NexGen
Energy Ltd.

Rook I Project

Environmental Impact Statement

TSD XVI: Tailings Geochemical Characterization Report

GOLDER
MEMBER OF WSP

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TAILINGS GEOCHEMICAL CHARACTERIZATION TECHNICAL SUPPORT DOCUMENT FOR THE ROOK I PROJECT

Prepared for:

NexGen Energy Ltd.

Prepared by:

Golder Associates Ltd.

March 2022

Executive Summary

NexGen Energy Ltd. (NexGen) is proposing to develop a new uranium mining and milling operation in northwestern Saskatchewan, called the Rook I Project (Project). The Project would include an underground mine and surface facilities to support the extraction and processing of uranium ore from the Arrow deposit. This technical support document to the Environmental Impact Statement details the geochemical characterization program of tailings, process wastes, binder, and cemented composite materials produced from pilot scale metallurgical testing of ore from the Arrow deposit.

The objectives of the geochemical characterization program were to:

- determine the geotechnical, geochemical, and radiological properties of tailings (neutralized leach residue), process wastes (gypsum precipitates and effluent precipitates), binder, and composite tailings materials; and
- evaluate the temporal geochemical and radiological leaching behavior of the individual and composite materials.

The characterization program was conducted for 17 different materials, including neutralized leach residue, process water, non-cemented process waste, binder, and cemented composite materials. The program was conducted using a range of standard and modified geotechnical, geochemical, and radiological test methods. The geochemical tests included a combination of static (one time) and kinetic (long-term) tests.

Key geotechnical findings from the characterization program are as follows:

- Neutralized leach residue and process waste samples are characterized by a higher hydraulic conductivity compared to cemented composite materials. The average leach residue and process waste hydraulic conductivity values are in the order of 10^{-07} m/s, and values for the cemented composite materials range from the order of 10^{-10} to 10^{-08} m/s.
- Composite materials with a high binder content are characterized by a hydraulic conductivity at least an order of magnitude lower than their corresponding low binder content materials.

Key geochemical findings from the characterization program are as follows:

- Neutralized leach residue consists mainly of acid-resistant minerals (e.g., quartz and aluminosilicates), and minerals detected in the gypsum precipitates and effluent precipitates are exclusively calcium sulphate minerals (e.g., gypsum and anhydrite). The mineralogy of the composite materials is representative of their individual components, with the addition of some carbonate and cementitious minerals (e.g., calcite and ettringite). No sulphide minerals were detected in the individual or composite materials.
- Neutralized leach residue and process waste samples are classified as potentially acid generating (PAG) due to their acidic pore water pH and low neutralization potential (NP). The composite materials generally contain an acid generation potential classification of uncertain or non-potentially acid generating (NPAG). High binder composite materials have a more basic paste pH due to the stored alkalinity in the material pore space from the addition of the cement binder.

- Leachable concentrations of major ions and dissolved metals are primarily driven by the mineralogical composition of the material. For example, leachable sulphate concentrations are highest in the effluent precipitate samples and aluminum concentrations are highest in the composite samples. Leachable dissolved metal concentrations are also influenced by the material pore water pH. For example, leachable lead concentrations are highest in the neutralized leach residue samples, which have an acidic pore water pH.
- The pore water pH of the composite materials is alkaline and generally remains alkaline for at least five pore volume replacements. Leachate pH values are influenced primarily by the amount of binder in the material, rather than the type of binder used. Leachable metal concentrations are also greatest when they are initially flushed and decrease as a function of pore volume replacement.
- Diffusive mass flux rates of all composite materials are highest during the initial leaching period and are generally two orders of magnitude greater than long-term mass flux rates. Diffusivity values for the composite materials vary over time according to the leach period and the remaining leachable concentration of the constituent.

Key radiological findings from the characterization program are as follows:

- The highest radioactivity values are measured in the composite samples with a low binder content. Radioactivity values from the short-term leach test indicate that some radioactivity is mobilized during the leaching event.
- Radionuclide species with the highest leachable concentrations in all samples are radium-226 and lead-210. The neutralized leach residue samples contain the highest leachable radionuclide concentrations.
- Leaching of radioactive species from the gypsum precipitates and effluent precipitates is lower compared to the neutralized leach residue and composite materials. Leachable concentrations of radionuclide species are also affected by binder content, where lead-210 concentrations are generally higher in the high binder samples and radium-226 concentrations are generally higher in the low binder samples.

Results from the characterization program were used in the consideration of management alternatives for tailings and process wastes, including the design of underground tailings and process waste disposal facilities. Results were also used in the development of geochemical source terms for selected disposal strategies. This geochemical characterization study ultimately supports the effects assessment for hydrogeology (EIS Section 8, Hydrogeology).

Abbreviations and Units of Measure

Abbreviation	Definition
1-D	one dimensional
3-D	three dimensional
ABA	acid base accounting
AP	acid potential
ASTM	American Society for Testing and Materials
$CaCO_3$	calcium carbonate
CPB	cemented paste backfill
CPT	cemented paste tailings
Golder	Golder Associates Ltd.
HCT	humidity cell test
HGNLR	high-grade neutralized leach residue
HUGP	high-uranium gypsum precipitates
LEAF	Leaching Environmental Assessment Framework
LUGP	low-uranium gypsum precipitates
MEND	Mine Environment Neutral Drainage
MGNLR	medium-grade neutralized leach residue
MTP	modified triaxial permeability
NexGen	NexGen Energy Ltd.
NPAG	non-potentially acid generating
NP	neutralization potential
NPR	neutralization potential ratio
OPC	ordinary Portland cement
PAG	potentially acid generating
Project	Rook I Project
QA/QC	quality assurance and quality control
SFE	shake flask extraction
SRC	Saskatchewan Research Council
TIC	total inorganic carbon
XRD	X-Ray Diffraction

Unit	Definition
%	percent
±	plus or minus
°C	degrees Celsius
µm	micron
Bq	becquerel
Bq/g	becquerels per gram
Bq/L	becquerels per litre
cm	centimetre
cm^3	cubic centimetre
g	gram
h	hour
kg	kilogram
kV	kilovolt

Unit	Definition
L	litre
m	metre
m/s	metres per second
m^2	square metre
m^2/s	square metres per second
meq/L	milliequivalents per litre
mg	milligram
mg/kg/wk	milligrams per kilogram per week
mg/L	milligrams per litre
mg/m^2/s	milligrams per square metre per second
mL	millilitre
mL/cm^3	millilitres per cubic centimetre
nA	nano ampere
s	second
t	tonne
wk	week
wt.%	weight percent

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1 INTRODUCTION

NexGen Energy Ltd. (NexGen) is proposing to develop a new uranium mining and milling operation in northwestern Saskatchewan, called the Rook I Project (Project). The Project would be located approximately 40 km east of the Saskatchewan-Alberta border, 130 km north of the town of La Loche, and 640 km northwest of the city of Saskatoon (Figure 1-1). The Project would reside within Treaty 8 territory and the Métis Homeland. At a regional scale, the Project would be situated within the southern Athabasca Basin adjacent to Patterson Lake, along the upper Clearwater River system. Patterson Lake is at the interface of the Boreal Shield and Boreal Plain ecozones. Access to the Project would be from an existing road off Highway 955 (Figure 1-2), with on-site worker accommodation serviced by fly-in/fly-out access.

The Project would include the following key facilities to support the extraction and processing of uranium from the Arrow deposit for transportation off site (Figure 1-3):

- underground mine development;
- process plant buildings, including uranium concentrate packaging facilities;
- paste tailings distribution system;
- underground tailings management facility;
- potentially acid generating (PAG) waste rock storage area;
- non-potentially acid generating (NPAG) waste rock storage area;
- special waste rock[1] and ore storage stockpiles;
- surface and underground water management infrastructure, including water management ponds, effluent treatment plant, and sewage treatment plant;
- conventional waste management facilities and fuel storage facilities;
- ancillary infrastructure, including maintenance shop, warehouse, administration building, and camp;
- airstrip and associated infrastructure; and
- access road to Project and site roads.

Environmental baseline studies have been undertaken to gather information on the current conditions for the biophysical, cultural, and socio-economic environment around and in relation to the Project. These include air quality, acoustic and light, geology and soils, hydrogeology, hydrology, surface water quality, aquatic resources, vegetation, wildlife, cultural studies, and socio-economic factors.

This technical support document to the Environmental Impact Statement details the geochemical characterization program of tailings, process wastes, binder and composite materials from pilot scale metallurgical testing of ore from the Arrow deposit. Results from the geochemical characterization program were used in the development of predictive geochemical source terms for selected disposal strategies, which is reported in a separate Technical Support Document (TSD XVI, Tailings Source Term Derivation Report). The geochemical characterization program specifically supports the effects assessment for the hydrogeology component (EIS Section 8).

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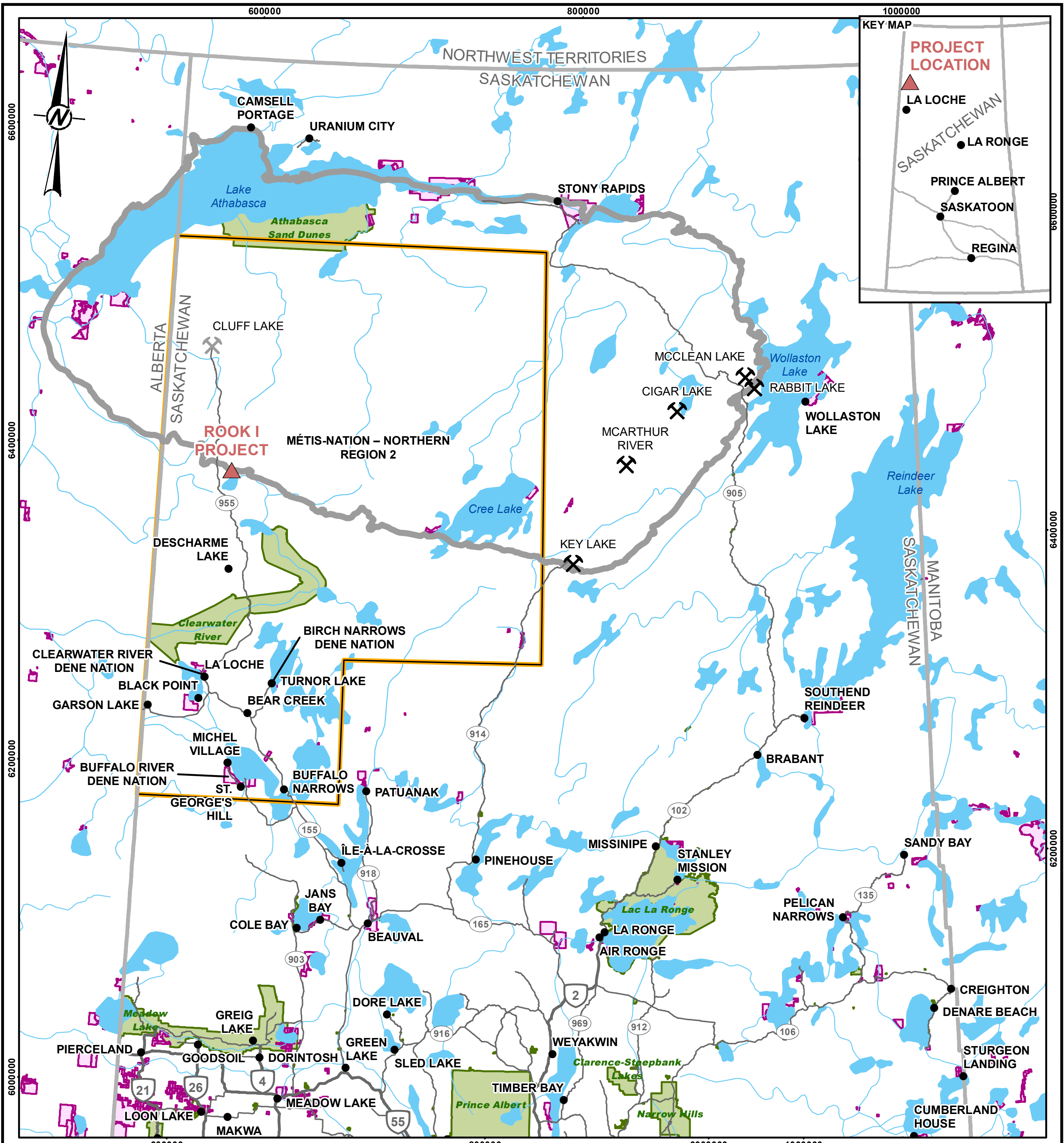
[1] Special waste rock is mine rock that is mineralized with insufficient grade to be considered ore (i.e., greater than 0.03% of triuranium octoxide [U_3O_8] and less than 0.26% U_3O_8). All special waste would be temporarily stored in the special waste rock stockpile.



LEGEND

- ● POPULATED PLACE
- ⚒ URANIUM MINING FACILITY (ACTIVE)
- ⚒ URANIUM MINING FACILITY (DECOMMISSIONED)
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- ATHABASCA BASIN BOUNDARY
- ▭ INDIAN RESERVE
- 🟩 PROVINCIAL PARKS
- 🟦 WATERBODY
- ▲ PROJECT LOCATION
- 🟧 MÉTIS NATION-SASKATCHEWAN NORTHERN REGION 2

0 100 200

1:3,500,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
2. PARKS OBTAINED FROM IHS MARKIT CANADA ULC.

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

LOCATION OF THE ROOK I PROJECT

CONSULTANT

GOLDER MEMBER OF WSP

PROJECT		20144150	PHASE 3314 - 6
DESIGN	JMC	2022-02-28	SCALE AS SHOWN REV. 0
GIS	NO	2022-02-28	**FIGURE 1-1**
CHECK	JMC	2022-02-28	
REVIEW	MM	2022-02-28	

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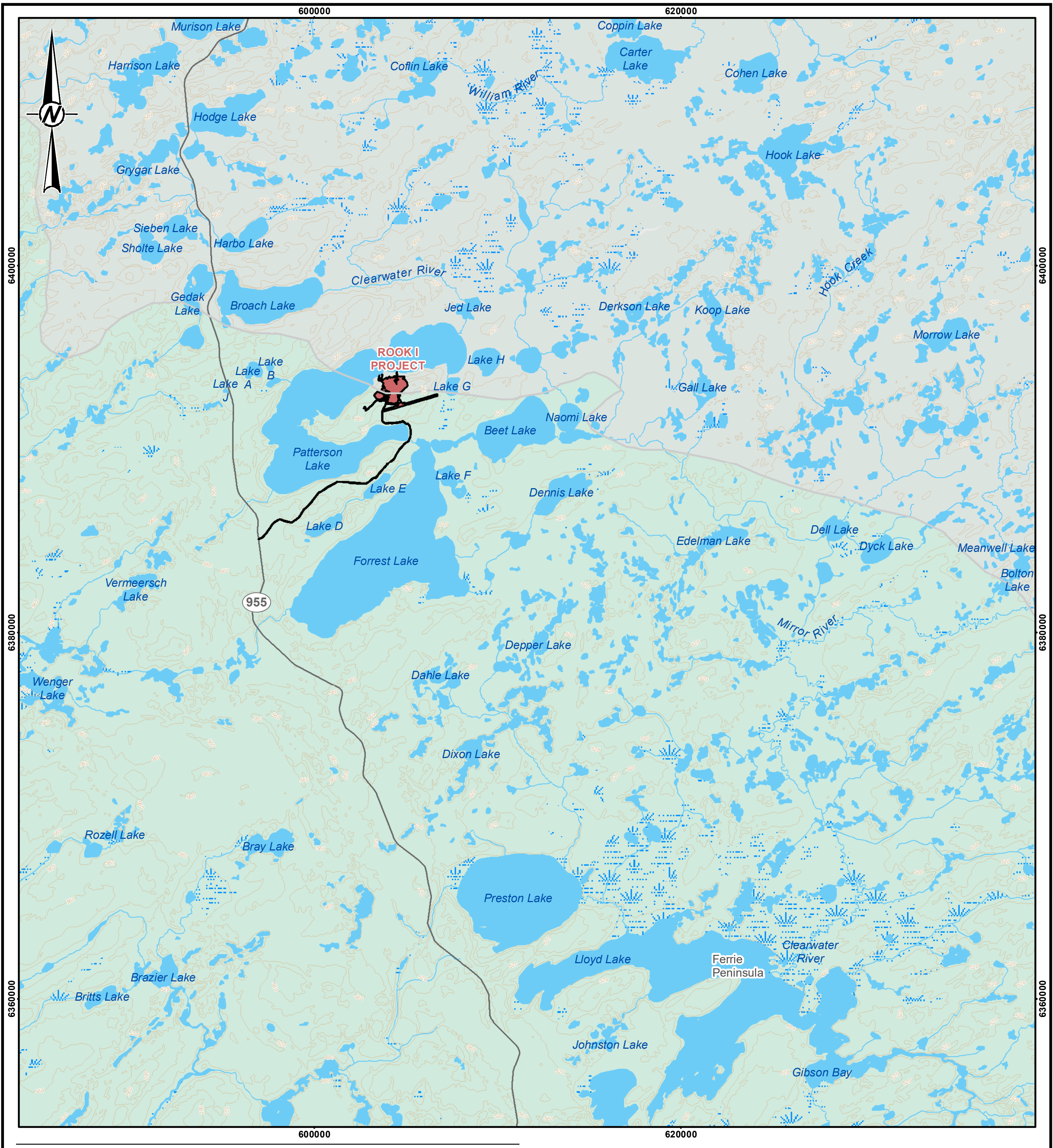

LEGEND

—	ELEVATION CONTOUR (20 m INTERVAL)
—	SECONDARY HIGHWAY
—	WATERCOURSE
▭	ATHABASCA BASIN
🟦	WATERBODY
⋯	WETLAND
▭	WOODED AREA
🟥	PROPOSED PROJECT FOOTPRINT

REFERENCE(S)
1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT
NexGen Energy Ltd.

ROOK I PROJECT

TITLE

REGIONAL AREA OF THE ROOK I PROJECT

CONSULTANT
GOLDER MEMBER OF WSP

PROJECT		20144150	PHASE	3314 - 6
DESIGN	JMC	2022-02-28	SCALE AS SHOWN	REV. 0
GIS	NO	2022-02-28	**FIGURE 1-2**	
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REVIEW	MM	2022-02-28		

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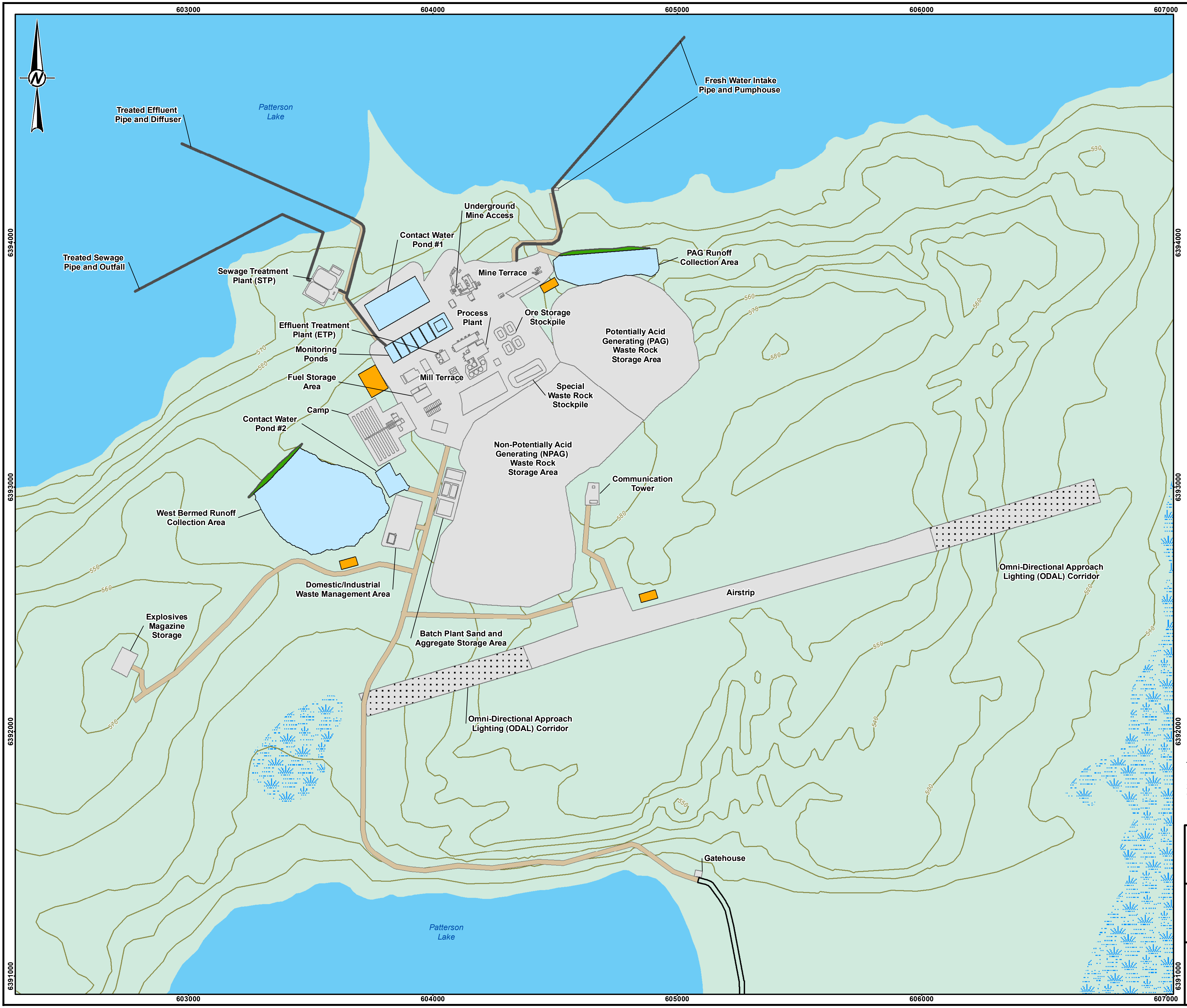

LEGEND

- ELEVATION CONTOUR (10 m INTERVAL)
- 🟦 WATERBODY
- WETLAND
- 🟩 WOODED AREA
- INTAKE OR DISCHARGE PIPE
- ☐ ACCESS ROAD
- 🟩 CONTACT WATER CONTAINMENT BERM
- ▨ OMNI-DIRECTIONAL APPROACH LIGHTING (ODAL) CORRIDOR
- ⬜ PROJECT INFRASTRUCTURE
- 🟫 SITE ROAD
- 🟧 TOPSOIL STORAGE AREA
- 🟦 WATER MANAGEMENT POND

0 0.5 1

1:15,500 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021 AND UPDATED JUNE 8, 2021 .
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.

PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

LAYOUT OF INFRASTRUCTURE AND FACILITIES FOR THE ROOK I PROJECT

CONSULTANT

GOLDER MEMBER OF WSP

PROJECT		20144150	PHASE	3314 - 6
DESIGN	JV	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2022-03-18	FIGURE 1-3	
CHECK	JMC	2022-03-18		
REVIEW	MM	2022-03-18		

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2 STUDY OBJECTIVES

The characterization program of tailings, process wastes, binder and cemented composite materials was conducted using a range of standard and modified geotechnical, geochemical, and radiological test methods.

The objectives of the characterization program were as follows:

- determine the geotechnical, geochemical, and radiological properties of individual and cemented composite tailings materials, process wastes and binders; and
- evaluate the temporal geochemical and radiological leaching behavior of the materials.

Results from the characterization program were used in the following Project components:

- consideration of management alternatives for tailings and process wastes, including the design of underground tailings and process waste disposal facilities; and
- development of geochemical source terms for the underground disposal of tailings and process wastes at the Project site.

3 CHARACTERIZATION PROGRAM

3.1 Approach

The characterization program began in 2019 and evolved with the Project design. Initially, a wide range of tailings and process waste samples were produced and characterized to allow for optimal flexibility during Project development. As the Project design progressed, the characterization program focused more strongly on the tailings and process waste materials that were most representative of the final waste management strategy and disposal facility design.

Results from the program were used to develop a range of composite materials that were later refined to represent the two general types of backfill materials described in the current mine plan. These backfill materials include cemented paste backfill (CPB) and cemented paste tailings (CPT). The CPB will consist of a mixture of neutralized leach residue, water, and binder and will be used to backfill the primary and secondary mine stopes. The CPB would contain different proportions of neutralized leach residue, water, and binder to achieve various targeted geotechnical strengths. The CPT would contain neutralized leach residue, water, process wastes, and binder and will be deposited in the underground tailings management facility chambers that have lower geotechnical strength requirements.

The selection of geotechnical, geochemical, and radiological test methods also evolved with the Project design and was adjusted to represent key mass transfer mechanisms associated with the disposal of CPB and CPT in an underground environment.

3.2 Sources and Description of Tailings and Process Waste Samples

All tailings and process waste samples, including composite samples, were prepared by the Saskatchewan Research Council (SRC) Analytical Laboratories. A metallurgical test program was conducted in 2018 and 2019 by the SRC using drill core samples from the Arrow deposit (NexGen 2021). The program included a bench test program, a pilot plant program, and paste backfill testing. The paste backfill testing program was conducted at SRC in 2019 under the supervision of Paterson & Cooke. The paste backfill program included geotechnical and geochemical tests to characterize material properties of the tailings and process waste streams to design backfill CPT recipes. A detailed description of the metallurgical test program and associated results is provided by NexGen (2021).

The tailings and process waste materials produced from the metallurgical test program included the following:

- neutralized leach residue produced from processed high- and medium-grade triuranium octoxide (U_3O_8) drill core samples;
- gypsum precipitates (high and low uranium versions), produced as a product of solvent extraction pilot;
- effluent precipitates from the effluent treatment pilot plant, consisting of a mixture of both first- and second-stage precipitate filter cake;
- cement binder consisting of either ordinary Portland cement (OPC) or a 1:1 OPC and cement slag mixture; and
- process water associated with the high-grade and medium-grade neutralized leach residues.

These individual materials were used in the paste backfill testing program to produce composite materials to prove suitability of neutralized leach residue for paste production and to develop composite material designs. The targeted proportions of the various composite samples for the characterization program are summarized in Table 3-1. The composite sample recipes are equivalent for the samples used in the static geochemical tests and kinetic geochemical tests. A total of eight composite samples that were cured for 28 days were developed for the characterization program and four sample cylinders were produced per sample type.

Table 3-1: Mix Blend Ratios for Composite Samples

Sample Number	High Grade Neutralized Leach Residue (%)	Gypsum (%)	Precipitates (%)	OPC (%)	Slag (%)	Water (%)
1	57.5	0	0	2.5	0	40
2	44	0	0	16	0	40
3	57.5	0	0	1.25	1.25	40
4	44	0	0	8	8	40
5	41	0	16.5	2.5	0	40
6	31.4	0	12.6	16	0	40
7	30.9	14.2	12.4	2.5	0	40
8	23.7	10.9	9.5	16	0	40

OPC = ordinary Portland cement.

A description of the individual and composite materials included in the characterization program is provided in Table 3-2. Sample identifiers presented in Table 3-2 are used throughout the remainder of the text. Four replicate samples were analyzed for all materials, except the OPC and OPC / slag binder samples, where only one sample was analyzed for each. The geochemical analytical testing was completed by the SRC, while geotechnical and selected geochemical tests were conducted by SNC-Lavalin in Saskatoon.

Table 3-2: Materials Included in the Characterization Program

Sample Number	Sample ID	Sample Composition	Sample Type	Sample Description
n/a	MGNLR	Individual material	Neutralized leach residue tailings	Medium-grade neutralized leach residue
	HGNLR			High-grade neutralized leach residue
	MG-PW		Process water	Process water produced from medium-grade neutralized leach residue
	HG-PW			Process water produced from high-grade neutralized leach residue
	LUGP		Non-cemented process waste	Low-uranium gypsum precipitate containing <300 ppm uranium
	HUGP			High-uranium gypsum precipitate containing >300 ppm uranium
	MPPT			Effluent precipitates (mixture of first- and second-stage precipitate filter cake)
	OPC		Reagent	Binder material consisting of OPC
	OPC/SLAG			Binder material consisting of a 1:1 (w/w) OPC and slag mixture
1	HLC	Composite material	CPB	High-grade neutralized leach residue with a low OPC binder content
2	HHC			High-grade neutralized leach residue with a high OPC binder content
3	HLC-S			High-grade neutralized leach residue with a low OPC / slag binder content
4	HHC-S			High-grade neutralized leach residue with a high OPC / slag binder content
5	HPLC		CPT	High-grade neutralized leach residue and effluent precipitates with a low OPC binder content
6	HPHC			High-grade neutralized leach residue and effluent precipitates with a high OPC binder content
7	HHGPLC			High-grade neutralized leach residue, high-uranium gypsum precipitates and effluent precipitates with a low OPC binder content
8	HHGPHC			High-grade neutralized leach residue, high-uranium gypsum precipitates and effluent precipitates with a high OPC binder content

>= greater than; <= less than; n/a = not applicable; ppm = parts per million; OPC = ordinary Portland cement; CPB = cemented paste backfill; CPT = cemented paste tailings; w/w = weight per unit weight.

4 METHODS

The selection of geotechnical, geochemical, and radiological test methods varied as the Project design evolved. The selected test methods aimed to provide relevant geotechnical, geochemical and radiological properties of a range of waste materials to support material design and selection, to support the design of waste management facilities and to support the development of geochemical source terms.

The selected test methods focus on those material properties that specifically influences the mobilization of contaminants from the waste materials. Furthermore, the material properties were further used in the development specialized kinetic tests aimed at empirical measurement of key mass transfer rates used on the geochemical source terms.

4.1 Geotechnical Testing

Geotechnical test methods were chosen to provide physical properties of materials that determines the pore water volume of material and the rate at which water can move through the waste material. Table 4-1 provides a description of the selected geotechnical test methods and Table 4-2 summarizes testing completed for each of the individual and composite materials. The American Society for Testing and Materials (ASTM) methods used for the geotechnical tests are referenced at the end of this document.

Table 4-1: Geotechnical Test Description and Methods

Test	Purpose	Method
Specific Gravity	Determine the ratio of solid particle unit weight to the unit weight of water. Values used in calculations of void ratios, degree of saturation, and material density. Material density used in calculation of mass loading rates from short-term leach tests and kinetic tests.	ASTM D854-14 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer
Particle Size Distribution	Quantitative determination of the distribution of particle size of the fine-grained portion of soils. Particle size distribution was used to evaluate the reactivity of materials (<2 mm fraction) and the specific reactive surface area of the material.	ASTM D7928-12 Standard Test Method for Particle Size Distribution of Fine-Grained Soils using the sedimentation (hydrometer) analysis
Porosity	Measurement of the volume of open space within a material. The porosity of the materials was used in the development of the modified triaxial permeability tests to define pore water volumes.	Calculated value
Moisture Content	Determination of the water content by mass of material. The moisture content of the material was used to evaluate the potential for each material to store water in its pore space.	ASTM D2216-10 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
Consolidation	Determination of consolidation in gypsum precipitates. The consolidation testing was used to evaluate the potential for the cemented paste tailings and process wastes to undergo differential settlement and cause cracking and/or fracturing	ASTM D2435 Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading
Triaxial Permeability Test	Measurement of hydraulic conductivity of water-saturated porous materials. The hydraulic conductivity of the materials determines the rate of water movement through the material and was used in the development of the modified triaxial permeability tests and the groundwater solute transport model.	ASTM D5084 Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

< = less than; ASTM = American Society for Testing and Materials.

Table 4-2: Geotechnical Testing Completed for Individual and Composite Waste Samples

Sample ID	Specific Gravity	Particle Size Distribution	Moisture Content	Porosity	Consolidation	Triaxial Permeability Test
MGNLR	✓	✓	✓	×	×	✓
HGNLR	✓	✓	✓	×	×	✓
LUGP	✓	×	✓	×	✓	✓
HUGP	✓	×	✓	×	✓	✓
MPPT	✓	×	✓	×	×	✓
OPC	✓	×	×	×	×	×
OPC / SLAG	✓	×	×	×	×	×
HLC	×	×	✓	✓	×	✓
HHC	×	×	✓	✓	×	✓
HPLC	×	×	✓	✓	×	✓
HPHC	×	×	✓	✓	×	✓
HHGPLC	✓	×	✓	✓	×	✓
HHGPHC	×	×	✓	✓	×	✓
HLC-S	×	×	✓	✓	×	✓
HHC-S	×	×	✓	✓	×	✓

✓ = yes; × = no.

4.2 Geochemical Testing

The selected geochemical tests consisted of a series of static and kinetic tests. Static tests are designed to assess the general physical and geochemical characteristics of a material, whereas kinetic tests are designed to evaluate mineral reactivity over time. Most of the geochemical tests conducted for the characterization program are standard tests that are typically employed in geochemical characterization programs (MEND 2009; INAP 2009). In some cases, the tests were modified to better reflect Project-specific conditions. For example, modified triaxial permeability (MTP) tests were conducted to better understand leachate chemistry of the cemented materials that could not undergo a traditional humidity cell test (HCT) due to their low hydraulic conductivity. The shake flask extraction (SFE), MTP, and Leaching Environmental Assessment Framework (LEAF) tests were directly used in the source term calculations for the underground disposal of tailings (TSD XV)

The static and kinetic tests conducted as part of the characterization program are summarized in Table 4-3, and detailed descriptions are provided for selected tests in subsequent subsections. The acid base accounting (ABA) methods are described in further detail in the subsequent subsection due to the detailed nature of the test. The MTP and LEAF tests are also described in further detail in subsequent subsections to elaborate on these non-standard testing procedures for source term development. The individual and composite materials analyzed for each static and kinetic test are summarized in Table 4-4.

The SFE leachate results were analyzed to identify soluble metals that could be readily leached from the test materials. The results were also compared to bulk metal concentrations to identify constituents that required further consideration as part of the characterization program and source term development.

Sulphide-sulphur and neutralization potential depletion calculations were also completed for the HCTs to assess mineral weathering rates within the neutralized leach residue material. The calculations were completed under the assumption that sulphate, calcium, and magnesium concentration trends are a direct result of sulphide oxidation and carbonate mineral neutralization.

Table 4-3: Geochemical Test Descriptions and Methods

Test	Type	Purpose	Method
Mineralogy	Static	Identify potential mineral sources of acid generation, acid neutralization, and metal leaching.	Quantitative Evaluation of Minerals by Scanning Electron Microscopy for the gypsum precipitates. Operating conditions were set to 15 kV and 10 nA beam current and data were collected in Particle Mineral Analysis mode with 5 µm point spacing. Quantitative Rietveld XRD for all other samples. Samples were irradiated with copper K(alpha) radiation (λ=1.54056Å).
ABA	Static	Develop estimates of the potential for acid generation based on the balance between acid producing and acid neutralizing minerals.	Detailed in Section 4.2.1, Acid Base Accounting.
Bulk metals	Static	Determine the total amount of metals in the solid phase of samples.	Aqua regia digestion with ICP-MS analysis.
Whole rock oxides	Static	Determine the concentrations of major oxide species.	X-Ray fluorescence lithium metaborate fusion.
SFE	Static	Develop initial estimates of metal leaching from a crushed sample when mixed in distilled water.	MEND 2009 Manual with a 3:1 liquid to solid ratio. Cations determined by ICP-MS analysis.
Process Water Quality	Static	Determine quality of process water produced from high-grade and medium-grade neutralized leach residue.	Cations determined by ICP-MS analysis.
MTP test	Kinetic	Evaluate pore water quality evolution as a function of pore water replacement.	Detailed in Section 4.2.3, Leaching Environmental Assessment Framework Test.
HCT	Kinetic	Assess acid generation and metal leaching reaction rates under aerobic weathering conditions.	ASTM D5744-99 Standard Test Method for Accelerated Weathering of Solid Materials Using a Modified Humidity Cell. Cells were initiated in August 2019 and continue to run at the time of writing. pH, conductivity, calcium, magnesium, and sulphate analyzed weekly and trace metals analyzed every four weeks.
LEAF test	Kinetic	Assess mass release of inorganic analytes under diffusion-controlled mass release conditions.	LEAF Method 1315 Mass Transfer Rates of Constituents in Monolithic or Compacted Granular Materials Using a Semi-Dynamic Tank Leaching Procedure. High binder samples conducted using equipment for monolithic samples. Low binder samples conducted using equipment for compacted granular samples.

ICP-MS = Inductively Coupled Plasma-Mass Spectrometry; LEAF = Leaching Environmental Assessment Framework; HCT = humidity cell test; MTP = modified triaxial permeability; ABA = acid base accounting; SFE = shake flask extraction; XRD = X-Ray Diffraction; ASTM = American Society for Testing and Materials; nA = nano ampere.

Table 4-4: Geochemical Testing Completed for Individual and Composite Waste Streams

Sample ID	Mineralogy	ABA	Bulk Metals	Whole Rock Oxides	SFE	Process Water	MTP	HCT	LEAF
MGNLR	✓	✓	✓	✓	✓	✓	×	✓	×
HGNLR	✓	✓	✓	✓	✓	✓	×	✓	×
LUGP	✓	✓	✓	✓	✓	×	×	×	×
HUGP	✓	✓	✓	✓	✓	×	×	×	×
MPPT	✓	✓	✓	✓	✓	×	×	×	×
OPC	×	✓	✓	✓	✓	×	×	×	×
OPC / SLAG	×	✓	✓	✓	✓	×	×	×	×
HLC	✓	✓	✓	✓	✓	×	✓	×	✓
HHC	✓	✓	✓	✓	✓	×	×	×	✓
HPLC	✓	✓	✓	✓	✓	×	✓	×	✓
HPHC	✓	✓	✓	✓	✓	×	×	×	✓

Table 4-4: Geochemical Testing Completed for Individual and Composite Waste Streams

Sample ID	Mineralogy	ABA	Bulk Metals	Whole Rock Oxides	SFE	Process Water	MTP	HCT	LEAF
HHGPLC	✓	✓	✓	✓	✓	×	✓	×	✓
HHGPHC	✓	✓	✓	✓	✓	×	×	×	✓
HLC-S	✓	✓	✓	✓	✓	×	✓	×	✓
HHC-S	✓	✓	✓	✓	✓	×	×	×	✓

ABA = acid base accounting; MTP = modified triaxial permeability; SFE = shake flask extraction; HCT = humidity cell test; LEAF = Leaching Environmental Assessment Framework; ✓ = yes; × = no.

4.2.1 Acid Base Accounting

Acid base accounting was performed to evaluate the acid generation potential of the materials. The parameters measured and calculated during the analysis are summarized in Table 4-5. Analysis was conducted according to the methods provided in Mine Environment Neutral Drainage (MEND 2009).

Table 4-5: Acid Base Accounting Analytical Parameters and Calculations

Parameter	Acronym	Method
Paste pH	n/a	pH of a slurry of solid sample and deionized water
Total sulphur	S	Leco furnace
Sulphate-sulphur	SO_4	React with hydrochloric acid to remove acid-soluble sulphate minerals and measure residue by Leco furnace
Sulphide-sulphur	$S[S^{2}]$	$S[S^{2}]$ = total sulphur - sulphate sulphur
Total inorganic carbon	TIC	Leco furnace
Modified Sobek bulk neutralization potential	Bulk NP	React with hydrochloric acid at 20°C for 24 hours followed by reverse titration
Carbonate neutralization potential	CO_3-NP	Mass carbon (mg) x 8.34 / Weight of sample (g)
Acid potential	AP	$S[S^{2-}]$ x 31.25
Neutralization potential ratio	NPR	NPR = NP/AP

n/a = not applicable.

Paste pH results are used to assess the stored acidity generated from the dissolution of soluble minerals present in a sample.

The three sulphur species assessed in this program include sulphide-sulphur, sulphate-sulphur, and total sulphur. Acid potential (AP) represents the bulk amount of acidity a sample can produce and was calculated assuming that all sulphide minerals are pyrite.

The modified Sobek bulk neutralization potential (NP) represents the amount of acidity that a sample can potentially consume or neutralize. The bulk NP was measured by acidifying the sample with hydrochloric acid and then performing a reverse titration. The carbonate NP is a calculated value that represents the bulk amount of acidity that a sample can potentially consume through the dissolution of carbonate minerals and was calculated from the total inorganic carbon (TIC) concentration. The ratio of carbonate NP to bulk NP was calculated for each sample to qualitatively evaluate the mineralogical sources of NP.

The ratio of NP to AP, referred to as the neutralization potential ratio (NPR), was used to classify the acid generation potential of each sample. In this report, bulk NP was used to calculate NPR. The guidelines for interpretation of NPR are presented in Table 4-6 and are based on criteria outlined in MEND (2009).

Table 4-6: Acid Generation Potential Criteria

Acid Generation Potential	Classification Criterion	Description
PAG	NPR <1	Likely to generate acidity unless sulphide minerals are non-reactive
Uncertain	1 ≤ NPR <2	Neither clearly acid generating nor acid consuming
NPAG	NPR ≥ 2	Acid consuming; low acid generation potential

<= less than; ≤ = less than or equal to; ≥ = greater than or equal to; NPAG = non-potentially acid generating; PAG = potentially acid generating; NPR = neutralization potential ratio.

4.2.2 Modified Triaxial Permeability Test

The MTP testing was conducted to obtain an estimate of pore water quality and examine how pH and metal concentration changes as a function of pore volume replacement. Low binder samples were initially better suited for this test due to their higher hydraulic conductivity resulting in higher advective flow during the test. MTP testing of high binder variants of the same materials are ongoing at the time of writing.

The MTP analytical approach is fundamentally based on ASTM D5084 – *Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using Flexible Wall Permeameter*. The permeameter apparatus was adjusted to capture the permeate using a one-directional flow approach. The permeameter apparatus was also flushed with deionized water at the lowest possible flow rate to obtain enough samples at the smallest increment that would provide sufficient volume for analysis. The sampling procedure was developed to collect samples over ranges of pore volume replacements as follows:

- 0 and 1 pore volume replacement(s);
- 2 and 5 pore volume replacements; and
- 5 pore volume replacements and greater.

Four replicate samples were submitted for 0 to 1 pore volume replacements and two replicate samples were submitted for all other intervals. The pore volume samples were analyzed for pH by electrode and dissolved trace metals by ICP-MS. Major ions were not analyzed due to the limited volume of leachate produced. The MTP procedure was conducted by SNC-Lavalin and chemical analysis of the samples occurred at the SRC laboratory.

4.2.3 Leaching Environmental Assessment Framework Test

The LEAF test method 1315 (USEPA 2017) is designed to provide mass transfer rates of inorganic analytes contained in a monolithic (3-D) or compacted granular (1-D) material under diffusion-controlled release conditions. The method requires continuous leaching of water-saturated monolithic or compacted granular material in a tank filled with reagent water with a periodic renewal of the water. The sample vessel and sample dimensions are chosen such that the sample is fully emersed in reagent water and the samples are in contact with the reagent water at a liquid to surface area ratio of 9 ± 1 mL/cm^2. The leaching solution is replaced with new reagent water for at least nine pre-determined intervals.

The low binder composite samples were set-up according to the dimensions specified for compacted granular materials and the high binder samples were set-up according to the dimensions specified for monolithic materials. At the end of each leach interval, the sample was freely drained, and the eluent solution was analyzed for the following parameters:

- General chemistry: pH, acidity, alkalinity, conductivity, hardness and total dissolved solids.
- Major ions: Ammonia, chloride, fluoride, nitrate, nitrite, phosphate and sulphate.
- Trace metals: Aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, silver, sodium, strontium, thallium, tin, titanium, uranium, vanadium and zinc.
- Radioactivity and radionuclides: Gross alpha activity, gross beta activity, lead-210, polonium-210, radium-226 and radium-228.

The concentration results were used to calculate mean interval flux in units of mg/m^2 per leaching interval and observed diffusivity in units of m^2/s per leaching interval, according to the standard equations provided in USEPA (2017).

4.3 Radiological Testing

Two types of radiological tests were conducted on solid and leachate samples: measurement of radioactivity and measurement of radiochemical speciation of radionuclides. Radiological parameters that were measured on various solid and leachate samples are summarized in Table 4-7.

Table 4-7: Radiological Test Descriptions

Measurement	Parameters	Method	Samples Analyzed
Radioactivity	Gross alpha activity, gross beta activity	Gas Flow Proportional Counting	Solid sample before SFE testing Residue solid sample after SFE testing SFE leachate LEAF test eluent Residue solid sample after LEAF testing Process water from high- and medium-grade leach residues
Radiochemical Speciation (Liquids)	Lead-210, Polonium-210, Radium-226, Radium-228	Beta Counting of the Bismuth-210; Successor Product (Lead-210); Alpha Spectroscopy (Polonium-210 and Radium-226); Gas Flow Proportional Counting (Radium-228)	SFE leachate LEAF test eluent Process water from high- and medium-grade leach residues
Radiochemical Speciation (Solids)	Potassium-40, Radium-226, Thorium-230, Thorium-232, Uranium-234, Uranium-235, Uranium-238	Alpha Spectroscopy (Radium-226), Calculation (Thorium-232 and uranium species)	Solid sample before SFE testing Residue solid sample after SFE testing

SFE = shake flask extraction; LEAF = Leaching Environmental Assessment Framework.

4.4 Quality Assurance and Quality Control

A quality assurance and quality control (QA/QC) framework was developed for the characterization program and was applied to all analytical results. The QA/QC program focused on the sample preparation procedures and analytical tests. Table 4-8 provides a summary of the QA/QC framework for the tailings characterization program.

The representativity of the ore samples used to generate the composite medium- and high-grade metallurgical pilot test samples are indicated to be representative of the range of ore grade in the Arrow deposit (i.e., extraction NexGen 2018). Equivalency assessment of metallurgical test procedures to project process design (extraction rates, waste volumes and characteristics, process methodology, chemical use) was also provided by NexGen (2018).

Table 4-8: Quality Assurance and Quality Control Framework

Activity	QA Aspect	Requirements
Sample preparation	Splitting and compositing of samples	Use standard methods and equipment
		Document all procedures with emphasis on any deviations from standard methods
		Use unique sample numbers for each sample and duplicate
		Create four sample replicates of each tailings, tailings composite, and process waste sample
Analytical testing	Analytical method	Use standard methods and equipment
		Testing of four replicate samples to determine precision/repeatability and sample homogeneity
		Follow laboratory QC program for all analytical apparatus
		Provide laboratory QA/QC report including results of reference materials, control samples, duplicates, sample spikes, and ISO/IEC 17025 accreditation

QA = quality assurance; QC = quality control; ISO/IEC = International Organization for Standardization/International Electrotechnical Commission.

Analytical results were reviewed within two weeks of receipt and results were imported into the master database only if applicable QA/QC criteria were met (Table 4-9). Descriptive statistics were performed on all samples to calculate mean and median values among replicate samples and trend analyses were used to evaluate variability over time. Results that were considered outliers were flagged in the master database and discussed with the laboratory.

Table 4-9: Quality Assurance and Quality Control Criteria

Test Type	QA/QC Framework	Acceptable Limits
All water chemistry	Charge balance error is within acceptable limits	±10%
ABA	Sulphate-sulphur and sulphide-sulphur results are less than or equal to total sulphur results	±10%
	NP does not exceed maximum value indicated by fizz rating acid strength and volume guidelines in MEND	MEND (2009)
Bulk Metals	Relative percent difference for uranium among replicates is within acceptable limits (for purposes of examining sample homogeneity)	10%
Whole rock	Sum of oxides and loss on ignition is within acceptable limits	98% to 103%
LEAF	Liquid to surface area ratio is maintained at 9 ± 1 mL/cm^2	9 ± 1 mL/cm^2
	Sample remains intact through testing	Assessed on a case-by-case basis

QA/QC = quality assurance and quality control; ABA = acid base accounting; NP = neutralization potential; MEND = Mine Environment Neutral Drainage; HCT = Humidity Cell Test; LEAF = Leaching Environmental Assessment Framework; ± = plus or minus.

4.4.1 Laboratory Internal Quality Assurance and Quality Control

Saskatchewan Research Council Analytical is accredited by the Canadian Association for Laboratory Accreditation for specific tests listed in the scope of accreditation approvals. All procedures, facilities, and methods conform to ISO/IEC 17025:2017, the internationally recognized standard. Details on SRC accreditation and internal QA/QC processes are provided in Appendix A, SRC Certificates.

Quality control was maintained for all analytical apparatus at SRC with certified reference material used to track analytical drift, data accuracy, and precision. Independent of the QA/QC samples of Golder Associates Ltd. (Golder), standards were inserted into sample batches at regular intervals by SRC. Standards used include LS4/MA1B, SY3, BL-2a, BL-4a, BL-5, and SRCUO2 (1.59% uranium concentrate), a standard produced in-house at the laboratory. In addition, samples were regularly analyzed in duplicate.

All quality control results were within specified limits and all processes performed at the laboratory were subject to an audit program, which was performed by approved trained professionals.

5 RESULTS

5.1 Quality Assurance and Quality Control Assessment

5.1.1 Laboratory Internal Quality Assurance and Quality Control Results

All analytical data complied with the QA/QC criteria outlined in Table 4-9, except for the data points noted below.

The following samples were flagged as part of the QA/QC process and removed from the master database:

- Results for all parameters (pH, sulphate, calcium, magnesium) analyzed in HCT samples HGNLR-2-9 and MGNLR-2-9 were considered outliers within their own set of replicate samples. It was suspected these samples may have been mislabelled (HGNLR-2-9 was labelled MGNLR-2-9 and vice versa) and were subsequently removed from the master database. The removal of these samples did not affect the evaluation of kinetic trends since there were sufficient data points for regression analyses of trends.

The following samples were flagged as part of the QA/QC process, but were not removed from the master database for reasons provided below:

- The sum of whole rock oxides and loss on ignition was less than 98% in the following samples: LUGP 1-4, HUGP 1-4, MPPT 1-4, HPHC 3-4, HHGPLC 1-4, and HHGPHC 1-4. The higher loss on ignition is related to the higher moisture content of these materials which are in turn associated with the inclusion of gypsum and/or anhydrite in the materials. These samples remained in the database because the higher loss on ignition is a result of material properties as opposed to analytical error.
- The charge balance error exceeded acceptable limits for the samples listed in Table 5-1. The HCT and LEAF test samples remained in the database because the charge balance was thought to be mainly a result of the low ion concentration in these samples (less than 1 meq/L).
- The OPC binder replicate samples contained an NP value that exceeded the maximum value indicated by fizz rating. These two samples were not removed from the master dataset because the carbonate NP value did not exceed the maximum value indicated by fizz rating and was deemed acceptable.

- The liquid to surface area ratio was not maintained at 9 ± 1 mL/cm^2 in the following LEAF test samples: HPLC-1-L-1, HPLC-2-L-1, HPLC-3-L-1, HPLC-4-L-1, HHGPLC-1-L-1, HHGPLC-2-L-1, HHGPLC-3-L-1, HHGPLC-4-L-1, HHGPLC-4-L-4, HHGPHC-4-L-11, HLC-S-L-1, HLC-S-2-L-1, HLC-S-3-L-1, and HLC-S-4-L-1. This deviation was deemed to be an inherent limitation of the test for the low binder samples at the first leach event due to the challenges encountered at test initiation related to sample swelling and flaking. The samples remained in the master database and the non-compliance was considered in the interpretation of the data.

Table 5-1: Leachate Solutions with Charge Balance Exceeding Acceptable Limits

Test	Sample IDs
SFE	■ HHC-S-1, HHC-S-2, HHC-S-3, HHC-S-4 ■ OPC / SLAG
HCT	■ MGNLR-3-8, MGNLR-4-12, MGNLR-4-16, MGNLR-4-20, MGNLR-4-24 ■ HGNLR-1-40, HGNLR-2-40, HGNLR-3-40, HGNLR-1-44, HGNLR-2-48, HGNLR-1-52, HGNLR-2-52, HGNLR-3-52, HGNLR-4-52, HGNLR-1-56, HGNLR-2-56, HGNLR-3-56, HGNLR-4-56, HGNLR-1-60, HGNLR-2-60, HGNLR-3-60, HGNLR-4-60, HGNLR-1-64, HGNLR-2-64, HGNLR-3-64, HGNLR-4-64
LEAF	■ HPHC-2-L-1, HPHC-3-L-1, HPHC-1-L-14, HPHC-2-L-14, HPHC-3-L-14, HPHC-4-L-14, HPHC-4-L-15, HPHC-1-L-16, HPHC-2-L-16, HPHC-3-L-16, HPHC-4-L-16, HPHC-3-L-17, HPHC-4-L-17 ■ HLC-1-L-4 ■ HHC-S-2-L-1, HHC-S-3-L-10, HHC-S-1-L-14, HHC-S-2-L-14, HHC-S-4-L-21, HHC-S-2-L-24 ■ HHC-2-L-2, HHC-1-L-14, HHC-2-L-14, HHC-3-L-14, HHC-4-L-14, HHC-1-L-16, HHC-2-L-16, HHC-3-L-16, HHC-4-L-16, HHC-3-L-17, HHC-4-L-17

SFE = shake flask extraction; HCT = humidity test control; LEAF = Leaching Environmental Assessment Framework.

5.1.2 Kinetic Test Program Quality Assurance and Quality Control Observations

In addition to the QA/QC compliance assessment, certain aspects of the HCT and LEAF tests methods were adjusted during testing and are noted as follows:

- During the initial HCT leach cycle, it was noted that the MGNLR material was draining at a slow rate and complete drainage would not occur within the time frame specified according to ASTM D5744-99. Therefore, the airflow was changed on all humidity cells to circulate above the samples. Leachate from the MGNLR material was collected at the time specified in the ASTM D5744-99 protocol, and although the volume was lower than specified in the protocol, it was sufficient for the requested analyses.
- The low binder LEAF test samples were initially prepared according to the monolithic sample (i.e., 3-D) protocol outlined in USEPA (2017). After approximately 15 minutes of submersion, the low cement samples flaked and failed (Figure 5-1). As such, these samples were subsequently prepared according to the alternative compacted granular method (i.e., 1-D) outlined in USEPA (2017).
- Sample swelling of low-binder, compacted granular samples was observed in the LEAF tests approximately one hour after submersion in the eluent water (Figure 5-2). The HLC material demonstrated minimal swelling, whereas HPLC and HHGPLC samples demonstrated cracking on the sample surface and swelling beyond the top of the contained cylinder. Despite the swelling and cracking, these samples remained in their containers and were tested as per standard protocol. Results were reviewed in detail, and it was determined that the swelling affects the results in a conservative way since cracking and swelling increases the diffusivity rates by creating more exposed surface area.

Figure 5-1: Leaching Environmental Assessment Framework Low Binder Content Sample Failure

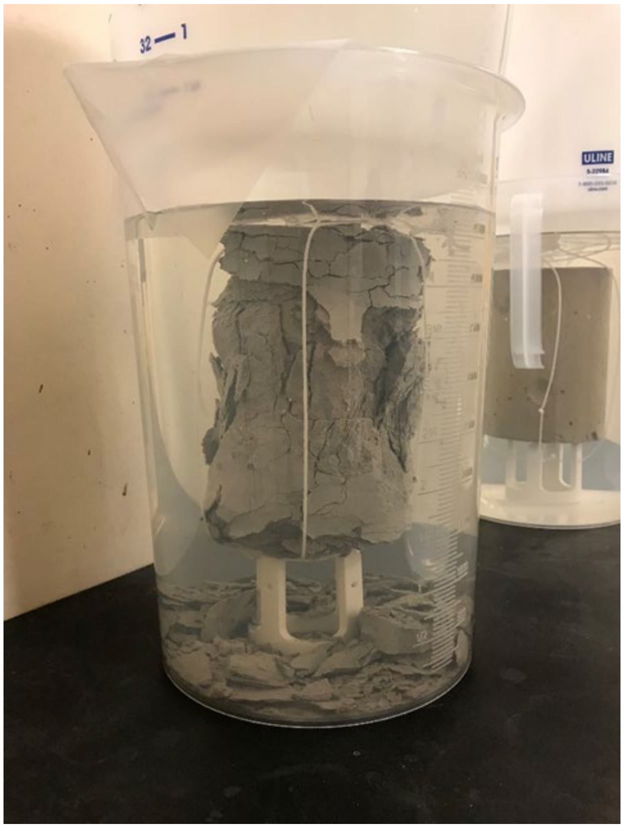
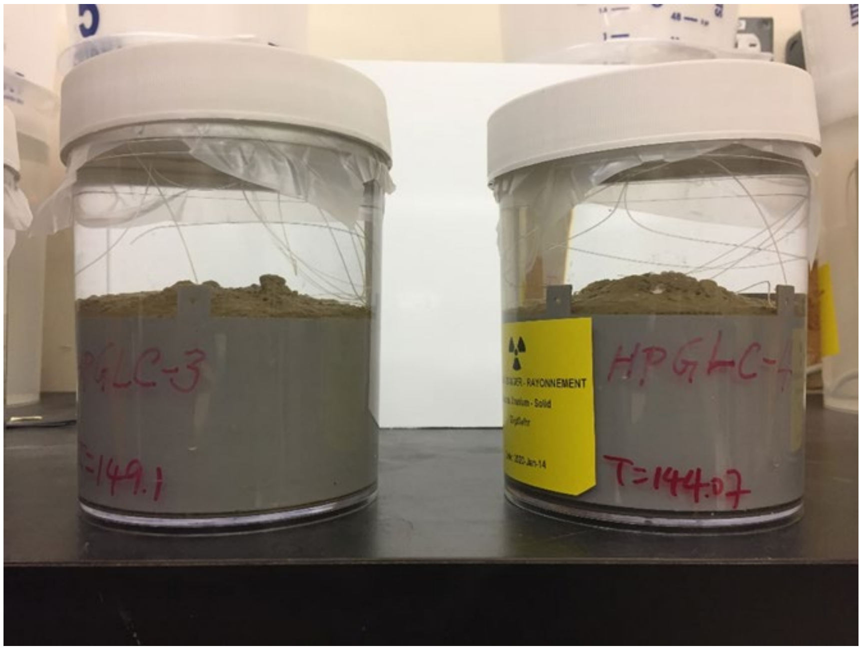


Figure 5-2: Leaching Environmental Assessment Framework Compacted Granular (1-Dimensional) Sample Swelling



5.2 Geotechnical Test Results

Geotechnical test results are presented in Appendix B, Geotechnical Test Results, and selected results are summarized as average values in Table 5-2.

Table 5-2: Summary Table of Average Results for Selected Geotechnical Tests

Sample ID	Specific Gravity	Moisture Content (%)	Porosity	Hydraulic Conductivity (m/s)
MGNLR	2.7	25	n/a	7.7×10^{-09}
HGNLR	2.7	28	n/a	1.2×10^{-07}
LUGP	2.5	45	n/a	4.2×10^{-07}
HUGP	2.3	65	n/a	4.2×10^{-07}
MPPT	3.2	146	n/a	1.6×10^{-07}
OPC	3.6	n/a	n/a	n/a
OPC / SLAG	2.9	n/a	n/a	n/a
HLC	n/a	64	0.63	2.6×10^{-08}
HHC	n/a	52	0.58	5.7×10^{-09}
HPLC	n/a	50	0.60	1.0×10^{-08}
HPHC	n/a	51	0.61	7.2×10^{-10}
HHGPLC	3.0	71	0.71	3.2×10^{-08}
HHGPHC	n/a	66	0.69	2.8×10^{-09}
HLC-S	n/a	65	0.65	4.4×10^{-08}
HHC-S	n/a	54	0.61	3.5×10^{-10}

n/a = not applicable, test not conducted.

Specific gravity was measured for all individual materials and one composite material (HHGPLC). The gypsum precipitate samples had the lowest specific gravity and the OPC binder sample had the highest value (Table 5-2). The specific gravity values were not consistent among the LUGP, HUGP, and MPPT samples, although Quantitative Rietveld X-Ray Diffraction (XRD) results suggest that these three materials are composed of 100% gypsum. The mineralogical composition of MPPT and the potential rationale for this difference is described in more detail in Section 5.3.1.1, Mineralogy.

Porosity values for all composite tailings materials were generally the same or greater in the low binder samples compared to corresponding high binder samples. Porosity ranged from 0.60 to 0.71 in the low binder samples and 0.58 to 0.69 in the high binder samples. The highest porosity value was found for HHGPLC and the lowest for HHC.

Moisture content was determined for all individual and composite materials (no binder materials). Key results are summarized as follows:

- Moisture content was lowest in the leach residue samples and greatest in the MPPT samples. Average moisture content ranged between 25% and 28% for the leach residue samples, 45% to 65% for the gypsum precipitates, and 146% for the effluent precipitates. Moisture content was also greater in the high-uranium gypsum precipitates (HUGP) compared to the low-uranium gypsum precipitates (LUGP).

- Moisture content in all effluent precipitate (MPPT) replicate samples was greater than 100%. These values suggest that this material can absorb greater than 100% of its mass in water, which is typical of high gypsum content material.
- Moisture content was the same or greater in the low binder samples compared to the corresponding high binder sample. Moisture content ranged from 50% to 71% in the low binder samples and 51% to 66% in the high binder samples. The greatest values occurred in the HHGPLC and HHGPHC samples, and the lowest values in the HPLC and HPHC samples.

Hydraulic conductivity values were determined for all individual and composite waste materials using triaxial permeability testing. Key results are summarized as follows:

- Generally, the hydraulic conductivity of the individual materials was higher than those of the composite samples. The average hydraulic conductivity of the leach residue samples ranged from 7.7×10^{-09} metres per second (m/s) to 1.2×10^{-07} m/s, and the average value for the composite samples ranged from 3.5×10^{-10} m/s to 4.4×10^{-08} m/s (Table 5-2).
- The neutralized leach residue in the composite samples was HGNLR only (no MGNLR). The hydraulic conductivities of all composite samples were therefore at least one order of magnitude lower than the HGNLR component. The hydraulic conductivity range of HGNLR and composite samples are comparable with hydraulic conductivity ranges for unconsolidated and consolidated tailings materials at comparable uranium mine sites in the Athabasca Basin.
- Within the composite samples, the hydraulic conductivity of the high binder material was one to two orders of magnitude lower than the corresponding low binder material (Table 5-2). Of the low binder composite materials, average hydraulic conductivity ranged from 1.0×10^{-08} m/s to 4.4×10^{-08} m/s. The average hydraulic conductivities among the high binder composite samples ranged from 3.5×10^{-10} m/s to 5.7×10^{-09} m/s.

Particle size distribution was analyzed for the two neutralized leach residue samples; average values are summarized in Table 5-3. The distribution was similar between the two material types; the dominant particle size was silt, followed by sand and clay.

Table 5-3: Average Particle Size Distribution Results

Sample ID	% Cobble	% Gravel	% Sand	% Silt	% Clay
MGNLR	0	0	33	58	8.6
HGNLR	0	0	36	60	4.5

5.3 Static Geochemical Tests

Static geochemical test results are discussed in the following sections. Full datasets for all static tests are presented in Appendix C, Static Test Results, and relevant figures are presented in Appendix D, Static Test Figures. In some cases, an average test value of the four replicate samples for a material is presented and discussed.

5.3.1.1 Mineralogy

Mineralogy results are presented in Appendix C, Table C-1, and key results are summarized below:

- The uranium extraction process resulted in leached residue that consisted of acid-resistant minerals. Mineral composition in leach residue samples (MGNLR and HGNLR) was similar and primarily consisted of muscovite (48 weight percent [wt.%] to 53 wt.%) and quartz (27 wt.% to 36 wt.%). The remaining detected mineral phases were clinochlore (4.9 wt.% to 10 wt.%), chamosite (7.5 wt.% to 11 wt.%), and gypsum (2.1 wt.% to 6.2 wt.%).
- Mineral phases detected in the gypsum and effluent precipitates were calcium sulphate minerals most likely related to slaked lime (calcium oxide) addition during processing and treatment. The LUGP samples consisted of gypsum (93 wt.%) and bassanite (6.7 wt.% to 7.5 wt.%), and the HUGP samples consisted of gypsum (99 wt.% to 100 wt.%) and anhydrite (0 wt.% to 1.4 wt.%).
- Quantitative Evaluation of Minerals by Scanning Electron Microscopy results of the MPPT indicate that these samples were composed of three major calcium sulphate groups that accounted for at least 93% of the samples by mass. These groups included gypsum, aluminum-bearing gypsum with unknown stoichiometry, and aluminum-bearing calcium sulphate with depleted calcium concentrations. The remainder of the samples were composed of an aluminum sulphate mineral with a nominal formula of $Al_2(SO_4)_3 \times 17H_2O$ that may also contain iron and/or calcium. No ferrihydrite was detected in the XRD or Quantitative Evaluation of Minerals by Scanning Electron Microscopy data for the MPPT.
- Muscovite and quartz were detected in all composite samples, and proportions ranged from 12 wt.% to 58 wt.% and 10 wt.% to 43 wt.%, respectively. Other mineral phases included gypsum (0 wt.% to 54 wt.%), ettringite (0 to 27 wt.%), clinochlore (0 wt.% to 22 wt.%), chamosite (0 wt.% to 18 wt.%), calcite (0 wt.% to 11 wt.%), kaolinite (0 wt.% to 9 wt.%), and portlandite (0 wt.% to 6 wt.%). The low binder samples contained greater proportions of gypsum, and the high binder samples contained greater proportions of calcium minerals (calcite and portlandite). No primary molybdenum mineral was detected.

Due to the amorphous nature of the OPC and OPC / slag binders, these samples were not submitted for XRD analysis. The OPC binder composition was provided by Lafarge Cement, and its composition included amorphous calcium silicates and calcium aluminates, including tricalcium silicate (60.8%), dicalcium silicate (11.6%), tricalcium aluminate (4.6%), and tetracalcium aluminoferrite (10.9%) (report certificate is provided in Appendix C, Table C-1).

5.3.1.2 Acid Base Accounting

Selected average ABA results are presented in Table 5-4. The complete dataset and figures are presented in Appendix C, Table C-2 and Appendix D, Figure D1-1 to Figure D1-4, respectively. Where relevant, average values represent an average of the four replicate samples analyzed for a specific material.

Table 5-4: Summary Table of Selected Average Acid Base Accounting Results

Sample ID	Paste pH	Total Sulphur	Sulphate Sulphur	Sulphide Sulphur	TIC	NP[a]	AP[b]	NPR[c]
	pH units	wt.% S			wt.%	t $CaCO_3$/1000 t		ratio
MGNLR	4.3	0.31	0.064	0.24	<0.01	2.4	7.6	0.32
HGNLR	5.3	0.64	0.40	0.24	<0.01	3.4	7.3	0.46

Table 5-4: Summary Table of Selected Average Acid Base Accounting Results

Sample ID	Paste pH	Total Sulphur	Sulphate Sulphur	Sulphide Sulphur	TIC	NP[a]	AP[b]	NPR[c]
	pH units	wt.% S			wt.%	t $CaCO_3$/1000 t		ratio
LUGP	5.7	19	18	0.83	<0.01	2.9	26	0.13
HUGP	9.0	19	18	1.1	<0.01	2.8	34	0.14
MPPT	7.5	12	12	0.49	<0.01	1.3	15	0.062
OPC	12	1.7	1.3	0.39	1.4	1090	12	89
OPC / SLAG	12	1.5	0.63	0.87	0.13	600	27	22
HLC	9.5	0.75	0.57	0.18	0.26	47	5.7	8.3
HHC	12	0.73	0.74	0.013	0.69	<0.5	0.40	1.3
HPLC	8.7	5.0	4.0	1.00	0.24	<0.5	31	0.0080
HPHC	12	3.4	3.3	0.072	0.70	277	2.2	168
HHGPLC	10	9.2	7.7	1.5	0.18	46	47	0.99
HHGPHC	12	5.8	5.5	0.35	0.74	254	11	52
HLC-S	9.9	0.85	0.71	0.15	0.083	33	4.5	7.4
HHC-S	12	0.95	0.89	0.060	0.56	207	1.9	112

a) Determined from modified Sobek method (MEND 2009).

b) Sulphide-sulphur (%) x 31.25.

c) NP / AP.

<= less than; TIC = total inorganic carbon; wt.% = weight percent; S = sulphur; AP = acid potential; NP = neutralization potential; NPR = neutralization potential ratio; $CaCO_3$ = calcium carbonate.

Results are summarized as follows:

- Average total sulphur content was greatest in the LUGP and HUGP samples (19 wt.%), followed by the MPPT samples (12 wt.%). Total sulphur content in the composite samples was greatest in the samples containing precipitates. Values were greatest in HHGPLC (9.2 wt.%), followed by HHGPHC (5.8 wt.%), HPLC (5.0 wt.%), HPHC (3.4 wt.%), HHC-S (0.95 wt.%), HLC-S (0.85 wt.%), HLC (0.75 wt.%), and HHC (0.73 wt.%).
- Total sulphur and sulphide-sulphur values did not plot on a 1:1 line, and results suggest that sulphur speciation in all samples is dominated by sulphate-sulphur (Figure D1-1). This is consistent with the detection of sulphate minerals (gypsum and anhydrite) in the mineralogy data.
- Sulphide-sulphur was generally present at values less than 1 wt.%. The greatest average values were noted in HHGPLC (1.5 wt.%), HUGP (1.1 wt.%), and HPLC (1.0 wt.%). Sulphide mineral content was either absent or below the analytical detection limit.
- Average NP values were relatively low in the leach residue and precipitate samples (1.3 t to 3.4 t calcium carbonate [$CaCO_3$]/1,000 t) and high in the OPC and OPC / slag binder materials (1,090 t $CaCO_3$/1,000 t and 600 t $CaCO_3$/1,000 t, respectively). The NP values among the composite materials were variable, and the highest values were noted in the samples with a high binder content (HPHC, HHGPHC, and HHC-S). The NP values were generally below the detection limit for the HHC and HPLC samples.

- The leach residue and precipitate samples contained a greater AP than NP and were therefore classified as PAG. The binder samples contained a greater NP to AP ratio of 2:1 and were classified as NPAG. The acid rock drainage classification for the composite samples was variable. The HHC, HPLC, and HHGPLC samples were classified as PAG/uncertain and HLC, HPHC, HHGPHC, HLC-S, and HHC-S were classified as NPAG (Figure D1-2).
- Paste pH values ranged from acidic to basic among all materials. Values for HGNLR and MGNLR were acidic, and average values for the precipitate materials ranged from acidic to basic (Table 5-4). The paste pH values for the OPC and OPC / slag binder materials were basic (pH 12). Average values for the composite materials ranged from 8.7 to 12 and were reflective of the amount of binder added (a higher cement content corresponds to higher pH).
- In the comparison of paste pH to NPR (Figure D1-3), the leach residue samples were classified as acid generating due to their acidic paste pH values and low NPR values (less than 1). The HUGP, LUGP, and MPPT samples were also classified as PAG due to their low NPR values. Most of the composite materials were classified as uncertain or NPAG due to their basic paste pH values (corresponding to stored alkalinity in the pore space) and relatively high NPR values (greater than 1).
- Total inorganic carbon content was relatively low in all materials. Leach residue and precipitate materials had TIC values less than 0.01 wt.%. Values were detectable in the composite materials and the samples with a high binder content had greater TIC values (Table 5-4). The carbonate NP values were less than the modified Sobek NP values in all materials except HHC and HPLC (Figure D1-4). This relationship indicates that these two materials may contain carbonate minerals that do not contribute to net neutrality.

5.3.1.3 Bulk Metals

Bulk metal results are tabulated in Appendix C, Table C-3, and are compared to the average abundance of elements in the Earth's crust to identify materials and constituents that may require further review with respect to environmental significance. Table 5-5 lists elements with enrichment factors greater than 5 and 10 times the average crustal abundances provided by Price (1997).

Element concentrations that were greater than 10 times crustal abundance in most individual and all composite samples were arsenic, bismuth, copper, lead, molybdenum, selenium, sulphur, and uranium. Antimony and silver were also present in concentrations greater than 10 times crustal abundance in some of the composite samples. Calcium, cobalt, tin, yttrium, and zinc concentrations were greater than 10 times crustal abundance in the individual materials, but not in the composite materials.

The OPC material was characterized by a greater enrichment of trace metals compared to the OPC / slag binder that included antimony, arsenic, molybdenum, tin, and zinc. The OPC / slag binder material contained a greater enrichment of bismuth and uranium.

Table 5-5: Metals Exceeding Five Times and Ten Times Price Crustal Abundance

Sample ID	Element Concentrations Greater than 5X and Less than 10X Crustal Abundance	Element Concentrations Greater than 10X Crustal Abundance
MGNLR	copper, sulphur	arsenic, bismuth, lead, molybdenum, selenium, silver, uranium
HGNLR	copper	antimony, arsenic, bismuth, lead, molybdenum, selenium, silver, sulphur, uranium
LUGP	arsenic, calcium	antimony, bismuth, sulphur, uranium
HUGP	antimony, bismuth, uranium	antimony, bismuth, sulphur, uranium
MPPT	cobalt, lead	antimony, arsenic, bismuth, copper, molybdenum, sulphur, uranium, yttrium
OPC	none	antimony, arsenic, calcium, molybdenum, sulphur, tin, zinc
SLAG	calcium, uranium	bismuth, sulphur
HLC	copper	antimony, arsenic, bismuth, lead, molybdenum, selenium, silver, sulphur, uranium
HHC	copper	antimony, arsenic, bismuth, lead, molybdenum, selenium, sulphur, uranium
HPLC	none	antimony, arsenic, bismuth, copper, lead, molybdenum, selenium, sulphur, uranium
HPHC	none	arsenic, bismuth, copper, lead, molybdenum, selenium, sulphur, uranium
HHGPLC	copper	arsenic, bismuth, lead, molybdenum, selenium, sulphur, uranium
HHGPHC	copper	arsenic, bismuth, lead, molybdenum, selenium, sulphur, uranium
HLC-S	copper	arsenic, bismuth, lead, molybdenum, selenium, silver, sulphur, uranium
HHC-S	copper	arsenic, bismuth, lead, molybdenum, selenium, silver, sulphur, uranium

5X = five times; 10X = ten times.

5.3.1.4 Whole Rock Oxides

Whole rock oxide results are tabulated in Appendix C, Table C-4, and selected results are summarized in Table 5-6. Major oxide components in the leach residue samples and composite waste samples were silicon dioxide (SiO_2) and aluminum oxide. These components are consistent with the mineralogical analyses indicating a dominant aluminum-silicate mineral assemblage. Samples with a high binder content also contained a greater proportion of calcium oxide. The gypsum and effluent precipitate materials consisted primarily of calcium oxide (19 to 36 wt.%).

Table 5-6: Major and Minor Oxide Components of Individual and Composite Waste Materials

Sample ID	Major Oxide Components (>10 wt.%)	Minor Oxide Components (>1 wt.% and <10 wt.%)
MGNLR	SiO_2, Al_2O_3	Fe_2O_3, K_2O, MgO
HGNLR	SiO_2, Al_2O_3	Fe_2O_3, K_2O, MgO
LUGP	CaO	None
HUGP	CaO	None
MPPT	CaO	Al_2O_3, Fe_2O_3, MgO, SiO_2
OPC	CaO, SiO_2	Al_2O_3, Fe_2O_3, MgO,
SLAG	CaO, SiO_2, Al_2O_3	MgO
HLC	SiO_2, Al_2O_3	CaO, Fe_2O_3, K_2O, MgO

Table 5-6: Major and Minor Oxide Components of Individual and Composite Waste Materials

Sample ID	Major Oxide Components (>10 wt.%)	Minor Oxide Components (>1 wt.% and <10 wt.%)
HHC	SiO_2, Al_2O_3, CaO	Fe_2O_3, K_2O, MgO
HPLC	SiO_2, Al_2O_3	CaO, Fe_2O_3, K_2O, MgO
HPHC	SiO_2, Al_2O_3, CaO	Fe_2O_3, K_2O, MgO
HHGPLC	SiO_2, Al_2O_3, CaO	Fe_2O_3, K_2O, MgO
HHGPHC	SiO_2, CaO	Al_2O_3, Fe_2O_3, K_2O, MgO
HLC-S	SiO_2, Al_2O_3	CaO, Fe_2O_3, K_2O, MgO, titanium dioxide
HHC-S	SiO_2, Al_2O_3, CaO	Fe_2O_3, K_2O, MgO

>= greater than; <= less than; wt.% = weight percent, Al_2O_3 = aluminum oxide; CaO = calcium oxide; K_2O = potassium oxide; MgO = magnesium oxide; SiO_2 = silicon dioxide; Fe_2O_3 = iron oxide.

5.3.1.5 Shake Flask Extraction Leach Test

Tabulated SFE leach test results are presented in Table 5-7 and detailed in Appendix C, Table C-5, and plots of selected SFE results are presented in Appendix D, Figure D2-1 to Figure D2-41.

Constituents with a high leachability potential identified from the bulk metal and SFE tests were chloride, fluoride, nitrite, sulphate, aluminum, arsenic, cadmium, chromium, copper, iron, lead, molybdenum, nickel, selenium, silver, uranium, zinc, radium-226, and lead-210.

Table 5-7: Average Shake Flask Extraction Leachate Concentrations for Selected Constituents

Sample ID	pH	Sulphate	Aluminum	Arsenic	Copper	Chromium	Molybdenum	Nickel	Lead	Selenium	Uranium	Lead-210	Radium-226
	pH units	mg/L										Bg/L	
MGNLR	4.8	160	0.040	0.0060	0.081	<0.0005	0.00030	0.081	3.2	0.088	0.19	275	345
HGNLR	5.6	1,123	0.025	0.0092	0.029	<0.0005	0.0062	0.13	3.2	0.064	3.7	240	86
LUGP	5.7	1,755	<0.00050	0.00093	0.0095	0.0013	0.14	0.011	0.015	0.0014	2.0	0.90	0.58
HUGP	7.4	2,218	<0.00050	0.0060	<0.00020	0.00046	0.54	0.0046	<0.0001	0.0032	0.59	<0.80	0.53
MPPT	6.6	3,850	0.066	0.045	<0.0020	<0.005	15	<0.0010	<0.001	0.017	0.012	<0.80	0.28
OPC	12	580	0.0070	<0.001	<0.0020	0.29	0.19	<0.0010	<0.001	0.0050	0.0080	<0.80	0.20
OPC / SLAG	12	3,300	0.087	0.00020	<0.00020	0.020	0.017	0.00020	<0.0001	0.038	<0.0001	<0.80	0.30
HLC	9.4	900	0.013	0.092	0.00038	0.00065	2.1	0.00020	0.0018	0.11	0.0076	0.55	83
HHC	12	145	0.018	0.040	0.00045	0.029	6.3	0.00020	0.39	0.035	0.015	43	108
HPLC	8.8	1,690	2.0	0.14	0.0018	0.0075	3.8	0.00028	0.0016	0.059	0.069	<0.80	17
HPHC	12	1,610	0.0090	0.34	0.0046	0.44	14	0.0028	0.098	0.035	0.020	8.0	7.2
HHGPLC	10	2,180	3.6	0.25	0.0064	0.033	4.3	0.00083	0.00065	0.19	0.014	<0.80	11
HHGPHC	12	1,950	0.012	0.15	0.0036	0.27	6.8	0.0040	0.047	0.017	0.012	4.0	6.9
HLC-S	10	3,075	0.12	0.16	0.0028	<0.0050	8.1	0.00075	0.0025	0.54	0.0020	2.0	64
HHC-S	12	543	4.7	0.067	0.0023	0.014	28	<0.0010	0.13	0.094	0.033	17	48

Bg/L = becquerels per litre; <= less than.

Average results for selected constituents are summarized in Table 5-7. Key results from the SFE leach testing are summarized as follows:

- Leachate pH values were acidic in the leach residue samples and ranged from acidic to circumneutral in the process waste samples. The pH values for the OPC and OPC / slag binder samples were highly alkaline (pH 12) due to the presence of amorphous calcium oxide minerals. The pH values in the composite samples were basic due to the presence of binder and the samples with a high binder content contained a higher pH than the samples with a low binder content.
- Sulphate concentrations were variable among the individual and composite materials. The highest average concentrations were measured in the MPPT material, followed by the OPC / slag binder. The HUGP, LUGP, and HGNLR materials also contained elevated sulphate concentrations among the individual waste materials. The composite material with the highest average sulphate concentration was HLC-S, followed by HHGPLC, HHGPHC, HPLC, HPHC, HLC, HHC-S, and HHC.
- Elevated aluminum concentrations were generally associated with the composite materials. Concentrations among the individual waste materials were highest in the OPC / slag binder, followed by the MPPT material. The highest average concentrations in the composite samples were measured in HHC-S and HHGPLC and these concentrations were more than one order of magnitude greater than the individual materials. Sample HPLC also contained elevated aluminum concentrations, though this material did not contain the OPC / slag binder or effluent precipitates.
- Elevated arsenic concentrations were associated with the composite materials, and concentrations in the composite materials were generally higher than in the individual materials. Among the individual tailings and process waste materials, the highest arsenic concentrations were associated with MPPT. Among the composite materials, the highest arsenic concentrations were measured in HPHC, followed by HHGPLC, HLC-S, HHGPHC, and HPLC.
- Elevated chromium concentrations were associated with the OPC binder and the composite materials. The concentration measured in the OPC binder was one to three orders of magnitude greater than the concentrations in the other individual materials. The highest average chromium concentrations in the composite samples were measured in HPHC and HHGPHC, and these concentrations were similar to the OPC binder concentration. Composite samples with a high binder content contained a higher chromium concentration compared to the composite samples with a low binder content.
- Elevated copper concentrations were associated with the leach residue samples. Individual material types HUGP, MPPT, OPC, and OPC / slag contained leachable copper concentrations below the analytical detection limit. Composite samples with the highest average copper concentration were HHGPLC, followed by HPHC, HHGPHC, HLC-S, HHC-S, and HPLC. Samples HHC and HLC contained the lowest copper concentrations, despite containing a higher proportion of leach residue.
- Elevated lead concentrations were associated with the leach residue samples. Individual material types HUGP, MPPT, OPC, and OPC / slag contained leachable lead concentrations below the analytical detection limit. Lead concentrations were greater in the high binder samples compared to the low binder samples. The highest average lead concentrations were measured in HHC, followed by HHC-S, HPHC, and HHGPHC. These concentrations were at least one order of magnitude lower than the concentrations noted in the individual leach residue samples.

