.7	1.1	1.4	-2.5	-0.8	1.5
1 ft Below Groundwater	29.5	0.6	1.2	1.8	-2.3	-0.4	1.6
5 ft Below Groundwater	29.5	1.3	1.7	1.9	-1.6	-0.1	1.6
10 ft Below Groundwater	29.5	1.3	1.7	1.9	-1.6	0.0	1.6
Source Area Well VW-13							
2 ft bgs	29.6	-0.7	0.6	1.6	-3.2	-0.2	2.7
1/4 to Water Table	30.3	-0.1	1.0	1.9	-2.7	0.0	2.8
Halfway to Water Table	30.7	1.5	2.1	2.7	-2.2	0.3	2.9
3/4 to Water Table	31.0	1.8	2.3	2.9	-1.6	0.5	3.0
1 ft Above Groundwater	31.1	2.2	2.6	2.9	-1.0	0.7	3.0
1 ft Below Groundwater	31.1	2.2	2.8	3.4	-0.7	1.2	3.2
5 ft Below Groundwater	30.9	2.7	3.1	3.3	-0.2	1.3	3.0
10 ft Below Groundwater	30.8	2.6	3.0	3.2	-0.3	1.3	2.9
Source Area Well VW-13B							
2 ft bgs	31.6	1.3	2.6	3.6	-1.2	1.8	4.7
1/4 to Water Table	31.6	1.2	2.3	3.2	-1.4	1.4	4.1
Halfway to Water Table	31.6	2.4	3.0	3.6	-1.3	1.2	3.8
3/4 to Water Table	31.4	2.2	2.7	3.3	-1.2	0.9	3.4
1 ft Above Groundwater	31.4	2.5	2.9	3.2	-0.7	1.0	3.3
1 ft Below Groundwater	31.3	2.4	3.0	3.6	-0.5	1.4	3.4
5 ft Below Groundwater	30.9	2.7	3.1	3.3	-0.2	1.3	3.0
10 ft Below Groundwater	30.6	2.4	2.8	3.0	-0.5	1.1	2.7

Table 5
Temperature Profile Comparisons - Upgradient, Source, and Downgradient Wells
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	T. (°C) [Measured = Ti]	ΔT (Min.) [Relative to Background]	ΔT (Av.) [Relative to Background]	ΔT (Max.) [Relative to Background]	ΔT (Min.) [Relative to Downgradient]	ΔT (Av.) [Relative to Downgradient]	ΔT (Max.) [Relative to Downgradient]
Source Area Well VW-14							
2 ft bgs	28.3	-2.0	-0.7	0.3	-4.5	-1.5	1.4
1/4 to Water Table	29.1	-1.3	-0.2	0.7	-3.9	-1.2	1.6
Halfway to Water Table	29.4	0.2	0.8	1.4	-3.5	-1.0	1.6
3/4 to Water Table	29.6	0.4	0.9	1.5	-3.0	-0.9	1.6
1 ft Above Groundwater	29.8	0.9	1.3	1.6	-2.3	-0.6	1.7
1 ft Below Groundwater	30.0	1.1	1.7	2.3	-1.8	0.1	2.1
5 ft Below Groundwater	29.8	1.6	2.0	2.2	-1.3	0.2	1.9
10 ft Below Groundwater	29.6	1.4	1.8	2.0	-1.5	0.1	1.7
Source Area Well VW-20							
2 ft bgs	28.7	-1.6	-0.3	0.7	-4.1	-1.1	1.8
1/4 to Water Table	29.6	-0.8	0.3	1.2	-3.4	-0.7	2.1
Halfway to Water Table	30.0	0.8	1.4	2.0	-2.9	-0.4	2.2
3/4 to Water Table	30.4	1.2	1.7	2.3	-2.2	-0.1	2.4
1 ft Above Groundwater	30.9	2.0	2.4	2.7	-1.2	0.5	2.8
1 ft Below Groundwater	31.1	2.2	2.8	3.4	-0.7	1.2	3.2
5 ft Below Groundwater	31.1	2.9	3.3	3.5	0.0	1.5	3.2
10 ft Below Groundwater	30.8	2.6	3.0	3.2	-0.3	1.3	2.9
Source Area Well VW-20B							
2 ft bgs	30.2	-0.1	1.2	2.2	-2.6	0.4	3.3
1/4 to Water Table	29.9	-0.5	0.6	1.5	-3.1	-0.4	2.4
Halfway to Water Table	29.9	0.7	1.3	1.9	-3.0	-0.5	2.1
3/4 to Water Table	30.1	0.9	1.4	2.0	-2.5	-0.4	2.1
1 ft Above Groundwater	31.0	2.1	2.5	2.8	-1.1	0.6	2.9
1 ft Below Groundwater	31.2	2.3	2.9	3.5	-0.6	1.3	3.3
5 ft Below Groundwater	31.0	2.8	3.2	3.4	-0.1	1.4	3.1
10 ft Below Groundwater	30.7	2.5	2.9	3.1	-0.4	1.2	2.8
Source Area Well VW-21B							
2 ft bgs	27.9	-2.4	-1.1	-0.1	-4.9	-1.9	1.0
1/4 to Water Table	28.7	-1.7	-0.6	0.3	-4.3	-1.6	1.2
Halfway to Water Table	29.3	0.1	0.7	1.3	-3.6	-1.1	1.5
3/4 to Water Table	29.7	0.5	1.0	1.6	-2.9	-0.8	1.7
1 ft Above Groundwater	30.1	1.2	1.6	1.9	-2.0	-0.3	2.0
1 ft Below Groundwater	30.3	1.4	2.0	2.6	-1.5	0.4	2.4
5 ft Below Groundwater	30.2	2.0	2.4	2.6	-0.9	0.6	2.3
10 ft Below Groundwater	30.0	1.8	2.2	2.4	-1.1	0.5	2.1

Table 5
Temperature Profile Comparisons - Upgradient, Source, and Downgradient Wells
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	T. (°C) [Measured = Ti]	ΔT (Min.) [Relative to Background]	ΔT (Av.) [Relative to Background]	ΔT (Max.) [Relative to Background]	ΔT (Min.) [Relative to Downgradient]	ΔT (Av.) [Relative to Downgradient]	ΔT (Max.) [Relative to Downgradient]
Source Area Well VW-23							
2 ft bgs	28.0	-2.3	-1.0	0.0	-4.8	-1.8	1.1
1/4 to Water Table	29.5	-0.9	0.2	1.1	-3.5	-0.8	2.0
Halfway to Water Table	30.1	0.9	1.5	2.1	-2.8	-0.3	2.3
3/4 to Water Table	30.5	1.3	1.8	2.4	-2.1	0.0	2.5
1 ft Above Groundwater	30.7	1.8	2.2	2.5	-1.4	0.3	2.6
1 ft Below Groundwater	30.7	1.8	2.4	3.0	-1.1	0.8	2.8
5 ft Below Groundwater	30.6	2.4	2.8	3.0	-0.5	1.0	2.7
10 ft Below Groundwater	30.6	2.4	2.8	3.0	-0.5	1.1	2.7
Source Area Well VW-24							
2 ft bgs	28.8	-1.5	-0.2	0.8	-4.0	-1.0	1.9
1/4 to Water Table	28.9	-1.5	-0.4	0.5	-4.1	-1.4	1.4
Halfway to Water Table	28.7	-0.5	0.1	0.7	-4.2	-1.7	0.9
3/4 to Water Table	28.7	-0.5	0.0	0.6	-3.9	-1.8	0.7
1 ft Above Groundwater	28.9	0.0	0.4	0.7	-3.2	-1.5	0.8
1 ft Below Groundwater	28.8	-0.1	0.5	1.1	-3.0	-1.1	0.9
5 ft Below Groundwater	28.6	0.4	0.8	1.0	-2.5	-1.0	0.7
10 ft Below Groundwater	28.6	0.4	0.8	1.0	-2.5	-0.9	0.7
Source Area Well VW-29							
2 ft bgs	27.5	-2.8	-1.5	-0.5	-5.3	-2.3	0.6
1/4 to Water Table	28.3	-2.1	-1.0	-0.1	-4.7	-2.0	0.8
Halfway to Water Table	29.0	-0.2	0.4	1.0	-3.9	-1.4	1.2
3/4 to Water Table	29.4	0.2	0.7	1.3	-3.2	-1.1	1.4
1 ft Above Groundwater	30.0	1.1	1.5	1.8	-2.1	-0.4	1.9
1 ft Below Groundwater	30.5	1.6	2.2	2.8	-1.3	0.6	2.6
5 ft Below Groundwater	30.4	2.2	2.6	2.8	-0.7	0.8	2.5
10 ft Below Groundwater	30.4	2.2	2.6	2.8	-0.7	0.9	2.5
Source Area Well VW-30							
2 ft bgs	28.0	-2.3	-1.0	0.0	-4.8	-1.8	1.1
1/4 to Water Table	28.3	-2.1	-1.0	-0.1	-4.7	-2.0	0.8
Halfway to Water Table	28.5	-0.7	-0.1	0.5	-4.4	-1.9	0.7
3/4 to Water Table	28.8	-0.4	0.1	0.7	-3.8	-1.7	0.8
1 ft Above Groundwater	29.1	0.2	0.6	0.9	-3.0	-1.3	1.0
1 ft Below Groundwater	29.3	0.4	1.0	1.6	-2.5	-0.6	1.4
5 ft Below Groundwater	29.2	1.0	1.4	1.6	-1.9	-0.4	1.3
10 ft Below Groundwater	29.0	0.8	1.2	1.4	-2.1	-0.5	1.1

Table 5
Temperature Profile Comparisons - Upgradient, Source, and Downgradient Wells
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	T. (°C) [Measured = Ti]	ΔT (Min.) [Relative to Background]	ΔT (Av.) [Relative to Background]	ΔT (Max.) [Relative to Background]	ΔT (Min.) [Relative to Downgradient]	ΔT (Av.) [Relative to Downgradient]	ΔT (Max.) [Relative to Downgradient]
Source Area Well VW-31							
2 ft bgs	30.0	-0.3	1.0	2.0	-2.8	0.2	3.1
1/4 to Water Table	30.1	-0.3	0.8	1.7	-2.9	-0.2	2.6
Halfway to Water Table	30.2	1.0	1.6	2.2	-2.7	-0.2	2.4
3/4 to Water Table	30.3	1.1	1.6	2.2	-2.3	-0.2	2.3
1 ft Above Groundwater	30.1	1.2	1.6	1.9	-2.0	-0.3	2.0
1 ft Below Groundwater	30.1	1.2	1.8	2.4	-1.7	0.2	2.2
5 ft Below Groundwater	30.1	1.9	2.3	2.5	-1.0	0.5	2.2
10 ft Below Groundwater	30.1	1.9	2.3	2.5	-1.0	0.6	2.2
Source Area Well VW-32							
2 ft bgs	29.4	-0.9	0.4	1.4	-3.4	-0.4	2.5
1/4 to Water Table	29.7	-0.7	0.4	1.3	-3.3	-0.6	2.2
Halfway to Water Table	29.8	0.6	1.2	1.8	-3.1	-0.6	2.0
3/4 to Water Table	30.0	0.8	1.3	1.9	-2.6	-0.5	2.0
1 ft Above Groundwater	30.1	1.2	1.6	1.9	-2.0	-0.3	2.0
1 ft Below Groundwater	29.9	1.0	1.6	2.2	-1.9	0.0	2.0
5 ft Below Groundwater	29.7	1.5	1.9	2.1	-1.4	0.1	1.8
10 ft Below Groundwater	29.6	1.4	1.8	2.0	-1.5	0.1	1.7
Source Area Well VW-35							
2 ft bgs	27.5	-2.8	-1.5	-0.5	-5.3	-2.3	0.6
1/4 to Water Table	28.6	-1.8	-0.7	0.2	-4.4	-1.7	1.1
Halfway to Water Table	28.7	-0.5	0.1	0.7	-4.2	-1.7	0.9
3/4 to Water Table	28.7	-0.5	0.0	0.6	-3.9	-1.8	0.7
1 ft Above Groundwater	28.5	-0.4	0.0	0.3	-3.6	-1.9	0.4
1 ft Below Groundwater	28.4	-0.5	0.1	0.7	-3.4	-1.5	0.5
5 ft Below Groundwater	28.4	0.2	0.6	0.8	-2.7	-1.2	0.5
10 ft Below Groundwater	28.4	0.2	0.6	0.8	-2.7	-1.2	0.5

Notes:
°C = degrees Celsius
Av. = average
bgs = below ground surface
ft = feet/foot
Max. = maximum
T = temperature
Tb = temperature in background well
Ti = temperature of well "i"
ΔT = temperature difference

Table 6
Statistical Comparison for Aqueous TEA and Byproduct Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Ammonia in Groundwater

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	2.10125	0.0424
Variance	1.711132	0.000121
Observations	16	5
df	15	4
F	14106.61	
P(F<=f) one-tail	1.14E-08	
F Critical one-tail	5.857805	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	2.10125	0.0424
Variance	1.711132	0.000121
Observations	16	5
Hypothesized Mean Difference	0	
df	15	
t Stat	6.294971	
P(T<=t) one-tail	7.18E-06	
t Critical one-tail	1.75305	
P(T<=t) two-tail	1.44E-05	
t Critical two-tail	2.13145	

The two means are unequal: t Stat < (-) t critical two-tail or t Stat > t Critical two-tail.

Table 6
Statistical Comparison for Aqueous TEA and Byproduct Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Carbon Dioxide in Groundwater

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	115812.5	29000
Variance	1.43E+09	1.96E+08
Observations	16	5
df	15	4
F	7.317455	
P(F<=f) one-tail	0.033821	
F Critical one-tail	5.857805	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	115812.5	29000
Variance	1.43E+09	1.96E+08
Observations	16	5
Hypothesized Mean Difference	0	
df	18	
t Stat	7.657968	
P(T<=t) one-tail	2.27E-07	
t Critical one-tail	1.734064	
P(T<=t) two-tail	4.54E-07	
t Critical two-tail	2.100922	

The two means are unequal: t Stat < (-) t critical two-tail or t Stat > t Critical two-tail.

Table 6
Statistical Comparison for Aqueous TEA and Byproduct Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Dissolved Iron in Groundwater

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	0.305656	0.1802
Variance	0.402648	0.01711
Observations	16	5
df	15	4
F	23.53263	
P(F<=f) one-tail	0.003812	
F Critical one-tail	5.857805	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	0.305656	0.1802
Variance	0.402648	0.01711
Observations	16	5
Hypothesized Mean Difference	0	
df	18	
t Stat	0.742	
P(T<=t) one-tail	0.23383	
t Critical one-tail	1.734064	
P(T<=t) two-tail	0.46766	
t Critical two-tail	2.100922	

The two means are indisitignuishable: t Stat > (-) t critical two-tail and t Stat < t Critical two-tail.

Table 6
Statistical Comparison for Aqueous TEA and Byproduct Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Dissolved Manganese in Groundwater

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	0.227106	0.02147
Variance	0.019594	0.000821
Observations	16	5
df	15	4
F	23.85366	
P(F<=f) one-tail	0.003714	
F Critical one-tail	5.857805	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	0.227106	0.02147
Variance	0.019594	0.000821
Observations	16	5
Hypothesized Mean Difference	0	
df	18	
t Stat	5.517802	
P(T<=t) one-tail	1.54E-05	
t Critical one-tail	1.734064	
P(T<=t) two-tail	3.07E-05	
t Critical two-tail	2.100922	

The two means are unequal: t Stat < (-) t critical two-tail or t Stat > t Critical two-tail.

Table 6
Statistical Comparison for Aqueous TEA and Byproduct Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Methane in Groundwater

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	2619.875	1.43
Variance	3971204	0.0386
Observations	16	5
df	15	4
F	1.03E+08	
P(F<=f) one-tail	2.14E-16	
F Critical one-tail	5.857805	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	2619.875	1.43
Variance	3971204	0.0386
Observations	16	5
Hypothesized Mean Difference	0	
df	15	
t Stat	5.255842	
P(T<=t) one-tail	4.84E-05	
t Critical one-tail	1.75305	
P(T<=t) two-tail	9.69E-05	
t Critical two-tail	2.13145	

The two means are unequal: t Stat < (-) t critical two-tail or t Stat > t Critical two-tail.

Table 6
Statistical Comparison for Aqueous TEA and Byproduct Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Nitrate in Groundwater

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	12.262	0.090594
Variance	5.93122	0.019059
Observations	5	16
df	4	15
F	311.208	
P(F<=f) one-tail	3.11E-14	
F Critical one-tail	3.055568	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	0.090594	12.262
Variance	0.019059	5.93122
Observations	16	5
Hypothesized Mean Difference	0	
df	4	
t Stat	-11.1696	
P(T<=t) one-tail	0.000183	
t Critical one-tail	2.131847	
P(T<=t) two-tail	0.000366	
t Critical two-tail	2.776445	

The two means are unequal: t Stat < (-) t critical two-tail or t Stat > t Critical two-tail.

Table 6
Statistical Comparison for Aqueous TEA and Byproduct Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Sulfate in Groundwater

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	119.44	18.735
Variance	7954.708	356.5873
Observations	5	16
df	4	15
F	22.30788	
P(F<=f) one-tail	3.6E-06	
F Critical one-tail	3.055568	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	18.735	119.44
Variance	356.5873	7954.708
Observations	16	5
Hypothesized Mean Difference	0	
df	4	
t Stat	-2.50728	
P(T<=t) one-tail	0.033125	
t Critical one-tail	2.131847	
P(T<=t) two-tail	0.066249	
t Critical two-tail	2.776445	

The two means are indisitignuishable: t Stat > (-) t critical two-tail and t Stat < t Critical two-tail.

Table 6
Statistical Comparison for Aqueous TEA and Byproduct Results
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Parameter: Sulfide in Groundwater

F-Test Two-Sample for Variances

	Variable 1	*Variable 2*
Mean	13.245	2.5
Variance	106.503	17.625
Observations	16	5
df	15	4
F	6.042724	
P(F<=f) one-tail	0.047375	
F Critical one-tail	5.857805	

F>F crit, therefore the variations of the two populations (upgradient and source) are unequal.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	*Variable 2*
Mean	13.245	2.5
Variance	106.503	17.625
Observations	16	5
Hypothesized Mean Difference	0	
df	17	
t Stat	3.367455	
P(T<=t) one-tail	0.001828	
t Critical one-tail	1.739607	
P(T<=t) two-tail	0.003656	
t Critical two-tail	2.109816	

The two means are unequal: t Stat < (-) t critical two-tail or t Stat > t Critical two-tail.

Table 7
Aqueous NSZD Rate Calculations Based on Groundwater Temperature
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Thermal Properties of Medium				
Specific Heat of Water	J/kg*K	4184	4184	4184

Groundwater Flow				
K = Hydraulic Conductivity	ft/day	50.4	50.4	50.4
ft/day to m/day		0.3048	0.3048	0.3048
K = Hydraulic Conductivity	m/day	15.4	15.4	15.4
Y = Average width of LNAPL footprint	m	730.3	730.3	730.3
Z = Average thickness of the smear zone	m	3.048	3.048	3.048
YZ = Area of Heating	m^2	2226	2226	2226
(i = dh/dx) = Groundwater Gradient	ft/ft	0.001	0.001	0.001
Q = Volumetric Flow Rate	m^3/day	34.2	34.2	34.2
$\dot{m}$ = Mass Flow Rate (assume ρ_{water}= 1000 kg/m^3)	kg/day	34194.9	34194.9	34194.9
kg/day to kg/sec		1.157E-05	1.157E-05	1.157E-05
$\dot{m}$ = Mass Flow Rate	kg/sec	0.396	0.396	0.396

Temperature				
Background well temp	^oC	28.3	28.3	28.3
Source Area Well	^oC	28.4	30.1	31.3
ΔT	^oC	0.1	1.8	3.0

Power to heat flowing groundwater				
Extractable heat (J/s)= GW flux (kg/s) * ΔT * heatcapacity (J/kg*K)	J/s	166	2981	4968

Methane Oxidation Power Source				
ΔH^o Methane oxidation (J/g of CH_4)	J/g	53953	53953	53953

NSZD Rate				
Methane needed to heat water	g/sec	0.003069221	0.055245976	0.092076626
Methane Utilization Factor ($C_{18}H_{38}$)	unitless	1.15	1.15	1.15
Total $C_{18}H_{38}$ Degradation Rate	g/sec	0.00353947	0.063710454	0.10618409
convert g/sec to g/yr		31540000	31540000	31540000
Total $C_{18}H_{38}$ Degradation Rate	g/year	111635	2009428	3349046
	kg/year	112	2009	3349
convert kg/year to lb/year		2.20462	2.20462	2.20462
	lb/year	246	4430	7383
Density $C_{18}H_{38}$ @ 25°C	g/mL	0.777	0.777	0.777
Total **$C_{18}H_{38}$ Degradation Rate (mL/yr)**		143674	2586136	4310227
convert mL/year to gallon/year		0.000264172	0.000264172	0.000264172
Total $C_{18}H_{38}$ Degradation Rate (Gal/yr)		**38**	**683**	**1139**

Notes:
°C = degrees Celsius
ft = feet
g = grams
Gal = gallons
J = Joules
kg = kilogram
lb = pounds
m^2 = square meters
m^3 = cubic meters
mL = milliliters

EHS Support

Table 8
Unsaturated Zone Temperature Gradient Calculation
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Upper Temp. (°C)	Lower Temp. (°C)	Upper Elevation[1]	Lower Elevation[1]	ΔT/ΔZ	Calculated Heat Flux (q_H)	R_{NSZD} (grams/m^2/day)	Polygon Area (m²)	grams/day
VW2	29.6	30.7	31.50	1.00	0.036	0.128	0.232	4,622.2	1,073.4
VW4	Use average of VW2 and VW23						0.300	17,632.0	5,281.9
VW5	27.2	28.7	28.29	1.00	0.055	0.195	0.354	5,108.9	1,808.2
VW6	Use average of VW2, VW5, VW14, and VW23						0.275	8,660.4	2,377.5
VW7	Use average of VW2 and VW5						0.293	17,632.0	5,167.5
VW13	30.3	31.1	23.09	1.00	0.036	0.128	0.233	7,577.7	1,767.5
VW13B	Use average of VW13, VW14, and VW23						0.262	1,080.6	282.9
VW14	29.1	29.8	25.19	1.00	0.029	0.102	0.186	5,230.2	974.4
VW15	30.3	32.6	41.47	10.87	0.075	0.266	0.484	9,507.6	4,601.5
VW17	Use average of VW13 and VW29						0.321	8,583.8	2,758.7
VW18	Use average of VW20, VW29, VW30,VW15,and VW13						0.324	10,336.0	3,353.5
VW19	Use average of VW15 and VW30						0.335	13,789.0	4,613.4
VW20	29.6	30.9	27.98	1.00	0.048	0.171	0.310	5,593.3	1,735.7
VW20B	30.1	31.0	9.45	1.00	0.107	0.377	0.686	2,109.4	1,447.1
VW21	Use VW21B value						0.336	6,641.6	2,234.9
VW21B	28.7	30.1	27.79	1.00	0.052	0.185	0.336	3,932.5	1,323.3
VW23	29.5	30.7	22.06	1.00	0.057	0.202	0.367	12,141.0	4,454.5
VW24	28.7	28.9	16.89	1.00	0.013	0.045	0.081	17,244.0	1,397.6
VW26	Uses VW32 value						0.091	3,055.7	277.8
VW28	Use VW32 value						0.091	5,599.1	509.0
VW29	28.3	30	27.73	1.00	0.064	0.225	0.410	8,365.2	3,425.7
VW30	28.3	29.1	28.82	1.00	0.029	0.102	0.185	17,750.0	3,286.7
VW32	29.7	30.1	29.33	1.00	0.014	0.050	0.091	9,952.5	904.8
VW35	28.6	28.7	42.77	14.26	0.004	0.012	0.023	11,844.0	267.5
VW38	Use average of VW21 and VW28						0.214	10,248.0	2,190.1
								Total	57,515.0
								LNAPL Density (g/mL)	0.777
								Total Rate (mL/day)	74,021.90
								Total Rate (gallons/day)	19.5545143
								Total Rate (gallons/year)	**7137**

Notes:
1. Elevations are in units of feet relative to the elevation of the groundwater table.
ΔT/ΔZ = temperature change divided by elevation change
Temp. = Temperature
°C = degrees Celsius
g/mL = grams per milliliter

Table 9
PSPH Recovery Summary August 2018- July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Reporting Period: 8/24/2018-10/5/2018			Reporting Period: 10/6/2018-10/31/2018			Reporting Period: 11/01/2018-11/30/2018			Reporting Period: 12/01/2018-12/28/2018		
	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)
VW2		0.227	0.237	0.024	0.681	0.704						
VW4							0.027	0.475	0.502			
VW5	0.071	0.355	0.426	0.000	0.157	0.157						
VW6	0.663	0.024	0.687	1.058	0.078	1.136	0.747	0.340	1.086	0.632	0.000	0.632
VW7										0.057	0.071	0.129
VW13	0.805	0.379	1.184	0.470	1.058	1.528	0.068	0.000	0.068	0.457	0.015	0.472
VW13B**		0.000	0.000	5.731	1711.192	1716.923	1.000	302.333	303.333	4.750	1423.821	1428.571
VW14	0.554	0.000	0.554	0.337	0.000	0.337	0.475	0.068	0.543	0.618	0.000	0.618
VW15	0.024	0.142	0.166									
VW18	0.071	0.379	0.450				0.014	0.000	0.014	0.014	0.029	0.043
VW19							0.007	0.000	0.007	0.021	0.575	0.596
VW20				0.611	0.588	1.199						
VW20B	0.379	0.332	0.711	0.940	0.862	1.802	0.272	1.154	1.426	0.350	0.014	0.364
VW21	0.057	0.047	0.104									
VW21B				0.118	0.039	0.157						
VW23	0.071	0.568	0.640				0.068	0.000	0.068	0.146	0.000	0.146
VW24	0.322	0.426	0.748	0.329	0.705	1.034	0.095	0.272	0.367	0.364	0.364	0.729
VW29				0.118	0.000	0.118	0.306	0.238	0.543	0.071	0.000	0.071
VW30	0.024	0.332	0.355	0.094	1.136	1.230	0.020	0.000	0.020	0.079	0.014	0.093
VW31	0.355	0.000	0.355	0.447	0.000	0.447	0.183	1.650	1.833	0.568	0.000	0.568
VW32										0.014	0.000	0.014
VW35							0.020	0.815	0.835			
VW38												
Period Total (gal)	**146.05**	**138.11**	**284.57**	**256.87**	**42912.39**	**43169.25**	**99.05**	**9220.33**	**9319.38**	**228.00**	**39897.31**	**40125.31**

Table 9
PSPH Recovery Summary August 2018- July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Reporting Period: 1/01/2019-1/31/2019			Reporting Period: 2/01/2019-2/28/2019			Reporting Period: 3/01/2019-3/31/2019			Reporting Period: 4/01/2019-4/30/2019		
	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)
VW2	0.006	0.006	0.013				0.100	0.000	0.100	0.210	0.000	0.210
VW4												
VW5	0.097	0.000	0.097	0.246	0.000	0.246	0.368	0.000	0.368	0.413	0.000	0.413
VW6	1.116	0.000	1.116	0.800	0.000	0.800	1.445	0.000	1.445	1.290	0.000	1.290
VW7										0.000	0.000	0.000
VW13	0.894	0.013	0.906	0.511	0.000	0.511	0.723	0.000	0.723	0.813	0.000	0.813
VW13B**	0.000	1496.839	1496.839	0.000	1457.100	1457.100	0.000	1319.342	1319.342	6.963	893.080	900.043
VW14	1.103	0.000	1.103	0.728	0.000	0.728	0.657	0.000	0.657	1.990	0.000	1.990
VW15												
VW18				0.036	0.125	0.161						
VW19							0.065	0.000	0.065			
VW20	0.145	0.000	0.145	0.364	0.000	0.364	0.361	0.000	0.361	0.340	0.000	0.340
VW20B	0.565	0.013	0.577	0.086	0.261	0.346				0.123	0.000	0.123
VW21	0.113	0.494	0.606									
VW21B	0.165	0.165	0.329	0.218	0.000	0.218	0.242	0.297	0.539	0.170	0.340	0.510
VW23				0.029	0.071	0.100						
VW24	0.532	0.329	0.861				0.165	0.526	0.690	0.143	0.543	0.687
VW29	0.210	0.000	0.210	0.289	0.000	0.289	0.261	0.000	0.261	0.237	0.000	0.237
VW30				0.036	0.036	0.071				0.073	1.003	1.077
VW31	1.000	0.000	1.000	0.436	0.000	0.436	0.526	0.000	0.526	0.477	0.000	0.477
VW32				0.071	0.000	0.071	0.106	0.000	0.106	0.053	0.000	0.053
VW35												
VW38							0.032	0.165	0.197			
Period Total (gal)	**184.30**	**46433.60**	**46617.90**	**107.77**	**40812.60**	**40920.37**	**156.57**	**40930.20**	**41086.77**	**398.90**	**26849.00**	**27247.90**

Table 9
PSPH Recovery Summary August 2018- July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Reporting Period: 5/01/2019-5/31/2019			Reporting Period: 6/01/2019-6/30/2019			Reporting Period: 7/01/2019-7/31/2019			Reporting Period: 8/01/2019-8/31/2019		
	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)
VW2	0.077	0.000	0.077	0.203	0.067	0.270						
VW4												
VW5	0.165	0.000	0.165	0.373	0.137	0.510	0.197	0.000	0.197	0.374	0.184	0.558
VW6	1.513	0.000	1.513	1.223	0.000	1.223				0.590	0.000	0.590
VW7												
VW13	1.545	0.000	1.545	0.813	0.000	0.813	0.590	0.000	0.590	0.626	0.000	0.626
VW13B**	6.516	774.129	780.645	2.600	777.400	780.000	1.184	569.623	570.806	0.787	1849.387	1850.174
VW14	1.545	0.000	1.545	0.340	0.000	0.340	2.432	0.000	2.432	0.952	0.000	0.952
VW15							0.000	0.000	0.000	0.000	0.000	0.000
VW18							0.065	0.494	0.558	0.065	0.032	0.097
VW19							0.071	0.290	0.361	0.000		
VW20	0.177	0.000	0.177	0.307	0.000	0.307				0.000		
VW20B	0.229	0.032	0.261	0.440	0.137	0.577	0.197	0.065	0.261	0.229	0.132	0.361
VW21				0.000	0.137	0.137				0.000		
VW21B	0.132	0.329	0.461	0.170	0.780	0.950				0.000		
VW23							0.045	0.229	0.274	0.000	0.248	0.248
VW24	0.229	0.100	0.329	0.577	0.610	1.187	0.229	0.132	0.361	0.100	0.000	0.100
VW29	0.132	0.000	0.132	0.270	0.340	0.610	0.032	0.000	0.032	0.065	0.065	0.129
VW30	0.106	0.616	0.723	0.170	0.680	0.850	0.100	0.000	0.100	0.045	0.013	0.058
VW31	0.439	0.000	0.439	0.610	0.067	0.677	0.368	0.000	0.368	0.387	0.000	0.387
VW32	0.077	0.000	0.077	0.137	0.067	0.203	0.065	0.000	0.065	0.013	0.032	0.045
VW35												
VW38												
Period Total (gal)	**399.40**	**24031.40**	**24430.80**	**247.00**	**23412.60**	**23659.60**	**172.80**	**17695.80**	**17868.60**	**131.20**	**57352.90**	**57484.10**

Table 9
PSPH Recovery Summary August 2018- July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Reporting Period: 9/01/2019-9/30/2019			Reporting Period: 10/01/2019-10/31/2019			Reporting Period: 11/01/2019-11/30/2019			Reporting Period: 12/01/2019-12/31/2019		
	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)
VW2												
VW4												
VW5	0.440	0.137	0.577	0.177	0.513	0.690	0.117	0.577	0.693	0.119	1.116	1.235
VW6	0.543	0.000	0.543				0.340	0.000	0.340	1.316	0.000	1.316
VW7												
VW13	1.357	0.067	1.423	0.787	0.197	0.984	0.097	0.733	0.830	0.690	0.329	1.019
VW13B**	1.663	2238.633	2240.297	0.658	1517.813	1518.471	0.477	1696.283	1696.760	0.855	1960.877	1961.732
VW14	1.243	0.000	1.243	2.235	0.000	2.235	1.187	0.000	1.187	2.432	0.000	2.432
VW15	0.000	0.000	0.000				0.000	0.000	0.000			
VW18	0.033	1.153	1.187	0.019	0.113	0.132	0.067	0.237	0.303	0.052	0.145	0.197
VW19												
VW20												
VW20B	0.103	0.000	0.103	0.165	0.000	0.165	0.203	0.000	0.203	0.297	0.000	0.297
VW21												
VW21B												
VW23	0.033	1.160	1.193	0.139	0.374	0.513	0.237	0.387	0.623	0.032	0.426	0.458
VW24	0.510	0.103	0.613	0.094	0.545	0.639	0.073	0.693	0.767	0.255	0.632	0.887
VW29	0.170	1.153	1.323	0.132	0.658	0.790	0.103	0.793	0.897	0.177	0.842	1.019
VW30	0.087	0.257	0.343	0.145	0.229	0.374	0.053	0.320	0.373			
VW31	1.087	0.000	1.087	0.394	0.000	0.394	0.183	0.190	0.373	0.329	0.000	0.329
VW32				0.248	0.065	0.313	0.123	0.170	0.293	0.439	0.755	1.194
VW35												
VW38												
Period Total (gal)	**218.10**	**67279.90**	**67498.00**	**161.00**	**47135.70**	**47296.70**	**97.80**	**51011.50**	**51109.30**	**216.80**	**60918.80**	**61135.60**

Table 9
PSPH Recovery Summary August 2018- July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Reporting Period: 1/01/2020-1/31/2020			Reporting Period: 2/01/2020-2/29/2020			Reporting Period: 3/01/2020-3/31/2020			Reporting Period: 4/01/2020-4/30/2020		
	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)
VW2												
VW4												
VW5	0.197	0.329	0.526	0.455	0.000	0.455	0.657	0.197	0.854	0.270	0.067	0.337
VW6	1.381	0.000	1.381	1.159	0.000	1.159	1.806	0.000	1.806	1.730	0.000	1.730
VW7												
VW13	0.361	0.000	0.361	0.576	0.000	0.576	0.842	0.000	0.842	0.917	0.000	0.917
VW13B**	1.116	1540.452	1541.568	1.300	1455.517	1456.817	1.577	1399.613	1401.190	2.273	2174.200	2176.473
VW14	2.071	0.000	2.071	2.107	0.000	2.107	2.465	0.000	2.465	2.173	0.000	2.173
VW15							0.000					
VW18							0.065	0.623	0.687	0.000	0.477	0.477
VW19												
VW20	0.113	0.000	0.113	0.386	0.000	0.386	0.229	0.000	0.229	0.203	0.000	0.203
VW20B	0.132	0.000	0.132	0.107	0.107	0.214	0.165	0.261	0.426	0.103	0.103	0.207
VW21												
VW21B							0.261	0.658	0.919	0.137	0.000	0.137
VW23	0.132	0.329	0.461	0.069	0.000	0.069	0.229	0.229	0.458	0.237	0.067	0.303
VW24	0.065	0.261	0.326	0.034	0.000	0.034	0.000	0.000	0.000			
VW29	0.032	0.558	0.590	0.245	0.107	0.352	0.329	0.065	0.394	0.373	0.033	0.407
VW30	0.084	0.394	0.477	0.034	0.283	0.317						
VW31	0.558	0.197	0.755	0.983	0.000	0.983	0.952	0.000	0.952	1.120	0.000	1.120
VW32	0.426	0.000	0.426	0.279	0.000	0.279	0.690	0.000	0.690	0.813	0.000	0.813
VW35												
VW38												
Period Total (gal)	**206.70**	**47818.10**	**48024.80**	**224.30**	**42224.40**	**42448.70**	**318.27**	**43451.00**	**43769.27**	**310.50**	**65248.40**	**65558.90**

Table 9
PSPH Recovery Summary August 2018- July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Reporting Period: 5/01/2020-5/31/2020			Reporting Period: 6/01/2020-6/30/2020			Reporting Period: 7/01/2020-7/31/2020			Reporting Period: 8/01/2020-8/31/2020		
	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)
VW2												
VW4												
VW5	0.787	0.000	0.787	1.053	0.000	1.053	1.019	0.000	1.019	0.494	0.000	0.494
VW6	1.710	0.000	1.710	1.527	0.000	1.527	1.477	0.000	1.477	1.655	0.000	1.655
VW7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW13	0.590	0.000	0.590	0.780	0.203	0.983	0.755	0.197	0.952	0.626	0.000	0.626
VW13B**	1.116	1728.839	1729.955	1.767	0.250	2.017	1.710	0.242	1.952	1.610	910.913	912.523
VW14	2.497	0.000	2.497	2.003	0.000	2.003	1.939	0.000	1.939	1.710	0.000	1.710
VW15	0.165	0.558	0.723	0.307	0.203	0.510	0.297	0.197	0.494	0.032	0.394	0.426
VW18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW19	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW20	0.165	0.000	0.165	0.067	0.983	1.050	0.065	0.952	1.016	0.077	0.165	0.242
VW20B	0.100	0.032	0.132	0.033	0.647	0.680	0.032	0.626	0.658	0.197	0.000	0.197
VW21	0.000	0.000	0.000	0.033	0.453	0.487	0.032	0.439	0.471	0.000	0.000	0.000
VW21B	0.013	0.184	0.197	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW23	0.077	0.119	0.197	0.040	0.130	0.170	0.039	0.126	0.165	0.032	0.426	0.458
VW24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW29	0.229	0.329	0.558	0.103	0.950	1.053	0.100	0.919	1.019	0.084	0.626	0.710
VW30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW31	0.887	0.000	0.887	1.187	0.000	1.187	1.148	0.000	1.148	0.658	0.000	0.658
VW32	0.526	0.000	0.526	0.780	0.137	0.917	0.755	0.132	0.887	0.361	0.000	0.361
VW35				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW38				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Period Total (gal)	**274.70**	**53631.90**	**53906.60**	**280.72**	**114.74**	**395.46**	**290.40**	**118.70**	**409.10**	**226.06**	**27375.68**	**27601.74**

Table 9
PSPH Recovery Summary August 2018- July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Reporting Period: 9/01/2020-9/30/2020			Reporting Period: 10/01/2020-10/31/2020			Reporting Period: 11/01/2020/11/30/2020			Reporting Period: 12/01/2020-12/31/2020		
	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)
VW2												
VW4												
VW5	0.440	0.407	0.847	0.013	0.578	0.591	0.088	1.711	1.799	0.276	0.000	0.276
VW6	3.923	0.000	3.923	1.446	0.460	1.906	2.309	1.358	3.667	1.881	0.000	1.881
VW7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW13	0.577	0.273	0.850	0.191	0.342	0.532	0.210	0.394	0.604	0.256	0.000	0.256
VW13B**	2.750	933.827	936.577	1.248	1838.777	1840.026	2.580	1820.883	1823.463	1.881	1656.968	1658.849
VW14	4.277	0.000	4.277	2.103	0.000	2.103	3.395	0.136	3.531	1.649	0.000	1.649
VW15	0.103	0.407	0.510	0.066	0.033	0.099	0.204	0.306	0.509	0.171	0.342	0.513
VW18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW19	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW20	0.053	0.217	0.270	0.020	0.138	0.158	0.238	0.061	0.299	0.046	0.131	0.177
VW20B	0.013	0.103	0.117	0.046	0.578	0.624	0.136	1.154	1.290	0.072	0.125	0.197
VW21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW21B	0.000	0.000	0.000	0.007	0.125	0.131	0.061	0.414	0.475	0.013	0.499	0.513
VW23	0.047	0.610	0.657	0.007	0.394	0.401	0.129	0.611	0.740	0.105	0.407	0.513
VW24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW29	0.080	0.577	0.657	0.039	0.026	0.066	0.041	0.163	0.204	0.000	0.092	0.092
VW30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW31	1.087	0.000	1.087	0.854	0.000	0.854	1.086	0.204	1.290	0.723	0.000	0.723
VW32	0.647	0.000	0.647	0.394	0.519	0.913	0.645	0.075	0.720	0.519	0.000	0.519
VW35	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW38	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Period Total (gal)	**433.90**	**29029.02**	**29462.92**	**186.56**	**53417.16**	**53603.71**	**344.78**	**56651.54**	**56996.32**	**227.79**	**49756.93**	**49984.73**

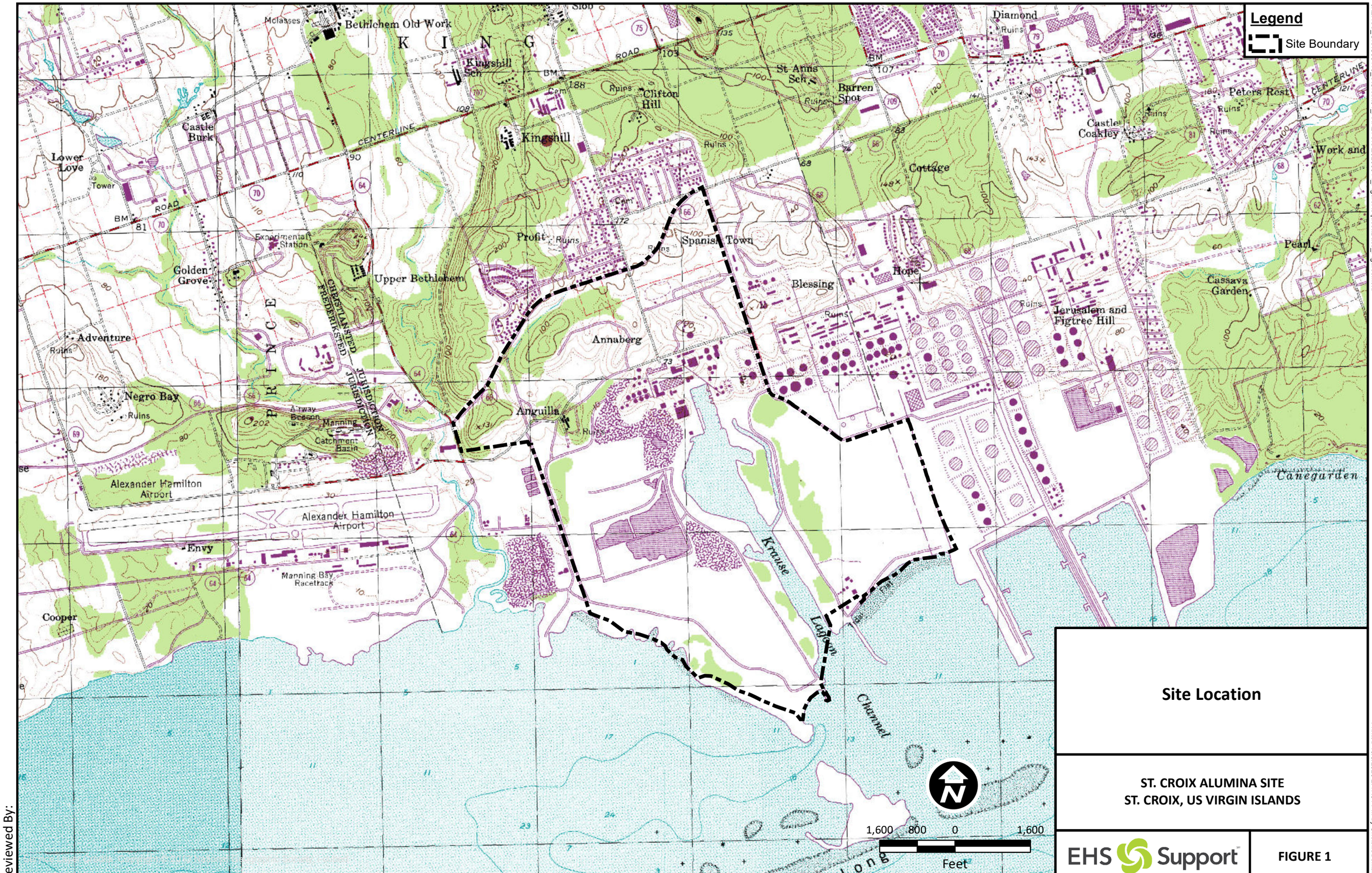
Table 9
PSPH Recovery Summary August 2018- July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Reporting Period: 1/01/2021-1/31/2021			Reporting Period: 2/01/2021-2/28/2021			Reporting Period: 3/01/2021-3/31/2021			Reporting Period: 4/01/2021-4/31/2021		
	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)
VW2												
VW4												
VW5	0.545	0.000	0.545	0.546	0.000	0.546	0.276	0.000	0.276	0.462	0.000	0.462
VW6	2.460	0.000	2.460	2.627	0.000	2.627	2.691	0.000	2.691	2.542	0.000	2.542
VW7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW13	0.467	0.000	0.467	0.364	0.000	0.364	0.407	0.000	0.407	0.373	0.000	0.373
VW13B**	0.868	1327.742	1328.610	1.281	2041.500	2042.781	1.447	1215.290	1216.737	1.555	1517.600	1519.155
VW14	1.100	0.000	1.100	1.666	0.000	1.666	1.678	0.000	1.678	1.346	0.000	1.346
VW15	0.000	0.611	0.611	0.073	0.437	0.509	0.000	0.493	0.493	0.014	0.611	0.625
VW18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW19	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW20	0.217	0.033	0.250	0.255	0.000	0.255	0.263	0.000	0.263	0.170	0.000	0.170
VW20B	0.059	0.039	0.099	0.022	0.015	0.036	0.079	0.414	0.493	0.081	0.801	0.883
VW21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW21B	0.000	0.670	0.670	0.218	0.160	0.378	0.053	0.000	0.053	0.054	0.000	0.054
VW23	0.026	0.053	0.079	0.073	0.146	0.218	0.329	0.000	0.329	0.136	0.000	0.136
VW24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW29	0.000	0.204	0.204	0.255	0.509	0.764	0.230	0.657	0.887	0.068	0.713	0.781
VW30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW31	1.013	0.000	1.013	1.249	0.000	1.249	1.128	0.000	1.128	0.897	0.000	0.897
VW32	0.434	0.000	0.434	0.473	0.000	0.473	0.493	0.000	0.493	0.455	0.000	0.455
VW35	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
VW38	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Period Total (gal)	**222.82**	**41209.91**	**41432.73**	**263.92**	**59240.21**	**59504.13**	**281.28**	**37722.48**	**38003.76**	**244.55**	**45591.76**	**45836.31**

Table 9
PSPH Recovery Summary August 2018- July 2021
Phase 1 NSZD Study
St. Croix Alumina
St. Croix, US Virgin Islands

Well	Reporting Period: 5/01/2021-5/31/2021			Reporting Period: 6/01/2021-6/30/2021			Reporting Period: 7/01/2021-7/31/2021			Total Recovery for August 2018-July 2021		
	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gpd)	Total Water Recovered (gpd)	Total Fluid Recovered (gpd)	Total PSPH Recovered (gal)	Total Water Recovered (gal)	Total Fluid Recovered (gal)
VW2										18.7	29.7	48.8
VW4										0.8	14.3	15.1
VW5	0.374	0.000	0.374	0.428	0.000	0.428	0.329	0.000	0.329	361.4	200.8	562.2
VW6	3.184	0.000	3.184	2.691	0.000	2.691	3.097	0.000	3.097	1661.0	68.2	1729.2
VW7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.6	2.0	3.6
VW13	0.952	0.000	0.952	0.985	0.272	1.256	0.965	1.300	2.265	690.8	176.2	866.9
VW13B**	2.171	1503.819	1505.990	0.897	763.095	763.992	1.303	842.748	844.052	1898.8	1345112.1	1347010.9
VW14	1.881	0.000	1.881	1.645	0.000	1.645	1.590	0.577	2.168	1773.4	24.0	1797.4
VW15	0.019	0.132	0.152	0.000	0.000	0.000	0.329	0.394	0.723	55.3	161.9	217.2
VW18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.1	120.2	136.3
VW19	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.0	25.1	30.1
VW20	0.297	0.000	0.297	0.238	0.000	0.238	0.065	0.100	0.165	162.3	100.2	262.5
VW20B	0.152	0.703	0.855	0.102	0.645	0.747	0.132	0.735	0.868	193.2	306.7	499.9
VW21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.9	48.6	56.6
VW21B	0.113	0.000	0.113	0.102	0.000	0.102	0.032	0.261	0.294	68.0	150.4	218.4
VW23	0.494	0.032	0.526	0.170	0.475	0.645	0.045	0.690	0.735	98.5	260.3	358.8
VW24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	127.3	191.8	319.1
VW29	0.481	0.242	0.723	0.217	0.699	0.917	0.065	0.855	0.919	167.0	377.4	544.4
VW30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	34.7	160.0	194.7
VW31	1.677	0.000	1.677	1.256	0.000	1.256	1.590	0.290	1.881	847.2	78.4	925.6
VW32	0.545	0.000	0.545	0.441	0.000	0.441	0.271	0.000	0.271	343.8	60.0	403.8
VW35	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.6	24.4	25.1
VW38	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.0	5.1	6.1
Period Total (gal)	**382.50**	**46652.80**	**47035.30**	**265.94**	**22190.40**	**22456.34**	**304.20**	**26286.50**	**26590.70**	**8511.51**	**1343763.77**	**1352275.67**

Figures



Site Location

ST. CROIX ALUMINA SITE
ST. CROIX, US VIRGIN ISLANDS

EHS Support

FIGURE 1

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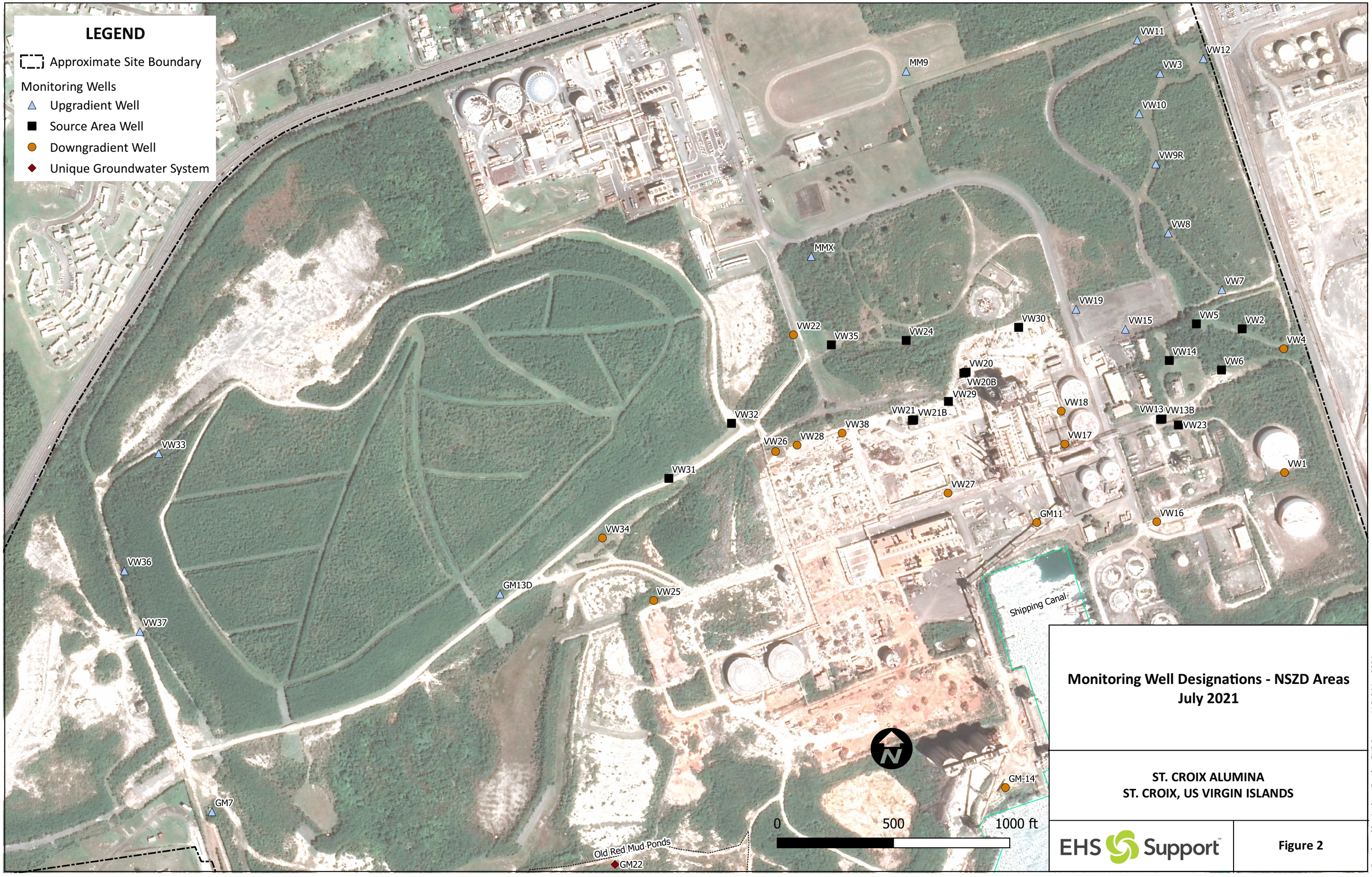


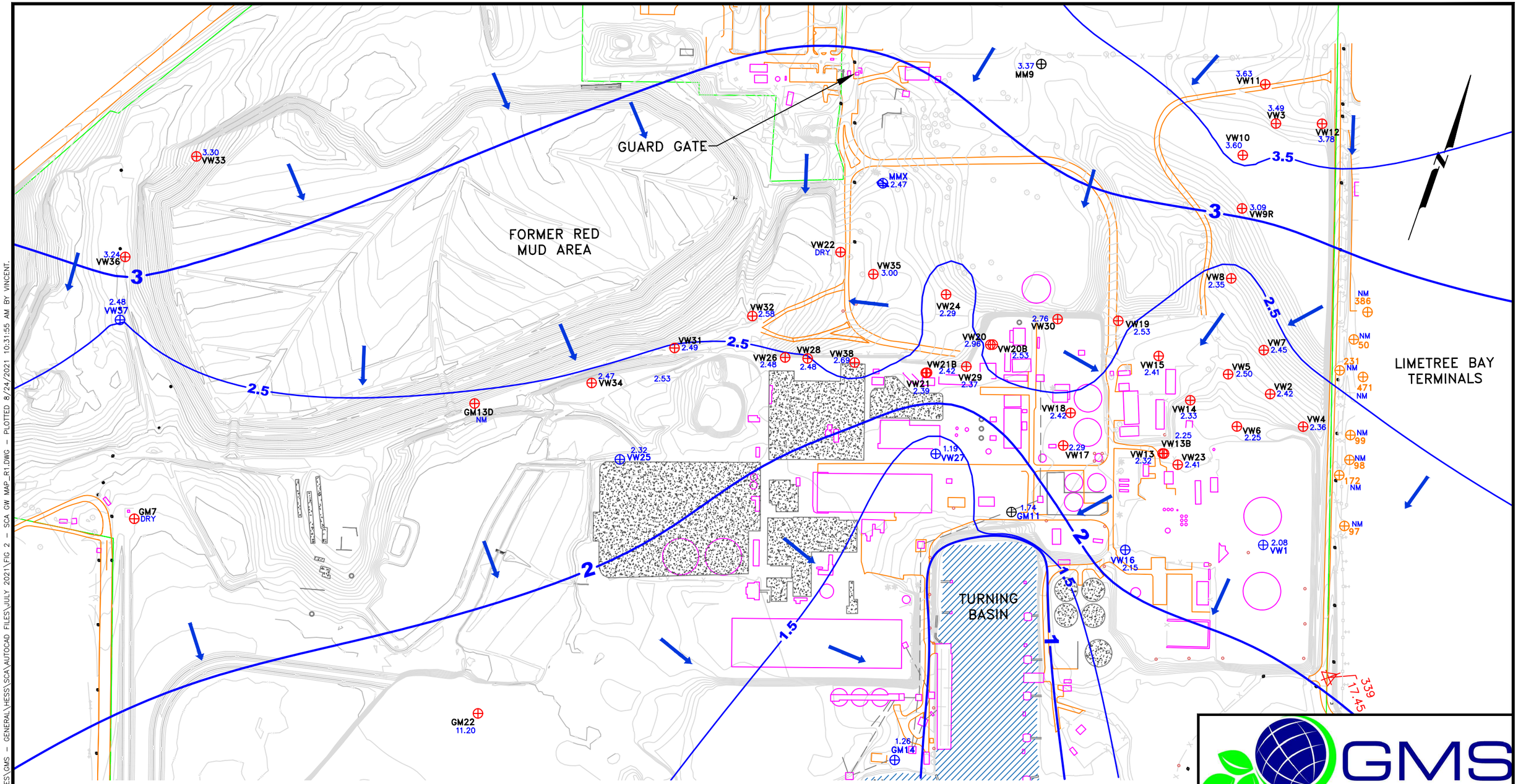
Monitoring Well Designations - NSZD Areas
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 2

Developed by Andrew Fowler, EHS Support LLC. 24Aug2021



LEGEND

VW33	MONITORING WELL		GROUND SURFACE CONTOUR (IN FEET)
VW37	DPPHC PERIMETER MONITRORING WELL	1.93	STATIC GROUNDWATER LEVEL
386	LIMETREE BAY WELL		GROUNDWATER FLOW DIRECTION
		NM	NOT MEASURED
		4	GROUNDWATER CONTOUR LINE (FEET ABOVE MLS)
			INFERRED GROUNDWATER CONTOUR LINE

0 200 400 800
APPROXIMATE SCALE IN FEET

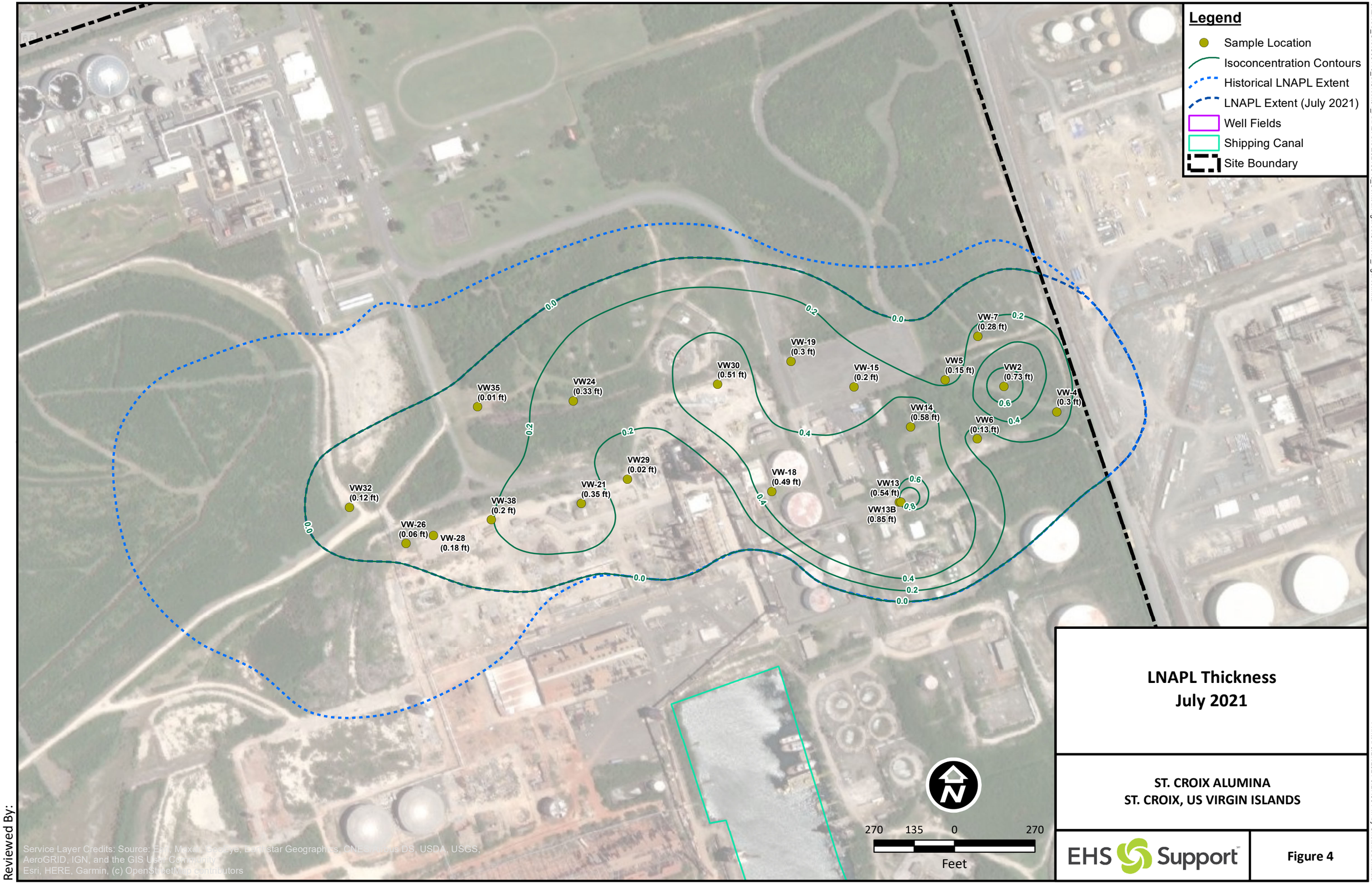
NOTE: TOPOGRAPHIC MAP PROVIDED BY ALCOA/2012 AND TETRATECH/2017

GMS
GeoMonitoring Services
Environmental Remediation & Consulting

FIGURE 2
GROUNDWATER SURFACE MAP
JULY 2021
MONITORING EVENT
ST. CROIX, U.S. VIRGIN ISLANDS

DRAWN BY:	DATE:	PROJ. NO.
VMW	08/24/21	SCA

C:\USERS\VINCENT\GEOMONITORING SERVICES\GMS – GENERAL\HESS\SCA\AUTOCAD FILES\JULY 2021\FIG 2 – SCA GW MAP_R1.DWG – PLOTTED 8/24/2021 10:31:55 AM BY VINCENT.



LNAPL Thickness
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 4

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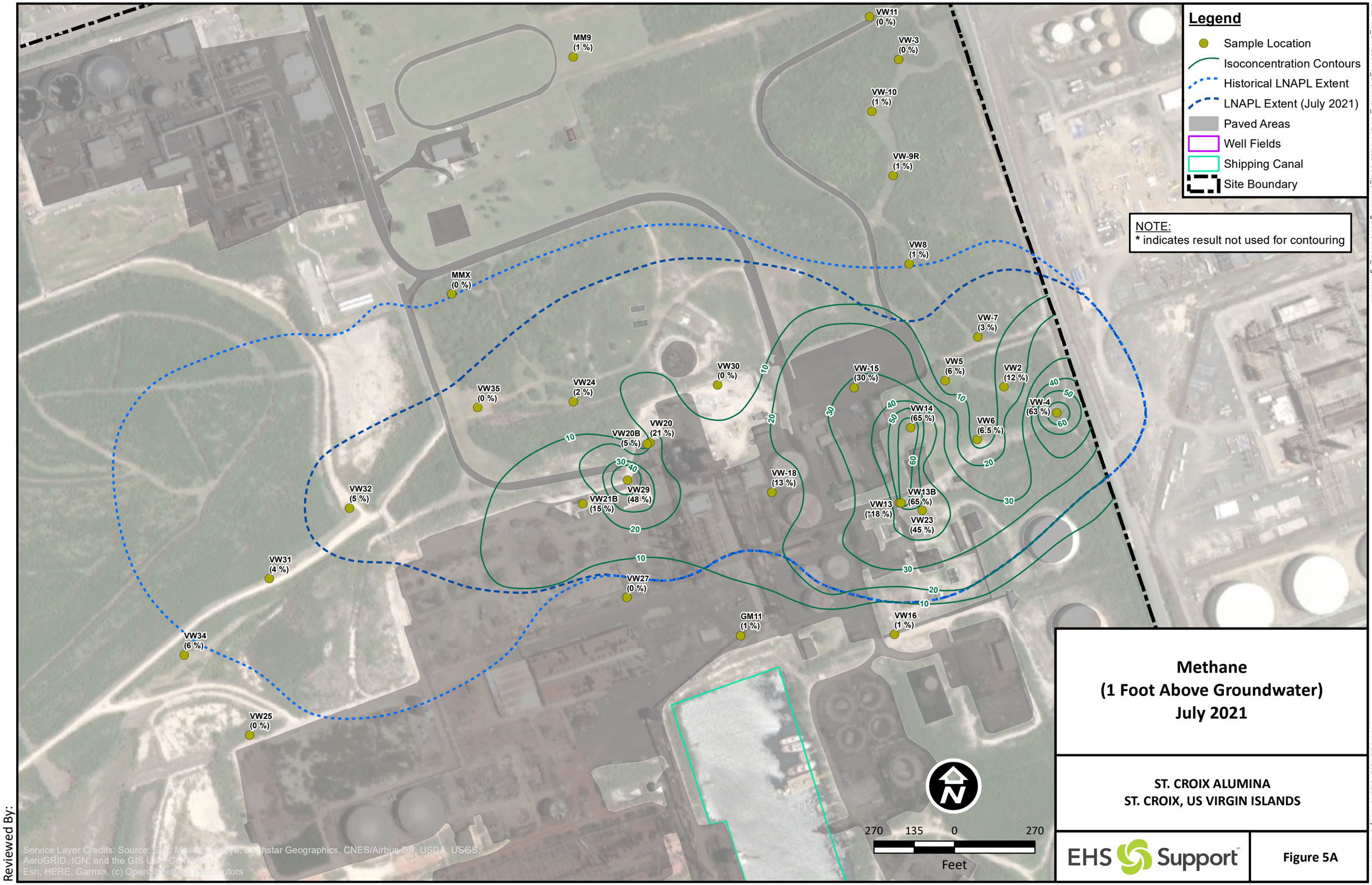

Methane
(1 Foot Above Groundwater)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5A

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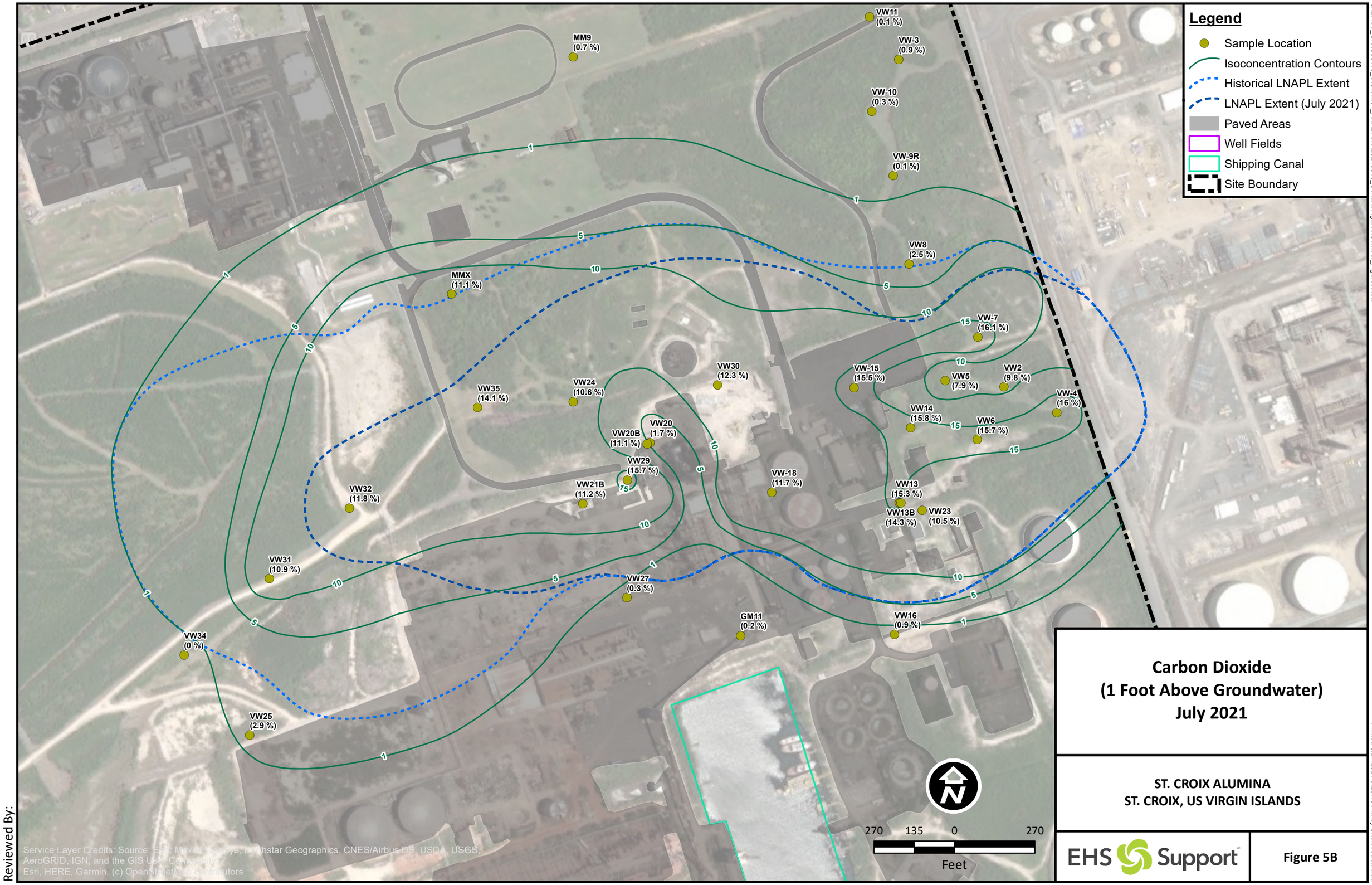

Carbon Dioxide
(1 Foot Above Groundwater)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5B

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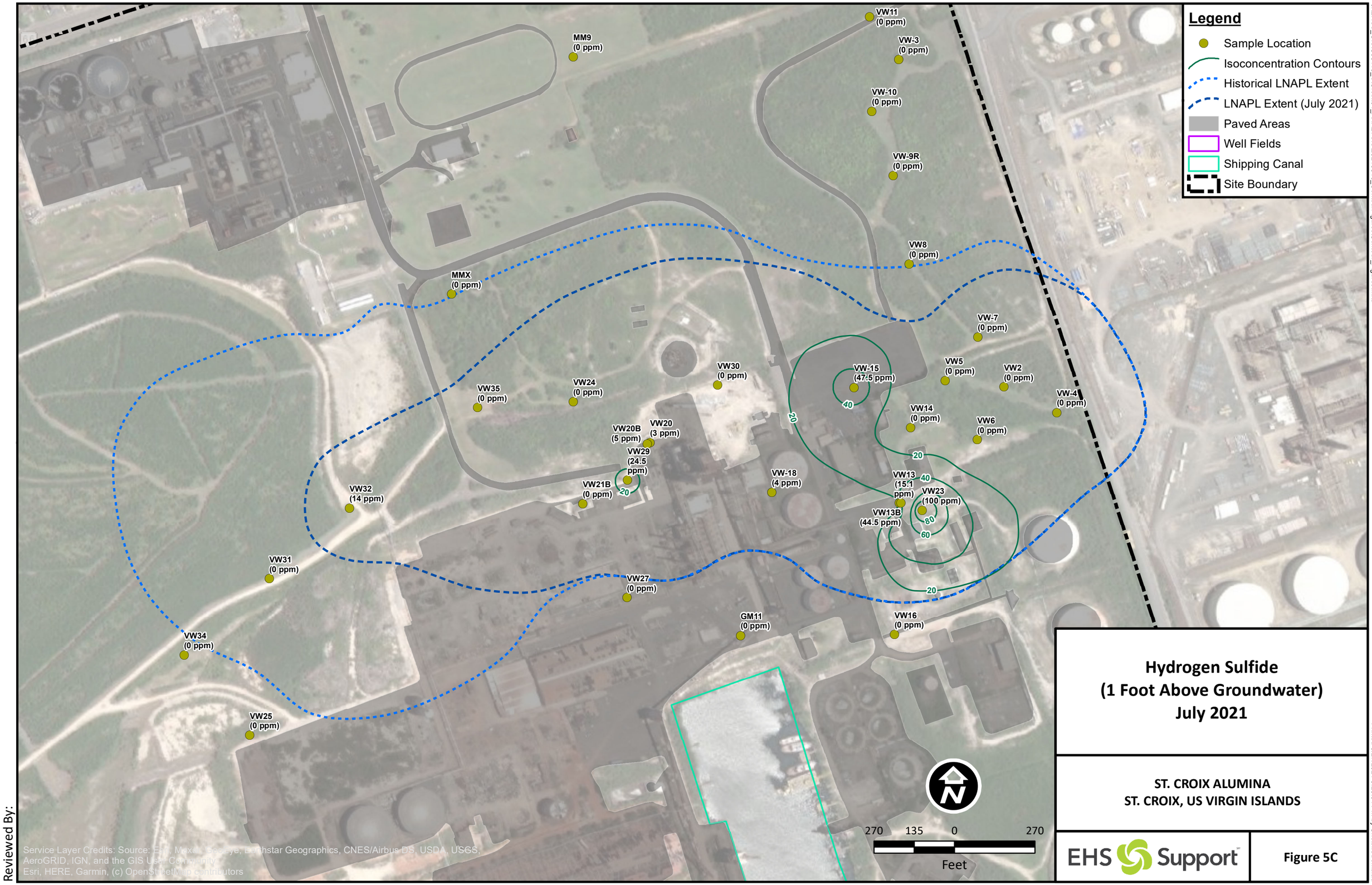

Hydrogen Sulfide
(1 Foot Above Groundwater)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5C

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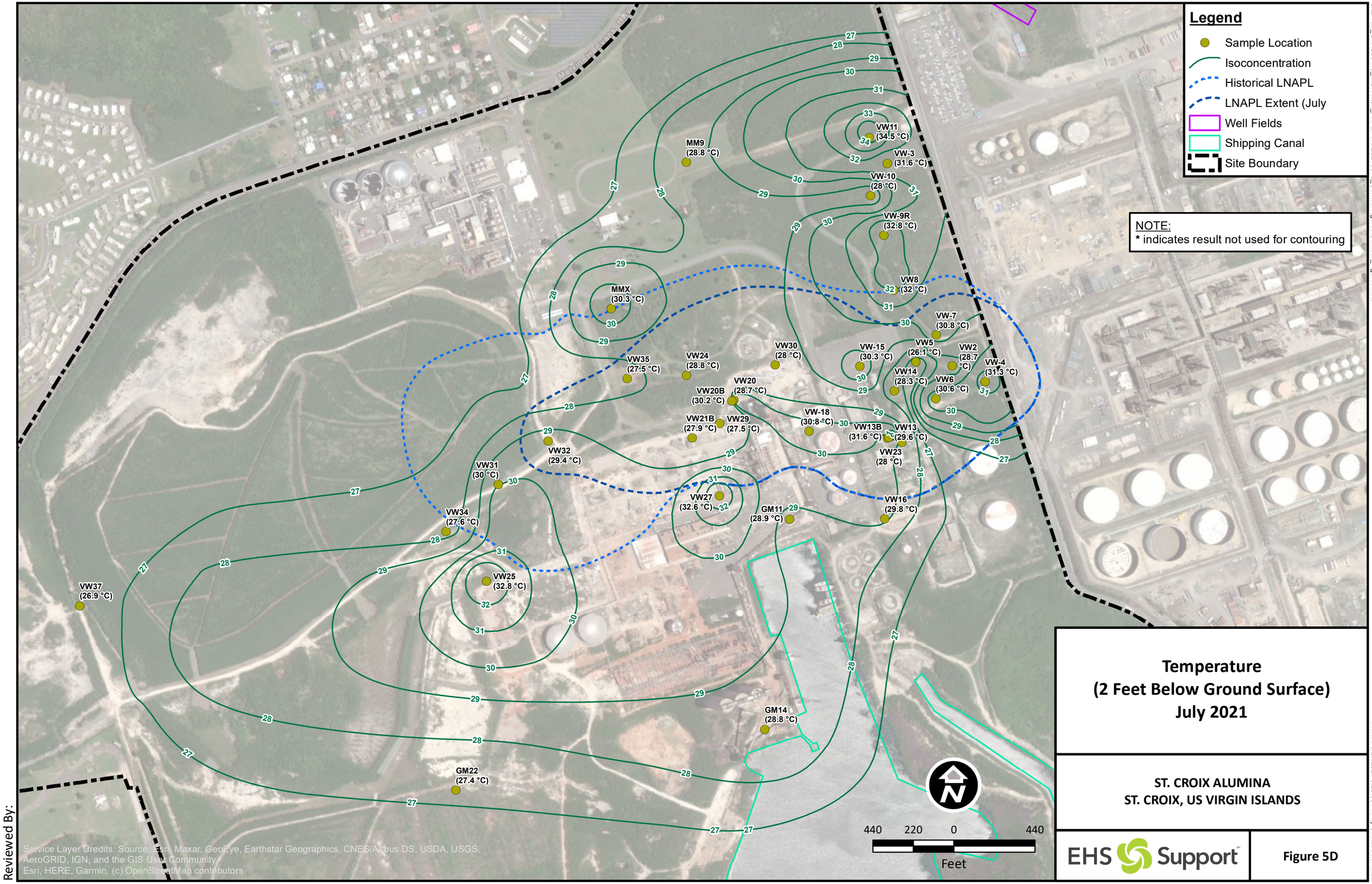

Temperature
(2 Feet Below Ground Surface)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5D

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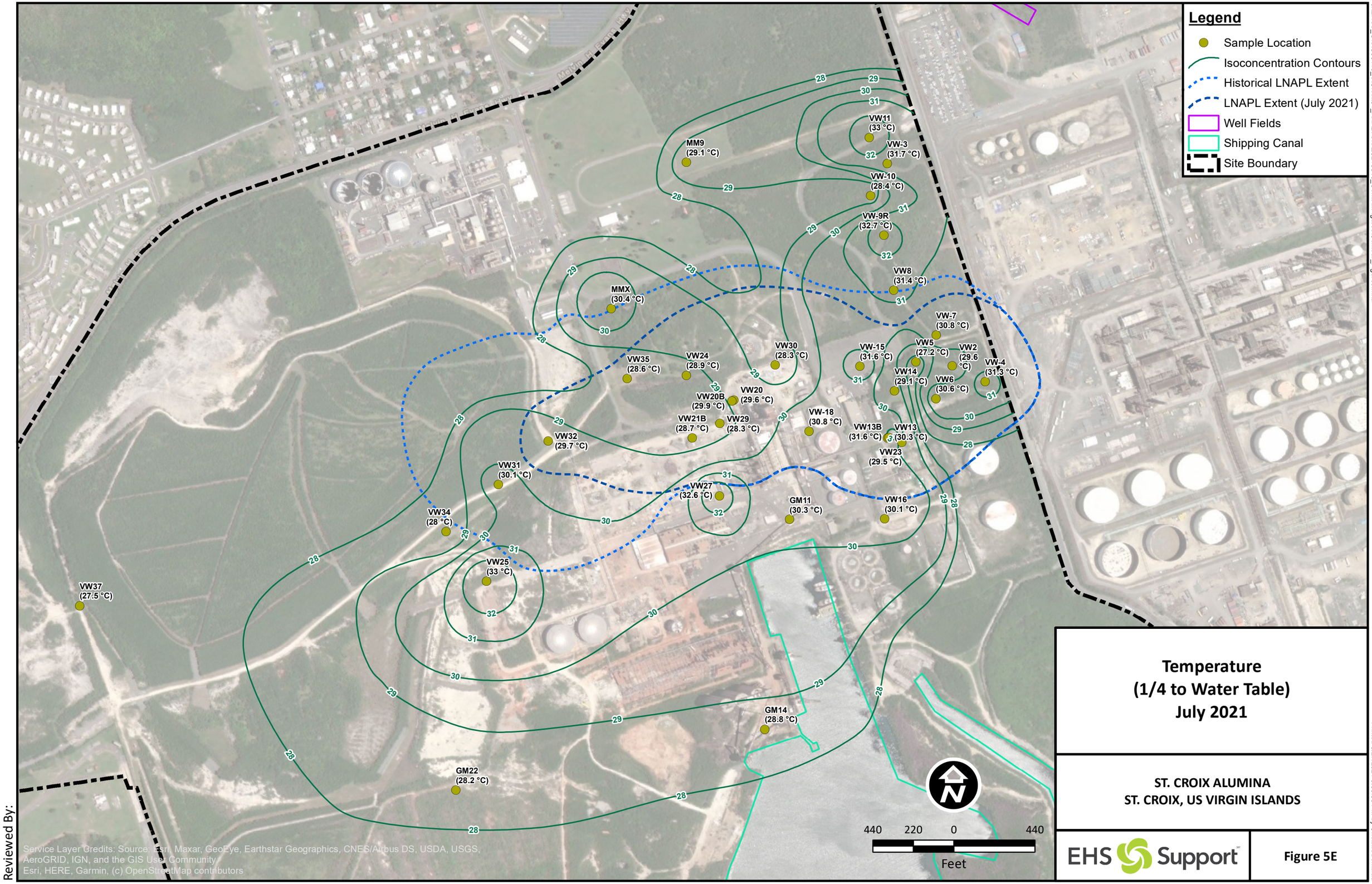

Temperature
(1/4 to Water Table)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5E

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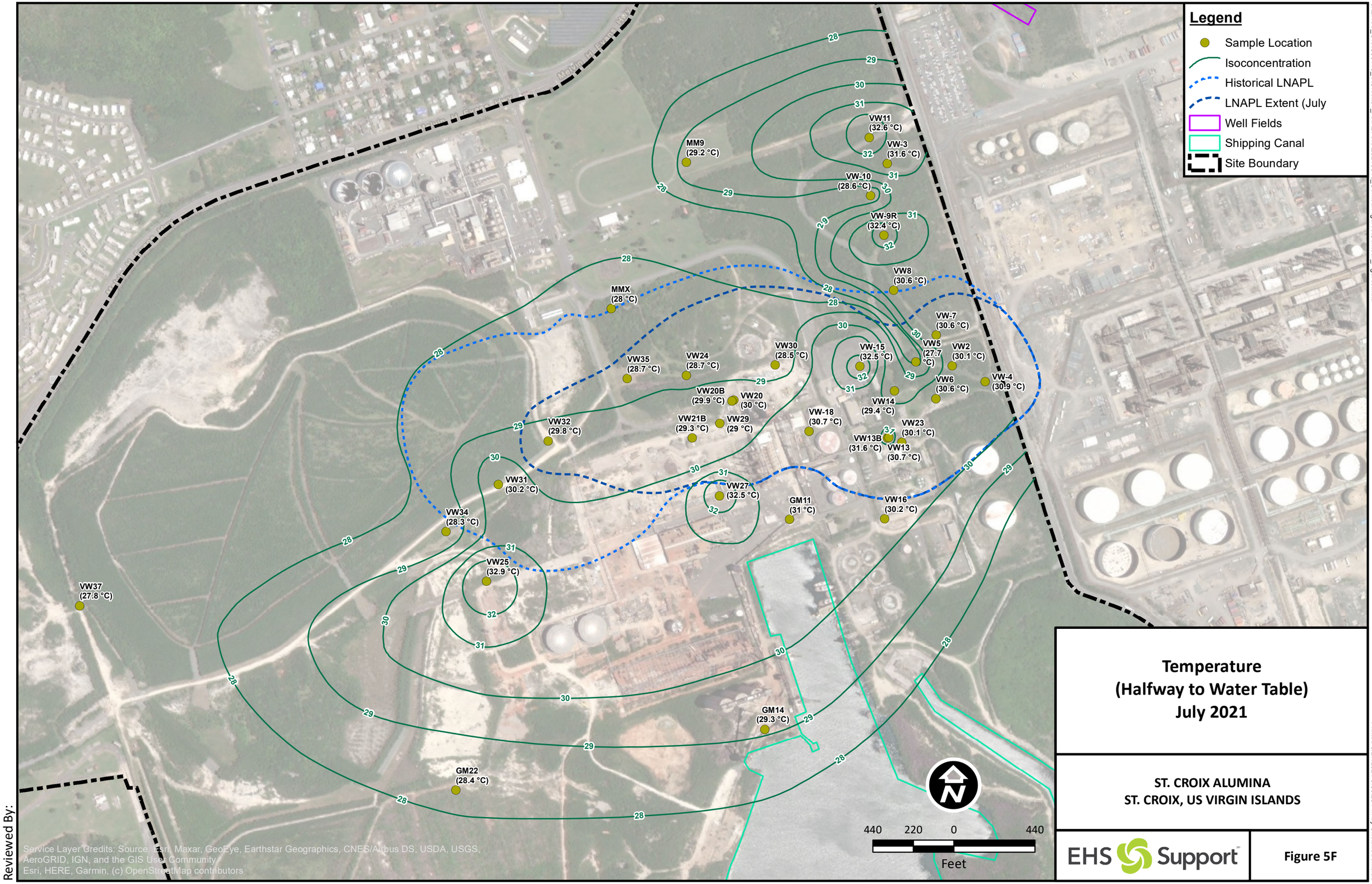

Temperature (Halfway to Water Table) July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5F

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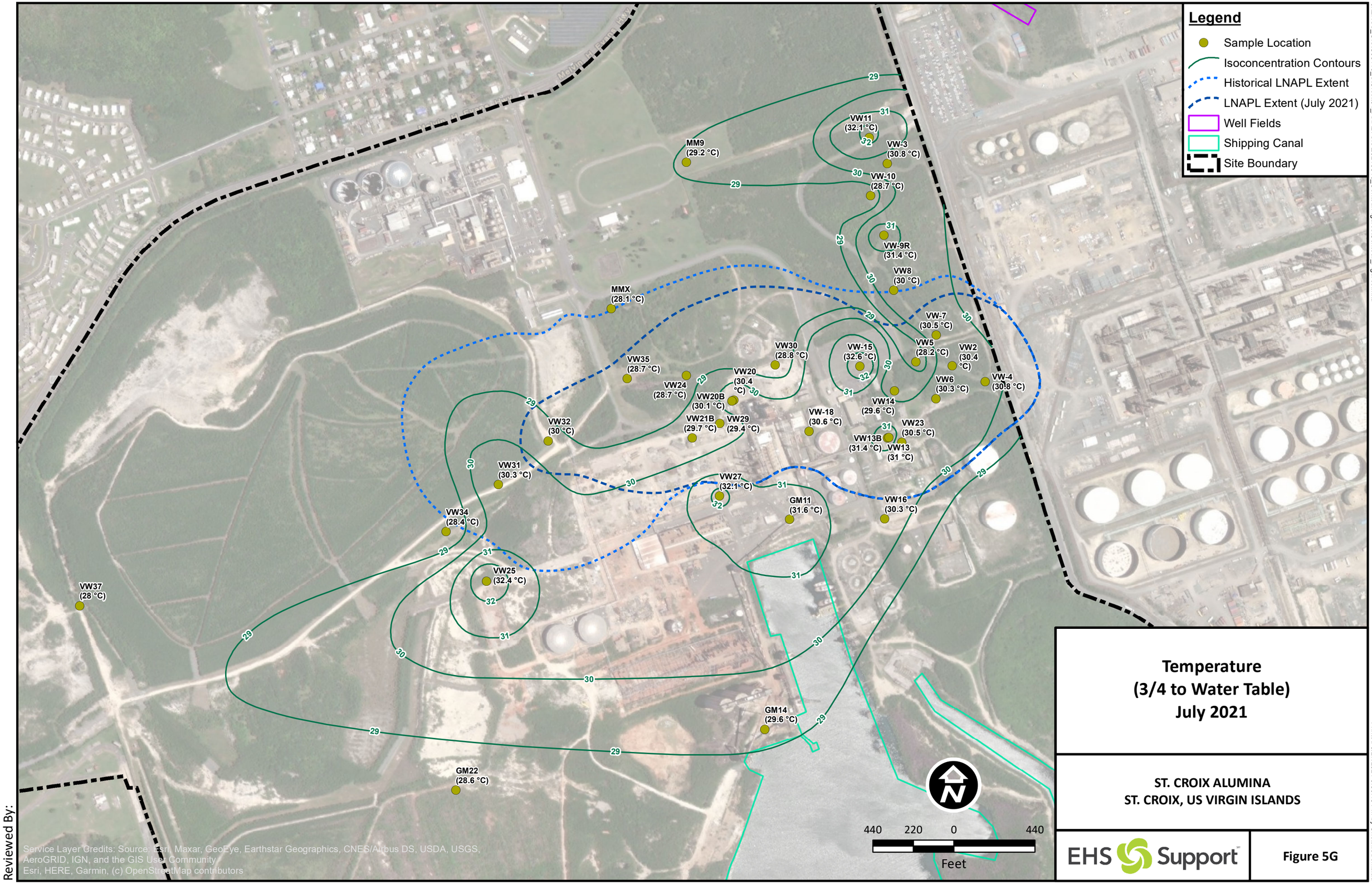

Temperature
(3/4 to Water Table)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5G

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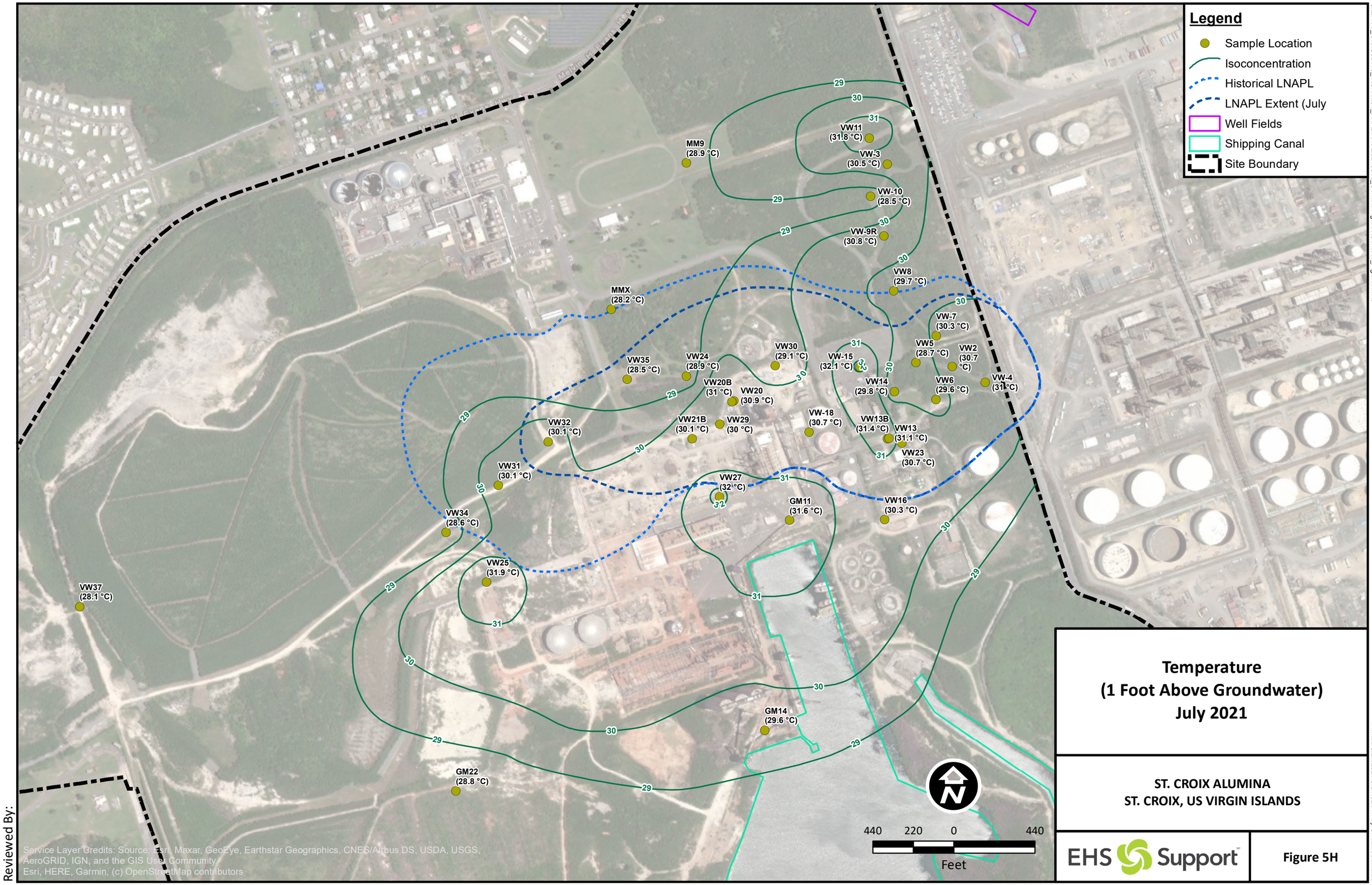

Temperature (1 Foot Above Groundwater) July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5H