- Elevated molybdenum concentrations were associated with MPPT and composite materials. Molybdenum concentrations in the individual materials were notably lower than concentrations for MPPT and all composite materials. The highest average molybdenum concentration was measured in a sample that does not contain MPPT. The greatest average concentrations were measured in HHC-S, followed by HPHC, HLC-S, HHGPHC, HHC, HHGPLC, HPLC, and HLC.
- Elevated nickel concentrations were associated with the leach residue samples. Nickel concentrations in the individual materials were greatest in HGNLR, followed by MGNLR, LUGP, and HUGP. The average HGNLR concentration was at least two orders of magnitude greater than the average concentrations in the composite materials. The composite samples with the highest average nickel concentrations were HHGPHC, followed by HPHC, HHGPLC, HLC-S, HPLC, HHC, and HLC.
- Elevated selenium concentrations were associated with the low binder composite materials, and these concentrations were notably greater than the average concentrations measured in the individual materials. The highest average selenium concentrations in the individual materials were measured in MGNLR, followed by HGNLR, OPC / slag, MPPT, OPC, HUGP, and LUGP. The highest average selenium concentrations in the composite materials were measured in HLC-S, followed by HHGPLC, HLC, HHC-S, HPLC, HHC, HPHC, and HHGPHC.
- Elevated uranium concentrations were associated with HGNLR and LUGP. Uranium concentrations in these two individual materials were approximately two to three orders of magnitude higher than concentrations measured in the composite materials. The composite materials with the highest average uranium concentrations were HPLC, followed by HHC-S, HPHC, HHC, HHGPLC, HHGPHC, HLC, and HLC-S.
- Elevated radium-226 concentrations were associated with the leach residue materials and composite materials containing only leach residue and binder. The precipitate and binder materials contained relatively low radium-226 concentrations. The composite materials with the greatest average radium-226 concentrations were HHC, followed by HLC, HLC-S, HHC-S, HPLC, HHGPLC, HPHC, and HHGPHC.

5.3.1.6 Process Water Quality

Chemical analysis results for process water produced from MGNLR and HGNLR are presented in Appendix C, Table C-6, and key results are summarized below:

- Process water from MGNLR was slightly acidic (average pH 6.4), and the average sulphate concentration was 1,143 mg/L. Average concentrations of the constituents identified from elemental and short-term leaching testing were 0.031 mg/L aluminum, 0.080 mg/L arsenic, 0.0096 mg/L copper, 0.0040 mg/L lead, 1.4 mg/L molybdenum, 0.038 mg/L nickel, 0.045 mg/L selenium, 1.2 mg/L uranium, and 25 Bq/L radium-226.
- Process water from HGNLR was acidic (average pH 5.3) and the average sulphate concentration was 1,758 mg/L. Average concentrations of the constituents identified from elemental and short-term leaching testing were 0.54 mg/L aluminum, 0.012 mg/L arsenic, 0.019 mg/L copper, 0.23 mg/L lead, 0.013 mg/L molybdenum, 0.15 mg/L nickel, 0.022 mg/L selenium, 4.5 mg/L uranium, and 103 Bq/L radium-226.

Generally, concentrations of constituents were similar or higher in the process water samples compared to the corresponding SFE neutralized leach residue results. One exception was the lead concentration, which was approximately one to three orders of magnitude higher in the neutralized leach residue SFE leachate than in the process water.

5.4 Kinetic Geochemical Test Results

Three kinetic tests were completed as part of the geochemical characterization program: MTP tests, HCTs, and LEAF tests. The HCTs were conducted on the HGNLR and MGNLR samples, MTP tests were conducted on low binder composite samples, and LEAF testing was completed on all composite materials.

Results presented in the subsequent subsections include trends for constituents that were identified to contain high leachable concentrations from the SFE testing (Section 5.3.1.5, Shake Flask Extraction Leach Test). Full analytical results for the kinetic tests are provided in Appendix E, Kinetic Test Results, and figures for all constituents are provided in Appendix F, Kinetic Test Figures.

Due to the ongoing nature of the HCT and LEAF kinetic tests, results presented in this report include data available to 16 October 2020.

5.4.1.1 Modified Triaxial Permeability Test

Low binder composite tailings materials were selected for MTP testing to obtain an estimate of pore water quality and examine changes in pH and metal/metalloid concentration as a function of pore volume replacement. Results are provided in Appendix E, Table E-1, and figures are provided in Appendix F, Figure F1-1 to Figure F1-26. Key results are summarized as follows:

- pH trends varied among the composite materials. Initial values in the HHGPLC samples were basic (pH 9.8) and decreased between four and five pore volumes. Values stabilized after five pore volume replacements and remained circumneutral (pH 7.9). Initial pH values in the HPLC samples were circumneutral (pH 7.7) and fluctuated between 7.2 and 8.8 for the remainder of the test period. Initial pH values in HLC S samples were basic (pH 10) and decreased between 0.5 and two pore volumes to 8.3. Values gradually increased after two pore volume replacements and were basic (pH 9.7) for the remainder of the test period. The HLC pH values fluctuated between circumneutral and basic (pH 7.4 and 9.6) throughout the test period.
- Aluminum concentrations decreased as a function of pore volume replacement for all materials. Concentrations in samples collected from zero to one pore volume replacement were highest in HHGPLC (1.0 mg/L) and HPLC (0.99 mg/L) and lowest in HLC-S (0.53 mg/L) and HLC (0.14 mg/L). Concentrations decreased in all samples between two to five pore volumes and generally stabilized after five pore volume replacements. The stable concentrations were higher in HHGPLC (0.43 mg/L) and HPLC (0.45 mg/L) compared to HLC-S (0.27 mg/L) and HLC (0.022 mg/L).
- Arsenic concentrations decreased as a function of pore volume replacement for all materials. Concentrations in samples collected to one pore volume replacement were highest in HHGPLC (1.6 mg/L) and HPLC (1.8 mg/L) and lowest in HLC-S (0.56 mg/L). Concentrations decreased between two to five pore volumes for all samples and continued to gradually decrease after five pore volume replacements for all materials. Average concentrations after five pore volume replacements were higher in HLC-S (0.019 mg/L) compared to HHGPLC (0.0084 mg/L) and HPLC (0.015 mg/L).

- Chromium concentrations decreased as a function of pore volume replacement except for HLC-S samples, which were below detection limit throughout testing. Concentrations in samples collected to one pore volume were greatest in HPLC (0.0068 mg/L) and HLC (0.0061 mg/L) and were generally below the detection limit (0.05 mg/L) for HHGPLC samples. Concentrations decreased between two to five pore volumes and stabilized after five pore volume replacements. Stable concentrations were greatest in HPLC samples (0.0026 mg/L), followed by HHGPLC (0.0020 mg/L) and HLC (0.0018 mg/L).

- Copper concentrations generally decreased as a function of pore volume replacement for all materials. Concentrations in samples collected to one pore volume replacement were highest in HHGPLC (0.26 mg/L), followed by HLC-S (0.12 mg/L), HLC (0.093), and HPLC (0.034 mg/L). Concentrations decreased between two to five pore volumes and gradually decreased after five pore volume replacements for all materials. Average concentrations after five pore volume replacements were greatest in HLC-S (0.0054 mg/L) and HLC (0.0030 mg/L) and lowest in HHGPLC (0.026 mg/L) and HPLC (0.00090 mg/L).

- Lead concentrations generally decreased as a function of pore volume replacement for all materials. Concentrations in samples collected to one pore volume replacement were greatest in HHGPLC (0.031 mg/L) and HPLC (0.036 mg/L) and lowest in HLC (0.025 mg/L) and HLC-S (0.011 mg/L). Concentrations decreased between two to five pore volumes and generally stabilized after five pore volume replacements in all materials. Stable concentrations were highest in HLC (0.0019 mg/L) and HLC-S (0.0029 mg/L) compared to HHGPLC (0.00090 mg/L) and HPLC (0.00072 mg/L).

- Molybdenum concentrations generally decreased as a function of pore volume replacement for all materials. Concentrations in samples collected to one pore volume replacement were greatest in HLC-S (166 mg/L), followed by HHGPLC (117 mg/L), HPLC (40 mg/L), and HLC (15 mg/L). Concentrations generally decreased between two to five pore volumes and stabilized after five pore volume replacements in all samples. Stable concentrations were greatest in the HLC-S (7.4 mg/L) and HLC (7.2 mg/L) compared to HHGPLC (4.5 mg/L) and HPLC (6.4 mg/L).

- Nickel concentrations generally decreased as a function of pore volume replacement for all materials. Concentrations in samples collected to one pore volume replacement were greatest in HHGPLC (0.030 mg/L) and HLC (0.030 mg/L), followed by HPLC (0.022 mg/L). HLC-S samples were generally below the detection limit (0.01 mg/L). Concentrations fluctuated between two to five pore volumes and continued to fluctuate slightly after five pore volume replacements. Average concentrations after five pore volume replacements were highest in HHGPLC (0.022 mg/L), followed by HLC (0.019 mg/L), HLC-S (0.0042 mg/L), and HPLC (0.0011 mg/L).

- Selenium concentration trends varied among the material types as a function of pore volume replacement. Maximum concentrations were measured in samples collected to one pore volume replacement and the highest concentrations were measured in HLC-S (1.3 mg/L) and HLC (0.46 mg/L) compared to HHGPLC (0.24 mg/L) and HPLC (0.33 mg/L). Concentrations decreased between two to five pore volumes for HHGPLC, HLC-S, and HPLC and increased for HLC samples. Concentrations stabilized after five pore volume replacements for HHGPLC and HPLC and increased for HLC and HLC-S samples. Average concentrations after five pore volumes replacements were greatest in HLC-S (0.44 mg/L) and HLC (0.43 mg/L) compared to HHGPLC (0.016 mg/L) and HPLC (0.051 mg/L).

- Uranium concentrations decreased as a function of pore volume replacement for HHGPLC, HPLC, and HLC-S and increased in HLC samples. Concentrations in samples collected to one pore volume replacement were greatest in HHGPLC (0.040 mg/L) and HPLC (0.040 mg/L) and lower in HLC (0.016 mg/L). The HLC-S sample results were below the detection limit (0.01 mg/L). Concentrations decreased between two to five pore volumes for HHGPLC, HLC-S, and HPLC and increased for HLC. Concentrations generally stabilized after five pore volume replacements for HHGPLC, HLC-S, and HPLC. Average concentrations after five pore volume replacements were highest in HLC (0.61 mg/L), followed by HPLC (0.0062 mg/L), HHGPLC (0.0040 mg/L), and HLC-S (0.00078 mg/L).

5.4.1.2 Humidity Cell Test

Neutralized leach residue (HGNLR and MGNLR) was selected for HCT to examine long-term rates of acid generation, acid neutralization, and metal leaching. Four HCTs were constructed for both HGNLR and MGNLR replicate samples. Data presented in this report includes results up to and including week 64. Results are described as weekly mass loading rates.

The HCT dataset is presented in Appendix E, Table E-2 to Table E-9, and selected results are plotted in Appendix F, Figure F2-1 to Figure F2-29. To evaluate the long-term acid generation potential of the leach residue samples, sulphide and NP depletion calculations were also performed consistent with Price (1997) and MEND (2009). Results from these calculations are presented in Table E-10.

Key results are summarized below:

- The week one leachate was acidic for all HGNLR (average pH 5.4) and MGNLR (average pH 4.3) samples. A slight but steady decline in pH was observed for both materials over the 64-week leaching period. The pH values at week 64 ranged from 4.5 to 4.7 for the HGNLR samples and 3.9 to 4.0 for the MGNLR samples.
- Maximum sulphate mass loading rates occurred during week one (average HGNLR 1,973 mg/kg/wk, average MGNLR 1,182 mg/kg/wk). The HGNLR samples demonstrated a distinct decrease in loading rates after week one, while the MGNLR samples demonstrated a decrease to week five, followed by fluctuating rates to week 25. Both materials showed stabilizing trends after approximately week 25. The HGNLR mass loading rates after week 25 ranged from 5.1 mg/kg/wk to 55 mg/kg/wk (average 20 mg/kg/wk) and the MGNLR mass loading rates ranged from 1.3 mg/kg/wk to 67 mg/kg/wk (average 24 mg/kg/wk).
- Average aluminum mass loading rates generally increased over the 64-week leaching period for both materials. The average HGNLR mass loading rate at week one was 0.072 mg/kg/wk and increased to 0.31 mg/kg/wk by week 64. The average MGNLR mass loading rate at week one was 0.21 mg/kg/wk and the average rate increased slightly to 0.26 mg/kg/wk by week 64.
- Average HGNLR arsenic loading rates ranged from 0.0020 mg/kg/wk to 0.025 mg/kg/wk and average MGNLR loading rates ranged from 0.0017 mg/kg/wk to 0.011 mg/kg/wk. Maximum average loading rates were observed at week one for both material types (0.025 mg/kg/wk HGNLR, 0.011 mg/kg/wk MGNLR) and loading rates for all cells demonstrated an overall stable trend after week 28.

- Average HGNLR copper loading rates ranged from 0.082 mg/kg/wk to 0.31 mg/kg/wk and average MGNLR loading rates ranged from 0.14 mg/kg/wk to 3.0 mg/kg/wk over the 64-week leaching period. The mass loading rates slightly increased over time for the HGNLR samples and notably increased over time for the MGNLR samples.
- Average HGNLR lead loading rates ranged from 2.5 mg/kg/wk to 6.7 mg/kg/wk and average MGNLR loading rates ranged from 2.4 mg/kg/wk to 6.5 mg/kg/wk over the 64-week leaching period. Loading rates demonstrated an overall increasing trend for both materials.
- Average HGNLR molybdenum loading rates ranged from 0.00028 to 0.0077 mg/kg/wk and average MGNLR rates ranged from 0.000037 mg/kg/wk to 0.025 mg/kg/wk over the 64-week leaching period. The loading rates for both materials have yet to demonstrate a stabilizing trend.
- Average HGNLR nickel loading rates ranged from 0.083 mg/kg/wk to 1.9 mg/kg/wk and average MGNLR rates ranged from 0.050 to 1.1 mg/kg/wk. Maximum loading rates were observed at week one for both materials and rates generally decreased to week 28. Loading rates after week 28 demonstrated an overall stable trend for both materials.
- Average HGNLR selenium loading rates ranged from 0.021 mg/kg/wk to 0.28 mg/kg/wk and average MGNLR rates ranged from 0.025 mg/kg/wk to 0.25 mg/kg/wk over the 64-week leaching period. Maximum loading rates were observed during week one and both materials demonstrated a stable trend after week four.
- Average HGNLR uranium loading rates ranged from 3.7 mg/kg/wk to 10 mg/kg/wk and average MGNLR rates ranged from 0.18 mg/kg/wk to 1.8 mg/kg/wk over the 64-week leaching period. The HGLNR loading rates were generally stable after week 44, while the MGNLR loading rates demonstrated a slight increasing trend.

The depletion calculations conducted for the HCTs predict that sulphide-sulphur was depleted in the HGNLR cells between weeks six and eight, and the NP was depleted between weeks one and four. By week 64, 19% of the NP remained in the MGNLR cells and the estimated time to sulphide depletion is one to two years. The faster depletion rate of NP compared to the sulphide-sulphur depletion rate supports the PAG classification of these leach residue materials.

5.4.1.3 Leaching Environmental Assessment Framework Test

Composite materials were selected for LEAF testing to assess mass release of inorganic analytes under diffusion-controlled mass release conditions. Interval mass flux and diffusivity values were calculated at each leaching interval for all samples. Interval mass release values were highest under the initial leaching condition and stabilized over time, while the diffusivity values varied as a function of the leaching interval time.

The LEAF test mass interval flux results are presented in Appendix E, Table E-11 to Table E-18, and the diffusivity results are presented in Table E-19 to Table E-26. Selected interval mass flux and diffusivity time series plots are presented in Appendix F, Figure F3-1 to Figure F3-37, and Figure F4-1 to Figure F4-36, respectively. To ease interpretation, only the first replicate of each material is illustrated in each time series figure. Since preparation of materials for LEAF testing occurred at different times, the current cumulative leaching time varies among the different material types.

Key interval mass flux results are summarized below:

- The pH values among the low binder content materials ranged from 6.2 to 9.1 and values among the high binder materials ranged from 7.1 to 12. The pH values generally demonstrated a stable trend for all materials after 28 days (6 leach events).
- Aluminum interval flux values ranged from 6.6×10^{-07} to 1.4×10^{-02} mg/m^2/s. Values were highest for HHC (average 2.6×10^{-04} mg/m^2/s) and HHC-S (average 5.4×10^{-04} mg/m^2/s) and lowest for HLC (average 2.6×10^{-05} mg/m^2/s) and HLC-S (average 2.5×10^{-05} mg/m^2/s).
- Arsenic interval flux values ranged from 5.8×10^{-08} to 1.4×10^{-04} mg/m^2/s and mass flux values were generally higher in the low binder materials. A stable trend was observed for most materials after approximately 63 days (9 leach events).
- Copper interval flux values ranged from 8.3×10^{-09} to 3.9×10^{-05} mg/m^2/s and no distinct differences were noted between the high and low binder materials. A stable trend was observed for most materials after approximately 63 days (9 leach events).
- Lead interval flux values ranged from 1.3×10^{-08} to 1.6×10^{-04} mg/m^2/s and values were generally higher in materials with a high binder content. A stable trend was observed for most materials after approximately 63 days (9 leach events).
- Molybdenum interval flux values ranged from 3.2×10^{-06} to 2.8×10^{-02} mg/m^2/s and values were generally higher in materials with a low binder content. The long-term flux values for sample HPHC were notably lower than the other materials.
- Nickel interval flux values ranged from 1.9×10^{-09} to 1.2×10^{-05} mg/m^2/s and no distinct differences were noted between the high and low binder materials. Long-term trends indicate that values have not yet stabilized for HHGPLC and HHC.
- Selenium interval flux values ranged from 6.6×10^{-08} to 2.2×10^{-04} mg/m^2/s and values were higher in materials with a low binder content. A stable trend was observed for most materials after approximately 63 days (9 leach events).
- Uranium interval flux values ranged from 3.1×10^{-07} to 1.2×10^{-03} mg/m^2/s and values were higher in materials with a low binder content. A stable trend was observed for most materials after approximately 63 days (9 leach events).
- Radium-226 interval flux values ranged from 4.8×10^{-12} to 8.0×10^{-09} mg/m^2/s and no distinct differences were noted between the high and low binder materials. A stable trend was observed for most materials after approximately 63 days (9 leach events).

Key diffusivity results are summarized as follows:

- Aluminum diffusivity values ranged from 4.9×10^{-12} to 3.2×10^{-03} m^2/s and values in the high binder materials were orders of magnitude greater than the low binder materials. Long-term diffusivity trends varied among the materials and HHGPHC demonstrated a distinct increasing long-term trend.

- Arsenic diffusivity values ranged from 5.6×10^{-14} to 1.1×10^{-08} m^2/s and values in the low binder materials were generally greater than the high binder materials. A stable trend was observed for most materials after approximately 63 days (9 leach events).
- Copper diffusivity values ranged from 1.1×10^{-12} to 3.6×10^{-06} m^2/s and no distinct differences were noted between high and low binder materials. Most materials demonstrated a slightly fluctuating long-term trend.
- Lead diffusivity values ranged from 3.6×10^{-14} to 1.4×10^{-05} m^2/s and values were generally greater in the low binder materials compared to the high binder materials. The low binder materials demonstrated a slightly fluctuating long-term trend, while a stable trend was observed for most high binder materials after approximately 150 days (15 leach events).
- Molybdenum diffusivity values ranged from 1.1×10^{-13} to 9.3×10^{-09} m^2/s and values in the low binder materials were higher than the high binder materials. Overall, a stable trend was observed for most materials after approximately 63 days (9 leach events).
- Nickel diffusivity values ranged from 7.2×10^{-13} to 1.8×10^{-07} m^2/s and the low binder materials were generally higher than the high binder materials. Similar to the interval flux values, long-term trends indicate that values have not yet stabilized for HHGPLC and HHC.
- Selenium diffusivity values ranged from 1.0×10^{-11} to 5.0×10^{-09} m^2/s and no distinct differences occurred between the high and low binder materials. Most materials demonstrated a slightly fluctuating long-term trend.
- Uranium diffusivity values ranged from 1.3×10^{-10} to 2.0×10^{-06} m^2/s and values for most low binder materials were generally greater than the high binder material values. Most materials demonstrated a slightly fluctuating long-term trend.
- Radium-226 diffusivity values ranged from 2.0×10^{-12} to 2.3×10^{-09} m^2/s and no distinct differences were noted between the high and low binder materials. Most materials demonstrated a slightly fluctuating long-term trend.

5.5 Radiological Test Results

Radiological results from the SFE tests are presented in Appendix C, Static Test Results, Table C-5, results from the process water samples are presented in Table C-7, and results from the LEAF tests are presented in Appendix E, Kinetic Test Results, Table E-11 to Table E-26.

Averaged results from the SFE radioactivity tests are summarized in Table 5-8. Key results are summarized as follows:

- Among the individual tailings and process waste samples, radioactivity was greatest in HGNLR, followed by MPPT.
- The highest radioactivity values were measured in the composite leach residue samples with a low binder content (HLC-S and HLC). The lowest values were measured in the HHGPHC samples.
- Radioactivity values of leachate samples indicate that some radioactivity is mobilized during the leaching event. For the composite samples, radioactivity in the solids generally decreased after the SFE leach

testing. The low binder samples demonstrated a greater decrease in radioactivity values compared to the high binder samples.

- Leaching of radioactive elements from the MPPT, LUGP, and HUGP materials was proportionally lower compared to that of the leached residues.

Table 5-8: Selected Average Results from Radioactivity Testing

Sample ID	Gross Alpha Activity (solid sample before SFE)	Gross Alpha Activity (solid sample after SFE)	Gross Alpha Activity (SFE leachate sample)	Gross Beta Activity (solid sample before SFE)	Gross Beta Activity (solid sample after SFE)	Gross Beta Activity (SFE leachate sample)
	Bq/g	Bq/g	Bq/L	Bq/g	Bq/g	Bq/L
MGNLR	1,300	1,325	550	583	568	390
HGNLR	3,125	3,275	265	1,500	1,500	388
LUGP	8.6	7.6	50	25	24	13
HUGP	18	15	16	13	13	4.6
MPPT	830	920	2.5	140	155	2.0
OPC	<0.49	0.74	<2.5	0.34	0.22	10
OPC / SLAG	2.5	1.7	<4.3	0.90	0.96	<3.3
HLC	4,725	4,050	210	1,525	1,400	57
HHC	3,750	3,475	288	1,300	1,200	128
HPLC	3,075	3,175	44	1,075	1,125	13
HPHC	2,650	1,950	60	855	700	36
HHGPLC	3,000	2,325	40	853	815	14
HHGPHC	1,725	1,525	48	548	545	24
HLC-S	4,825	4,050	148	1,500	1,475	43
HHC-S	2,900	2,800	105	1,020	1,125	53

Bq/g = becquerels per gram; Bq/L = becquerels per litre; <= less than; SFE = shake flask extraction.

Averaged results from the SFE radiochemical speciation assessment for solid samples are summarized in Table 5-9. Key results are summarized as follows:

- Radionuclide species with the highest solid-phase concentrations in all samples were radium-226 and thorium-230.
- Radionuclide concentrations slightly increased or decreased in the solid samples after the SFE testing. Distinct leaching trends were not apparent for these samples.

Table 5-9: Average Results from Shake Flask Extraction Radiochemical Speciation Tests for Solid Samples

Sample ID	Potassium-40		Radium-226		Thorium-230		Thorium-232		Uranium-234		Uranium-235		Uranium-238	
	Bq/g(a)													
MGNLR	1.5	1.6	205	185	63	60	0.066	0.073	3.1	2.9	0.16	0.15	3.1	2.9
HGNLR	1.1	1.3	438	395	230	215	0.13	0.12	33	28	1.7	1.4	33	28
LUGP	0.048	0.028	0.048	0.055	11	13	0.0030	0.0035	2.1	2.0	0.10	0.10	2.1	2.0

Table 5-9: Average Results from Shake Flask Extraction Radiochemical Speciation Tests for Solid Samples

Sample ID	Potassium-40		Radium-226		Thorium-230		Thorium-232		Uranium-234		Uranium-235		Uranium-238	
	Bq/g[a]													
HUGP	0.020	0.028	0.20	0.16	13	13	0.0050	0.0060	8.1	8.7	0.41	0.43	8.1	8.7
MPPT	0.10	0.039	11	12	1525	1600	0.45	0.55	25	27	1.2	1.3	25	27
OPC	<0.04	0.14	0.040	0.040	0.020	0.020	0.010	0.0090	0.024	0.026	0.0010	0.0010	0.024	0.026
OPC / SLAG	0.10	0.10	0.10	0.10	<0.5	<0.5	0.052	0.047	0.12	0.11	0.0061	0.0053	0.12	0.11
HLC	2.0	1.9	380	373	213	208	0.11	0.12	29	29	1.4	1.5	29	29
HHC	1.8	1.9	290	270	175	165	0.086	0.18	23	46	1.2	2.3	23	46
HPLC	1.0	1.3	293	310	560	578	0.24	0.27	28	32	1.4	1.6	28	32
HPHC	1.1	1.5	173	175	373	348	0.17	0.16	23	20	1.1	0.99	23	20
HHGPLC	1.8	1.0	185	188	405	380	0.18	0.17	26	23	1.3	1.1	26	23
HHGPHC	1.3	0.88	150	134	278	288	0.13	0.14	17	16	0.86	0.81	17	16
HLC-S	1.5	1.5	390	405	213	215	0.12	0.12	31	36	1.6	1.8	31	36
HHC-S	0.73	2.0	253	308	150	175	0.11	0.095	23	39	1.2	2.0	23	39

a) Values to the left of the constituent represent concentrations in samples before SFE testing, and values to right represent concentrations after testing.

Bq/g = becquerels per gram; <= less than; SFE = shake flask extraction.

Averaged results from the SFE and process water radiochemical speciation assessment for leachate and process water samples are provided in Table 5-10. Key results are summarized as follows:

- Radionuclide species with the greatest concentrations in the process water samples and SFE leachate were radium-226 and lead-210.
- Neutralized leach residue samples (MGNLR and HGNLR) contained a greater measured concentration of leachable radionuclides compared to the composite samples.
- Average radium-226 concentrations are greatest in the MGNLR material, followed by the high-grade process water and the HHC composite sample.
- Average lead-210 concentrations were greatest in the MGNLR and HGNLR samples and concentrations are at least one order of magnitude lower in the composite samples.

Table 5-10: Selected Average Results from Leachate Radiochemical Speciation Tests

Sample ID	Lead-210	Polonium-210	Radium-226	Radium-228
	Bq/L			
MG-PW	1.2	1.0	25	0.48
HG-PW	27	3.9	103	2.5
MGNLR (SFE)	275	23	345	3.8
HGNLR (SFE)	240	7.4	86	1.5
LUGP (SFE)	0.90	0.10	0.58	0.75
HUGP (SFE)	0.40	0.10	0.53	1.0
MPPT (SFE)	0.40	0.10	0.28	1.0

Table 5-10: Selected Average Results from Leachate Radiochemical Speciation Tests

Sample ID	Lead-210	Polonium-210	Radium-226	Radium-228
	Bq/L			
OPC (SFE)	<0.8	<0.2	0.20	<2
OPC / SLAG (SFE)	<0.8	<0.2	0.30	<3
HLC (SFE)	0.55	0.20	83	1.9
HHC (SFE)	43	1.8	108	4.5
HPLC (SFE)	0.40	0.33	17	2.1
HPHC (SFE)	8.0	0.38	7.2	3.4
HHGPLC (SFE)	0.40	0.13	11	3.4
HHGPHC (SFE)	4.0	0.18	6.9	2.5
HLC-S (SFE)	2.0	0.75	64	1.0
HHC-S (SFE)	17	0.93	48	4.1

Bq/L = becquerels per litre; <= less than; SFE = shake flask extraction.

6 KEY FINDINGS

Key findings from the geotechnical, geochemical, and radiological characterization of neutralized leach reside, process waste, binder, and composite materials are described below.

Analytical data complied with the QA/QC criteria established for the characterization program, except for a small number of data points. These data points were addressed on an individual basis and did not affect the data interpretation or trend analysis. Adjustments were made to the HCT procedures to accommodate slow draining of the leach residues. The low binder LEAF test samples were also converted from a 3-D assessment to a 1-D assessment (as prescribed by the method) due to swelling and flaking during hydration.

Key findings from the geotechnical tests are as follows:

- Neutralized leach residue samples contained the lowest moisture content (25% to 28%) and the gypsum and effluent precipitates contained the highest moisture content (45% to 146%). Moisture content was the same or greater in the low binder samples compared to the corresponding high binder sample.
- The hydraulic conductivity of the individual materials (7.7×10^{-09} m/s to 1.2×10^{-07} m/s) was higher than that of the composite samples (3.5×10^{-10} m/s to 4.4×10^{-08} m/s). Binder content influenced the hydraulic conductivity of the composite materials and the hydraulic conductivity of the high binder material (3.5×10^{-10} m/s to 5.7×10^{-09} m/s) was one to two orders of magnitude lower than the corresponding low binder material (1.0×10^{-08} m/s to 4.4×10^{-08} m/s).

Key findings from the static geochemical tests are as follows:

- Neutralized leach residue consisted of acid resistant minerals, including muscovite (48 wt.% to 53 wt.%), quartz (27 wt.% to 36 wt.%), clinochlore (4.9 wt.% to 10 wt.%), chamosite (7.5 wt.% to 11 wt.%), and gypsum (2.1 wt.% to 6.2 wt.%). The gypsum and effluent precipitates consisted of calcium sulphate minerals, including gypsum (93 wt.%), bassanite (6.7 wt.% to 7.5 wt.%), and anhydrite (0 wt.% to 1.4 wt.%).

- The mineralogy of the composite samples reflected the mineralogy of the individual waste components with the addition of minerals that are likely associated with cement binders. The composite samples consisted of muscovite (12 wt.% to 58 wt.%), quartz (10 wt.% to 43 wt.%), gypsum (0 wt.% to 54 wt.%), ettringite (0 wt.% to 27 wt.%), clinochlore (0 wt.% to 22 wt.%), chamosite (0 wt.% to 18 wt.%), calcite (0 wt.% to 11 wt.%), kaolinite (0 wt.% to 9 wt.%), and portlandite (0 wt.% to 6 wt.%).
- The total sulphur content in all materials tested was dominated by sulphate-sulphur. Sulphide-sulphur was generally present at values less than 1 wt.% and was consistent with no detected sulphide minerals in the XRD analysis. Acid potential values ranged from 0.4 t to 47 t $CaCO_3$/1,000 t equivalent.
- Average NP values were relatively low in the neutralized leach residue and precipitate samples (1.3 t to 3.4 t $CaCO_3$/1,000 t) and notably higher in most of the composite samples due to the addition of the high NP binder materials (1,090 t $CaCO_3$/1,000 t and 600 t $CaCO_3$/1,000 t, respectively). High binder composites had a higher NP compared to the corresponding low binder version.
- Based on internationally accepted acid generation potential criteria, the neutralized leached residue, gypsum precipitates, and effluent precipitates were classified as PAG. Most of the composite materials were classified as uncertain or NPAG due to their basic paste pH values (corresponding to stored alkalinity in the pore space) and relatively high NPR values (greater than one).
- Major and minor oxide components of the materials were consistent with the primary mineralogy. Metal concentrations with enrichment factors greater than five times crustal abundance in most individual waste samples and all composite samples were arsenic, bismuth, copper, lead, molybdenum, selenium, sulphur, and uranium. Antimony and silver were also present in concentrations greater than five times crustal abundance in some of the composite samples. Calcium, cobalt, tin, yttrium, and zinc concentrations were greater than five times crustal abundance in the individual waste samples.
- The leachability of dissolved constituents from the individual and composite materials was determined by the mineralogy of the material and the binder content. More specifically, the binder materials were highly alkaline, which affects the solubility of certain metals and metalloids. Constituents with a high leachability potential identified from the bulk metal and SFE tests were chloride, fluoride, nitrite, sulphate, aluminum, arsenic, cadmium, chromium, copper, iron, lead, lead-210, molybdenum, nickel, radium-226, selenium, silver, uranium, and zinc.

Key findings from the short-term leach testing are as follows:

- High binder versions of composite samples contained higher pH values compared to the corresponding low binder versions.
- The highest sulphate liberation rates were associated with the gypsum and effluent precipitates due to the dominant gypsum composition of the materials.
- Composite samples contained the highest aluminium liberation rates. Elevated copper, lead, nickel, selenium, and uranium concentrations were associated with the neutralized leach residue, whereas chromium was associated with the OPC and cement/slag binders. Elevated molybdenum leachate concentrations were associated with the gypsum and effluent precipitates.

Key findings from the MTP tests (pore water quality evaluation) are as follows:

- The initial pore water pH of the composite samples was alkaline (pH 7.4 to 10) and higher pH levels were associated with the high binder materials. The pH values of subsequent pore volume replacements remained alkaline and varied among the composite samples.
- Metal concentrations were highest in the initial pore volume samples (0 to 1 pore volume replacements).
- Metal liberation rates for aluminium, arsenic, chromium, copper, lead, molybdenum, nickel, and uranium decreased as a function of pore volume replaced. The rates decreased by one to several orders of magnitude over a period of 5 pore volume replacements.

Key findings from the HCT tests are as follows:

- The week one leachate was acidic for all HGNLR (average pH 5.4) and MGNLR (average pH 4.3) samples and declined over the 64-week leaching period from 4.5 to 4.7 for the HGNLR samples and 3.9 to 4.0 for the MGNLR samples.
- Maximum sulphate mass loading rates occurred during week one (average HGNLR 1,973 mg/kg/wk, average MGNLR 1,182 mg/kg/wk). Sulphate mass loading decreases over time following ordered rate kinetics and showed stabilizing trends after approximately week 25. The average HGNLR mass loading rate after week 25 was 20 mg/kg/wk) and the average MGNLR mass loading rate 24 mg/kg/wk.
- Metal mass loading rates for arsenic, nickel and selenium followed order rate kinetics evident in initial high concentrations that decrease over time to lower long-term rates. aluminium, copper, lead, molybdenum and uranium mass loading rates follow non-order rate kinetics with either increasing trends or fluctuating trends over the leaching period of 64 weeks.
- The depletion calculations conducted for the HCTs predict that sulphide-sulphur was depleted in the HGNLR cells between weeks six and eight, and the NP was depleted between weeks one and four, supporting the PAG classification of these leach residue materials.

Key findings from the LEAF tests are as follows:

- The interval mass flux values were highest under initial leaching conditions and stabilized over time, while the diffusivity values varied as a function of the leaching interval time.
- Interval mass flux values indicated diffusion-based ordered rate kinetics for most constituents.
- Aluminum diffusivity values ranged from 4.9×10^{-12} to 3.2×10^{-3} m^2/s and values in the high binder materials were orders of magnitude greater than those for the low binder materials. The diffusivity values for arsenic, lead, molybdenum, and uranium were greater in the low binder samples compared to the high binder samples of the same composite material. Diffusivity values for selenium, copper, and radium-226 did not show differentiation between low and high binder versions of composite materials.

Key findings from the radiological tests are as follows:

- Of the composite materials tested, the HHC-S samples contained the highest radioactivity (gross alpha activity 288 Bq/L and gross beta activity 128 Bq/L). Radioactivity levels of the composite materials were affected by binder content and the high binder samples contained a higher leachable radioactivity.

- Radioactivity and radiochemical speciation analysis indicate that some radioactivity was mobilized during short-term leach testing. For the composite samples, radioactivity in the solids generally decreased after the SFE leach testing. The low binder samples demonstrated a greater decrease in radioactivity values compared to the high binder samples.
- Radionuclide species with the highest leachable concentrations in all samples were radium-226 and lead-210. Average radium-226 concentrations were greatest in the MGNLR samples (345 Bq/L) and average lead-210 concentrations were also greatest in the MGNLR samples (275 Bq/L).

CLOSING

Golder is pleased to submit this report to NexGen in support of the environmental assessment for the Rook I Project. For details on the limitations and use of information presented in this report, please refer to the Study Limitations section following this page. If you have any questions or require additional details related to this study, please contact the undersigned.

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SR/NB/rd

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The report is of a summary nature and is not intended to stand alone without reference to the instructions given to Golder by the Client, communications between Golder and the Client, and to any other reports prepared by Golder for the Client relative to the specific site described in the report. In order to properly understand the suggestions, recommendations and opinions expressed in this report, reference must be to the foregoing and to the entirety of the report. Golder cannot be responsible for use of portions of the report without reference to the entire report.

The information, recommendations and opinions expressed in this report are for the sole benefit of the Client and were prepared for the specific purpose set out herein. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

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APPENDIX A

SRC Certificates

Canadian Association for Laboratory Accreditation Inc.

CALA

Certificate of Accreditation

SRC Environmental Analytical Laboratories
Saskatchewan Research Council
143-111 Research Drive
Saskatoon, Saskatchewan

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

CALA

Accreditation No.: A2472
Issued On: March 1, 2018
Accreditation Date: January 3, 2005
Expiry Date: August 29, 2020

Andrew M. Adams
President & CEO

ilac-MRA CALA

CERTIFICATE OF ACCREDITATION

Standards Council of Canada
Conseil canadien des normes

CERTIFICAT D'ACCRÉDITATION

Saskatchewan Research Council
GEOANALYTICAL LABORATORIES
Galleria Building, 125 – 15 Innovation Blvd., Saskatoon, SK S7N 2X8

having been assessed by the Standards Council of Canada (SCC) and found to conform with the requirements of ISO/IEC 17025:2005 and the conditions for accreditation established by SCC is hereby recognized as an

ACCREDITED TESTING LABORATORY

for the specific tests or types of tests listed in the scope of accreditation approved by SCC and found on the SCC website at www.scc.ca.

ayant fait l'objet d'une évaluation du Conseil canadien des normes (CCN), et ayant été trouvé conforme aux exigences énoncées dans ISO/IEC 17025:2005 et aux conditions d'accréditation établies par le CCN, est de ce fait reconnu comme étant un

LABORATOIRE D'ESSAIS ACCRÉDITÉ

pour les essais ou types d'essais énumérés dans la portée d'accréditation approuvée par le CCN et figurant dans le site Web du CCN au www.ccn.ca.

Accredited laboratory number: / Numéro de laboratoire accrédité : 537

SCC file number: / Dossier du CCN n° : 15675

Initial accreditation date: / Date de la première accréditation : 2004-04-14

Cynthia Milito
pp. Chantal Guay

Vice-President – Accreditation Services / Vice-présidente – Services d'accréditation
Issued on: / Délivré le : 2017-06-23

The validity of this certificate, including the date of last re-accreditation and its expiry can be confirmed by the accompanying Scope of Accreditation document in the Directory of Accredited Laboratories on the SCC website at www.scc.ca.

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. The accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF communiqué dated April 2017).

Pour vérifier la validité du présent certificat, y compris la date de la dernière réaccréditation et la date d'expiration du certificat, consulter la portée d'accréditation qui se trouve dans le répertoire des laboratoires accrédités dans le site Web du CCN au www.ccn.ca.

Ce laboratoire est accrédité conformément à la Norme internationale reconnue ISO/IEC 17025:2005. Cette accréditation démontre la compétence technique d'un organisme pour une portée définie et l'exploitation d'un système de management de la qualité de laboratoire (cf. communiqué conjoint ISO-ILAC-IAF date de avril 2017).

Canada

SRC SASKATCHEWAN RESEARCH COUNCIL
Environmental Analytical Laboratories
143 - 111 Research Drive, Saskatoon, SK Canada S7N 3R2
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SRC ENVIRONMENTAL ANALYTICAL LABORATORIES QUALITY ASSURANCE PROGRAM

Introduction

As one of the most modern, well-equipped laboratory complexes in Canada, SRC Environmental Analytical Laboratories (SRC Analytical) provides a wide range of commercial analytical services. SRC Analytical maintains an extensive *Quality Assurance Program* designed to ensure the reliability of analytical data. Key components of the Quality Assurance program are:

- Accreditation by Canadian Association for Laboratory Accreditation (CALA).
- Participation in interlaboratory performance assessment programs.
- Routine quality control practices.
- Computerized sample management.

Accreditation by CALA

SRC Analytical is accredited by the Canadian Association for Laboratory Accreditation (CALA), for specific environmental tests listed in the scope of accreditation approved by CALA. Accreditation ensures that procedures, facilities, and methods conform to ISO/IEC 17025:2017, the internationally recognized standard. The accreditation program consists of a biennial on-site assessment which assesses the accredited methods as well as the quality management system.

Proficiency Testing and Interlaboratory Performance Assessment

Proficiency Testing helps to ensure the accuracy of results through interlaboratory comparisons and is a mandatory requirement of accreditation. SRC Analytical participates in several proficiency testing and interlaboratory performance assessment programs including:

- Proficiency Testing Canada (PTC)
- Environment Canada's Ecosystems Interlaboratory Quality Assurance program.
- ASTM's proficiency studies
- International Atomic Energy Agency programs.
- Commercially available programs such as those supplied by Environmental Resource Associates (ERA)

Quality Control

SRC Analytical employs a variety of techniques, such as the analysis of reference materials, control samples, duplicates, and spike recovery to ensure the validity of analytical results. If a problem is identified, the samples are repeated or other corrective action is taken to demonstrate that the analytical results are acceptable. If this is not possible, then the client is notified.

Computerized Sample Management

A computerized Laboratory Information Management System (LIMS) uniquely identifies samples, specifies the required analyses, monitors workflow, and stores the analytical results. All analytical data generated is the property of the client and is not released to a third party except at the written request of the client. The LIMS also prepares analytical reports and invoices.

Quality Assurance Department

Quality Assurance staff at SRC Analytical manages all aspects of the quality system. This includes reviews of quality control data, method validation, and quality audits. For further information, contact the SRC Analytical Laboratory.

January 28, 2020

Quality Assurance Supervisor

Date

January 2020

SRC GEOANALYTICAL LABORATORIES

Reference Material Report for CAR218

By Clare Deugau
Saskatchewan Research Council
Mining & Minerals
Geoanalytical Laboratories

17 January 2018

SRC Geoanalytical Laboratories
QC Limits for CAR218 Reference Material

Contents

ICP1 Total Digestion

Standard Information

CAR218 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

CAR218 STD QC LIMITS: ICP1 U Exploration Package Total Digestion

Analyte	Det Limit	Unit	Value	Lower Limi	Upper Lim
Ag	0.2	ppm	3.2	2.4	3.9
Al2O3	0.01	wt %	13.6	13.2	14.0
Ba	1	ppm	99	95	103
Be	0.2	ppm	8.4	7.9	8.9
CaO	0.01	wt %	0.43	0.41	0.45
Cd	1	ppm	1	<1	3
Ce	1	ppm	59	55	64
Co	1	ppm	146	136	155
Cr	1	ppm	162	141	183
Cu	1	ppm	380	364	395
Dy	0.2	ppm	25.6	22.6	28.6
Er	0.2	ppm	11.2	10.4	11.9
Eu	0.2	ppm	1.8	1.7	2.0
Fe2O3	0.01	wt %	3.48	3.36	3.61
Ga	1	ppm	35	31	38
Gd	1	ppm	13	11	14
Hf	1	ppm	6	3	8
Ho	1	ppm	3	2	5
K2O	0.01	wt %	2.88	2.76	3.00
La	1	ppm	35	31	38
Li	1	ppm	217	207	227
MgO	0.01	wt %	2.32	2.23	2.41
MnO	0.01	wt %	0.04	0.03	0.06
Mo	1	ppm	632	612	652
Na2O	0.01	wt %	0.06	0.04	0.07
Nb	1	ppm	17	15	19
Nd	1	ppm	32	31	33
Ni	1	ppm	2105	1931	2278
P2O5	0.01	wt %	0.12	0.11	0.14
Pb	1	ppm	256	245	267
Pr	1	ppm	6	4	9
Sc	1	ppm	11	10	12
Sm	1	ppm	7	4	9
Sn	1	ppm	4	<1	7
Sr	1	ppm	118	112	123
Ta	1	ppm	1	<1	3
Tb	1	ppm	1	<1	2
Th	1	ppm	34	30	39
TiO2	0.01	wt %	0.64	0.61	0.68
U	2	ppm	3014	2908	3120
V	1	ppm	968	931	1005
W	1	ppm	8	5	11
Y	1	ppm	128	121	134
Yb	0.1	ppm	8.2	7.6	8.7
Zn	1	ppm	62	58	66
Zr	1	ppm	245	229	262

ICP1 Partial Digestion

Standard Information

CAR218 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

CAR218 STD QC LIMITS: ICP1 U Exploration Package Partial Digestion

Analyte	Det Limit	Unit	Value	Lower Lim	Upper Lim
Ag	0.2	ppm	2.9	2.7	3.2
As	1	ppm	3130	2999	3260
Bi	1	ppm	97	92	102
Co	1	ppm	140	134	147
Cu	1	ppm	363	348	378
Ge	1	ppm	1	<1	2
Hg	1	ppm	1	<1	2
Mo	1	ppm	578	557	598
Ni	1	ppm	1992	1900	2085
Pb	1	ppm	199	185	214
Sb	1	ppm	3	2	5
Se	1	ppm	13	10	17
Te	1	ppm	1	<1	2
U	1	ppm	3007	2878	3136
V	1	ppm	283	260	305
Zn	1	ppm	48	44	51

SRC Geoanalytical Laboratories
QC Limits for CAR218 Reference Material

ICPMS Total Digestion

Standard Information

CAR218 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

CAR218 STD QC LIMITS: ICP-MS Package Total Digestion

Analyte	Det Limit	Unit	Value	Lower Lim	Upper Lim
Ag	0.02	ppm	2.91	2.41	3.40
Be	0.1	ppm	9.4	7.5	11.2
Bi	0.1	ppm	119	108	130
Cd	0.1	ppm	0.1	<0.1	0.2
Co	0.02	ppm	148	129	167
Cs	0.1	ppm	1.8	1.6	2.1
Cu	0.1	ppm	379	352	406
Dy	0.02	ppm	24.2	19.5	28.9
Er	0.02	ppm	9.98	8.53	11.43
Eu	0.02	ppm	1.77	1.47	2.06
Ga	0.1	ppm	36.6	33.3	39.9
Gd	0.1	ppm	12.5	10.5	14.6
Hf	0.1	ppm	7.1	5.7	8.6
Ho	0.02	ppm	4.57	4.13	5.01
Mo	0.01	ppm	656	600	713
Nb	0.1	ppm	13.5	11.5	15.4
Nd	0.1	ppm	26.6	21.0	32.1
Ni	0.1	ppm	2073	1891	2256
Pb204	0.001	ppm	0.508	0.458	0.558
Pb206	0.001	ppm	179	169	189
Pb207	0.001	ppm	17.2	15.9	18.6
Pb208	0.001	ppm	26.6	23.5	29.8
PbSUM	0.001	ppm	223	212	235
Pr	0.1	ppm	7.3	6.2	8.5
Rb	0.1	ppm	70.3	63.3	77.2
Sc	0.1	ppm	12.1	9.6	14.5
Sm	0.1	ppm	7.7	6.3	9.1
Sn	0.02	ppm	2.46	1.67	3.25
Ta	0.02	ppm	1.43	1.22	1.63
Tb	0.02	ppm	3.51	3.03	3.99
Th	0.02	ppm	34.2	29.6	38.7
U	0.02	ppm	2999	2677	3320
V	0.1	ppm	961	913	1009
W	0.1	ppm	9.2	5.6	12.8
Y	0.1	ppm	127	113	140
Yb	0.02	ppm	7.25	6.57	7.93
Zn	1	ppm	60	53	67

ICPMS Partial Digestion

Standard Information

CAR218 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

CAR218 STD QC LIMITS: ICP MS Package Partial Digestion

Analyte	Det Limit	Unit	Value	Lower Limi	Upper Limi
Ag	0.01	ppm	2.66	2.09	3.23
As	0.01	ppm	3236	3021	3451
Be	0.01	ppm	3.68	3.30	4.07
Bi	0.01	ppm	104	83.8	125
Cd	0.01	ppm	0.05	<0.01	0.14
Co	0.01	ppm	138	126	149
Cs	0.01	ppm	0.44	0.38	0.50
Cu	0.01	ppm	356	339	373
Dy	0.01	ppm	19.3	17.7	21.0
Er	0.01	ppm	8.45	7.73	9.18
Eu	0.01	ppm	1.33	1.20	1.46
Ga	0.01	ppm	7.68	6.76	8.60
Gd	0.01	ppm	10.41	9.23	11.59
Ge	0.01	ppm	0.08	0.06	0.11
Hf	0.01	ppm	1.00	0.79	1.22
Hg	0.01	ppm	0.84	0.74	0.93
Ho	0.01	ppm	3.77	3.49	4.06
Mo	0.01	ppm	589	553	625
Nb	0.01	ppm	0.02	<0.01	0.05
Nd	0.01	ppm	13.1	12.0	14.1
Ni	0.01	ppm	1896	1782	2010
Pb204	0.001	ppm	0.438	0.402	0.474
Pb206	0.001	ppm	154	146	162
Pb207	0.001	ppm	16.1	15.1	17.1
Pb208	0.001	ppm	25.4	23.2	27.6
PbSUM	0.001	ppm	196	185	207
Pr	0.01	ppm	2.67	2.42	2.91
Rb	0.01	ppm	6.95	6.19	7.70
Sb	0.01	ppm	2.34	1.50	3.17
Sc	0.1	ppm	4.41	4.05	4.77
Se	0.1	ppm	11.46	9.30	13.61
Sm	0.01	ppm	5.47	5.05	5.90
Sn	0.01	ppm	0.35	0.26	0.45
Ta	0.01	ppm	0.01	<0.01	0.02
Tb	0.01	ppm	3.04	2.51	3.57
Te	0.01	ppm	0.28	0.12	0.44
Th	0.01	ppm	21.2	19.4	23.0
U	0.01	ppm	2891	2728	3054
V	0.1	ppm	272	249	295
W	0.1	ppm	0.1	<0.1	0.2
Y	0.01	ppm	92.9	85.7	100.1
Yb	0.01	ppm	5.50	5.05	5.96
Zn	0.1	ppm	43.7	40.4	47.1
Zr	0.01	ppm	40.0	31.9	48.0

ICP Total Digestion (MS Package)

Standard Information

CAR218 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

CAR218 STD QC LIMITS: ICP (MS Package) Total Digestion

Analyte	Det Limit	Unit	Value	Lower Limi	Upper Lim
Al2O3	0.01	wt %	13.6	13.2	14.0
Ba	1	ppm	99	95	103
CaO	0.01	wt %	0.43	0.41	0.45
Ce	1	ppm	59	55	64
Cr	1	ppm	162	141	183
Fe2O3	0.01	wt %	3.48	3.06	3.61
K2O	0.002	wt %	2.88	2.76	3.00
La	1	ppm	35	31	38
Li	1	ppm	217	207	227
MgO	0.002	wt %	2.32	2.23	2.41
MnO	0.001	wt %	0.046	0.040	0.052
Na2O	0.01	wt %	0.06	0.04	0.07
P2O5	0.002	wt %	0.128	0.117	0.139
Sr	1	ppm	118	112	123
TiO2	0.002	wt %	0.64	0.61	0.68
V	0.1	ppm	968	931	1005
Zr	1	ppm	245	229	262

SRC Geoanalytical Laboratories
QC Limits for CAR218 Reference Material

Aqua Regia Digestion

Standard Information

CAR218 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

CAR218 STD QC LIMITS: Aqua Regia Digestion

Analyte	Det Limit	Unit	Value	Lower Limi	Upper Limi
Ag	0.2	ppm	3.0	2.6	3.4
Al2O3	0.01	wt %	6.83	6.39	7.27
As	1	ppm	3360	3135	3584
Ba	1	ppm	58	54	61
Be	0.5	ppm	5.2	4.7	5.6
Bi	1	ppm	102	95	109
CaO	0.01	wt %	0.42	0.40	0.45
Cd	1	ppm	2	1	3
Co	1	ppm	132	123	142
Cr	1	ppm	97	90	104
Cu	1	ppm	375	356	395
Fe2O3	0.01	wt %	3.15	2.99	3.31
Hg	1	ppm	1	<1	2
K2O	0.01	wt %	1.01	0.93	1.09
La	1	ppm	13	12	15
MgO	0.01	wt %	1.84	1.75	1.93
MnO	0.002	wt %	0.042	0.040	0.045
Mo	1	ppm	568	535	600
Na2O	0.01	wt %	0.03	0.02	0.04
Ni	1	ppm	2039	1915	2163
P2O5	0.002	wt %	0.097	0.090	0.103
Pb	1	ppm	203	191	215
S	10	ppm	2959	2780	3138
Sb	1	ppm	4	2	6
Sc	1	ppm	6	4	7
Se	1	ppm	16	12	19
Sn		ppm	1	<1	2
Sr	1	ppm	59	53	64
TiO2	0.01	wt %	0.01	<0.01	0.02
U, ICP	1	ppm	2909	2747	3070
V	1	ppm	565	521	609
W	1	ppm	1	<1	2
Y	1	ppm	97	92	103
Zn	1	ppm	53	49	57
Zr	1	ppm	1	<1	2

Other Packages

Standard Information

CAR218 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

CAR218 STD QC LIMITS

Analyte	Det Limit	Unit	Value	Lower Limi	Upper Lim
U3O8	0.001	wt %	0.351	0.346	0.356
LOI	0.1	wt %	5.6	5.0	6.2

Saskatchewan Research Council

SRC GEOANALYTICAL LABORATORIES

Quality Control Data Limits

Prepared By
Clare Glennon
QA Specialist

Geoanalytical Laboratories
Mining and Minerals
Saskatchewan Research Council

10 June 2009

smart science solutions

Quality Control Data Limits

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Contents

1. ASR109 Standard Information

Standard Information

ASR109 is a standard prepared in-house using various reject samples. The standard has been prepared to assure homogeneity. The standards have been sent to third parties for recheck analysis. QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

ASR109 STD QC LIMITS: ICP U Exploration Package Partial Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.1	0.2	ppm	0.4	<0.1
As	0.2	0.6	ppm	1.0	0.2
Bi	0.2	0.7	ppm	1.0	0.4
Co	0.1	0.7	ppm	1.0	0.4
Cu	0.1	4.6	ppm	4.9	4.3
Ge	0.2	0.2	ppm	0.5	<0.2
Hg	0.2	0.3	ppm	0.7	<0.2
Mo	0.1	2.6	ppm	2.9	2.3
Ni	0.1	12.7	ppm	13.9	11.5
Pb	0.02	1.06	ppm	1.26	0.86
Sb	0.2	0.2	ppm	0.5	<0.2
Se	0.2	0.2	ppm	0.5	<0.2
Te	0.2	0.2	ppm	0.5	<0.2
U	0.5	1.0	ppm	1.5	0.5
V	0.1	1.6	ppm	1.9	1.3
Zn	0.1	0.9	ppm	1.2	0.6

ASR109 STD QC LIMITS: Other Packages - Partial Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
U,Fl	0.02	0.18	ppm	0.22	0.14

ASR109 Standard Information continued

Standard Information

ASR109 is a standard prepared in-house using various reject samples. The standard has been prepared to assure homogeneity. The standards have been sent to third parties for recheck analysis. QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

ASR109 STD QC LIMITS: ICP U Exploration Package Total Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.2	0.2	ppm	0.4	<0.2
Al2O3	0.01	0.49	%	0.54	0.44
Ba	1	18	ppm	21	15
Be	0.2	0.2	ppm	0.4	<0.2
CaO	0.01	0.01	%	0.03	<0.01
Cd	0.2	0.2	ppm	0.4	<0.2
Ce	1	14	ppm	17	11
Co	1	1	ppm	2	<1
Cr	1	503	ppm	563	443
Cu	1	4	ppm	6	2
Dy	0.2	0.3	ppm	0.5	<0.2
Er	0.2	0.3	ppm	0.5	<0.2
Eu	0.2	0.2	ppm	0.4	<0.2
Fe2O3	0.01	0.54	%	0.59	0.49
Ga	1	1	ppm	2	<1
Gd	0.5	1.2	ppm	1.8	0.6
Hf	0.5	1.3	ppm	2.3	<0.5
Ho	0.4	0.4	ppm	0.7	<0.4
K2O	0.002	0.044	%	0.049	0.039
La	1	7	ppm	10	4
Li	1	9	ppm	11	7
MgO	0.001	0.027	%	0.033	0.021
MnO	0.001	0.004	%	0.006	0.002
Mo	1	3	ppm	5	1
NaO2	0.01	0.01	%	0.03	<0.01
Nb	1	1	ppm	2	<1
Nd	1	5	ppm	7	3
Ni	1	12	ppm	15	9
P2O5	0.002	0.013	%	0.016	0.010
Pb	1	2	ppm	4	<2
Pr	1	1	ppm	2	<1
Sc	1	1	ppm	1.5	<1
Sm	0.5	1	ppm	1.5	0.5
Sn	1	1	ppm	2	<1
Sr	1	41	ppm	44	38
Ta	1	1	ppm	2	<1
Tb	0.3	0.3	ppm	0.8	<0.3
Th	1	2	ppm	4	<1
TiO2	0.001	0.028	%	0.034	0.022
U	2	2	ppm	4	<2
V	1	4	ppm	6	2
W	1	1	ppm	2	<1
Y	1	2	ppm	2	<1
Yb	0.1	0.2	ppm	0.4	<0.1
Zn	1	1	ppm	3	<1
Zr	1	44	ppm	54	34

ASR109 Standard Information continued

Standard Information

ASR109 is a standard prepared in-house using various reject samples. The standard has been prepared to assure homogeneity. The standards have been sent to third parties for recheck analysis. QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

ASR109 STD QC LIMITS: ICPMS SST Package Partial Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.01	0.01	ppm	0.02	<0.01
As	0.01	0.45	ppm	0.55	0.35
Be	0.01	0.01	ppm	0.02	<0.01
Bi	0.01	0.02	ppm	0.04	<0.01
Cd	0.01	0.02	ppm	0.04	<0.1
Co	0.01	0.76	ppm	0.86	0.66
Cs	0.01	0.02	ppm	0.04	<0.01
Cu	0.01	4.50	ppm	4.80	4.20
Dy	0.01	0.13	ppm	0.15	0.11
Er	0.01	0.07	ppm	0.09	0.05
Eu	0.01	0.04	ppm	0.06	0.02
Ga	0.01	0.20	ppm	0.23	0.17
Gd	0.01	0.24	ppm	0.28	0.2
Ge	0.01	0.02	ppm	0.04	<0.01
Hf	0.01	0.10	ppm	0.12	0.08
Hg	0.01	0.02	ppm	0.04	<0.01
Ho	0.01	0.02	ppm	0.03	0.01
Mo	0.01	2.70	ppm	3.10	2.30
Nb	0.01	0.01	ppm	0.02	<0.01
Nd	0.01	1.36	ppm	1.56	1.16
Ni	0.01	12.9	ppm	14.2	11.6
Pb204	0.01	0.02	ppm	0.04	<0.01
Pb206	0.02	0.31	ppm	0.37	0.25
Pb207	0.02	0.25	ppm	0.31	0.19
Pb208	0.02	0.63	ppm	0.73	0.53
PbTOTAL	0.02	1.15	ppm	1.45	0.98
Pr	0.01	0.40	ppm	0.45	0.35
Rb	0.01	0.29	ppm	0.34	0.24
Sb	0.01	0.04	ppm	0.06	0.02
Sc	0.1	0.2	ppm	0.3	<0.1
Se	0.1	0.1	ppm	0.1	<0.1
Sm	0.01	0.26	ppm	0.31	0.21
Sn	0.01	0.33	ppm	0.39	0.27
Ta	0.01	0.01	ppm	0.02	<0.01
Tb	0.01	0.03	ppm	0.04	0.02
Te	0.01	0.02	ppm	0.04	<0.01
Th	0.01	0.75	ppm	0.85	0.65
U	0.01	0.23	ppm	0.28	0.18
V	0.1	1.4	ppm	1.7	1.1
W	0.1	0.1	ppm	0.2	<0.1
Y	0.01	0.50	ppm	0.66	0.40
Yb	0.01	0.10	ppm	0.08	0.04
Zn	0.1	1.0	ppm	2.0	<0.1
Zr	0.01	3.32	ppm	4.32	2.32

ASR109 Standard Information continued

Standard Information

ASR109 is a standard prepared in-house using various reject samples. The standard has been prepared to assure homogeneity. The standards have been sent to third parties for recheck analysis. QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

ASR109 STD QC LIMITS: ICPMS SST Package Total Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.02	0.04	ppm	0.06	0.02
Be	0.1	0.1	ppm	0.2	<0.1
Bi	0.1	0.1	ppm	0.1	<0.1
Cd	0.1	0.2	ppm	0.1	<0.1
Co	0.01	0.74	ppm	0.86	0.62
Cs	0.1	0.2	ppm	0.3	<0.1
Cu	0.1	4.9	ppm	5.5	4.3
Dy	0.01	0.40	ppm	0.47	0.33
Er	0.01	0.22	ppm	0.26	0.17
Eu	0.01	0.15	ppm	0.18	0.12
Ga	0.01	0.8	ppm	1.0	0.6
Gd	0.01	0.9	ppm	1.1	0.7
Hf	0.01	1.3	ppm	1.7	0.9
Ho	0.01	0.08	ppm	0.10	0.06
Mo	0.01	3.30	ppm	3.70	2.90
Nb	0.01	0.8	ppm	1.1	0.5
Nd	0.01	5.2	ppm	5.7	4.7
Ni	0.01	13.1	ppm	14.4	12.1
Pb204	0.01	0.03	ppm	0.05	<0.02
Pb206	0.02	0.58	ppm	0.68	0.48
Pb207	0.02	0.49	ppm	0.59	0.39
Pb208	0.02	1.25	ppm	1.55	0.95
PbTOTAL	0.02	2.5	ppm	2.87	1.84
Pr	0.01	1.5	ppm	1.7	1.4
Rb	0.01	1.0	ppm	1.3	0.7
Sc	0.1	0.3	ppm	0.4	0.2
Sm	0.01	0.9	ppm	1.1	0.7
Sn	0.01	0.38	ppm	0.48	0.28
Ta *	0.1	0.1	ppm	0.2	<0.1
Tb	0.01	0.09	ppm	0.12	0.06
Th	0.01	2.00	ppm	2.42	1.58
U	0.01	0.51	ppm	0.60	0.42
V	0.1	4.5	ppm	5.1	3.9
W	0.1	0.4	ppm	0.8	0.1
Y	0.01	1.8	ppm	2.1	1.5
Yb	0.01	0.25	ppm	0.30	0.20
Zn	0.1	3	ppm	6	1

* Detection Limits have changed

2. ASR209 Standard Information

Standard Information

ASR209 is a standard prepared in-house using various reject samples. The standard has been prepared to assure homogeneity. The standards have been sent to third parties for recheck analysis. QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

ASR209 STD QC LIMITS: ICP U Exploration Package Partial Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.1	0.2	ppm	0.4	<0.1
As	0.2	1.7	ppm	2.3	1.1
Bi	0.2	0.6	ppm	1.0	0.2
Co	0.1	0.7	ppm	1.0	0.4
Cu	0.1	4.3	ppm	4.6	4
Ge	0.2	0.2	ppm	0.5	<0.2
Hg	0.2	0.3	ppm	0.6	<0.2
Mo	0.1	2	ppm	2.3	1.7
Ni	0.1	11.6	ppm	12.5	10.7
Pb	0.02	2.49	ppm	2.69	2.29
Sb	0.2	0.2	ppm	0.5	<0.2
Se	0.2	0.2	ppm	0.5	<0.2
Te	0.2	0.2	ppm	0.5	<0.2
U	0.5	1.5	ppm	2.5	<0.5
V	0.1	4.5	ppm	5	4
Zn	0.1	1.1	ppm	1.4	0.8

ASR209 STD QC LIMITS: Other Packages - Partial Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
U,Fl	0.02	1.21	ppm	1.31	1.11

ASR209 Standard Information continued

Standard Information

ASR209 is a standard prepared in-house using various reject samples. The standard has been prepared to assure homogeneity. The standards have been sent to third parties for recheck analysis. QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

ASR209 STD QC LIMITS: ICP U Exploration Package Total Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.2	0.3	ppm	0.6	<0.2
Al2O3	0.01	2.5	%	2.7	2.3
Ba	1	19	ppm	22	16
Be	0.2	0.3	ppm	0.6	<0.2
CaO	0.01	0.01	%	0.03	<0.01
Cd	0.2	0.2	ppm	0.4	<0.2
Ce	1	47	ppm	53	41
Co	1	1	ppm	2	<1
Cr	1	440	ppm	500	380
Cu	1	5	ppm	7	3
Dy	0.2	1.8	ppm	2.1	1.5
Er	0.2	1.2	ppm	1.5	0.9
Eu	0.2	0.4	ppm	0.6	0.2
Fe2O3	0.01	0.85	%	0.88	0.49
Ga	1	4	ppm	6	<1
Gd	0.5	2.5	ppm	3.4	1.6
Hf	0.5	5.8	ppm	7	4.6
Ho	0.4	0.6	ppm	0.9	<0.4
K2O	0.002	0.206	%	0.227	0.185
La	1	22	ppm	28	16
Li	1	8	ppm	10	6
MgO	0.001	0.038	%	0.044	0.032
MnO	0.001	0.004	%	0.006	0.002
Mo	1	3	ppm	5	1
NaO2	0.01	0.01	%	0.03	<0.01
Nb	1	5	ppm	7	3
Nd	1	15	ppm	18	12
Ni	1	13	ppm	16	10
P2O5	0.002	0.045	%	0.05	0.040
Pb	1	6	ppm	9	3
Pr	1	4	ppm	7	<1
Sc	1	1	ppm	3	<1
Sm	0.5	2.5	ppm	3.1	1.9
Sn	1	1	ppm	3	<1
Sr	1	167	ppm	173	161
Ta	1	1	ppm	3	<1
Tb	0.3	0.3	ppm	0.8	<0.3
Th	1	25	ppm	30	20
TiO2	0.001	0.232	%	0.272	0.192
U	2	3	ppm	6	<2
V	1	15	ppm	18	12
W	1	1	ppm	3	<1
Y	1	13	ppm	16	10
Yb	0.1	1.3	ppm	1.6	1
Zn	1	2	ppm	4	<1
Zr	1	272	ppm	308	236

ASR209 Standard Information continued

Standard Information

ASR209 is a standard prepared in-house using various reject samples. The standard has been prepared to assure homogeneity. The standards have been sent to third parties for recheck analysis. QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

ASR209 STD QC LIMITS: ICPMS SST Package Partial Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.01	0.02	ppm	0.04	<0.01
As	0.01	1.60	ppm	1.90	1.30
Be	0.01	0.07	ppm	0.09	0.05
Bi	0.01	0.05	ppm	0.07	0.03
Cd	0.01	0.04	ppm	0.06	0.02
Co	0.01	0.77	ppm	0.87	0.67
Cs	0.01	0.02	ppm	0.04	<0.01
Cu	0.01	4.20	ppm	4.70	3.70
Dy	0.01	0.44	ppm	0.51	0.37
Er	0.01	0.21	ppm	0.25	0.17
Eu	0.01	0.10	ppm	0.13	0.07
Ga	0.01	0.32	ppm	0.37	0.27
Gd	0.01	0.72	ppm	0.79	0.65
Ge	0.01	0.02	ppm	0.04	<0.01
Hf	0.01	0.54	ppm	0.64	0.44
Hg	0.01	0.02	ppm	0.04	<0.01
Ho	0.01	0.08	ppm	0.1	0.06
Mo	0.01	2.15	ppm	2.45	1.85
Nb	0.01	0.01	ppm	0.02	<0.01
Nd	0.01	4.30	ppm	5.0	3.60
Ni	0.01	11.5	ppm	12.6	10.4
Pb204	0.01	0.03	ppm	0.05	0.01
Pb206	0.02	0.77	ppm	0.97	0.57
Pb207	0.02	0.54	ppm	0.71	0.37
Pb208	0.02	1.50	ppm	1.90	1.10
PbTOTAL	0.02	2.50	ppm	3.63	2.05
Pr	0.01	1.33	ppm	1.53	1.13
Rb	0.01	0.44	ppm	0.51	0.37
Sb	0.01	0.04	ppm	0.06	0.02
Sc	0.1	0.2	ppm	0.3	<0.1
Se	0.1	0.04	ppm	0.1	<0.1
Sm	0.01	0.75	ppm	0.9	0.6
Sn	0.01	0.55	ppm	0.65	0.45
Ta	0.01	0.01	ppm	0.02	<0.01
Tb	0.01	0.08	ppm	0.1	0.06
Te	0.01	0.02	ppm	0.04	<0.01
Th	0.01	11.0	ppm	12.5	9.50
U	0.01	1.20	ppm	1.35	1.05
V	0.1	4.2	ppm	4.7	3.7
W	0.1	0.1	ppm	0.2	<0.1
Y	0.01	1.88	ppm	2.13	1.63
Yb	0.01	0.20	ppm	0.25	0.15
Zn	0.1	1.4	ppm	2.6	0.2
Zr	0.01	18.8	ppm	26.0	11.6

ASR209 Standard Information continued

Standard Information

ASR209 is a standard prepared in-house using various reject samples. The standard has been prepared to assure homogeneity. The standards have been sent to third parties for recheck analysis. QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

ASR209 STD QC LIMITS: ICPMS SST Package Total Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.02	0.12	ppm	0.17	0.07
Be	0.1	0.2	ppm	0.3	0.1
Bi	0.1	0.1	ppm	0.2	<0.1
Cd	0.1	0.3	ppm	0.5	0.1
Co	0.01	0.83	ppm	0.95	0.71
Cs	0.1	0.2	ppm	0.3	<0.1
Cu	0.1	4.6	ppm	5.2	4.0
Dy	0.01	1.90	ppm	2.20	1.60
Er	0.01	1.05	ppm	1.20	0.90
Eu	0.01	0.35	ppm	0.40	0.30
Ga	0.01	2.8	ppm	3.1	2.5
Gd	0.01	2.7	ppm	3.2	2.2
Hf	0.01	7.6	ppm	8.6	6.6
Ho	0.01	0.40	ppm	0.45	0.35
Mo	0.01	3.10	ppm	3.50	2.70
Nb	0.01	5.9	ppm	6.7	5.1
Nd	0.01	17.0	ppm	19.0	15.0
Ni	0.01	12.1	ppm	13.3	10.9
Pb204	0.01	0.073	ppm	0.088	0.058
Pb206	0.02	1.7	ppm	1.81	1.59
Pb207	0.02	1.17	ppm	1.29	1.05
Pb208	0.02	3.95	ppm	4.35	3.55
PbTOTAL	0.02	6.89	ppm	7.49	6.29
Pr	0.01	5.0	ppm	5.5	4.5
Rb	0.01	2.7	ppm	3.2	2.2
Sc	0.1	0.9	ppm	1.0	0.7
Sm	0.01	2.7	ppm	3.0	2.4
Sn	0.01	1.33	ppm	1.53	1.13
Ta *	0.1	0.9	ppm	1.0	0.8
Tb	0.01	0.32	ppm	0.39	0.25
Th	0.01	26.9	ppm	30.1	23.7
U	0.01	3.06	ppm	3.46	2.66
V	0.1	16.1	ppm	18.4	13.8
W	0.1	0.9	ppm	1.3	0.5
Y	0.01	10.8	ppm	13.1	8.5
Yb	0.01	1.09	ppm	1.26	0.92
Zn	0.1	3	ppm	8	<1

* Detection Limits have changed

3. LS4 Standard Information

Standard Information

LS4 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

LS4 STD QC LIMITS: Aqua Regia Leach

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.2	0.2	ppm	0.4	<0.02
Al2O3	0.01	5.88	%	6.24	5.52
As	1	13	ppm	17	9
Ba	1	308	ppm	327	289
Be	0.2	2.1	ppm	2.8	1.4
Bi	1	1	ppm	2	<1
CaO	0.01	0.5	%	0.56	0.44
Cd	1	1	ppm	2	<1
Co	1	39	ppm	44	34
Cr	1	88	ppm	99	77
Cu	1	50	ppm	55	45
Fe2O3	0.01	10.4	%	11.7	9.1
Ge	1	1	ppm	2	<1
Hg	1	1	ppm	2	<1
K2O	0.01	0.51	%	0.57	0.45
MgO	0.01	1.10	%	1.16	1.04
MnO	0.01	0.69	%	0.74	0.64
Mo	1	13	ppm	17	9
Na2O	0.01	0.02	%	0.03	0.01
Ni	1	49	ppm	54	44
P2O5	0.01	0.56	%	0.64	0.48
Pb	1	25	ppm	29	21
Sb	1	1	ppm	2	<1
Sc	1	7	ppm	9	5
Se	1	1	ppm	2	<1
Sn	1	2	ppm	4	<1
Sr	1	24	ppm	29	19
Te	1	1	ppm	2	<1
TiO2	0.01	0.17	%	0.21	0.13
U	1	33	ppm	40	26
V	1	102	ppm	112	92
W	1	1	ppm	2	<1
Y	1	18	ppm	21	15
Zn	1	207	ppm	229	185
Zr	1	2	ppm	4	<1

LS4 Standard Information continued

Standard Information

LS4 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

LS4 STD QC LIMITS: ICP U Exploration Package Partial Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.2	0.2	ppm	0.4	<0.02
As	1	12	ppm	15	9
Bi	1	1	ppm	2	<1
Co	1	38	ppm	42	34
Cu	1	49	ppm	56	42
Ge	1	1	ppm	2	<1
Hg	1	1	ppm	2	<1
Mo	1	12	ppm	15	9
Ni	1	49	ppm	54	44
Pb	1	23	ppm	27	19
Sb	1	1	ppm	2	<1
Te	1	1	ppm	2	<1
U	1	34	ppm	39	29
V	1	101	ppm	111	91
Zn	1	205	ppm	225	185

LS4 Standard Information continued

Standard Information

LS4 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

LS4 STD QC LIMITS: Aqua Regia Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.2	0.2	ppm	0.4	<0.2
As	1	13	ppm	17	9
Bi	1	1	ppm	2	<1
Co	1	39	ppm	44	34
Cu	1	50	ppm	55	45
Ge	1	1	ppm	2	<1
Hg	1	1	ppm	2	<1
Mo	1	13	ppm	17	9
Ni	1	49	ppm	54	44
Pb	1	25	ppm	29	21
Sb	1	1	ppm	2	<1
Se	1	1	ppm	2	<1
Te	1	1	ppm	2	<1
U	1	33	ppm	40	26
V	1	102	ppm	112	92
Zn	1	207	ppm	229	185

LS4 Standard Information continued

Standard Information

LS4 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

LS4 STD QC LIMITS: AR ICP3 Gold Exploration

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.2	0.2	ppm	0.4	<0.02
Al2O3	0.01	5.88	%	6.24	5.52
As	1	13	ppm	17	9
Ba	1	308	ppm	327	289
Be	0.2	2.1	ppm	2.8	1.4
Bi	1	1	ppm	2	<1
CaO	0.01	0.5	%	0.56	0.44
Cd	1	1	ppm	2	<1
Co	1	39	ppm	44	34
Cr	1	88	ppm	99	77
Cu	1	50	ppm	55	45
Fe2O3	0.01	10.4	%	11.7	9.1
K2O	0.01	0.51	%	0.57	0.45
MgO	0.01	1.09	%	1.19	0.99
MnO	0.01	0.67	%	0.74	0.60
Mo	1	13	ppm	17	9
Na2O	0.01	0.02	%	0.04	<0.01
Ni	1	49	ppm	54	44
P2O5	0.01	0.56	%	0.64	0.48
Pb	1	25	ppm	29	21
Sb	1	1	ppm	2	<1
Sc	1	7	ppm	9	5
Sn	1	2	ppm	4	<1
Sr	1	24	ppm	29	19
TiO2	0.01	0.17	%	0.21	0.13
V	1	102	ppm	112	92
W	1	1	ppm	2	<1
Y	1	18	ppm	21	15
Zn	1	207	ppm	229	185
Zr	1	2	ppm	4	<1

4. Boron Standard Information

Standard Information

Boron standard QC values are based on replicate analysis and limits are determinded from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

Boron STD QC LIMITS: Na_2O_2 Fusion

Standard	Analyte	Unit	Value	Upper Limit	Lower Limit
Boron High (BH)	B	ppm	880	930	830
Boron Medium (BM)	B	ppm	95	101	89
Boron Low (BL)	B	ppm	16	21	11

5. U3O8 Standard Information

Standard Information

BL standard QC values are based on replicate analysis and limits are determinded from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

STD QC LIMITS: Aqua Regia Digestion

Standard	Analyte	Unit	Value	Upper Limit	Lower Limit
BL1	U3O8	%	0.026	0.030	0.022
BL2A	U3O8	%	0.502	0.510	0.496
BL3	U3O8	%	1.21	1.23	1.19
BL4A	U3O8	%	0.147	0.151	0.143
BL5	U3O8	%	8.36	8.46	8.26
UHU1	U3O8	%	80.5	81.6	79.4
CUP2	U3O8	%	87.5	88.4	86.5

6. CG 51509 Standard Information

Standard Information

CG51509 standard QC values are based on replicate analysis and limits are determined from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that samples sets using this standard have passed QC limits.

CG51509 STD QC LIMITS: ICP U Exploration Package Total Digestion

Analyte	Det Limit	Value	Units	Upper Limit	Lower Limit
Ag	0.2	0.2	ppm	0.4	<0.2
Al2O3	0.01	17.7	%	18.5	16.9
Ba	1	2250	ppm	2450	2050
Be	0.2	2.1	ppm	2.5	1.7
CaO	0.01	4.74	%	5.01	4.47
Cd	1	1	ppm	2	<1
Ce	1	160	ppm	175	145
Co	1	18	ppm	22	14
Cr	1	121	ppm	132	110
Cu	1	4	ppm	6	2
Dy	0.2	3.4	ppm	3.9	2.9
Er	0.2	2.5	ppm	3.0	2.0
Eu	0.2	2.6	ppm	3.0	2.2
Fe2O3	0.01	7.25	%	7.6	6.9
Ga	1	23	ppm	28	18
Gd	1	5.5	ppm	7	4
Hf	1	4	ppm	5	3
Ho	1	1	ppm	2	<1
K2O	0.01	3.11	%	3.31	2.91
La	1	88	ppm	96	80
Li	1	30	ppm	34	26
MgO	0.01	2.81	%	2.98	2.64
MnO	0.01	0.076	%	0.088	0.064
Mo	1	1	ppm	2	<1
Na2O	0.01	3.2	%	3.41	2.99
Nb	1	8	ppm	10	6
Nd	1	63	ppm	69	57
Ni	1	24	ppm	29	19
P2O5	0.01	0.67	%	0.71	0.63
Pb	1	19	ppm	23	15
Pr	1	16	ppm	19	13
Sc	1	13	ppm	15	11
Sm	1	8.8	ppm	9.8	7.8
Sn	1	3	ppm	5	1
Sr	1	1150	ppm	1220	1080
Ta	1	1	ppm	2	<1
Tb	1	1	ppm	2	<1
Th	1	13	ppm	16	10
TiO2	0.01	1.07	%	1.17	0.97
U	2	2	ppm	4	<2
V	1	131	ppm	143	109
W	1	1	ppm	2	<1
Y	1	22	ppm	25	19
Yb	0.1	2	ppm	2.3	1.7
Zn	1	87	ppm	94	80
Zr	1	177	ppm	217	137

7. Lead Isotopes standard information

Standard Information

NBS981 standard QC values are based on replicate analysis and limits are determinded from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

Pb Isotope STD QC LIMITS: ICP-MS

Ratio	Value	Upper Limit	Lower Limit
Pb 208 Pb 206	2.178	2.219	2.137
Pb 207 Pb 206	0.922	0.928	0.915
Pb 206 Pb 204	17.019	17.328	16.709
Pb 207 Pb 204	15.683	16.034	15.333
Pb 208 Pb 204	37.064	38.42	35.709

QC LIMITS

FOR

SY3 REFERENCE MATERIAL

By Clare Glennon
Saskatchewan Research Council
Mining & Minerals

11th April 2013

SY3 Standard Information

SY3 Information

SY3 QC values are based on replicate analysis and limits are determinded from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

SY3 QC LIMITS: Trace Element WR Fusion

Analyte	Value	Units	Upper Limit	Lower Limit
Ag	3.1	ppm	3.8	2.3
As	12.3	ppm	18.5	6
Ba	450	ppm	482	416
Be	20	ppm	24.8	17.2
Bi	0.3	ppm	0.6	<0.1
Cd	0.2	ppm	0.5	0.1
Ce	2230	ppm	2416	2080
Co	7.8	ppm	9.6	5.9
Cs	1.7	ppm	2.9	0.6
Cu	17	ppm	22.9	11.1
Dy	118	ppm	128	109
Er	68.8	ppm	75.5	62
Eu	17	ppm	18.7	15.3
Ga	27	ppm	31.2	21.4
Gd	105	ppm	117	93
Ge	0.4	ppm	1.5	<0.1
Hf	9.7	ppm	12.2	7.2
Hg	0.3	ppm	1.8	<0.1
Ho	29.5	ppm	36.3	23.4
La	1340	ppm	1439	1248
Lu	7.95	ppm	8.83	7.06
Mo	0.6	ppm	3	<0.1
Nb	148	ppm	194	101
Nd	670	ppm	740	603
Ni	11	ppm	17	5
Pb204	0.093	ppm	0.115	0.071
Pb206	78	ppm	83.9	72.1
Pb207	8.36	ppm	9.35	7.36
Pb208	44.1	ppm	48.2	40
PbSUM	133	ppm	140	121
Pr	223	ppm	241	204
Rb	206	ppm	222	190
Sb	1	ppm	3	<1
Se	30	ppm	36	10
Sm	109	ppm	119	98
Sn	5.7	ppm	6.9	4.6
Sr	302	ppm	322	278
Ta	30	ppm	35.4	22.3
Tb	18.1	ppm	19.8	16.3
Te	0.1	ppm	0.2	<0.1
Th	1032	ppm	1144	919
Tl	0.66	ppm	1.16	0.16
Tm	11.6	ppm	13	10.3
U	650	ppm	701	602
W	4	ppm	6	<1
Y	718	ppm	777	668
Yb	62.1	ppm	66.9	57.3
Zn	244	ppm	272	207
Zr	320	ppm	342	275

SY3 Information

SY3 QC values are based on replicate analysis and limits are determinded from 3 sigma data. This standard is continuously control chart monitored by LIMS to ensure that sample sets using this standard have passed QC limits.

SY3 QC LIMITS: MS Fusion Rare Earth Elements (MS REE1)

Analyte	Value	Units	Upper Limit	Lower Limit
Ce	2230	ppm	2416	2080
Dy	118	ppm	128	109
Er	68.8	ppm	75.5	62
Eu	17	ppm	18.7	15.3
Gd	105	ppm	117	93
Ho	29.5	ppm	36.3	23.4
La	1340	ppm	1439	1248
Lu	7.95	ppm	8.83	7.06
Nb	148	ppm	194	101
Nd	670	ppm	740	603
Pr	223	ppm	241	204
Sm	109	ppm	119	98
Ta	30	ppm	35.4	22.3
Tb	18.1	ppm	19.8	16.3
Th	1032	ppm	1144	919
Tl	0.66	ppm	1.16	0.16
Tm	11.6	ppm	13	10.3
U	650	ppm	701	602
Y	718	ppm	777	668
Yb	62.1	ppm	66.9	57.3

CANMET

Canada Centre
for Mineral
and Energy
Technology

Centre canadien
de la technologie
des minéraux
et de l'énergie

REPORT 79-35

REFERENCE MATERIALS – ROCK SAMPLES

SY-2, SY-3, MRG-1

SYDNEY ABBEY

DISPLAY COPY

CANADIAN CERTIFIED
REFERENCE MATERIALS
PROJECT

MINERALS RESEARCH PROGRAM
MINERAL SCIENCES LABORATORIES

DECEMBER 1979

Energy, Mines and Énergie, Mines et

INTRODUCTION

The geologist generally requires a complete analysis of his rock samples that normally includes the determination of SiO_2, Al_2O_3, Fe_2O_3, FeO, MgO, CaO, Na_2O, K_2O, H_2O, CO_2, TiO_2, P_2O_5 and MnO, and frequently of F and S. More recently, requirements have also included such common trace elements as Ba, Co, Cr, Cu, La, Li, Ni, Pb, Rb, Sr, V, Y, Zn and Zr, with less frequent demands for additional elements. Collaborative analytical programs on reference samples of rocks originating in the U.S.A. (1,2), France (3,4), Japan (5) and South Africa (6) have revealed certain special characteristics of such programs:

(1) Because of the many constituents which must be determined and the limited facilities available in individual laboratories, many such establishments must be enlisted. Laboratories qualified to participate in such programs are generally those in governmental and geological institutions and in geology departments of universities.

(2) Results for individual constituents show the relatively wide and erratic dispersion usually observed for rocks.

Many uncontrolled variables in the collaborative analysis of rock samples make it difficult to treat the data statistically as done for ores - e.g., by Sutarno and Faye (7). Various semi-empirical methods have been proposed for the difficult problem of choosing suitable values. The logic behind the choice of method used here has been described elsewhere (8-11).

HISTORY OF THE SAMPLES

The first reference sample of a rock prepared by the predecessors of the Canadian Certified Reference Materials Project was SY-1, a syenite from the Bancroft area of eastern Ontario, containing unusually high concentrations of uranium, thorium, rare earths and several additional trace elements. Sine et al. listed the most recent analytical data on SY-1 (12). That sample was never subjected to a systematic collaborative analysis, and because it was prepared in a limited quantity the supply became exhausted in a short time.

SY-2 was collected in the same area as a replacement for SY-1 but was found to have lower contents of uranium, thorium and rare earths. To provide a new material closer in composition to SY-1, another batch of syenite from the same source was subjected to autogenous grinding with fist-sized lumps of material containing uraninite, allanite and betafite. Autogenous grinding was performed to minimize the well-known heterogeneity problems encountered in mixing finely-ground solids. Spectrographic checks on the distribution of individual rare-earth elements indicated that the mixing process had been successful. The product was designated SY-3. Preliminary descriptions of SY-2 and SY-3 were given by Gillieson (13).

MRG-1 is a gabbro sample from Mount Royal, Montreal, described in detail by Perrault et al. (14).

The three samples were originally offered for sale as "uncertified" materials, purchasers being invited to report analytical data to the originators, as had been done with SY-1. In an effort at more systematic treatment, a group known as the Task Force on Rock Samples was organized late in 1973 for obtaining and correlating as much compositional data as possible on the three samples. This paper lists all available data and recommends some compositional values.

COLLABORATIVE ANALYSIS

A number of laboratories which had shown competence in the collaborative analysis of other reference rocks were invited to analyze SY-2, SY-3 and MRG-1 (2-5). Because of the many trace elements which had not been reported by those laboratories, additional laboratories were required. Laboratories which had reported limited results before the task force was organized were asked to provide further data, and invitations were also extended to a number of Canadian provincial institutions. In all, over 100 laboratories were approached and many agreed to participate. Additional results were also taken from the literature.

Two earlier reports have been issued on these samples. Report MRP/MSL 75-132(TR) gave all relevant information as of 1975. A supplement, CANMET Report 76-36, brought matters up to date as of 1976. The current report includes all the material in the earlier reports, updated where necessary, as well as data received since 1976. The recommended values in this report supersede those in the two earlier reports.

SUMMARY OF RESULTS RECEIVED

Table 1 lists all data on the major and minor components and Table 2 those on trace elements. Some trace elements are present at sufficiently high levels that they must be taken into account in deriving the summation for the complete analysis. Major and minor components are tabulated in the order proposed by Maxwell (15), with some modifications. Trace elements are listed in alphabetical order of their chemical symbols.

In Tables 1 and 2 the following notes should be observed:

(1) where replicate results were reported, apparently produced by the same analyst using the same method at about the same time, only the arithmetic average is tabulated, the figure in parentheses indicating the number of replicates. Actual individual results are available on request.

(2) Fe_2O_3T refers to total iron content expressed as ferric oxide.

(3) RE_2O_3T refers to total rare earth oxide content.

(4) Readers are requested to inform the author or any error they may observe.

ANALYTICAL METHODS

The methods used in obtaining individual results in compilations were often listed with such cryptic notations as "spectro", "AAS", "grav", etc. However, the reliability of a result can depend on steps other than the final measurements. Analysts were therefore requested to provide either details of their methods or to cite pertinent literature.

To conserve space a three-letter code based on the three essential analytical unit operations has been adopted. Literature references to the methods are given in the tables when available.

(1) Sample pretreatment

B	pelletization
F	fusion, sintering
H	acid decomposition
0	none used or specified

(2) Separations (if any)

C	chromatography, ion exchange
D	fractional distillation
P	precipitation, leaching
V	bulk volatilization
Y	solvent extraction
Z	electrodeposition
0	none used or specified

(3) Final measurement

A	atomic absorption or fluorescence
E	flame emission
G	gravimetric
J	absorptimetric, fluorimetric
K	gas volumetric
L	electrometric, ion-selective electrode, polarographic, coulometric
M	mass spectrometric
R	radiometric, neutron activation
S	spectrographic
T	titrimetric
X	X-ray fluorescence
Dif	by difference
0	not specified

DISCUSSION

Tables 1 and 2 reveal an erratic pattern in the analytical tasks performed. Although all participants were informed that SY-3 contained unusually high concentrations of uranium, thorium and the rare earths, and that MRG-1 contained somewhat higher concentrations than usual of chromium, copper, nickel and vanadium, some analysts nevertheless provided only a limited amount of data. Moreover some interference in determining the more common components may have been overlooked.

The great spread of values for each component is somewhat offset by the process of selective elimination used in arriving at the recommended values. Nevertheless, reliable values for some components may never be attained, no matter how many additional analyses are reported. In the case of U.S. Geological Survey standard W-1, 20 years after the sample became available, only "magnitude" values were listed for such common trace components as B, Be, Ce, Cl, Ge, Se, and W (16). Only 24 of the 48 other trace element values listed for W-1 in the same compilation are given as "recommended".

Some of the collaborating laboratories used more than one analytical method, thereby providing (in some cases) independent checks on their own results; others depended entirely on one method.

A disappointingly small number of participants reported results for the common components - ferrous iron, water, carbon dioxide and fluorine. Further complications arose in the case of carbon dioxide because of the failure of some contributors to specify whether they determined the carbon dioxide evolved by acid treatment, hence carbonates, or that resulting from the combustion of the sample, hence total carbon. At least two laboratories reported appreciably different results by the two approaches. The difference may represent non-carbonate carbon or contamination. A similar difference has been observed by laboratories of the Geological Survey of Canada with samples having no appreciable non-carbonate carbon.

Because of the availability of additional data it is now possible to make some distinction between carbon dioxide results obtained by acid evolution and by combustion. The following results clearly indicate a significant difference between the two techniques. All of the following values are expressed as per cent carbon dioxide:

SY-2		SY-3		MRG-1	
Acid	Combust	Acid	Combust	Acid	Combust
0.49	0.66	0.47	0.60	1.22	1.22
0.48	0.63	0.42	0.55	1.08	1.21
0.48	0.60	0.41	0.55	1.06	1.15
0.47	0.59	0.41	0.50	1.03	1.14
0.46	0.59	0.40	0.50	1.03	1.14
0.46	0.57	0.40	0.46	1.02	1.13
0.46	0.55	0.40	0.44	1.00	1.11
0.46	0.55	0.35	0.43	0.98	1.11
0.44	0.53	0.34	0.41	0.90	1.10
0.43	0.53	0.26	0.33	0.90	1.06
0.42	0.52	0.18		0.88	1.05
0.32					

The two sets of results for carbon dioxide in each sample were treated as different determinations. Results for which there was insufficient information on the method used were ignored. The recommended value for "carbon dioxide" is derived from the acid-evolution results. "Carbon" represents the difference between the derived values by both methods, recalculated to the element.

Results received from one reliable source suggested inhomogeneity in sample SY-3, with regard to uranium, thorium, lead, and copper. Because the base material used in preparing SY-3 was very similar to SY-2, and the four listed elements are among those for which there is a marked difference between SY-2 and SY-3, there is reason to suspect that the inhomogeneity, if any, is the result of incomplete mixing in the autogenous grinding step mentioned above. Although the data from earlier spectrographic examination of the variation of individual rare earths in SY-3 showed no noticeable evidence of inhomogeneity, additional tests were undertaken, using X-ray fluorescence. The elements observed were uranium, thorium, cerium, lanthanum, yttrium, strontium and rubidium. Results obtained were not sufficiently conclusive either to confirm or to contradict the suggestion of inhomogeneity. The issue therefore remains in doubt, although the weight of evidence suggests that the one observed example of inhomogeneity may have been fortuitous.

Some questions could be raised regarding the possibility that inhomogeneity is a major source of the general spread of values, particularly for trace elements. Rocks are essentially heterogeneous, and the artificial "homogenization" processes used in sample preparation are reversible to some extent. However, a perusal of the available data suggests that inter-laboratory bias is a much greater source of deviation than could generally be expected from sample inhomogeneity. For example, some of the participating laboratories showed a persistent bias that affected several different elements in a manner that would be difficult to justify in terms of segregation of individual minerals. In many cases, a particular bias in the results for a given element coming from a given laboratory was observable in all three samples. It is also noteworthy that the spread of values for most of the components of the three rocks is not very different from those observed in similar programs originating in other countries (2-6).

DERIVATION OF ASSIGNED VALUES

The errors and aberrations from using mere averages or straightforward statistical treatment to arrive at assigned values have been pointed out elsewhere (9,10,17). The empirical method used in this work was first applied in a study of six samples from the U.S. Geological Survey (2,10) and subsequently modified (10,11). It is based on the assumption that the best values must be derived from results reported only by laboratories with the best over-all performance.

The method involved a series of steps:

(1) Based on the H_2O^- percentages reported with each group of data, all results were converted to the "dry basis". Where no H_2O^- was reported, results were assumed to be on the dry basis.

(2) Where fewer than three results were available for a particular constituent of a particular sample, no value was assigned.

(3). Where three or four results were available, a value was assigned equal to the median of the reported results, provided they were based on at least three mutually independent methods and were in reasonable agreement. Such values are shown with question marks, to indicate uncertainty.

(4) Where five to nine results were available, the median was also used as an assigned value, regardless of method, but also shown with a question mark.

(5) Where ten or more results were available, the mean and standard deviation were calculated. All values removed from the mean by more than one standard deviation were categorized as "poor", each being identified with the laboratory that produced it.

(6) The poor results were set aside and the mean and standard deviation of the remaining values calculated. All values removed from that mean by more than one standard deviation were categorized as "fair" and each identifed with the laboratory that produced it.

(7) The fair results were set aside and the remaining "hard core" of values categorized as "good" and identified with the laboratories that produced them.

(8) After operations (5), (6) and (7) had been completed for all eligible values for all constituents of all three samples, each contributing laboratory was given a rating, determined by the following formula:

$$R = \frac{N_g - N_p}{N_g + N_f + N_p} \times 100$$

where

R = rating

N_g = number of good results

N_f = number of fair results

N_p = number of poor results

(9) Results reported by laboratories with ratings of 40 or higher were categorized as "select".

(10) For each constituent of each sample, any outlying select result that differed from its nearest neighbour by as much as or by more than the latter differed from the opposite extreme, was eliminated.

(11) For constituents where fewer than five select values were available, the median of the available select values was assigned, but again with a question mark.

(12) Where five or more select results were available, a subjective decision was made in choosing either the select median or the select mean as an assigned value.

All recommended values have been categorized as "A", "B", or "?". The "A" is for constituents for which at least 20 results were reported, where there is no evidence of bias in the distribution and where there is close agreement between mode, median, mean, select median and select mean. It follows that any further results received are not likely to affect such values beyond one or two units in the last significant figure. The "?" category includes the values mentioned above, and also others where erratic distribution or other factors cast doubt on the derived value. The "B" is intended for values intermediate between the other two.

Because some trace elements are present at sufficiently high levels to affect the complete analysis of the samples, calculations on those elements were done first. Recommended values are given in Table 3. Most of those with question marks are based on the medians, the others on the select medians. In both cases, some rounding of values has been introduced.

An exception was made for rubidium in SY-3, where two isotopic-dilution mass-spectrometry laboratories, one in Canada, the other in Australia, reported 208.4 and 208 ppm respectively. The select median, 208 ppm, was therefore taken as the recommended value and listed to one significant figure more than usual.

Equivalent percentages as oxides are also given in Table 3 only where those values are 0.01 or higher. They were used in the subsequent calculations on the major and minor elements. The equivalent percentages for non-carbonate carbon and chlorine are expressed as the elements, the form in which those constituents are usually reported in a complete rock analysis.

Recommended values for major and minor constituents are listed in Table 4 in which "others" represents the sum of the "equivalent percentages" of the trace elements, adjusted upward to allow for additional rare-earth elements for which reported results were too limited to justify assigning values. Fe_2O_3TR represents the value for total iron, expressed as ferric oxide and derived from reported values for total iron. Fe_2O_3TC represents the value for total iron, expressed as ferric oxide, but calculated from the values derived for Fe_2O_3 and FeO from reported values for ferric and ferrous iron. Closeness of agreement between the two values for total iron is a rough measure of the validity of the procedures used in deriving recommended values. Closeness of the total to 100% is another, but less reliable, indicator of that validity. The values of elements for which insufficient data were received to assign "recommended" values are recorded in Table 5.

CONCLUSIONS

The present collaborative program has placed the quantitative compositional data for the three samples on a much firmer footing than they were originally. There are, however, some negative aspects to the results:

(1) The suspicion of heterogeneity resulting from the autogenous grinding used in preparing SY-3.

(2) The limited quantity of data, and hence the uncertainty in the assigned values, for uranium, thorium, the rare earths and several additional elements which distinguish SY-2 and SY-3 from other available reference samples.

Table 4 - Recommended values - "complete analysis" (%, dry basis)

	SY-2	SY-3	MRG-1
SiO_2	60.10A	59.68A	39.32A
Al_2O_3	12.12A	11.80A	8.50A
Fe_2O_3	2.28B	2.44B	8.26B
FeO	3.62A	3.58A	8.63A
MgO	2.70A	2.67A	13.49A
CaO	7.98A	8.26A	14.77B
Na_2O	4.34A	4.15A	0.71A
K_2O	4.48A	4.20A	0.18A
H_2O^+	0.43B	0.42B	0.98B
CO_2	0.46B	0.38B	1.00B
TiO_2	0.14A	0.15A	3.69B
P_2O_5	0.43A	0.54A	0.06A
F	0.51B	0.66B	0.025B
S	0.011B	0.05B	0.06B
MnO	0.32A	0.32A	0.17A
Others*	0.43?	1.18?	0.33?
Σ	100.35?	100.48?	100.18?
O/F, etc.	0.22?	0.31?	0.04?
Σ (corr.)	100.13?	100.17?	100.14?
Fe_2O_3TR	6.28A	6.42B	17.82A
Fe_2O_3TC	6.27B	6.42B	17.85B

*Others represents the sum of the "equivalent percentages" of the trace elements, adjusted upward to allow for additional rare-earth elements for which reported results were too limited to justify assigning values.

CANADIAN CERTIFIED REFERENCE MATERIALS PROJECT

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Pages from the SY-3 report follow. Let me know if you wish to see the full report.

APPENDIX B

Geotechnical Test Results

Appendix B, Table B-1
Geotechnical Test Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Specific Gravity	Moisture Content	Porosity	Hydraulic Conductivity
	-	%	-	m/s
MG-NLR-1	2.7	25	-	7.8E-09
MG-NLR-2	2.7	25	-	7.5E-09
MG-NLR-3	2.7	25	-	6.5E-09
MG-NLR-4	2.7	25	-	9.1E-09
HG-NLR-1	2.7	28	-	5.4E-08
HG-NLR-2	2.7	27	-	0.00000017
HG-NLR-3	2.7	28	-	7.5E-08
HG-NLR-4	2.7	28	-	0.0000002
LUGP-1	2.5	46	-	0.00000049
LUGP-2	2.5	43	-	0.00000042
LUGP-3	2.5	45	-	0.00000039
LUGP-4	2.5	47	-	0.0000004
HUGP-1	2.3	64	-	0.00000047
HUGP-2	2.3	69	-	0.00000048
HUGP-3	2.3	65	-	0.00000035
HUGP-4	2.3	64	-	0.00000037
MPPT-1	3.2	141	-	2.0E-08
MPPT-2	3.2	144	-	8.1E-09
MPPT-3	3.2	152	-	2.4E-08
MPPT-4	3.2	146	-	0.00000061
HLC-1	-	64	0.62	2.5E-08
HLC-2	-	63	0.62	2.7E-08
HLC-3	-	65	0.63	2.4E-08
HLC-4	-	64	0.63	2.7E-08
HHC-1	-	50	0.58	2.9E-09
HHC-2	-	50	0.57	7.0E-09
HHC-3	-	53	0.58	7.9E-09
HHC-4	-	54	0.58	4.8E-09
HPLC-1	-	48	0.59	9.3E-09
HPLC-2	-	49	0.59	9.3E-09
HPLC-3	-	52	0.61	8.3E-09
HPLC-4	-	50	0.61	1.3E-08
HPHC-1	-	50	0.62	9.1E-10
HPHC-2	-	51	0.62	9.1E-10
HPHC-3	-	52	0.61	6.3E-10
HPHC-4	-	52	0.61	4.5E-10
HHGPLC-1	3.0	72	0.72	3.2E-08
HHGPLC-2	3.0	71	0.72	3.3E-08
HHGPLC-3	3.0	70	0.73	3.1E-08
HHGPLC-4	3.0	69	0.70	3.3E-08
HHGPHC-1	-	64	0.68	1.8E-09
HHGPHC-2	-	68	0.69	4.1E-09
HHGPHC-3	-	67	0.69	2.4E-09
HHGPHC-4	-	66	0.69	3.1E-09
HLC-S-1	-	63	0.64	4.9E-08
HLC-S-2	-	67	0.65	4.7E-08
HLC-S-3	-	66	0.65	3.7E-08
HLC-S-4	-	64	0.65	4.2E-08
HHC-S-1	-	55	0.61	3.6E-10
HHC-S-2	-	55	0.61	8.4E-11
HHC-S-3	-	53	0.60	5.1E-10
HHC-S-4	-	54	0.60	4.4E-10
GUCEM	3.6	-	-	-
SLAG	2.9	-	-	-

- : Sample not analyzed

APPENDIX C

Static Test Results

Appendix C, Table C-1
Mineralogy (XRD) Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Anhydrite	Bassanite	Calcite	Chamosite	Clinochlore	Ettringite	Gypsum	Kaolinite	Muscovite	Portlandite	Quartz
	wt. %										
MG-NLR-1	-	-	-	8.9	5.7	-	4.5	-	53	-	28
MG-NLR-2	-	-	-	10	4.9	-	4.9	-	46	-	34
MG-NLR-3	-	-	-	8.4	5.3	-	4.3	-	47	-	35
MG-NLR-4	-	-	-	7.5	5.7	-	6.2	-	49	-	32
HG-NLR-1	-	-	-	8.9	9.5	-	2.1	-	44	-	36
HG-NLR-2	-	-	-	11	8.9	-	2.8	-	50	-	27
HG-NLR-3	-	-	-	11	10	-	3.1	-	47	-	28
HG-NLR-4	-	-	-	11	9.4	-	3.2	-	50	-	27
LUGP-1	-	7.5	-	-	-	-	93	-	-	-	-
LUGP-2	-	6.7	-	-	-	-	93	-	-	-	-
LUGP-3	-	6.9	-	-	-	-	93	-	-	-	-
LUGP-4	-	7.1	-	-	-	-	93	-	-	-	-
HUGP-1	0.40	-	-	-	-	-	100	-	-	-	-
HUGP-2	1.4	-	-	-	-	-	99	-	-	-	-
HUGP-3	0.10	-	-	-	-	-	100	-	-	-	-
HUGP-4	-	-	-	-	-	-	100	-	-	-	-
MPPT-1	0.10	-	-	-	-	-	100	-	-	-	-
MPPT-2	-	-	-	-	-	-	100	-	-	-	-
MPPT-3	-	-	-	-	-	-	100	-	-	-	-
MPPT-4	-	-	-	-	-	-	100	-	-	-	-
HLC-1	-	-	-	8.3	8.2	-	3.0	-	54	-	26
HLC-2	-	-	-	9.3	6.7	-	2.9	-	56	-	25
HLC-3	-	-	-	9.0	6.6	-	3.3	-	57	-	24
HLC-4	-	-	-	9.0	6.7	-	3.4	-	58	-	24
HHC-1	-	-	-	12	1.4	-	-	-	43	4.8	39
HHC-2	-	-	-	13	0.90	-	-	-	42	5.7	39
HHC-3	-	-	-	15	0.20	-	-	-	38	5.8	42
HHC-4	-	-	-	14	0.30	-	-	-	40	5.6	40
HPLC-1	-	-	-	-	20	-	27	-	37	-	16
HPLC-2	-	-	-	-	18	-	26	-	39	-	17
HPLC-3	-	-	-	-	18	-	27	-	40	-	15
HPLC-4	-	-	-	-	17	-	27	-	37	-	19
HPHC-1	-	-	8.4	-	9.3	13	11	-	23	-	35
HPHC-2	-	-	11	-	10	15	12	-	22	-	31
HPHC-3	-	-	9.7	-	11	15	11	-	21	-	33
HPHC-4	-	-	11	-	9.4	16	8.9	-	21	-	34
HHGPLC-1	-	-	-	-	14	2.8	53	-	19	-	12
HHGPLC-2	-	-	-	-	15	2.8	54	-	18	-	10
HHGPLC-3	-	-	1.1	-	11	14	47	-	18	-	9.7
HHGPLC-4	-	-	6.2	-	16	4.8	35	-	22	-	16
HHGPHC-1	-	-	5.6	-	22	24	20	-	14	-	15
HHGPHC-2	-	-	6.6	-	21	24	21	-	13	-	15
HHGPHC-3	-	-	6.9	-	19	27	23	-	12	-	13
HHGPHC-4	-	-	6.1	-	20	26	23	-	12	-	13
HLC-S-1	-	-	-	18	-	-	2.9	-	44	-	35
HLC-S-2	-	-	-	17	-	-	2.1	-	40	-	42
HLC-S-3	-	-	-	17	-	-	3.9	-	37	-	43
HLC-S-4	-	-	-	18	-	-	2.3	-	40	-	39
HHC-S-1	-	-	-	17	-	-	-	5.9	52	-	26
HHC-S-2	-	-	-	15	-	-	-	5.0	45	-	36
HHC-S-3	-	-	-	14	-	-	-	7.2	49	-	30
HHC-S-4	-	-	-	14	-	-	-	8.5	48	-	30

-	Mineral not detected

Appendix C, Table C-2
Acid Base Accounting Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Fizz Rating	Paste pH	Total Sulphur	Sulphide Sulphur	Sulphate Sulphur	Total Inorganic Carbon	Neutralizing Potential[1]	Carbonate Neutralizing Potential[2]	Acid Potential[3]	Net Neutralizing Potential[4]	Net Carbonate Neutralizing Potential[5]	Neutralizing Potential Ratio[6]	Carbonate Neutralizing Potential Ratio[7]
	-	pH units	% S			%	t $CaCO_3$ /1000 t					Ratio	
MG-NLR-1	none	4.1	0.30	0.23	0.067	<0.01	2.5	0.42	7.2	-4.7	-6.8	0.35	0.058
MG-NLR-2	none	4.3	0.31	0.25	0.063	<0.01	2.1	0.42	7.8	-5.7	-7.4	0.27	0.053
MG-NLR-3	none	4.3	0.31	0.24	0.067	<0.01	2.3	0.42	7.5	-5.2	-7.1	0.31	0.056
MG-NLR-4	none	4.4	0.31	0.25	0.060	<0.01	2.8	0.42	7.8	-5.0	-7.4	0.36	0.053
HG-NLR-1	none	5.3	0.64	0.24	0.40	<0.01	3.2	0.42	7.5	-4.3	-7.1	0.43	0.056
HG-NLR-2	none	5.3	0.64	0.24	0.40	<0.01	3.8	0.42	7.5	-3.7	-7.1	0.51	0.056
HG-NLR-3	none	5.3	0.65	0.25	0.40	<0.01	3.3	0.42	7.8	-4.5	-7.4	0.42	0.053
HG-NLR-4	none	5.4	0.61	0.21	0.40	<0.01	3.3	0.42	6.6	-3.3	-6.1	0.50	0.063
LUGP-1	none	6.0	19	0.60	18	<0.01	5.4	0.42	19	-13	-18	0.29	0.022
LUGP-2	none	5.6	19	0.83	18	<0.01	2.1	0.42	26	-24	-26	0.081	0.016
LUGP-3	none	5.6	19	0.90	18	<0.01	1.9	0.42	28	-26	-28	0.068	0.015
LUGP-4	none	5.7	19	1.0	18	<0.01	2.1	0.42	31	-29	-31	0.067	0.013
HUGP-1	none	9.0	19	0.27	18	<0.01	2.9	0.42	8.4	-5.5	-8.0	0.34	0.049
HUGP-2	none	9.0	19	1.2	18	<0.01	3.0	0.42	38	-35	-37	0.080	0.011
HUGP-3	none	9.0	19	0.93	18	<0.01	2.4	0.42	29	-27	-29	0.083	0.014
HUGP-4	none	9.0	19	1.9	17	<0.01	2.9	0.42	59	-56	-59	0.049	0.0070
MPPT-1	none	7.5	13	0.83	12	<0.01	4.4	0.42	26	-22	-26	0.17	0.016
MPPT-2	none	7.5	12	0.63	12	<0.01	<0.5	0.42	20	-19	-19	0.013	0.021
MPPT-3	none	7.5	12	0.30	12	<0.01	<0.5	0.42	9.4	-9.1	-9.0	0.027	0.044
MPPT-4	none	7.5	12	0.20	12	<0.01	<0.5	0.42	6.3	-6.0	-5.8	0.040	0.067
HLC-1	slight	9.4	0.76	0.19	0.57	0.26	47	22	5.9	41	16	7.8	3.6
HLC-2	slight	9.5	0.75	0.18	0.57	0.27	48	23	5.6	43	17	8.6	4.0
HLC-3	slight	9.5	0.75	0.18	0.57	0.26	47	22	5.6	41	16	8.4	3.9
HLC-4	slight	9.5	0.75	0.18	0.57	0.23	47	19	5.6	41	14	8.4	3.4
HHC-1	moderate	12	0.69	<0.01	0.73	0.70	<0.5	58	0.16	0.094	58	1.6	373
HHC-2	moderate	12	0.72	<0.01	0.73	0.70	<0.5	58	0.16	0.094	58	1.6	373
HHC-3	moderate	12	0.77	0.037	0.73	0.68	<0.5	57	1.1	-0.90	56	0.22	49
HHC-4	moderate	12	0.72	<0.01	0.77	0.66	<0.5	55	0.16	0.094	55	1.6	352
HPLC-1	moderate	8.7	5.0	0.96	4.0	0.27	<0.5	23	30	-30	-7.5	0.0083	0.75
HPLC-2	moderate	8.8	5.0	0.97	4.0	0.22	<0.5	18	30	-30	-12	0.0082	0.60
HPLC-3	moderate	8.8	5.0	1.0	4.0	0.23	<0.5	19	32	-31	-12	0.0079	0.61
HPLC-4	moderate	8.6	5.1	1.1	4.0	0.23	<0.5	19	33	-33	-14	0.0076	0.58
HPHC-1	moderate	12	3.4	0.027	3.3	0.66	274	55	0.84	273	54	324	65
HPHC-2	moderate	12	3.4	0.11	3.3	0.72	285	60	3.4	282	57	83	17
HPHC-3	moderate	12	3.4	0.10	3.3	0.69	262	58	3.1	259	54	84	18
HPHC-4	moderate	12	3.4	0.050	3.3	0.72	286	60	1.6	284	58	183	38
HHGPLC-1	moderate	10	9.3	1.6	7.7	0.19	<0.5	16	51	-50	-35	0.0049	0.31
HHGPLC-2	moderate	10	9.3	1.6	7.7	0.15	66	13	50	16	-37	1.3	0.25
HHGPLC-3	moderate	10	9.1	1.4	7.7	0.19	56	16	43	13	-27	1.3	0.37
HHGPLC-4	moderate	10	9.2	1.5	7.7	0.19	61	16	46	15	-30	1.3	0.34
HHGPHC-1	moderate	12	5.5	0.18	5.3	0.77	244	64	5.6	239	59	43	11
HHGPHC-2	moderate	12	6.2	0.54	5.7	0.73	256	61	17	239	44	15	3.6
HHGPHC-3	moderate	12	5.9	0.61	5.3	0.71	260	59	19	241	40	14	3.1
HHGPHC-4	moderate	12	5.7	0.060	5.7	0.73	254	61	1.9	252	59	136	32
HLC-S-1	slight	9.9	0.91	0.18	0.73	0.080	34	6.7	5.6	29	1.0	6.1	1.2
HLC-S-2	slight	9.9	0.85	0.15	0.70	0.080	34	6.7	4.7	29	2.0	7.3	1.4
HLC-S-3	slight	10.0	0.78	0.11	0.67	0.080	28	6.7	3.4	25	3.2	8.3	1.9
HLC-S-4	slight	9.9	0.87	0.14	0.73	0.090	35	7.5	4.4	31	3.1	8.0	1.7
HHC-S-1	moderate	12	0.97	0.070	0.90	0.55	200	46	2.2	198	44	91	21
HHC-S-2	moderate	12	0.96	0.060	0.90	0.56	217	47	1.9	215	45	116	25
HHC-S-3	moderate	12	0.93	0.060	0.87	0.55	205	46	1.9	203	44	109	24
HHC-S-4	moderate	12	0.95	0.050	0.90	0.56	205	47	1.6	203	45	131	30
GUCEM	slight	12	1.7	0.39	1.3	1.4	1090	115	12	1078	103	89	9.4
SLAG	strong	12	1.5	0.87	0.63	0.13	600	11	27	573	-16	22	0.40

(1) Neutralization potential (NP) is determined directly from modified Sobek method (MEND, 2009).
(2) Carbonate neutralization potential (CO3-NP) = (% Total Inorganic Carbon (TIC)) * (100.09/12.01) * 10
(3) Acid potential (AP) = Sulphide Sulphur (%) x 31.25
(4) Net neutralization potential = NP - AP
(5) Net carbonate neutralization potential = CO3-NP - AP
(6) Net Potential Ratio (NPR) = NP / AP
(7) Carbonate NPR (CO3-NPR) = CO3-NP / AP

Appendix C, Table C-3
Whole Rock Analysis Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Al_2O_3	BaO	CaO	Cr_2O_3	Fe_2O_3	K_2O	MgO	MnO	Na2O	P_2O_5	Sc_2O_3	SiO_2	SrO	TiO_2	Y_2O_3	ZrO_2	LOI	SUM
	wt %																	
MG-NLR-1	22	0.14	0.18	0.021	1.7	4.8	2.2	<0.01	0.22	0.050	0.0032	61	0.017	1.0	0.0032	0.062	6.5	99
MG-NLR-2	22	0.15	0.18	0.021	1.7	4.8	2.2	<0.01	0.21	0.050	0.0032	61	0.018	0.99	0.0029	0.053	6.5	100
MG-NLR-3	22	0.14	0.16	0.021	1.7	4.8	2.2	<0.01	0.20	0.060	0.0032	62	0.018	1.0	0.0032	0.058	6.5	100
MG-NLR-4	21	0.14	0.16	0.021	1.8	4.7	2.2	<0.01	0.20	0.060	0.0032	61	0.018	1.0	0.0030	0.060	6.8	99
HG-NLR-1	21	0.13	0.76	0.021	1.8	4.4	2.7	0.010	0.18	0.10	0.0031	59	0.027	1.0	0.0050	0.067	8.2	99
HG-NLR-2	21	0.13	0.74	0.020	1.9	4.4	2.6	<0.01	0.18	0.10	0.0031	59	0.027	1.1	0.0048	0.054	8.3	99
HG-NLR-3	21	0.13	0.77	0.020	1.9	4.5	2.7	0.010	0.18	0.10	0.0031	59	0.028	1.0	0.0046	0.064	8.3	99
HG-NLR-4	22	0.13	0.75	0.021	1.9	4.5	2.7	0.010	0.18	0.10	0.0031	59	0.027	1.1	0.0046	0.065	8.2	100
LUGP-1	0.14	0.0030	35	0.0016	0.020	0.040	0.080	<0.01	0.090	<0.01	0.00031	0.50	0.011	<0.01	0.00025	0.0012	22	57
LUGP-2	0.10	0.0033	36	0.0015	0.020	0.030	0.070	<0.01	0.090	<0.01	0.00031	0.60	0.011	<0.01	0.00025	0.00027	22	59
LUGP-3	0.070	0.0035	34	0.0025	0.030	0.040	0.070	<0.01	0.080	<0.01	0.00031	0.60	0.011	<0.01	0.00025	0.00027	22	57
LUGP-4	0.17	0.0035	34	0.0034	0.040	0.040	0.080	<0.01	0.090	<0.01	0.00031	0.60	0.011	<0.01	0.00025	0.00027	22	57
HUGP-1	0.12	0.0030	34	0.00029	0.020	0.020	0.23	<0.01	0.24	<0.01	0.00031	0.40	0.012	<0.01	0.00063	0.0026	22	57
HUGP-2	0.20	0.0021	35	0.00073	0.020	0.040	0.23	<0.01	0.24	<0.01	0.00031	0.40	0.012	<0.01	0.00063	0.0023	22	57
HUGP-3	0.090	0.0021	34	0.0010	0.010	0.040	0.22	<0.01	0.24	<0.01	0.00031	0.40	0.012	<0.01	0.00063	0.0023	22	57
HUGP-4	0.070	0.0022	34	0.00088	0.010	0.040	0.20	<0.01	0.24	<0.01	0.00031	0.50	0.012	<0.01	0.00051	0.0023	22	57
MPPT-1	9.8	0.053	19	0.020	5.0	0.050	3.1	0.040	0.97	0.090	0.0081	2.3	0.0085	0.040	0.067	0.00068	37	77
MPPT-2	9.7	0.055	19	0.020	5.0	0.060	3.0	0.040	0.92	0.090	0.0080	2.2	0.0085	0.040	0.066	0.00081	37	77
MPPT-3	9.8	0.053	19	0.020	5.0	0.050	3.0	0.040	0.94	0.10	0.0081	2.2	0.0084	0.040	0.067	0.00068	37	77
MPPT-4	9.8	0.053	19	0.020	5.0	0.050	3.1	0.040	0.93	0.10	0.0081	2.2	0.0084	0.040	0.067	0.00081	37	77
HLC-1	20	0.13	3.6	0.026	2.1	4.1	2.7	0.010	0.19	0.070	0.0029	56	0.030	1.1	0.0047	0.065	9.7	100
HLC-2	20	0.13	3.6	0.027	2.1	4.0	2.7	0.010	0.18	0.070	0.0031	56	0.031	1.0	0.0048	0.068	9.7	100
HLC-3	22	0.13	3.6	0.027	2.2	4.0	2.6	0.010	0.20	0.070	0.0028	55	0.031	1.0	0.0048	0.067	9.7	100
HLC-4	20	0.13	3.6	0.027	2.1	4.1	2.6	0.010	0.18	0.060	0.0028	56	0.030	1.1	0.0041	0.064	9.7	100
HHC-1	17	0.12	16	0.016	2.4	3.0	2.8	0.020	0.18	0.090	0.0023	46	0.038	0.84	0.0044	0.056	13	100
HHC-2	16	0.12	16	0.017	2.3	3.0	2.8	0.020	0.19	0.070	0.0023	46	0.036	0.81	0.0038	0.056	13	100
HHC-3	17	0.12	16	0.018	2.3	3.1	2.8	0.020	0.17	0.060	0.0023	45	0.036	0.85	0.0037	0.057	13	100
HHC-4	16	0.12	16	0.017	2.3	3.0	2.8	0.020	0.18	0.050	0.0021	45	0.037	0.82	0.0037	0.062	13	100
HPLC-1	17	0.10	8.5	0.022	2.7	3.0	3.1	0.020	0.34	0.090	0.0043	39	0.023	0.71	0.020	0.045	24	99
HPLC-2	17	0.10	8.7	0.021	2.7	3.0	3.1	0.020	0.34	0.090	0.0041	39	0.024	0.72	0.020	0.050	24	99
HPLC-3	18	0.10	8.5	0.022	2.7	3.1	3.1	0.020	0.34	0.090	0.0041	39	0.023	0.74	0.020	0.048	24	99
HPLC-4	17	0.10	8.5	0.022	2.7	3.0	3.1	0.020	0.34	0.090	0.0041	39	0.023	0.73	0.020	0.053	24	99
HPHC-1	13	0.095	20	0.016	2.6	2.1	3.2	0.020	0.35	0.080	0.0028	32	0.030	0.55	0.014	0.038	23	96
HPHC-2	13	0.099	21	0.016	2.8	2.2	3.3	0.030	0.37	0.080	0.0029	33	0.031	0.57	0.014	0.039	22	98
HPHC-3	13	0.100	21	0.015	2.6	2.2	3.3	0.030	0.38	0.080	0.0029	31	0.031	0.53	0.014	0.038	22	96
HPHC-4	13	0.094	20	0.017	2.8	2.1	3.2	0.020	0.35	0.070	0.0028	36	0.030	0.60	0.014	0.038	20	97
HHGPLC-1	13	0.082	16	0.015	2.2	2.1	2.4	0.020	0.40	0.080	0.0031	27	0.023	0.50	0.016	0.036	27	90
HHGPLC-2	13	0.081	17	0.015	2.2	2.1	2.4	0.020	0.38	0.080	0.0032	26	0.022	0.50	0.016	0.034	27	90
HHGPLC-3	12	0.077	17	0.015	2.1	2.0	2.4	0.020	0.37	0.080	0.0031	25	0.021	0.47	0.016	0.034	28	89
HHGPLC-4	13	0.080	17	0.015	2.2	2.0	2.4	0.020	0.39	0.070	0.0031	26	0.022	0.49	0.017	0.033	28	91
HHGPHC-1	9.3	0.063	23	0.011	2.1	1.6	2.3	0.020	0.64	0.060	0.0021	21	0.025	0.37	0.010	0.024	31	91
HHGPHC-2	8.7	0.059	23	0.0099	2.1	1.4	2.3	0.020	0.69	0.060	0.0020	19	0.024	0.34	0.010	0.022	32	90
HHGPHC-3	8.6	0.059	23	0.010	2.1	1.4	2.3	0.020	0.70	0.050	0.0020	19	0.024	0.34	0.011	0.028	32	90
HHGPHC-4	9.5	0.063	24	0.011	2.2	1.5	2.3	0.020	0.66	0.050	0.0021	22	0.025	0.36	0.011	0.028	29	91
HLC-S-1	20	0.13	2.6	0.024	1.9	4.3	2.5	0.010	0.65	0.090	0.0028	58	0.030	1.1	0.0039	0.061	8.4	99
HLC-S-2	20	0.13	2.5	0.024	1.9	4.3	2.5	0.010	0.66	0.090	0.0028	59	0.030	1.1	0.0042	0.069	8.2	99
HLC-S-3	20	0.13	2.6	0.024	2.0	4.4	2.6	0.010	0.67	0.10	0.0029	58	0.030	1.1	0.0042	0.076	8.3	99
HLC-S-4	20	0.13	2.6	0.024	2.0	4.3	2.5	0.010	0.66	0.10	0.0028	58	0.030	1.1	0.0046	0.069	8.2	99
HHC-S-1	17	0.10	14	0.020	1.8	3.3	3.0	0.030	0.59	0.080	0.0025	41	0.036	0.81	0.0044	0.050	18	99
HHC-S-2	17	0.10	13	0.022	1.8	3.2	3.0	0.030	0.57	0.080	0.0025	42	0.035	0.81	0.0044	0.056	18	99
HHC-S-3	17	0.10	14	0.020	1.8	3.3	3.0	0.030	0.58	0.080	0.0025	41	0.036	0.81	0.0044	0.052	18	99
HHC-S-4	17	0.10	13	0.022	1.8	3.2	2.9	0.030	0.57	0.070	0.0025	42	0.035	0.80	0.0042	0.049	18	100
GUCEM	3.9	0.11	63	0.013	3.5	0.52	4.3	0.060	0.16	0.050	0.00031	19	0.060	0.15	0.0011	0.0072	5.0	99
SLAG	14	0.058	45	0.0057	0.75	0.35	5.2	0.14	0.21	0.030	0.0031	33	0.065	0.57	0.0085	0.032	0.50	100

Appendix C, Table C-4
Bulk Metals Analysis Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Se	Sn	Sr	Ti	U	V	W	Y	Zn	Zr
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Average Crustal Abundance[(1)]	0.075	82300	1.8	425	3	0.0085	41500	3	25	102	60	56300	-	20850	39	23300	950	1.2	23550	84	1050	14	350	0.2	22	0.05	2.3	370	5650	2.7	120	1.25	33	70	165
MG-NLR-1	**1.2**	22229	**26**	79	2.0	**37**	1001	<1	28	44	**517**	7554	<1	2822	15	8804	31	**241**	297	46	39	**1310**	**3460**	<1	2.0	**20**	<1	43	120	**221**	105	<1	4.0	6.0	38
MG-NLR-2	**1.1**	21117	**23**	75	1.8	**34**	929	<1	27	42	**484**	7204	<1	2656	14	8262	23	**235**	148	43	35	**1280**	**3340**	<1	2.0	**17**	<1	41	120	**209**	101	<1	3.0	6.0	37
MG-NLR-3	**1.0**	21858	**26**	78	1.9	**35**	1001	<1	28	45	**511**	7414	<1	2739	15	8623	23	**235**	148	45	31	**1280**	**3410**	<1	2.0	**19**	<1	42	120	**207**	104	<1	3.0	5.0	37
MG-NLR-4	**1.1**	22229	**24**	78	2.0	**35**	1001	<1	28	43	**512**	7414	<1	2822	15	8684	23	**244**	148	44	31	**1290**	**3360**	1.0	2.0	**17**	<1	43	120	**228**	105	<1	3.0	5.0	37
HG-NLR-1	**4.5**	24822	**35**	71	2.2	**55**	5646	<1	54	37	**533**	8323	<1	2656	18	10674	39	**738**	148	56	65	**3710**	**6870**	**6.0**	3.0	**35**	<1	55	180	**2520**	109	1.0	15	7.0	50
HG-NLR-2	**4.2**	24769	**35**	70	2.2	**54**	5575	<1	51	37	**530**	8323	<1	2739	19	10674	39	**707**	148	55	70	**3580**	**6870**	**6.0**	3.0	**32**	<1	55	180	**2530**	109	1.0	15	7.0	49
HG-NLR-3	**4.5**	25404	**36**	72	2.2	**57**	5718	<1	53	38	**538**	8463	<1	2822	19	10915	39	**754**	148	55	70	**3440**	**7080**	**5.0**	3.0	**34**	<1	56	180	**2540**	112	1.0	15	7.0	50
HG-NLR-4	**4.7**	25722	**34**	73	2.2	**58**	5789	<1	53	38	**549**	8463	<1	2822	19	10975	39	**762**	148	56	74	**3560**	**7110**	**7.0**	3.0	**35**	<1	57	180	**2520**	114	1.0	15	7.0	53
LUGP-1	<0.2	53	**11**	6.0	<0.5	**5.0**	**218699**	<1	<1	7.0	<1	140	<1	249	4.0	603	15	4.0	816	<1	22	<1	**115000**	**14**	<1	<1	8.0	76	60	**163**	<1	<1	1.0	<1	5.0
LUGP-2	<0.2	53	**11**	6.0	<0.5	**5.0**	205834	<1	<1	7.0	<1	140	<1	249	4.0	603	15	5.0	816	<1	22	<1	**110000**	**12**	<1	<1	6.0	73	60	**164**	<1	<1	1.0	<1	5.0
LUGP-3	<0.2	53	**12**	8.0	<0.5	**6.0**	**219413**	<1	<1	10	<1	210	<1	249	4.0	543	15	5.0	742	<1	26	<1	**116000**	**14**	<1	<1	7.0	75	60	**160**	<1	<1	1.0	<1	5.0
LUGP-4	<0.2	53	**11**	8.0	<0.5	**6.0**	205834	<1	<1	13	<1	280	<1	249	4.0	543	15	5.0	742	<1	22	<1	**115000**	**12**	<1	<1	7.0	71	60	**155**	<1	<1	1.0	<1	4.0
HUGP-1	<0.2	53	**14**	6.0	<0.5	**4.0**	**210122**	<1	<1	2.0	1.0	140	<1	249	7.0	1568	15	**9.0**	2226	<1	26	2.0	**114000**	**14**	<1	<1	7.0	89	60	**641**	<1	<1	6.0	<1	25
HUGP-2	<0.2	53	**16**	6.0	<0.5	**3.0**	206549	<1	<1	3.0	<1	70	<1	249	7.0	1447	15	**8.0**	2151	<1	26	1.0	**114000**	**13**	<1	<1	6.0	86	60	**637**	<1	<1	6.0	<1	24
HUGP-3	<0.2	53	**12**	7.0	<0.5	**3.0**	207263	<1	<1	7.0	<1	70	<1	249	7.0	1447	15	**9.0**	2151	1.0	26	2.0	**115000**	**13**	<1	<1	6.0	87	60	**637**	<1	<1	6.0	<1	25
HUGP-4	<0.2	53	**12**	6.0	<0.5	**3.0**	205119	<1	<1	3.0	<1	70	<1	249	7.0	1447	15	**8.0**	2077	<1	26	1.0	**114000**	**14**	<1	<1	6.0	85	60	**628**	<1	<1	6.0	<1	23
MPPT-1	<0.2	65098	**185**	152	9.2	**26**	144370	1.0	**131**	152	**1110**	35601	<1	498	4.0	20865	379	**1060**	9199	231	458	**82**	**97900**	<1	60	<1	<1	64	240	**1870**	472	<1	**505**	168	13
MPPT-2	<0.2	67744	**191**	227	9.5	**29**	162237	1.0	**135**	157	**1170**	36510	<1	498	4.0	21167	395	**1080**	9051	239	471	**84**	**96700**	**2.0**	63	<1	<1	70	300	**1890**	485	<1	**533**	176	14
MPPT-3	<0.2	66156	**187**	200	9.5	**25**	157949	1.0	**131**	181	**1150**	36650	<1	498	4.0	21106	395	**1090**	9125	233	471	**82**	**94200**	**5.0**	62	<1	<1	69	300	**1860**	482	<1	**526**	173	13
MPPT-4	<0.2	65627	**188**	162	9.4	**25**	157234	1.0	**134**	155	**1140**	36231	<1	498	4.0	21106	387	**1110**	8976	236	471	**83**	**103000**	1.0	62	<1	<1	68	300	**1870**	482	<1	**521**	172	13
HLC-1	**3.8**	22758	**34**	69	1.6	**60**	27016	<1	49	67	**542**	10002	<1	3570	19	10674	77	**655**	668	52	83	**3450**	**7840**	**5.0**	3.0	**29**	<1	70	180	**2300**	90	1.0	13	39	53
HLC-2	**4.0**	23234	**35**	73	1.6	**59**	27445	<1	50	69	**546**	10142	<1	3653	19	10975	77	**677**	668	53	83	**3500**	**7810**	**5.0**	3.0	**32**	<1	72	180	**2310**	92	1.0	13	40	53
HLC-3	**3.9**	22705	**35**	61	1.6	**58**	26801	<1	49	67	**536**	9932	<1	3487	19	10734	70	**647**	668	51	79	**3420**	**7860**	**3.0**	3.0	**31**	<1	70	180	**2270**	92	1.0	13	39	47
HLC-4	**3.7**	21382	**33**	72	1.6	**57**	26015	<1	47	64	**536**	9652	<1	3404	18	10312	70	**635**	668	50	79	**3230**	**7740**	**5.0**	3.0	**29**	<1	67	180	**2230**	87	1.0	13	37	46
HHC-1	<0.2	25510	**41**	77	1.4	**43**	129361	<1	39	44	**477**	12240	<1	4566	34	15136	170	**462**	1039	48	140	**2420**	**9080**	**12**	3.0	**17**	7.0	180	300	**1840**	86	<1	14	185	33
HHC-2	<0.2	24928	**41**	85	1.3	**44**	128646	<1	39	43	**474**	12310	<1	4649	33	15136	170	**463**	1039	47	131	**2460**	**9370**	**12**	3.0	**16**	7.0	179	300	**1810**	86	<1	14	186	32
HHC-3	<0.2	24398	**37**	90	1.3	**43**	127217	<1	38	43	**464**	12100	<1	4566	33	14835	163	**455**	964	47	131	**2430**	**9320**	**12**	3.0	**15**	7.0	177	300	**1810**	84	<1	14	184	33
HHC-4	<0.2	25034	**39**	106	1.3	**44**	129361	<1	39	44	**468**	12100	<1	4649	34	14835	163	**473**	964	47	131	**2450**	**9240**	**12**	3.0	**14**	6.0	180	360	**1780**	84	<1	14	184	34
HPLC-1	<0.2	38847	**82**	105	3.5	**52**	74329	<1	72	85	**687**	16647	<1	3653	17	17307	170	**768**	2003	109	201	**2290**	**38400**	**5.0**	20	**15**	<1	81	240	**2270**	210	<1	159	82	51
HPLC-2	<0.2	37894	**76**	78	3.7	**50**	72185	<1	71	83	**681**	16577	<1	3570	16	17247	163	**740**	1929	105	192	**2200**	**37500**	**4.0**	20	**17**	<1	78	240	**2250**	206	<1	159	79	50
HPLC-3	<0.2	37365	**79**	76	3.7	**50**	70970	<1	69	82	**675**	16367	<1	3570	16	17066	163	**754**	1929	103	196	**2230**	**37300**	**5.0**	19	**18**	<1	76	240	**2190**	204	<1	157	78	49
HPLC-4	<0.2	38106	**79**	74	3.7	**52**	74329	<1	71	83	**715**	16926	<1	3570	16	17609	163	**766**	2003	105	196	**2290**	**39300**	**5.0**	20	**18**	<1	79	240	**2260**	212	<1	164	80	42
HPHC-1	<0.2	34031	**93**	471	2.6	**33**	143655	1.0	53	75	**466**	17696	<1	5064	34	20443	232	**529**	3116	81	253	**1760**	**35000**	<1	15	**19**	<1	206	480	**1660**	186	<1	116	240	73
HPHC-2	<0.2	34190	**85**	471	2.6	**35**	150087	<1	53	74	**478**	17556	<1	4981	34	20564	232	**548**	3116	79	249	**1790**	**34800**	<1	15	<1	<1	209	480	**1640**	185	<1	116	226	76
HPHC-3	<0.2	33925	**79**	478	2.6	**34**	153661	<1	53	71	**492**	18045	<1	4898	35	21468	240	**544**	3116	82	266	**1790**	**36400**	<1	15	**2.0**	<1	213	540	**1640**	188	<1	122	236	75
HPHC-4	<0.2	34137	**83**	460	2.5	**33**	144370	1.0	53	76	**447**	17416	<1	5313	33	19900	217	**516**	3042	76	231	**1720**	**34800**	<1	15	<1	<1	203	480	**1590**	182	<1	113	211	71
HHGPLC-1	<0.2	28897	**96**	281	2.9	**40**	117211	<1	57	62	**508**	13359	<1	2822	18	14533	132	**596**	3413	84	209	**2030**	**82800**	<1	16	**6.0**	<1	113	300	**1920**	186	<1	133	72	69
HHGPLC-2	<0.2	29109	**89**	277	2.8	**40**	120070	<1	56	60	**498**	13149	<1	2906	21	14232	132	**601**	3264	83	201	**2060**	**83500**	<1	16	**2.0**	<1	112	300	**1980**	185	<1	128	72	68
HHGPLC-3	<0.2	28580	**90**	281	2.9	**43**	120070	<1	56	60	**501**	13289	<1	2739	19	14473	132	**587**	3264	82	214	**2000**	**84100**	<1	16	**14**	<1	112	300	**2010**	185	<1	135	74	69
HHGPLC-4	<0.2	27733	**102**	273	2.8	**37**	117211	<1	54	60	**498**	13079	<1	2656	18	14111	132	**591**	3264	80	183	**2040**	**82200**	<1	16	**4.0**	<1	108	300	**1970**	183	<1	133	72	69
HHGPHC-1	<0.2	24346	**77**	263	1.8	**28**	165096	<1	38	51	**338**	13709	<1	3238	20	14714	155	**419**	5712	57	201	**1370**	**56100**	<1	11	**2.0**	<1	175	420	**1240**	136	<1	86	76	59
HHGPHC-2	<0.2	23605	**70**	262	1.8	**27**	170099	<1	35	49	**327**	13709	<1	3238	22	14714	155	**417**	5861	57	196	**1380**	**59100**	<1	11	**4.0**	<1	174	420	**1200**	133	<1	90	75	59
HHGPHC-3	<0.2	23340	**72**	261	1.8	**27**	171528	<1	35	51	**333**	13569	<1	3072	21	14413	155	**426**	5786	56	192	**1400**	**58900**	<1	11	<1	<1	174	420	**1220**	133	<1	87	77	59
HHGPHC-4	<0.2	24187	**72**	264	1.8	**26**	167955	<1	37	52	**326**	13429	<1	3155	22	14352	155	**425**	5416	57	205	**1410**	**58400**	<1	11	<1	<1	172	420	**1230**	135	<1	85	77	59
HLC-S-1	**8.4**	25722	**33**	93	2.0	**47**	19726	<1	43	59	**477**	8813	<1	3321	19	11458	77	**579**	4080	52	70	**2950**	**9270**	<1	3.0	**1.0**	<1	64	240	**2080**	105	<1	13	14	40
HLC-S-2	**8.9**	27786	**33**	108	2.1	**49**	21012	<1	45	62	**504**	9302	<1	3570	21	12362	85	**601**	4451	55	65	**2920**	**9310**	<1	4.0	**1.0**	<1	69	300	**2130**	113	<1	15	16	45
HLC-S-3	**8.4**	26092	**33**	93	2.0	**46**	18654	<1	42	63	**470**	8813	<1	3404	20	11518	77	**599**	4303	52	65	**2860**	**8980**	<1	3.0	**1.0**	<1	63	240	**2020**	106	<1	13	14	39
HLC-S-4	**8.4**	26833	**33**	105	2.1	**47**	19297	<1	43	63	**486**	9023	<1	3487	20	11940	77	**629**	4451	52	65	**2940**	**9180**	<1	4.0	**2.0**	<1	66	240	**2110**	107	<1	14	15	40
HHC-S-1	**4.1**	36571	**56**	227	2.9	**36**	110064	<1	33	70	**447**	10142	<1	4234	35	18212	256	**453**	4154	59	127	**2390**	**12800**	<1	6.0	**1.0**	<1	176	779	**1720**	107	<1	23	45	51
HHC-S-2	**4.1**	34560	**62**	219	2.7	**37**	105776	<1	33	76	**403**	10002	<1	3985	33	17187	256	**442**	4006	57	127	**2360**	**12700**	<1	5.0	**2.0**	<1	168	719	**1740**	99	<1	21	45	43
HHC-S-3	**4.0**	34348	**55**	218	2.7	**37**	108635	<1	33	66	**415**	9722	<1	3819	36	17187	248	**443**	4080	57	109	**2370**	**12900**	<1	5.0	**1.0**	<1	170	719	**1720**	98	<1	22	49	50
HHC-S-4	**4.1**	34243	**60**	212	2.6	**36**	104346	<1	32	74	**395**	9652	<1	3819	32	16764	240	**446**	3932	54	122	**2330**	**12400**	<1	5.0	**2.0**	<1	165	719	**1700**	97	<1	21	42	47
GUCEM	<0.2	28791	**29**	189	0.80	<1	**556037**	1.0	7.0	88	194	27278	<1	5977	70	32082	581	**15**	1558	25	345	16	**12500**	**67**	3.0	<1	**45**	569	659	11	52	<1	13	**851**	13
SLAG	<0.2	83092	7.0	573	11	**42**	**322330**	2.0	<1	47	4.0	5316	<1	3072	59	32865	1332	4.0	1632	2.0	140	<1	**25300**	<1	22	<1	<1	560	3777	**19**	31	<1	81	17	154

(1) Price,W.A., 1997. Draft Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Mine sites in British Columbia, Ministry of Energy and Mines. p.159.

XX	Denotes values greater than five times the Price Crustal Abundance.
XX	Denotes values greater than ten times the Price Crustal Abundance.

Appendix C, Table C-5
Shake Flask Extraction Results
NexGen Rook I Geochemical Characterization Report

Sample ID	pH	Specific Conductivity	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Ammonia	Nitrate	Nitrite	Chloride	Fluoride	Calcium	Magnesium	Potassium	Sodium	Sulfate	Phosphate	Total Hardness	Total Dissolved Solids	Sum of Ions	Aluminum	Antimony	Arsenic
	pH units	µS/cm	mg/L $CaCO_3$	mg/L $CaCO_3$	mg/L	mg/L	mg/L	mg/L-N	mg/L-N	mg/L-N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L-P	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MG-NLR-1	4.7	387	5.0	<1	<1	<1	<1	<0.01	<0.0090	<0.0091	10	0.11	46	9.9	5.0	3.8	160	<0.016	155	280	235	0.041	0.00070	0.0061
MG-NLR-2	4.8	353	5.0	<1	<1	<1	<1	<0.01	<0.0090	<0.0091	9.0	0.10	42	9.1	4.7	3.6	150	<0.016	142	264	218	0.036	0.00080	0.0059
MG-NLR-3	4.9	380	5.0	<1	<1	<1	<1	<0.01	<0.0090	<0.0091	10	0.10	46	9.8	5.1	4.0	160	<0.016	155	282	235	0.040	0.00070	0.0059
MG-NLR-4	4.8	398	5.0	<1	<1	<1	<1	<0.01	<0.0090	<0.0091	10	0.11	49	10	5.3	4.0	170	<0.016	163	317	248	0.041	0.00070	0.0060
HG-NLR-1	5.4	2160	10	2.0	2.0	<1	<1	0.50	<0.0090	<0.0091	8.0	0.50	516	36	6.2	4.3	1380	<0.016	1430	2160	1950	0.027	0.0016	0.011
HG-NLR-2	5.6	1530	5.0	1.0	1.0	<1	<1	0.26	<0.0090	<0.0091	5.0	0.44	336	22	4.4	2.7	890	<0.016	928	1420	1260	0.022	0.0014	0.0076
HG-NLR-3	5.6	1660	7.0	3.0	4.0	<1	<1	0.29	<0.0090	<0.0091	6.0	0.41	376	26	4.9	3.0	990	<0.016	1040	1570	1410	0.022	0.0013	0.0082
HG-NLR-4	5.7	1980	5.0	<1	<1	<1	<1	0.26	<0.0090	<0.0091	7.0	0.47	467	32	5.9	3.9	1230	<0.016	1300	1950	1750	0.028	0.0018	0.010
LUGP-1	5.5	2860	5.0	37	45	<1	<1	0.65	<0.0090	<0.0091	23	<0.1	543	59	40	106	1770	<0.016	1600	2770	2590	<0.0005	<0.0002	0.00090
LUGP-2	6.2	2920	5.0	24	29	<1	<1	0.66	<0.0090	<0.0091	21	<0.1	538	64	39	109	1780	<0.016	1600	2780	2580	<0.0005	<0.0002	0.0011
LUGP-3	5.5	2820	5.0	27	33	<1	<1	0.67	<0.0090	<0.0091	23	<0.1	543	54	37	97	1730	<0.016	1580	2740	2520	<0.0005	<0.0002	0.00090
LUGP-4	5.8	2880	2.0	24	29	<1	<1	0.60	<0.0090	<0.0091	20	<0.1	542	57	38	103	1740	<0.016	1580	2780	2530	<0.0005	<0.0002	0.00080
HUGP-1	7.4	3590	7.0	27	33	<1	<1	0.26	<0.0090	<0.0091	37	0.30	509	126	29	242	2210	<0.016	1790	3590	3190	<0.0005	<0.0002	0.0061
HUGP-2	7.4	3600	5.0	29	35	<1	<1	0.12	<0.0090	<0.0091	40	0.30	517	126	29	246	2230	<0.016	1810	3530	3220	<0.0005	<0.0002	0.0060
HUGP-3	7.3	3520	5.0	25	30	<1	<1	0.26	<0.0090	<0.0091	35	0.30	522	119	28	233	2190	<0.016	1790	3460	3160	<0.0005	<0.0002	0.0057
HUGP-4	7.5	3580	5.0	28	34	<1	<1	1.0	<0.0090	<0.0091	35	0.30	515	126	29	245	2240	<0.016	1800	3520	3220	<0.0005	<0.0002	0.0062
MPPT-1	6.5	4920	5.0	27	33	<1	<1	0.58	<0.0090	<0.0091	32	1.0	473	301	22	452	3200	<0.016	2420	5140	4510	0.075	<0.002	0.040
MPPT-2	6.6	6140	7.0	28	34	<1	<1	0.33	<0.0090	<0.0091	42	1.2	456	455	30	645	4100	<0.016	3010	6600	5760	0.059	<0.002	0.048
MPPT-3	6.6	5840	7.0	28	34	<1	<1	0.19	<0.0090	<0.0091	38	1.1	466	424	27	591	3900	<0.016	2900	6260	5480	0.073	<0.002	0.045
MPPT-4	6.6	6200	5.0	28	34	<1	<1	0.18	<0.0090	<0.0091	40	1.2	464	470	29	637	4200	<0.016	3090	6780	5870	0.057	<0.002	0.045
HLC-1	9.5	1700	<1	33	13	13	<1	0.28	<0.0090	<0.0091	40	0.090	402	0.20	13	36	1040	<0.01	1000	1550	1560	0.012	0.0069	0.096
HLC-2	9.5	1230	<1	30	15	11	<1	0.13	<0.0090	<0.0091	30	0.080	260	0.20	9.8	26	700	<0.01	649	1050	1050	0.015	0.0073	0.092
HLC-3	9.3	1540	<1	30	17	10	<1	1.6	<0.0090	<0.0091	36	0.10	356	0.20	12	32	940	<0.01	889	1390	1400	0.011	0.0089	0.091
HLC-4	9.3	1540	<1	31	16	11	<1	0.14	<0.0090	<0.0091	37	0.090	351	0.20	12	33	920	<0.01	876	1380	1380	0.012	0.012	0.088
HHC-1	12	4820	<1	1110	<1	36	357	0.10	<0.0090	0.018	8.0	0.070	320	<0.1	152	94	120	<0.01	798	1380	1090	0.024	<0.0002	0.036
HHC-2	12	4900	<1	1100	<1	48	347	0.12	<0.0090	0.018	8.0	0.070	306	<0.1	171	107	120	<0.01	763	1410	1110	0.011	<0.0002	0.041
HHC-3	12	5130	<1	1160	<1	48	367	0.17	<0.0090	0.024	9.0	0.080	317	<0.1	179	117	150	<0.01	790	1510	1190	0.010	<0.0002	0.046
HHC-4	12	4750	<1	1070	<1	48	337	0.11	<0.0090	0.021	8.0	0.070	350	<0.1	143	94	190	<0.01	873	1400	1170	0.026	<0.0002	0.037
HPLC-1	8.8	2580	<1	26	24	4.0	<1	0.45	<0.0090	<0.0091	39	0.62	627	0.60	16	136	1650	<0.01	1570	2480	2500	2.0	0.0057	0.14
HPLC-2	8.7	2540	<1	26	24	4.0	<1	0.52	<0.0090	<0.0091	34	0.63	631	0.70	15	118	1670	<0.01	1580	2480	2500	2.0	0.0060	0.12
HPLC-3	8.8	2630	<1	28	24	5.0	<1	0.46	<0.0090	<0.0091	44	0.64	619	0.70	17	144	1710	<0.01	1550	2550	2560	2.0	0.0063	0.15
HPLC-4	8.8	2640	<1	26	22	5.0	<1	0.46	<0.0090	<0.0091	45	0.62	614	0.60	18	157	1730	<0.01	1530	2570	2590	2.0	0.0060	0.16
HPHC-1	12	5500	<1	716	<1	142	163	0.14	<0.0090	<0.0091	32	0.20	358	<0.1	199	452	1410	<0.01	893	2870	2760	0.022	<0.0002	0.23
HPHC-2	12	7290	<1	1020	<1	192	238	0.22	<0.0090	<0.0091	41	0.20	472	0.10	262	592	1780	<0.01	1180	3700	3580	<0.005	<0.002	0.38
HPHC-3	12	5230	<1	699	<1	186	132	0.25	<0.0090	<0.0091	30	0.10	364	<0.1	177	396	1360	<0.01	908	2760	2640	0.0090	<0.002	0.35
HPHC-4	12	7540	<1	1100	<1	253	230	0.40	<0.0090	<0.0091	42	0.20	529	0.10	263	592	1890	<0.01	1320	3890	3800	<0.005	<0.002	0.40
HHGPLC-1	10	3580	<1	70	85	<1	<1	0.23	<0.0090	<0.0091	47	0.10	522	0.30	31	421	2200	<0.01	1300	3200	3310	3.7	0.0011	0.26
HHGPLC-2	10	3500	<1	67	82	<1	<1	0.52	<0.0090	<0.0091	44	0.20	524	0.30	29	396	2130	<0.01	1310	3120	3210	3.6	0.0012	0.24
HHGPLC-3	10	3710	<1	65	79	<1	<1	0.30	<0.0090	<0.0091	51	0.10	520	0.30	33	456	2260	<0.01	1300	3270	3400	3.6	0.0011	0.27
HHGPLC-4	10	3500	<1	66	80	<1	<1	0.38	<0.0090	<0.0091	44	0.20	536	0.30	30	398	2130	<0.01	1340	3090	3220	3.5	0.0010	0.24
HHGPHC-1	12	5700	<1	662	<1	212	105	0.41	<0.0090	<0.0091	11	0.10	563	<0.1	118	484	1990	<0.01	1400	3560	3480	0.020	<0.0002	0.13
HHGPHC-2	12	5630	<1	610	<1	175	108	0.38	<0.0090	<0.0091	11	0.10	559	<0.1	115	466	1960	<0.01	1390	3520	3390	0.0084	<0.0002	0.13
HHGPHC-3	12	5320	<1	666	<1	252	84	0.61	<0.0090	<0.0091	10	0.10	590	<0.1	105	412	1900	<0.01	1470	3350	3350	0.0085	<0.0002	0.20
HHGPHC-4	12	5320	<1	656	<1	253	80	0.60	<0.0090	<0.0091	10	0.10	589	<0.1	110	433	1950	<0.01	1470	3410	3420	0.012	<0.0002	0.13
HLC-S-1	10	5080	<1	94	115	<1	<1	0.73	<0.0090	<0.0091	166	1.4	554	0.40	12	727	3200	0.010	1380	4230	4780	0.055	0.068	0.15
HLC-S-2	10	5060	<1	84	102	<1	<1	0.86	<0.0090	<0.0091	174	1.5	557	0.40	12	739	3000	<0.01	1390	4240	4580	0.30	0.066	0.16
HLC-S-3	11	5230	<1	92	112	<1	<1	0.92	<0.0090	0.0091	169	1.5	578	0.40	12	753	3100	<0.01	1440	4280	4720	0.054	0.064	0.16
HLC-S-4	10	4940	<1	92	112	<1	<1	0.56	<0.0090	<0.0091	161	1.4	524	0.40	11	685	3000	<0.01	1310	4090	4490	0.073	0.064	0.15
HHC-S-1	12	4780	<1	949	<1	403	94	0.42	<0.0090	<0.0091	149	0.40	46	0.10	86	408	510	<0.01	115	1360	1700	4.5	0.0020	0.061
HHC-S-2	12	5340	<1	977	<1	385	114	0.48	<0.0090	<0.0091	114	0.40	39	0.20	98	483	670	<0.01	98	1580	1900	5.1	0.0020	0.082
HHC-S-3	12	4370	<1	884	<1	424	60	0.43	<0.0090	<0.0091	93	0.40	46	0.10	78	371	470	<0.01	115	1260	1540	4.5	0.0020	0.059
HHC-S-4	12	4690	<1	902	<1	373	95	0.62	<0.0090	<0.0091	105	0.30	46	0.20	84	400	520	<0.01	116	1360	1620	4.6	0.0020	0.064
GUCEM	12	11200	<1	2520	<1	300	687	1.3	<0.0090	<0.0091	6.0	<0.1	1010	<0.1	304	60	580	<0.016	2520	3190	2950	0.0070	<0.002	<0.001
SLAG	12	3880	<1	512	78	269	<1	1.8	<0.0090	0.021	108	0.40	756	0.10	56	13	3300	<0.01	1880	2650	4580	0.087	<0.0002	0.00020

(1) Radioactivity analysis for SFE leachate
(2) Radioactivity analysis for initial sample
(3) Radioactivity analysis for solid residue sample

Appendix C, Table C-5
Shake Flask Extraction Results
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Sample ID	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc	Gross Alpha Activity(1)	Gross Beta Activity(1)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	Bq/L
MG-NLR-1	0.15	<0.0001	0.28	0.00010	<0.0005	0.11	0.086	0.032	3.1	0.039	0.000029	0.00030	0.078	0.088	<0.0005	0.45	0.0022	<0.0001	0.00030	0.19	0.00020	0.0072	500	390
MG-NLR-2	0.15	<0.0001	0.28	<0.0001	<0.0005	0.10	0.078	0.031	3.2	0.037	0.000030	0.00030	0.073	0.084	<0.0005	0.44	0.0021	<0.0001	<0.0002	0.18	0.00020	0.0059	610	400
MG-NLR-3	0.15	<0.0001	0.30	0.00010	<0.0005	0.11	0.080	0.033	3.2	0.040	0.000027	0.00030	0.086	0.089	<0.0005	0.46	0.0022	<0.0001	0.00020	0.20	0.00020	0.0084	530	380
MG-NLR-4	0.14	<0.0001	0.32	0.00010	<0.0005	0.12	0.081	0.034	3.2	0.042	0.000034	0.00030	0.087	0.090	<0.0005	0.46	0.0023	<0.0001	0.00020	0.21	0.00020	0.0062	560	390
HG-NLR-1	0.0076	<0.0001	0.34	0.00030	<0.0005	0.24	0.034	0.020	3.5	0.37	0.000064	0.0068	0.15	0.076	<0.0005	0.54	0.0037	<0.0001	0.00040	4.2	<0.0001	0.0031	240	410
HG-NLR-2	0.017	<0.0001	0.28	0.00020	<0.0005	0.18	0.025	0.012	2.9	0.23	0.000029	0.0056	0.12	0.054	<0.0005	0.38	0.0027	<0.0001	0.00030	3.2	<0.0001	0.0033	280	360
HG-NLR-3	0.011	<0.0001	0.30	0.00020	<0.0005	0.20	0.026	0.012	3.0	0.27	0.000031	0.0059	0.12	0.054	<0.0005	0.40	0.0029	<0.0001	0.00030	3.4	<0.0001	0.0021	250	370
HG-NLR-4	0.0081	<0.0001	0.34	0.00030	<0.0005	0.24	0.031	0.015	3.2	0.33	0.000070	0.0064	0.14	0.070	<0.0005	0.49	0.0034	<0.0001	0.00040	4.0	<0.0001	0.0025	290	410
LUGP-1	0.020	<0.0001	0.33	<0.0001	0.0020	0.0012	0.0054	0.032	0.057	0.020	<0.000001	0.13	0.011	0.0015	<0.0005	0.40	<0.0002	<0.0001	0.00040	2.4	<0.0001	0.012	50	10
LUGP-2	0.020	<0.0001	0.35	<0.0001	0.00050	0.0012	0.016	0.0016	0.00050	0.023	<0.000001	0.17	0.012	0.0015	<0.0005	0.40	<0.0002	<0.0001	0.00040	1.7	<0.0001	0.014	40	12
LUGP-3	0.019	<0.0001	0.32	<0.0001	0.0020	0.0010	0.0047	0.032	0.0013	0.018	0.0000040	0.13	0.011	0.0012	<0.0005	0.39	<0.0002	<0.0001	0.00020	2.3	<0.0001	0.011	59	17
LUGP-4	0.019	<0.0001	0.33	<0.0001	0.00080	0.0010	0.012	0.0080	<0.0001	0.020	<0.000001	0.14	0.011	0.0014	<0.0005	0.39	<0.0002	<0.0001	0.00040	1.7	<0.0001	0.012	52	12
HUGP-1	0.017	<0.0001	0.94	<0.0001	<0.0005	0.00010	<0.0002	<0.0005	<0.0001	0.0052	0.0000040	0.56	0.0050	0.0032	<0.0005	0.36	<0.0002	<0.0001	0.0016	0.63	<0.0001	<0.0005	19	5.1
HUGP-2	0.017	<0.0001	0.90	<0.0001	0.0011	0.00010	<0.0002	0.0034	<0.0001	0.0052	<0.000001	0.54	0.0045	0.0032	<0.0005	0.36	<0.0002	<0.0001	0.0017	0.60	<0.0001	0.00090	15	4.4
HUGP-3	0.012	<0.0001	0.88	<0.0001	<0.0005	0.00010	<0.0002	<0.0005	<0.0001	0.0049	<0.000001	0.52	0.0042	0.0030	<0.0005	0.35	<0.0002	<0.0001	0.0015	0.55	<0.0001	<0.0005	15	4.5
HUGP-4	0.016	<0.0001	0.94	<0.0001	<0.0005	0.00010	<0.0002	<0.0005	<0.0001	0.0053	0.0000010	0.55	0.0047	0.0034	<0.0005	0.36	<0.0002	<0.0001	0.0018	0.60	<0.0001	<0.0005	16	4.2
MPPT-1	0.020	<0.001	1.3	<0.001	<0.005	0.0020	<0.002	<0.005	<0.001	0.42	<0.000001	12	<0.001	0.012	<0.005	0.24	0.016	<0.001	0.041	0.010	0.0020	<0.005	<2.1	<0.86
MPPT-2	0.019	<0.001	1.6	<0.001	<0.005	0.0030	<0.002	<0.005	<0.001	0.56	<0.000001	16	<0.001	0.019	<0.005	0.26	0.020	<0.001	0.046	0.015	0.0020	<0.005	3.8	3.4
MPPT-3	0.018	<0.001	1.5	<0.001	<0.005	0.0020	<0.002	<0.005	<0.001	0.51	0.0000080	15	<0.001	0.017	<0.005	0.27	0.018	<0.001	0.051	0.011	0.0020	<0.005	3.5	1.6
MPPT-4	0.020	<0.001	1.4	<0.001	<0.005	0.0030	<0.002	<0.005	<0.001	0.56	0.0000010	16	<0.001	0.019	<0.005	0.27	0.020	<0.001	0.057	0.011	0.0020	<0.005	<3.3	2.4
HLC-1	0.048	<0.0001	0.15	<0.0001	0.00060	0.00010	0.00030	<0.0005	0.0020	<0.0005	0.00060	2.1	0.00020	0.11	0.052	1.1	0.0025	<0.0001	0.0072	0.0048	0.018	<0.0005	240	58
HLC-2	0.047	<0.0001	0.14	<0.0001	0.00060	0.00010	0.00030	<0.0005	0.0020	<0.0005	0.00021	2.0	0.00020	0.11	0.049	1.1	0.0025	<0.0001	0.0070	0.0046	0.018	<0.0005	210	57
HLC-3	0.047	<0.0001	0.14	<0.0001	0.00070	0.00010	0.00040	<0.0005	0.0018	<0.0005	0.00046	2.0	0.00020	0.11	0.048	1.0	0.0024	<0.0001	0.0063	0.012	0.017	<0.0005	180	53
HLC-4	0.050	<0.0001	0.16	<0.0001	0.00070	0.00010	0.00050	<0.0005	0.0015	<0.0005	0.00045	2.2	0.00020	0.12	0.053	1.0	0.0024	<0.0001	0.0070	0.0089	0.017	<0.0005	210	58
HHC-1	0.22	<0.0001	0.020	<0.0001	0.026	<0.0001	0.00040	<0.0005	0.42	<0.0005	<0.000001	6.0	0.00020	0.045	<0.0005	4.5	0.0028	<0.0001	0.013	0.020	0.00060	<0.0005	280	140
HHC-2	0.21	<0.0001	0.020	<0.0001	0.028	<0.0001	0.00050	<0.0005	0.42	<0.0005	<0.000001	6.6	0.00020	0.043	<0.0005	4.7	0.0030	<0.0001	0.014	0.014	0.00060	<0.0005	270	130
HHC-3	0.20	<0.0001	<0.01	0.00010	0.033	<0.0001	0.00050	<0.0005	0.40	<0.0005	<0.000001	6.8	0.00020	0.028	<0.0005	4.7	0.0031	<0.0001	0.014	0.015	0.00040	<0.0005	390	140
HHC-4	0.17	<0.0001	<0.01	<0.0001	0.029	<0.0001	0.00040	<0.0005	0.32	<0.0005	<0.000001	5.6	0.00020	0.022	<0.0005	3.4	0.0023	<0.0001	0.012	0.012	0.00040	<0.0005	210	100
HPLC-1	0.024	<0.0001	0.53	<0.0001	0.0072	<0.0001	0.0011	0.0014	0.00050	<0.0005	<0.000001	3.6	0.00020	0.053	<0.0005	0.45	0.0010	<0.0001	0.010	0.070	0.022	0.00090	52	16
HPLC-2	0.025	<0.0001	0.51	<0.0001	0.0066	<0.0001	0.0021	0.0020	0.0011	<0.0005	<0.000001	3.3	0.00020	0.053	<0.0005	0.45	0.00090	<0.0001	0.0098	0.075	0.022	0.0020	37	12
HPLC-3	0.023	<0.0001	0.58	<0.0001	0.0078	<0.0001	0.0024	0.0018	0.0042	<0.0005	<0.000001	3.9	0.00040	0.064	<0.0005	0.46	0.0010	<0.0001	0.013	0.068	0.023	0.0038	45	12
HPLC-4	0.024	<0.0001	0.59	<0.0001	0.0084	<0.0001	0.0015	0.0011	0.00070	<0.0005	<0.000001	4.4	0.00030	0.064	0.00090	0.47	0.0011	<0.0001	0.014	0.064	0.023	0.0014	41	11
HPHC-1	0.071	<0.0001	<0.01	<0.0001	0.29	0.00040	0.0045	0.0014	0.055	<0.0005	<0.000001	8.8	0.0020	0.025	<0.0005	1.7	0.0040	<0.0001	0.030	0.013	0.011	<0.0005	65	34
HPHC-2	0.072	<0.001	<0.1	<0.001	0.50	<0.001	0.0050	<0.005	0.12	<0.005	<0.000001	15	0.0030	0.039	<0.005	3.2	0.0070	<0.001	0.051	0.022	0.010	<0.005	71	41
HPHC-3	0.071	<0.001	<0.1	<0.001	0.44	<0.001	0.0040	<0.005	0.078	<0.005	<0.000001	14	0.0030	0.035	<0.005	2.2	0.0050	<0.001	0.049	0.019	0.013	<0.005	55	29
HPHC-4	0.076	<0.001	<0.1	<0.001	0.51	<0.001	0.0050	<0.005	0.14	<0.005	<0.000001	17	0.0030	0.040	<0.005	3.6	0.0070	<0.001	0.056	0.025	0.0090	<0.005	48	40
HHGPLC-1	0.024	<0.0001	0.52	<0.0001	0.032	0.00010	0.0065	0.0018	0.00060	<0.0005	0.0000040	4.2	0.00080	0.19	<0.0005	0.68	0.0017	<0.0001	0.013	0.014	0.046	<0.0005	43	16
HHGPLC-2	0.025	<0.0001	0.52	<0.0001	0.032	0.00010	0.0062	0.0032	0.00080	<0.0005	0.0000080	4.2	0.00080	0.19	<0.0005	0.66	0.0016	<0.0001	0.012	0.014	0.046	<0.0005	38	12
HHGPLC-3	0.024	<0.0001	0.54	<0.0001	0.035	0.00010	0.0069	0.0030	0.00060	<0.0005	0.0000060	4.7	0.00090	0.20	0.00050	0.69	0.0018	0.00010	0.014	0.015	0.048	0.00050	35	13
HHGPLC-4	0.024	<0.0001	0.49	<0.0001	0.031	0.00010	0.0060	0.0025	0.00060	<0.0005	0.000015	4.1	0.00080	0.18	<0.0005	0.66	0.0016	<0.0001	0.012	0.013	0.046	<0.0005	45	16
HHGPHC-1	0.049	<0.0001	0.010	<0.0001	0.25	0.00040	0.0029	0.0023	0.046	<0.0005	0.000021	5.8	0.0034	0.015	<0.0005	1.6	0.0039	<0.0001	0.018	0.012	0.012	0.00060	44	24
HHGPHC-2	0.049	<0.0001	0.010	<0.0001	0.24	0.00040	0.0029	0.0012	0.044	<0.0005	0.000020	5.7	0.0032	0.014	<0.0005	1.6	0.0039	<0.0001	0.020	0.011	0.012	0.0011	53	23
HHGPHC-3	0.049	<0.0001	0.010	<0.0001	0.34	0.00070	0.0056	0.0023	0.056	<0.0005	0.000011	9.5	0.0061	0.022	<0.0005	1.9	0.0046	<0.0001	0.030	0.014	0.012	<0.0005	55	29
HHGPHC-4	0.051	<0.0001	0.010	<0.0001	0.24	0.00040	0.0031	0.00060	0.042	<0.0005	0.0000050	6.1	0.0033	0.015	<0.0005	1.7	0.0038	<0.0001	0.021	0.0094	0.012	<0.0005	39	20
HLC-S-1	0.026	<0.001	0.30	<0.001	<0.005	<0.001	0.0030	<0.005	0.0020	<0.005	<0.000001	7.8	0.0010	0.55	<0.005	1.3	<0.002	<0.001	0.025	0.0020	0.039	<0.005	160	44
HLC-S-2	0.028	<0.001	0.30	<0.001	<0.005	<0.001	0.0040	<0.005	0.0030	<0.005	<0.000001	8.5	0.0010	0.54	<0.005	1.3	<0.002	<0.001	0.024	0.0020	0.042	<0.005	140	44
HLC-S-3	0.028	<0.001	0.30	<0.001	<0.005	<0.001	0.0020	<0.005	0.0030	<0.005	<0.000001	8.1	<0.001	0.54	<0.005	1.3	<0.002	<0.001	0.023	0.0020	0.041	<0.005	150	41
HLC-S-4	0.026	<0.001	0.30	<0.001	<0.005	<0.001	0.0020	<0.005	0.0020	<0.005	<0.000001	7.8	<0.001	0.52	<0.005	1.2	<0.002	<0.001	0.020	0.0020	0.036	<0.005	140	41
HHC-S-1	0.063	<0.001	<0.1	<0.001	0.013	0.0010	0.0020	0.054	0.13	<0.005	<0.000001	26	<0.001	0.092	<0.005	0.52	<0.002	<0.001	0.079	0.032	0.0040	<0.005	110	51
HHC-S-2	0.063	<0.001	<0.1	<0.001	0.017	0.0020	0.0030	0.075	0.14	<0.005	<0.000001	35	<0.001	0.11	<0.005	0.51	0.0020	<0.001	0.10	0.038	0.0050	<0.005	110	54
HHC-S-3	0.062	<0.001	<0.1	<0.001	0.013	0.0010	0.0020	0.054	0.11	<0.005	0.0000080	24	<0.001	0.084	<0.005	0.48	<0.002	<0.001	0.077	0.029	0.0040	<0.005	99	45
HHC-S-4	0.065	<0.001	<0.1	<0.001	0.013	0.0010	0.0020	0.056	0.13	<0.005	0.0000020	28	<0.001	0.091	<0.005	0.51	<0.002	<0.001	0.089	0.032	0.0040	<0.005	100	50
GUCEM	0.34	<0.001	<0.1	<0.001	0.29	<0.001	<0.002	<0.005	<0.001	<0.005	<0.000001	0.19	<0.001	0.0050	<0.005	6.6	<0.002	<0.001	<0.002	0.0080	<0.001	<0.005	<2.5	10
SLAG	0.35	<0.0001	<0.01	<0.0001	0.020	0.00040	<0.0002	0.050	<0.0001	<0.0005	<0.000001	0.017	0.00020	0.038	<0.0005	2.9	<0.0002	<0.0001	0.00040	<0.0001	0.0016	0.00060	<4.3	<3.3