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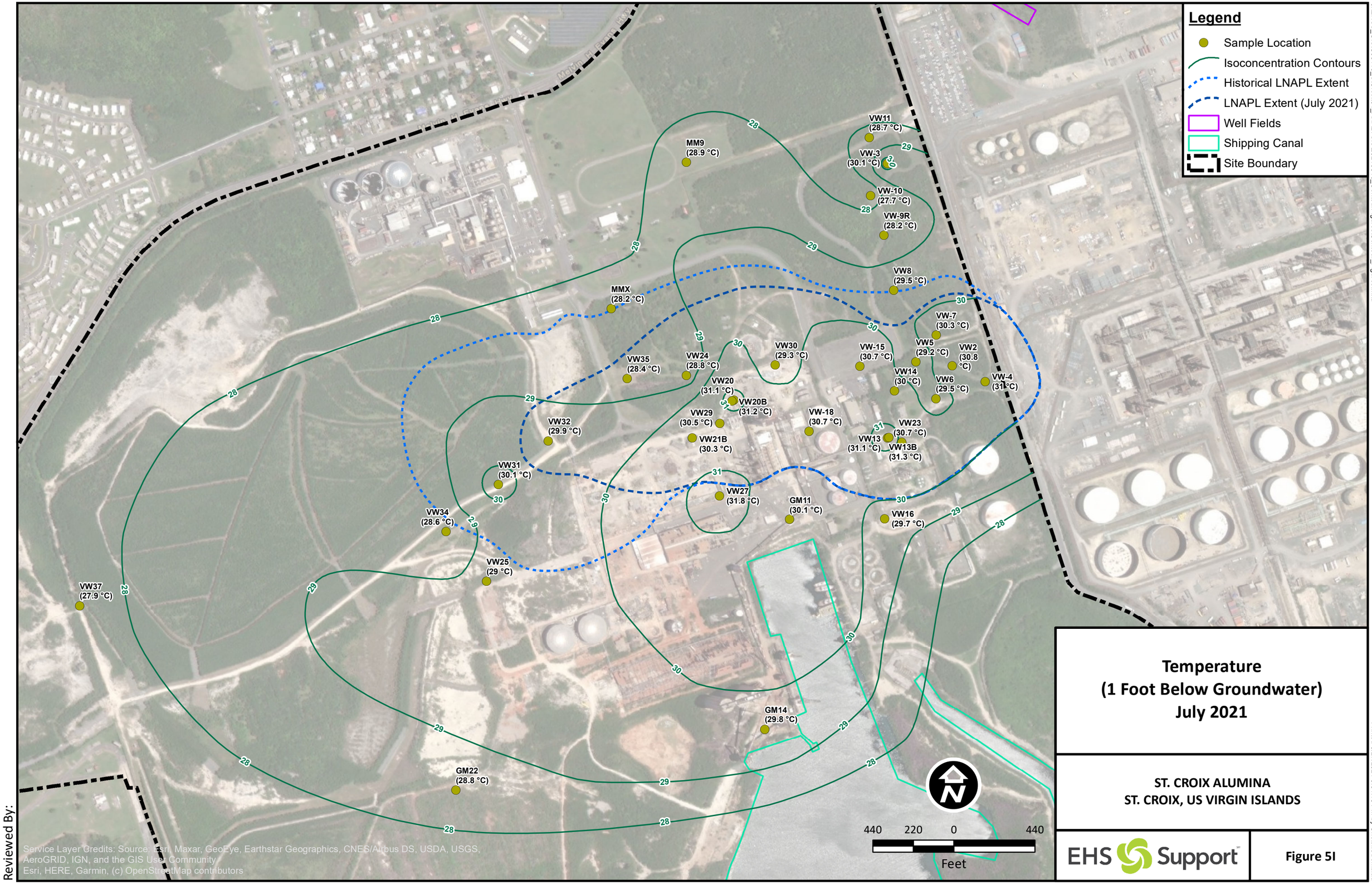

Temperature
(1 Foot Below Groundwater)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5I

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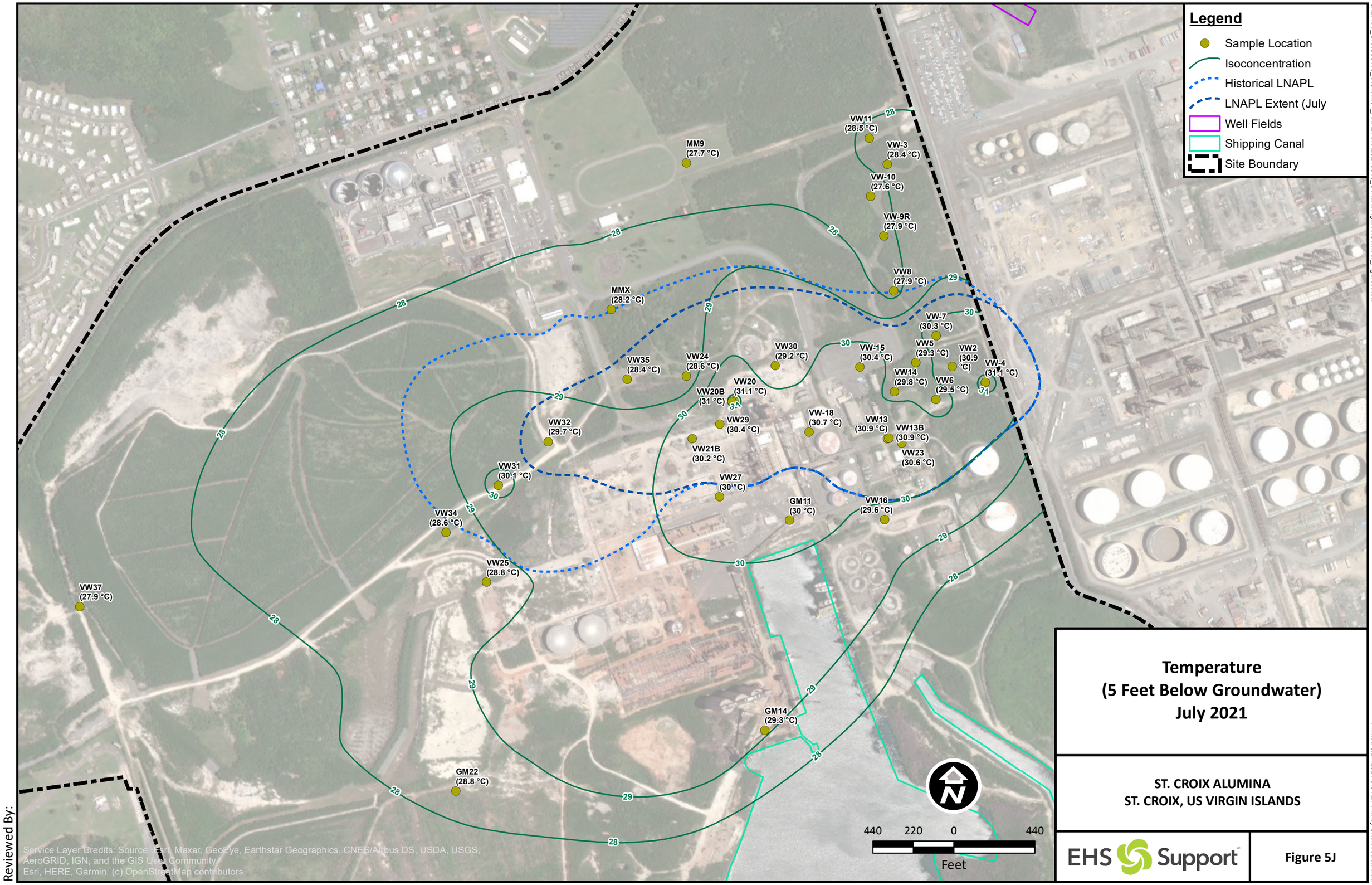

Temperature
(5 Feet Below Groundwater)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5J

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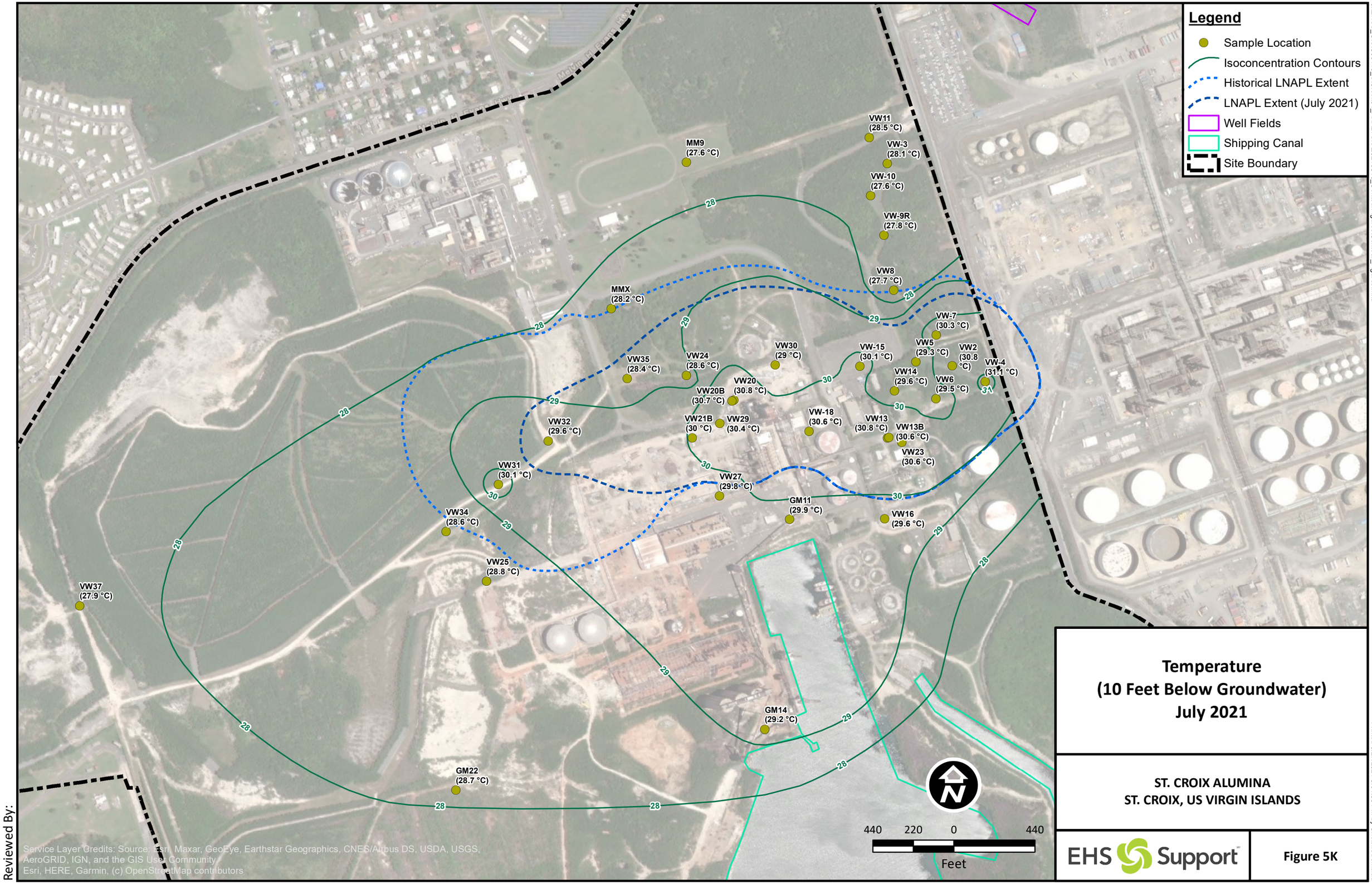

Temperature
(10 Feet Below Groundwater)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5K

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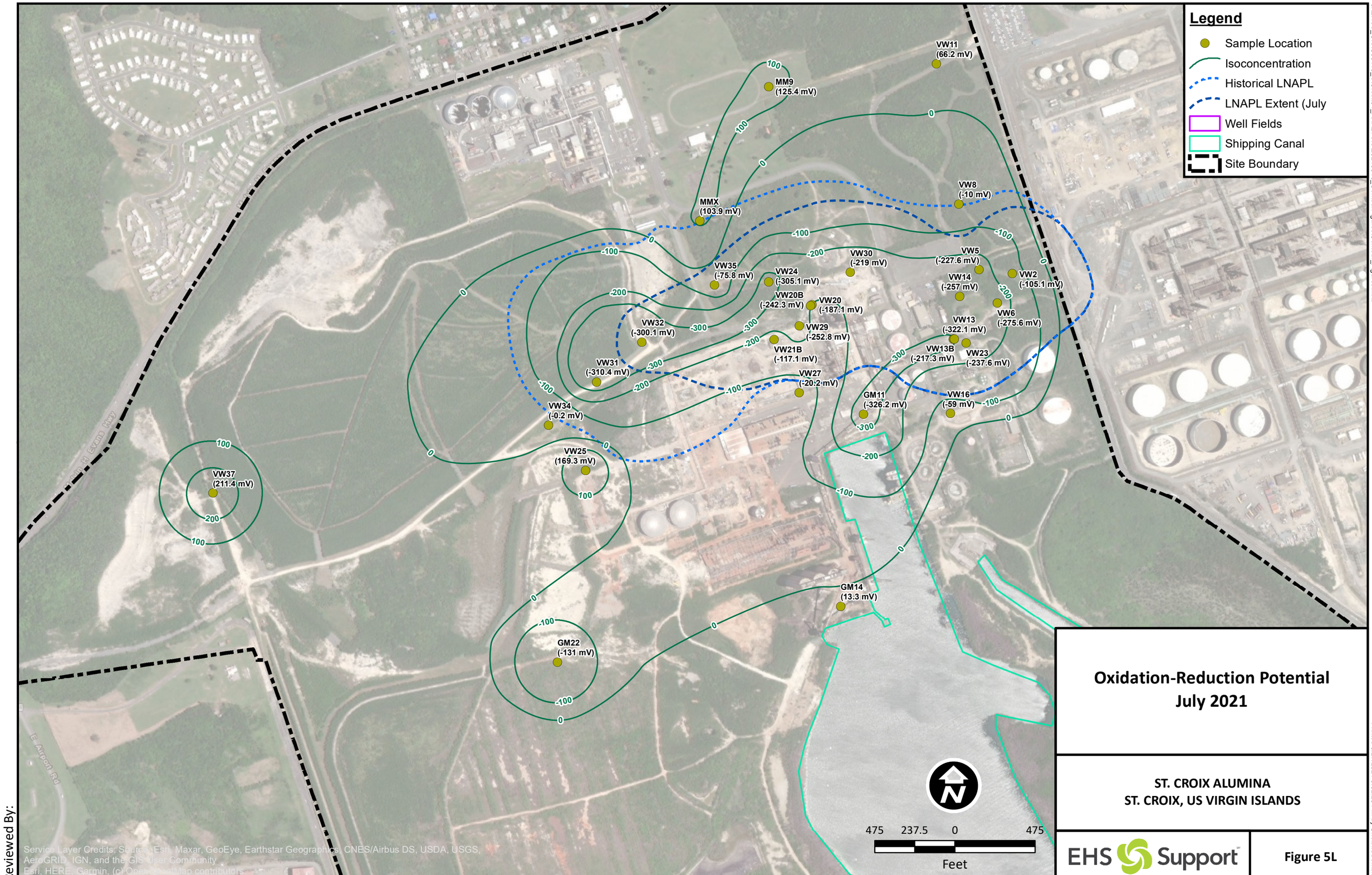

Oxidation-Reduction Potential
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5L

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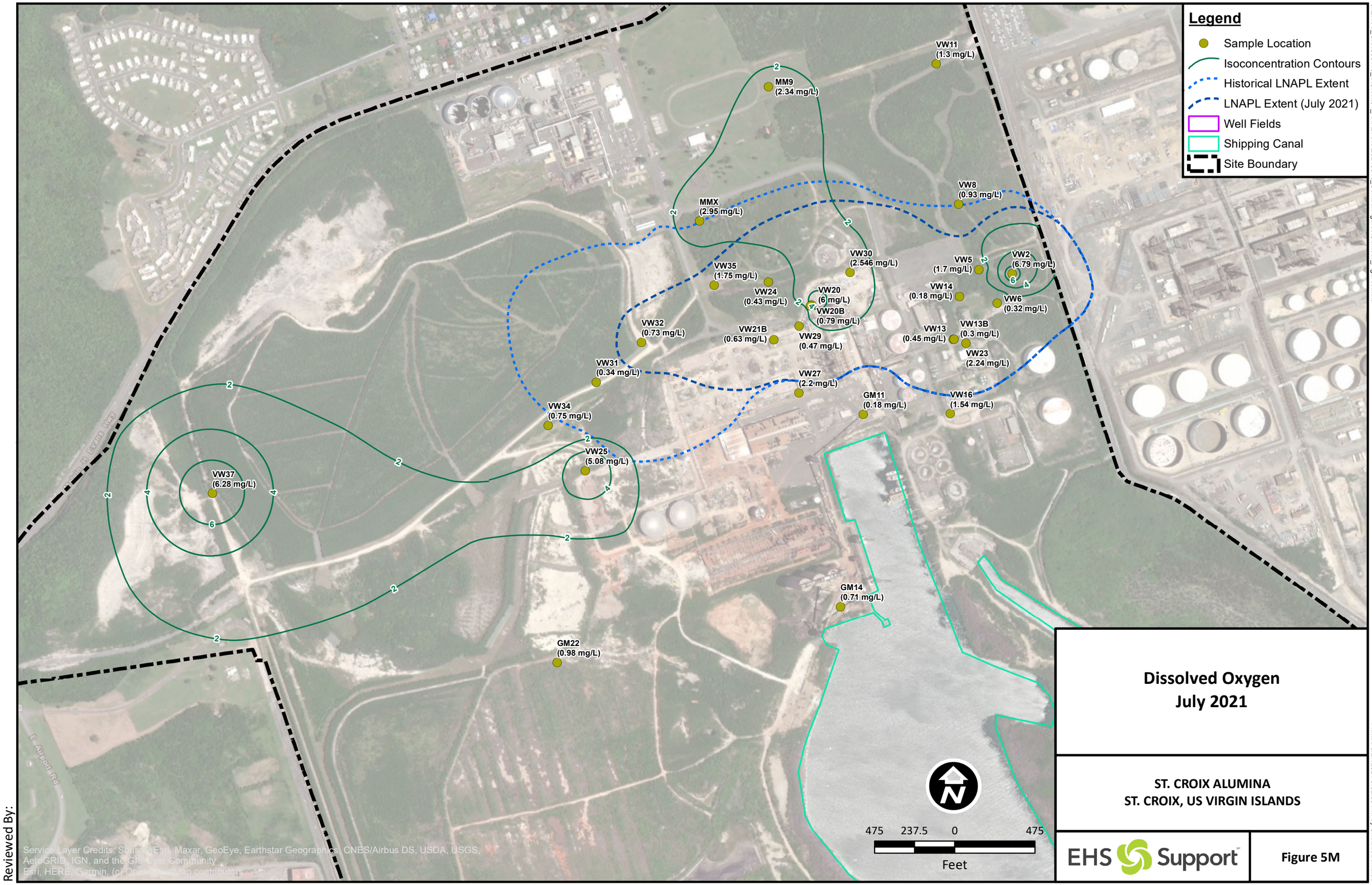

Dissolved Oxygen
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5M

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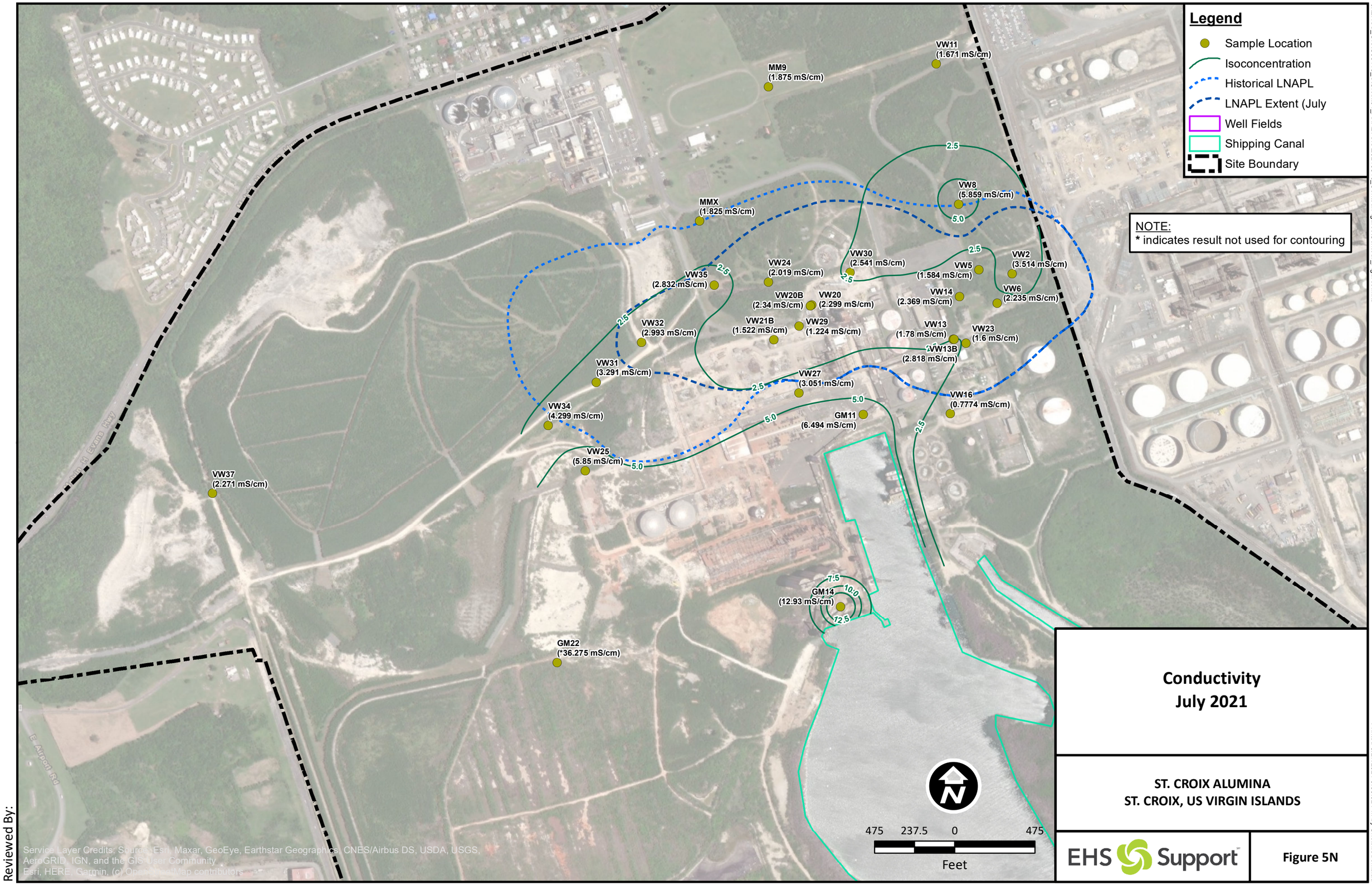

Conductivity
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 5N

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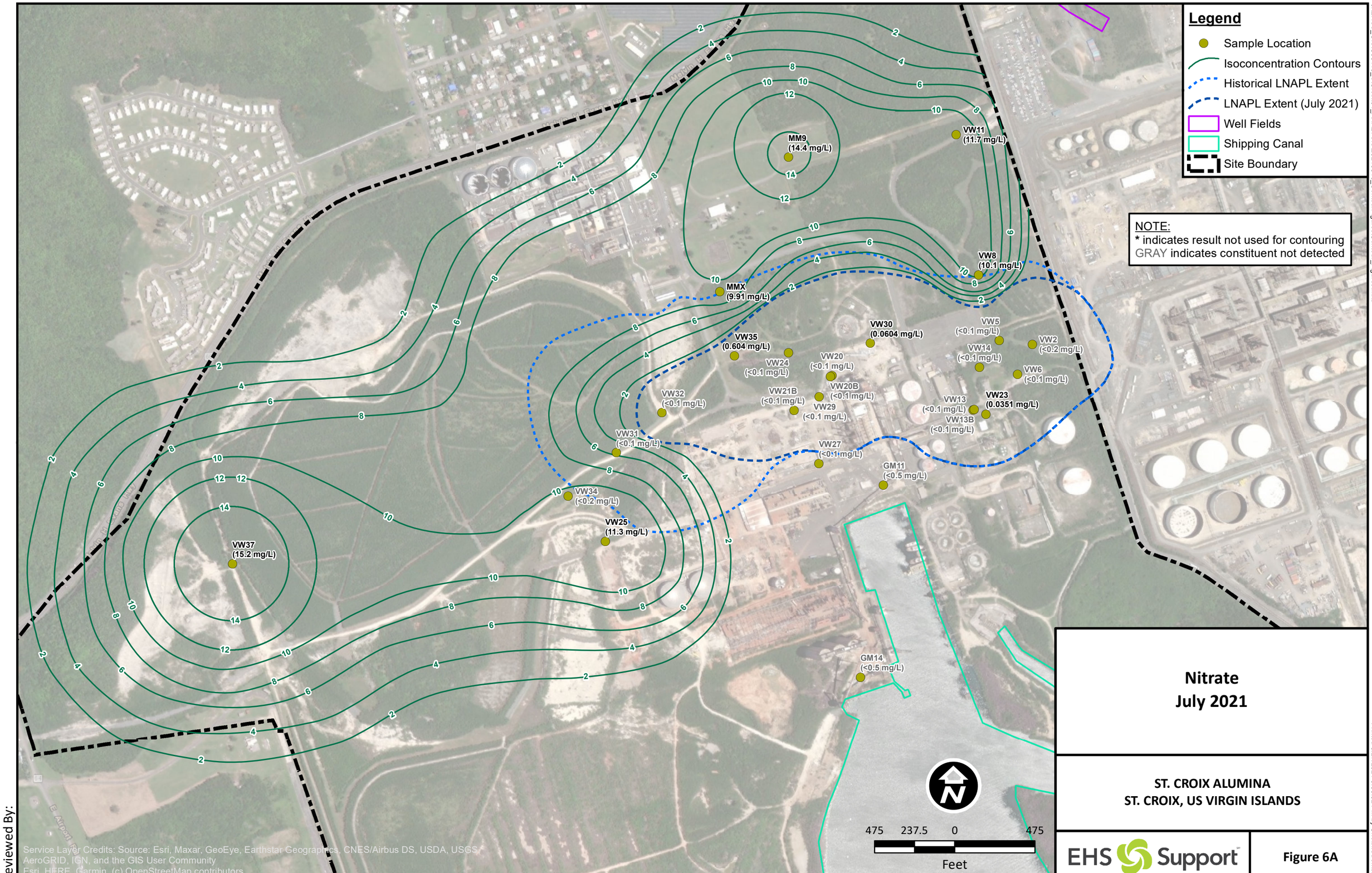

Nitrate
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 6A

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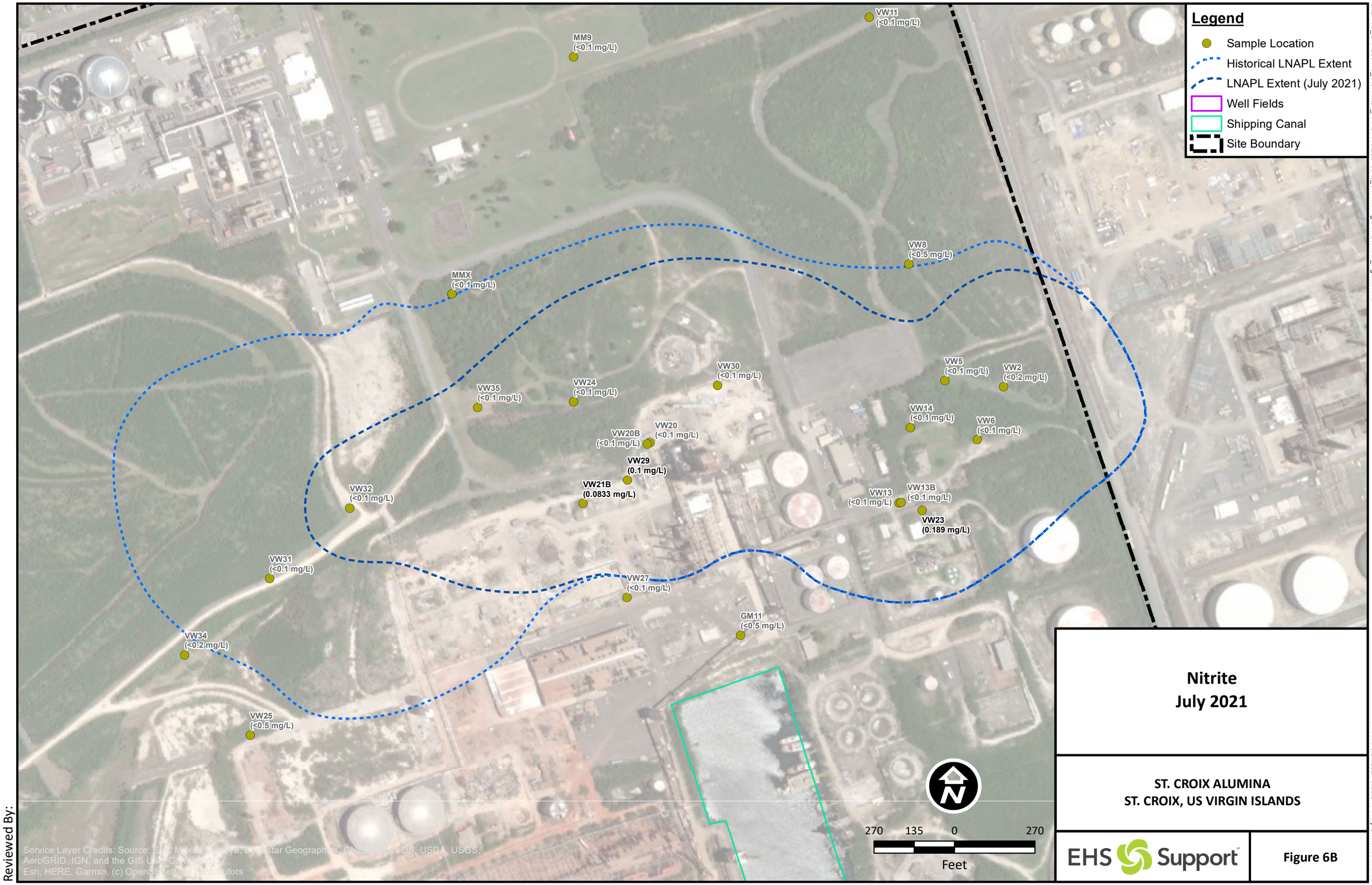

Nitrite
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 6B

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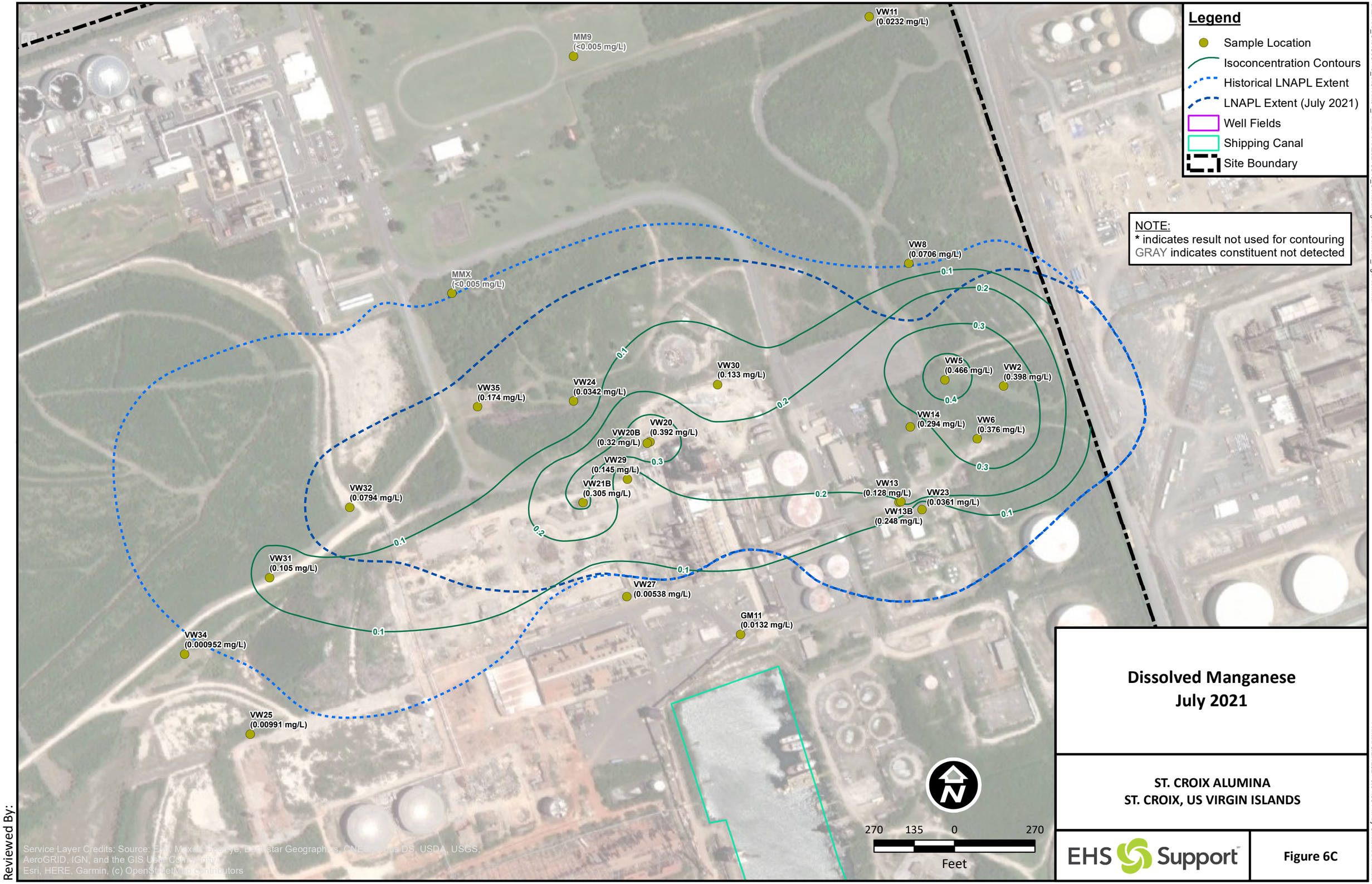

Dissolved Manganese
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 6C

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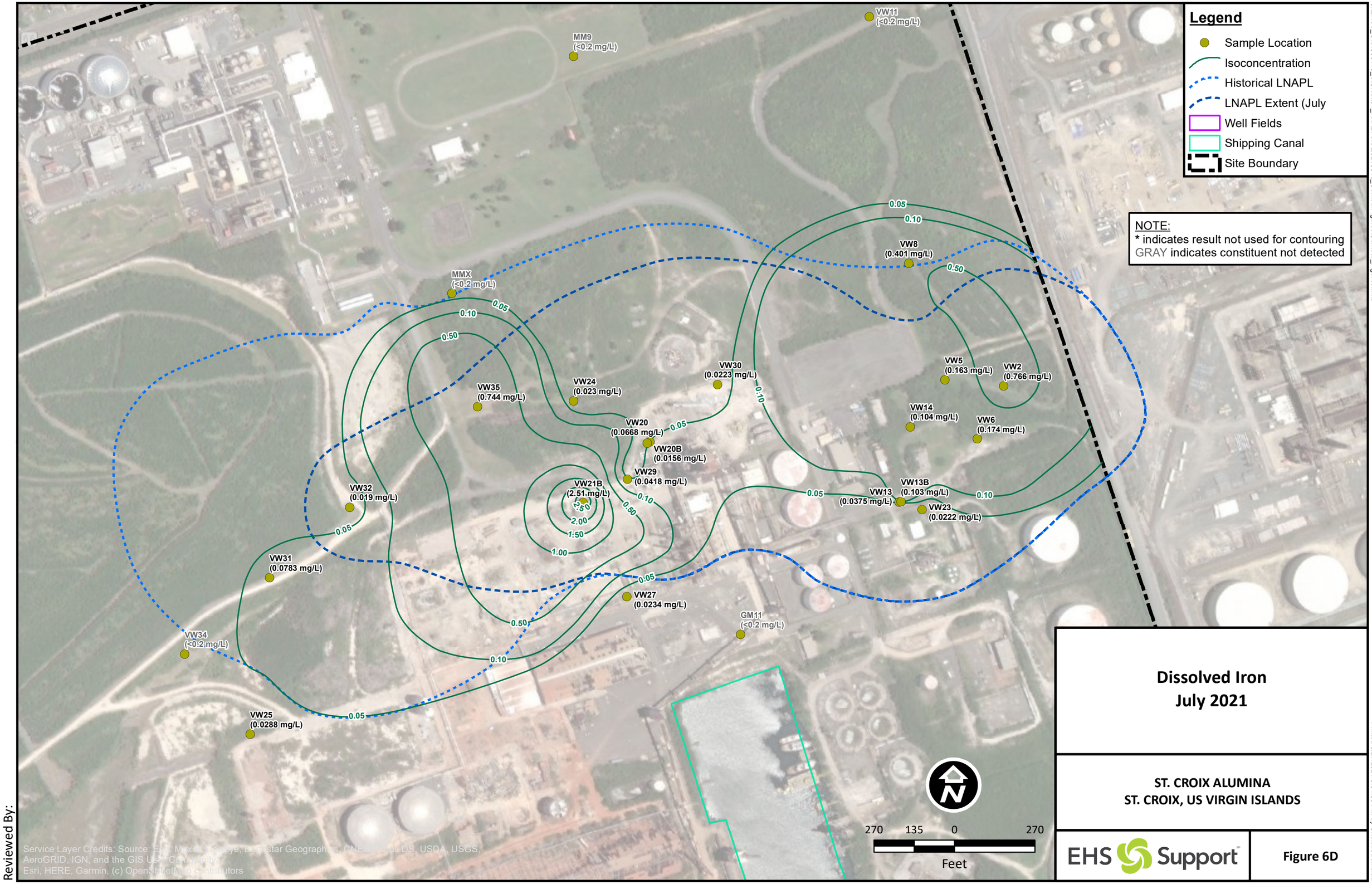

Dissolved Iron
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 6D

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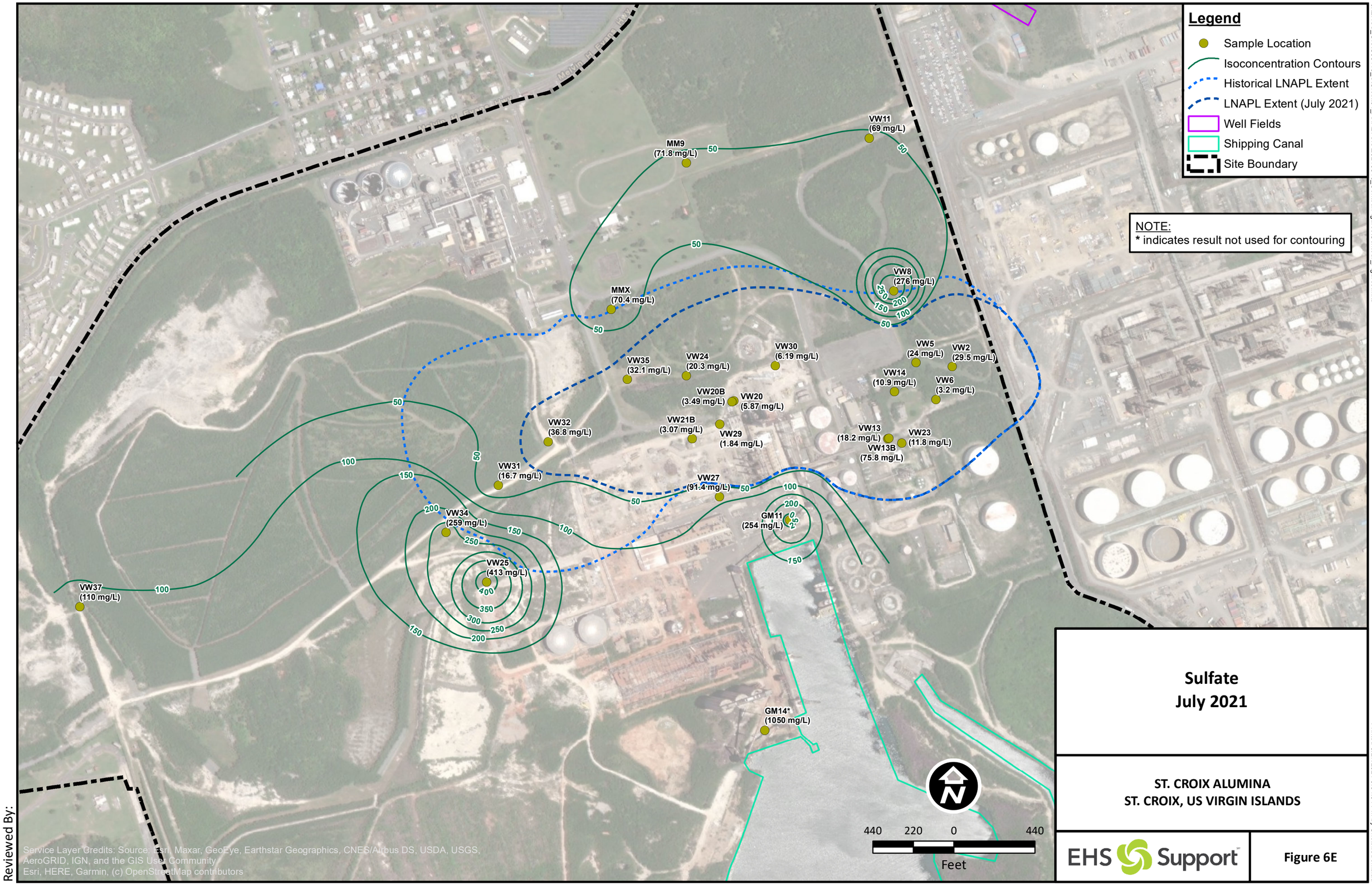

Sulfate
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 6E

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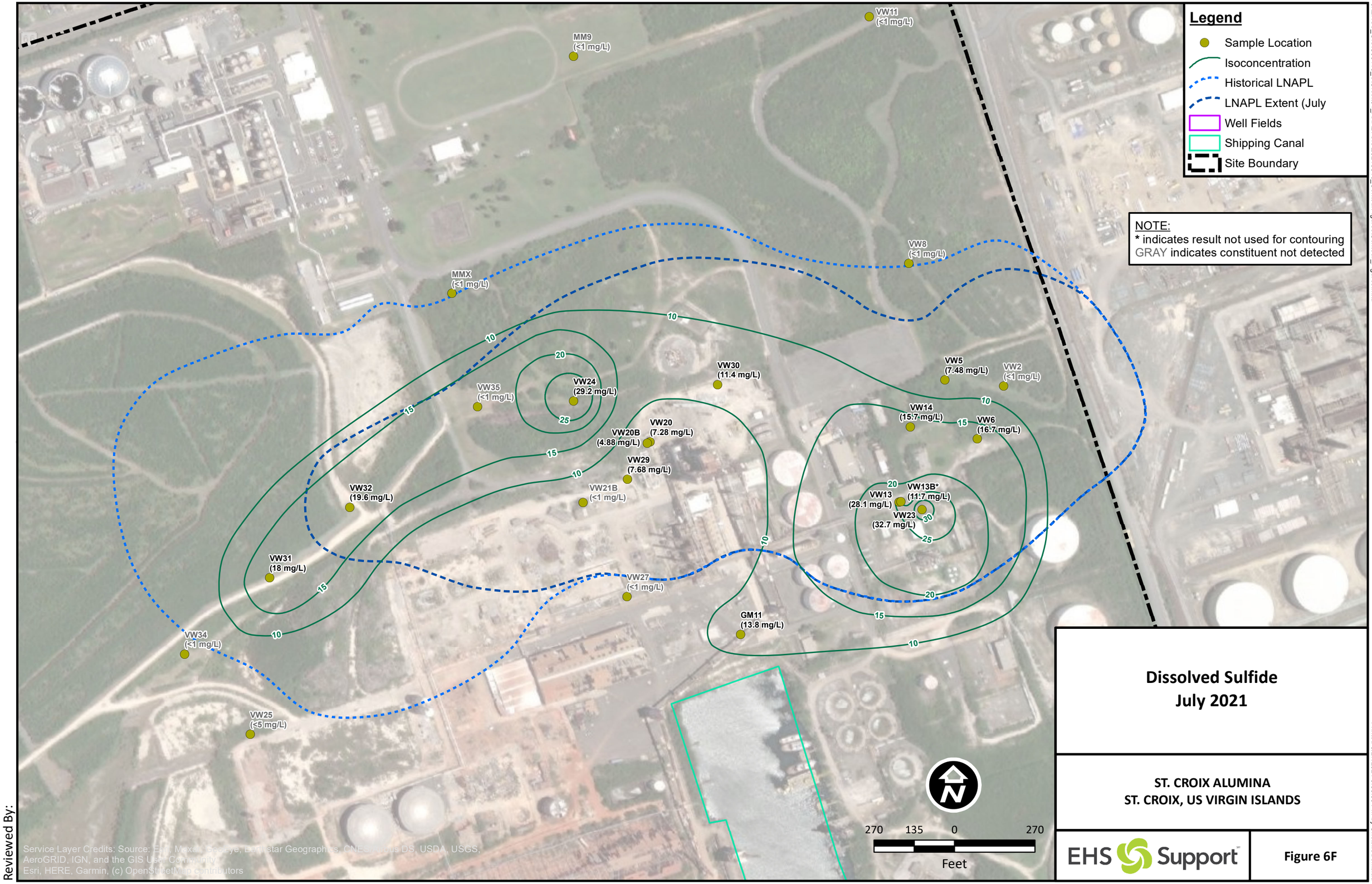

Dissolved Sulfide
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 6F

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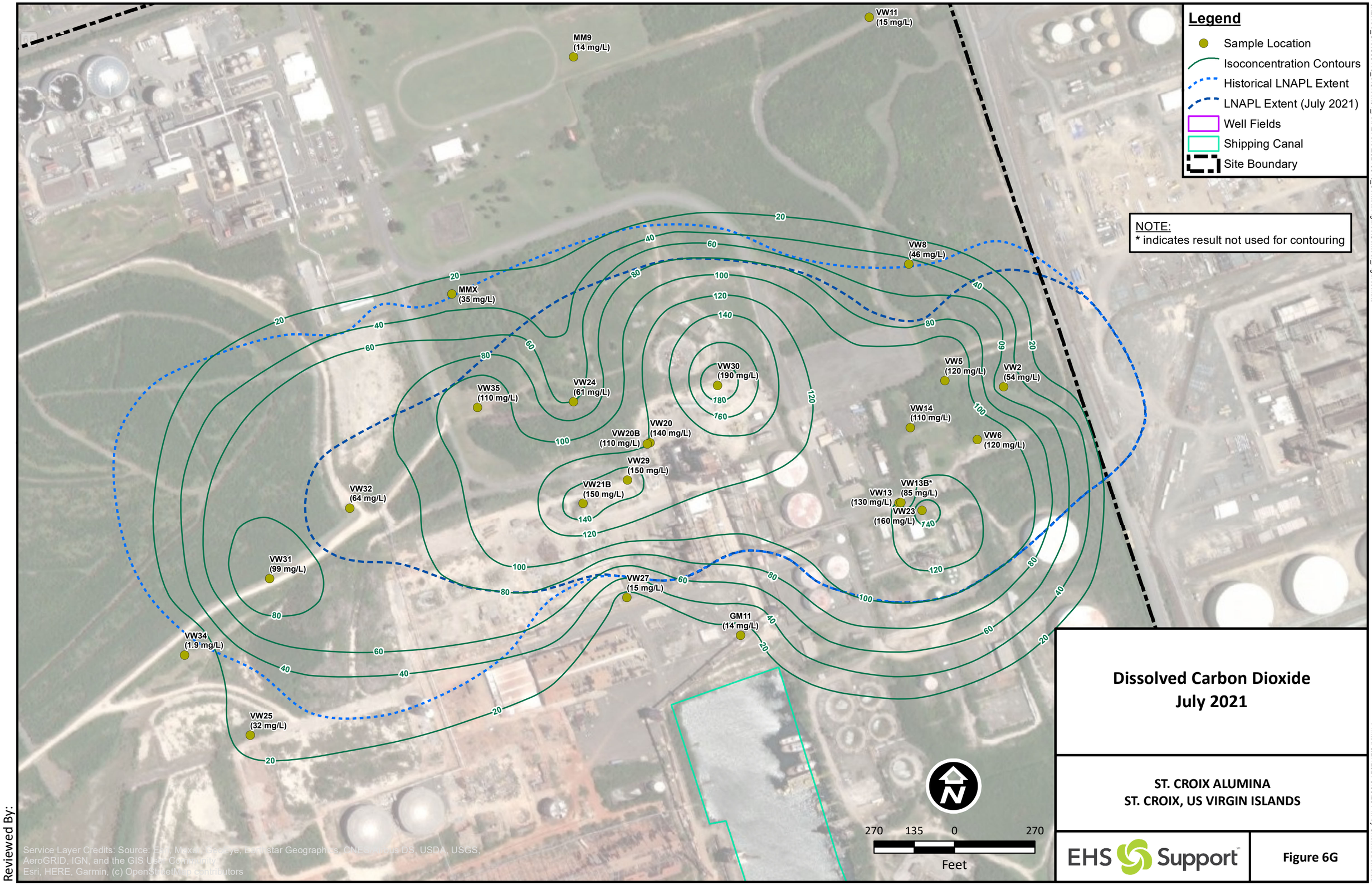

Dissolved Carbon Dioxide
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 6G

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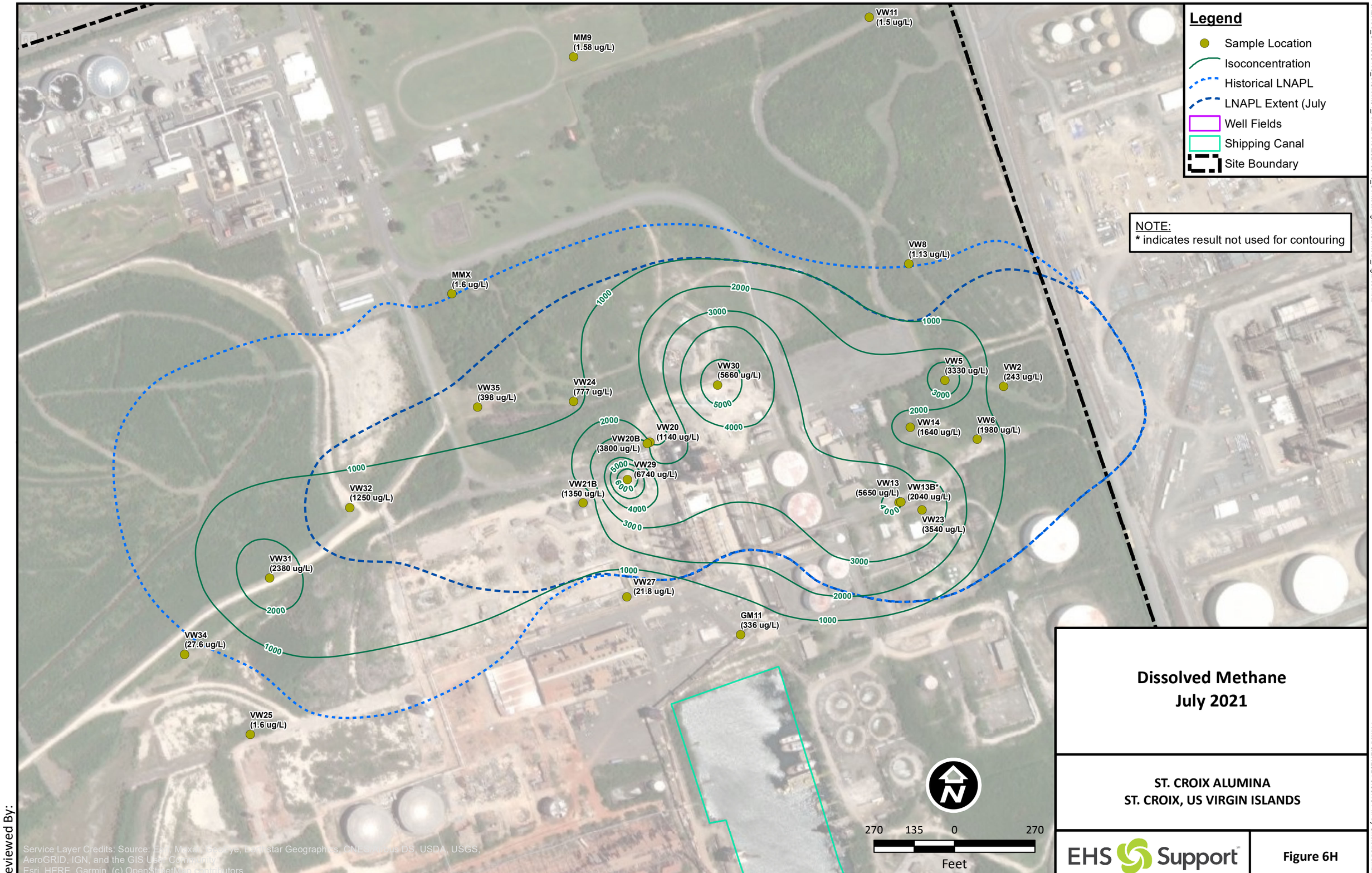

Dissolved Methane
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 6H

Reviewed By:

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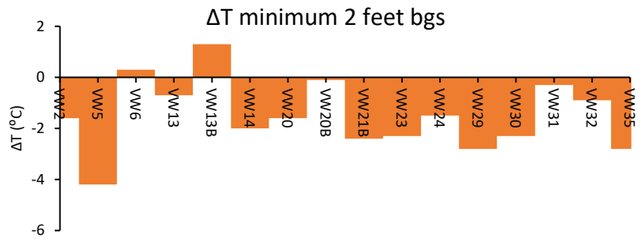
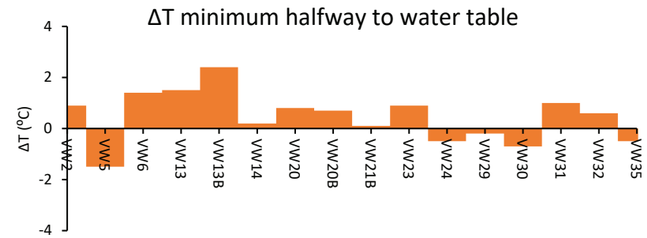
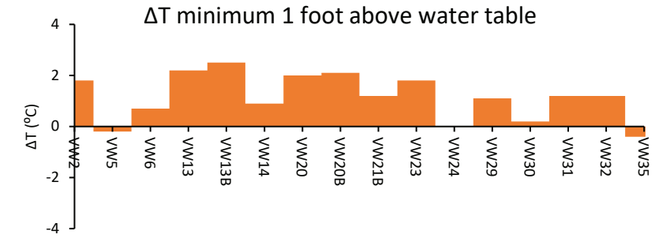
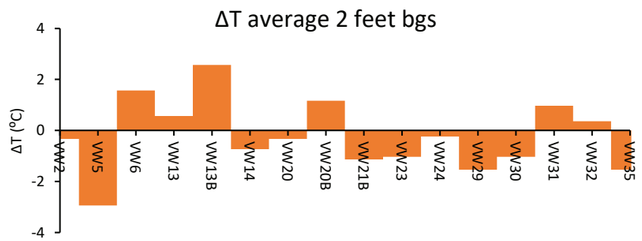
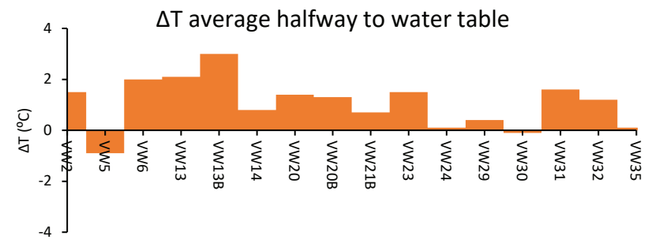
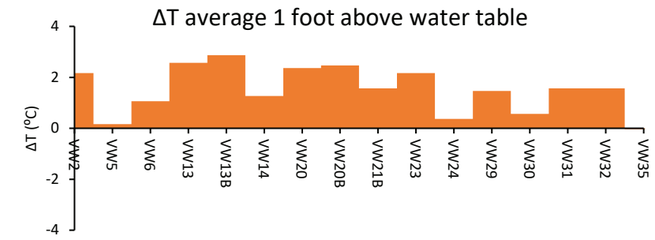


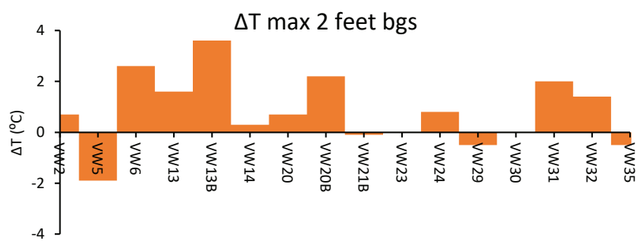


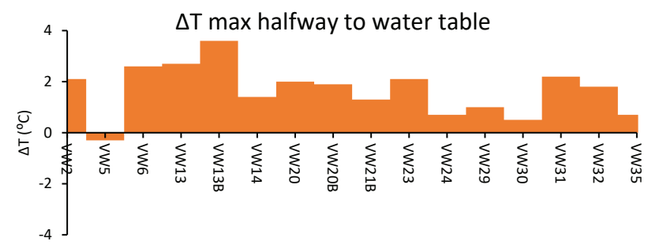


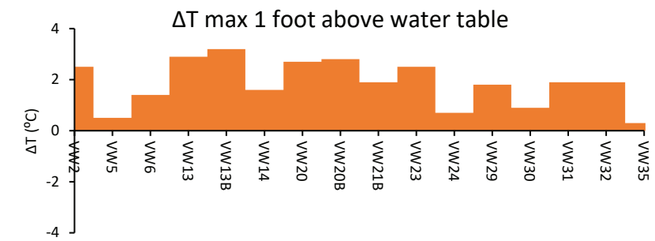


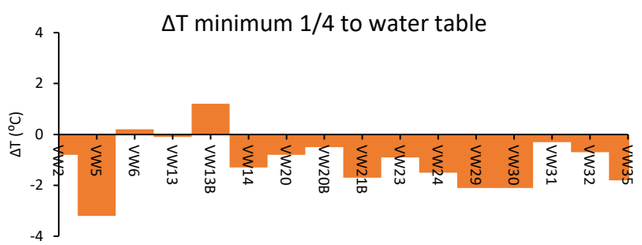


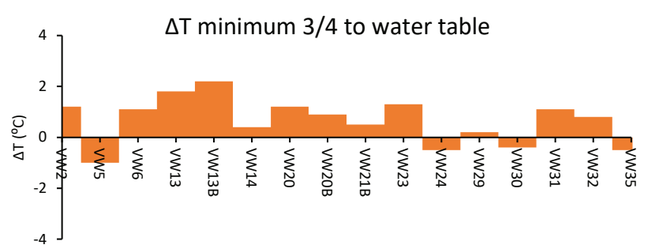


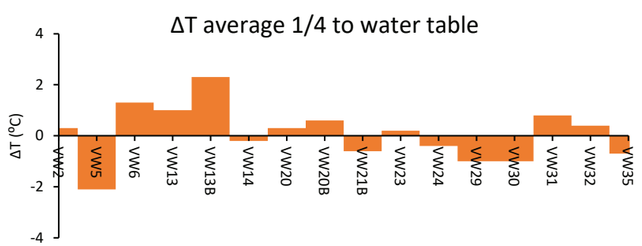


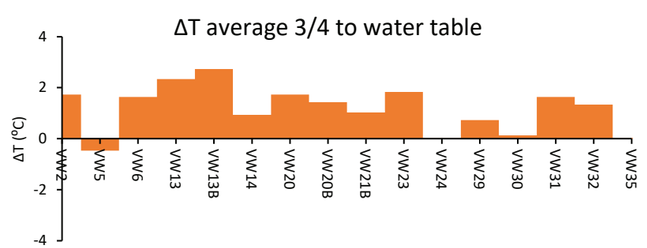


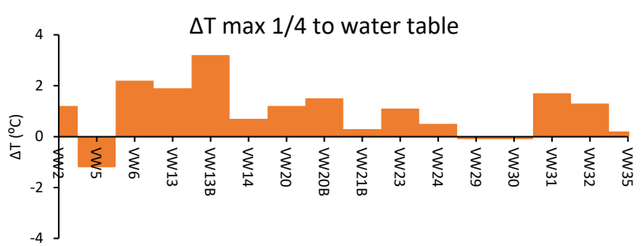


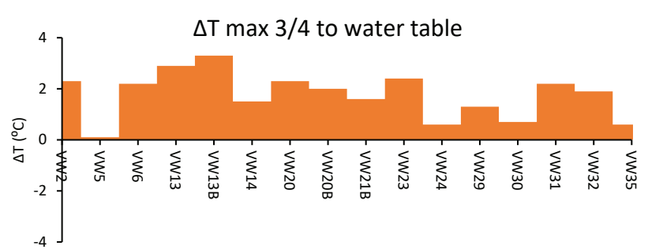












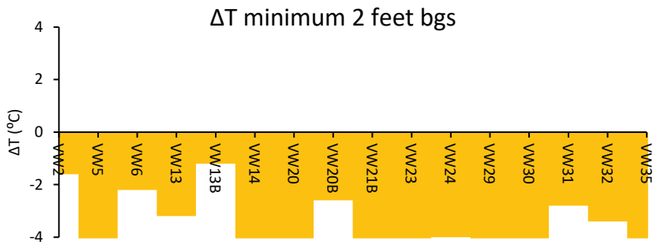
Minimum, Average, and Maximum Temperature Differential Between Source and Background Wells Unsaturated Zone July 2021

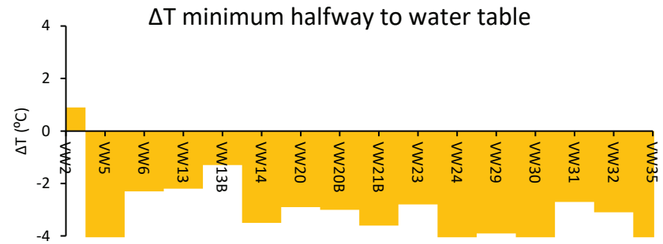
ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

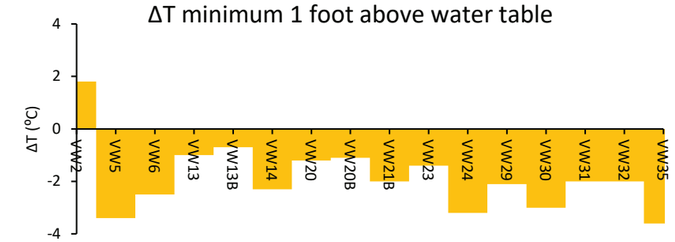
EHS Support

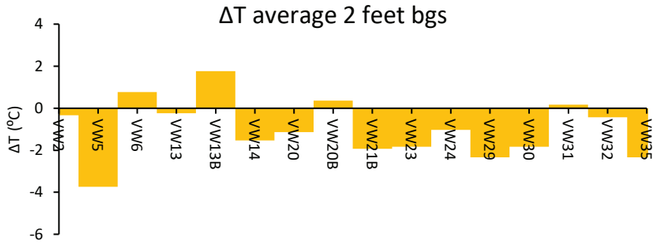
Figure 7A

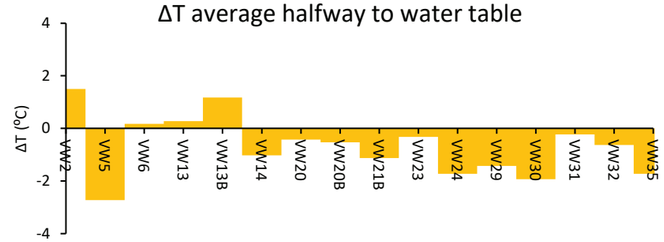
Developed by Andrew Fowler, EHS Support LLC

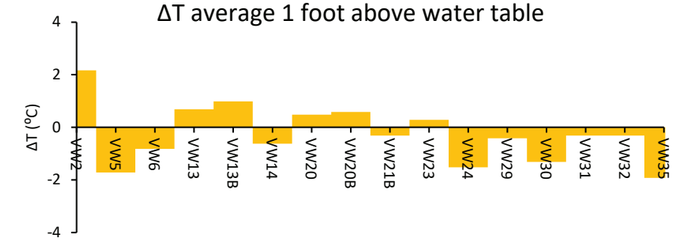


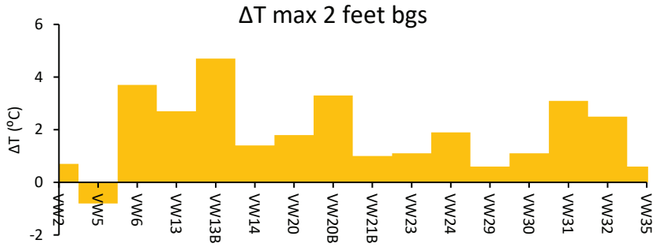


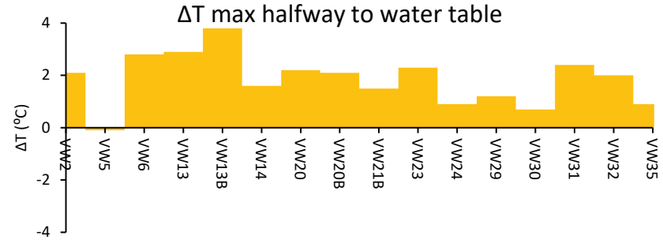


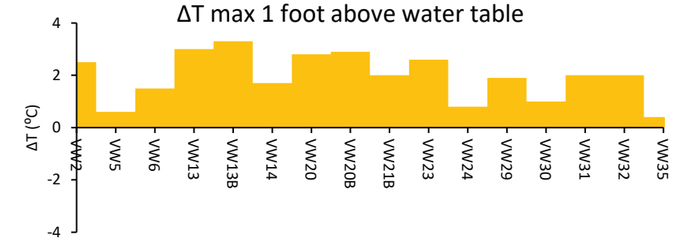


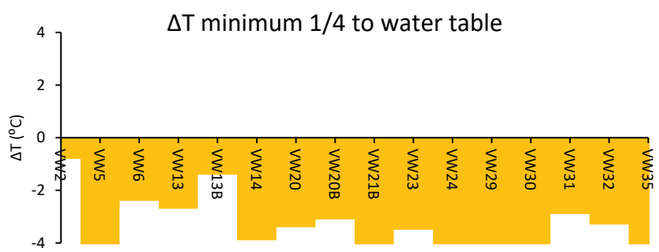


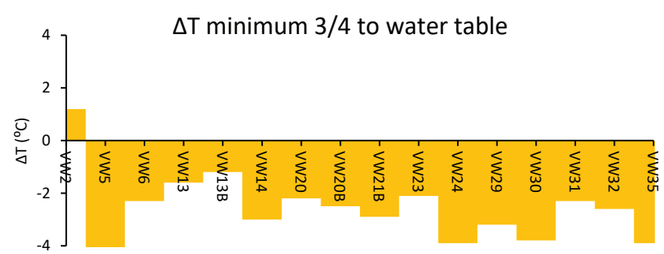


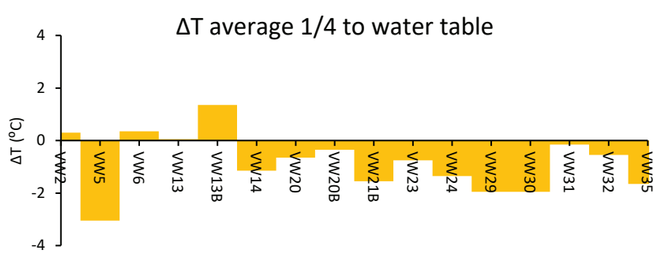


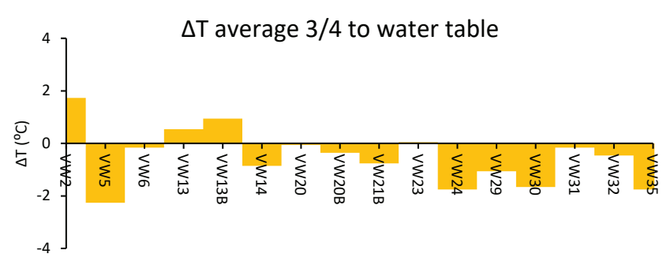


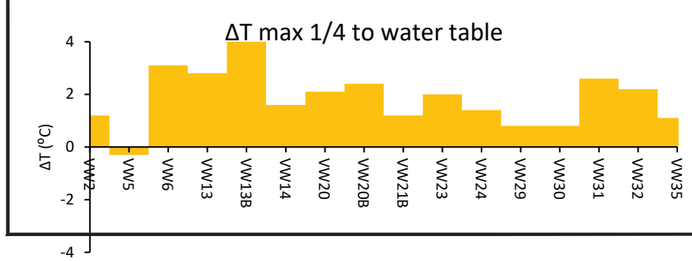


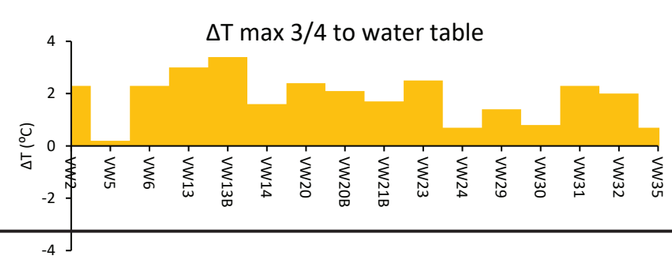












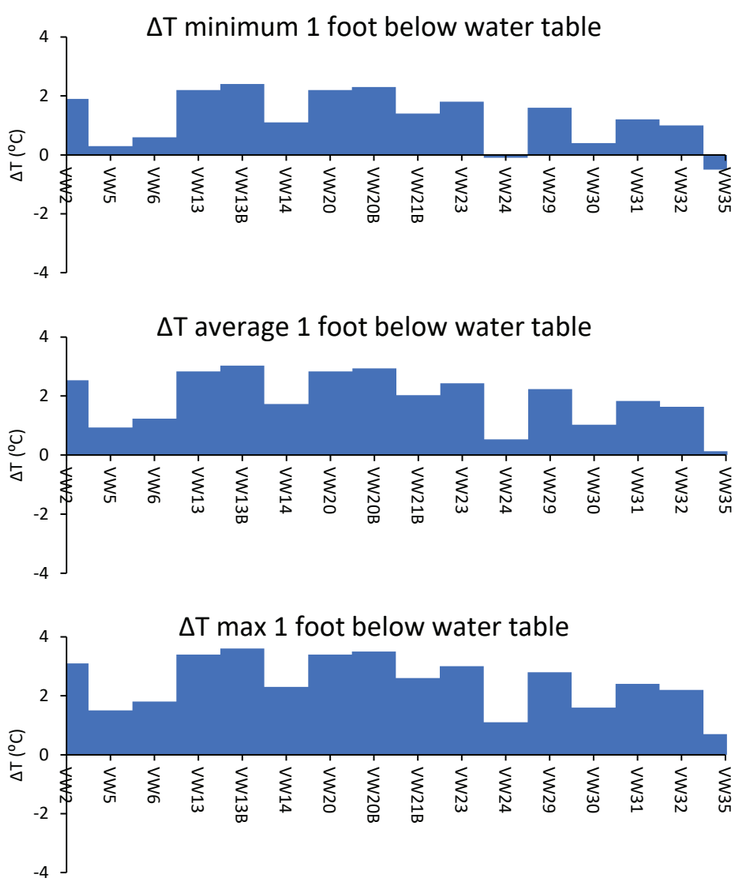
Minimum, Average, and Maximum Temperature Differential Between Source and Downgradient Wells Unsaturated Zone July 2021

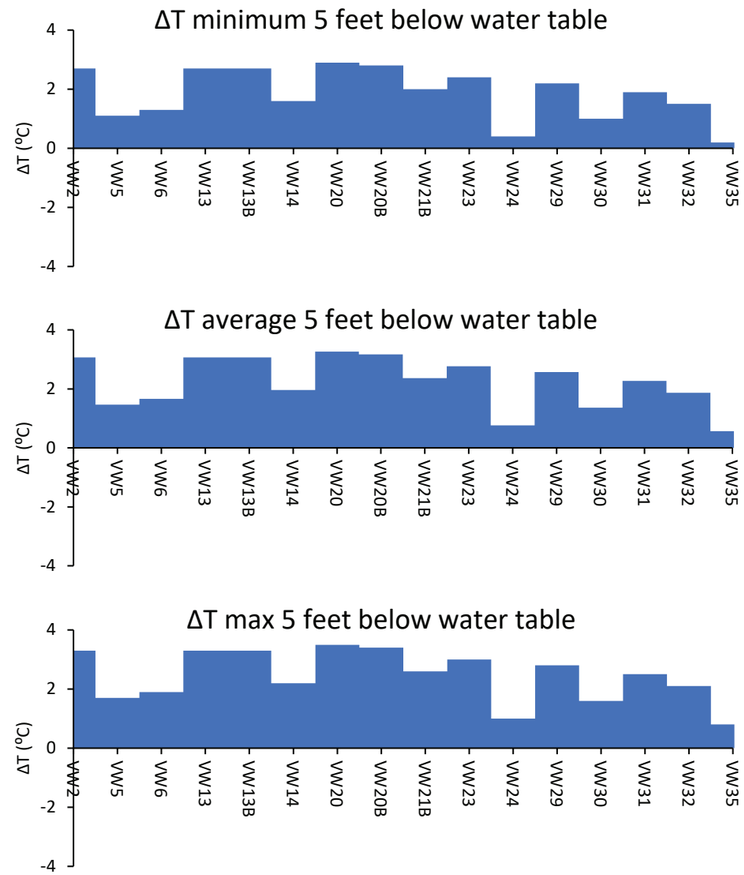
ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

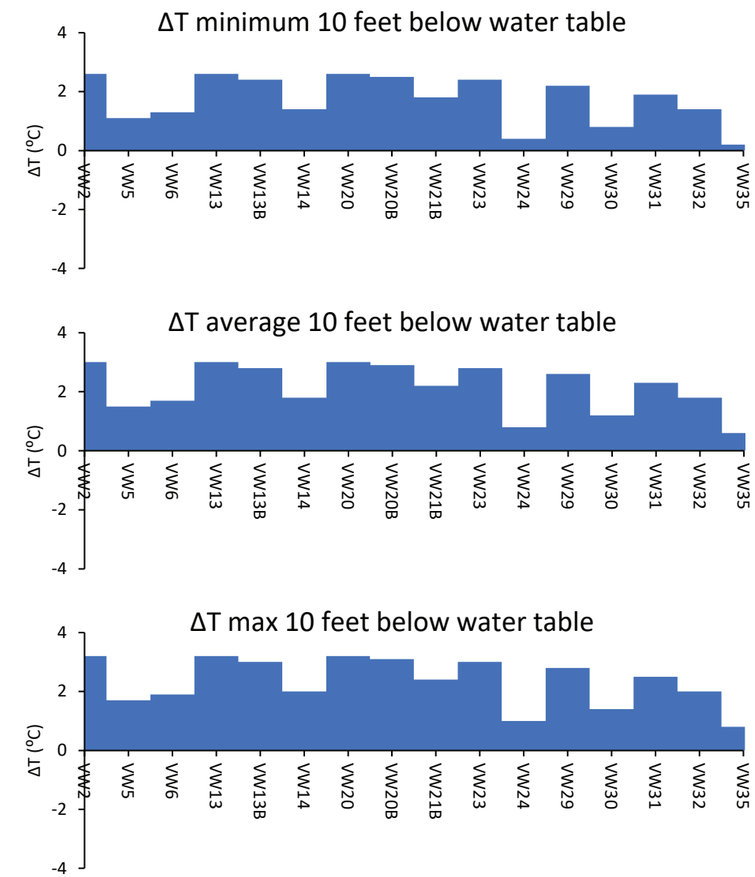
EHS Support

Figure 7B

Developed by Andrew Fowler, EHS Support LLC







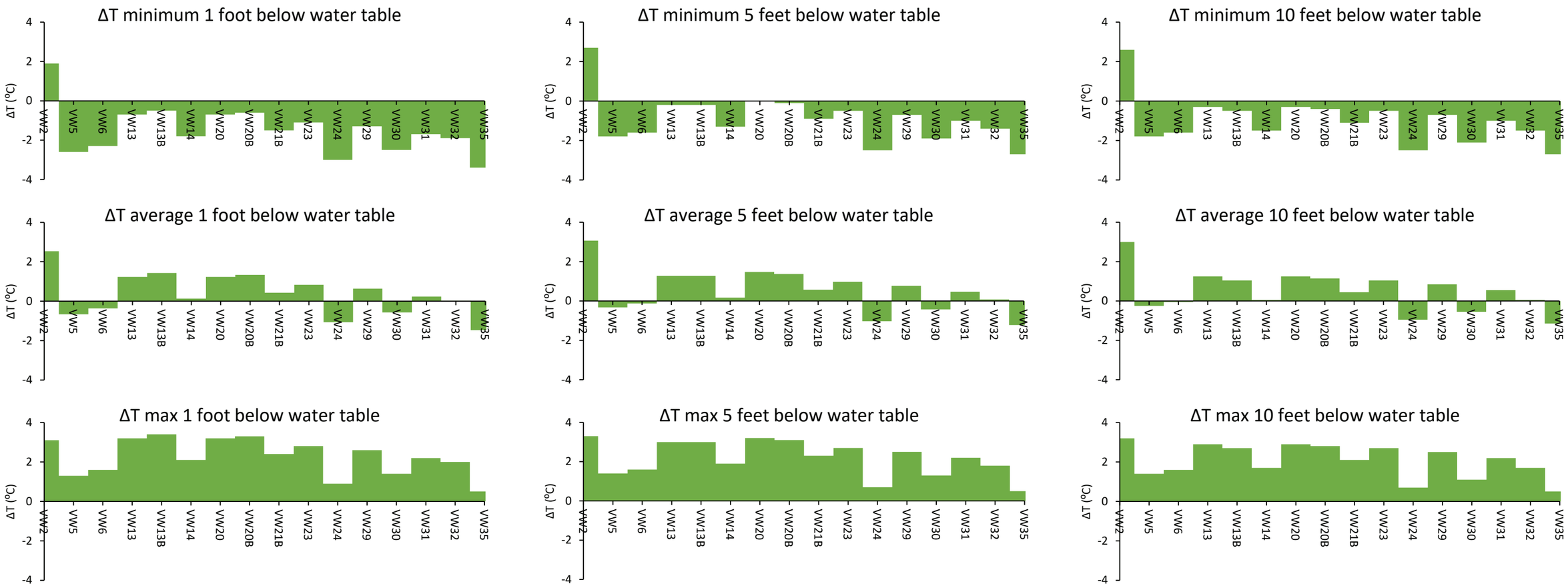
Minimum, Average, and Maximum Temperature Differential Between Source and Background Wells Saturated Zone July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 7C

Developed by Andrew Fowler, EHS Support LLC



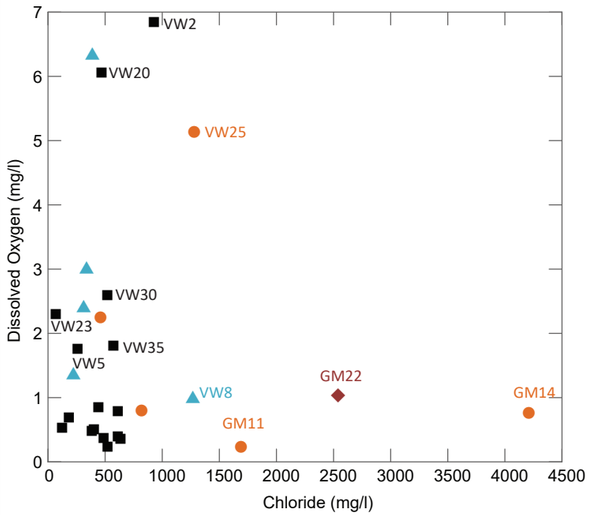
Minimum, Average, and Maximum Temperature Differential Between Source and Downgradient Wells Saturated Zone July 2021

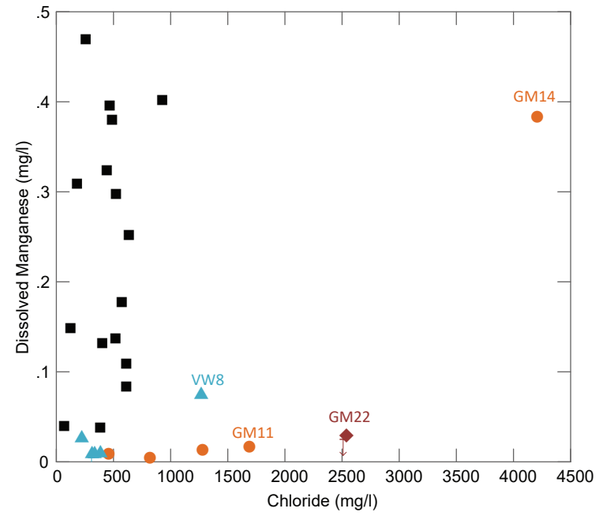
ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

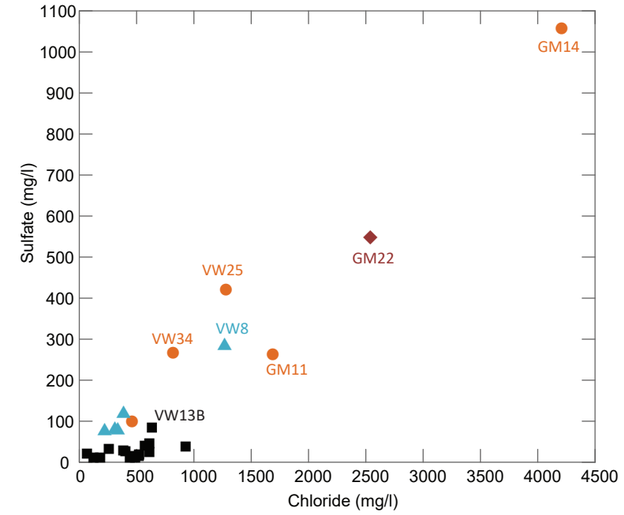
EHS Support

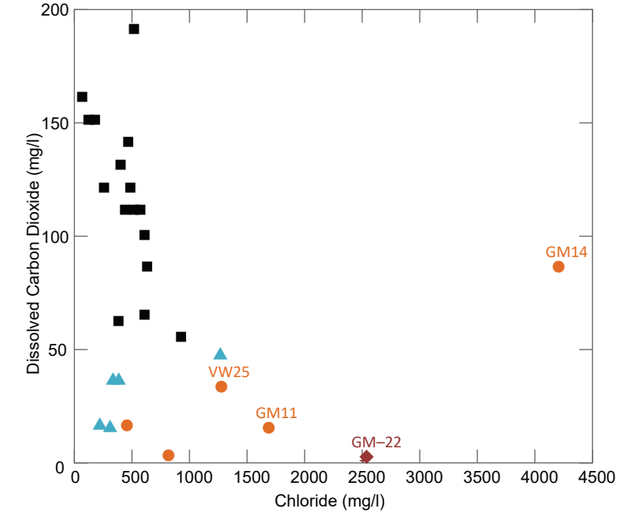
Figure 7D

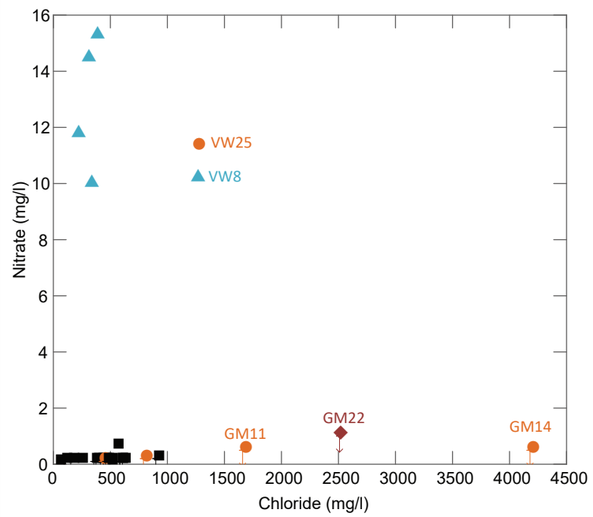
Developed by Andrew Fowler, EHS Support LLC

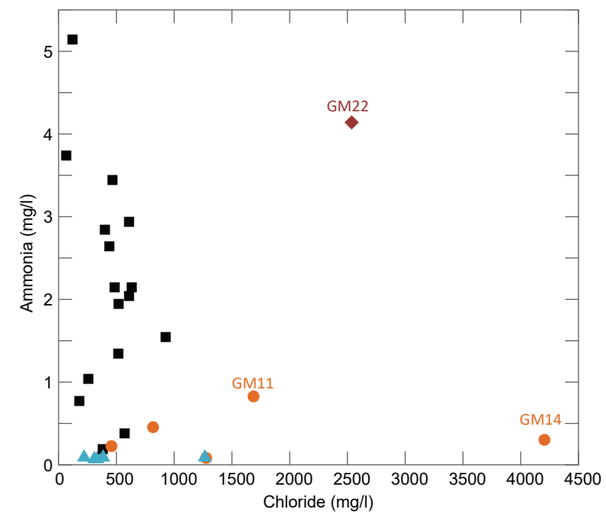


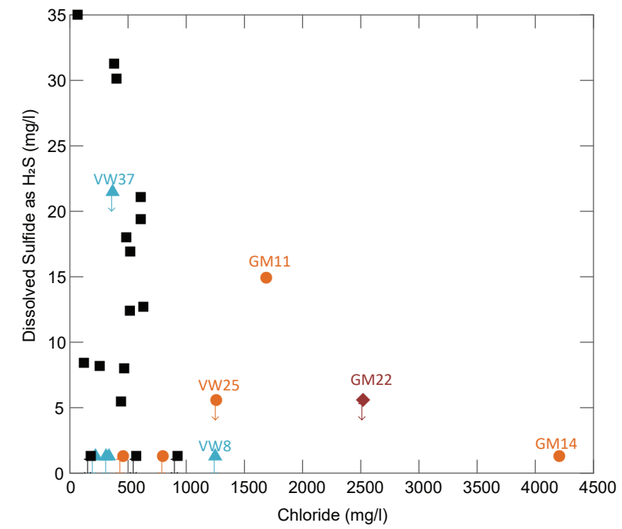


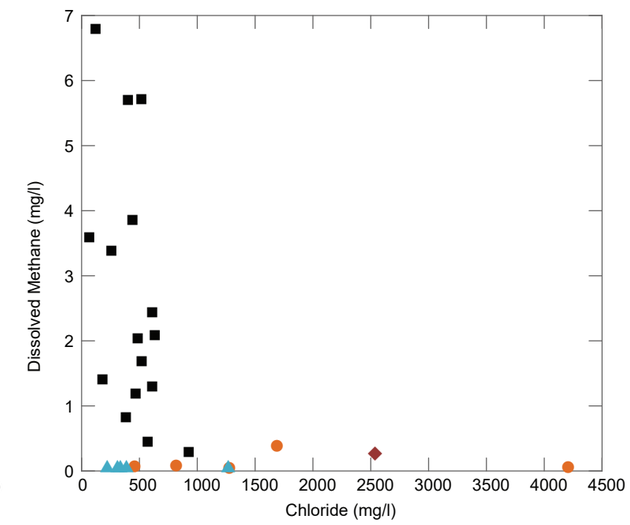


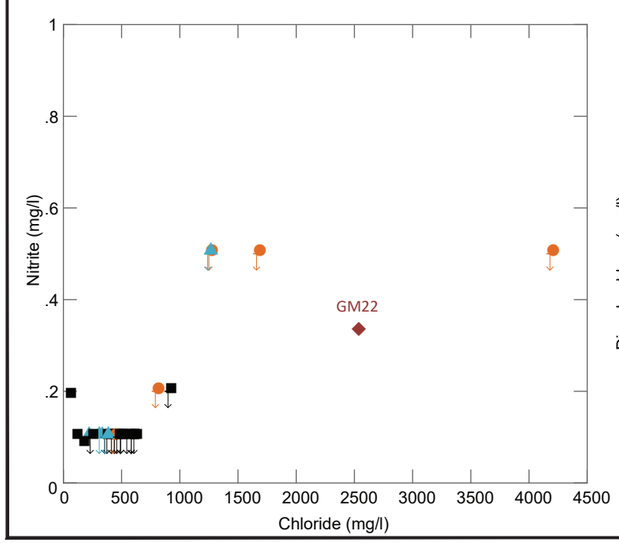


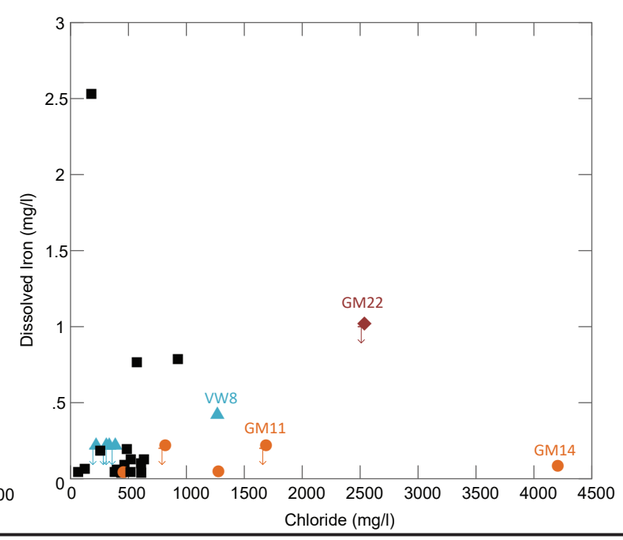












Legend

- Upgradient Wells
- Source Area Wells
- Downgradient Wells
- Below Reporting Limit

Redox Potential for Electron Acceptors

$O_2 \rightarrow H_2O$	+820 mV
$2NO_3 \rightarrow N_2$	+740 mV
$MnO_2 \rightarrow Mn^{2+}$	+520 mV
$NO_3 \rightarrow NH_4^+$	+380 mV
$FeO(OH) \rightarrow Fe^{2+}$	-50 mV
$SO_4^{2-} \rightarrow H_2S$	-220 mV
$CO_2 \rightarrow CH_4$	-240 mV

Source: Jørgensen, B.B., 2000. Bacteria and marine biogeochemistry. In Marine geochemistry (pp. 173-207). Springer, Berlin, Heidelberg.

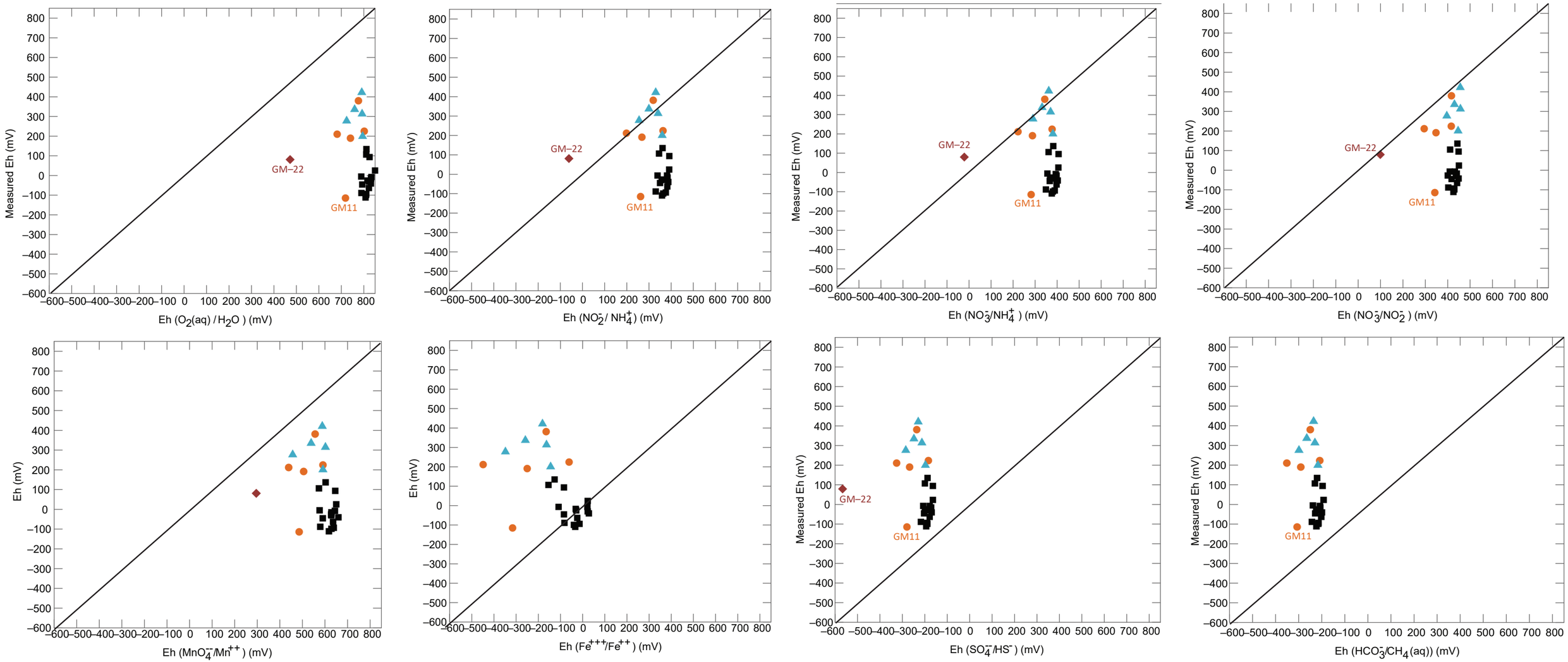
Electron Acceptor Cross Plots
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 8A

Developed by Andrew Fowler, EHS Support LLC



Legend

- ▲ Upgradient Wells
- ■ Source Area Wells
- ● Downgradient Wells
- ↓ Below Reporting Limit

1. Measured oxidation reduction potential (ORP) converted to redox potential (Eh) by adding 200 mV.
2. [Mn^{4+}] calculated assuming MnO_2 (pyrolusite) equilibrium.
2. [Fe^{3+}] calculated assuming Fe_2O_3 (hematite) equilibrium.