(1) Radioactivity analysis for SFE leachate

(2) Radioactivity analysis for initial sample

(3) Radioactivity analysis for solid residue sam

Appendix C, Table C-5
Shake Flask Extraction Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Pb-210[1]	Po-210[1]	Ra-226[1]	Ra-228[1]	Gross Alpha Activity[2]	Gross Beta Activity[2]	K-40[2]	Ra-226[2]	Th-230[2]	Th-232[2]	U-234[2]	U-235[2]	U-238[2]	Gross Alpha Activity[3]	Gross Beta Activity[3]	K-40[3]	Ra-226[3]	Th-230[3]	Th-232[3]	U-234[3]	U-235[3]	U-238[3]
	Bq/L	Bq/L	Bq/L	Bq/L	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g	Bq/g
MG-NLR-1	260	31	340	4.0	1300	580	1.0	190	70	0.068	3.1	0.16	3.1	1300	580	2.0	170	60	0.064	2.6	0.13	2.6
MG-NLR-2	280	21	360	5.0	1300	580	2.0	200	60	0.068	2.7	0.14	2.7	1400	590	<0.5	210	60	0.078	3.0	0.15	3.0
MG-NLR-3	290	17	350	3.0	1400	610	2.0	220	60	0.068	3.8	0.19	3.8	1400	580	2.0	160	60	0.074	2.9	0.14	2.9
MG-NLR-4	270	21	330	3.0	1200	560	1.0	210	60	0.060	2.9	0.14	2.9	1200	520	2.0	200	60	0.074	3.1	0.16	3.1
HG-NLR-1	270	10	77	<2	3100	1500	<2	440	230	0.13	33	1.7	33	3300	1400	<1	390	210	0.12	28	1.4	28
HG-NLR-2	230	5.6	99	<2	3000	1500	2.0	460	240	0.12	34	1.7	34	3400	1600	2.0	370	210	0.12	29	1.4	29
HG-NLR-3	260	6.1	92	3.0	3300	1500	<1	430	230	0.13	32	1.6	32	3300	1500	2.0	450	230	0.12	28	1.4	28
HG-NLR-4	200	7.9	75	<2	3100	1500	1.0	420	220	0.13	32	1.6	32	3100	1500	<1	370	210	0.11	27	1.3	27
LUGP-1	<0.8	<0.2	<0.2	<1	8.8	26	<0.06	0.040	12	0.0030	2.1	0.10	2.1	7.8	25	<0.08	0.040	13	0.0030	2.0	0.10	2.0
LUGP-2	0.80	<0.2	1.3	<1	9.2	25	<0.08	0.040	10	0.0030	2.0	0.10	2.0	7.7	25	<0.07	0.050	13	0.0030	2.0	0.099	2.0
LUGP-3	2.0	<0.2	0.60	<2	7.8	24	<0.06	0.050	11	0.0030	2.1	0.10	2.1	8.2	25	<0.05	0.080	12	0.0040	2.0	0.10	2.0
LUGP-4	<0.8	<0.2	0.30	<2	8.4	23	0.090	0.060	12	0.0030	2.1	0.10	2.1	6.8	22	<0.02	0.050	12	0.0040	2.1	0.10	2.1
HUGP-1	<0.8	<0.2	0.60	<2	18	13	<0.05	0.18	12	0.0050	8.0	0.40	8.0	11	11	<0.06	0.16	12	0.0060	8.4	0.42	8.4
HUGP-2	<0.8	<0.2	0.30	<2	18	14	<0.05	0.18	13	0.0050	8.0	0.40	8.0	16	13	<0.05	0.17	14	0.0060	8.9	0.44	8.9
HUGP-3	<0.8	<0.2	0.60	<2	19	13	<0.04	0.18	14	0.0050	8.4	0.42	8.4	18	13	<0.06	0.12	12	0.0060	8.8	0.44	8.8
HUGP-4	<0.8	<0.2	0.60	<2	17	12	<0.02	0.24	14	0.0050	8.2	0.41	8.2	16	13	<0.05	0.18	14	0.0060	8.7	0.43	8.7
MPPT-1	<0.8	<0.2	0.30	<2	800	150	<0.2	12	1500	0.41	25	1.2	25	910	150	<0.03	11	1600	0.53	26	1.3	26
MPPT-2	<0.8	<0.2	0.20	<2	920	160	<0.1	11	1600	0.45	25	1.2	25	990	170	<0.1	15	1600	0.56	28	1.4	28
MPPT-3	<0.8	<0.2	<0.2	<2	880	110	0.20	13	1500	0.46	25	1.2	25	960	160	<0.1	12	1600	0.56	27	1.3	27
MPPT-4	<0.8	<0.2	0.50	<2	720	140	<0.1	8.0	1500	0.46	25	1.3	25	820	140	<0.08	11	1600	0.55	27	1.3	27
HLC-1	<0.8	0.20	82	<3	4800	1500	<3	390	210	0.11	28	1.4	28	4200	1300	<4	390	200	0.11	29	1.4	29
HLC-2	<0.8	0.20	89	<3	5200	1600	<3	340	220	0.11	28	1.4	28	4100	1400	<4	420	210	0.12	29	1.5	29
HLC-3	1.0	<0.2	80	<3	5000	1500	3.0	380	220	0.11	29	1.4	29	3800	1500	<4	360	220	0.11	29	1.5	29
HLC-4	<0.8	0.30	82	3.0	3900	1500	<4	410	200	0.11	29	1.4	29	4100	1400	<3	320	200	0.12	30	1.5	30
HHC-1	45	2.1	119	6.0	4300	1300	<2	290	170	0.086	23	1.2	23	3400	1200	<3	220	150	0.17	45	2.2	45
HHC-2	45	1.9	120	4.0	3400	1300	3.0	300	190	0.088	24	1.2	24	3400	1200	<3	310	160	0.19	47	2.3	47
HHC-3	47	1.8	95	5.0	3600	1300	<2	290	170	0.085	23	1.1	23	3700	1200	3.0	320	180	0.18	46	2.3	46
HHC-4	36	1.4	99	3.0	3700	1300	2.0	280	170	0.085	23	1.2	23	3400	1200	<3	230	170	0.18	47	2.3	47
HPLC-1	<0.8	0.30	15	4.0	3000	1100	<2	320	550	0.24	27	1.4	27	3100	1100	<2	330	590	0.26	34	1.7	34
HPLC-2	<0.8	0.20	15	<3	2900	1100	<2	270	580	0.25	29	1.4	29	3200	1100	<3	280	560	0.27	31	1.6	31
HPLC-3	<0.8	0.30	16	<3	2800	1000	<2	290	550	0.24	28	1.4	28	2800	1100	<3	320	570	0.26	31	1.6	31
HPLC-4	<0.8	0.50	21	<3	3600	1100	<2	290	560	0.24	28	1.4	28	3600	1200	<2	310	590	0.27	33	1.6	33
HPHC-1	4.0	0.30	6.9	3.0	2600	840	<2	160	380	0.17	23	1.1	23	1900	690	<2	120	350	0.17	20	1.0	20
HPHC-2	10	<0.2	7.6	<3	2600	860	<3	210	370	0.16	22	1.1	22	1900	700	<2	200	340	0.16	20	1.0	20
HPHC-3	7.0	0.80	7.9	4.0	2800	870	<2	160	400	0.17	23	1.1	23	2000	730	2.0	190	350	0.16	20	0.98	20
HPHC-4	11	0.30	6.3	5.0	2600	850	<2	160	340	0.16	22	1.1	22	2000	680	2.0	190	350	0.16	20	0.99	20
HHGPLC-1	<0.8	0.20	12	<3	3100	890	3.0	180	400	0.18	26	1.3	26	2400	820	<2	210	390	0.17	22	1.1	22
HHGPLC-2	<0.8	<0.2	8.8	9.0	3100	840	<2	200	400	0.18	26	1.3	26	2200	810	<2	190	380	0.17	22	1.1	22
HHGPLC-3	<0.8	<0.2	8.3	<3	3000	860	2.0	140	420	0.19	26	1.3	26	2300	810	<2	140	390	0.17	22	1.1	22
HHGPLC-4	<0.8	<0.2	14	<3	2800	820	<2	220	400	0.18	26	1.3	26	2400	820	<2	210	360	0.18	24	1.2	24
HHGPHC-1	4.0	<0.2	6.0	<3	1700	560	2.0	120	270	0.13	17	0.86	17	1400	540	<2	95	290	0.14	16	0.83	16
HHGPHC-2	2.0	0.40	7.2	4.0	1900	590	<2	160	280	0.13	17	0.87	17	1400	470	<1	160	300	0.13	16	0.79	16
HHGPHC-3	6.0	<0.2	6.8	<3	1800	500	<2	160	280	0.13	17	0.85	17	1800	600	<2	110	280	0.14	16	0.82	16
HHGPHC-4	4.0	<0.2	7.4	3.0	1500	540	<2	160	280	0.12	17	0.85	17	1500	570	<2	170	280	0.13	16	0.81	16
HLC-S-1	2.0	0.70	64	<2	4700	1500	<2	320	200	0.12	31	1.6	31	3900	1400	<2	390	210	0.12	32	1.6	32
HLC-S-2	1.0	0.70	65	<2	4800	1500	<3	430	210	0.12	31	1.6	31	4200	1500	<4	420	240	0.12	34	1.7	34
HLC-S-3	2.0	0.80	66	<2	4900	1500	<4	370	210	0.12	30	1.5	30	3900	1500	<3	390	210	0.12	35	1.7	35
HLC-S-4	3.0	0.80	61	<2	4900	1500	<3	440	230	0.13	32	1.6	32	4200	1500	<3	420	200	0.12	41	2.1	41
HHC-S-1	16	0.80	47	3.0	3000	1000	<2	290	160	0.12	24	1.2	24	3300	1400	4.0	400	220	0.094	78	3.9	78
HHC-S-2	18	1.0	48	<3	3000	1000	<0.8	240	150	0.11	23	1.2	23	2700	1000	<2	280	160	0.093	25	1.2	25
HHC-S-3	14	0.80	47	6.0	3100	1100	<2	270	170	0.11	23	1.1	23	2500	1000	<4	260	160	0.095	26	1.3	26
HHC-S-4	19	1.1	48	6.0	2500	980	<1	210	120	0.11	23	1.1	23	2700	1100	<2	290	160	0.096	28	1.4	28
GUCEM	<0.8	<0.2	0.20	<2	<0.49	0.34	<0.04	0.040	0.020	0.010	0.024	0.0010	0.024	0.74	0.22	0.14	0.040	0.020	0.0090	0.026	0.0010	0.026
SLAG	<0.8	<0.2	0.30	<3	2.5	0.90	0.10	0.10	<0.5	0.052	0.12	0.0061	0.12	1.7	0.96	0.10	0.10	<0.5	0.047	0.11	0.0053	0.11

(1) Radioactivity analysis for SFE leachate
(2) Radioactivity analysis for initial sample
(3) Radioactivity analysis for solid residue sam

Appendix C, Table C-6
Process Water Chemistry Results
NexGen Rook I Geochemical Characterization Report

Parameter	Units	Sample ID							
		MG-PW-1	MG-PW-2	MG-PW-3	MG-PW-4	HG-PW-1	HG-PW-2	HG-PW-3	HG-PW-4
pH	s.u.	6.4	6.4	6.4	6.3	5.3	5.2	5.2	5.2
Specific Conductivity	µS/cm	1990	1990	2000	2000	2720	2730	2740	2730
Total Alkalinity	mg/L	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0
Bicarbonate	mg/L	7.0	7.0	7.0	7.0	6.0	6.0	6.0	6.0
Carbonate	mg/L	<1	<1	<1	<1	<1	<1	<1	<1
Hydroxide	mg/L	<1	<1	<1	<1	<1	<1	<1	<1
Ammonia	mg/L-N	0.31	0.15	0.20	0.11	0.45	0.42	0.42	0.43
Nitrate	mg/L-N	1.0	0.93	0.77	0.72	1.2	0.41	0.41	0.41
Nitrite	mg/L-N	0.22	-	-	-	<0.0091	-	-	-
Chloride	mg/L	43	43	43	43	52	52	52	52
Fluoride	mg/L	1.2	1.2	1.2	1.2	1.9	1.9	1.9	1.9
Calcium	mg/L	389	393	394	394	332	332	335	334
Magnesium	mg/L	50	50	50	50	234	234	236	235
Potassium	mg/L	10	10	10	10	23	23	23	23
Sodium	mg/L	37	37	37	37	40	40	40	40
Sulfate	mg/L	1130	1140	1150	1150	1750	1750	1770	1760
Orthophosphate	mg/L-P	0.020	0.020	-	-	0.010	0.010	-	-
Total Hardness	mg/L	1180	1180	1190	1190	1790	1790	1800	1800
Total Dissolved Solids	mg/L	1890	1890	1890	1900	2740	2750	2750	2740
Aluminum	mg/L	0.031	0.031	0.031	0.029	0.54	0.54	0.54	0.54
Antimony	mg/L	0.0010	0.0010	0.0010	0.0010	0.00070	0.00060	0.00060	0.00060
Arsenic	mg/L	0.080	0.080	0.080	0.080	0.012	0.012	0.012	0.012
Barium	mg/L	0.026	0.025	0.025	0.026	0.019	0.020	0.019	0.020
Beryllium	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.00010	0.00010	0.00010	0.00010
Boron	mg/L	0.11	0.11	0.11	0.11	1.4	1.4	1.4	1.4
Cadmium	mg/L	<0.00001	0.000020	0.000040	0.000030	0.000070	0.000070	0.000060	0.000070
Chromium	mg/L	0.00060	0.00060	0.00060	0.00060	0.0011	0.0011	0.0011	0.0011
Cobalt	mg/L	0.0054	0.0055	0.0056	0.0055	0.047	0.047	0.047	0.048
Copper	mg/L	0.0094	0.0097	0.0097	0.0096	0.019	0.019	0.019	0.019
Iron	mg/L	0.068	0.066	0.069	0.068	0.28	0.27	0.27	0.28
Lead	mg/L	0.0039	0.0039	0.0040	0.0040	0.23	0.22	0.23	0.23
Manganese	mg/L	0.045	0.045	0.046	0.046	0.56	0.55	0.55	0.56
Mercury	mg/L	0.0000020	0.0000020	0.0000020	0.0000020	0.0000020	0.0000020	0.0000020	0.0000020
Molybdenum	mg/L	1.4	1.4	1.4	1.4	0.012	0.013	0.013	0.013
Nickel	mg/L	0.038	0.038	0.038	0.038	0.15	0.15	0.15	0.15
Selenium	mg/L	0.044	0.044	0.045	0.045	0.022	0.022	0.022	0.022
Silver	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Strontium	mg/L	1.4	1.4	1.4	1.4	4.0	3.9	3.9	4.0
Thallium	mg/L	0.0010	0.0010	0.0010	0.0010	0.0023	0.0023	0.0022	0.0022
Tin	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.0062	0.0061	0.0065	0.0062	0.0011	0.00090	0.00090	0.00080
Uranium	mg/L	1.2	1.2	1.2	1.2	4.5	4.5	4.4	4.5
Vanadium	mg/L	0.00080	0.00080	0.00090	0.00080	0.00030	0.00030	0.00030	0.00030
Zinc	mg/L	0.0053	0.0056	0.0051	0.0051	0.014	0.013	0.013	0.013
Gross Alpha Activity	Bq/L	130	150	-	-	840	860	-	-
Gross Beta Activity	Bq/L	27	47	-	-	320	320	-	-
Lead-210	Bq/L	1.7	0.60	-	-	26	28	-	-
Polonium-210	Bq/L	1.6	0.40	-	-	3.8	4.0	-	-
Radium-226	Bq/L	26	24	-	-	110	95	-	-
Radium-228	Bq/L	0.70	<0.5	-	-	2.0	3.0	-	-

-	Parameter not measured

APPENDIX D

Static Test Figures

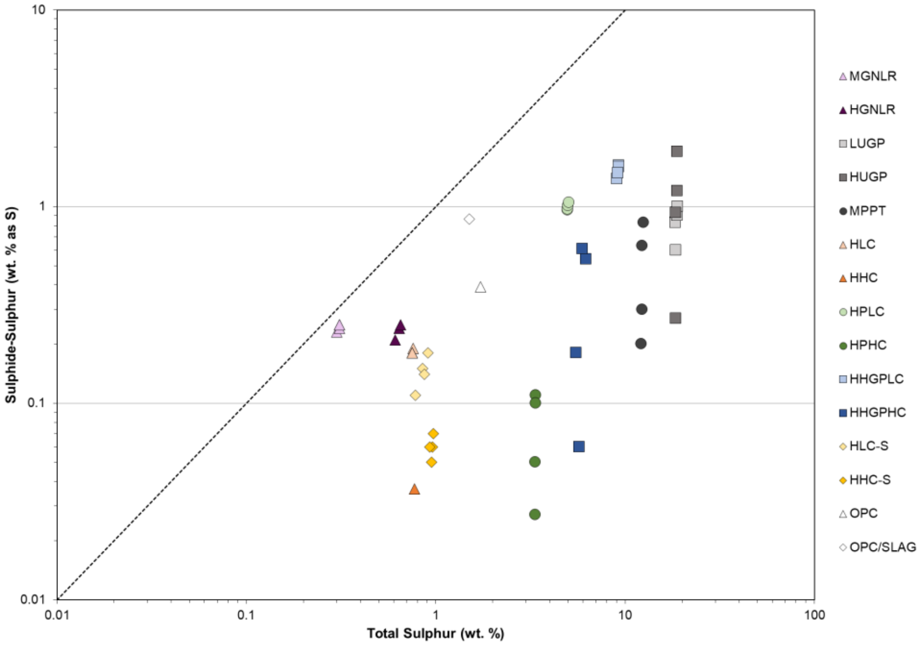

Figure D1-1: Sulphide-Sulphur vs Total Sulphur

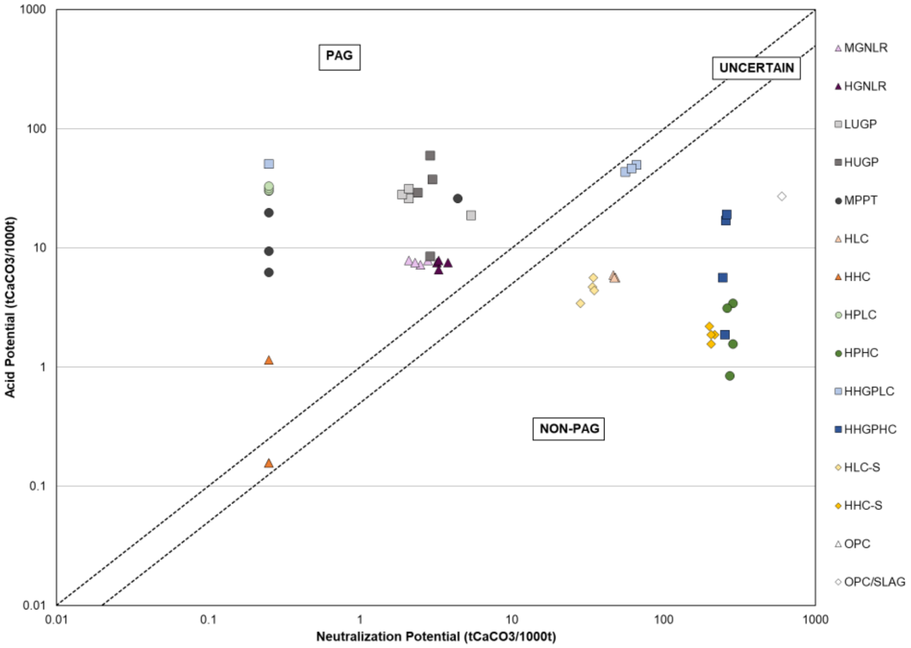

Figure D1-2: Acid Potential vs Modified Sobek Neutralization Potential

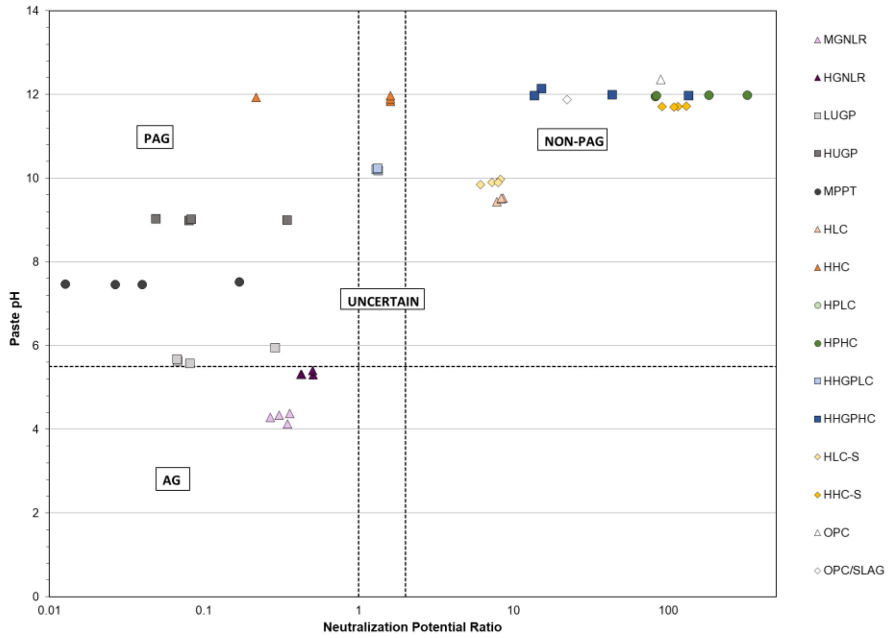

Figure D1-3: Paste pH vs Neutralization Potential Ratio

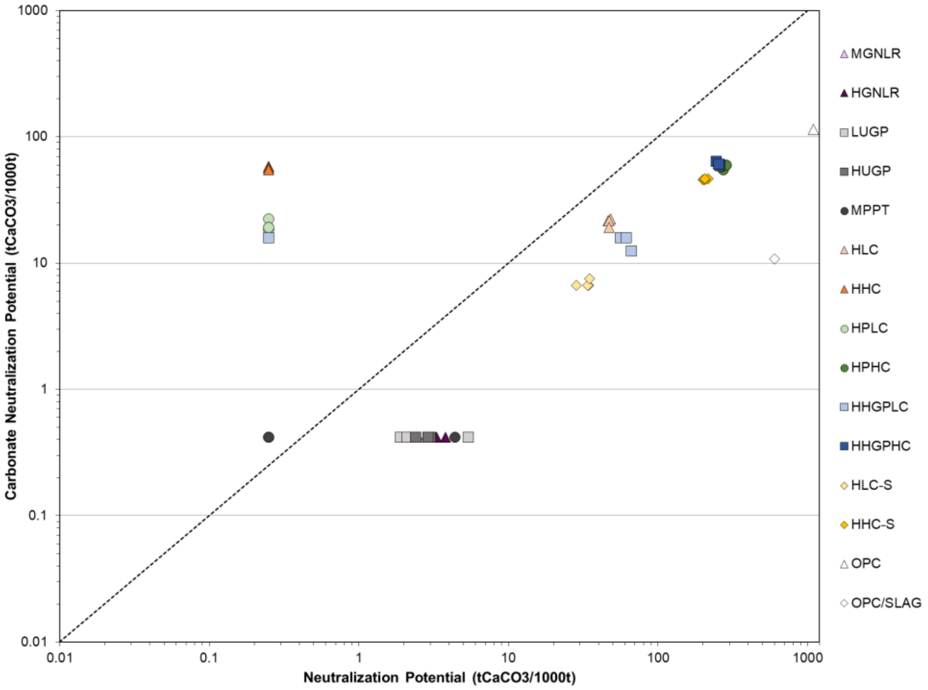

Figure D1-4: Carbonate Neutralization Potential vs Modified Sobek Neutralization Potential

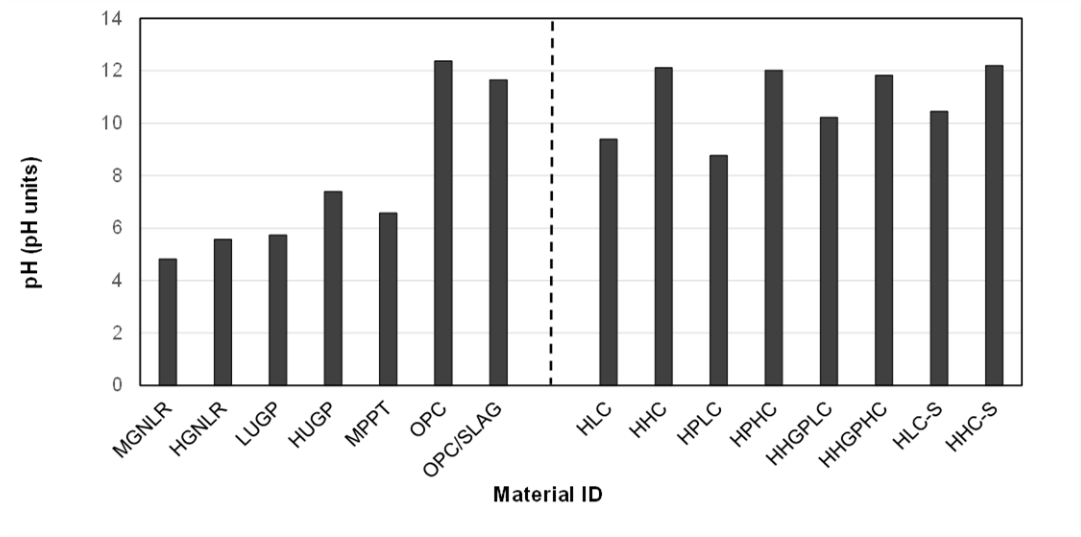

Figure D2-1: SFE pH vs Material Type

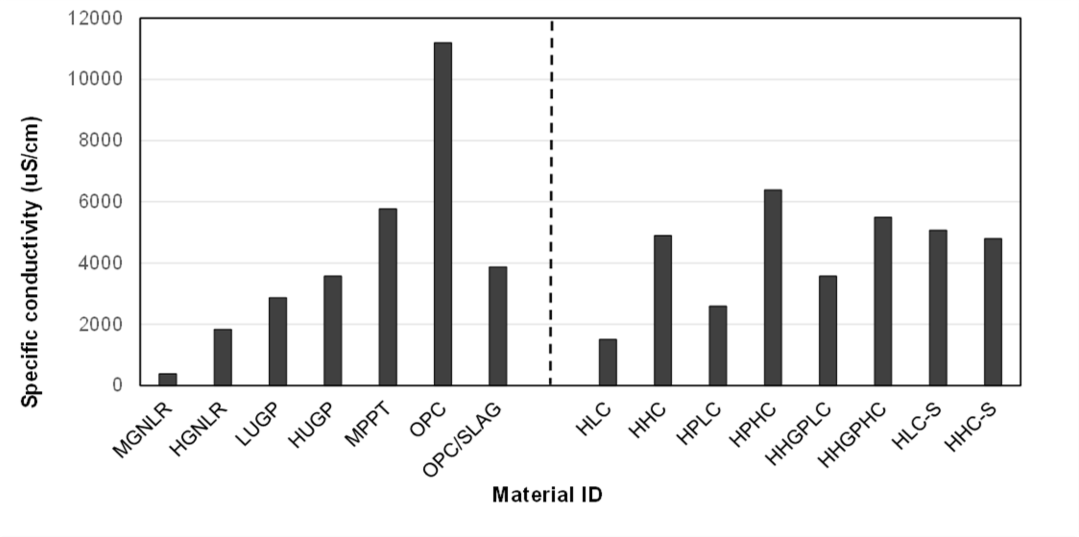

Figure D2-2: SFE Specific Conductivity vs Material Type

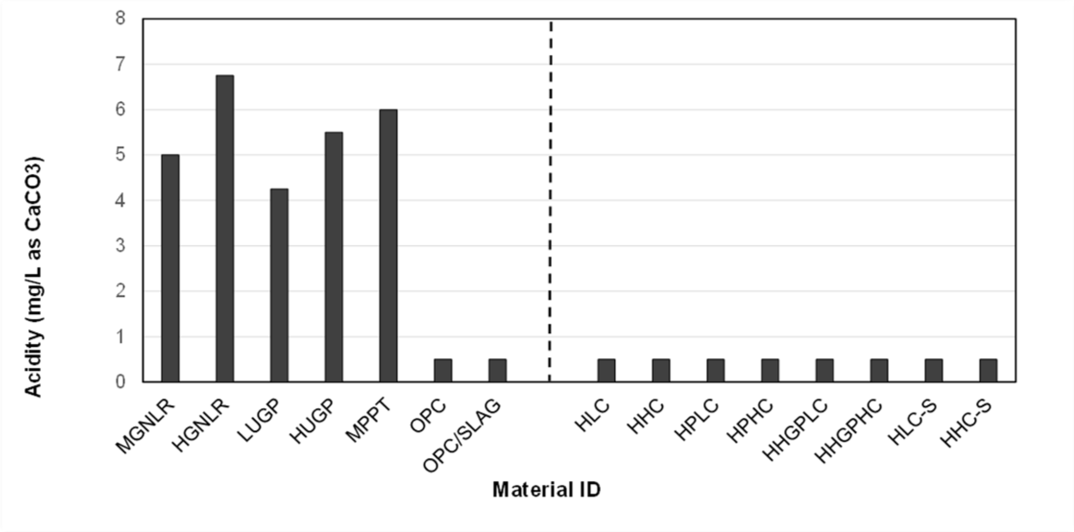

Figure D2-3: SFE Acidity vs Material Type

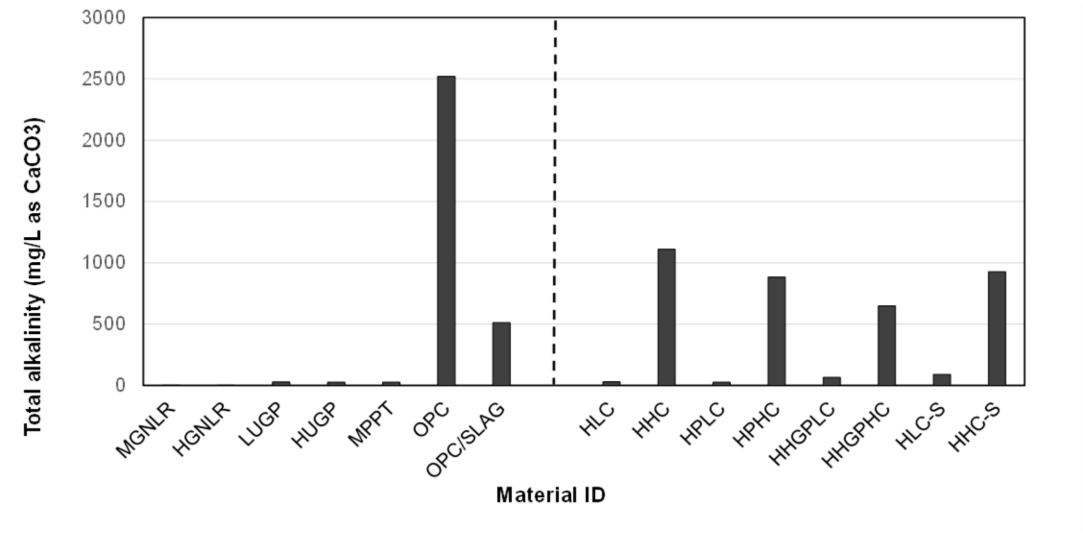

Figure D2-4: SFE Alkalinity vs Material Type

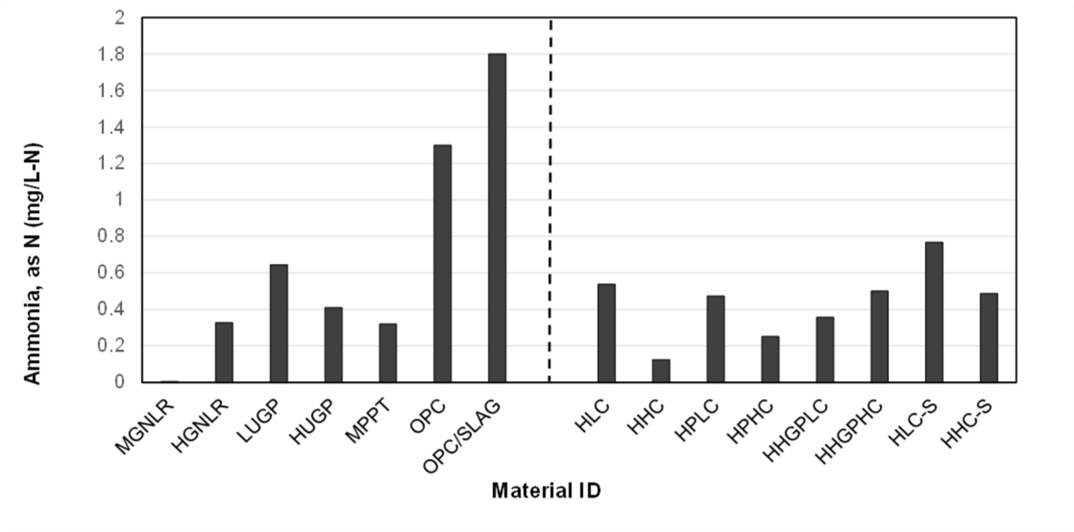

Figure D2-5: SFE Ammonia Concentration vs Material Type

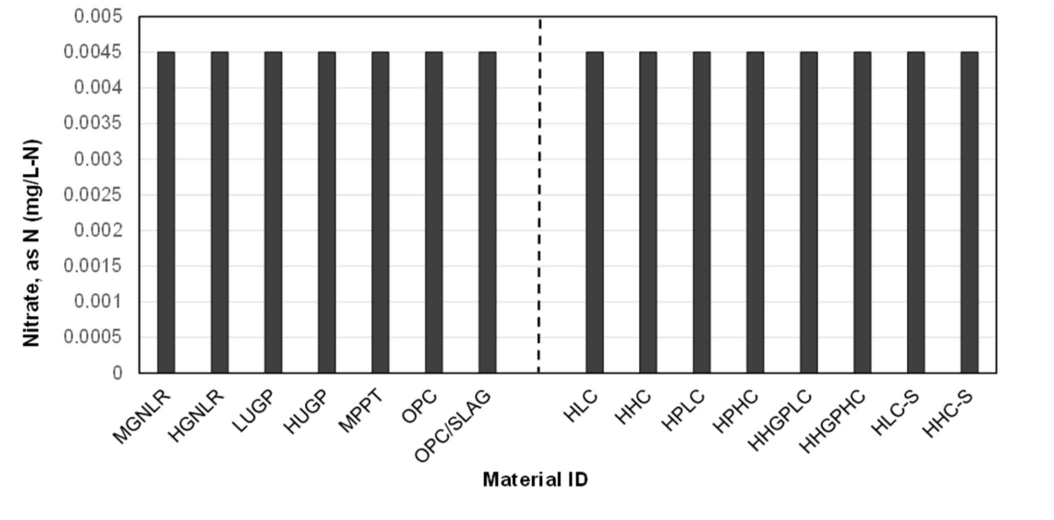

Figure D2-6: SFE Nitrate Concentration vs Material Type

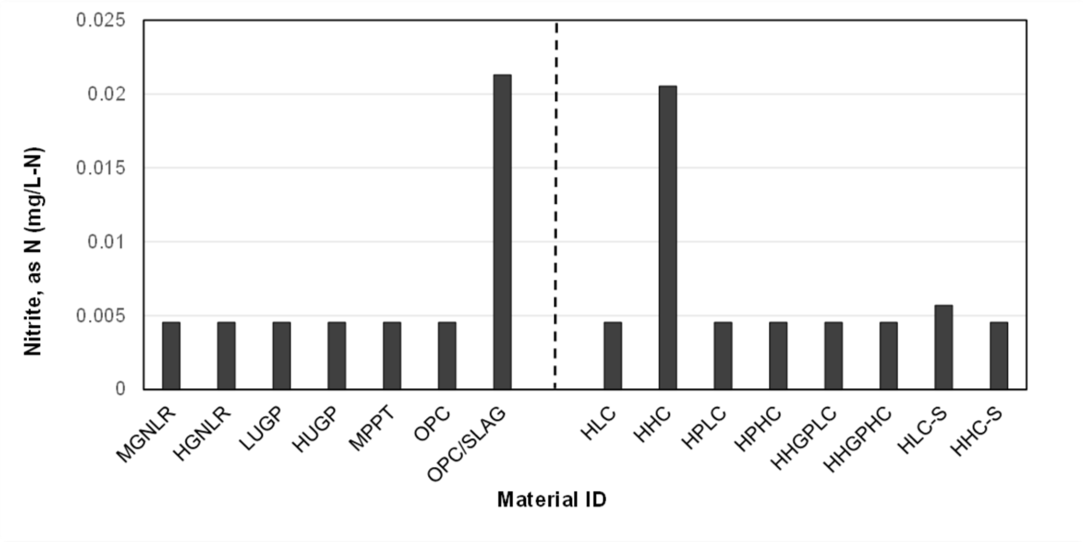

Figure D2-7: SFE Nitrite Concentration vs Material Type

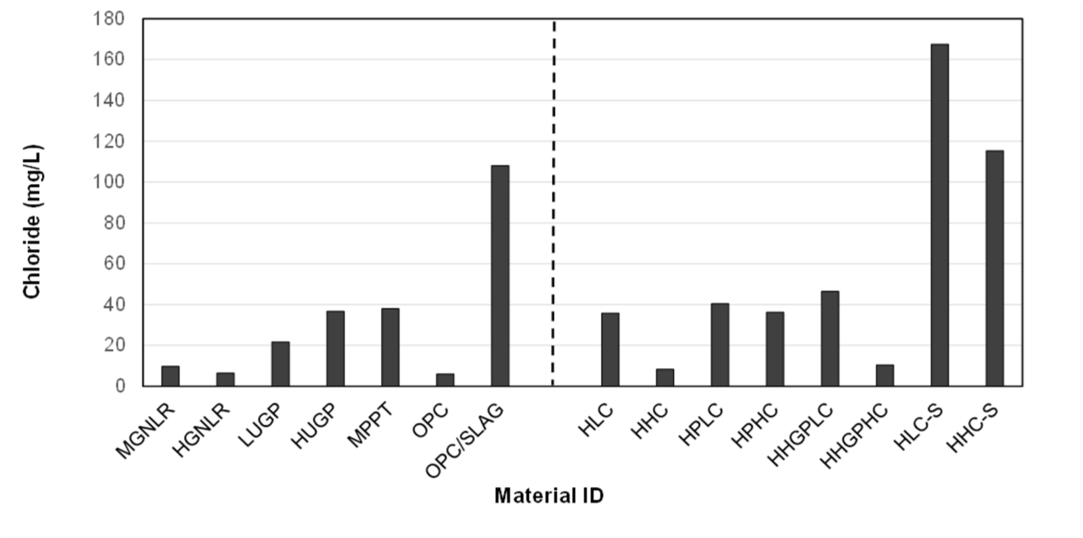

Figure D2-8: SFE Chloride Concentration vs Material Type

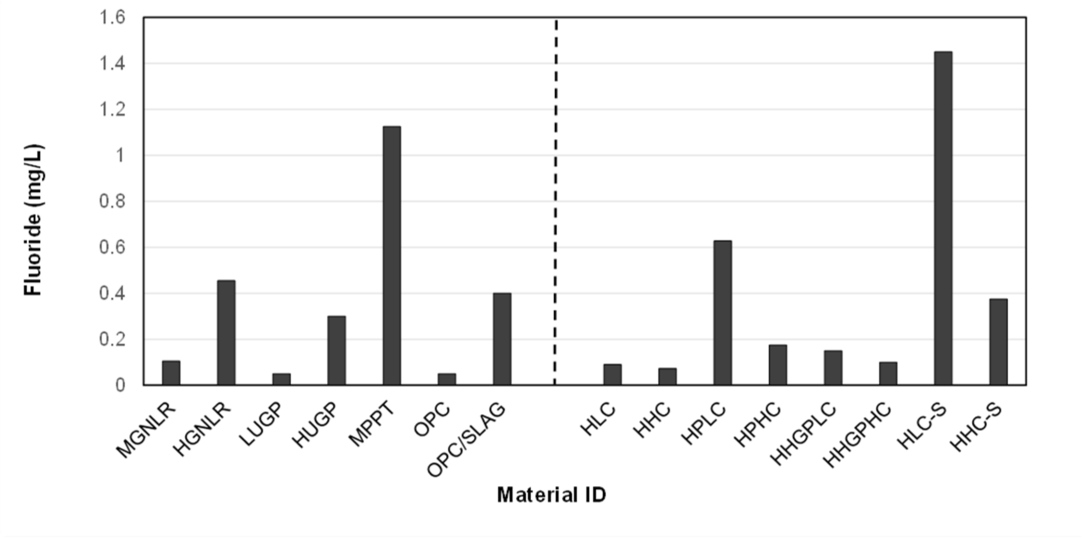

Figure D2-9: SFE Fluoride Concentration vs Material Type

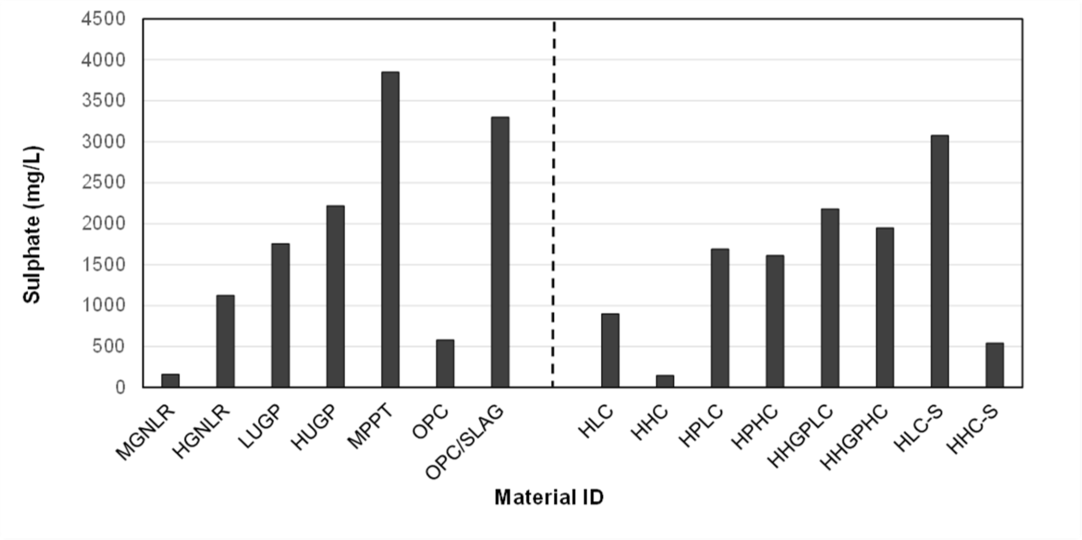

Figure D2-10: SFE Sulphate Concentration vs Material Type

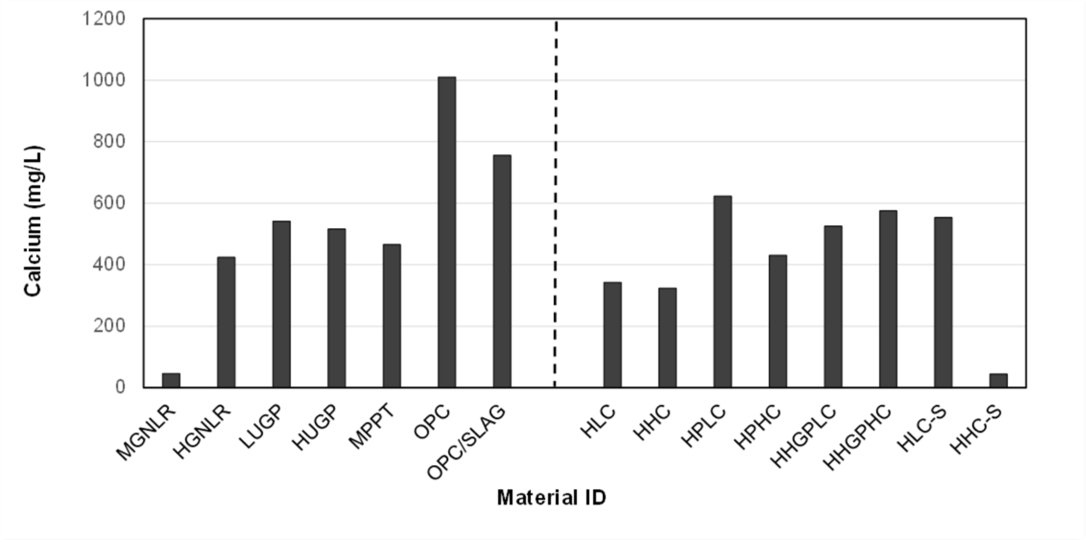

Figure D2-11: SFE Calcium Concentration vs Material Type

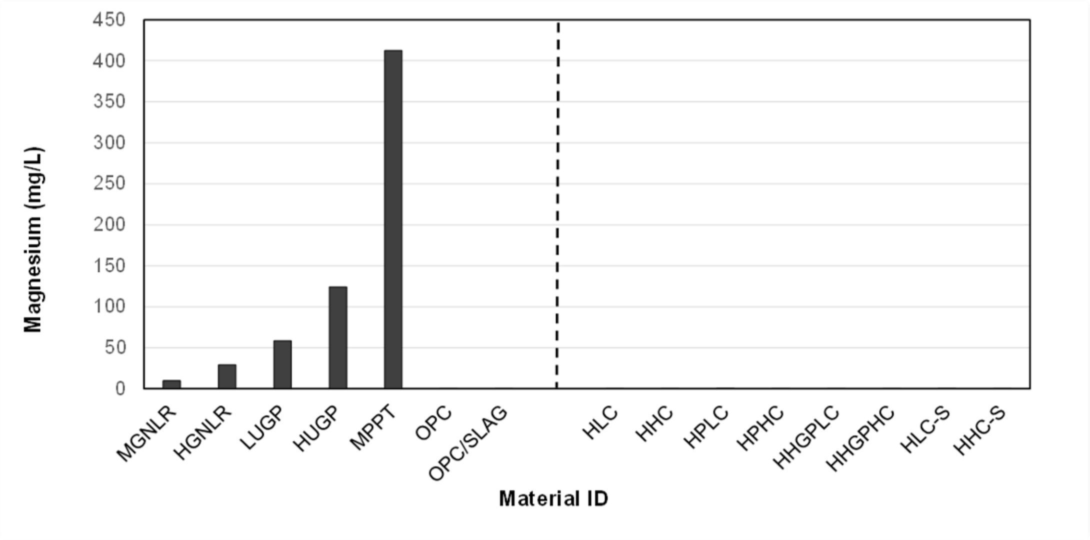

Figure D2-12: SFE Magnesium Concentration vs Material Type

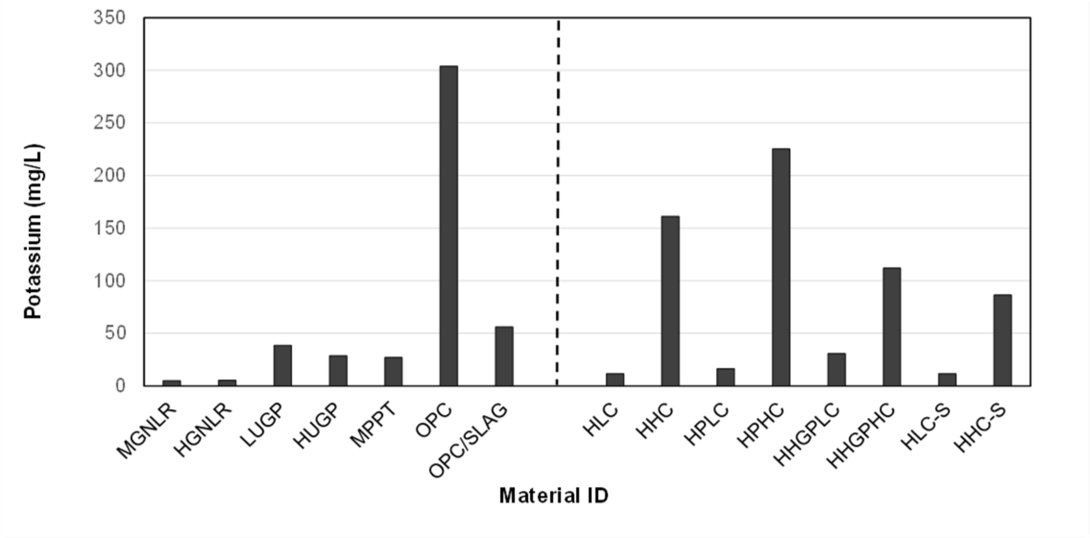

Figure D2-13: SFE Potassium Concentration vs Material Type

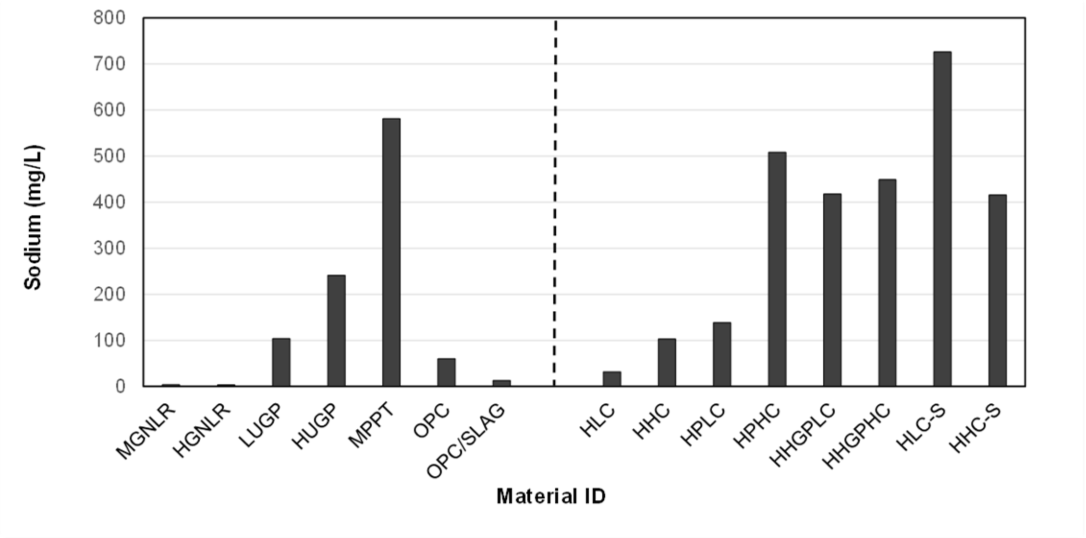

Figure D2-14: SFE Sodium Concentration vs Material Type

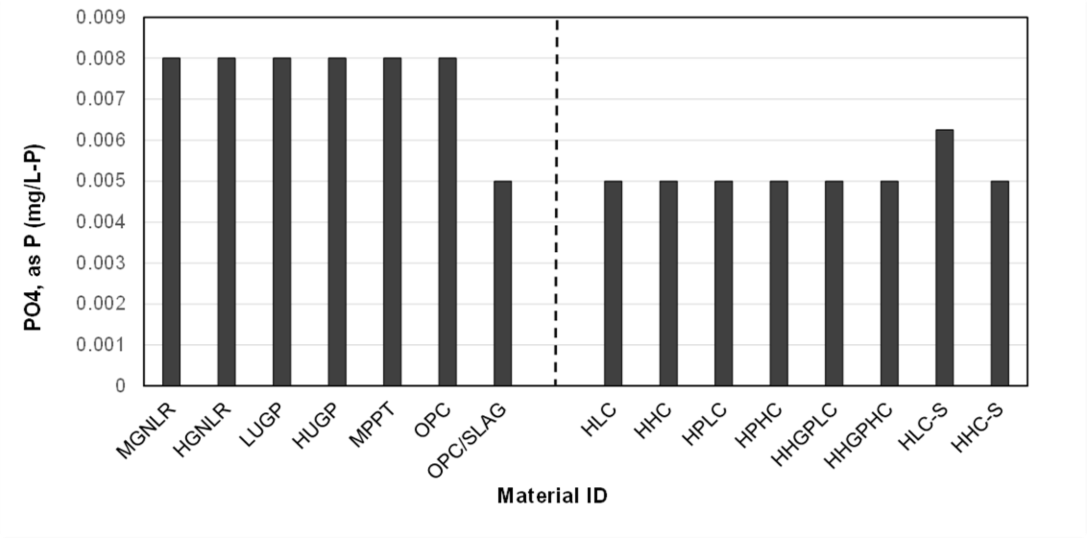

Figure D2-15: SFE Phosphate Concentration vs Material Type

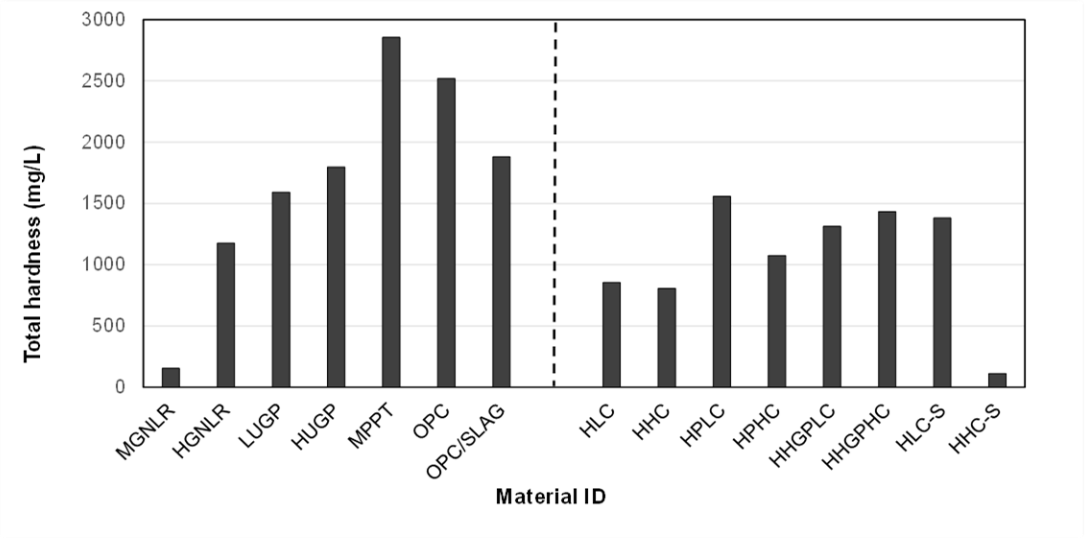

Figure D2-16: SFE Total Hardness vs Material Type

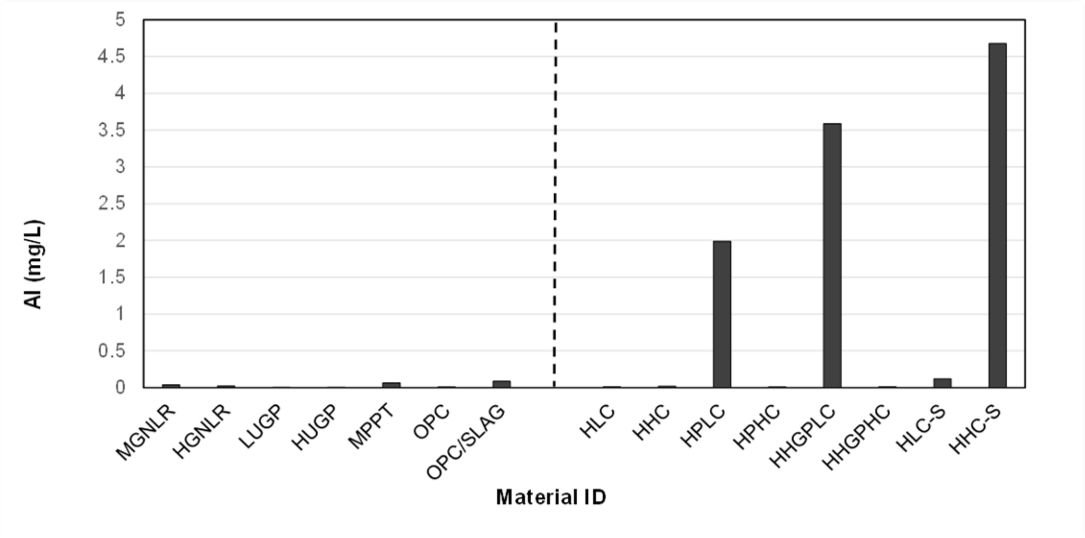

Figure D2-17: SFE Aluminum Concentration vs Material Type

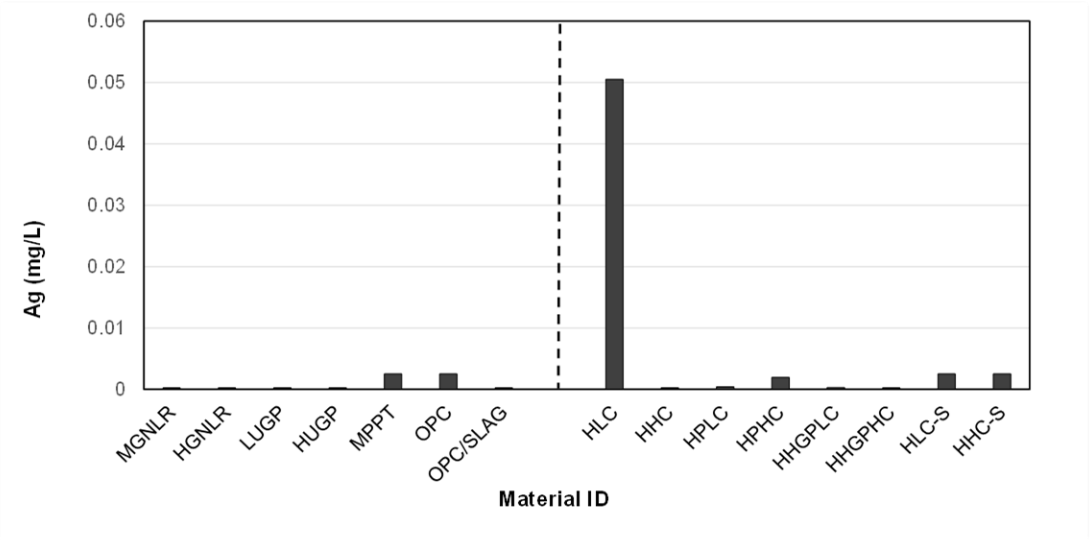

Figure D2-18: SFE Silver Concentration vs Material Type

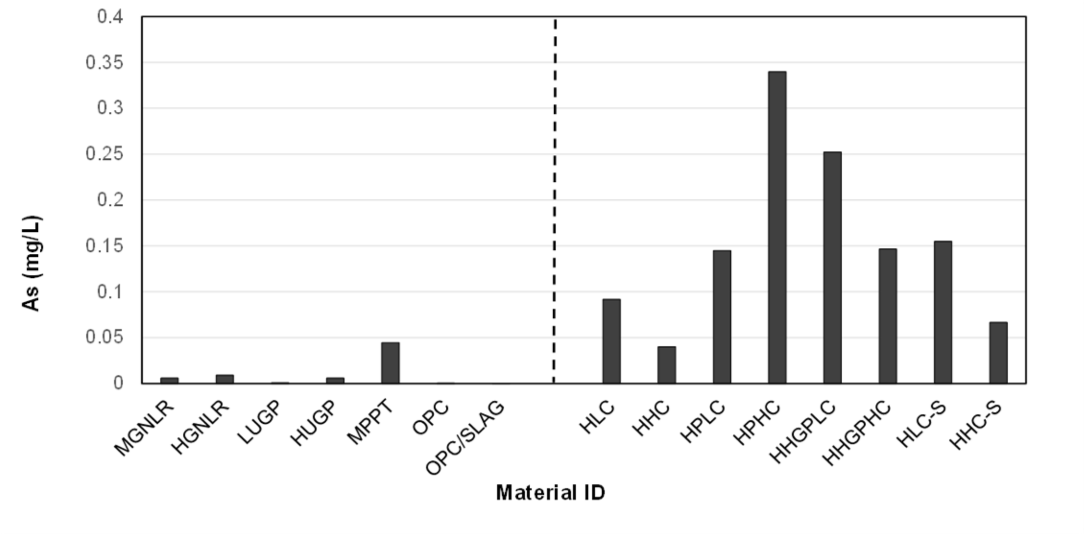

Figure D2-19: SFE Arsenic Concentration vs Material Type

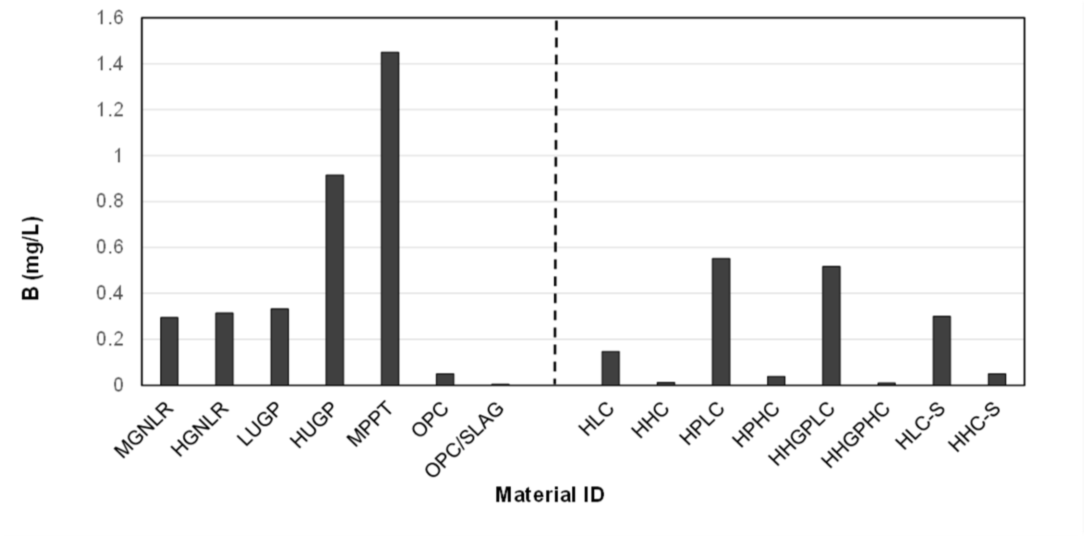

Figure D2-20: SFE Boron Concentration vs Material Type

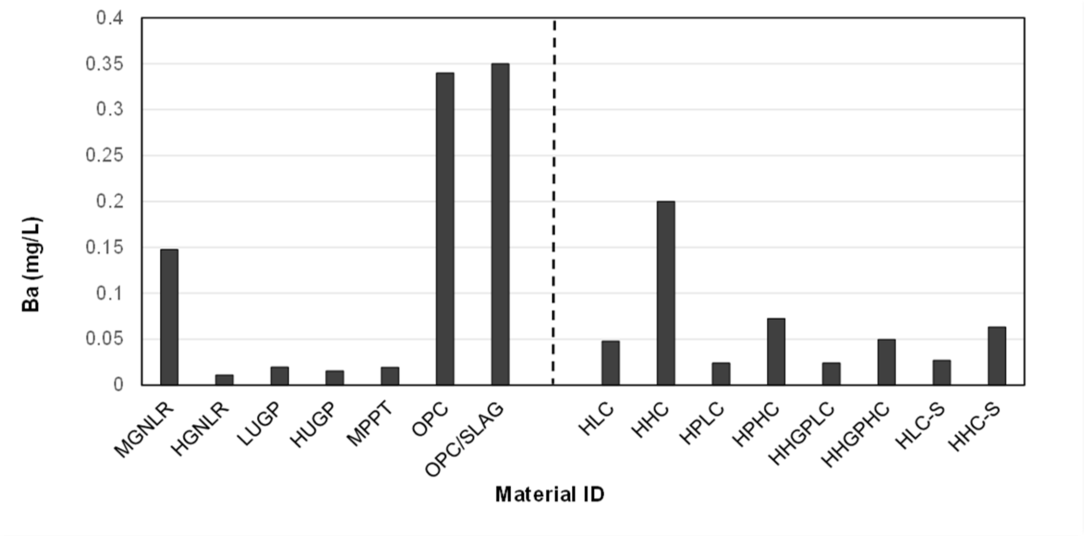

Figure D2-21: SFE Barium Concentration vs Material Type

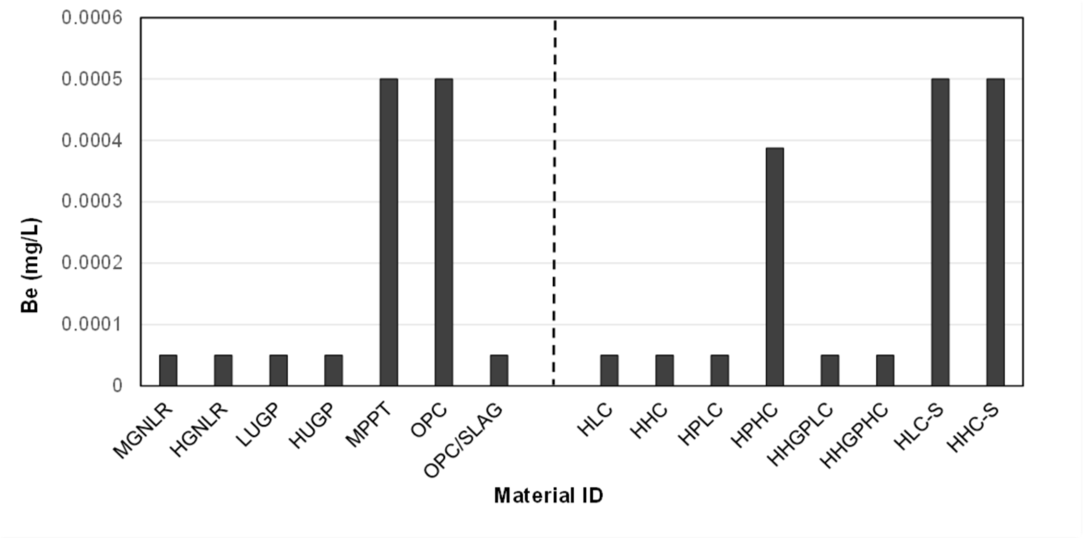

Figure D2-22: SFE Beryllium Concentration vs Material Type

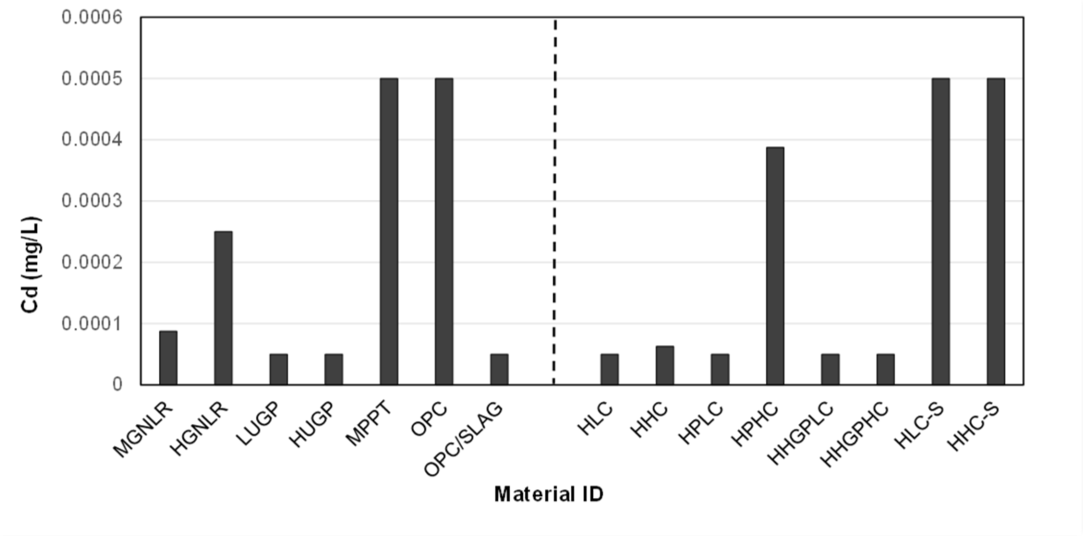

Figure D2-23: SFE Cadmium Concentration vs Material Type

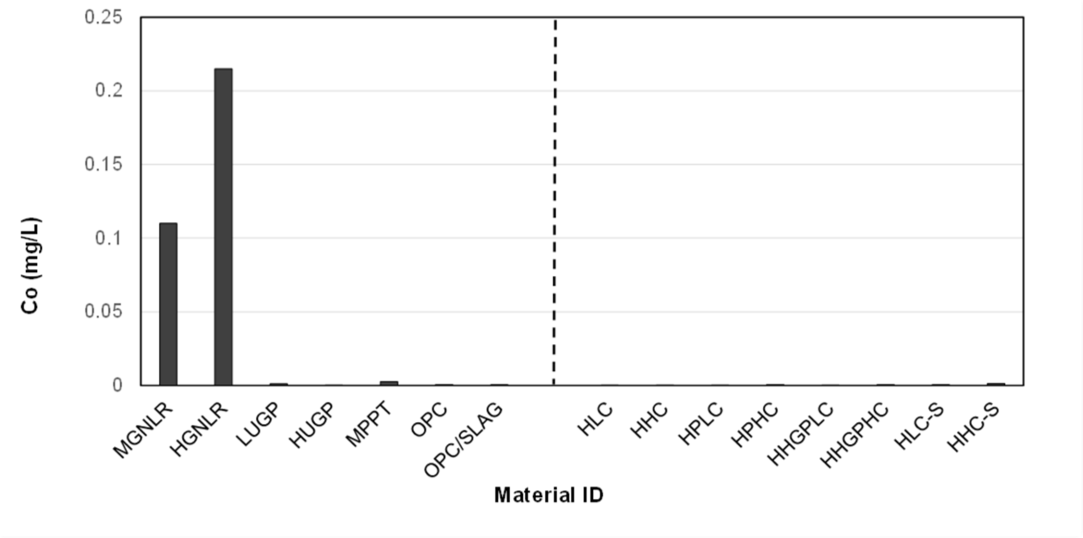

Figure D2-24: SFE Cobalt Concentration vs Material Type

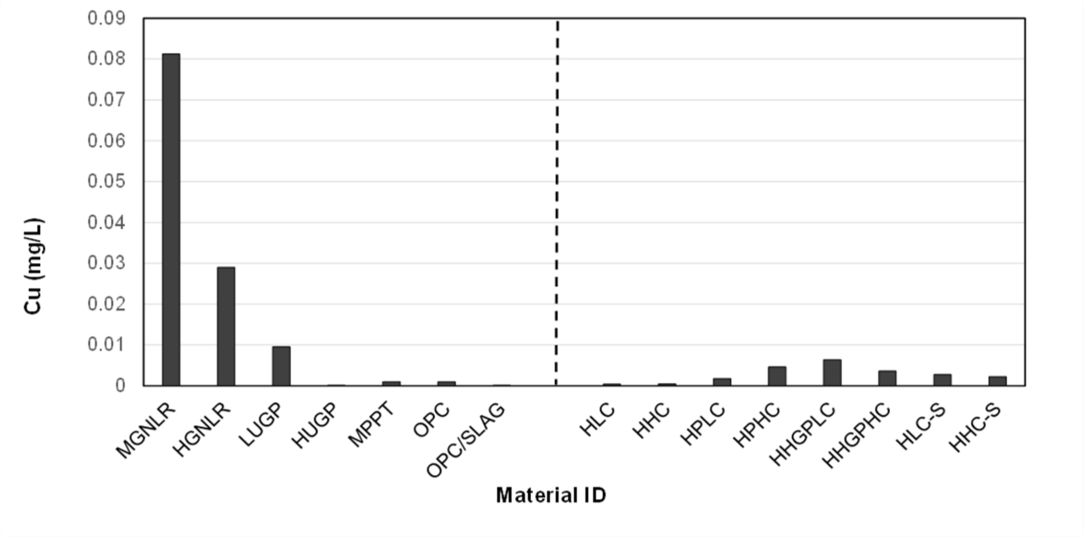

Figure D2-25: SFE Copper Concentration vs Material Type

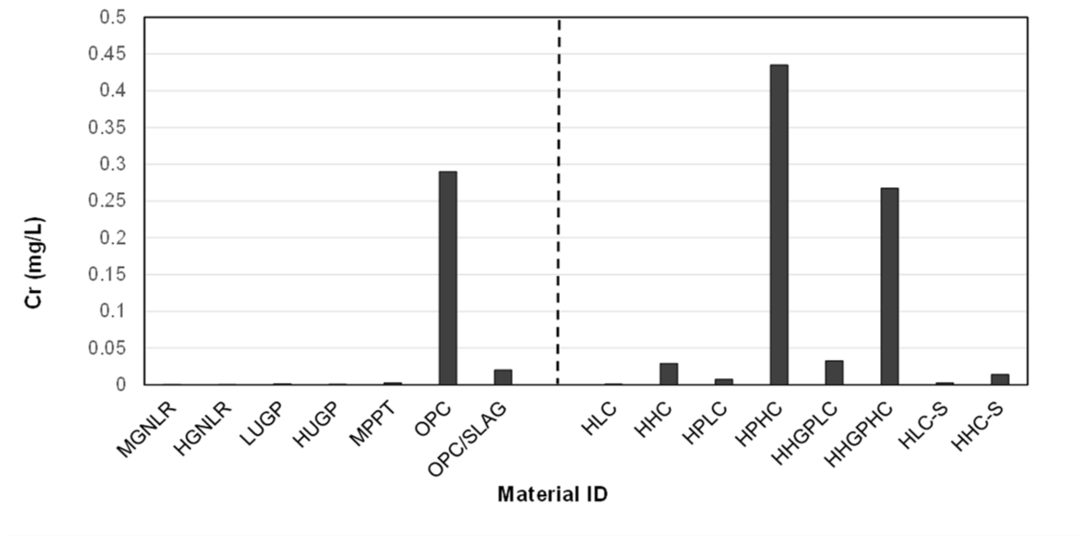

Figure D2-26: SFE Chromium Concentration vs Material Type

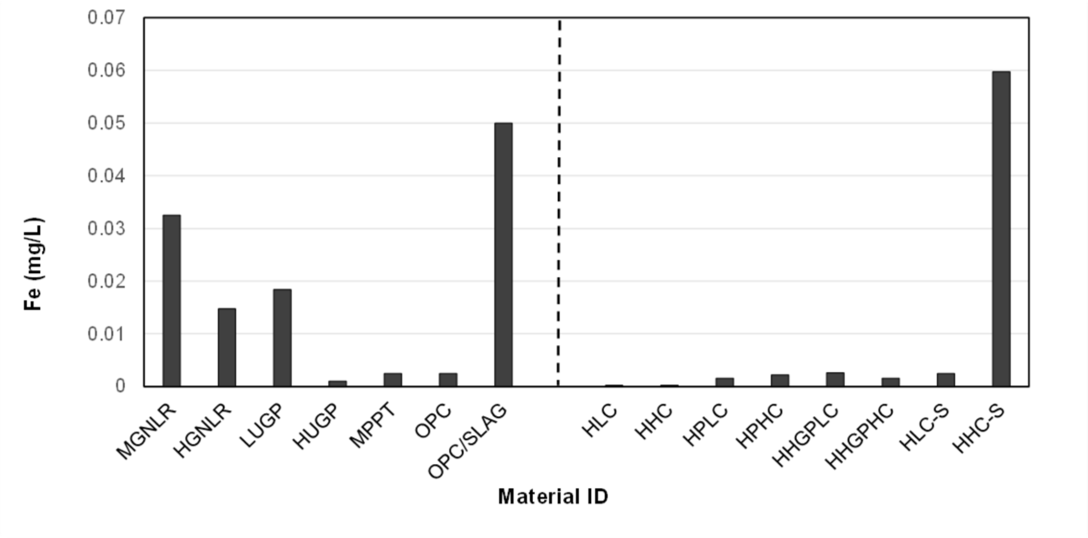

Figure D2-27: SFE Iron Concentration vs Material Type

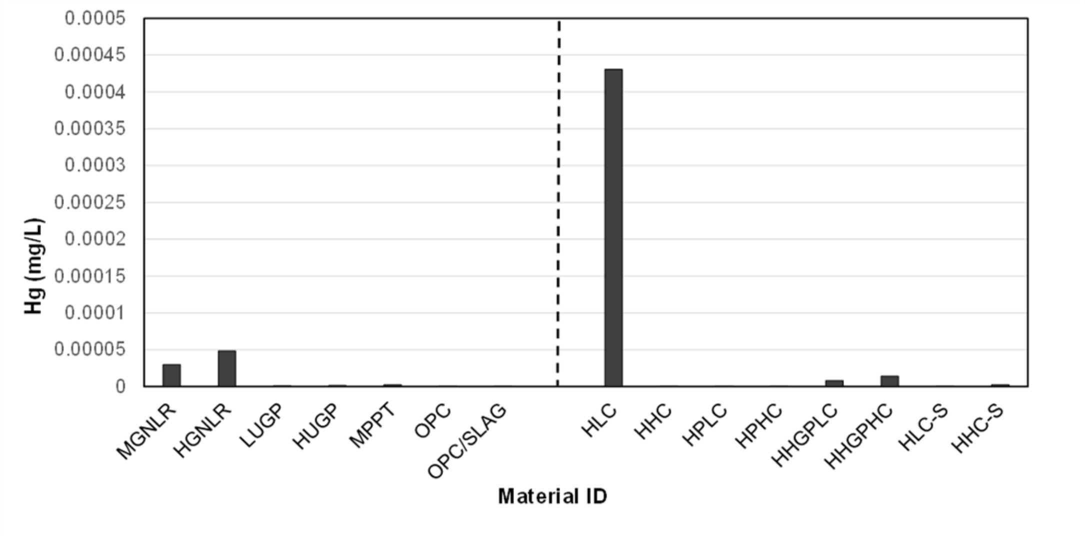

Figure D2-28: SFE Mercury Concentration vs Material Type

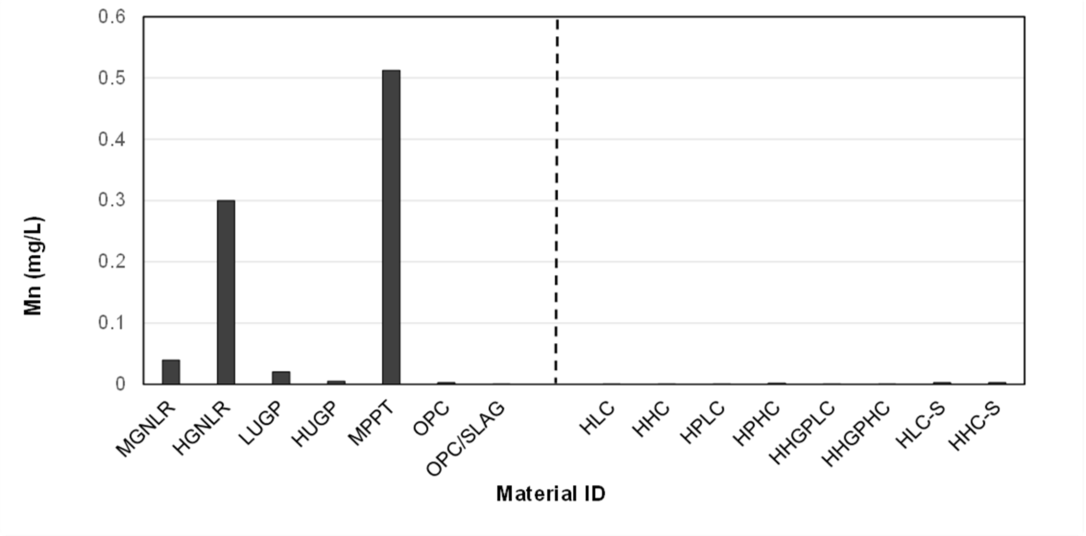

Figure D2-29: SFE Manganese Concentration vs Material Type

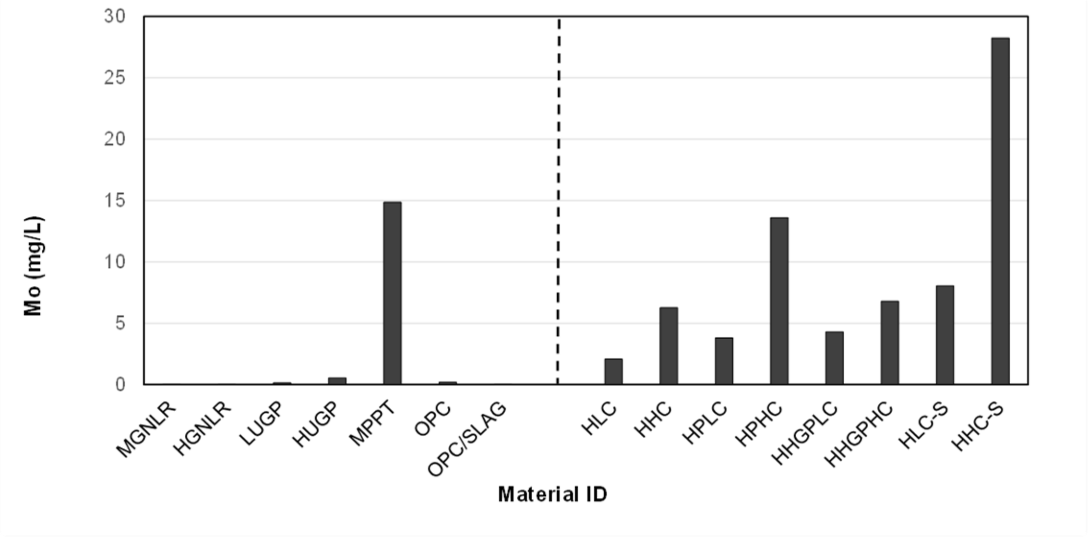

Figure D2-30: SFE Molybdenum Concentraiton vs Material Type

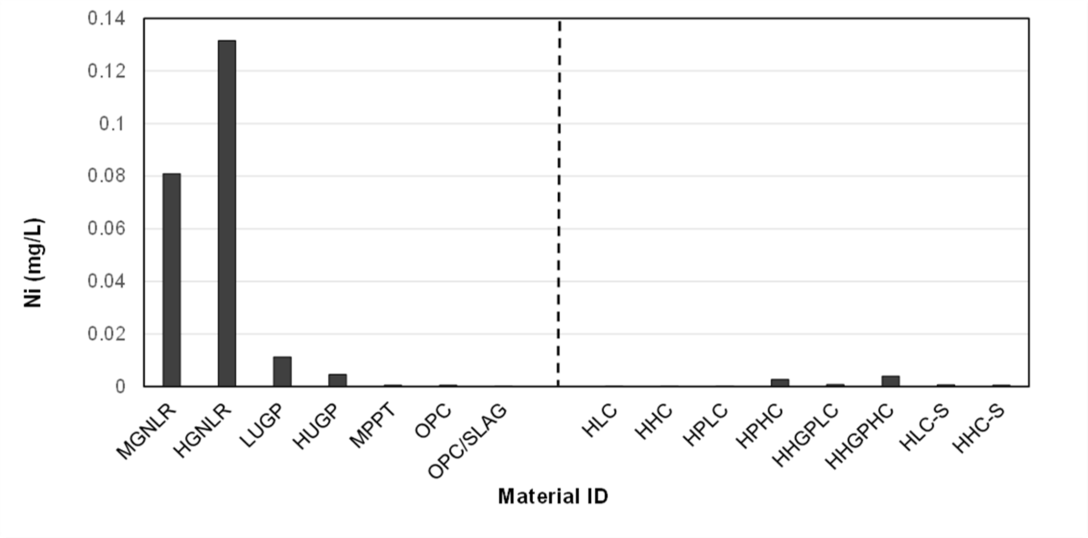

Figure D2-31: SFE Nickel Concentration vs Material Type

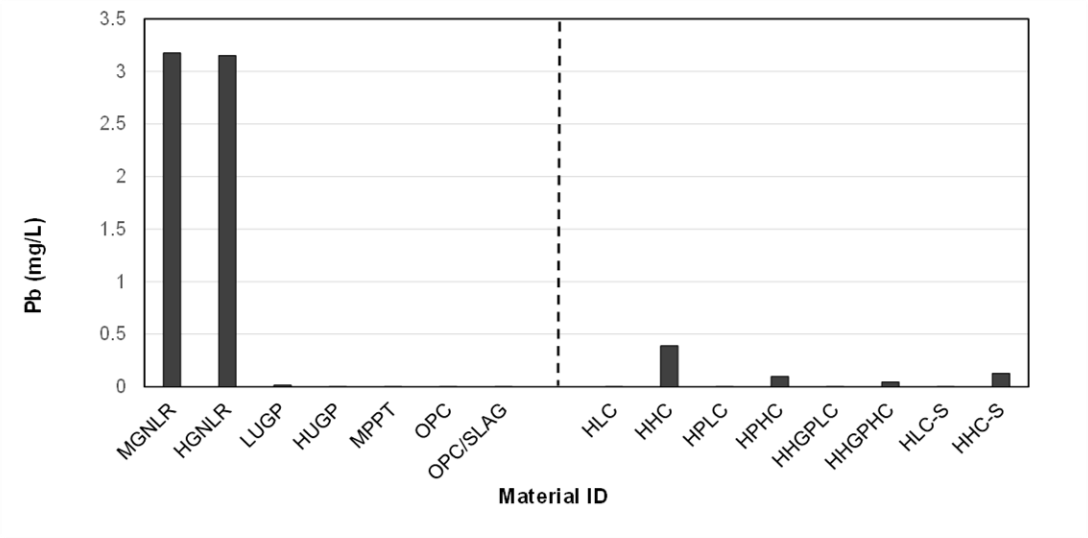

Figure D2-32: SFE Lead Concentration vs Material Type

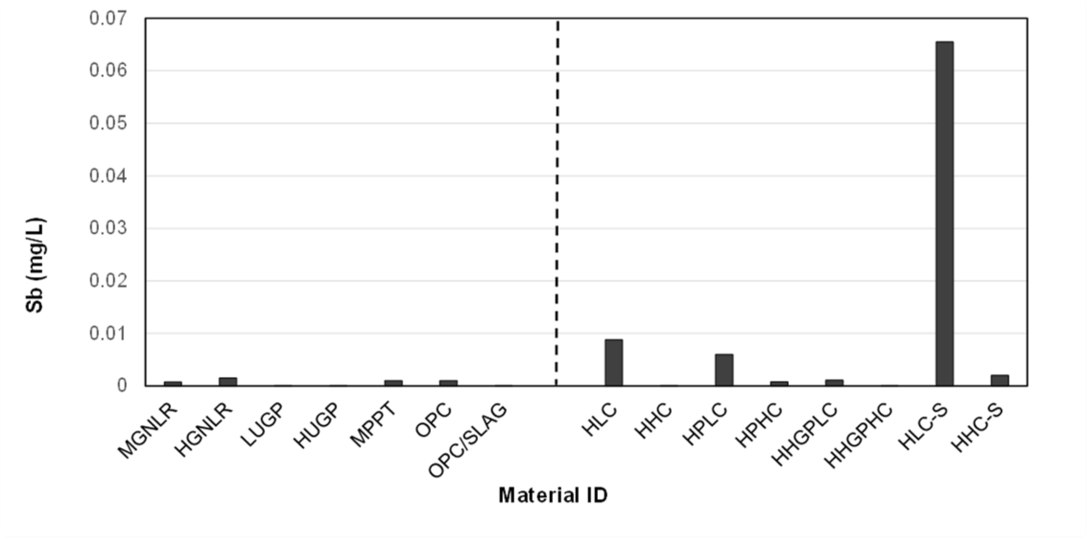

Figure D2-33: SFE Antimony Concentration vs Material Type

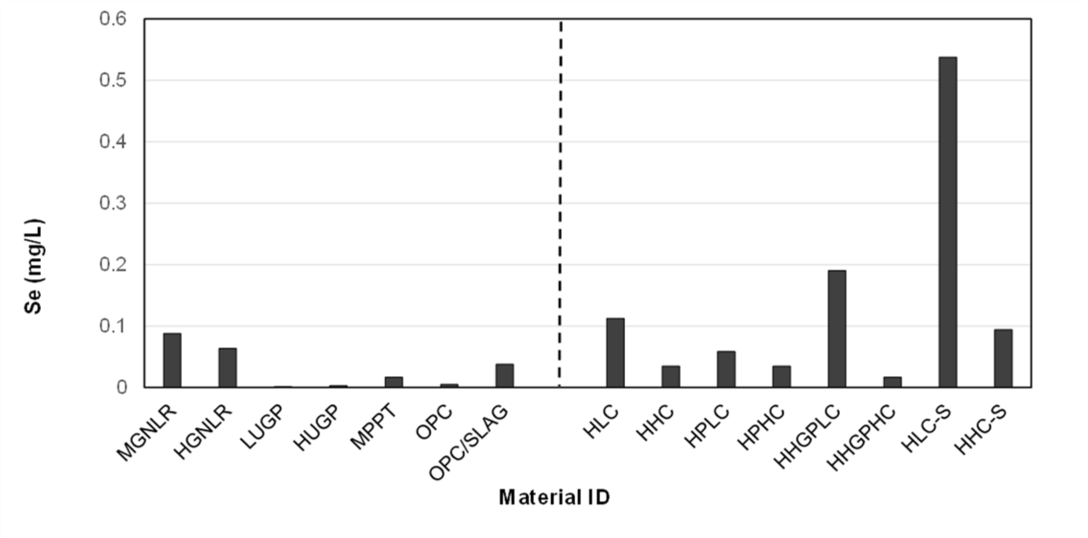

Figure D2-34: SFE Selenium Concentration vs Material Type

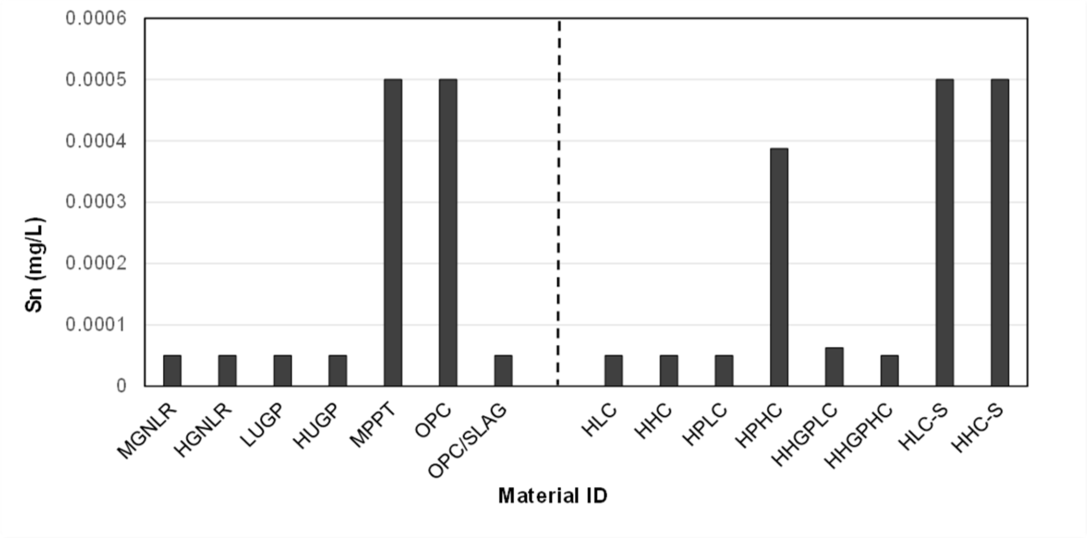

Figure D2-35: SFE Tin Concentration vs Material Type

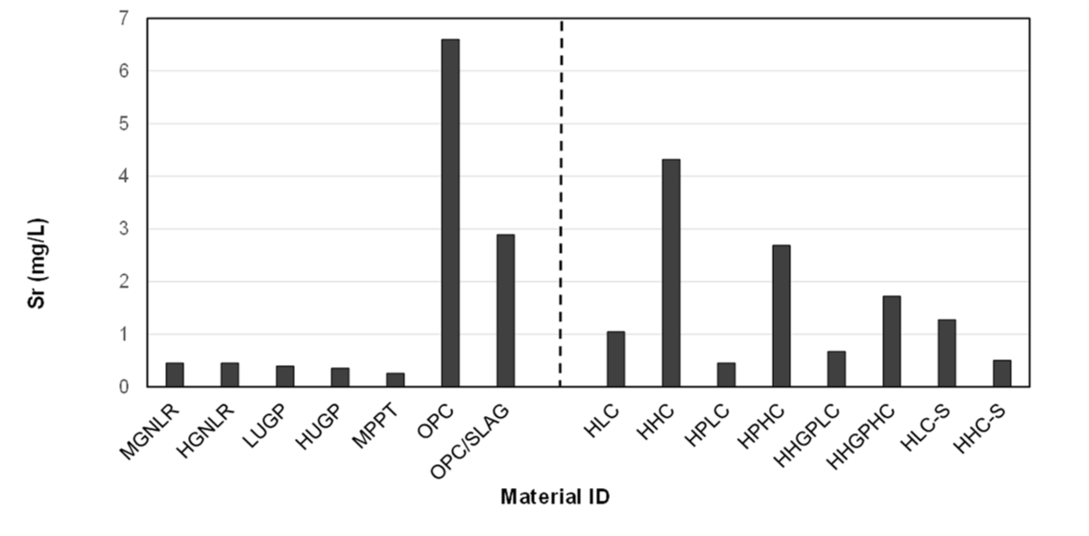

Figure D2-36: SFE Strontium Concentration vs Material Type

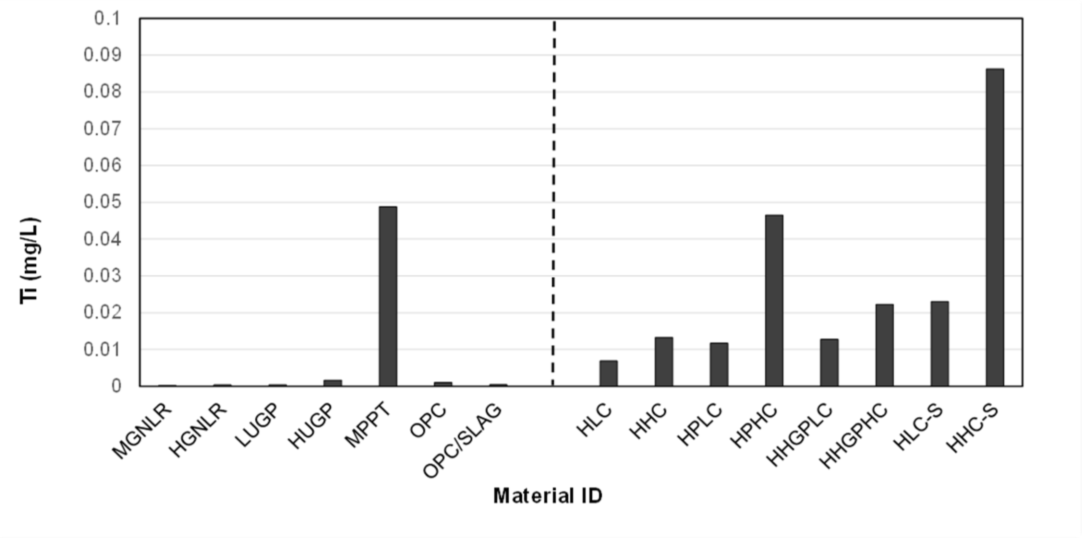

Figure D2-37: SFE Titanium vs Material Type

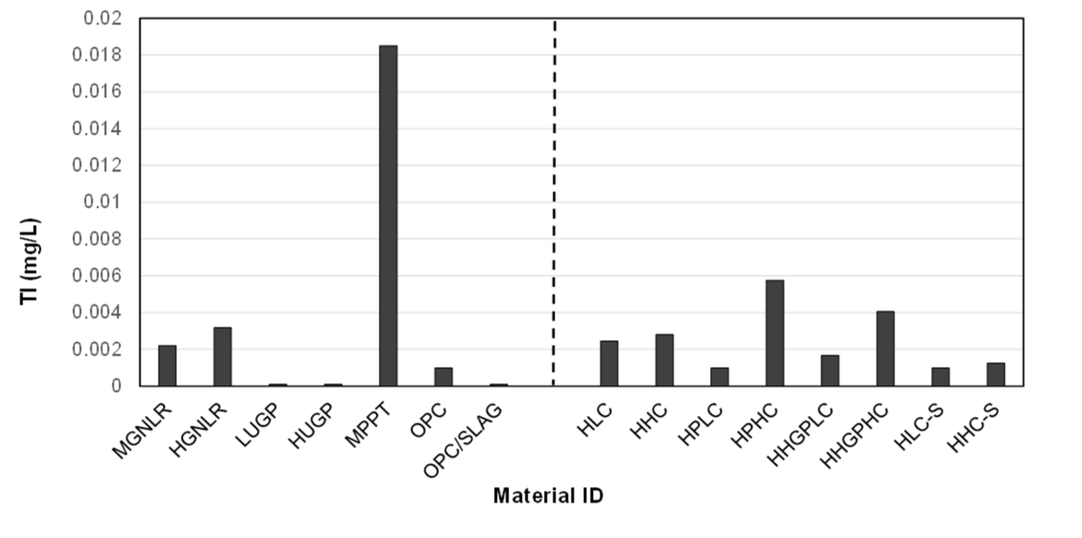

Figure D2-38: SFE Thallium Concentration vs Material Type

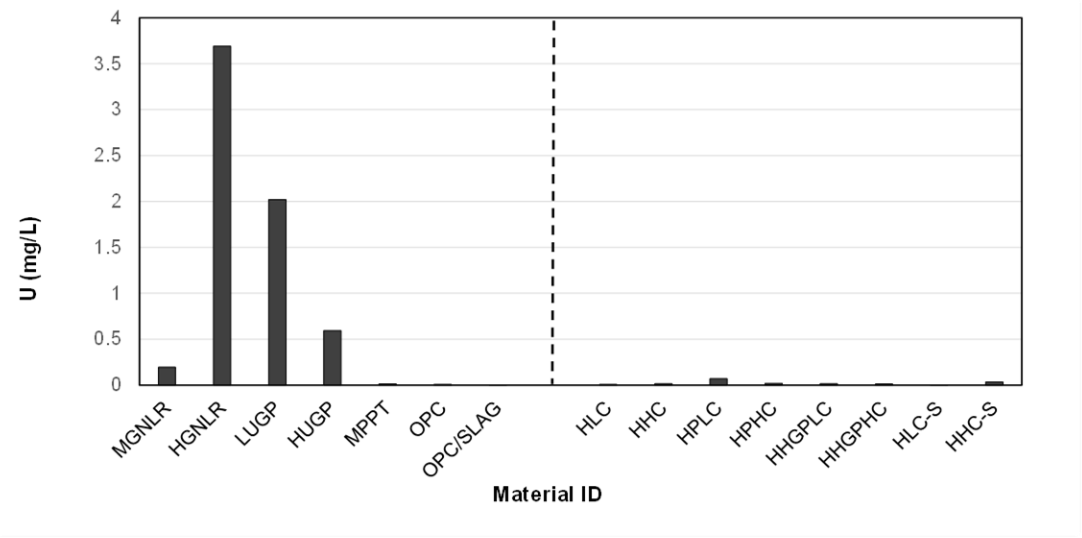

Figure D2-39: SFE Uranium Concentration vs Material Type

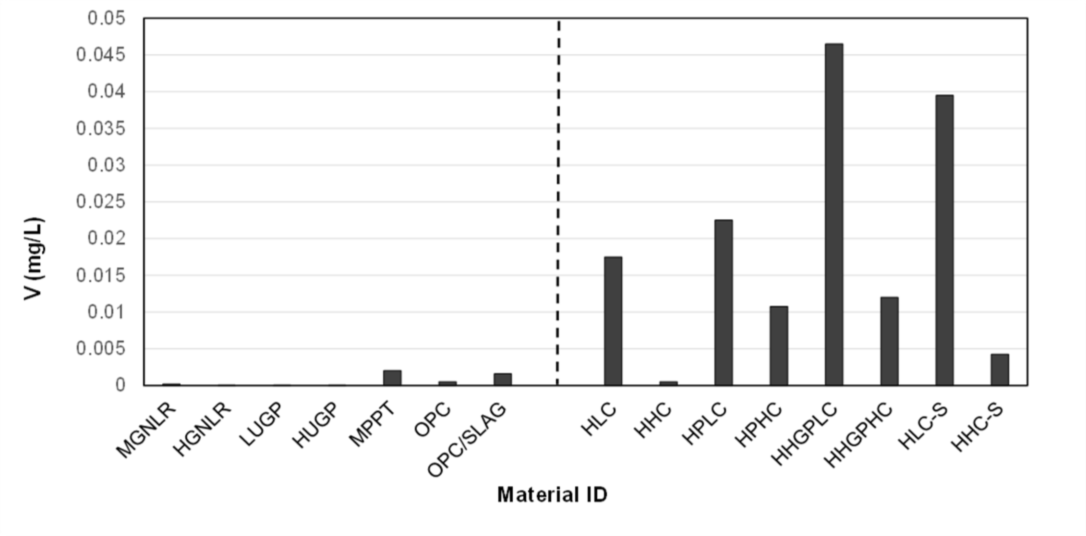

Figure D2-40: SFE Vanadium Concentration vs Material Type

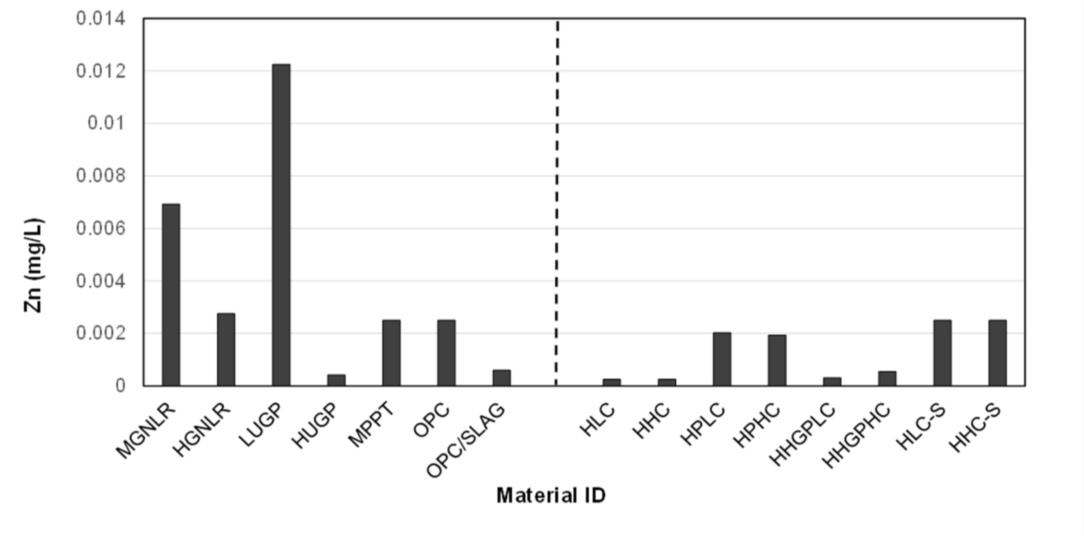

Figure D2-41: SFE Zinc Concentration vs Material Type

APPENDIX E

Kinetic Test Results

Appendix E, Table E-1
Modified Triaxial Permeability Test Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Replicate Number	Pore Volume Replacement	SNC pH	SRC pH	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead
			pH units	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
HHGPLC	1	0.25	10	10	0.94	<0.02	1.7	<0.05	<0.01	<1	0.0030	<0.05	0.040	0.81	0.19	0.030
HHGPLC	2	0.25	11	9.4	0.75	<0.02	1.6	<0.05	<0.01	<1	<0.001	<0.05	<0.01	0.10	0.080	0.020
HHGPLC	3	0.25	11	9.8	1.1	<0.02	1.9	<0.05	<0.01	<1	<0.001	<0.05	<0.01	0.18	0.18	0.040
HHGPLC	4	0.25	10	9.9	3.6	<0.02	1.8	0.060	<0.01	<1	0.0010	<0.05	0.010	0.18	1.8	0.24
HHGPLC	1	0.5	11	10	0.91	<0.02	1.7	<0.05	<0.01	<1	<0.001	<0.05	<0.01	0.56	0.090	0.030
HHGPLC	2	0.5	11	9.3	0.79	<0.02	2.1	<0.05	<0.01	<1	<0.001	<0.05	<0.01	0.19	0.090	<0.01
HHGPLC	3	0.5	10	10	0.85	<0.02	2.0	<0.05	<0.01	<1	0.0020	<0.05	<0.01	0.040	0.090	0.020
HHGPLC	4	0.5	10	10	0.91	<0.02	2.0	<0.05	<0.01	<1	0.0020	<0.05	<0.01	0.050	0.17	0.020
HHGPLC	1	0.75	11	10	0.84	<0.02	1.5	<0.05	<0.01	<1	<0.001	<0.05	<0.01	0.040	<0.05	0.010
HHGPLC	2	0.75	11	9.7	0.83	<0.02	1.8	<0.05	<0.01	<1	0.0010	<0.05	<0.01	0.69	<0.05	<0.01
HHGPLC	3	0.75	11	10	0.86	<0.02	1.6	<0.05	<0.01	<1	<0.001	<0.05	<0.01	0.040	0.050	0.020
HHGPLC	4	0.75	10	10.0	0.85	<0.02	1.8	<0.05	<0.01	<1	0.0020	<0.05	<0.01	<0.02	<0.05	<0.01
HHGPLC	1	1	10	10	0.67	<0.002	1.1	0.017	<0.001	<0.1	0.00080	0.012	0.0020	0.12	0.029	0.015
HHGPLC	2	1	11	9.9	0.65	0.0070	1.3	0.019	<0.001	0.20	0.0010	0.018	0.0010	0.72	0.032	0.0060
HHGPLC	3	1	11	9.9	0.74	0.0060	1.1	0.016	<0.001	0.20	0.00030	0.012	0.0020	0.15	0.030	0.017
HHGPLC	4	1	10	10	0.74	0.0050	1.1	0.016	<0.001	0.20	<0.0001	0.011	0.0010	0.017	0.036	0.0070
HHGPLC	1	1.25	10	10	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	1.25	11	9.6	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	1.75	10	9.1	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	1.75	10	9.8	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	2.25	10	9.2	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	2.25	10	9.9	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	2.75	-	9.6	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	2.75	-	9.6	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	3.25	-	10	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	3.25	-	9.6	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	3.75	-	9.4	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	3.75	-	9.8	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	5	10	7.5	0.37	0.0017	0.064	0.023	<0.0001	0.060	0.00011	0.0031	<0.0001	0.011	0.0088	0.00040
HHGPLC	2	5	10	8.0	0.46	0.0026	0.076	0.022	<0.0001	0.090	0.000060	0.0036	0.00020	0.0071	0.0014	0.0018
HHGPLC	1	15	10	7.8	0.45	0.0018	0.0090	0.022	<0.0001	0.070	0.000050	0.00090	<0.0001	0.0018	0.0050	0.00010
HHGPLC	2	15	9.6	7.9	0.43	0.0025	0.013	0.024	<0.0001	0.080	0.00016	0.0033	0.00020	0.0063	0.0013	0.0018
HHGPLC	1	25	10.0	7.5	0.40	0.0019	0.0074	0.020	<0.0001	0.060	0.000040	0.00080	<0.0001	0.0022	0.0041	0.00020
HHGPLC	2	25	10	7.9	0.43	0.0025	0.0080	0.022	<0.0001	0.080	0.000030	0.0019	<0.0001	0.0018	0.00090	0.00090
HHGPLC	1	30	10	7.7	0.43	0.0020	0.0063	0.020	<0.0001	0.070	0.000040	0.00070	<0.0001	0.0010	0.0039	0.00010
HHGPLC	2	30	10	8.9	0.43	0.0023	0.0069	0.021	<0.0001	0.080	0.000060	0.0020	0.00010	0.0023	0.0054	0.0019
HLC-S	1	0.25	10	10	0.60	<0.02	0.36	<0.05	<0.01	<1	<0.001	<0.05	<0.01	0.11	<0.05	0.010
HLC-S	2	0.25	11	9.7	0.78	<0.02	0.53	<0.05	<0.01	<1	<0.001	<0.05	<0.01	0.090	<0.05	0.010
HLC-S	3	0.25	11	9.8	0.55	<0.02	0.39	<0.05	<0.01	<1	0.0060	<0.05	<0.01	0.060	<0.05	0.020
HLC-S	4	0.25	10	9.7	0.40	<0.02	0.64	<0.05	<0.01	<1	0.0050	<0.05	<0.01	0.050	<0.05	<0.01
HLC-S	1	0.5	11	10	0.46	<0.02	0.50	<0.05	<0.01	<1	0.0050	<0.05	<0.01	0.27	<0.05	0.020
HLC-S	2	0.5	11	11	0.60	<0.02	0.62	<0.05	<0.01	<1	0.0050	<0.05	<0.01	0.10	<0.05	0.010
HLC-S	3	0.5	10	9.4	0.54	<0.02	0.62	<0.05	<0.01	<1	0.0030	<0.05	<0.01	0.27	0.11	0.010
HLC-S	4	0.5	10	10.0	0.30	<0.02	0.84	<0.05	<0.01	<1	0.0010	<0.05	<0.01	0.040	<0.05	<0.01
HLC-S	1	2	10	7.8	0.32	0.0030	0.043	0.027	<0.001	0.40	0.00030	<0.005	<0.001	0.062	0.014	0.0040
HLC-S	3	2	10	8.8	0.30	0.0030	0.050	0.023	<0.001	0.30	0.00020	<0.005	<0.001	0.024	0.0050	0.0060
HLC-S	1	4	10	9.2	0.26	0.0021	0.020	0.028	<0.0001	0.26	0.000080	<0.0005	<0.0001	0.013	0.0031	0.0020
HLC-S	3	4	10	10	0.27	0.0020	0.021	0.028	<0.0001	0.22	0.00020	<0.0005	<0.0001	0.0045	0.0017	0.0031
HLC-S	1	6	10	9.1	0.25	0.0021	0.018	0.028	<0.0001	0.26	0.00023	<0.0005	<0.0001	0.0082	0.0023	0.0016
HLC-S	3	6	10	9.6	0.26	0.0021	0.019	0.028	<0.0001	0.22	0.000050	<0.0005	<0.0001	0.0060	0.0026	0.0042
HLC-S	1	10	-	10	0.31	0.0035	0.020	0.028	<0.0001	0.35	0.000080	<0.0005	<0.0001	0.0046	0.0018	0.0023
HLC-S	3	10	-	10	0.26	0.0022	0.019	0.028	<0.0001	0.29	0.00010	<0.0005	<0.0001	0.0029	0.0018	0.0033

Appendix E, Table E-1
Modified Triaxial Permeability Test Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Replicate Number	Pore Volume Replacement	Manganese	Molybdenum	Nickel	Selenium	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
HHGPLC	1	0.25	<0.05	126	0.030	0.26	<0.005	1.5	<0.02	<0.01	0.29	0.020	0.23	1.2
HHGPLC	2	0.25	<0.05	104	0.010	0.22	<0.005	1.3	<0.02	<0.01	0.26	0.060	0.18	0.39
HHGPLC	3	0.25	<0.05	128	0.11	0.26	<0.005	1.4	<0.02	<0.01	0.30	0.040	0.24	0.15
HHGPLC	4	0.25	<0.05	118	0.050	0.25	<0.005	1.4	<0.02	<0.01	0.35	0.31	0.25	0.20
HHGPLC	1	0.5	<0.05	144	0.020	0.27	<0.005	1.6	<0.02	<0.01	0.35	0.010	0.26	0.17
HHGPLC	2	0.5	<0.05	124	0.020	0.26	<0.005	1.5	<0.02	<0.01	0.34	0.030	0.21	0.060
HHGPLC	3	0.5	<0.05	132	0.050	0.28	<0.005	1.5	<0.02	<0.01	0.36	0.020	0.26	<0.05
HHGPLC	4	0.5	<0.05	132	0.020	0.26	<0.005	1.5	<0.02	<0.01	0.37	0.030	0.26	0.050
HHGPLC	1	0.75	<0.05	144	0.020	0.26	<0.005	1.7	<0.02	<0.01	0.36	<0.01	0.26	0.080
HHGPLC	2	0.75	<0.05	118	0.020	0.26	<0.005	1.4	<0.02	<0.01	0.28	0.020	0.22	<0.05
HHGPLC	3	0.75	<0.05	128	0.060	0.27	<0.005	1.5	<0.02	<0.01	0.29	0.010	0.25	<0.05
HHGPLC	4	0.75	<0.05	120	0.020	0.24	<0.005	1.5	<0.02	<0.01	0.27	0.010	0.25	<0.05
HHGPLC	1	1	<0.005	101	0.011	0.20	<0.0005	1.6	0.0070	<0.001	0.25	0.0070	0.22	0.060
HHGPLC	2	1	<0.005	81	0.0080	0.19	0.00080	1.4	0.0060	<0.001	0.21	0.017	0.18	0.024
HHGPLC	3	1	<0.005	87	0.023	0.20	<0.0005	1.4	0.0060	<0.001	0.20	0.0090	0.21	0.028
HHGPLC	4	1	<0.005	83	0.011	0.17	<0.0005	1.4	0.0060	<0.001	0.20	0.010	0.20	0.019
HHGPLC	1	1.25	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	1.25	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	1.75	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	1.75	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	2.25	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	2.25	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	2.75	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	2.75	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	3.25	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	3.25	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	3.75	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	2	3.75	-	-	-	-	-	-	-	-	-	-	-	-
HHGPLC	1	5	<0.0005	9.6	0.0014	0.022	0.00010	1.6	0.0014	0.00010	0.035	0.0047	0.055	0.0067
HHGPLC	2	5	<0.0005	6.8	0.055	0.020	0.00017	1.5	0.0012	<0.0001	0.024	0.0023	0.054	0.0059
HHGPLC	1	15	<0.0005	3.0	0.00020	0.016	0.00021	0.55	0.00040	<0.0001	0.010	0.0054	0.059	0.0018
HHGPLC	2	15	<0.0005	7.4	0.051	0.018	<0.00005	0.61	0.00050	<0.0001	0.026	0.0028	0.055	0.0040
HHGPLC	1	25	<0.0005	2.1	0.00060	0.014	0.0021	0.45	0.00040	<0.0001	0.0079	0.0043	0.057	0.0023
HHGPLC	2	25	<0.0005	3.0	0.024	0.017	0.00014	0.43	0.00040	<0.0001	0.0096	0.0034	0.055	0.0017
HHGPLC	1	30	<0.0005	1.6	<0.0001	0.014	0.00070	0.38	0.00030	<0.0001	0.0064	0.0036	0.057	0.00080
HHGPLC	2	30	<0.0005	2.2	0.032	0.016	0.000060	0.37	0.00030	<0.0001	0.0079	0.0043	0.056	0.0039
HLC-S	1	0.25	<0.05	141	<0.01	1.0	0.0070	2.8	<0.02	<0.01	0.23	<0.01	0.040	0.080
HLC-S	2	0.25	<0.05	148	<0.01	1.1	<0.005	3.0	<0.02	<0.01	0.27	<0.01	0.050	0.060
HLC-S	3	0.25	<0.05	152	0.020	1.0	<0.005	2.9	<0.02	<0.01	0.25	0.010	0.050	<0.05
HLC-S	4	0.25	<0.05	146	<0.01	1.5	0.024	2.6	<0.02	<0.01	0.26	<0.01	0.060	<0.05
HLC-S	1	0.5	<0.05	177	<0.01	1.4	0.020	3.4	<0.02	<0.01	0.31	<0.01	0.030	<0.05
HLC-S	2	0.5	<0.05	180	<0.01	1.2	<0.005	3.7	<0.02	<0.01	0.32	<0.01	0.030	<0.05
HLC-S	3	0.5	<0.05	189	0.050	1.6	0.0090	3.7	<0.02	<0.01	0.29	<0.01	0.040	<0.05
HLC-S	4	0.5	<0.05	194	<0.01	1.7	0.015	3.5	<0.02	<0.01	0.34	<0.01	0.040	<0.05
HLC-S	1	2	<0.005	12	<0.001	0.40	<0.0005	2.7	0.0030	<0.001	0.020	<0.001	0.015	0.0080
HLC-S	3	2	<0.005	13	0.017	0.37	<0.0005	2.7	0.0030	<0.001	0.019	<0.001	0.013	0.010
HLC-S	1	4	0.00090	8.3	0.00030	0.31	0.00030	2.7	0.0017	<0.0001	0.013	0.00060	0.012	0.0026
HLC-S	3	4	0.0013	8.7	0.0021	0.26	0.00010	2.8	0.0018	<0.0001	0.014	0.00050	0.010	0.0027
HLC-S	1	6	0.00090	6.7	0.00040	0.32	<0.00005	2.6	0.0012	<0.0001	0.011	0.00080	0.012	0.0031
HLC-S	3	6	0.0012	7.2	0.012	0.24	0.000070	2.7	0.0012	<0.0001	0.011	0.00060	0.011	0.0079
HLC-S	1	10	0.00080	9.4	0.00020	0.66	0.000080	1.2	0.00050	<0.0001	0.014	0.00090	0.014	0.0022
HLC-S	3	10	0.0011	6.4	0.0043	0.54	0.000090	1.5	0.00060	<0.0001	0.0093	0.00080	0.012	0.0035

Appendix E, Table E-1
Modified Triaxial Permeability Test Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Replicate Number	Pore Volume Replacement	SNC pH	SRC pH	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead
			pH units	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
HLC	1	0.5	10.0	7.4	0.14	0.0040	0.26	0.073	<0.001	0.10	0.00010	<0.005	0.0020	0.078	<0.005	0.0040
HLC	2	0.5	10	7.4	0.14	0.0060	0.26	0.074	<0.001	0.10	0.00020	<0.005	0.0010	0.048	<0.005	0.0040
HLC	3	0.5	10.0	7.4	0.19	<0.002	0.33	0.067	<0.001	0.20	<0.0001	0.0090	0.0020	0.15	0.020	0.047
HLC	4	0.5	9.8	7.5	0.16	<0.002	0.35	0.075	<0.001	0.10	0.00020	0.010	0.0020	0.10	0.015	0.036
HLC	1	1	12	9.0	0.078	0.0020	0.27	0.063	<0.001	0.10	<0.0001	<0.005	0.0020	0.033	<0.005	0.0050
HLC	2	1	10	9.2	0.089	0.0080	0.26	0.059	<0.001	0.10	<0.0001	<0.005	0.0010	0.071	<0.005	0.0050
HLC	3	1	10	7.8	0.16	<0.002	0.25	0.060	<0.001	<0.1	<0.0001	0.0090	0.0020	0.12	0.031	0.041
HLC	4	1	10	7.5	0.13	<0.002	0.31	0.071	<0.001	<0.1	0.00040	0.011	0.0020	0.14	0.016	0.054
HLC	1	2	11	9.6	0.074	0.0055	0.12	0.061	<0.0001	0.080	0.00012	0.00080	0.0011	0.046	0.0028	0.0061
HLC	2	2	10	8.4	0.055	0.012	0.089	0.067	<0.0001	0.18	<0.00001	0.00060	0.00030	0.064	0.0019	0.0025
HLC	1	5	9.4	7.5	0.023	0.077	0.038	0.067	<0.001	<0.1	<0.0001	0.0060	<0.001	0.0070	<0.005	0.0030
HLC	2	5	9.3	7.5	0.018	0.11	0.054	0.080	<0.0001	0.34	0.00010	0.00080	0.00030	0.0072	0.0018	0.0019
HLC	1	20	9.4	8.1	0.019	0.075	0.026	0.039	<0.0001	4.9	0.00012	0.0014	0.00020	0.0018	0.0031	0.0013
HLC	2	20	9.4	8.8	0.018	0.11	0.046	0.046	<0.0001	3.4	0.000060	0.00060	0.00020	0.0062	0.0045	0.0025
HLC	1	30	9.6	8.6	0.031	0.047	0.018	0.039	<0.0001	3.3	0.000080	0.0011	0.00010	0.0014	0.0015	0.00090
HLC	2	30	9.4	8.7	0.020	0.077	0.034	0.040	<0.0001	3.4	0.000070	0.00060	<0.0001	0.0025	0.0060	0.0019
HPLC	1	0.25	10	7.4	0.80	0.014	2.4	0.070	<0.001	1.0	0.00060	0.023	<0.001	0.014	0.0060	0.0020
HPLC	2	0.25	10	7.5	0.45	0.0080	2.6	0.081	<0.001	0.40	0.00050	<0.005	<0.001	0.020	<0.005	0.0020
HPLC	3	0.25	9.5	8.0	0.37	0.012	3.0	0.087	<0.001	0.40	0.00020	<0.005	<0.001	0.011	<0.005	<0.001
HPLC	4	0.25	10	7.7	0.87	0.010	2.7	0.067	<0.001	0.80	0.00060	<0.005	<0.001	0.041	<0.005	0.0020
HPLC	1	1	9.5	8.8	1.4	0.010	0.63	0.038	<0.001	0.70	0.00060	0.012	<0.001	0.042	0.15	0.022
HPLC	2	1	10	8.2	2.6	0.0060	1.1	0.046	<0.001	0.20	0.00020	0.0070	0.0080	0.050	1.5	0.22
HPLC	3	1	10	7.7	0.47	0.0070	0.97	0.025	<0.001	0.30	0.00020	<0.005	<0.001	0.0040	0.0070	<0.001
HPLC	4	1	10	8.4	0.99	0.014	1.3	0.020	<0.001	0.80	0.00020	<0.005	<0.001	0.090	<0.005	0.0020
HPLC	1	2	9.4	7.4	0.73	0.013	0.45	0.018	<0.001	1.0	0.00030	0.010	<0.001	0.0070	<0.005	0.0010
HPLC	2	2	10	7.4	0.40	0.0070	0.53	0.020	<0.001	0.30	0.00020	<0.005	<0.001	0.0070	<0.005	0.0010
HPLC	1	3	9.8	7.2	0.64	0.011	0.30	0.017	<0.001	0.90	0.00020	0.0070	<0.001	0.0080	<0.005	<0.001
HPLC	2	3	9.8	7.4	0.34	0.0057	0.31	0.016	<0.0001	0.24	0.00013	0.00070	0.00010	0.013	0.0017	0.00080
HPLC	1	5	9.8	8.0	0.54	0.0097	0.24	0.020	<0.0001	0.73	0.00010	0.0038	<0.0001	0.0072	0.0023	0.00090
HPLC	2	5	9.7	7.4	0.40	0.0060	0.20	0.023	<0.001	0.30	0.00020	<0.005	<0.001	0.013	<0.005	0.0010
HPLC	1	20	9.7	7.2	0.55	0.0094	0.020	0.018	<0.0001	0.38	0.000030	0.0014	<0.0001	0.00070	0.0017	0.00050
HPLC	2	20	9.1	7.8	0.33	0.0057	0.012	0.019	<0.0001	0.19	0.000030	0.0019	<0.0001	0.0011	0.0018	0.00060
HPLC	1	30	9.0	8.2	0.50	0.0094	0.014	0.019	<0.0001	0.26	0.000040	0.0030	<0.0001	0.0011	0.0041	0.00080
HPLC	2	30	9.1	7.5	0.36	0.0058	0.012	0.020	<0.0001	0.17	0.000070	0.0030	<0.0001	0.00070	0.0014	0.00050

\- Parameter not analyzed

Appendix E, Table E-1
Modified Triaxial Permeability Test Results
NexGen Rook I Geochemical Characterization Report

Sample ID	Replicate Number	Pore Volume Replacement	Manganese	Molybdenum	Nickel	Selenium	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
HLC	1	0.5	<0.005	17	0.048	0.50	0.0019	3.3	0.010	<0.001	0.072	0.023	0.014	0.024
HLC	2	0.5	<0.005	17	0.0040	0.50	0.0021	3.2	0.011	<0.001	0.068	0.033	0.0090	0.0050
HLC	3	0.5	<0.005	13	0.047	0.42	0.0017	4.0	0.010	<0.001	0.052	0.0070	0.022	0.27
HLC	4	0.5	<0.005	13	0.0060	0.42	0.0022	3.9	0.011	<0.001	0.058	0.0030	0.039	0.28
HLC	1	1	<0.005	21	0.023	0.58	0.011	4.0	0.014	<0.001	0.086	0.018	0.012	0.018
HLC	2	1	<0.005	17	0.0030	0.47	0.0069	3.8	0.014	<0.001	0.074	0.038	0.011	<0.005
HLC	3	1	<0.005	12	0.10	0.38	<0.0005	4.2	0.012	<0.001	0.051	0.0030	0.015	0.13
HLC	4	1	<0.005	14	0.0050	0.42	0.0016	4.2	0.013	<0.001	0.055	0.0010	0.021	0.14
HLC	1	2	<0.0005	5.7	0.24	0.058	0.016	3.9	0.015	0.00040	0.023	0.014	0.016	0.013
HLC	2	2	<0.0005	5.7	0.0014	0.062	0.025	4.5	0.018	<0.0001	0.025	0.10	0.016	0.0025
HLC	1	5	<0.005	10	0.085	0.21	0.0012	1.7	0.019	<0.001	0.036	0.032	0.0050	0.11
HLC	2	5	<0.0005	7.3	0.011	0.21	0.00014	1.8	0.026	<0.0001	0.031	0.23	0.0053	0.0044
HLC	1	20	<0.0005	6.9	0.031	0.38	0.00097	0.57	0.012	0.00020	0.027	0.58	0.0058	0.022
HLC	2	20	<0.0005	6.5	0.024	0.55	<0.00005	0.67	0.025	<0.0001	0.028	0.85	0.0068	0.017
HLC	1	30	<0.0005	5.0	0.015	0.37	0.0010	0.63	0.0052	<0.0001	0.022	0.12	0.0065	0.032
HLC	2	30	<0.0005	7.2	0.0067	0.42	<0.00005	0.55	0.013	<0.0001	0.033	0.90	0.0061	0.016
HPLC	1	0.25	<0.005	59	0.010	0.51	<0.0005	1.3	0.0070	<0.001	0.12	0.0070	0.097	0.013
HPLC	2	0.25	0.057	48	0.044	0.36	0.00090	1.5	0.0060	<0.001	0.10	0.0040	0.12	0.0080
HPLC	3	0.25	<0.005	56	0.010	0.48	0.0033	1.7	0.0050	<0.001	0.12	0.0030	0.14	0.0090
HPLC	4	0.25	<0.005	49	0.054	0.40	0.00050	1.6	0.0060	<0.001	0.12	0.016	0.094	0.17
HPLC	1	1	<0.005	25	0.010	0.22	<0.0005	0.89	0.0040	<0.001	0.052	0.030	0.060	0.025
HPLC	2	1	0.022	23	0.025	0.17	0.00060	1.1	0.0040	<0.001	0.089	0.25	0.093	0.057
HPLC	3	1	<0.005	23	0.0020	0.18	<0.0005	1.6	0.0040	<0.001	0.049	0.0010	0.10	<0.005
HPLC	4	1	<0.005	38	0.018	0.30	<0.0005	1.6	0.0060	<0.001	0.076	0.0080	0.088	0.12
HPLC	1	2	<0.005	19	<0.001	0.16	<0.0005	1.5	0.0040	<0.001	0.040	0.020	0.060	<0.005
HPLC	2	2	<0.005	14	0.0050	0.085	<0.0005	1.7	0.0030	<0.001	0.029	0.0060	0.067	0.0050
HPLC	1	3	<0.005	10	<0.001	0.11	<0.0005	1.4	0.0030	<0.001	0.021	0.011	0.048	<0.005
HPLC	2	3	0.0010	8.7	0.024	0.068	<0.00005	1.6	0.0022	0.00020	0.016	0.0024	0.052	0.016
HPLC	1	5	0.0013	8.7	0.00070	0.072	0.00016	1.5	0.0017	<0.0001	0.015	0.010	0.042	0.0023
HPLC	2	5	<0.005	10	0.0020	0.052	0.0020	1.7	<0.002	<0.001	0.024	0.0020	0.058	<0.005
HPLC	1	20	<0.0005	4.3	0.00060	0.050	0.00025	0.78	0.00050	<0.0001	0.0079	0.0070	0.042	0.0011
HPLC	2	20	0.00060	5.2	0.00050	0.048	0.0012	0.74	0.00040	<0.0001	0.0096	0.0023	0.053	0.0022
HPLC	1	30	0.00070	5.0	0.0034	0.048	0.000060	0.51	0.00040	<0.0001	0.010	0.013	0.041	0.0015
HPLC	2	30	0.0010	4.9	<0.0001	0.057	<0.00005	0.50	0.00040	<0.0001	0.0090	0.0026	0.054	0.0014

- Parameter not analyzed

Cell Identification	Week	pH	Specific Conductivity	Sulphate	Calcium	Magnesium	Acidity	Total Alkalinity	Chloride	Fluoride	Potassium	Sodium	Ammonia-N	Nitrate-N	Nitrite-N	Orthophosphate-P	Aluminum
		pH units	uS/cm	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-1	1	4.3	2100	1368	378	90	26	0.97	42	0.30	17	21	0.49	0.0044	0.0044	-	0.16
MG-NLR-1	2	4.4	743	207	59	12	15	0.56	-	-	-	-	-	-	-	-	-
MG-NLR-1	3	4.7	275	83	24	3.7	20	0.75	-	-	-	-	-	-	-	-	-
MG-NLR-1	4	4.6	167	59	16	2.6	11	0.93	0.19	0.15	5.1	0.47	0.0047	0.0042	0.0042	0.028	0.056
MG-NLR-1	5	4.6	116	35	8.9	1.6	11	0.89	-	-	-	-	-	-	-	-	-
MG-NLR-1	6	4.6	55	9.4	2.2	0.40	6.0	0.50	-	-	-	-	-	-	-	-	-
MG-NLR-1	7	4.9	70	13	3.2	0.57	6.8	0.57	-	-	-	-	-	-	-	-	-
MG-NLR-1	8	4.7	52	21	4.7	0.94	20	1.2	0.35	0.21	2.6	0.47	0.0059	0.0053	0.0053	0.012	0.093
MG-NLR-1	9	4.5	56	3.2	0.70	0.13	2.7	0.16	-	-	-	-	-	-	-	-	-
MG-NLR-1	10	5.0	25	3.2	0.74	0.20	8.4	0.49	-	-	-	-	-	-	-	-	-
MG-NLR-1	11	4.3	152	15	3.7	0.77	4.9	0.29	-	-	-	-	-	-	-	-	-
MG-NLR-1	12	4.7	104	24	5.9	1.2	2.6	0.66	0.13	0.099	1.6	0.46	0.0033	0.0030	0.0030	0.0066	0.086
MG-NLR-1	13	4.4	103	3.2	0.75	0.16	0.36	0.090	-	-	-	-	-	-	-	-	-
MG-NLR-1	14	4.5	111	19	4.3	0.93	1.9	0.46	-	-	-	-	-	-	-	-	-
MG-NLR-1	15	4.5	109	4.7	1.1	0.23	0.49	0.12	-	-	-	-	-	-	-	-	-
MG-NLR-1	16	4.8	31	9.9	2.3	0.60	7.0	0.99	0.050	0.070	0.70	0.20	0.0050	0.0045	0.0045	0.0050	0.039
MG-NLR-1	17	4.3	154	15	3.7	0.91	2.0	0.29	-	-	-	-	-	-	-	-	-
MG-NLR-1	18	4.2	192	24	5.9	1.4	2.3	0.33	-	-	-	-	-	-	-	-	-
MG-NLR-1	19	4.3	156	16	3.9	0.94	1.9	0.28	-	-	-	-	-	-	-	-	-
MG-NLR-1	20	4.4	132	63	13	3.3	15	1.00	0.050	0.23	2.7	0.50	0.040	0.0045	0.0045	0.020	0.16
MG-NLR-1	21	4.1	176	20	4.7	1.2	5.1	0.34	-	-	-	-	-	-	-	-	-
MG-NLR-1	22	4.3	135	8.6	1.9	0.55	2.6	0.18	-	-	-	-	-	-	-	-	-
MG-NLR-1	23	4.1	150	12	2.6	0.71	3.6	0.24	-	-	-	-	-	-	-	-	-
MG-NLR-1	24	4.3	123	39	8.3	2.2	13	0.88	0.44	0.17	2.3	0.44	0.079	0.0040	0.0040	0.044	0.21
MG-NLR-1	25	4.3	118	11	2.3	0.67	4.6	0.31	-	-	-	-	-	-	-	-	-
MG-NLR-1	26	4.2	164	29	6.3	2.3	7.9	0.53	-	-	-	-	-	-	-	-	-
MG-NLR-1	27	4.2	120	15	3.2	0.94	6.1	0.41	-	-	-	-	-	-	-	-	-
MG-NLR-1	28	4.3	108	19	3.9	1.2	6.3	0.57	0.29	0.092	1.0	0.23	0.17	0.026	0.0026	0.0029	0.086
MG-NLR-1	29	4.2	109	11	2.3	0.69	3.8	0.35	-	-	-	-	-	-	-	-	-
MG-NLR-1	30	4.1	121	19	3.9	1.3	5.4	0.49	-	-	-	-	-	-	-	-	-
MG-NLR-1	31	4.3	98	17	3.7	1.2	6.4	0.58	-	-	-	-	-	-	-	-	-
MG-NLR-1	32	4.4	82	19	3.8	1.3	6.8	0.61	0.25	0.074	1.1	0.25	0.12	0.028	0.0028	0.0031	0.092
MG-NLR-1	33	4.3	88	10	2.1	0.66	3.8	0.34	-	-	-	-	-	-	-	-	-
MG-NLR-1	34	5.0	101	15	3.0	1.00	5.5	0.50	-	-	-	-	-	-	-	-	-
MG-NLR-1	35	4.2	88	15	2.7	0.96	5.6	0.51	-	-	-	-	-	-	-	-	-
MG-NLR-1	36	4.7	97	28	5.4	1.8	10	0.86	0.17	0.16	1.4	0.26	0.0043	0.039	0.0039	0.0043	0.11
MG-NLR-1	37	4.3	90	13	2.6	0.90	5.4	0.45	-	-	-	-	-	-	-	-	-
MG-NLR-1	38	4.5	55	6.2	1.2	0.44	4.4	0.37	-	-	-	-	-	-	-	-	-
MG-NLR-1	39	4.0	128	19	3.7	1.3	6.0	0.50	-	-	-	-	-	-	-	-	-
MG-NLR-1	40	4.3	85	27	5.0	1.9	12	0.88	0.044	0.12	1.1	0.18	0.44	0.040	0.0040	0.018	0.16
MG-NLR-1	41	4.3	98	19	3.5	1.3	7.9	0.57	-	-	-	-	-	-	-	-	-
MG-NLR-1	42	4.1	212	27	4.9	1.9	5.3	0.38	-	-	-	-	-	-	-	-	-
MG-NLR-1	43	4.0	205	32	6.3	2.4	5.9	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-1	44	4.2	141	37	6.6	2.6	17	0.73	0.15	0.21	1.2	0.22	0.37	0.033	0.0033	0.0073	0.24
MG-NLR-1	45	4.2	145	26	4.7	1.8	11	0.50	-	-	-	-	-	-	-	-	-
MG-NLR-1	46	4.0	96	11	2.0	0.81	7.7	0.34	-	-	-	-	-	-	-	-	-
MG-NLR-1	47	3.9	187	26	4.7	1.8	8.9	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-1	48	4.0	171	43	7.4	3.0	18	0.68	0.068	0.23	1.4	0.14	0.034	0.15	0.0031	0.020	0.32
MG-NLR-1	49	4.0	215	30	5.0	2.1	11	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-1	50	4.0	220	29	4.5	1.9	9.8	0.38	-	-	-	-	-	-	-	-	-
MG-NLR-1	51	3.9	170	27	4.2	1.8	11	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-1	52	4.1	172	34	5.3	2.2	18	0.57	0.057	0.19	1.1	0.17	0.28	0.026	0.0026	0.011	0.28
MG-NLR-1	53	3.9	196	30	4.7	2.0	14	0.43	-	-	-	-	-	-	-	-	-
MG-NLR-1	54	3.9	189	25	3.7	1.7	12	0.37	-	-	-	-	-	-	-	-	-
MG-NLR-1	55	3.9	202	30	4.7	2.0	14	0.43	-	-	-	-	-	-	-	-	-
MG-NLR-1	56	4.1	168	27	3.9	1.7	15	0.47	0.047	0.18	0.84	0.093	0.23	0.021	0.0021	0.014	0.25
MG-NLR-1	57	4.0	167	18	2.5	1.1	11	0.34	-	-	-	-	-	-	-	-	-
MG-NLR-1	58	4.1	155	21	2.8	1.3	13	0.40	-	-	-	-	-	-	-	-	-
MG-NLR-1	59	3.9	164	22	2.9	1.3	12	0.38	-	-	-	-	-	-	-	-	-
MG-NLR-1	60	3.7	156	26	3.2	1.5	16	0.61	0.030	0.16	0.79	0.061	0.030	0.027	0.0028	0.0030	0.26
MG-NLR-1	61	4.0	153	24	2.8	1.3	13	0.48	-	-	-	-	-	-	-	-	-
MG-NLR-1	62	3.8	143	25	2.9	1.3	13	0.49	-	-	-	-	-	-	-	-	-
MG-NLR-1	63	4.1	141	22	2.5	1.2	12	0.45	-	-	-	-	-	-	-	-	-
MG-NLR-1	64	4.0	103	22	2.5	1.2	16	0.69	0.034	0.055	0.82	0.069	0.034	0.031	0.0031	0.014	0.35

- Parameter not analyzed

Appendix E, Table E-2
MGNLR-1 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Week	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-1	1	0.00078	0.011	0.054	0.00019	1.5	0.0026	0.00024	0.97	0.95	0.13	2.2	0.15	0.0000039	0.00087	0.83	0.15
MG-NLR-1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	4	0.00065	0.0087	0.028	0.000047	0.41	0.00021	0.00023	0.49	0.056	0.0074	2.2	0.11	0.0000037	0.0044	0.35	0.038
MG-NLR-1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	8	0.00094	0.0076	0.16	0.000059	0.45	0.00025	0.00029	0.056	0.13	0.029	2.1	0.0052	0.0000047	0.00047	0.038	0.056
MG-NLR-1	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	12	0.00033	0.0032	0.13	0.000033	0.28	0.00014	0.00016	0.092	0.21	0.066	3.1	0.0073	0.0000026	0.00013	0.062	0.030
MG-NLR-1	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	16	0.00030	0.0022	0.084	0.000050	0.089	0.00012	0.00025	0.036	0.12	0.040	1.3	0.0032	0.0000040	0.00020	0.025	0.018
MG-NLR-1	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	20	0.00050	0.0036	0.18	0.000100	0.37	0.00014	0.00025	0.16	0.53	0.18	5.1	0.012	0.0000050	0.00040	0.11	0.036
MG-NLR-1	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	24	0.00053	0.0051	0.22	0.000088	0.48	0.00021	0.00022	0.15	0.61	0.27	4.8	0.011	0.0000035	0.00053	0.10	0.036
MG-NLR-1	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	28	0.00034	0.0025	0.14	0.000057	0.26	0.000086	0.00014	0.080	0.30	0.13	2.4	0.0057	0.00000029	0.000029	0.053	0.025
MG-NLR-1	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	32	0.00037	0.0023	0.14	0.000061	0.21	0.000098	0.00015	0.068	0.30	0.15	2.3	0.0057	0.0000018	0.00025	0.049	0.031
MG-NLR-1	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	36	0.00043	0.0030	0.16	0.000043	0.21	0.000095	0.00021	0.086	0.40	0.21	2.8	0.0072	0.00000043	0.00052	0.062	0.046
MG-NLR-1	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	40	0.00044	0.0032	0.11	0.000088	0.16	0.00013	0.00022	0.11	0.70	0.37	3.5	0.0088	0.00000044	0.0064	0.073	0.047
MG-NLR-1	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	44	0.00029	0.0024	0.073	0.00022	0.18	0.00012	0.00018	0.18	1.4	0.57	4.6	0.013	0.00000073	0.00029	0.12	0.041
MG-NLR-1	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	48	0.00034	0.0024	0.047	0.00027	0.21	0.00016	0.00017	0.22	2.2	0.84	5.1	0.015	0.00000034	0.00020	0.15	0.043
MG-NLR-1	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	52	0.00028	0.0019	0.039	0.00023	0.16	0.00015	0.00014	0.16	2.3	0.85	4.2	0.011	0.0000040	0.000028	0.12	0.038
MG-NLR-1	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	56	0.00019	0.0015	0.029	0.00019	0.11	0.00013	0.00012	0.14	2.4	0.74	3.6	0.0093	0.00000023	0.000093	0.098	0.028
MG-NLR-1	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	60	0.00024	0.0017	0.049	0.00024	0.098	0.00011	0.00015	0.13	2.9	0.89	4.1	0.0079	0.0000073	0.00043	0.090	0.033
MG-NLR-1	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-1	64	0.00027	0.0022	0.069	0.00027	0.12	0.00015	0.00017	0.13	3.3	1.2	5.0	0.0082	0.00000034	0.0024	0.092	0.036

- Parameter not analyzed

Appendix E, Table E-2
MGNLR-1 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Week	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-1	1	0.000024	0.90	0.0049	0.000049	0.000097	1.4	0.00019	0.092
MG-NLR-1	2	-	-	-	-	-	-	-	-
MG-NLR-1	3	-	-	-	-	-	-	-	-
MG-NLR-1	4	0.000023	0.53	0.0020	0.000047	0.00028	5.2	0.000047	0.070
MG-NLR-1	5	-	-	-	-	-	-	-	-
MG-NLR-1	6	-	-	-	-	-	-	-	-
MG-NLR-1	7	-	-	-	-	-	-	-	-
MG-NLR-1	8	0.000029	0.32	0.0012	0.000059	0.0015	0.13	0.00035	0.027
MG-NLR-1	9	-	-	-	-	-	-	-	-
MG-NLR-1	10	-	-	-	-	-	-	-	-
MG-NLR-1	11	-	-	-	-	-	-	-	-
MG-NLR-1	12	0.000016	0.44	0.00086	0.000033	0.000066	0.23	0.000033	0.031
MG-NLR-1	13	-	-	-	-	-	-	-	-
MG-NLR-1	14	-	-	-	-	-	-	-	-
MG-NLR-1	15	-	-	-	-	-	-	-	-
MG-NLR-1	16	0.000025	0.16	0.00030	0.000050	0.00050	0.12	0.000050	0.012
MG-NLR-1	17	-	-	-	-	-	-	-	-
MG-NLR-1	18	-	-	-	-	-	-	-	-
MG-NLR-1	19	-	-	-	-	-	-	-	-
MG-NLR-1	20	0.000025	0.63	0.00100	0.000050	0.00030	0.42	0.000050	0.024
MG-NLR-1	21	-	-	-	-	-	-	-	-
MG-NLR-1	22	-	-	-	-	-	-	-	-
MG-NLR-1	23	-	-	-	-	-	-	-	-
MG-NLR-1	24	0.000022	0.55	0.0011	0.000044	0.0019	0.45	0.000044	0.022
MG-NLR-1	25	-	-	-	-	-	-	-	-
MG-NLR-1	26	-	-	-	-	-	-	-	-
MG-NLR-1	27	-	-	-	-	-	-	-	-
MG-NLR-1	28	0.000014	0.25	0.00052	0.000029	0.000057	0.22	0.000029	0.013
MG-NLR-1	29	-	-	-	-	-	-	-	-
MG-NLR-1	30	-	-	-	-	-	-	-	-
MG-NLR-1	31	-	-	-	-	-	-	-	-
MG-NLR-1	32	0.000015	0.24	0.00049	0.000031	0.00037	0.20	0.000031	0.010
MG-NLR-1	33	-	-	-	-	-	-	-	-
MG-NLR-1	34	-	-	-	-	-	-	-	-
MG-NLR-1	35	-	-	-	-	-	-	-	-
MG-NLR-1	36	0.000021	0.29	0.00060	0.000043	0.00043	0.22	0.000043	0.010
MG-NLR-1	37	-	-	-	-	-	-	-	-
MG-NLR-1	38	-	-	-	-	-	-	-	-
MG-NLR-1	39	-	-	-	-	-	-	-	-
MG-NLR-1	40	0.000022	0.33	0.00062	0.000044	0.0039	0.32	0.000088	0.015
MG-NLR-1	41	-	-	-	-	-	-	-	-
MG-NLR-1	42	-	-	-	-	-	-	-	-
MG-NLR-1	43	-	-	-	-	-	-	-	-
MG-NLR-1	44	0.000018	0.48	0.00066	0.000037	0.00095	0.60	0.000037	0.021
MG-NLR-1	45	-	-	-	-	-	-	-	-
MG-NLR-1	46	-	-	-	-	-	-	-	-
MG-NLR-1	47	-	-	-	-	-	-	-	-
MG-NLR-1	48	0.000017	0.52	0.00068	0.000034	0.00068	0.85	0.000034	0.030
MG-NLR-1	49	-	-	-	-	-	-	-	-
MG-NLR-1	50	-	-	-	-	-	-	-	-
MG-NLR-1	51	-	-	-	-	-	-	-	-
MG-NLR-1	52	0.000014	0.40	0.00057	0.000028	0.00023	0.84	0.000028	0.032
MG-NLR-1	53	-	-	-	-	-	-	-	-
MG-NLR-1	54	-	-	-	-	-	-	-	-
MG-NLR-1	55	-	-	-	-	-	-	-	-
MG-NLR-1	56	0.000012	0.28	0.00047	0.000023	0.00065	0.77	0.000023	0.026
MG-NLR-1	57	-	-	-	-	-	-	-	-
MG-NLR-1	58	-	-	-	-	-	-	-	-
MG-NLR-1	59	-	-	-	-	-	-	-	-
MG-NLR-1	60	0.000015	0.24	0.00049	0.000030	0.00073	0.84	0.000030	0.026
MG-NLR-1	61	-	-	-	-	-	-	-	-
MG-NLR-1	62	-	-	-	-	-	-	-	-
MG-NLR-1	63	-	-	-	-	-	-	-	-
MG-NLR-1	64	0.000017	0.24	0.00055	0.000034	0.0021	1.1	0.000034	0.031

- Parameter not analyzed

Appendix E, Table E-3
MGNLR-2 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	pH	Specific Conductivity	Sulphate	Calcium	Magnesium	Acidity	Total Alkalinity	Chloride	Fluoride	Potassium	Sodium	Ammonia-N	Nitrate-N	Nitrite-N	Orthophosphate-P	Aluminum
		pH units	uS/cm	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-2	1	4.2	2150	1221	344	81	25	0.87	41	0.31	17	19	0.43	0.0039	0.0039	-	0.30
MG-NLR-2	2	4.4	434	85	25	3.9	12	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-2	3	4.5	279	117	35	5.2	31	1.1	-	-	-	-	-	-	-	-	-
MG-NLR-2	4	4.6	164	52	14	2.2	11	0.84	0.084	0.11	4.7	0.34	0.0042	0.0038	0.0038	0.0084	0.079
MG-NLR-2	5	4.7	125	25	6.8	1.0	7.3	0.56	-	-	-	-	-	-	-	-	-
MG-NLR-2	6	4.6	66	11	2.5	0.44	5.7	0.44	-	-	-	-	-	-	-	-	-
MG-NLR-2	7	4.7	54	9.9	2.5	0.44	7.2	0.55	-	-	-	-	-	-	-	-	-
MG-NLR-2	8	4.6	82	31	7.5	1.5	16	1.1	0.42	0.18	3.0	0.42	0.0053	0.0095	0.0048	0.0053	0.075
MG-NLR-2	9	5.0	1640	132	53	0.90	2.0	0.13	-	-	-	-	-	-	-	-	-
MG-NLR-2	10	4.5	91	17	3.9	0.93	7.7	0.52	-	-	-	-	-	-	-	-	-
MG-NLR-2	11	4.3	144	11	2.9	0.95	3.3	0.22	-	-	-	-	-	-	-	-	-
MG-NLR-2	12	4.4	142	24	5.7	1.2	2.2	0.44	0.088	0.088	1.4	0.26	0.0022	0.050	0.0020	0.0044	0.088
MG-NLR-2	13	4.3	136	4.5	1.1	0.22	0.45	0.090	-	-	-	-	-	-	-	-	-
MG-NLR-2	14	4.4	138	21	4.9	1.1	2.0	0.41	-	-	-	-	-	-	-	-	-
MG-NLR-2	15	4.3	141	4.3	1.0	0.23	0.42	0.085	-	-	-	-	-	-	-	-	-
MG-NLR-2	16	4.4	100	32	7.6	1.7	16	0.94	0.094	0.12	2.1	0.37	0.028	0.0042	0.0043	0.0047	0.12
MG-NLR-2	17	4.4	89	10	2.3	0.55	5.8	0.34	-	-	-	-	-	-	-	-	-
MG-NLR-2	18	4.3	103	12	2.8	0.68	5.8	0.34	-	-	-	-	-	-	-	-	-
MG-NLR-2	19	4.3	104	12	2.9	0.72	5.8	0.34	-	-	-	-	-	-	-	-	-
MG-NLR-2	20	4.7	34	12	2.6	0.79	6.9	0.98	0.049	0.098	0.98	0.30	0.0049	0.0044	0.0045	0.0098	0.042
MG-NLR-2	21	4.5	125	13	2.9	0.79	2.0	0.29	-	-	-	-	-	-	-	-	-
MG-NLR-2	22	4.2	170	11	2.6	0.67	1.2	0.17	-	-	-	-	-	-	-	-	-
MG-NLR-2	23	4.2	154	14	3.1	0.85	1.7	0.24	-	-	-	-	-	-	-	-	-
MG-NLR-2	24	4.4	144	41	9.0	2.5	12	0.99	0.49	0.22	2.3	0.49	0.14	0.0044	0.0045	0.020	0.20
MG-NLR-2	25	4.4	106	12	2.5	0.71	4.1	0.34	-	-	-	-	-	-	-	-	-
MG-NLR-2	26	4.4	116	16	3.3	0.96	5.0	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-2	27	4.2	124	17	3.6	1.1	5.5	0.46	-	-	-	-	-	-	-	-	-
MG-NLR-2	28	4.3	106	15	3.0	0.91	8.4	0.65	0.32	0.097	0.84	0.19	0.19	0.029	0.0029	0.0032	0.11
MG-NLR-2	29	4.3	109	18	3.5	1.1	6.4	0.49	-	-	-	-	-	-	-	-	-
MG-NLR-2	30	4.5	62	10	2.0	0.69	6.4	0.49	-	-	-	-	-	-	-	-	-
MG-NLR-2	31	4.4	113	20	4.1	1.4	6.9	0.53	-	-	-	-	-	-	-	-	-
MG-NLR-2	32	4.3	165	41	8.5	2.8	7.9	0.61	0.24	0.13	1.6	0.36	0.061	0.027	0.0028	0.0030	0.22
MG-NLR-2	33	4.0	173	23	4.9	1.6	4.9	0.38	-	-	-	-	-	-	-	-	-
MG-NLR-2	34	5.0	25	4.5	0.73	0.37	6.8	0.52	-	-	-	-	-	-	-	-	-
MG-NLR-2	35	4.3	139	18	3.3	1.2	4.9	0.38	-	-	-	-	-	-	-	-	-
MG-NLR-2	36	4.5	163	47	9.3	3.1	17	0.84	0.17	0.24	1.7	0.25	0.0042	0.038	0.0038	0.0042	0.24
MG-NLR-2	37	4.0	148	19	3.6	1.3	7.4	0.37	-	-	-	-	-	-	-	-	-
MG-NLR-2	38	4.2	133	15	2.8	0.99	7.0	0.35	-	-	-	-	-	-	-	-	-
MG-NLR-2	39	4.0	185	28	4.9	1.8	8.9	0.44	-	-	-	-	-	-	-	-	-
MG-NLR-2	40	4.2	153	46	8.2	3.1	19	0.82	0.041	0.15	1.5	0.16	0.41	0.037	0.0037	0.016	0.34
MG-NLR-2	41	4.1	171	23	3.9	1.5	9.0	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-2	42	4.2	119	14	2.4	0.87	9.1	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-2	43	4.0	174	19	3.4	1.3	7.1	0.31	-	-	-	-	-	-	-	-	-
MG-NLR-2	44	4.1	166	43	7.1	2.8	21	0.73	0.15	0.25	1.5	0.22	0.37	0.033	0.0033	0.0037	0.32
MG-NLR-2	45	4.0	158	23	3.7	1.5	11	0.41	-	-	-	-	-	-	-	-	-
MG-NLR-2	46	3.8	152	21	3.5	1.4	11	0.40	-	-	-	-	-	-	-	-	-
MG-NLR-2	47	3.9	126	17	2.5	1.0	11	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-2	48	4.0	134	31	4.8	2.0	17	0.67	0.20	0.19	1.1	0.13	0.034	0.14	0.0031	0.0067	0.34
MG-NLR-2	49	4.0	156	19	2.8	1.2	9.8	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-2	50	4.1	154	18	2.5	1.1	8.9	0.36	-	-	-	-	-	-	-	-	-
MG-NLR-2	51	3.8	157	22	3.0	1.3	9.6	0.38	-	-	-	-	-	-	-	-	-
MG-NLR-2	52	4.1	156	29	4.1	1.9	21	0.56	0.056	0.18	0.96	0.17	0.28	0.025	0.0026	0.0056	0.27
MG-NLR-2	53	3.9	153	18	2.5	1.1	13	0.35	-	-	-	-	-	-	-	-	-
MG-NLR-2	54	4.1	150	21	2.7	1.3	15	0.40	-	-	-	-	-	-	-	-	-
MG-NLR-2	55	3.9	176	26	3.5	1.7	16	0.44	-	-	-	-	-	-	-	-	-
MG-NLR-2	56	4.1	144	29	3.7	1.8	18	0.61	0.061	0.20	0.92	0.12	0.31	0.028	0.0028	0.0031	0.28
MG-NLR-2	57	3.9	151	17	2.2	1.0	11	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-2	58	4.0	144	15	1.8	0.89	9.2	0.32	-	-	-	-	-	-	-	-	-
MG-NLR-2	59	3.9	167	17	2.0	1.0	8.6	0.30	-	-	-	-	-	-	-	-	-
MG-NLR-2	60	3.8	176	23	2.7	1.4	15	0.44	0.022	0.15	0.66	0.088	0.022	0.020	0.0020	0.0022	0.27
MG-NLR-2	61	3.8	149	20	2.1	1.1	14	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-2	62	3.8	142	20	2.1	1.0	14	0.41	-	-	-	-	-	-	-	-	-
MG-NLR-2	63	3.9	145	20	2.0	1.1	14	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-2	64	3.9	104	17	1.7	0.94	13	0.52	0.026	0.042	0.52	0.052	0.026	0.024	0.0024	0.016	0.19

- Parameter not analyzed

Appendix E, Table E-3
MGNLR-2 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-2	1	0.00069	0.012	0.032	0.00035	2.3	0.00069	0.00087	1.7	0.95	0.27	2.3	0.27	0.0000069	0.00061	1.5	0.35
MG-NLR-2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	4	0.00059	0.0065	0.10	0.000042	0.66	0.000050	0.00021	0.13	0.18	0.037	2.9	0.013	0.0000034	0.00017	0.10	0.040
MG-NLR-2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	8	0.00063	0.0054	0.24	0.000053	0.45	0.000032	0.00026	0.087	0.14	0.041	3.4	0.0073	0.0000053	0.00021	0.059	0.054
MG-NLR-2	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	12	0.00022	0.0021	0.070	0.000044	0.27	0.000031	0.00011	0.10	0.25	0.083	3.1	0.0070	0.0000013	0.000044	0.067	0.023
MG-NLR-2	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	16	0.00056	0.0041	0.20	0.000047	0.37	0.000047	0.00023	0.11	0.36	0.15	4.3	0.0094	0.0000056	0.000094	0.083	0.030
MG-NLR-2	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	20	0.00039	0.0025	0.098	0.000049	0.12	0.000020	0.00025	0.042	0.16	0.061	1.7	0.0033	0.0000039	0.000098	0.031	0.023
MG-NLR-2	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	24	0.00059	0.0041	0.18	0.000099	0.44	0.000059	0.00025	0.17	0.78	0.36	5.4	0.012	0.0000059	0.000049	0.12	0.034
MG-NLR-2	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	28	0.00032	0.0022	0.15	0.000065	0.24	0.000032	0.00016	0.091	0.43	0.23	2.9	0.0065	0.00000065	0.000065	0.062	0.025
MG-NLR-2	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	32	0.00024	0.0019	0.091	0.00012	0.24	0.000067	0.00015	0.16	0.96	0.47	4.8	0.012	0.0000012	0.00012	0.11	0.047
MG-NLR-2	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	36	0.00042	0.0024	0.078	0.00017	0.24	0.000084	0.00021	0.19	1.4	0.59	5.5	0.014	0.00000042	0.00025	0.13	0.049
MG-NLR-2	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	40	0.00033	0.0029	0.056	0.00033	0.30	0.000098	0.00020	0.25	2.3	0.94	6.5	0.017	0.0000074	0.0012	0.16	0.058
MG-NLR-2	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	44	0.00037	0.0026	0.067	0.00029	0.24	0.00010	0.00018	0.22	2.3	0.91	5.7	0.015	0.00000073	0.00015	0.15	0.054
MG-NLR-2	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	48	0.00040	0.0036	0.010	0.00027	0.22	0.000094	0.00017	0.16	2.2	0.97	1.9	0.012	0.00000034	0.0047	0.11	0.065
MG-NLR-2	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	52	0.00023	0.0019	0.043	0.00023	0.16	0.00011	0.00014	0.14	2.5	0.91	4.1	0.0096	0.0000040	0.000028	0.100	0.035
MG-NLR-2	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	56	0.00024	0.0017	0.048	0.00024	0.13	0.000092	0.00015	0.15	2.9	0.94	4.3	0.0092	0.00000031	0.00012	0.10	0.032
MG-NLR-2	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	60	0.00013	0.0013	0.031	0.00027	0.097	0.000084	0.00011	0.12	2.7	0.99	3.7	0.0071	0.00000022	0.00053	0.083	0.030
MG-NLR-2	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-2	64	0.00021	0.0013	0.045	0.00016	0.068	0.000057	0.00013	0.078	2.1	0.75	3.0	0.0049	0.0000010	0.00010	0.055	0.025

- Parameter not analyzed

Appendix E, Table E-3
MGNLR-2 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-2	1	0.000022	0.88	0.0056	0.000043	0.00026	2.3	0.00026	0.15
MG-NLR-2	2	-	-	-	-	-	-	-	-
MG-NLR-2	3	-	-	-	-	-	-	-	-
MG-NLR-2	4	0.000021	0.60	0.0022	0.000042	0.00050	0.23	0.00017	0.049
MG-NLR-2	5	-	-	-	-	-	-	-	-
MG-NLR-2	6	-	-	-	-	-	-	-	-
MG-NLR-2	7	-	-	-	-	-	-	-	-
MG-NLR-2	8	0.000026	0.50	0.0013	0.000053	0.00032	0.15	0.00011	0.055
MG-NLR-2	9	-	-	-	-	-	-	-	-
MG-NLR-2	10	-	-	-	-	-	-	-	-
MG-NLR-2	11	-	-	-	-	-	-	-	-
MG-NLR-2	12	0.000011	0.46	0.00070	0.000022	0.000044	0.24	0.000022	0.013
MG-NLR-2	13	-	-	-	-	-	-	-	-
MG-NLR-2	14	-	-	-	-	-	-	-	-
MG-NLR-2	15	-	-	-	-	-	-	-	-
MG-NLR-2	16	0.000023	0.52	0.0010	0.000047	0.000094	0.33	0.000047	0.025
MG-NLR-2	17	-	-	-	-	-	-	-	-
MG-NLR-2	18	-	-	-	-	-	-	-	-
MG-NLR-2	19	-	-	-	-	-	-	-	-
MG-NLR-2	20	0.000025	0.18	0.00039	0.000049	0.00030	0.099	0.000049	0.022
MG-NLR-2	21	-	-	-	-	-	-	-	-
MG-NLR-2	22	-	-	-	-	-	-	-	-
MG-NLR-2	23	-	-	-	-	-	-	-	-
MG-NLR-2	24	0.000025	0.60	0.0011	0.000049	0.00039	0.46	0.000049	0.029
MG-NLR-2	25	-	-	-	-	-	-	-	-
MG-NLR-2	26	-	-	-	-	-	-	-	-
MG-NLR-2	27	-	-	-	-	-	-	-	-
MG-NLR-2	28	0.000016	0.28	0.00052	0.000032	0.00013	0.25	0.000032	0.026
MG-NLR-2	29	-	-	-	-	-	-	-	-
MG-NLR-2	30	-	-	-	-	-	-	-	-
MG-NLR-2	31	-	-	-	-	-	-	-	-
MG-NLR-2	32	0.000015	0.50	0.00067	0.000030	0.00030	0.52	0.000030	0.024
MG-NLR-2	33	-	-	-	-	-	-	-	-
MG-NLR-2	34	-	-	-	-	-	-	-	-
MG-NLR-2	35	-	-	-	-	-	-	-	-
MG-NLR-2	36	0.000021	0.57	0.00076	0.000042	0.00067	0.62	0.000042	0.028
MG-NLR-2	37	-	-	-	-	-	-	-	-
MG-NLR-2	38	-	-	-	-	-	-	-	-
MG-NLR-2	39	-	-	-	-	-	-	-	-
MG-NLR-2	40	0.000020	0.64	0.00074	0.000041	0.00090	0.94	0.000041	0.035
MG-NLR-2	41	-	-	-	-	-	-	-	-
MG-NLR-2	42	-	-	-	-	-	-	-	-
MG-NLR-2	43	-	-	-	-	-	-	-	-
MG-NLR-2	44	0.000018	0.53	0.00073	0.000037	0.00015	0.96	0.000037	0.035
MG-NLR-2	45	-	-	-	-	-	-	-	-
MG-NLR-2	46	-	-	-	-	-	-	-	-
MG-NLR-2	47	-	-	-	-	-	-	-	-
MG-NLR-2	48	0.000017	0.34	0.00067	0.000034	0.0062	0.86	0.000034	0.050
MG-NLR-2	49	-	-	-	-	-	-	-	-
MG-NLR-2	50	-	-	-	-	-	-	-	-
MG-NLR-2	51	-	-	-	-	-	-	-	-
MG-NLR-2	52	0.000014	0.32	0.00051	0.000028	0.00028	0.87	0.000028	0.032
MG-NLR-2	53	-	-	-	-	-	-	-	-
MG-NLR-2	54	-	-	-	-	-	-	-	-
MG-NLR-2	55	-	-	-	-	-	-	-	-
MG-NLR-2	56	0.000015	0.27	0.00049	0.000031	0.00037	0.96	0.000031	0.029
MG-NLR-2	57	-	-	-	-	-	-	-	-
MG-NLR-2	58	-	-	-	-	-	-	-	-
MG-NLR-2	59	-	-	-	-	-	-	-	-
MG-NLR-2	60	0.000011	0.19	0.00040	0.000022	0.0022	0.90	0.000022	0.027
MG-NLR-2	61	-	-	-	-	-	-	-	-
MG-NLR-2	62	-	-	-	-	-	-	-	-
MG-NLR-2	63	-	-	-	-	-	-	-	-
MG-NLR-2	64	0.000013	0.13	0.00031	0.000026	0.00031	0.67	0.000026	0.020