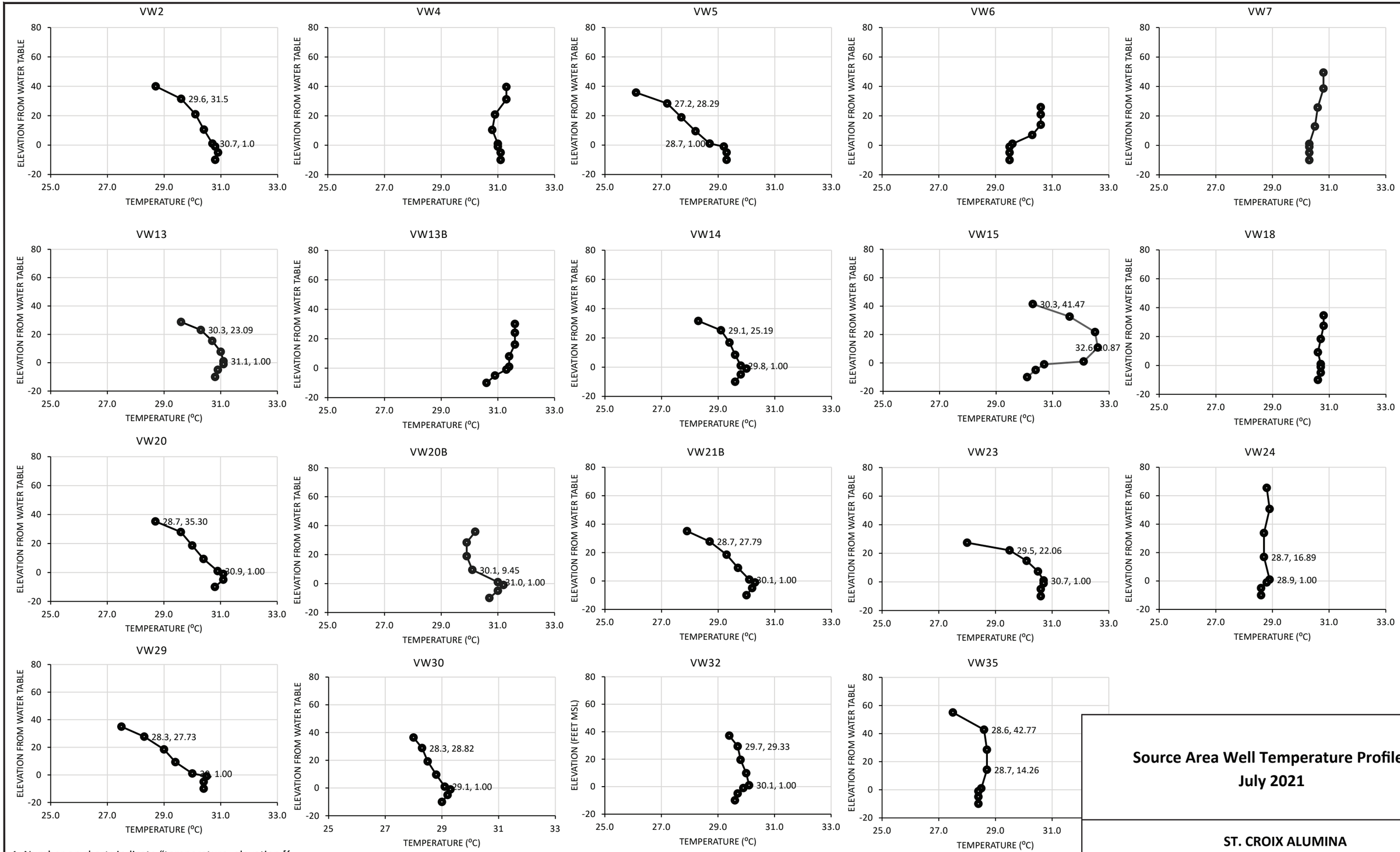
Measured versus Calculated Redox Potential (Eh)
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 8B

Developed by Andrew Fowler, EHS Support LLC



1. Number on charts indicate "temperature, elevation [ft msl] at specified point.
2. Specified points are used in temperature gradient NSZD calculations.
3. Charts without listed points are not used in NSZD calculations.
4. Elevations are in feet relative to the water table.

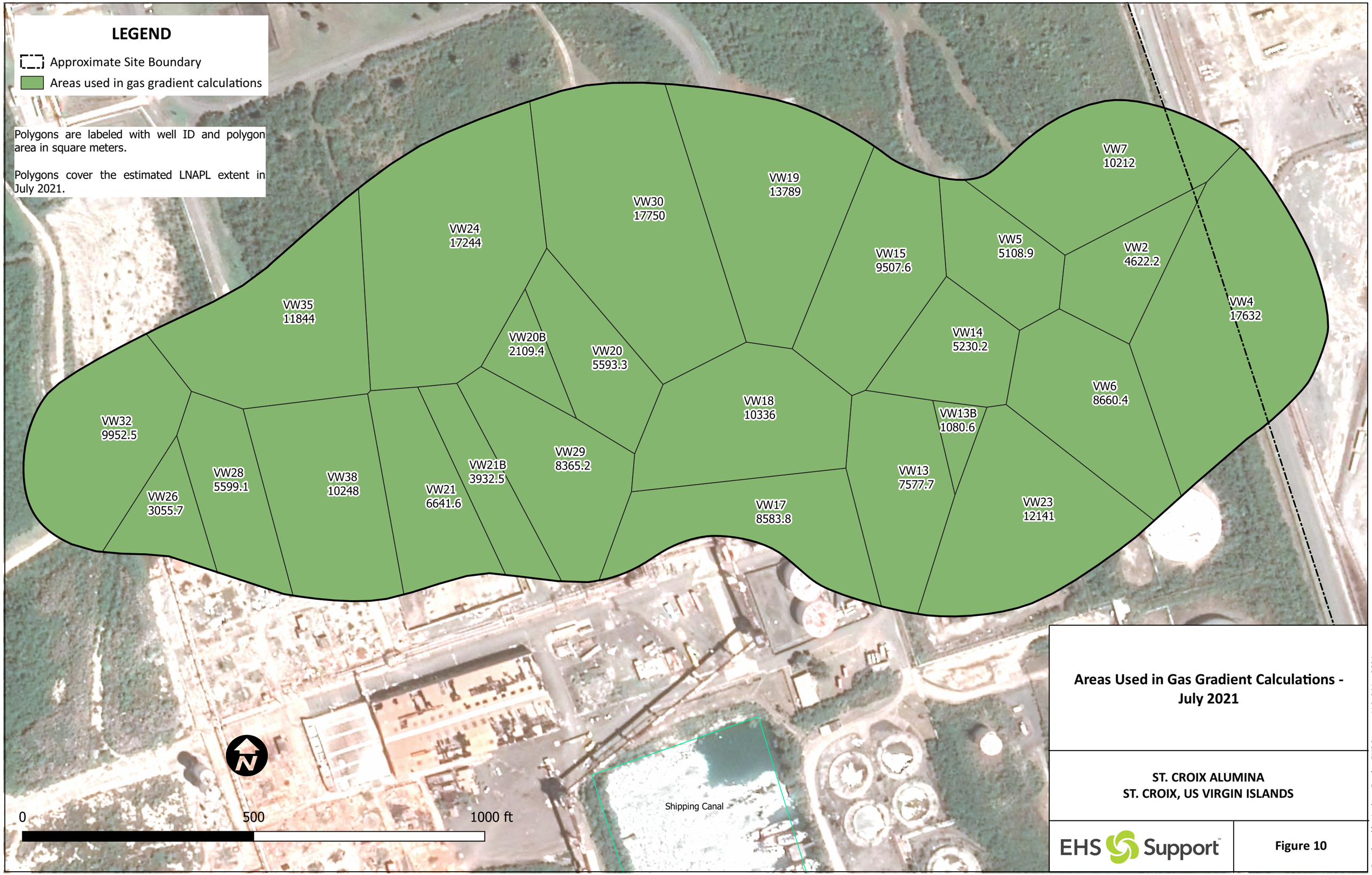
Source Area Well Temperature Profiles
July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 9

Developed by Andrew Fowler, EHS Support LLC



Areas Used in Gas Gradient Calculations - July 2021

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 10

Developed by Andrew Fowler, EHS Support LLC. 24Aug2021

Proposed LI-COR Sampling Locations

ST. CROIX ALUMINA
ST. CROIX, US VIRGIN ISLANDS

EHS Support

Figure 11

Developed by Andrew Fowler, EHS Support LLC 24Sep2021

Appendix A Instrument Calibration Records

EHS Support

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004 EHS Field Form
PID Instrument Calibration Log

Photoionization Detector or Single Gas Meter	
Project Name	Equipment Type 4 gas Meter
Project Location SCA	Make/Model/Serial No. Eagle 2
Project Number	Page _____ of _____

Calibration	
Calibration Gas Type	Calibration Standard Concentration H_2S 10 ppm CO - 50ppm LEL 2.½% O_2 18%

Date/Time	Calibrated By	Calibration Results Field Instrument Lot # 217894	Comments
7/13	Rex Meyer	Bump 50% LEL on new Gas	Exp Date 5/13/2023
7/14	" "	Cap " "	"

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77
Hs

003 EHS Field Form
Instrument Calibration Log

Multi-Parameter Water Meter

Project Name: ST Croix Acum	Equipment Type: YSI ProDSS
Project Location: ST. Croix	Make/Model/Serial No.: 19J101125 Profession Series
Project Number: 8eA	Page 1 of ____

Calibration Reference Solution

Parameter	Standard	Units	Buffer Expiration Date
pH	4.01	S.U.	1/21/22
	7		3/1/22
	10.01		7/31/21
Conductivity	1409	µmho/cm	12/16/22
ORP			

Date/Time	Calibrated By	Temp	pH Standard 1	pH Standard 2	pH Standard 3	Conductivity	ORP (Redox)	Dissolved Oxygen	Comment
		C°	7	10	4	1409 S/cm	mV	mg/L	
7/12 @ 4:00	Rex Meyer	29.3	6.90 Accepted	9.96 Accepted	4.01 Accepted	1412 accepted		Accepted	19J101125 Run & Rock
7/12 @ 4:40	Rex Meyer	28.4	7.10 Accepted			1409 accepted		Accepted	19B102539 Rod & Aft
7/13 @ 1435	Rex Meyer	31	7.05 Accepted	9.98 Accepted	4.01	1412 accepted		Accept able - cal	Run & Jack
7/13 @ 1450	Rex Meyer	31	7.06 Accepted	9.99 Accept	4.02 Accept	1420 Accepted		Accepted	Rok & Pot

FIELD ENVIRONMENTAL INSTRUMENTS, INC.
www.fieldenvironmental.com

301 Brushton Avenue
Suite A
Pittsburgh PA 15221
800-393-4009 Toll Free
(412) 436-2600 Local
(412) 436-2616 Fax

YSI 6-Series Calibration Certificate

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 7 @ 25^{C}	7003167	3/1/2022	7.15	7.00	(6.86 to 7.14)
			pH mV value	-8.7	(0 mV +/- 50mV)

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 4 @ 25^{C}	7909203	9/1/2021	4.18	4.00	(3.92 to 4.08)
			pH mV value	163.60	(156.3mV to 171.3mV)

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 10 @ 25^{C}	7907178	7/31/2021	9.96	10.00	(9.80 to 10.20)
			pH mV value	-177.70	(-173.7mV to -188.7mV)

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
Conductivity	7906263	6/1/2021	1.317	1.409	(1.338 to 1.479)

Dissolved Oxygen		Pre-Cal Reading	Post-Cal Reading	
	100% Saturation	8.84	9.33	mg/L

Check Standard	Temp °C	Relative Reading	Acceptable Range
ORP	19.9	220.0	(+/- 20mV)
	mV Offset	6.5	(0 +/- 100)

Turbidity	Pre-Cal Reading	Post-Cal Reading
0 NTU	0.0	0.0
124 NTU	110.0	124.0

Model	YSI Pro DSS
Cable Length	4 Meter
Cable SN	20D103895
S/N	U90381X
Barcode	U94767X
Order #	460111

Calibrated By: Roderick Keels

Date of Calibration: 7/2/2021

*Solutions provided by LabChem (412-826-5230)

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.

All calibration solutions used are traceable to NIST. Additional documentation is available upon request.

FIELD ENVIRONMENTAL INSTRUMENTS, INC.

www.fieldenvironmental.com

301 Brushton Ave
Suite A
Pittsburgh, PA 152
Toll Free (800) 39
Local (412) 436-2
Fax (412) 436-26

YSI DO Meter Equipment Check Certificate

	Reading
DO mg/L	8.52
DO % Saturation	100
Temperature	°C 23.3

Model	YSI ODO
S/N	88814
Order #	460111

Calibrated By: Roderick Keels

Date of Calibration: 7/2/2021

Adam McMullin
Al Marshall
Allan Miller
Andrew Merck
Art Kearney
Ashrene Mohammed
Brendan Bride

All calibrations performed by Field Environmental Instruments conform to manufacturer's specifications.
Any problems must be reported to Field Environmental within 24 hours of receiveing equipment.

Appendix B Field Sampling Records

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LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 1125
Initial Water Level: 81 ft
Depth to Product: ft
Total Well Depth: 145.50 ft

Well Identification: MW9
Sample Date: 7-12-21
Field Technician(s):
Inner Casing Diameter (in): 2"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 1130

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	ml L/min	ft	°C / °F	S.U.	µS/cm	NTU	mg/L	mV			
1130	300		30.9	7.72	1.935	5.70	8.02	112.9			
1133			30.0	7.70	1.899	4.30	7.64	118.7			
1136			29.6	7.69	1.899	4.80	7.44	120.8			
1139			29.4	7.68	1.860	4.70	7.37	122.4			
1142			29.3	7.67	1.875	6.09	7.34	125.21			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 1.0 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	1150			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 0855
Initial Water Level: 62.35 ft
Depth to Product: ft
Total Well Depth: 98.95 ft

Well Identification: MMX
Sample Date: 7-12-21
Field Technician(s):
Inner Casing Diameter (in): 6"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 0930

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	mL/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
0956	150		29.8	7.18	1853	12.20	4.31	96.3	NONE	CLEAR	
0959			29.1	7.18	1,835	16.40	4.30	98.1			
1002			28.7	7.17	1,699	16.40	4.14	100.4			
1005			28.7	7.16	1,700	15.70	3.43	101.4			
1008			28.8	7.15	1,873	14.07	3.12	102.4			
1011	150		28.8	7.15	1,825	14.55	2.95	103.9			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 1.5 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	1014			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

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LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: 35.71 ft
Depth to Product: ft
Total Well Depth: 55.90 ft

Well Identification: GM11
Sample Date: 7-12-21
Field Technician(s):
Inner Casing Diameter (in): 2"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 1235

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	mL/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
1240	200		31.6	7.97	6.502	3.09	0.80	-247.0	H_2S	CLEAR	
1243			31.5	7.97	6.475	2.95	0.57	-268.2			
1246			31.4	7.98	6.484	3.09	0.45	-280.7			
1249			31.4	7.98	6.484	2.91	0.35	-290.8			
1252			31.4	7.99	6.497	3.40	0.26	-307.7			
1255			31.4	7.99	6.504	2.70	0.21	-313.4			
1258			31.4	7.99	6.505	2.77	0.20	-319.3			
1301			31.3	8.00	6.493	2.90	0.18	-324.2			
1304			31.3	8.00	6.494	3.01	0.18	-326.2			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	1310			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: ft
Depth to Product: ft
Total Well Depth: 41.90 ft

Well Identification: VW-27
Sample Date: 7-12-21
Field Technician(s):
Inner Casing Diameter (in):
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 1405

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	mL/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
1407	200		33	8.00	3.110	23.50	3.27	13.3	—	CLEAR	
1410			32.3	7.95	3.173	12.14	2.46	3.176			
1413			31.9	7.93	3.146	16.66	2.02	-15.6			
1416			31.8	7.93	3.137	16.00	1.25	-15.7			
1419			31.2	7.92	3.094	15.6	1.27	-17.0			
1422			31.5	7.91	3.051	15.66	1.20	-20.2			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☐ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	~~1400~~			
	1400		FD-01	

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

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LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 1525
Initial Water Level: 29.12 ft
Depth to Product: ____ ft
Total Well Depth: ____ ft

Well Identification: VW-1
Sample Date: 7-12-21
Field Technician(s): ____
Inner Casing Diameter (in): 2"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 1530

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	mL/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
1556	300		31.5	6.98	2.132	533.07	4.80	-61.1			
1559			29.8	6.81	1.985	347.2	1.14	-77.2			
1602			29.7	6.80	1.994	276.5	0.95	-79.0			
1605			29.6	6.80	2.010	218.45	0.92	-79.4			
1608			29.7	6.80	2.023	167.5	0.25	-79.7			
1611			29.6	6.80	2.024	135.14	0.79	-81.5			
1614											

Comments:

End Purge Time: ____
Final Water Level: ____ ft
Total Volume Purged: 1.25 gal

One Well Volume (prior to purging, if applicable): ____ gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth: ____

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	1615			

Gas Concentration in Well: ____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: ____

LOW FLOW GROUNDWATER SAMPLING FORM

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Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: ft
Depth to Product: ft
Total Well Depth: 42.20 ft

Well Identification: VW-25
Sample Date: 7-13-24
Field Technician(s):
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 0650

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	mL/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
0655	200		28.1	7.49	5.782	101.5	4.18	171.2	—		
0658			28.2	7.48	5.823	80.25	3.01	169.7			
0701			28.3	7.49	5.831	65.10	2.50	169.2			
0704			28.4	7.49	5.850	62.21	2.92	169.2			
0707			28.4	7.50	5.850	60.07	5.08	169.3			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 0.25 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	0710			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: ft
Depth to Product: ft
Total Well Depth: 58.35 ft

Well Identification: VW-37
Sample Date: 7-13-21
Field Technician(s):
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 0800

Time	Flow Rate L/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity S/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
0815	200		28.4	7.37	2.237	482.15	5.23	157.3	—	cloudy	
0818			28.3	7.23	2.223	247.82	5.45	164.9			
0821			28.5	7.23	2.230	188.16	5.86	170.3			
0824			28.4	7.23	2.224	202.65	5.79	176.6			
0827			28.4	7.24	2.223	169.00	6.85	181.4			
0830			28.4	7.26	2.215	112.41	7.92	187.6			
0833			28.3	7.50	2.209	217.00	9.35	190.7			
0838			28.8	7.88	2.230	207.95	8.26	193.3			
0841			29.3	7.94	2.243	265.53	8.43	194.8			
0844			29.6	7.59	2.240	189.19	7.76	200.1			
0847			29.5	7.33	2.250	112.65	6.98	205.0			
0850			29.7	7.27	2.261	174.08	6.55	202.3			
0853			29.7	7.25	2.267	194.20	6.30	209.0			
0856			29.8	7.24	2.271	204.65	6.28	211.4			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 2.5 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	0900			
			FD-02	

Gas Concentration in Well: ppm

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: 39.10 ft
Depth to Product: 38.98 ft
Total Well Depth: 46.60 ft

Well Identification: VW-32
Sample Date: 7.13-21
Field Technician(s):
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 1025

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	mL/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
1034	240		30.0	6.98	2.991	32.14	1.16	-269.4			
1037			30.0	6.97	2.991	28.71	1.25	-297.5			
1040			30.1	6.99	3.000	20.98	0.63	-298.2			
1043			30.0	7.00	2.997	20.10	1.06	-300.1			
1046			29.9	7.01	2.735	17.50	0.81	-301.4			
1049			29.9	7.02	2.991	16.92	0.91	-296.0			
1052			29.9	7.03	2.990	15.69	0.83	-296.3			
1055			30.0	7.03	2.993	14.48	0.23	-300.1			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 1.5 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	1100			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

casing inner diameter *(converted to feet)*
of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

LOW FLOW GROUNDWATER SAMPLING FORM

EHS Supp

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: 57.03 ft
Depth to Product: 57.02 ft
Total Well Depth: 64.75 ft

Well Identification: MW-35
Sample Date: 7-13-21
Field Technician(s):
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 1150

Time	Flow Rate mL/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity S/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
1158	200		29.3	6.26	2.848	44.60	2.33	-21.3	PRODUCT	CLEAR	
1201			29.2	6.25	2.849	40.03	2.24	-23.5			
1204			29.1	6.25	2.841	31.89	1.95	-24.9			
1207			29.1	6.25	2.841	31.04	2.07	-25.5			
1210			29.1	6.26	2.832	33.22	1.25	-25.8			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	1215			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

LOW FLOW GROUNDWATER SAMPLING FORM

EHS Supp

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: 38.42 ft
Depth to Product: 37.91 ft
Total Well Depth: 45.40 ft

Well Identification: VW30
Sample Date: 7-13-21
Field Technician(s):
Inner Casing Diameter (in):
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 1256

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	mL/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
1308	240		30.2	6.40	2.547	30.45	2.11	-191.9			
1311			29.9	6.40	2.555	42.71	2.09	-218.4			
1314			29.9	6.40	2.548	45.83	3.01	-221.6			
1317			29.7	6.41	2.541	37.33	3.20	-220.2			
1320			29.7	6.41	2.541	47.15	2.540	-222.8			
1323			29.7	6.42	2.542	48.25	2.518	-221.0			
1326			29.7	6.43	2.541	30.77	2.542	-219.0			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☐ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	1330			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: 37.3 ft
Depth to Product: ft
Total Well Depth: 44.7 ft

Well Identification: VW20
Sample Date: 7-17-21
Field Technician(s):
Inner Casing Diameter (in):
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 0700

Time	Flow Rate mL/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity S/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
0708	240		29.2	6.01	2229	183.00	3.42	-175.1	FOOD	CLEAR	
0711			28.9	6.01	2260	99.40	2.67	-192.8			
0714			28.7	6.17	2290	24.65	4.88	-183.8			
0717			28.6	6.23	2291	25.70	5.66	-185.9			
0720			28.7	6.27	2297	52.35	5.96	-186.3			
0723			28.7	6.27	2299	40.25	6.00	-187.1			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 1 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	0725			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: 37.79 ft
Depth to Product: ft
Total Well Depth: 52.95 ft

Well Identification: VW 20B
Sample Date: 2-14-21
Field Technician(s):
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 0755

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	~~M~~ L/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
0805	220		29.3	6.48	2328	-9.00	1.72	-218.6	PROD	CLEAR	
0808			29.6	6.47	2349	-9.60	1.19	-233.2			
0811			29.7	6.47	2353	-9.88	0.83	-238.0			
0814			29.7	6.47	2348	-12.94	0.25	-240.4			
0817			29.7	6.47	2357	-14.90	0.22	-241.5			
0820			29.6	6.47	2340	57.69	0.29	-242.3			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 1 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	0830			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: 36.95 ft
Depth to Product: 36.97 ft
Total Well Depth: 43.18 ft

Well Identification: PW29
Sample Date: 2-14-21
Field Technician(s):
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 0900

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	mL/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
0909	220		30.0	~~[illegible]~~	1218	52.30	1.40	~~222.1~~	PROD	CLEAR	pH 6.25
0912			30.1	~~[illegible]~~	1226	35.42	1.99	-235.8			
0915			30.0	6.26	1227	96.20	0.92	-237.9			
0918			30.0	6.27	1226	129.50	0.69	-224.5			
0921			30.1	6.27	1226	1350.92	0.25	-239.7			
0924			30.0	6.27	1225	32.52	0.55	-247.5			
0927			30.1	6.27	1225	40.93	0.50	-251.4			
0930			30.1	6.27	1224	48.78	0.47	-252.8			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	0940			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: 37.05 ft
Depth to Product: ft
Total Well Depth: 50.05 ft

Well Identification: UW21B
Sample Date: 7.14.21
Field Technician(s):
Inner Casing Diameter (in): 6"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 0955

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	~~1~~ L/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
1002	300		30.1	6.30	1684	-8.62	1.25	-100.6	PROD	CLEAR	
1005			30.0	6.32	1682	-8.90	0.96	-108.2			
1008			30.0	6.33	1667	-6.56	0.83	-110.0			
1011			30.0	6.33	1640	-6.68	0.76	-112.8			
1014			30.1	6.32	1611	-7.63	0.71	-116.6			
1017			30.0	6.33	1600	-34.02	1.62	-88.9			
1020			30.0	6.32	1563	-36.01	1.46	-94.1			
1023			30.0	6.32	1562	-11.85	0.73	-111.0			
1026			30.0	6.31	1543	-12.95	0.62	-115.6			
1029			30.0	6.31	1522	-13.42	0.63	-112.1			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 1.5 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	1035			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

LOW FLOW GROUNDWATER SAMPLING FORM

EHS Supp

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial):
Initial Water Level: 27.90 ft
Depth to Product: 27.37 ft
Total Well Depth: 32.45 ft

Well Identification: VW-6
Sample Date: 2-14-21
Field Technician(s):
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 1105

Time	Flow Rate L/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity S/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
1115	250		29.3	6.35	2137	6.50	0.58	-244.0	PROD	CLEAR	
1118			29.3	6.36	2170	-6.31	0.39	-257.5			
1121			29.3	6.37	2180	-5.55	0.36	-262.4			
1124			29.3	6.37	2188	-2.23	0.35	-268.8			
1127			29.4	6.38	2213	1.22	0.34	270.3			
1130			29.4	6.39	2220	6.50	0.33	270.9			
1133			29.4	6.39	2235	13.52	0.32	275.6			

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 1 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☒ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
	1135			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

LOW FLOW GROUNDWATER SAMPLING FORM

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Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 7:00
Initial Water Level: 37.57 ft
Depth to Product: 37.72 37.75 ft
Total Well Depth: 45.87 45.87 ft

Well Identification: VW-5
Sample Date: 7/14/2021
Field Technician(s): Josh & Ray
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 7:30

Time	Flow Rate L/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity mS/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
7:30	200	37.57	28.9	6.33	1.751	26.1	1.60	-182.4	HC & H2S	Clear	
7:33	↓		28.8	6.40	1.707	105	1.92	-207.8	"	"	
7:36	↓		28.7	6.41	1.725	53	1.79	-222.1	"	"	
7:39	170		28.8	6.42	1.580	18.9	1.72	-226.6	"	"	
7:42	↓		28.8	6.42	1.585	20.1	1.71	-227.5	"	"	Film in
7:45	↓		28.8	6.43	1.584	19.03	1.70	-227.6	"	"	Bucket

Comments:

End Purge Time: 7:55
Final Water Level: 24.25 ft
Total Volume Purged: gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☐ No
Tubing Inlet Depth: 38

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-5	7:45			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 8:15
Initial Water Level: ~~35.45~~ 29.70 ft
Depth to Product: ~~0.3~~ 0.3 ft
Total Well Depth: 38.40 ft

Well Identification: VW23
Sample Date: 7/14
Field Technician(s): Pat & Josh
Inner Casing Diameter (in): 4
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 8:19

Time	Flow Rate L/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity mS/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
8:20	200	~~35.45~~	29.9	6.74	1.462	193	0.86	-252.6	HC - H2S	Tan	
8:23	200	29.70	30.0	6.66	1.463	185	0.55	-269.1	"	"	
8:26	200		30.0	6.67	1.457	194	2.20	-246.3	"	"	
8:29	200		30.1	6.69	1.598	448	2.23	-237.6	"	"	
8:32			30.1	6.70	1.600	210	2.24	-237.5	"	"	
8:35			30.1	6.70	1.599	207	2.23	-237.5	"	"	
8:38			30.1	6.70	1.600	208	2.24	-237.6	"	"	Film in Bucket
					1.600						

Comments:

End Purge Time: 8:55
Final Water Level: 29.34 ft
Total Volume Purged: 2 1/2 gal

One Well Volume (prior to purging, if applicable): _____ gal
Well Purged Dry? ☐ Yes ☑ No
Tubing Inlet Depth: 37

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW 23	8:40			

Gas Concentration in Well: _____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: [signature]

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LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 9:50
Initial Water Level: 30.42 ft
Depth to Product: 31.78 ft
Total Well Depth: ft

Well Identification: VW-13
Sample Date: 7/14
Field Technician(s): Josh & Ry
Inner Casing Diameter (in):
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time:

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	L/min	ft	°C / °F	S.U.	µS/cm	NTU	mg/L	mV			
9:52	150		31.8	6.63	1.776	121	1.09	-286.1	HC &	H2S	
9:55	↓		31.8	6.62	1.779	346	1.07	-313.4	"	"	
9:58			32.1	6.62	1.783	285	0.99	-318.4	"	"	
10:01			31.8	6.62	1.784	169	0.84	-320.1	"	"	
10:04			31.9	6.62	1.784	167	0.77	-322.2	"	"	
10:07			31.8	6.62	1.786	90.5	0.71	-323.1	"	Black	
10:10	125		31.8	6.62	1.788	67	0.45	-322.1	"	"	Film on H2O

Comments:

End Purge Time: 10:10
Final Water Level: ft
Total Volume Purged: 2 1/2 gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☑ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-13	10:10			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

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LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina

Project Number: SCA

Time (Initial): 11:00 – Pulled Pump 5 feet over

Initial Water Level: _____ ft

Depth to Product: _____ ft

Total Well Depth: _____ ft

Well Identification: VW 13B

Sample Date: 7/14/2021

Field Technician(s): Ray & Josh

Inner Casing Diameter (in): 4

Pump and Tubing Type: Bladder pump, Teflon-lined tubing

Start Purge Time: 11:00

Time	Flow Rate L/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity S/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
11:00	200		30.5	6.93	3.006	372	0.5	-216.1	N/C	Clear	
11:03	200		30.4	6.93	2.820	375	0.3	-217.2	N/C	Clear	
11:06	200		30.4	6.91	2.830	378	0.3	-216.9	"	Clear	
11:09	200		30.4	6.92	2.818	381	0.2	-217.0	"	Clear	
11:12	200		30.5	6.92	2.819	378	0.2	-217.2	"	Clear	
11:15	175		30.5	6.92	2.818	342	0.3	-217.3	"	"	Filter in Bucket

Comments: _____

End Purge Time: 11:20

Final Water Level: _____ ft

Total Volume Purged: 23/4 g gal

One Well Volume (prior to purging, if applicable): _____ gal

Well Purged Dry? ☐ Yes ☑ No

Tubing Inlet Depth: _____

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-13B	11:25			

Gas Concentration in Well: _____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*

L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: _____

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LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 12:05
Initial Water Level: ft
Depth to Product: ft
Total Well Depth: ft

Well Identification: VW 14
Sample Date: 7/14
Field Technician(s): Ron Tech
Inner Casing Diameter (in): 4
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 12:14

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	L/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
12:15	200		33.4	6.96	2377.1	26	1.40	-224.5	HC	Clear	
12:18			32.3	6.30	2306	13	0.52	-243	✓	✓	
12:21	150		32.1	6.76	2360	10.2	0.28	-254	✓	✓	
12:24			32.1	6.75	2366	5.8	0.24	-255	✓	✓	
12:27			32.2	6.75	2369	6.6	0.20	-256	✓	✓	
12:30	150		32.2	6.75	2368	8.7	0.17	-257	✓	✓	
12:30			32.2	6.75	2369	10.16	0.18	-257	✓	✓	

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☑ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-14	12:35			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

777.1
[illegible]

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 13:10
Initial Water Level: 41.89 ft
Depth to Product: 41.91 ft
Total Well Depth: ~~[illegible]~~ 50.53 ft

Well Identification: VW-2
Sample Date: 7/13
Field Technician(s): Ron & Josh
Inner Casing Diameter (in): 2
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time:

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	L/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV	[illegible]		
13:25	200		31.4	6.96	3482	750	6.49	-102.8	~~[illegible]~~ HC	~~[illegible]~~	Brown / Grey
13:28	200		30.9	6.86	3409	495	6.85	-102.4	HC	Brown / Grey	
13:31	200		30.7	6.89	3526	341	6.71	-104.1	"	"	
13:34			30.7	6.91	3512	341	6.71	-104.9	"	"	
13:37			30.7	6.91	3513	341	6.70	-137.5	"	"	
13:40			30.7	6.91	3514	286	6.75	-136.9	"	"	
13:43			30.8	6.89	3515	276	6.78	-111.0	"	"	
13:46			30.7	6.90	3514	170	6.79	-105	"	"	
13:49			30.7	6.89	3513	170	6.80	-105.1	"	"	
13:52			30.7	6.89	3514	131	6.79	-105.1	"	"	

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: 3 gallon gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☑ No
Tubing Inlet Depth: 43

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-2	13:55			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: [signature]

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LOW FLOW GROUNDWATER SAMPLING FORM

776.2 mm Hg

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 11:50
Initial Water Level: 58.66 ft
Depth to Product: 58.3 ft
Total Well Depth: 74.6 ft

Well Identification: VW 24
Sample Date: 7/13/21
Field Technician(s): Rex & Josh
Inner Casing Diameter (in): 4
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 11:55

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	L/min	ft	°C / °F	S.U.	~S/cm	NTU	mg/L	mV			
12:00	250		29.4	6.62	2036	133	1.40	-281.4	HC	Grey	Film on Bucket
12:03	200		29.4	6.60	2044	100.2	1.08	-293.4	HC	"	" + H_2S
12:06	"		29.4	6.60	2041	75.3	0.92	-298.5	"	"	" "
12:09	"		29.1	6.61	2022	42.2	0.49	-304.9	"	"	"
12:12	"		29.1	6.62	2019	42.2	0.47	-304.8	"	"	"
12:15	190		29.2	6.62	2019	42.1	0.43	-305.1	"	"	

Comments:

End Purge Time: 12:40
Final Water Level: 58.9 ft
Total Volume Purged: 3 gallon gal

One Well Volume (prior to purging, if applicable): _____ gal
Well Purged Dry? ☐ Yes ☐ No
Tubing Inlet Depth: _____

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-24	12:20			

Gas Concentration in Well: _____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: [signature]

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LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 10:05
Initial Water Level: 38.33 ft
Depth to Product: 38.30 / Purge @ 40' ft
Total Well Depth: 42.90 ft

Well Identification: VW-31
Sample Date: 7/13/
Field Technician(s): Rex & Josh
Inner Casing Diameter (in): 4
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 9:10

Time	Flow Rate L/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity S/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
10:15	175	38.30	30.6	7.13	4053	88.1	2.17	-263	H_2S	Gray	
10:19			30.1	6.67	3397	61	0.55	-288	✓	✓	
10:22			29.9	6.63	3315	51	0.51	-297.1	✓	✓	
10:25			29.9	6.61	3303	16.4	0.44	-299.9	✓	✓	+ H_2S
10:28			30.1	6.60	3290	12.94	0.40	-305.5	✓	✓	✓
10:31			30.0	6.59	3291	11.21	0.36	-309.1	✓	✓	✓
10:34			30.0	6.59	3290	11.41	0.34	-310.1	✓	✓	✓
10:37			30.0	6.59	3291	11.92	0.34	-310.4	✓	✓	✓

Comments:

End Purge Time: 10:10
Final Water Level: 38.43 ft
Total Volume Purged: 2 1/2 gal

43.95 TD

One Well Volume (prior to purging, if applicable): _____ gal
Well Purged Dry? ☐ Yes ☑ No
Tubing Inlet Depth: 40'

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-31	10:40	10-40	MS/MSD-2	MS/MSD-2

Gas Concentration in Well: _____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: [signature]

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LOW FLOW GROUNDWATER SAMPLING FORM

772.6 mmHg

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 8:20
Initial Water Level: 24.95 ft
Depth to Product: None ft
Total Well Depth: 29.82 ft

Well Identification: GM 22
Sample Date: 7/13/21
Field Technician(s): Rae & Josh
Inner Casing Diameter (in): 2"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 8:40

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	L/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
8:42	100	24.95	29.3	12.27	35,259	222	2.01	-117.8	Earthy	Red	
8:45	100	24.95	29.3	12.28	35,377	196	1.89	-119.8	✓	✓	
8:48	100	24.95	29.4	12.31	35,559	138	1.70	-111.6	✓	✓	
8:51	100	24.95	29.5	12.32	35,620	134	1.42	-114.6	✓	✓	
8:54	✓	✓	29.8	12.32	35,971	152	1.01	-120.9	✓	✓	
8:57	✓	✓	29.7	12.38	36,185	153	1.00	-129.7	✓	✓	
9:00	✓	✓	29.8	12.33	36,250	154	0.99	-130.0	✓	✓	
9:03	✓	✓	29.8	12.33	36,275	155	0.98	-131	✓	✓	
		25.33									

Comments:

End Purge Time: 9:05
Final Water Level: 25.33 ft
Total Volume Purged: 2 1/2 gall gal

One Well Volume (prior to purging, if applicable): _____ gal
Well Purged Dry? ☐ Yes ☑ No
Tubing Inlet Depth: 29'

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
GM 22	9:05			

Gas Concentration in Well: _____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: [signature]

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LOW FLOW GROUNDWATER SAMPLING FORM

277.2 mm/Hg

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 7:29
Initial Water Level: 23.99 ft
Depth to Product: None ft
Total Well Depth: 33.44 ft

Well Identification: VW 34
Sample Date: 7/13/21
Field Technician(s): Rob & Josh
Inner Casing Diameter (in): 4
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 7:30

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	L/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
7/32	150	23.99	28.4	8.85	4304	40.3	2.01	73.8	None	Clear	
7/35	150	23.99	28.3	8.85	4309	40.1	1.36	74.5	None	Clear	
7:38	150	23.99	28.4	8.85	4308	41.0	0.97	72.2	None	Clear	
7:41	150	23.99	28.5	8.85	4307	41.1	0.78	70.0	None	Clear	
7:44	150	23.99	28.4	8.85	4308	41.2	0.76	70.1	"	"	
7:47	150	23.99	28.4	8.85	4305	41.3	0.75	70.0	H_2S	"	
7:50	150	23.99	28.4	8.86	4302	41.2	0.75	-0.1	H_2S	"	
7:53	150	23.99	28.4	8.87	4300	41.1	0.74	-0.2	H_2S	"	
7:54	150	23.99	28.3	8.87	4299	41.2	0.75	-0.2	H_2S	"	

Comments:

End Purge Time: 7:54
Final Water Level: 23.99 ft
Total Volume Purged: 2 1/2 gal gal

One Well Volume (prior to purging, if applicable): _____ gal
Well Purged Dry? ☐ Yes ☐ No
Tubing Inlet Depth: _____

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-34	8:00			

Gas Concentration in Well: _____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: [signature]

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LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 2:45
Initial Water Level: 29.85 ft
Depth to Product: N/A ft
Total Well Depth: 38.40 ft

Well Identification: VW-16
Sample Date: 7/12
Field Technician(s): Rex & Josh Meyer
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 2:50

Time	Flow Rate L/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity S/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
2:50	150	29.85	31.4	7.11	777.4	50.6	2.05	-49.3	None	Clear	Change Pump
2:53			30.7	7.09	777.4	50.1	1.63	-55.9	✓	✓	
2:56			30.6	7.09	777.3	19.1	1.57	-62	✓	✓	
2:59			30.5	7.09	777.3	19.0	1.56	-59.1	✓	✓	
3:02			30.5	7:10	777.4	19.0	1.57	-59.2	✓	✓	
3:05			30.6	7:10	777.5	19.0	1.56	-59.3	✓	✓	
3:08	150		30.7	7:10	777.4	18.0	1.54	-59.0	✓	✓	

Comments: Replaced Pump Bladder - still had Air - Replaced the Pump

End Purge Time: 29.85
Final Water Level: 15:10 ft
Total Volume Purged: 2 1/2 gallon gal

One Well Volume (prior to purging, if applicable): _____ gal
Well Purged Dry? ☐ Yes ☑ No
Tubing Inlet Depth: 34.8

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-16	3:10			

Gas Concentration in Well: _____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: _____

LOW FLOW GROUNDWATER SAMPLING FORM

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Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 13:10
Initial Water Level: 8:56 ft
Depth to Product: N/A ft
Total Well Depth: ft

Well Identification: GM 14
Sample Date: 7/12
Field Technician(s): Josh & Ry
Inner Casing Diameter (in): 2"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 13:33

Time	Flow Rate L/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity S/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
13:15	200	8.56	29.5	6.85	12,964	19.8	0.9	23	None	Clear	
13:18	200	—	29.3	6.83	12,909	28.5	0.7	18	None	Clear	
13:21	200	—	29.3	6.83	12,986	68.1	0.67	16.2	None	Clear	
13:24	200	—	29.3	6.84	12,995	52.1	0.65	15.0	None	Clear	
13:27	200	—	29.3	6.82	13,022	2.20	0.65	14.0	✓	✓	
13:30	200	—	29.3	6.84	12,987	2.3	0.70	13.9	✓	✓	
13:33	✓	—	29.3	6.83	12,990	2.3	0.71	13.4	✓	✓	
13:37	—	—	29.3	6.83	12,930	2.3	0.71	13.3	✓	✓	

Comments:

End Purge Time:
Final Water Level: ft
Total Volume Purged: gal

One Well Volume (prior to purging, if applicable): gal
Well Purged Dry? ☐ Yes ☑ No
Tubing Inlet Depth:

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
GM 14	13:35			

Gas Concentration in Well: ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature:

EHS Supp

LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 11:25
Initial Water Level: 57.39 ft
Depth to Product: None ft
Total Well Depth: 71.4 ft

Well Identification: VW-8
Sample Date: 7/12
Field Technician(s): Josh & Rex
Inner Casing Diameter (in): 4" FG
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 11:25

Time	Flow Rate L/min	Water Level ft	Temp. °C / °F	pH S.U.	Conductivity S/cm	Turbidity NTU	DO mg/L	ORP mV	Odor	Color	Comments
11:26	125	57.39	29.5	6.46	8588	12.8	1.51	13.9	None	Clear	
11:29	125	57.39	29.1	6.54	8334	94.8	1.78	9.0	None	Clear	
11:32	125	57.39	29.1	6.21	8030	39.4	1.64	6.8	None	Clear	
11:35	125	57.39	29.1	6.70	7709	6.88	0.98	8.8	None	Clear	
11:38	125	57.39	29.0	6.76	7350	5.41	1.85	12.6	None	Clear	
11:41	128	58.78	29.1	6.76	7113	22.1	1.77	15.9	None	Clear	
11:44	118	58.78	29.2	6.98	5572	2.4	2.96	11.1	None	Clear	
11:47	118	58.78	29.2	6.96	5883	2.3	0.93	-10.0	None	Clear	
11:50	118	58.78	29.0	6.97	5886	2.2	0.93	-10.1	None	Clear	
11:53	125	58.78	29.1	6.99	5881	2.3	0.93	-10.0	None	Clear	
11:56	125	58.78	29.0	6.99	5858	2.4	0.92	-10.1	None	Clear	
11:59	125	58.78	29.0	6.98	5859	2.4	0.93	-10.0	None	Clear	
12:45	57.57 →										

Comments: 57.57 @ tm

End Purge Time: 12:40
Final Water Level: 57.57 ft
Total Volume Purged: 2½ gal

One Well Volume (prior to purging, if applicable): _____ gal
Well Purged Dry? ☐ Yes ☐ No
Tubing Inlet Depth: 65'

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-8	12:00			

Gas Concentration in Well: _____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: [signature]

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LOW FLOW GROUNDWATER SAMPLING FORM

Project Name: St. Croix Alumina
Project Number: SCA
Time (Initial): 10:50
Initial Water Level: 71.81 ft
Depth to Product: 0 ft
Total Well Depth: 87.9' ft

Well Identification: VW-11
Sample Date: 7/12/2021
Field Technician(s): Rex & Josh Meyer
Inner Casing Diameter (in): 4"
Pump and Tubing Type: Bladder pump, Teflon-lined tubing
Start Purge Time: 10:06

Time	Flow Rate	Water Level	Temp.	pH	Conductivity	Turbidity	DO	ORP	Odor	Color	Comments
	L/min	ft	°C / °F	S.U.	S/cm	NTU	mg/L	mV			
10:06	150	71.81	29.6	8.32	1675	21.9	1.61	86.0	None	Clear	
10:09	150	71.8	29.6	8.31	1674	19.10	1.39	87.0	None	Clear	
10:12	150	71.8	29.6	8.31	1674	19.8	1.24	86.5	None	Clear	
10:15	150	71.8	29.7	8.29	1680	17.8	1.17	85.5	None	Clear	
10:18	150	71.92	29.7	8.28	1679	19.66	1.17	85.7	None	Clear	
10:21	150	71.92	29.7	8.28	1669	19.47	1.18	65.8	None	Clear	
10:24	150	71.92	29.6	8.22	1673	20.01	1.29	65.9	None	Clear	
10:27	150	71.92	29.6	8.21	1669	20.09	1.28	66.1	None	Clear	
10:30	150	71.94	29.6	8.19	1671	20.0	1.30	66.2	None	Clear	

Comments:

End Purge Time: 10:55
Final Water Level: 71.92 ft
Total Volume Purged: 3 1/2 GALLONS gal

One Well Volume (prior to purging, if applicable): _____ gal
Well Purged Dry? ☐ Yes ☐ No
Tubing Inlet Depth: _____

SAMPLE ID	TIME	ANALYSES	QA/QC SAMPLE	REMARKS
VW-11	10:30			

Gas Concentration in Well: _____ ppm

Formula for Calculating Well Casing Volume

$$[A] = \frac{\pi D^2 L}{4} * 7.48 \frac{gal}{ft^3}$$

D = Well casing inner diameter *(converted to feet)*
L = Height of water column (ft)

Parameter	Stabilization Criteria*
Temperature	± 3% of reading (minimum of ± 0.2 C)
pH	+/- 0.1
Specific Conductance	+/- 3%
ORP	+/- 10 millivolts
Dissolved Oxygen	10% for values greater than 0.5 mg/L, if 3 DO values are less than 0.5 mg/L, consider values stabilized.
Turbidity	Not a stabilization criteria; however, the lower the turbidity the better

* - USEPA, 1996 (Puls and Barcelona) Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures

If the field parameters do not stabilize, a groundwater sample will be collected after removal of 1 well volume, or 1 hour, whichever occurs first.

Signature: _____

Appendix C Laboratory Analytical Reports

10450 Stancliff Rd. Suite 210
Houston, TX 77099
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August 16, 2021

Brad Freeman
Geo Monitoring Services
4123 5th Street
Brookshire, TX 77423

Work Order: **HS21070657**

Laboratory Results for: **St. Croix Alumina**

Dear Brad Freeman,

ALS Environmental received 4 sample(s) on Jul 14, 2021 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER

Ragen Giga
Project Manager

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070657

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21070657-01	VW11	Water		12-Jul-2021 10:30	14-Jul-2021 10:05	☐
HS21070657-02	VW8	Water		12-Jul-2021 12:00	14-Jul-2021 10:05	☐
HS21070657-03	GM14	Water		12-Jul-2021 13:35	14-Jul-2021 10:05	☐
HS21070657-04	Trip Blank	Water	CG 061121 -80	12-Jul-2021 00:00	14-Jul-2021 10:05	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070657

CASE NARRATIVE

Work Order Comments

- The analyses for Dissolved Carbon Dioxide were subcontracted to ALS Environmental in Simi Valley, CA.

GC Semivolatiles by Method RSK-175

Batch ID: R387563

Sample ID: VW8 (HS21070657-02MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: VW8 (HS21070657-02MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

GC Semivolatiles by Method SW8015M

Batch ID: 167933

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Semivolatiles by Method SW8270

Batch ID: 168053

Sample ID: LCSD-168053

- The RPD between the LCS and LCSD was outside of the control limit.

Sample ID: HS21070738-06MSD

- MSD is for an unrelated sample

Sample ID: VW8 (HS21070657-02MSD)

- Some surrogates recovered outside control limits for MS/MSD RPD

GCMS Volatiles by Method SW8260

Batch ID: R387955

Sample ID: GM14 (HS21070657-03)

- One or more surrogate recoveries were above the upper control limits. No target analytes were detected in the sample. The high surrogate recoveries did not impact the non-detect results for target analytes.

Batch ID: R387870

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R387764

Sample ID: HS21070720-09MSD

- MSD is for an unrelated sample

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070657

CASE NARRATIVE

Metals by Method SW6020A

Batch ID: 168222

Sample ID: HS21070671-03MS

- MS and MSD are for an unrelated sample

Sample ID: VW8 (HS21070657-02MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Calcium,Magnesium,Sodium)

Sample ID: VW8 (HS21070657-02PDS)

- The PDS recovery was outside method control limits, however the result in the parent sample is greater than 4x the spike amount. (Calcium,Magnesium)

Batch ID: 168296

Sample ID: VW11 (HS21070657-01)

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Wet Chemistry by Method E300

Batch ID: R387531

Sample ID: VW8 (HS21070657-02MS)

- MS/MSD recovered outside control limits for Chloride and Sulfate

Sample ID: VW11 (HS21070657-01MS)

- MS/MSD recovered outside control limits for Chloride and Nitrogen, Nitrate (As N)

WetChemistry by Method SM2320B

Batch ID: R387561

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9060

Batch ID: R387640

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500 S2-F

Batch ID: R387721

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070657

CASE NARRATIVE

WetChemistry by Method E300

Batch ID: R387949

Sample ID: GM14 (HS21070657-03)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrate/Nitrite (as N))

Sample ID: VW11 (HS21070657-01)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrate/Nitrite (as N))

Batch ID: R387531

Sample ID: GM14 (HS21070657-03)

- Sample ran at 5X due to high concentration of Chloride

Sample ID: HS21070672-02MSD

- MSD is for an unrelated sample (Chloride,Sulfate)

Sample ID: VW11 (HS21070657-01)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

Sample ID: VW8 (HS21070657-02)

- Sample ran at 5X due to high concentration of Chloride

WetChemistry by Method SM4500 NH3-B-F

Batch ID: 168470

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M4500 NH3 D

Batch ID: 168464

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW11
Collection Date: 12-Jul-2021 10:30

ANALYTICAL REPORT
WorkOrder:HS21070657
Lab ID:HS21070657-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 18:16
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 18:16
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	20-Jul-2021 18:16
o-Xylene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 18:16
Toluene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 18:16
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 18:16
Surr: 1,2-Dichloroethane-d4	*94.5*			*70-126*	*%REC*	*1*	*20-Jul-2021 18:16*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*20-Jul-2021 18:16*
Surr: Dibromofluoromethane	*96.2*			*77-123*	*%REC*	*1*	*20-Jul-2021 18:16*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*20-Jul-2021 18:16*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0211		0.0211	0.105	ug/L	1	20-Jul-2021 14:55
Surr: 2-Fluorobiphenyl	*119*			*32-130*	*%REC*	*1*	*20-Jul-2021 14:55*
Surr: 4-Terphenyl-d14	*98.6*			*40-135*	*%REC*	*1*	*20-Jul-2021 14:55*
Surr: Nitrobenzene-d5	*71.3*			*45-142*	*%REC*	*1*	*20-Jul-2021 14:55*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1.50**		**0.107**	**0.500**	**ug/L**	1	15-Jul-2021 10:05
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 14-Jul-2021		Analyst: PPM
TPH (Diesel Range)	< 0.021		0.021	0.052	mg/L	1	16-Jul-2021 16:53
Surr: 2-Fluorobiphenyl	*75.0*			*60-135*	*%REC*	*1*	*16-Jul-2021 16:53*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 22-Jul-2021		Analyst: JHD
Calcium	**9.36**		**0.0340**	**0.500**	**mg/L**	1	23-Jul-2021 15:13
Iron	**4.32**		**0.0120**	**0.200**	**mg/L**	1	23-Jul-2021 15:13
Magnesium	**8.34**		**0.0100**	**0.200**	**mg/L**	1	23-Jul-2021 15:13
Manganese	**0.110**		**0.000700**	**0.00500**	**mg/L**	1	23-Jul-2021 15:13
Potassium	**7.97**		**0.0180**	**0.200**	**mg/L**	1	23-Jul-2021 15:13
Sodium	**419**		**0.280**	**4.00**	**mg/L**	20	26-Jul-2021 12:26
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 23-Jul-2021		Analyst: JC
Iron	< 0.0120		0.0120	0.200	mg/L	1	23-Jul-2021 20:56
Manganese	**0.0232**		**0.000700**	**0.00500**	**mg/L**	1	23-Jul-2021 20:56
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**193**		**2.00**	**5.00**	**mg/L**	10	14-Jul-2021 18:20
Nitrogen, Nitrate (As N)	**11.7**	H	**0.0300**	**0.100**	**mg/L**	1	14-Jul-2021 12:37
Nitrogen, Nitrite (As N)	< 0.0300	H	0.0300	0.100	mg/L	1	14-Jul-2021 12:37
Sulfate	**69.0**		**0.200**	**0.500**	**mg/L**	1	14-Jul-2021 12:37
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	**11.8**		**0.150**	**1.00**	**mg/L**	5	22-Jul-2021 00:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070657
Sample ID:	VW11	Lab ID:HS21070657-01
Collection Date:	12-Jul-2021 10:30	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 27-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**0.36**	J	**0.10**	**0.50**	**mg/L**	1	28-Jul-2021 15:34
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**645**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 03:10
Alkalinity, Carbonate (As CaCO3)	**23.0**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 03:10
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 03:10
Alkalinity, Total (As CaCO3)	**668**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 03:10
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 27-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	< 0.025		0.025	0.050	mg/L	1	27-Jul-2021 18:30
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**1.33**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 05:10
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW8
Collection Date: 12-Jul-2021 12:00

ANALYTICAL REPORT
WorkOrder:HS21070657
Lab ID:HS21070657-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 16:03
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 16:03
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	20-Jul-2021 16:03
o-Xylene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 16:03
Toluene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 16:03
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 16:03
Surr: 1,2-Dichloroethane-d4	*95.2*			*70-126*	*%REC*	*1*	*20-Jul-2021 16:03*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*20-Jul-2021 16:03*
Surr: Dibromofluoromethane	*95.4*			*77-123*	*%REC*	*1*	*20-Jul-2021 16:03*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*20-Jul-2021 16:03*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0212		0.0212	0.106	ug/L	1	20-Jul-2021 15:15
Surr: 2-Fluorobiphenyl	*70.0*			*32-130*	*%REC*	*1*	*20-Jul-2021 15:15*
Surr: 4-Terphenyl-d14	*95.4*			*40-135*	*%REC*	*1*	*20-Jul-2021 15:15*
Surr: Nitrobenzene-d5	*90.6*			*45-142*	*%REC*	*1*	*20-Jul-2021 15:15*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1.13**		**0.107**	**0.500**	**ug/L**	1	15-Jul-2021 10:13
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 14-Jul-2021		Analyst: PPM
TPH (Diesel Range)	< 0.021		0.021	0.052	mg/L	1	16-Jul-2021 17:22
Surr: 2-Fluorobiphenyl	*70.4*			*60-135*	*%REC*	*1*	*16-Jul-2021 17:22*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 22-Jul-2021		Analyst: JHD
Calcium	**92.9**		**0.0340**	**0.500**	**mg/L**	1	23-Jul-2021 15:15
Iron	**0.606**		**0.0120**	**0.200**	**mg/L**	1	23-Jul-2021 15:15
Magnesium	**61.9**		**0.0100**	**0.200**	**mg/L**	1	23-Jul-2021 15:15
Manganese	**0.0765**		**0.000700**	**0.00500**	**mg/L**	1	23-Jul-2021 15:15
Potassium	**14.7**		**0.0180**	**0.200**	**mg/L**	1	23-Jul-2021 15:15
Sodium	**891**		**0.700**	**10.0**	**mg/L**	50	26-Jul-2021 12:28
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 23-Jul-2021		Analyst: JC
Iron	**0.401**		**0.0120**	**0.200**	**mg/L**	1	23-Jul-2021 19:58
Manganese	**0.0706**		**0.000700**	**0.00500**	**mg/L**	1	23-Jul-2021 19:58
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**1,240**		**10.0**	**25.0**	**mg/L**	50	14-Jul-2021 13:18
Nitrogen, Nitrate (As N)	**10.1**		**0.150**	**0.500**	**mg/L**	5	14-Jul-2021 11:36
Nitrogen, Nitrite (As N)	< 0.150		0.150	0.500	mg/L	5	14-Jul-2021 11:36
Sulfate	**276**		**1.00**	**2.50**	**mg/L**	5	14-Jul-2021 11:36
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 27-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**0.30**	J	**0.10**	**0.50**	**mg/L**	1	28-Jul-2021 15:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070657
Sample ID:	VW8	Lab ID:HS21070657-02
Collection Date:	12-Jul-2021 12:00	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**565**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 02:54
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 02:54
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 02:54
Alkalinity, Total (As CaCO3)	**565**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 02:54
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 27-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	< 0.025		0.025	0.050	mg/L	1	27-Jul-2021 18:30
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**1.44**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 05:26
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: GM14
Collection Date: 12-Jul-2021 13:35

ANALYTICAL REPORT
WorkOrder:HS21070657
Lab ID:HS21070657-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	21-Jul-2021 17:31
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	21-Jul-2021 17:31
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	21-Jul-2021 17:31
o-Xylene	< 0.30		0.30	1.0	ug/L	1	21-Jul-2021 17:31
Toluene	< 0.20		0.20	1.0	ug/L	1	21-Jul-2021 17:31
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	21-Jul-2021 17:31
Surr: 1,2-Dichloroethane-d4	*95.7*			*70-126*	*%REC*	*1*	*21-Jul-2021 17:31*
Surr: 4-Bromofluorobenzene	*105*			*81-113*	*%REC*	*1*	*21-Jul-2021 17:31*
Surr: Dibromofluoromethane	*94.4*			*77-123*	*%REC*	*1*	*21-Jul-2021 17:31*
Surr: Toluene-d8	*156*	*S*		*82-127*	*%REC*	*1*	*21-Jul-2021 17:31*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0205		0.0205	0.103	ug/L	1	20-Jul-2021 16:14
Surr: 2-Fluorobiphenyl	*66.5*			*32-130*	*%REC*	*1*	*20-Jul-2021 16:14*
Surr: 4-Terphenyl-d14	*88.5*			*40-135*	*%REC*	*1*	*20-Jul-2021 16:14*
Surr: Nitrobenzene-d5	*119*			*45-142*	*%REC*	*1*	*20-Jul-2021 16:14*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**2.14**		**0.107**	**0.500**	**ug/L**	1	15-Jul-2021 10:55
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 14-Jul-2021		Analyst: PPM
TPH (Diesel Range)	< 0.020		0.020	0.051	mg/L	1	16-Jul-2021 18:49
Surr: 2-Fluorobiphenyl	*83.0*			*60-135*	*%REC*	*1*	*16-Jul-2021 18:49*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 22-Jul-2021		Analyst: JHD
Calcium	**216**		**0.680**	**10.0**	**mg/L**	20	26-Jul-2021 12:37
Iron	**0.378**		**0.0120**	**0.200**	**mg/L**	1	23-Jul-2021 15:41
Magnesium	**209**		**0.200**	**4.00**	**mg/L**	20	26-Jul-2021 12:37
Manganese	**0.502**		**0.000700**	**0.00500**	**mg/L**	1	23-Jul-2021 15:41
Potassium	**14.0**		**0.0180**	**0.200**	**mg/L**	1	23-Jul-2021 15:41
Sodium	**2,640**		**0.280**	**4.00**	**mg/L**	20	26-Jul-2021 12:37
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 23-Jul-2021		Analyst: JC
Iron	**0.0648**	J	**0.0120**	**0.200**	**mg/L**	1	23-Jul-2021 20:58
Manganese	**0.380**		**0.000700**	**0.00500**	**mg/L**	1	23-Jul-2021 20:58
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**4,180**		**40.0**	**100**	**mg/L**	200	14-Jul-2021 18:50
Nitrogen, Nitrate (As N)	< 0.150		0.150	0.500	mg/L	5	14-Jul-2021 12:12
Nitrogen, Nitrite (As N)	< 0.150		0.150	0.500	mg/L	5	14-Jul-2021 12:12
Sulfate	**1,050**		**40.0**	**100**	**mg/L**	200	14-Jul-2021 18:50
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	22-Jul-2021 00:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070657
Sample ID:	GM14		Lab ID:HS21070657-03
Collection Date:	12-Jul-2021 13:35		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 27-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**0.75**		**0.10**	**0.50**	**mg/L**	1	28-Jul-2021 15:34
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**649**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 03:39
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 03:39
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 03:39
Alkalinity, Total (As CaCO3)	**649**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 03:39
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 27-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**0.26**		**0.025**	**0.050**	**mg/L**	1	27-Jul-2021 18:30
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**3.51**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 06:27
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070657
Sample ID:	Trip Blank	Lab ID:HS21070657-04
Collection Date:	12-Jul-2021 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 04:26
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 04:26
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	20-Jul-2021 04:26
o-Xylene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 04:26
Toluene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 04:26
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 04:26
Surr: 1,2-Dichloroethane-d4	*97.9*			*70-126*	*%REC*	*1*	*20-Jul-2021 04:26*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*20-Jul-2021 04:26*
Surr: Dibromofluoromethane	*98.2*			*77-123*	*%REC*	*1*	*20-Jul-2021 04:26*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*20-Jul-2021 04:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

Batch ID: 167933 **Start Date:** 14 Jul 2021 12:38 **End Date:** 15 Jul 2021 15:00
Method: SW3511 **Prep Code:** 3511_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070657-01		31.82 (mL)	2 (mL)	0.06285	40 mL Amber
HS21070657-02		31.79 (mL)	2 (mL)	0.06291	40 mL Amber
HS21070657-03		32.22 (mL)	2 (mL)	0.06207	40 mL Amber

Batch ID: 168053 **Start Date:** 19 Jul 2021 08:49 **End Date:** 19 Jul 2021 14:30
Method: SW3511 **Prep Code:** 3511_PAH

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070657-01	1	31.29 (mL)	2 (mL)	0.06392	40 mL Amber
HS21070657-02	1	31.14 (mL)	2 (mL)	0.06423	40 mL Amber
HS21070657-03	1	32.16 (mL)	2 (mL)	0.06219	40 mL Amber

Batch ID: 168222 **Start Date:** 22 Jul 2021 09:30 **End Date:** 22 Jul 2021 13:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070657-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070657-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070657-03		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 168296 **Start Date:** 23 Jul 2021 12:00 **End Date:** 23 Jul 2021 15:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070657-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070657-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070657-03		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 168464 **Start Date:** 27 Jul 2021 11:00 **End Date:** 27 Jul 2021 15:30
Method: TKN WATER - PREP **Prep Code:** TKN_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070657-01		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070657-02		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070657-03		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2

Batch ID: 168470 **Start Date:** 27 Jul 2021 14:00 **End Date:** 27 Jul 2021 16:30
Method: NITROGEN AMMONIA - WATER - PREP **Prep Code:** NIT_AMM_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070657-01		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070657-02		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070657-03		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 167933 (0)	**Test Name :** TPH DRO/ORO BY SW8015C				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30		14 Jul 2021 12:38	16 Jul 2021 16:53	1
HS21070657-02	VW8	12 Jul 2021 12:00		14 Jul 2021 12:38	16 Jul 2021 17:22	1
HS21070657-03	GM14	12 Jul 2021 13:35		14 Jul 2021 12:38	16 Jul 2021 18:49	1
Batch ID: 168053 (0)	**Test Name :** LOW-LEVEL PAHS - 8270D				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30		19 Jul 2021 08:49	20 Jul 2021 14:55	1
HS21070657-02	VW8	12 Jul 2021 12:00		19 Jul 2021 08:49	20 Jul 2021 15:15	1
HS21070657-03	GM14	12 Jul 2021 13:35		19 Jul 2021 08:49	20 Jul 2021 16:14	1
Batch ID: 168222 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30		22 Jul 2021 13:30	26 Jul 2021 12:26	20
HS21070657-01	VW11	12 Jul 2021 10:30		22 Jul 2021 13:30	23 Jul 2021 15:13	1
HS21070657-02	VW8	12 Jul 2021 12:00		22 Jul 2021 13:30	26 Jul 2021 12:28	50
HS21070657-02	VW8	12 Jul 2021 12:00		22 Jul 2021 13:30	23 Jul 2021 15:15	1
HS21070657-03	GM14	12 Jul 2021 13:35		22 Jul 2021 13:30	26 Jul 2021 12:37	20
HS21070657-03	GM14	12 Jul 2021 13:35		22 Jul 2021 13:30	23 Jul 2021 15:41	1
Batch ID: 168296 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30		23 Jul 2021 15:00	23 Jul 2021 20:56	1
HS21070657-02	VW8	12 Jul 2021 12:00		23 Jul 2021 15:00	23 Jul 2021 19:58	1
HS21070657-03	GM14	12 Jul 2021 13:35		23 Jul 2021 15:00	23 Jul 2021 20:58	1
Batch ID: 168464 (0)	**Test Name :** TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30		27 Jul 2021 11:00	28 Jul 2021 15:34	1
HS21070657-02	VW8	12 Jul 2021 12:00		27 Jul 2021 11:00	28 Jul 2021 15:34	1
HS21070657-03	GM14	12 Jul 2021 13:35		27 Jul 2021 11:00	28 Jul 2021 15:34	1
Batch ID: 168470 (0)	**Test Name :** AMMONIA AS N BY SM4500 NH3-B-F-2011				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30		27 Jul 2021 14:00	27 Jul 2021 18:30	1
HS21070657-02	VW8	12 Jul 2021 12:00		27 Jul 2021 14:00	27 Jul 2021 18:30	1
HS21070657-03	GM14	12 Jul 2021 13:35		27 Jul 2021 14:00	27 Jul 2021 18:30	1
Batch ID: R387531 (0)	**Test Name :** ANIONS BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30			14 Jul 2021 18:20	10
HS21070657-01	VW11	12 Jul 2021 10:30			14 Jul 2021 12:37	1
HS21070657-02	VW8	12 Jul 2021 12:00			14 Jul 2021 13:18	50
HS21070657-02	VW8	12 Jul 2021 12:00			14 Jul 2021 11:36	5
HS21070657-03	GM14	12 Jul 2021 13:35			14 Jul 2021 18:50	200
HS21070657-03	GM14	12 Jul 2021 13:35			14 Jul 2021 12:12	5

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R387561 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30			16 Jul 2021 03:10	1
HS21070657-02	VW8	12 Jul 2021 12:00			16 Jul 2021 02:54	1
HS21070657-03	GM14	12 Jul 2021 13:35			16 Jul 2021 03:39	1
Batch ID: R387563 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30			15 Jul 2021 10:05	1
HS21070657-02	VW8	12 Jul 2021 12:00			15 Jul 2021 10:13	1
HS21070657-03	GM14	12 Jul 2021 13:35			15 Jul 2021 10:55	1
Batch ID: R387640 (0)	**Test Name :** DISSOLVED ORGANIC CARBON BY SW9060A				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30			17 Jul 2021 05:10	1
HS21070657-02	VW8	12 Jul 2021 12:00			17 Jul 2021 05:26	1
HS21070657-03	GM14	12 Jul 2021 13:35			17 Jul 2021 06:27	1
Batch ID: R387721 (0)	**Test Name :** SULFIDE BY SM4500 S2-F-2011				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30			19 Jul 2021 12:00	1
HS21070657-02	VW8	12 Jul 2021 12:00			19 Jul 2021 12:00	1
HS21070657-03	GM14	12 Jul 2021 13:35			19 Jul 2021 12:00	1
Batch ID: R387764 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070657-04	Trip Blank	12 Jul 2021 00:00			20 Jul 2021 04:26	1
Batch ID: R387870 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30			20 Jul 2021 18:16	1
HS21070657-02	VW8	12 Jul 2021 12:00			20 Jul 2021 16:03	1
Batch ID: R387949 (0)	**Test Name :** NITRATE/NITRITE BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30			22 Jul 2021 00:00	5
HS21070657-03	GM14	12 Jul 2021 13:35			22 Jul 2021 00:22	5
Batch ID: R387955 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070657-03	GM14	12 Jul 2021 13:35			21 Jul 2021 17:31	1
Batch ID: R389567 (0)	**Test Name :** SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE				**Matrix:** Water	
HS21070657-01	VW11	12 Jul 2021 10:30			16 Aug 2021 15:24	1
HS21070657-02	VW8	12 Jul 2021 12:00			16 Aug 2021 15:24	1
HS21070657-03	GM14	12 Jul 2021 13:35			16 Aug 2021 15:24	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 167933 (0) **Instrument: FID-16** **Method: TPH DRO/ORO BY SW8015C**

MBLK Sample ID: **MBLK-167933** Units: **mg/L** Analysis Date: **16-Jul-2021 15:38**
Client ID: Run ID: **FID-16_388218** SeqNo: **6199969** PrepDate: **14-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	< 0.021	0.054								
Surr: 2-Fluorobiphenyl	*0.05234*	*0.0054*	*0.06439*	*0*	*81.3*	*60 - 135*				

LCS Sample ID: **LCS-167933** Units: **mg/L** Analysis Date: **16-Jul-2021 16:07**
Client ID: Run ID: **FID-16_388218** SeqNo: **6199970** PrepDate: **14-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6304	0.053	0.6408	0	98.4	70 - 130				
Surr: 2-Fluorobiphenyl	*0.07005*	*0.0053*	*0.06408*	*0*	*109*	*60 - 135*				

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **16-Jul-2021 17:51**
Client ID: **VW8** Run ID: **FID-16_388218** SeqNo: **6199973** PrepDate: **14-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6463	0.052	0.6219	0	104	70 - 130				
Surr: 2-Fluorobiphenyl	*0.06432*	*0.0052*	*0.06219*	*0*	*103*	*60 - 135*				

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **16-Jul-2021 18:20**
Client ID: **VW8** Run ID: **FID-16_388218** SeqNo: **6199974** PrepDate: **14-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.648	0.053	0.6316	0	103	70 - 130	0.6463	0.257	20	
Surr: 2-Fluorobiphenyl	*0.06404*	*0.0053*	*0.06316*	*0*	*101*	*60 - 135*	*0.06432*	*0.44*	*20*	

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387563 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MBLK Sample ID: **MBLK-210715** Units: **ug/L** Analysis Date: **15-Jul-2021 09:42**
Client ID: Run ID: **FID-4_387563** SeqNo: **6192191** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	< 0.107	0.500								

LCS Sample ID: **LCS-210715** Units: **ug/L** Analysis Date: **15-Jul-2021 09:51**
Client ID: Run ID: **FID-4_387563** SeqNo: **6192192** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	8.847	0.500	9.647	0	91.7	75 - 125				

MS Sample ID: **HS21070657-02MS** Units: **ug/L** Analysis Date: **15-Jul-2021 10:22**
Client ID: **VW8** Run ID: **FID-4_387563** SeqNo: **6192195** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	5.149	0.500	9.647	1.132	41.6	75 - 125				S

MSD Sample ID: **HS21070657-02MSD** Units: **ug/L** Analysis Date: **15-Jul-2021 10:45**
Client ID: **VW8** Run ID: **FID-4_387563** SeqNo: **6192196** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	5.745	0.500	9.647	1.132	47.8	75 - 125	5.149	10.9	30	S

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 168222 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-168222** Units: **mg/L** Analysis Date: **23-Jul-2021 15:09**
Client ID: Run ID: **ICPMS06_388101** SeqNo: **6197579** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	< 0.0340	0.500								
Iron	0.01235	0.200								J
Magnesium	0.01506	0.200								J
Manganese	< 0.000700	0.00500								
Potassium	< 0.0180	0.200								
Sodium	0.01876	0.200								J

LCS Sample ID: **LCS-168222** Units: **mg/L** Analysis Date: **23-Jul-2021 15:11**
Client ID: Run ID: **ICPMS06_388101** SeqNo: **6197580** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	4.798	0.500	5	0	96.0	80 - 120				
Iron	4.843	0.200	5	0	96.9	80 - 120				
Magnesium	4.99	0.200	5	0	99.8	80 - 120				
Manganese	0.0472	0.00500	0.05	0	94.4	80 - 120				
Potassium	5.088	0.200	5	0	102	80 - 120				
Sodium	4.947	0.200	5	0	98.9	80 - 120				

MS Sample ID: **HS21070671-03MS** Units: **mg/L** Analysis Date: **23-Jul-2021 15:50**
Client ID: Run ID: **ICPMS06_388101** SeqNo: **6197593** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	175.5	0.500	5	175.8	-6.35	80 - 120				SO
Iron	5.808	0.200	5	1.267	90.8	80 - 120				
Magnesium	21.64	0.200	5	17.65	79.8	80 - 120				S
Manganese	0.9203	0.00500	0.05	0.8991	42.3	80 - 120				SO
Potassium	5.951	0.200	5	1.2	95.0	80 - 120				
Sodium	63.25	0.200	5	61.41	36.8	80 - 120				SO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 168222 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **23-Jul-2021 15:19**
Client ID: **VW8** Run ID: **ICPMS06_388101** SeqNo: **6197584** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	95.8	0.500	5	92.86	58.8	80 - 120				SO
Iron	5.101	0.200	5	0.6058	89.9	80 - 120				
Magnesium	65.88	0.200	5	61.94	78.9	80 - 120				SO
Manganese	0.1189	0.00500	0.05	0.07645	84.9	80 - 120				
Potassium	19.18	0.200	5	14.75	88.6	80 - 120				
Sodium	801.5	0.200	5	817.1	-313	80 - 120				SEO

MSD Sample ID: **HS21070671-03MSD** Units: **mg/L** Analysis Date: **23-Jul-2021 15:52**
Client ID: Run ID: **ICPMS06_388101** SeqNo: **6197594** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	177.9	0.500	5	175.8	42.7	80 - 120	175.5	1.39	20	SO
Iron	5.862	0.200	5	1.267	91.9	80 - 120	5.808	0.93	20	
Magnesium	21.91	0.200	5	17.65	85.1	80 - 120	21.64	1.23	20	
Manganese	0.9261	0.00500	0.05	0.8991	53.9	80 - 120	0.9203	0.629	20	SO
Potassium	5.91	0.200	5	1.2	94.2	80 - 120	5.951	0.684	20	
Sodium	64.78	0.200	5	61.41	67.4	80 - 120	63.25	2.39	20	SO

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **23-Jul-2021 15:21**
Client ID: **VW8** Run ID: **ICPMS06_388101** SeqNo: **6197585** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	96.51	0.500	5	92.86	73.0	80 - 120	95.8	0.739	20	SO
Iron	5.18	0.200	5	0.6058	91.5	80 - 120	5.101	1.54	20	
Magnesium	67.18	0.200	5	61.94	105	80 - 120	65.88	1.94	20	O
Manganese	0.1203	0.00500	0.05	0.07645	87.7	80 - 120	0.1189	1.19	20	
Potassium	19.36	0.200	5	14.75	92.3	80 - 120	19.18	0.973	20	
Sodium	811.9	0.200	5	817.1	-105	80 - 120	801.5	1.29	20	SEO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 168222 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS21070671-03PDS** Units: **mg/L** Analysis Date: **23-Jul-2021 15:54**
Client ID: Run ID: **ICPMS06_388101** SeqNo: **6197595** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	176.1	0.500	10	175.8	3.47	75 - 125				SO
Iron	11.67	0.200	10	1.267	104	75 - 125				
Magnesium	27.32	0.200	10	17.65	96.7	75 - 125				
Manganese	0.9635	0.00500	0.1	0.8991	64.5	75 - 125				SO
Potassium	11.84	0.200	10	1.2	106	75 - 125				
Sodium	68.51	0.200	10	61.41	71.0	75 - 125				SO

PDS Sample ID: **HS21070657-02PDS** Units: **mg/L** Analysis Date: **23-Jul-2021 15:23**
Client ID: **VW8** Run ID: **ICPMS06_388101** SeqNo: **6197586** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	105.9	0.500	10	92.86	131	75 - 125				SO
Magnesium	74.89	0.200	10	61.94	130	75 - 125				SO
Manganese	0.2001	0.00500	0.1	0.07645	124	75 - 125				

PDS Sample ID: **HS21070657-02PDS** Units: **mg/L** Analysis Date: **26-Jul-2021 12:32**
Client ID: **VW8** Run ID: **ICPMS06_388182** SeqNo: **6199006** PrepDate: **22-Jul-2021** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	1410	10.0	500	890.7	104	75 - 125				

SD Sample ID: **HS21070671-03SD** Units: **mg/L** Analysis Date: **23-Jul-2021 15:43**
Client ID: Run ID: **ICPMS06_388101** SeqNo: **6197591** PrepDate: **22-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	191.8	2.50					175.8	9.11	10	
Iron	1.378	1.00					1.267	8.8	10	
Magnesium	18.93	1.00					17.65	7.25	10	
Manganese	0.9444	0.0250					0.8991	5.04	10	
Sodium	67.14	1.00					61.41	9.33	10	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: **168222 (0)** **Instrument:** **ICPMS06** **Method:** **ICP-MS METALS BY SW6020A**

SD Sample ID: **HS21070657-02SD** Units: **mg/L** Analysis Date: **23-Jul-2021 15:17**
Client ID: **VW8** Run ID: **ICPMS06_388101** SeqNo: **6197583** PrepDate: **22-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	93.94	2.50					92.86	1.15	10	
Iron	0.6241	1.00					0.6058	0	10	J
Magnesium	63.59	1.00					61.94	2.65	10	
Manganese	0.07966	0.0250					0.07645	4.2	10	
Potassium	15.4	1.00					14.75	4.43	10	

SD Sample ID: **HS21070657-02SD** Units: **mg/L** Analysis Date: **26-Jul-2021 12:30**
Client ID: **VW8** Run ID: **ICPMS06_388182** SeqNo: **6199005** PrepDate: **22-Jul-2021** DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	960.6	50.0					890.7	7.85	10	

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 168296 (0) **Instrument:** ICPMS05 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLKF1-168296** Units: **mg/L** Analysis Date: **23-Jul-2021 19:54**
Client ID: Run ID: **ICPMS05_388081** SeqNo: **6197760** PrepDate: **23-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	< 0.0120	0.200								
Manganese	< 0.000700	0.00500								

MBLK Sample ID: **MBLK-168296** Units: **mg/L** Analysis Date: **23-Jul-2021 19:52**
Client ID: Run ID: **ICPMS05_388081** SeqNo: **6197759** PrepDate: **23-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	< 0.0120	0.200								
Manganese	< 0.000700	0.00500								

LCS Sample ID: **LCS-168296** Units: **mg/L** Analysis Date: **23-Jul-2021 19:56**
Client ID: Run ID: **ICPMS05_388081** SeqNo: **6197761** PrepDate: **23-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.716	0.200	5	0	94.3	80 - 120				
Manganese	0.04678	0.00500	0.05	0	93.6	80 - 120				

MS Sample ID: **HS21070779-01MS** Units: **mg/L** Analysis Date: **23-Jul-2021 20:46**
Client ID: Run ID: **ICPMS05_388081** SeqNo: **6197775** PrepDate: **23-Jul-2021** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.714	2.00	5	0.0397	113	75 - 125				
Manganese	0.05654	0.0500	0.05	0.000915	111	75 - 125				

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **23-Jul-2021 20:02**
Client ID: **VW8** Run ID: **ICPMS05_388081** SeqNo: **6197764** PrepDate: **23-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.291	0.200	5	0.4011	97.8	75 - 125				
Manganese	0.119	0.00500	0.05	0.07056	96.9	75 - 125				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 168296 (0) **Instrument:** ICPMS05 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MSD Sample ID: **HS21070779-01MSD** Units: **mg/L** Analysis Date: **23-Jul-2021 20:48**
Client ID: Run ID: **ICPMS05_388081** SeqNo: **6197776** PrepDate: **23-Jul-2021** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.913	2.00	5	0.0397	117	75 - 125	5.714	3.43	20	
Manganese	0.05805	0.0500	0.05	0.000915	114	75 - 125	0.05654	2.64	20	

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **23-Jul-2021 20:04**
Client ID: **VW8** Run ID: **ICPMS05_388081** SeqNo: **6197765** PrepDate: **23-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.304	0.200	5	0.4011	98.1	75 - 125	5.291	0.237	20	
Manganese	0.1185	0.00500	0.05	0.07056	95.8	75 - 125	0.119	0.472	20	

PDS Sample ID: **HS21070779-01PDS** Units: **mg/L** Analysis Date: **23-Jul-2021 20:50**
Client ID: Run ID: **ICPMS05_388081** SeqNo: **6197777** PrepDate: **23-Jul-2021** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	102.7	2.00	100	0	103	75 - 125				
Manganese	1.027	0.0500	1	0	103	75 - 125				

PDS Sample ID: **HS21070657-02PDS** Units: **mg/L** Analysis Date: **23-Jul-2021 20:06**
Client ID: **VW8** Run ID: **ICPMS05_388081** SeqNo: **6197766** PrepDate: **23-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.26	0.200	10	0.4011	98.6	75 - 125				
Manganese	0.1651	0.00500	0.1	0.07056	94.5	75 - 125				

SD Sample ID: **HS21070779-01SD** Units: **mg/L** Analysis Date: **23-Jul-2021 20:44**
Client ID: Run ID: **ICPMS05_388081** SeqNo: **6197774** PrepDate: **23-Jul-2021** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	< 0.600	10.0					0.0397	0	10	
Manganese	< 0.0350	0.250					0.000915	0	10	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: **168296 (0)** **Instrument:** **ICPMS05** **Method:** **DISSOLVED METALS BY SW6020A (DISSOLVED)**

SD Sample ID: **HS21070657-02SD** Units: **mg/L** Analysis Date: **23-Jul-2021 20:00**
Client ID: **VW8** Run ID: **ICPMS05_388081** SeqNo: **6197763** PrepDate: **23-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	0.3829	1.00					0.4011	0	10	J
Manganese	0.07085	0.0250					0.07056	0.41	10	

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 168053 (0) **Instrument: SV-6** **Method: LOW-LEVEL PAHS - 8270D**

MBLK Sample ID: **MBLK-168053** Units: **ug/L** Analysis Date: **19-Jul-2021 14:16**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189739** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	< 0.0200	0.100								
Surr: 2-Fluorobiphenyl	*1.904*	*0.100*	*3.03*	*0*	*62.9*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.753*	*0.100*	*3.03*	*0*	*90.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.567*	*0.100*	*3.03*	*0*	*84.7*	*45 - 142*				

LCS Sample ID: **LCS-168053** Units: **ug/L** Analysis Date: **19-Jul-2021 14:36**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189740** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.941	0.100	3.03	0	97.1	40 - 140				
Surr: 2-Fluorobiphenyl	*3.897*	*0.100*	*3.03*	*0*	*129*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.459*	*0.100*	*3.03*	*0*	*81.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.364*	*0.100*	*3.03*	*0*	*78.0*	*45 - 142*				

LCSD Sample ID: **LCSD-168053** Units: **ug/L** Analysis Date: **19-Jul-2021 14:56**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189741** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.927	0.100	3.03	0	96.6	40 - 140	2.941	0.481	25	
Surr: 2-Fluorobiphenyl	*2.886*	*0.100*	*3.03*	*0*	*95.3*	*32 - 130*	*3.897*	*29.8*	*25*	R
Surr: 4-Terphenyl-d14	*2.837*	*0.100*	*3.03*	*0*	*93.6*	*40 - 135*	*2.459*	*14.3*	*25*	
Surr: Nitrobenzene-d5	*2.239*	*0.100*	*3.03*	*0*	*73.9*	*45 - 142*	*2.364*	*5.43*	*25*	

MS Sample ID: **HS21070738-06MS** Units: **ug/L** Analysis Date: **19-Jul-2021 18:48**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189752** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.864	0.105	3.167	0.3862	78.2	40 - 140				
Surr: 2-Fluorobiphenyl	*2.734*	*0.105*	*3.167*	*0*	*86.3*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.408*	*0.105*	*3.167*	*0*	*76.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.847*	*0.105*	*3.167*	*0*	*89.9*	*45 - 142*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 168053 (0) **Instrument: SV-6** **Method: LOW-LEVEL PAHS - 8270D**

MS Sample ID: **HS21070657-02MS** Units: **ug/L** Analysis Date: **20-Jul-2021 15:35**
Client ID: **VW8** Run ID: **SV-6_387888** SeqNo: **6192655** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.391	0.106	3.201	0	106	40 - 140				
Surr: 2-Fluorobiphenyl	*2.25*	*0.106*	*3.201*	*0*	*70.3*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.912*	*0.106*	*3.201*	*0*	*91.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.537*	*0.106*	*3.201*	*0*	*79.3*	*45 - 142*				

MSD Sample ID: **HS21070738-06MSD** Units: **ug/L** Analysis Date: **19-Jul-2021 19:08**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189753** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.092	0.104	3.14	0.3862	86.2	40 - 140	2.864	7.65	25	
Surr: 2-Fluorobiphenyl	*2.623*	*0.104*	*3.14*	*0*	*83.5*	*32 - 130*	*2.734*	*4.17*	*25*	
Surr: 4-Terphenyl-d14	*3.54*	*0.104*	*3.14*	*0*	*113*	*40 - 135*	*2.408*	*38.1*	*25*	R
Surr: Nitrobenzene-d5	*2.928*	*0.104*	*3.14*	*0*	*93.2*	*45 - 142*	*2.847*	*2.78*	*25*	

MSD Sample ID: **HS21070657-02MSD** Units: **ug/L** Analysis Date: **20-Jul-2021 15:54**
Client ID: **VW8** Run ID: **SV-6_387888** SeqNo: **6192656** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.232	0.107	3.229	0	100	40 - 140	3.391	4.81	25	
Surr: 2-Fluorobiphenyl	*3.747*	*0.107*	*3.229*	*0*	*116*	*32 - 130*	*2.25*	*49.9*	*25*	R
Surr: 4-Terphenyl-d14	*3.148*	*0.107*	*3.229*	*0*	*97.5*	*40 - 135*	*2.912*	*7.79*	*25*	
Surr: Nitrobenzene-d5	*3.81*	*0.107*	*3.229*	*0*	*118*	*45 - 142*	*2.537*	*40.1*	*25*	R

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387764 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210719** Units: **ug/L** Analysis Date: **20-Jul-2021 04:04**
Client ID: Run ID: **VOA4_387764** SeqNo: **6190034** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*48.48*	*1.0*	*50*	*0*	*97.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.22*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*48.83*	*1.0*	*50*	*0*	*97.7*	*73 - 126*				
Surr: Toluene-d8	*49.3*	*1.0*	*50*	*0*	*98.6*	*81 - 120*				

LCS Sample ID: **VLCSW-210719** Units: **ug/L** Analysis Date: **20-Jul-2021 03:19**
Client ID: Run ID: **VOA4_387764** SeqNo: **6190033** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.74	1.0	20	0	109	74 - 120				
Ethylbenzene	21.26	1.0	20	0	106	77 - 117				
m,p-Xylene	45.27	2.0	40	0	113	77 - 122				
o-Xylene	22.18	1.0	20	0	111	75 - 119				
Toluene	20.73	1.0	20	0	104	77 - 118				
Xylenes, Total	67.45	1.0	60	0	112	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.61*	*1.0*	*50*	*0*	*95.2*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*52.8*	*1.0*	*50*	*0*	*106*	*82 - 115*				
Surr: Dibromofluoromethane	*49.84*	*1.0*	*50*	*0*	*99.7*	*73 - 126*				
Surr: Toluene-d8	*50.4*	*1.0*	*50*	*0*	*101*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387764 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070720-09MS** Units: **ug/L** Analysis Date: **20-Jul-2021 06:40**
Client ID: Run ID: **VOA4_387764** SeqNo: **6190041** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.94	1.0	20	0	105	70 - 127				
Ethylbenzene	14.48	1.0	20	0	72.4	70 - 124				
m,p-Xylene	39.37	2.0	40	0	98.4	70 - 130				
o-Xylene	20.67	1.0	20	0	103	70 - 124				
Toluene	21.87	1.0	20	0	109	70 - 123				
Xylenes, Total	60.04	1.0	60	0	100	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.19*	*1.0*	*50*	*0*	*92.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*55.77*	*1.0*	*50*	*0*	*112*	*81 - 113*				
Surr: Dibromofluoromethane	*48.96*	*1.0*	*50*	*0*	*97.9*	*77 - 123*				
Surr: Toluene-d8	*57.37*	*1.0*	*50*	*0*	*115*	*82 - 127*				

MSD Sample ID: **HS21070720-09MSD** Units: **ug/L** Analysis Date: **20-Jul-2021 07:02**
Client ID: Run ID: **VOA4_387764** SeqNo: **6190042** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.38	1.0	20	0	102	70 - 127	20.94	2.73	20	
Ethylbenzene	19.56	1.0	20	0	97.8	70 - 124	14.48	29.9	20	R
m,p-Xylene	38.83	2.0	40	0	97.1	70 - 130	39.37	1.39	20	
o-Xylene	19.85	1.0	20	0	99.3	70 - 124	20.67	4.02	20	
Toluene	19.11	1.0	20	0	95.6	70 - 123	21.87	13.5	20	
Xylenes, Total	58.68	1.0	60	0	97.8	70 - 130	60.04	2.28	20	
Surr: 1,2-Dichloroethane-d4	*46.94*	*1.0*	*50*	*0*	*93.9*	*70 - 126*	*46.19*	*1.62*	*20*	
Surr: 4-Bromofluorobenzene	*52.6*	*1.0*	*50*	*0*	*105*	*81 - 113*	*55.77*	*5.85*	*20*	
Surr: Dibromofluoromethane	*48.63*	*1.0*	*50*	*0*	*97.3*	*77 - 123*	*48.96*	*0.695*	*20*	
Surr: Toluene-d8	*50.59*	*1.0*	*50*	*0*	*101*	*82 - 127*	*57.37*	*12.6*	*20*	

The following samples were analyzed in this batch: HS21070657-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387870 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210720** Units: **ug/L** Analysis Date: **20-Jul-2021 14:56**
Client ID: Run ID: **VOA4_387870** SeqNo: **6192189** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*47.91*	*1.0*	*50*	*0*	*95.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.29*	*1.0*	*50*	*0*	*92.6*	*82 - 115*				
Surr: Dibromofluoromethane	*47.82*	*1.0*	*50*	*0*	*95.6*	*73 - 126*				
Surr: Toluene-d8	*50.92*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-210720** Units: **ug/L** Analysis Date: **20-Jul-2021 16:25**
Client ID: Run ID: **VOA4_387870** SeqNo: **6192107** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.1	1.0	20	0	105	74 - 120				
Ethylbenzene	22.25	1.0	20	0	111	77 - 117				
m,p-Xylene	46.78	2.0	40	0	117	77 - 122				
o-Xylene	22.22	1.0	20	0	111	75 - 119				
Toluene	20.73	1.0	20	0	104	77 - 118				
Xylenes, Total	69	1.0	60	0	115	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.16*	*1.0*	*50*	*0*	*92.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*52.3*	*1.0*	*50*	*0*	*105*	*82 - 115*				
Surr: Dibromofluoromethane	*48.78*	*1.0*	*50*	*0*	*97.6*	*73 - 126*				
Surr: Toluene-d8	*50.52*	*1.0*	*50*	*0*	*101*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387870 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070657-02MS** Units: **ug/L** Analysis Date: **20-Jul-2021 16:47**
Client ID: **VW8** Run ID: **VOA4_387870** SeqNo: **6192108** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.26	1.0	20	0	101	70 - 127				
Ethylbenzene	20.52	1.0	20	0	103	70 - 124				
m,p-Xylene	43.85	2.0	40	0	110	70 - 130				
o-Xylene	21.71	1.0	20	0	109	70 - 124				
Toluene	20.33	1.0	20	0	102	70 - 123				
Xylenes, Total	65.56	1.0	60	0	109	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.38*	*1.0*	*50*	*0*	*92.8*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.84*	*1.0*	*50*	*0*	*106*	*81 - 113*				
Surr: Dibromofluoromethane	*48.27*	*1.0*	*50*	*0*	*96.5*	*77 - 123*				
Surr: Toluene-d8	*50.2*	*1.0*	*50*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS21070657-02MSD** Units: **ug/L** Analysis Date: **20-Jul-2021 17:09**
Client ID: **VW8** Run ID: **VOA4_387870** SeqNo: **6192109** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.96	1.0	20	0	105	70 - 127	20.26	3.41	20	
Ethylbenzene	21.22	1.0	20	0	106	70 - 124	20.52	3.37	20	
m,p-Xylene	44.7	2.0	40	0	112	70 - 130	43.85	1.92	20	
o-Xylene	22.07	1.0	20	0	110	70 - 124	21.71	1.65	20	
Toluene	20.6	1.0	20	0	103	70 - 123	20.33	1.29	20	
Xylenes, Total	66.77	1.0	60	0	111	70 - 130	65.56	1.83	20	
Surr: 1,2-Dichloroethane-d4	*46.41*	*1.0*	*50*	*0*	*92.8*	*70 - 126*	*46.38*	*0.0767*	*20*	
Surr: 4-Bromofluorobenzene	*52.94*	*1.0*	*50*	*0*	*106*	*81 - 113*	*52.84*	*0.179*	*20*	
Surr: Dibromofluoromethane	*47.86*	*1.0*	*50*	*0*	*95.7*	*77 - 123*	*48.27*	*0.847*	*20*	
Surr: Toluene-d8	*50.53*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.2*	*0.651*	*20*	