- Parameter not analyzed

Appendix E, Table E-4
MGNLR-3 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	pH	Specific Conductivity	Sulphate	Calcium	Magnesium	Acidity	Total Alkalinity	Chloride	Fluoride	Potassium	Sodium	Ammonia-N	Nitrate-N	Nitrite-N	Orthophosphate-P	Aluminum
		pH units	uS/cm	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-3	1	4.3	2040	1182	332	77	20	0.90	43	0.25	20	21	0.45	0.0040	0.0041	-	0.21
MG-NLR-3	2	4.5	374	105	30	4.7	14	0.62	-	-	-	-	-	-	-	-	-
MG-NLR-3	3	4.6	252	72	21	3.2	16	0.72	-	-	-	-	-	-	-	-	-
MG-NLR-3	4	4.6	141	51	13	2.2	9.6	0.96	0.096	0.13	5.2	0.38	0.0048	0.0043	0.0044	0.0096	0.085
MG-NLR-3	5	4.7	131	38	9.5	1.6	7.9	0.79	-	-	-	-	-	-	-	-	-
MG-NLR-3	6	4.6	63	11	2.6	0.44	4.9	0.49	-	-	-	-	-	-	-	-	-
MG-NLR-3	7	4.6	79	12	3.1	0.56	4.6	0.46	-	-	-	-	-	-	-	-	-
MG-NLR-3	8	4.7	40	16	3.6	1.1	19	1.1	0.33	0.14	2.2	0.22	0.0055	0.0049	0.0050	0.16	0.072
MG-NLR-3	9	4.6	86	3.6	0.83	0.15	2.0	0.12	-	-	-	-	-	-	-	-	-
MG-NLR-3	10	4.6	61	11	2.5	0.50	8.5	0.50	-	-	-	-	-	-	-	-	-
MG-NLR-3	11	4.3	158	17	4.1	0.91	5.0	0.29	-	-	-	-	-	-	-	-	-
MG-NLR-3	12	4.4	120	28	6.8	1.4	3.1	0.62	0.062	0.093	1.8	0.31	0.0031	3.1	0.0028	0.0062	0.12
MG-NLR-3	13	4.3	117	4.4	1.0	0.21	0.51	0.10	-	-	-	-	-	-	-	-	-
MG-NLR-3	14	4.3	127	22	5.2	1.1	2.3	0.47	-	-	-	-	-	-	-	-	-
MG-NLR-3	15	4.3	132	4.6	1.1	0.25	0.50	0.100	-	-	-	-	-	-	-	-	-
MG-NLR-3	16	4.6	64	34	7.7	1.7	13	1.1	0.11	0.14	2.1	0.42	0.0053	0.0047	0.0048	0.032	0.081
MG-NLR-3	17	4.4	97	14	3.2	0.76	5.1	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-3	18	4.6	37	5.4	1.2	0.29	5.0	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-3	19	4.3	101	14	3.3	0.86	4.7	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-3	20	4.7	42	14	3.2	1.1	9.9	0.99	0.049	0.079	0.99	0.30	0.0049	0.0044	0.0045	0.0099	0.050
MG-NLR-3	21	4.4	114	13	3.0	0.78	3.2	0.32	-	-	-	-	-	-	-	-	-
MG-NLR-3	22	4.2	185	24	5.6	1.5	3.5	0.35	-	-	-	-	-	-	-	-	-
MG-NLR-3	23	4.3	196	30	7.0	1.9	4.1	0.41	-	-	-	-	-	-	-	-	-
MG-NLR-3	24	4.3	180	52	11	3.1	13	1.1	0.43	0.26	2.6	0.43	0.19	0.0048	0.0049	0.032	0.26
MG-NLR-3	25	4.4	112	19	3.9	1.1	5.8	0.48	-	-	-	-	-	-	-	-	-
MG-NLR-3	26	4.4	97	18	3.6	1.1	6.9	0.58	-	-	-	-	-	-	-	-	-
MG-NLR-3	27	4.2	135	25	5.1	1.6	7.2	0.60	-	-	-	-	-	-	-	-	-
MG-NLR-3	28	4.4	71	19	3.9	1.3	12	0.88	0.18	0.096	0.96	0.18	0.26	0.039	0.0040	0.0044	0.096
MG-NLR-3	29	5.4	10	2.0	0.36	0.41	7.1	0.51	-	-	-	-	-	-	-	-	-
MG-NLR-3	30	4.2	135	20	4.1	1.3	6.0	0.43	-	-	-	-	-	-	-	-	-
MG-NLR-3	31	4.2	223	55	12	3.7	9.6	0.69	-	-	-	-	-	-	-	-	-
MG-NLR-3	32	4.2	173	53	11	3.5	9.4	0.67	0.20	0.14	1.8	0.33	0.067	0.030	0.0030	0.0033	0.28
MG-NLR-3	33	4.0	185	29	5.7	1.9	6.1	0.44	-	-	-	-	-	-	-	-	-
MG-NLR-3	34	4.5	158	31	5.5	2.0	7.7	0.55	-	-	-	-	-	-	-	-	-
MG-NLR-3	35	4.0	143	26	4.4	1.6	7.6	0.54	-	-	-	-	-	-	-	-	-
MG-NLR-3	36	4.5	131	37	6.5	2.3	15	0.87	0.17	0.21	1.6	0.17	0.0043	0.039	0.0039	0.0043	0.19
MG-NLR-3	37	4.1	100	13	2.3	0.77	6.9	0.41	-	-	-	-	-	-	-	-	-
MG-NLR-3	38	4.3	68	8.8	1.4	0.55	7.1	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-3	39	4.1	139	23	3.9	1.4	8.8	0.52	-	-	-	-	-	-	-	-	-
MG-NLR-3	40	4.1	118	43	7.2	2.8	23	1.0	0.051	0.14	1.5	0.20	0.51	0.046	0.0047	0.020	0.32
MG-NLR-3	41	4.1	153	23	3.6	1.4	9.7	0.44	-	-	-	-	-	-	-	-	-
MG-NLR-3	42	4.0	169	26	4.1	1.7	11	0.51	-	-	-	-	-	-	-	-	-
MG-NLR-3	43	3.9	182	33	5.1	2.1	11	0.51	-	-	-	-	-	-	-	-	-
MG-NLR-3	44	4.4	50	15	2.3	0.95	11	0.95	0.19	0.12	0.66	0.19	0.47	0.043	0.0043	0.0047	0.21
MG-NLR-3	45	4.0	174	19	3.0	1.3	3.8	0.31	-	-	-	-	-	-	-	-	-
MG-NLR-3	46	3.8	173	27	4.0	1.7	5.4	0.45	-	-	-	-	-	-	-	-	-
MG-NLR-3	47	3.8	174	24	3.4	1.5	4.7	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-3	48	4.0	150	40	5.7	2.5	20	0.75	0.075	0.24	1.3	0.15	0.037	0.15	0.0034	0.030	0.31
MG-NLR-3	49	4.0	175	22	3.1	1.4	11	0.40	-	-	-	-	-	-	-	-	-
MG-NLR-3	50	4.0	168	23	3.0	1.4	12	0.44	-	-	-	-	-	-	-	-	-
MG-NLR-3	51	3.8	177	25	3.3	1.5	10	0.38	-	-	-	-	-	-	-	-	-
MG-NLR-3	52	4.0	157	32	4.1	1.9	27	0.61	0.061	0.19	1.0	0.18	0.30	0.027	0.0028	0.018	0.29
MG-NLR-3	53	3.9	166	27	3.5	1.6	22	0.48	-	-	-	-	-	-	-	-	-
MG-NLR-3	54	3.9	183	18	2.3	1.1	13	0.28	-	-	-	-	-	-	-	-	-
MG-NLR-3	55	4.0	180	28	3.3	1.7	21	0.46	-	-	-	-	-	-	-	-	-
MG-NLR-3	56	4.2	130	34	3.9	2.0	29	0.82	0.041	0.24	1.2	0.16	0.41	0.037	0.0037	0.016	0.34
MG-NLR-3	57	3.9	128	16	1.8	0.94	15	0.43	-	-	-	-	-	-	-	-	-
MG-NLR-3	58	4.0	130	15	1.6	0.81	13	0.35	-	-	-	-	-	-	-	-	-
MG-NLR-3	59	4.0	148	14	1.4	0.75	10	0.28	-	-	-	-	-	-	-	-	-
MG-NLR-3	60	3.8	145	27	2.8	1.5	20	0.64	0.032	0.17	0.89	0.064	0.032	0.029	0.0029	0.0032	0.29
MG-NLR-3	61	3.9	128	18	1.8	0.96	15	0.46	-	-	-	-	-	-	-	-	-
MG-NLR-3	62	3.8	120	19	1.8	0.89	16	0.50	-	-	-	-	-	-	-	-	-
MG-NLR-3	63	3.9	117	17	1.5	0.85	14	0.45	-	-	-	-	-	-	-	-	-
MG-NLR-3	64	3.9	101	17	1.5	0.89	16	0.56	0.028	0.078	0.56	0.056	0.028	0.025	0.0025	0.017	0.19

- Parameter not analyzed

Appendix E, Table E-4
MGNLR-3 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-3	1	0.00081	0.013	0.034	0.00027	2.3	0.00073	0.00054	1.8	0.95	0.18	2.4	0.27	0.0000063	0.00081	1.5	0.39
MG-NLR-3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	4	0.00067	0.0075	0.12	0.000048	0.75	0.000048	0.00024	0.14	0.19	0.033	3.1	0.013	0.0000038	0.00029	0.11	0.056
MG-NLR-3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	8	0.00076	0.0059	0.15	0.000055	0.40	0.000011	0.00027	0.055	0.092	0.026	2.0	0.0048	0.0000065	0.00022	0.037	0.043
MG-NLR-3	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	12	0.00037	0.0033	0.099	0.000062	0.33	0.000031	0.00015	0.12	0.27	0.093	3.7	0.0087	0.0000012	0.0019	0.084	0.028
MG-NLR-3	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	16	0.00074	0.0040	0.19	0.000053	0.26	0.000021	0.00026	0.080	0.21	0.076	3.1	0.0062	0.0000032	0.00011	0.054	0.034
MG-NLR-3	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	20	0.00030	0.0022	0.084	0.000049	0.12	0.000020	0.00025	0.056	0.22	0.077	2.0	0.0043	0.0000040	0.00059	0.040	0.024
MG-NLR-3	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	24	0.00053	0.0045	0.14	0.00021	0.46	0.000075	0.00027	0.22	1.1	0.47	6.6	0.016	0.0000053	0.000053	0.15	0.042
MG-NLR-3	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	28	0.00035	0.0021	0.11	0.000044	0.15	0.000035	0.00022	0.088	0.49	0.20	2.9	0.0060	0.00000044	0.000044	0.059	0.029
MG-NLR-3	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	32	0.00027	0.0024	0.040	0.00020	0.28	0.000074	0.00017	0.19	1.6	0.67	4.9	0.013	0.0000013	0.000067	0.13	0.032
MG-NLR-3	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	36	0.00043	0.0027	0.12	0.00017	0.24	0.000069	0.00022	0.13	1.0	0.56	4.4	0.0087	0.00000043	0.00017	0.090	0.035
MG-NLR-3	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	40	0.00051	0.0034	0.10	0.00031	0.32	0.000082	0.00026	0.21	2.1	1.0	8.0	0.013	0.00000051	0.0012	0.13	0.082
MG-NLR-3	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	44	0.00038	0.0022	0.045	0.000095	0.095	0.000038	0.00024	0.069	0.79	0.44	2.6	0.0049	0.0000019	0.0033	0.047	0.020
MG-NLR-3	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	48	0.00037	0.0022	0.058	0.00030	0.22	0.00011	0.00019	0.17	2.7	0.97	5.2	0.012	0.00000037	0.000075	0.11	0.050
MG-NLR-3	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	52	0.00024	0.0019	0.042	0.00024	0.16	0.00010	0.00015	0.15	3.1	1.0	4.4	0.0097	0.0000049	0.000061	0.10	0.038
MG-NLR-3	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	56	0.00033	0.0025	0.079	0.00033	0.16	0.00011	0.00020	0.16	3.9	1.4	5.6	0.011	0.000014	0.000041	0.11	0.034
MG-NLR-3	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	60	0.00019	0.0018	0.052	0.00025	0.11	0.000083	0.00016	0.13	3.5	1.3	4.8	0.0076	0.0000025	0.000064	0.086	0.036
MG-NLR-3	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-3	64	0.00017	0.0012	0.067	0.00017	0.073	0.000061	0.00014	0.073	2.4	0.87	3.4	0.0047	0.00000028	0.000028	0.051	0.028

- Parameter not analyzed

Appendix E, Table E-4
MGNLR-3 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-3	1	0.000022	0.90	0.0063	0.00018	0.00036	2.4	0.00027	0.12
MG-NLR-3	2	-	-	-	-	-	-	-	-
MG-NLR-3	3	-	-	-	-	-	-	-	-
MG-NLR-3	4	0.000024	0.64	0.0024	0.000048	0.00029	0.29	0.00019	0.079
MG-NLR-3	5	-	-	-	-	-	-	-	-
MG-NLR-3	6	-	-	-	-	-	-	-	-
MG-NLR-3	7	-	-	-	-	-	-	-	-
MG-NLR-3	8	0.000027	0.29	0.00098	0.000055	0.00076	0.12	0.00022	0.025
MG-NLR-3	9	-	-	-	-	-	-	-	-
MG-NLR-3	10	-	-	-	-	-	-	-	-
MG-NLR-3	11	-	-	-	-	-	-	-	-
MG-NLR-3	12	0.000015	0.56	0.00093	0.000031	0.0022	0.33	0.00012	0.014
MG-NLR-3	13	-	-	-	-	-	-	-	-
MG-NLR-3	14	-	-	-	-	-	-	-	-
MG-NLR-3	15	-	-	-	-	-	-	-	-
MG-NLR-3	16	0.000026	0.35	0.00074	0.000053	0.00011	0.25	0.000053	0.025
MG-NLR-3	17	-	-	-	-	-	-	-	-
MG-NLR-3	18	-	-	-	-	-	-	-	-
MG-NLR-3	19	-	-	-	-	-	-	-	-
MG-NLR-3	20	0.000025	0.22	0.00040	0.000049	0.00040	0.15	0.000049	0.026
MG-NLR-3	21	-	-	-	-	-	-	-	-
MG-NLR-3	22	-	-	-	-	-	-	-	-
MG-NLR-3	23	-	-	-	-	-	-	-	-
MG-NLR-3	24	0.000027	0.75	0.0012	0.000053	0.00011	0.77	0.000053	0.042
MG-NLR-3	25	-	-	-	-	-	-	-	-
MG-NLR-3	26	-	-	-	-	-	-	-	-
MG-NLR-3	27	-	-	-	-	-	-	-	-
MG-NLR-3	28	0.000022	0.25	0.00044	0.000044	0.00018	0.29	0.000044	0.029
MG-NLR-3	29	-	-	-	-	-	-	-	-
MG-NLR-3	30	-	-	-	-	-	-	-	-
MG-NLR-3	31	-	-	-	-	-	-	-	-
MG-NLR-3	32	0.000017	0.55	0.00074	0.000033	0.00020	0.90	0.000033	0.028
MG-NLR-3	33	-	-	-	-	-	-	-	-
MG-NLR-3	34	-	-	-	-	-	-	-	-
MG-NLR-3	35	-	-	-	-	-	-	-	-
MG-NLR-3	36	0.000022	0.36	0.00069	0.000043	0.00052	0.54	0.000043	0.021
MG-NLR-3	37	-	-	-	-	-	-	-	-
MG-NLR-3	38	-	-	-	-	-	-	-	-
MG-NLR-3	39	-	-	-	-	-	-	-	-
MG-NLR-3	40	0.000026	0.48	0.00072	0.000051	0.0020	0.95	0.000051	0.045
MG-NLR-3	41	-	-	-	-	-	-	-	-
MG-NLR-3	42	-	-	-	-	-	-	-	-
MG-NLR-3	43	-	-	-	-	-	-	-	-
MG-NLR-3	44	0.000047	0.17	0.00038	0.000047	0.0086	0.35	0.00038	0.017
MG-NLR-3	45	-	-	-	-	-	-	-	-
MG-NLR-3	46	-	-	-	-	-	-	-	-
MG-NLR-3	47	-	-	-	-	-	-	-	-
MG-NLR-3	48	0.000019	0.36	0.00060	0.000037	0.00030	0.99	0.000037	0.031
MG-NLR-3	49	-	-	-	-	-	-	-	-
MG-NLR-3	50	-	-	-	-	-	-	-	-
MG-NLR-3	51	-	-	-	-	-	-	-	-
MG-NLR-3	52	0.000015	0.32	0.00055	0.000030	0.00024	1.00	0.000030	0.032
MG-NLR-3	53	-	-	-	-	-	-	-	-
MG-NLR-3	54	-	-	-	-	-	-	-	-
MG-NLR-3	55	-	-	-	-	-	-	-	-
MG-NLR-3	56	0.000020	0.29	0.00074	0.000041	0.00057	1.1	0.000041	0.038
MG-NLR-3	57	-	-	-	-	-	-	-	-
MG-NLR-3	58	-	-	-	-	-	-	-	-
MG-NLR-3	59	-	-	-	-	-	-	-	-
MG-NLR-3	60	0.000016	0.21	0.00051	0.000032	0.00032	1.0	0.000032	0.028
MG-NLR-3	61	-	-	-	-	-	-	-	-
MG-NLR-3	62	-	-	-	-	-	-	-	-
MG-NLR-3	63	-	-	-	-	-	-	-	-
MG-NLR-3	64	0.000014	0.12	0.00033	0.000028	0.00039	0.65	0.000028	0.018

- Parameter not analyzed

Appendix E, Table E-5
MGNLR-4 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	pH	Specific Conductivity	Sulphate	Calcium	Magnesium	Acidity	Total Alkalinity	Chloride	Fluoride	Potassium	Sodium	Ammonia-N	Nitrate-N	Nitrite-N	Orthophosphate-P	Aluminum
		pH units	uS/cm	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-4	1	4.3	1970	1293	361	85	28	1.0	39	0.35	19	19	0.51	0.0046	0.0047	-	0.15
MG-NLR-4	2	4.5	333	83	23	3.7	15	0.55	-	-	-	-	-	-	-	-	-
MG-NLR-4	3	4.6	198	55	15	2.4	19	0.70	-	-	-	-	-	-	-	-	-
MG-NLR-4	4	4.5	144	33	8.9	1.5	6.4	0.64	0.064	0.077	3.1	0.26	0.0032	0.0029	0.0029	0.0064	0.056
MG-NLR-4	5	5.4	15	4.7	1.5	3.3	11	1.1	-	-	-	-	-	-	-	-	-
MG-NLR-4	6	4.6	151	20	5.0	1.1	3.3	0.33	-	-	-	-	-	-	-	-	-
MG-NLR-4	7	4.4	200	31	8.0	1.5	4.0	0.40	-	-	-	-	-	-	-	-	-
MG-NLR-4	8	4.6	125	61	16	3.1	35	1.2	0.96	0.22	5.4	0.60	0.0060	0.0054	0.0055	0.54	0.13
MG-NLR-4	9	4.5	118	5.1	1.3	0.26	3.4	0.12	-	-	-	-	-	-	-	-	-
MG-NLR-4	10	4.4	130	27	6.8	1.4	16	0.57	-	-	-	-	-	-	-	-	-
MG-NLR-4	11	4.5	101	10	2.3	0.50	7.7	0.27	-	-	-	-	-	-	-	-	-
MG-NLR-4	12	4.7	48	9.0	2.1	0.51	2.3	0.56	0.056	0.084	1.2	0.17	0.028	0.011	0.0026	0.011	0.044
MG-NLR-4	13	4.6	43	1.6	0.33	0.083	0.41	0.10	-	-	-	-	-	-	-	-	-
MG-NLR-4	14	4.5	66	11	2.5	0.57	1.9	0.48	-	-	-	-	-	-	-	-	-
MG-NLR-4	15	4.6	72	2.3	0.51	0.12	0.37	0.091	-	-	-	-	-	-	-	-	-
MG-NLR-4	16	4.6	49	17	3.8	0.95	11	1.1	0.11	0.15	1.8	0.32	0.0053	0.0047	0.0048	0.063	0.061
MG-NLR-4	17	4.6	48	7.5	1.6	0.47	4.7	0.47	-	-	-	-	-	-	-	-	-
MG-NLR-4	18	4.5	66	11	2.4	0.61	4.7	0.47	-	-	-	-	-	-	-	-	-
MG-NLR-4	19	4.5	62	9.5	2.2	0.54	4.5	0.45	-	-	-	-	-	-	-	-	-
MG-NLR-4	20	4.9	18	6.7	1.5	0.59	6.9	0.99	0.049	0.099	0.89	0.20	0.0049	0.0044	0.0045	0.0099	0.023
MG-NLR-4	21	4.7	34	4.3	0.96	0.25	2.5	0.36	-	-	-	-	-	-	-	-	-
MG-NLR-4	22	4.4	102	17	4.0	1.0	3.3	0.47	-	-	-	-	-	-	-	-	-
MG-NLR-4	23	5.0	6.0	1.3	0.33	0.80	3.3	0.47	-	-	-	-	-	-	-	-	-
MG-NLR-4	24	4.8	24	8.6	1.9	1.4	5.3	1.1	0.11	0.053	1.2	0.11	0.085	0.0048	0.0048	0.064	0.075
MG-NLR-4	25	4.6	51	7.7	1.7	0.58	2.4	0.48	-	-	-	-	-	-	-	-	-
MG-NLR-4	26	4.4	80	14	3.0	0.85	2.6	0.53	-	-	-	-	-	-	-	-	-
MG-NLR-4	27	4.6	34	3.5	0.77	0.33	2.0	0.41	-	-	-	-	-	-	-	-	-
MG-NLR-4	28	4.2	161	53	12	3.5	17	0.83	0.25	0.17	2.0	0.33	0.33	0.037	0.0038	0.12	0.23
MG-NLR-4	29	4.1	169	37	8.6	2.3	12	0.62	-	-	-	-	-	-	-	-	-
MG-NLR-4	30	4.2	183	36	7.6	2.3	11	0.55	-	-	-	-	-	-	-	-	-
MG-NLR-4	31	4.9	12	2.3	0.49	0.65	11	0.54	-	-	-	-	-	-	-	-	-
MG-NLR-4	32	4.2	209	67	15	4.6	19	0.87	0.26	0.19	2.3	0.43	0.087	0.039	0.0039	0.017	0.70
MG-NLR-4	33	4.0	219	33	7.2	2.2	8.9	0.40	-	-	-	-	-	-	-	-	-
MG-NLR-4	34	4.5	206	41	8.7	2.6	12	0.55	-	-	-	-	-	-	-	-	-
MG-NLR-4	35	4.0	179	37	7.2	2.3	13	0.60	-	-	-	-	-	-	-	-	-
MG-NLR-4	36	4.7	56	19	3.7	1.1	11	1.0	0.10	0.11	0.94	0.10	0.0052	0.047	0.0047	0.042	0.51
MG-NLR-4	37	4.1	92	12	2.3	0.70	4.3	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-4	38	4.5	136	19	3.8	1.2	4.6	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-4	39	3.9	214	43	8.2	2.7	6.4	0.59	-	-	-	-	-	-	-	-	-
MG-NLR-4	40	4.0	167	53	10	3.5	26	0.86	0.043	0.18	1.8	0.17	0.43	0.039	0.0039	0.017	0.44
MG-NLR-4	41	4.0	176	25	4.5	1.5	12	0.41	-	-	-	-	-	-	-	-	-
MG-NLR-4	42	4.2	102	10	1.8	0.60	11	0.36	-	-	-	-	-	-	-	-	-
MG-NLR-4	43	4.7	6.0	1.3	0.26	0.74	16	0.53	-	-	-	-	-	-	-	-	-
MG-NLR-4	44	4.1	179	57	9.9	3.6	26	0.90	0.27	0.32	2.0	0.36	0.45	0.040	0.0041	0.0045	0.78
MG-NLR-4	45	4.0	173	27	4.5	1.7	13	0.45	-	-	-	-	-	-	-	-	-
MG-NLR-4	46	3.8	150	21	3.6	1.3	12	0.41	-	-	-	-	-	-	-	-	-
MG-NLR-4	47	3.8	161	25	4.1	1.5	13	0.45	-	-	-	-	-	-	-	-	-
MG-NLR-4	48	4.0	161	40	6.7	2.6	20	0.70	0.070	0.24	1.4	0.14	0.035	0.14	0.0032	0.035	0.31
MG-NLR-4	49	4.0	190	24	3.8	1.5	11	0.40	-	-	-	-	-	-	-	-	-
MG-NLR-4	50	3.9	171	24	3.7	1.5	12	0.45	-	-	-	-	-	-	-	-	-
MG-NLR-4	51	3.8	185	24	3.9	1.5	9.8	0.35	-	-	-	-	-	-	-	-	-
MG-NLR-4	52	4.0	161	32	4.8	2.0	18	0.60	0.060	0.18	1.1	0.18	0.30	0.027	0.0027	0.030	0.29
MG-NLR-4	53	3.9	186	28	4.2	1.8	13	0.45	-	-	-	-	-	-	-	-	-
MG-NLR-4	54	3.9	175	22	3.1	1.4	11	0.36	-	-	-	-	-	-	-	-	-
MG-NLR-4	55	3.9	168	29	4.1	1.8	15	0.51	-	-	-	-	-	-	-	-	-
MG-NLR-4	56	4.1	131	27	3.8	1.7	16	0.65	0.032	0.19	0.97	0.13	0.32	0.029	0.0029	0.013	0.37
MG-NLR-4	57	3.9	148	18	2.5	1.1	10.0	0.42	-	-	-	-	-	-	-	-	-
MG-NLR-4	58	4.0	148	18	2.4	1.1	9.3	0.39	-	-	-	-	-	-	-	-	-
MG-NLR-4	59	3.9	159	18	2.4	1.1	8.2	0.34	-	-	-	-	-	-	-	-	-
MG-NLR-4	60	3.7	147	28	3.5	1.7	18	0.67	0.034	0.18	1.0	0.067	0.034	0.030	0.0031	0.0067	0.31
MG-NLR-4	61	3.9	150	18	2.2	1.0	11	0.40	-	-	-	-	-	-	-	-	-
MG-NLR-4	62	3.8	144	24	2.7	1.2	13	0.50	-	-	-	-	-	-	-	-	-
MG-NLR-4	63	3.9	144	19	2.1	1.0	11	0.40	-	-	-	-	-	-	-	-	-
MG-NLR-4	64	3.9	113	26	2.9	1.5	20	0.76	0.038	0.098	0.91	0.076	0.038	0.034	0.0034	0.015	0.29

- Parameter not analyzed

Cell Identification	Cycle	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-4	1	0.00072	0.0096	0.069	0.00021	1.2	0.00031	0.00026	0.73	0.53	0.12	2.5	0.10	0.0000051	0.00051	0.58	0.10
MG-NLR-4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	4	0.00038	0.0040	0.096	0.000032	0.38	0.000026	0.00016	0.077	0.11	0.024	2.0	0.0077	0.0000026	0.00013	0.059	0.031
MG-NLR-4	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	8	0.00072	0.0095	0.19	0.000060	0.88	0.000048	0.00030	0.18	0.34	0.082	5.3	0.014	0.0000072	0.00012	0.12	0.059
MG-NLR-4	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	12	0.00039	0.0035	0.079	0.000028	0.24	0.000011	0.00014	0.038	0.090	0.019	1.2	0.0032	0.0000023	0.00011	0.028	0.019
MG-NLR-4	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	16	0.00084	0.0057	0.15	0.000053	0.36	0.000021	0.00026	0.059	0.14	0.031	1.9	0.0046	0.0000042	0.00011	0.042	0.035
MG-NLR-4	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	20	0.00049	0.0027	0.059	0.000049	0.089	0.0000049	0.00025	0.024	0.057	0.013	0.76	0.0020	0.0000089	0.00020	0.017	0.016
MG-NLR-4	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	24	0.00043	0.0023	0.083	0.000053	0.085	0.000021	0.00075	0.047	0.15	0.058	1.4	0.0038	0.0000043	0.00075	0.033	0.017
MG-NLR-4	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	28	0.00033	0.0029	0.076	0.00017	0.33	0.000083	0.00021	0.22	0.92	0.32	5.1	0.016	0.00000042	0.000083	0.15	0.050
MG-NLR-4	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	32	0.00061	0.0095	0.10	0.00017	0.31	0.000069	0.00069	0.18	0.73	0.55	5.3	0.016	0.000049	0.070	0.12	0.043
MG-NLR-4	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	36	0.00052	0.0047	0.070	0.00010	0.13	0.000031	0.00063	0.094	0.56	0.35	3.1	0.0067	0.0000010	0.014	0.065	0.020
MG-NLR-4	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	40	0.00043	0.0037	0.050	0.00035	0.36	0.00014	0.00022	0.30	2.3	0.94	8.0	0.021	0.0000017	0.0041	0.21	0.050
MG-NLR-4	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	44	0.00063	0.015	0.075	0.00018	0.13	0.000036	0.00099	0.099	0.94	1.2	4.5	0.0076	0.0000027	0.097	0.071	0.035
MG-NLR-4	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	48	0.00042	0.0024	0.045	0.00028	0.22	0.000091	0.00017	0.18	1.8	0.77	4.7	0.012	0.0000007	0.0011	0.12	0.045
MG-NLR-4	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	52	0.00024	0.0021	0.042	0.00030	0.17	0.000090	0.00015	0.16	2.1	0.85	4.3	0.010	0.0000048	0.000030	0.11	0.035
MG-NLR-4	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	56	0.00026	0.0026	0.060	0.00032	0.19	0.00010	0.00016	0.18	2.7	1.1	5.7	0.012	0.0000019	0.00032	0.13	0.041
MG-NLR-4	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	60	0.00020	0.0022	0.053	0.00027	0.11	0.000088	0.00017	0.15	2.6	1.0	5.1	0.0094	0.0000054	0.00034	0.10	0.036
MG-NLR-4	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MG-NLR-4	64	0.00023	0.0020	0.068	0.00030	0.11	0.000083	0.00019	0.12	2.5	1.1	5.3	0.0076	0.00000038	0.00015	0.088	0.036

- Parameter not analyzed

Appendix E, Table E-5
MGNLR-4 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
MG-NLR-4	1	0.000026	0.89	0.0049	0.000051	0.00031	1.1	0.00021	0.028
MG-NLR-4	2	-	-	-	-	-	-	-	-
MG-NLR-4	3	-	-	-	-	-	-	-	-
MG-NLR-4	4	0.000016	0.36	0.0012	0.000032	0.00051	0.14	0.00013	0.013
MG-NLR-4	5	-	-	-	-	-	-	-	-
MG-NLR-4	6	-	-	-	-	-	-	-	-
MG-NLR-4	7	-	-	-	-	-	-	-	-
MG-NLR-4	8	0.000030	0.76	0.0022	0.000060	0.00012	0.40	0.000060	0.016
MG-NLR-4	9	-	-	-	-	-	-	-	-
MG-NLR-4	10	-	-	-	-	-	-	-	-
MG-NLR-4	11	-	-	-	-	-	-	-	-
MG-NLR-4	12	0.000014	0.18	0.00056	0.000028	0.00056	0.11	0.000028	0.016
MG-NLR-4	13	-	-	-	-	-	-	-	-
MG-NLR-4	14	-	-	-	-	-	-	-	-
MG-NLR-4	15	-	-	-	-	-	-	-	-
MG-NLR-4	16	0.000026	0.27	0.00095	0.000053	0.00011	0.15	0.000053	0.041
MG-NLR-4	17	-	-	-	-	-	-	-	-
MG-NLR-4	18	-	-	-	-	-	-	-	-
MG-NLR-4	19	-	-	-	-	-	-	-	-
MG-NLR-4	20	0.000025	0.11	0.00040	0.000049	0.00030	0.050	0.000049	0.018
MG-NLR-4	21	-	-	-	-	-	-	-	-
MG-NLR-4	22	-	-	-	-	-	-	-	-
MG-NLR-4	23	-	-	-	-	-	-	-	-
MG-NLR-4	24	0.000027	0.17	0.00032	0.000053	0.0026	0.11	0.000053	0.030
MG-NLR-4	25	-	-	-	-	-	-	-	-
MG-NLR-4	26	-	-	-	-	-	-	-	-
MG-NLR-4	27	-	-	-	-	-	-	-	-
MG-NLR-4	28	0.000021	0.64	0.00083	0.000042	0.00075	0.48	0.000042	0.100
MG-NLR-4	29	-	-	-	-	-	-	-	-
MG-NLR-4	30	-	-	-	-	-	-	-	-
MG-NLR-4	31	-	-	-	-	-	-	-	-
MG-NLR-4	32	0.00011	0.52	0.0011	0.000043	0.037	2.4	0.0025	0.030
MG-NLR-4	33	-	-	-	-	-	-	-	-
MG-NLR-4	34	-	-	-	-	-	-	-	-
MG-NLR-4	35	-	-	-	-	-	-	-	-
MG-NLR-4	36	0.000052	0.29	0.00063	0.000052	0.032	0.36	0.0020	0.014
MG-NLR-4	37	-	-	-	-	-	-	-	-
MG-NLR-4	38	-	-	-	-	-	-	-	-
MG-NLR-4	39	-	-	-	-	-	-	-	-
MG-NLR-4	40	0.000022	0.82	0.0010	0.000043	0.0030	1.5	0.00017	0.045
MG-NLR-4	41	-	-	-	-	-	-	-	-
MG-NLR-4	42	-	-	-	-	-	-	-	-
MG-NLR-4	43	-	-	-	-	-	-	-	-
MG-NLR-4	44	0.000081	0.26	0.00081	0.000045	0.039	0.70	0.0042	0.024
MG-NLR-4	45	-	-	-	-	-	-	-	-
MG-NLR-4	46	-	-	-	-	-	-	-	-
MG-NLR-4	47	-	-	-	-	-	-	-	-
MG-NLR-4	48	0.000017	0.40	0.00063	0.000035	0.00091	1.1	0.000035	0.027
MG-NLR-4	49	-	-	-	-	-	-	-	-
MG-NLR-4	50	-	-	-	-	-	-	-	-
MG-NLR-4	51	-	-	-	-	-	-	-	-
MG-NLR-4	52	0.000015	0.37	0.00060	0.000030	0.00024	1.2	0.000030	0.030
MG-NLR-4	53	-	-	-	-	-	-	-	-
MG-NLR-4	54	-	-	-	-	-	-	-	-
MG-NLR-4	55	-	-	-	-	-	-	-	-
MG-NLR-4	56	0.000016	0.36	0.00071	0.000032	0.00097	1.5	0.000032	0.033
MG-NLR-4	57	-	-	-	-	-	-	-	-
MG-NLR-4	58	-	-	-	-	-	-	-	-
MG-NLR-4	59	-	-	-	-	-	-	-	-
MG-NLR-4	60	0.000017	0.26	0.00054	0.000034	0.00054	1.3	0.000034	0.030
MG-NLR-4	61	-	-	-	-	-	-	-	-
MG-NLR-4	62	-	-	-	-	-	-	-	-
MG-NLR-4	63	-	-	-	-	-	-	-	-
MG-NLR-4	64	0.000019	0.22	0.00053	0.000038	0.00060	1.3	0.000038	0.026

- Parameter not analyzed

Appendix E, Table E-6
HGNLR-1 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	pH	Specific Conductivity	Sulphate	Calcium	Magnesium	Acidity	Total Alkalinity	Chloride	Fluoride	Potassium	Sodium	Ammonia-N	Nitrate-N	Nitrite-N	Orthophosphate-P	Aluminum
		pH units	uS/cm	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-1	1	5.3	3130	2554	620	222	36	3.3	69	1.3	16	19	0.25	0.0050	0.0051	0.0089	0.14
HG-NLR-1	2	5.6	2150	240	90	5.3	5.5	0.52	-	-	-	-	-	-	-	-	-
HG-NLR-1	3	5.2	1600	979	406	5.1	33	3.1	-	-	-	-	-	-	-	-	-
HG-NLR-1	4	5.2	1450	889	373	3.3	12	1.1	4.2	0.75	4.4	0.53	0.0053	0.0048	0.0048	0.011	0.11
HG-NLR-1	5	5.5	1310	729	306	2.4	11	0.99	-	-	-	-	-	-	-	-	-
HG-NLR-1	6	5.2	1520	491	203	1.2	5.9	0.54	-	-	-	-	-	-	-	-	-
HG-NLR-1	7	5.5	1550	530	221	0.90	6.2	0.56	-	-	-	-	-	-	-	-	-
HG-NLR-1	8	5.3	1710	1131	466	1.6	22	1.1	4.4	0.95	4.7	0.67	0.0055	0.013	0.0050	0.0055	0.13
HG-NLR-1	9	5.1	1170	145	61	0.11	4.5	0.22	-	-	-	-	-	-	-	-	-
HG-NLR-1	10	5.5	1260	337	141	0.28	9.5	0.47	-	-	-	-	-	-	-	-	-
HG-NLR-1	11	5.2	1170	219	91	0.20	6.7	0.34	-	-	-	-	-	-	-	-	-
HG-NLR-1	12	5.3	1170	619	255	0.49	12	2.0	2.9	0.69	2.6	0.29	0.020	0.0044	0.0045	0.020	0.13
HG-NLR-1	13	5.3	1290	443	182	0.30	7.2	1.2	-	-	-	-	-	-	-	-	-
HG-NLR-1	14	5.0	987	216	90	0.16	4.7	0.79	-	-	-	-	-	-	-	-	-
HG-NLR-1	15	5.4	1170	319	132	0.20	6.0	1.00	-	-	-	-	-	-	-	-	-
HG-NLR-1	16	5.2	838	475	197	0.23	17	1.2	2.3	0.85	2.4	0.46	0.081	0.0052	0.0053	0.0058	0.21
HG-NLR-1	17	5.0	644	152	63	0.098	7.4	0.49	-	-	-	-	-	-	-	-	-
HG-NLR-1	18	5.0	510	128	54	0.099	7.4	0.49	-	-	-	-	-	-	-	-	-
HG-NLR-1	19	5.1	335	75	31	0.099	7.5	0.50	-	-	-	-	-	-	-	-	-
HG-NLR-1	20	5.1	231	128	52	0.13	15	1.3	0.064	0.89	1.9	0.38	0.026	0.0057	0.0058	0.038	0.22
HG-NLR-1	21	5.5	242	49	19	0.098	5.9	0.49	-	-	-	-	-	-	-	-	-
HG-NLR-1	22	5.4	157	34	12	0.099	5.9	0.49	-	-	-	-	-	-	-	-	-
HG-NLR-1	23	4.9	161	34	12	0.098	5.9	0.49	-	-	-	-	-	-	-	-	-
HG-NLR-1	24	5.1	110	60	21	0.23	14	1.2	0.23	0.91	2.0	0.35	0.16	0.052	0.0053	0.0058	0.28
HG-NLR-1	25	5.1	97	14	4.7	0.078	4.7	0.39	-	-	-	-	-	-	-	-	-
HG-NLR-1	26	5.3	94	22	6.7	0.17	6.7	0.55	-	-	-	-	-	-	-	-	-
HG-NLR-1	27	4.9	114	23	6.9	0.098	5.9	0.49	-	-	-	-	-	-	-	-	-
HG-NLR-1	28	5.0	122	38	12	0.24	16	0.79	0.16	0.53	1.3	0.24	0.39	0.035	0.0036	0.0039	0.20
HG-NLR-1	29	4.7	134	30	9.2	0.15	11	0.51	-	-	-	-	-	-	-	-	-
HG-NLR-1	30	4.8	132	23	7.3	0.12	8.5	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-1	31	4.8	146	44	14	0.21	15	0.70	-	-	-	-	-	-	-	-	-
HG-NLR-1	32	4.6	133	56	18	0.29	19	3.9	0.19	0.63	1.9	0.29	0.39	0.044	0.0044	0.0049	0.40
HG-NLR-1	33	5.0	146	22	6.6	0.13	8.8	1.8	-	-	-	-	-	-	-	-	-
HG-NLR-1	34	5.2	111	23	6.2	0.14	9.6	1.9	-	-	-	-	-	-	-	-	-
HG-NLR-1	35	4.7	113	23	6.3	0.14	9.6	1.9	-	-	-	-	-	-	-	-	-
HG-NLR-1	36	5.1	107	31	8.7	0.20	13	1.3	0.27	0.55	1.1	0.13	0.033	0.030	0.0030	0.0033	0.25
HG-NLR-1	37	4.6	113	22	6.5	0.14	8.9	0.93	-	-	-	-	-	-	-	-	-
HG-NLR-1	38	4.7	128	24	6.7	0.17	8.0	0.84	-	-	-	-	-	-	-	-	-
HG-NLR-1	39	4.6	115	25	6.7	0.15	9.8	1.0	-	-	-	-	-	-	-	-	-
HG-NLR-1	40	4.8	109	29	8.3	0.17	14	0.85	0.043	0.51	1.2	0.26	0.43	0.038	0.0039	0.017	0.30
HG-NLR-1	41	6.0	100	18	4.9	0.13	7.6	0.45	-	-	-	-	-	-	-	-	-
HG-NLR-1	42	4.6	112	17	4.4	0.12	6.9	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-1	43	4.7	110	16	4.6	0.14	6.1	0.36	-	-	-	-	-	-	-	-	-
HG-NLR-1	44	4.6	109	33	8.6	0.34	19	0.86	0.086	0.61	1.5	0.17	0.43	0.039	0.0039	0.0043	0.29
HG-NLR-1	45	4.6	105	15	4.2	0.12	8.4	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-1	46	4.4	112	20	5.6	0.19	10	0.46	-	-	-	-	-	-	-	-	-
HG-NLR-1	47	4.6	110	18	4.5	0.16	9.0	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-1	48	4.5	115	36	10	0.30	16	0.75	0.45	0.53	1.4	0.37	0.037	0.14	0.0034	0.022	0.28
HG-NLR-1	49	4.5	108	13	3.2	0.13	6.8	0.32	-	-	-	-	-	-	-	-	-
HG-NLR-1	50	4.5	123	17	4.6	0.15	8.0	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-1	51	4.5	107	17	4.6	0.19	8.0	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-1	52	4.6	109	28	7.8	0.28	21	0.71	0.035	0.45	1.1	0.28	0.35	0.032	0.0032	0.0071	0.23
HG-NLR-1	53	4.4	98	16	3.9	0.16	12	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-1	54	4.6	103	13	3.3	0.13	9.6	0.33	-	-	-	-	-	-	-	-	-
HG-NLR-1	55	4.6	100	17	4.3	0.18	13	0.46	-	-	-	-	-	-	-	-	-
HG-NLR-1	56	4.6	78	28	7.3	0.31	19	0.78	0.078	0.40	1.1	0.23	0.039	0.035	0.0035	0.016	0.24
HG-NLR-1	57	4.3	101	10	2.7	0.13	8.0	0.33	-	-	-	-	-	-	-	-	-
HG-NLR-1	58	4.5	99	13	3.4	0.15	8.7	0.36	-	-	-	-	-	-	-	-	-
HG-NLR-1	59	4.4	95	12	3.1	0.17	8.1	0.34	-	-	-	-	-	-	-	-	-
HG-NLR-1	60	4.4	97	18	4.5	0.21	13	0.70	0.035	0.042	0.77	0.035	0.035	0.032	0.0032	0.0035	0.23
HG-NLR-1	61	4.4	89	12	2.9	0.15	7.2	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-1	62	4.6	91	14	3.3	0.15	7.2	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-1	63	4.4	90	15	3.7	0.18	8.4	0.44	-	-	-	-	-	-	-	-	-
HG-NLR-1	64	4.7	69	19	4.7	0.23	11	0.77	0.039	0.22	0.77	0.077	0.039	0.035	0.0035	0.0077	0.23

- Parameter not analyzed

Appendix E, Table E-6
HGNLR-1 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-1	1	0.0011	0.036	0.0028	0.00056	2.5	0.0017	0.0028	3.3	0.23	0.014	4.9	2.8	0.0000022	0.0089	3.0	0.29
HG-NLR-1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	4	0.00074	0.0086	0.13	0.000053	0.88	0.0013	0.00026	0.17	0.38	0.046	3.6	0.018	0.0000032	0.00021	0.13	0.063
HG-NLR-1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	8	0.00067	0.014	0.018	0.000055	0.57	0.00027	0.00028	0.86	0.11	0.011	3.9	0.11	0.0000044	0.0045	0.52	0.058
HG-NLR-1	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	12	0.00049	0.0078	0.026	0.000049	0.53	0.00011	0.00025	0.43	0.092	0.011	2.8	0.048	0.0000039	0.0030	0.26	0.046
HG-NLR-1	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	16	0.00046	0.0075	0.044	0.000058	0.50	0.000058	0.00029	0.31	0.11	0.013	3.0	0.028	0.0000058	0.0025	0.17	0.047
HG-NLR-1	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	20	0.00038	0.0032	0.089	0.000064	0.38	0.000026	0.00032	0.15	0.078	0.0086	2.9	0.015	0.0000038	0.0014	0.087	0.042
HG-NLR-1	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	24	0.00035	0.0025	0.12	0.000058	0.37	0.000035	0.00029	0.16	0.091	0.0096	4.2	0.016	0.0000058	0.00081	0.089	0.038
HG-NLR-1	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	28	0.00024	0.0018	0.094	0.000039	0.32	0.000024	0.00020	0.14	0.086	0.0086	3.3	0.013	0.00000039	0.00047	0.076	0.036
HG-NLR-1	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	32	0.00029	0.0028	0.16	0.000049	0.44	0.000049	0.00024	0.23	0.18	0.024	6.0	0.023	0.0000019	0.0012	0.13	0.045
HG-NLR-1	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	36	0.00013	0.0019	0.093	0.000033	0.21	0.000020	0.00017	0.15	0.13	0.023	4.1	0.015	0.00000033	0.0011	0.088	0.027
HG-NLR-1	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	40	0.000085	0.0026	0.13	0.000043	0.32	0.000034	0.00021	0.20	0.20	0.031	6.3	0.020	0.0000017	0.00051	0.12	0.039
HG-NLR-1	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	44	0.00017	0.0028	0.13	0.000043	0.28	0.000043	0.00022	0.22	0.24	0.040	7.1	0.022	0.00000043	0.00052	0.13	0.037
HG-NLR-1	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	48	0.00022	0.0025	0.11	0.000075	0.25	0.000037	0.00019	0.19	0.25	0.074	6.7	0.020	0.0000030	0.0020	0.12	0.031
HG-NLR-1	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	52	0.00014	0.0024	0.099	0.000071	0.22	0.000043	0.00018	0.19	0.30	0.062	6.7	0.018	0.0000057	0.00021	0.12	0.028
HG-NLR-1	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	56	0.000078	0.0024	0.10	0.000078	0.21	0.000023	0.00019	0.20	0.31	0.063	6.9	0.019	0.0000031	0.00039	0.12	0.032
HG-NLR-1	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	60	0.000070	0.0022	0.11	0.000070	0.16	0.000028	0.00018	0.20	0.34	0.070	7.0	0.019	0.0000035	0.00021	0.12	0.025
HG-NLR-1	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-1	64	0.000077	0.0023	0.12	0.000077	0.14	0.000039	0.00019	0.20	0.40	0.085	7.6	0.019	0.0000023	0.00093	0.12	0.024

- Parameter not analyzed

Appendix E, Table E-6
HGNLR-1 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-1	1	0.00028	0.43	0.0078	0.00056	0.0011	17	0.00056	0.096
HG-NLR-1	2	-	-	-	-	-	-	-	-
HG-NLR-1	3	-	-	-	-	-	-	-	-
HG-NLR-1	4	0.000026	0.76	0.0028	0.000053	0.00032	0.35	0.00021	0.088
HG-NLR-1	5	-	-	-	-	-	-	-	-
HG-NLR-1	6	-	-	-	-	-	-	-	-
HG-NLR-1	7	-	-	-	-	-	-	-	-
HG-NLR-1	8	0.000028	0.79	0.0025	0.000055	0.00033	11	0.000055	0.031
HG-NLR-1	9	-	-	-	-	-	-	-	-
HG-NLR-1	10	-	-	-	-	-	-	-	-
HG-NLR-1	11	-	-	-	-	-	-	-	-
HG-NLR-1	12	0.000025	0.61	0.0016	0.000049	0.00020	8.3	0.000049	0.026
HG-NLR-1	13	-	-	-	-	-	-	-	-
HG-NLR-1	14	-	-	-	-	-	-	-	-
HG-NLR-1	15	-	-	-	-	-	-	-	-
HG-NLR-1	16	0.000029	0.68	0.0016	0.000058	0.00012	9.0	0.000058	0.030
HG-NLR-1	17	-	-	-	-	-	-	-	-
HG-NLR-1	18	-	-	-	-	-	-	-	-
HG-NLR-1	19	-	-	-	-	-	-	-	-
HG-NLR-1	20	0.000032	0.46	0.0013	0.000064	0.00013	4.7	0.000064	0.026
HG-NLR-1	21	-	-	-	-	-	-	-	-
HG-NLR-1	22	-	-	-	-	-	-	-	-
HG-NLR-1	23	-	-	-	-	-	-	-	-
HG-NLR-1	24	0.000029	0.43	0.0014	0.000058	0.00012	4.5	0.000058	0.034
HG-NLR-1	25	-	-	-	-	-	-	-	-
HG-NLR-1	26	-	-	-	-	-	-	-	-
HG-NLR-1	27	-	-	-	-	-	-	-	-
HG-NLR-1	28	0.000020	0.29	0.00086	0.000039	0.000079	3.5	0.000039	0.017
HG-NLR-1	29	-	-	-	-	-	-	-	-
HG-NLR-1	30	-	-	-	-	-	-	-	-
HG-NLR-1	31	-	-	-	-	-	-	-	-
HG-NLR-1	32	0.000024	0.51	0.0016	0.000049	0.0012	6.4	0.000049	0.0076
HG-NLR-1	33	-	-	-	-	-	-	-	-
HG-NLR-1	34	-	-	-	-	-	-	-	-
HG-NLR-1	35	-	-	-	-	-	-	-	-
HG-NLR-1	36	0.000017	0.31	0.00093	0.000033	0.0015	4.1	0.000033	0.0039
HG-NLR-1	37	-	-	-	-	-	-	-	-
HG-NLR-1	38	-	-	-	-	-	-	-	-
HG-NLR-1	39	-	-	-	-	-	-	-	-
HG-NLR-1	40	0.000021	0.39	0.0013	0.000043	0.00043	5.9	0.000043	0.0094
HG-NLR-1	41	-	-	-	-	-	-	-	-
HG-NLR-1	42	-	-	-	-	-	-	-	-
HG-NLR-1	43	-	-	-	-	-	-	-	-
HG-NLR-1	44	0.000022	0.40	0.0013	0.000043	0.00026	6.7	0.000043	0.014
HG-NLR-1	45	-	-	-	-	-	-	-	-
HG-NLR-1	46	-	-	-	-	-	-	-	-
HG-NLR-1	47	-	-	-	-	-	-	-	-
HG-NLR-1	48	0.000019	0.34	0.0011	0.000037	0.0028	6.5	0.000037	0.0090
HG-NLR-1	49	-	-	-	-	-	-	-	-
HG-NLR-1	50	-	-	-	-	-	-	-	-
HG-NLR-1	51	-	-	-	-	-	-	-	-
HG-NLR-1	52	0.000018	0.34	0.0011	0.000035	0.000071	6.7	0.000035	0.0085
HG-NLR-1	53	-	-	-	-	-	-	-	-
HG-NLR-1	54	-	-	-	-	-	-	-	-
HG-NLR-1	55	-	-	-	-	-	-	-	-
HG-NLR-1	56	0.000019	0.30	0.00094	0.000039	0.00039	7.1	0.000039	0.011
HG-NLR-1	57	-	-	-	-	-	-	-	-
HG-NLR-1	58	-	-	-	-	-	-	-	-
HG-NLR-1	59	-	-	-	-	-	-	-	-
HG-NLR-1	60	0.000018	0.28	0.00098	0.000035	0.00035	6.8	0.000035	0.0077
HG-NLR-1	61	-	-	-	-	-	-	-	-
HG-NLR-1	62	-	-	-	-	-	-	-	-
HG-NLR-1	63	-	-	-	-	-	-	-	-
HG-NLR-1	64	0.000019	0.29	0.00093	0.000039	0.0015	7.3	0.000039	0.0067

- Parameter not analyzed

Appendix E, Table E-7
HGNLR-2 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	pH	Specific Conductivity	Sulphate	Calcium	Magnesium	Acidity	Total Alkalinity	Chloride	Fluoride	Potassium	Sodium	Ammonia-N	Nitrate-N	Nitrite-N	Orthophosphate-P	Aluminum
		pH units	uS/cm	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-2	1	5.3	1620	1132	320	73	11	2.2	40	0.59	5.7	7.8	0.044	0.0050	0.0050	0.0089	0.031
HG-NLR-2	2	5.4	2370	1706	527	93	11	2.2	-	-	-	-	-	-	-	-	-
HG-NLR-2	3	5.3	2140	1497	509	58	11	2.1	-	-	-	-	-	-	-	-	-
HG-NLR-2	4	5.3	1780	1303	477	33	13	2.3	6.9	0.70	6.7	2.2	0.40	0.0051	0.0052	0.023	0.074
HG-NLR-2	5	5.5	1600	1040	416	18	12	2.1	-	-	-	-	-	-	-	-	-
HG-NLR-2	6	5.2	1520	445	173	5.9	5.4	0.98	-	-	-	-	-	-	-	-	-
HG-NLR-2	7	5.2	1440	401	159	4.3	5.1	0.93	-	-	-	-	-	-	-	-	-
HG-NLR-2	8	5.2	1530	956	380	8.8	21	1.1	5.4	0.85	4.8	0.64	0.0054	0.0048	0.0049	0.086	0.12
HG-NLR-2	9	4.6	93	9.9	2.3	0.44	5.9	0.29	-	-	-	-	-	-	-	-	-
HG-NLR-2	10	5.2	1480	429	175	2.1	9.9	0.49	-	-	-	-	-	-	-	-	-
HG-NLR-2	11	5.1	1450	250	104	0.96	6.0	0.30	-	-	-	-	-	-	-	-	-
HG-NLR-2	12	5.3	1470	966	384	2.0	20	1.2	3.5	1.0	4.4	0.35	0.0058	0.0052	0.0053	0.047	0.20
HG-NLR-2	13	5.1	1310	329	135	0.44	7.5	0.44	-	-	-	-	-	-	-	-	-
HG-NLR-2	14	5.1	1090	254	104	0.25	7.0	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-2	15	5.2	986	258	106	0.30	8.4	0.50	-	-	-	-	-	-	-	-	-
HG-NLR-2	16	5.1	834	504	208	0.48	20	1.2	3.6	0.82	2.9	0.36	0.060	0.0054	0.0055	0.060	0.20
HG-NLR-2	17	5.1	868	214	90	0.20	8.5	0.50	-	-	-	-	-	-	-	-	-
HG-NLR-2	18	5.1	680	203	78	0.19	8.2	0.48	-	-	-	-	-	-	-	-	-
HG-NLR-2	19	5.1	618	150	62	0.15	8.5	0.50	-	-	-	-	-	-	-	-	-
HG-NLR-2	20	5.2	461	306	124	0.84	24	1.4	4.2	1.2	3.5	0.84	0.056	0.0063	0.0063	0.042	0.60
HG-NLR-2	21	5.1	385	87	34	0.097	8.2	0.48	-	-	-	-	-	-	-	-	-
HG-NLR-2	22	5.1	323	74	29	0.099	8.4	0.49	-	-	-	-	-	-	-	-	-
HG-NLR-2	23	5.0	271	53	20	0.089	7.6	0.44	-	-	-	-	-	-	-	-	-
HG-NLR-2	24	5.1	183	97	36	0.36	14	1.2	0.24	0.88	2.4	0.36	0.14	0.0053	0.0054	0.048	0.32
HG-NLR-2	25	4.8	176	30	10	0.12	4.8	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-2	26	5.1	131	28	9.1	0.10	6.1	0.51	-	-	-	-	-	-	-	-	-
HG-NLR-2	27	4.9	149	26	8.7	0.087	5.2	0.43	-	-	-	-	-	-	-	-	-
HG-NLR-2	28	4.9	133	45	15	0.25	13	0.83	0.17	0.59	1.5	0.25	0.33	0.037	0.0038	0.0041	0.25
HG-NLR-2	29	4.9	134	26	8.5	0.13	7.2	0.45	-	-	-	-	-	-	-	-	-
HG-NLR-2	30	4.8	135	24	7.5	0.12	6.4	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-2	31	5.0	127	26	8.0	0.14	7.6	0.47	-	-	-	-	-	-	-	-	-
HG-NLR-2	32	5.0	112	34	10	0.37	9.7	0.74	0.15	0.56	1.4	0.22	0.15	0.033	0.0034	0.0037	0.32
HG-NLR-2	33	4.8	127	19	5.7	0.11	4.6	0.35	-	-	-	-	-	-	-	-	-
HG-NLR-2	34	5.3	118	23	6.6	0.14	6.1	0.47	-	-	-	-	-	-	-	-	-
HG-NLR-2	35	4.8	109	25	7.0	0.16	7.0	0.54	-	-	-	-	-	-	-	-	-
HG-NLR-2	36	5.1	100	35	10	0.26	15	0.86	0.34	0.65	1.4	0.17	0.086	0.039	0.0039	0.0043	0.39
HG-NLR-2	37	4.7	113	23	6.8	0.15	8.3	0.49	-	-	-	-	-	-	-	-	-
HG-NLR-2	38	4.8	124	26	7.0	0.19	7.9	0.47	-	-	-	-	-	-	-	-	-
HG-NLR-2	39	4.7	112	24	6.5	0.15	8.4	0.50	-	-	-	-	-	-	-	-	-
HG-NLR-2	40	4.8	106	26	7.7	0.18	17	0.89	0.044	0.52	1.2	0.18	0.44	0.040	0.0040	0.018	0.30
HG-NLR-2	41	5.2	100	16	4.3	0.12	7.4	0.39	-	-	-	-	-	-	-	-	-
HG-NLR-2	42	4.8	109	17	4.4	0.12	7.6	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-2	43	4.8	97	16	4.5	0.16	7.8	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-2	44	4.7	98	37	11	0.35	15	0.88	0.088	0.62	1.5	0.18	0.44	0.040	0.0040	0.0044	0.36
HG-NLR-2	45	4.8	96	14	4.2	0.11	6.5	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-2	46	4.4	97	17	4.9	0.18	7.5	0.44	-	-	-	-	-	-	-	-	-
HG-NLR-2	47	4.5	99	16	4.1	0.16	7.0	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-2	48	4.6	89	29	8.1	0.33	15	0.81	0.041	0.54	1.3	0.16	0.041	0.17	0.0037	0.0081	0.30
HG-NLR-2	49	4.6	107	12	3.2	0.13	6.1	0.32	-	-	-	-	-	-	-	-	-
HG-NLR-2	50	5.0	113	16	4.2	0.15	7.2	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-2	51	4.4	101	16	4.4	0.20	7.6	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-2	52	4.6	98	25	6.6	0.28	17	0.69	0.034	0.41	1.1	0.21	0.34	0.031	0.0031	0.0069	0.23
HG-NLR-2	53	4.8	98	16	4.1	0.16	10	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-2	54	4.7	86	11	3.2	0.097	8.1	0.32	-	-	-	-	-	-	-	-	-
HG-NLR-2	55	4.6	109	18	4.9	0.22	11	0.44	-	-	-	-	-	-	-	-	-
HG-NLR-2	56	4.6	97	27	7.3	0.37	16	0.75	0.075	0.46	1.0	0.22	0.037	0.034	0.0034	0.015	0.43
HG-NLR-2	57	4.6	95	13	3.5	0.15	8.5	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-2	58	4.5	94	16	4.1	0.18	9.9	0.45	-	-	-	-	-	-	-	-	-
HG-NLR-2	59	4.5	91	13	3.2	0.18	7.9	0.36	-	-	-	-	-	-	-	-	-
HG-NLR-2	60	4.3	102	19	4.9	0.36	16	0.71	0.036	0.18	0.86	0.071	0.036	0.032	0.0032	0.0036	0.33
HG-NLR-2	61	4.4	89	13	3.2	0.16	8.7	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-2	62	4.4	89	14	3.5	0.16	8.9	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-2	63	4.5	87	15	3.8	0.23	9.9	0.45	-	-	-	-	-	-	-	-	-
HG-NLR-2	64	4.5	69	20	5.0	0.32	11	0.80	0.040	0.13	0.88	0.080	0.040	0.036	0.0036	0.016	0.25

- Parameter not analyzed

HGNLR-2 HCT Mass Loading Results

Cell Identification	Cycle	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-2	1	0.00044	0.012	0.040	0.000055	1.2	0.00059	0.00028	1.1	0.065	0.0061	2.2	0.91	0.00000055	0.0050	0.95	0.20
HG-NLR-2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	4	0.00080	0.014	0.026	0.000057	0.59	0.00049	0.00029	0.93	0.083	0.0054	2.9	0.46	0.0000046	0.0064	0.76	0.045
HG-NLR-2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	8	0.00064	0.012	0.024	0.000054	0.54	0.00033	0.00027	0.87	0.099	0.0084	3.7	0.24	0.0000054	0.0042	0.60	0.048
HG-NLR-2	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	12	0.0012	0.013	0.023	0.00058	0.58	0.00023	0.0029	0.71	0.15	0.012	3.7	0.099	0.0000047	0.0047	0.45	0.044
HG-NLR-2	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	16	0.00048	0.0077	0.043	0.000060	0.46	0.000084	0.00030	0.38	0.12	0.012	3.1	0.038	0.0000048	0.0029	0.22	0.046
HG-NLR-2	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	20	0.00070	0.0057	0.084	0.00014	0.50	0.000056	0.00035	0.31	0.14	0.092	3.9	0.028	0.0000084	0.010	0.17	0.053
HG-NLR-2	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	24	0.00036	0.0031	0.10	0.000059	0.45	0.000036	0.00030	0.19	0.11	0.011	4.0	0.019	0.0000059	0.0012	0.11	0.048
HG-NLR-2	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	28	0.00017	0.0021	0.083	0.000041	0.33	0.000033	0.00021	0.16	0.099	0.0091	3.3	0.014	0.00000041	0.00050	0.083	0.035
HG-NLR-2	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	32	0.00022	0.0022	0.082	0.000037	0.25	0.000022	0.00019	0.13	0.10	0.026	3.6	0.013	0.0000045	0.0023	0.079	0.028
HG-NLR-2	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	36	0.00026	0.0027	0.094	0.000043	0.25	0.000026	0.00021	0.15	0.15	0.045	4.6	0.016	0.00000086	0.0036	0.094	0.031
HG-NLR-2	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	40	0.00018	0.0027	0.11	0.000044	0.31	0.000027	0.00022	0.20	0.18	0.032	6.2	0.018	0.0000018	0.0019	0.10	0.036
HG-NLR-2	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	44	0.00018	0.0032	0.12	0.000044	0.27	0.000035	0.00022	0.20	0.22	0.053	6.7	0.019	0.0000018	0.0032	0.12	0.034
HG-NLR-2	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	48	0.00024	0.0029	0.098	0.000081	0.24	0.000033	0.00020	0.19	0.23	0.064	6.5	0.018	0.0000041	0.0029	0.11	0.029
HG-NLR-2	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	52	0.00014	0.0023	0.069	0.000069	0.20	0.000041	0.00017	0.17	0.25	0.054	5.6	0.017	0.0000062	0.00041	0.10	0.025
HG-NLR-2	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	56	0.00045	0.0036	0.082	0.000075	0.20	0.000037	0.00019	0.20	0.30	0.13	6.8	0.020	0.0000097	0.018	0.12	0.029
HG-NLR-2	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	60	0.00021	0.0029	0.086	0.000071	0.16	0.000043	0.00018	0.20	0.33	0.11	6.7	0.019	0.000029	0.0064	0.12	0.024
HG-NLR-2	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-2	64	0.00016	0.0023	0.10	0.000080	0.14	0.000040	0.00020	0.18	0.36	0.088	7.2	0.018	0.0000008	0.00064	0.11	0.023

- Parameter not analyzed

Appendix E, Table E-7
HGNLR-2 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-2	1	0.000028	0.36	0.0028	0.000055	0.00044	4.7	0.000055	0.026
HG-NLR-2	2	-	-	-	-	-	-	-	-
HG-NLR-2	3	-	-	-	-	-	-	-	-
HG-NLR-2	4	0.000029	0.66	0.0030	0.000057	0.00034	7.3	0.000057	0.029
HG-NLR-2	5	-	-	-	-	-	-	-	-
HG-NLR-2	6	-	-	-	-	-	-	-	-
HG-NLR-2	7	-	-	-	-	-	-	-	-
HG-NLR-2	8	0.000027	0.66	0.0025	0.000054	0.00021	9.1	0.000054	0.016
HG-NLR-2	9	-	-	-	-	-	-	-	-
HG-NLR-2	10	-	-	-	-	-	-	-	-
HG-NLR-2	11	-	-	-	-	-	-	-	-
HG-NLR-2	12	0.00029	0.78	0.0023	0.00058	0.0012	13	0.00058	0.022
HG-NLR-2	13	-	-	-	-	-	-	-	-
HG-NLR-2	14	-	-	-	-	-	-	-	-
HG-NLR-2	15	-	-	-	-	-	-	-	-
HG-NLR-2	16	0.000030	0.67	0.0017	0.000060	0.00012	9.1	0.000060	0.018
HG-NLR-2	17	-	-	-	-	-	-	-	-
HG-NLR-2	18	-	-	-	-	-	-	-	-
HG-NLR-2	19	-	-	-	-	-	-	-	-
HG-NLR-2	20	0.000035	0.65	0.0018	0.000070	0.013	8.1	0.0013	0.017
HG-NLR-2	21	-	-	-	-	-	-	-	-
HG-NLR-2	22	-	-	-	-	-	-	-	-
HG-NLR-2	23	-	-	-	-	-	-	-	-
HG-NLR-2	24	0.000030	0.49	0.0015	0.000059	0.00012	5.4	0.000059	0.0094
HG-NLR-2	25	-	-	-	-	-	-	-	-
HG-NLR-2	26	-	-	-	-	-	-	-	-
HG-NLR-2	27	-	-	-	-	-	-	-	-
HG-NLR-2	28	0.000021	0.31	0.00099	0.000041	0.00017	3.7	0.000041	0.014
HG-NLR-2	29	-	-	-	-	-	-	-	-
HG-NLR-2	30	-	-	-	-	-	-	-	-
HG-NLR-2	31	-	-	-	-	-	-	-	-
HG-NLR-2	32	0.000019	0.30	0.0010	0.000037	0.0042	3.8	0.00030	0.0050
HG-NLR-2	33	-	-	-	-	-	-	-	-
HG-NLR-2	34	-	-	-	-	-	-	-	-
HG-NLR-2	35	-	-	-	-	-	-	-	-
HG-NLR-2	36	0.000021	0.34	0.0011	0.000043	0.0053	4.4	0.00034	0.0069
HG-NLR-2	37	-	-	-	-	-	-	-	-
HG-NLR-2	38	-	-	-	-	-	-	-	-
HG-NLR-2	39	-	-	-	-	-	-	-	-
HG-NLR-2	40	0.000022	0.36	0.0012	0.000044	0.0019	5.6	0.000044	0.0067
HG-NLR-2	41	-	-	-	-	-	-	-	-
HG-NLR-2	42	-	-	-	-	-	-	-	-
HG-NLR-2	43	-	-	-	-	-	-	-	-
HG-NLR-2	44	0.000022	0.38	0.0012	0.000044	0.0043	5.8	0.00026	0.0080
HG-NLR-2	45	-	-	-	-	-	-	-	-
HG-NLR-2	46	-	-	-	-	-	-	-	-
HG-NLR-2	47	-	-	-	-	-	-	-	-
HG-NLR-2	48	0.000020	0.33	0.0011	0.000041	0.0031	5.8	0.000041	0.0073
HG-NLR-2	49	-	-	-	-	-	-	-	-
HG-NLR-2	50	-	-	-	-	-	-	-	-
HG-NLR-2	51	-	-	-	-	-	-	-	-
HG-NLR-2	52	0.000017	0.30	0.00090	0.000034	0.000069	5.4	0.000034	0.025
HG-NLR-2	53	-	-	-	-	-	-	-	-
HG-NLR-2	54	-	-	-	-	-	-	-	-
HG-NLR-2	55	-	-	-	-	-	-	-	-
HG-NLR-2	56	0.000075	0.31	0.0010	0.000037	0.019	6.4	0.00090	0.0090
HG-NLR-2	57	-	-	-	-	-	-	-	-
HG-NLR-2	58	-	-	-	-	-	-	-	-
HG-NLR-2	59	-	-	-	-	-	-	-	-
HG-NLR-2	60	0.000036	0.29	0.00093	0.000036	0.0071	6.1	0.00043	0.0086
HG-NLR-2	61	-	-	-	-	-	-	-	-
HG-NLR-2	62	-	-	-	-	-	-	-	-
HG-NLR-2	63	-	-	-	-	-	-	-	-
HG-NLR-2	64	0.000020	0.26	0.00088	0.000040	0.0012	6.5	0.000040	0.0080

- Parameter not analyzed

Appendix E, Table E-8
HGNLR-3 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	pH	Specific Conductivity	Sulphate	Calcium	Magnesium	Acidity	Total Alkalinity	Chloride	Fluoride	Potassium	Sodium	Ammonia-N	Nitrate-N	Nitrite-N	Orthophosphate-P	Aluminum
		pH units	uS/cm	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-3	1	5.4	2800	2078	514	160	17	3.0	74	1.0	12	16	0.31	0.0045	0.0046	0.0080	0.052
HG-NLR-3	2	5.4	2400	1776	601	75	19	3.3	-	-	-	-	-	-	-	-	-
HG-NLR-3	3	5.4	1860	1264	497	17	19	3.3	-	-	-	-	-	-	-	-	-
HG-NLR-3	4	5.4	1690	1105	450	11	11	2.1	4.3	0.60	5.2	0.85	0.0053	0.0048	0.0048	0.011	0.047
HG-NLR-3	5	5.5	1690	1076	449	9.2	10	2.1	-	-	-	-	-	-	-	-	-
HG-NLR-3	6	5.3	1640	465	188	2.6	4.7	0.93	-	-	-	-	-	-	-	-	-
HG-NLR-3	7	5.3	1600	509	209	2.4	5.1	1.0	-	-	-	-	-	-	-	-	-
HG-NLR-3	8	5.2	1570	1069	436	3.4	23	1.1	4.6	1.0	4.8	0.69	0.0057	0.0052	0.0052	0.0057	0.10
HG-NLR-3	9	5.1	1520	261	109	0.50	5.9	0.29	-	-	-	-	-	-	-	-	-
HG-NLR-3	10	5.2	1500	462	210	0.68	10	0.52	-	-	-	-	-	-	-	-	-
HG-NLR-3	11	5.2	1340	168	71	0.22	4.4	0.22	-	-	-	-	-	-	-	-	-
HG-NLR-3	12	5.3	1150	636	253	0.61	12	1.0	2.0	0.72	2.8	0.20	0.030	0.0045	0.0046	0.020	0.11
HG-NLR-3	13	5.2	1200	328	135	0.25	6.0	0.50	-	-	-	-	-	-	-	-	-
HG-NLR-3	14	5.1	1060	230	95	0.19	4.6	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-3	15	5.2	998	248	102	0.23	5.6	0.47	-	-	-	-	-	-	-	-	-
HG-NLR-3	16	5.3	773	436	184	0.36	21	2.4	3.6	0.99	2.5	0.36	0.073	0.0055	0.0055	0.0061	0.17
HG-NLR-3	17	5.2	697	164	68	0.15	8.4	0.99	-	-	-	-	-	-	-	-	-
HG-NLR-3	18	5.3	542	146	58	0.097	8.3	0.97	-	-	-	-	-	-	-	-	-
HG-NLR-3	19	5.1	502	119	49	0.15	8.4	0.99	-	-	-	-	-	-	-	-	-
HG-NLR-3	20	5.2	340	181	71	0.23	17	1.1	2.3	1.00	2.1	0.34	0.023	0.0051	0.0051	0.045	0.20
HG-NLR-3	21	5.1	272	60	24	0.10	7.5	0.50	-	-	-	-	-	-	-	-	-
HG-NLR-3	22	5.1	215	47	17	0.097	7.2	0.48	-	-	-	-	-	-	-	-	-
HG-NLR-3	23	5.1	175	39	14	0.10	7.6	0.51	-	-	-	-	-	-	-	-	-
HG-NLR-3	24	5.0	151	79	28	0.25	19	1.3	0.25	1.1	2.6	0.38	0.18	0.0057	0.0057	0.025	0.30
HG-NLR-3	25	5.0	151	25	7.9	0.076	5.7	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-3	26	5.0	156	32	10	0.091	6.9	0.46	-	-	-	-	-	-	-	-	-
HG-NLR-3	27	5.0	164	32	11	0.14	7.2	0.48	-	-	-	-	-	-	-	-	-
HG-NLR-3	28	5.0	133	49	16	0.27	16	0.88	0.18	0.76	1.8	0.27	0.35	0.040	0.0040	0.0044	0.27
HG-NLR-3	29	5.0	121	21	6.3	0.079	7.1	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-3	30	4.9	138	12	3.7	0.058	3.5	0.19	-	-	-	-	-	-	-	-	-
HG-NLR-3	31	5.0	121	25	7.6	0.095	8.5	0.47	-	-	-	-	-	-	-	-	-
HG-NLR-3	32	4.9	113	42	13	0.35	13	0.88	0.18	0.62	1.8	0.26	0.18	0.039	0.0040	0.0044	0.38
HG-NLR-3	33	4.9	114	18	5.4	0.11	5.4	0.36	-	-	-	-	-	-	-	-	-
HG-NLR-3	34	5.3	100	19	5.4	0.090	6.7	0.45	-	-	-	-	-	-	-	-	-
HG-NLR-3	35	4.8	107	22	6.0	0.14	6.9	0.46	-	-	-	-	-	-	-	-	-
HG-NLR-3	36	5.2	100	34	9.7	0.32	15	2.4	0.32	0.69	1.5	0.24	0.041	0.037	0.0037	0.016	0.30
HG-NLR-3	37	4.7	111	23	5.9	0.14	8.7	1.4	-	-	-	-	-	-	-	-	-
HG-NLR-3	38	4.5	136	30	7.9	0.17	7.9	1.2	-	-	-	-	-	-	-	-	-
HG-NLR-3	39	4.7	140	38	10	0.24	11	1.8	-	-	-	-	-	-	-	-	-
HG-NLR-3	40	4.9	81	25	7.0	0.17	16	0.83	0.041	0.43	1.2	0.25	0.41	0.037	0.0038	0.017	0.33
HG-NLR-3	41	5.1	92	18	4.3	0.13	8.2	0.43	-	-	-	-	-	-	-	-	-
HG-NLR-3	42	4.9	104	17	4.2	0.12	7.3	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-3	43	4.7	92	17	4.2	0.13	8.0	0.42	-	-	-	-	-	-	-	-	-
HG-NLR-3	44	4.9	87	31	7.9	0.25	14	0.84	0.084	0.66	1.4	0.17	0.42	0.038	0.0038	0.0042	0.29
HG-NLR-3	45	4.8	84	15	3.6	0.12	6.6	0.39	-	-	-	-	-	-	-	-	-
HG-NLR-3	46	4.6	90	16	4.1	0.12	7.0	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-3	47	4.8	56	7.2	2.2	0.13	5.3	0.31	-	-	-	-	-	-	-	-	-
HG-NLR-3	48	4.7	96	35	9.2	0.33	14	0.84	0.17	0.54	1.3	0.25	0.042	0.15	0.0038	0.025	0.34
HG-NLR-3	49	5.1	40	5.1	1.2	0.17	5.8	0.34	-	-	-	-	-	-	-	-	-
HG-NLR-3	50	4.6	114	18	4.2	0.15	6.4	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-3	51	4.5	93	16	3.8	0.19	6.4	0.38	-	-	-	-	-	-	-	-	-
HG-NLR-3	52	4.7	92	25	6.2	0.27	18	0.68	0.068	0.40	1.7	0.34	0.34	0.031	0.0031	0.021	0.21
HG-NLR-3	53	4.7	87	14	3.3	0.15	9.5	0.37	-	-	-	-	-	-	-	-	-
HG-NLR-3	54	4.6	105	15	3.5	0.16	8.4	0.32	-	-	-	-	-	-	-	-	-
HG-NLR-3	55	4.6	90	16	4.2	0.19	12	0.48	-	-	-	-	-	-	-	-	-
HG-NLR-3	56	4.7	83	25	6.2	0.31	15	0.77	0.039	0.48	1.0	0.23	0.039	0.035	0.0035	0.015	0.37
HG-NLR-3	57	4.6	77	9.9	2.5	0.14	6.5	0.34	-	-	-	-	-	-	-	-	-
HG-NLR-3	58	4.7	87	13	3.3	0.16	7.5	0.39	-	-	-	-	-	-	-	-	-
HG-NLR-3	59	4.5	85	12	3.0	0.14	6.8	0.36	-	-	-	-	-	-	-	-	-
HG-NLR-3	60	4.2	93	15	3.9	0.25	12	0.62	0.031	0.099	0.68	0.031	0.031	0.028	0.0028	0.0031	0.20
HG-NLR-3	61	4.5	80	11	2.5	0.14	6.7	0.35	-	-	-	-	-	-	-	-	-
HG-NLR-3	62	4.4	86	13	3.2	0.15	7.1	0.37	-	-	-	-	-	-	-	-	-
HG-NLR-3	63	4.6	85	14	3.5	0.21	8.0	0.42	-	-	-	-	-	-	-	-	-
HG-NLR-3	64	4.5	62	19	4.9	0.42	12	0.84	0.042	0.18	0.92	0.084	0.042	0.038	0.0038	0.017	0.52

- Parameter not analyzed

Appendix E, Table E-8
HGNLR-3 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-3	1	0.0010	0.026	0.011	0.00050	2.2	0.0014	0.0025	2.0	0.079	0.0090	3.4	2.1	0.0000060	0.0080	1.8	0.35
HG-NLR-3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	4	0.00085	0.012	0.023	0.000053	0.44	0.00031	0.00027	0.60	0.045	0.0034	2.6	0.23	0.0000032	0.0066	0.46	0.041
HG-NLR-3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	8	0.00080	0.014	0.021	0.000057	0.56	0.00031	0.00029	0.83	0.069	0.0068	3.7	0.17	0.0000057	0.0057	0.53	0.056
HG-NLR-3	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	12	0.00061	0.0074	0.029	0.000050	0.48	0.00012	0.00025	0.44	0.058	0.0050	2.9	0.058	0.0000040	0.0037	0.27	0.043
HG-NLR-3	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	16	0.00061	0.0068	0.046	0.000061	0.51	0.000085	0.00030	0.36	0.076	0.0073	3.3	0.036	0.0000048	0.0034	0.21	0.048
HG-NLR-3	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	20	0.00045	0.0034	0.075	0.000057	0.44	0.000034	0.00028	0.20	0.064	0.0061	2.8	0.020	0.0000057	0.0020	0.11	0.044
HG-NLR-3	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	24	0.00038	0.0031	0.12	0.000063	0.50	0.000038	0.00031	0.21	0.083	0.011	4.2	0.023	0.0000088	0.0015	0.12	0.052
HG-NLR-3	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	28	0.00027	0.0022	0.097	0.000044	0.39	0.000035	0.00022	0.19	0.076	0.0081	3.5	0.019	0.00000044	0.00071	0.098	0.038
HG-NLR-3	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	32	0.00026	0.0026	0.096	0.000044	0.32	0.000026	0.00022	0.18	0.096	0.031	4.4	0.019	0.0000035	0.0037	0.10	0.034
HG-NLR-3	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	36	0.00024	0.0024	0.11	0.000041	0.27	0.000024	0.00020	0.17	0.11	0.024	4.6	0.018	0.0000016	0.0019	0.099	0.032
HG-NLR-3	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	40	0.00033	0.0035	0.13	0.000083	0.38	0.000033	0.00021	0.20	0.14	0.062	6.4	0.022	0.0000050	0.017	0.12	0.041
HG-NLR-3	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	44	0.00017	0.0025	0.12	0.000042	0.25	0.000034	0.00021	0.19	0.14	0.032	5.9	0.019	0.0000017	0.0018	0.10	0.031
HG-NLR-3	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	48	0.00058	0.0037	0.17	0.000042	0.29	0.000033	0.00021	0.21	0.17	0.13	7.7	0.022	0.0000050	0.018	0.12	0.033
HG-NLR-3	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	52	0.00021	0.0022	0.11	0.000034	0.22	0.000034	0.00017	0.15	0.15	0.040	5.8	0.017	0.0000055	0.00027	0.095	0.025
HG-NLR-3	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	56	0.00031	0.0029	0.12	0.000039	0.19	0.000039	0.00019	0.19	0.19	0.077	6.8	0.020	0.0000046	0.0085	0.11	0.026
HG-NLR-3	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	60	0.000062	0.0018	0.10	0.000062	0.14	0.000025	0.00015	0.16	0.18	0.043	5.7	0.016	0.0000049	0.00099	0.094	0.020
HG-NLR-3	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-3	64	0.00042	0.0032	0.13	0.000084	0.15	0.000042	0.00050	0.19	0.26	0.12	7.3	0.020	0.0000058	0.011	0.12	0.023

- Parameter not analyzed

Appendix E, Table E-8
HGNLR-3 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-3	1	0.00025	0.42	0.0060	0.00050	0.0010	8.2	0.00050	0.029
HG-NLR-3	2	-	-	-	-	-	-	-	-
HG-NLR-3	3	-	-	-	-	-	-	-	-
HG-NLR-3	4	0.000027	0.64	0.0027	0.000053	0.00043	5.7	0.000053	0.019
HG-NLR-3	5	-	-	-	-	-	-	-	-
HG-NLR-3	6	-	-	-	-	-	-	-	-
HG-NLR-3	7	-	-	-	-	-	-	-	-
HG-NLR-3	8	0.000029	0.78	0.0028	0.000057	0.0022	9.2	0.000057	0.014
HG-NLR-3	9	-	-	-	-	-	-	-	-
HG-NLR-3	10	-	-	-	-	-	-	-	-
HG-NLR-3	11	-	-	-	-	-	-	-	-
HG-NLR-3	12	0.000025	0.64	0.0018	0.000050	0.00010	7.8	0.000050	0.010
HG-NLR-3	13	-	-	-	-	-	-	-	-
HG-NLR-3	14	-	-	-	-	-	-	-	-
HG-NLR-3	15	-	-	-	-	-	-	-	-
HG-NLR-3	16	0.000030	0.67	0.0018	0.000061	0.00012	8.4	0.000061	0.013
HG-NLR-3	17	-	-	-	-	-	-	-	-
HG-NLR-3	18	-	-	-	-	-	-	-	-
HG-NLR-3	19	-	-	-	-	-	-	-	-
HG-NLR-3	20	0.000028	0.49	0.0015	0.000057	0.00011	5.5	0.000057	0.010
HG-NLR-3	21	-	-	-	-	-	-	-	-
HG-NLR-3	22	-	-	-	-	-	-	-	-
HG-NLR-3	23	-	-	-	-	-	-	-	-
HG-NLR-3	24	0.000031	0.52	0.0019	0.000063	0.00013	5.8	0.000063	0.015
HG-NLR-3	25	-	-	-	-	-	-	-	-
HG-NLR-3	26	-	-	-	-	-	-	-	-
HG-NLR-3	27	-	-	-	-	-	-	-	-
HG-NLR-3	28	0.000022	0.35	0.0012	0.000044	0.000088	4.5	0.000044	0.0097
HG-NLR-3	29	-	-	-	-	-	-	-	-
HG-NLR-3	30	-	-	-	-	-	-	-	-
HG-NLR-3	31	-	-	-	-	-	-	-	-
HG-NLR-3	32	0.000022	0.38	0.0014	0.000044	0.0054	5.2	0.00018	0.0096
HG-NLR-3	33	-	-	-	-	-	-	-	-
HG-NLR-3	34	-	-	-	-	-	-	-	-
HG-NLR-3	35	-	-	-	-	-	-	-	-
HG-NLR-3	36	0.000020	0.36	0.0012	0.000041	0.0023	4.8	0.000041	0.011
HG-NLR-3	37	-	-	-	-	-	-	-	-
HG-NLR-3	38	-	-	-	-	-	-	-	-
HG-NLR-3	39	-	-	-	-	-	-	-	-
HG-NLR-3	40	0.000021	0.40	0.0013	0.000041	0.0100	6.2	0.00033	0.011
HG-NLR-3	41	-	-	-	-	-	-	-	-
HG-NLR-3	42	-	-	-	-	-	-	-	-
HG-NLR-3	43	-	-	-	-	-	-	-	-
HG-NLR-3	44	0.000021	0.35	0.0013	0.000042	0.0023	5.7	0.000084	0.0093
HG-NLR-3	45	-	-	-	-	-	-	-	-
HG-NLR-3	46	-	-	-	-	-	-	-	-
HG-NLR-3	47	-	-	-	-	-	-	-	-
HG-NLR-3	48	0.000050	0.38	0.0013	0.000042	0.016	6.4	0.00033	0.0068
HG-NLR-3	49	-	-	-	-	-	-	-	-
HG-NLR-3	50	-	-	-	-	-	-	-	-
HG-NLR-3	51	-	-	-	-	-	-	-	-
HG-NLR-3	52	0.000017	0.29	0.00096	0.000034	0.00014	5.3	0.000034	0.0068
HG-NLR-3	53	-	-	-	-	-	-	-	-
HG-NLR-3	54	-	-	-	-	-	-	-	-
HG-NLR-3	55	-	-	-	-	-	-	-	-
HG-NLR-3	56	0.000039	0.29	0.0011	0.000039	0.010	6.0	0.00062	0.0062
HG-NLR-3	57	-	-	-	-	-	-	-	-
HG-NLR-3	58	-	-	-	-	-	-	-	-
HG-NLR-3	59	-	-	-	-	-	-	-	-
HG-NLR-3	60	0.000015	0.23	0.00080	0.000031	0.0016	5.1	0.00012	0.0052
HG-NLR-3	61	-	-	-	-	-	-	-	-
HG-NLR-3	62	-	-	-	-	-	-	-	-
HG-NLR-3	63	-	-	-	-	-	-	-	-
HG-NLR-3	64	0.000042	0.28	0.0010	0.000042	0.018	6.5	0.0012	0.0066

- Parameter not analyzed

Appendix E, Table E-9
HGNLR-4 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	pH	Specific Conductivity	Sulphate	Calcium	Magnesium	Acidity	Total Alkalinity	Chloride	Fluoride	Potassium	Sodium	Ammonia-N	Nitrate-N	Nitrite-N	Orthophosphate-P	Aluminum
		pH units	uS/cm	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-4	1	5.4	3130	2128	532	175	20	0.91	79	1.1	14	17	0.22	0.0041	0.0042	0.0073	0.061
HG-NLR-4	2	5.4	2220	313	108	12	4.7	0.21	-	-	-	-	-	-	-	-	-
HG-NLR-4	3	5.4	1480	766	288	20	20	0.90	-	-	-	-	-	-	-	-	-
HG-NLR-4	4	5.4	544	233	90	4.1	2.7	2.7	1.8	0.20	1.6	0.54	0.0045	0.0040	0.0041	0.018	0.014
HG-NLR-4	5	5.4	1890	1027	413	15	2.6	2.6	-	-	-	-	-	-	-	-	-
HG-NLR-4	6	5.3	1660	427	169	4.7	1.3	1.3	-	-	-	-	-	-	-	-	-
HG-NLR-4	7	5.3	1870	473	194	3.7	1.2	1.2	-	-	-	-	-	-	-	-	-
HG-NLR-4	8	5.2	1840	976	397	5.1	19	0.87	4.4	0.78	4.7	0.52	0.035	0.0039	0.0040	0.035	0.081
HG-NLR-4	9	5.2	1910	222	90	0.65	4.1	0.19	-	-	-	-	-	-	-	-	-
HG-NLR-4	10	5.2	1820	411	208	1.2	8.1	0.37	-	-	-	-	-	-	-	-	-
HG-NLR-4	11	5.2	1760	237	99	0.50	5.0	0.23	-	-	-	-	-	-	-	-	-
HG-NLR-4	12	5.2	1840	922	363	1.0	16	1.7	2.6	0.77	3.2	0.17	0.0043	0.0038	0.0039	0.017	0.12
HG-NLR-4	13	5.2	1570	374	154	0.24	7.6	0.80	-	-	-	-	-	-	-	-	-
HG-NLR-4	14	5.1	1500	255	104	0.16	5.2	0.54	-	-	-	-	-	-	-	-	-
HG-NLR-4	15	5.2	1380	294	119	0.22	7.1	0.74	-	-	-	-	-	-	-	-	-
HG-NLR-4	16	5.2	1160	609	255	0.30	15	1.0	3.0	0.91	2.6	0.30	0.091	0.0046	0.0046	0.020	0.16
HG-NLR-4	17	5.2	924	184	78	0.080	6.0	0.40	-	-	-	-	-	-	-	-	-
HG-NLR-4	18	5.2	740	181	68	0.082	6.2	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-4	19	5.1	663	117	50	0.11	5.5	0.37	-	-	-	-	-	-	-	-	-
HG-NLR-4	20	5.1	461	209	82	0.28	18	0.95	2.8	0.80	2.1	0.28	0.057	0.0043	0.0043	0.038	0.20
HG-NLR-4	21	5.1	347	66	26	0.082	7.8	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-4	22	5.1	306	58	23	0.082	7.8	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-4	23	5.1	238	45	16	0.082	7.8	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-4	24	5.1	214	108	40	0.23	17	1.2	0.23	1.2	2.7	0.46	0.16	0.0052	0.0053	0.012	0.33
HG-NLR-4	25	5.0	186	26	8.8	0.063	4.7	0.32	-	-	-	-	-	-	-	-	-
HG-NLR-4	26	5.0	170	29	9.3	0.12	5.8	0.39	-	-	-	-	-	-	-	-	-
HG-NLR-4	27	5.0	167	24	7.9	0.10	5.2	0.34	-	-	-	-	-	-	-	-	-
HG-NLR-4	28	5.0	147	42	14	0.21	13	0.68	0.14	0.66	1.4	0.21	0.27	0.031	0.0031	0.0034	0.24
HG-NLR-4	29	5.0	138	16	5.0	0.079	5.0	0.26	-	-	-	-	-	-	-	-	-
HG-NLR-4	30	4.9	133	18	5.5	0.12	5.8	0.31	-	-	-	-	-	-	-	-	-
HG-NLR-4	31	-	-	-	-	-	7.1	0.37	-	-	-	-	-	-	-	-	-
HG-NLR-4	32	5.0	111	34	10	0.50	9.3	2.1	0.14	0.59	1.5	0.21	0.14	0.032	0.0033	0.0036	0.42
HG-NLR-4	33	4.9	110	14	4.2	0.059	3.9	0.89	-	-	-	-	-	-	-	-	-
HG-NLR-4	34	5.3	108	18	4.8	0.11	4.8	1.1	-	-	-	-	-	-	-	-	-
HG-NLR-4	35	4.8	108	20	5.7	0.12	5.3	1.2	-	-	-	-	-	-	-	-	-
HG-NLR-4	36	5.2	96	21	6.3	0.16	8.9	1.1	0.21	0.45	0.84	0.16	0.053	0.024	0.0024	0.0026	0.23
HG-NLR-4	37	4.7	110	15	4.5	0.096	5.4	0.64	-	-	-	-	-	-	-	-	-
HG-NLR-4	38	4.9	108	19	5.2	0.12	6.9	0.81	-	-	-	-	-	-	-	-	-
HG-NLR-4	39	4.8	116	19	5.3	0.11	6.5	0.76	-	-	-	-	-	-	-	-	-
HG-NLR-4	40	4.8	95	22	5.7	0.17	9.8	0.57	0.029	0.32	0.92	0.23	0.29	0.026	0.0026	0.011	0.18
HG-NLR-4	41	5.0	95	15	4.1	0.11	6.3	0.37	-	-	-	-	-	-	-	-	-
HG-NLR-4	42	4.9	101	13	3.2	0.096	5.4	0.32	-	-	-	-	-	-	-	-	-
HG-NLR-4	43	4.7	90	13	3.7	0.13	5.7	0.33	-	-	-	-	-	-	-	-	-
HG-NLR-4	44	4.9	87	25	6.6	0.20	12	0.68	0.068	0.51	1.1	0.14	0.34	0.030	0.0031	0.0034	0.28
HG-NLR-4	45	4.8	91	14	3.3	0.10	5.7	0.33	-	-	-	-	-	-	-	-	-
HG-NLR-4	46	4.5	92	14	3.6	0.11	6.2	0.36	-	-	-	-	-	-	-	-	-
HG-NLR-4	47	4.6	94	13	3.2	0.13	5.4	0.32	-	-	-	-	-	-	-	-	-
HG-NLR-4	48	4.7	84	25	6.6	0.40	11	0.66	0.033	0.45	1.1	0.13	0.033	0.12	0.0030	0.0033	0.19
HG-NLR-4	49	4.8	88	9.3	2.5	0.082	4.7	0.27	-	-	-	-	-	-	-	-	-
HG-NLR-4	50	4.3	98	13	3.2	0.13	5.6	0.33	-	-	-	-	-	-	-	-	-
HG-NLR-4	51	4.4	94	13	3.2	0.13	5.5	0.32	-	-	-	-	-	-	-	-	-
HG-NLR-4	52	4.6	95	21	5.5	0.29	13	0.58	0.029	0.35	0.87	0.23	0.29	0.026	0.0026	0.012	0.17
HG-NLR-4	53	4.7	86	13	3.4	0.15	8.5	0.37	-	-	-	-	-	-	-	-	-
HG-NLR-4	54	4.6	88	10	2.6	0.11	6.5	0.28	-	-	-	-	-	-	-	-	-
HG-NLR-4	55	4.6	89	14	3.7	0.16	9.4	0.41	-	-	-	-	-	-	-	-	-
HG-NLR-4	56	4.7	80	19	5.1	0.26	12	0.64	0.064	0.38	0.77	0.19	0.032	0.029	0.0029	0.019	0.28
HG-NLR-4	57	4.7	77	8.3	2.2	0.089	5.6	0.30	-	-	-	-	-	-	-	-	-
HG-NLR-4	58	4.6	87	12	3.1	0.14	6.7	0.35	-	-	-	-	-	-	-	-	-
HG-NLR-4	59	4.5	86	9.2	2.4	0.11	5.3	0.28	-	-	-	-	-	-	-	-	-
HG-NLR-4	60	4.2	95	15	4.1	0.24	9.2	0.48	0.024	0.087	0.63	0.048	0.024	0.022	0.0022	0.0024	0.16
HG-NLR-4	61	4.5	86	9.2	2.3	0.11	5.4	0.29	-	-	-	-	-	-	-	-	-
HG-NLR-4	62	4.4	87	12	3.1	0.14	6.6	0.34	-	-	-	-	-	-	-	-	-
HG-NLR-4	63	4.5	91	12	3.0	0.16	6.1	0.32	-	-	-	-	-	-	-	-	-
HG-NLR-4	64	4.5	76	18	4.7	0.31	11	0.63	0.031	0.15	0.75	0.13	0.031	0.028	0.0028	0.013	0.24

- Parameter not analyzed

Appendix E, Table E-9
HGNLR-4 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-4	1	0.00091	0.026	0.0055	0.00046	2.0	0.0013	0.0023	2.0	0.090	0.0055	3.7	1.9	0.00000091	0.0082	1.8	0.26
HG-NLR-4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	4	0.00027	0.0024	0.026	0.000045	0.18	0.000099	0.00022	0.18	0.016	0.0027	0.82	0.083	0.0000036	0.0023	0.14	0.015
HG-NLR-4	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	8	0.00061	0.012	0.012	0.000044	0.45	0.00032	0.00022	0.80	0.064	0.0047	3.2	0.19	0.0000035	0.0045	0.53	0.045
HG-NLR-4	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	12	0.00085	0.013	0.0085	0.00043	0.51	0.00026	0.0021	0.60	0.094	0.0077	3.4	0.082	0.0000017	0.0043	0.39	0.041
HG-NLR-4	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	16	0.00061	0.0084	0.028	0.00010	0.48	0.00010	0.00025	0.39	0.088	0.0084	2.8	0.038	0.000014	0.0037	0.22	0.049
HG-NLR-4	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	20	0.00038	0.0033	0.060	0.000047	0.44	0.000038	0.00024	0.19	0.067	0.0072	2.5	0.018	0.0000038	0.0021	0.11	0.045
HG-NLR-4	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	24	0.00035	0.0034	0.11	0.000058	0.55	0.000046	0.00029	0.21	0.090	0.013	4.2	0.020	0.0000093	0.0015	0.11	0.057
HG-NLR-4	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	28	0.00021	0.0018	0.075	0.000034	0.33	0.000021	0.00017	0.14	0.067	0.0068	2.8	0.014	0.00000034	0.00062	0.073	0.031
HG-NLR-4	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	32	0.00036	0.0027	0.086	0.000036	0.27	0.000029	0.00018	0.14	0.086	0.067	3.7	0.014	0.0000079	0.011	0.075	0.031
HG-NLR-4	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	36	0.00021	0.0018	0.063	0.000026	0.17	0.000016	0.00013	0.100	0.068	0.034	2.8	0.011	0.0000011	0.0053	0.057	0.020
HG-NLR-4	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	40	0.00023	0.0018	0.063	0.000029	0.20	0.000017	0.00014	0.10	0.080	0.032	3.1	0.011	0.0000057	0.0046	0.059	0.023
HG-NLR-4	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	44	0.00027	0.0024	0.088	0.000034	0.22	0.000027	0.00017	0.14	0.12	0.055	4.3	0.015	0.0000020	0.0068	0.083	0.027
HG-NLR-4	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	48	0.00027	0.0022	0.080	0.000033	0.19	0.000027	0.00017	0.14	0.13	0.035	4.5	0.015	0.0000060	0.0025	0.080	0.025
HG-NLR-4	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	52	0.00012	0.0019	0.075	0.000029	0.20	0.000029	0.00014	0.14	0.17	0.031	4.6	0.015	0.0000069	0.00023	0.083	0.022
HG-NLR-4	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	56	0.00026	0.0022	0.077	0.000032	0.15	0.000026	0.00016	0.15	0.17	0.058	4.7	0.016	0.0000038	0.0041	0.088	0.021
HG-NLR-4	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	60	0.000048	0.0014	0.063	0.000048	0.12	0.000014	0.00012	0.13	0.16	0.040	3.9	0.013	0.0000039	0.00043	0.074	0.016
HG-NLR-4	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HG-NLR-4	64	0.00019	0.0019	0.075	0.000063	0.12	0.000031	0.00016	0.15	0.23	0.063	4.8	0.016	0.0000019	0.0015	0.092	0.019

- Parameter not analyzed

Appendix E, Table E-9
HGNLR-4 HCT Mass Loading Results
NexGen Rook I Geochemical Characterization Report

Cell Identification	Cycle	Silver	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HG-NLR-4	1	0.00023	0.44	0.0064	0.00046	0.00091	9.4	0.00046	0.034
HG-NLR-4	2	-	-	-	-	-	-	-	-
HG-NLR-4	3	-	-	-	-	-	-	-	-
HG-NLR-4	4	0.000022	0.14	0.00081	0.000045	0.00018	1.4	0.000045	0.0099
HG-NLR-4	5	-	-	-	-	-	-	-	-
HG-NLR-4	6	-	-	-	-	-	-	-	-
HG-NLR-4	7	-	-	-	-	-	-	-	-
HG-NLR-4	8	0.000022	0.58	0.0026	0.000044	0.00044	8.4	0.000044	0.0096
HG-NLR-4	9	-	-	-	-	-	-	-	-
HG-NLR-4	10	-	-	-	-	-	-	-	-
HG-NLR-4	11	-	-	-	-	-	-	-	-
HG-NLR-4	12	0.00021	0.68	0.0026	0.00043	0.00085	11	0.00043	0.013
HG-NLR-4	13	-	-	-	-	-	-	-	-
HG-NLR-4	14	-	-	-	-	-	-	-	-
HG-NLR-4	15	-	-	-	-	-	-	-	-
HG-NLR-4	16	0.000025	0.69	0.0017	0.000051	0.00010	9.5	0.000051	0.012
HG-NLR-4	17	-	-	-	-	-	-	-	-
HG-NLR-4	18	-	-	-	-	-	-	-	-
HG-NLR-4	19	-	-	-	-	-	-	-	-
HG-NLR-4	20	0.000024	0.50	0.0013	0.000047	0.000095	5.5	0.000047	0.010
HG-NLR-4	21	-	-	-	-	-	-	-	-
HG-NLR-4	22	-	-	-	-	-	-	-	-
HG-NLR-4	23	-	-	-	-	-	-	-	-
HG-NLR-4	24	0.000029	0.57	0.0019	0.000058	0.00012	6.1	0.000058	0.011
HG-NLR-4	25	-	-	-	-	-	-	-	-
HG-NLR-4	26	-	-	-	-	-	-	-	-
HG-NLR-4	27	-	-	-	-	-	-	-	-
HG-NLR-4	28	0.000017	0.29	0.00096	0.000034	0.00014	3.6	0.000034	0.0068
HG-NLR-4	29	-	-	-	-	-	-	-	-
HG-NLR-4	30	-	-	-	-	-	-	-	-
HG-NLR-4	31	-	-	-	-	-	-	-	-
HG-NLR-4	32	0.000018	0.32	0.0011	0.000036	0.014	4.0	0.00079	0.0054
HG-NLR-4	33	-	-	-	-	-	-	-	-
HG-NLR-4	34	-	-	-	-	-	-	-	-
HG-NLR-4	35	-	-	-	-	-	-	-	-
HG-NLR-4	36	0.000026	0.22	0.00074	0.000026	0.0063	2.9	0.00032	0.0043
HG-NLR-4	37	-	-	-	-	-	-	-	-
HG-NLR-4	38	-	-	-	-	-	-	-	-
HG-NLR-4	39	-	-	-	-	-	-	-	-
HG-NLR-4	40	0.000014	0.22	0.00080	0.000029	0.0044	3.3	0.000057	0.0045
HG-NLR-4	41	-	-	-	-	-	-	-	-
HG-NLR-4	42	-	-	-	-	-	-	-	-
HG-NLR-4	43	-	-	-	-	-	-	-	-
HG-NLR-4	44	0.000034	0.27	0.0010	0.000034	0.0081	4.2	0.00041	0.0052
HG-NLR-4	45	-	-	-	-	-	-	-	-
HG-NLR-4	46	-	-	-	-	-	-	-	-
HG-NLR-4	47	-	-	-	-	-	-	-	-
HG-NLR-4	48	0.000017	0.27	0.00093	0.000033	0.0021	4.3	0.000033	0.0063
HG-NLR-4	49	-	-	-	-	-	-	-	-
HG-NLR-4	50	-	-	-	-	-	-	-	-
HG-NLR-4	51	-	-	-	-	-	-	-	-
HG-NLR-4	52	0.000014	0.25	0.00081	0.000029	0.00023	4.3	0.000029	0.0087
HG-NLR-4	53	-	-	-	-	-	-	-	-
HG-NLR-4	54	-	-	-	-	-	-	-	-
HG-NLR-4	55	-	-	-	-	-	-	-	-
HG-NLR-4	56	0.000016	0.23	0.00083	0.000032	0.0064	4.4	0.00038	0.0064
HG-NLR-4	57	-	-	-	-	-	-	-	-
HG-NLR-4	58	-	-	-	-	-	-	-	-
HG-NLR-4	59	-	-	-	-	-	-	-	-
HG-NLR-4	60	0.000012	0.17	0.00063	0.000048	0.00097	3.6	0.000097	0.0053
HG-NLR-4	61	-	-	-	-	-	-	-	-
HG-NLR-4	62	-	-	-	-	-	-	-	-
HG-NLR-4	63	-	-	-	-	-	-	-	-
HG-NLR-4	64	0.000063	0.21	0.00069	0.000031	0.0038	4.9	0.00013	0.0062

- Parameter not analyzed

Appendix E, Table E-10
HCT Depletion Calculation Results
NexGen Rook I Geochemical Characterization Report

Sample ID			HG-NLR-1	HG-NLR-2	HG-NLR-3	HG-NLR-4	MG-NLR-1	MG-NLR-2	MG-NLR-3	MG-NLR-4
Static Test Results	Total Sulphur	%	0.64	0.64	0.65	0.61	0.30	0.31	0.31	0.31
	Sulphide Sulphur	%	0.24	0.24	0.25	0.21	0.23	0.25	0.24	0.25
	NP	t $CaCO_3$/1000 t	3.2	3.8	3.3	3.3	2.5	2.1	2.3	2.8
	CO_3-NP	t $CaCO_3$/1000 t	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
	ARD Designation	NPR	PAG	PAG	PAG	PAG	PAG	PAG	PAG	PAG
Kinetic Test Results	Total Sulphur Remaining	%	38	29	29	38	67	70	70	70
	Time to Total Sulphur Depletion	years	1.9	1.2	1.4	1.5	5.4	6.2	5.4	5.7
	Sulphide Remaining	%	0	0	0	0	57	63	62	63
	Time to Sulphide Depletion	years	0	0	0	0	3.5	4.5	3.7	4.1
	Neutralization Capacity Remaining (NP)	%	0	0	0	0	0	0	2.3	20
	Time to NP depletion	years	0	0	0	0	0	0	0.072	0.81
	Neutralization Capacity Remaining (CO_3-NP)	%	0	0	0	0	0	0	0	0
	Time to CO_3-NP Depletion	years	0	0	0	0	0	0	0	0
	ARD Designation	CO_3-NPR	PAG	PAG	PAG	PAG	PAG	PAG	PAG	PAG
		NPR	PAG	PAG	PAG	PAG	PAG	PAG	PAG	PAG
		Overall	PAG	PAG	PAG	PAG	PAG	PAG	PAG	PAG

Calculations include data to October 15, 2020 (64 leaching cycles)

Appendix E, Table E-11
HLC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s
HLC-1	L-1	2019-12-11	0.080	0.10	0.057	0.00047	664	1.00	0.67	0.0082	8.1	0.86	1846	-	0.082	0.094	0.0059	0.0059	1.7	1.0	0.41	0.022
HLC-1	L-2	2019-12-12	1.0	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.86	1846	-	0.0050	0.0060	0.00050	0.00050	0.20	0.096	0.038	0.018
HLC-1	L-3	2019-12-13	2.0	0.10	0.057	0.00047	663	1.00	0.66	0.0082	8.1	0.86	1846	-	0.0019	0.0019	0.00047	0.00047	0.17	0.077	0.031	0.017
HLC-1	L-4	2019-12-18	7.0	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.86	1846	-	0.0013	0.0015	0.000092	0.000092	0.085	0.044	0.017	0.010
HLC-1	L-5	2019-12-25	14	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.86	1846	-	0.0014	0.0017	0.000065	0.000065	0.066	0.033	0.013	0.0069
HLC-1	L-6	2020-01-08	28	0.10	0.057	0.00047	649	1.00	0.65	0.0082	7.9	0.86	1846	-	0.00072	0.00085	0.000033	0.000033	0.045	0.024	0.0096	0.0041
HLC-1	L-7	2020-01-22	42	0.10	0.057	0.00047	660	1.00	0.66	0.0082	8.1	0.86	1846	-	0.00073	0.00053	0.00013	0.000033	0.041	0.021	0.0084	0.0030
HLC-1	L-8	2020-01-29	49	0.10	0.057	0.00047	657	1.00	0.66	0.0082	8.0	0.86	1846	-	0.00040	0.00053	0.000067	0.000067	0.041	0.023	0.0091	0.0027
HLC-1	L-9	2020-02-12	63	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	0.00092	0.0011	0.000033	0.000033	0.034	0.018	0.0074	0.0020
HLC-1	L-10	2020-02-26	77	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.86	1846	-	0.00086	0.0011	0.000033	0.000033	0.031	0.017	0.0070	0.0015
HLC-1	L-11	2020-03-11	91	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.86	1846	-	0.00092	0.00046	0.00033	0.000033	0.030	0.017	0.0067	0.0012
HLC-1	L-12	2020-03-25	105	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1846	-	0.00099	0.00086	0.00013	0.000033	0.027	0.014	0.0058	0.0011
HLC-1	L-13	2020-04-08	119	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.86	1846	-	0.00046	0.00039	0.000066	0.000033	0.024	0.014	0.0054	0.00085
HLC-1	L-14	2020-04-22	133	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.86	1846	-	0.00059	0.00072	0.000033	0.000033	0.024	0.013	0.0053	0.00065
HLC-1	L-15	2020-05-06	147	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	0.0017	0.0018	0.00013	0.000033	0.020	0.013	0.0051	0.00059
HLC-1	L-16	2020-05-20	161	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	0.00079	0.00033	0.00033	0.000033	0.020	0.013	0.0052	0.00040
HLC-1	L-17	2020-06-03	175	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1846	-	0.0016	0.0019	0.000033	0.000033	0.019	0.012	0.0047	0.00040
HLC-2	L-1	2019-12-11	0.080	0.10	0.057	0.00047	667	1.00	0.67	0.0082	8.2	0.86	1844	-	0.012	0.012	0.0059	0.0059	0.43	0.19	0.067	0.024
HLC-2	L-2	2019-12-12	1.0	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.86	1844	-	0.0030	0.0040	0.00050	0.00050	0.21	0.095	0.038	0.023
HLC-2	L-3	2019-12-13	2.0	0.10	0.057	0.00047	672	1.00	0.67	0.0082	8.2	0.86	1844	-	0.0038	0.0048	0.00048	0.00048	0.17	0.078	0.031	0.016
HLC-2	L-4	2019-12-18	7.0	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.86	1844	-	0.0011	0.0013	0.000092	0.000092	0.087	0.045	0.018	0.010
HLC-2	L-5	2019-12-25	14	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1844	-	0.0012	0.0015	0.000066	0.000066	0.067	0.034	0.014	0.0070
HLC-2	L-6	2020-01-08	28	0.10	0.057	0.00047	662	1.00	0.66	0.0082	8.1	0.86	1844	-	0.0015	0.0015	0.00013	0.000034	0.046	0.024	0.0097	0.0043
HLC-2	L-7	2020-01-22	42	0.10	0.057	0.00047	661	1.00	0.66	0.0082	8.1	0.86	1844	-	0.00094	0.00047	0.00033	0.000033	0.043	0.022	0.0087	0.0030
HLC-2	L-8	2020-01-29	49	0.10	0.057	0.00047	658	1.00	0.66	0.0082	8.1	0.86	1844	-	0.00053	0.00067	0.000067	0.000067	0.039	0.023	0.0091	0.0025
HLC-2	L-9	2020-02-12	63	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1844	-	0.00086	0.00086	0.000066	0.000033	0.034	0.019	0.0074	0.0019
HLC-2	L-10	2020-02-26	77	0.10	0.057	0.00047	654	1.00	0.65	0.0082	8.0	0.86	1844	-	0.00099	0.0011	0.000066	0.000033	0.030	0.017	0.0070	0.0015
HLC-2	L-11	2020-03-11	91	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1844	-	0.00060	0.000066	0.00033	0.000033	0.029	0.016	0.0064	0.0012
HLC-2	L-12	2020-03-25	105	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1844	-	0.0011	0.0011	0.00013	0.000033	0.026	0.014	0.0058	0.0011
HLC-2	L-13	2020-04-08	119	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1844	-	0.0016	0.0017	0.00013	0.000033	0.025	0.014	0.0054	0.00079
HLC-2	L-14	2020-04-22	133	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1844	-	0.0016	0.0019	0.000033	0.000033	0.025	0.014	0.0054	0.00066
HLC-2	L-15	2020-05-06	147	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1844	-	0.00040	0.000033	0.00013	0.000033	0.020	0.013	0.0052	0.00053
HLC-2	L-16	2020-05-20	161	0.10	0.057	0.00047	654	1.00	0.65	0.0082	8.0	0.86	1844	-	0.00086	0.00040	0.00033	0.000033	0.020	0.013	0.0052	0.00040
HLC-2	L-17	2020-06-03	175	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1844	-	0.00066	0.00080	0.000033	0.000033	0.019	0.012	0.0047	0.00040
HLC-3	L-1	2019-12-11	0.080	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1842	-	0.023	0.023	0.0058	0.0058	0.37	0.17	0.072	0.0058
HLC-3	L-2	2019-12-12	1.0	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1842	-	0.0020	0.0020	0.00050	0.00050	0.21	0.097	0.039	0.016
HLC-3	L-3	2019-12-13	2.0	0.10	0.057	0.00047	659	1.00	0.66	0.0082	8.1	0.86	1842	-	0.0037	0.0047	0.00047	0.00047	0.16	0.075	0.030	0.014
HLC-3	L-4	2019-12-18	7.0	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	0.00093	0.0011	0.000093	0.000093	0.089	0.046	0.018	0.0098
HLC-3	L-5	2019-12-25	14	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	0.00053	0.00066	0.000066	0.000066	0.068	0.035	0.014	0.0066
HLC-3	L-6	2020-01-08	28	0.10	0.057	0.00047	658	1.00	0.66	0.0082	8.1	0.86	1842	-	0.0016	0.0016	0.00013	0.000033	0.047	0.025	0.0098	0.0041
HLC-3	L-7	2020-01-22	42	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1842	-	0.00066	0.00047	0.00013	0.000033	0.043	0.022	0.0088	0.0029
HLC-3	L-8	2020-01-29	49	0.10	0.057	0.00047	658	1.00	0.66	0.0082	8.1	0.86	1842	-	0.0011	0.0013	0.000067	0.000067	0.042	0.023	0.0091	0.0025
HLC-3	L-9	2020-02-12	63	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1842	-	0.00086	0.0011	0.000033	0.000033	0.033	0.018	0.0074	0.0019
HLC-3	L-10	2020-02-26	77	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1842	-	0.00066	0.00033	0.00027	0.000033	0.031	0.018	0.0071	0.0015
HLC-3	L-11	2020-03-11	91	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	0.00059	0.000066	0.00033	0.000033	0.028	0.016	0.0065	0.0013
HLC-3	L-12	2020-03-25	105	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	0.00079	0.00066	0.00013	0.000033	0.026	0.015	0.0058	0.0011
HLC-3	L-13	2020-04-08	119	0.10	0.057	0.00047	654	1.00	0.66	0.0082	8.0	0.86	1842	-	0.00099	0.00086	0.00013	0.000033	0.026	0.014	0.0055	0.00086
HLC-3	L-14	2020-04-22	133	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.86	1842	-	0.00093	0.0011	0.000033	0.000033	0.025	0.014	0.0055	0.00073
HLC-3	L-15	2020-05-06	147	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	0.00053	0.00013	0.00026	0.000033	0.022	0.013	0.0051	0.00060
HLC-3	L-16	2020-05-20	161	0.10	0.057	0.00047	654	1.00	0.65	0.0082	8.0	0.86	1842	-	0.00093	0.00046	0.00033	0.000033	0.021	0.013	0.0052	0.00040
HLC-3	L-17	2020-06-03	175	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1842	-	0.00079	0.00099	0.000033	0.000033	0.019	0.012	0.0047	0.00046
HLC-4	L-1	2019-12-11	0.080	0.10	0.057	0.00047	659	1.00	0.66	0.0082	8.1	0.86	1846	-	0.023	0.023	0.0058	0.0058	0.37	0.20	0.081	0.0047
HLC-4	L-2	2019-12-12	1.0	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1846	-	0.0050	0.0061	0.00050	0.00050	0.20	0.10	0.041	0.018
HLC-4	L-3	2019-12-13	2.0	0.10	0.057	0.00047	663	1.00	0.66	0.0082	8.1	0.86	1846	-	0.0028	0.0038	0.00047	0.00047	0.17	0.077	0.031	0.015
HLC-4	L-4	2019-12-18	7.0	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	0.0011	0.0013	0.000092	0.000092	0.089	0.045	0.018	0.011
HLC-4	L-5	2019-12-25	14	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	0.0012	0.0014	0.000066	0.000066	0.068	0.034	0.014	0.0071
HLC-4	L-6	2020-01-08	28	0.10	0.057	0.00047	660	1.00	0.66	0.0082	8.1	0.86	1846	-	0.0016	0.0016	0.00013	0.000033	0.047	0.024	0.0097	0.0044
HLC-4	L-7	2020-01-22	42	0.10	0.057	0.00047	658	1.00	0.66	0.0082	8.1	0.86	1846	-	0.00080	0.00033	0.00033	0.000033	0.041	0.022	0.0087	0.0030
HLC-4	L-8	2020-01-29	49	0.10	0.057	0.00047	657	1.00	0.66	0.0082	8.0	0.86	1846	-	0.00053	0.00067	0.000067	0.000067	0.042	0.023	0.0090	0.0027
HLC-4	L-9	2020-02-12	63	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1846	-	0.00093	0.0011	0.000033	0.000033	0.034	0.018	0.0073	0.0019
HLC-4	L-10	2020-02-26	77	0.10	0.057	0.00047	654	1.00	0.65	0.0082	8.0	0.86	1846	-	0.0015	0.0018	0.000033	0.000033	0.032	0.017	0.0070	0.0016
HLC-4	L-11	2020-03-11	91	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1846	-	0.00053	0.00013	0.00026	0.000033	0.029	0.016	0.0065	0.0013
HLC-4	L-12	2020-03-25	105	0.10	0.057	0.00047	649	1.00	0.65	0.0082	8.0	0.86	1846	-	0.0011	0.0011	0.00013	0.000033	0.027	0.015	0.0059	0.0011
HLC-4	L-13	2020-04-08	119	0.10	0.057	0.00047	649	1.00	0.65	0.0082	8.0	0.86	1846	-	0.00059	0.00039	0.00013	0.000033	0.025	0.014	0.0055	0.00086
HLC-4	L-14	2020-04-22	133	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.86	1846	-	0.00066	0.00079	0.000033	0.000033	0.025	0.013	0.0054	0.00066
HLC-4	L-15	2020-05-06	147	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.86	1846	-	0.00059	0.00026	0.00026	0.000033	0.019	0.013	0.0050	0.00053
HLC-4	L-16	2020-05-20	161	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1846	-	0.00066	0.00013	0.00033	0.000033	0.020	0.013	0.0051	0.00040
HLC-4	L-17	2020-06-03	175	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	0.0015	0.0018	0.000033	0.000033	0.019	0.012	0.0048	0.00040

- Parameter not analyzed

Appendix E, Table E-11
HLC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	$mg\text{-}N/m^2s$	$mg\text{-}N/m^2s$	$mg\text{-}N/m^2s$	$mg\text{-}P/m^2s$	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s
HLC-1	L-1	0.00047	0.024	0.0059	0.057	-	-	0.000053	-	1.1	0.0000082	0.00052	0.000088	0.00012	0.00020	0.00000059	5.9E-08	0.00000059	0.000011	0.000014	0.000054	0.00000033
HLC-1	L-2	0.000040	0.0034	0.00010	0.012	-	-	0.000045	-	0.11	0.00000076	0.000067	0.000013	0.000020	0.000016	5.0E-08	2.0E-08	0.0000006	0.00000025	0.0000033	0.000042	5.0E-10
HLC-1	L-3	0.000038	0.0029	0.000047	0.011	-	-	0.0000042	-	0.10	0.00000048	0.000033	0.000012	0.000019	0.000012	4.7E-08	1.9E-08	4.7E-08	0.00000024	0.00000047	0.0000036	4.7E-10
HLC-1	L-4	0.000022	0.0016	0.000037	0.0062	-	-	0.00000082	-	0.057	0.00000024	0.0000038	0.0000081	0.0000092	0.0000040	9.2E-09	9.2E-10	1.8E-08	4.6E-08	0.00000027	0.0000013	3.7E-10
HLC-1	L-5	0.000016	0.0012	0.000026	0.0044	-	-	0.00000059	-	0.042	0.00000013	0.0000039	0.0000059	0.0000078	0.0000026	6.5E-09	6.5E-10	1.3E-08	3.3E-08	0.00000014	0.0000014	2.6E-10
HLC-1	L-6	0.000011	0.00079	0.000020	0.0030	-	-	0.0000003	-	0.030	8.5E-08	0.00000085	0.0000040	0.0000053	0.0000018	3.3E-09	3.3E-09	3.3E-09	1.6E-08	5.3E-08	5.3E-08	1.3E-10
HLC-1	L-7	0.000010	0.00073	0.000020	0.0023	-	-	0.0000003	-	0.025	5.5E-08	0.00000094	0.0000035	0.0000060	0.0000017	3.3E-09	1.3E-09	3.3E-09	1.7E-08	6.0E-08	0.00000021	3.3E-11
HLC-1	L-8	0.000012	0.00079	0.000013	0.0024	-	-	0.0000060	-	0.027	3.7E-08	0.0000040	0.0000035	0.0000067	0.0000021	6.7E-09	2.7E-09	2.7E-08	3.3E-08	0.00000019	0.0000021	1.3E-10
HLC-1	L-9	0.0000066	0.00056	0.000013	0.0017	-	-	0.0000030	-	0.021	1.5E-08	0.0000018	0.0000027	0.0000059	0.0000018	3.3E-09	2.6E-09	1.3E-08	1.6E-08	7.9E-08	0.00000086	1.3E-10
HLC-1	L-10	0.0000066	0.00053	0.000013	0.0015	-	-	0.0000030	-	0.020	9.9E-09	0.00000099	0.0000026	0.0000059	0.0000017	3.3E-09	6.6E-10	3.3E-09	1.7E-08	4.0E-08	0.00000011	3.3E-11
HLC-1	L-11	0.0000066	0.00049	0.000013	0.0014	-	-	0.0000030	-	0.018	7.9E-09	0.0000014	0.0000025	0.0000059	0.0000018	3.3E-09	6.6E-10	3.3E-09	1.6E-08	3.9E-08	0.00000011	6.6E-11
HLC-1	L-12	0.0000066	0.00042	0.000013	0.0011	-	-	0.0000030	-	0.016	5.9E-09	0.0000012	0.0000021	0.0000053	0.0000016	3.3E-09	3.3E-10	3.3E-09	1.6E-08	2.6E-08	5.3E-08	3.3E-11
HLC-1	L-13	0.0000066	0.00040	0.000013	0.00098	-	-	0.0000030	-	0.015	5.2E-09	0.0000012	0.0000020	0.0000052	0.0000016	3.3E-09	3.3E-10	3.3E-09	1.6E-08	2.6E-08	6.6E-08	3.3E-11
HLC-1	L-14	0.0000059	0.00038	0.0000065	0.00091	-	-	0.0000029	-	0.014	4.6E-09	0.0000013	0.0000018	0.0000052	0.0000015	3.3E-09	6.5E-10	3.3E-09	1.6E-08	2.6E-08	5.9E-08	3.3E-11
HLC-1	L-15	0.0000072	0.00036	0.0000066	0.00079	-	-	0.000030	-	0.014	3.3E-09	0.0000018	0.0000017	0.0000046	0.0000016	3.3E-09	6.6E-10	3.3E-09	1.6E-08	2.0E-08	1.6E-08	3.3E-11
HLC-1	L-16	0.0000059	0.00036	0.0000066	0.00073	-	-	0.0000030	-	0.014	1.6E-09	0.0000016	0.0000016	0.0000053	0.0000015	3.3E-09	2.0E-09	3.3E-09	1.6E-08	2.6E-08	0.00000016	3.3E-11
HLC-1	L-17	0.0000066	0.00032	0.0000066	0.00059	-	-	0.0000030	-	0.013	1.6E-09	0.0000014	0.0000016	0.0000046	0.0000015	3.3E-09	3.3E-10	3.3E-09	1.6E-08	5.9E-08	9.2E-08	1.3E-10
HLC-2	L-1	0.00024	0.013	0.0059	0.039	-	-	0.000053	-	0.25	0.0000027	0.00041	0.000028	0.000059	0.000043	0.00000059	5.9E-08	0.0000012	0.0000030	0.000015	0.00014	2.4E-08
HLC-2	L-2	0.000040	0.0039	0.000050	0.015	-	-	0.000045	-	0.12	0.0000011	0.000013	0.000016	0.000020	0.0000064	5.0E-08	5.0E-08	5.0E-08	0.00000025	0.0000010	0.0000037	4.0E-09
HLC-2	L-3	0.000029	0.0031	0.000048	0.010	-	-	0.0000043	-	0.095	0.00000061	0.000034	0.000012	0.000019	0.0000059	4.8E-08	9.5E-09	4.8E-08	0.00000024	0.00000057	0.0000055	1.9E-09
HLC-2	L-4	0.000020	0.0016	0.000037	0.0062	-	-	0.00000083	-	0.057	0.00000024	0.0000040	0.0000077	0.0000092	0.0000024	9.2E-09	1.8E-09	9.2E-09	4.6E-08	0.00000022	0.0000015	5.5E-10
HLC-2	L-5	0.000017	0.0012	0.000026	0.0045	-	-	0.0000006	-	0.042	0.00000012	0.0000028	0.0000060	0.0000066	0.0000019	6.6E-09	1.3E-09	6.6E-09	3.3E-08	0.00000011	0.00000054	2.6E-10
HLC-2	L-6	0.0000087	0.00080	0.000020	0.0030	-	-	0.0000003	-	0.030	8.7E-08	0.00000087	0.0000040	0.0000054	0.0000015	3.4E-09	4.0E-09	3.4E-09	1.7E-08	4.0E-08	6.7E-08	3.4E-11
HLC-2	L-7	0.000010	0.00074	0.000013	0.0024	-	-	0.0000003	-	0.027	5.9E-08	0.00000074	0.0000035	0.0000067	0.0000015	3.3E-09	2.7E-09	3.3E-09	1.7E-08	8.0E-08	0.0000001	6.7E-11
HLC-2	L-8	0.000012	0.00080	0.000013	0.0024	-	-	0.0000060	-	0.027	3.9E-08	0.0000013	0.0000033	0.0000080	0.0000019	6.7E-09	2.7E-09	6.7E-09	3.3E-08	6.7E-08	0.00000032	6.7E-11
HLC-2	L-9	0.0000066	0.00058	0.000013	0.0017	-	-	0.0000030	-	0.021	1.8E-08	0.0000008	0.0000027	0.0000066	0.0000016	3.3E-09	2.7E-09	3.3E-09	1.7E-08	4.0E-08	0.00000014	3.3E-11
HLC-2	L-10	0.0000066	0.00053	0.000013	0.0015	-	-	0.0000030	-	0.019	1.5E-08	0.00000066	0.0000025	0.0000060	0.0000015	3.3E-09	6.6E-10	3.3E-09	1.7E-08	3.3E-08	9.3E-08	3.3E-11
HLC-2	L-11	0.0000060	0.00048	0.000013	0.0013	-	-	0.0000030	-	0.018	1.2E-08	0.0000008	0.0000023	0.0000060	0.0000015	3.3E-09	1.3E-09	3.3E-09	1.7E-08	3.3E-08	0.00000011	3.3E-11
HLC-2	L-12	0.0000053	0.00043	0.0000066	0.0011	-	-	0.0000030	-	0.017	9.3E-09	0.00000086	0.0000021	0.0000053	0.0000014	3.3E-09	3.3E-10	3.3E-09	1.7E-08	2.7E-08	0.00000011	3.3E-11
HLC-2	L-13	0.0000066	0.00041	0.0000066	0.00099	-	-	0.0000030	-	0.015	7.3E-09	0.0000014	0.0000020	0.0000053	0.0000013	3.3E-09	4.6E-09	3.3E-09	1.6E-08	4.0E-08	0.0000004	3.3E-11
HLC-2	L-14	0.0000053	0.00040	0.0000066	0.00093	-	-	0.0000030	-	0.015	6.6E-09	0.0000012	0.0000019	0.0000053	0.0000014	3.3E-09	1.3E-09	3.3E-09	1.7E-08	4.0E-08	0.0000003	3.3E-11
HLC-2	L-15	0.0000073	0.00036	0.0000066	0.00080	-	-	0.000030	-	0.014	4.0E-09	0.0000012	0.0000017	0.0000046	0.0000014	3.3E-09	3.3E-09	3.3E-09	1.7E-08	2.7E-08	1.7E-08	3.3E-11
HLC-2	L-16	0.0000053	0.00036	0.0000066	0.00073	-	-	0.0000030	-	0.014	3.3E-09	0.0000012	0.0000016	0.0000053	0.0000013	3.3E-09	2.0E-09	3.3E-09	1.7E-08	2.6E-08	7.9E-08	3.3E-11
HLC-2	L-17	0.0000053	0.00032	0.0000066	0.00059	-	-	0.0000030	-	0.013	1.7E-09	0.0000011	0.0000015	0.0000053	0.0000013	3.3E-09	6.6E-10	3.3E-09	1.7E-08	2.7E-08	1.0E-07	1.3E-10
HLC-3	L-1	0.000058	0.0070	0.00058	0.014	-	-	0.000052	-	0.19	0.0000012	0.00027	0.000014	0.000058	0.000041	0.00000058	0.00000012	0.0000012	0.0000029	0.000016	0.00011	5.8E-09
HLC-3	L-2	0.000040	0.0034	0.000050	0.011	-	-	0.000045	-	0.12	0.00000065	0.000014	0.000011	0.000020	0.0000087	5.0E-08	2.0E-08	5.0E-08	0.00000025	0.0000010	0.0000092	5.0E-10
HLC-3	L-3	0.000028	0.0028	0.000047	0.0093	-	-	0.0000042	-	0.093	0.00000047	0.000026	0.000010	0.000019	0.0000069	4.7E-08	9.3E-09	4.7E-08	0.00000023	0.00000047	0.0000037	4.7E-10
HLC-3	L-4	0.000022	0.0016	0.000037	0.0063	-	-	0.00000083	-	0.057	0.00000022	0.0000043	0.0000078	0.0000093	0.0000028	9.3E-09	9.3E-10	1.9E-08	4.6E-08	0.00000022	0.0000015	3.7E-10
HLC-3	L-5	0.000017	0.0012	0.000026	0.0044	-	-	0.0000006	-	0.044	9.0E-08	0.0000028	0.0000060	0.0000079	0.0000021	6.6E-09	4.0E-09	2.6E-08	3.3E-08	0.0000025	0.0000020	2.6E-10
HLC-3	L-6	0.000011	0.00080	0.000020	0.0029	-	-	0.0000003	-	0.030	6.7E-08	0.00000093	0.0000040	0.0000060	0.0000016	3.3E-09	3.3E-09	6.7E-09	1.7E-08	5.3E-08	0.00000031	3.3E-11
HLC-3	L-7	0.0000100	0.00073	0.000013	0.0023	-	-	0.0000003	-	0.026	4.3E-08	0.00000086	0.0000034	0.0000066	0.0000016	3.3E-09	1.3E-09	3.3E-09	1.7E-08	6.0E-08	0.00000021	3.3E-11
HLC-3	L-8	0.000012	0.00077	0.000013	0.0023	-	-	0.0000060	-	0.027	3.1E-08	0.0000017	0.0000033	0.0000080	0.0000019	6.7E-09	6.7E-10	6.7E-09	3.3E-08	0.00000011	0.0000010	6.7E-11
HLC-3	L-9	0.0000053	0.00055	0.000013	0.0017	-	-	0.0000030	-	0.021	2.7E-08	0.00000086	0.0000027	0.0000060	0.0000016	3.3E-09	2.7E-09	3.3E-09	1.7E-08	4.6E-08	0.00000028	3.3E-11
HLC-3	L-10	0.0000060	0.00052	0.000013	0.0015	-	-	0.0000030	-	0.020	1.1E-08	0.00000099	0.0000025	0.0000060	0.0000015	3.3E-09	6.6E-10	3.3E-09	1.7E-08	5.3E-08	0.00000036	3.3E-11
HLC-3	L-11	0.0000066	0.00048	0.000013	0.0013	-	-	0.0000030	-	0.018	7.3E-09	0.0000011	0.0000024	0.0000059	0.0000015	3.3E-09	1.3E-09	6.6E-09	1.7E-08	5.3E-08	0.00000049	6.6E-11
HLC-3	L-12	0.0000060	0.00042	0.0000066	0.0011	-	-	0.0000030	-	0.017	5.3E-09	0.00000079	0.0000022	0.0000053	0.0000015	3.3E-09	2.0E-09	3.3E-09	1.7E-08	2.0E-08	9.9E-08	3.3E-11
HLC-3	L-13	0.0000066	0.00040	0.0000066	0.00099	-	-	0.0000030	-	0.015	5.3E-09	0.0000011	0.0000021	0.0000053	0.0000015	3.3E-09	6.6E-10	3.3E-09	1.7E-08	3.3E-08	0.00000012	3.3E-11
HLC-3	L-14	0.0000066	0.00040	0.0000066	0.00093	-	-	0.0000030	-	0.015	4.6E-09	0.0000013	0.0000019	0.0000053	0.0000015	3.3E-09	6.6E-10	3.3E-09	1.7E-08	2.6E-08	0.00000013	3.3E-11
HLC-3	L-15	0.0000066	0.00035	0.0000066	0.00079	-	-	0.000030	-	0.014	3.3E-09	0.0000012	0.0000017	0.0000046	0.0000015	3.3E-09	3.3E-10	3.3E-09	1.7E-08	2.0E-08	1.7E-08	3.3E-11
HLC-3	L-16	0.0000046	0.00036	0.0000066	0.00073	-	-	0.0000030	-	0.014	4.0E-09	0.0000012	0.0000017	0.0000053	0.0000015	3.3E-09	3.3E-10	3.3E-09	1.7E-08	2.0E-08	6.6E-08	3.3E-11
HLC-3	L-17	0.0000053	0.00032	0.0000066	0.00061	-	-	0.0000030	-	0.013	5.3E-09	0.0000014	0.0000016	0.0000046	0.0000015	3.3E-09	3.3E-10	3.3E-09	1.6E-08	4.6E-08	0.00000024	1.3E-10
HLC-4	L-1	0.000058	0.0070	0.00058	0.016	-	-	0.000053	-	0.21	0.0000019	0.00029	0.000015	0.000058	0.000040	0.00000058	0.00000012	0.00000058	0.0000029	0.000012	0.000096	1.2E-08
HLC-4	L-2	0.000030	0.0036	0.00010	0.012	-	-	0.000045	-	0.12	0.00000071	0.0000084	0.000012	0.000020	0.0000081	5.0E-08	2.0E-08	5.0E-08	0.0000017	0.0000005	0.0000059	1.0E-09
HLC-4	L-3	0.000028	0.0028	0.000047	0.010	-	-	0.0000042	-	0.094	0.00000047	0.000034	0.000011	0.000019	0.0000066	4.7E-08	9.4E-09	4.7E-08	0.00000024	0.00000028	0.0000035	4.7E-10
HLC-4	L-4	0.000022	0.0016	0.000037	0.0065	-	-	0.00000083	-	0.057	0.00000022	0.0000028	0.0000079	0.0000092	0.0000026	9.2E-09	1.8E-09	9.2E-09	4.6E-08	0.00000018	0.0000016	5.5E-10
HLC-4	L-5	0.000017	0.0012	0.000026	0.0046	-	-	0.00000059	-	0.043	0.00000012	0.0000020	0.0000062	0.0000066	0.0000020	6.6E-09	2.6E-09	1.3E-08	3.3E-08	0.00000012	0.0000010	2.6E-10
HLC-4	L-6	0.000011	0.00080	0.000020	0.0030	-	-	0.0000003	-	0.030	8.0E-08	0.00000087	0.0000041	0.0000067	0.0000015	3.3E-09	3.3E-10	3.3E-09	1.7E-08	4.0E-08	0.00000051	3.3E-11
HLC-4	L-7	0.0000100	0.00073	0.000013	0.0024	-	-	0.0000003	-	0.026	4.9E-08	0.00000087	0.0000035	0.0000067	0.0000016	3.3E-09	3.3E-10	3.3E-09	1.7E-08	5.3E-08	0.00000026	6.7E-11
HLC-4	L-8	0.000012	0.00080	0.000013	0.0024	-	-	0.0000060	-	0.027	3.5E-08	0.0000016	0.0000035	0.0000080	0.0000019	6.7E-09	1.3E-09	6.7E-09	3.3E-08	8.0E-08	0.00000088	6.7E-11
HLC-4	L-9	0.0000053	0.00056	0.000013	0.0017	-	-	0.0000030	-	0.021	2.8E-08	0.00000079	0.0000027	0.0000059	0.0000016	3.3E-09	6.6E-10	3.3E-09	1.7E-08	4.0E-08	0.00000022	3.3E-11
HLC-4	L-10	0.0000066	0.00053	0.000013	0.0016	-	-	0.0000030	-	0.020	1.1E-08	0.00000099	0.0000026	0.0000066	0.0000015	3.3E-09	1.3E-09	3.3E-09	1.7E-08	4.6E-08	0.00000038	3.3E-11
HLC-4	L-11	0.0000066	0.00048	0.000013	0.0014	-	-	0.0000030	-	0.018	8.6E-09	0.0000011	0.0000024	0.0000060	0.0000015	3.3E-09	1.3E-09	6.6E-09	1.7E-08	5.3E-08	0.0000005	6.6E-11
HLC-4	L-12	0.0000066	0.00043	0.000013	0.0012	-	-	0.0000030	-	0.016	5.9E-09	0.0000011	0.0000022	0.0000053	0.0000014	3.3E-09	6.6E-10	3.3E-09	1.6E-08	2.0E-08	5.9E-08	3.3E-11
HLC-4	L-13	0.0000072	0.00041	0.0000066	0.00099	-	-	0.0000030	-	0.016	4.6E-09	0.00000099	0.0000021	0.0000053	0.0000014	3.3E-09	3.3E-10	3.3E-09	1.6E-08	2.6E-08	0.00000016	3.3E-11
HLC-4	L-14	0.0000059	0.00041	0.0000066	0.00092	-	-	0.0000030	-	0.015	4.6E-09	0.0000011	0.0000019	0.0000052	0.0000014	3.3E-09	2.0E-09	3.3E-09	1.6E-08	3.3E-08	0.00000022	3.3E-11
HLC-4	L-15	0.0000066	0.00036	0.0000066	0.00079	-	-	0.000030	-	0.014	4.0E-09	0.00000099	0.0000017	0.0000046	0.0000014	3.3E-09	2.6E-09	3.3E-09	1.7E-08	2.0E-08	1.7E-08	3.3E-11
HLC-4	L-16	0.0000046	0.00036	0.0000066	0.00072	-	-	0.0000030	-	0.013	4.0E-09	0.00000086	0.0000016	0.0000053	0.0000013	3.3E-09	3.3E-10	3.3E-09	5.3E-08	2.0E-08	7.2E-08	3.3E-11
HLC-4	L-17	0.0000059	0.00032	0.0000066	0.00059	-	-	0.0000030	-	0.013	3.3E-09	0.0000016	0.0000015	0.0000053	0.0000015	3.3E-09	2.0E-09	3.3E-09	1.6E-08	3.3E-08	0.00000022	1.3E-10

- Parameter not analyzed

Appendix E, Table E-11
HLC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s
HLC-1	L-1	0.0000029	0.0026	0.0000035	0.000025	0.000020	0.00016	0.00000059	0.00079	0.000018	0.0000035	0.00013	0.000016	0.000029	-	-	8.0E-09	-
HLC-1	L-2	0.0000006	0.00057	0.0000006	0.000062	0.0000024	0.000018	5.0E-08	0.000084	0.0000058	0.0000005	0.000056	0.0000016	0.0000021	-	-	9.2E-10	-
HLC-1	L-3	0.00000024	0.00056	0.00000019	0.0000014	0.0000023	0.000016	4.7E-08	0.000071	0.0000019	0.00000038	0.000010	0.0000013	0.00000094	-	-	4.3E-10	-
HLC-1	L-4	4.6E-08	0.00033	5.5E-08	0.0000015	0.0000010	0.0000086	9.2E-09	0.000040	0.0000010	0.00000022	0.0000029	0.00000064	0.00000048	-	-	1.9E-10	-
HLC-1	L-5	3.3E-08	0.00026	3.9E-08	0.0000011	0.00000076	0.0000056	6.5E-09	0.000030	0.00000093	0.00000016	0.0000016	0.00000052	0.00000012	-	-	1.4E-10	-
HLC-1	L-6	1.6E-08	0.00020	2.0E-08	0.00000021	0.00000053	0.0000039	3.3E-09	0.000022	0.0000005	0.00000011	0.00000064	0.00000038	9.2E-08	-	-	8.9E-11	-
HLC-1	L-7	1.7E-08	0.00019	1.3E-08	0.00000026	0.00000049	0.0000033	3.3E-09	0.000019	0.00000043	0.0000001	0.00000057	0.00000039	6.7E-08	-	-	7.8E-11	-
HLC-1	L-8	3.3E-08	0.00020	2.7E-08	0.0000025	0.00000057	0.0000033	6.7E-09	0.000020	0.00000092	0.00000011	0.0000024	0.00000045	0.00000024	-	-	8.6E-11	-
HLC-1	L-9	1.6E-08	0.00018	2.6E-08	0.0000011	0.00000047	0.0000028	3.3E-09	0.000017	0.00000059	9.2E-08	0.0000014	0.00000036	0.00000013	-	-	7.3E-11	-
HLC-1	L-10	1.7E-08	0.00017	3.3E-08	0.00000011	0.00000046	0.0000022	3.3E-09	0.000016	0.00000054	8.6E-08	0.00000073	0.00000036	0.00000016	-	-	6.6E-11	-
HLC-1	L-11	1.6E-08	0.00018	2.0E-08	0.00000015	0.00000047	0.0000025	3.3E-09	0.000015	0.00000052	7.9E-08	0.00000085	0.00000039	5.9E-08	-	-	6.4E-11	-
HLC-1	L-12	1.6E-08	0.00017	1.3E-08	0.00000013	0.00000042	0.0000022	3.3E-09	0.000014	0.00000059	7.9E-08	0.00000086	0.00000035	9.9E-08	-	-	5.0E-11	-
HLC-1	L-13	1.6E-08	0.00016	6.6E-09	0.00000013	0.00000043	0.0000020	3.3E-09	0.000014	0.0000004	7.9E-08	0.00000072	0.00000033	7.2E-08	-	-	5.3E-11	-
HLC-1	L-14	1.6E-08	0.00015	1.3E-08	0.00000011	0.00000038	0.0000017	3.3E-09	0.000012	0.00000049	7.2E-08	0.00000065	0.00000031	0.00000014	-	-	5.3E-11	-
HLC-1	L-15	1.6E-08	0.00015	3.3E-09	0.00000011	0.00000038	0.0000016	3.3E-09	0.000013	0.00000044	5.9E-08	0.00000099	0.00000031	5.3E-08	-	-	4.6E-11	-
HLC-1	L-16	1.6E-08	0.00015	1.3E-08	0.00000013	0.00000035	0.0000013	3.3E-09	0.000011	0.00000034	5.9E-08	0.00000086	0.0000003	0.00000018	-	-	3.9E-11	-
HLC-1	L-17	1.6E-08	0.00016	1.3E-08	0.00000014	0.00000036	0.0000015	3.3E-09	0.000011	0.0000003	5.3E-08	0.00000072	0.00000031	7.9E-08	-	-	4.3E-11	-
HLC-2	L-1	0.0000030	0.00097	0.0000035	0.000048	0.0000035	0.000038	0.00000059	0.00014	0.0000083	0.0000012	0.000076	0.0000047	0.000020	-	-	1.4E-09	-
HLC-2	L-2	0.00000025	0.00060	0.0000002	0.0000014	0.0000016	0.000016	5.0E-08	0.000085	0.0000018	0.0000004	0.0000054	0.0000012	0.0000010	-	-	3.5E-10	-
HLC-2	L-3	0.00000024	0.00050	0.00000019	0.0000036	0.0000014	0.000013	4.8E-08	0.000071	0.0000016	0.00000038	0.0000061	0.0000011	0.00000057	-	-	2.6E-10	-
HLC-2	L-4	4.6E-08	0.00031	5.5E-08	0.00000088	0.00000081	0.0000073	9.2E-09	0.000040	0.00000094	0.0000002	0.0000015	0.00000064	0.00000042	-	-	1.1E-10	-
HLC-2	L-5	3.3E-08	0.00026	2.6E-08	0.00000045	0.00000063	0.0000056	6.6E-09	0.000030	0.00000085	0.00000016	0.00000079	0.00000053	0.00000015	-	-	1.0E-10	-
HLC-2	L-6	1.7E-08	0.00020	2.0E-08	9.4E-08	0.00000048	0.0000038	3.4E-09	0.000022	0.00000051	0.00000011	0.00000042	0.00000039	0.00000013	-	-	7.6E-11	-
HLC-2	L-7	1.7E-08	0.00019	1.3E-08	8.0E-08	0.00000047	0.0000034	3.3E-09	0.000020	0.00000045	0.00000011	0.00000031	0.00000041	6.7E-08	-	-	7.0E-11	-
HLC-2	L-8	3.3E-08	0.00020	2.7E-08	0.00000033	0.00000053	0.0000031	6.7E-09	0.000020	0.00000071	0.00000011	0.00000053	0.00000044	0.00000025	-	-	7.9E-11	-
HLC-2	L-9	1.7E-08	0.00018	1.3E-08	0.00000017	0.00000044	0.0000027	3.3E-09	0.000017	0.0000005	9.3E-08	0.00000038	0.00000037	4.6E-08	-	-	6.5E-11	-
HLC-2	L-10	1.7E-08	0.00017	1.3E-08	6.6E-08	0.00000044	0.0000023	3.3E-09	0.000015	0.00000057	8.6E-08	0.00000031	0.00000036	1.7E-08	-	-	6.1E-11	-
HLC-2	L-11	1.7E-08	0.00016	1.3E-08	8.6E-08	0.00000041	0.0000021	3.3E-09	0.000014	0.0000005	7.3E-08	0.00000031	0.00000035	4.0E-08	-	-	5.6E-11	-
HLC-2	L-12	1.7E-08	0.00017	1.3E-08	0.00000014	0.00000041	0.0000020	3.3E-09	0.000014	0.00000061	8.0E-08	0.00000036	0.00000034	0.00000012	-	-	5.0E-11	-
HLC-2	L-13	1.6E-08	0.00016	6.6E-09	0.00000035	0.00000041	0.0000018	3.3E-09	0.000014	0.00000041	7.3E-08	0.00000053	0.00000033	3.3E-08	-	-	4.6E-11	-
HLC-2	L-14	1.7E-08	0.00015	1.3E-08	0.00000033	0.00000038	0.0000017	3.3E-09	0.000013	0.00000044	7.3E-08	0.00000046	0.00000032	0.00000012	-	-	4.8E-11	-
HLC-2	L-15	1.7E-08	0.00016	6.6E-09	1.0E-07	0.00000038	0.0000015	3.3E-09	0.000012	0.00000043	6.0E-08	0.00000039	0.00000031	6.6E-08	-	-	4.3E-11	-
HLC-2	L-16	1.7E-08	0.00015	6.6E-09	7.3E-08	0.00000035	0.0000013	3.3E-09	0.000011	0.0000003	6.0E-08	0.00000038	0.0000003	7.9E-08	-	-	3.8E-11	-
HLC-2	L-17	1.7E-08	0.00016	6.6E-09	0.00000013	0.00000035	0.0000014	3.3E-09	0.000011	0.0000003	5.3E-08	0.00000042	0.00000031	0.00000015	-	-	4.0E-11	-
HLC-3	L-1	0.0000058	0.00052	0.0000035	0.00014	0.0000046	0.000029	0.00000058	0.00014	0.000087	0.0000012	0.00014	0.0000023	0.000015	-	-	1.9E-09	-
HLC-3	L-2	0.00000025	0.00048	0.0000004	0.0000067	0.0000021	0.000014	5.0E-08	0.000082	0.0000019	0.0000004	0.000011	0.0000011	0.0000020	-	-	4.3E-10	-
HLC-3	L-3	0.00000023	0.00046	0.00000019	0.0000015	0.0000020	0.000013	4.7E-08	0.000067	0.0000012	0.00000037	0.0000049	0.0000010	0.00000065	-	-	3.3E-10	-
HLC-3	L-4	4.6E-08	0.00032	5.6E-08	0.0000013	0.0000011	0.0000078	9.3E-09	0.000041	0.00000098	0.00000022	0.0000020	0.00000061	0.00000044	-	-	1.5E-10	-
HLC-3	L-5	3.3E-08	0.00027	5.3E-08	0.0000015	0.00000079	0.0000060	6.6E-09	0.000030	0.00000087	0.00000016	0.0000016	0.00000052	0.0000010	-	-	1.0E-10	-
HLC-3	L-6	1.7E-08	0.00020	2.0E-08	0.00000041	0.00000057	0.0000039	3.3E-09	0.000023	0.00000054	0.00000012	0.00000067	0.00000038	1.0E-07	-	-	7.6E-11	-
HLC-3	L-7	1.7E-08	0.00019	1.3E-08	0.00000028	0.00000054	0.0000034	3.3E-09	0.000021	0.00000045	0.00000011	0.00000052	0.0000004	4.7E-08	-	-	7.2E-11	-
HLC-3	L-8	3.3E-08	0.00020	1.3E-08	0.00000089	0.00000059	0.0000032	6.7E-09	0.000020	0.00000077	0.00000012	0.0000010	0.00000044	0.00000013	-	-	7.2E-11	-
HLC-3	L-9	1.7E-08	0.00017	1.3E-08	0.00000037	0.00000046	0.0000027	3.3E-09	0.000017	0.00000052	9.3E-08	0.00000056	0.00000034	6.0E-08	-	-	6.3E-11	-
HLC-3	L-10	1.7E-08	0.00018	1.3E-08	0.00000041	0.00000046	0.0000024	3.3E-09	0.000016	0.00000058	8.6E-08	0.00000062	0.00000035	3.3E-08	-	-	5.9E-11	-
HLC-3	L-11	1.7E-08	0.00017	1.3E-08	0.00000055	0.00000044	0.0000023	3.3E-09	0.000015	0.00000057	7.9E-08	0.00000066	0.00000034	3.3E-08	-	-	5.4E-11	-
HLC-3	L-12	1.7E-08	0.00017	1.3E-08	9.3E-08	0.00000043	0.0000021	3.3E-09	0.000015	0.00000062	7.9E-08	0.0000004	0.00000034	8.6E-08	-	-	5.2E-11	-
HLC-3	L-13	1.7E-08	0.00016	6.6E-09	0.00000019	0.00000042	0.0000020	3.3E-09	0.000014	0.00000038	8.0E-08	0.0000006	0.00000034	8.6E-08	-	-	5.4E-11	-
HLC-3	L-14	1.7E-08	0.00016	6.6E-09	0.00000019	0.00000041	0.0000019	3.3E-09	0.000013	0.00000048	7.3E-08	0.00000063	0.00000032	1.7E-08	-	-	5.4E-11	-
HLC-3	L-15	1.7E-08	0.00015	3.3E-09	0.00000011	0.00000038	0.0000016	3.3E-09	0.000012	0.00000047	6.6E-08	0.00000064	0.0000003	4.0E-08	-	-	4.5E-11	-
HLC-3	L-16	1.7E-08	0.00016	6.6E-09	0.00000011	0.00000037	0.0000014	3.3E-09	0.000012	0.00000032	6.6E-08	0.00000066	0.00000032	8.6E-08	-	-	3.9E-11	-
HLC-3	L-17	1.6E-08	0.00016	6.6E-09	0.00000016	0.00000037	0.0000015	3.3E-09	0.000011	0.00000029	5.9E-08	0.00000063	0.00000032	7.9E-08	-	-	4.3E-11	-
HLC-4	L-1	0.0000029	0.00062	0.0000023	0.00010	0.0000047	0.000030	0.00000058	0.00016	0.000012	0.0000012	0.00011	0.0000035	0.000011	-	-	1.9E-09	-
HLC-4	L-2	0.00000025	0.00052	0.0000002	0.0000027	0.0000019	0.000013	5.0E-08	0.000088	0.0000016	0.0000004	0.0000067	0.0000013	0.0000014	-	-	3.8E-10	-
HLC-4	L-3	0.00000024	0.00049	9.4E-08	0.0000011	0.0000018	0.000013	4.7E-08	0.000070	0.0000013	0.00000038	0.0000041	0.0000012	0.00000024	-	-	2.8E-10	-
HLC-4	L-4	4.6E-08	0.00033	3.7E-08	0.00000083	0.00000092	0.0000079	9.2E-09	0.000041	0.0000011	0.00000022	0.0000015	0.00000065	0.00000052	-	-	1.4E-10	-
HLC-4	L-5	3.3E-08	0.00026	2.6E-08	0.00000079	0.00000072	0.0000058	6.6E-09	0.000030	0.00000086	0.00000016	0.0000011	0.00000054	0.00000012	-	-	1.0E-10	-
HLC-4	L-6	1.7E-08	0.00021	2.0E-08	0.00000029	0.00000052	0.0000039	3.3E-09	0.000022	0.00000053	0.00000012	0.00000058	0.0000004	8.7E-08	-	-	7.4E-11	-
HLC-4	L-7	1.7E-08	0.00019	1.3E-08	0.00000031	0.00000049	0.0000035	3.3E-09	0.000020	0.00000046	0.00000011	0.00000053	0.00000041	3.3E-08	-	-	7.0E-11	-
HLC-4	L-8	3.3E-08	0.00020	2.7E-08	0.00000084	0.00000055	0.0000032	6.7E-09	0.000020	0.00000073	0.00000012	0.00000098	0.00000044	0.00000015	-	-	8.6E-11	-
HLC-4	L-9	1.7E-08	0.00017	1.3E-08	0.00000028	0.00000044	0.0000026	3.3E-09	0.000017	0.0000005	9.3E-08	0.0000005	0.00000035	4.6E-08	-	-	6.8E-11	-
HLC-4	L-10	1.7E-08	0.00018	1.3E-08	0.0000004	0.00000044	0.0000024	3.3E-09	0.000016	0.00000057	8.6E-08	0.00000061	0.00000036	5.3E-08	-	-	5.5E-11	-
HLC-4	L-11	1.7E-08	0.00017	2.0E-08	0.00000051	0.00000042	0.0000022	3.3E-09	0.000014	0.00000054	7.9E-08	0.00000065	0.00000035	5.3E-08	-	-	5.5E-11	-
HLC-4	L-12	1.6E-08	0.00017	6.6E-09	0.00000014	0.00000042	0.0000021	3.3E-09	0.000014	0.00000063	7.9E-08	0.00000057	0.00000034	5.9E-08	-	-	5.2E-11	-
HLC-4	L-13	1.6E-08	0.00016	2.0E-08	0.00000018	0.00000042	0.0000020	3.3E-09	0.000014	0.00000037	7.9E-08	0.00000057	0.00000034	5.3E-08	-	-	5.3E-11	-
HLC-4	L-14	1.6E-08	0.00016	6.6E-09	0.00000028	0.00000039	0.0000017	3.3E-09	0.000013	0.00000049	7.2E-08	0.00000055	0.00000033	7.2E-08	-	-	4.6E-11	-
HLC-4	L-15	1.7E-08	0.00015	3.3E-09	0.00000011	0.00000036	0.0000015	3.3E-09	0.000012	0.00000047	6.6E-08	0.00000053	0.00000029	1.7E-08	-	-	4.5E-11	-
HLC-4	L-16	1.6E-08	0.00015	1.3E-08	0.00000013	0.00000036	0.0000013	3.3E-09	0.000011	0.00000034	5.9E-08	0.00000047	0.0000003	6.6E-08	-	-	3.9E-11	-
HLC-4	L-17	1.6E-08	0.00016	1.3E-08	0.00000028	0.00000036	0.0000015	3.3E-09	0.000011	0.0000003	5.9E-08	0.00000057	0.00000032	0.00000028	-	-	4.1E-11	-

- Parameter not analyzed

Appendix E, Table E-12
HHC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s
HHC-1	L-1	2019-10-08	0.080	0.076	0.15	0.00066	4176	1.00	4.2	0.044	9.6	0.89	1346	0.014	0.083	0.097	0.0069	0.0069	0.24	0.11	0.044	0.0069
HHC-1	L-2	2019-10-09	1.0	0.076	0.15	0.00066	4367	1.00	4.4	0.044	10	0.89	1346	0.00063	0.028	0.015	0.0088	0.00063	0.44	0.096	0.035	0.0025
HHC-1	L-3	2019-10-10	2.0	0.076	0.15	0.00066	4374	1.00	4.4	0.044	10	0.89	1346	0.00058	0.026	0.026	0.0023	0.00058	0.31	0.066	0.026	0.0023
HHC-1	L-4	2019-10-15	7.0	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	0.00012	0.020	0.00012	0.0088	0.0016	0.15	0.031	0.012	0.0016
HHC-1	L-5	2019-10-22	14	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	0.000083	0.028	0.000083	0.0063	0.0058	0.070	0.024	0.0094	0.00066
HHC-1	L-6	2019-11-05	28	0.076	0.15	0.00066	4370	1.00	4.4	0.044	10	0.89	1346	0.000041	0.017	0.000041	0.0030	0.0041	0.041	0.018	0.0073	0.00033
HHC-1	L-7	2019-11-19	42	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	0.000041	0.017	0.000041	0.0035	0.0036	0.033	0.020	0.0080	0.00017
HHC-1	L-8	2019-11-26	49	0.076	0.15	0.00066	4375	1.00	4.4	0.044	10	0.89	1346	0.000083	0.023	0.000083	0.0053	0.0046	0.040	0.027	0.011	0.00017
HHC-1	L-9	2019-12-10	63	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	0.000041	0.014	0.000041	0.0034	0.0029	0.028	0.021	0.0083	0.000083
HHC-1	L-10	2019-12-24	77	0.076	0.15	0.00066	4365	1.00	4.4	0.044	10	0.89	1346	0.000041	0.015	0.000041	0.0031	0.0033	0.026	0.019	0.0074	0.000083
HHC-1	L-11	2020-01-07	91	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.89	1346	0.000041	0.014	0.000041	0.0031	0.0030	0.024	0.019	0.0076	0.000041
HHC-1	L-12	2020-01-21	105	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	0.000041	0.013	0.000041	0.0029	0.0027	0.024	0.018	0.0074	0.000083
HHC-1	L-13	2020-02-04	119	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	0.000041	0.015	0.000041	0.0028	0.0034	0.024	0.017	0.0069	0.000041
HHC-1	L-14	2020-02-18	133	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.89	1346	0.000041	0.0093	0.000041	0.0028	0.0016	0.021	0.017	0.0070	0.000041
HHC-1	L-15	2020-03-03	147	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	0.000041	0.012	0.000041	0.0030	0.0023	0.021	0.017	0.0069	0.000041
HHC-1	L-16	2020-03-17	161	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.89	1346	0.000041	0.0093	0.000041	0.0030	0.0015	0.022	0.016	0.0063	0.000083
HHC-1	L-17	2020-03-31	175	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.89	1346	0.000041	0.010	0.000041	0.0033	0.0016	0.020	0.014	0.0057	0.000041
HHC-1	L-18	2020-04-28	203	0.076	0.15	0.00066	4374	1.00	4.4	0.044	10	0.89	1346	0.000021	0.0078	0.000021	0.0015	0.0017	0.012	0.0092	0.0037	0.000021
HHC-1	L-19	2020-05-26	231	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	0.000021	0.0070	0.000021	0.0017	0.0015	0.013	0.0090	0.0036	0.000021
HHC-1	L-20	2020-06-23	259	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	0.000021	0.0080	0.000021	0.0012	0.0021	0.012	0.0098	0.0039	0.000021
HHC-1	L-21	2020-07-24	290	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	0.000019	0.0073	0.000019	0.0011	0.0019	0.011	0.0094	0.0038	0.000019
HHC-1	L-22	2020-08-21	318	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	0.000021	0.0076	0.000021	0.0014	0.0018	0.012	0.010	0.0041	0.000021
HHC-1	L-23	2020-09-18	346	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	0.000021	0.0074	0.000021	0.0012	0.0018	0.012	0.0098	0.0039	0.000021
HHC-1	L-24	2020-10-16	374	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	0.000021	0.0060	0.000021	0.0015	0.0012	0.011	0.0094	0.0038	0.000021
HHC-2	L-1	2019-10-08	0.080	0.076	0.14	0.00065	4139	1.00	4.1	0.043	9.5	0.87	1331	0.0069	0.069	0.083	0.0069	0.0069	0.28	0.12	0.047	0.0028
HHC-2	L-2	2019-10-09	1.0	0.076	0.14	0.00065	4338	1.00	4.3	0.043	10	0.87	1331	0.00063	0.029	0.023	0.0063	0.00063	0.44	0.11	0.040	0.0025
HHC-2	L-3	2019-10-10	2.0	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	0.00058	0.023	0.017	0.0058	0.00058	0.34	0.088	0.034	0.0035
HHC-2	L-4	2019-10-15	7.0	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	0.00012	0.014	0.00012	0.0079	0.00023	0.18	0.043	0.017	0.0019
HHC-2	L-5	2019-10-22	14	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1331	0.000083	0.025	0.000083	0.0061	0.0051	0.075	0.023	0.0091	0.00099
HHC-2	L-6	2019-11-05	28	0.076	0.14	0.00065	4348	1.00	4.4	0.043	10	0.87	1331	0.000041	0.017	0.000041	0.0029	0.0041	0.042	0.015	0.0061	0.00033
HHC-2	L-7	2019-11-19	42	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	0.000041	0.016	0.000041	0.0036	0.0034	0.031	0.017	0.0069	0.00017
HHC-2	L-8	2019-11-26	49	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	0.000083	0.022	0.000083	0.0061	0.0040	0.037	0.025	0.0100	0.00017
HHC-2	L-9	2019-12-10	63	0.076	0.14	0.00065	4347	1.00	4.4	0.043	10	0.87	1331	0.000041	0.013	0.000041	0.0034	0.0026	0.026	0.019	0.0075	0.000083
HHC-2	L-10	2019-12-24	77	0.076	0.14	0.00065	4347	1.00	4.4	0.043	10	0.87	1331	0.000041	0.014	0.000041	0.0031	0.0031	0.025	0.017	0.0067	0.000083
HHC-2	L-11	2020-01-07	91	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	0.000041	0.013	0.000041	0.0035	0.0025	0.022	0.017	0.0070	0.000041
HHC-2	L-12	2020-01-21	105	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	0.000041	0.012	0.000041	0.0027	0.0024	0.021	0.018	0.0072	0.000083
HHC-2	L-13	2020-02-04	119	0.076	0.14	0.00065	4349	1.00	4.4	0.043	10	0.87	1331	0.000041	0.013	0.000041	0.0022	0.0032	0.022	0.016	0.0065	0.000083
HHC-2	L-14	2020-02-18	133	0.076	0.14	0.00065	4353	1.00	4.4	0.043	10	0.87	1331	0.000041	0.0089	0.000041	0.0027	0.0015	0.019	0.016	0.0065	0.000041
HHC-2	L-15	2020-03-03	147	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	0.000041	0.012	0.000041	0.0030	0.0023	0.019	0.016	0.0063	0.000041
HHC-2	L-16	2020-03-17	161	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1331	0.000041	0.0085	0.000041	0.0029	0.0012	0.020	0.015	0.0059	0.000041
HHC-2	L-17	2020-03-31	175	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	0.000041	0.0087	0.000041	0.0026	0.0015	0.019	0.013	0.0053	0.000041
HHC-2	L-18	2020-04-28	203	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	0.000021	0.0071	0.000021	0.0015	0.0016	0.011	0.0087	0.0035	0.000021
HHC-2	L-19	2020-05-26	231	0.076	0.14	0.00065	4349	1.00	4.4	0.043	10	0.87	1331	0.000021	0.0064	0.000021	0.0015	0.0013	0.012	0.0083	0.0033	0.000021
HHC-2	L-20	2020-06-23	259	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	0.000021	0.0080	0.000021	0.0015	0.0019	0.010	0.0094	0.0038	0.000021
HHC-2	L-21	2020-07-24	290	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1331	0.000019	0.0072	0.000019	0.0012	0.0018	0.0095	0.0082	0.0033	0.000019
HHC-2	L-22	2020-08-21	318	0.076	0.14	0.00065	4353	1.00	4.4	0.043	10	0.87	1331	0.000021	0.0072	0.000021	0.0014	0.0017	0.011	0.0092	0.0037	0.000021
HHC-2	L-23	2020-09-18	346	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	0.000021	0.0070	0.000021	0.0011	0.0017	0.0098	0.0085	0.0034	0.000021
HHC-2	L-24	2020-10-16	374	0.076	0.14	0.00065	4349	1.00	4.4	0.043	10	0.87	1331	0.000021	0.0051	0.000021	0.0012	0.0011	0.0097	0.0079	0.0032	0.000021
HHC-3	L-1	2019-10-08	0.080	0.076	0.14	0.00065	4119	1.00	4.1	0.043	9.5	0.87	1333	0.0069	0.082	0.096	0.0069	0.0069	0.36	0.18	0.069	0.0014
HHC-3	L-2	2019-10-09	1.0	0.076	0.14	0.00065	4348	1.00	4.4	0.043	10	0.87	1333	0.00063	0.035	0.025	0.0088	0.00063	0.53	0.14	0.052	0.0025
HHC-3	L-3	2019-10-10	2.0	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	0.00058	0.034	0.027	0.0070	0.00058	0.37	0.11	0.042	0.0035
HHC-3	L-4	2019-10-15	7.0	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	0.00012	0.013	0.00023	0.0079	0.00012	0.19	0.054	0.021	0.0019
HHC-3	L-5	2019-10-22	14	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	0.000083	0.024	0.000083	0.0063	0.0045	0.075	0.027	0.011	0.00099
HHC-3	L-6	2019-11-05	28	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1333	0.000041	0.016	0.000041	0.0033	0.0036	0.043	0.013	0.0052	0.00033
HHC-3	L-7	2019-11-19	42	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	0.000041	0.016	0.000041	0.0039	0.0032	0.032	0.018	0.0073	0.00017
HHC-3	L-8	2019-11-26	49	0.076	0.14	0.00065	4355	1.00	4.4	0.043	10	0.87	1333	0.000083	0.022	0.000083	0.0053	0.0043	0.038	0.025	0.010	0.00017
HHC-3	L-9	2019-12-10	63	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	0.000041	0.012	0.000041	0.0033	0.0023	0.026	0.019	0.0076	0.000083
HHC-3	L-10	2019-12-24	77	0.076	0.14	0.00065	4347	1.00	4.4	0.043	10	0.87	1333	0.000041	0.014	0.000041	0.0029	0.0031	0.025	0.017	0.0067	0.000041
HHC-3	L-11	2020-01-07	91	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	0.000041	0.013	0.000041	0.0033	0.0026	0.023	0.016	0.0065	0.000041
HHC-3	L-12	2020-01-21	105	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	0.000041	0.012	0.000041	0.0031	0.0023	0.021	0.018	0.0072	0.000083
HHC-3	L-13	2020-02-04	119	0.076	0.14	0.00065	4349	1.00	4.4	0.043	10	0.87	1333	0.000041	0.014	0.000041	0.0036	0.0029	0.021	0.017	0.0066	0.000083
HHC-3	L-14	2020-02-18	133	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	0.000041	0.0089	0.000041	0.0027	0.0015	0.019	0.016	0.0066	0.000041
HHC-3	L-15	2020-03-03	147	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	0.000041	0.011	0.000041	0.0030	0.0020	0.021	0.016	0.0066	0.000041
HHC-3	L-16	2020-03-17	161	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	0.000041	0.0086	0.000041	0.0032	0.0012	0.021	0.015	0.0061	0.000083
HHC-3	L-17	2020-03-31	175	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	0.000041	0.0081	0.000041	0.0028	0.0012	0.019	0.013	0.0054	0.000041
HHC-4	L-1	2019-10-08	0.080	0.076	0.14	0.00064	4020	1.00	4.0	0.043	9.4	0.84	1319	0.0068	0.055	0.068	0.0068	0.0068	0.25	0.14	0.052	0.0014
HHC-4	L-2	2019-10-09	1.0	0.076	0.14	0.00064	4275	1.00	4.3	0.043	10	0.84	1319	0.00063	0.028	0.013	0.010	0.00063	0.48	0.14	0.050	0.0025
HHC-4	L-3	2019-10-10	2.0	0.076	0.14	0.00064	4279	1.00	4.3	0.043	10	0.84	1319	0.00058	0.031	0.024	0.0070	0.00058	0.35	0.11	0.041	0.0023
HHC-4	L-4	2019-10-15	7.0	0.076	0.14	0.00064	4276	1.00	4.3	0.043	10	0.84	1319	0.00012	0.0090	0.0019	0.0044	0.00012	0.19	0.056	0.022	0.0014
HHC-4	L-5	2019-10-22	14	0.076	0.14	0.00064	4279	1.00	4.3	0.043	10	0.84	1319	0.000083	0.022	0.000083	0.0056	0.0043	0.078	0.029	0.011	0.00083
HHC-4	L-6	2019-11-05	28	0.076	0.14	0.00064	4277	1.00	4.3	0.043	10	0.84	1319	0.000041	0.016	0.000041	0.0027	0.0038	0.042	0.015	0.0062	0.00025
HHC-4	L-7	2019-11-19	42	0.076	0.14	0.00064	4278	1.00	4.3	0.043	10	0.84	1319	0.000041	0.015	0.000041	0.0031	0.0034	0.032	0.019	0.0075	0.00017
HHC-4	L-8	2019-11-26	49	0.076	0.14	0.00064	4282	1.00	4.3	0.043	10	0.84	1319	0.000083	0.024	0.000083	0.0040	0.0060	0.039	0.027	0.011	0.00017
HHC-4	L-9	2019-12-10	63	0.076	0.14	0.00064	4279	1.00	4.3	0.043	10	0.84	1319	0.000041	0.012	0.000041	0.0033	0.0022	0.027	0.020	0.0079	0.000083
HHC-4	L-10	2019-12-24	77	0.076	0.14	0.00064	4273	1.00	4.3	0.043	10	0.84	1319	0.000041	0.014	0.000041	0.0030	0.0030	0.026	0.018	0.0072	0.000083
HHC-4	L-11	2020-01-07	91	0.076	0.14	0.00064	4280	1.00	4.3	0.043	10	0.84	1319	0.000041	0.013	0.000041	0.0030	0.0026	0.023	0.016	0.0066	0.000041
HHC-4	L-12	2020-01-21	105	0.076	0.14	0.00064	4276	1.00	4.3	0.043	10	0.84	1319	0.000041	0.012	0.000041	0.0031	0.0024	0.024	0.018	0.0073	0.000083
HHC-4	L-13	2020-02-04	119	0.076	0.14	0.00064	4281	1.00	4.3	0.043	10	0.84	1319	0.000041	0.014	0.000041	0.0032	0.0031	0.023	0.017	0.0069	0.000083
HHC-4	L-14	2020-02-18	133	0.076	0.14	0.00064	4281	1.00	4.3	0.043	10	0.84	1319	0.000041	0.0091	0.000041	0.0027	0.0016	0.020	0.017	0.0069	0.000041
HHC-4	L-15	2020-03-03	147	0.076	0.14	0.00064	4281	1.00	4.3	0.043	10	0.84	1319	0.000041	0.011	0.000041	0.0032	0.0020	0.022	0.017	0.0069	0.000041
HHC-4	L-16	2020-03-17	161	0.076	0.14	0.00064	4280	1.00	4.3	0.043	10	0.84	1319	0.000041	0.0085	0.000041	0.0030	0.0012	0.021	0.016	0.0064	0.000041
HHC-4	L-17	2020-03-31	175	0.076	0.14	0.00064	4282	1.00	4.3	0.043	10	0.84	1319	0.000042	0.0078	0.000042	0.0024	0.0013	0.021	0.014	0.0056	0.000042