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387955 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210721** Units: **ug/L** Analysis Date: **21-Jul-2021 14:57**
Client ID: Run ID: **VOA4_387955** SeqNo: **6194149** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*45.52*	*1.0*	*50*	*0*	*91.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.82*	*1.0*	*50*	*0*	*104*	*82 - 115*				
Surr: Dibromofluoromethane	*47.25*	*1.0*	*50*	*0*	*94.5*	*73 - 126*				
Surr: Toluene-d8	*50.84*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-210721** Units: **ug/L** Analysis Date: **21-Jul-2021 14:13**
Client ID: Run ID: **VOA4_387955** SeqNo: **6194148** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.47	1.0	20	0	107	74 - 120				
Ethylbenzene	21.47	1.0	20	0	107	77 - 117				
m,p-Xylene	44.69	2.0	40	0	112	77 - 122				
o-Xylene	22.62	1.0	20	0	113	75 - 119				
Toluene	21.57	1.0	20	0	108	77 - 118				
Xylenes, Total	67.31	1.0	60	0	112	75 - 122				
Surr: 1,2-Dichloroethane-d4	*44.59*	*1.0*	*50*	*0*	*89.2*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*52.51*	*1.0*	*50*	*0*	*105*	*82 - 115*				
Surr: Dibromofluoromethane	*48.17*	*1.0*	*50*	*0*	*96.3*	*73 - 126*				
Surr: Toluene-d8	*51.39*	*1.0*	*50*	*0*	*103*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387955 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070678-11MS** Units: **ug/L** Analysis Date: **21-Jul-2021 16:25**
Client ID: Run ID: **VOA4_387955** SeqNo: **6194152** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.39	1.0	20	0	96.9	70 - 127				
Ethylbenzene	20.83	1.0	20	0	104	70 - 124				
m,p-Xylene	44.8	2.0	40	0	112	70 - 130				
o-Xylene	22.54	1.0	20	0	113	70 - 124				
Toluene	20.15	1.0	20	0	101	70 - 123				
Xylenes, Total	67.34	1.0	60	0	112	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.86*	*1.0*	*50*	*0*	*93.7*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.51*	*1.0*	*50*	*0*	*105*	*81 - 113*				
Surr: Dibromofluoromethane	*47.82*	*1.0*	*50*	*0*	*95.6*	*77 - 123*				
Surr: Toluene-d8	*51.14*	*1.0*	*50*	*0*	*102*	*82 - 127*				

MSD Sample ID: **HS21070678-11MSD** Units: **ug/L** Analysis Date: **21-Jul-2021 16:47**
Client ID: Run ID: **VOA4_387955** SeqNo: **6194153** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.75	1.0	20	0	93.7	70 - 127	19.39	3.36	20	
Ethylbenzene	20.64	1.0	20	0	103	70 - 124	20.83	0.917	20	
m,p-Xylene	42.16	2.0	40	0	105	70 - 130	44.8	6.09	20	
o-Xylene	21.12	1.0	20	0	106	70 - 124	22.54	6.49	20	
Toluene	19.22	1.0	20	0	96.1	70 - 123	20.15	4.73	20	
Xylenes, Total	63.28	1.0	60	0	105	70 - 130	67.34	6.22	20	
Surr: 1,2-Dichloroethane-d4	*48.62*	*1.0*	*50*	*0*	*97.2*	*70 - 126*	*46.86*	*3.7*	*20*	
Surr: 4-Bromofluorobenzene	*50.72*	*1.0*	*50*	*0*	*101*	*81 - 113*	*52.51*	*3.48*	*20*	
Surr: Dibromofluoromethane	*50.1*	*1.0*	*50*	*0*	*100*	*77 - 123*	*47.82*	*4.67*	*20*	
Surr: Toluene-d8	*49.75*	*1.0*	*50*	*0*	*99.5*	*82 - 127*	*51.14*	*2.76*	*20*	

The following samples were analyzed in this batch: HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 168464 (0) **Instrument:** WetChem_HS **Method:** TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011

MBLK Sample ID: **MBLK-168464** Units: **mg/L** Analysis Date: **28-Jul-2021 15:34**
Client ID: Run ID: **WetChem_HS_388407** SeqNo: **6204171** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	< 0.10	0.50								

LCS Sample ID: **LCS-168464** Units: **mg/L** Analysis Date: **28-Jul-2021 15:34**
Client ID: Run ID: **WetChem_HS_388407** SeqNo: **6204170** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	20.27	0.50	20	0	101	85 - 115				

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **28-Jul-2021 15:34**
Client ID: **VW8** Run ID: **WetChem_HS_388407** SeqNo: **6204168** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	21.46	0.50	20	0.296	106	75 - 125				

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **28-Jul-2021 15:34**
Client ID: **VW8** Run ID: **WetChem_HS_388407** SeqNo: **6204169** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	19.9	0.50	20	0.296	98.0	75 - 125	21.46	7.57	20	

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: 168470 (0) **Instrument: UV-2450** **Method: AMMONIA AS N BY SM4500 NH3-B-F-2011**

MBLK Sample ID: **MBLK-168470** Units: **mg/L** Analysis Date: **27-Jul-2021 18:30**
Client ID: Run ID: **UV-2450_388337** SeqNo: **6202510** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	< 0.025	0.050								

LCS Sample ID: **LCS-168470** Units: **mg/L** Analysis Date: **27-Jul-2021 18:30**
Client ID: Run ID: **UV-2450_388337** SeqNo: **6202509** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.488	0.050	0.5	0	97.6	85 - 115				

MS Sample ID: **HS21070779-01MS** Units: **mg/L** Analysis Date: **27-Jul-2021 18:30**
Client ID: Run ID: **UV-2450_388337** SeqNo: **6202507** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.508	0.050	0.5	0.058	90.0	80 - 120				

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **27-Jul-2021 18:30**
Client ID: **VW8** Run ID: **UV-2450_388337** SeqNo: **6202527** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.487	0.050	0.5	0	97.4	80 - 120				

MSD Sample ID: **HS21070779-01MSD** Units: **mg/L** Analysis Date: **27-Jul-2021 18:30**
Client ID: Run ID: **UV-2450_388337** SeqNo: **6202508** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.518	0.050	0.5	0.058	92.0	80 - 120	0.508	1.95	20	

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **27-Jul-2021 18:30**
Client ID: **VW8** Run ID: **UV-2450_388337** SeqNo: **6202528** PrepDate: **27-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.487	0.050	0.5	0	97.4	80 - 120	0.487	0	20	

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387531 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **14-Jul-2021 09:31**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184331** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 0.200	0.500								
Nitrogen, Nitrate (As N)	< 0.0300	0.100								
Nitrogen, Nitrite (As N)	< 0.0300	0.100								
Sulfate	< 0.200	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **14-Jul-2021 09:39**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184332** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.26	0.500	20	0	101	90 - 110				
Nitrogen, Nitrate (As N)	4.091	0.100	4	0	102	90 - 110				
Nitrogen, Nitrite (As N)	4.035	0.100	4	0	101	90 - 110				
Sulfate	20.39	0.500	20	0	102	90 - 110				

MS Sample ID: **HS21070672-02MS** Units: **mg/L** Analysis Date: **14-Jul-2021 16:22**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184353** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	133	0.500	10	123.5	95.1	80 - 120				EO
Nitrogen, Nitrate (As N)	5.622	0.100	2	3.647	98.8	80 - 120				
Nitrogen, Nitrite (As N)	1.898	0.100	2	0.0532	92.2	80 - 120				
Sulfate	89.95	0.500	10	79.95	100	80 - 120				O

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **14-Jul-2021 13:02**
Client ID: **VW8** Run ID: **ICS-Integrion_387531** SeqNo: **6184344** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1212	2.50	50	1243	-62.6	80 - 120				SEO
Nitrogen, Nitrate (As N)	19.07	0.500	10	10.09	89.8	80 - 120				
Nitrogen, Nitrite (As N)	9.342	0.500	10	0.02	93.2	80 - 120				
Sulfate	305.2	2.50	50	275.8	58.8	80 - 120				SO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387531 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MS Sample ID: **HS21070657-01MS** Units: **mg/L** Analysis Date: **14-Jul-2021 12:45**
Client ID: **VW11** Run ID: **ICS-Integrion_387531** SeqNo: **6184342** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	194.9	0.500	10	189	58.7	80 - 120				SEO
Nitrogen, Nitrate (As N)	13.13	0.100	2	11.71	71.2	80 - 120				SO
Nitrogen, Nitrite (As N)	1.843	0.100	2	0.0052	91.9	80 - 120				
Sulfate	77.25	0.500	10	68.97	82.8	80 - 120				O

MSD Sample ID: **HS21070672-02MSD** Units: **mg/L** Analysis Date: **14-Jul-2021 16:29**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184354** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	130.8	0.500	10	123.5	72.9	80 - 120	133	1.68	20	SEO
Nitrogen, Nitrate (As N)	5.502	0.100	2	3.647	92.8	80 - 120	5.622	2.16	20	
Nitrogen, Nitrite (As N)	1.864	0.100	2	0.0532	90.5	80 - 120	1.898	1.83	20	
Sulfate	87.57	0.500	10	79.95	76.2	80 - 120	89.95	2.69	20	SO

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **14-Jul-2021 13:10**
Client ID: **VW8** Run ID: **ICS-Integrion_387531** SeqNo: **6184345** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1212	2.50	50	1243	-61.8	80 - 120	1212	0.0326	20	SEO
Nitrogen, Nitrate (As N)	19.08	0.500	10	10.09	89.9	80 - 120	19.07	0.0315	20	
Nitrogen, Nitrite (As N)	9.357	0.500	10	0.02	93.4	80 - 120	9.342	0.16	20	
Sulfate	305.1	2.50	50	275.8	58.6	80 - 120	305.2	0.0318	20	SO

MSD Sample ID: **HS21070657-01MSD** Units: **mg/L** Analysis Date: **14-Jul-2021 12:53**
Client ID: **VW11** Run ID: **ICS-Integrion_387531** SeqNo: **6184343** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	195	0.500	10	189	60.1	80 - 120	194.9	0.0723	20	SEO
Nitrogen, Nitrate (As N)	13.13	0.100	2	11.71	71.5	80 - 120	13.13	0.0366	20	SO
Nitrogen, Nitrite (As N)	1.843	0.100	2	0.0052	91.9	80 - 120	1.843	0.0109	20	
Sulfate	77.45	0.500	10	68.97	84.8	80 - 120	77.25	0.261	20	O

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387561 (0) **Instrument:** ManTech01 **Method:** ALKALINITY BY SM 2320B-2011

MBLK Sample ID: **WBLKW3-210715** Units: **mg/L** Analysis Date: **16-Jul-2021 03:32**
Client ID: Run ID: **ManTech01_387561** SeqNo: **6185310** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00								
Alkalinity, Total (As CaCO3)	< 5.00	5.00								

LCS Sample ID: **LCS3-210715** Units: **mg/L** Analysis Date: **16-Jul-2021 02:38**
Client ID: Run ID: **ManTech01_387561** SeqNo: **6185303** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1000	5.00	1000	0	100	85 - 115				
Alkalinity, Total (As CaCO3)	1027	5.00	1000	0	103	85 - 115				

LCSD Sample ID: **LCSD3-210715** Units: **mg/L** Analysis Date: **16-Jul-2021 02:47**
Client ID: Run ID: **ManTech01_387561** SeqNo: **6185304** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1051	5.00	1000	0	105	85 - 115	1000	4.95	20	
Alkalinity, Total (As CaCO3)	1053	5.00	1000	0	105	85 - 115	1027	2.46	20	

DUP Sample ID: **HS21070657-02DUP** Units: **mg/L** Analysis Date: **16-Jul-2021 03:02**
Client ID: **VW8** Run ID: **ManTech01_387561** SeqNo: **6185306** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	576.3	5.00					565	1.99	20	
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	576.3	5.00					565	1.99	20	

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387640 (0) **Instrument:** TOC_04 **Method:** DISSOLVED ORGANIC CARBON BY SW9060A (DISSOLVED)

MBLK Sample ID: **MBLK-07162021** Units: **mg/L** Analysis Date: **17-Jul-2021 03:08**
Client ID: Run ID: **TOC_04_387640** SeqNo: **6187009** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	< 0.500	1.00								

LCS Sample ID: **LCS-07162021** Units: **mg/L** Analysis Date: **17-Jul-2021 03:23**
Client ID: Run ID: **TOC_04_387640** SeqNo: **6187010** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.43	1.00	10	0	104	85 - 115				

LCSD Sample ID: **LCSD-07162021** Units: **mg/L** Analysis Date: **17-Jul-2021 03:38**
Client ID: Run ID: **TOC_04_387640** SeqNo: **6187011** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.31	1.00	10	0	103	85 - 115	10.43	1.16	20	

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **17-Jul-2021 06:10**
Client ID: **VW8** Run ID: **TOC_04_387640** SeqNo: **6187021** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	11.56	1.00	10	1.435	101	80 - 120				

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: R387721 (0) **Instrument:** WetChem_HS **Method:** SULFIDE BY SM4500 S2-F-2011

MBLK Sample ID: **MBLK-R387721** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188654** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	< 1.00	1.00								

LCS Sample ID: **LCS-R387721** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188653** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.4	1.00	25	0	85.6	85 - 115				

LCSD Sample ID: **LCSD-R387721** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188652** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.6	1.00	25	0	86.4	85 - 115	21.4	0.93	20	

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188664** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	145	5.00	125	18	102	80 - 120				

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: **VW8** Run ID: **WetChem_HS_387721** SeqNo: **6188633** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	20.8	1.00	25	-1.6	89.6	80 - 120				

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188663** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	144	5.00	125	18	101	80 - 120	145	0.692	20	

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: **R387721 (0)** **Instrument:** **WetChem_HS** **Method:** **SULFIDE BY SM4500 S2-F-2011**

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: **VW8** Run ID: **WetChem_HS_387721** SeqNo: **6188634** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21	1.00	25	-1.6	90.4	80 - 120	20.8	0.957	20	

The following samples were analyzed in this batch: HS21070657-01 HS21070657-02 HS21070657-03

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070657

QC BATCH REPORT

Batch ID: **R387949 (0)** **Instrument:** **ICS-Integrion** **Method:** **NITRATE/NITRITE BY E300.0, REV 2.1, 1993**

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **22-Jul-2021 01:22**
Client ID: Run ID: **ICS-Integrion_387949** SeqNo: **6193991** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	< 0.0300	0.200								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **22-Jul-2021 01:29**
Client ID: Run ID: **ICS-Integrion_387949** SeqNo: **6193992** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	8.252	0.200	8	0	103	90 - 110				

MS Sample ID: **HS21070657-01MS** Units: **mg/L** Analysis Date: **22-Jul-2021 00:07**
Client ID: **VW11** Run ID: **ICS-Integrion_387949** SeqNo: **6193986** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	30.18	1.00	20	11.76	92.1	80 - 120				

MSD Sample ID: **HS21070657-01MSD** Units: **mg/L** Analysis Date: **22-Jul-2021 00:15**
Client ID: **VW11** Run ID: **ICS-Integrion_387949** SeqNo: **6193987** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	29.75	1.00	20	11.76	89.9	80 - 120	30.18	1.43	20	

The following samples were analyzed in this batch: HS21070657-01 HS21070657-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: **HS21070657**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	21-022-0	26-Mar-2022
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-33	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
North Carolina	624-2021	31-Dec-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-21-27	30-Apr-2022

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Sample Receipt Checklist

Work Order ID: HS21070657 **Date/Time Received:** **14-Jul-2021 10:05**

Client Name: GMS **Received by:** **Jared R. Makan**

Completed By: /S/ Jared R. Makan (eSignature) 14-Jul-2021 10:55 (Date/Time) **Reviewed by:** /S/ Ragen Giga (eSignature) 15-Jul-2021 14:39 (Date/Time)

Matrices: **Water** Carrier name: **FedEx International Priority**

	Yes	No	
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	1 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:238515
Samplers name present on COC?	☑	☐	
Chain of custody agrees with sample labels?	☐	☑	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	1.3°C	IR31
Cooler(s)/Kit(s):	46500	
Date/Time sample(s) sent to storage:	07/14/2021 10:55	

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐

pH adjusted by:

Login Notes: Trip blank received, not listed on COC. Placed on hold.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 238515

HS21070657

Geo Monitoring Services
St. Croix Alumina

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	St. Croix Alumina
Work Order		Project Number	
Company Name	Geo Monitoring Services	Bill To Company	Geo Monitoring Services
Send Report To	Brad Freeman	Invoice Attn	Brad Freeman
Address	4123 5th Street	Address	4123 5th Street
City/State/Zip	Brookshire, TX 77423	City/State/Zip	Brookshire TX 77423
Phone	(281) 375-5101	Phone	(281) 375-5101
Fax	(281) 375-8468	Fax	(281) 375-8468
e-Mail Address	brad@geomon.net	e-Mail Address	brad@geomon.net

A	8015_DRO_LVI (DRO 8015)
B	8260_LL_W (8260 BTEX)
C	8270_PAH_LVI (8270 Napththalene)
D	ALK_W 2320B (Alkalinity), 300_W (NO2, NO3,Cl,SO4)
E	ICP_TW (Ca, Mg, K, Na, Fe, Mn)
F	ICP_DISS (Dissolved Fe & Mn (Field Filter))
G	SULFD_4500S F (Sulfide)
H	NIT_AMMON_W (Ammonia)
I	RSK175 (Methane), Diss CO2 (Sub to ALS Simi Valley)
J	TOC_Diss_5310B (DOC)- Field Filter

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	VW-11	7/12	10:30	W		22	3	3	3	1	1	1	1	1	6	2	
2	VW-8	7/12	12:00	W		22	X	—	X	X	X	X	X	X	X	X	
3	MSMSD-1	7/12	12:00	W		22	X	—	X	X	X	X	X	X	X	X	
4	GM-14	7/12	13:35			22	X	—	X	X	X	X	X	X	X	X	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: [signature]

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 1 Wk Days [ ] 24 Hour [ ] Other _____

Results Due Date:

Relinquished by: [signature] Date: 7/12 Time: Received by:

Relinquished by: Date: 7/14/21 Time: 10:05 Received by (Laboratory): J. [signature]

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: GMS - St. Croix Alumina

Cooler ID	Cooler Temp.
46500	UC 1.3°C

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other _____
[ ] TRRP Check list
[ ] TRRP Level IV

1231 CFO

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 1/12/2021
Name: Michael
Company: GES
Time: 14:00
Seal Broken By: Jm
Date: 7/24/21

FedEx Express International Air Waybill

Origin

1 From
Date
Sender's FedEx Account Number
Sender's Name
Phone
Company
Address
Address
City
State Province
Country
ZIP Postal Code
Email Address
Internal Billing Reference

2 To
28 ☐ Residential Delivery
Recipient's Name
Phone
Company
Address
Dept./Floor
Address
City
State Province
Country
ZIP Postal Code
Email Address
Recipient's Tax ID Number for Customs Purposes

FedEx Tracking Number 8160 2462 0030 0402 Form ID No.

4 Express Package Service
NOTE: Service order has changed. Please select carefully.
06 ☐ FedEx Intl. First 01 ☐ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging
06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube
15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☐ Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.
01 ☐ HOLD at FedEx Location 03 ☐ SATURDAY Delivery
10 ☐ Direct Signature Someone at recipient's address may sign for delivery. 34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.
Bill transportation charges to:
Enter FedEx Acct. No. or Credit Card No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque
FedEx Acct. No.
Credit Card Exp. Date
Bill duties and taxes to:
Enter FedEx Acct. No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed 2 ☐ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque
FedEx Acct. No.

Shipment Information
Total Packages
Shipper's Load and Count/SLAC
Total Weight lbs. kg
DIM / / in. cm

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs

8 Required Signature
Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not requ U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipm and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.
WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.
Sender's Signature:
Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.
Recipient's Signature

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SEIA	XHISEI	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station
Forms Attached: ☐ CI ☐ CO

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RIGHT SOLUTIONS | RIGHT PARTNER

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

August 13, 2021

Ragen Giga
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099

RE: HS21070657

Dear Ragen:

Enclosed are the results of the samples submitted to our laboratory on July 15, 2021. For your reference, these analyses have been assigned our service request number P2103805.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 4:44 pm, Aug 13, 2021

Hayden Akers
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: ALS Environmental - US
Project: HS21070657

Service Request No: P2103805

CASE NARRATIVE

The samples were received intact under chain of custody on July 15, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

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ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Environmental - US

Service Request: P2103805

Project ID: HS21070657

Date Received: 7/15/2021

Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2
VW-11	P2103805-001	Water	7/12/2021	10:30	X
VW-8	P2103805-002	Water	7/12/2021	12:00	X
GM-14	P2103805-003	Water	7/12/2021	13:35	X

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B103805

10450 Stancliff Rd, Ste 210
Houston, TX 77099
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www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **16487**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065 **Phone:** +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Ragen Giga
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RagenP.Giga@ALSGlobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21070657
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS21070657-01**	**VW-11**	**Water**	**12 Jul 2021 10:30**
	SUB_Diss CO2			28 Jul 2021
2.	**HS21070657-02**	**VW-8**	**Water**	**12 Jul 2021 12:00**
	SUB_Diss CO2			28 Jul 2021
3.	**HS21070657-03**	**GM-14**	**Water**	**12 Jul 2021 13:35**
	SUB_Diss CO2			28 Jul 2021

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS21070657-02 MS/MSD

QC Level: STD (Laboratory Standard QC: method blank and LCS required)

Relinquished By: J. Musselman Date/Time: 7/14/21 18:00

Received By: Date/Time: 7-15-21 0930

Cooler ID(s): Temperature(s): 2° wet

ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2103805
Project: HS21070657
Sample(s) received on: 7/15/2021 Date opened: 7/15/2021 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C	Wet Ic		
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler Lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☒	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103805-001.01	40mL VOA NP		6		A	CB 7/22/21
P2103805-001.02	40mL VOA NP				A	
P2103805-001.03	40mL VOA NP				A	
P2103805-002.01	40mL VOA NP				A	
P2103805-002.02	40mL VOA NP		6		A	CB 7/22/21
P2103805-002.03	40mL VOA NP		6		A	CB 7/22/21
P2103805-002.04	40mL VOA NP		6		A	CB 7/22/21
P2103805-002.05	40mL VOA NP				A	
P2103805-002.06	40mL VOA NP				A	
P2103805-003.01	40mL VOA NP		6		A	CB 7/22/21
P2103805-003.02	40mL VOA NP				A	
P2103805-003.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Project ID: **HS21070657** ALS Project ID: P2103805

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 7/12/21
Analyst: Connor Barrett Date Received: 7/15/21
Matrix: Liquid Date Analyzed: 7/22/21
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	MDL µg/L	Data Qualifier
VW-11	P2103805-001	0.10	**15,000**	1,000	370	
VW-8	P2103805-002	0.10	**46,000**	1,000	370	
GM-14	P2103805-003	0.10	**85,000**	1,000	370	
Method Control Sample	P210722-MB	0.10	ND	1,000	370	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **VW-8**
Client Project ID: **HS21070657**

ALS Project ID: P2103805
ALS Sample ID: P2103805-002MS
P2103805-002DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date Collected: #######
Date Received: #######
Date Analyzed: #######
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	46,100	65,600	66,000	**85**	**87**	50-150	2	30	

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ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21070657**

ALS Project ID: P2103805
ALS Sample ID: P210722-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/22/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	21,700	21,900	**95**	**96**	56-105	1	12	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

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10450 Stancliff Rd. Suite 210
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August 16, 2021

Brad Freeman
Geo Monitoring Services
4123 5th Street
Brookshire, TX 77423

Work Order: **HS21070658**

Laboratory Results for: **St. Croix Alumina**

Dear Brad Freeman,

ALS Environmental received 7 sample(s) on Jul 14, 2021 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER

Ragen Giga
Project Manager

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070658

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21070658-01	MMX	Water		12-Jul-2021 10:14	14-Jul-2021 10:05	☐
HS21070658-02	MM9	Water		12-Jul-2021 11:50	14-Jul-2021 10:05	☐
HS21070658-03	GM11	Water		12-Jul-2021 13:10	14-Jul-2021 10:05	☐
HS21070658-04	VW27	Water		12-Jul-2021 14:25	14-Jul-2021 10:05	☐
HS21070658-05	FD-01	Water		12-Jul-2021 00:00	14-Jul-2021 10:05	☐
HS21070658-06	Trip Blank 01	Water	CG 061121 -96	12-Jul-2021 00:00	14-Jul-2021 10:05	☐
HS21070658-07	Trip Blank 02	Water	CG 061121 -71	12-Jul-2021 00:00	14-Jul-2021 10:05	☐

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Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070658

CASE NARRATIVE

Work Order Comments

- Sample ID - MMX and FD-01 Lab unable to meet Short Hold time, due to FEDEX delayed receipt of sample coolers - Trip blanks received, not listed on COC. Placed on hold.

Work Order Comments

- The analyses for Dissolved Carbon Dioxide were subcontracted to ALS Environmental in Simi Valley, CA.

GC Semivolatiles by Method RSK-175

Batch ID: R387563

Sample ID: HS21070657-02MS

- MS and MSD are for an unrelated sample

GC Semivolatiles by Method SW8015M

Batch ID: 168012

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Semivolatiles by Method SW8270

Batch ID: 168053

Sample ID: LCSD-168053

- The RPD between the LCS and LCSD was outside of the control limit.

Sample ID: HS21070738-06MSD, HS21070657-02MSD

- MSD is for an unrelated sample

GCMS Volatiles by Method SW8260

Batch ID: R387870

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R387712

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R387759

Sample ID: HS21070458-05MS

- MS and MSD are for an unrelated sample

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Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070658

CASE NARRATIVE

Metals by Method SW6020A

Batch ID: 168171

Sample ID: HS21070483-08MS

- MS and MSD are for an unrelated sample

Batch ID: 168015

Sample ID: HS21070586-01MS

- MS and MSD are for an unrelated sample (Calcium,Magnesium,Potassium,Sodium)

Wet Chemistry by Method E300

Batch ID: R387531

Sample ID: HS21070657-02MS

- MS and MSD are for an unrelated sample

Sample ID: HS21070657-01MS

- MS and MSD are for an unrelated sample

Batch ID: R387574

Sample ID: HS21070773-03MS

- MS and MSD are for an unrelated sample

WetChemistry by Method SW9060

Batch ID: R387639

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500 S2-F

Batch ID: R387721

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R387738

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

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Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070658

CASE NARRATIVE

WetChemistry by Method E300

Batch ID: R387871

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R387531

Sample ID: FD-01 (HS21070658-05)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.
- Sample ran at 5X due to high concentration of Chloride

Sample ID: GM11 (HS21070658-03)

- Sample ran at 5X due to high concentration of Chloride

Sample ID: HS21070672-02MSD

- MSD is for an unrelated sample (Chloride,Sulfate)

Sample ID: MMX (HS21070658-01)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

WetChemistry by Method SM4500 NH3-B-F

Batch ID: 168209

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 168143

Sample ID: GM11 (HS21070658-03MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: GM11 (HS21070658-03MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

Sample ID: HS21070287-01MS

- MS and MSD are for an unrelated sample

WetChemistry by Method M4500 NH3 D

Batch ID: 168107

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

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Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: MMX
Collection Date: 12-Jul-2021 10:14

ANALYTICAL REPORT
WorkOrder:HS21070658
Lab ID:HS21070658-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 17:53
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 17:53
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	20-Jul-2021 17:53
o-Xylene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 17:53
Toluene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 17:53
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 17:53
Surr: 1,2-Dichloroethane-d4	*96.5*			*70-126*	*%REC*	*1*	*20-Jul-2021 17:53*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*20-Jul-2021 17:53*
Surr: Dibromofluoromethane	*93.7*			*77-123*	*%REC*	*1*	*20-Jul-2021 17:53*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*20-Jul-2021 17:53*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0202		0.0202	0.101	ug/L	1	19-Jul-2021 15:30
Surr: 2-Fluorobiphenyl	*80.1*			*32-130*	*%REC*	*1*	*19-Jul-2021 15:30*
Surr: 4-Terphenyl-d14	*99.7*			*40-135*	*%REC*	*1*	*19-Jul-2021 15:30*
Surr: Nitrobenzene-d5	*75.7*			*45-142*	*%REC*	*1*	*19-Jul-2021 15:30*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1.60**		**0.107**	**0.500**	**ug/L**	1	15-Jul-2021 11:11
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	< 0.021		0.021	0.052	mg/L	1	21-Jul-2021 13:40
Surr: 2-Fluorobiphenyl	*95.4*			*60-135*	*%REC*	*1*	*21-Jul-2021 13:40*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Calcium	**52.2**		**0.0340**	**0.500**	**mg/L**	1	19-Jul-2021 15:29
Iron	< 0.0120		0.0120	0.200	mg/L	1	19-Jul-2021 15:29
Magnesium	**38.1**		**0.0100**	**0.200**	**mg/L**	1	19-Jul-2021 15:29
Manganese	< 0.000700		0.000700	0.00500	mg/L	1	19-Jul-2021 15:29
Potassium	**12.4**		**0.0180**	**0.200**	**mg/L**	1	19-Jul-2021 15:29
Sodium	**240**		**0.280**	**4.00**	**mg/L**	20	20-Jul-2021 12:28
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 21-Jul-2021		Analyst: JHD
Iron	< 0.0120		0.0120	0.200	mg/L	1	21-Jul-2021 14:25
Manganese	< 0.000700		0.000700	0.00500	mg/L	1	21-Jul-2021 14:25
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**308**		**2.00**	**5.00**	**mg/L**	10	14-Jul-2021 14:23
Nitrogen, Nitrate (As N)	**9.91**	H	**0.0300**	**0.100**	**mg/L**	1	14-Jul-2021 12:28
Nitrogen, Nitrite (As N)	< 0.0300	H	0.0300	0.100	mg/L	1	14-Jul-2021 12:28
Sulfate	**70.4**		**0.200**	**0.500**	**mg/L**	1	14-Jul-2021 12:28
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	**9.96**		**0.150**	**1.00**	**mg/L**	5	20-Jul-2021 01:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070658
Sample ID:	MMX	Lab ID:HS21070658-01
Collection Date:	12-Jul-2021 10:14	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**2.3**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**430**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:11
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	19-Jul-2021 19:11
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	19-Jul-2021 19:11
Alkalinity, Total (As CaCO3)	**430**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:11
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 20-Jul-2021		Analyst: KVL
Nitrogen, Ammonia (as N)	**0.033**	J	**0.025**	**0.050**	**mg/L**	1	20-Jul-2021 16:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**1.04**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 19:39
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070658
Sample ID:	MM9	Lab ID:HS21070658-02
Collection Date:	12-Jul-2021 11:50	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 04:40
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 04:40
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	17-Jul-2021 04:40
o-Xylene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 04:40
Toluene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 04:40
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 04:40
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*17-Jul-2021 04:40*
Surr: 4-Bromofluorobenzene	*94.2*			*81-113*	*%REC*	*1*	*17-Jul-2021 04:40*
Surr: Dibromofluoromethane	*98.2*			*77-123*	*%REC*	*1*	*17-Jul-2021 04:40*
Surr: Toluene-d8	*95.1*			*82-127*	*%REC*	*1*	*17-Jul-2021 04:40*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0215		0.0215	0.107	ug/L	1	19-Jul-2021 15:49
Surr: 2-Fluorobiphenyl	*71.7*			*32-130*	*%REC*	*1*	*19-Jul-2021 15:49*
Surr: 4-Terphenyl-d14	*69.1*			*40-135*	*%REC*	*1*	*19-Jul-2021 15:49*
Surr: Nitrobenzene-d5	*53.7*			*45-142*	*%REC*	*1*	*19-Jul-2021 15:49*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1.58**		**0.107**	**0.500**	**ug/L**	1	15-Jul-2021 11:20
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	< 0.021		0.021	0.052	mg/L	1	21-Jul-2021 14:10
Surr: 2-Fluorobiphenyl	*91.4*			*60-135*	*%REC*	*1*	*21-Jul-2021 14:10*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Calcium	**17.3**		**0.0340**	**0.500**	**mg/L**	1	19-Jul-2021 15:31
Iron	**0.0484**	J	**0.0120**	**0.200**	**mg/L**	1	19-Jul-2021 15:31
Magnesium	**8.68**		**0.0100**	**0.200**	**mg/L**	1	19-Jul-2021 15:31
Manganese	**0.00150**	J	**0.000700**	**0.00500**	**mg/L**	1	19-Jul-2021 15:31
Potassium	**9.38**		**0.0180**	**0.200**	**mg/L**	1	19-Jul-2021 15:31
Sodium	**291**		**0.280**	**4.00**	**mg/L**	20	20-Jul-2021 12:30
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 21-Jul-2021		Analyst: JHD
Iron	< 0.0120		0.0120	0.200	mg/L	1	21-Jul-2021 14:27
Manganese	< 0.000700		0.000700	0.00500	mg/L	1	21-Jul-2021 14:27
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**283**		**2.00**	**5.00**	**mg/L**	10	16-Jul-2021 06:38
Nitrogen, Nitrate (As N)	**14.4**		**0.0300**	**0.100**	**mg/L**	1	14-Jul-2021 11:18
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	14-Jul-2021 11:18
Sulfate	**71.8**		**0.200**	**0.500**	**mg/L**	1	14-Jul-2021 11:18
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	**14.0**		**0.150**	**1.00**	**mg/L**	5	20-Jul-2021 01:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070658
Sample ID:	MM9		Lab ID:HS21070658-02
Collection Date:	12-Jul-2021 11:50		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**1.9**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**438**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:25
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	19-Jul-2021 19:25
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	19-Jul-2021 19:25
Alkalinity, Total (As CaCO3)	**442**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:25
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 20-Jul-2021		Analyst: KVL
Nitrogen, Ammonia (as N)	**0.028**	J	**0.025**	**0.050**	**mg/L**	1	20-Jul-2021 16:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**0.758**	J	**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 19:55
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: GM11
Collection Date: 12-Jul-2021 13:10

ANALYTICAL REPORT
WorkOrder:HS21070658
Lab ID:HS21070658-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 05:03
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 05:03
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	17-Jul-2021 05:03
o-Xylene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 05:03
Toluene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 05:03
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 05:03
Surr: 1,2-Dichloroethane-d4	*110*			*70-126*	*%REC*	*1*	*17-Jul-2021 05:03*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*17-Jul-2021 05:03*
Surr: Dibromofluoromethane	*107*			*77-123*	*%REC*	*1*	*17-Jul-2021 05:03*
Surr: Toluene-d8	*95.1*			*82-127*	*%REC*	*1*	*17-Jul-2021 05:03*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0201		0.0201	0.101	ug/L	1	19-Jul-2021 16:09
Surr: 2-Fluorobiphenyl	*65.3*			*32-130*	*%REC*	*1*	*19-Jul-2021 16:09*
Surr: 4-Terphenyl-d14	*116*			*40-135*	*%REC*	*1*	*19-Jul-2021 16:09*
Surr: Nitrobenzene-d5	*76.0*			*45-142*	*%REC*	*1*	*19-Jul-2021 16:09*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**336**		**2.68**	**12.5**	**ug/L**	25	15-Jul-2021 12:32
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**0.067**		**0.021**	**0.052**	**mg/L**	1	21-Jul-2021 14:39
Surr: 2-Fluorobiphenyl	*105*			*60-135*	*%REC*	*1*	*21-Jul-2021 14:39*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Calcium	**24.9**		**0.0340**	**0.500**	**mg/L**	1	19-Jul-2021 15:33
Iron	**0.0162**	J	**0.0120**	**0.200**	**mg/L**	1	19-Jul-2021 15:33
Magnesium	**49.0**		**0.0100**	**0.200**	**mg/L**	1	19-Jul-2021 15:33
Manganese	**0.0158**		**0.000700**	**0.00500**	**mg/L**	1	19-Jul-2021 15:33
Potassium	**24.4**		**0.0180**	**0.200**	**mg/L**	1	19-Jul-2021 15:33
Sodium	**1,070**		**0.280**	**4.00**	**mg/L**	20	20-Jul-2021 12:32
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 21-Jul-2021		Analyst: JHD
Iron	< 0.0120		0.0120	0.200	mg/L	1	21-Jul-2021 14:29
Manganese	**0.0132**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 14:29
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**1,660**		**10.0**	**25.0**	**mg/L**	50	14-Jul-2021 17:51
Nitrogen, Nitrate (As N)	< 0.150		0.150	0.500	mg/L	5	14-Jul-2021 12:04
Nitrogen, Nitrite (As N)	< 0.150		0.150	0.500	mg/L	5	14-Jul-2021 12:04
Sulfate	**254**		**1.00**	**2.50**	**mg/L**	5	14-Jul-2021 12:04
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 01:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070658
Sample ID:	GM11		Lab ID:HS21070658-03
Collection Date:	12-Jul-2021 13:10		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**1.6**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**544**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:32
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	19-Jul-2021 19:32
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	19-Jul-2021 19:32
Alkalinity, Total (As CaCO3)	**544**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:32
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 20-Jul-2021		Analyst: KVL
Nitrogen, Ammonia (as N)	**0.79**		**0.025**	**0.050**	**mg/L**	1	20-Jul-2021 16:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**13.8**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**4.40**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 20:13
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW27
Collection Date: 12-Jul-2021 14:25

ANALYTICAL REPORT
WorkOrder:HS21070658
Lab ID:HS21070658-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 05:25
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 05:25
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	17-Jul-2021 05:25
o-Xylene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 05:25
Toluene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 05:25
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 05:25
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*17-Jul-2021 05:25*
Surr: 4-Bromofluorobenzene	*86.0*			*81-113*	*%REC*	*1*	*17-Jul-2021 05:25*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*17-Jul-2021 05:25*
Surr: Toluene-d8	*100.0*			*82-127*	*%REC*	*1*	*17-Jul-2021 05:25*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0213		0.0213	0.106	ug/L	1	19-Jul-2021 16:29
Surr: 2-Fluorobiphenyl	*69.6*			*32-130*	*%REC*	*1*	*19-Jul-2021 16:29*
Surr: 4-Terphenyl-d14	*120*			*40-135*	*%REC*	*1*	*19-Jul-2021 16:29*
Surr: Nitrobenzene-d5	*97.2*			*45-142*	*%REC*	*1*	*19-Jul-2021 16:29*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**21.8**		**0.107**	**0.500**	**ug/L**	1	15-Jul-2021 12:11
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**0.040**	J	**0.021**	**0.051**	**mg/L**	1	21-Jul-2021 15:08
Surr: 2-Fluorobiphenyl	*96.3*			*60-135*	*%REC*	*1*	*21-Jul-2021 15:08*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Calcium	**13.9**		**0.0340**	**0.500**	**mg/L**	1	19-Jul-2021 15:35
Iron	**0.0927**	J	**0.0120**	**0.200**	**mg/L**	1	19-Jul-2021 15:35
Magnesium	**12.8**		**0.0100**	**0.200**	**mg/L**	1	19-Jul-2021 15:35
Manganese	**0.00815**		**0.000700**	**0.00500**	**mg/L**	1	19-Jul-2021 15:35
Potassium	**4.85**		**0.0180**	**0.200**	**mg/L**	1	19-Jul-2021 15:35
Sodium	**504**		**0.280**	**4.00**	**mg/L**	20	20-Jul-2021 12:34
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 21-Jul-2021		Analyst: JHD
Iron	**0.0234**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 14:31
Manganese	**0.00538**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 14:31
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**430**		**2.00**	**5.00**	**mg/L**	10	14-Jul-2021 17:58
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	14-Jul-2021 12:20
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	14-Jul-2021 12:20
Sulfate	**91.4**		**2.00**	**5.00**	**mg/L**	10	14-Jul-2021 17:58
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 01:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070658
Sample ID:	VW27		Lab ID:HS21070658-04
Collection Date:	12-Jul-2021 14:25		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**0.65**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**657**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:40
Alkalinity, Carbonate (As CaCO3)	**16.2**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:40
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	19-Jul-2021 19:40
Alkalinity, Total (As CaCO3)	**673**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:40
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 21-Jul-2021		Analyst: KVL
Nitrogen, Ammonia (as N)	**0.19**		**0.025**	**0.050**	**mg/L**	1	21-Jul-2021 16:30
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**4.54**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 20:31
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: FD-01
Collection Date: 12-Jul-2021 00:00

ANALYTICAL REPORT
WorkOrder:HS21070658
Lab ID:HS21070658-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 05:47
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 05:47
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	17-Jul-2021 05:47
o-Xylene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 05:47
Toluene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 05:47
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 05:47
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*17-Jul-2021 05:47*
Surr: 4-Bromofluorobenzene	*97.3*			*81-113*	*%REC*	*1*	*17-Jul-2021 05:47*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*17-Jul-2021 05:47*
Surr: Toluene-d8	*96.9*			*82-127*	*%REC*	*1*	*17-Jul-2021 05:47*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0210		0.0210	0.105	ug/L	1	19-Jul-2021 16:49
Surr: 2-Fluorobiphenyl	*67.6*			*32-130*	*%REC*	*1*	*19-Jul-2021 16:49*
Surr: 4-Terphenyl-d14	*102*			*40-135*	*%REC*	*1*	*19-Jul-2021 16:49*
Surr: Nitrobenzene-d5	*116*			*45-142*	*%REC*	*1*	*19-Jul-2021 16:49*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**380**		**2.68**	**12.5**	**ug/L**	25	15-Jul-2021 12:51
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**0.092**		**0.021**	**0.052**	**mg/L**	1	21-Jul-2021 15:38
Surr: 2-Fluorobiphenyl	*107*			*60-135*	*%REC*	*1*	*21-Jul-2021 15:38*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Calcium	**23.8**		**0.0340**	**0.500**	**mg/L**	1	19-Jul-2021 15:39
Iron	**0.0248**	J	**0.0120**	**0.200**	**mg/L**	1	19-Jul-2021 15:39
Magnesium	**49.8**		**0.0100**	**0.200**	**mg/L**	1	19-Jul-2021 15:39
Manganese	**0.0127**		**0.000700**	**0.00500**	**mg/L**	1	19-Jul-2021 15:39
Potassium	**25.1**		**0.0180**	**0.200**	**mg/L**	1	19-Jul-2021 15:39
Sodium	**1,180**		**0.280**	**4.00**	**mg/L**	20	20-Jul-2021 13:24
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 21-Jul-2021		Analyst: JHD
Iron	< 0.0120		0.0120	0.200	mg/L	1	21-Jul-2021 14:33
Manganese	**0.0126**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 14:33
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**1,720**		**10.0**	**25.0**	**mg/L**	50	14-Jul-2021 18:13
Nitrogen, Nitrate (As N)	< 0.150	H	0.150	0.500	mg/L	5	14-Jul-2021 18:05
Nitrogen, Nitrite (As N)	< 0.150	H	0.150	0.500	mg/L	5	14-Jul-2021 18:05
Sulfate	**264**		**1.00**	**2.50**	**mg/L**	5	14-Jul-2021 18:05
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 01:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070658
Sample ID:	FD-01	Lab ID:HS21070658-05
Collection Date:	12-Jul-2021 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**1.6**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**565**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:48
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	19-Jul-2021 19:48
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	19-Jul-2021 19:48
Alkalinity, Total (As CaCO3)	**565**		**5.00**	**5.00**	**mg/L**	1	19-Jul-2021 19:48
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 21-Jul-2021		Analyst: KVL
Nitrogen, Ammonia (as N)	**0.68**		**0.025**	**0.050**	**mg/L**	1	21-Jul-2021 16:30
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**13.4**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**4.39**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 20:48
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070658
Sample ID:	Trip Blank 01	Lab ID:HS21070658-06
Collection Date:	12-Jul-2021 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	19-Jul-2021 20:39
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	19-Jul-2021 20:39
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	19-Jul-2021 20:39
o-Xylene	< 0.30		0.30	1.0	ug/L	1	19-Jul-2021 20:39
Toluene	< 0.20		0.20	1.0	ug/L	1	19-Jul-2021 20:39
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	19-Jul-2021 20:39
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*19-Jul-2021 20:39*
Surr: 4-Bromofluorobenzene	*81.1*			*81-113*	*%REC*	*1*	*19-Jul-2021 20:39*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*19-Jul-2021 20:39*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*19-Jul-2021 20:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070658
Sample ID:	Trip Blank 02		Lab ID:HS21070658-07
Collection Date:	12-Jul-2021 00:00		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 02:49
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 02:49
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	17-Jul-2021 02:49
o-Xylene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 02:49
Toluene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 02:49
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 02:49
Surr: 1,2-Dichloroethane-d4	*100*			*70-126*	*%REC*	*1*	*17-Jul-2021 02:49*
Surr: 4-Bromofluorobenzene	*89.7*			*81-113*	*%REC*	*1*	*17-Jul-2021 02:49*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*17-Jul-2021 02:49*
Surr: Toluene-d8	*110*			*82-127*	*%REC*	*1*	*17-Jul-2021 02:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Weight / Prep Log

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

Batch ID: 168012 **Start Date:** 16 Jul 2021 10:31 **End Date:** 19 Jul 2021 16:00
Method: SW3511 **Prep Code:** 3511_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070658-01		31.59 (mL)	2 (mL)	0.06331	40 mL Amber
HS21070658-02		31.67 (mL)	2 (mL)	0.06315	40 mL Amber
HS21070658-03		31.91 (mL)	2 (mL)	0.06268	40 mL Amber
HS21070658-04		32.15 (mL)	2 (mL)	0.06221	40 mL Amber
HS21070658-05		31.96 (mL)	2 (mL)	0.06258	40 mL Amber

Batch ID: 168015 **Start Date:** 16 Jul 2021 09:00 **End Date:** 16 Jul 2021 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070658-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070658-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070658-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070658-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070658-05		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 168053 **Start Date:** 19 Jul 2021 08:49 **End Date:** 19 Jul 2021 14:30
Method: SW3511 **Prep Code:** 3511_PAH

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070658-01	1	32.73 (mL)	2 (mL)	0.06111	40 mL Amber
HS21070658-02	1	30.71 (mL)	2 (mL)	0.06513	40 mL Amber
HS21070658-03	1	32.83 (mL)	2 (mL)	0.06092	40 mL Amber
HS21070658-04	1	31.01 (mL)	2 (mL)	0.0645	40 mL Amber
HS21070658-05	1	31.42 (mL)	2 (mL)	0.06365	40 mL Amber

Batch ID: 168107 **Start Date:** 19 Jul 2021 10:00 **End Date:** 19 Jul 2021 14:30
Method: TKN WATER - PREP **Prep Code:** TKN_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070658-01		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070658-02		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070658-03		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070658-04		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070658-05		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2

Batch ID: 168143 **Start Date:** 20 Jul 2021 10:00 **End Date:** 20 Jul 2021 11:30
Method: NITROGEN AMMONIA - WATER - PREP **Prep Code:** NIT_AMM_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070658-01		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070658-02		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070658-03		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2

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Weight / Prep Log

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

Batch ID: 168171 **Start Date:** 21 Jul 2021 10:15 **End Date:** 21 Jul 2021 13:15
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070658-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070658-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070658-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070658-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070658-05		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 168209 **Start Date:** 21 Jul 2021 10:30 **End Date:** 21 Jul 2021 12:00
Method: NITROGEN AMMONIA - WATER - PREP **Prep Code:** NIT_AMM_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070658-04		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070658-05		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 168012 (0)	**Test Name :** TPH DRO/ORO BY SW8015C				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14		16 Jul 2021 10:31	21 Jul 2021 13:40	1
HS21070658-02	MM9	12 Jul 2021 11:50		16 Jul 2021 10:31	21 Jul 2021 14:10	1
HS21070658-03	GM11	12 Jul 2021 13:10		16 Jul 2021 10:31	21 Jul 2021 14:39	1
HS21070658-04	VW27	12 Jul 2021 14:25		16 Jul 2021 10:31	21 Jul 2021 15:08	1
HS21070658-05	FD-01	12 Jul 2021 00:00		16 Jul 2021 10:31	21 Jul 2021 15:38	1
Batch ID: 168015 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14		16 Jul 2021 13:00	20 Jul 2021 12:28	20
HS21070658-01	MMX	12 Jul 2021 10:14		16 Jul 2021 13:00	19 Jul 2021 15:29	1
HS21070658-02	MM9	12 Jul 2021 11:50		16 Jul 2021 13:00	20 Jul 2021 12:30	20
HS21070658-02	MM9	12 Jul 2021 11:50		16 Jul 2021 13:00	19 Jul 2021 15:31	1
HS21070658-03	GM11	12 Jul 2021 13:10		16 Jul 2021 13:00	20 Jul 2021 12:32	20
HS21070658-03	GM11	12 Jul 2021 13:10		16 Jul 2021 13:00	19 Jul 2021 15:33	1
HS21070658-04	VW27	12 Jul 2021 14:25		16 Jul 2021 13:00	20 Jul 2021 12:34	20
HS21070658-04	VW27	12 Jul 2021 14:25		16 Jul 2021 13:00	19 Jul 2021 15:35	1
HS21070658-05	FD-01	12 Jul 2021 00:00		16 Jul 2021 13:00	20 Jul 2021 13:24	20
HS21070658-05	FD-01	12 Jul 2021 00:00		16 Jul 2021 13:00	19 Jul 2021 15:39	1
Batch ID: 168053 (0)	**Test Name :** LOW-LEVEL PAHS - 8270D				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14		19 Jul 2021 08:49	19 Jul 2021 15:30	1
HS21070658-02	MM9	12 Jul 2021 11:50		19 Jul 2021 08:49	19 Jul 2021 15:49	1
HS21070658-03	GM11	12 Jul 2021 13:10		19 Jul 2021 08:49	19 Jul 2021 16:09	1
HS21070658-04	VW27	12 Jul 2021 14:25		19 Jul 2021 08:49	19 Jul 2021 16:29	1
HS21070658-05	FD-01	12 Jul 2021 00:00		19 Jul 2021 08:49	19 Jul 2021 16:49	1
Batch ID: 168107 (0)	**Test Name :** TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070658-02	MM9	12 Jul 2021 11:50		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070658-03	GM11	12 Jul 2021 13:10		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070658-04	VW27	12 Jul 2021 14:25		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070658-05	FD-01	12 Jul 2021 00:00		19 Jul 2021 10:00	20 Jul 2021 15:51	1
Batch ID: 168143 (0)	**Test Name :** AMMONIA AS N BY SM4500 NH3-B-F-2011				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14		20 Jul 2021 10:00	20 Jul 2021 16:00	1
HS21070658-02	MM9	12 Jul 2021 11:50		20 Jul 2021 10:00	20 Jul 2021 16:00	1
HS21070658-03	GM11	12 Jul 2021 13:10		20 Jul 2021 10:00	20 Jul 2021 16:00	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 168171 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14		21 Jul 2021 13:15	21 Jul 2021 14:25	1
HS21070658-02	MM9	12 Jul 2021 11:50		21 Jul 2021 13:15	21 Jul 2021 14:27	1
HS21070658-03	GM11	12 Jul 2021 13:10		21 Jul 2021 13:15	21 Jul 2021 14:29	1
HS21070658-04	VW27	12 Jul 2021 14:25		21 Jul 2021 13:15	21 Jul 2021 14:31	1
HS21070658-05	FD-01	12 Jul 2021 00:00		21 Jul 2021 13:15	21 Jul 2021 14:33	1
Batch ID: 168209 (0)	**Test Name :** AMMONIA AS N BY SM4500 NH3-B-F-2011				**Matrix:** Water	
HS21070658-04	VW27	12 Jul 2021 14:25		21 Jul 2021 10:30	21 Jul 2021 16:30	1
HS21070658-05	FD-01	12 Jul 2021 00:00		21 Jul 2021 10:30	21 Jul 2021 16:30	1
Batch ID: R387531 (0)	**Test Name :** ANIONS BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14			14 Jul 2021 14:23	10
HS21070658-01	MMX	12 Jul 2021 10:14			14 Jul 2021 12:28	1
HS21070658-02	MM9	12 Jul 2021 11:50			14 Jul 2021 11:18	1
HS21070658-03	GM11	12 Jul 2021 13:10			14 Jul 2021 17:51	50
HS21070658-03	GM11	12 Jul 2021 13:10			14 Jul 2021 12:04	5
HS21070658-04	VW27	12 Jul 2021 14:25			14 Jul 2021 17:58	10
HS21070658-04	VW27	12 Jul 2021 14:25			14 Jul 2021 12:20	1
HS21070658-05	FD-01	12 Jul 2021 00:00			14 Jul 2021 18:13	50
HS21070658-05	FD-01	12 Jul 2021 00:00			14 Jul 2021 18:05	5
Batch ID: R387563 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14			15 Jul 2021 11:11	1
HS21070658-02	MM9	12 Jul 2021 11:50			15 Jul 2021 11:20	1
HS21070658-03	GM11	12 Jul 2021 13:10			15 Jul 2021 12:32	25
HS21070658-04	VW27	12 Jul 2021 14:25			15 Jul 2021 12:11	1
HS21070658-05	FD-01	12 Jul 2021 00:00			15 Jul 2021 12:51	25
Batch ID: R387574 (0)	**Test Name :** ANIONS BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070658-02	MM9	12 Jul 2021 11:50			16 Jul 2021 06:38	10
Batch ID: R387639 (0)	**Test Name :** DISSOLVED ORGANIC CARBON BY SW9060A				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14			16 Jul 2021 19:39	1
HS21070658-02	MM9	12 Jul 2021 11:50			16 Jul 2021 19:55	1
HS21070658-03	GM11	12 Jul 2021 13:10			16 Jul 2021 20:13	1
HS21070658-04	VW27	12 Jul 2021 14:25			16 Jul 2021 20:31	1
HS21070658-05	FD-01	12 Jul 2021 00:00			16 Jul 2021 20:48	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R387712 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070658-02	MM9	12 Jul 2021 11:50			17 Jul 2021 04:40	1
HS21070658-03	GM11	12 Jul 2021 13:10			17 Jul 2021 05:03	1
HS21070658-04	VW27	12 Jul 2021 14:25			17 Jul 2021 05:25	1
HS21070658-05	FD-01	12 Jul 2021 00:00			17 Jul 2021 05:47	1
HS21070658-07	Trip Blank 02	12 Jul 2021 00:00			17 Jul 2021 02:49	1
Batch ID: R387721 (0)	**Test Name :** SULFIDE BY SM4500 S2-F-2011				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14			19 Jul 2021 12:00	1
HS21070658-02	MM9	12 Jul 2021 11:50			19 Jul 2021 12:00	1
HS21070658-03	GM11	12 Jul 2021 13:10			19 Jul 2021 12:00	1
HS21070658-04	VW27	12 Jul 2021 14:25			19 Jul 2021 12:00	1
HS21070658-05	FD-01	12 Jul 2021 00:00			19 Jul 2021 12:00	1
Batch ID: R387738 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14			19 Jul 2021 19:11	1
HS21070658-02	MM9	12 Jul 2021 11:50			19 Jul 2021 19:25	1
HS21070658-03	GM11	12 Jul 2021 13:10			19 Jul 2021 19:32	1
HS21070658-04	VW27	12 Jul 2021 14:25			19 Jul 2021 19:40	1
HS21070658-05	FD-01	12 Jul 2021 00:00			19 Jul 2021 19:48	1
Batch ID: R387759 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070658-06	Trip Blank 01	12 Jul 2021 00:00			19 Jul 2021 20:39	1
Batch ID: R387870 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14			20 Jul 2021 17:53	1
Batch ID: R387871 (0)	**Test Name :** NITRATE/NITRITE BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14			20 Jul 2021 01:06	5
HS21070658-02	MM9	12 Jul 2021 11:50			20 Jul 2021 01:28	5
HS21070658-03	GM11	12 Jul 2021 13:10			20 Jul 2021 01:36	5
HS21070658-04	VW27	12 Jul 2021 14:25			20 Jul 2021 01:43	5
HS21070658-05	FD-01	12 Jul 2021 00:00			20 Jul 2021 01:51	5
Batch ID: R389567 (0)	**Test Name :** SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE				**Matrix:** Water	
HS21070658-01	MMX	12 Jul 2021 10:14			16 Aug 2021 15:24	1
HS21070658-02	MM9	12 Jul 2021 11:50			16 Aug 2021 15:24	1
HS21070658-03	GM11	12 Jul 2021 13:10			16 Aug 2021 15:24	1
HS21070658-04	VW27	12 Jul 2021 14:25			16 Aug 2021 15:24	1
HS21070658-05	FD-01	12 Jul 2021 00:00			16 Aug 2021 15:24	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168012 (0) **Instrument: FID-16** **Method: TPH DRO/ORO BY SW8015C**

MBLK Sample ID: **MBLK-168012** Units: **mg/L** Analysis Date: **21-Jul-2021 12:13**
Client ID: Run ID: **FID-16_387986** SeqNo: **6194626** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	< 0.021	0.052								
Surr: 2-Fluorobiphenyl	*0.0628*	*0.0052*	*0.06262*	*0*	*100*	*60 - 135*				

LCS Sample ID: **LCS-168012** Units: **mg/L** Analysis Date: **21-Jul-2021 12:42**
Client ID: Run ID: **FID-16_387986** SeqNo: **6194627** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.7234	0.053	0.633	0	114	70 - 130				
Surr: 2-Fluorobiphenyl	*0.08252*	*0.0053*	*0.0633*	*0*	*130*	*60 - 135*				

LCSD Sample ID: **LCSD-168012** Units: **mg/L** Analysis Date: **21-Jul-2021 13:11**
Client ID: Run ID: **FID-16_387986** SeqNo: **6194628** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6358	0.053	0.634	0	100	70 - 130	0.7234	12.9	20	
Surr: 2-Fluorobiphenyl	*0.08276*	*0.0053*	*0.0634*	*0*	*131*	*60 - 135*	*0.08252*	*0.293*	*20*	

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387563 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MBLK Sample ID: **MBLK-210715** Units: **ug/L** Analysis Date: **15-Jul-2021 09:42**
Client ID: Run ID: **FID-4_387563** SeqNo: **6192191** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	< 0.107	0.500								

LCS Sample ID: **LCS-210715** Units: **ug/L** Analysis Date: **15-Jul-2021 09:51**
Client ID: Run ID: **FID-4_387563** SeqNo: **6192192** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	8.847	0.500	9.647	0	91.7	75 - 125				

MS Sample ID: **HS21070657-02MS** Units: **ug/L** Analysis Date: **15-Jul-2021 10:22**
Client ID: Run ID: **FID-4_387563** SeqNo: **6192195** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	5.149	0.500	9.647	1.132	41.6	75 - 125				S

MSD Sample ID: **HS21070657-02MSD** Units: **ug/L** Analysis Date: **15-Jul-2021 10:45**
Client ID: Run ID: **FID-4_387563** SeqNo: **6192196** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	5.745	0.500	9.647	1.132	47.8	75 - 125	5.149	10.9	30	S

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168015 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-168015** Units: **mg/L** Analysis Date: **19-Jul-2021 13:15**
Client ID: Run ID: **ICPMS06_387696** SeqNo: **6188277** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	< 0.0340	0.500								
Iron	< 0.0120	0.200								
Magnesium	0.01802	0.200								J
Manganese	< 0.000700	0.00500								
Potassium	< 0.0180	0.200								
Sodium	0.02164	0.200								J

LCS Sample ID: **LCS-168015** Units: **mg/L** Analysis Date: **19-Jul-2021 13:17**
Client ID: Run ID: **ICPMS06_387696** SeqNo: **6188278** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	4.953	0.500	5	0	99.1	80 - 120				
Iron	4.989	0.200	5	0	99.8	80 - 120				
Magnesium	5.209	0.200	5	0	104	80 - 120				
Manganese	0.04825	0.00500	0.05	0	96.5	80 - 120				
Potassium	5.157	0.200	5	0	103	80 - 120				
Sodium	5.262	0.200	5	0	105	80 - 120				

MS Sample ID: **HS21070586-01MS** Units: **mg/L** Analysis Date: **19-Jul-2021 13:28**
Client ID: Run ID: **ICPMS06_387696** SeqNo: **6188281** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	305.7	0.500	5	326.2	-410	80 - 120				SEO
Iron	4.811	0.200	5	0.006786	96.1	80 - 120				
Magnesium	309.6	0.200	5	324.8	-304	80 - 120				SEO
Manganese	0.04557	0.00500	0.05	0.000305	90.5	80 - 120				
Potassium	27.91	0.200	5	24.86	61.1	80 - 120				SO
Sodium	721.9	0.200	5	771.4	-990	80 - 120				SEO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168015 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS21070586-01MSD** Units: **mg/L** Analysis Date: **19-Jul-2021 13:32**
Client ID: Run ID: **ICPMS06_387696** SeqNo: **6188283** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	296.5	0.500	5	326.2	-593	80 - 120	305.7	3.04	20	SEO
Iron	4.728	0.200	5	0.006786	94.4	80 - 120	4.811	1.75	20	
Magnesium	301.2	0.200	5	324.8	-472	80 - 120	309.6	2.74	20	SEO
Manganese	0.04492	0.00500	0.05	0.000305	89.2	80 - 120	0.04557	1.44	20	
Potassium	27.37	0.200	5	24.86	50.3	80 - 120	27.91	1.96	20	SO
Sodium	709.1	0.200	5	771.4	-1250	80 - 120	721.9	1.78	20	SEO

PDS Sample ID: **HS21070586-01PDS** Units: **mg/L** Analysis Date: **20-Jul-2021 12:23**
Client ID: Run ID: **ICPMS06_387805** SeqNo: **6190493** PrepDate: **16-Jul-2021** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	803	25.0	500	320.1	96.6	75 - 125				
Magnesium	824.1	10.0	500	330	98.8	75 - 125				
Sodium	1275	10.0	500	796.5	95.8	75 - 125				

PDS Sample ID: **HS21070586-01PDS** Units: **mg/L** Analysis Date: **19-Jul-2021 13:34**
Client ID: Run ID: **ICPMS06_387696** SeqNo: **6188284** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.37	0.200	10	0.006786	104	75 - 125				
Manganese	0.09871	0.00500	0.1	0.000305	98.4	75 - 125				
Potassium	32.6	0.200	10	24.86	77.4	75 - 125				

SD Sample ID: **HS21070586-01SD** Units: **mg/L** Analysis Date: **20-Jul-2021 12:21**
Client ID: Run ID: **ICPMS06_387805** SeqNo: **6190492** PrepDate: **16-Jul-2021** DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	324.9	125					320.1	1.51	10	
Magnesium	348	50.0					330	5.46	10	
Sodium	854.6	50.0					796.5	7.3	10	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168015 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS21070586-01SD** Units: **mg/L** Analysis Date: **19-Jul-2021 13:26**
Client ID: Run ID: **ICPMS06_387696** SeqNo: **6188280** PrepDate: **16-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	< 0.0600	1.00					0.006786	0	10	
Manganese	< 0.00350	0.0250					0.000305	0	10	
Potassium	24.24	1.00					24.86	2.51	10	

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168171 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLK-168171** Units: **mg/L** Analysis Date: **21-Jul-2021 13:58**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192808** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	< 0.0120	0.200								
Manganese	< 0.000700	0.00500								

LCS Sample ID: **LCS-168171** Units: **mg/L** Analysis Date: **21-Jul-2021 14:00**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192809** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.604	0.200	5	0	92.1	80 - 120				
Manganese	0.04434	0.00500	0.05	0	88.7	80 - 120				

MS Sample ID: **HS21070483-08MS** Units: **mg/L** Analysis Date: **21-Jul-2021 14:08**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192813** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.452	0.200	5	0.8812	91.4	75 - 125				
Manganese	0.7421	0.00500	0.05	0.7153	53.7	75 - 125				SO

MSD Sample ID: **HS21070483-08MSD** Units: **mg/L** Analysis Date: **21-Jul-2021 14:10**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192814** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.407	0.200	5	0.8812	90.5	75 - 125	5.452	0.829	20	
Manganese	0.7401	0.00500	0.05	0.7153	49.7	75 - 125	0.7421	0.27	20	SO

PDS Sample ID: **HS21070483-08PDS** Units: **mg/L** Analysis Date: **21-Jul-2021 14:12**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192815** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	11.27	0.200	10	0.8812	104	75 - 125				
Manganese	0.7987	0.00500	0.1	0.7153	83.4	75 - 125				O

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: **168171 (0)** **Instrument:** **ICPMS06** **Method:** **DISSOLVED METALS BY SW6020A (DISSOLVED)**

SD Sample ID: **HS21070483-08SD** Units: **mg/L** Analysis Date: **21-Jul-2021 14:06**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192812** PrepDate: **21-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	0.9169	1.00					0.8812	0	10	J
Manganese	0.7123	0.0250					0.7153	0.42	10	

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168053 (0) **Instrument: SV-6** **Method: LOW-LEVEL PAHS - 8270D**

MBLK Sample ID: **MBLK-168053** Units: **ug/L** Analysis Date: **19-Jul-2021 14:16**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189739** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	< 0.0200	0.100								
Surr: 2-Fluorobiphenyl	*1.904*	*0.100*	*3.03*	*0*	*62.9*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.753*	*0.100*	*3.03*	*0*	*90.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.567*	*0.100*	*3.03*	*0*	*84.7*	*45 - 142*				

LCS Sample ID: **LCS-168053** Units: **ug/L** Analysis Date: **19-Jul-2021 14:36**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189740** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.941	0.100	3.03	0	97.1	40 - 140				
Surr: 2-Fluorobiphenyl	*3.897*	*0.100*	*3.03*	*0*	*129*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.459*	*0.100*	*3.03*	*0*	*81.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.364*	*0.100*	*3.03*	*0*	*78.0*	*45 - 142*				

LCSD Sample ID: **LCSD-168053** Units: **ug/L** Analysis Date: **19-Jul-2021 14:56**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189741** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.927	0.100	3.03	0	96.6	40 - 140	2.941	0.481	25	
Surr: 2-Fluorobiphenyl	*2.886*	*0.100*	*3.03*	*0*	*95.3*	*32 - 130*	*3.897*	*29.8*	*25*	R
Surr: 4-Terphenyl-d14	*2.837*	*0.100*	*3.03*	*0*	*93.6*	*40 - 135*	*2.459*	*14.3*	*25*	
Surr: Nitrobenzene-d5	*2.239*	*0.100*	*3.03*	*0*	*73.9*	*45 - 142*	*2.364*	*5.43*	*25*	

MS Sample ID: **HS21070738-06MS** Units: **ug/L** Analysis Date: **19-Jul-2021 18:48**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189752** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.864	0.105	3.167	0.3862	78.2	40 - 140				
Surr: 2-Fluorobiphenyl	*2.734*	*0.105*	*3.167*	*0*	*86.3*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.408*	*0.105*	*3.167*	*0*	*76.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.847*	*0.105*	*3.167*	*0*	*89.9*	*45 - 142*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168053 (0) **Instrument: SV-6** **Method: LOW-LEVEL PAHS - 8270D**

MS Sample ID: **HS21070657-02MS** Units: **ug/L** Analysis Date: **20-Jul-2021 15:35**
Client ID: Run ID: **SV-6_387888** SeqNo: **6192655** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.391	0.106	3.201	0	106	40 - 140				
Surr: 2-Fluorobiphenyl	*2.25*	*0.106*	*3.201*	*0*	*70.3*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.912*	*0.106*	*3.201*	*0*	*91.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.537*	*0.106*	*3.201*	*0*	*79.3*	*45 - 142*				

MSD Sample ID: **HS21070738-06MSD** Units: **ug/L** Analysis Date: **19-Jul-2021 19:08**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189753** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.092	0.104	3.14	0.3862	86.2	40 - 140	2.864	7.65	25	
Surr: 2-Fluorobiphenyl	*2.623*	*0.104*	*3.14*	*0*	*83.5*	*32 - 130*	*2.734*	*4.17*	*25*	
Surr: 4-Terphenyl-d14	*3.54*	*0.104*	*3.14*	*0*	*113*	*40 - 135*	*2.408*	*38.1*	*25*	R
Surr: Nitrobenzene-d5	*2.928*	*0.104*	*3.14*	*0*	*93.2*	*45 - 142*	*2.847*	*2.78*	*25*	

MSD Sample ID: **HS21070657-02MSD** Units: **ug/L** Analysis Date: **20-Jul-2021 15:54**
Client ID: Run ID: **SV-6_387888** SeqNo: **6192656** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.232	0.107	3.229	0	100	40 - 140	3.391	4.81	25	
Surr: 2-Fluorobiphenyl	*3.747*	*0.107*	*3.229*	*0*	*116*	*32 - 130*	*2.25*	*49.9*	*25*	R
Surr: 4-Terphenyl-d14	*3.148*	*0.107*	*3.229*	*0*	*97.5*	*40 - 135*	*2.912*	*7.79*	*25*	
Surr: Nitrobenzene-d5	*3.81*	*0.107*	*3.229*	*0*	*118*	*45 - 142*	*2.537*	*40.1*	*25*	R

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387712 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210716** Units: **ug/L** Analysis Date: **17-Jul-2021 02:27**
Client ID: Run ID: **VOA4_387712** SeqNo: **6188577** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*51.24*	*1.0*	*50*	*0*	*102*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.61*	*1.0*	*50*	*0*	*95.2*	*82 - 115*				
Surr: Dibromofluoromethane	*49.86*	*1.0*	*50*	*0*	*99.7*	*73 - 126*				
Surr: Toluene-d8	*49.42*	*1.0*	*50*	*0*	*98.8*	*81 - 120*				

LCS Sample ID: **VLCSW-210716** Units: **ug/L** Analysis Date: **17-Jul-2021 00:58**
Client ID: Run ID: **VOA4_387712** SeqNo: **6188499** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.51	1.0	20	0	97.5	74 - 120				
Ethylbenzene	19.76	1.0	20	0	98.8	77 - 117				
m,p-Xylene	37.4	2.0	40	0	93.5	77 - 122				
o-Xylene	20.46	1.0	20	0	102	75 - 119				
Toluene	22.15	1.0	20	0	111	77 - 118				
Xylenes, Total	57.87	1.0	60	0	96.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.03*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*44.75*	*1.0*	*50*	*0*	*89.5*	*82 - 115*				
Surr: Dibromofluoromethane	*50.45*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*56.66*	*1.0*	*50*	*0*	*113*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387712 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070738-10MS** Units: **ug/L** Analysis Date: **17-Jul-2021 03:34**
Client ID: Run ID: **VOA4_387712** SeqNo: **6188504** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	15.88	1.0	20	0	79.4	70 - 127				
Ethylbenzene	16.39	1.0	20	0	81.9	70 - 124				
m,p-Xylene	32.9	2.0	40	0	82.3	70 - 130				
o-Xylene	15.96	1.0	20	0	79.8	70 - 124				
Toluene	17.56	1.0	20	0	87.8	70 - 123				
Xylenes, Total	48.87	1.0	60	0	81.4	70 - 130				
Surr: 1,2-Dichloroethane-d4	*54.56*	*1.0*	*50*	*0*	*109*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.1*	*1.0*	*50*	*0*	*96.2*	*81 - 113*				
Surr: Dibromofluoromethane	*53.19*	*1.0*	*50*	*0*	*106*	*77 - 123*				
Surr: Toluene-d8	*48.36*	*1.0*	*50*	*0*	*96.7*	*82 - 127*				

MSD Sample ID: **HS21070738-10MSD** Units: **ug/L** Analysis Date: **17-Jul-2021 03:56**
Client ID: Run ID: **VOA4_387712** SeqNo: **6188505** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	15.32	1.0	20	0	76.6	70 - 127	15.88	3.59	20	
Ethylbenzene	15.59	1.0	20	0	78.0	70 - 124	16.39	4.98	20	
m,p-Xylene	30.3	2.0	40	0	75.7	70 - 130	32.9	8.25	20	
o-Xylene	15.98	1.0	20	0	79.9	70 - 124	15.96	0.117	20	
Toluene	16.55	1.0	20	0	82.8	70 - 123	17.56	5.89	20	
Xylenes, Total	46.28	1.0	60	0	77.1	70 - 130	48.87	5.44	20	
Surr: 1,2-Dichloroethane-d4	*53.02*	*1.0*	*50*	*0*	*106*	*70 - 126*	*54.56*	*2.87*	*20*	
Surr: 4-Bromofluorobenzene	*46.88*	*1.0*	*50*	*0*	*93.8*	*81 - 113*	*48.1*	*2.56*	*20*	
Surr: Dibromofluoromethane	*53.52*	*1.0*	*50*	*0*	*107*	*77 - 123*	*53.19*	*0.618*	*20*	
Surr: Toluene-d8	*48.04*	*1.0*	*50*	*0*	*96.1*	*82 - 127*	*48.36*	*0.663*	*20*	

The following samples were analyzed in this batch: HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05 HS21070658-07

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387759 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210719** Units: **ug/L** Analysis Date: **19-Jul-2021 20:17**
Client ID: Run ID: **VOA4_387759** SeqNo: **6189802** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*49.73*	*1.0*	*50*	*0*	*99.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.51*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*50.12*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*49.37*	*1.0*	*50*	*0*	*98.7*	*81 - 120*				

LCS Sample ID: **VLCSW-210719** Units: **ug/L** Analysis Date: **19-Jul-2021 19:32**
Client ID: Run ID: **VOA4_387759** SeqNo: **6189801** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.85	1.0	20	0	94.3	74 - 120				
Ethylbenzene	19.86	1.0	20	0	99.3	77 - 117				
m,p-Xylene	40.89	2.0	40	0	102	77 - 122				
o-Xylene	19.81	1.0	20	0	99.0	75 - 119				
Toluene	18.87	1.0	20	0	94.4	77 - 118				
Xylenes, Total	60.7	1.0	60	0	101	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.72*	*1.0*	*50*	*0*	*95.4*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*52.75*	*1.0*	*50*	*0*	*106*	*82 - 115*				
Surr: Dibromofluoromethane	*49.79*	*1.0*	*50*	*0*	*99.6*	*73 - 126*				
Surr: Toluene-d8	*50.14*	*1.0*	*50*	*0*	*100*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387759 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070458-05MS** Units: **ug/L** Analysis Date: **19-Jul-2021 23:37**
Client ID: Run ID: **VOA4_387759** SeqNo: **6189806** PrepDate: DF: **1000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	34720	1000	20000	17810	84.5	70 - 127				
Ethylbenzene	23720	1000	20000	3354	102	70 - 124				
m,p-Xylene	65070	2000	40000	26730	95.8	70 - 130				
o-Xylene	26960	1000	20000	7164	99.0	70 - 124				
Toluene	68300	1000	20000	62190	30.5	70 - 123				S
Xylenes, Total	92030	1000	60000	33890	96.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48850*	*1000*	*50000*	*0*	*97.7*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*53130*	*1000*	*50000*	*0*	*106*	*81 - 113*				
Surr: Dibromofluoromethane	*50460*	*1000*	*50000*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*50190*	*1000*	*50000*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS21070458-05MSD** Units: **ug/L** Analysis Date: **19-Jul-2021 23:59**
Client ID: Run ID: **VOA4_387759** SeqNo: **6189807** PrepDate: DF: **1000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	34980	1000	20000	17810	85.8	70 - 127	34720	0.755	20	
Ethylbenzene	23780	1000	20000	3354	102	70 - 124	23720	0.251	20	
m,p-Xylene	64490	2000	40000	26730	94.4	70 - 130	65070	0.895	20	
o-Xylene	27380	1000	20000	7164	101	70 - 124	26960	1.54	20	
Toluene	68040	1000	20000	62190	29.3	70 - 123	68300	0.377	20	S
Xylenes, Total	91870	1000	60000	33890	96.6	70 - 130	92030	0.176	20	
Surr: 1,2-Dichloroethane-d4	*48340*	*1000*	*50000*	*0*	*96.7*	*70 - 126*	*48850*	*1.06*	*20*	
Surr: 4-Bromofluorobenzene	*45630*	*1000*	*50000*	*0*	*91.3*	*81 - 113*	*53130*	*15.2*	*20*	
Surr: Dibromofluoromethane	*51560*	*1000*	*50000*	*0*	*103*	*77 - 123*	*50460*	*2.15*	*20*	
Surr: Toluene-d8	*50240*	*1000*	*50000*	*0*	*100*	*82 - 127*	*50190*	*0.0986*	*20*	

The following samples were analyzed in this batch: HS21070658-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387870 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210720** Units: **ug/L** Analysis Date: **20-Jul-2021 14:56**
Client ID: Run ID: **VOA4_387870** SeqNo: **6192189** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*47.91*	*1.0*	*50*	*0*	*95.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.29*	*1.0*	*50*	*0*	*92.6*	*82 - 115*				
Surr: Dibromofluoromethane	*47.82*	*1.0*	*50*	*0*	*95.6*	*73 - 126*				
Surr: Toluene-d8	*50.92*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-210720** Units: **ug/L** Analysis Date: **20-Jul-2021 16:25**
Client ID: Run ID: **VOA4_387870** SeqNo: **6192107** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.1	1.0	20	0	105	74 - 120				
Ethylbenzene	22.25	1.0	20	0	111	77 - 117				
m,p-Xylene	46.78	2.0	40	0	117	77 - 122				
o-Xylene	22.22	1.0	20	0	111	75 - 119				
Toluene	20.73	1.0	20	0	104	77 - 118				
Xylenes, Total	69	1.0	60	0	115	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.16*	*1.0*	*50*	*0*	*92.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*52.3*	*1.0*	*50*	*0*	*105*	*82 - 115*				
Surr: Dibromofluoromethane	*48.78*	*1.0*	*50*	*0*	*97.6*	*73 - 126*				
Surr: Toluene-d8	*50.52*	*1.0*	*50*	*0*	*101*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387870 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070657-02MS** Units: **ug/L** Analysis Date: **20-Jul-2021 16:47**
Client ID: Run ID: **VOA4_387870** SeqNo: **6192108** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.26	1.0	20	0	101	70 - 127				
Ethylbenzene	20.52	1.0	20	0	103	70 - 124				
m,p-Xylene	43.85	2.0	40	0	110	70 - 130				
o-Xylene	21.71	1.0	20	0	109	70 - 124				
Toluene	20.33	1.0	20	0	102	70 - 123				
Xylenes, Total	65.56	1.0	60	0	109	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.38*	*1.0*	*50*	*0*	*92.8*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.84*	*1.0*	*50*	*0*	*106*	*81 - 113*				
Surr: Dibromofluoromethane	*48.27*	*1.0*	*50*	*0*	*96.5*	*77 - 123*				
Surr: Toluene-d8	*50.2*	*1.0*	*50*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS21070657-02MSD** Units: **ug/L** Analysis Date: **20-Jul-2021 17:09**
Client ID: Run ID: **VOA4_387870** SeqNo: **6192109** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.96	1.0	20	0	105	70 - 127	20.26	3.41	20	
Ethylbenzene	21.22	1.0	20	0	106	70 - 124	20.52	3.37	20	
m,p-Xylene	44.7	2.0	40	0	112	70 - 130	43.85	1.92	20	
o-Xylene	22.07	1.0	20	0	110	70 - 124	21.71	1.65	20	
Toluene	20.6	1.0	20	0	103	70 - 123	20.33	1.29	20	
Xylenes, Total	66.77	1.0	60	0	111	70 - 130	65.56	1.83	20	
Surr: 1,2-Dichloroethane-d4	*46.41*	*1.0*	*50*	*0*	*92.8*	*70 - 126*	*46.38*	*0.0767*	*20*	
Surr: 4-Bromofluorobenzene	*52.94*	*1.0*	*50*	*0*	*106*	*81 - 113*	*52.84*	*0.179*	*20*	
Surr: Dibromofluoromethane	*47.86*	*1.0*	*50*	*0*	*95.7*	*77 - 123*	*48.27*	*0.847*	*20*	
Surr: Toluene-d8	*50.53*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.2*	*0.651*	*20*	

The following samples were analyzed in this batch: HS21070658-01

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168107 (0) **Instrument: WetChem_HS** **Method: TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011**

MBLK Sample ID: **MBLK-168107** Units: **mg/L** Analysis Date: **20-Jul-2021 15:51**
Client ID: Run ID: **WetChem_HS_387809** SeqNo: **6190605** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	< 0.10	0.50								

LCS Sample ID: **LCS-168107** Units: **mg/L** Analysis Date: **20-Jul-2021 15:51**
Client ID: Run ID: **WetChem_HS_387809** SeqNo: **6190604** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	20.86	0.50	20	0	104	85 - 115				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **20-Jul-2021 15:51**
Client ID: Run ID: **WetChem_HS_387809** SeqNo: **6190602** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	25.1	0.50	20	3.878	106	75 - 125				

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 15:51**
Client ID: Run ID: **WetChem_HS_387809** SeqNo: **6190603** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	25.27	0.50	20	3.878	107	75 - 125	25.1	0.691	20	

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168143 (0) **Instrument: UV-2450** **Method: AMMONIA AS N BY SM4500 NH3-B-F-2011**

MBLK Sample ID: **MBLK-168143** Units: **mg/L** Analysis Date: **20-Jul-2021 16:00**
Client ID: Run ID: **UV-2450_387814** SeqNo: **6190827** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	< 0.025	0.050								

LCS Sample ID: **LCS-168143** Units: **mg/L** Analysis Date: **20-Jul-2021 16:00**
Client ID: Run ID: **UV-2450_387814** SeqNo: **6190826** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.435	0.050	0.5	0	87.0	85 - 115				

MS Sample ID: **HS21070658-03MS** Units: **mg/L** Analysis Date: **20-Jul-2021 16:00**
Client ID: **GM11** Run ID: **UV-2450_387814** SeqNo: **6190833** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.14	0.050	0.5	0.792	69.6	80 - 120				SE

MS Sample ID: **HS21070287-01MS** Units: **mg/L** Analysis Date: **20-Jul-2021 16:00**
Client ID: Run ID: **UV-2450_387814** SeqNo: **6190829** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.17	0.050	0.5	0.85	64.0	80 - 120				SE

MSD Sample ID: **HS21070658-03MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 16:00**
Client ID: **GM11** Run ID: **UV-2450_387814** SeqNo: **6190832** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.141	0.050	0.5	0.792	69.8	80 - 120	1.14	0.0877	20	SE

MSD Sample ID: **HS21070287-01MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 16:00**
Client ID: Run ID: **UV-2450_387814** SeqNo: **6190828** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.187	0.050	0.5	0.85	67.4	80 - 120	1.17	1.44	20	SE

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: 168209 (0) **Instrument: UV-2450** **Method: AMMONIA AS N BY SM4500 NH3-B-F-2011**

MBLK Sample ID: **MBLK-168209** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193122** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	< 0.025	0.050								

LCS Sample ID: **LCS-168209** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193121** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.484	0.050	0.5	0	96.8	85 - 115				

MS Sample ID: **HS21070697-01MS** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193119** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.287	0.050	0.5	0.738	110	80 - 120				E

MS Sample ID: **HS21070695-04MS** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193117** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.531	0.050	0.5	0.057	94.8	80 - 120				

MSD Sample ID: **HS21070697-01MSD** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193120** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.287	0.050	0.5	0.738	110	80 - 120	1.287	0	20	E

MSD Sample ID: **HS21070695-04MSD** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193118** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.495	0.050	0.5	0.057	87.6	80 - 120	0.531	7.02	20	

The following samples were analyzed in this batch: HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387531 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **14-Jul-2021 09:31**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184331** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 0.200	0.500								
Nitrogen, Nitrate (As N)	< 0.0300	0.100								
Nitrogen, Nitrite (As N)	< 0.0300	0.100								
Sulfate	< 0.200	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **14-Jul-2021 09:39**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184332** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.26	0.500	20	0	101	90 - 110				
Nitrogen, Nitrate (As N)	4.091	0.100	4	0	102	90 - 110				
Nitrogen, Nitrite (As N)	4.035	0.100	4	0	101	90 - 110				
Sulfate	20.39	0.500	20	0	102	90 - 110				

MS Sample ID: **HS21070672-02MS** Units: **mg/L** Analysis Date: **14-Jul-2021 16:22**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184353** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	133	0.500	10	123.5	95.1	80 - 120				EO
Nitrogen, Nitrate (As N)	5.622	0.100	2	3.647	98.8	80 - 120				
Nitrogen, Nitrite (As N)	1.898	0.100	2	0.0532	92.2	80 - 120				
Sulfate	89.95	0.500	10	79.95	100	80 - 120				O

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **14-Jul-2021 13:02**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184344** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1212	2.50	50	1243	-62.6	80 - 120				SEO
Nitrogen, Nitrate (As N)	19.07	0.500	10	10.09	89.8	80 - 120				
Nitrogen, Nitrite (As N)	9.342	0.500	10	0.02	93.2	80 - 120				
Sulfate	305.2	2.50	50	275.8	58.8	80 - 120				SO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387531 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MS Sample ID: **HS21070657-01MS** Units: **mg/L** Analysis Date: **14-Jul-2021 12:45**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184342** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	194.9	0.500	10	189	58.7	80 - 120				SEO
Nitrogen, Nitrate (As N)	13.13	0.100	2	11.71	71.2	80 - 120				SO
Nitrogen, Nitrite (As N)	1.843	0.100	2	0.0052	91.9	80 - 120				
Sulfate	77.25	0.500	10	68.97	82.8	80 - 120				O

MSD Sample ID: **HS21070672-02MSD** Units: **mg/L** Analysis Date: **14-Jul-2021 16:29**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184354** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	130.8	0.500	10	123.5	72.9	80 - 120	133	1.68	20	SEO
Nitrogen, Nitrate (As N)	5.502	0.100	2	3.647	92.8	80 - 120	5.622	2.16	20	
Nitrogen, Nitrite (As N)	1.864	0.100	2	0.0532	90.5	80 - 120	1.898	1.83	20	
Sulfate	87.57	0.500	10	79.95	76.2	80 - 120	89.95	2.69	20	SO

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **14-Jul-2021 13:10**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184345** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1212	2.50	50	1243	-61.8	80 - 120	1212	0.0326	20	SEO
Nitrogen, Nitrate (As N)	19.08	0.500	10	10.09	89.9	80 - 120	19.07	0.0315	20	
Nitrogen, Nitrite (As N)	9.357	0.500	10	0.02	93.4	80 - 120	9.342	0.16	20	
Sulfate	305.1	2.50	50	275.8	58.6	80 - 120	305.2	0.0318	20	SO

MSD Sample ID: **HS21070657-01MSD** Units: **mg/L** Analysis Date: **14-Jul-2021 12:53**
Client ID: Run ID: **ICS-Integrion_387531** SeqNo: **6184343** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	195	0.500	10	189	60.1	80 - 120	194.9	0.0723	20	SEO
Nitrogen, Nitrate (As N)	13.13	0.100	2	11.71	71.5	80 - 120	13.13	0.0366	20	SO
Nitrogen, Nitrite (As N)	1.843	0.100	2	0.0052	91.9	80 - 120	1.843	0.0109	20	
Sulfate	77.45	0.500	10	68.97	84.8	80 - 120	77.25	0.261	20	O

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387574 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **16-Jul-2021 00:13**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185713** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 0.200	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **16-Jul-2021 00:21**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185714** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.66	0.500	20	0	103	90 - 110				

MS Sample ID: **HS21070773-03MS** Units: **mg/L** Analysis Date: **16-Jul-2021 01:42**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185720** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	364	0.500	10	363.7	3.71	80 - 120				SEO

MS Sample ID: **HS21070753-10MS** Units: **mg/L** Analysis Date: **15-Jul-2021 23:36**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185709** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	24.96	0.500	10	15.02	99.5	80 - 120				

MSD Sample ID: **HS21070773-03MSD** Units: **mg/L** Analysis Date: **16-Jul-2021 01:50**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185721** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	371.8	0.500	10	363.7	81.1	80 - 120	364	2.1	20	EO

MSD Sample ID: **HS21070753-10MSD** Units: **mg/L** Analysis Date: **15-Jul-2021 23:44**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185710** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	24.92	0.500	10	15.02	99.0	80 - 120	24.96	0.2	20	

The following samples were analyzed in this batch: HS21070658-02

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387639 (0) **Instrument:** TOC_04 **Method:** DISSOLVED ORGANIC CARBON BY SW9060A (DISSOLVED)

MBLK Sample ID: **MBLK-07162021** Units: **mg/L** Analysis Date: **16-Jul-2021 18:56**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	< 0.500	1.00								

LCS Sample ID: **LCS-07162021** Units: **mg/L** Analysis Date: **16-Jul-2021 19:11**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.6	1.00	10	0	106	85 - 115				

LCSD Sample ID: **LCSD-07162021** Units: **mg/L** Analysis Date: **16-Jul-2021 19:26**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186977** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.48	1.00	10	0	105	85 - 115	10.6	1.14	20	

MS Sample ID: **HS21070738-03MS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:21**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186984** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	17.75	1.00	10	6.473	113	80 - 120				

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387721 (0) **Instrument:** WetChem_HS **Method:** SULFIDE BY SM4500 S2-F-2011

MBLK Sample ID: **MBLK-R387721** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188654** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	< 1.00	1.00								

LCS Sample ID: **LCS-R387721** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188653** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.4	1.00	25	0	85.6	85 - 115				

LCSD Sample ID: **LCSD-R387721** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188652** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.6	1.00	25	0	86.4	85 - 115	21.4	0.93	20	

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188664** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	145	5.00	125	18	102	80 - 120				

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188633** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	20.8	1.00	25	-1.6	89.6	80 - 120				

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188663** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	144	5.00	125	18	101	80 - 120	145	0.692	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: **R387721 (0)** **Instrument:** **WetChem_HS** **Method:** **SULFIDE BY SM4500 S2-F-2011**

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188634** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21	1.00	25	-1.6	90.4	80 - 120	20.8	0.957	20	

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387738 (0) **Instrument:** ManTech01 **Method:** ALKALINITY BY SM 2320B-2011

MBLK Sample ID: **WBLKW1-210719** Units: **mg/L** Analysis Date: **19-Jul-2021 18:46**
Client ID: Run ID: **ManTech01_387738** SeqNo: **6189097** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00								
Alkalinity, Total (As CaCO3)	< 5.00	5.00								

LCS Sample ID: **LCS1-210719** Units: **mg/L** Analysis Date: **19-Jul-2021 18:55**
Client ID: Run ID: **ManTech01_387738** SeqNo: **6189098** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	983.8	5.00	1000	0	98.4	85 - 115				
Alkalinity, Total (As CaCO3)	1002	5.00	1000	0	100	85 - 115				

LCSD Sample ID: **LCSD1-210719** Units: **mg/L** Analysis Date: **19-Jul-2021 19:04**
Client ID: Run ID: **ManTech01_387738** SeqNo: **6189099** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	987.8	5.00	1000	0	98.8	85 - 115	983.8	0.411	20	
Alkalinity, Total (As CaCO3)	1004	5.00	1000	0	100	85 - 115	1002	0.24	20	

DUP Sample ID: **HS21070658-01DUP** Units: **mg/L** Analysis Date: **19-Jul-2021 19:18**
Client ID: **MMX** Run ID: **ManTech01_387738** SeqNo: **6189101** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	410.7	5.00					430.5	4.7	20	
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	410.7	5.00					430.5	4.7	20	

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070658

QC BATCH REPORT

Batch ID: R387871 (0) **Instrument:** ICS-Integrion **Method:** NITRATE/NITRITE BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **20-Jul-2021 04:41**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192155** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	< 0.0300	0.200								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **20-Jul-2021 04:48**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192156** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	8.175	0.200	8	0	102	90 - 110				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **20-Jul-2021 02:35**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192139** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	19.49	1.00	20	0	97.4	80 - 120				

MS Sample ID: **HS21070658-01MS** Units: **mg/L** Analysis Date: **20-Jul-2021 01:14**
Client ID: **MMX** Run ID: **ICS-Integrion_387871** SeqNo: **6192128** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	28.76	1.00	20	9.956	94.0	80 - 120				

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 02:42**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192140** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	19.84	1.00	20	0	99.2	80 - 120	19.49	1.8	20	

MSD Sample ID: **HS21070658-01MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 01:21**
Client ID: **MMX** Run ID: **ICS-Integrion_387871** SeqNo: **6192129** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	29.19	1.00	20	9.956	96.2	80 - 120	28.76	1.48	20	

The following samples were analyzed in this batch: HS21070658-01 HS21070658-02 HS21070658-03 HS21070658-04 HS21070658-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: **HS21070658**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	21-022-0	26-Mar-2022
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-33	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
North Carolina	624-2021	31-Dec-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-21-27	30-Apr-2022

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070658

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	MET061
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	MET061
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	WET231
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	WET231
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	WET231
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	VOA078
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	RSK010
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	WET231
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	Sub
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	LVI002
HS21070658-01	MMX	Login	7/14/2021 10:56:17 AM	JRM	LVI002

RIGHT SOLUTIONS | RIGHT PARTNER

Sample Receipt Checklist

Work Order ID: HS21070658 **Date/Time Received:** **14-Jul-2021 10:05**

Client Name: GMS **Received by:** **Jared R. Makan**

Completed By: /S/ Jared R. Makan (eSignature) 14-Jul-2021 10:55 (Date/Time) **Reviewed by:** /S/ Ragen Giga (eSignature) 15-Jul-2021 14:59 (Date/Time)

Matrices: **Water** Carrier name: **FedEx International Priority**

	Yes	No	
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	1 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:238514
Samplers name present on COC?	☐	☑	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	1.4°C, 1.0°C UC/C	IR31
Cooler(s)/Kit(s):	46730, 45587	
Date/Time sample(s) sent to storage:	07/14/2021 11:05	

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐

pH adjusted by:

Login Notes: MMX and FD-01 Hold time for Nitrates missed due to FEDEX delayed receipt of sample Kits - Trip blanks received, not listed on COC. Placed on hold.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 238514

HS21070658

Geo Monitoring Services
St. Croix Alumina

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	St. Croix Alumina	A	8015_DRO_LVI (DRO 8015)
Work Order		Project Number		B	8260_LL_W (8260 BTEX)
Company Name	Geo Monitoring Services	Bill To Company	Geo Monitoring Services	C	8270_PAH_LVI (8270 Napththalene)
Send Report To	Brad Freeman	Invoice Attn	Brad Freeman	D	ALK_W 2320B (Alkalinity), 300_W (NO2, NO3,Cl,SO4)
Address	4123 5th Street	Address	4123 5th Street	E	ICP_TW (Ca, Mg, K, Na, Fe, Mn)
				F	ICP_DISS (Dissolved Fe & Mn (Field Filter))
City/State/Zip	Brookshire, TX 77423	City/State/Zip	Brookshire TX 77423	G	SULFD_4500S F (Sulfide)
Phone	(281) 375-5101	Phone	(281) 375-5101	H	NIT_AMMON_W (Ammonia)
Fax	(281) 375-8468	Fax	(281) 375-8468	I	RSK175 (Methane), Diss CO2 (Sub to ALS Simi Valley)
e-Mail Address	brad@geomon.net	e-Mail Address	brad@geomon.net	J	TOC_Diss_5310B (DOC)- Field Filter

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MMX	7-12-21	1014	H_2O		22	3	3	3	1	1	1	1	1	6	2	
2	MM9	↓	1150	↓			X	X	X	X	X	X	X	X	X	X	
3	GW 11	↓	1310	↓			X	X	X	X	X	X	X	X	X	X	
4	VW 27	7-12-21	1425	H_2O			X	X	X	X	X	X	X	X	X	X	
5	FD-01																
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign

Shipment Method

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
[signature]	7-12-21	1445	
Relinquished by:	Date: 7/14/21	Time: 10:05	Received by (Laboratory): J. [signature]
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: GMS - St. Croix Alumina

Cooler ID	Cooler Temp.
	ul
46730	1.4
45587	1.0

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other ____
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

1K31 CFO

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTO
Date: 7/12/2021
Name: michael
Company: GES

DY SEAL
Time: 1400
Alexander

Seal Broken By: Jm
Date: 7/14/21

FedEx Express International Air Waybill

Origin Cop

From
Date: [illegible]
Sender's FedEx Account Number:
Sender's Name: [illegible]
Phone: [illegible]
Company: GES
Address: [illegible]
Address:
City: [illegible]
State Province: [illegible]
Country:
ZIP Postal Code: [illegible]
Email Address: [illegible]
Internal Billing Reference:

To
28 ☐ Residential Delivery
Recipient's Name:
Phone:
Company: ALS Laboratories
Address: 10450 Stancliff Rd. Suite 210
Dept./Floor:
Address:
City: Houston
State Province: TX
Country:
ZIP Postal Code: 77099
Email Address:
Recipient's Tax ID Number for Customs Purposes:

Shipment Information
Packages per's Load and Count/SLAC: 1
Total Weight: 5.4 lbs. ☐ kg ☐
DIM: / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Sample		USA	10

s EEI been d in AES? U.S. Export y: Check One
☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.
☐ No EEI required, enter exemption number:
If other than NLR, enter License Exception:
Total Declared Value for Carriage:
Total Value for Customs (Specify Currency): 10 USD
☐ Yes – Enter AES proof of filing citation:

FedEx Tracking Number: 8160 2462 0051 0402 Form ID No.

4 Express Package Service
NOTE: Service order has changed. Please select carefully.
06 ☐ FedEx Intl. First 01 ☑ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging
06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube
15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☑ Other Cooler

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.
01 ☐ HOLD at FedEx Location 03 ☑ SATURDAY Delivery
10 ☐ Direct Signature Someone at recipient's address may sign for delivery.
34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.
Bill transportation charges to:
Enter FedEx Acct. No. or Credit Card No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque
Total Transports
FedEx Acct. No. 967554812
[redacted]
Specify Curren
Credit Card Exp. Date
Bill duties and taxes to:
Enter FedEx Acct. No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque
FedEx Acct. No. 967554812

8 Required Signature
Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not requi U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipme and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.
WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.
Sender's Signature: [illegible]
Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.
Recipient's Signature
66

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SGN	XHS EX	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☑ Station
Forms Attached: ☐ CI ☐ CO
Base Charges: Declared Val. Chrg: Other: ODA/OPA: Credit Card Auth.:
FedEx Emp. #: [illegible] Audit Emp. #: Date: Time: Del. Courier Emp. #: Date: Time:

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY
Date: 7/14/2021 Time:
Name: Michael Ale
Company: GES

SEAL
Seal Broken By: Jm
Date: 7/14/21

FedEx Express International Air Waybill

Origin Co

From

Date | Sender's FedEx Account Number

Sender's Name: Michael Alexander | Phone: 340 277 6004

Company: GES

Address: 1 E State Hope

Address

City: Christiansted | State Province: VI

Country | ZIP Postal Code: 00820

Email Address: [illegible]

Internal Billing Reference

To

28 ☐ Residential Delivery

Recipient's Name | Phone

Company: [illegible]

Address: 10450 Stancliff Rd Suite 210

Dept./Floor

Address

City: Houston | State Province: Tx

Country | ZIP Postal Code: 77099

Email Address

Recipient's Tax ID Number for Customs Purposes

Shipment Information

Packages: 1 | Total Weight: 62 lbs. ☐ kg ☐ | DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Sample		USA	10

EI been in AES? ☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR. ☐ No EEI required, enter exemption number: | If other than NLR, enter License Exception: | Total Declared Value for Carriage | Total Value for Customs (Specify Currency) 0 USD

Export Check One

Enter AES proof of filing citation:

FedEx Tracking Number 8160 2462 0040 0402 Form ID No.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First | 01 ☑ FedEx Intl. Priority | 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope | 02 ☐ FedEx Pak | 03 ☐ FedEx Box | 04 ☐ FedEx Tube
15 ☐ FedEx 10kg Box | 25 ☐ FedEx 25kg Box | 01 ☑ Other Courier

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location | 03 ☑ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery. | 34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. | 2 ☑ Recipient | 3 ☐ Third Party | 4 ☐ Credit Card | 5 ☐ Cash Check/Cheque

Total Transportati

FedEx Acct. No. 967554812

[redacted]

Specify Curranc

Credit Card Exp. Date

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. | 2 ☑ Recipient | 3 ☐ Third Party | 5 ☐ Cash Check/Cheque

FedEx Acct. No. 967554812

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.
WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: M Sanes

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
SIXA	SEXA	XH SEXA	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station | Forms Attached: ☐ CI ☐ CO

Base Charges | Declared Val. Chrg. | Other | ODA/OPA | Credit Card Auth.

FedEx Emp. # 1155 | Audit Emp. # | Date 7/14/21 | Time | Del. Courier Emp. # | Date | Time

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

July 22, 2021

Ragen Giga
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099

RE: HS21070658

Dear Ragen:

Enclosed are the results of the samples submitted to our laboratory on July 14, 2021. For your reference, these analyses have been assigned our service request number P2103807.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 4:44 pm, Aug 13, 2021

Hayden Akers
Project Manager

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: ALS Environmental - US
Project: HS21070658

Service Request No: P2103807

CASE NARRATIVE

The samples were received intact under chain of custody on July 14, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

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ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Environmental - US

Service Request: P2103807

Project ID: HS21070658

Date Received: 7/15/2021

Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2
MMX	P2103807-001	Water	7/12/2021	10:14	X
MM9	P2103807-002	Water	7/12/2021	11:50	X
GW-11	P2103807-003	Water	7/12/2021	13:10	X
VW-27	P2103807-004	Water	7/12/2021	14:25	X
FD-01	P2103807-005	Water	7/12/2021	00:00	X

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P2103807

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **16491**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065 **Phone:** +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Ragen Giga
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RagenP.Giga@ALSGlobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21070658
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS21070658-01**	**MMX**	**Water**	**12 Jul 2021 10:14**
	SUB_Diss CO2			21 Jul 2021
2.	**HS21070658-02**	**MM9**	**Water**	**12 Jul 2021 11:50**
	SUB_Diss CO2			21 Jul 2021
3.	**HS21070658-03**	**GW-11**	**Water**	**12 Jul 2021 13:10**
	SUB_Diss CO2			21 Jul 2021
4.	**HS21070658-04**	**VW-27**	**Water**	**12 Jul 2021 14:25**
	SUB_Diss CO2			21 Jul 2021
5.	**HS21070658-05**	**FD-01**	**Water**	**12 Jul 2021 00:00**
	SUB_Diss CO2			21 Jul 2021

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: STD (Laboratory Standard QC: method blank and LCS required)

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P21038067

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **16491**

Relinquished By:	J. MACKAY	Date/Time:	7/14/21 18:00
Received By:		Date/Time:	7-15-21 0830
Cooler ID(s):		Temperature(s):	2° [illegible]

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ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2103807
Project: HS21070658
Sample(s) received on: 7/14/2021 Date opened: 7/14/2021 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C	Wet Ic		
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☒	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103807-001.01	40mL VOA NP		6		A	CB 7/26/21
P2103807-001.02	40mL VOA NP				A	
P2103807-001.03	40mL VOA NP				A	
P2103807-002.01	40mL VOA NP		7		A	CB 7/26/21
P2103807-002.02	40mL VOA NP				A	
P2103807-002.03	40mL VOA NP				A	
P2103807-003.01	40mL VOA NP		7		A	CB 7/26/21
P2103807-003.02	40mL VOA NP				A	
P2103807-003.03	40mL VOA NP				A	
P2103807-004.01	40mL VOA NP		7		A	CB 7/26/21
P2103807-004.02	40mL VOA NP				A	
P2103807-004.03	40mL VOA NP				A	
P2103807-005.01	40mL VOA NP		7		A	CB 7/26/21
P2103807-005.02	40mL VOA NP				A	
P2103807-005.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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Client: **ALS Environmental - US**

Client Project ID: **HS21070658** ALS Project ID: P2103807

Carbon Dioxide

Test Code: RSK 175

Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 7/12/21

Analyst: Connor Barrett Date Received: 7/15/21

Matrix: Liquid Date Analyzed: 7/26/21

Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	MDL µg/L	Data Qualifier
MMX	P2103807-001	0.10	**35,000**	1,000	370	
MM9	P2103807-002	0.10	**14,000**	1,000	370	
GW-11	P2103807-003	0.10	**14,000**	1,000	370	
VW-27	P2103807-004	0.10	**15,000**	1,000	370	
FD-01	P2103807-005	0.10	**12,000**	1,000	370	
Method Control Sample	P210726-MB	0.10	ND	1,000	370	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21070658**

ALS Project ID: P2103807
ALS Sample ID: P210726-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/26/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	22,000	21,400	**96**	**93**	56-105	3	12	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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August 16, 2021

Brad Freeman
Geo Monitoring Services
4123 5th Street
Brookshire, TX 77423

Work Order: **HS21070738**

Laboratory Results for: **St. Croix Alumina**

Dear Brad Freeman,

ALS Environmental received 19 sample(s) on Jul 15, 2021 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER

Ragen Giga
Project Manager

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070738

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21070738-01	Equipment Blank-1	Water		12-Jul-2021 15:30	15-Jul-2021 09:25	☐
HS21070738-02	VW16	Water		12-Jul-2021 16:10	15-Jul-2021 09:25	☐
HS21070738-03	VW34	Water		13-Jul-2021 08:00	15-Jul-2021 09:25	☐
HS21070738-04	GM22	Water		13-Jul-2021 09:05	15-Jul-2021 09:25	☐
HS21070738-05	VW1	Water		13-Jul-2021 16:15	15-Jul-2021 09:25	☐
HS21070738-06	VW31	Water		13-Jul-2021 10:40	15-Jul-2021 09:25	☐
HS21070738-07	VW24	Water		13-Jul-2021 12:20	15-Jul-2021 09:25	☐
HS21070738-08	VW2	Water		13-Jul-2021 13:55	15-Jul-2021 09:25	☐
HS21070738-09	VW25	Water		13-Jul-2021 07:10	15-Jul-2021 09:25	☐
HS21070738-10	VW37	Water		13-Jul-2021 09:00	15-Jul-2021 09:25	☐
HS21070738-11	VW32	Water		13-Jul-2021 11:00	15-Jul-2021 09:25	☐
HS21070738-12	VW35	Water		13-Jul-2021 12:15	15-Jul-2021 09:25	☐
HS21070738-13	VW30	Water		13-Jul-2021 13:30	15-Jul-2021 09:25	☐
HS21070738-14	FD-02	Water		13-Jul-2021 00:00	15-Jul-2021 09:25	☐
HS21070738-15	Equipment Blank-2	Water		12-Jul-2021 13:45	15-Jul-2021 09:25	☐
HS21070738-16	Trip Blank 01	Water	CG 061121 -72	12-Jul-2021 00:00	15-Jul-2021 09:25	☐
HS21070738-17	Trip Blank 02	Water	CG 061121 -75	12-Jul-2021 00:00	15-Jul-2021 09:25	☐
HS21070738-18	Trip Blank 03	Water	CG 061121 -150	12-Jul-2021 00:00	15-Jul-2021 09:25	☐
HS21070738-19	Trip Blank 04	Water	CG 061121 -144	12-Jul-2021 00:00	15-Jul-2021 09:25	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070738

CASE NARRATIVE

Work Order Comments

- Bottle count differs for samples VW-16 & VW-1; COC lists 22 containers with all analyses checked off, received only vials for 8260 BTEX, 8270 PAH & 8015 DRO. VW-16 & VW-1 logged in for BTEX, PAH & DRO per containers received.
  One DRO LVI vial broke during shipping for VW-24. Enough sample remains to run analysis.
  Trip blanks received, not listed on COC. Logged in for analysis.
  DRO checked off for Equipment Blank-1, no vials received. Logged in for VOCs only.
  nitial pH>2 (13) on acid preserved bottles for GM-22. pH adjusted by adding the following acid to samples:
  Ammonia/TKN - 0.5ml H2SO4
  Metals - 0.5ml HNO3
  Final pH=13, unable to achieve a pH<2. Preserved 07/15/21 10:25

Work Order Comments

- The analyses for Dissolved Carbon Dioxide were subcontracted to ALS Environmental in Simi Valley, CA.

GC Semivolatiles by Method RSK-175

Batch ID: R387651

Sample ID: GM22 (HS21070738-04)

- Preservation of VOA vials can only be verified after samples are analyzed. Based on the post-analytical screening, the following chemically-preserved samples were found to have a pH >2.

Sample ID: VW31 (HS21070738-06MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: VW31 (HS21070738-06MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070738

CASE NARRATIVE

GC Semivolatiles by Method SW8015M

Batch ID: 168013

Sample ID: VW2 (HS21070738-08)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW24 (HS21070738-07)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW30 (HS21070738-13)

- Surrogate recoveries were outside of the control limits due to matrix interference.
- Surrogate recovered above upper control limits

Sample ID: VW31 (HS21070738-06)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW31 (HS21070738-06MS/MSD)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW31 (HS21070738-06MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: VW31 (HS21070738-06MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

Sample ID: VW32 (HS21070738-11)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Batch ID: 168012

Sample ID: LCSD-168012

- The RPD between the LCS and LCSD was outside of the control limit.
- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070738

CASE NARRATIVE

GCMS Semivolatiles by Method SW8270

Batch ID: 168053

Sample ID: LCSD-168053

- The RPD between the LCS and LCSD was outside of the control limit.

Sample ID: HS21070657-02MSD

- MSD is for an unrelated sample

Sample ID: VW31 (HS21070738-06MSD)

- MS/MSD RPD recovered above limits for surrogate

Batch ID: 168052

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R388086

Sample ID: GM22 (HS21070738-04)

- Lowest practical dilution for sample hs21070738-04. Sample is foamy.

Sample ID: VW31 (HS21070738-06MS)

- MS/MSD failed QC limits. No RPDs

Batch ID: R387712,R388159

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R387692

Sample ID: VW16 (HS21070738-02)

- Surrogate recovered outside control limits

Batch ID: R387764

Sample ID: HS21070720-09MSD

- MSD is for an unrelated sample

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Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070738

CASE NARRATIVE

Metals by Method SW6020A

Batch ID: 168066

Sample ID: VW31 (HS21070738-06MSD)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Calcium,Sodium)

Batch ID: 168025

Sample ID: GM22 (HS21070738-04)

- Sample ran at 5x due to high concentration of Sodium.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070738

CASE NARRATIVE

WetChemistry by Method E300

Batch ID: R387871

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R387565

Sample ID: FD-02 (HS21070738-14)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

Sample ID: GM22 (HS21070738-04)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.
- Sample ran at 10X due to high concentration of Chloride

Sample ID: HS21070739-01MS

- MS and MSD are for an unrelated sample (Sulfate)

Sample ID: VW25 (HS21070738-09)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.
- Sample ran at 5X due to high concentration of Chloride

Sample ID: VW31 (HS21070738-06)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

Sample ID: VW31 (HS21070738-06MS)

- The recovery of the Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) associated with this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS/MSD may be due to sample matrix interference. (Sulfate)

Sample ID: VW32 (HS21070738-11)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

Sample ID: VW34 (HS21070738-03)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.
- Sample ran at 2X due to high concentration of Chloride

Sample ID: VW37 (HS21070738-10)

- Sample holding time expired prior to sample receipt. It was analyzed at the request of the client. Results should be considered estimated.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070738

CASE NARRATIVE

WetChemistry by Method SM4500 S2-F

Batch ID: R387721

Sample ID: GM22 (HS21070738-04)

- Dilution due to sample matrix.

Sample ID: VW25 (HS21070738-09)

- Dilution due to sample matrix.

Sample ID: VW31 (HS21070738-06)

- Dilution due to sample matrix.

Sample ID: VW37 (HS21070738-10)

- Dilution due to sample matrix.

WetChemistry by Method SW9060

Batch ID: R387639,R388034

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R387559

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM4500 NH3-B-F

Batch ID: 168273

Sample ID: VW31 (HS21070738-06MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: VW31 (HS21070738-06MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

Batch ID: 168209

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M4500 NH3 D

Batch ID: 168107

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	Equipment Blank-1	Lab ID:HS21070738-01
Collection Date:	12-Jul-2021 15:30	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 20:32
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 20:32
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	16-Jul-2021 20:32
o-Xylene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 20:32
Toluene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 20:32
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 20:32
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*1*	*16-Jul-2021 20:32*
Surr: 4-Bromofluorobenzene	*99.1*			*81-113*	*%REC*	*1*	*16-Jul-2021 20:32*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*16-Jul-2021 20:32*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*1*	*16-Jul-2021 20:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	VW16	Lab ID:HS21070738-02
Collection Date:	12-Jul-2021 16:10	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 21:17
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 21:17
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	16-Jul-2021 21:17
o-Xylene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 21:17
Toluene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 21:17
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 21:17
Surr: 1,2-Dichloroethane-d4	*134*	*S*		*70-126*	*%REC*	*1*	*16-Jul-2021 21:17*
Surr: 4-Bromofluorobenzene	*98.0*			*81-113*	*%REC*	*1*	*16-Jul-2021 21:17*
Surr: Dibromofluoromethane	*86.7*			*77-123*	*%REC*	*1*	*16-Jul-2021 21:17*
Surr: Toluene-d8	*96.7*			*82-127*	*%REC*	*1*	*16-Jul-2021 21:17*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0210		0.0210	0.105	ug/L	1	19-Jul-2021 17:09
Surr: 2-Fluorobiphenyl	*102*			*32-130*	*%REC*	*1*	*19-Jul-2021 17:09*
Surr: 4-Terphenyl-d14	*80.1*			*40-135*	*%REC*	*1*	*19-Jul-2021 17:09*
Surr: Nitrobenzene-d5	*97.2*			*45-142*	*%REC*	*1*	*19-Jul-2021 17:09*
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	< 0.021		0.021	0.052	mg/L	1	21-Jul-2021 19:32
Surr: 2-Fluorobiphenyl	*93.0*			*60-135*	*%REC*	*1*	*21-Jul-2021 19:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW34
Collection Date: 13-Jul-2021 08:00

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 10:36
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 10:36
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	17-Jul-2021 10:36
o-Xylene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 10:36
Toluene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 10:36
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 10:36
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*17-Jul-2021 10:36*
Surr: 4-Bromofluorobenzene	*99.2*			*81-113*	*%REC*	*1*	*17-Jul-2021 10:36*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*17-Jul-2021 10:36*
Surr: Toluene-d8	*96.9*			*82-127*	*%REC*	*1*	*17-Jul-2021 10:36*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0213		0.0213	0.107	ug/L	1	19-Jul-2021 17:29
Surr: 2-Fluorobiphenyl	*93.8*			*32-130*	*%REC*	*1*	*19-Jul-2021 17:29*
Surr: 4-Terphenyl-d14	*109*			*40-135*	*%REC*	*1*	*19-Jul-2021 17:29*
Surr: Nitrobenzene-d5	*78.9*			*45-142*	*%REC*	*1*	*19-Jul-2021 17:29*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**27.6**		**0.107**	**0.500**	**ug/L**	1	16-Jul-2021 10:11
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	< 0.021		0.021	0.052	mg/L	1	21-Jul-2021 20:01
Surr: 2-Fluorobiphenyl	*94.6*			*60-135*	*%REC*	*1*	*21-Jul-2021 20:01*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**15.1**		**0.0340**	**0.500**	**mg/L**	1	22-Jul-2021 12:46
Iron	**0.272**		**0.0120**	**0.200**	**mg/L**	1	22-Jul-2021 12:46
Magnesium	**8.87**		**0.0100**	**0.200**	**mg/L**	1	22-Jul-2021 12:46
Manganese	**0.00784**		**0.000700**	**0.00500**	**mg/L**	1	22-Jul-2021 12:46
Potassium	**21.5**		**0.0180**	**0.200**	**mg/L**	1	22-Jul-2021 12:46
Sodium	**827**		**0.0700**	**1.00**	**mg/L**	5	21-Jul-2021 15:47
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	< 0.0120		0.0120	0.200	mg/L	1	16-Jul-2021 22:08
Manganese	**0.000952**	J	**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:08
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**790**		**10.0**	**25.0**	**mg/L**	50	15-Jul-2021 18:55
Nitrogen, Nitrate (As N)	< 0.0600	H	0.0600	0.200	mg/L	2	15-Jul-2021 18:48
Nitrogen, Nitrite (As N)	< 0.0600	H	0.0600	0.200	mg/L	2	15-Jul-2021 18:48
Sulfate	**259**		**10.0**	**25.0**	**mg/L**	50	15-Jul-2021 18:55
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 01:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070738
Sample ID:	VW34		Lab ID:HS21070738-03
Collection Date:	13-Jul-2021 08:00		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**1.1**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**717**		**5.00**	**5.00**	**mg/L**	1	15-Jul-2021 23:41
Alkalinity, Carbonate (As CaCO3)	**188**		**5.00**	**5.00**	**mg/L**	1	15-Jul-2021 23:41
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	15-Jul-2021 23:41
Alkalinity, Total (As CaCO3)	**905**		**5.00**	**5.00**	**mg/L**	1	15-Jul-2021 23:41
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 21-Jul-2021		Analyst: KVL
Nitrogen, Ammonia (as N)	**0.41**		**0.025**	**0.050**	**mg/L**	1	21-Jul-2021 16:30
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**6.47**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 21:02
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: GM22
Collection Date: 13-Jul-2021 09:05

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 5.0		5.0	25	ug/L	25	23-Jul-2021 03:33
Ethylbenzene	< 7.5		7.5	25	ug/L	25	23-Jul-2021 03:33
m,p-Xylene	< 12		12	50	ug/L	25	23-Jul-2021 03:33
o-Xylene	< 7.5		7.5	25	ug/L	25	23-Jul-2021 03:33
Toluene	< 5.0		5.0	25	ug/L	25	23-Jul-2021 03:33
Xylenes, Total	< 7.5		7.5	25	ug/L	25	23-Jul-2021 03:33
Surr: 1,2-Dichloroethane-d4	*116*			*70-126*	*%REC*	*25*	*23-Jul-2021 03:33*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*25*	*23-Jul-2021 03:33*
Surr: Dibromofluoromethane	*111*			*77-123*	*%REC*	*25*	*23-Jul-2021 03:33*
Surr: Toluene-d8	*107*			*82-127*	*%REC*	*25*	*23-Jul-2021 03:33*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0201		0.0201	0.101	ug/L	1	19-Jul-2021 17:49
Surr: 2-Fluorobiphenyl	*73.8*			*32-130*	*%REC*	*1*	*19-Jul-2021 17:49*
Surr: 4-Terphenyl-d14	*73.4*			*40-135*	*%REC*	*1*	*19-Jul-2021 17:49*
Surr: Nitrobenzene-d5	*57.1*			*45-142*	*%REC*	*1*	*19-Jul-2021 17:49*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**211**		**2.14**	**10.0**	**ug/L**	20	16-Jul-2021 14:38
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**0.29**		**0.020**	**0.051**	**mg/L**	1	21-Jul-2021 20:30
Surr: 2-Fluorobiphenyl	*117*			*60-135*	*%REC*	*1*	*21-Jul-2021 20:30*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**1.92**	J	**0.340**	**5.00**	**mg/L**	1	22-Jul-2021 12:48
Iron	**1.48**	J	**0.120**	**2.00**	**mg/L**	1	22-Jul-2021 12:48
Magnesium	**0.598**	J	**0.100**	**2.00**	**mg/L**	1	22-Jul-2021 12:48
Manganese	**0.0131**	J	**0.00700**	**0.0500**	**mg/L**	1	22-Jul-2021 12:48
Potassium	**54.2**		**0.180**	**2.00**	**mg/L**	1	22-Jul-2021 12:48
Sodium	**6,950**		**0.700**	**10.0**	**mg/L**	5	21-Jul-2021 15:49
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	< 0.0600		0.0600	1.00	mg/L	5	16-Jul-2021 22:10
Manganese	< 0.00350		0.00350	0.0250	mg/L	5	16-Jul-2021 22:10
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**2,510**		**40.0**	**100**	**mg/L**	200	15-Jul-2021 19:10
Nitrogen, Nitrate (As N)	< 0.300	H	0.300	1.00	mg/L	10	15-Jul-2021 19:03
Nitrogen, Nitrite (As N)	**0.328**	JH	**0.300**	**1.00**	**mg/L**	10	15-Jul-2021 19:03
Sulfate	**540**		**2.00**	**5.00**	**mg/L**	10	15-Jul-2021 19:03
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.300		0.300	2.00	mg/L	10	20-Jul-2021 02:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	GM22	Lab ID:HS21070738-04
Collection Date:	13-Jul-2021 09:05	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**5.9**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	< 100		100	100	mg/L	20	15-Jul-2021 23:50
Alkalinity, Carbonate (As CaCO3)	**11,600**		**100**	**100**	**mg/L**	20	15-Jul-2021 23:50
Alkalinity, Hydroxide (As CaCO3)	**3,600**		**100**	**100**	**mg/L**	20	15-Jul-2021 23:50
Alkalinity, Total (As CaCO3)	**15,200**		**100**	**100**	**mg/L**	20	15-Jul-2021 23:50
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**4.1**		**0.62**	**1.2**	**mg/L**	1	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 5.00		5.00	5.00	mg/L	5	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**231**		**5.00**	**10.0**	**mg/L**	10	22-Jul-2021 16:51
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	VW1	Lab ID:HS21070738-05
Collection Date:	13-Jul-2021 16:15	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 04:48
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 04:48
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	20-Jul-2021 04:48
o-Xylene	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 04:48
Toluene	< 0.20		0.20	1.0	ug/L	1	20-Jul-2021 04:48
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	20-Jul-2021 04:48
Surr: 1,2-Dichloroethane-d4	*95.4*			*70-126*	*%REC*	*1*	*20-Jul-2021 04:48*
Surr: 4-Bromofluorobenzene	*84.7*			*81-113*	*%REC*	*1*	*20-Jul-2021 04:48*
Surr: Dibromofluoromethane	*96.9*			*77-123*	*%REC*	*1*	*20-Jul-2021 04:48*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*20-Jul-2021 04:48*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0202		0.0202	0.101	ug/L	1	19-Jul-2021 18:08
Surr: 2-Fluorobiphenyl	*116*			*32-130*	*%REC*	*1*	*19-Jul-2021 18:08*
Surr: 4-Terphenyl-d14	*106*			*40-135*	*%REC*	*1*	*19-Jul-2021 18:08*
Surr: Nitrobenzene-d5	*96.8*			*45-142*	*%REC*	*1*	*19-Jul-2021 18:08*
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**0.075**		**0.021**	**0.052**	**mg/L**	1	21-Jul-2021 21:00
Surr: 2-Fluorobiphenyl	*108*			*60-135*	*%REC*	*1*	*21-Jul-2021 21:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW31
Collection Date: 13-Jul-2021 10:40

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-06
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 00:03
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 00:03
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 00:03
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 00:03
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 00:03
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 00:03
Surr: 1,2-Dichloroethane-d4	*106*			*70-126*	*%REC*	*1*	*23-Jul-2021 00:03*
Surr: 4-Bromofluorobenzene	*99.3*			*81-113*	*%REC*	*1*	*23-Jul-2021 00:03*
Surr: Dibromofluoromethane	*109*			*77-123*	*%REC*	*1*	*23-Jul-2021 00:03*
Surr: Toluene-d8	*107*			*82-127*	*%REC*	*1*	*23-Jul-2021 00:03*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	**0.386**		**0.0210**	**0.105**	**ug/L**	1	19-Jul-2021 18:28
Surr: 2-Fluorobiphenyl	*105*			*32-130*	*%REC*	*1*	*19-Jul-2021 18:28*
Surr: 4-Terphenyl-d14	*79.4*			*40-135*	*%REC*	*1*	*19-Jul-2021 18:28*
Surr: Nitrobenzene-d5	*97.1*			*45-142*	*%REC*	*1*	*19-Jul-2021 18:28*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**2,380**		**10.7**	**50.0**	**ug/L**	100	16-Jul-2021 15:22
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**2.7**		**0.021**	**0.052**	**mg/L**	1	21-Jul-2021 18:04
Surr: 2-Fluorobiphenyl	*167*	*S*		*60-135*	*%REC*	*1*	*21-Jul-2021 18:04*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**42.2**		**0.0340**	**0.500**	**mg/L**	1	22-Jul-2021 12:36
Iron	**0.224**		**0.0120**	**0.200**	**mg/L**	1	22-Jul-2021 12:36
Magnesium	**24.3**		**0.0100**	**0.200**	**mg/L**	1	22-Jul-2021 12:36
Manganese	**0.0999**		**0.000700**	**0.00500**	**mg/L**	1	22-Jul-2021 12:36
Potassium	**16.7**		**0.0180**	**0.200**	**mg/L**	1	22-Jul-2021 12:36
Sodium	**579**		**0.280**	**4.00**	**mg/L**	20	22-Jul-2021 13:00
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0783**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 21:30
Manganese	**0.105**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 21:30
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**582**		**4.00**	**10.0**	**mg/L**	20	15-Jul-2021 20:09
Nitrogen, Nitrate (As N)	< 0.0300	H	0.0300	0.100	mg/L	1	15-Jul-2021 19:47
Nitrogen, Nitrite (As N)	< 0.0300	H	0.0300	0.100	mg/L	1	15-Jul-2021 19:47
Sulfate	**16.7**		**0.200**	**0.500**	**mg/L**	1	15-Jul-2021 19:47
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 02:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070738
Sample ID:	VW31		Lab ID:HS21070738-06
Collection Date:	13-Jul-2021 10:40		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**3.9**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**914**		**5.00**	**5.00**	**mg/L**	1	15-Jul-2021 23:24
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	15-Jul-2021 23:24
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	15-Jul-2021 23:24
Alkalinity, Total (As CaCO3)	**914**		**5.00**	**5.00**	**mg/L**	1	15-Jul-2021 23:24
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**2.9**		**0.25**	**0.50**	**mg/L**	10	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**18.0**		**5.00**	**5.00**	**mg/L**	5	19-Jul-2021 12:00
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW24
Collection Date: 13-Jul-2021 12:20

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-07
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 01:27
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 01:27
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 01:27
o-Xylene	**0.54**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 01:27
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 01:27
Xylenes, Total	**0.54**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 01:27
Surr: 1,2-Dichloroethane-d4	*108*			*70-126*	*%REC*	*1*	*23-Jul-2021 01:27*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*23-Jul-2021 01:27*
Surr: Dibromofluoromethane	*109*			*77-123*	*%REC*	*1*	*23-Jul-2021 01:27*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*23-Jul-2021 01:27*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	**2.44**		**0.0210**	**0.105**	**ug/L**	1	19-Jul-2021 19:28
Surr: 2-Fluorobiphenyl	*81.6*			*32-130*	*%REC*	*1*	*19-Jul-2021 19:28*
Surr: 4-Terphenyl-d14	*101*			*40-135*	*%REC*	*1*	*19-Jul-2021 19:28*
Surr: Nitrobenzene-d5	*114*			*45-142*	*%REC*	*1*	*19-Jul-2021 19:28*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**777**		**5.35**	**25.0**	**ug/L**	50	16-Jul-2021 15:31
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**11**		**0.10**	**0.26**	**mg/L**	5	22-Jul-2021 13:06
Surr: 2-Fluorobiphenyl	*357*	*S*		*60-135*	*%REC*	*5*	*22-Jul-2021 13:06*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**52.5**		**0.0340**	**0.500**	**mg/L**	1	22-Jul-2021 12:50
Iron	**0.120**	J	**0.0120**	**0.200**	**mg/L**	1	22-Jul-2021 12:50
Magnesium	**24.3**		**0.0100**	**0.200**	**mg/L**	1	22-Jul-2021 12:50
Manganese	**0.0354**		**0.000700**	**0.00500**	**mg/L**	1	22-Jul-2021 12:50
Potassium	**11.2**		**0.0180**	**0.200**	**mg/L**	1	22-Jul-2021 12:50
Sodium	**291**		**0.0700**	**1.00**	**mg/L**	5	21-Jul-2021 15:51
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0230**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:12
Manganese	**0.0342**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:12
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**355**		**4.00**	**10.0**	**mg/L**	20	15-Jul-2021 20:17
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	15-Jul-2021 11:38
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	15-Jul-2021 11:38
Sulfate	**20.3**		**0.200**	**0.500**	**mg/L**	1	15-Jul-2021 11:38
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 02:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**	
Project:	St. Croix Alumina	WorkOrder:HS21070738	
Sample ID:	VW24	Lab ID:HS21070738-07	
Collection Date:	13-Jul-2021 12:20	Matrix:Water	

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**0.41**	J	**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**519**		**5.00**	**5.00**	**mg/L**	1	15-Jul-2021 23:57
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	15-Jul-2021 23:57
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	15-Jul-2021 23:57
Alkalinity, Total (As CaCO3)	**519**		**5.00**	**5.00**	**mg/L**	1	15-Jul-2021 23:57
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**0.15**		**0.025**	**0.050**	**mg/L**	1	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**29.2**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**2.84**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 22:26
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW2
Collection Date: 13-Jul-2021 13:55

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-08
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 01:48
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 01:48
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 01:48
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 01:48
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 01:48
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 01:48
Surr: 1,2-Dichloroethane-d4	*111*			*70-126*	*%REC*	*1*	*23-Jul-2021 01:48*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*23-Jul-2021 01:48*
Surr: Dibromofluoromethane	*112*			*77-123*	*%REC*	*1*	*23-Jul-2021 01:48*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*23-Jul-2021 01:48*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	**0.941**		**0.0209**	**0.104**	**ug/L**	1	19-Jul-2021 19:48
Surr: 2-Fluorobiphenyl	*68.1*			*32-130*	*%REC*	*1*	*19-Jul-2021 19:48*
Surr: 4-Terphenyl-d14	*87.3*			*40-135*	*%REC*	*1*	*19-Jul-2021 19:48*
Surr: Nitrobenzene-d5	*59.9*			*45-142*	*%REC*	*1*	*19-Jul-2021 19:48*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**243**		**2.14**	**10.0**	**ug/L**	20	16-Jul-2021 15:42
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**6.2**		**0.021**	**0.052**	**mg/L**	1	21-Jul-2021 21:58
Surr: 2-Fluorobiphenyl	*670*	*S*		*60-135*	*%REC*	*1*	*21-Jul-2021 21:58*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**114**		**0.170**	**2.50**	**mg/L**	5	21-Jul-2021 15:53
Iron	**2.21**		**0.0600**	**1.00**	**mg/L**	5	21-Jul-2021 15:53
Magnesium	**49.6**		**0.0500**	**1.00**	**mg/L**	5	21-Jul-2021 15:53
Manganese	**0.407**		**0.00350**	**0.0250**	**mg/L**	5	21-Jul-2021 15:53
Potassium	**12.1**		**0.0900**	**1.00**	**mg/L**	5	21-Jul-2021 15:53
Sodium	**517**		**0.0700**	**1.00**	**mg/L**	5	21-Jul-2021 15:53
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.766**		**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:14
Manganese	**0.398**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:14
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**899**		**10.0**	**25.0**	**mg/L**	50	15-Jul-2021 20:24
Nitrogen, Nitrate (As N)	< 0.0600		0.0600	0.200	mg/L	2	15-Jul-2021 11:53
Nitrogen, Nitrite (As N)	< 0.0600		0.0600	0.200	mg/L	2	15-Jul-2021 11:53
Sulfate	**29.5**		**0.400**	**1.00**	**mg/L**	2	15-Jul-2021 11:53
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 02:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070738
Sample ID:	VW2		Lab ID:HS21070738-08
Collection Date:	13-Jul-2021 13:55		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**1.6**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**629**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:04
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:04
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:04
Alkalinity, Total (As CaCO3)	**629**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:04
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**1.5**		**0.25**	**0.50**	**mg/L**	10	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**4.98**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 22:44
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW25
Collection Date: 13-Jul-2021 07:10

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-09
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 10:14
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 10:14
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	17-Jul-2021 10:14
o-Xylene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 10:14
Toluene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 10:14
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 10:14
Surr: 1,2-Dichloroethane-d4	*105*			*70-126*	*%REC*	*1*	*17-Jul-2021 10:14*
Surr: 4-Bromofluorobenzene	*96.7*			*81-113*	*%REC*	*1*	*17-Jul-2021 10:14*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*17-Jul-2021 10:14*
Surr: Toluene-d8	*94.5*			*82-127*	*%REC*	*1*	*17-Jul-2021 10:14*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0211		0.0211	0.106	ug/L	1	19-Jul-2021 20:08
Surr: 2-Fluorobiphenyl	*77.8*			*32-130*	*%REC*	*1*	*19-Jul-2021 20:08*
Surr: 4-Terphenyl-d14	*104*			*40-135*	*%REC*	*1*	*19-Jul-2021 20:08*
Surr: Nitrobenzene-d5	*93.5*			*45-142*	*%REC*	*1*	*19-Jul-2021 20:08*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1.60**		**0.107**	**0.500**	**ug/L**	1	16-Jul-2021 11:37
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	< 0.021		0.021	0.052	mg/L	1	21-Jul-2021 23:26
Surr: 2-Fluorobiphenyl	*76.8*			*60-135*	*%REC*	*1*	*21-Jul-2021 23:26*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**54.3**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:10
Iron	**4.45**		**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:10
Magnesium	**27.4**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:10
Manganese	**0.0340**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:10
Potassium	**10.6**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:10
Sodium	**136**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 12:52
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0288**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:16
Manganese	**0.00991**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:16
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**1,250**		**20.0**	**50.0**	**mg/L**	100	15-Jul-2021 20:39
Nitrogen, Nitrate (As N)	**11.3**	H	**0.150**	**0.500**	**mg/L**	5	15-Jul-2021 20:32
Nitrogen, Nitrite (As N)	< 0.150	H	0.150	0.500	mg/L	5	15-Jul-2021 20:32
Sulfate	**413**		**20.0**	**50.0**	**mg/L**	100	15-Jul-2021 20:39
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	**11.2**		**0.150**	**1.00**	**mg/L**	5	20-Jul-2021 03:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	VW25	Lab ID:HS21070738-09
Collection Date:	13-Jul-2021 07:10	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**2.2**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**1,030**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:13
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:13
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:13
Alkalinity, Total (As CaCO3)	**1,030**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:13
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**0.047**	J	**0.025**	**0.050**	**mg/L**	1	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 5.00		5.00	5.00	mg/L	5	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**12.3**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 23:02
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW37
Collection Date: 13-Jul-2021 09:00

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-10
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 03:12
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 03:12
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	17-Jul-2021 03:12
o-Xylene	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 03:12
Toluene	< 0.20		0.20	1.0	ug/L	1	17-Jul-2021 03:12
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	17-Jul-2021 03:12
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*17-Jul-2021 03:12*
Surr: 4-Bromofluorobenzene	*84.0*			*81-113*	*%REC*	*1*	*17-Jul-2021 03:12*
Surr: Dibromofluoromethane	*97.6*			*77-123*	*%REC*	*1*	*17-Jul-2021 03:12*
Surr: Toluene-d8	*95.3*			*82-127*	*%REC*	*1*	*17-Jul-2021 03:12*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0209		0.0209	0.105	ug/L	1	19-Jul-2021 20:27
Surr: 2-Fluorobiphenyl	*78.0*			*32-130*	*%REC*	*1*	*19-Jul-2021 20:27*
Surr: 4-Terphenyl-d14	*87.1*			*40-135*	*%REC*	*1*	*19-Jul-2021 20:27*
Surr: Nitrobenzene-d5	*79.6*			*45-142*	*%REC*	*1*	*19-Jul-2021 20:27*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1.34**		**0.107**	**0.500**	**ug/L**	1	16-Jul-2021 11:45
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	< 0.021		0.021	0.052	mg/L	1	21-Jul-2021 23:55
Surr: 2-Fluorobiphenyl	*90.8*			*60-135*	*%REC*	*1*	*21-Jul-2021 23:55*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**149**		**0.340**	**5.00**	**mg/L**	1	21-Jul-2021 16:12
Iron	**10.3**		**0.120**	**2.00**	**mg/L**	1	21-Jul-2021 16:12
Magnesium	**36.3**		**0.100**	**2.00**	**mg/L**	1	21-Jul-2021 16:12
Manganese	**0.231**		**0.00700**	**0.0500**	**mg/L**	1	21-Jul-2021 16:12
Potassium	**13.9**		**0.180**	**2.00**	**mg/L**	1	21-Jul-2021 16:12
Sodium	**368**		**0.140**	**2.00**	**mg/L**	1	21-Jul-2021 16:12
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	< 0.0120		0.0120	0.200	mg/L	1	16-Jul-2021 22:18
Manganese	**0.00605**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:18
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**359**		**2.00**	**5.00**	**mg/L**	10	15-Jul-2021 20:54
Nitrogen, Nitrate (As N)	**15.2**	H	**0.0300**	**0.100**	**mg/L**	1	15-Jul-2021 20:46
Nitrogen, Nitrite (As N)	< 0.0300	H	0.0300	0.100	mg/L	1	15-Jul-2021 20:46
Sulfate	**110**		**2.00**	**5.00**	**mg/L**	10	15-Jul-2021 20:54
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	**15.5**		**0.150**	**1.00**	**mg/L**	5	20-Jul-2021 03:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070738
Sample ID:	VW37		Lab ID:HS21070738-10
Collection Date:	13-Jul-2021 09:00		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**1.4**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**539**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:21
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:21
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:21
Alkalinity, Total (As CaCO3)	**539**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:21
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**0.051**		**0.025**	**0.050**	**mg/L**	1	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 20.0		20.0	20.0	mg/L	20	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**1.38**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 23:18
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW32
Collection Date: 13-Jul-2021 11:00

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-11
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 02:51
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 02:51
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 02:51
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 02:51
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 02:51
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 02:51
Surr: 1,2-Dichloroethane-d4	*111*			*70-126*	*%REC*	*1*	*23-Jul-2021 02:51*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*23-Jul-2021 02:51*
Surr: Dibromofluoromethane	*111*			*77-123*	*%REC*	*1*	*23-Jul-2021 02:51*
Surr: Toluene-d8	*107*			*82-127*	*%REC*	*1*	*23-Jul-2021 02:51*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	**0.576**		**0.0210**	**0.105**	**ug/L**	1	19-Jul-2021 20:47
Surr: 2-Fluorobiphenyl	*91.1*			*32-130*	*%REC*	*1*	*19-Jul-2021 20:47*
Surr: 4-Terphenyl-d14	*109*			*40-135*	*%REC*	*1*	*19-Jul-2021 20:47*
Surr: Nitrobenzene-d5	*88.7*			*45-142*	*%REC*	*1*	*19-Jul-2021 20:47*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1,250**		**10.7**	**50.0**	**ug/L**	100	16-Jul-2021 15:50
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**3.4**		**0.020**	**0.051**	**mg/L**	1	22-Jul-2021 00:25
Surr: 2-Fluorobiphenyl	*175*	*S*		*60-135*	*%REC*	*1*	*22-Jul-2021 00:25*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**33.5**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:14
Iron	**0.0787**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:14
Magnesium	**21.0**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:14
Manganese	**0.0860**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:14
Potassium	**17.0**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:14
Sodium	**496**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 12:54
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0190**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:20
Manganese	**0.0794**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:20
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**583**		**4.00**	**10.0**	**mg/L**	20	15-Jul-2021 21:38
Nitrogen, Nitrate (As N)	< 0.0300	H	0.0300	0.100	mg/L	1	15-Jul-2021 21:31
Nitrogen, Nitrite (As N)	< 0.0300	H	0.0300	0.100	mg/L	1	15-Jul-2021 21:31
Sulfate	**36.8**		**0.200**	**0.500**	**mg/L**	1	15-Jul-2021 21:31
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	**0.182**	J	**0.150**	**1.00**	**mg/L**	5	20-Jul-2021 03:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070738
Sample ID:	VW32		Lab ID:HS21070738-11
Collection Date:	13-Jul-2021 11:00		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**2.7**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**715**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:45
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:45
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:45
Alkalinity, Total (As CaCO3)	**715**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:45
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**2.0**		**0.12**	**0.25**	**mg/L**	5	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**19.6**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**7.46**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 23:36
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW35
Collection Date: 13-Jul-2021 12:15

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-12
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 03:12
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 03:12
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 03:12
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 03:12
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 03:12
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 03:12
Surr: 1,2-Dichloroethane-d4	*110*			*70-126*	*%REC*	*1*	*23-Jul-2021 03:12*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*23-Jul-2021 03:12*
Surr: Dibromofluoromethane	*113*			*77-123*	*%REC*	*1*	*23-Jul-2021 03:12*
Surr: Toluene-d8	*106*			*82-127*	*%REC*	*1*	*23-Jul-2021 03:12*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0211		0.0211	0.105	ug/L	1	19-Jul-2021 21:07
Surr: 2-Fluorobiphenyl	*119*			*32-130*	*%REC*	*1*	*19-Jul-2021 21:07*
Surr: 4-Terphenyl-d14	*119*			*40-135*	*%REC*	*1*	*19-Jul-2021 21:07*
Surr: Nitrobenzene-d5	*75.9*			*45-142*	*%REC*	*1*	*19-Jul-2021 21:07*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**398**		**5.35**	**25.0**	**ug/L**	50	16-Jul-2021 16:08
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**1.8**		**0.021**	**0.053**	**mg/L**	1	22-Jul-2021 00:54
Surr: 2-Fluorobiphenyl	*113*			*60-135*	*%REC*	*1*	*22-Jul-2021 00:54*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**67.7**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:16
Iron	**1.34**		**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:16
Magnesium	**32.5**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:16
Manganese	**0.202**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:16
Potassium	**15.7**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:16
Sodium	**432**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 13:06
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.744**		**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:22
Manganese	**0.174**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:22
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**545**		**4.00**	**10.0**	**mg/L**	20	15-Jul-2021 21:46
Nitrogen, Nitrate (As N)	**0.604**		**0.0300**	**0.100**	**mg/L**	1	15-Jul-2021 11:31
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	15-Jul-2021 11:31
Sulfate	**32.1**		**0.200**	**0.500**	**mg/L**	1	15-Jul-2021 11:31
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	**0.492**	J	**0.150**	**1.00**	**mg/L**	5	20-Jul-2021 03:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	VW35	Lab ID:HS21070738-12
Collection Date:	13-Jul-2021 12:15	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**0.65**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**683**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:53
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:53
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 00:53
Alkalinity, Total (As CaCO3)	**683**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 00:53
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**0.34**		**0.025**	**0.050**	**mg/L**	1	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**7.58**		**0.500**	**1.00**	**mg/L**	1	16-Jul-2021 23:53
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW30
Collection Date: 13-Jul-2021 13:30

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-13
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 0.20		0.20	1.0	ug/L	1	26-Jul-2021 01:42
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 01:42
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	26-Jul-2021 01:42
o-Xylene	**0.78**	J	**0.30**	**1.0**	**ug/L**	1	26-Jul-2021 01:42
Toluene	< 0.20		0.20	1.0	ug/L	1	26-Jul-2021 01:42
Xylenes, Total	**0.78**	J	**0.30**	**1.0**	**ug/L**	1	26-Jul-2021 01:42
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*26-Jul-2021 01:42*
Surr: 4-Bromofluorobenzene	*99.3*			*81-113*	*%REC*	*1*	*26-Jul-2021 01:42*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*26-Jul-2021 01:42*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*1*	*26-Jul-2021 01:42*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	**0.977**		**0.0204**	**0.102**	**ug/L**	1	19-Jul-2021 21:27
Surr: 2-Fluorobiphenyl	*44.8*			*32-130*	*%REC*	*1*	*19-Jul-2021 21:27*
Surr: 4-Terphenyl-d14	*129*			*40-135*	*%REC*	*1*	*19-Jul-2021 21:27*
Surr: Nitrobenzene-d5	*83.9*			*45-142*	*%REC*	*1*	*19-Jul-2021 21:27*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**5,660**		**21.4**	**100**	**ug/L**	200	16-Jul-2021 16:19
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**2.7**		**0.021**	**0.052**	**mg/L**	1	22-Jul-2021 01:23
Surr: 2-Fluorobiphenyl	*731*	*S*		*60-135*	*%REC*	*1*	*22-Jul-2021 01:23*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**119**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:24
Iron	**0.0753**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:24
Magnesium	**37.1**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:24
Manganese	**0.134**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:24
Potassium	**24.3**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:24
Sodium	**295**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 13:08
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0223**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:24
Manganese	**0.133**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:24
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**490**		**4.00**	**10.0**	**mg/L**	20	15-Jul-2021 21:53
Nitrogen, Nitrate (As N)	**0.0604**	J	**0.0300**	**0.100**	**mg/L**	1	15-Jul-2021 11:46
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	15-Jul-2021 11:46
Sulfate	**6.19**		**0.200**	**0.500**	**mg/L**	1	15-Jul-2021 11:46
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 03:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070738
Sample ID:	VW30		Lab ID:HS21070738-13
Collection Date:	13-Jul-2021 13:30		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**1.8**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**682**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 01:00
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 01:00
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 01:00
Alkalinity, Total (As CaCO3)	**682**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 01:00
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**1.3**		**0.12**	**0.25**	**mg/L**	5	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**11.4**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**33.0**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 00:09
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: FD-02
Collection Date: 13-Jul-2021 00:00

ANALYTICAL REPORT
WorkOrder:HS21070738
Lab ID:HS21070738-14
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 0.20		0.20	1.0	ug/L	1	26-Jul-2021 02:04
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 02:04
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	26-Jul-2021 02:04
o-Xylene	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 02:04
Toluene	< 0.20		0.20	1.0	ug/L	1	26-Jul-2021 02:04
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 02:04
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*26-Jul-2021 02:04*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*26-Jul-2021 02:04*
Surr: Dibromofluoromethane	*97.8*			*77-123*	*%REC*	*1*	*26-Jul-2021 02:04*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*26-Jul-2021 02:04*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 19-Jul-2021		Analyst: ACN
Naphthalene	< 0.0204		0.0204	0.102	ug/L	1	19-Jul-2021 21:47
Surr: 2-Fluorobiphenyl	*75.2*			*32-130*	*%REC*	*1*	*19-Jul-2021 21:47*
Surr: 4-Terphenyl-d14	*99.7*			*40-135*	*%REC*	*1*	*19-Jul-2021 21:47*
Surr: Nitrobenzene-d5	*140*			*45-142*	*%REC*	*1*	*19-Jul-2021 21:47*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1.49**		**0.107**	**0.500**	**ug/L**	1	16-Jul-2021 12:23
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**0.025**	J	**0.021**	**0.052**	**mg/L**	1	22-Jul-2021 01:52
Surr: 2-Fluorobiphenyl	*82.6*			*60-135*	*%REC*	*1*	*22-Jul-2021 01:52*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**55.3**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:26
Iron	**1.87**		**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:26
Magnesium	**29.6**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:26
Manganese	**0.0375**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:26
Potassium	**11.0**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:26
Sodium	**336**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 13:10
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	< 0.0120		0.0120	0.200	mg/L	1	16-Jul-2021 22:26
Manganese	**0.00200**	J	**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:26
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**380**		**4.00**	**10.0**	**mg/L**	20	15-Jul-2021 22:08
Nitrogen, Nitrate (As N)	**15.3**	H	**0.0300**	**0.100**	**mg/L**	1	15-Jul-2021 22:00
Nitrogen, Nitrite (As N)	< 0.0300	H	0.0300	0.100	mg/L	1	15-Jul-2021 22:00
Sulfate	**118**		**4.00**	**10.0**	**mg/L**	20	15-Jul-2021 22:08
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	**15.2**		**0.150**	**1.00**	**mg/L**	5	20-Jul-2021 03:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	FD-02	Lab ID:HS21070738-14
Collection Date:	13-Jul-2021 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 19-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**1.4**		**0.10**	**0.50**	**mg/L**	1	20-Jul-2021 15:51
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**537**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 01:07
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 01:07
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 01:07
Alkalinity, Total (As CaCO3)	**537**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 01:07
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**0.046**	J	**0.025**	**0.050**	**mg/L**	1	22-Jul-2021 18:00
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 12:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**1.77**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 00:25
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	Equipment Blank-2	Lab ID:HS21070738-15
Collection Date:	12-Jul-2021 13:45	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 20:54
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 20:54
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	16-Jul-2021 20:54
o-Xylene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 20:54
Toluene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 20:54
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 20:54
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*16-Jul-2021 20:54*
Surr: 4-Bromofluorobenzene	*97.4*			*81-113*	*%REC*	*1*	*16-Jul-2021 20:54*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*1*	*16-Jul-2021 20:54*
Surr: Toluene-d8	*97.4*			*82-127*	*%REC*	*1*	*16-Jul-2021 20:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	Trip Blank 01	Lab ID:HS21070738-16
Collection Date:	12-Jul-2021 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 19:04
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 19:04
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	16-Jul-2021 19:04
o-Xylene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 19:04
Toluene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 19:04
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 19:04
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*16-Jul-2021 19:04*
Surr: 4-Bromofluorobenzene	*98.3*			*81-113*	*%REC*	*1*	*16-Jul-2021 19:04*
Surr: Dibromofluoromethane	*99.3*			*77-123*	*%REC*	*1*	*16-Jul-2021 19:04*
Surr: Toluene-d8	*97.6*			*82-127*	*%REC*	*1*	*16-Jul-2021 19:04*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	Trip Blank 02	Lab ID:HS21070738-17
Collection Date:	12-Jul-2021 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 19:26
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 19:26
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	16-Jul-2021 19:26
o-Xylene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 19:26
Toluene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 19:26
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 19:26
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*16-Jul-2021 19:26*
Surr: 4-Bromofluorobenzene	*96.7*			*81-113*	*%REC*	*1*	*16-Jul-2021 19:26*
Surr: Dibromofluoromethane	*99.0*			*77-123*	*%REC*	*1*	*16-Jul-2021 19:26*
Surr: Toluene-d8	*96.9*			*82-127*	*%REC*	*1*	*16-Jul-2021 19:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	Trip Blank 03	Lab ID:HS21070738-18
Collection Date:	12-Jul-2021 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 19:48
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 19:48
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	16-Jul-2021 19:48
o-Xylene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 19:48
Toluene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 19:48
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 19:48
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*16-Jul-2021 19:48*
Surr: 4-Bromofluorobenzene	*86.5*			*81-113*	*%REC*	*1*	*16-Jul-2021 19:48*
Surr: Dibromofluoromethane	*98.4*			*77-123*	*%REC*	*1*	*16-Jul-2021 19:48*
Surr: Toluene-d8	*97.6*			*82-127*	*%REC*	*1*	*16-Jul-2021 19:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070738
Sample ID:	Trip Blank 04	Lab ID:HS21070738-19
Collection Date:	12-Jul-2021 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 20:10
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 20:10
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	16-Jul-2021 20:10
o-Xylene	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 20:10
Toluene	< 0.20		0.20	1.0	ug/L	1	16-Jul-2021 20:10
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	16-Jul-2021 20:10
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*16-Jul-2021 20:10*
Surr: 4-Bromofluorobenzene	*112*			*81-113*	*%REC*	*1*	*16-Jul-2021 20:10*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*16-Jul-2021 20:10*
Surr: Toluene-d8	*109*			*82-127*	*%REC*	*1*	*16-Jul-2021 20:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Weight / Prep Log

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

Batch ID: 168012 **Start Date:** 16 Jul 2021 10:31 **End Date:** 19 Jul 2021 16:00
Method: SW3511 **Prep Code:** 3511_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070738-02		31.66 (mL)	2 (mL)	0.06317	40 mL Amber
HS21070738-03		31.76 (mL)	2 (mL)	0.06297	40 mL Amber
HS21070738-04		32.51 (mL)	2 (mL)	0.06152	40 mL Amber
HS21070738-05		31.97 (mL)	2 (mL)	0.06256	40 mL Amber

Batch ID: 168013 **Start Date:** 16 Jul 2021 10:37 **End Date:** 19 Jul 2021 17:00
Method: SW3511 **Prep Code:** 3511_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070738-06		31.58 (mL)	2 (mL)	0.06333	40 mL Amber
HS21070738-07		31.76 (mL)	2 (mL)	0.06297	40 mL Amber
HS21070738-08		31.81 (mL)	2 (mL)	0.06287	40 mL Amber
HS21070738-09		31.87 (mL)	2 (mL)	0.06275	40 mL Amber
HS21070738-10		31.65 (mL)	2 (mL)	0.06319	40 mL Amber
HS21070738-11		32.21 (mL)	2 (mL)	0.06209	40 mL Amber
HS21070738-12		31.38 (mL)	2 (mL)	0.06373	40 mL Amber
HS21070738-13		31.93 (mL)	2 (mL)	0.06264	40 mL Amber
HS21070738-14		31.98 (mL)	2 (mL)	0.06254	40 mL Amber

Batch ID: 168025 **Start Date:** 16 Jul 2021 12:00 **End Date:** 16 Jul 2021 16:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070738-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-11		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-12		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-13		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-14		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 168052 **Start Date:** 19 Jul 2021 08:48 **End Date:** 19 Jul 2021 12:00
Method: SW3511 **Prep Code:** 3511_PAH

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070738-14	1	32.32 (mL)	2 (mL)	0.06188	40 mL Amber

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Weight / Prep Log

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

Batch ID: 168053 **Start Date:** 19 Jul 2021 08:49 **End Date:** 19 Jul 2021 14:30
Method: SW3511 **Prep Code:** 3511_PAH

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070738-02	1	31.41 (mL)	2 (mL)	0.06367	40 mL Amber
HS21070738-03	1	30.98 (mL)	2 (mL)	0.06456	40 mL Amber
HS21070738-04	1	32.77 (mL)	2 (mL)	0.06103	40 mL Amber
HS21070738-05	1	32.7 (mL)	2 (mL)	0.06116	40 mL Amber
HS21070738-06	1	31.41 (mL)	2 (mL)	0.06367	40 mL Amber
HS21070738-07	1	31.45 (mL)	2 (mL)	0.06359	40 mL Amber
HS21070738-08	1	31.64 (mL)	2 (mL)	0.06321	40 mL Amber
HS21070738-09	1	31.22 (mL)	2 (mL)	0.06406	40 mL Amber
HS21070738-10	1	31.56 (mL)	2 (mL)	0.06337	40 mL Amber
HS21070738-11	1	31.5 (mL)	2 (mL)	0.06349	40 mL Amber
HS21070738-12	1	31.34 (mL)	2 (mL)	0.06382	40 mL Amber
HS21070738-13	1	32.33 (mL)	2 (mL)	0.06186	40 mL Amber

Batch ID: 168066 **Start Date:** 19 Jul 2021 09:30 **End Date:** 19 Jul 2021 13:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070738-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-04		1 (mL)	10 (mL)	10	120 plastic HNO3
HS21070738-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-09		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-10		1 (mL)	10 (mL)	10	120 plastic HNO3
HS21070738-11		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-12		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-13		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070738-14		10 (mL)	10 (mL)	1	120 plastic HNO3

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Weight / Prep Log

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

Batch ID: 168107 **Start Date:** 19 Jul 2021 10:00 **End Date:** 19 Jul 2021 14:30
Method: TKN WATER - PREP **Prep Code:** TKN_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070738-03		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-04		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-06		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-07		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-08		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-09		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-10		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-11		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-12		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-13		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070738-14		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2

Batch ID: 168209 **Start Date:** 21 Jul 2021 10:30 **End Date:** 21 Jul 2021 12:00
Method: NITROGEN AMMONIA - WATER - PREP **Prep Code:** NIT_AMM_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070738-03		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070738-04		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2

Batch ID: 168273 **Start Date:** 22 Jul 2021 10:00 **End Date:** 22 Jul 2021 12:00
Method: NITROGEN AMMONIA - WATER - PREP **Prep Code:** NIT_AMM_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070738-04		1 (mL)	25 (mL)	25	250 mL plastic, H2SO4 to pH <2
HS21070738-06		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070738-07		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070738-08		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070738-09		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070738-10		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070738-11		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070738-12		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070738-13		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070738-14		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 168012 (0)	**Test Name :** TPH DRO/ORO BY SW8015C				**Matrix:** Water	
HS21070738-02	VW16	12 Jul 2021 16:10		16 Jul 2021 10:31	21 Jul 2021 19:32	1
HS21070738-03	VW34	13 Jul 2021 08:00		16 Jul 2021 10:31	21 Jul 2021 20:01	1
HS21070738-04	GM22	13 Jul 2021 09:05		16 Jul 2021 10:31	21 Jul 2021 20:30	1
HS21070738-05	VW1	13 Jul 2021 16:15		16 Jul 2021 10:31	21 Jul 2021 21:00	1
Batch ID: 168013 (0)	**Test Name :** TPH DRO/ORO BY SW8015C				**Matrix:** Water	
HS21070738-06	VW31	13 Jul 2021 10:40		16 Jul 2021 10:37	21 Jul 2021 18:04	1
HS21070738-07	VW24	13 Jul 2021 12:20		16 Jul 2021 10:37	22 Jul 2021 13:06	5
HS21070738-08	VW2	13 Jul 2021 13:55		16 Jul 2021 10:37	21 Jul 2021 21:58	1
HS21070738-09	VW25	13 Jul 2021 07:10		16 Jul 2021 10:37	21 Jul 2021 23:26	1
HS21070738-10	VW37	13 Jul 2021 09:00		16 Jul 2021 10:37	21 Jul 2021 23:55	1
HS21070738-11	VW32	13 Jul 2021 11:00		16 Jul 2021 10:37	22 Jul 2021 00:25	1
HS21070738-12	VW35	13 Jul 2021 12:15		16 Jul 2021 10:37	22 Jul 2021 00:54	1
HS21070738-13	VW30	13 Jul 2021 13:30		16 Jul 2021 10:37	22 Jul 2021 01:23	1
HS21070738-14	FD-02	13 Jul 2021 00:00		16 Jul 2021 10:37	22 Jul 2021 01:52	1
Batch ID: 168025 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00		16 Jul 2021 16:00	16 Jul 2021 22:08	1
HS21070738-04	GM22	13 Jul 2021 09:05		16 Jul 2021 16:00	16 Jul 2021 22:10	5
HS21070738-06	VW31	13 Jul 2021 10:40		16 Jul 2021 16:00	16 Jul 2021 21:30	1
HS21070738-07	VW24	13 Jul 2021 12:20		16 Jul 2021 16:00	16 Jul 2021 22:12	1
HS21070738-08	VW2	13 Jul 2021 13:55		16 Jul 2021 16:00	16 Jul 2021 22:14	1
HS21070738-09	VW25	13 Jul 2021 07:10		16 Jul 2021 16:00	16 Jul 2021 22:16	1
HS21070738-10	VW37	13 Jul 2021 09:00		16 Jul 2021 16:00	16 Jul 2021 22:18	1
HS21070738-11	VW32	13 Jul 2021 11:00		16 Jul 2021 16:00	16 Jul 2021 22:20	1
HS21070738-12	VW35	13 Jul 2021 12:15		16 Jul 2021 16:00	16 Jul 2021 22:22	1
HS21070738-13	VW30	13 Jul 2021 13:30		16 Jul 2021 16:00	16 Jul 2021 22:24	1
HS21070738-14	FD-02	13 Jul 2021 00:00		16 Jul 2021 16:00	16 Jul 2021 22:26	1
Batch ID: 168052 (0)	**Test Name :** LOW-LEVEL PAHS - 8270D				**Matrix:** Water	
HS21070738-14	FD-02	13 Jul 2021 00:00		19 Jul 2021 08:48	19 Jul 2021 21:47	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 168053 (0)	**Test Name :** LOW-LEVEL PAHS - 8270D				**Matrix:** Water	
HS21070738-02	VW16	12 Jul 2021 16:10		19 Jul 2021 08:49	19 Jul 2021 17:09	1
HS21070738-03	VW34	13 Jul 2021 08:00		19 Jul 2021 08:49	19 Jul 2021 17:29	1
HS21070738-04	GM22	13 Jul 2021 09:05		19 Jul 2021 08:49	19 Jul 2021 17:49	1
HS21070738-05	VW1	13 Jul 2021 16:15		19 Jul 2021 08:49	19 Jul 2021 18:08	1
HS21070738-06	VW31	13 Jul 2021 10:40		19 Jul 2021 08:49	19 Jul 2021 18:28	1
HS21070738-07	VW24	13 Jul 2021 12:20		19 Jul 2021 08:49	19 Jul 2021 19:28	1
HS21070738-08	VW2	13 Jul 2021 13:55		19 Jul 2021 08:49	19 Jul 2021 19:48	1
HS21070738-09	VW25	13 Jul 2021 07:10		19 Jul 2021 08:49	19 Jul 2021 20:08	1
HS21070738-10	VW37	13 Jul 2021 09:00		19 Jul 2021 08:49	19 Jul 2021 20:27	1
HS21070738-11	VW32	13 Jul 2021 11:00		19 Jul 2021 08:49	19 Jul 2021 20:47	1
HS21070738-12	VW35	13 Jul 2021 12:15		19 Jul 2021 08:49	19 Jul 2021 21:07	1
HS21070738-13	VW30	13 Jul 2021 13:30		19 Jul 2021 08:49	19 Jul 2021 21:27	1
Batch ID: 168066 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00		19 Jul 2021 13:30	22 Jul 2021 12:46	1
HS21070738-03	VW34	13 Jul 2021 08:00		19 Jul 2021 13:30	21 Jul 2021 15:47	5
HS21070738-04	GM22	13 Jul 2021 09:05		19 Jul 2021 13:30	22 Jul 2021 12:48	1
HS21070738-04	GM22	13 Jul 2021 09:05		19 Jul 2021 13:30	21 Jul 2021 15:49	5
HS21070738-06	VW31	13 Jul 2021 10:40		19 Jul 2021 13:30	22 Jul 2021 13:00	20
HS21070738-06	VW31	13 Jul 2021 10:40		19 Jul 2021 13:30	22 Jul 2021 12:36	1
HS21070738-07	VW24	13 Jul 2021 12:20		19 Jul 2021 13:30	22 Jul 2021 12:50	1
HS21070738-07	VW24	13 Jul 2021 12:20		19 Jul 2021 13:30	21 Jul 2021 15:51	5
HS21070738-08	VW2	13 Jul 2021 13:55		19 Jul 2021 13:30	21 Jul 2021 15:53	5
HS21070738-09	VW25	13 Jul 2021 07:10		19 Jul 2021 13:30	22 Jul 2021 12:52	5
HS21070738-09	VW25	13 Jul 2021 07:10		19 Jul 2021 13:30	21 Jul 2021 16:10	1
HS21070738-10	VW37	13 Jul 2021 09:00		19 Jul 2021 13:30	21 Jul 2021 16:12	1
HS21070738-11	VW32	13 Jul 2021 11:00		19 Jul 2021 13:30	22 Jul 2021 12:54	5
HS21070738-11	VW32	13 Jul 2021 11:00		19 Jul 2021 13:30	21 Jul 2021 16:14	1
HS21070738-12	VW35	13 Jul 2021 12:15		19 Jul 2021 13:30	22 Jul 2021 13:06	5
HS21070738-12	VW35	13 Jul 2021 12:15		19 Jul 2021 13:30	21 Jul 2021 16:16	1
HS21070738-13	VW30	13 Jul 2021 13:30		19 Jul 2021 13:30	22 Jul 2021 13:08	5
HS21070738-13	VW30	13 Jul 2021 13:30		19 Jul 2021 13:30	21 Jul 2021 16:24	1
HS21070738-14	FD-02	13 Jul 2021 00:00		19 Jul 2021 13:30	22 Jul 2021 13:10	5
HS21070738-14	FD-02	13 Jul 2021 00:00		19 Jul 2021 13:30	21 Jul 2021 16:26	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 168107 (0)	**Test Name :** TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-04	GM22	13 Jul 2021 09:05		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-06	VW31	13 Jul 2021 10:40		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-07	VW24	13 Jul 2021 12:20		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-08	VW2	13 Jul 2021 13:55		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-09	VW25	13 Jul 2021 07:10		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-10	VW37	13 Jul 2021 09:00		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-11	VW32	13 Jul 2021 11:00		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-12	VW35	13 Jul 2021 12:15		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-13	VW30	13 Jul 2021 13:30		19 Jul 2021 10:00	20 Jul 2021 15:51	1
HS21070738-14	FD-02	13 Jul 2021 00:00		19 Jul 2021 10:00	20 Jul 2021 15:51	1
Batch ID: 168209 (0)	**Test Name :** AMMONIA AS N BY SM4500 NH3-B-F-2011				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00		21 Jul 2021 10:30	21 Jul 2021 16:30	1
Batch ID: 168273 (0)	**Test Name :** AMMONIA AS N BY SM4500 NH3-B-F-2011				**Matrix:** Water	
HS21070738-04	GM22	13 Jul 2021 09:05		22 Jul 2021 10:00	22 Jul 2021 18:00	1
HS21070738-06	VW31	13 Jul 2021 10:40		22 Jul 2021 10:00	22 Jul 2021 18:00	10
HS21070738-07	VW24	13 Jul 2021 12:20		22 Jul 2021 10:00	22 Jul 2021 18:00	1
HS21070738-08	VW2	13 Jul 2021 13:55		22 Jul 2021 10:00	22 Jul 2021 18:00	10
HS21070738-09	VW25	13 Jul 2021 07:10		22 Jul 2021 10:00	22 Jul 2021 18:00	1
HS21070738-10	VW37	13 Jul 2021 09:00		22 Jul 2021 10:00	22 Jul 2021 18:00	1
HS21070738-11	VW32	13 Jul 2021 11:00		22 Jul 2021 10:00	22 Jul 2021 18:00	5
HS21070738-12	VW35	13 Jul 2021 12:15		22 Jul 2021 10:00	22 Jul 2021 18:00	1
HS21070738-13	VW30	13 Jul 2021 13:30		22 Jul 2021 10:00	22 Jul 2021 18:00	5
HS21070738-14	FD-02	13 Jul 2021 00:00		22 Jul 2021 10:00	22 Jul 2021 18:00	1
Batch ID: R387559 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00			15 Jul 2021 23:41	1
HS21070738-04	GM22	13 Jul 2021 09:05			15 Jul 2021 23:50	20
HS21070738-06	VW31	13 Jul 2021 10:40			15 Jul 2021 23:24	1
HS21070738-07	VW24	13 Jul 2021 12:20			15 Jul 2021 23:57	1
HS21070738-08	VW2	13 Jul 2021 13:55			16 Jul 2021 00:04	1
HS21070738-09	VW25	13 Jul 2021 07:10			16 Jul 2021 00:13	1
HS21070738-10	VW37	13 Jul 2021 09:00			16 Jul 2021 00:21	1
HS21070738-11	VW32	13 Jul 2021 11:00			16 Jul 2021 00:45	1
HS21070738-12	VW35	13 Jul 2021 12:15			16 Jul 2021 00:53	1
HS21070738-13	VW30	13 Jul 2021 13:30			16 Jul 2021 01:00	1
HS21070738-14	FD-02	13 Jul 2021 00:00			16 Jul 2021 01:07	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R387565 (0)	**Test Name :** ANIONS BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00			15 Jul 2021 18:55	50
HS21070738-03	VW34	13 Jul 2021 08:00			15 Jul 2021 18:48	2
HS21070738-04	GM22	13 Jul 2021 09:05			15 Jul 2021 19:10	200
HS21070738-04	GM22	13 Jul 2021 09:05			15 Jul 2021 19:03	10
HS21070738-06	VW31	13 Jul 2021 10:40			15 Jul 2021 20:09	20
HS21070738-06	VW31	13 Jul 2021 10:40			15 Jul 2021 19:47	1
HS21070738-07	VW24	13 Jul 2021 12:20			15 Jul 2021 20:17	20
HS21070738-07	VW24	13 Jul 2021 12:20			15 Jul 2021 11:38	1
HS21070738-08	VW2	13 Jul 2021 13:55			15 Jul 2021 20:24	50
HS21070738-08	VW2	13 Jul 2021 13:55			15 Jul 2021 11:53	2
HS21070738-09	VW25	13 Jul 2021 07:10			15 Jul 2021 20:39	100
HS21070738-09	VW25	13 Jul 2021 07:10			15 Jul 2021 20:32	5
HS21070738-10	VW37	13 Jul 2021 09:00			15 Jul 2021 20:54	10
HS21070738-10	VW37	13 Jul 2021 09:00			15 Jul 2021 20:46	1
HS21070738-11	VW32	13 Jul 2021 11:00			15 Jul 2021 21:38	20
HS21070738-11	VW32	13 Jul 2021 11:00			15 Jul 2021 21:31	1
HS21070738-12	VW35	13 Jul 2021 12:15			15 Jul 2021 21:46	20
HS21070738-12	VW35	13 Jul 2021 12:15			15 Jul 2021 11:31	1
HS21070738-13	VW30	13 Jul 2021 13:30			15 Jul 2021 21:53	20
HS21070738-13	VW30	13 Jul 2021 13:30			15 Jul 2021 11:46	1
HS21070738-14	FD-02	13 Jul 2021 00:00			15 Jul 2021 22:08	20
HS21070738-14	FD-02	13 Jul 2021 00:00			15 Jul 2021 22:00	1
Batch ID: R387639 (0)	**Test Name :** DISSOLVED ORGANIC CARBON BY SW9060A				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00			16 Jul 2021 21:02	1
HS21070738-07	VW24	13 Jul 2021 12:20			16 Jul 2021 22:26	1
HS21070738-08	VW2	13 Jul 2021 13:55			16 Jul 2021 22:44	1
HS21070738-09	VW25	13 Jul 2021 07:10			16 Jul 2021 23:02	1
HS21070738-10	VW37	13 Jul 2021 09:00			16 Jul 2021 23:18	1
HS21070738-11	VW32	13 Jul 2021 11:00			16 Jul 2021 23:36	1
HS21070738-12	VW35	13 Jul 2021 12:15			16 Jul 2021 23:53	1
HS21070738-13	VW30	13 Jul 2021 13:30			17 Jul 2021 00:09	1
HS21070738-14	FD-02	13 Jul 2021 00:00			17 Jul 2021 00:25	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R387651 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00			16 Jul 2021 10:11	1
HS21070738-04	GM22	13 Jul 2021 09:05			16 Jul 2021 14:38	20
HS21070738-06	VW31	13 Jul 2021 10:40			16 Jul 2021 15:22	100
HS21070738-07	VW24	13 Jul 2021 12:20			16 Jul 2021 15:31	50
HS21070738-08	VW2	13 Jul 2021 13:55			16 Jul 2021 15:42	20
HS21070738-09	VW25	13 Jul 2021 07:10			16 Jul 2021 11:37	1
HS21070738-10	VW37	13 Jul 2021 09:00			16 Jul 2021 11:45	1
HS21070738-11	VW32	13 Jul 2021 11:00			16 Jul 2021 15:50	100
HS21070738-12	VW35	13 Jul 2021 12:15			16 Jul 2021 16:08	50
HS21070738-13	VW30	13 Jul 2021 13:30			16 Jul 2021 16:19	200
HS21070738-14	FD-02	13 Jul 2021 00:00			16 Jul 2021 12:23	1
Batch ID: R387692 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070738-01	Equipment Blank-1	12 Jul 2021 15:30			16 Jul 2021 20:32	1
HS21070738-02	VW16	12 Jul 2021 16:10			16 Jul 2021 21:17	1
HS21070738-15	Equipment Blank-2	12 Jul 2021 13:45			16 Jul 2021 20:54	1
HS21070738-16	Trip Blank 01	12 Jul 2021 00:00			16 Jul 2021 19:04	1
HS21070738-17	Trip Blank 02	12 Jul 2021 00:00			16 Jul 2021 19:26	1
HS21070738-18	Trip Blank 03	12 Jul 2021 00:00			16 Jul 2021 19:48	1
HS21070738-19	Trip Blank 04	12 Jul 2021 00:00			16 Jul 2021 20:10	1
Batch ID: R387712 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00			17 Jul 2021 10:36	1
HS21070738-09	VW25	13 Jul 2021 07:10			17 Jul 2021 10:14	1
HS21070738-10	VW37	13 Jul 2021 09:00			17 Jul 2021 03:12	1
Batch ID: R387721 (0)	**Test Name :** SULFIDE BY SM4500 S2-F-2011				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00			19 Jul 2021 12:00	1
HS21070738-04	GM22	13 Jul 2021 09:05			19 Jul 2021 12:00	5
HS21070738-06	VW31	13 Jul 2021 10:40			19 Jul 2021 12:00	5
HS21070738-07	VW24	13 Jul 2021 12:20			19 Jul 2021 12:00	1
HS21070738-08	VW2	13 Jul 2021 13:55			19 Jul 2021 12:00	1
HS21070738-09	VW25	13 Jul 2021 07:10			19 Jul 2021 12:00	5
HS21070738-10	VW37	13 Jul 2021 09:00			19 Jul 2021 12:00	20
HS21070738-11	VW32	13 Jul 2021 11:00			19 Jul 2021 12:00	1
HS21070738-12	VW35	13 Jul 2021 12:15			19 Jul 2021 12:00	1
HS21070738-13	VW30	13 Jul 2021 13:30			19 Jul 2021 12:00	1
HS21070738-14	FD-02	13 Jul 2021 00:00			19 Jul 2021 12:00	1
Batch ID: R387764 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070738-05	VW1	13 Jul 2021 16:15			20 Jul 2021 04:48	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R387871 (0)	**Test Name :** NITRATE/NITRITE BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00			20 Jul 2021 01:58	5
HS21070738-04	GM22	13 Jul 2021 09:05			20 Jul 2021 02:05	10
HS21070738-06	VW31	13 Jul 2021 10:40			20 Jul 2021 02:28	5
HS21070738-07	VW24	13 Jul 2021 12:20			20 Jul 2021 02:50	5
HS21070738-08	VW2	13 Jul 2021 13:55			20 Jul 2021 02:57	5
HS21070738-09	VW25	13 Jul 2021 07:10			20 Jul 2021 03:05	5
HS21070738-10	VW37	13 Jul 2021 09:00			20 Jul 2021 03:12	5
HS21070738-11	VW32	13 Jul 2021 11:00			20 Jul 2021 03:19	5
HS21070738-12	VW35	13 Jul 2021 12:15			20 Jul 2021 03:27	5
HS21070738-13	VW30	13 Jul 2021 13:30			20 Jul 2021 03:49	5
HS21070738-14	FD-02	13 Jul 2021 00:00			20 Jul 2021 03:56	5
Batch ID: R388034 (0)	**Test Name :** DISSOLVED ORGANIC CARBON BY SW9060A				**Matrix:** Water	
HS21070738-04	GM22	13 Jul 2021 09:05			22 Jul 2021 16:51	10
Batch ID: R388086 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070738-04	GM22	13 Jul 2021 09:05			23 Jul 2021 03:33	25
HS21070738-06	VW31	13 Jul 2021 10:40			23 Jul 2021 00:03	1
HS21070738-07	VW24	13 Jul 2021 12:20			23 Jul 2021 01:27	1
HS21070738-08	VW2	13 Jul 2021 13:55			23 Jul 2021 01:48	1
HS21070738-11	VW32	13 Jul 2021 11:00			23 Jul 2021 02:51	1
HS21070738-12	VW35	13 Jul 2021 12:15			23 Jul 2021 03:12	1
Batch ID: R388159 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070738-13	VW30	13 Jul 2021 13:30			26 Jul 2021 01:42	1
HS21070738-14	FD-02	13 Jul 2021 00:00			26 Jul 2021 02:04	1
Batch ID: R389567 (0)	**Test Name :** SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE				**Matrix:** Water	
HS21070738-03	VW34	13 Jul 2021 08:00			16 Aug 2021 15:24	1
HS21070738-04	GM22	13 Jul 2021 09:05			16 Aug 2021 15:24	1
HS21070738-06	VW31	13 Jul 2021 10:40			16 Aug 2021 15:24	1
HS21070738-07	VW24	13 Jul 2021 12:20			16 Aug 2021 15:24	1
HS21070738-08	VW2	13 Jul 2021 13:55			16 Aug 2021 15:24	1
HS21070738-09	VW25	13 Jul 2021 07:10			16 Aug 2021 15:24	1
HS21070738-10	VW37	13 Jul 2021 09:00			16 Aug 2021 15:24	1
HS21070738-11	VW32	13 Jul 2021 11:00			16 Aug 2021 15:24	1
HS21070738-12	VW35	13 Jul 2021 12:15			16 Aug 2021 15:24	1
HS21070738-13	VW30	13 Jul 2021 13:30			16 Aug 2021 15:24	1
HS21070738-14	FD-02	13 Jul 2021 00:00			16 Aug 2021 15:24	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168012 (0) **Instrument: FID-16** **Method: TPH DRO/ORO BY SW8015C**

MBLK Sample ID: **MBLK-168012** Units: **mg/L** Analysis Date: **21-Jul-2021 12:13**
Client ID: Run ID: **FID-16_387986** SeqNo: **6194626** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	< 0.021	0.052								
Surr: 2-Fluorobiphenyl	*0.0628*	*0.0052*	*0.06262*	*0*	*100*	*60 - 135*				

LCS Sample ID: **LCS-168012** Units: **mg/L** Analysis Date: **21-Jul-2021 12:42**
Client ID: Run ID: **FID-16_387986** SeqNo: **6194627** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.7234	0.053	0.633	0	114	70 - 130				
Surr: 2-Fluorobiphenyl	*0.08252*	*0.0053*	*0.0633*	*0*	*130*	*60 - 135*				

LCSD Sample ID: **LCSD-168012** Units: **mg/L** Analysis Date: **21-Jul-2021 13:11**
Client ID: Run ID: **FID-16_387986** SeqNo: **6194628** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6358	0.053	0.634	0	100	70 - 130	0.7234	12.9	20	
Surr: 2-Fluorobiphenyl	*0.08276*	*0.0053*	*0.0634*	*0*	*131*	*60 - 135*	*0.08252*	*0.293*	*20*	

The following samples were analyzed in this batch: HS21070738-02 HS21070738-03 HS21070738-04 HS21070738-05

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168013 (0) **Instrument: FID-16** **Method: TPH DRO/ORO BY SW8015C**

MBLK Sample ID: **MBLK-168013** Units: **mg/L** Analysis Date: **21-Jul-2021 16:07**
Client ID: Run ID: **FID-16_387980** SeqNo: **6194558** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	< 0.021	0.053								
Surr: 2-Fluorobiphenyl	*0.07447*	*0.0053*	*0.06322*	*0*	*118*	*60 - 135*				

LCS Sample ID: **LCS-168013** Units: **mg/L** Analysis Date: **21-Jul-2021 16:36**
Client ID: Run ID: **FID-16_387980** SeqNo: **6194559** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6315	0.053	0.6379	0	99.0	70 - 130				
Surr: 2-Fluorobiphenyl	*0.08133*	*0.0053*	*0.06379*	*0*	*128*	*60 - 135*				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **21-Jul-2021 18:33**
Client ID: **VW31** Run ID: **FID-16_387980** SeqNo: **6194562** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	3.414	0.052	0.6228	2.682	118	70 - 130				O
Surr: 2-Fluorobiphenyl	*0.1105*	*0.0052*	*0.06228*	*0*	*177*	*60 - 135*				S

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **21-Jul-2021 19:02**
Client ID: **VW31** Run ID: **FID-16_387980** SeqNo: **6194563** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	3.354	0.052	0.6191	2.682	109	70 - 130	3.414	1.79	20	O
Surr: 2-Fluorobiphenyl	*0.1075*	*0.0052*	*0.06191*	*0*	*174*	*60 - 135*	*0.1105*	*2.74*	*20*	S

The following samples were analyzed in this batch:

HS21070738-06	HS21070738-07	HS21070738-08	HS21070738-09
HS21070738-10	HS21070738-11	HS21070738-12	HS21070738-13
HS21070738-14			

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387651 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MBLK Sample ID: **MBLK-210716** Units: **ug/L** Analysis Date: **16-Jul-2021 09:50**
Client ID: Run ID: **FID-4_387651** SeqNo: **6192301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	< 0.107	0.500								

LCS Sample ID: **LCS-210716** Units: **ug/L** Analysis Date: **16-Jul-2021 10:02**
Client ID: Run ID: **FID-4_387651** SeqNo: **6192302** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	9.631	0.500	9.647	0	99.8	75 - 125				

MS Sample ID: **HS21070738-06MS** Units: **ug/L** Analysis Date: **16-Jul-2021 10:41**
Client ID: **VW31** Run ID: **FID-4_387651** SeqNo: **6192306** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	944	0.500	9.647	2338	-14400	75 - 125				SEO

MSD Sample ID: **HS21070738-06MSD** Units: **ug/L** Analysis Date: **16-Jul-2021 10:52**
Client ID: **VW31** Run ID: **FID-4_387651** SeqNo: **6192307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	851.9	0.500	9.647	2338	-15400	75 - 125	944	10.3	30	SEO

The following samples were analyzed in this batch:

HS21070738-03	HS21070738-04	HS21070738-06	HS21070738-07
HS21070738-08	HS21070738-09	HS21070738-10	HS21070738-11
HS21070738-12	HS21070738-13	HS21070738-14	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168025 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLK-168025** Units: **mg/L** Analysis Date: **16-Jul-2021 21:26**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186888** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	< 0.0120	0.200								
Manganese	< 0.000700	0.00500								

LCS Sample ID: **LCS-168025** Units: **mg/L** Analysis Date: **16-Jul-2021 21:28**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186889** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.606	0.200	5	0	92.1	80 - 120				
Manganese	0.04535	0.00500	0.05	0	90.7	80 - 120				

MS Sample ID: **HS21070773-03MS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:58**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186901** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.584	0.200	5	0.0375	90.9	75 - 125				
Manganese	0.1686	0.00500	0.05	0.1276	82.1	75 - 125				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:34**
Client ID: **VW31** Run ID: **ICPMS06_387616** SeqNo: **6186892** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.737	0.200	5	0.07835	93.2	75 - 125				
Manganese	0.1527	0.00500	0.05	0.1051	95.2	75 - 125				

MSD Sample ID: **HS21070773-03MSD** Units: **mg/L** Analysis Date: **16-Jul-2021 22:00**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186872** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.866	0.200	5	0.0375	96.6	75 - 125	4.584	5.97	20	
Manganese	0.1809	0.00500	0.05	0.1276	107	75 - 125	0.1686	7.02	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168025 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **16-Jul-2021 21:36**
Client ID: **VW31** Run ID: **ICPMS06_387616** SeqNo: **6186893** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.673	0.200	5	0.07835	91.9	75 - 125	4.737	1.36	20	
Manganese	0.1533	0.00500	0.05	0.1051	96.5	75 - 125	0.1527	0.41	20	

PDS Sample ID: **HS21070773-03PDS** Units: **mg/L** Analysis Date: **16-Jul-2021 22:02**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186873** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.959	0.200	10	0.0375	99.2	75 - 125				
Manganese	0.2277	0.00500	0.1	0.1276	100	75 - 125				

PDS Sample ID: **HS21070738-06PDS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:38**
Client ID: **VW31** Run ID: **ICPMS06_387616** SeqNo: **6186894** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.797	0.200	10	0.07835	97.2	75 - 125				
Manganese	0.2031	0.00500	0.1	0.1051	98.0	75 - 125				

SD Sample ID: **HS21070773-03SD** Units: **mg/L** Analysis Date: **16-Jul-2021 21:56**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186900** PrepDate: **16-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	< 0.0600	1.00					0.0375	0	10	
Manganese	0.1289	0.0250					0.1276	1.04	10	

SD Sample ID: **HS21070738-06SD** Units: **mg/L** Analysis Date: **16-Jul-2021 21:32**
Client ID: **VW31** Run ID: **ICPMS06_387616** SeqNo: **6186891** PrepDate: **16-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	0.08238	1.00					0.07835	0	10	J
Manganese	0.1054	0.0250					0.1051	0.287	10	

The following samples were analyzed in this batch:

HS21070738-03	HS21070738-04	HS21070738-06	HS21070738-07
HS21070738-08	HS21070738-09	HS21070738-10	HS21070738-11
HS21070738-12	HS21070738-13	HS21070738-14	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168066 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-168066** Units: **mg/L** Analysis Date: **21-Jul-2021 15:43**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6193014** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	< 0.0340	0.500								
Iron	< 0.0120	0.200								
Magnesium	0.0164	0.200								J
Manganese	< 0.000700	0.00500								
Potassium	< 0.0180	0.200								
Sodium	0.09255	0.200								J

LCS Sample ID: **LCS-168066** Units: **mg/L** Analysis Date: **21-Jul-2021 15:45**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6193015** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	4.757	0.500	5	0	95.1	80 - 120				
Iron	4.702	0.200	5	0	94.0	80 - 120				
Magnesium	4.74	0.200	5	0	94.8	80 - 120				
Manganese	0.04489	0.00500	0.05	0	89.8	80 - 120				
Potassium	4.672	0.200	5	0	93.4	80 - 120				
Sodium	4.729	0.200	5	0	94.6	80 - 120				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **22-Jul-2021 12:40**
Client ID: **VW31** Run ID: **ICPMS06_388006** SeqNo: **6194980** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	48.02	0.500	5	42.18	117	80 - 120				O
Iron	4.8	0.200	5	0.2239	91.5	80 - 120				
Magnesium	29.39	0.200	5	24.33	101	80 - 120				O
Manganese	0.1454	0.00500	0.05	0.09989	91.0	80 - 120				
Potassium	21.46	0.200	5	16.74	94.4	80 - 120				
Sodium	603.4	0.200	5	590.6	255	80 - 120				SEO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168066 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **22-Jul-2021 12:42**
Client ID: **VW31** Run ID: **ICPMS06_388006** SeqNo: **6194981** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	48.85	0.500	5	42.18	133	80 - 120	48.02	1.72	20	SO
Iron	4.89	0.200	5	0.2239	93.3	80 - 120	4.8	1.84	20	
Magnesium	30.03	0.200	5	24.33	114	80 - 120	29.39	2.14	20	O
Manganese	0.1473	0.00500	0.05	0.09989	94.8	80 - 120	0.1454	1.31	20	
Potassium	22.23	0.200	5	16.74	110	80 - 120	21.46	3.51	20	
Sodium	614	0.200	5	590.6	467	80 - 120	603.4	1.74	20	SEO

PDS Sample ID: **HS21070738-06PDS** Units: **mg/L** Analysis Date: **22-Jul-2021 12:44**
Client ID: **VW31** Run ID: **ICPMS06_388006** SeqNo: **6194982** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	53.58	0.500	10	42.18	114	75 - 125				O
Iron	9.614	0.200	10	0.2239	93.9	75 - 125				
Magnesium	34.6	0.200	10	24.33	103	75 - 125				
Manganese	0.2001	0.00500	0.1	0.09989	100	75 - 125				
Potassium	27.16	0.200	10	16.74	104	75 - 125				

PDS Sample ID: **HS21070738-06PDS** Units: **mg/L** Analysis Date: **22-Jul-2021 13:04**
Client ID: **VW31** Run ID: **ICPMS06_388006** SeqNo: **6194939** PrepDate: **19-Jul-2021** DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	779.5	4.00	200	579.2	100	75 - 125				

SD Sample ID: **HS21070738-06SD** Units: **mg/L** Analysis Date: **22-Jul-2021 12:38**
Client ID: **VW31** Run ID: **ICPMS06_388006** SeqNo: **6194979** PrepDate: **19-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	40.64	2.50					42.18	3.64	10	
Iron	0.2244	1.00					0.2239	0	10	J
Magnesium	24.28	1.00					24.33	0.186	10	
Manganese	0.1009	0.0250					0.09989	0.974	10	
Potassium	17.02	1.00					16.74	1.67	10	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: **168066 (0)** **Instrument:** **ICPMS06** **Method:** **ICP-MS METALS BY SW6020A**

SD Sample ID: **HS21070738-06SD** Units: **mg/L** Analysis Date: **22-Jul-2021 13:02**
Client ID: **VW31** Run ID: **ICPMS06_388006** SeqNo: **6194938** PrepDate: **19-Jul-2021** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	623.1	20.0					579.2	7.6	10	

The following samples were analyzed in this batch:

HS21070738-03	HS21070738-04	HS21070738-06	HS21070738-07
HS21070738-08	HS21070738-09	HS21070738-10	HS21070738-11
HS21070738-12	HS21070738-13	HS21070738-14	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168052 (0) **Instrument: SV-6** **Method: LOW-LEVEL PAHS - 8270D**

MBLK Sample ID: **MBLK-168052** Units: **ug/L** Analysis Date: **19-Jul-2021 11:40**
Client ID: Run ID: **SV-6_387708** SeqNo: **6188484** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	< 0.0200	0.100								
Surr: 2-Fluorobiphenyl	*3.391*	*0.100*	*3.03*	*0*	*112*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.26*	*0.100*	*3.03*	*0*	*74.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.316*	*0.100*	*3.03*	*0*	*76.4*	*45 - 142*				

LCS Sample ID: **LCS-168052** Units: **ug/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **SV-6_387708** SeqNo: **6188485** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.291	0.100	3.03	0	109	40 - 140				
Surr: 2-Fluorobiphenyl	*3.512*	*0.100*	*3.03*	*0*	*116*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.542*	*0.100*	*3.03*	*0*	*83.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.557*	*0.100*	*3.03*	*0*	*84.4*	*45 - 142*				

LCSD Sample ID: **LCSD-168052** Units: **ug/L** Analysis Date: **19-Jul-2021 12:19**
Client ID: Run ID: **SV-6_387708** SeqNo: **6188486** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.201	0.100	3.03	0	106	40 - 140	3.291	2.76	25	
Surr: 2-Fluorobiphenyl	*2.823*	*0.100*	*3.03*	*0*	*93.2*	*32 - 130*	*3.512*	*21.7*	*25*	
Surr: 4-Terphenyl-d14	*2.692*	*0.100*	*3.03*	*0*	*88.8*	*40 - 135*	*2.542*	*5.72*	*25*	
Surr: Nitrobenzene-d5	*2.318*	*0.100*	*3.03*	*0*	*76.5*	*45 - 142*	*2.557*	*9.8*	*25*	

MS Sample ID: **HS21070671-03MS** Units: **ug/L** Analysis Date: **20-Jul-2021 18:33**
Client ID: Run ID: **SV-6_387888** SeqNo: **6194510** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.426	0.103	3.116	0	110	40 - 140				
Surr: 2-Fluorobiphenyl	*3.879*	*0.103*	*3.116*	*0*	*124*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.921*	*0.103*	*3.116*	*0*	*93.8*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.453*	*0.103*	*3.116*	*0*	*78.7*	*45 - 142*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: **168052 (0)** **Instrument:** **SV-6** **Method:** **LOW-LEVEL PAHS - 8270D**

MSD Sample ID: **HS21070671-03MSD** Units: **ug/L** Analysis Date: **20-Jul-2021 18:53**
Client ID: Run ID: **SV-6_387888** SeqNo: **6194511** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.391	0.102	3.09	0	110	40 - 140	3.426	1.04	25	
Surr: 2-Fluorobiphenyl	*3.23*	*0.102*	*3.09*	*0*	*105*	*32 - 130*	*3.879*	*18.3*	*25*	
Surr: 4-Terphenyl-d14	*2.884*	*0.102*	*3.09*	*0*	*93.3*	*40 - 135*	*2.921*	*1.3*	*25*	
Surr: Nitrobenzene-d5	*2.682*	*0.102*	*3.09*	*0*	*86.8*	*45 - 142*	*2.453*	*8.92*	*25*	

The following samples were analyzed in this batch: HS21070738-14

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168053 (0) **Instrument: SV-6** **Method: LOW-LEVEL PAHS - 8270D**

MBLK Sample ID: **MBLK-168053** Units: **ug/L** Analysis Date: **19-Jul-2021 14:16**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189739** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	< 0.0200	0.100								
Surr: 2-Fluorobiphenyl	*1.904*	*0.100*	*3.03*	*0*	*62.9*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.753*	*0.100*	*3.03*	*0*	*90.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.567*	*0.100*	*3.03*	*0*	*84.7*	*45 - 142*				

LCS Sample ID: **LCS-168053** Units: **ug/L** Analysis Date: **19-Jul-2021 14:36**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189740** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.941	0.100	3.03	0	97.1	40 - 140				
Surr: 2-Fluorobiphenyl	*3.897*	*0.100*	*3.03*	*0*	*129*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.459*	*0.100*	*3.03*	*0*	*81.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.364*	*0.100*	*3.03*	*0*	*78.0*	*45 - 142*				

LCSD Sample ID: **LCSD-168053** Units: **ug/L** Analysis Date: **19-Jul-2021 14:56**
Client ID: Run ID: **SV-6_387708** SeqNo: **6189741** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.927	0.100	3.03	0	96.6	40 - 140	2.941	0.481	25	
Surr: 2-Fluorobiphenyl	*2.886*	*0.100*	*3.03*	*0*	*95.3*	*32 - 130*	*3.897*	*29.8*	*25*	R
Surr: 4-Terphenyl-d14	*2.837*	*0.100*	*3.03*	*0*	*93.6*	*40 - 135*	*2.459*	*14.3*	*25*	
Surr: Nitrobenzene-d5	*2.239*	*0.100*	*3.03*	*0*	*73.9*	*45 - 142*	*2.364*	*5.43*	*25*	

MS Sample ID: **HS21070738-06MS** Units: **ug/L** Analysis Date: **19-Jul-2021 18:48**
Client ID: **VW31** Run ID: **SV-6_387708** SeqNo: **6189752** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.864	0.105	3.167	0.3862	78.2	40 - 140				
Surr: 2-Fluorobiphenyl	*2.734*	*0.105*	*3.167*	*0*	*86.3*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.408*	*0.105*	*3.167*	*0*	*76.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.847*	*0.105*	*3.167*	*0*	*89.9*	*45 - 142*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168053 (0) **Instrument: SV-6** **Method: LOW-LEVEL PAHS - 8270D**

MS Sample ID: **HS21070657-02MS** Units: **ug/L** Analysis Date: **20-Jul-2021 15:35**
Client ID: Run ID: **SV-6_387888** SeqNo: **6192655** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.391	0.106	3.201	0	106	40 - 140				
Surr: 2-Fluorobiphenyl	*2.25*	*0.106*	*3.201*	*0*	*70.3*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.912*	*0.106*	*3.201*	*0*	*91.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.537*	*0.106*	*3.201*	*0*	*79.3*	*45 - 142*				

MSD Sample ID: **HS21070738-06MSD** Units: **ug/L** Analysis Date: **19-Jul-2021 19:08**
Client ID: **VW31** Run ID: **SV-6_387708** SeqNo: **6189753** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.092	0.104	3.14	0.3862	86.2	40 - 140	2.864	7.65	25	
Surr: 2-Fluorobiphenyl	*2.623*	*0.104*	*3.14*	*0*	*83.5*	*32 - 130*	*2.734*	*4.17*	*25*	
Surr: 4-Terphenyl-d14	*3.54*	*0.104*	*3.14*	*0*	*113*	*40 - 135*	*2.408*	*38.1*	*25*	R
Surr: Nitrobenzene-d5	*2.928*	*0.104*	*3.14*	*0*	*93.2*	*45 - 142*	*2.847*	*2.78*	*25*	

MSD Sample ID: **HS21070657-02MSD** Units: **ug/L** Analysis Date: **20-Jul-2021 15:54**
Client ID: Run ID: **SV-6_387888** SeqNo: **6192656** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.232	0.107	3.229	0	100	40 - 140	3.391	4.81	25	
Surr: 2-Fluorobiphenyl	*3.747*	*0.107*	*3.229*	*0*	*116*	*32 - 130*	*2.25*	*49.9*	*25*	R
Surr: 4-Terphenyl-d14	*3.148*	*0.107*	*3.229*	*0*	*97.5*	*40 - 135*	*2.912*	*7.79*	*25*	
Surr: Nitrobenzene-d5	*3.81*	*0.107*	*3.229*	*0*	*118*	*45 - 142*	*2.537*	*40.1*	*25*	R

The following samples were analyzed in this batch:

HS21070738-02	HS21070738-03	HS21070738-04	HS21070738-05
HS21070738-06	HS21070738-07	HS21070738-08	HS21070738-09
HS21070738-10	HS21070738-11	HS21070738-12	HS21070738-13

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387692 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210716** Units: **ug/L** Analysis Date: **16-Jul-2021 18:42**
Client ID: Run ID: **VOA4_387692** SeqNo: **6188051** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*51.3*	*1.0*	*50*	*0*	*103*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*57.18*	*1.0*	*50*	*0*	*114*	*82 - 115*				
Surr: Dibromofluoromethane	*48.58*	*1.0*	*50*	*0*	*97.2*	*73 - 126*				
Surr: Toluene-d8	*56.11*	*1.0*	*50*	*0*	*112*	*81 - 120*				

LCS Sample ID: **VLCSW-210716** Units: **ug/L** Analysis Date: **16-Jul-2021 17:44**
Client ID: Run ID: **VOA4_387692** SeqNo: **6188050** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.01	1.0	20	0	95.1	74 - 120				
Ethylbenzene	19.67	1.0	20	0	98.4	77 - 117				
m,p-Xylene	39.69	2.0	40	0	99.2	77 - 122				
o-Xylene	19.02	1.0	20	0	95.1	75 - 119				
Toluene	21.35	1.0	20	0	107	77 - 118				
Xylenes, Total	58.71	1.0	60	0	97.9	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.88*	*1.0*	*50*	*0*	*97.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.55*	*1.0*	*50*	*0*	*99.1*	*82 - 115*				
Surr: Dibromofluoromethane	*49.77*	*1.0*	*50*	*0*	*99.5*	*73 - 126*				
Surr: Toluene-d8	*48.48*	*1.0*	*50*	*0*	*97.0*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387692 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070738-02MS** Units: **ug/L** Analysis Date: **16-Jul-2021 21:39**
Client ID: **VW16** Run ID: **VOA4_387692** SeqNo: **6188059** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	17.02	1.0	20	0	85.1	70 - 127				
Ethylbenzene	17.52	1.0	20	0	87.6	70 - 124				
m,p-Xylene	34.01	2.0	40	0	85.0	70 - 130				
o-Xylene	16.86	1.0	20	0	84.3	70 - 124				
Toluene	18.17	1.0	20	0	90.9	70 - 123				
Xylenes, Total	50.87	1.0	60	0	84.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.37*	*1.0*	*50*	*0*	*101*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.95*	*1.0*	*50*	*0*	*99.9*	*81 - 113*				
Surr: Dibromofluoromethane	*49.29*	*1.0*	*50*	*0*	*98.6*	*77 - 123*				
Surr: Toluene-d8	*48.59*	*1.0*	*50*	*0*	*97.2*	*82 - 127*				

MSD Sample ID: **HS21070738-02MSD** Units: **ug/L** Analysis Date: **16-Jul-2021 22:01**
Client ID: **VW16** Run ID: **VOA4_387692** SeqNo: **6188060** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	16.64	1.0	20	0	83.2	70 - 127	17.02	2.25	20	
Ethylbenzene	16.72	1.0	20	0	83.6	70 - 124	17.52	4.64	20	
m,p-Xylene	33.18	2.0	40	0	82.9	70 - 130	34.01	2.47	20	
o-Xylene	16.49	1.0	20	0	82.4	70 - 124	16.86	2.24	20	
Toluene	17.66	1.0	20	0	88.3	70 - 123	18.17	2.83	20	
Xylenes, Total	49.66	1.0	60	0	82.8	70 - 130	50.87	2.39	20	
Surr: 1,2-Dichloroethane-d4	*50.24*	*1.0*	*50*	*0*	*100*	*70 - 126*	*50.37*	*0.252*	*20*	
Surr: 4-Bromofluorobenzene	*49.86*	*1.0*	*50*	*0*	*99.7*	*81 - 113*	*49.95*	*0.19*	*20*	
Surr: Dibromofluoromethane	*50.53*	*1.0*	*50*	*0*	*101*	*77 - 123*	*49.29*	*2.49*	*20*	
Surr: Toluene-d8	*48.43*	*1.0*	*50*	*0*	*96.9*	*82 - 127*	*48.59*	*0.313*	*20*	

The following samples were analyzed in this batch: HS21070738-01 HS21070738-02 HS21070738-15 HS21070738-16 HS21070738-17 HS21070738-18 HS21070738-19

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387712 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210716** Units: **ug/L** Analysis Date: **17-Jul-2021 02:27**
Client ID: Run ID: **VOA4_387712** SeqNo: **6188577** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*51.24*	*1.0*	*50*	*0*	*102*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.61*	*1.0*	*50*	*0*	*95.2*	*82 - 115*				
Surr: Dibromofluoromethane	*49.86*	*1.0*	*50*	*0*	*99.7*	*73 - 126*				
Surr: Toluene-d8	*49.42*	*1.0*	*50*	*0*	*98.8*	*81 - 120*				

LCS Sample ID: **VLCSW-210716** Units: **ug/L** Analysis Date: **17-Jul-2021 00:58**
Client ID: Run ID: **VOA4_387712** SeqNo: **6188499** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.51	1.0	20	0	97.5	74 - 120				
Ethylbenzene	19.76	1.0	20	0	98.8	77 - 117				
m,p-Xylene	37.4	2.0	40	0	93.5	77 - 122				
o-Xylene	20.46	1.0	20	0	102	75 - 119				
Toluene	22.15	1.0	20	0	111	77 - 118				
Xylenes, Total	57.87	1.0	60	0	96.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.03*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*44.75*	*1.0*	*50*	*0*	*89.5*	*82 - 115*				
Surr: Dibromofluoromethane	*50.45*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*56.66*	*1.0*	*50*	*0*	*113*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387712 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070738-10MS** Units: **ug/L** Analysis Date: **17-Jul-2021 03:34**
Client ID: **VW37** Run ID: **VOA4_387712** SeqNo: **6188504** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	15.88	1.0	20	0	79.4	70 - 127				
Ethylbenzene	16.39	1.0	20	0	81.9	70 - 124				
m,p-Xylene	32.9	2.0	40	0	82.3	70 - 130				
o-Xylene	15.96	1.0	20	0	79.8	70 - 124				
Toluene	17.56	1.0	20	0	87.8	70 - 123				
Xylenes, Total	48.87	1.0	60	0	81.4	70 - 130				
Surr: 1,2-Dichloroethane-d4	*54.56*	*1.0*	*50*	*0*	*109*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.1*	*1.0*	*50*	*0*	*96.2*	*81 - 113*				
Surr: Dibromofluoromethane	*53.19*	*1.0*	*50*	*0*	*106*	*77 - 123*				
Surr: Toluene-d8	*48.36*	*1.0*	*50*	*0*	*96.7*	*82 - 127*				

MSD Sample ID: **HS21070738-10MSD** Units: **ug/L** Analysis Date: **17-Jul-2021 03:56**
Client ID: **VW37** Run ID: **VOA4_387712** SeqNo: **6188505** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	15.32	1.0	20	0	76.6	70 - 127	15.88	3.59	20	
Ethylbenzene	15.59	1.0	20	0	78.0	70 - 124	16.39	4.98	20	
m,p-Xylene	30.3	2.0	40	0	75.7	70 - 130	32.9	8.25	20	
o-Xylene	15.98	1.0	20	0	79.9	70 - 124	15.96	0.117	20	
Toluene	16.55	1.0	20	0	82.8	70 - 123	17.56	5.89	20	
Xylenes, Total	46.28	1.0	60	0	77.1	70 - 130	48.87	5.44	20	
Surr: 1,2-Dichloroethane-d4	*53.02*	*1.0*	*50*	*0*	*106*	*70 - 126*	*54.56*	*2.87*	*20*	
Surr: 4-Bromofluorobenzene	*46.88*	*1.0*	*50*	*0*	*93.8*	*81 - 113*	*48.1*	*2.56*	*20*	
Surr: Dibromofluoromethane	*53.52*	*1.0*	*50*	*0*	*107*	*77 - 123*	*53.19*	*0.618*	*20*	
Surr: Toluene-d8	*48.04*	*1.0*	*50*	*0*	*96.1*	*82 - 127*	*48.36*	*0.663*	*20*	

The following samples were analyzed in this batch: HS21070738-03 HS21070738-09 HS21070738-10

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387764 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210719** Units: **ug/L** Analysis Date: **20-Jul-2021 04:04**
Client ID: Run ID: **VOA4_387764** SeqNo: **6190034** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*48.48*	*1.0*	*50*	*0*	*97.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.22*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*48.83*	*1.0*	*50*	*0*	*97.7*	*73 - 126*				
Surr: Toluene-d8	*49.3*	*1.0*	*50*	*0*	*98.6*	*81 - 120*				

LCS Sample ID: **VLCSW-210719** Units: **ug/L** Analysis Date: **20-Jul-2021 03:19**
Client ID: Run ID: **VOA4_387764** SeqNo: **6190033** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.74	1.0	20	0	109	74 - 120				
Ethylbenzene	21.26	1.0	20	0	106	77 - 117				
m,p-Xylene	45.27	2.0	40	0	113	77 - 122				
o-Xylene	22.18	1.0	20	0	111	75 - 119				
Toluene	20.73	1.0	20	0	104	77 - 118				
Xylenes, Total	67.45	1.0	60	0	112	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.61*	*1.0*	*50*	*0*	*95.2*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*52.8*	*1.0*	*50*	*0*	*106*	*82 - 115*				
Surr: Dibromofluoromethane	*49.84*	*1.0*	*50*	*0*	*99.7*	*73 - 126*				
Surr: Toluene-d8	*50.4*	*1.0*	*50*	*0*	*101*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387764 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070720-09MS** Units: **ug/L** Analysis Date: **20-Jul-2021 06:40**
Client ID: Run ID: **VOA4_387764** SeqNo: **6190041** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.94	1.0	20	0	105	70 - 127				
Ethylbenzene	14.48	1.0	20	0	72.4	70 - 124				
m,p-Xylene	39.37	2.0	40	0	98.4	70 - 130				
o-Xylene	20.67	1.0	20	0	103	70 - 124				
Toluene	21.87	1.0	20	0	109	70 - 123				
Xylenes, Total	60.04	1.0	60	0	100	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.19*	*1.0*	*50*	*0*	*92.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*55.77*	*1.0*	*50*	*0*	*112*	*81 - 113*				
Surr: Dibromofluoromethane	*48.96*	*1.0*	*50*	*0*	*97.9*	*77 - 123*				
Surr: Toluene-d8	*57.37*	*1.0*	*50*	*0*	*115*	*82 - 127*				

MSD Sample ID: **HS21070720-09MSD** Units: **ug/L** Analysis Date: **20-Jul-2021 07:02**
Client ID: Run ID: **VOA4_387764** SeqNo: **6190042** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.38	1.0	20	0	102	70 - 127	20.94	2.73	20	
Ethylbenzene	19.56	1.0	20	0	97.8	70 - 124	14.48	29.9	20	R
m,p-Xylene	38.83	2.0	40	0	97.1	70 - 130	39.37	1.39	20	
o-Xylene	19.85	1.0	20	0	99.3	70 - 124	20.67	4.02	20	
Toluene	19.11	1.0	20	0	95.6	70 - 123	21.87	13.5	20	
Xylenes, Total	58.68	1.0	60	0	97.8	70 - 130	60.04	2.28	20	
Surr: 1,2-Dichloroethane-d4	*46.94*	*1.0*	*50*	*0*	*93.9*	*70 - 126*	*46.19*	*1.62*	*20*	
Surr: 4-Bromofluorobenzene	*52.6*	*1.0*	*50*	*0*	*105*	*81 - 113*	*55.77*	*5.85*	*20*	
Surr: Dibromofluoromethane	*48.63*	*1.0*	*50*	*0*	*97.3*	*77 - 123*	*48.96*	*0.695*	*20*	
Surr: Toluene-d8	*50.59*	*1.0*	*50*	*0*	*101*	*82 - 127*	*57.37*	*12.6*	*20*	

The following samples were analyzed in this batch: HS21070738-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R388086 (0) **Instrument:** VOA6 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210722** Units: **ug/L** Analysis Date: **22-Jul-2021 23:42**
Client ID: Run ID: **VOA6_388086** SeqNo: **6196693** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*55.97*	*1.0*	*50*	*0*	*112*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.96*	*1.0*	*50*	*0*	*97.9*	*82 - 115*				
Surr: Dibromofluoromethane	*55.32*	*1.0*	*50*	*0*	*111*	*73 - 126*				
Surr: Toluene-d8	*52.97*	*1.0*	*50*	*0*	*106*	*81 - 120*				

LCS Sample ID: **VLCSW-210722** Units: **ug/L** Analysis Date: **22-Jul-2021 23:00**
Client ID: Run ID: **VOA6_388086** SeqNo: **6196692** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.29	1.0	20	0	96.4	74 - 120				
Ethylbenzene	19.28	1.0	20	0	96.4	77 - 117				
m,p-Xylene	38.46	2.0	40	0	96.2	77 - 122				
o-Xylene	19.32	1.0	20	0	96.6	75 - 119				
Toluene	19.25	1.0	20	0	96.3	77 - 118				
Xylenes, Total	57.78	1.0	60	0	96.3	75 - 122				
Surr: 1,2-Dichloroethane-d4	*56.3*	*1.0*	*50*	*0*	*113*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.21*	*1.0*	*50*	*0*	*94.4*	*82 - 115*				
Surr: Dibromofluoromethane	*55.46*	*1.0*	*50*	*0*	*111*	*73 - 126*				
Surr: Toluene-d8	*44.6*	*1.0*	*50*	*0*	*89.2*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R388086 (0) **Instrument:** VOA6 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070738-06MS** Units: **ug/L** Analysis Date: **23-Jul-2021 00:24**
Client ID: **VW31** Run ID: **VOA6_388086** SeqNo: **6196695** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	12.27	1.0	20	0	61.3	70 - 127				S
Ethylbenzene	13.77	1.0	20	0	68.9	70 - 124				S
m,p-Xylene	27	2.0	40	0	67.5	70 - 130				S
o-Xylene	13.75	1.0	20	0	68.8	70 - 124				S
Toluene	13.78	1.0	20	0	68.9	70 - 123				S
Xylenes, Total	40.75	1.0	60	0	67.9	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*52.08*	*1.0*	*50*	*0*	*104*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.86*	*1.0*	*50*	*0*	*99.7*	*81 - 113*				
Surr: Dibromofluoromethane	*53.1*	*1.0*	*50*	*0*	*106*	*77 - 123*				
Surr: Toluene-d8	*51.99*	*1.0*	*50*	*0*	*104*	*82 - 127*				

MSD Sample ID: **HS21070738-06MSD** Units: **ug/L** Analysis Date: **23-Jul-2021 00:45**
Client ID: **VW31** Run ID: **VOA6_388086** SeqNo: **6196696** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	11.87	1.0	20	0	59.3	70 - 127	12.27	3.32	20	S
Ethylbenzene	13.38	1.0	20	0	66.9	70 - 124	13.77	2.9	20	S
m,p-Xylene	25.54	2.0	40	0	63.9	70 - 130	27	5.53	20	S
o-Xylene	13.06	1.0	20	0	65.3	70 - 124	13.75	5.15	20	S
Toluene	12.77	1.0	20	0	63.9	70 - 123	13.78	7.58	20	S
Xylenes, Total	38.61	1.0	60	0	64.3	70 - 130	40.75	5.4	20	S
Surr: 1,2-Dichloroethane-d4	*53.09*	*1.0*	*50*	*0*	*106*	*70 - 126*	*52.08*	*1.9*	*20*	
Surr: 4-Bromofluorobenzene	*51.42*	*1.0*	*50*	*0*	*103*	*81 - 113*	*49.86*	*3.08*	*20*	
Surr: Dibromofluoromethane	*55.25*	*1.0*	*50*	*0*	*111*	*77 - 123*	*53.1*	*3.98*	*20*	
Surr: Toluene-d8	*49.91*	*1.0*	*50*	*0*	*99.8*	*82 - 127*	*51.99*	*4.08*	*20*	

The following samples were analyzed in this batch: HS21070738-04 HS21070738-06 HS21070738-07 HS21070738-08 HS21070738-11 HS21070738-12

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R388159 (0) **Instrument:** VOA9 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210725** Units: **ug/L** Analysis Date: **25-Jul-2021 23:56**
Client ID: Run ID: **VOA9_388159** SeqNo: **6198553** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*50.24*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.36*	*1.0*	*50*	*0*	*98.7*	*82 - 115*				
Surr: Dibromofluoromethane	*49.3*	*1.0*	*50*	*0*	*98.6*	*73 - 126*				
Surr: Toluene-d8	*50.04*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-210725** Units: **ug/L** Analysis Date: **25-Jul-2021 23:13**
Client ID: Run ID: **VOA9_388159** SeqNo: **6198552** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.47	1.0	20	0	97.4	74 - 120				
Ethylbenzene	19.16	1.0	20	0	95.8	77 - 117				
m,p-Xylene	37.77	2.0	40	0	94.4	77 - 122				
o-Xylene	18.99	1.0	20	0	95.0	75 - 119				
Toluene	18.8	1.0	20	0	94.0	77 - 118				
Xylenes, Total	56.76	1.0	60	0	94.6	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.73*	*1.0*	*50*	*0*	*97.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.26*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*49.7*	*1.0*	*50*	*0*	*99.4*	*73 - 126*				
Surr: Toluene-d8	*50.34*	*1.0*	*50*	*0*	*101*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R388159 (0) **Instrument:** VOA9 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070789-12MS** Units: **ug/L** Analysis Date: **26-Jul-2021 00:38**
Client ID: Run ID: **VOA9_388159** SeqNo: **6198555** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.42	1.0	20	1.828	97.9	70 - 127				
Ethylbenzene	23.08	1.0	20	1.987	105	70 - 124				
m,p-Xylene	43.8	2.0	40	1.806	105	70 - 130				
o-Xylene	21.12	1.0	20	0	106	70 - 124				
Toluene	20.38	1.0	20	0	102	70 - 123				
Xylenes, Total	64.91	1.0	60	1.806	105	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.02*	*1.0*	*50*	*0*	*100*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*50.01*	*1.0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*50.41*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS21070789-12MSD** Units: **ug/L** Analysis Date: **26-Jul-2021 01:00**
Client ID: Run ID: **VOA9_388159** SeqNo: **6198556** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.81	1.0	20	1.828	94.9	70 - 127	21.42	2.85	20	
Ethylbenzene	21.91	1.0	20	1.987	99.6	70 - 124	23.08	5.2	20	
m,p-Xylene	41.8	2.0	40	1.806	100.0	70 - 130	43.8	4.65	20	
o-Xylene	20.13	1.0	20	0	101	70 - 124	21.12	4.79	20	
Toluene	19.33	1.0	20	0	96.7	70 - 123	20.38	5.3	20	
Xylenes, Total	61.93	1.0	60	1.806	100	70 - 130	64.91	4.7	20	
Surr: 1,2-Dichloroethane-d4	*49.37*	*1.0*	*50*	*0*	*98.7*	*70 - 126*	*50.02*	*1.31*	*20*	
Surr: 4-Bromofluorobenzene	*50.77*	*1.0*	*50*	*0*	*102*	*81 - 113*	*51*	*0.447*	*20*	
Surr: Dibromofluoromethane	*49.5*	*1.0*	*50*	*0*	*99.0*	*77 - 123*	*50.01*	*1.01*	*20*	
Surr: Toluene-d8	*50.07*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.41*	*0.667*	*20*	

The following samples were analyzed in this batch: HS21070738-13 HS21070738-14

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168107 (0) **Instrument:** WetChem_HS **Method:** TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011

MBLK Sample ID: **MBLK-168107** Units: **mg/L** Analysis Date: **20-Jul-2021 15:51**
Client ID: Run ID: **WetChem_HS_387809** SeqNo: **6190605** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	< 0.10	0.50								

LCS Sample ID: **LCS-168107** Units: **mg/L** Analysis Date: **20-Jul-2021 15:51**
Client ID: Run ID: **WetChem_HS_387809** SeqNo: **6190604** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	20.86	0.50	20	0	104	85 - 115				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **20-Jul-2021 15:51**
Client ID: **VW31** Run ID: **WetChem_HS_387809** SeqNo: **6190602** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	25.1	0.50	20	3.878	106	75 - 125				

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 15:51**
Client ID: **VW31** Run ID: **WetChem_HS_387809** SeqNo: **6190603** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	25.27	0.50	20	3.878	107	75 - 125	25.1	0.691	20	

The following samples were analyzed in this batch:

HS21070738-03	HS21070738-04	HS21070738-06	HS21070738-07
HS21070738-08	HS21070738-09	HS21070738-10	HS21070738-11
HS21070738-12	HS21070738-13	HS21070738-14	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168209 (0) **Instrument: UV-2450** **Method: AMMONIA AS N BY SM4500 NH3-B-F-2011**

MBLK Sample ID: **MBLK-168209** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193122** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	< 0.025	0.050								

LCS Sample ID: **LCS-168209** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193121** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.484	0.050	0.5	0	96.8	85 - 115				

MS Sample ID: **HS21070697-01MS** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193119** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.287	0.050	0.5	0.738	110	80 - 120				E

MS Sample ID: **HS21070695-04MS** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193117** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.531	0.050	0.5	0.057	94.8	80 - 120				

MSD Sample ID: **HS21070697-01MSD** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193120** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.287	0.050	0.5	0.738	110	80 - 120	1.287	0	20	E

MSD Sample ID: **HS21070695-04MSD** Units: **mg/L** Analysis Date: **21-Jul-2021 16:30**
Client ID: Run ID: **UV-2450_387907** SeqNo: **6193118** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.495	0.050	0.5	0.057	87.6	80 - 120	0.531	7.02	20	

The following samples were analyzed in this batch: HS21070738-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: 168273 (0) **Instrument: UV-2450** **Method: AMMONIA AS N BY SM4500 NH3-B-F-2011**

MBLK Sample ID: **MBLK-168273** Units: **mg/L** Analysis Date: **22-Jul-2021 18:00**
Client ID: Run ID: **UV-2450_388033** SeqNo: **6195537** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	< 0.025	0.050								

LCS Sample ID: **LCS-168273** Units: **mg/L** Analysis Date: **22-Jul-2021 18:00**
Client ID: Run ID: **UV-2450_388033** SeqNo: **6195536** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.494	0.050	0.5	0	98.8	85 - 115				

MS Sample ID: **HS21070758-01MS** Units: **mg/L** Analysis Date: **22-Jul-2021 18:00**
Client ID: Run ID: **UV-2450_388033** SeqNo: **6195534** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.719	0.050	0.5	0.15	114	80 - 120				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **22-Jul-2021 18:00**
Client ID: **VW31** Run ID: **UV-2450_388033** SeqNo: **6195532** PrepDate: **22-Jul-2021** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	3.3	0.50	5	2.9	8.00	80 - 120				S

MSD Sample ID: **HS21070758-01MSD** Units: **mg/L** Analysis Date: **22-Jul-2021 18:00**
Client ID: Run ID: **UV-2450_388033** SeqNo: **6195535** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.719	0.050	0.5	0.15	114	80 - 120	0.719	0	20	

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **22-Jul-2021 18:00**
Client ID: **VW31** Run ID: **UV-2450_388033** SeqNo: **6195533** PrepDate: **22-Jul-2021** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	3.31	0.50	5	2.9	8.20	80 - 120	3.3	0.303	20	S

The following samples were analyzed in this batch:

HS21070738-04	HS21070738-06	HS21070738-07	HS21070738-08
HS21070738-09	HS21070738-10	HS21070738-11	HS21070738-12
HS21070738-13	HS21070738-14		

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387559 (0) **Instrument:** ManTech01 **Method:** ALKALINITY BY SM 2320B-2011

MBLK Sample ID: **WBLKW2-210715** Units: **mg/L** Analysis Date: **15-Jul-2021 23:07**
Client ID: Run ID: **ManTech01_387559** SeqNo: **6185273** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00								
Alkalinity, Total (As CaCO3)	< 5.00	5.00								

LCS Sample ID: **WLCS2-210715** Units: **mg/L** Analysis Date: **15-Jul-2021 22:46**
Client ID: Run ID: **ManTech01_387559** SeqNo: **6185270** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1035	5.00	1000	0	104	85 - 115				
Alkalinity, Total (As CaCO3)	1050	5.00	1000	0	105	85 - 115				

LCSD Sample ID: **WLCSD2-210715** Units: **mg/L** Analysis Date: **15-Jul-2021 23:16**
Client ID: Run ID: **ManTech01_387559** SeqNo: **6185274** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1023	5.00	1000	0	102	85 - 115	1035	1.15	20	
Alkalinity, Total (As CaCO3)	1039	5.00	1000	0	104	85 - 115	1050	1.1	20	

DUP Sample ID: **HS21070738-06DUP** Units: **mg/L** Analysis Date: **15-Jul-2021 23:33**
Client ID: **VW31** Run ID: **ManTech01_387559** SeqNo: **6185276** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	921.1	5.00					914.1	0.762	20	
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	921.1	5.00					914.1	0.762	20	

The following samples were analyzed in this batch:

HS21070738-03	HS21070738-04	HS21070738-06	HS21070738-07
HS21070738-08	HS21070738-09	HS21070738-10	HS21070738-11
HS21070738-12	HS21070738-13	HS21070738-14	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387565 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **15-Jul-2021 15:20**
Client ID: Run ID: **ICS-Integrion_387565** SeqNo: **6185474** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 0.200	0.500								
Nitrogen, Nitrate (As N)	< 0.0300	0.100								
Nitrogen, Nitrite (As N)	< 0.0300	0.100								
Sulfate	< 0.200	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **15-Jul-2021 15:28**
Client ID: Run ID: **ICS-Integrion_387565** SeqNo: **6185475** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.51	0.500	20	0	103	90 - 110				
Nitrogen, Nitrate (As N)	4.197	0.100	4	0	105	90 - 110				
Nitrogen, Nitrite (As N)	4.084	0.100	4	0	102	90 - 110				
Sulfate	20.94	0.500	20	0	105	90 - 110				

LCSD Sample ID: **LCSD** Units: **mg/L** Analysis Date: **15-Jul-2021 15:35**
Client ID: Run ID: **ICS-Integrion_387565** SeqNo: **6185476** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.48	0.500	20	0	97.4	90 - 110	20.51	5.15	20	
Nitrogen, Nitrate (As N)	4.005	0.100	4	0	100	90 - 110	4.197	4.68	20	
Nitrogen, Nitrite (As N)	3.895	0.100	4	0	97.4	90 - 110	4.084	4.75	20	
Sulfate	19.74	0.500	20	0	98.7	90 - 110	20.94	5.94	20	

MS Sample ID: **HS21070739-01MS** Units: **mg/L** Analysis Date: **15-Jul-2021 15:58**
Client ID: Run ID: **ICS-Integrion_387565** SeqNo: **6185479** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	37.5	0.500	10	28.77	87.2	80 - 120				
Nitrogen, Nitrate (As N)	2.187	0.100	2	0.1489	102	80 - 120				
Nitrogen, Nitrite (As N)	1.942	0.100	2	0.0429	95.0	80 - 120				
Sulfate	162.8	0.500	10	161.7	10.8	80 - 120				SEO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387565 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **15-Jul-2021 19:55**
Client ID: **VW31** Run ID: **ICS-Integrion_387565** SeqNo: **6185494** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	558.8	0.500	10	553.1	57.3	80 - 120				SEO
Nitrogen, Nitrate (As N)	2.066	0.100	2	0.0143	103	80 - 120				
Nitrogen, Nitrite (As N)	1.663	0.100	2	0	83.1	80 - 120				
Sulfate	30.41	0.500	10	16.73	137	80 - 120				S

MSD Sample ID: **HS21070739-01MSD** Units: **mg/L** Analysis Date: **15-Jul-2021 16:05**
Client ID: Run ID: **ICS-Integrion_387565** SeqNo: **6185480** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	37.72	0.500	10	28.77	89.5	80 - 120	37.5	0.606	20	
Nitrogen, Nitrate (As N)	2.204	0.100	2	0.1489	103	80 - 120	2.187	0.765	20	
Nitrogen, Nitrite (As N)	1.956	0.100	2	0.0429	95.6	80 - 120	1.942	0.713	20	
Sulfate	164.4	0.500	10	161.7	26.6	80 - 120	162.8	0.965	20	SEO

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **15-Jul-2021 20:02**
Client ID: **VW31** Run ID: **ICS-Integrion_387565** SeqNo: **6185495** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	547.9	0.500	10	553.1	-51.3	80 - 120	558.8	1.96	20	SEO
Nitrogen, Nitrate (As N)	2.026	0.100	2	0.0143	101	80 - 120	2.066	1.93	20	
Nitrogen, Nitrite (As N)	1.634	0.100	2	0	81.7	80 - 120	1.663	1.73	20	
Sulfate	29.59	0.500	10	16.73	129	80 - 120	30.41	2.74	20	S

The following samples were analyzed in this batch:

HS21070738-03	HS21070738-04	HS21070738-06	HS21070738-07
HS21070738-08	HS21070738-09	HS21070738-10	HS21070738-11
HS21070738-12	HS21070738-13	HS21070738-14	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387639 (0) **Instrument:** TOC_04 **Method:** DISSOLVED ORGANIC CARBON BY SW9060A (DISSOLVED)

MBLK Sample ID: **MBLK-07162021** Units: **mg/L** Analysis Date: **16-Jul-2021 18:56**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	< 0.500	1.00								

LCS Sample ID: **LCS-07162021** Units: **mg/L** Analysis Date: **16-Jul-2021 19:11**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.6	1.00	10	0	106	85 - 115				

LCSD Sample ID: **LCSD-07162021** Units: **mg/L** Analysis Date: **16-Jul-2021 19:26**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186977** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.48	1.00	10	0	105	85 - 115	10.6	1.14	20	

MS Sample ID: **HS21070738-03MS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:21**
Client ID: **VW34** Run ID: **TOC_04_387639** SeqNo: **6186984** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	17.75	1.00	10	6.473	113	80 - 120				

The following samples were analyzed in this batch:

HS21070738-03	HS21070738-07	HS21070738-08	HS21070738-09
HS21070738-10	HS21070738-11	HS21070738-12	HS21070738-13
HS21070738-14			

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387721 (0) **Instrument:** WetChem_HS **Method:** SULFIDE BY SM4500 S2-F-2011

MBLK Sample ID: **MBLK-R387721** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188654** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	< 1.00	1.00								

LCS Sample ID: **LCS-R387721** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188653** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.4	1.00	25	0	85.6	85 - 115				

LCSD Sample ID: **LCSD-R387721** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188652** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.6	1.00	25	0	86.4	85 - 115	21.4	0.93	20	

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: **VW31** Run ID: **WetChem_HS_387721** SeqNo: **6188664** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	145	5.00	125	18	102	80 - 120				

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188633** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	20.8	1.00	25	-1.6	89.6	80 - 120				

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: **VW31** Run ID: **WetChem_HS_387721** SeqNo: **6188663** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	144	5.00	125	18	101	80 - 120	145	0.692	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: **R387721 (0)** **Instrument:** **WetChem_HS** **Method:** **SULFIDE BY SM4500 S2-F-2011**

MSD Sample ID: **HS21070657-02MSD** Units: **mg/L** Analysis Date: **19-Jul-2021 12:00**
Client ID: Run ID: **WetChem_HS_387721** SeqNo: **6188634** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21	1.00	25	-1.6	90.4	80 - 120	20.8	0.957	20	

The following samples were analyzed in this batch:

HS21070738-03	HS21070738-04	HS21070738-06	HS21070738-07
HS21070738-08	HS21070738-09	HS21070738-10	HS21070738-11
HS21070738-12	HS21070738-13	HS21070738-14	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R387871 (0) **Instrument:** ICS-Integrion **Method:** NITRATE/NITRITE BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **20-Jul-2021 04:41**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192155** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	< 0.0300	0.200								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **20-Jul-2021 04:48**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192156** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	8.175	0.200	8	0	102	90 - 110				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **20-Jul-2021 02:35**
Client ID: **VW31** Run ID: **ICS-Integrion_387871** SeqNo: **6192139** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	19.49	1.00	20	0	97.4	80 - 120				

MS Sample ID: **HS21070658-01MS** Units: **mg/L** Analysis Date: **20-Jul-2021 01:14**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192128** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	28.76	1.00	20	9.956	94.0	80 - 120				

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 02:42**
Client ID: **VW31** Run ID: **ICS-Integrion_387871** SeqNo: **6192140** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	19.84	1.00	20	0	99.2	80 - 120	19.49	1.8	20	

MSD Sample ID: **HS21070658-01MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 01:21**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192129** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	29.19	1.00	20	9.956	96.2	80 - 120	28.76	1.48	20	

The following samples were analyzed in this batch:

HS21070738-03	HS21070738-04	HS21070738-06	HS21070738-07
HS21070738-08	HS21070738-09	HS21070738-10	HS21070738-11
HS21070738-12	HS21070738-13	HS21070738-14	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070738

QC BATCH REPORT

Batch ID: R388034 (0) **Instrument:** TOC_04 **Method:** DISSOLVED ORGANIC CARBON BY SW9060A (DISSOLVED)

MBLK Sample ID: **MBLK-07222021** Units: **mg/L** Analysis Date: **22-Jul-2021 16:05**
Client ID: Run ID: **TOC_04_388034** SeqNo: **6195553** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	< 0.500	1.00								

LCS Sample ID: **LCS-07222021** Units: **mg/L** Analysis Date: **22-Jul-2021 16:20**
Client ID: Run ID: **TOC_04_388034** SeqNo: **6195554** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.8	1.00	10	0	108	85 - 115				

LCSD Sample ID: **LCSD-07222021** Units: **mg/L** Analysis Date: **22-Jul-2021 16:36**
Client ID: Run ID: **TOC_04_388034** SeqNo: **6195555** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.01	1.00	10	0	100	85 - 115	10.8	7.59	20	

MS Sample ID: **HS21071128-05MS** Units: **mg/L** Analysis Date: **22-Jul-2021 18:26**
Client ID: Run ID: **TOC_04_388034** SeqNo: **6195558** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	14.4	1.00	10	4.088	103	80 - 120				

The following samples were analyzed in this batch: HS21070738-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: **HS21070738**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	21-022-0	26-Mar-2022
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-33	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
North Carolina	624-2021	31-Dec-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-21-27	30-Apr-2022

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070738

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS21070738-01	Equipment Blank-1	Login	7/15/2021 10:32:52 AM	JRM	VOA078
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	MET061
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	MET061
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	WET192
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	WET209
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	WET192
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	VOA078
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	RSK010
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	WET231
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	Sub
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	LVI002
HS21070738-02	VW16	Login	7/15/2021 10:32:52 AM	JRM	LVI002

RIGHT SOLUTIONS | RIGHT PARTNER

Sample Receipt Checklist

Work Order ID: HS21070738 **Date/Time Received:** **15-Jul-2021 09:25**

Client Name: GMS **Received by:** **Jared R. Makan**

Completed By: /S/ Jared R. Makan (eSignature) 15-Jul-2021 10:25 (Date/Time) **Reviewed by:** /S/ Ragen Giga (eSignature) 16-Jul-2021 15:26 (Date/Time)

Matrices: **Water** Carrier name: **FedEx International Priority**

	Yes	No	
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	2 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:238516, 238517
Samplers name present on COC?	☑	☐	
Chain of custody agrees with sample labels?	☐	☑	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☐	☑	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	4.7°C, 4.5°C, 5.5°C, 4.9°C UC/C	IR31
Cooler(s)/Kit(s):	43078, 46736, 46046, 45621	
Date/Time sample(s) sent to storage:	07/15/2021 11:00	

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☐	☑	N/A ☐
pH adjusted?	☑	☐	N/A ☐

pH adjusted by: Jared R. Makan

Login Notes: Initial pH>2 (13) on acid preserved bottles for GM-22. pH adjusted by adding the following acid to samples:
Ammonia/TKN - 0.5ml H2SO4
Metals - 0.5ml HNO3
Final pH=13, unable to achieve a pH<2. Preserved 07/15/21 10:25

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

RIGHT SOLUTIONS | RIGHT PARTNER

Sample Receipt Checklist

Work Order ID: HS21070738 **Date/Time Received:** **15-Jul-2021 09:25**

Client Name: GMS **Received by:** **Jared R. Makan**

Completed By: /S/ Jared R. Makan (eSignature) 15-Jul-2021 10:50 (Date/Time) **Reviewed by:** /S/ Ragen Giga (eSignature) 16-Jul-2021 15:26 (Date/Time)

Matrices: **Water** Carrier name: **FedEx International Priority**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	☑
Chain of custody present?	☑	☐	1 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:238516, 238517
Samplers name present on COC?	☑	☐	
Chain of custody agrees with sample labels?	☐	☑	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☐	☑	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s): 4.7°C, 4.5°C, 5.5°C, 4.9°C UC/C | IR31

Cooler(s)/Kit(s): 43078, 46736, 46046, 45621

Date/Time sample(s) sent to storage: 07/15/2021 11:00

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☐	☑	N/A ☐
pH adjusted?	☑	☐	N/A ☐

pH adjusted by: Jared R. Makan

Login Notes: One DRO LVI vial broke during shipping for VW-24. Enough sample remains to run analysis.
Trip blanks received, not listed on COC. Logged in for analysis.
DRO checked off for Equipment Blank-1, no vials received. Logged in for VOCs only.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

RIGHT SOLUTIONS | RIGHT PARTNER

Sample Receipt Checklist

Work Order ID: HS21070738 **Date/Time Received:** **15-Jul-2021 09:25**

Client Name: GMS **Received by:** **Jared R. Makan**

Completed By: /S/ Jared R. Makan (eSignature) 15-Jul-2021 10:55 (Date/Time) **Reviewed by:** /S/ Ragen Giga (eSignature) 16-Jul-2021 15:26 (Date/Time)

Matrices: **Water** Carrier name: **FedEx International Priority**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	☑
Chain of custody present?	☑	☐	1 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:238516, 238517
Samplers name present on COC?	☑	☐	
Chain of custody agrees with sample labels?	☐	☑	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☐	☑	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s):	4.7°C, 4.5°C, 5.5°C, 4.9°C UC/C	IR31
Cooler(s)/Kit(s):	43078, 46736, 46046, 45621	
Date/Time sample(s) sent to storage:	07/15/2021 11:00	

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☐	☑	N/A ☐
pH adjusted?	☑	☐	N/A ☐

pH adjusted by: Jared R. Makan

Login Notes: Bottle count differs for samples VW-16 & VW-1; COC lists 22 containers with all analyses checked off, received only vials for 8260 BTEX, 8270 PAH & 8015 DRO. VW-16 & VW-1 logged in for BTEX, PAH & DRO per containers received.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

RIGHT SOLUTIONS | RIGHT PARTNER

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Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 238516

HS21070738

Geo Monitoring Services
St. Croix Alumina

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	St. Croix Alumina
Work Order		Project Number	
Company Name	Geo Monitoring Services	Bill To Company	Geo Monitoring Services
Send Report To	Brad Freeman	Invoice Attn	Brad Freeman
Address	4123 5th Street	Address	4123 5th Street
City/State/Zip	Brookshire, TX 77423	City/State/Zip	Brookshire TX 77423
Phone	(281) 375-5101	Phone	(281) 375-5101
Fax	(281) 375-8468	Fax	(281) 375-8468
e-Mail Address	brad@geomon.net	e-Mail Address	brad@geomon.net

A	8015_DRO_LVI (DRO 8015)
B	8260_LL_W (8260 BTEX)
C	8270_PAH_LVI (8270 Napththalene)
D	ALK_W 2320B (Alkalinity), 300_W (NO2, NO3,Cl,SO4)
E	ICP_TW (Ca, Mg, K, Na, Fe, Mn)
F	ICP_DISS (Dissolved Fe & Mn (Field Filter))
G	SULFD_4500S F (Sulfide)
H	NIT_AMMON_W (Ammonia)
I	RSK175 (Methane), Diss CO2 (Sub to ALS Simi Valley)
J	TOC_Diss_5310B (DOC)- Field Filter

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Equip Blank-1	7/12/21	1530	H_2O	HCl	3		X	X								
2	VW-16	7/12	16:10	✓	✓	22		X	X	X	X	X	X	X	X	X	
3	VW-34	7/13	8:00	✓	✓	22		X	X								
4	GM-22	7/13	9:05	✓	✓	22		X	X								
5	VW-9	7/12	16:15	✓	✓	22		X	X								
6	VW-31	7/13	10:40	✓	✓	22		X	X								
7	MSN-2	7/13	10 40	✓	✓	22		X	X								
8	VW-24	7/13	12:20	✓	✓	22		X	X								
9	VW-2	7/13	13:55	✓	✓	22		X	X								
10																	

Sampler(s) Please Print & Sign: Rex Meyer

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 1 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by:	Date: 7/13	Time:	Received by:
Relinquished by:	Date: 7/15/21	Time: 09:25	Received by (Laboratory): J Mccann
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: GMS - St. Croix Alumina

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other ____
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 238517

HS21070738

Geo Monitoring Services
St. Croix Alumina

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	St. Croix Alumina
Work Order		Project Number	
Company Name	Geo Monitoring Services	Bill To Company	Geo Monitoring Services
Send Report To	Brad Freeman	Invoice Attn	Brad Freeman
Address	4123 5th Street	Address	4123 5th Street
City/State/Zip	Brookshire, TX 77423	City/State/Zip	Brookshire TX 77423
Phone	(281) 375-5101	Phone	(281) 375-5101
Fax	(281) 375-8468	Fax	(281) 375-8468
e-Mail Address	brad@geomon.net	e-Mail Address	brad@geomon.net

A	8015_DRO_LVI (DRO 8015)
B	8260_LL_W (8260 BTEX)
C	8270_PAH_LVI (8270 Napththalene)
D	ALK_W 2320B (Alkalinity), 300_W (NO2, NO3,Cl,SO4)
E	ICP_TW (Ca, Mg, K, Na, Fe, Mn)
F	ICP_DISS (Dissolved Fe & Mn (Field Filter))
G	SULFD_4500S F (Sulfide)
H	NIT_AMMON_W (Ammonia)
I	RSK175 (Methane), Diss CO2 (Sub to ALS Simi Valley)
J	TOC_Diss_5310B (DOC)- Field Filter

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	VW-25	7-13-21	0710	H_2O		22	3	3	3	1	1	1	1	1	6	2	
2	VW-37	↓	0900	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
3	VW-32	↓	1100	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
4	VW-35	↓	1215	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
5	VW-30	7-13-21	1330	H_2O		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
6	FD-02																
7	EQUIP BLANK-2	7-13-21	1345	H_2O				X									
8																	
9																	
10																	

Sampler(s) Please Print & Sign

Shipment Method

Required Turnaround Time: (Check Box) ☐ Other ____ ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

	Date:	Time:		
Relinquished by:	7-13-21	1410	Received by:	
Relinquished by:	7/15/21	09:25	Received by (Laboratory):	J. [illegible]
Logged by (Laboratory):			Checked by (Laboratory):	

Notes: GMS - St. Croix Alumina

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- ☒ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SVWD43/CLP
- ☐ Other ____
- ☐ TRRP Check list
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Date: 7/13
Name:
Company: GES

CUSTODY SEAL
Time: 1400
Alexander

Seal Broken By: JM
Date: 7/15/21

FedEx Express International Air Waybill

Origin Copy

From
Date 7/13/2021 Sender's FedEx Account Number
Sender's Name Michael Alexander Phone 310-277-6604
Company GES
Address #1 Estate Hope
Address
City Christiansted State/Province VI
Country ZIP/Postal Code 00820
Email Address michael@alexlab-online.com
Internal Billing Reference

To
28 ☐ Residential Delivery
Recipient's Name Phone
Company ALS laboratories
Address 10450 Stancliff Road Suite 210 Dept./Floor
Address
City Houston State/Province TX
Country ZIP/Postal Code 77099
Email Address
Recipient's Tax ID Number or Customs Purposes

Shipment Information
Packages Load and Count/SLAC 1 Total Weight 5 lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental sample		USA	10

Total Declared Value for Carriage
Total Value for Customs (Specify Currency) 10 USD

been AES? ☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.
☐ No EEI required, enter exemption number: ____ If other than NLR, enter License Exception: ____
Enter AES proof of filing citation: ____

FedEx Tracking Number 8160 2462 0073 Form ID No. 0402

4 Express Package Service
NOTE: Service order has changed. Please select carefully.
06 ☐ FedEx Intl. First 01 ☑ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging
06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube
15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☑ Other cooler

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.
01 ☐ HOLD at FedEx Location 03 ☐ SATURDAY Delivery
10 ☐ Direct Signature Someone at recipient's address may sign for delivery. 34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.
Bill transportation charges to:
Enter FedEx Acct. No. or Credit Card No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque
Total Transportation
FedEx Acct. No. 960755 4812
[redacted]
Credit Card Exp. Date
Specify Currency
Bill duties and taxes to:
Enter FedEx Acct. No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque
FedEx Acct. No. 960755 4812

8 Required Signature
Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require a U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.
WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.
Sender's Signature: M. Sanes.
Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.
Recipient's Signature 662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SCFA	XHSG	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☑ Station
Forms Attached: ☐ CI ☐ CO
Base Charges 155 Declared Val. Chrg. Other 5 ODA/OPA 10 Credit Card Auth
FedEx Emp. # Audit Emp. # Date Time Del. Courier Emp. # Date Time

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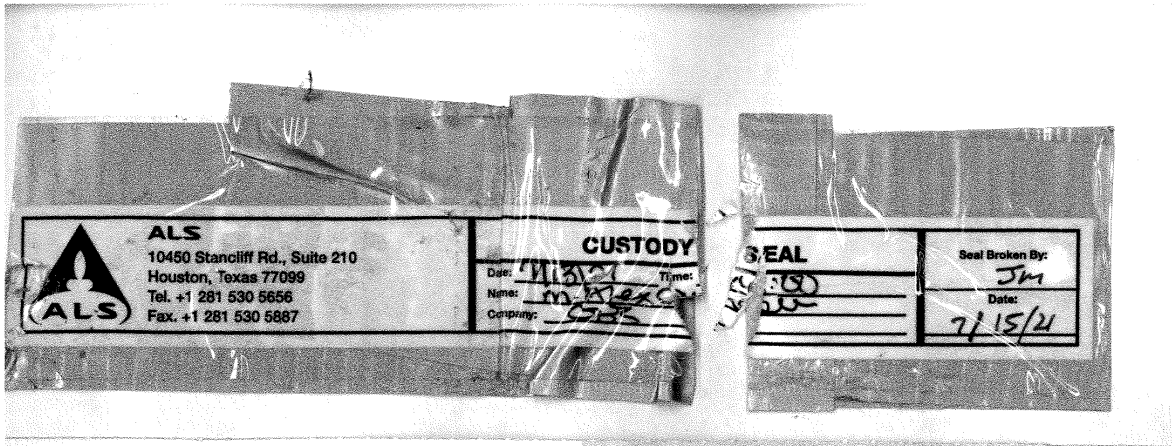

FedEx Express International Air Waybill

Origin Cop

From

Date 7/13/2021 Sender's FedEx Account Number

Sender's Name Michael Alexander Phone 340-277-6004

Company GES

Address #1 Estate Hope

Address

City Christiansted State Province VI

Country ZIP Postal Code 00820

Email Address MAlexander@gesunline.com

Internal Billing Reference

To 28 ☐ Residential Delivery

Recipient's Name ALS Laboratories Phone

Company

Address 10450 Stancliff Road Suite 210 Dept./Floor

Address

City Houston State Province Tx

Country ZIP Postal Code 77099

Email Address

Recipient's Tax ID Number for Customs Purposes

Shipment Information

Packages 's Load and Count/SLAC 1 Total Weight 6 lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Samples		USA	10-

EI been AES? Export Check One ☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR. ☐ No EEI required, enter exemption number: If other than NLR, enter License Exception:

Total Declared Value for Carriage

Total Value for Customs (Specify Currency) 10 USD

s – Enter AES proof of filing citation:

FedEx Tracking Number 8160 2462 0095 0402 Form ID No.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☑ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube
15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☑ Other Cooler

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☑ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery. 34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transportation

FedEx Acct. No. 967554812

Credit Card Exp. Date

Specify Currency

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No. 967554812

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require a U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.

WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: M. Sanes

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SEPA	XHSEP	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station Forms Attached: ☐ CI ☐ CO

Base Charges Declared Val. Chrg. Other ODA/OPA Credit Card Auth.

FedEx Emp. # 1558 Audit Emp. # Date Time Del. Courier Emp. # Date Time

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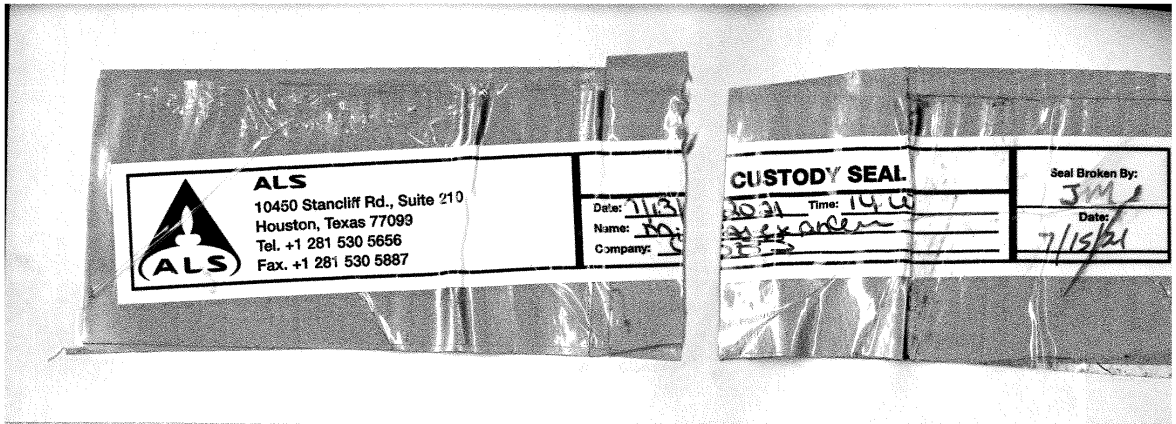

FedEx Express International Air Waybill

From

Date 7/13/2021 Sender's FedEx Account Number

Sender's Name Michael Alexander Phone 310 577 6004

Company GES

Address #1 Estate Mgr

Address

City Michigan #1 State Province NJ

Country ZIP Postal Code 00820

Email Address Malexander@gesunlink.com

Internal Billing Reference

To

28 ☐ Residential Delivery

Recipient's Name Phone

Company ALS Laboratories

Address 10450 Stancliff Road Suite 210

Dept./Floor

Address

City Houston State Province TX

Country ZIP Postal Code 77099

Email Address

Recipient's Tax ID Number for Customs Purposes

Shipment Information

Packages Sender's Load and Count/SLAC 1 Total Weight lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
environmental sample		USA	10-

EEI been in AES? ☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR. ☐ No EEI required, enter exemption number: If other than NLR, enter License Exception:

Total Declared Value for Carriage

Total Value for Customs (Specify Currency) 10- USD

Yes – Enter AES proof of filing citation:

FedEx Tracking Number 8160 2462 0018 0402 Form ID No.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☑ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube 15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☑ Other Courier

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☑ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery. 34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transportat

FedEx Acct. No. 967554612

[redacted]

Specify Curreng

Credit Card Exp. Date

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No. 967554612

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.

WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: M. Sanes

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SGKA	X-H-SGK	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station

Forms Attached: ☐ CI ☐ CO

Base Charges Declared Val. Chrg. Other ODA/OPA Credit Card Auth.

FedEx Emp. # 1150 Audit Emp. # Date 7/13 Time Del. Courier Emp. # Date Time

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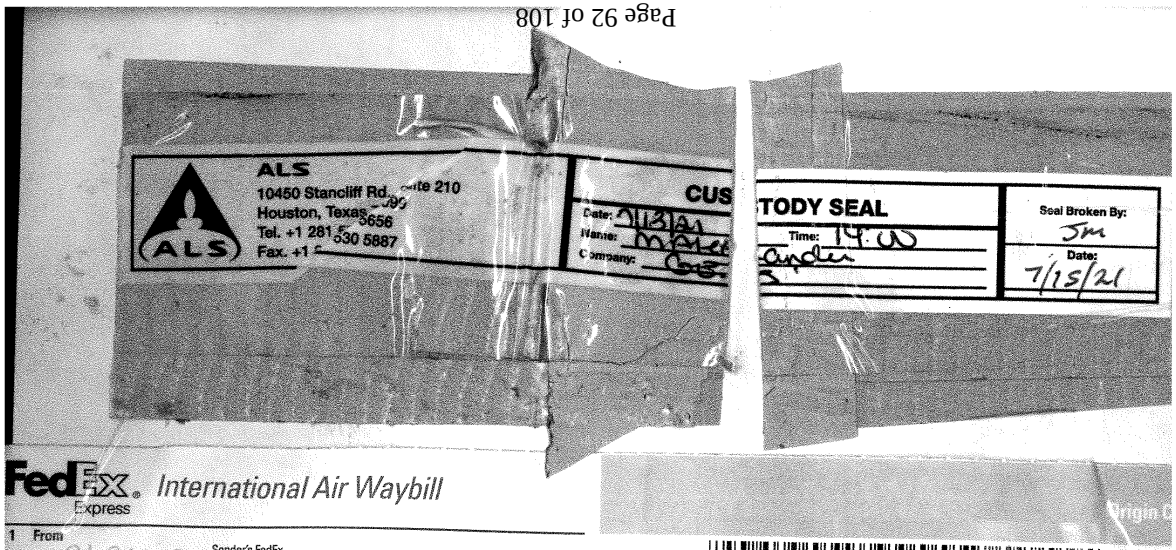

FedEx Express International Air Waybill

1 From

Date 7/13/2021 Sender's FedEx Account Number

Sender's Name Michael Alexander Phone 346-277-6004

Company GES

Address #1 Estate Hope

Address

City Christiansted State Province VI

Country ZIP Postal Code 00820

Email Address MAlexander@gesonline.com

Internal Billing Reference

2 To

28 ☐ Residential Delivery

Recipient's Name Phone

Company ALS Laboratories

Address 10450 Stancliff Road Suite 210 Dept./Floor

Address

City Houston State Province TX

Country ZIP Postal Code 77099

Email Address

Recipient's Tax ID Number for Customs Purposes

3 Shipment Information

Packages Sender's Load and Count/SLAC 1 Total Weight lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Sample		USA	10

EEI been in AES? U.S. Export Check One ☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR. ☐ No EEI required, enter exemption number: If other than NLR, enter License Exception:

Yes – Enter AES proof of filing citation:

Total Declared Value for Carriage

Total Value for Customs (Specify Currency) 10 USD

FedEx Tracking Number 8160 2462 0029 0402 Form ID No.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☐ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube

15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☐ Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☑ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery. 34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transport

FedEx Acct. No. 967554812

Credit Card Exp. Date

Specify Curre

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No. 967554812

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not requir U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipmer and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.

WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: N. Sanes

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SEKA	XHSEKA	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station Forms Attached: ☐ CI ☐ CG

Base Charges Declared Val. Chrg. Other ODA/OPA Credit Card Auth

FedEx Emp. # 7155 Audit Emp. # Date 7/13 Time 10:00 Del. Courier Emp. # Date Time

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FedEx Express International Air Waybill

Customs Copy

8160 2462 0029 0402

FedEx Tracking Number 8160 2462 0029 Form ID No. 0402

1 From

Date

Sender's FedEx Account Number

Sender's Name

Phone

Company

Address

Address

City

State Province

ZIP Postal Code

Country

Email Address

Internal Billing Reference

2 To

28 ☐ Residential Delivery

Recipient's Name

Phone

Company

Address

Dept./Floor

Address

City

State Province

ZIP Postal Code

Country

Email Address

Recipient's Tax ID Number for Customs Purposes

3 Shipment Information

Total Packages

Shipper's Load and Count/SLAC

Total Weight lbs. ☐ kg ☐

DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Commercial Sample		USA	10

Has EEI been filed in AES? For U.S. Export Only: Check One

☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.

☐ No EEI required, enter exemption number:

If other than NLR, enter License Exception:

☐ Yes – Enter AES proof of filing citation:

Total Declared Value for Carriage

Total Value for Customs (Specify Currency) 10 USD

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☐ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube

15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☐ Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☐ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery.

34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighbouring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transportation

FedEx Acct. No. 969554812

Specify Currency

Credit Card Exp. Date

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No. 969554812

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require a U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.

WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: D. Sanes

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SGLA	XIFGA	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station

Forms Attached: ☐ CI ☐ CO

Base Charges ____ Declared Vol. Chrg ____ Other ____ ODA/OPA ____ Credit Card Auth. ____

FedEx Emp. # ____ Audit Emp. # ____ Date ____ Time ____ Del. Courier Emp. # ____ Date ____ Time ____

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RRDA 02/20

PACKAGE LABEL

COMMERCIAL INVOICE LABEL

DELIVERY RECORD LABEL

DELIVERY REATTEMPT LABEL

8160 2462 0029

RIGHT SOLUTIONS | RIGHT PARTNER

FedEx Express International Air Waybill

3A

1 From

Date [illegible] Sender's FedEx Account Number

Sender's Name [illegible] Phone

Company BES

Address [illegible]

Address

City [illegible] State Province [illegible]

Country ZIP Postal Code [illegible]

Email Address [illegible]

Internal Billing Reference

2 To

28 ☐ Residential Delivery

Recipient's Name Phone

Company [illegible]

Address [illegible] Dept./Floor

Address

City [illegible] State Province TX

Country ZIP Postal Code [illegible]

Email Address

Recipient's Tax ID Number for Customs Purposes

3 Shipment Information

Total Packages [illegible] Shipper's Load and Count/SLAC

Total Weight [illegible] lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
[illegible]			

Has EEI been filed in AES? For U.S. Export Only: Check One

☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.

☐ No EEI required, enter exemption number: _____

☐ Yes – Enter AES proof of filing citation: _____

Total Declared Value for Carriage

If other than NLR, enter License Exception: _____

Total Value for Customs (Specify Currency) [illegible] USD

Shipper's Copy

FedEx Tracking Number 8160 2462 0073 0402 Form ID No.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☐ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube

15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☐ Other [illegible]

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☐ SATURDAY Delivery

10 ☐ Direct Signature — Someone at recipient's address may sign for delivery.

34 ☐ Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transportation

FedEx Acct. No. [illegible]

Credit Card Exp. Date

Specify Currency

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No. [illegible]

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require a U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.
WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: [illegible]

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SCHH	XHCG	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station

Forms Attached: ☐ CI ☐ CD

Base Charges _____ Declared Val. Chrg. _____ Other _____ ODA/OPA _____ Credit Card Auth. _____

FedEx Emp. # _____ Audit Emp. # _____ Date _____ Time _____ Del. Courier Emp. # _____ Date _____ Time _____

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RRDA 02/20

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FedEx Express International Air Waybill

Customs Copy

8160 2462 0018

PACKAGE LABEL

COMMERCIAL INVOICE LABEL

DELIVERY RECORD LABEL

DELIVERY REATTEMPT LABEL

FedEx Tracking Number 8160 2462 0018 Form ID No. 0402

1 From

Date

Sender's FedEx Account Number

Sender's Name

Phone

Company

Address

Address

City

State Province

Country

ZIP Postal Code

Email Address

Internal Billing Reference

2 To

28 ☐ Residential Delivery

Recipient's Name

Phone

Company

Address

Dept./Floor

Address

City

State Province

Country

ZIP Postal Code

Email Address

Recipient's Tax ID Number for Customs Purposes

3 Shipment Information

Total Packages

Shipper's Load and Count/SLAC

Total Weight lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs

Has EEI been filed in AES? For U.S. Export Only: Check One

☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.

☐ No EEI required, enter exemption number: If other than NLR, enter License Exception:

☐ Yes – Enter AES proof of filing citation:

Total Declared Value for Carriage

Total Value for Customs (Specify Currency)

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☐ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube

15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☐ Other

6 Special Handling and Delivery Signature Options

Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☐ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery.

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Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transportation

FedEx Acct. No.

Specify Currency

Credit Card Exp. Date

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No.

8 Required Signature

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WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

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Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
			Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station

Forms Attached: ☐ CI ☐ CO

Base Charges Declared Val. Chrg. Other ODA/OPA Credit Card Auth.

FedEx Emp. # Agent Emp. # Date Time Del. Courier Emp. # Date Time

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FedEx Express International Air Waybill

Destination Copy

PACKAGE LABEL

COMMERCIAL INVOICE LABEL

DELIVERY RECORD LABEL

DELIVERY REATTEMPT LABEL

8160 2462 0095

1 From

Date

Sender's Name — Phone

Company

Address

Address

City — State Province

Country — ZIP Postal Code

Email Address

Internal Billing Reference

2 To — 28 ☐ Residential Delivery

Recipient's Name — Phone

Company

Address — Dept./Floor

Address

City — State Province

Country — ZIP Postal Code

Email Address

Recipient's Tax ID Number for Customs Purposes

3 Shipment Information

Total Packages — Shipper's Load and Count/SLAC

Total Weight — lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs

Has EEI been filed in AES? For U.S. Export Only: Check One

☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.

☐ No EEI required, enter exemption number: ____ If other than NLR, enter License Exception: ____

☐ Yes – Enter AES proof of filing citation: ____

Total Declared Value for Carriage

Total Value for Customs (Specify Currency)

FedEx Tracking Number 8160 2462 0095 — 0402 Form ID No.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First — 01 ☐ FedEx Intl. Priority — 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope — 02 ☐ FedEx Pak — 03 ☐ FedEx Box — 04 ☐ FedEx Tube

15 ☐ FedEx 10kg Box — 25 ☐ FedEx 25kg Box — 01 ☐ Other ____

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location — 03 ☐ SATURDAY Delivery

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Total Transportation

Specify Currency

Credit Card Exp. Date

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. — 2 ☐ Recipient — 3 ☐ Third Party — 5 ☐ Cash Check/Cheque

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Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
			Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station — Forms Attached: ☐ CI ☐ CO

Base Charges — Declared Val. Chrg. — Other — ODA/OPA — Credit Card Auth

FedEx Emp. # — Audit Emp. # — Date — Time — Del. Courier Emp. # — Date — Time

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

August 13, 2021

Ragen Giga
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099

RE: HS21070738

Dear Ragen:

Enclosed are the results of the samples submitted to our laboratory on July 16, 2021. For your reference, these analyses have been assigned our service request number P2103815.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 4:48 pm, Aug 13, 2021

Hayden Akers
Project Manager

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: ALS Environmental - US
Project: HS21070738

Service Request No: P2103815

CASE NARRATIVE

The samples were received intact under chain of custody on July 16, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

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ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Environmental - US
Project ID: HS21070738

Service Request: P2103815

Date Received: 7/16/2021
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2
VW-34	P2103815-001	Water	7/13/2021	08:00	X
GM-22	P2103815-002	Water	7/13/2021	09:05	X
VW-31	P2103815-003	Water	7/13/2021	10:40	X
VW-24	P2103815-004	Water	7/13/2021	12:20	X
VW-2	P2103815-005	Water	7/13/2021	13:55	X
VW-25	P2103815-006	Water	7/13/2021	07:10	X
VW-37	P2103815-007	Water	7/13/2021	09:00	X
VW-32	P2103815-008	Water	7/13/2021	11:00	X
VW-35	P2103815-009	Water	7/13/2021	12:15	X
VW-30	P2103815-010	Water	7/13/2021	13:30	X
FD-02	P2103815-011	Water	7/13/2021	00:00	X

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P210 3815

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **16498**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065 **Phone:** +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Ragen Giga
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RagenP.Giga@ALSGlobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21070738
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS21070738-03**	**VW-34**	**Water**	**13 Jul 2021 08:00**
	SUB_Diss CO2			22 Jul 2021
2.	**HS21070738-04**	**GM-22**	**Water**	**13 Jul 2021 09:05**
	SUB_Diss CO2			22 Jul 2021
3.	**HS21070738-06**	**VW-31**	**Water**	**13 Jul 2021 10:40**
	SUB_Diss CO2			22 Jul 2021
4.	**HS21070738-07**	**VW-24**	**Water**	**13 Jul 2021 12:20**
	SUB_Diss CO2			22 Jul 2021
5.	**HS21070738-08**	**VW-2**	**Water**	**13 Jul 2021 13:55**
	SUB_Diss CO2			22 Jul 2021
6.	**HS21070738-09**	**VW-25**	**Water**	**13 Jul 2021 07:10**
	SUB_Diss CO2			22 Jul 2021
7.	**HS21070738-10**	**VW-37**	**Water**	**13 Jul 2021 09:00**
	SUB_Diss CO2			22 Jul 2021
8.	**HS21070738-11**	**VW-32**	**Water**	**13 Jul 2021 11:00**
	SUB_Diss CO2			22 Jul 2021
9.	**HS21070738-12**	**VW-35**	**Water**	**13 Jul 2021 12:15**

P2103815

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **16498**

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
	SUB_Diss CO2			22 Jul 2021
10.	**HS21070738-13**	**VW-30**	**Water**	**13 Jul 2021 13:30**
	SUB_Diss CO2			22 Jul 2021
11.	**HS21070738-14**	**FD-02**	**Water**	**13 Jul 2021 00:00**
	SUB_Diss CO2			22 Jul 2021

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS21070738-06 MS/MSD

QC Level: STD (Laboratory Standard QC: method blank and LCS required)

Relinquished By: J. Mackam Date/Time: 7/15/21 18:00

Received By: Date/Time: 7/16/21 0930

Cooler ID(s): Temperature(s): 2° wet

ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2103815
Project: HS21070738
Sample(s) received on: 7/16/2021 Date opened: 7/16/2021 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C Wet Ic			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☒	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103815-001.01	40mL VOA NP		9			CB 7/26/21
P2103815-001.02	40mL VOA NP					
P2103815-001.03	40mL VOA NP					
P2103815-002.01	40mL VOA NP		13			CB 7/26/21
P2103815-002.02	40mL VOA NP					
P2103815-002.03	40mL VOA NP					
P2103815-003.01	40mL VOA NP		7			CB 7/26/21
P2103815-003.02	40mL VOA NP		7			CB 7/26/21
P2103815-003.03	40mL VOA NP		7			CB 7/26/21
P2103815-004.01	40mL VOA NP					
P2103815-004.02	40mL VOA NP		6			CB 7/27/21
P2103815-004.03	40mL VOA NP					
P2103815-005.01	40mL VOA NP					
P2103815-005.02	40mL VOA NP		6			CB 7/27/21
P2103815-005.03	40mL VOA NP					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2103815
Project: HS21070738
Sample(s) received on: 7/16/2021 Date opened: 7/16/2021 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103815-006.01	40mL VOA NP					
P2103815-006.02	40mL VOA NP		6			CB 7/27/21
P2103815-006.03	40mL VOA NP					
P2103815-007.01	40mL VOA NP					
P2103815-007.02	40mL VOA NP		6			CB 7/27/21
P2103815-007.03	40mL VOA NP					
P2103815-008.01	40mL VOA NP					
P2103815-008.02	40mL VOA NP		6			CB 7/27/21
P2103815-008.03	40mL VOA NP					
P2103815-009.01	40mL VOA NP					
P2103815-009.02	40mL VOA NP		6			CB 7/27/21
P2103815-009.03	40mL VOA NP					
P2103815-010.01	40mL VOA NP					
P2103815-010.02	40mL VOA NP		6			CB 7/27/21
P2103815-010.03	40mL VOA NP					
P2103815-011.01	40mL VOA NP					
P2103815-011.02	40mL VOA NP		6			CB 7/27/21
P2103815-011.03	40mL VOA NP					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Project ID: **HS21070738** ALS Project ID: P2103815

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date(s) Collected: 7/13/21
Date Received: 7/16/21
Date Analyzed: 7/26 - 7/27/21

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	MDL µg/L	Data Qualifier
VW-34	P2103815-001	0.10	**1,900**	1,000	370	
GM-22	P2103815-002	0.10	ND	1,000	370	
VW-31	P2103815-003	0.10	**99,000**	1,000	370	
VW-24	P2103815-004	0.10	**61,000**	1,000	370	
VW-2	P2103815-005	0.10	**54,000**	1,000	370	
VW-25	P2103815-006	0.10	**32,000**	1,000	370	
VW-37	P2103815-007	0.10	**35,000**	1,000	370	
VW-32	P2103815-008	0.10	**64,000**	1,000	370	
VW-35	P2103815-009	0.10	**110,000**	1,000	370	
VW-30	P2103815-010	0.10	**190,000**	1,000	370	
FD-02	P2103815-011	0.10	**30,000**	1,000	370	
Method Control Sample	P210726-MB	0.10	ND	1,000	370	
Method Control Sample	P210727-MB	0.10	ND	1,000	370	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **VW-31**
Client Project ID: **HS21070738**

ALS Project ID: P2103815
ALS Sample ID: P2103815-003MS
P2103815-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date Collected: #######
Date Received: #######
Date Analyzed: #######
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	99,400	125,000	123,000	**112**	**103**	50-150	8	30	

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21070738**

ALS Project ID: P2103815
ALS Sample ID: P210726-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/26/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	22,000	21,400	**96**	**93**	56-105	3	12	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21070738**

ALS Project ID: P2103815
ALS Sample ID: P210727-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/27/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,900	20,000	**87**	**87**	56-105	0	12	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

August 16, 2021

Brad Freeman
Geo Monitoring Services
4123 5th Street
Brookshire, TX 77423

Work Order: **HS21070773**

Laboratory Results for: **St. Croix Alumina**

Dear Brad Freeman,

ALS Environmental received 14 sample(s) on Jul 15, 2021 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER

Ragen Giga
Project Manager

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070773

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21070773-01	VW5	Water		14-Jul-2021 07:45	15-Jul-2021 09:25	☐
HS21070773-02	VW23	Water		14-Jul-2021 08:40	15-Jul-2021 09:25	☐
HS21070773-03	VW13	Water		14-Jul-2021 10:10	15-Jul-2021 09:25	☐
HS21070773-04	VW13B	Water		14-Jul-2021 11:25	15-Jul-2021 09:25	☐
HS21070773-05	VW14	Water		14-Jul-2021 12:35	15-Jul-2021 09:25	☐
HS21070773-06	VW20B	Water		14-Jul-2021 08:30	15-Jul-2021 09:25	☐
HS21070773-07	VW20	Water		14-Jul-2021 07:25	15-Jul-2021 09:25	☐
HS21070773-08	VW29	Water		14-Jul-2021 09:40	15-Jul-2021 09:25	☐
HS21070773-09	VW21B	Water		14-Jul-2021 10:35	15-Jul-2021 09:25	☐
HS21070773-10	VW6	Water		14-Jul-2021 11:35	15-Jul-2021 09:25	☐
HS21070773-11	Trip Blank 01	Water		14-Jul-2021 07:45	15-Jul-2021 09:25	☐
HS21070773-12	Trip Blank 02	Water		14-Jul-2021 07:45	15-Jul-2021 09:25	☐
HS21070773-13	Trip Blank 03	Water		14-Jul-2021 07:45	15-Jul-2021 09:25	☐
HS21070773-14	Trip Blank 04	Water		14-Jul-2021 07:45	15-Jul-2021 09:25	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070773

CASE NARRATIVE

Work Order Comments

- Trip blanks received, not listed on COC. Logged in for analysis.

Work Order Comments

- The analyses for Dissolved Carbon Dioxide were subcontracted to ALS Environmental in Simi Valley, CA.

GC Semivolatiles by Method RSK-175

Batch ID: R387998

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R387651

Sample ID: HS21070738-06MS

- MS and MSD are for an unrelated sample

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070773

CASE NARRATIVE

GC Semivolatiles by Method SW8015M

Batch ID: 168013

Sample ID: HS21070738-06MS

- MS and MSD are for an unrelated sample

Sample ID: VW13 (HS21070773-03)

- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: VW13B (HS21070773-04)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW14 (HS21070773-05)

- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: VW20 (HS21070773-07)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW20B (HS21070773-06)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW21B (HS21070773-09)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW23 (HS21070773-02)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW29 (HS21070773-08)

- Surrogate recoveries were outside of the control limits due to matrix interference.

Sample ID: VW6 (HS21070773-10)

- Surrogate recoveries were outside of the control limits due to matrix interference.

GCMS Semivolatiles by Method SW8270

Batch ID: 168115

Sample ID: LCSD-168115

- The RPD between the LCS and LCSD was outside of the control limit.

Sample ID: VW13 (HS21070773-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070773

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R388159

Sample ID: VW13B (HS21070773-04)

- Lowest practical dilution for sample HS21070773-04 due to matrix.

Batch ID: R388070

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R388059

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020A

Batch ID: 168124

Sample ID: HS21070809-04MS

- MS/MSD and DUPs are for an unrelated sample

Batch ID: 168066

Sample ID: HS21070738-06MS

- MS and MSD are for an unrelated sample

Batch ID: 168025

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 168171

Sample ID: HS21070483-08MS

- MS and MSD are for an unrelated sample

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070773

CASE NARRATIVE

WetChemistry by Method E300

Batch ID: R387949

Sample ID: VW14 (HS21070773-05)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrate/Nitrite (as N))

Sample ID: VW20 (HS21070773-07)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrate/Nitrite (as N))

Sample ID: VW20B (HS21070773-06)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrate/Nitrite (as N))

Sample ID: VW21B (HS21070773-09)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrate/Nitrite (as N))

Sample ID: VW29 (HS21070773-08)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrate/Nitrite (as N))

Sample ID: VW6 (HS21070773-10)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrate/Nitrite (as N))

Batch ID: R387700,R387871

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R387574

Sample ID: VW13 (HS21070773-03MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Chloride)
- The recovery of the Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) associated with this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS/MSD may be due to sample matrix interference. (Sulfate)

WetChemistry by Method SM4500 S2-F

Batch ID: R387791

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9060

Batch ID: R387639,R387640

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM2320B

Batch ID: R387559,R387561

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070773

CASE NARRATIVE

WetChemistry by Method SM4500 NH3-B-F

Batch ID: 168319

Sample ID: VW5 (HS21070773-01MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: VW5 (HS21070773-01MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

WetChemistry by Method M4500 NH3 D

Batch ID: 168252

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW5
Collection Date: 14-Jul-2021 07:45

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-01
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 01:25
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 01:25
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 01:25
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 01:25
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 01:25
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 01:25
Surr: 1,2-Dichloroethane-d4	*94.9*			*70-126*	*%REC*	*1*	*23-Jul-2021 01:25*
Surr: 4-Bromofluorobenzene	*107*			*81-113*	*%REC*	*1*	*23-Jul-2021 01:25*
Surr: Dibromofluoromethane	*96.3*			*77-123*	*%REC*	*1*	*23-Jul-2021 01:25*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jul-2021 01:25*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**0.313**		**0.0199**	**0.0993**	**ug/L**	1	21-Jul-2021 19:50
Surr: 2-Fluorobiphenyl	*81.1*			*32-130*	*%REC*	*1*	*21-Jul-2021 19:50*
Surr: 4-Terphenyl-d14	*107*			*40-135*	*%REC*	*1*	*21-Jul-2021 19:50*
Surr: Nitrobenzene-d5	*100*			*45-142*	*%REC*	*1*	*21-Jul-2021 19:50*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**3,330**		**21.4**	**100**	**ug/L**	200	16-Jul-2021 16:30
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**1.3**		**0.021**	**0.052**	**mg/L**	1	22-Jul-2021 02:22
Surr: 2-Fluorobiphenyl	*131*			*60-135*	*%REC*	*1*	*22-Jul-2021 02:22*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**175**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:28
Iron	**0.235**		**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:28
Magnesium	**11.7**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:28
Manganese	**0.470**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:28
Potassium	**1.76**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:28
Sodium	**88.7**		**0.0140**	**0.200**	**mg/L**	1	21-Jul-2021 16:28
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.163**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:32
Manganese	**0.466**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:32
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**230**		**2.00**	**5.00**	**mg/L**	10	16-Jul-2021 18:20
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 01:05
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 01:05
Sulfate	**24.0**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 01:05
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 04:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**	
Project:	St. Croix Alumina	WorkOrder:HS21070773	
Sample ID:	VW5	Lab ID:HS21070773-01	
Collection Date:	14-Jul-2021 07:45	Matrix:Water	

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**3.2**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**511**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 02:13
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 02:13
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 02:13
Alkalinity, Total (As CaCO3)	**511**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 02:13
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**1.0**		**0.25**	**0.50**	**mg/L**	10	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**7.48**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**5.64**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 00:42
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW23
Collection Date: 14-Jul-2021 08:40

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 01:47
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 01:47
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 01:47
o-Xylene	**0.73**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 01:47
Toluene	**0.31**	J	**0.20**	**1.0**	**ug/L**	1	23-Jul-2021 01:47
Xylenes, Total	**0.73**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 01:47
Surr: 1,2-Dichloroethane-d4	*124*			*70-126*	*%REC*	*1*	*23-Jul-2021 01:47*
Surr: 4-Bromofluorobenzene	*106*			*81-113*	*%REC*	*1*	*23-Jul-2021 01:47*
Surr: Dibromofluoromethane	*90.7*			*77-123*	*%REC*	*1*	*23-Jul-2021 01:47*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*23-Jul-2021 01:47*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**1.00**		**0.0200**	**0.0998**	**ug/L**	1	21-Jul-2021 20:10
Surr: 2-Fluorobiphenyl	*61.5*			*32-130*	*%REC*	*1*	*21-Jul-2021 20:10*
Surr: 4-Terphenyl-d14	*88.8*			*40-135*	*%REC*	*1*	*21-Jul-2021 20:10*
Surr: Nitrobenzene-d5	*71.3*			*45-142*	*%REC*	*1*	*21-Jul-2021 20:10*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**3,540**		**21.4**	**100**	**ug/L**	200	16-Jul-2021 16:39
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**4.8**		**0.021**	**0.052**	**mg/L**	1	22-Jul-2021 02:51
Surr: 2-Fluorobiphenyl	*286*	*S*		*60-135*	*%REC*	*1*	*22-Jul-2021 02:51*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**113**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:29
Iron	**0.180**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:29
Magnesium	**68.4**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:29
Manganese	**0.0458**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:29
Potassium	**4.10**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:29
Sodium	**144**		**0.0140**	**0.200**	**mg/L**	1	21-Jul-2021 16:29
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0222**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:34
Manganese	**0.0361**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:34
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**39.0**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 01:13
Nitrogen, Nitrate (As N)	**0.0351**	J	**0.0300**	**0.100**	**mg/L**	1	16-Jul-2021 01:13
Nitrogen, Nitrite (As N)	**0.189**		**0.0300**	**0.100**	**mg/L**	1	16-Jul-2021 01:13
Sulfate	**11.8**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 01:13
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 04:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070773
Sample ID:	VW23	Lab ID:HS21070773-02
Collection Date:	14-Jul-2021 08:40	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**5.0**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**894**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 02:29
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 02:29
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 02:29
Alkalinity, Total (As CaCO3)	**894**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 02:29
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**3.7**		**0.25**	**0.50**	**mg/L**	10	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**32.7**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**18.4**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 01:31
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW13
Collection Date: 14-Jul-2021 10:10

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-03
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 02:09
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 02:09
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 02:09
o-Xylene	**0.69**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 02:09
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 02:09
Xylenes, Total	**0.69**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 02:09
Surr: 1,2-Dichloroethane-d4	*93.3*			*70-126*	*%REC*	*1*	*23-Jul-2021 02:09*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*23-Jul-2021 02:09*
Surr: Dibromofluoromethane	*94.5*			*77-123*	*%REC*	*1*	*23-Jul-2021 02:09*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jul-2021 02:09*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**13.0**		**0.210**	**1.05**	**ug/L**	10	23-Jul-2021 14:17
Surr: 2-Fluorobiphenyl	*65.2*			*32-130*	*%REC*	*10*	*23-Jul-2021 14:17*
Surr: 4-Terphenyl-d14	*123*			*40-135*	*%REC*	*10*	*23-Jul-2021 14:17*
Surr: Nitrobenzene-d5	*98.4*			*45-142*	*%REC*	*10*	*23-Jul-2021 14:17*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**5,650**		**42.8**	**200**	**ug/L**	400	16-Jul-2021 16:48
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**56**		**2.1**	**5.2**	**mg/L**	100	22-Jul-2021 14:05
Surr: 2-Fluorobiphenyl	*0*	*JS*		*60-135*	*%REC*	*100*	*22-Jul-2021 14:05*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**86.8**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:33
Iron	**0.0660**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:33
Magnesium	**58.2**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:33
Manganese	**0.0734**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:33
Potassium	**7.85**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:33
Sodium	**220**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 13:12
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0375**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 21:54
Manganese	**0.128**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 21:54
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**374**		**2.00**	**5.00**	**mg/L**	10	16-Jul-2021 18:43
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 01:35
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 01:35
Sulfate	**18.2**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 01:35
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 04:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070773
Sample ID:	VW13		Lab ID:HS21070773-03
Collection Date:	14-Jul-2021 10:10		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**3.6**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**677**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 02:21
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 02:21
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 02:21
Alkalinity, Total (As CaCO3)	**677**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 02:21
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**2.8**		**0.25**	**0.50**	**mg/L**	10	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**28.1**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**12.0**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 01:46
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW13B
Collection Date: 14-Jul-2021 11:25

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-04
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 1.0		1.0	5.0	ug/L	5	26-Jul-2021 07:01
Ethylbenzene	< 1.5		1.5	5.0	ug/L	5	26-Jul-2021 07:01
m,p-Xylene	< 2.5		2.5	10	ug/L	5	26-Jul-2021 07:01
o-Xylene	< 1.5		1.5	5.0	ug/L	5	26-Jul-2021 07:01
Toluene	< 1.0		1.0	5.0	ug/L	5	26-Jul-2021 07:01
Xylenes, Total	< 1.5		1.5	5.0	ug/L	5	26-Jul-2021 07:01
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*5*	*26-Jul-2021 07:01*
Surr: 4-Bromofluorobenzene	*99.5*			*81-113*	*%REC*	*5*	*26-Jul-2021 07:01*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*5*	*26-Jul-2021 07:01*
Surr: Toluene-d8	*99.5*			*82-127*	*%REC*	*5*	*26-Jul-2021 07:01*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**0.899**		**0.0199**	**0.0994**	**ug/L**	1	21-Jul-2021 20:49
Surr: 2-Fluorobiphenyl	*84.9*			*32-130*	*%REC*	*1*	*21-Jul-2021 20:49*
Surr: 4-Terphenyl-d14	*82.6*			*40-135*	*%REC*	*1*	*21-Jul-2021 20:49*
Surr: Nitrobenzene-d5	*63.3*			*45-142*	*%REC*	*1*	*21-Jul-2021 20:49*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**2,040**		**10.7**	**50.0**	**ug/L**	100	16-Jul-2021 16:56
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**4.0**		**0.021**	**0.051**	**mg/L**	1	22-Jul-2021 03:49
Surr: 2-Fluorobiphenyl	*181*	*S*		*60-135*	*%REC*	*1*	*22-Jul-2021 03:49*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**85.0**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:35
Iron	**0.143**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:35
Magnesium	**51.3**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:35
Manganese	**0.279**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:35
Potassium	**9.70**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:35
Sodium	**351**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 13:14
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.103**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:36
Manganese	**0.248**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:36
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**606**		**4.00**	**10.0**	**mg/L**	20	16-Jul-2021 18:50
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 01:57
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 01:57
Sulfate	**75.8**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 01:57
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	20-Jul-2021 04:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**	
Project:	St. Croix Alumina	WorkOrder:HS21070773	
Sample ID:	VW13B	Lab ID:HS21070773-04	
Collection Date:	14-Jul-2021 11:25	Matrix:Water	

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**2.6**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**581**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 03:46
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 03:46
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 03:46
Alkalinity, Total (As CaCO3)	**581**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 03:46
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**2.1**		**0.25**	**0.50**	**mg/L**	10	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**11.7**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**5.42**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 02:03
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW14
Collection Date: 14-Jul-2021 12:35

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-05
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 09:11
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 09:11
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 09:11
o-Xylene	**0.57**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 09:11
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 09:11
Xylenes, Total	**0.57**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 09:11
Surr: 1,2-Dichloroethane-d4	*110*			*70-126*	*%REC*	*1*	*23-Jul-2021 09:11*
Surr: 4-Bromofluorobenzene	*112*			*81-113*	*%REC*	*1*	*23-Jul-2021 09:11*
Surr: Dibromofluoromethane	*88.5*			*77-123*	*%REC*	*1*	*23-Jul-2021 09:11*
Surr: Toluene-d8	*111*			*82-127*	*%REC*	*1*	*23-Jul-2021 09:11*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**1.05**		**0.0203**	**0.102**	**ug/L**	1	21-Jul-2021 21:09
Surr: 2-Fluorobiphenyl	*76.3*			*32-130*	*%REC*	*1*	*21-Jul-2021 21:09*
Surr: 4-Terphenyl-d14	*93.4*			*40-135*	*%REC*	*1*	*21-Jul-2021 21:09*
Surr: Nitrobenzene-d5	*65.7*			*45-142*	*%REC*	*1*	*21-Jul-2021 21:09*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1,640**		**10.7**	**50.0**	**ug/L**	100	16-Jul-2021 17:05
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**110**		**2.1**	**5.2**	**mg/L**	100	22-Jul-2021 14:34
Surr: 2-Fluorobiphenyl	*0*	*JS*		*60-135*	*%REC*	*100*	*22-Jul-2021 14:34*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**92.3**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:37
Iron	**0.0934**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:37
Magnesium	**40.9**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:37
Manganese	**0.279**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:37
Potassium	**9.43**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:37
Sodium	**312**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 13:16
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.104**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:38
Manganese	**0.294**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:38
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**492**		**2.00**	**5.00**	**mg/L**	10	16-Jul-2021 19:12
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:04
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:04
Sulfate	**10.9**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 02:04
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	21-Jul-2021 22:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070773
Sample ID:	VW14		Lab ID:HS21070773-05
Collection Date:	14-Jul-2021 12:35		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**2.4**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**647**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 03:54
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 03:54
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 03:54
Alkalinity, Total (As CaCO3)	**647**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 03:54
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**1.9**		**0.25**	**0.50**	**mg/L**	10	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**15.7**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**6.56**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 02:20
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW20B
Collection Date: 14-Jul-2021 08:30

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-06
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 0.20		0.20	1.0	ug/L	1	26-Jul-2021 06:18
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 06:18
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	26-Jul-2021 06:18
o-Xylene	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 06:18
Toluene	< 0.20		0.20	1.0	ug/L	1	26-Jul-2021 06:18
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 06:18
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*26-Jul-2021 06:18*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*26-Jul-2021 06:18*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*26-Jul-2021 06:18*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*26-Jul-2021 06:18*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**0.0992**	J	**0.0204**	**0.102**	**ug/L**	1	21-Jul-2021 21:29
Surr: 2-Fluorobiphenyl	*78.3*			*32-130*	*%REC*	*1*	*21-Jul-2021 21:29*
Surr: 4-Terphenyl-d14	*80.5*			*40-135*	*%REC*	*1*	*21-Jul-2021 21:29*
Surr: Nitrobenzene-d5	*59.9*			*45-142*	*%REC*	*1*	*21-Jul-2021 21:29*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**3,800**		**21.4**	**100**	**ug/L**	200	16-Jul-2021 17:13
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**1.7**		**0.021**	**0.052**	**mg/L**	1	22-Jul-2021 05:46
Surr: 2-Fluorobiphenyl	*175*	*S*		*60-135*	*%REC*	*1*	*22-Jul-2021 05:46*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**67.3**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:39
Iron	**0.0590**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:39
Magnesium	**38.6**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:39
Manganese	**0.314**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:39
Potassium	**14.0**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:39
Sodium	**331**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 13:17
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0156**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:40
Manganese	**0.320**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:40
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**412**		**2.00**	**5.00**	**mg/L**	10	16-Jul-2021 19:20
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:12
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:12
Sulfate	**3.49**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 02:12
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	21-Jul-2021 22:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**	
Project:	St. Croix Alumina	WorkOrder:HS21070773	
Sample ID:	VW20B	Lab ID:HS21070773-06	
Collection Date:	14-Jul-2021 08:30	Matrix:Water	

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**3.5**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**640**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:01
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:01
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:01
Alkalinity, Total (As CaCO3)	**640**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:01
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**2.6**		**0.25**	**0.50**	**mg/L**	10	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**4.88**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**7.85**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 03:53
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW20
Collection Date: 14-Jul-2021 07:25

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-07
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
Benzene	< 0.20		0.20	1.0	ug/L	1	26-Jul-2021 06:39
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 06:39
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	26-Jul-2021 06:39
o-Xylene	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 06:39
Toluene	< 0.20		0.20	1.0	ug/L	1	26-Jul-2021 06:39
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	26-Jul-2021 06:39
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*26-Jul-2021 06:39*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*26-Jul-2021 06:39*
Surr: Dibromofluoromethane	*100.0*			*77-123*	*%REC*	*1*	*26-Jul-2021 06:39*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*26-Jul-2021 06:39*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**0.102**		**0.0203**	**0.102**	**ug/L**	1	21-Jul-2021 21:49
Surr: 2-Fluorobiphenyl	*79.3*			*32-130*	*%REC*	*1*	*21-Jul-2021 21:49*
Surr: 4-Terphenyl-d14	*77.6*			*40-135*	*%REC*	*1*	*21-Jul-2021 21:49*
Surr: Nitrobenzene-d5	*64.3*			*45-142*	*%REC*	*1*	*21-Jul-2021 21:49*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1,140**		**10.7**	**50.0**	**ug/L**	100	16-Jul-2021 17:28
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**1.6**		**0.021**	**0.052**	**mg/L**	1	22-Jul-2021 06:16
Surr: 2-Fluorobiphenyl	*137*	*S*		*60-135*	*%REC*	*1*	*22-Jul-2021 06:16*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**92.5**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:54
Iron	**0.0997**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:54
Magnesium	**37.1**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:54
Manganese	**0.391**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:54
Potassium	**13.7**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:54
Sodium	**272**		**0.0700**	**1.00**	**mg/L**	5	22-Jul-2021 13:23
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0668**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:42
Manganese	**0.392**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:42
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**439**		**2.00**	**5.00**	**mg/L**	10	16-Jul-2021 19:27
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:19
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:19
Sulfate	**5.87**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 02:19
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	21-Jul-2021 23:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070773
Sample ID:	VW20		Lab ID:HS21070773-07
Collection Date:	14-Jul-2021 07:25		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**4.4**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**614**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:08
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:08
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:08
Alkalinity, Total (As CaCO3)	**614**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:08
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**3.4**		**0.25**	**0.50**	**mg/L**	10	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**7.28**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**8.52**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 04:08
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW29
Collection Date: 14-Jul-2021 09:40

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-08
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 11:24
Ethylbenzene	**0.43**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 11:24
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 11:24
o-Xylene	**0.77**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 11:24
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 11:24
Xylenes, Total	**0.77**	J	**0.30**	**1.0**	**ug/L**	1	23-Jul-2021 11:24
Surr: 1,2-Dichloroethane-d4	*90.5*			*70-126*	*%REC*	*1*	*23-Jul-2021 11:24*
Surr: 4-Bromofluorobenzene	*113*			*81-113*	*%REC*	*1*	*23-Jul-2021 11:24*
Surr: Dibromofluoromethane	*93.5*			*77-123*	*%REC*	*1*	*23-Jul-2021 11:24*
Surr: Toluene-d8	*114*			*82-127*	*%REC*	*1*	*23-Jul-2021 11:24*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**8.52**		**0.0210**	**0.105**	**ug/L**	1	21-Jul-2021 22:08
Surr: 2-Fluorobiphenyl	*62.4*			*32-130*	*%REC*	*1*	*21-Jul-2021 22:08*
Surr: 4-Terphenyl-d14	*79.4*			*40-135*	*%REC*	*1*	*21-Jul-2021 22:08*
Surr: Nitrobenzene-d5	*80.0*			*45-142*	*%REC*	*1*	*21-Jul-2021 22:08*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**6,740**		**42.8**	**200**	**ug/L**	400	16-Jul-2021 17:36
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**5.4**		**0.021**	**0.053**	**mg/L**	1	22-Jul-2021 06:45
Surr: 2-Fluorobiphenyl	*309*	*S*		*60-135*	*%REC*	*1*	*22-Jul-2021 06:45*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**136**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:56
Iron	**0.0692**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:56
Magnesium	**24.0**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:56
Manganese	**0.141**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:56
Potassium	**2.85**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:56
Sodium	**63.1**		**0.0140**	**0.200**	**mg/L**	1	21-Jul-2021 16:56
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**0.0418**	J	**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:44
Manganese	**0.145**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:44
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**95.0**		**2.00**	**5.00**	**mg/L**	10	16-Jul-2021 19:34
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:27
Nitrogen, Nitrite (As N)	**0.100**		**0.0300**	**0.100**	**mg/L**	1	16-Jul-2021 02:27
Sulfate	**1.84**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 02:27
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	21-Jul-2021 23:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070773
Sample ID:	VW29		Lab ID:HS21070773-08
Collection Date:	14-Jul-2021 09:40		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**6.8**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**550**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:15
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:15
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:15
Alkalinity, Total (As CaCO3)	**550**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:15
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**5.1**		**0.25**	**0.50**	**mg/L**	10	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**7.68**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**16.2**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 04:23
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW21B
Collection Date: 14-Jul-2021 10:35

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-09
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 10:40
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 10:40
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 10:40
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 10:40
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 10:40
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 10:40
Surr: 1,2-Dichloroethane-d4	*92.7*			*70-126*	*%REC*	*1*	*23-Jul-2021 10:40*
Surr: 4-Bromofluorobenzene	*105*			*81-113*	*%REC*	*1*	*23-Jul-2021 10:40*
Surr: Dibromofluoromethane	*96.8*			*77-123*	*%REC*	*1*	*23-Jul-2021 10:40*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*23-Jul-2021 10:40*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**1.90**		**0.0202**	**0.101**	**ug/L**	1	21-Jul-2021 22:28
Surr: 2-Fluorobiphenyl	*74.3*			*32-130*	*%REC*	*1*	*21-Jul-2021 22:28*
Surr: 4-Terphenyl-d14	*81.6*			*40-135*	*%REC*	*1*	*21-Jul-2021 22:28*
Surr: Nitrobenzene-d5	*62.2*			*45-142*	*%REC*	*1*	*21-Jul-2021 22:28*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1,350**		**10.7**	**50.0**	**ug/L**	100	16-Jul-2021 17:53
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**4.1**		**0.021**	**0.051**	**mg/L**	1	22-Jul-2021 07:14
Surr: 2-Fluorobiphenyl	*220*	*S*		*60-135*	*%REC*	*1*	*22-Jul-2021 07:14*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 19-Jul-2021		Analyst: JHD
Calcium	**87.0**		**0.0340**	**0.500**	**mg/L**	1	21-Jul-2021 16:58
Iron	**2.61**		**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 16:58
Magnesium	**41.8**		**0.0100**	**0.200**	**mg/L**	1	21-Jul-2021 16:58
Manganese	**0.315**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 16:58
Potassium	**7.26**		**0.0180**	**0.200**	**mg/L**	1	21-Jul-2021 16:58
Sodium	**136**		**0.0140**	**0.200**	**mg/L**	1	21-Jul-2021 16:58
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 16-Jul-2021		Analyst: JHD
Iron	**2.51**		**0.0120**	**0.200**	**mg/L**	1	16-Jul-2021 22:46
Manganese	**0.305**		**0.000700**	**0.00500**	**mg/L**	1	16-Jul-2021 22:46
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**153**		**2.00**	**5.00**	**mg/L**	10	16-Jul-2021 19:42
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:34
Nitrogen, Nitrite (As N)	**0.0833**	J	**0.0300**	**0.100**	**mg/L**	1	16-Jul-2021 02:34
Sulfate	**3.07**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 02:34
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	21-Jul-2021 23:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services		**ANALYTICAL REPORT**
Project:	St. Croix Alumina		WorkOrder:HS21070773
Sample ID:	VW21B		Lab ID:HS21070773-09
Collection Date:	14-Jul-2021 10:35		Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**0.96**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**615**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:23
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:23
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:23
Alkalinity, Total (As CaCO3)	**615**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:23
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**0.73**		**0.025**	**0.050**	**mg/L**	1	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**11.2**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 04:38
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Sample ID: VW6
Collection Date: 14-Jul-2021 11:35

ANALYTICAL REPORT
WorkOrder:HS21070773
Lab ID:HS21070773-10
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 07:42
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 07:42
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 07:42
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 07:42
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 07:42
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 07:42
Surr: 1,2-Dichloroethane-d4	*92.7*			*70-126*	*%REC*	*1*	*23-Jul-2021 07:42*
Surr: 4-Bromofluorobenzene	*105*			*81-113*	*%REC*	*1*	*23-Jul-2021 07:42*
Surr: Dibromofluoromethane	*96.3*			*77-123*	*%REC*	*1*	*23-Jul-2021 07:42*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jul-2021 07:42*
LOW-LEVEL PAHS - 8270D		**Method:SW8270**			Prep:SW3511 / 20-Jul-2021		Analyst: ACN
Naphthalene	**0.846**		**0.0205**	**0.103**	**ug/L**	1	21-Jul-2021 22:48
Surr: 2-Fluorobiphenyl	*66.4*			*32-130*	*%REC*	*1*	*21-Jul-2021 22:48*
Surr: 4-Terphenyl-d14	*103*			*40-135*	*%REC*	*1*	*21-Jul-2021 22:48*
Surr: Nitrobenzene-d5	*79.3*			*45-142*	*%REC*	*1*	*21-Jul-2021 22:48*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**					Analyst: PPM
Methane	**1,980**		**10.7**	**50.0**	**ug/L**	100	21-Jul-2021 13:02
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3511 / 16-Jul-2021		Analyst: PPM
TPH (Diesel Range)	**5.0**		**0.021**	**0.052**	**mg/L**	1	22-Jul-2021 07:44
Surr: 2-Fluorobiphenyl	*805*	*S*		*60-135*	*%REC*	*1*	*22-Jul-2021 07:44*
ICP-MS METALS BY SW6020A		**Method:SW6020A**			Prep:SW3010A / 20-Jul-2021		Analyst: JHD
Calcium	**127**		**0.0340**	**0.500**	**mg/L**	1	20-Jul-2021 20:49
Iron	**0.292**		**0.0120**	**0.200**	**mg/L**	1	20-Jul-2021 20:49
Magnesium	**37.3**		**0.0100**	**0.200**	**mg/L**	1	20-Jul-2021 20:49
Manganese	**0.410**		**0.000700**	**0.00500**	**mg/L**	1	20-Jul-2021 20:49
Potassium	**7.69**		**0.0180**	**0.200**	**mg/L**	1	20-Jul-2021 20:49
Sodium	**298**		**0.700**	**10.0**	**mg/L**	50	21-Jul-2021 12:27
DISSOLVED METALS BY SW6020A		**Method:SW6020A (dissolved)**			Prep:SW3010A / 21-Jul-2021		Analyst: JHD
Iron	**0.174**	J	**0.0120**	**0.200**	**mg/L**	1	21-Jul-2021 14:35
Manganese	**0.376**		**0.000700**	**0.00500**	**mg/L**	1	21-Jul-2021 14:35
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Chloride	**458**		**2.00**	**5.00**	**mg/L**	10	16-Jul-2021 19:49
Nitrogen, Nitrate (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:41
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	16-Jul-2021 02:41
Sulfate	**3.20**		**0.200**	**0.500**	**mg/L**	1	16-Jul-2021 02:41
NITRATE/NITRITE BY E300.0, REV 2.1, 1993		**Method:E300**					Analyst: YP
Nitrate/Nitrite (as N)	< 0.150		0.150	1.00	mg/L	5	21-Jul-2021 23:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**	
Project:	St. Croix Alumina	WorkOrder:HS21070773	
Sample ID:	VW6	Lab ID:HS21070773-10	
Collection Date:	14-Jul-2021 11:35	Matrix:Water	

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011		**Method:M4500 NH3 D**			Prep:M4500-N C / 20-Jul-2021		Analyst: YP
Nitrogen, Total Kjeldahl	**2.1**		**0.10**	**0.50**	**mg/L**	1	21-Jul-2021 14:22
ALKALINITY BY SM 2320B-2011		**Method:SM2320B**					Analyst: TH
Alkalinity, Bicarbonate (As CaCO3)	**618**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:30
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:30
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2021 04:30
Alkalinity, Total (As CaCO3)	**618**		**5.00**	**5.00**	**mg/L**	1	16-Jul-2021 04:30
AMMONIA AS N BY SM4500 NH3-B-F-2011		**Method:SM4500 NH3-B-F**			Prep:M4500-NH3 B / 22-Jul-2021		Analyst: JAC
Nitrogen, Ammonia (as N)	**2.1**		**0.25**	**0.50**	**mg/L**	10	23-Jul-2021 15:13
SULFIDE BY SM4500 S2-F-2011		**Method:SM4500 S2-F**					Analyst: KVL
Sulfide	**16.7**		**1.00**	**1.00**	**mg/L**	1	19-Jul-2021 17:00
DISSOLVED ORGANIC CARBON BY SW9060A		**Method:SW9060 (dissolved)**					Analyst: JAC
Organic Carbon, Dissolved	**11.8**		**0.500**	**1.00**	**mg/L**	1	17-Jul-2021 04:53
SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE		**Method:NA**					Analyst: SUBCA
Subcontract Analysis	See Attached		0			1	16-Aug-2021 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070773
Sample ID:	Trip Blank 01	Lab ID:HS21070773-11
Collection Date:	14-Jul-2021 07:45	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 11:02
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 11:02
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 11:02
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 11:02
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 11:02
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 11:02
Surr: 1,2-Dichloroethane-d4	*89.9*			*70-126*	*%REC*	*1*	*23-Jul-2021 11:02*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*23-Jul-2021 11:02*
Surr: Dibromofluoromethane	*92.3*			*77-123*	*%REC*	*1*	*23-Jul-2021 11:02*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*23-Jul-2021 11:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070773
Sample ID:	Trip Blank 02	Lab ID:HS21070773-12
Collection Date:	14-Jul-2021 07:45	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 06:13
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 06:13
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 06:13
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 06:13
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 06:13
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 06:13
Surr: 1,2-Dichloroethane-d4	*93.1*			*70-126*	*%REC*	*1*	*23-Jul-2021 06:13*
Surr: 4-Bromofluorobenzene	*105*			*81-113*	*%REC*	*1*	*23-Jul-2021 06:13*
Surr: Dibromofluoromethane	*94.7*			*77-123*	*%REC*	*1*	*23-Jul-2021 06:13*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*23-Jul-2021 06:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070773
Sample ID:	Trip Blank 03	Lab ID:HS21070773-13
Collection Date:	14-Jul-2021 07:45	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 06:35
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 06:35
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 06:35
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 06:35
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 06:35
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 06:35
Surr: 1,2-Dichloroethane-d4	*91.1*			*70-126*	*%REC*	*1*	*23-Jul-2021 06:35*
Surr: 4-Bromofluorobenzene	*96.7*			*81-113*	*%REC*	*1*	*23-Jul-2021 06:35*
Surr: Dibromofluoromethane	*94.8*			*77-123*	*%REC*	*1*	*23-Jul-2021 06:35*
Surr: Toluene-d8	*96.1*			*82-127*	*%REC*	*1*	*23-Jul-2021 06:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	Geo Monitoring Services	**ANALYTICAL REPORT**
Project:	St. Croix Alumina	WorkOrder:HS21070773
Sample ID:	Trip Blank 04	Lab ID:HS21070773-14
Collection Date:	14-Jul-2021 07:45	Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 06:57
Ethylbenzene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 06:57
m,p-Xylene	< 0.50		0.50	2.0	ug/L	1	23-Jul-2021 06:57
o-Xylene	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 06:57
Toluene	< 0.20		0.20	1.0	ug/L	1	23-Jul-2021 06:57
Xylenes, Total	< 0.30		0.30	1.0	ug/L	1	23-Jul-2021 06:57
Surr: 1,2-Dichloroethane-d4	*91.2*			*70-126*	*%REC*	*1*	*23-Jul-2021 06:57*
Surr: 4-Bromofluorobenzene	*105*			*81-113*	*%REC*	*1*	*23-Jul-2021 06:57*
Surr: Dibromofluoromethane	*92.7*			*77-123*	*%REC*	*1*	*23-Jul-2021 06:57*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*23-Jul-2021 06:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

Batch ID: 168013 **Start Date:** 16 Jul 2021 10:37 **End Date:** 19 Jul 2021 17:00
Method: SW3511 **Prep Code:** 3511_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070773-01		31.69 (mL)	2 (mL)	0.06311	40 mL Amber
HS21070773-02		31.48 (mL)	2 (mL)	0.06353	40 mL Amber
HS21070773-03		31.89 (mL)	2 (mL)	0.06272	40 mL Amber
HS21070773-04		32.17 (mL)	2 (mL)	0.06217	40 mL Amber
HS21070773-05		31.95 (mL)	2 (mL)	0.0626	40 mL Amber
HS21070773-06		31.94 (mL)	2 (mL)	0.06262	40 mL Amber
HS21070773-07		31.71 (mL)	2 (mL)	0.06307	40 mL Amber
HS21070773-08		31.27 (mL)	2 (mL)	0.06396	40 mL Amber
HS21070773-09		32.05 (mL)	2 (mL)	0.0624	40 mL Amber
HS21070773-10		31.84 (mL)	2 (mL)	0.06281	40 mL Amber

Batch ID: 168025 **Start Date:** 16 Jul 2021 12:00 **End Date:** 16 Jul 2021 16:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070773-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-09		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 168066 **Start Date:** 19 Jul 2021 09:30 **End Date:** 19 Jul 2021 13:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070773-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-02		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-03		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-04		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-07		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-08		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21070773-09		10 (mL)	10 (mL)	1	120 plastic HNO3

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Weight / Prep Log

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

Batch ID: 168115 **Start Date:** 20 Jul 2021 10:00 **End Date:** 20 Jul 2021 14:30
Method: SW3511 **Prep Code:** 3511_PAH

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070773-01	1	33.22 (mL)	2 (mL)	0.0602	40 mL Amber
HS21070773-02	1	33.05 (mL)	2 (mL)	0.06051	40 mL Amber
HS21070773-03	1	31.44 (mL)	2 (mL)	0.06361	40 mL Amber
HS21070773-04	1	33.2 (mL)	2 (mL)	0.06024	40 mL Amber
HS21070773-05	1	32.5 (mL)	2 (mL)	0.06154	40 mL Amber
HS21070773-06	1	32.4 (mL)	2 (mL)	0.06173	40 mL Amber
HS21070773-07	1	32.45 (mL)	2 (mL)	0.06163	40 mL Amber
HS21070773-08	1	31.45 (mL)	2 (mL)	0.06359	40 mL Amber
HS21070773-09	1	32.61 (mL)	2 (mL)	0.06133	40 mL Amber
HS21070773-10	1	32.18 (mL)	2 (mL)	0.06215	40 mL Amber

Batch ID: 168124 **Start Date:** 20 Jul 2021 12:00 **End Date:** 20 Jul 2021 16:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070773-10		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 168171 **Start Date:** 21 Jul 2021 10:15 **End Date:** 21 Jul 2021 13:15
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070773-10		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 168252 **Start Date:** 20 Jul 2021 12:00 **End Date:** 20 Jul 2021 16:00
Method: TKN WATER - PREP **Prep Code:** TKN_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070773-01		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070773-02		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070773-03		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070773-04		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070773-05		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070773-06		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070773-07		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070773-08		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070773-09		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2
HS21070773-10		25 (mL)	50 (mL)	2	250 mL plastic, H2SO4 to pH <2

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Weight / Prep Log

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

Batch ID: 168319 **Start Date:** 22 Jul 2021 16:00 **End Date:** 22 Jul 2021 18:00
Method: NITROGEN AMMONIA - WATER - PREP **Prep Code:** NIT_AMM_W_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21070773-01		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070773-02		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070773-03		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070773-04		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070773-05		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070773-06		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070773-07		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070773-08		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070773-09		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2
HS21070773-10		25 (mL)	25 (mL)	1	250 mL plastic, H2SO4 to pH <2

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 168013 (0)	**Test Name :** TPH DRO/ORO BY SW8015C				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45		16 Jul 2021 10:37	22 Jul 2021 02:22	1
HS21070773-02	VW23	14 Jul 2021 08:40		16 Jul 2021 10:37	22 Jul 2021 02:51	1
HS21070773-03	VW13	14 Jul 2021 10:10		16 Jul 2021 10:37	22 Jul 2021 14:05	100
HS21070773-04	VW13B	14 Jul 2021 11:25		16 Jul 2021 10:37	22 Jul 2021 03:49	1
HS21070773-05	VW14	14 Jul 2021 12:35		16 Jul 2021 10:37	22 Jul 2021 14:34	100
HS21070773-06	VW20B	14 Jul 2021 08:30		16 Jul 2021 10:37	22 Jul 2021 05:46	1
HS21070773-07	VW20	14 Jul 2021 07:25		16 Jul 2021 10:37	22 Jul 2021 06:16	1
HS21070773-08	VW29	14 Jul 2021 09:40		16 Jul 2021 10:37	22 Jul 2021 06:45	1
HS21070773-09	VW21B	14 Jul 2021 10:35		16 Jul 2021 10:37	22 Jul 2021 07:14	1
HS21070773-10	VW6	14 Jul 2021 11:35		16 Jul 2021 10:37	22 Jul 2021 07:44	1
Batch ID: 168025 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45		16 Jul 2021 16:00	16 Jul 2021 22:32	1
HS21070773-02	VW23	14 Jul 2021 08:40		16 Jul 2021 16:00	16 Jul 2021 22:34	1
HS21070773-03	VW13	14 Jul 2021 10:10		16 Jul 2021 16:00	16 Jul 2021 21:54	1
HS21070773-04	VW13B	14 Jul 2021 11:25		16 Jul 2021 16:00	16 Jul 2021 22:36	1
HS21070773-05	VW14	14 Jul 2021 12:35		16 Jul 2021 16:00	16 Jul 2021 22:38	1
HS21070773-06	VW20B	14 Jul 2021 08:30		16 Jul 2021 16:00	16 Jul 2021 22:40	1
HS21070773-07	VW20	14 Jul 2021 07:25		16 Jul 2021 16:00	16 Jul 2021 22:42	1
HS21070773-08	VW29	14 Jul 2021 09:40		16 Jul 2021 16:00	16 Jul 2021 22:44	1
HS21070773-09	VW21B	14 Jul 2021 10:35		16 Jul 2021 16:00	16 Jul 2021 22:46	1
Batch ID: 168066 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45		19 Jul 2021 13:30	21 Jul 2021 16:28	1
HS21070773-02	VW23	14 Jul 2021 08:40		19 Jul 2021 13:30	21 Jul 2021 16:29	1
HS21070773-03	VW13	14 Jul 2021 10:10		19 Jul 2021 13:30	22 Jul 2021 13:12	5
HS21070773-03	VW13	14 Jul 2021 10:10		19 Jul 2021 13:30	21 Jul 2021 16:33	1
HS21070773-04	VW13B	14 Jul 2021 11:25		19 Jul 2021 13:30	22 Jul 2021 13:14	5
HS21070773-04	VW13B	14 Jul 2021 11:25		19 Jul 2021 13:30	21 Jul 2021 16:35	1
HS21070773-05	VW14	14 Jul 2021 12:35		19 Jul 2021 13:30	22 Jul 2021 13:16	5
HS21070773-05	VW14	14 Jul 2021 12:35		19 Jul 2021 13:30	21 Jul 2021 16:37	1
HS21070773-06	VW20B	14 Jul 2021 08:30		19 Jul 2021 13:30	22 Jul 2021 13:17	5
HS21070773-06	VW20B	14 Jul 2021 08:30		19 Jul 2021 13:30	21 Jul 2021 16:39	1
HS21070773-07	VW20	14 Jul 2021 07:25		19 Jul 2021 13:30	22 Jul 2021 13:23	5
HS21070773-07	VW20	14 Jul 2021 07:25		19 Jul 2021 13:30	21 Jul 2021 16:54	1
HS21070773-08	VW29	14 Jul 2021 09:40		19 Jul 2021 13:30	21 Jul 2021 16:56	1
HS21070773-09	VW21B	14 Jul 2021 10:35		19 Jul 2021 13:30	21 Jul 2021 16:58	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 168115 (0)	**Test Name :** LOW-LEVEL PAHS - 8270D				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45		20 Jul 2021 10:00	21 Jul 2021 19:50	1
HS21070773-02	VW23	14 Jul 2021 08:40		20 Jul 2021 10:00	21 Jul 2021 20:10	1
HS21070773-03	VW13	14 Jul 2021 10:10		20 Jul 2021 10:00	23 Jul 2021 14:17	10
HS21070773-04	VW13B	14 Jul 2021 11:25		20 Jul 2021 10:00	21 Jul 2021 20:49	1
HS21070773-05	VW14	14 Jul 2021 12:35		20 Jul 2021 10:00	21 Jul 2021 21:09	1
HS21070773-06	VW20B	14 Jul 2021 08:30		20 Jul 2021 10:00	21 Jul 2021 21:29	1
HS21070773-07	VW20	14 Jul 2021 07:25		20 Jul 2021 10:00	21 Jul 2021 21:49	1
HS21070773-08	VW29	14 Jul 2021 09:40		20 Jul 2021 10:00	21 Jul 2021 22:08	1
HS21070773-09	VW21B	14 Jul 2021 10:35		20 Jul 2021 10:00	21 Jul 2021 22:28	1
HS21070773-10	VW6	14 Jul 2021 11:35		20 Jul 2021 10:00	21 Jul 2021 22:48	1
Batch ID: 168124 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS21070773-10	VW6	14 Jul 2021 11:35		20 Jul 2021 16:00	21 Jul 2021 12:27	50
HS21070773-10	VW6	14 Jul 2021 11:35		20 Jul 2021 16:00	20 Jul 2021 20:49	1
Batch ID: 168171 (0)	**Test Name :** DISSOLVED METALS BY SW6020A				**Matrix:** Water	
HS21070773-10	VW6	14 Jul 2021 11:35		21 Jul 2021 13:15	21 Jul 2021 14:35	1
Batch ID: 168252 (0)	**Test Name :** TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45		20 Jul 2021 12:00	21 Jul 2021 14:22	1
HS21070773-02	VW23	14 Jul 2021 08:40		20 Jul 2021 12:00	21 Jul 2021 14:22	1
HS21070773-03	VW13	14 Jul 2021 10:10		20 Jul 2021 12:00	21 Jul 2021 14:22	1
HS21070773-04	VW13B	14 Jul 2021 11:25		20 Jul 2021 12:00	21 Jul 2021 14:22	1
HS21070773-05	VW14	14 Jul 2021 12:35		20 Jul 2021 12:00	21 Jul 2021 14:22	1
HS21070773-06	VW20B	14 Jul 2021 08:30		20 Jul 2021 12:00	21 Jul 2021 14:22	1
HS21070773-07	VW20	14 Jul 2021 07:25		20 Jul 2021 12:00	21 Jul 2021 14:22	1
HS21070773-08	VW29	14 Jul 2021 09:40		20 Jul 2021 12:00	21 Jul 2021 14:22	1
HS21070773-09	VW21B	14 Jul 2021 10:35		20 Jul 2021 12:00	21 Jul 2021 14:22	1
HS21070773-10	VW6	14 Jul 2021 11:35		20 Jul 2021 12:00	21 Jul 2021 14:22	1
Batch ID: 168319 (0)	**Test Name :** AMMONIA AS N BY SM4500 NH3-B-F-2011				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45		22 Jul 2021 16:00	23 Jul 2021 15:13	10
HS21070773-02	VW23	14 Jul 2021 08:40		22 Jul 2021 16:00	23 Jul 2021 15:13	10
HS21070773-03	VW13	14 Jul 2021 10:10		22 Jul 2021 16:00	23 Jul 2021 15:13	10
HS21070773-04	VW13B	14 Jul 2021 11:25		22 Jul 2021 16:00	23 Jul 2021 15:13	10
HS21070773-05	VW14	14 Jul 2021 12:35		22 Jul 2021 16:00	23 Jul 2021 15:13	10
HS21070773-06	VW20B	14 Jul 2021 08:30		22 Jul 2021 16:00	23 Jul 2021 15:13	10
HS21070773-07	VW20	14 Jul 2021 07:25		22 Jul 2021 16:00	23 Jul 2021 15:13	10
HS21070773-08	VW29	14 Jul 2021 09:40		22 Jul 2021 16:00	23 Jul 2021 15:13	10
HS21070773-09	VW21B	14 Jul 2021 10:35		22 Jul 2021 16:00	23 Jul 2021 15:13	1
HS21070773-10	VW6	14 Jul 2021 11:35		22 Jul 2021 16:00	23 Jul 2021 15:13	10

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R387559 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45			16 Jul 2021 02:13	1
HS21070773-02	VW23	14 Jul 2021 08:40			16 Jul 2021 02:29	1
HS21070773-03	VW13	14 Jul 2021 10:10			16 Jul 2021 02:21	1
Batch ID: R387561 (0)	**Test Name :** ALKALINITY BY SM 2320B-2011				**Matrix:** Water	
HS21070773-04	VW13B	14 Jul 2021 11:25			16 Jul 2021 03:46	1
HS21070773-05	VW14	14 Jul 2021 12:35			16 Jul 2021 03:54	1
HS21070773-06	VW20B	14 Jul 2021 08:30			16 Jul 2021 04:01	1
HS21070773-07	VW20	14 Jul 2021 07:25			16 Jul 2021 04:08	1
HS21070773-08	VW29	14 Jul 2021 09:40			16 Jul 2021 04:15	1
HS21070773-09	VW21B	14 Jul 2021 10:35			16 Jul 2021 04:23	1
HS21070773-10	VW6	14 Jul 2021 11:35			16 Jul 2021 04:30	1
Batch ID: R387574 (0)	**Test Name :** ANIONS BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45			16 Jul 2021 01:05	1
HS21070773-02	VW23	14 Jul 2021 08:40			16 Jul 2021 01:13	1
HS21070773-03	VW13	14 Jul 2021 10:10			16 Jul 2021 01:35	1
HS21070773-04	VW13B	14 Jul 2021 11:25			16 Jul 2021 01:57	1
HS21070773-05	VW14	14 Jul 2021 12:35			16 Jul 2021 02:04	1
HS21070773-06	VW20B	14 Jul 2021 08:30			16 Jul 2021 02:12	1
HS21070773-07	VW20	14 Jul 2021 07:25			16 Jul 2021 02:19	1
HS21070773-08	VW29	14 Jul 2021 09:40			16 Jul 2021 02:27	1
HS21070773-09	VW21B	14 Jul 2021 10:35			16 Jul 2021 02:34	1
HS21070773-10	VW6	14 Jul 2021 11:35			16 Jul 2021 02:41	1
Batch ID: R387639 (0)	**Test Name :** DISSOLVED ORGANIC CARBON BY SW9060A				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45			17 Jul 2021 00:42	1
HS21070773-02	VW23	14 Jul 2021 08:40			17 Jul 2021 01:31	1
HS21070773-03	VW13	14 Jul 2021 10:10			17 Jul 2021 01:46	1
HS21070773-04	VW13B	14 Jul 2021 11:25			17 Jul 2021 02:03	1
HS21070773-05	VW14	14 Jul 2021 12:35			17 Jul 2021 02:20	1
Batch ID: R387640 (0)	**Test Name :** DISSOLVED ORGANIC CARBON BY SW9060A				**Matrix:** Water	
HS21070773-06	VW20B	14 Jul 2021 08:30			17 Jul 2021 03:53	1
HS21070773-07	VW20	14 Jul 2021 07:25			17 Jul 2021 04:08	1
HS21070773-08	VW29	14 Jul 2021 09:40			17 Jul 2021 04:23	1
HS21070773-09	VW21B	14 Jul 2021 10:35			17 Jul 2021 04:38	1
HS21070773-10	VW6	14 Jul 2021 11:35			17 Jul 2021 04:53	1

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R387651 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45			16 Jul 2021 16:30	200
HS21070773-02	VW23	14 Jul 2021 08:40			16 Jul 2021 16:39	200
HS21070773-03	VW13	14 Jul 2021 10:10			16 Jul 2021 16:48	400
HS21070773-04	VW13B	14 Jul 2021 11:25			16 Jul 2021 16:56	100
HS21070773-05	VW14	14 Jul 2021 12:35			16 Jul 2021 17:05	100
HS21070773-06	VW20B	14 Jul 2021 08:30			16 Jul 2021 17:13	200
HS21070773-07	VW20	14 Jul 2021 07:25			16 Jul 2021 17:28	100
HS21070773-08	VW29	14 Jul 2021 09:40			16 Jul 2021 17:36	400
HS21070773-09	VW21B	14 Jul 2021 10:35			16 Jul 2021 17:53	100
Batch ID: R387700 (0)	**Test Name :** ANIONS BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45			16 Jul 2021 18:20	10
HS21070773-03	VW13	14 Jul 2021 10:10			16 Jul 2021 18:43	10
HS21070773-04	VW13B	14 Jul 2021 11:25			16 Jul 2021 18:50	20
HS21070773-05	VW14	14 Jul 2021 12:35			16 Jul 2021 19:12	10
HS21070773-06	VW20B	14 Jul 2021 08:30			16 Jul 2021 19:20	10
HS21070773-07	VW20	14 Jul 2021 07:25			16 Jul 2021 19:27	10
HS21070773-08	VW29	14 Jul 2021 09:40			16 Jul 2021 19:34	10
HS21070773-09	VW21B	14 Jul 2021 10:35			16 Jul 2021 19:42	10
HS21070773-10	VW6	14 Jul 2021 11:35			16 Jul 2021 19:49	10
Batch ID: R387791 (0)	**Test Name :** SULFIDE BY SM4500 S2-F-2011				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45			19 Jul 2021 17:00	1
HS21070773-02	VW23	14 Jul 2021 08:40			19 Jul 2021 17:00	1
HS21070773-03	VW13	14 Jul 2021 10:10			19 Jul 2021 17:00	1
HS21070773-04	VW13B	14 Jul 2021 11:25			19 Jul 2021 17:00	1
HS21070773-05	VW14	14 Jul 2021 12:35			19 Jul 2021 17:00	1
HS21070773-06	VW20B	14 Jul 2021 08:30			19 Jul 2021 17:00	1
HS21070773-07	VW20	14 Jul 2021 07:25			19 Jul 2021 17:00	1
HS21070773-08	VW29	14 Jul 2021 09:40			19 Jul 2021 17:00	1
HS21070773-09	VW21B	14 Jul 2021 10:35			19 Jul 2021 17:00	1
HS21070773-10	VW6	14 Jul 2021 11:35			19 Jul 2021 17:00	1
Batch ID: R387871 (0)	**Test Name :** NITRATE/NITRITE BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45			20 Jul 2021 04:04	5
HS21070773-02	VW23	14 Jul 2021 08:40			20 Jul 2021 04:11	5
HS21070773-03	VW13	14 Jul 2021 10:10			20 Jul 2021 04:19	5
HS21070773-04	VW13B	14 Jul 2021 11:25			20 Jul 2021 04:26	5

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Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R387949 (0)	**Test Name :** NITRATE/NITRITE BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS21070773-05	VW14	14 Jul 2021 12:35			21 Jul 2021 22:46	5
HS21070773-06	VW20B	14 Jul 2021 08:30			21 Jul 2021 22:53	5
HS21070773-07	VW20	14 Jul 2021 07:25			21 Jul 2021 23:01	5
HS21070773-08	VW29	14 Jul 2021 09:40			21 Jul 2021 23:08	5
HS21070773-09	VW21B	14 Jul 2021 10:35			21 Jul 2021 23:15	5
HS21070773-10	VW6	14 Jul 2021 11:35			21 Jul 2021 23:38	5
Batch ID: R387998 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Water	
HS21070773-10	VW6	14 Jul 2021 11:35			21 Jul 2021 13:02	100
Batch ID: R388059 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45			23 Jul 2021 01:25	1
HS21070773-02	VW23	14 Jul 2021 08:40			23 Jul 2021 01:47	1
HS21070773-03	VW13	14 Jul 2021 10:10			23 Jul 2021 02:09	1
Batch ID: R388070 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070773-05	VW14	14 Jul 2021 12:35			23 Jul 2021 09:11	1
HS21070773-08	VW29	14 Jul 2021 09:40			23 Jul 2021 11:24	1
HS21070773-09	VW21B	14 Jul 2021 10:35			23 Jul 2021 10:40	1
HS21070773-10	VW6	14 Jul 2021 11:35			23 Jul 2021 07:42	1
HS21070773-11	Trip Blank 01	14 Jul 2021 07:45			23 Jul 2021 11:02	1
HS21070773-12	Trip Blank 02	14 Jul 2021 07:45			23 Jul 2021 06:13	1
HS21070773-13	Trip Blank 03	14 Jul 2021 07:45			23 Jul 2021 06:35	1
HS21070773-14	Trip Blank 04	14 Jul 2021 07:45			23 Jul 2021 06:57	1
Batch ID: R388159 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS21070773-04	VW13B	14 Jul 2021 11:25			26 Jul 2021 07:01	5
HS21070773-06	VW20B	14 Jul 2021 08:30			26 Jul 2021 06:18	1
HS21070773-07	VW20	14 Jul 2021 07:25			26 Jul 2021 06:39	1
Batch ID: R389567 (0)	**Test Name :** SUBCONTRACT ANALYSIS - DISSOLVED CARBON DIOXIDE				**Matrix:** Water	
HS21070773-01	VW5	14 Jul 2021 07:45			16 Aug 2021 15:24	1
HS21070773-02	VW23	14 Jul 2021 08:40			16 Aug 2021 15:24	1
HS21070773-03	VW13	14 Jul 2021 10:10			16 Aug 2021 15:24	1
HS21070773-04	VW13B	14 Jul 2021 11:25			16 Aug 2021 15:24	1
HS21070773-05	VW14	14 Jul 2021 12:35			16 Aug 2021 15:24	1
HS21070773-06	VW20B	14 Jul 2021 08:30			16 Aug 2021 15:24	1
HS21070773-07	VW20	14 Jul 2021 07:25			16 Aug 2021 15:24	1
HS21070773-08	VW29	14 Jul 2021 09:40			16 Aug 2021 15:24	1
HS21070773-09	VW21B	14 Jul 2021 10:35			16 Aug 2021 15:24	1
HS21070773-10	VW6	14 Jul 2021 11:35			16 Aug 2021 15:24	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168013 (0) **Instrument: FID-16** **Method: TPH DRO/ORO BY SW8015C**

MBLK Sample ID: **MBLK-168013** Units: **mg/L** Analysis Date: **21-Jul-2021 16:07**
Client ID: Run ID: **FID-16_387980** SeqNo: **6194558** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	< 0.021	0.053								
Surr: 2-Fluorobiphenyl	*0.07447*	*0.0053*	*0.06322*	*0*	*118*	*60 - 135*				

LCS Sample ID: **LCS-168013** Units: **mg/L** Analysis Date: **21-Jul-2021 16:36**
Client ID: Run ID: **FID-16_387980** SeqNo: **6194559** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6315	0.053	0.6379	0	99.0	70 - 130				
Surr: 2-Fluorobiphenyl	*0.08133*	*0.0053*	*0.06379*	*0*	*128*	*60 - 135*				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **21-Jul-2021 18:33**
Client ID: Run ID: **FID-16_387980** SeqNo: **6194562** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	3.414	0.052	0.6228	2.682	118	70 - 130				O
Surr: 2-Fluorobiphenyl	*0.1105*	*0.0052*	*0.06228*	*0*	*177*	*60 - 135*				S

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **21-Jul-2021 19:02**
Client ID: Run ID: **FID-16_387980** SeqNo: **6194563** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	3.354	0.052	0.6191	2.682	109	70 - 130	3.414	1.79	20	O
Surr: 2-Fluorobiphenyl	*0.1075*	*0.0052*	*0.06191*	*0*	*174*	*60 - 135*	*0.1105*	*2.74*	*20*	S

The following samples were analyzed in this batch:

HS21070773-01	HS21070773-02	HS21070773-03	HS21070773-04
HS21070773-05	HS21070773-06	HS21070773-07	HS21070773-08
HS21070773-09	HS21070773-10		

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387651 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MBLK Sample ID: **MBLK-210716** Units: **ug/L** Analysis Date: **16-Jul-2021 09:50**
Client ID: Run ID: **FID-4_387651** SeqNo: **6192301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	< 0.107	0.500								

LCS Sample ID: **LCS-210716** Units: **ug/L** Analysis Date: **16-Jul-2021 10:02**
Client ID: Run ID: **FID-4_387651** SeqNo: **6192302** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	9.631	0.500	9.647	0	99.8	75 - 125				

MS Sample ID: **HS21070738-06MS** Units: **ug/L** Analysis Date: **16-Jul-2021 10:41**
Client ID: Run ID: **FID-4_387651** SeqNo: **6192306** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	944	0.500	9.647	2338	-14400	75 - 125				SEO

MSD Sample ID: **HS21070738-06MSD** Units: **ug/L** Analysis Date: **16-Jul-2021 10:52**
Client ID: Run ID: **FID-4_387651** SeqNo: **6192307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	851.9	0.500	9.647	2338	-15400	75 - 125	944	10.3	30	SEO

The following samples were analyzed in this batch:

HS21070773-01	HS21070773-02	HS21070773-03	HS21070773-04
HS21070773-05	HS21070773-06	HS21070773-07	HS21070773-08
HS21070773-09			

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387998 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MBLK Sample ID: **MBLK-210721** Units: **ug/L** Analysis Date: **21-Jul-2021 11:10**
Client ID: Run ID: **FID-4_387998** SeqNo: **6194757** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	< 0.107	0.500								

LCS Sample ID: **LCS-210721** Units: **ug/L** Analysis Date: **21-Jul-2021 11:18**
Client ID: Run ID: **FID-4_387998** SeqNo: **6194758** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	10.32	0.500	9.647	0	107	75 - 125				

LCSD Sample ID: **LCSD-210721** Units: **ug/L** Analysis Date: **21-Jul-2021 11:26**
Client ID: Run ID: **FID-4_387998** SeqNo: **6194759** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methane	10.47	0.500	9.647	0	109	75 - 125	10.32	1.45	30	

The following samples were analyzed in this batch: HS21070773-10

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168025 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLK-168025** Units: **mg/L** Analysis Date: **16-Jul-2021 21:26**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186888** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	< 0.0120	0.200								
Manganese	< 0.000700	0.00500								

LCS Sample ID: **LCS-168025** Units: **mg/L** Analysis Date: **16-Jul-2021 21:28**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186889** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.606	0.200	5	0	92.1	80 - 120				
Manganese	0.04535	0.00500	0.05	0	90.7	80 - 120				

MS Sample ID: **HS21070773-03MS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:58**
Client ID: **VW13** Run ID: **ICPMS06_387616** SeqNo: **6186901** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.584	0.200	5	0.0375	90.9	75 - 125				
Manganese	0.1686	0.00500	0.05	0.1276	82.1	75 - 125				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:34**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186892** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.737	0.200	5	0.07835	93.2	75 - 125				
Manganese	0.1527	0.00500	0.05	0.1051	95.2	75 - 125				

MSD Sample ID: **HS21070773-03MSD** Units: **mg/L** Analysis Date: **16-Jul-2021 22:00**
Client ID: **VW13** Run ID: **ICPMS06_387616** SeqNo: **6186872** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.866	0.200	5	0.0375	96.6	75 - 125	4.584	5.97	20	
Manganese	0.1809	0.00500	0.05	0.1276	107	75 - 125	0.1686	7.02	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168025 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **16-Jul-2021 21:36**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186893** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.673	0.200	5	0.07835	91.9	75 - 125	4.737	1.36	20	
Manganese	0.1533	0.00500	0.05	0.1051	96.5	75 - 125	0.1527	0.41	20	

PDS Sample ID: **HS21070773-03PDS** Units: **mg/L** Analysis Date: **16-Jul-2021 22:02**
Client ID: **VW13** Run ID: **ICPMS06_387616** SeqNo: **6186873** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.959	0.200	10	0.0375	99.2	75 - 125				
Manganese	0.2277	0.00500	0.1	0.1276	100	75 - 125				

PDS Sample ID: **HS21070738-06PDS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:38**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186894** PrepDate: **16-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	9.797	0.200	10	0.07835	97.2	75 - 125				
Manganese	0.2031	0.00500	0.1	0.1051	98.0	75 - 125				

SD Sample ID: **HS21070773-03SD** Units: **mg/L** Analysis Date: **16-Jul-2021 21:56**
Client ID: **VW13** Run ID: **ICPMS06_387616** SeqNo: **6186900** PrepDate: **16-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	< 0.0600	1.00					0.0375	0	10	
Manganese	0.1289	0.0250					0.1276	1.04	10	

SD Sample ID: **HS21070738-06SD** Units: **mg/L** Analysis Date: **16-Jul-2021 21:32**
Client ID: Run ID: **ICPMS06_387616** SeqNo: **6186891** PrepDate: **16-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	0.08238	1.00					0.07835	0	10	J
Manganese	0.1054	0.0250					0.1051	0.287	10	

The following samples were analyzed in this batch:

HS21070773-01	HS21070773-02	HS21070773-03	HS21070773-04
HS21070773-05	HS21070773-06	HS21070773-07	HS21070773-08
HS21070773-09			

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168066 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-168066** Units: **mg/L** Analysis Date: **21-Jul-2021 15:43**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6193014** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	< 0.0340	0.500								
Iron	< 0.0120	0.200								
Magnesium	0.0164	0.200								J
Manganese	< 0.000700	0.00500								
Potassium	< 0.0180	0.200								
Sodium	0.09255	0.200								J

LCS Sample ID: **LCS-168066** Units: **mg/L** Analysis Date: **21-Jul-2021 15:45**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6193015** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	4.757	0.500	5	0	95.1	80 - 120				
Iron	4.702	0.200	5	0	94.0	80 - 120				
Magnesium	4.74	0.200	5	0	94.8	80 - 120				
Manganese	0.04489	0.00500	0.05	0	89.8	80 - 120				
Potassium	4.672	0.200	5	0	93.4	80 - 120				
Sodium	4.729	0.200	5	0	94.6	80 - 120				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **22-Jul-2021 12:40**
Client ID: Run ID: **ICPMS06_388006** SeqNo: **6194980** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	48.02	0.500	5	42.18	117	80 - 120				O
Iron	4.8	0.200	5	0.2239	91.5	80 - 120				
Magnesium	29.39	0.200	5	24.33	101	80 - 120				O
Manganese	0.1454	0.00500	0.05	0.09989	91.0	80 - 120				
Potassium	21.46	0.200	5	16.74	94.4	80 - 120				
Sodium	603.4	0.200	5	590.6	255	80 - 120				SEO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168066 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **22-Jul-2021 12:42**
Client ID: Run ID: **ICPMS06_388006** SeqNo: **6194981** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	48.85	0.500	5	42.18	133	80 - 120	48.02	1.72	20	SO
Iron	4.89	0.200	5	0.2239	93.3	80 - 120	4.8	1.84	20	
Magnesium	30.03	0.200	5	24.33	114	80 - 120	29.39	2.14	20	O
Manganese	0.1473	0.00500	0.05	0.09989	94.8	80 - 120	0.1454	1.31	20	
Potassium	22.23	0.200	5	16.74	110	80 - 120	21.46	3.51	20	
Sodium	614	0.200	5	590.6	467	80 - 120	603.4	1.74	20	SEO

PDS Sample ID: **HS21070738-06PDS** Units: **mg/L** Analysis Date: **22-Jul-2021 12:44**
Client ID: Run ID: **ICPMS06_388006** SeqNo: **6194982** PrepDate: **19-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	53.58	0.500	10	42.18	114	75 - 125				O
Iron	9.614	0.200	10	0.2239	93.9	75 - 125				
Magnesium	34.6	0.200	10	24.33	103	75 - 125				
Manganese	0.2001	0.00500	0.1	0.09989	100	75 - 125				
Potassium	27.16	0.200	10	16.74	104	75 - 125				

PDS Sample ID: **HS21070738-06PDS** Units: **mg/L** Analysis Date: **22-Jul-2021 13:04**
Client ID: Run ID: **ICPMS06_388006** SeqNo: **6194939** PrepDate: **19-Jul-2021** DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	779.5	4.00	200	579.2	100	75 - 125				

SD Sample ID: **HS21070738-06SD** Units: **mg/L** Analysis Date: **22-Jul-2021 12:38**
Client ID: Run ID: **ICPMS06_388006** SeqNo: **6194979** PrepDate: **19-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	40.64	2.50					42.18	3.64	10	
Iron	0.2244	1.00					0.2239	0	10	J
Magnesium	24.28	1.00					24.33	0.186	10	
Manganese	0.1009	0.0250					0.09989	0.974	10	
Potassium	17.02	1.00					16.74	1.67	10	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168066 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS21070738-06SD** Units: **mg/L** Analysis Date: **22-Jul-2021 13:02**
Client ID: Run ID: **ICPMS06_388006** SeqNo: **6194938** PrepDate: **19-Jul-2021** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Sodium	623.1	20.0					579.2	7.6	10	

The following samples were analyzed in this batch: HS21070773-01 HS21070773-02 HS21070773-03 HS21070773-04 HS21070773-05 HS21070773-06 HS21070773-07 HS21070773-08 HS21070773-09

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168124 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-168124** Units: **mg/L** Analysis Date: **20-Jul-2021 20:14**
Client ID: Run ID: **ICPMS06_387805** SeqNo: **6191226** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	< 0.0340	0.500								
Iron	< 0.0120	0.200								
Magnesium	< 0.0100	0.200								
Manganese	< 0.000700	0.00500								
Potassium	0.02628	0.200								J
Sodium	0.04621	0.200								J

LCS Sample ID: **LCS-168124** Units: **mg/L** Analysis Date: **20-Jul-2021 20:16**
Client ID: Run ID: **ICPMS06_387805** SeqNo: **6191227** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	4.971	0.500	5	0	99.4	80 - 120				
Iron	4.802	0.200	5	0	96.0	80 - 120				
Magnesium	5.005	0.200	5	0	100	80 - 120				
Manganese	0.04716	0.00500	0.05	0	94.3	80 - 120				
Potassium	4.981	0.200	5	0	99.6	80 - 120				
Sodium	5.019	0.200	5	0	100	80 - 120				

MS Sample ID: **HS21070809-04MS** Units: **mg/L** Analysis Date: **20-Jul-2021 20:22**
Client ID: Run ID: **ICPMS06_387805** SeqNo: **6191230** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	257.2	0.500	5	249.5	154	80 - 120				SEO
Iron	5.133	0.200	5	0.515	92.4	80 - 120				
Magnesium	155.7	0.200	5	151.4	86.3	80 - 120				O
Manganese	0.711	0.00500	0.05	0.6744	73.4	80 - 120				SO
Potassium	6.725	0.200	5	1.868	97.1	80 - 120				
Sodium	573.1	0.200	5	570.6	49.1	80 - 120				SEO

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168124 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MSD Sample ID: **HS21070809-04MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 20:24**
Client ID: Run ID: **ICPMS06_387805** SeqNo: **6191231** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	278.8	0.500	5	249.5	585	80 - 120	257.2	8.04	20	SEO
Iron	5.584	0.200	5	0.515	101	80 - 120	5.133	8.42	20	
Magnesium	168.1	0.200	5	151.4	334	80 - 120	155.7	7.66	20	SO
Manganese	0.7867	0.00500	0.05	0.6744	225	80 - 120	0.711	10.1	20	SO
Potassium	7.368	0.200	5	1.868	110	80 - 120	6.725	9.13	20	
Sodium	617.6	0.200	5	570.6	940	80 - 120	573.1	7.48	20	SEO

PDS Sample ID: **HS21070809-04PDS** Units: **mg/L** Analysis Date: **21-Jul-2021 12:03**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192584** PrepDate: **20-Jul-2021** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	728.1	25.0	500	256.3	94.4	75 - 125				
Sodium	1025	10.0	500	576.6	89.8	75 - 125				

PDS Sample ID: **HS21070809-04PDS** Units: **mg/L** Analysis Date: **20-Jul-2021 20:26**
Client ID: Run ID: **ICPMS06_387805** SeqNo: **6191232** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10.53	0.200	10	0.515	100	75 - 125				
Magnesium	167.5	0.200	10	151.4	161	75 - 125				SO
Manganese	0.8146	0.00500	0.1	0.6744	140	75 - 125				SO
Potassium	12.52	0.200	10	1.868	107	75 - 125				

SD Sample ID: **HS21070809-04SD** Units: **mg/L** Analysis Date: **21-Jul-2021 11:57**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192581** PrepDate: **20-Jul-2021** DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Calcium	252.2	125					256.3	1.6	10	
Sodium	581.5	50.0					576.6	0.851	10	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168124 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS21070809-04SD** Units: **mg/L** Analysis Date: **20-Jul-2021 20:20**
Client ID: Run ID: **ICPMS06_387805** SeqNo: **6191229** PrepDate: **20-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	0.5258	1.00					0.515	0	10	J
Magnesium	153.9	1.00					151.4	1.65	10	
Manganese	0.6725	0.0250					0.6744	0.272	10	
Potassium	1.943	1.00					1.868	3.98	10	

The following samples were analyzed in this batch: HS21070773-10

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168171 (0) **Instrument:** ICPMS06 **Method:** DISSOLVED METALS BY SW6020A (DISSOLVED)

MBLK Sample ID: **MBLK-168171** Units: **mg/L** Analysis Date: **21-Jul-2021 13:58**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192808** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	< 0.0120	0.200								
Manganese	< 0.000700	0.00500								

LCS Sample ID: **LCS-168171** Units: **mg/L** Analysis Date: **21-Jul-2021 14:00**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192809** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	4.604	0.200	5	0	92.1	80 - 120				
Manganese	0.04434	0.00500	0.05	0	88.7	80 - 120				

MS Sample ID: **HS21070483-08MS** Units: **mg/L** Analysis Date: **21-Jul-2021 14:08**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192813** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.452	0.200	5	0.8812	91.4	75 - 125				
Manganese	0.7421	0.00500	0.05	0.7153	53.7	75 - 125				SO

MSD Sample ID: **HS21070483-08MSD** Units: **mg/L** Analysis Date: **21-Jul-2021 14:10**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192814** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	5.407	0.200	5	0.8812	90.5	75 - 125	5.452	0.829	20	
Manganese	0.7401	0.00500	0.05	0.7153	49.7	75 - 125	0.7421	0.27	20	SO

PDS Sample ID: **HS21070483-08PDS** Units: **mg/L** Analysis Date: **21-Jul-2021 14:12**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192815** PrepDate: **21-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	11.27	0.200	10	0.8812	104	75 - 125				
Manganese	0.7987	0.00500	0.1	0.7153	83.4	75 - 125				O

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: **168171 (0)** **Instrument:** **ICPMS06** **Method:** **DISSOLVED METALS BY SW6020A (DISSOLVED)**

SD Sample ID: **HS21070483-08SD** Units: **mg/L** Analysis Date: **21-Jul-2021 14:06**
Client ID: Run ID: **ICPMS06_387887** SeqNo: **6192812** PrepDate: **21-Jul-2021** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Iron	0.9169	1.00					0.8812	0	10	J
Manganese	0.7123	0.0250					0.7153	0.42	10	

The following samples were analyzed in this batch: HS21070773-10

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168115 (0) **Instrument: SV-6** **Method: LOW-LEVEL PAHS - 8270D**

MBLK Sample ID: **MBLK-168115** Units: **ug/L** Analysis Date: **21-Jul-2021 18:50**
Client ID: Run ID: **SV-6_387977** SeqNo: **6196860** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	< 0.0200	0.100								
Surr: 2-Fluorobiphenyl	*3.417*	*0.100*	*3.03*	*0*	*113*	*32 - 130*				
Surr: 4-Terphenyl-d14	*3.485*	*0.100*	*3.03*	*0*	*115*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.359*	*0.100*	*3.03*	*0*	*111*	*45 - 142*				

LCS Sample ID: **LCS-168115** Units: **ug/L** Analysis Date: **21-Jul-2021 19:10**
Client ID: Run ID: **SV-6_387977** SeqNo: **6196861** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	2.957	0.100	3.03	0	97.6	40 - 140				
Surr: 2-Fluorobiphenyl	*2.681*	*0.100*	*3.03*	*0*	*88.5*	*32 - 130*				
Surr: 4-Terphenyl-d14	*1.821*	*0.100*	*3.03*	*0*	*60.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.1*	*0.100*	*3.03*	*0*	*69.3*	*45 - 142*				

LCSD Sample ID: **LCSD-168115** Units: **ug/L** Analysis Date: **21-Jul-2021 19:30**
Client ID: Run ID: **SV-6_387977** SeqNo: **6196862** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	3.355	0.100	3.03	0	111	40 - 140	2.957	12.6	25	
Surr: 2-Fluorobiphenyl	*3.314*	*0.100*	*3.03*	*0*	*109*	*32 - 130*	*2.681*	*21.1*	*25*	
Surr: 4-Terphenyl-d14	*3.26*	*0.100*	*3.03*	*0*	*108*	*40 - 135*	*1.821*	*56.7*	*25*	R
Surr: Nitrobenzene-d5	*3.055*	*0.100*	*3.03*	*0*	*101*	*45 - 142*	*2.1*	*37*	*25*	R

The following samples were analyzed in this batch:

HS21070773-01	HS21070773-02	HS21070773-03	HS21070773-04
HS21070773-05	HS21070773-06	HS21070773-07	HS21070773-08
HS21070773-09	HS21070773-10		

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R388059 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210722** Units: **ug/L** Analysis Date: **22-Jul-2021 18:02**
Client ID: Run ID: **VOA4_388059** SeqNo: **6196244** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*46.9*	*1.0*	*50*	*0*	*93.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.42*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*47.88*	*1.0*	*50*	*0*	*95.8*	*73 - 126*				
Surr: Toluene-d8	*49.36*	*1.0*	*50*	*0*	*98.7*	*81 - 120*				

LCS Sample ID: **VLCSW-210722** Units: **ug/L** Analysis Date: **22-Jul-2021 17:18**
Client ID: Run ID: **VOA4_388059** SeqNo: **6196243** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.19	1.0	20	0	95.9	74 - 120				
Ethylbenzene	20.91	1.0	20	0	105	77 - 117				
m,p-Xylene	44.34	2.0	40	0	111	77 - 122				
o-Xylene	21.11	1.0	20	0	106	75 - 119				
Toluene	20.24	1.0	20	0	101	77 - 118				
Xylenes, Total	65.45	1.0	60	0	109	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.35*	*1.0*	*50*	*0*	*98.7*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.24*	*1.0*	*50*	*0*	*100*	*82 - 115*				
Surr: Dibromofluoromethane	*50.53*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*51.14*	*1.0*	*50*	*0*	*102*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R388059 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070802-05MS** Units: **ug/L** Analysis Date: **22-Jul-2021 20:15**
Client ID: Run ID: **VOA4_388059** SeqNo: **6196250** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.34	1.0	20	0	107	70 - 127				
Ethylbenzene	21.07	1.0	20	0	105	70 - 124				
m,p-Xylene	44.24	2.0	40	0	111	70 - 130				
o-Xylene	21.8	1.0	20	0	109	70 - 124				
Toluene	20.59	1.0	20	0	103	70 - 123				
Xylenes, Total	66.04	1.0	60	0	110	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.64*	*1.0*	*50*	*0*	*93.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.26*	*1.0*	*50*	*0*	*105*	*81 - 113*				
Surr: Dibromofluoromethane	*48.55*	*1.0*	*50*	*0*	*97.1*	*77 - 123*				
Surr: Toluene-d8	*51.02*	*1.0*	*50*	*0*	*102*	*82 - 127*				

MSD Sample ID: **HS21070802-05MSD** Units: **ug/L** Analysis Date: **22-Jul-2021 20:37**
Client ID: Run ID: **VOA4_388059** SeqNo: **6196251** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.3	1.0	20	0	101	70 - 127	21.34	4.99	20	
Ethylbenzene	20.32	1.0	20	0	102	70 - 124	21.07	3.62	20	
m,p-Xylene	41.74	2.0	40	0	104	70 - 130	44.24	5.82	20	
o-Xylene	21.04	1.0	20	0	105	70 - 124	21.8	3.57	20	
Toluene	19.64	1.0	20	0	98.2	70 - 123	20.59	4.74	20	
Xylenes, Total	62.77	1.0	60	0	105	70 - 130	66.04	5.07	20	
Surr: 1,2-Dichloroethane-d4	*46.56*	*1.0*	*50*	*0*	*93.1*	*70 - 126*	*46.64*	*0.17*	*20*	
Surr: 4-Bromofluorobenzene	*53.26*	*1.0*	*50*	*0*	*107*	*81 - 113*	*52.26*	*1.91*	*20*	
Surr: Dibromofluoromethane	*48.89*	*1.0*	*50*	*0*	*97.8*	*77 - 123*	*48.55*	*0.687*	*20*	
Surr: Toluene-d8	*50.87*	*1.0*	*50*	*0*	*102*	*82 - 127*	*51.02*	*0.297*	*20*	

The following samples were analyzed in this batch: HS21070773-01 HS21070773-02 HS21070773-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R388070 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210722** Units: **ug/L** Analysis Date: **23-Jul-2021 05:51**
Client ID: Run ID: **VOA4_388070** SeqNo: **6196435** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*50.24*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.79*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*50.51*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.14*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-210722** Units: **ug/L** Analysis Date: **23-Jul-2021 09:33**
Client ID: Run ID: **VOA4_388070** SeqNo: **6196444** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.96	1.0	20	0	99.8	74 - 120				
Ethylbenzene	23.06	1.0	20	0	115	77 - 117				
m,p-Xylene	48.58	2.0	40	0	121	77 - 122				
o-Xylene	23.74	1.0	20	0	119	75 - 119				
Toluene	20.83	1.0	20	0	104	77 - 118				
Xylenes, Total	72.32	1.0	60	0	121	75 - 122				
Surr: 1,2-Dichloroethane-d4	*44.48*	*1.0*	*50*	*0*	*89.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*52.32*	*1.0*	*50*	*0*	*105*	*82 - 115*				
Surr: Dibromofluoromethane	*47.67*	*1.0*	*50*	*0*	*95.3*	*73 - 126*				
Surr: Toluene-d8	*50.28*	*1.0*	*50*	*0*	*101*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R388070 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070773-10MS** Units: **ug/L** Analysis Date: **23-Jul-2021 08:04**
Client ID: **VW6** Run ID: **VOA4_388070** SeqNo: **6196441** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	194.9	10	200	0	97.4	70 - 127				
Ethylbenzene	222.1	10	200	0	111	70 - 124				
m,p-Xylene	461.6	20	400	0	115	70 - 130				
o-Xylene	222.7	10	200	0	111	70 - 124				
Toluene	199.9	10	200	0	100.0	70 - 123				
Xylenes, Total	684.4	10	600	0	114	70 - 130				
Surr: 1,2-Dichloroethane-d4	*450.5*	*10*	*500*	*0*	*90.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*529.7*	*10*	*500*	*0*	*106*	*81 - 113*				
Surr: Dibromofluoromethane	*484.6*	*10*	*500*	*0*	*96.9*	*77 - 123*				
Surr: Toluene-d8	*505.6*	*10*	*500*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS21070773-10MSD** Units: **ug/L** Analysis Date: **23-Jul-2021 08:26**
Client ID: **VW6** Run ID: **VOA4_388070** SeqNo: **6196442** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	186.2	10	200	0	93.1	70 - 127	194.9	4.55	20	
Ethylbenzene	204.5	10	200	0	102	70 - 124	222.1	8.21	20	
m,p-Xylene	432.4	20	400	0	108	70 - 130	461.6	6.53	20	
o-Xylene	207.3	10	200	0	104	70 - 124	222.7	7.19	20	
Toluene	182.8	10	200	0	91.4	70 - 123	199.9	8.94	20	
Xylenes, Total	639.7	10	600	0	107	70 - 130	684.4	6.74	20	
Surr: 1,2-Dichloroethane-d4	*448.7*	*10*	*500*	*0*	*89.7*	*70 - 126*	*450.5*	*0.406*	*20*	
Surr: 4-Bromofluorobenzene	*529.2*	*10*	*500*	*0*	*106*	*81 - 113*	*529.7*	*0.104*	*20*	
Surr: Dibromofluoromethane	*480.3*	*10*	*500*	*0*	*96.1*	*77 - 123*	*484.6*	*0.885*	*20*	
Surr: Toluene-d8	*492.5*	*10*	*500*	*0*	*98.5*	*82 - 127*	*505.6*	*2.62*	*20*	

The following samples were analyzed in this batch:

HS21070773-05	HS21070773-08	HS21070773-09	HS21070773-10
HS21070773-11	HS21070773-12	HS21070773-13	HS21070773-14

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R388159 (0) **Instrument:** VOA9 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210725** Units: **ug/L** Analysis Date: **25-Jul-2021 23:56**
Client ID: Run ID: **VOA9_388159** SeqNo: **6198553** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
o-Xylene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*50.24*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.36*	*1.0*	*50*	*0*	*98.7*	*82 - 115*				
Surr: Dibromofluoromethane	*49.3*	*1.0*	*50*	*0*	*98.6*	*73 - 126*				
Surr: Toluene-d8	*50.04*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-210725** Units: **ug/L** Analysis Date: **25-Jul-2021 23:13**
Client ID: Run ID: **VOA9_388159** SeqNo: **6198552** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.47	1.0	20	0	97.4	74 - 120				
Ethylbenzene	19.16	1.0	20	0	95.8	77 - 117				
m,p-Xylene	37.77	2.0	40	0	94.4	77 - 122				
o-Xylene	18.99	1.0	20	0	95.0	75 - 119				
Toluene	18.8	1.0	20	0	94.0	77 - 118				
Xylenes, Total	56.76	1.0	60	0	94.6	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.73*	*1.0*	*50*	*0*	*97.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.26*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*49.7*	*1.0*	*50*	*0*	*99.4*	*73 - 126*				
Surr: Toluene-d8	*50.34*	*1.0*	*50*	*0*	*101*	*81 - 120*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R388159 (0) **Instrument:** VOA9 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS21070789-12MS** Units: **ug/L** Analysis Date: **26-Jul-2021 00:38**
Client ID: Run ID: **VOA9_388159** SeqNo: **6198555** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.42	1.0	20	1.828	97.9	70 - 127				
Ethylbenzene	23.08	1.0	20	1.987	105	70 - 124				
m,p-Xylene	43.8	2.0	40	1.806	105	70 - 130				
o-Xylene	21.12	1.0	20	0	106	70 - 124				
Toluene	20.38	1.0	20	0	102	70 - 123				
Xylenes, Total	64.91	1.0	60	1.806	105	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.02*	*1.0*	*50*	*0*	*100*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*50.01*	*1.0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*50.41*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS21070789-12MSD** Units: **ug/L** Analysis Date: **26-Jul-2021 01:00**
Client ID: Run ID: **VOA9_388159** SeqNo: **6198556** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.81	1.0	20	1.828	94.9	70 - 127	21.42	2.85	20	
Ethylbenzene	21.91	1.0	20	1.987	99.6	70 - 124	23.08	5.2	20	
m,p-Xylene	41.8	2.0	40	1.806	100.0	70 - 130	43.8	4.65	20	
o-Xylene	20.13	1.0	20	0	101	70 - 124	21.12	4.79	20	
Toluene	19.33	1.0	20	0	96.7	70 - 123	20.38	5.3	20	
Xylenes, Total	61.93	1.0	60	1.806	100	70 - 130	64.91	4.7	20	
Surr: 1,2-Dichloroethane-d4	*49.37*	*1.0*	*50*	*0*	*98.7*	*70 - 126*	*50.02*	*1.31*	*20*	
Surr: 4-Bromofluorobenzene	*50.77*	*1.0*	*50*	*0*	*102*	*81 - 113*	*51*	*0.447*	*20*	
Surr: Dibromofluoromethane	*49.5*	*1.0*	*50*	*0*	*99.0*	*77 - 123*	*50.01*	*1.01*	*20*	
Surr: Toluene-d8	*50.07*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.41*	*0.667*	*20*	

The following samples were analyzed in this batch: HS21070773-04 HS21070773-06 HS21070773-07

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168252 (0) **Instrument: WetChem_HS** **Method: TOTAL KJELDAHL NITROGEN BY SM4500 NH3 D-2011**

MBLK Sample ID: **MBLK-168252** Units: **mg/L** Analysis Date: **21-Jul-2021 14:22**
Client ID: Run ID: **WetChem_HS_388005** SeqNo: **6194920** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	< 0.10	0.50								

LCS Sample ID: **LCS-168252** Units: **mg/L** Analysis Date: **21-Jul-2021 14:22**
Client ID: Run ID: **WetChem_HS_388005** SeqNo: **6194917** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	19.41	0.50	20	0	97.0	85 - 115				

LCSD Sample ID: **LCSD-168252** Units: **mg/L** Analysis Date: **21-Jul-2021 14:22**
Client ID: Run ID: **WetChem_HS_388005** SeqNo: **6194918** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	21.28	0.50	20	0	106	85 - 115	19.41	9.18	20	

MS Sample ID: **HS21070836-02MS** Units: **mg/L** Analysis Date: **21-Jul-2021 14:22**
Client ID: Run ID: **WetChem_HS_388005** SeqNo: **6194915** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	22.74	0.50	20	0.844	110	75 - 125				

MSD Sample ID: **HS21070836-02MSD** Units: **mg/L** Analysis Date: **21-Jul-2021 14:22**
Client ID: Run ID: **WetChem_HS_388005** SeqNo: **6194916** PrepDate: **20-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	21.95	0.50	20	0.844	106	75 - 125	22.74	3.54	20	

The following samples were analyzed in this batch:

HS21070773-01	HS21070773-02	HS21070773-03	HS21070773-04
HS21070773-05	HS21070773-06	HS21070773-07	HS21070773-08
HS21070773-09	HS21070773-10		

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: 168319 (0) **Instrument: UV-2450** **Method: AMMONIA AS N BY SM4500 NH3-B-F-2011**

MBLK Sample ID: **MBLK-168319** Units: **mg/L** Analysis Date: **23-Jul-2021 15:13**
Client ID: Run ID: **UV-2450_388106** SeqNo: **6197265** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	< 0.025	0.050								

LCS Sample ID: **LCS-168319** Units: **mg/L** Analysis Date: **23-Jul-2021 15:13**
Client ID: Run ID: **UV-2450_388106** SeqNo: **6197264** PrepDate: **22-Jul-2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.492	0.050	0.5	0	98.4	85 - 115				

MS Sample ID: **HS21070773-01MS** Units: **mg/L** Analysis Date: **23-Jul-2021 15:13**
Client ID: **VW5** Run ID: **UV-2450_388106** SeqNo: **6197262** PrepDate: **22-Jul-2021** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.4	0.50	5	1.03	7.40	80 - 120				S

MSD Sample ID: **HS21070773-01MSD** Units: **mg/L** Analysis Date: **23-Jul-2021 15:13**
Client ID: **VW5** Run ID: **UV-2450_388106** SeqNo: **6197263** PrepDate: **22-Jul-2021** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	1.43	0.50	5	1.03	8.00	80 - 120	1.4	2.12	20	S

The following samples were analyzed in this batch:

HS21070773-01	HS21070773-02	HS21070773-03	HS21070773-04
HS21070773-05	HS21070773-06	HS21070773-07	HS21070773-08
HS21070773-09	HS21070773-10		

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387559 (0) **Instrument:** ManTech01 **Method:** ALKALINITY BY SM 2320B-2011

MBLK Sample ID: **WBLKW2-210715** Units: **mg/L** Analysis Date: **15-Jul-2021 23:07**
Client ID: Run ID: **ManTech01_387559** SeqNo: **6185273** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00								
Alkalinity, Total (As CaCO3)	< 5.00	5.00								

LCS Sample ID: **WLCS2-210715** Units: **mg/L** Analysis Date: **15-Jul-2021 22:46**
Client ID: Run ID: **ManTech01_387559** SeqNo: **6185270** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1035	5.00	1000	0	104	85 - 115				
Alkalinity, Total (As CaCO3)	1050	5.00	1000	0	105	85 - 115				

LCSD Sample ID: **WLCSD2-210715** Units: **mg/L** Analysis Date: **15-Jul-2021 23:16**
Client ID: Run ID: **ManTech01_387559** SeqNo: **6185274** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1023	5.00	1000	0	102	85 - 115	1035	1.15	20	
Alkalinity, Total (As CaCO3)	1039	5.00	1000	0	104	85 - 115	1050	1.1	20	

DUP Sample ID: **HS21070738-06DUP** Units: **mg/L** Analysis Date: **15-Jul-2021 23:33**
Client ID: Run ID: **ManTech01_387559** SeqNo: **6185276** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	921.1	5.00					914.1	0.762	20	
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	921.1	5.00					914.1	0.762	20	

The following samples were analyzed in this batch: HS21070773-01 HS21070773-02 HS21070773-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387561 (0) **Instrument:** ManTech01 **Method:** ALKALINITY BY SM 2320B-2011

MBLK Sample ID: **WBLKW3-210715** Units: **mg/L** Analysis Date: **16-Jul-2021 03:32**
Client ID: Run ID: **ManTech01_387561** SeqNo: **6185310** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00								
Alkalinity, Total (As CaCO3)	< 5.00	5.00								

LCS Sample ID: **LCS3-210715** Units: **mg/L** Analysis Date: **16-Jul-2021 02:38**
Client ID: Run ID: **ManTech01_387561** SeqNo: **6185303** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1000	5.00	1000	0	100	85 - 115				
Alkalinity, Total (As CaCO3)	1027	5.00	1000	0	103	85 - 115				

LCSD Sample ID: **LCSD3-210715** Units: **mg/L** Analysis Date: **16-Jul-2021 02:47**
Client ID: Run ID: **ManTech01_387561** SeqNo: **6185304** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1051	5.00	1000	0	105	85 - 115	1000	4.95	20	
Alkalinity, Total (As CaCO3)	1053	5.00	1000	0	105	85 - 115	1027	2.46	20	

DUP Sample ID: **HS21070657-02DUP** Units: **mg/L** Analysis Date: **16-Jul-2021 03:02**
Client ID: Run ID: **ManTech01_387561** SeqNo: **6185306** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	576.3	5.00					565	1.99	20	
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	576.3	5.00					565	1.99	20	

The following samples were analyzed in this batch: HS21070773-04 HS21070773-05 HS21070773-06 HS21070773-07 HS21070773-08 HS21070773-09 HS21070773-10

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387574 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **16-Jul-2021 00:13**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185713** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 0.200	0.500								
Nitrogen, Nitrate (As N)	< 0.0300	0.100								
Nitrogen, Nitrite (As N)	< 0.0300	0.100								
Sulfate	< 0.200	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **16-Jul-2021 00:21**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185714** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.66	0.500	20	0	103	90 - 110				
Nitrogen, Nitrate (As N)	4.216	0.100	4	0	105	90 - 110				
Nitrogen, Nitrite (As N)	4.104	0.100	4	0	103	90 - 110				
Sulfate	21.11	0.500	20	0	106	90 - 110				

MS Sample ID: **HS21070773-03MS** Units: **mg/L** Analysis Date: **16-Jul-2021 01:42**
Client ID: **VW13** Run ID: **ICS-Integrion_387574** SeqNo: **6185720** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	364	0.500	10	363.7	3.71	80 - 120				SEO
Nitrogen, Nitrate (As N)	1.998	0.100	2	0	99.9	80 - 120				
Nitrogen, Nitrite (As N)	1.768	0.100	2	0	88.4	80 - 120				
Sulfate	24.19	0.500	10	18.25	59.4	80 - 120				S

MS Sample ID: **HS21070753-10MS** Units: **mg/L** Analysis Date: **15-Jul-2021 23:36**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185709** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	24.96	0.500	10	15.02	99.5	80 - 120				
Nitrogen, Nitrate (As N)	2.309	0.100	2	0.2663	102	80 - 120				
Nitrogen, Nitrite (As N)	2.112	0.100	2	0.1367	98.8	80 - 120				
Sulfate	17.21	0.500	10	6.964	102	80 - 120				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: **R387574 (0)** **Instrument:** **ICS-Integrion** **Method:** **ANIONS BY E300.0, REV 2.1, 1993**

MSD Sample ID: **HS21070773-03MSD** Units: **mg/L** Analysis Date: **16-Jul-2021 01:50**
Client ID: **VW13** Run ID: **ICS-Integrion_387574** SeqNo: **6185721** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	371.8	0.500	10	363.7	81.1	80 - 120	364	2.1	20	EO
Nitrogen, Nitrate (As N)	2.038	0.100	2	0	102	80 - 120	1.998	2	20	
Nitrogen, Nitrite (As N)	1.795	0.100	2	0	89.7	80 - 120	1.768	1.49	20	
Sulfate	24.87	0.500	10	18.25	66.2	80 - 120	24.19	2.78	20	S

MSD Sample ID: **HS21070753-10MSD** Units: **mg/L** Analysis Date: **15-Jul-2021 23:44**
Client ID: Run ID: **ICS-Integrion_387574** SeqNo: **6185710** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	24.92	0.500	10	15.02	99.0	80 - 120	24.96	0.2	20	
Nitrogen, Nitrate (As N)	2.301	0.100	2	0.2663	102	80 - 120	2.309	0.338	20	
Nitrogen, Nitrite (As N)	2.106	0.100	2	0.1367	98.5	80 - 120	2.112	0.275	20	
Sulfate	17.11	0.500	10	6.964	101	80 - 120	17.21	0.622	20	

The following samples were analyzed in this batch:

HS21070773-01	HS21070773-02	HS21070773-03	HS21070773-04
HS21070773-05	HS21070773-06	HS21070773-07	HS21070773-08
HS21070773-09	HS21070773-10		

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387639 (0) **Instrument:** TOC_04 **Method:** DISSOLVED ORGANIC CARBON BY SW9060A (DISSOLVED)

MBLK Sample ID: **MBLK-07162021** Units: **mg/L** Analysis Date: **16-Jul-2021 18:56**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	< 0.500	1.00								

LCS Sample ID: **LCS-07162021** Units: **mg/L** Analysis Date: **16-Jul-2021 19:11**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.6	1.00	10	0	106	85 - 115				

LCSD Sample ID: **LCSD-07162021** Units: **mg/L** Analysis Date: **16-Jul-2021 19:26**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186977** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.48	1.00	10	0	105	85 - 115	10.6	1.14	20	

MS Sample ID: **HS21070738-03MS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:21**
Client ID: Run ID: **TOC_04_387639** SeqNo: **6186984** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	17.75	1.00	10	6.473	113	80 - 120				

The following samples were analyzed in this batch: HS21070773-01 HS21070773-02 HS21070773-03 HS21070773-04 HS21070773-05

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387640 (0) **Instrument:** TOC_04 **Method:** DISSOLVED ORGANIC CARBON BY SW9060A (DISSOLVED)

MBLK Sample ID: **MBLK-07162021** Units: **mg/L** Analysis Date: **17-Jul-2021 03:08**
Client ID: Run ID: **TOC_04_387640** SeqNo: **6187009** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	< 0.500	1.00								

LCS Sample ID: **LCS-07162021** Units: **mg/L** Analysis Date: **17-Jul-2021 03:23**
Client ID: Run ID: **TOC_04_387640** SeqNo: **6187010** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.43	1.00	10	0	104	85 - 115				

LCSD Sample ID: **LCSD-07162021** Units: **mg/L** Analysis Date: **17-Jul-2021 03:38**
Client ID: Run ID: **TOC_04_387640** SeqNo: **6187011** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	10.31	1.00	10	0	103	85 - 115	10.43	1.16	20	

MS Sample ID: **HS21070657-02MS** Units: **mg/L** Analysis Date: **17-Jul-2021 06:10**
Client ID: Run ID: **TOC_04_387640** SeqNo: **6187021** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Dissolved	11.56	1.00	10	1.435	101	80 - 120				

The following samples were analyzed in this batch: HS21070773-06 HS21070773-07 HS21070773-08 HS21070773-09 HS21070773-10

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387700 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **16-Jul-2021 20:11**
Client ID: Run ID: **ICS-Integrion_387700** SeqNo: **6188207** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 0.200	0.500								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **16-Jul-2021 20:19**
Client ID: Run ID: **ICS-Integrion_387700** SeqNo: **6188208** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.37	0.500	20	0	102	90 - 110				

MS Sample ID: **HS21070885-04MS** Units: **mg/L** Analysis Date: **16-Jul-2021 21:33**
Client ID: Run ID: **ICS-Integrion_387700** SeqNo: **6188215** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	55.73	0.500	10	46.28	94.5	80 - 120				O

MS Sample ID: **HS21070773-04MS** Units: **mg/L** Analysis Date: **16-Jul-2021 18:57**
Client ID: **VW13B** Run ID: **ICS-Integrion_387700** SeqNo: **6188197** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	796	10.0	200	606.5	94.8	80 - 120				

MSD Sample ID: **HS21070885-04MSD** Units: **mg/L** Analysis Date: **16-Jul-2021 21:40**
Client ID: Run ID: **ICS-Integrion_387700** SeqNo: **6188216** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	56.63	0.500	10	46.28	104	80 - 120	55.73	1.6	20	O

MSD Sample ID: **HS21070773-04MSD** Units: **mg/L** Analysis Date: **16-Jul-2021 19:05**
Client ID: **VW13B** Run ID: **ICS-Integrion_387700** SeqNo: **6188198** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	805.9	10.0	200	606.5	99.7	80 - 120	796	1.24	20	

The following samples were analyzed in this batch:

HS21070773-01	HS21070773-03	HS21070773-04	HS21070773-05
HS21070773-06	HS21070773-07	HS21070773-08	HS21070773-09
HS21070773-10			

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387791 (0) **Instrument:** WetChem_HS **Method:** SULFIDE BY SM4500 S2-F-2011

MBLK Sample ID: **MBLK-R387791** Units: **mg/L** Analysis Date: **19-Jul-2021 17:00**
Client ID: Run ID: **WetChem_HS_387791** SeqNo: **6190218** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	< 1.00	1.00								

LCS Sample ID: **LCS-R387791** Units: **mg/L** Analysis Date: **19-Jul-2021 17:00**
Client ID: Run ID: **WetChem_HS_387791** SeqNo: **6190217** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.68	1.00	25	0	90.7	85 - 115				

LCSD Sample ID: **LCSD-R387791** Units: **mg/L** Analysis Date: **19-Jul-2021 17:00**
Client ID: Run ID: **WetChem_HS_387791** SeqNo: **6190216** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.88	1.00	25	0	91.5	85 - 115	22.68	0.878	20	

MS Sample ID: **HS21070697-01MS** Units: **mg/L** Analysis Date: **19-Jul-2021 17:00**
Client ID: Run ID: **WetChem_HS_387791** SeqNo: **6190201** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	26.68	1.00	25	-0.32	108	80 - 120				

The following samples were analyzed in this batch:

HS21070773-01	HS21070773-02	HS21070773-03	HS21070773-04
HS21070773-05	HS21070773-06	HS21070773-07	HS21070773-08
HS21070773-09	HS21070773-10		

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387871 (0) **Instrument:** ICS-Integrion **Method:** NITRATE/NITRITE BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **20-Jul-2021 04:41**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192155** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	< 0.0300	0.200								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **20-Jul-2021 04:48**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192156** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	8.175	0.200	8	0	102	90 - 110				

MS Sample ID: **HS21070738-06MS** Units: **mg/L** Analysis Date: **20-Jul-2021 02:35**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192139** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	19.49	1.00	20	0	97.4	80 - 120				

MS Sample ID: **HS21070658-01MS** Units: **mg/L** Analysis Date: **20-Jul-2021 01:14**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192128** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	28.76	1.00	20	9.956	94.0	80 - 120				

MSD Sample ID: **HS21070738-06MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 02:42**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192140** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	19.84	1.00	20	0	99.2	80 - 120	19.49	1.8	20	

MSD Sample ID: **HS21070658-01MSD** Units: **mg/L** Analysis Date: **20-Jul-2021 01:21**
Client ID: Run ID: **ICS-Integrion_387871** SeqNo: **6192129** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	29.19	1.00	20	9.956	96.2	80 - 120	28.76	1.48	20	

The following samples were analyzed in this batch: HS21070773-01 HS21070773-02 HS21070773-03 HS21070773-04

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: HS21070773

QC BATCH REPORT

Batch ID: R387949 (0) **Instrument:** ICS-Integrion **Method:** NITRATE/NITRITE BY E300.0, REV 2.1, 1993

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **22-Jul-2021 01:22**
Client ID: Run ID: **ICS-Integrion_387949** SeqNo: **6193991** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	< 0.0300	0.200								

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **22-Jul-2021 01:29**
Client ID: Run ID: **ICS-Integrion_387949** SeqNo: **6193992** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	8.252	0.200	8	0	103	90 - 110				

MS Sample ID: **HS21070657-01MS** Units: **mg/L** Analysis Date: **22-Jul-2021 00:07**
Client ID: Run ID: **ICS-Integrion_387949** SeqNo: **6193986** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	30.18	1.00	20	11.76	92.1	80 - 120				

MSD Sample ID: **HS21070657-01MSD** Units: **mg/L** Analysis Date: **22-Jul-2021 00:15**
Client ID: Run ID: **ICS-Integrion_387949** SeqNo: **6193987** PrepDate: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrate/Nitrite (as N)	29.75	1.00	20	11.76	89.9	80 - 120	30.18	1.43	20	

The following samples were analyzed in this batch: HS21070773-05 HS21070773-06 HS21070773-07 HS21070773-08 HS21070773-09 HS21070773-10

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
WorkOrder: **HS21070773**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	21-022-0	26-Mar-2022
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-33	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
North Carolina	624-2021	31-Dec-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-21-27	30-Apr-2022

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070773

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-01	VW5	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-02	VW23	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-03	VW13	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	VOA036

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070773

SAMPLE TRACKING

HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-04	VW13B	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-05	VW14	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-06	VW20B	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-07	VW20	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	WET247

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Geo Monitoring Services
Project: St. Croix Alumina
Work Order: HS21070773

SAMPLE TRACKING

HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-08	VW29	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-09	VW21B	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	MET090
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	WET232
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	WET247
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	RSK022
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	WET231
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	Sub
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-10	VW6	Login	7/15/2021 2:54:08 PM	JRM	LVI004
HS21070773-11	Trip Blank 01	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-12	Trip Blank 02	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-13	Trip Blank 03	Login	7/15/2021 2:54:08 PM	JRM	VOA036
HS21070773-14	Trip Blank 04	Login	7/15/2021 2:54:08 PM	JRM	VOA036

RIGHT SOLUTIONS | RIGHT PARTNER

Sample Receipt Checklist

Work Order ID: HS21070773 **Date/Time Received:** **15-Jul-2021 09:25**

Client Name: GMS **Received by:** **Jared R. Makan**

Completed By: /S/ Jared R. Makan (eSignature) 15-Jul-2021 15:15 (Date/Time) **Reviewed by:** /S/ Ragen Giga (eSignature) 16-Jul-2021 10:32 (Date/Time)

Matrices: **Water** Carrier name: **FedEx International Priority**

	Yes	No	
Shipping container/cooler in good condition?	☑	☐	Not Present ☐
Custody seals intact on shipping container/cooler?	☑	☐	Not Present ☐
Custody seals intact on sample bottles?	☐	☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☐	Not Present ☑
Chain of custody present?	☑	☐	1 Page(s)
Chain of custody signed when relinquished and received?	☑	☐	COC IDs:238514
Samplers name present on COC?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s): 1.8°C, 2.1°C, 1.6°C, 1.5°C UC/C IR31

Cooler(s)/Kit(s): 47345, 47302, 45643, 46067

Date/Time sample(s) sent to storage: 07/15/2021 15:20

	Yes	No	
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	☑	☐	N/A ☐
pH adjusted?	☐	☑	N/A ☐

pH adjusted by:

Login Notes: Trip blanks received, not listed on COC. Logged in for analysis.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

RIGHT SOLUTIONS | RIGHT PARTNER

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 229576

HS21070773

Geo Monitoring Services
St. Croix Alumina

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	St. Croix Alumina	A	8015_DRO_LVI (DRO 8015)
Work Order		Project Number		B	8260_LL_W (8260 BTEX)
Company Name	Geo Monitoring Services	Bill To Company	Geo Monitoring Services	C	8270_PAH_LVI (8270 Napththalene)
Send Report To	Brad Freeman	Invoice Attn	Brad Freeman	D	ALK_W 2320B (Alkalinity), 300_W (NO2, NO3,Cl,SO4)
Address	4123 5th Street	Address	4123 5th Street	E	ICP_TW (Ca, Mg, K, Na, Fe, Mn)
				F	ICP_DISS (Dissolved Fe & Mn (Field Filter))
City/State/Zip	Brookshire, TX 77423	City/State/Zip	Brookshire TX 77423	G	SULFD_4500S F (Sulfide)
Phone	(281) 375-5101	Phone	(281) 375-5101	H	NIT_ AMMON_W (Ammonia)
Fax	(281) 375-8468	Fax	(281) 375-8468	I	RSK175 (Methane), Diss CO2 (Sub to ALS Simi Valley)
e-Mail Address	brad@geomon.net	e-Mail Address	brad@geomon.net	J	TOC_Diss_5310B (DOC)- Field Filter

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	VW-5	7/14/21	7:45	W	Yes	22	X	X	X	X	X	X	X	X	X	X	
2	VW-23		8:40														
3	VW-13		10:10														
4	VW-13B		11:25														
5	VW-14		12:35														
6			PM														
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: REX MEYER

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by:	Date: 7/14	Time: 1340	Received by:
Relinquished by:	Date: 7/15/21	Time: 09:25	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: GMS - St. Croix Alumina

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other ____
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be complete.

Copyright 2011 by ALS Environmental.

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Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 229575

HS21070773

Geo Monitoring Services
St. Croix Alumina

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	St. Croix Alumina
Work Order		Project Number	
Company Name	Geo Monitoring Services	Bill To Company	Geo Monitoring Services
Send Report To	Brad Freeman	Invoice Attn	Brad Freeman
Address	4123 5th Street	Address	4123 5th Street
City/State/Zip	Brookshire, TX 77423	City/State/Zip	Brookshire TX 77423
Phone	(281) 375-5101	Phone	(281) 375-5101
Fax	(281) 375-8468	Fax	(281) 375-8468
e-Mail Address	brad@geomon.net	e-Mail Address	brad@geomon.net

A	8015_DRO_LVI (DRO 8015)
B	8260_LL_W (8260 BTEX)
C	8270_PAH_LVI (8270 Napththalene)
D	ALK_W 2320B (Alkalinity), 300_W (NO2, NO3,Cl,SO4)
E	ICP_TW (Ca, Mg, K, Na. Fe. Mn)
F	ICP_DISS (Dissolved Fe & Mn (Field Filter))
G	SULFD_4500S F (Sulfide)
H	NIT_ AMMON_W (Ammonia)
I	RSK175 (Methane), Diss CO2 (Sub to ALS Simi Valley)
J	TOC_Diss_5310B (DOC)- Field Filter

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	VW20B	7-14-21	0830	H_2O		22	3	3	3	1	1	1	1	1	3	2	
2	VW20 [illegible]	↓	0725	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
3	VW29 [illegible]		0940														
4	VW21B		1035														
5	VW6	7-14-21	1135	H_2O													
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign

Shipment Method

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

	Date:	Time:	
Relinquished by: [signature]	7-14-21	1340	Received by:
Relinquished by:	7/15/21	09:25	Received by (Laboratory): [signature]
Logged by (Laboratory):			Checked by (Laboratory):

Notes: GMS - St. Croix Alumina

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other ____
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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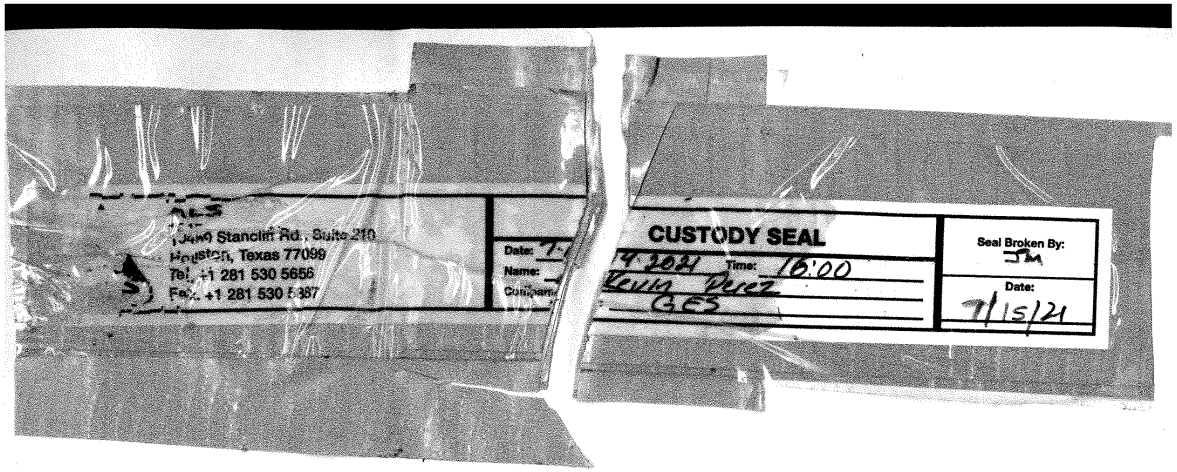

FedEx Express International Air Waybill

Origin Cop

From

Date 7/11/2021 Sender's FedEx Account Number

Sender's Name Michael Alexander Phone 340-277-6004

Company GES

Address #1 Estate Hope

Address

City Christiansted State Province VI

Country ZIP Postal Code 00820

Email Address malexander@gesonline.com

Internal Billing Reference

To 28 ☐ Residential Delivery

Recipient's Name Phone

Company ALS Laboratories

Address 10450 Stanclift Road Suite 210 Dept./Floor

Address

City Houston State Province TX

Country ZIP Postal Code 77099

Email Address

Recipient's Tax ID Number for Customs Purposes

Shipment Information

Packages Load and Count/SLAC 1 Total Weight 5 lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Samples		USD	10 —

Total Declared Value for Carriage

Total Value for Customs (Specify Currency) 10 — USD

been AES? ☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.

Export Check One ☐ No EEI required, enter exemption number: If other than NLR, enter License Exception:

Enter AES proof of filing citation:

FedEx Tracking Number 8160 2461 9996 0402 Form ID No.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☑ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube

15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☑ Other Cooler

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☑ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery. 34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transportation

FedEx Acct. No. 967554812

Specify Currency

Credit Card Exp. Date

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No. 967554812

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require a U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.

WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: N. Sanes

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STA	SGT		Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station

Forms Attached: ☐ CI ☐ CO

Base Charges Declared Val. Chrg. Other DDA/OPA Credit Card Auth.

FedEx Emp. # 115576 Audit Emp. # Date Time Del. Courier Emp. # Date Time

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ALS
10450 Stancliff Rd., Su[illegible] te 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 588[illegible]

CUSTODY SEAL
Date: 1-14-2021 Time: 16:00
Name: Kevin Perez
Company: GES

Seal Broken By: JN
Date: 7/15/21

FedEx Express International Air Waybill

Origin Co[illegible]

FedEx Tracking Number 8160 2462 0007 0402 Form ID No.

From

Date 7/14/2021 Sender's FedEx Account Number

Sender's Name Michael Alexander Phone 310-277-6004

Company GES

Address 11 Estate Hope

Address

City Christiansted State/Province VI ZIP/Postal Code 00820

Country

Email Address malexander@gesonline.com

Internal Billing Reference

To

28 ☐ Residential Delivery

Recipient's Name Phone

Company ALS Laboratories

Address 10450 Stancliff Road Suite 210 Dept./Floor

Address

City Houston State/Province TX

Country ZIP/Postal Code 77099

Email Address

Recipient's Tax ID Number for Customs Purposes

Shipment Information

Packages Load and Count/SLAC ____ Total Weight 6 lbs. ☐ kg ☐ DIM ___ / ___ / ___ in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Samples		USA	10

Been AES? ☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.
Export & Dep ☐ No EEI required, enter exemption number: ____ If other than NLR, enter License Exception: ____
Enter AES proof of filing citation: ____

Total Declared Value for Carriage

Total Value for Customs (Specify Currency) 10 USD

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☑ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☑ FedEx Tube
15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☑ Other Cooler

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☑ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery.

34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transportation

FedEx Acct. No. 967554812

Credit Card Exp. Date

Specify Currency

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No. 967554612

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require a U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.
WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: M. Spence

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STA	SGRA	XHSGR	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station

Forms Attached: ☐ CI ☐ CD

Base Charges ____ Declared Val. Chrg. ____ Other ____ ODA/OPA ____ Credit Card Auth. ____
FedEx Emp. # ____ Audit Emp. # ____ Date ____ Time ____ Del. Courier Emp. # ____ Date ____ Time ____

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ALS
10450 Stancliff Rd., suite 210
Houston, Texas 77099
Tel. +1 281 530 5558
Fax. +1 281 530 5587

CUSTODY SEAL
Time: 1600
Seal Broken By: JM
Date: 7/15/21

FedEx Express International Air Waybill

Origin Copy

FedEx Tracking Number 8160 2462 0084 Form ID No. 0402

From
Date 7/14/2021 Sender's FedEx Account Number
Sender's Name Michael Alexander Phone 310-277-6644
Company GES
Address #1 Estate Hope
Address
City Christiansted State/Province VI
Country ZIP/Postal Code 00820
Email Address malexander@gesonline.com
Internal Billing Reference

To
28 ☐ Residential Delivery
Recipient's Name Phone
Company ALS Laboratories
Address 10450 Stancliff Road Suite 210 Dept./Floor
Address
City Houston State/Province TX
Country ZIP/Postal Code 77099
Email Address
Recipient's Tax ID Number for Customs Purposes

Shipment Information
Packages or's Load and Count/SLAC 1 Total Weight 62 lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Samples		USA	10

EEI been in AES? U.S. Export Check One
☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.
☐ No EEI required, enter exemption number:
If other than NLR, enter License Exception:
Yes – Enter AES proof of filing station:
Total Declared Value for Carriage
Total Value for Customs (Specify Currency) 10 USD

4 Express Package Service
NOTE: Service order has changed. Please select carefully.
06 ☐ FedEx Intl. First 01 ☐ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging
06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube
15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☐ Other Cooler

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.
01 ☐ HOLD at FedEx Location 03 ☐ SATURDAY Delivery
10 ☐ Direct Signature Someone at recipient's address may sign for delivery.
34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.
Bill transportation charges to:
Enter FedEx Acct. No. or Credit Card No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque
Total Transportation
FedEx Acct. No. 967554812
Credit Card Exp. Date
Specify Currency
Bill duties and taxes to:
Enter FedEx Acct. No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque
FedEx Acct. No. 967554812

8 Required Signature
Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.
WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.
Sender's Signature: M. Sanes
Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.
Recipient's Signature 662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SGTA	XHSGT	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station
Forms Attached: ☐ CI ☐ CD
Base Charges Declared Val. Chrg. Other ODA/OPA Credit Card Auth.
FedEx Emp. # Audit Entry # Date Time Del. Courier Emp. # Date Time

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 7-14-2021 Time: 16:00
Name: Kevin Perez
Company: GES

Seal Broken By: JM
Date: 7/15/21

FedEx Express International Air Waybill

Origin Cop

From
Date 7/14/2021 Sender's FedEx Account Number
Sender's Name michael alexander Phone 340-277-6004
Company GES
Address 411 Estate Hope
Address
City christiansted State Province VI
Country ZIP Postal Code 00820
Email Address malexander@gesonline.com
Internal Billing Reference

To
28 ☐ Residential Delivery
Recipient's Name Phone
Company ALS Laboratories
Address 10450 Stancliff Road Suite 210 Dept./Floor
Address
City Houston State Province Tx
Country ZIP Postal Code 77099
Email Address
Recipient's Tax ID Number for Customs Purposes

Shipment Information
Packages Sender's Load and Count/SLAC 1 Total Weight 55 lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Samples		USA	10—

EEI been filed in AES? ☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.
☐ No EEI required, enter exemption number:
If other than NLR, enter License Exception:
Total Declared Value for Carriage
Total Value for Customs (Specify Currency) 10— USD
Enter AES proof of filing citation:

FedEx Tracking Number 8168 3208 9047 0402 Form ID No.

4 Express Package Service
NOTE: Service order has changed. Please select carefully.
06 ☐ FedEx Intl. First 01 ☐ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging
06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube
15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☐ Other cooler

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.
01 ☐ HOLD at FedEx Location 03 ☐ SATURDAY Delivery
10 ☐ Direct Signature Someone at recipient's address may sign for delivery. 34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.
Bill transportation charges to:
Enter FedEx Acct. No. or Credit Card No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque
Total Transportati
FedEx Acct. No. 967554812
[redacted]
Specify Currenc
Credit Card Exp. Date
Bill duties and taxes to:
Enter FedEx Acct. No. below.
1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque
FedEx Acct. No. 967554812

8 Required Signature
Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.
WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.
Sender's Signature: n. Sanes
Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.
Recipient's Signature
662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SGRA	XHSGRA	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station
Forms Attached: ☒ CI ☐ CC
Base Charges Declared Val. Chrg. Other ODA/DPA Credit Card Auth.
FedEx Emp. # 7155 Audit Emp. # Date 07/14/21 Time Del. Courier Emp. # Date Time
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FedEx Express International Air Waybill

Customs Copy

PACKAGE LABEL

COMMERCIAL INVOICE LABEL

DELIVERY RECORD LABEL

DELIVERY REATTEMPT LABEL

8160246199 96

1 From

Date [illegible] Sender's FedEx Account Number

Sender's Name [illegible] Phone [illegible]

Company [illegible]

Address [illegible]

Address

City [illegible] State Province [illegible]

Country ZIP Postal Code 06820

Email Address [illegible]

Internal Billing Reference

2 To

28 ☐ Residential Delivery

Recipient's Name Phone

Company ALS Laboratories

Address 10450 Stancliff Road Suite 210

Dept./Floor

Address

City Houston State Province TX

Country ZIP Postal Code 77099

Email Address

Recipient's Tax ID Number for Customs Purposes

3 Shipment Information

Total Packages Shipper's Load and Count/SLAC ____ Total Weight ____ lbs. ☐ kg ☐ DIM ___ / ___ / ___ in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Samples		USA	10

Has EEI been filed in AES? For U.S. Export Only: Check One

☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.

☐ No EEI required, enter exemption number: ____ If other than NLR, enter License Exception: ____

☐ Yes – Enter AES proof of filing citation: ____

Total Declared Value for Carriage

Total Value for Customs (Specify Currency) 10 USD

FedEx Tracking Number 8160 2461 9996 0402 Form ID No.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☑ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube

15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☑ Other Cooler

6 Special Handling and Delivery Signature Options

Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☑ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery.

34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment

Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transportation

FedEx Acct. No. 967554812

[redacted]

Specify Currency

Credit Card Exp. Date

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No. 967554812

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require a U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.

WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: [illegible]

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

562

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
SMA	SGRA	[illegible]	Total Volume (1)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Sign

Forms Attached: ☐ CI ☐ CO

Base Charges ____ Declared Val. Chrg. ____ Other ____ ODA/OPA ____ Credit Card Auth. ____

FedEx Emp. # 45976 Audit Emp. # ____ Date ____ Time ____ Del. Emp. ____ Date ____ Time ____

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RRDA 02/20

RRDA 02/20

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FedEx Express International Air Waybill

Customs Copy

PACKAGE LABEL

COMMERCIAL INVOICE LABEL

DELIVERY RECORD LABEL

DELIVERY REATTEMPT LABEL

8168 3208 9047

1 From

Date 7/14/2021 Sender's FedEx Account Number

Sender's Name Michael Alexander Phone 340-277-6004

Company GES.

Address #11 Estate Hope

Address

City Christiansted State Province VI

Country ZIP Postal Code 00820

Email Address malexander@gesonline.com

Internal Billing Reference

2 To 28 ☐ Residential Delivery

Recipient's Name Phone

Company ALS Laboratories

Address 10450 Stancliff Road Suite 210

Dept./Floor

Address

City Houston State Province TX

Country ZIP Postal Code 77099

Email Address

Recipient's Tax ID Number for Customs Purposes

3 Shipment Information

Total Packages Shipper's Load and Count/SLAC 1 Total Weight 55 lbs. ☐ kg ☐ DIM / / in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs
Environmental Samples		USA	10

Has EEI been filed in AES? For U.S. Export Only: Check One

☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.

☐ No EEI required, enter exemption number: If other than NLR, enter License Exception:

☐ Yes – Enter AES proof of filing citation:

Total Declared Value for Carriage

Total Value for Customs (Specify Currency) 10 USD

FedEx Tracking Number 8168 3208 9047 0402 Form ID No.

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☐ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube

15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☐ Other cooler

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☐ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery.

34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

Total Transportation

FedEx Acct. No. 967554812

Specify Currency

Credit Card Exp. Date

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

FedEx Acct. No. 967554812

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require a U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.

WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: N. Sanes

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
STXA	SGKA	YHSGRA	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station Forms Attached: ☒ CI ☐ CO

Base Charges Declared Val. Chrg. Other ODA/OPA Credit Card Auth.

FedEx Emp. # 7155 Audit Emp. # Date 07/14/2021 Time Del. Courier Emp. # Date Time

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RRDA 03/21

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8160246200007

PACKAGE LABEL

COMMERCIAL INVOICE LABEL

FedEx Express International Air Waybill

Destination Copy

FedEx Tracking Number 8160 2462 0007 0402 Form ID No.

1 From

Date 9/14/2021 [redacted]

Sender's Name Michael Alexander Phone 210-222-6004

Company GES

Address #1 Estate Hope

Address

City Christiansted State Province VI

Country ZIP Postal Code 00820

Email Address [illegible]

Internal Billing Reference

2 To

28 ☐ Residential Delivery

Recipient's Name Phone

Company HCS Laboratories

Address 10450 Stanhope Road Suite 210

Dept./Floor

Address

City [illegible] State Province Tx

Country ZIP Postal Code 11749

Email Address

Recipient's Tax ID Number for Customs Purposes

3 Shipment Information

Total Packages Shipper's Load and Count/SLAC ____ Total Weight ____ lbs. ☐ kg ☐ DIM ___/___/___ in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs

Has EEI been filed in AES? For U.S. Export Only: Check One

☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.

☐ No EEI required, enter exemption number: ____ If other than NLR, enter License Exception: ____

☐ Yes – Enter AES proof of filing citation:

Total Declared Value for Carriage

Total Value for Customs (Specify Currency) 10 USD

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First 01 ☑ FedEx Intl. Priority 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope 02 ☐ FedEx Pak 03 ☐ FedEx Box 04 ☐ FedEx Tube

15 ☐ FedEx 10kg Box 25 ☐ FedEx 25kg Box 01 ☑ Other Courier

6 Special Handling and Delivery Signature Options

Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location 03 ☑ SATURDAY Delivery

10 ☐ Direct Signature Someone at recipient's address may sign for delivery. 34 ☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

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Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☑ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash Check/Cheque

[redacted] 96 [redacted]

Total Transportation

Specify Currency

Credit Card Exp. Date

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender Acct. No. in Section 1 will be billed. 2 ☐ Recipient 3 ☐ Third Party 5 ☐ Cash Check/Cheque

[redacted] 96 [redacted]

8 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill, and you represent that this shipment does not require a U.S. State Department License or contain dangerous goods. Certain international treaties, including the Warsaw or Montreal Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.

WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature: [illegible]

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
SYRA	SERA	XHEER	Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station

Forms Attached: ☐ CI ☐ CO

Base Charges ____ Declared Val. Chrg. ____ Other ____ ODA/OPA ____ Credit Card Auth. ____

FedEx Emp. # [illegible] Audit Emp. # ____ Date ____ Time ____ Del. Courier Emp. # ____ Date ____ Time ____

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FedEx Express International Air Waybill

Customs Copy

PACKAGE LABEL | COMMERCIAL INVOICE LABEL | DELIVERY RECORD LABEL | DELIVERY REATTEMPT LABEL

1 From

Date

Sender's FedEx Account Number

Sender's Name — Phone

Company

Address

Address

City — State Province

Country — ZIP Postal Code

Email Address

Internal Billing Reference

2 To

28 ☐ Residential Delivery

Recipient's Name — Phone

Company

Address — Dept./Floor

Address

City — State Province

Country — ZIP Postal Code

Email Address

Recipient's Tax ID Number for Customs Purposes

3 Shipment Information

Total Packages — Shipper's Load and Count/SLAC — Total Weight — lbs. ☐ kg ☐ — DIM / / — in. ☐ cm ☐

Commodity Description	Harmonized Code	Country of Manufacture	Value for Customs

Has EEI been filed in AES? (For U.S. Export Only: Check One)
☐ No EEI required, value $2,500 or less per Sch. B Number, no license required (NLR), not subject to ITAR.
☐ No EEI required, enter exemption number: ____ If other than NLR, enter License Exception: ____
☐ Yes – Enter AES proof of filing citation: ____

Total Declared Value for Carriage

Total Value for Customs (Specify Currency)

FedEx Tracking Number 8160 2462 0084 — Form ID No. 0402

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

06 ☐ FedEx Intl. First — 01 ☐ FedEx Intl. Priority — 03 ☐ FedEx Intl. Economy

5 Packaging

06 ☐ FedEx Envelope — 02 ☐ FedEx Pak — 03 ☐ FedEx Box — 04 ☐ FedEx Tube
15 ☐ FedEx 10kg Box — 25 ☐ FedEx 25kg Box — 01 ☐ Other

6 Special Handling and Delivery Signature Options Fees may apply. See the FedEx Service Guide.

01 ☐ HOLD at FedEx Location — 03 ☐ SATURDAY Delivery

10 ☐ Direct Signature — Someone at recipient's address may sign for delivery.

34 ☐ Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

7 Payment Complete payment options for both transportation charges and duties and taxes.

Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 ☐ Sender (Acct. No. in Section 1 will be billed) — 2 ☐ Recipient — 3 ☐ Third Party — 4 ☐ Credit Card — 5 ☐ Cash Check/Cheque

Total Transportation

FedEx Acct. No.

Credit Card Exp. Date — Specify Currency

Bill duties and taxes to:

Enter FedEx Acct. No. below.

1 ☐ Sender (Acct. No. in Section 1 will be billed) — 2 ☐ Recipient — 3 ☐ Third Party — 5 ☐ Cash Check/Cheque

FedEx Acct. No.

8 Required Signature

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WARNING: These commodities, technology, or software were exported from the United States in accordance with Export Administration Regulations. Diversion contrary to U.S. law prohibited.

Sender's Signature:

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Carriage as stated on the reverse side of the Recipient's Copy.

Recipient's Signature

662

Origin Station ID	Country Code/Destination Station ID	URSA Routing	Handling Units
			Total Volume (cm)

Received At: 1 ☐ Reg. Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ World Service Center 5 ☐ Station

Forms Attached: ☒ CI ☐ CO

Base Charges — Declared Val. Chrg. — Other — ODA/OPA — Credit Card Auth.

FedEx Emp. # — Audit Emp. # — Date — Time — Def. Courier Emp. # — Date — Time

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8160246200 84

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

LABORATORY REPORT

August 13, 2021

Ragen Giga
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099

RE: HS21070773

Dear Ragen:

Enclosed are the results of the samples submitted to our laboratory on July 16, 2021. For your reference, these analyses have been assigned our service request number P2103813.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Hayden Akers at 4:46 pm, Aug 13, 2021

Hayden Akers
Project Manager

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: ALS Environmental - US
Project: HS21070773

Service Request No: P2103813

CASE NARRATIVE

The samples were received intact under chain of custody on July 16, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

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ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Environmental - US

Service Request: P2103813

Project ID: HS21070773

Date Received: 7/16/2021

Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2
VW-5	P2103813-001	Water	7/14/2021	07:45	X
VW-23	P2103813-002	Water	7/14/2021	08:40	X
VW-13	P2103813-003	Water	7/14/2021	10:10	X
VW-13B	P2103813-004	Water	7/14/2021	11:25	X
VW-14	P2103813-005	Water	7/14/2021	12:35	X
VW-20B	P2103813-006	Water	7/14/2021	08:30	X
VW-20	P2103813-007	Water	7/14/2021	07:25	X
VW-29	P2103813-008	Water	7/14/2021	09:40	X
VW-21B	P2103813-009	Water	7/14/2021	10:35	X
VW-6	P2103813-010	Water	7/14/2021	11:35	X

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B103813

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **16503**

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065 **Phone:** +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Ragen Giga
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RagenP.Giga@ALSGlobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS21070773
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS21070773-01**	**VW-5**	**Water**	**14 Jul 2021 07:45**
	SUB_Diss CO2			22 Jul 2021
2.	**HS21070773-02**	**VW-23**	**Water**	**14 Jul 2021 08:40**
	SUB_Diss CO2			22 Jul 2021
3.	**HS21070773-03**	**VW-13**	**Water**	**14 Jul 2021 10:10**
	SUB_Diss CO2			22 Jul 2021
4.	**HS21070773-04**	**VW-13B**	**Water**	**14 Jul 2021 11:25**
	SUB_Diss CO2			22 Jul 2021
5.	**HS21070773-05**	**VW-14**	**Water**	**14 Jul 2021 12:35**
	SUB_Diss CO2			22 Jul 2021
6.	**HS21070773-06**	**VW-20B**	**Water**	**14 Jul 2021 08:30**
	SUB_Diss CO2			22 Jul 2021
7.	**HS21070773-07**	**VW-20**	**Water**	**14 Jul 2021 07:25**
	SUB_Diss CO2			22 Jul 2021
8.	**HS21070773-08**	**VW-29**	**Water**	**14 Jul 2021 09:40**
	SUB_Diss CO2			22 Jul 2021
9.	**HS21070773-09**	**VW-21B**	**Water**	**14 Jul 2021 10:35**

P2 103813

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **16503**

LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
ANALYSIS REQUESTED			DUE DATE
SUB_Diss CO2			22 Jul 2021
10. HS21070773-10	**VW-6**	**Water**	**14 Jul 2021 11:35**
SUB_Diss CO2			22 Jul 2021

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: STD (Laboratory Standard QC: method blank and LCS required)

Relinquished By: J. [illegible] Date/Time: 7/15/21 18:00

Received By: [signature] Date/Time: 7-16-21 0930

Cooler ID(s): [signature] Temperature(s): 2° [illegible]

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ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2103813
Project: HS21070773
Sample(s) received on: 7/16/2021 Date opened: 7/16/2021 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: 2° C Blank Temperature: ° C	Wet Ic		
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☒	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☐
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☐
	Are dual bed badges separated and individually capped and intact?	☐	☐	☐

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103813-001.01	40mL VOA NP		6			CB 7/29/21
P2103813-001.02	40mL VOA NP					
P2103813-001.03	40mL VOA NP					
P2103813-002.01	40mL VOA NP		6			CB 7/29/21
P2103813-002.02	40mL VOA NP					
P2103813-002.03	40mL VOA NP					
P2103813-003.01	40mL VOA NP		6			CB 7/29/21
P2103813-003.02	40mL VOA NP					
P2103813-003.03	40mL VOA NP					
P2103813-004.01	40mL VOA NP		6			CB 7/29/21
P2103813-004.02	40mL VOA NP					
P2103813-004.03	40mL VOA NP					
P2103813-005.01	40mL VOA NP		6			CB 7/29/21
P2103813-005.02	40mL VOA NP					
P2103813-005.03	40mL VOA NP					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Environmental
Sample Acceptance Check Form

Client: ALS Environmental - US Work order: P2103813
Project: HS21070773
Sample(s) received on: 7/16/2021 Date opened: 7/16/2021 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2103813-006.01	40mL VOA NP		6			CB 7/29/21
P2103813-006.02	40mL VOA NP					
P2103813-006.03	40mL VOA NP					
P2103813-007.01	40mL VOA NP		6			CB 7/29/21
P2103813-007.02	40mL VOA NP					
P2103813-007.03	40mL VOA NP					
P2103813-008.01	40mL VOA NP		6			CB 7/29/21
P2103813-008.02	40mL VOA NP					
P2103813-008.03	40mL VOA NP					
P2103813-009.01	40mL VOA NP		6			CB 7/29/21
P2103813-009.02	40mL VOA NP					
P2103813-009.03	40mL VOA NP					
P2103813-010.01	40mL VOA NP		6			CB 7/29/21
P2103813-010.02	40mL VOA NP					
P2103813-010.03	40mL VOA NP					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Environmental - US**
Client Project ID: **HS21070773** ALS Project ID: P2103813

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 7/14/21
Analyst: Connor Barrett Date Received: 7/16/21
Matrix: Liquid Date Analyzed: 7/29/21
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	MRL µg/L	MDL µg/L	Data Qualifier
VW-5	P2103813-001	0.10	**120,000**	1,000	370	
VW-23	P2103813-002	0.10	**160,000**	1,000	370	
VW-13	P2103813-003	0.10	**130,000**	1,000	370	
VW-13B	P2103813-004	0.10	**85,000**	1,000	370	
VW-14	P2103813-005	0.10	**110,000**	1,000	370	
VW-20B	P2103813-006	0.10	**110,000**	1,000	370	
VW-20	P2103813-007	0.10	**140,000**	1,000	370	
VW-29	P2103813-008	0.10	**150,000**	1,000	370	
VW-21B	P2103813-009	0.10	**150,000**	1,000	370	
VW-6	P2103813-010	0.10	**120,000**	1,000	370	
Method Control Sample	P210729-MB	0.10	ND	1,000	370	

ND = Compound was analyzed for, but not detected above the laboratory detection limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Environmental - US**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS21070773**

ALS Project ID: P2103813
ALS Sample ID: P210729-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Connor Barrett
Matrix: Liquid
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/29/21
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	20,100	20,800	**88**	**91**	56-105	3	12	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

RIGHT SOLUTIONS | RIGHT PARTNER

Appendix D Tier II Data Quality Evaluation Report

EHS Validation Report Number: 379

St. Croix Alumina Site
St. Croix, U.S. Virgin Islands

Analyses performed by: ALS Environmental Houston, Texas

Sample Delivery Group (SDG): HS21070773
Analyses: VOC, SVOC, TPH
Review Level: Tier II

EHS Support

Report Date: August 23, 2021

Table of Contents

1 Data Review Summary 1

1.1 Guidelines and Qualifiers 1
1.2 Sample Custody and Receipt 1
1.3 Assessment Summary and Data Usability 1

2 Volatile Organic Compound (VOC) Analysis 2

2.1 Preservation and Holding Times 2
2.2 Blanks 2
2.3 Surrogates 2
2.4 Laboratory Control Sample (LCS) Analysis 2
2.5 Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Analysis 2
2.6 Compound Identification 2
2.7 Field Duplicates 2
2.8 Additional Notes 3

3 Semi-Volatile Organic Compound (SVOC) Analysis 4

3.1 Preservation and Holding Times 4
3.2 Blanks 4
3.3 Surrogates 4
3.4 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis 4
3.5 Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Analysis 4
3.6 Compound Identification 4
3.7 Field Duplicates 4
3.8 Additional Notes 4

4 Total Petroleum Hydrocarbons: Diesel Range Organics (DRO) Analysis 5

4.1 Preservation and Holding Times 5
4.2 Blanks 5
4.3 Surrogates 5
4.4 Laboratory Control Sample (LCS) Analysis 6
4.5 Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Analysis 6
4.6 Target Compound Identification 6
4.7 Field Duplicates 6
4.8 Additional Notes 6

Sample and Analytical Protocol Summary

Water samples were collected at the St. Croix Alumina Site in St. Croix, U.S. Virgin Islands and were analyzed by Environmental Protection Agency (EPA) SW-846 Methods 8260C for volatile organic compounds (VOCs), 8270D for semi-volatile organic compounds (SVOCs), and 8015B for total petroleum hydrocarbons (TPH). Samples included in this sample delivery group (SDG), and in this data validation report, are listed in the following table. Additional analyses (metals and general chemistry) were performed on these samples but not included in the validation process.

SDG	Lab Sample ID	Field Sample ID	Sample Matrix	Sample Collection Date	Analysis		
					SVOC	TPH	VOC
HS21070773	HS21070773-01	VW5	Water	7/14/2021	X	X	X
HS21070773	HS21070773-02	VW23	Water	7/14/2021	X	X	X
HS21070773	HS21070773-03	VW13	Water	7/14/2021	X	X	X
HS21070773	HS21070773-04	VW13B	Water	7/14/2021	X	X	X
HS21070773	HS21070773-05	VW14	Water	7/14/2021	X	X	X
HS21070773	HS21070773-06	VW20B	Water	7/14/2021	X	X	X
HS21070773	HS21070773-07	VW20	Water	7/14/2021	X	X	X
HS21070773	HS21070773-08	VW29	Water	7/14/2021	X	X	X
HS21070773	HS21070773-09	VW21B	Water	7/14/2021	X	X	X
HS21070773	HS21070773-10	VW6	Water	7/14/2021	X	X	X
HS21070773	HS21070773-11	Trip Blank 01	Water	7/14/2021			X
HS21070773	HS21070773-12	Trip Blank 02	Water	7/14/2021			X
HS21070773	HS21070773-13	Trip Blank 03	Water	7/14/2021			X
HS21070773	HS21070773-14	Trip Blank 04	Water	7/14/2021			X

SDG Sample delivery group
SVOC Semi-volatile organic compounds
TPH Total petroleum hydrocarbons
VOC Volatile organic compounds

1 Data Review Summary

1.1 Guidelines and Qualifiers

Data were reviewed in accordance with the United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines (Organic, January 2017), laboratory analytical methods, and professional judgment. It is expected that the laboratory conducted sufficient quality review of the data prior to reporting. While quality control (QC) is meant to increase confidence in analytical data, it is important to note that no compound concentration is guaranteed to be accurate, even if all QC criteria are met.

Data validation includes a review of reported results and supporting documentation in the laboratory report. Based on this evaluation, qualifiers may be added, deleted, or modified. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

Qualifier Code	Definition
U	The analyte was included in the analysis but was not detected above the reported quantitation limit, or the result is considered non-detect as a consequence of associated blank contamination.
UJ	The analyte was included in the analysis but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

QC Quality control

1.2 Sample Custody and Receipt

All samples were received in good condition and properly preserved. On the chain of custody, samples were relinquished by field staff and received by laboratory staff; there are no signatures associated with the commercial shipper. Aside from that note, no issues with the chain of custody were encountered; it was properly completed.

1.3 Assessment Summary and Data Usability

In this SDG, no QC excursions encountered led to rejection of data. Results reported in this SDG are considered usable. Refer to the following sections for specific QC variances and consequences thereof.

2 Volatile Organic Compound (VOC) Analysis

2.1 Preservation and Holding Times

Acceptance criteria were met. Relevant preservation and holding time requirements are presented in the following table.

Method	Matrix	Preservation	Holding Time
Method 8260	Soil	Frozen, or cooled to ≤6 °C and preserved with NaHSO4 or MeOH	14 days
	Water	≤6 °C; HCl to pH < 2	14 days
		≤6 °C	7 days

°C Degrees Celsius
HCl Hydrochloric acid
MeOH Methanol
NaHSO4 Sodium bisulfate

2.2 Blanks

Acceptance criteria were met; no detections were reported from the method blanks nor from the trip blanks associated with this data set.

2.3 Surrogates

Acceptance criteria were met.

2.4 Laboratory Control Sample (LCS) Analysis

Acceptance criteria were met.

2.5 Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Analysis

Acceptance criteria were met. MS/MSD analysis was performed on sample HS21070773-10.

2.6 Compound Identification

Acceptable; no issues to report.

2.7 Field Duplicates

Not applicable; no field duplicate samples were submitted in this SDG.

2.8 Additional Notes

Results for sample HS21070773-04 were reported from a dilution. A note in the laboratory report narrative says: “Sample ID: VW13B (HS21070773-04) Lowest practical dilution for sample HS21070773-04 due to matrix.”

3 Semi-Volatile Organic Compound (SVOC) Analysis

3.1 Preservation and Holding Times

Acceptance criteria were met. Relevant preservation and holding time requirements are presented in the following table.

Method	Matrix	Preservation	Holding Time
SW-846 Method 8270	Water	≤6 °C	7 days from collection to extraction, 40 days from extraction to analysis
SW-846 Method 8270	Soil, sediment	≤6 °C	14 days from collection to extraction, 40 days from extraction to analysis

°C Degrees Celsius

3.2 Blanks

Acceptance criteria were met; no detections were reported from the method blanks associated with this data set.

3.3 Surrogates

Acceptance criteria were met.

3.4 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

Acceptance criteria were met.

3.5 Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Analysis

Not applicable; no MS/MSD analysis performed on a sample in this data set was reported.

3.6 Compound Identification

Acceptable; no issues to report.

3.7 Field Duplicates

Not applicable; no field duplicate samples were submitted in this SDG.

3.8 Additional Notes

The naphthalene result for sample HS21070773-03 was reported from a dilution. A note in the laboratory report narrative states that the sample was analyzed at a dilution due to matrix interference.

4 Total Petroleum Hydrocarbons: Diesel Range Organics (DRO) Analysis

4.1 Preservation and Holding Times

Acceptance criteria were met. Relevant preservation and holding time requirements are presented in the following table.

Method	Matrix	Preservation	Holding Time
SW-846 8015 Diesel Range Organics (DRO)	Water	≤6 °C	7 days from collection to extraction, 40 days from extraction to analysis
	Soil	≤6 °C	14 days from collection to extraction, 40 days from extraction to analysis

°C Degrees Celsius
DRO Diesel Range Organics

4.2 Blanks

Acceptance criteria were met; no detections were reported from the method blanks associated with this data set.

4.3 Surrogates

Surrogate recoveries outside control limits are shown in the following table. Please note that when samples are sufficiently diluted, the concentrations of the surrogates are less than the lowest calibrated point for the instrument, i.e., surrogates are 'diluted out.' This does not lead to sample qualification.

Sample ID	Surrogate	Surrogate Recovery
HS21070773-02	2-Fluorobiphenyl	> Upper acceptance limit
HS21070773-04	2-Fluorobiphenyl	> Upper acceptance limit
HS21070773-06	2-Fluorobiphenyl	> Upper acceptance limit
HS21070773-07	2-Fluorobiphenyl	> Upper acceptance limit
HS21070773-08	2-Fluorobiphenyl	> Upper acceptance limit
HS21070773-09	2-Fluorobiphenyl	> Upper acceptance limit
HS21070773-10	2-Fluorobiphenyl	> Upper acceptance limit

Detected concentrations of diesel range organics (DRO) were reported for all the samples listed in the table above. DRO results in all the above-listed samples are consequently considered estimated and qualified with J flags, in accordance with the following table.

Surrogate Recovery	Sample Result	Sample Result Qualification (Note 1)
> Upper acceptance limit (UL)	Non-detect	No Action
	Detect	J
< Lower acceptance limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

Note 1 See Section 1 for qualifier definitions.

4.4 Laboratory Control Sample (LCS) Analysis

Acceptance criteria were met.

4.5 Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Analysis

Not applicable; no MS/MSD analysis performed on a sample in this data set was reported.

4.6 Target Compound Identification

Acceptable; no issues to report.

4.7 Field Duplicates

Not applicable; no field duplicate samples were submitted in this SDG.

4.8 Additional Notes

Results from samples HS21070773-03 and HS21070773-05 were reported from dilutions.

In accordance with the site-specific Quality Assurance Project Plan (QAPP; EHS Support, 2021), results in the database will not reflect qualifiers applied during validation. The following excerpt is taken the QAPP and provides additional information.

“Tier II validation will be performed on a small percentage of the data and is meant to provide information about the usability and quality of the data set as a whole. The majority of data (90 percent) that will undergo data usability review will not bear any validation qualifiers; those results will be used as-reported unless they need to be rejected. Therefore, in order to maintain consistency in the database, validation qualifiers applied during Tier II validation will not be applied to the data in the database or in the project tables/ reports.”

Validation performed by: Amy Coats
EHS Support LLC

Appendix E Usability Data Quality Evaluation

EHS Validation Report Number: 380

St. Croix Alumina Site
St. Croix, U.S. Virgin Islands

Analyses performed by: ALS Environmental Houston, Texas

Sample Delivery Groups (SDGs): HS21070657,HS-21070658, HS21070738
Analyses: VOC, SVOC, TPH
Review Level: Usability

EHS Support

Report Date:
August 23, 2021

Table of Contents

1 Data Review Summary 4

1.1 Guidelines and Qualifiers 4
1.2 Sample Receipt 4
1.3 Assessment Summary and Data Usability 4

2 Reviewed Quality Control Elements and Applied Limits 5

2.1 Preservation and Holding Times 5
2.2 Surrogates 5
2.3 Laboratory Control Sample (LCS) Analysis 5
2.4 Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Analysis 6
2.5 Additional Notes 6

Sample Summary

Water samples were collected at the St. Croix Alumina Site in St. Croix, U.S Virgin Islands and were analyzed by Environmental Protection Agency (EPA) SW-846 Methods 8260C for volatile organic compounds (VOCs), 8270D for semi-volatile organic compounds (SVOCs), and 8015B for total petroleum hydrocarbons (TPH). Samples included in this data set, and in this data validation report, are listed below. Additional analyses (metals and general chemistry) were performed on these samples but not included in the data review process.

SDG	Lab Sample ID	Field Sample ID	Sample Matrix	Sample Collection Date	Analysis		
					SVOC	TPH	VOC
HS21070657	HS21070657-01	VW11	Water	7/12/2021	X	X	X
HS21070657	HS21070657-02	VW8	Water	7/12/2021	X	X	X
HS21070657	HS21070657-03	GM14	Water	7/12/2021	X	X	X
HS21070657	HS21070657-04	Trip Blank	Water	7/12/2021			X
HS21070658	HS21070658-01	MMX	Water	7/12/2021	X	X	X
HS21070658	HS21070658-02	MM9	Water	7/12/2021	X	X	X
HS21070658	HS21070658-03	GM11	Water	7/12/2021	X	X	X
HS21070658	HS21070658-04	VW27	Water	7/12/2021	X	X	X
HS21070658	HS21070658-05	FD-01	Water	7/12/2021	X	X	X
HS21070658	HS21070658-06	Trip Blank 01	Water	7/12/2021			X
HS21070658	HS21070658-07	Trip Blank 02	Water	7/12/2021			X
HS21070738	HS21070738-01	Equipment Blank-1	Water	7/12/2021			X
HS21070738	HS21070738-02	VW16	Water	7/12/2021	X	X	X
HS21070738	HS21070738-03	VW34	Water	7/13/2021	X	X	X
HS21070738	HS21070738-04	GM-22	Water	7/13/2021	X	X	X
HS21070738	HS21070738-05	VW1	Water	7/13/2021	X	X	X
HS21070738	HS21070738-06	VW31	Water	7/13/2021	X	X	X
HS21070738	HS21070738-07	VW24	Water	7/13/2021	X	X	X
HS21070738	HS21070738-08	VW2	Water	7/13/2021	X	X	X
HS21070738	HS21070738-09	VW25	Water	7/13/2021	X	X	X
HS21070738	HS21070738-10	VW37	Water	7/13/2021	X	X	X
HS21070738	HS21070738-11	VW32	Water	7/13/2021	X	X	X
HS21070738	HS21070738-12	VW35	Water	7/13/2021	X	X	X
HS21070738	HS21070738-13	VW30	Water	7/13/2021	X	X	X
HS21070738	HS21070738-14	FD-02	Water	7/13/2021	X	X	X
HS21070738	HS21070738-15	Equipment Blank-2	Water	7/12/2021			X
HS21070738	HS21070738-16	Trip Blank 01	Water	7/12/2021			X
HS21070738	HS21070738-17	Trip Blank 02	Water	7/12/2021			X
HS21070738	HS21070738-18	Trip Blank 03	Water	7/12/2021			X

SDG	Lab Sample ID	Field Sample ID	Sample Matrix	Sample Collection Date	Analysis		
					SVOC	TPH	VOC
HS21070738	HS21070738-19	Trip Blank 04	Water	7/12/2021			X

SDG Sample delivery group
SVOC Semi-volatile organic compounds
TPH Total petroleum hydrocarbons
VOC Volatile organic compounds

1 Data Review Summary

1.1 Guidelines and Qualifiers

Results were evaluated to determine usability. Quality control (QC) elements that were reviewed, as well as applied acceptance limits, are presented in the following sections. Sample results that are deemed unusable due to significant QC exceedances have been rejected (definition below). All other reported results are considered usable. Some of these usable results are associated with QC variances that indicate uncertainty in the quantitative values but do not impact data usability. Limits applied during this review were established based on limits in United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines (Organic, January 2017), laboratory analytical methods, and professional judgment.

	Definition of R (Rejected) Qualifier
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

1.2 Sample Receipt

No receipt or custody issues expected to impact data quality were encountered; sample temperatures upon receipt were acceptable. Administrative issues with chains of custody, such as whether relinquishing and receiving records are complete and demonstrate perfect parity, are not being noted for this review. The laboratory report for sample delivery group HS21070738 includes the following notes:
“One DRO LVI vial broke during shipping for VW-24. Enough sample remains to run analysis.”
“DRO checked off for Equipment Blank-1, no vials received. Logged in for VOCs only.”

1.3 Assessment Summary and Data Usability

In this data set, no QC excursions encountered led to rejection of data. Results reported in this data set are considered usable. Refer to the following sections for additional information.

2 Reviewed Quality Control Elements and Applied Limits

2.1 Preservation and Holding Times

No results were rejected based on preservation or holding time. If variances related to these QC elements are encountered, the qualification procedures followed are those that are shown in the table below.

Quality Control Nonconformance	Qualification	
	Detected analytes	Non-detect analytes
Technical holding time exceeded; analysis performed in less than 2x holding time	Usable	Usable
Technical holding time exceeded; analysis performed in more than 2x holding time	Usable	R
Sample temperature greater than 6°C but less than 10°C	Usable	Usable
Sample temperature greater than 10°C	Usable	R

2.2 Surrogates

No results in this data set were rejected due to surrogate recoveries. The following table shows the limit below which impacted results may be rejected, called the lower cutoff or the rejection point. Surrogate recoveries greater than the limit shown in the table do not lead to result rejection.

Surrogate Recovery	Sample Result	Qualification
< 20%	Non-detect	R
	Detect	Usable

2.3 Laboratory Control Sample (LCS) Analysis

No results in this data set were rejected due to LCS recoveries. The following table shows the limit, applied to LCS (including LCSD) recoveries, below which impacted results may be rejected. Recoveries greater than the limit shown in the table do not lead to result rejection.

LCS Recovery	Sample result	Sample Result Qualification
< 10% for organic analyses	Non-detect	R
	Detect	Usable

2.4 Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Analysis

No results in this data set were rejected due to MS recoveries. The following table shows the limit, applied to MS (including MSD) recoveries, below which impacted results may be rejected. Recoveries greater than the limit shown in the table do not lead to result rejection.

Quality Control Nonconformance	Sample result	Sample Result Qualification
< 10% for organic analyses	Non-detect	R
	Detect	Usable

2.5 Additional Notes

Two field duplicate – parent sample pairs were included in this data set. Relationships between parent and duplicate sample results do not impact data usability and were therefore not evaluated as part of this usability review.

Validation performed by: Amy Coats
EHS Support

Appendix F LNAPL Recovery Data Statistical Analysis

MEMO

To: Nigel Goulding

From: Emma Cronin

CC: Samuel Parker

Date: September 10, 2021

Re: Reservoir Depletion Analysis Technical Memorandum

Introduction

St. Croix Alumina, LLC ("SCA"), ALCOA World Alumina, LLC (formerly known as ALCOA Alumina and Chemical, LLC) ("ALCOA"), Virgin Islands Alumina Company ("VIALCO"), Century Aluminum Company, Inc., Lockheed Martin Corporation (Lockheed Martin), Hess Oil Virgin Islands Corp. ("HOVIC"), and HOVENSA LLC ("HOVENSA") entered into an Administrative Order on Consent (AOC), with the United States Environmental Protection Agency, Region II, (USEPA), on May 14, 2001, with an effective date of May 24, 2001. Pursuant to the AOC, these companies have agreed to work together to address Phase Separated Petroleum Hydrocarbon (PSPH) and Dissolved Phase Petroleum Hydrocarbon Constituents (DPPHC) located beneath the St. Croix Alumina facility in St. Croix, U.S. Virgin Islands (Site). As per the AOC, a Project Operating Committee (POC) was formed to design, install, and operate a monitoring and remediation system for the Site.

In July 2020, an *LNAPL CSM and Remedial Action Work Plan* was prepared by EHS Support, and a revision was prepared in April 2021 (Work Plan; EHS Support, 2021). The Work Plan provided detailed documentation surrounding a reservoir decline curve analysis using data from the Site monitoring well network from 2002 to May 2020. Ongoing monitoring of the well extraction network has occurred since May 2020. The purpose of this memorandum (memo) is to update the reservoir depletion curve analysis with well data for the Site from May 2020 through July 2021 and incorporate additional analyses to understand the relationship between cumulative recovery volumes and recovery rates. This information is used to determine whether extraction wells are suitable for removal from the monitoring program based on the recovery of Phase Separated Petroleum Hydrocarbons (PSPH) as presented in Figure 6-3 of the 2021 *LNAPL CSM and Remedial Action Work Plan* (EHS Support, 2021).

Memo Objectives

- Update the cumulative PSPH recovery rate database to include monitoring and extraction data from June 2020 to July 2021.
- Conduct an analysis of reservoir depletion using ordinary least squares (OLS) and Theil-Sen regression approaches to estimate the theoretical maximum recovery volume in each well.

- Determine which monitoring wells meet the criteria for 90% of theoretical maximum PSPH recovery volume.
- Estimate when the 90% theoretical maximum recovery volume threshold will be met for wells that do not meet the above criteria.

Data Analysis

The following data analysis section describes updates to the recovery rate dataset, a summary of the statistical analyses conducted, and approach used to determine which monitoring wells met the criteria.

The reservoir depletion curve analysis was conducted using available extraction rate and recovery data from 18 wells. PSPH recovery rates and cumulative PSPH recovery volumes from May 2020 to July 2021 were collated into the existing database containing previous well data. Wells VW26, VW28, VW38 were not included in these analyses as they had never exceeded 1 gallon per day (gpd) PSPH and were not included in the July 2021 datafile. Well VW32 was included in this analysis even though it was not previously included (see Table 5-5 in EHS Support, 2020) because recovery data were provided for June 2020 through July 2021 in the July 2021 datafile.

Ordinary Least Squares (OLS) and Theil-Sen trend methods were used to evaluate recovery trends in the 18 wells. Model fitting was carried out using the R program (www.R-project.org) on untransformed PSPH recovery rate and PSPH cumulative recovery data. The statistical "Kendall" and "mblm" packages were used to calculate the slope and intercept model parameters. The Theil-Sen regression approach pairs individual measurements of the PSPH recovery rate and cumulative PSPH recovery volume and calculates a slope between them. The median of the pairwise comparisons are calculated to obtain a central tendency of the slope. A Mann Kendall Test can be used to determine whether or not the slope of a Theil-Sen trendline is significantly decreasing. Once the slope has been calculated, the intercept is calculated as the median intercept for $y=mx+b$ using the provided data and calculated slope. This approach is more robust than traditional OLS approaches and less sensitive to outliers or inconsistent sampling periods than an OLS regression. Scatterplots illustrating the relationship between recovery rate and cumulative recovery volume were generated. These figures were created using tri-panel plots with the first panel maintaining fixed axis for the recovery rate to enable comparison between wells. The next two panels were used to highlight both the OLS and Theil-Sen analyses results. These are found in **Attachment A.**

Regression analyses were performed for both OLS and Theil-Sen methods, and the resulting parameter estimates from the two models were compared. Parameter estimates were similar for model fitting procedures (**Attachment A**). However, the Theil-Sen and Mann Kendall approach was selected for subsequent consideration because the statistical approach is less sensitive to skewed or heteroskedastic data when evaluating trends (USEPA, 2009). Application of the regression analyses used parameter estimates based on the Theil-Sen approach.

Intercepts and slopes calculated from Theil-Sen regressions for each well were used to calculate the cumulative PSPH volume recovered when the rate of recovery volume is equal to zero ("zero-point") for each well. The cumulative recovery volume at this zero point is the theoretical maximum recovery volume for each well. Theoretical maxima were then compared to the measured cumulative PSPH

recovered through July 2021 to determine if wells had already exceeded 90% of theoretical recoverable PSPH.

For wells that have not already exceeded 90% of theoretical recoverable PSPH, estimates were made for when that threshold will be achieved. To estimate the date on which a well will have 90% recovery, the cumulative PSPH (y-axis) was plotted over cumulative days pumped (x-axis) and a linear regression was fit. The linear regression equations were used to estimate the month during which the well would exceed the 90% theoretical recoverable PSPH threshold.

Theil- Sen Regression Findings

Results of the Theil-Sen regression analysis are provided in **Table 1** below. Wells VW6, VW13, VW14, VW20, VW20B, VW21, VW24, and VW29 had significantly decreasing trends based on the Mann Kendall Test. Although extraction wells VW13B, VW15, VW21 and VW30 had negative Theil-Sen slopes, the Mann Kendall test did not exhibit significantly decreasing trends. Six of the wells (VW6, VW13, VW14, VW20, VW20B, and VW21) exhibited recovery in excess of 90 percent of the theoretical maxima.

Table 1 Theil-Sen Regression Parameters and Theoretical Maximum Recoverable PSPH by Extraction Well

Well	Theil-Sen Intercept (Thousands of US Gallons)	Theil-Sen Slope	Cumulative PSPH Recovered to July 2021 (US Gallons)	Theoretical Maximum (US Gallons)	% of Theoretical Maximum Recovered	Mann Kendall p-Value
VW13	25.51	-0.30	83,941	85,249	98.47	0.00
VW13B	3.50	-0.11	20,014	32,345	61.88	0.16
VW14	40.80	-0.31	127,315	130,949	97.23	0.00
VW15	0.10	-0.88	39	111	35.42	0.39
VW18	0.02	0.00	27	--	--	0.96
VW2	0.01	10.72	19	0	-3845.45	0.13
VW20	10.18	-0.19	52,127	53,050	98.26	0.00
VW20B	65.65	-1.07	61,123	61,193	99.89	0.00
VW21	6.36	-0.22	26,881	28,645	93.84	0.00
VW21B	0.13	0.00	6,360	--	--	0.43
VW23	0.03	0.60	78	-55	-141.69	0.22
VW24	0.40	-2.76	127	144	88.47	0.01
VW29	0.61	-0.66	818	933	87.69	0.00
VW30	0.12	-0.31	196	391	50.24	0.29
VW31	0.37	0.95	707	-387	-182.57	0.02
VW32	0.05	1.76	294	-27	-1108.83	0.00
VW5	0.15	0.53	297	-278	-106.88	0.19
VW6	43.43	-0.49	87,491	88,788	98.54	0.00

Estimated 90% Recovery Date Findings

Estimated dates for 90% of the theoretical maximum recovery volumes are provided in **Table 2** below. These calculations represent wells that have negative Theil-Sen slopes but have not already achieved 90% of theoretical recovery volume.

Table 2 Estimated Dates for 90% of Theoretical Maximum Volume Recovery

Well	90% Theoretical Recovery Volume (US Gallons)	Estimated Date of 90% Recovery
VW13B	29,111	July 2026
VW15	100	August 2026
VW24	130	May 2021
VW29	840	February 2024
VW30	352	December 2026

Conclusions

Wells VW6, VW13, VW14, VW20, VW20B, and VW21 exhibited recovery in excess of 90% of the theoretical maxima and should be considered for further review for removal from the monitoring program. Wells VW2, VW5, VW13B, VW15, VW18, VW21B, VW23, VW24, VW29, VW30, VW31, and VW32 indicate they should remain in the monitoring program based on theoretical maximum approach. Of these 12 wells, 5 could be estimated out to the 90% theoretical recoverable PSPH threshold. These wells should continue in the monitoring program and be considered for removal near the dates in **Table 2**. The remaining seven wells should remain in the monitoring program and should continue to be evaluated for decreasing recovery rates for PSPH over time.

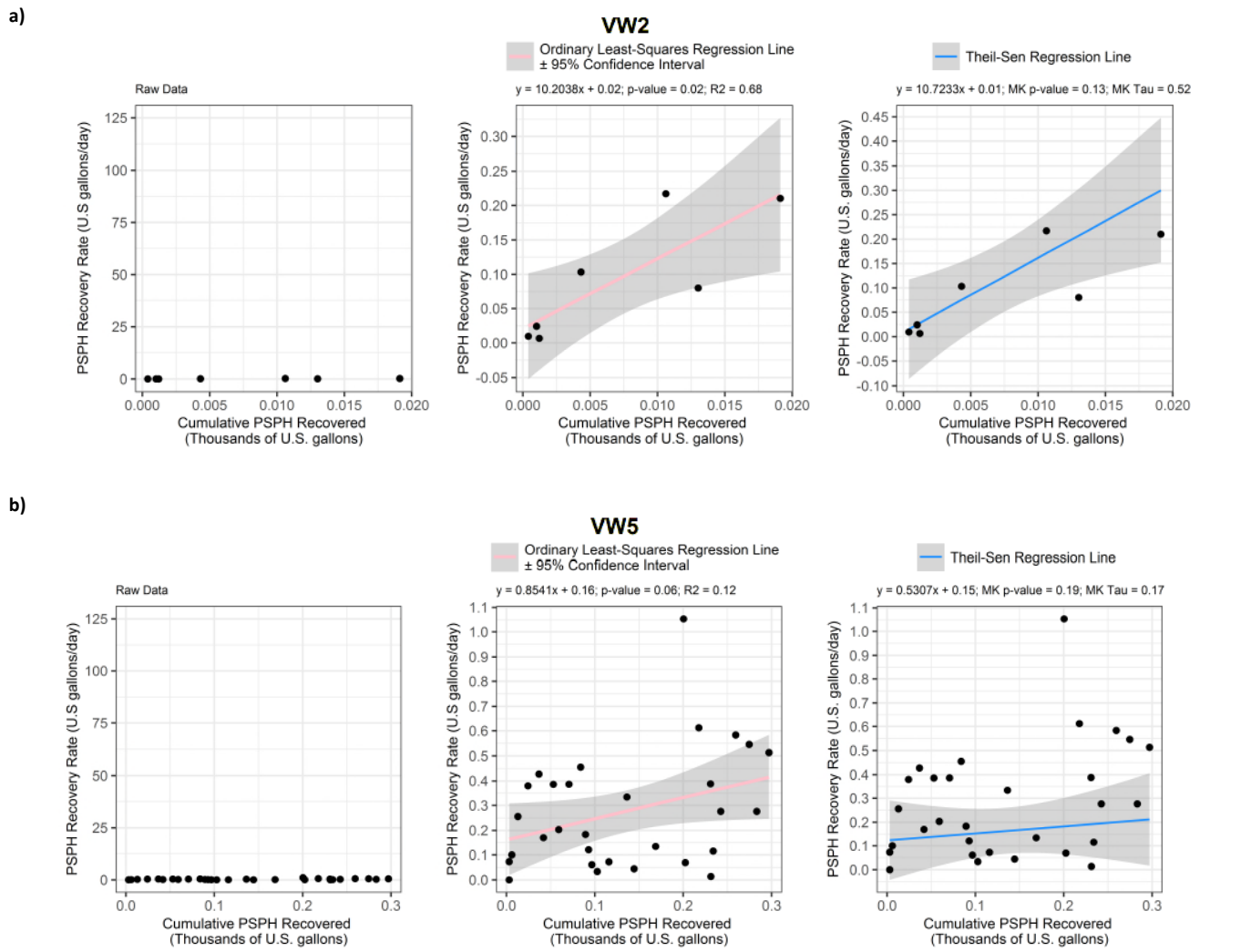
References

EHS Support. (2020). LNAPL CSM and Remedial Action Work Plan. St. Croix, U.S. Virgin Islands. Dated July 2020.

EHS Support. (2021) LNAPL CSM and Remedial Action Work Plan. St. Croix, U.S. Virgin Islands. Dated April 2021.

USEPA. (2009). Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance (EPA 350-R-09-007). April 2009.

Attachment A PSPH Recovery Rate and Cumulative Recovery Volume Plots



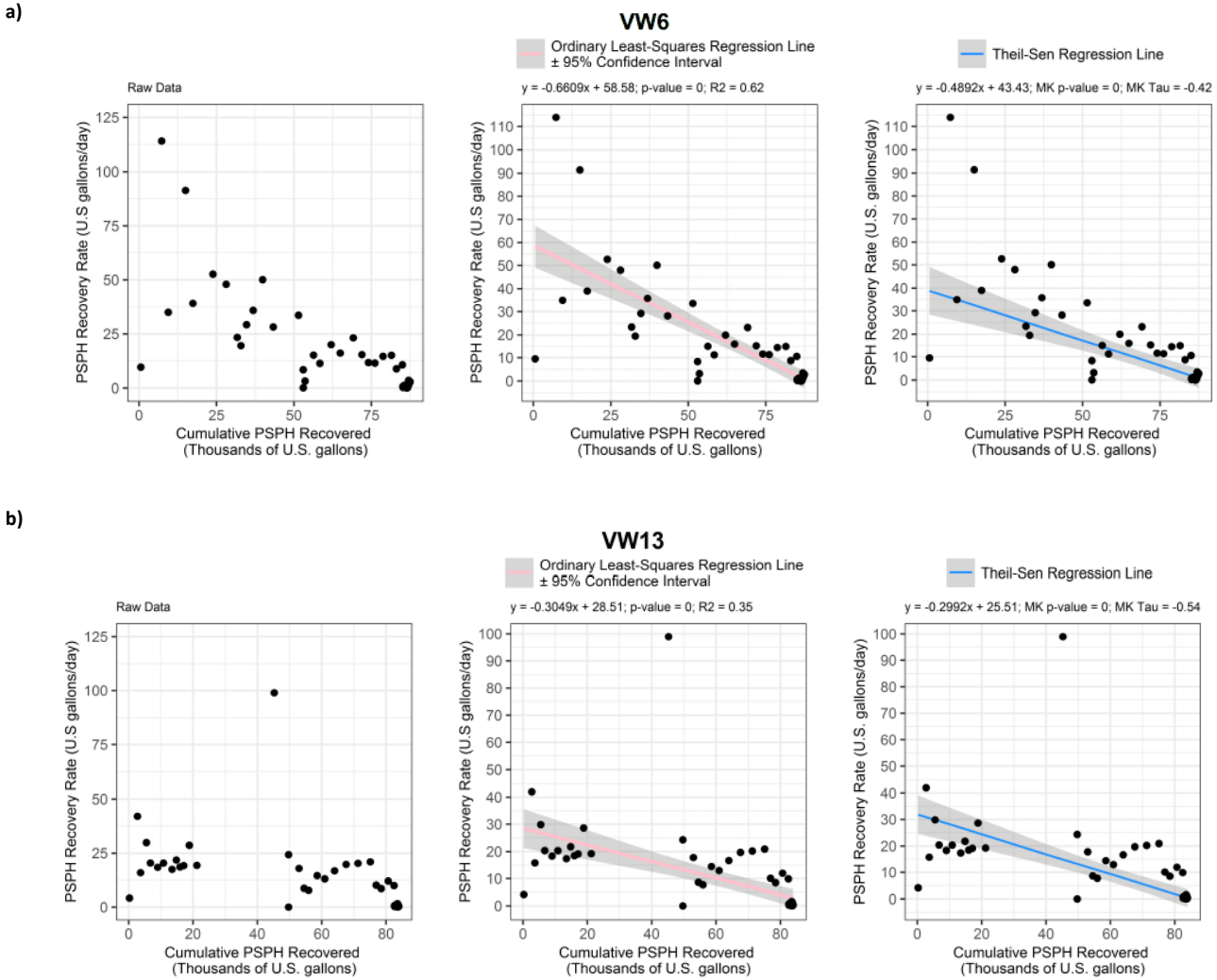
Analyses

- Raw Data
- Ordinary Least Squares
- Theil-Sen Regression

Recovery Wells VW2 & VW5
PSPH Recovery Rate vs Cumulative PSPH Volume Recovered
From February 1, 2002 to July 31, 2021

EHS Support

FIGURE A-1



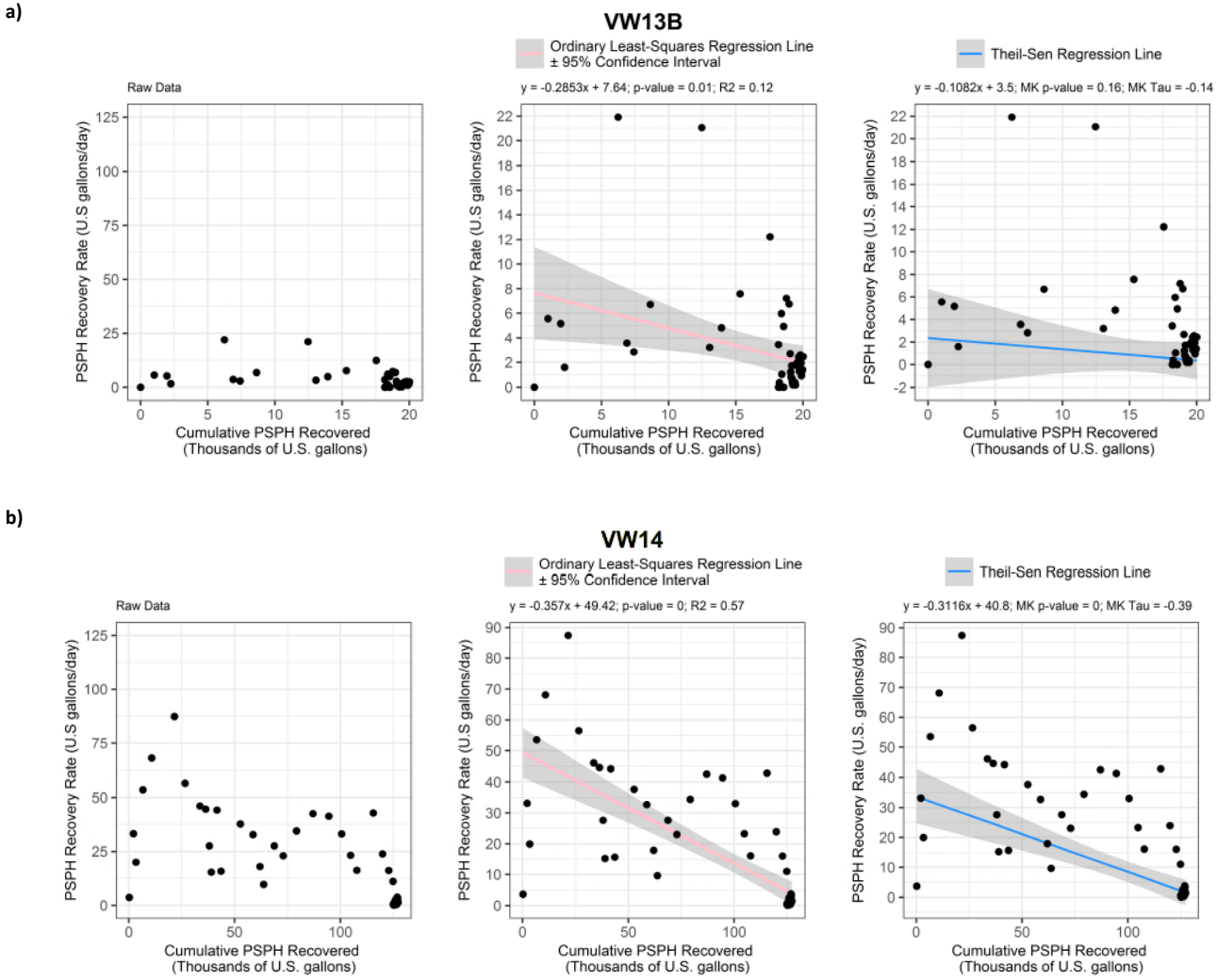
Analyses

- Raw Data
- Ordinary Least Squares
- Theil-Sen Regression

Recovery Wells VW 6 & VW13
PSPH Recovery Rate vs Cumulative PSPH Volume Recovered
From February 1, 2002 to July 31, 2021

EHS Support

FIGURE A-2



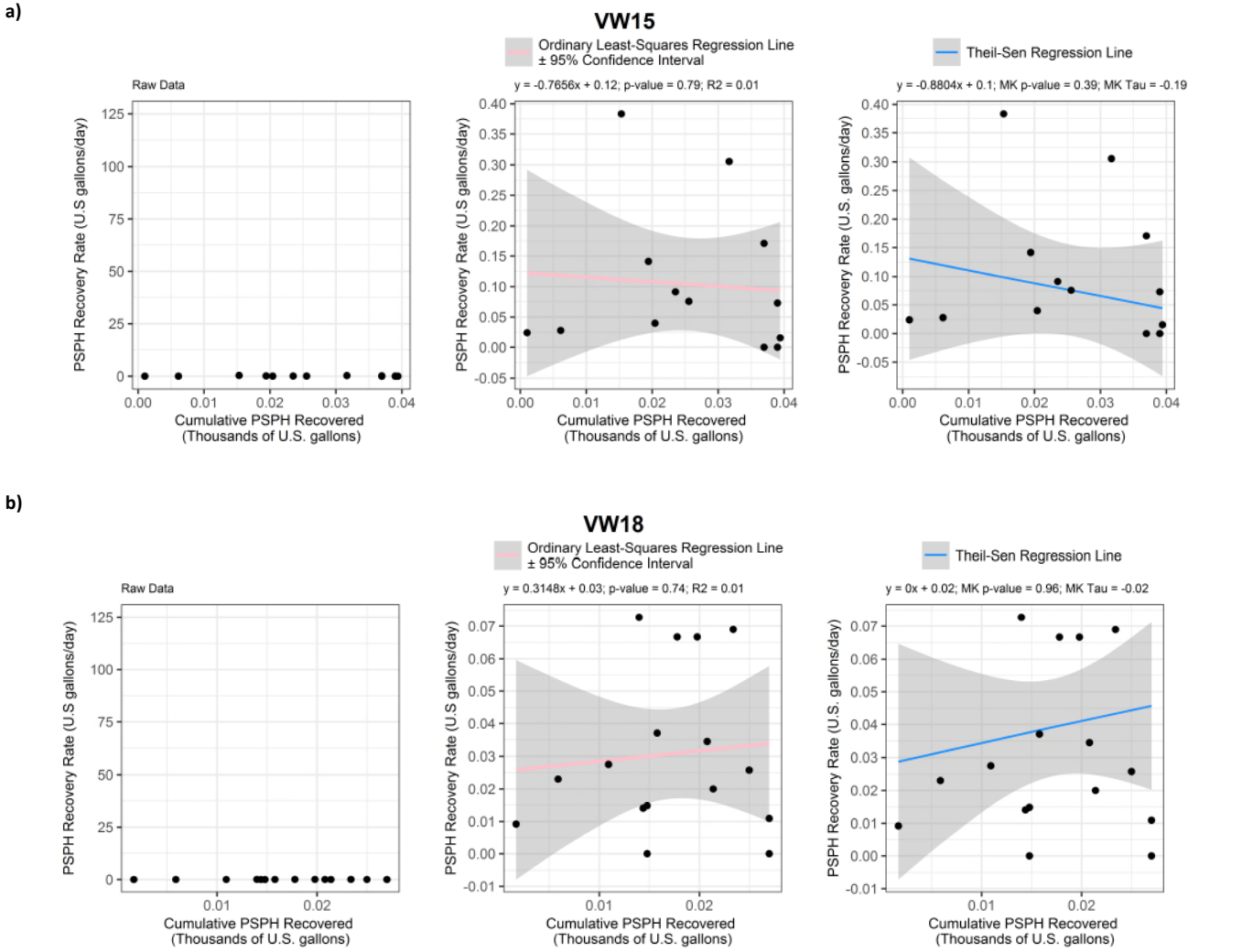
Analyses

- Raw Data
- Ordinary Least Squares
- Theil-Sen Regression

Recovery Wells VW13B & VW14
PSPH Recovery Rate vs Cumulative PSPH Volume Recovered
From February 1, 2002 to July 31, 2021

EHS Support

FIGURE A-3



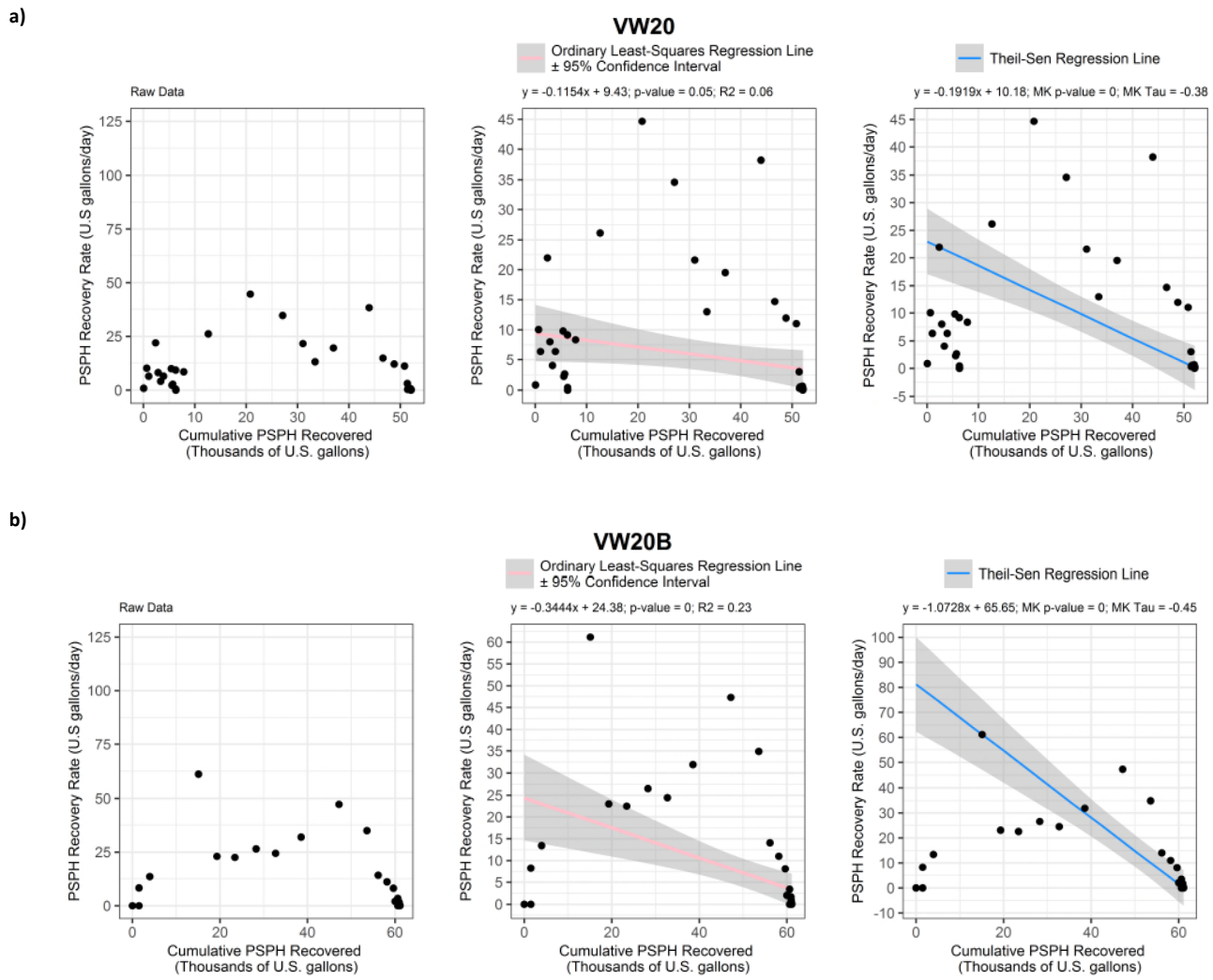
Analyses

- Raw Data
- Ordinary Least Squares
- Theil-Sen Regression

Recovery Wells VW15 & VW18
PSPH Recovery Rate vs Cumulative PSPH Volume Recovered
From February 1, 2002 to July 31, 2021

EHS Support

FIGURE A-4



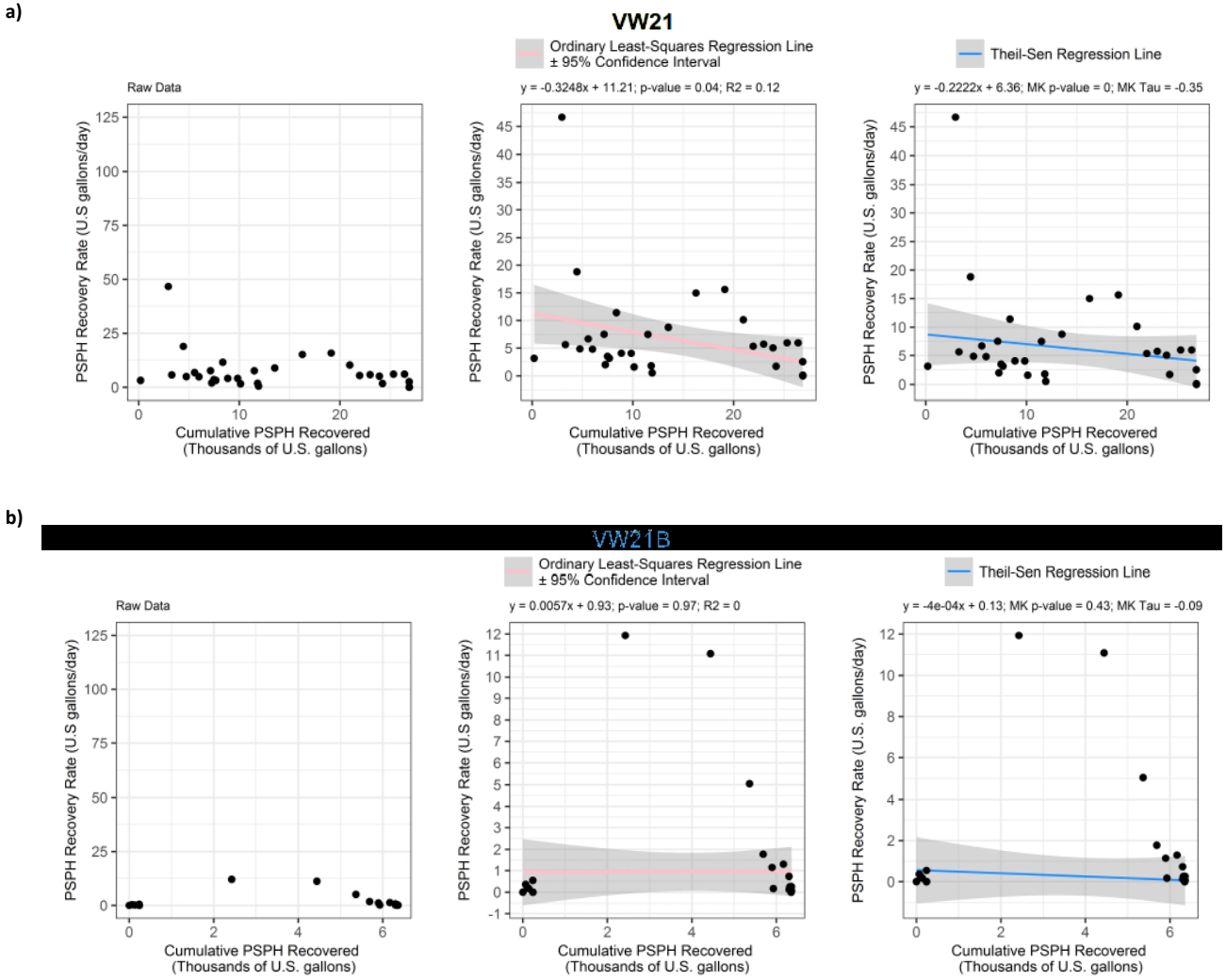
Analyses

- Raw Data
- Ordinary Least Squares
- Theil-Sen Regression

Recovery Wells VW20 & VW20B
PSPH Recovery Rate vs Cumulative
PSPH Volume Recovered
From February 1, 2002 to
July 31, 2021

EHS Support

FIGURE A-5



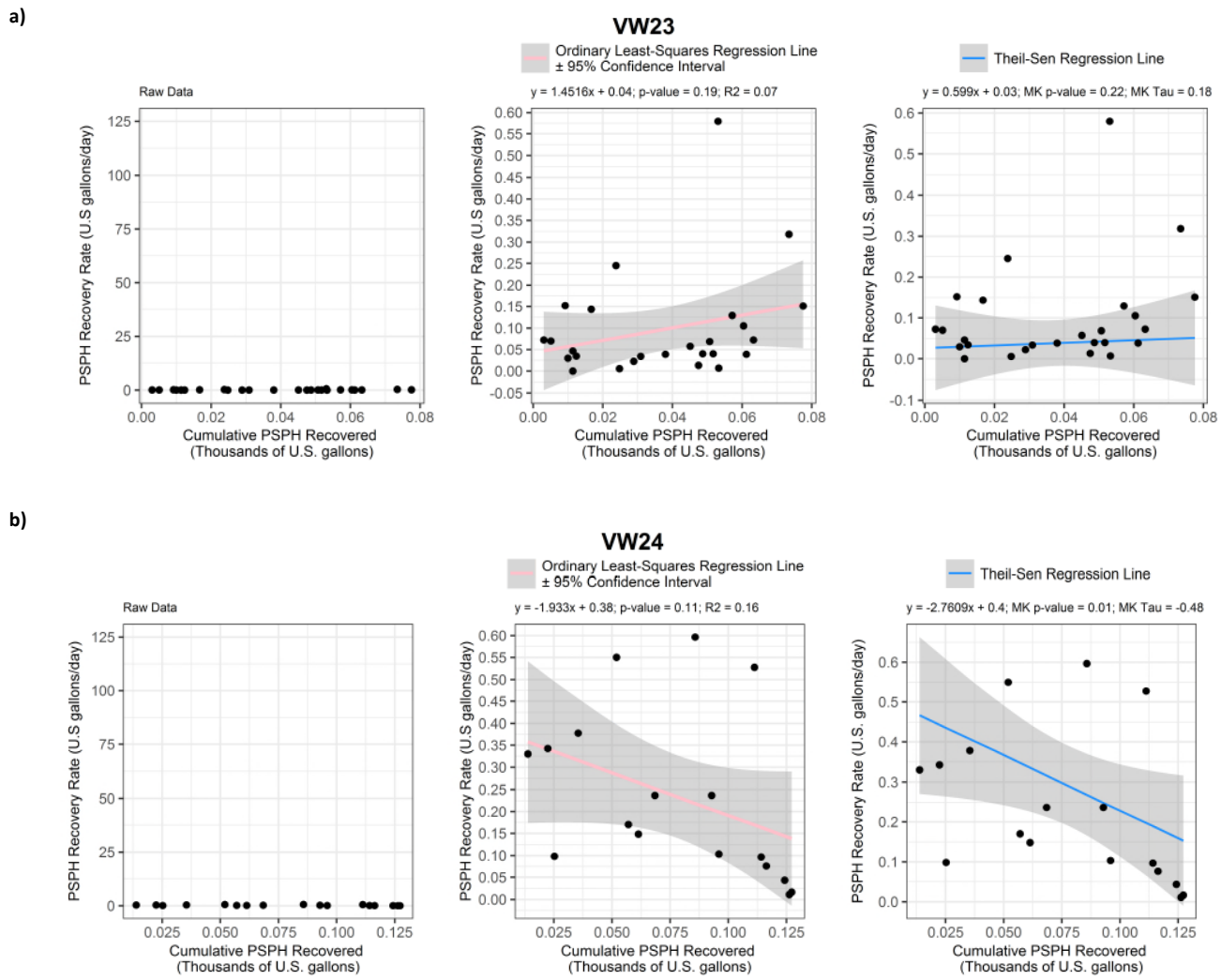
Analyses

- Raw Data
- Ordinary Least Squares
- Theil-Sen Regression

Recovery Well VW21 & VW21B
PSPH Recovery Rate vs Cumulative
PSPH Volume Recovered
From February 1, 2002 to
July 31, 2021

EHS Support

FIGURE A-6



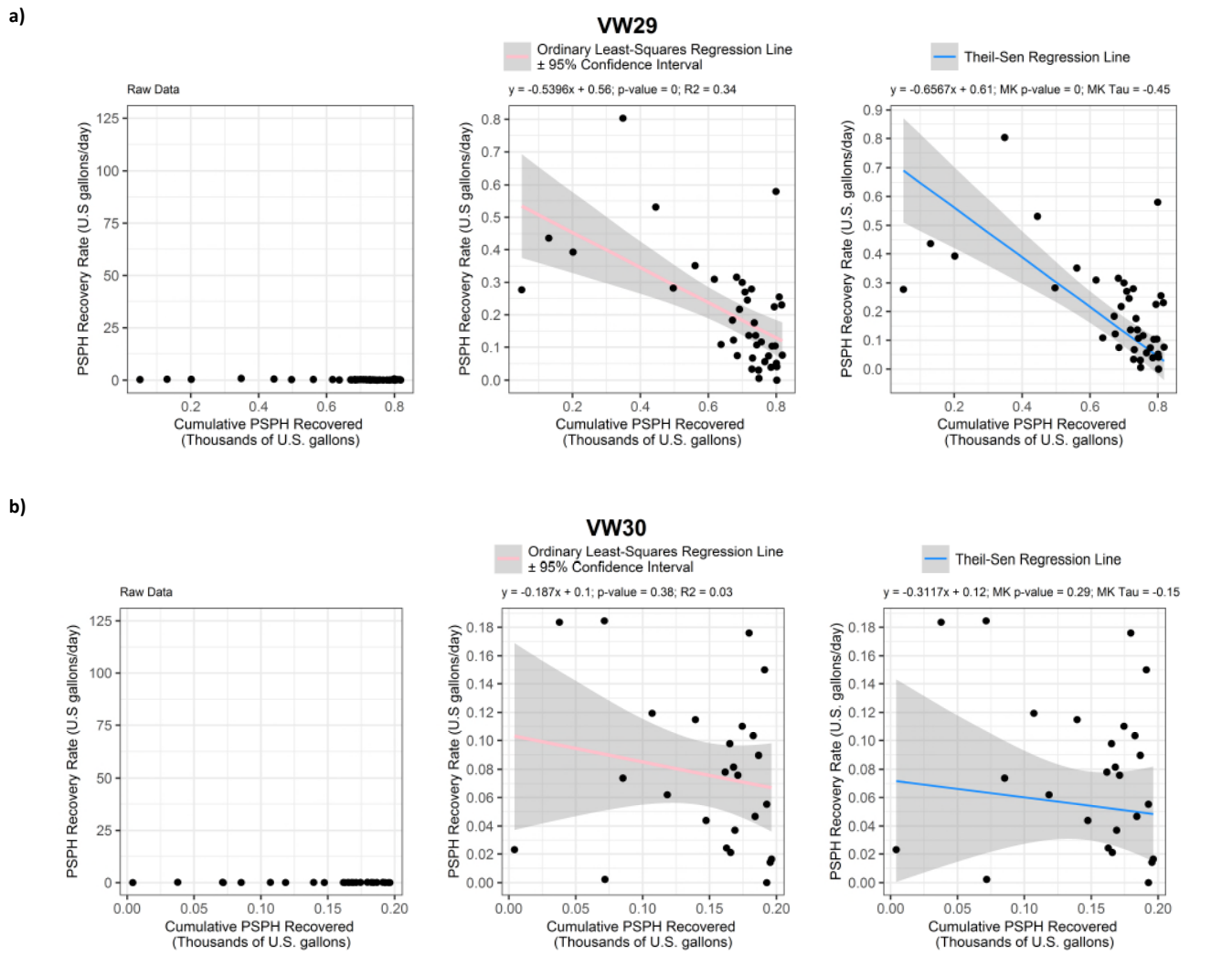
Analyses

- Raw Data
- Ordinary Least Squares
- Theil-Sen Regression

Recovery Wells VW23 & VW24
PSPH Recovery Rate vs Cumulative PSPH Volume Recovered
From February 1, 2002 to July 31, 2021

EHS Support

FIGURE A-7



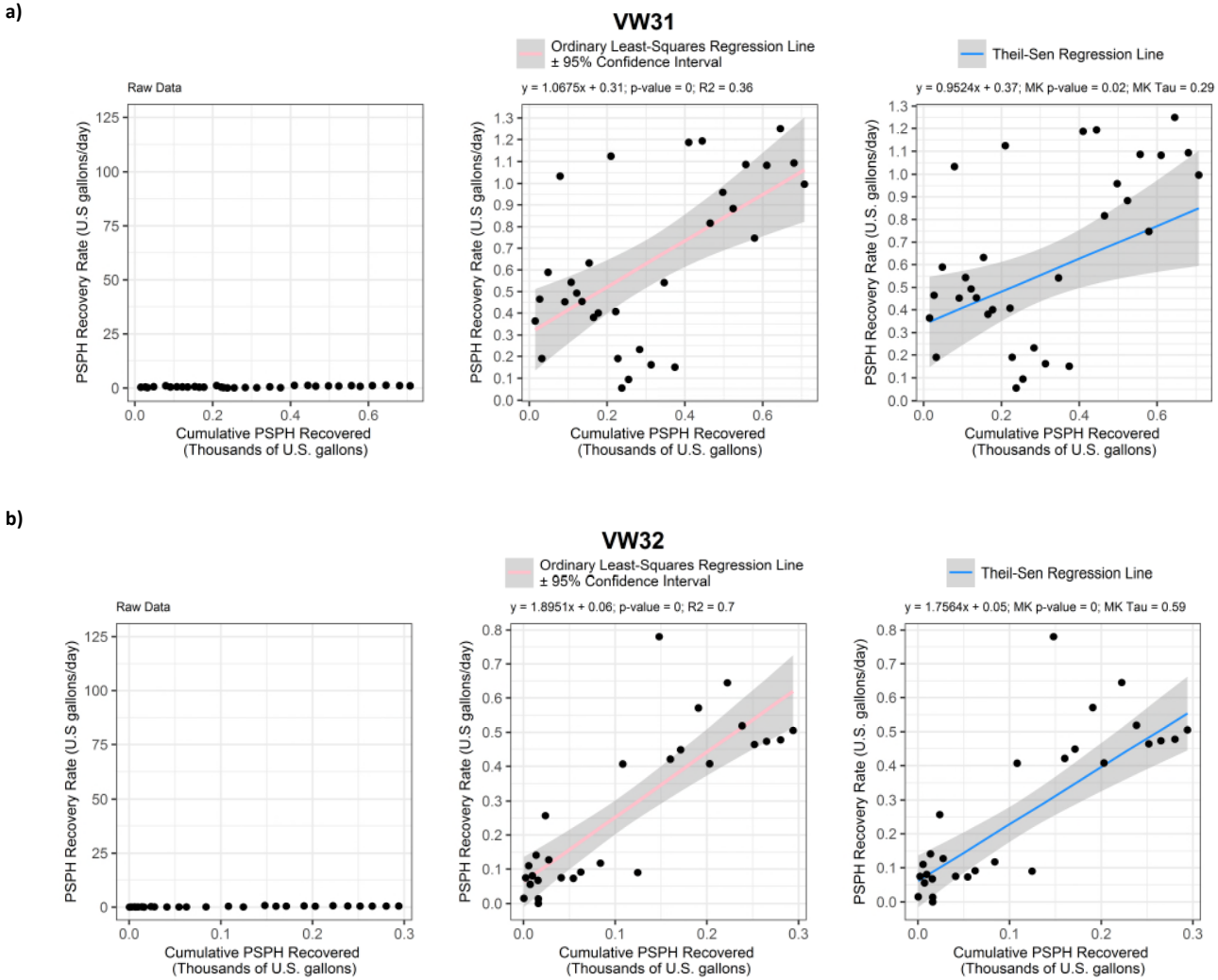
Analyses

- Raw Data
- Ordinary Least Squares
- Theil-Sen Regression

Recovery Well VW29 & VW30
PSPH Recovery Rate vs Cumulative PSPH Volume Recovered
From February 1, 2002 to July 31, 2021

EHS Support

FIGURE A-8



Analyses

- Raw Data
- Ordinary Least Squares
- Theil-Sen Regression

Recovery Wells VW31 & VW32
PSPH Recovery Rate vs Cumulative PSPH Volume Recovered
From February 1, 2002 to July 31, 2021

EHS Support

FIGURE A-9