\- Parameter not analyzed

Appendix E, Table E-12
HHC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH$_3$	NO$_2$	NO$_3$	PO$_4$	SO$_4$	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-P/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HHC-1	L-1	0.00028	0.062	0.0014	0.087	0.000069	0.000063	0.000062	0.000069	0.29	0.00000035	0.00080	0.000090	0.00014	0.000078	0.00000069	6.9E-08	0.00000069	0.000058	0.0000083	0.00022	6.9E-09
HHC-1	L-2	0.00023	0.042	0.0019	0.069	0.000050	0.0000057	0.0000057	0.0000063	0.25	3.1E-08	0.00030	0.000042	0.00011	0.000020	6.3E-08	1.3E-08	6.3E-08	0.000049	0.0000005	0.000019	6.3E-10
HHC-1	L-3	0.00016	0.026	0.00070	0.052	0.000023	0.0000053	0.0000052	0.0000058	0.17	2.9E-08	0.00036	0.000024	0.000081	0.000015	5.8E-08	1.2E-08	5.8E-08	0.000030	0.00000058	0.000017	1.2E-09
HHC-1	L-4	0.000051	0.012	0.000023	0.027	0.000014	0.0000011	0.0000010	0.0000012	0.077	5.8E-09	0.00041	0.000010	0.000014	0.0000065	1.2E-08	1.2E-08	1.2E-08	0.000016	0.00000012	0.0000013	1.2E-10
HHC-1	L-5	0.000027	0.0055	0.0000083	0.012	0.0000083	0.00000075	0.00000075	0.00000083	0.030	4.1E-09	0.00046	0.0000048	0.0000017	0.0000061	8.3E-09	6.6E-09	8.3E-09	0.0000081	6.6E-08	0.00000093	5.0E-10
HHC-1	L-6	0.000014	0.0020	0.0000041	0.0048	0.000012	0.00000038	0.00000037	0.00000041	0.013	2.1E-09	0.00024	0.0000027	0.00000041	0.0000055	4.1E-09	2.5E-09	4.1E-09	0.0000044	5.8E-08	0.00000036	1.7E-10
HHC-1	L-7	0.000012	0.00082	0.0000041	0.0018	0.0000066	0.00000038	0.00000037	0.00000041	0.0083	2.1E-09	0.00023	0.0000018	0.00000041	0.0000070	4.1E-09	1.7E-09	4.1E-09	0.0000034	5.0E-08	0.00000031	4.1E-11
HHC-1	L-8	0.000012	0.00056	0.0000083	0.00095	0.0000083	0.00000075	0.0000034	0.0000017	0.0085	4.1E-09	0.00035	0.0000015	0.00000083	0.000010	8.3E-09	1.7E-09	8.3E-09	0.0000030	6.6E-08	0.0000023	8.3E-11
HHC-1	L-9	0.0000099	0.00023	0.0000041	0.00039	0.0000083	0.00000038	0.00000037	0.00000041	0.0064	2.1E-09	0.00021	0.0000011	0.00000041	0.0000080	4.1E-09	3.3E-09	4.1E-09	0.0000023	4.1E-08	0.00000031	4.1E-11
HHC-1	L-10	0.0000099	0.00016	0.0000041	0.00020	0.0000041	0.00000038	0.00000037	0.00000041	0.0058	2.1E-09	0.00021	0.00000083	0.00000041	0.0000083	4.1E-09	8.3E-10	4.1E-09	0.0000021	4.1E-08	0.0000004	4.1E-11
HHC-1	L-11	0.0000083	0.00012	0.0000041	0.00011	0.0000041	0.00000038	0.00000037	0.00000083	0.0053	2.1E-09	0.00019	0.00000075	0.00000041	0.0000099	4.1E-09	2.5E-09	4.1E-09	0.0000019	5.0E-08	0.0000007	4.1E-11
HHC-1	L-12	0.0000083	0.000091	0.0000041	0.000083	0.00000041	0.00000038	0.00000037	0.00000041	0.0049	2.1E-09	0.00019	0.00000065	0.00000041	0.0000099	4.1E-09	8.3E-10	4.1E-09	0.0000018	4.1E-08	0.00000052	8.3E-11
HHC-1	L-13	0.0000066	0.000075	0.0000041	0.000050	0.0000050	0.00000038	0.00000037	0.00000041	0.0046	2.1E-09	0.00018	0.00000056	0.00000041	0.0000099	4.1E-09	8.3E-10	4.1E-09	0.0000016	5.0E-08	0.00000099	4.1E-11
HHC-1	L-14	0.0000033	0.000058	0.0000041	0.000050	0.0000091	0.00000038	0.00000037	0.00000041	0.0041	2.1E-09	0.00018	0.00000051	0.00000041	0.0000099	4.1E-09	1.7E-09	4.1E-09	0.0000015	3.3E-08	0.00000058	4.1E-11
HHC-1	L-15	0.0000083	0.000058	0.0000041	0.000033	0.0000050	0.00000038	0.00000037	0.00000041	0.0041	2.1E-09	0.00018	0.00000047	0.00000041	0.0000099	4.1E-09	1.7E-09	4.1E-09	0.0000015	3.3E-08	0.0000008	4.1E-11
HHC-1	L-16	0.0000066	0.000041	0.0000041	0.000033	0.0000017	0.00000038	0.00000037	0.00000041	0.0039	2.1E-09	0.00017	0.00000045	0.00000041	0.0000100	4.1E-09	1.7E-09	4.1E-09	0.0000014	5.0E-08	0.0000010	4.1E-11
HHC-1	L-17	0.0000050	0.000041	0.0000041	0.000025	0.0000041	0.00000038	0.0000011	0.00000041	0.0038	2.1E-09	0.00017	0.00000043	0.00000041	0.0000100	4.1E-09	1.7E-09	4.1E-09	0.0000015	3.3E-08	0.00000091	4.1E-11
HHC-1	L-18	0.0000041	0.000033	0.0000021	0.000021	0.00000021	0.00000019	0.00000019	0.00000041	0.0028	1.0E-09	0.000097	0.00000036	0.00000021	0.0000062	2.1E-09	2.1E-10	2.1E-09	0.0000011	2.5E-08	0.00000037	2.1E-11
HHC-1	L-19	0.0000041	0.000029	0.0000021	0.000025	0.00000083	0.00000019	0.00000019	0.00000021	0.0027	1.0E-09	0.000090	0.00000033	0.00000021	0.0000058	2.1E-09	4.1E-10	2.1E-09	0.0000011	2.5E-08	0.00000035	2.1E-11
HHC-1	L-20	0.0000041	0.000025	0.0000021	0.000021	0.00000083	0.00000019	0.00000084	0.00000021	0.0026	1.0E-09	0.000089	0.00000031	0.00000021	0.0000058	2.1E-09	9.5E-09	2.1E-09	0.0000010	2.1E-08	0.00000036	2.1E-11
HHC-1	L-21	0.0000037	0.000026	0.0000019	0.000019	0.00000019	0.00000017	0.00000017	0.00000019	0.0024	9.4E-10	0.000079	0.00000029	0.00000019	0.0000052	1.9E-09	9.4E-09	1.9E-09	0.00000097	2.2E-08	0.00000041	1.9E-11
HHC-1	L-22	0.0000033	0.000021	0.0000021	0.000017	0.00000083	0.00000019	0.00000019	0.00000021	0.0024	1.0E-09	0.000078	0.0000003	0.00000021	0.0000054	2.1E-09	8.3E-10	2.1E-09	0.00000091	2.9E-08	0.00000054	2.1E-11
HHC-1	L-23	0.0000017	0.000017	0.0000021	0.0000083	0.00000041	0.00000019	0.00000019	0.00000021	0.0025	1.0E-09	0.000084	0.00000031	0.00000021	0.0000054	2.1E-09	2.1E-10	2.1E-09	0.00000099	2.5E-08	0.00000035	2.1E-11
HHC-1	L-24	0.0000021	0.000021	0.0000021	0.000012	0.00000041	0.00000019	0.00000019	0.00000021	0.0024	1.0E-09	0.000077	0.00000028	0.00000021	0.0000050	2.1E-09	4.1E-10	2.1E-09	0.00000091	2.1E-08	0.00000041	2.1E-11
HHC-2	L-1	0.00028	0.065	0.0014	0.10	0.000069	0.000063	0.000062	0.000069	0.33	0.00000035	0.00077	0.00011	0.00028	0.000072	0.00000069	6.9E-08	0.00000069	0.000077	0.0000055	0.00022	6.9E-09
HHC-2	L-2	0.00021	0.038	0.0025	0.072	0.000050	0.0000057	0.0000057	0.0000063	0.28	3.1E-08	0.00028	0.000043	0.00015	0.000020	6.3E-08	6.3E-09	6.3E-08	0.000060	0.00000063	0.000021	6.3E-10
HHC-2	L-3	0.00017	0.024	0.0012	0.055	0.000035	0.0000053	0.0000052	0.0000058	0.20	2.9E-08	0.00030	0.000023	0.000093	0.000016	5.8E-08	1.2E-08	5.8E-08	0.000037	0.00000058	0.000019	1.2E-09
HHC-2	L-4	0.000060	0.012	0.000093	0.031	0.000019	0.0000011	0.0000010	0.0000012	0.10	5.8E-09	0.00028	0.000013	0.000023	0.0000067	1.2E-08	7.0E-09	1.2E-08	0.000020	0.00000014	0.0000014	1.2E-10
HHC-2	L-5	0.000028	0.0056	0.0000083	0.015	0.0000099	0.00000075	0.00000075	0.00000083	0.036	4.1E-09	0.00044	0.0000056	0.0000033	0.0000051	8.3E-09	3.3E-09	8.3E-09	0.000010	8.3E-08	0.00000094	8.3E-11
HHC-2	L-6	0.000015	0.0022	0.0000041	0.0061	0.000011	0.00000038	0.00000037	0.00000041	0.013	2.1E-09	0.00026	0.0000031	0.00000041	0.0000045	4.1E-09	3.3E-09	4.1E-09	0.0000053	5.8E-08	0.00000039	4.1E-11
HHC-2	L-7	0.000012	0.00100	0.0000041	0.0024	0.0000075	0.00000038	0.00000037	0.00000041	0.0082	2.1E-09	0.00025	0.0000020	0.00000041	0.0000061	4.1E-09	2.5E-09	4.1E-09	0.0000040	5.0E-08	0.0000004	4.1E-11
HHC-2	L-8	0.000012	0.00066	0.0000083	0.0013	0.0000050	0.00000075	0.0000034	0.0000017	0.0076	4.1E-09	0.00038	0.0000016	0.00000083	0.0000093	8.3E-09	8.3E-10	8.3E-09	0.0000035	8.3E-08	0.0000010	8.3E-11
HHC-2	L-9	0.000012	0.00027	0.0000041	0.00051	0.0000075	0.00000038	0.00000037	0.00000041	0.0056	2.1E-09	0.00022	0.0000012	0.00000041	0.0000071	4.1E-09	2.5E-09	4.1E-09	0.0000026	4.1E-08	0.00000036	4.1E-11
HHC-2	L-10	0.0000099	0.00018	0.0000041	0.00026	0.0000025	0.00000038	0.00000037	0.0000017	0.0051	2.1E-09	0.00022	0.00000091	0.00000041	0.0000078	4.1E-09	8.3E-10	4.1E-09	0.0000023	5.0E-08	0.00000061	4.1E-11
HHC-2	L-11	0.0000083	0.00013	0.0000041	0.00013	0.0000033	0.00000038	0.00000037	0.00000041	0.0046	2.1E-09	0.00021	0.0000008	0.00000041	0.0000083	4.1E-09	1.7E-09	4.1E-09	0.0000022	5.0E-08	0.00000091	4.1E-11
HHC-2	L-12	0.0000083	0.000100	0.0000041	0.000091	0.00000041	0.00000038	0.00000037	0.00000041	0.0041	2.1E-09	0.00020	0.00000068	0.00000041	0.0000091	4.1E-09	4.1E-10	4.1E-09	0.0000021	5.0E-08	0.00000082	4.1E-11
HHC-2	L-13	0.0000058	0.000083	0.0000041	0.000058	0.0000083	0.00000038	0.00000037	0.00000041	0.0039	2.1E-09	0.00019	0.00000061	0.00000041	0.0000091	4.1E-09	8.3E-10	4.1E-09	0.0000018	5.0E-08	0.0000013	4.1E-11
HHC-2	L-14	0.0000033	0.000066	0.0000041	0.000058	0.0000066	0.00000038	0.00000037	0.00000083	0.0036	2.1E-09	0.00020	0.00000054	0.00000041	0.0000091	4.1E-09	1.7E-09	4.1E-09	0.0000017	3.3E-08	0.00000059	4.1E-11
HHC-2	L-15	0.0000050	0.000058	0.0000041	0.000041	0.0000050	0.00000038	0.00000037	0.00000041	0.0036	2.1E-09	0.00019	0.00000051	0.00000041	0.0000091	4.1E-09	4.1E-10	4.1E-09	0.0000017	3.3E-08	0.00000091	4.1E-11
HHC-2	L-16	0.0000050	0.000050	0.0000041	0.000033	0.0000017	0.00000038	0.00000037	0.00000041	0.0033	2.1E-09	0.00019	0.00000048	0.00000041	0.0000100	4.1E-09	1.7E-09	4.1E-09	0.0000016	5.0E-08	0.0000013	4.1E-11
HHC-2	L-17	0.0000041	0.000041	0.0000041	0.000025	0.00000083	0.00000038	0.00000094	0.00000041	0.0032	2.1E-09	0.00018	0.00000045	0.00000041	0.0000100	4.1E-09	4.1E-10	4.1E-09	0.0000016	4.1E-08	0.0000010	4.1E-11
HHC-2	L-18	0.0000041	0.000029	0.0000021	0.000021	0.00000021	0.00000019	0.00000019	0.00000041	0.0024	1.0E-09	0.00011	0.00000037	0.00000021	0.0000062	2.1E-09	2.1E-10	2.1E-09	0.0000012	2.1E-08	0.00000033	2.1E-11
HHC-2	L-19	0.0000041	0.000029	0.0000021	0.000021	0.00000083	0.00000019	0.00000019	0.00000021	0.0022	1.0E-09	0.00010	0.00000034	0.00000021	0.0000058	2.1E-09	4.1E-10	2.1E-09	0.0000012	2.9E-08	0.00000054	2.1E-11
HHC-2	L-20	0.0000041	0.000025	0.0000021	0.000021	0.00000041	0.00000019	0.00000075	0.00000021	0.0021	1.0E-09	0.00010	0.00000032	0.00000021	0.0000058	2.1E-09	9.1E-09	2.1E-09	0.0000011	2.5E-08	0.00000041	2.1E-11
HHC-2	L-21	0.0000037	0.000026	0.0000019	0.000019	0.00000075	0.00000017	0.00000017	0.00000019	0.0019	9.4E-10	0.000093	0.00000028	0.00000019	0.0000056	1.9E-09	7.9E-09	1.9E-09	0.00000097	0.0000001	0.00000075	1.9E-11
HHC-2	L-22	0.0000041	0.000021	0.0000021	0.000017	0.00000083	0.00000019	0.00000019	0.00000083	0.0019	1.0E-09	0.000100	0.00000028	0.00000021	0.0000058	2.1E-09	2.1E-10	2.1E-09	0.00000095	2.9E-08	0.00000066	2.1E-11
HHC-2	L-23	0.0000012	0.000017	0.0000021	0.0000083	0.00000041	0.00000019	0.00000019	0.00000021	0.0018	1.0E-09	0.000099	0.00000026	0.00000021	0.0000058	2.1E-09	2.1E-10	2.1E-09	0.00000091	3.3E-08	0.00000083	2.1E-11
HHC-2	L-24	0.0000017	0.000021	0.0000021	0.000012	0.00000041	0.00000019	0.00000084	0.00000041	0.0017	1.0E-09	0.000092	0.00000024	0.00000021	0.0000054	2.1E-09	8.3E-10	4.1E-09	0.00000083	4.1E-08	0.0000015	2.1E-11
HHC-3	L-1	0.00027	0.070	0.0027	0.11	0.000069	0.000063	0.000062	0.000069	0.40	0.00000034	0.0016	0.00011	0.00027	0.000085	0.00000069	0.00000014	0.0000027	0.000077	0.000016	0.00074	6.9E-09
HHC-3	L-2	0.00025	0.038	0.0028	0.073	0.000050	0.0000057	0.0000057	0.0000063	0.30	3.2E-08	0.00032	0.000045	0.00016	0.000024	6.3E-08	1.3E-08	0.00000013	0.000057	0.0000010	0.000038	6.3E-10
HHC-3	L-3	0.00017	0.024	0.0013	0.055	0.000058	0.0000053	0.0000052	0.0000058	0.21	2.9E-08	0.00034	0.000024	0.00010	0.000019	5.8E-08	5.8E-09	5.8E-08	0.000035	0.0000007	0.000026	5.8E-10
HHC-3	L-4	0.000058	0.012	0.000093	0.030	0.000021	0.0000011	0.0000010	0.0000012	0.11	5.8E-09	0.00028	0.000013	0.000023	0.0000074	1.2E-08	2.3E-09	1.2E-08	0.000019	0.00000014	0.0000018	1.2E-10
HHC-3	L-5	0.000022	0.0055	0.0000083	0.014	0.0000099	0.00000075	0.00000075	0.00000083	0.038	4.1E-09	0.00043	0.0000058	0.0000033	0.0000060	8.3E-09	1.7E-09	8.3E-09	0.0000095	8.3E-08	0.0000012	8.3E-11
HHC-3	L-6	0.000016	0.0022	0.0000041	0.0060	0.000013	0.00000038	0.00000037	0.00000041	0.015	2.1E-09	0.00026	0.0000031	0.00000041	0.0000048	4.1E-09	1.7E-09	4.1E-09	0.0000048	5.8E-08	0.00000036	4.1E-11
HHC-3	L-7	0.000012	0.00100	0.0000041	0.0023	0.0000058	0.00000038	0.00000037	0.00000041	0.0083	2.1E-09	0.00025	0.0000020	0.00000041	0.0000063	4.1E-09	1.7E-09	4.1E-09	0.0000036	5.8E-08	0.00000073	4.1E-11
HHC-3	L-8	0.000013	0.00070	0.0000083	0.0013	0.0000066	0.00000076	0.0000034	0.00000083	0.0081	4.2E-09	0.00038	0.0000017	0.00000083	0.0000096	8.3E-09	1.7E-09	8.3E-09	0.0000032	6.6E-08	0.0000010	8.3E-11
HHC-3	L-9	0.000011	0.00028	0.0000041	0.00054	0.0000075	0.00000038	0.00000037	0.00000041	0.0061	2.1E-09	0.00023	0.0000012	0.00000041	0.0000075	4.1E-09	2.5E-09	4.1E-09	0.0000023	5.0E-08	0.00000039	4.1E-11
HHC-3	L-10	0.0000099	0.00018	0.0000041	0.00027	0.0000025	0.00000038	0.00000037	0.00000083	0.0054	2.1E-09	0.00022	0.00000099	0.00000041	0.0000078	4.1E-09	4.1E-09	4.1E-09	0.0000021	4.1E-08	0.00000049	4.1E-11
HHC-3	L-11	0.0000091	0.00013	0.0000041	0.00014	0.0000041	0.00000038	0.00000037	0.00000041	0.0049	2.1E-09	0.00021	0.00000081	0.00000041	0.0000083	4.1E-09	8.3E-10	4.1E-09	0.0000020	5.0E-08	0.00000091	4.1E-11
HHC-3	L-12	0.0000083	0.000099	0.0000041	0.000099	0.0000025	0.00000038	0.00000037	0.00000041	0.0045	2.1E-09	0.00020	0.00000072	0.00000041	0.0000091	4.1E-09	8.3E-10	4.1E-09	0.0000018	5.0E-08	0.00000083	4.1E-11
HHC-3	L-13	0.0000058	0.000083	0.0000041	0.000066	0.0000075	0.00000038	0.00000037	0.00000041	0.0042	2.1E-09	0.00019	0.00000063	0.00000041	0.0000091	4.1E-09	4.1E-10	4.1E-09	0.0000017	5.8E-08	0.0000016	4.1E-11
HHC-3	L-14	0.0000033	0.000075	0.0000041	0.000058	0.0000066	0.00000038	0.00000037	0.00000041	0.0038	2.1E-09	0.00020	0.00000056	0.00000041	0.0000091	4.1E-09	8.3E-10	4.1E-09	0.0000016	3.3E-08	0.00000066	4.1E-11
HHC-3	L-15	0.0000050	0.000058	0.0000041	0.000041	0.0000050	0.00000038	0.00000037	0.00000041	0.0039	2.1E-09	0.00020	0.00000053	0.00000041	0.0000091	4.1E-09	1.7E-09	4.1E-09	0.0000016	4.1E-08	0.0000012	4.1E-11
HHC-3	L-16	0.0000041	0.000050	0.0000041	0.000033	0.0000025	0.00000038	0.00000037	0.00000041	0.0036	2.1E-09	0.00019	0.00000049	0.00000041	0.0000100	4.1E-09	8.3E-10	4.1E-09	0.0000014	4.1E-08	0.0000010	4.1E-11
HHC-3	L-17	0.0000050	0.000041	0.0000041	0.000025	0.0000017	0.00000038	0.00000094	0.00000041	0.0035	2.1E-09	0.00018	0.00000048	0.00000041	0.0000100	4.1E-09	8.3E-10	4.1E-09	0.0000014	3.3E-08	0.00000072	4.1E-11
HHC-4	L-1	0.00027	0.061	0.0027	0.079	0.000068	0.000062	0.000061	0.000068	0.30	0.00000034	0.00076	0.000093	0.00027	0.000068	0.00000068	0.00000014	0.00000068	0.000063	0.000012	0.00022	6.8E-09
HHC-4	L-2	0.00023	0.038	0.0029	0.062	0.000063	0.0000057	0.0000057	0.0000063	0.28	3.2E-08	0.00024	0.000040	0.00014	0.000023	6.3E-08	1.3E-08	6.3E-08	0.000054	0.0000005	0.000018	6.3E-10
HHC-4	L-3	0.00016	0.024	0.0014	0.048	0.000012	0.0000053	0.0000052	0.0000058	0.21	2.9E-08	0.00026	0.000021	0.000093	0.000017	5.8E-08	2.3E-08	5.8E-08	0.000032	0.00000046	0.0000080	5.8E-10
HHC-4	L-4	0.000056	0.012	0.00012	0.027	0.000019	0.0000011	0.0000010	0.0000012	0.11	5.8E-09	0.00023	0.000011	0.000021	0.0000072	1.2E-08	7.0E-09	1.2E-08	0.000018	0.00000012	0.0000010	1.2E-10
HHC-4	L-5	0.000028	0.0056	0.0000083	0.013	0.000013	0.00000075	0.00000075	0.00000083	0.038	4.1E-09	0.00038	0.0000051	0.0000033	0.0000058	8.3E-09	8.3E-10	8.3E-09	0.0000090	8.3E-08	0.00000068	8.3E-11
HHC-4	L-6	0.000015	0.0021	0.0000041	0.0051	0.0000075	0.00000038	0.00000037	0.00000041	0.014	2.1E-09	0.00025	0.0000028	0.00000083	0.0000048	4.1E-09	3.3E-09	4.1E-09	0.0000046	6.6E-08	0.00000044	4.1E-11
HHC-4	L-7	0.000013	0.00091	0.0000041	0.0019	0.0000058	0.00000038	0.00000037	0.00000041	0.0083	2.1E-09	0.00024	0.0000018	0.00000041	0.0000062	4.1E-09	8.3E-10	4.1E-09	0.0000035	5.8E-08	0.00000051	4.1E-11
HHC-4	L-8	0.000012	0.00063	0.0000083	0.00100	0.0000083	0.00000076	0.0000034	0.0000033	0.0081	4.1E-09	0.00037	0.0000015	0.00000083	0.0000093	8.3E-09	8.3E-10	8.3E-09	0.0000032	8.3E-08	0.0000010	8.3E-11
HHC-4	L-9	0.000011	0.00026	0.0000041	0.00039	0.0000075	0.00000038	0.0000011	0.00000041	0.0062	2.1E-09	0.00021	0.0000011	0.00000041	0.0000072	4.1E-09	2.5E-09	4.1E-09	0.0000023	4.1E-08	0.00000027	4.1E-11
HHC-4	L-10	0.0000099	0.00017	0.0000041	0.00020	0.0000041	0.00000038	0.00000037	0.00000041	0.0056	2.1E-09	0.00022	0.00000083	0.00000041	0.0000078	4.1E-09	1.7E-09	4.1E-09	0.0000022	5.0E-08	0.00000073	4.1E-11
HHC-4	L-11	0.0000083	0.00012	0.0000041	0.00011	0.0000033	0.00000038	0.00000037	0.00000041	0.0051	2.1E-09	0.00021	0.00000074	0.00000041	0.0000083	4.1E-09	1.7E-09	4.1E-09	0.0000020	5.0E-08	0.00000071	4.1E-11
HHC-4	L-12	0.0000083	0.000099	0.0000041	0.000083	0.0000033	0.00000038	0.00000037	0.00000041	0.0047	2.1E-09	0.00020	0.00000065	0.00000041	0.0000091	4.1E-09	4.1E-10	4.1E-09	0.0000019	4.1E-08	0.00000061	4.1E-11
HHC-4	L-13	0.0000066	0.000083	0.0000041	0.000050	0.0000058	0.00000038	0.00000037	0.00000041	0.0044	2.1E-09	0.00019	0.00000057	0.00000041	0.0000091	4.1E-09	1.7E-09	4.1E-09	0.0000017	4.1E-08	0.00000075	4.1E-11
HHC-4	L-14	0.0000033	0.000066	0.0000041	0.000050	0.0000083	0.00000038	0.00000037	0.00000041	0.0041	2.1E-09	0.00020	0.00000053	0.00000041	0.0000091	4.1E-09	8.3E-10	4.1E-09	0.0000017	3.3E-08	0.00000061	4.1E-11
HHC-4	L-15	0.0000050	0.000058	0.0000041	0.000033	0.0000050	0.00000038	0.00000037	0.00000041	0.0041	2.1E-09	0.00019	0.00000049	0.00000041	0.0000091	4.1E-09	4.1E-10	4.1E-09	0.0000017	4.1E-08	0.0000011	4.1E-11
HHC-4	L-16	0.0000050	0.000050	0.0000041	0.000033	0.0000017	0.00000038	0.00000037	0.00000041	0.0038	2.1E-09	0.00019	0.00000046	0.00000041	0.0000091	4.1E-09	4.1E-10	4.1E-09	0.0000015	5.0E-08	0.0000012	4.1E-11
HHC-4	L-17	0.0000042	0.000050	0.0000042	0.000025	0.0000017	0.00000038	0.00000094	0.00000042	0.0037	2.1E-09	0.00019	0.00000045	0.00000042	0.0000100	4.2E-09	4.2E-10	4.2E-09	0.0000015	3.3E-08	0.00000071	4.2E-11

- Parameter not analyzed

Appendix E, Table E-12
HHC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HHC-1	L-1	0.0000035	0.0015	0.0000042	0.000030	0.0000042	0.000015	0.0000014	0.000096	0.000017	0.0000014	0.000069	0.000025	0.000012	4.5E-12	6.2E-14	5.2E-10	1.4E-13
HHC-1	L-2	0.00000031	0.0014	0.00000013	0.0000024	0.0000025	0.0000074	6.3E-08	0.000060	0.0000050	0.00000013	0.000025	0.000018	0.00000031	-	-	-	-
HHC-1	L-3	0.00000029	0.00091	0.00000012	0.0000022	0.0000017	0.0000062	5.8E-08	0.000046	0.0000030	0.00000012	0.0000091	0.000021	0.0000007	1.9E-13	2.5E-15	8.8E-11	5.8E-15
HHC-1	L-4	5.8E-08	0.00052	1.2E-08	0.00000042	0.00000058	0.0000023	1.2E-08	0.000035	0.0000016	7.0E-08	0.0000022	0.000023	5.8E-08	-	-	-	-
HHC-1	L-5	4.1E-08	0.00029	8.3E-09	0.0000005	0.00000018	0.00000086	8.3E-09	0.000038	0.00000085	5.0E-08	0.0000018	0.000010	4.1E-08	-	-	-	-
HHC-1	L-6	2.1E-08	0.00017	8.3E-09	0.00000044	6.6E-08	0.00000036	4.1E-09	0.000041	0.00000036	2.5E-08	0.00000083	0.0000035	5.8E-08	4.7E-14	6.8E-17	3.1E-11	7.5E-16
HHC-1	L-7	2.1E-08	0.00013	4.1E-09	0.00000053	5.0E-08	0.00000027	4.1E-09	0.000051	0.00000038	2.5E-08	0.00000091	0.0000023	2.1E-08	-	-	-	-
HHC-1	L-8	4.1E-08	0.00013	8.3E-09	0.00000066	8.3E-08	0.00000027	8.3E-09	0.000066	0.00000038	1.7E-08	0.0000013	0.0000027	4.1E-08	-	-	-	-
HHC-1	L-9	2.1E-08	0.00010	4.1E-09	0.00000056	4.1E-08	0.00000019	4.1E-09	0.000047	0.00000032	1.7E-08	0.00000081	0.0000017	2.1E-08	4.1E-14	4.9E-17	3.6E-11	2.5E-15
HHC-1	L-10	2.1E-08	0.000089	4.1E-09	0.00000058	4.1E-08	0.00000017	4.1E-09	0.000043	0.00000026	8.3E-09	0.00000091	0.0000015	2.1E-08	-	-	-	-
HHC-1	L-11	2.1E-08	0.000080	4.1E-09	0.00000066	5.0E-08	0.00000017	4.1E-09	0.000041	0.00000022	8.3E-09	0.00000099	0.0000013	2.1E-08	-	-	-	-
HHC-1	L-12	2.1E-08	0.000074	4.1E-09	0.00000065	5.8E-08	0.00000017	4.1E-09	0.000038	0.0000002	8.3E-09	0.00000099	0.0000013	5.0E-08	4.1E-14	9.7E-17	4.5E-11	2.5E-15
HHC-1	L-13	2.1E-08	0.000066	4.1E-09	0.0000007	5.8E-08	0.00000015	4.1E-09	0.000035	0.0000002	8.3E-09	0.00000091	0.0000012	2.1E-08	-	-	-	-
HHC-1	L-14	2.1E-08	0.000058	4.1E-09	0.00000068	6.6E-08	0.00000015	4.1E-09	0.000033	0.00000022	8.3E-09	0.00000099	0.0000012	2.1E-08	-	-	-	-
HHC-1	L-15	2.1E-08	0.000056	4.1E-09	0.00000068	6.6E-08	0.00000015	4.1E-09	0.000030	0.0000002	8.3E-09	0.0000011	0.0000012	2.1E-08	4.7E-14	9.7E-17	4.5E-11	2.9E-15
HHC-1	L-16	2.1E-08	0.000051	4.1E-09	0.0000007	6.6E-08	0.00000015	4.1E-09	0.000028	0.00000021	8.3E-09	0.0000011	0.0000011	2.1E-08	-	-	-	-
HHC-1	L-17	2.1E-08	0.000049	4.1E-09	0.0000007	7.5E-08	0.00000016	4.1E-09	0.000027	1.0E-07	8.3E-09	0.0000011	0.0000011	2.1E-08	5.3E-14	2.0E-16	4.9E-11	2.9E-15
HHC-1	L-18	1.0E-08	0.000041	2.1E-09	0.0000005	3.7E-08	9.1E-08	2.1E-09	0.000019	9.1E-08	4.1E-09	0.00000058	0.00000066	5.0E-08	2.7E-14	4.9E-17	2.7E-11	1.2E-15
HHC-1	L-19	1.0E-08	0.000038	2.1E-09	0.0000005	4.1E-08	8.3E-08	2.1E-09	0.000017	9.1E-08	4.1E-09	0.00000058	0.00000058	1.0E-08	3.0E-14	7.3E-17	2.7E-11	1.2E-15
HHC-1	L-20	1.0E-08	0.000035	2.1E-09	0.0000005	5.0E-08	7.9E-08	2.1E-09	0.000017	7.9E-08	4.1E-09	0.00000058	0.00000054	1.0E-08	5.0E-14	1.7E-16	3.1E-11	1.2E-15
HHC-1	L-21	9.4E-09	0.000033	1.9E-09	0.00000045	4.5E-08	7.1E-08	1.9E-09	0.000016	7.9E-08	3.7E-09	0.00000049	0.00000052	1.9E-08	3.1E-14	8.8E-17	2.9E-11	1.1E-15
HHC-1	L-22	1.0E-08	0.000032	3.7E-08	0.0000005	4.6E-08	7.5E-08	2.1E-09	0.000015	5.8E-08	4.1E-09	0.00000058	0.00000054	3.3E-08	4.3E-14	1.9E-16	2.7E-11	1.4E-15
HHC-1	L-23	1.0E-08	0.000032	1.7E-08	0.00000046	4.6E-08	7.5E-08	2.1E-09	0.000014	8.3E-08	4.1E-09	0.00000054	0.00000054	2.5E-08	3.5E-14	9.7E-17	2.2E-11	1.2E-15
HHC-1	L-24	1.0E-08	0.000031	2.1E-09	0.00000041	4.1E-08	7.0E-08	2.1E-09	0.000012	7.9E-08	4.1E-09	0.0000005	0.00000054	1.0E-08	3.0E-14	7.3E-17	2.5E-11	1.2E-15
HHC-2	L-1	0.0000035	0.0016	0.0000014	0.000023	0.0000041	0.000017	0.00000069	0.00011	0.000012	0.0000014	0.000069	0.000025	0.000011	3.7E-12	4.2E-14	3.5E-10	1.4E-13
HHC-2	L-2	0.00000031	0.0015	0.00000013	0.0000023	0.0000026	0.0000084	6.3E-08	0.000058	0.0000054	0.00000013	0.000029	0.000015	0.00000031	-	-	-	-
HHC-2	L-3	0.00000029	0.00094	0.00000012	0.0000021	0.0000020	0.0000063	5.8E-08	0.000057	0.0000029	0.00000012	0.000012	0.000014	0.0000007	1.7E-13	1.8E-15	9.1E-11	5.8E-15
HHC-2	L-4	5.8E-08	0.00057	1.2E-08	0.0000003	0.00000074	0.0000028	1.2E-08	0.000037	0.0000015	7.0E-08	0.0000018	0.000019	5.8E-08	-	-	-	-
HHC-2	L-5	4.1E-08	0.00034	8.3E-09	0.0000004	0.00000027	0.0000012	8.3E-09	0.000031	0.0000009	5.0E-08	0.0000018	0.000012	4.1E-08	-	-	-	-
HHC-2	L-6	2.1E-08	0.00018	8.3E-09	0.00000036	9.1E-08	0.00000047	4.1E-09	0.000032	0.00000046	2.5E-08	0.00000091	0.0000044	2.1E-08	4.7E-14	6.8E-17	2.5E-11	8.3E-16
HHC-2	L-7	2.1E-08	0.00013	4.1E-09	0.00000043	6.6E-08	0.00000032	4.1E-09	0.000043	0.00000041	2.5E-08	0.0000011	0.0000028	2.1E-08	-	-	-	-
HHC-2	L-8	4.1E-08	0.00013	1.7E-08	0.00000056	8.3E-08	0.00000032	8.3E-09	0.000061	0.00000041	1.7E-08	0.0000014	0.0000030	0.0000005	-	-	-	-
HHC-2	L-9	2.1E-08	0.00010	4.1E-09	0.00000045	5.0E-08	0.00000022	4.1E-09	0.000044	0.00000032	8.3E-09	0.00000083	0.0000018	2.1E-08	3.8E-14	3.9E-17	3.1E-11	2.5E-15
HHC-2	L-10	2.1E-08	0.000089	4.1E-09	0.0000005	5.0E-08	0.00000019	4.1E-09	0.000041	0.0000003	8.3E-09	0.00000083	0.0000017	2.1E-08	-	-	-	-
HHC-2	L-11	2.1E-08	0.000083	4.1E-09	0.00000057	5.8E-08	0.00000019	4.1E-09	0.000040	0.00000027	8.3E-09	0.00000099	0.0000016	2.1E-08	-	-	-	-
HHC-2	L-12	2.1E-08	0.000077	4.1E-09	0.00000057	5.8E-08	0.00000018	4.1E-09	0.000037	0.00000022	8.3E-09	0.0000010	0.0000015	2.1E-08	5.0E-14	2.4E-16	4.3E-11	2.5E-15
HHC-2	L-13	2.1E-08	0.000067	4.1E-09	0.00000062	5.0E-08	0.00000017	4.1E-09	0.000035	0.00000023	8.3E-09	0.00000099	0.0000013	2.1E-08	-	-	-	-
HHC-2	L-14	2.1E-08	0.000060	4.1E-09	0.00000057	6.6E-08	0.00000017	4.1E-09	0.000032	0.00000023	8.3E-09	0.0000010	0.0000013	2.1E-08	-	-	-	-
HHC-2	L-15	2.1E-08	0.000056	4.1E-09	0.00000059	6.6E-08	0.00000017	4.1E-09	0.000030	0.00000021	8.3E-09	0.0000011	0.0000013	2.1E-08	5.6E-14	1.5E-16	4.5E-11	2.9E-15
HHC-2	L-16	2.1E-08	0.000051	4.1E-09	0.00000065	6.6E-08	0.00000017	4.1E-09	0.000028	0.00000022	8.3E-09	0.0000012	0.0000012	2.1E-08	-	-	-	-
HHC-2	L-17	2.1E-08	0.000048	4.1E-09	0.0000006	7.5E-08	0.00000017	4.1E-09	0.000027	0.00000012	8.3E-09	0.0000012	0.0000012	2.1E-08	8.0E-14	1.5E-16	4.5E-11	2.9E-15
HHC-2	L-18	1.0E-08	0.000040	2.1E-09	0.00000041	4.1E-08	0.0000001	2.1E-09	0.000018	8.7E-08	4.1E-09	0.00000058	0.00000075	3.3E-08	2.5E-14	4.9E-17	2.9E-11	1.2E-15
HHC-2	L-19	1.0E-08	0.000035	2.1E-09	0.00000041	4.1E-08	9.9E-08	2.1E-09	0.000017	9.9E-08	4.1E-09	0.00000062	0.00000066	2.5E-08	3.3E-14	9.8E-17	2.6E-11	1.2E-15
HHC-2	L-20	1.0E-08	0.000033	2.1E-09	0.00000046	5.0E-08	8.7E-08	2.1E-09	0.000017	7.0E-08	4.1E-09	0.00000058	0.00000062	2.1E-08	4.3E-14	2.0E-16	3.2E-11	1.2E-15
HHC-2	L-21	9.4E-09	0.000030	3.7E-09	0.00000045	4.5E-08	8.2E-08	1.9E-09	0.000015	7.5E-08	3.7E-09	0.00000056	0.00000056	6.0E-08	2.5E-14	1.1E-16	2.7E-11	1.3E-15
HHC-2	L-22	1.0E-08	0.000028	1.2E-08	0.00000046	5.0E-08	8.3E-08	2.1E-09	0.000015	6.6E-08	4.1E-09	0.00000062	0.00000062	2.9E-08	5.0E-14	2.0E-16	2.9E-11	1.5E-15
HHC-2	L-23	1.0E-08	0.000026	4.1E-09	0.00000046	5.0E-08	9.1E-08	2.1E-09	0.000013	7.5E-08	4.1E-09	0.00000062	0.00000058	2.5E-08	4.6E-14	1.5E-16	2.6E-11	1.2E-15
HHC-2	L-24	2.5E-08	0.000024	8.3E-09	0.0000005	4.6E-08	8.7E-08	2.1E-09	0.000012	0.0000001	4.1E-09	0.00000066	0.00000058	4.1E-08	4.7E-14	3.2E-16	2.6E-11	1.2E-15
HHC-3	L-1	0.000012	0.0018	0.0000041	0.000089	0.0000041	0.000018	0.0000014	0.00011	0.000026	0.0000014	0.00015	0.000029	0.000018	-	-	-	-
HHC-3	L-2	0.00000076	0.0016	0.00000025	0.0000045	0.0000028	0.0000088	6.3E-08	0.000078	0.0000063	0.00000025	0.000044	0.000015	0.00000076	-	-	-	-
HHC-3	L-3	0.00000029	0.00098	0.00000023	0.0000031	0.0000020	0.0000066	5.8E-08	0.000066	0.0000035	0.00000012	0.000017	0.000014	0.0000007	-	-	-	-
HHC-3	L-4	5.8E-08	0.00060	2.3E-08	0.00000039	0.00000077	0.0000030	1.2E-08	0.000046	0.0000018	9.3E-08	0.0000019	0.000018	5.8E-08	-	-	-	-
HHC-3	L-5	4.1E-08	0.00035	8.3E-09	0.00000043	0.00000027	0.0000012	8.3E-09	0.000038	0.0000011	5.0E-08	0.0000018	0.000012	4.1E-08	-	-	-	-
HHC-3	L-6	2.1E-08	0.00020	8.3E-09	0.00000036	9.1E-08	0.00000049	4.1E-09	0.000034	0.0000005	3.3E-08	0.00000091	0.0000046	2.1E-08	-	-	-	-
HHC-3	L-7	2.1E-08	0.00014	8.3E-09	0.00000047	6.6E-08	0.00000034	4.1E-09	0.000043	0.00000042	2.5E-08	0.0000010	0.0000030	2.1E-08	-	-	-	-
HHC-3	L-8	4.2E-08	0.00014	8.3E-09	0.00000061	1.0E-07	0.00000035	8.3E-09	0.000061	0.0000004	1.7E-08	0.0000015	0.0000032	0.0000002	-	-	-	-
HHC-3	L-9	2.1E-08	0.00012	4.1E-09	0.00000047	5.0E-08	0.00000024	4.1E-09	0.000043	0.00000041	1.7E-08	0.00000083	0.0000019	4.1E-08	-	-	-	-
HHC-3	L-10	2.1E-08	0.000096	4.1E-09	0.00000049	5.0E-08	0.00000021	4.1E-09	0.000041	0.00000033	8.3E-09	0.00000083	0.0000017	2.1E-08	-	-	-	-
HHC-3	L-11	2.1E-08	0.000089	4.1E-09	0.0000006	5.8E-08	0.0000002	4.1E-09	0.000040	0.00000028	8.3E-09	0.0000011	0.0000017	2.1E-08	-	-	-	-
HHC-3	L-12	2.1E-08	0.000081	4.1E-09	0.00000059	5.8E-08	0.00000019	4.1E-09	0.000037	0.00000022	8.3E-09	0.00000099	0.0000016	2.1E-08	-	-	-	-
HHC-3	L-13	2.1E-08	0.000074	8.3E-09	0.00000069	5.8E-08	0.00000018	4.1E-09	0.000035	0.00000031	8.3E-09	0.0000011	0.0000014	4.1E-08	-	-	-	-
HHC-3	L-14	2.1E-08	0.000065	4.1E-09	0.0000006	6.6E-08	0.00000017	4.1E-09	0.000032	0.00000022	8.3E-09	0.0000011	0.0000014	2.1E-08	-	-	-	-
HHC-3	L-15	2.1E-08	0.000061	8.3E-09	0.00000065	6.6E-08	0.00000018	4.1E-09	0.000030	0.00000022	8.3E-09	0.0000012	0.0000013	2.1E-08	-	-	-	-
HHC-3	L-16	2.1E-08	0.000055	4.1E-09	0.00000064	7.5E-08	0.00000018	4.1E-09	0.000028	0.00000025	8.3E-09	0.0000012	0.0000013	2.1E-08	-	-	-	-
HHC-3	L-17	2.1E-08	0.000052	4.1E-09	0.0000006	7.5E-08	0.00000018	4.1E-09	0.000027	0.00000015	8.3E-09	0.0000012	0.0000012	2.1E-08	-	-	-	-
HHC-4	L-1	0.0000034	0.0015	0.0000027	0.000030	0.0000027	0.000012	0.00000068	0.00010	0.000016	0.0000014	0.000080	0.000019	0.000011	-	-	-	-
HHC-4	L-2	0.00000032	0.0015	0.00000013	0.0000024	0.0000025	0.0000076	6.3E-08	0.000073	0.0000058	0.00000025	0.000039	0.000013	0.00000032	-	-	-	-
HHC-4	L-3	0.00000029	0.00092	5.8E-08	0.0000013	0.0000019	0.0000058	5.8E-08	0.000065	0.0000029	0.00000012	0.000013	0.000013	0.00000029	-	-	-	-
HHC-4	L-4	5.8E-08	0.00055	1.2E-08	0.00000028	0.00000072	0.0000026	1.2E-08	0.000046	0.0000017	9.3E-08	0.0000016	0.000017	5.8E-08	-	-	-	-
HHC-4	L-5	4.1E-08	0.00033	8.3E-09	0.00000038	0.00000025	0.0000011	8.3E-09	0.000038	0.00000088	5.0E-08	0.0000016	0.000012	4.1E-08	-	-	-	-
HHC-4	L-6	2.1E-08	0.00018	8.3E-09	0.00000036	8.3E-08	0.00000041	4.1E-09	0.000036	0.00000043	2.5E-08	0.00000099	0.0000043	2.1E-08	-	-	-	-
HHC-4	L-7	2.1E-08	0.00014	4.1E-09	0.00000045	6.6E-08	0.0000003	4.1E-09	0.000046	0.00000041	2.5E-08	0.00000091	0.0000028	2.1E-08	-	-	-	-
HHC-4	L-8	4.1E-08	0.00013	8.3E-09	0.0000006	8.3E-08	0.00000032	8.3E-09	0.000065	0.00000037	1.7E-08	0.0000015	0.0000030	0.00000017	-	-	-	-
HHC-4	L-9	2.1E-08	0.00011	4.1E-09	0.00000046	5.0E-08	0.00000022	4.1E-09	0.000046	0.00000042	1.7E-08	0.00000083	0.0000018	2.1E-08	-	-	-	-
HHC-4	L-10	2.1E-08	0.000094	4.1E-09	0.00000053	4.1E-08	0.00000019	4.1E-09	0.000041	0.00000032	8.3E-09	0.00000083	0.0000017	2.1E-08	-	-	-	-
HHC-4	L-11	2.1E-08	0.000087	4.1E-09	0.00000059	5.8E-08	0.00000019	4.1E-09	0.000041	0.00000029	8.3E-09	0.0000011	0.0000016	2.1E-08	-	-	-	-
HHC-4	L-12	2.1E-08	0.000081	4.1E-09	0.00000059	5.8E-08	0.00000017	4.1E-09	0.000039	0.00000019	8.3E-09	0.00000099	0.0000015	2.1E-08	-	-	-	-
HHC-4	L-13	2.1E-08	0.000075	4.1E-09	0.00000063	5.8E-08	0.00000017	4.1E-09	0.000037	0.00000027	8.3E-09	0.0000010	0.0000013	2.1E-08	-	-	-	-
HHC-4	L-14	2.1E-08	0.000065	4.1E-09	0.00000063	6.6E-08	0.00000017	4.1E-09	0.000034	0.00000022	8.3E-09	0.0000011	0.0000013	2.1E-08	-	-	-	-
HHC-4	L-15	2.1E-08	0.000060	4.1E-09	0.00000066	6.6E-08	0.00000017	4.1E-09	0.000031	0.00000023	8.3E-09	0.0000012	0.0000013	2.1E-08	-	-	-	-
HHC-4	L-16	2.1E-08	0.000054	4.1E-09	0.00000071	7.5E-08	0.00000017	4.1E-09	0.000030	0.00000026	8.3E-09	0.0000012	0.0000012	2.1E-08	-	-	-	-
HHC-4	L-17	2.1E-08	0.000052	4.2E-09	0.00000065	7.5E-08	0.00000017	4.2E-09	0.000028	0.00000012	8.3E-09	0.0000012	0.0000012	2.1E-08	-	-	-	-

- Parameter not analyzed

Appendix E, Table E-13
HPLC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s
HPLC-1	L-1	2019-12-11	0.080	0.10	0.057	0.00047	599	1.00	0.60	0.0082	7.3	0.76	1637	-	0.053	0.064	0.0053	0.0053	1.0	0.66	0.27	0.00053
HPLC-1	L-2	2019-12-12	1.0	0.10	0.057	0.00047	626	1.00	0.63	0.0082	7.7	0.76	1637	-	0.0039	0.0048	0.00048	0.00048	0.26	0.14	0.058	0.0048
HPLC-1	L-3	2019-12-13	2.0	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.76	1637	-	0.0037	0.0046	0.00046	0.00046	0.26	0.13	0.052	0.0065
HPLC-1	L-4	2019-12-18	7.0	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1637	-	0.0013	0.0015	0.000091	0.000091	0.14	0.059	0.024	0.0058
HPLC-1	L-5	2019-12-25	14	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1637	-	0.0014	0.0017	0.000065	0.000065	0.12	0.048	0.019	0.0048
HPLC-1	L-6	2020-01-08	28	0.10	0.057	0.00047	645	1.00	0.64	0.0082	7.9	0.76	1637	-	0.0012	0.0015	0.000033	0.000033	0.082	0.035	0.014	0.0030
HPLC-1	L-7	2020-01-22	42	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1637	-	0.0016	0.0019	0.000033	0.000033	0.078	0.034	0.013	0.0022
HPLC-1	L-8	2020-01-29	49	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.76	1637	-	0.00052	0.00066	0.000066	0.000066	0.092	0.043	0.017	0.0020
HPLC-1	L-9	2020-02-12	63	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1637	-	0.0016	0.0020	0.000033	0.000033	0.068	0.032	0.013	0.0012
HPLC-1	L-10	2020-02-26	77	0.10	0.057	0.00047	645	1.00	0.64	0.0082	7.9	0.76	1637	-	0.00052	0.00065	0.000033	0.000033	0.065	0.031	0.012	0.00091
HPLC-1	L-11	2020-03-11	91	0.10	0.057	0.00047	644	1.00	0.65	0.0082	7.9	0.76	1637	-	0.0011	0.0014	0.000033	0.000033	0.061	0.030	0.012	0.00072
HPLC-1	L-12	2020-03-25	105	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1637	-	0.0010	0.0013	0.000033	0.000033	0.059	0.029	0.011	0.00052
HPLC-1	L-13	2020-04-08	119	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.76	1637	-	0.00045	0.00052	0.000032	0.000032	0.056	0.028	0.011	0.00039
HPLC-1	L-14	2020-04-22	133	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.76	1637	-	0.00058	0.00071	0.000032	0.000032	0.055	0.028	0.011	0.00026
HPLC-1	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1637	-	0.00072	0.00085	0.000033	0.000033	0.048	0.027	0.011	0.00026
HPLC-1	L-16	2020-05-20	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1637	-	0.00065	0.00078	0.000033	0.000033	0.047	0.027	0.011	0.00020
HPLC-1	L-17	2020-06-03	175	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1637	-	0.00059	0.00072	0.000033	0.000033	0.046	0.026	0.010	0.00020
HPLC-2	L-1	2019-12-11	0.080	0.10	0.057	0.00047	562	1.0	0.56	0.0082	6.9	0.76	1638	-	0.11	0.13	0.0050	0.0050	3.3	2.2	0.90	0.0050
HPLC-2	L-2	2019-12-12	1.0	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.76	1638	-	0.0040	0.0050	0.00050	0.00050	0.42	0.25	0.10	0.0050
HPLC-2	L-3	2019-12-13	2.0	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.76	1638	-	0.0055	0.0064	0.00046	0.00046	0.36	0.19	0.076	0.0055
HPLC-2	L-4	2019-12-18	7.0	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.76	1638	-	0.0023	0.0029	0.000090	0.000090	0.15	0.071	0.028	0.0052
HPLC-2	L-5	2019-12-25	14	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.76	1638	-	0.0013	0.0016	0.000065	0.000065	0.13	0.056	0.022	0.0045
HPLC-2	L-6	2020-01-08	28	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1638	-	0.0011	0.0014	0.000033	0.000033	0.087	0.037	0.015	0.0031
HPLC-2	L-7	2020-01-22	42	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1638	-	0.0018	0.0022	0.000033	0.000033	0.083	0.037	0.015	0.0023
HPLC-2	L-8	2020-01-29	49	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1638	-	0.0016	0.0020	0.000065	0.000065	0.10	0.049	0.019	0.0021
HPLC-2	L-9	2020-02-12	63	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1638	-	0.0015	0.0018	0.000033	0.000033	0.072	0.034	0.014	0.0014
HPLC-2	L-10	2020-02-26	77	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1638	-	0.0017	0.0021	0.000033	0.000033	0.069	0.034	0.014	0.0010
HPLC-2	L-11	2020-03-11	91	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1638	-	0.00091	0.0011	0.000033	0.000033	0.066	0.033	0.013	0.00085
HPLC-2	L-12	2020-03-25	105	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.76	1638	-	0.00078	0.00097	0.000032	0.000032	0.062	0.031	0.012	0.00071
HPLC-2	L-13	2020-04-08	119	0.10	0.057	0.00047	628	1.00	0.63	0.0082	7.7	0.76	1638	-	0.00089	0.0011	0.000032	0.000032	0.058	0.029	0.012	0.00051
HPLC-2	L-14	2020-04-22	133	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1638	-	0.00085	0.0010	0.000033	0.000033	0.059	0.031	0.012	0.00039
HPLC-2	L-15	2020-05-06	147	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.76	1638	-	0.0013	0.0016	0.000033	0.000033	0.051	0.030	0.012	0.00033
HPLC-2	L-16	2020-05-20	161	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1638	-	0.0014	0.0017	0.000033	0.000033	0.050	0.029	0.011	0.00026
HPLC-2	L-17	2020-06-03	175	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1638	-	0.00091	0.0011	0.000033	0.000033	0.049	0.027	0.011	0.00026
HPLC-3	L-1	2019-12-11	0.080	0.10	0.057	0.00047	567	1.0	0.57	0.0082	6.9	0.76	1635	-	0.12	0.15	0.0050	0.0050	5.1	3.4	1.4	0.0050
HPLC-3	L-2	2019-12-12	1.0	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1635	-	0.0050	0.0060	0.00050	0.00050	0.48	0.29	0.12	0.0060
HPLC-3	L-3	2019-12-13	2.0	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.76	1635	-	0.0081	0.0100	0.00045	0.00045	0.39	0.22	0.086	0.0054
HPLC-3	L-4	2019-12-18	7.0	0.10	0.057	0.00047	636	1.00	0.64	0.0082	7.8	0.76	1635	-	0.0022	0.0027	0.000090	0.000090	0.16	0.075	0.030	0.0054
HPLC-3	L-5	2019-12-25	14	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.76	1635	-	0.0016	0.0019	0.000065	0.000065	0.13	0.059	0.023	0.0047
HPLC-3	L-6	2020-01-08	28	0.10	0.057	0.00047	645	1.00	0.64	0.0082	7.9	0.76	1635	-	0.0016	0.0020	0.000033	0.000033	0.089	0.038	0.015	0.0032
HPLC-3	L-7	2020-01-22	42	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1635	-	0.0015	0.0018	0.000033	0.000033	0.085	0.038	0.015	0.0024
HPLC-3	L-8	2020-01-29	49	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.76	1635	-	0.0032	0.0039	0.000065	0.000065	0.10	0.049	0.020	0.0021
HPLC-3	L-9	2020-02-12	63	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1635	-	0.0017	0.0021	0.000033	0.000033	0.073	0.035	0.014	0.0014
HPLC-3	L-10	2020-02-26	77	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1635	-	0.0018	0.0022	0.000033	0.000033	0.070	0.035	0.014	0.0010
HPLC-3	L-11	2020-03-11	91	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.76	1635	-	0.0016	0.0019	0.000032	0.000032	0.065	0.033	0.013	0.00084
HPLC-3	L-12	2020-03-25	105	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1635	-	0.00085	0.0010	0.000033	0.000033	0.060	0.032	0.013	0.00065
HPLC-3	L-13	2020-04-08	119	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.76	1635	-	0.0014	0.0017	0.000032	0.000032	0.060	0.030	0.012	0.00052
HPLC-3	L-14	2020-04-22	133	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1635	-	0.0013	0.0016	0.000033	0.000033	0.059	0.031	0.012	0.00039
HPLC-3	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1635	-	0.0014	0.0017	0.000033	0.000033	0.051	0.030	0.012	0.00039
HPLC-3	L-16	2020-05-20	161	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1635	-	0.00085	0.0010	0.000033	0.000033	0.051	0.031	0.012	0.00026
HPLC-3	L-17	2020-06-03	175	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1635	-	0.0011	0.0014	0.000033	0.000033	0.050	0.027	0.011	0.00026
HPLC-4	L-1	2019-12-11	0.080	0.10	0.057	0.00047	555	1.0	0.55	0.0082	6.8	0.75	1619	-	0.16	0.20	0.0049	0.0049	3.6	2.4	0.96	0.0049
HPLC-4	L-2	2019-12-12	1.0	0.10	0.057	0.00047	626	1.00	0.63	0.0082	7.7	0.75	1619	-	0.0087	0.011	0.00048	0.00048	0.61	0.37	0.15	0.0058
HPLC-4	L-3	2019-12-13	2.0	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.75	1619	-	0.013	0.015	0.00045	0.00045	0.46	0.27	0.11	0.0054
HPLC-4	L-4	2019-12-18	7.0	0.10	0.057	0.00047	626	1.00	0.63	0.0082	7.7	0.75	1619	-	0.0021	0.0027	0.000089	0.000089	0.16	0.075	0.030	0.0055
HPLC-4	L-5	2019-12-25	14	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.75	1619	-	0.0022	0.0027	0.000065	0.000065	0.15	0.058	0.023	0.0049
HPLC-4	L-6	2020-01-08	28	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.75	1619	-	0.0014	0.0017	0.000033	0.000033	0.089	0.037	0.015	0.0033
HPLC-4	L-7	2020-01-22	42	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.75	1619	-	0.00091	0.0011	0.000033	0.000033	0.087	0.038	0.015	0.0023
HPLC-4	L-8	2020-01-29	49	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.75	1619	-	0.0016	0.0020	0.000065	0.000065	0.10	0.048	0.019	0.0021
HPLC-4	L-9	2020-02-12	63	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.75	1619	-	0.0016	0.0020	0.000033	0.000033	0.071	0.035	0.014	0.0014
HPLC-4	L-10	2020-02-26	77	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.75	1619	-	0.0015	0.0018	0.000032	0.000032	0.070	0.034	0.014	0.0010
HPLC-4	L-11	2020-03-11	91	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.75	1619	-	0.0012	0.0014	0.000032	0.000032	0.066	0.033	0.013	0.00084
HPLC-4	L-12	2020-03-25	105	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.75	1619	-	0.0014	0.0017	0.000032	0.000032	0.062	0.031	0.012	0.00065
HPLC-4	L-13	2020-04-08	119	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.75	1619	-	0.0013	0.0016	0.000032	0.000032	0.059	0.030	0.012	0.00052
HPLC-4	L-14	2020-04-22	133	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.75	1619	-	0.0014	0.0018	0.000033	0.000033	0.059	0.031	0.012	0.00039
HPLC-4	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.75	1619	-	0.00091	0.0011	0.000033	0.000033	0.051	0.030	0.012	0.00033
HPLC-4	L-16	2020-05-20	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.75	1619	-	0.00085	0.0010	0.000033	0.000033	0.051	0.032	0.013	0.00026
HPLC-4	L-17	2020-06-03	175	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.75	1619	-	0.0010	0.0013	0.000033	0.000033	0.050	0.028	0.011	0.00026

- Parameter not analyzed

Appendix E, Table E-13
HPLC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-P/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HPLC-1	L-1	0.00064	0.0042	0.00053	0.0074	-	-	0.00019	-	0.57	0.00000027	0.0040	0.000016	0.00021	0.00021	0.00000053	5.3E-08	0.0000021	0.0000027	0.000012	0.00036	5.3E-09
HPLC-1	L-2	0.00021	0.0026	0.00019	0.014	-	-	0.0000043	-	0.15	2.4E-08	0.00033	0.0000082	0.00011	0.0000067	4.8E-08	9.7E-09	9.7E-08	0.00000058	0.00000097	0.000018	4.8E-10
HPLC-1	L-3	0.00021	0.0029	0.00018	0.019	-	-	0.0000042	-	0.16	4.6E-08	0.00034	0.000011	0.00011	0.0000067	4.6E-08	4.6E-09	4.6E-08	0.00000092	0.00000055	0.0000068	4.6E-10
HPLC-1	L-4	0.00014	0.0018	0.00011	0.017	-	-	0.00000082	-	0.088	2.7E-08	0.00013	0.000011	0.000062	0.0000014	9.1E-09	3.7E-09	1.8E-08	0.00000026	0.00000042	0.0000024	9.1E-11
HPLC-1	L-5	0.00010	0.0016	0.000091	0.014	-	-	0.00000059	-	0.072	6.5E-09	0.000088	0.000011	0.000047	0.00000095	6.5E-09	6.5E-09	6.5E-09	0.00000014	0.00000023	0.00000049	6.5E-11
HPLC-1	L-6	0.000072	0.0011	0.000065	0.011	-	-	0.00000029	-	0.052	5.2E-09	0.000054	0.0000083	0.000038	0.00000059	3.3E-09	4.6E-09	3.3E-09	7.8E-08	0.00000014	0.00000016	3.3E-11
HPLC-1	L-7	0.000072	0.00098	0.000059	0.0092	-	-	0.00000029	-	0.050	5.2E-09	0.000053	0.0000077	0.000035	0.00000059	3.3E-09	5.2E-09	6.5E-09	5.9E-08	0.00000015	0.00000078	3.3E-11
HPLC-1	L-8	0.000080	0.0011	0.000079	0.0094	-	-	0.0000059	-	0.058	3.3E-09	0.000076	0.0000076	0.000043	0.00000097	6.6E-09	3.9E-09	1.3E-08	6.6E-08	0.00000018	0.0000021	6.6E-11
HPLC-1	L-9	0.000040	0.00072	0.000052	0.0068	-	-	0.0000029	-	0.042	3.3E-09	0.000052	0.0000061	0.000029	0.00000065	3.3E-09	3.3E-09	1.3E-08	4.6E-08	0.00000013	0.0000016	3.3E-11
HPLC-1	L-10	0.000038	0.00072	0.000052	0.0063	-	-	0.0000029	-	0.040	3.3E-09	0.000046	0.0000055	0.000027	0.00000061	3.3E-09	3.3E-10	6.5E-09	3.9E-08	0.0000001	0.00000091	3.3E-11
HPLC-1	L-11	0.000046	0.00065	0.000052	0.0056	-	-	0.0000030	-	0.039	1.6E-09	0.000040	0.0000050	0.000026	0.00000063	3.3E-09	6.5E-10	3.3E-09	1.6E-08	7.2E-08	9.2E-08	3.3E-11
HPLC-1	L-12	0.000041	0.00060	0.000046	0.0048	-	-	0.0000029	-	0.037	1.6E-09	0.000040	0.0000044	0.000024	0.00000063	3.3E-09	3.3E-10	3.3E-09	1.6E-08	5.2E-08	3.9E-08	3.3E-11
HPLC-1	L-13	0.000050	0.00056	0.000045	0.0042	-	-	0.0000029	-	0.035	1.6E-09	0.000037	0.0000039	0.000023	0.00000061	3.2E-09	3.2E-09	3.2E-09	1.6E-08	5.8E-08	7.1E-08	3.2E-11
HPLC-1	L-14	0.000035	0.00056	0.000045	0.0038	-	-	0.0000029	-	0.035	1.6E-09	0.000034	0.0000035	0.000021	0.00000063	3.2E-09	3.2E-10	3.2E-09	1.6E-08	5.2E-08	7.1E-08	3.2E-11
HPLC-1	L-15	0.000048	0.00051	0.000039	0.0033	-	-	0.000029	-	0.033	1.6E-09	0.000030	0.0000029	0.000019	0.00000065	3.3E-09	6.5E-10	3.3E-09	1.6E-08	4.6E-08	7.2E-08	3.3E-11
HPLC-1	L-16	0.000043	0.00048	0.000046	0.0028	-	-	0.0000030	-	0.031	1.6E-09	0.000029	0.0000027	0.000020	0.00000065	3.3E-09	3.3E-10	3.3E-09	1.6E-08	4.6E-08	7.8E-08	3.3E-11
HPLC-1	L-17	0.000035	0.00046	0.000039	0.0025	-	-	0.0000029	-	0.031	1.6E-09	0.000022	0.0000023	0.000019	0.00000072	3.3E-09	1.3E-09	3.3E-09	3.3E-08	5.9E-08	9.1E-08	6.5E-11
HPLC-2	L-1	0.0012	0.0050	0.0020	0.0099	-	-	0.00018	-	2.0	0.00000025	0.0069	0.000036	0.00040	0.00026	0.0000005	5.0E-08	0.0000020	0.0000025	0.000012	0.00029	5.0E-09
HPLC-2	L-2	0.00029	0.0030	0.00030	0.013	-	-	0.0000045	-	0.25	2.5E-08	0.00061	0.0000097	0.00014	0.000011	5.0E-08	2.0E-08	5.0E-08	0.0000006	0.0000017	0.000012	5.0E-10
HPLC-2	L-3	0.00024	0.0028	0.00027	0.017	-	-	0.0000041	-	0.20	2.3E-08	0.00070	0.000011	0.00012	0.000015	4.6E-08	2.7E-08	4.6E-08	0.00000023	0.00000055	0.0000061	4.6E-10
HPLC-2	L-4	0.00013	0.0018	0.00013	0.016	-	-	0.00000081	-	0.096	3.1E-08	0.00019	0.000010	0.000063	0.0000023	9.0E-09	5.4E-09	0.00000013	0.0000004	0.0000010	0.000027	9.0E-11
HPLC-2	L-5	0.00012	0.0016	0.000091	0.014	-	-	0.00000058	-	0.079	7.8E-09	0.00011	0.000010	0.000049	0.0000013	6.5E-09	3.9E-09	6.5E-09	0.00000014	0.00000021	0.00000094	6.5E-11
HPLC-2	L-6	0.000078	0.0010	0.000072	0.010	-	-	0.00000029	-	0.055	4.6E-09	0.000065	0.0000079	0.000038	0.00000072	3.3E-09	2.0E-09	6.5E-09	9.1E-08	0.00000014	0.00000085	3.3E-11
HPLC-2	L-7	0.000064	0.00098	0.000065	0.0091	-	-	0.00000029	-	0.053	3.9E-09	0.000057	0.0000076	0.000036	0.00000065	3.3E-09	1.3E-09	3.3E-09	6.5E-08	0.00000011	0.00000018	3.3E-11
HPLC-2	L-8	0.000089	0.0011	0.000078	0.0097	-	-	0.0000059	-	0.063	3.3E-09	0.000095	0.0000078	0.000044	0.0000016	6.5E-09	1.3E-09	3.9E-08	9.1E-08	0.0000003	0.0000064	6.5E-11
HPLC-2	L-9	0.000044	0.00078	0.000059	0.0068	-	-	0.0000029	-	0.045	1.6E-09	0.000059	0.0000061	0.000030	0.00000078	3.3E-09	6.5E-10	3.3E-09	5.2E-08	8.5E-08	0.00000016	3.3E-11
HPLC-2	L-10	0.000037	0.00072	0.000052	0.0063	-	-	0.0000029	-	0.043	1.6E-09	0.000050	0.0000056	0.000029	0.00000078	3.3E-09	2.0E-09	3.3E-09	4.6E-08	7.8E-08	0.00000027	3.3E-11
HPLC-2	L-11	0.000050	0.00065	0.000052	0.0056	-	-	0.0000029	-	0.042	1.6E-09	0.000048	0.0000051	0.000029	0.00000091	3.3E-09	3.3E-10	3.3E-09	3.9E-08	6.5E-08	9.8E-08	3.3E-11
HPLC-2	L-12	0.000045	0.00060	0.000045	0.0048	-	-	0.0000029	-	0.039	1.6E-09	0.000046	0.0000045	0.000025	0.00000084	3.2E-09	3.2E-10	3.2E-09	3.9E-08	5.2E-08	0.00000014	3.2E-11
HPLC-2	L-13	0.000048	0.00055	0.000045	0.0041	-	-	0.0000029	-	0.036	1.6E-09	0.000042	0.0000040	0.000023	0.00000083	3.2E-09	2.5E-09	3.2E-09	3.2E-08	5.7E-08	0.00000034	3.2E-11
HPLC-2	L-14	0.000040	0.00055	0.000046	0.0038	-	-	0.0000029	-	0.037	1.6E-09	0.000044	0.0000036	0.000023	0.00000091	3.3E-09	3.3E-10	6.5E-09	1.6E-08	7.2E-08	0.00000085	3.3E-11
HPLC-2	L-15	0.000047	0.00049	0.000046	0.0033	-	-	0.000029	-	0.034	1.6E-09	0.000042	0.0000031	0.000020	0.00000091	3.3E-09	1.3E-09	3.3E-09	1.6E-08	4.6E-08	7.2E-08	3.3E-11
HPLC-2	L-16	0.000037	0.00048	0.000046	0.0029	-	-	0.0000030	-	0.034	1.6E-09	0.000035	0.0000029	0.000021	0.00000078	3.3E-09	3.3E-10	3.3E-09	1.6E-08	4.6E-08	9.2E-08	3.3E-11
HPLC-2	L-17	0.000039	0.00044	0.000039	0.0025	-	-	0.0000029	-	0.031	1.6E-09	0.000029	0.0000026	0.000020	0.00000085	3.3E-09	3.3E-10	6.5E-09	3.3E-08	7.2E-08	0.00000072	6.5E-11
HPLC-3	L-1	0.0016	0.0060	0.0020	0.011	-	-	0.00018	-	3.1	0.00000025	0.010	0.000049	0.00050	0.00028	0.0000005	0.0000001	0.0000060	0.0000070	0.000036	0.0012	5.0E-09
HPLC-3	L-2	0.00031	0.0034	0.00040	0.016	-	-	0.0000045	-	0.30	2.5E-08	0.00071	0.000012	0.00015	0.000014	5.0E-08	5.0E-09	5.0E-08	0.00000025	0.0000008	0.0000099	5.0E-10
HPLC-3	L-3	0.00027	0.0030	0.00027	0.019	-	-	0.0000041	-	0.24	2.3E-08	0.00084	0.000013	0.00013	0.000017	4.5E-08	4.5E-09	4.5E-08	0.00000023	0.00000054	0.0000085	4.5E-10
HPLC-3	L-4	0.00014	0.0018	0.00013	0.016	-	-	0.00000081	-	0.10	2.2E-08	0.00018	0.000010	0.000067	0.0000025	9.0E-09	3.6E-09	1.8E-08	0.00000025	0.00000038	0.0000038	9.0E-11
HPLC-3	L-5	0.00012	0.0016	0.00010	0.014	-	-	0.00000058	-	0.082	3.2E-09	0.00011	0.000010	0.000052	0.0000017	6.5E-09	3.9E-09	1.3E-08	0.00000016	0.00000026	0.0000016	6.5E-11
HPLC-3	L-6	0.000078	0.0011	0.000072	0.011	-	-	0.00000029	-	0.057	4.6E-09	0.000065	0.0000082	0.000040	0.00000085	3.3E-09	2.0E-09	3.3E-09	9.8E-08	0.0000001	0.00000016	3.3E-11
HPLC-3	L-7	0.000072	0.0010	0.000065	0.0094	-	-	0.00000029	-	0.052	3.9E-09	0.000059	0.0000076	0.000037	0.00000078	3.3E-09	6.5E-10	3.3E-09	7.8E-08	9.8E-08	0.00000016	3.3E-11
HPLC-3	L-8	0.000088	0.0011	0.000078	0.0096	-	-	0.0000059	-	0.064	3.2E-09	0.000095	0.0000078	0.000043	0.0000016	6.5E-09	6.5E-10	1.3E-08	7.8E-08	0.00000014	0.0000017	6.5E-11
HPLC-3	L-9	0.000030	0.00078	0.000059	0.0068	-	-	0.0000029	-	0.046	1.6E-09	0.000059	0.0000061	0.000029	0.00000085	3.3E-09	2.6E-09	3.3E-09	5.2E-08	7.2E-08	0.00000014	3.3E-11
HPLC-3	L-10	0.000043	0.00072	0.000059	0.0063	-	-	0.0000029	-	0.044	3.3E-09	0.000055	0.0000056	0.000029	0.00000085	3.3E-09	2.0E-09	2.0E-08	5.9E-08	0.00000015	0.0000029	3.3E-11
HPLC-3	L-11	0.000058	0.00065	0.000052	0.0055	-	-	0.0000029	-	0.042	1.6E-09	0.000049	0.0000051	0.000028	0.00000091	3.2E-09	3.2E-10	3.2E-09	3.9E-08	6.5E-08	0.00000017	3.2E-11
HPLC-3	L-12	0.000045	0.00061	0.000052	0.0048	-	-	0.0000029	-	0.039	1.6E-09	0.000050	0.0000046	0.000026	0.00000091	3.3E-09	3.3E-09	3.3E-09	5.9E-08	6.5E-08	0.0000006	3.3E-11
HPLC-3	L-13	0.000053	0.00056	0.000045	0.0042	-	-	0.0000029	-	0.037	1.6E-09	0.000045	0.0000040	0.000024	0.00000091	3.2E-09	6.5E-10	3.2E-09	3.9E-08	5.8E-08	0.00000044	3.2E-11
HPLC-3	L-14	0.000039	0.00055	0.000046	0.0038	-	-	0.0000030	-	0.037	1.6E-09	0.000047	0.0000037	0.000024	0.00000092	3.3E-09	3.3E-10	3.3E-09	1.6E-08	5.2E-08	0.00000026	3.3E-11
HPLC-3	L-15	0.000048	0.00050	0.000046	0.0033	-	-	0.000029	-	0.034	1.6E-09	0.000039	0.0000031	0.000020	0.00000085	3.3E-09	2.6E-09	3.3E-09	1.6E-08	4.6E-08	0.0000001	3.3E-11
HPLC-3	L-16	0.000046	0.00050	0.000046	0.0031	-	-	0.0000030	-	0.035	1.6E-09	0.000044	0.0000029	0.000021	0.00000085	3.3E-09	3.3E-10	3.3E-09	1.6E-08	4.6E-08	0.00000012	3.3E-11
HPLC-3	L-17	0.000039	0.00044	0.000039	0.0024	-	-	0.0000029	-	0.032	1.6E-09	0.000031	0.0000026	0.000020	0.00000091	3.3E-09	1.3E-09	3.3E-09	3.3E-08	5.2E-08	0.00000016	6.5E-11
HPLC-4	L-1	0.000049	0.0059	0.0020	0.0098	-	-	0.0029	-	2.2	0.00000025	0.0083	0.000041	0.00039	0.00024	0.00000049	4.9E-08	0.0000059	0.0000069	0.000034	0.0011	4.9E-09
HPLC-4	L-2	0.00036	0.0036	0.00039	0.016	-	-	0.0000043	-	0.38	4.8E-08	0.00085	0.000014	0.00017	0.000013	4.8E-08	2.9E-08	4.8E-08	0.00000048	0.00000077	0.000011	4.8E-10
HPLC-4	L-3	0.00027	0.0029	0.00036	0.016	-	-	0.0000041	-	0.27	2.3E-08	0.0010	0.000013	0.00014	0.000026	4.5E-08	1.8E-08	4.5E-08	0.00000023	0.00000054	0.0000070	4.5E-10
HPLC-4	L-4	0.00014	0.0018	0.00012	0.016	-	-	0.0000008	-	0.10	2.3E-08	0.00018	0.000010	0.000064	0.0000025	8.9E-09	7.1E-09	8.9E-09	0.00000025	0.00000035	0.0000023	8.9E-11
HPLC-4	L-5	0.00011	0.0017	0.000090	0.015	-	-	0.00000058	-	0.083	7.7E-09	0.00013	0.000011	0.000050	0.0000018	6.5E-09	2.6E-09	3.9E-08	0.00000019	0.00000041	0.0000077	6.5E-11
HPLC-4	L-6	0.000072	0.0011	0.000072	0.011	-	-	0.00000029	-	0.057	5.2E-09	0.000069	0.0000084	0.000039	0.00000085	3.3E-09	2.0E-09	2.6E-08	0.00000012	0.00000021	0.0000040	3.3E-11
HPLC-4	L-7	0.000072	0.0010	0.000065	0.0099	-	-	0.00000029	-	0.054	4.6E-09	0.000061	0.0000081	0.000038	0.00000085	3.3E-09	2.6E-09	3.3E-09	7.2E-08	9.1E-08	0.00000024	3.3E-11
HPLC-4	L-8	0.000089	0.0012	0.000078	0.010	-	-	0.0000059	-	0.065	3.3E-09	0.000095	0.0000082	0.000046	0.0000016	6.5E-09	5.2E-09	6.5E-09	7.8E-08	0.00000012	0.0000010	6.5E-11
HPLC-4	L-9	0.000049	0.00078	0.000059	0.0070	-	-	0.0000029	-	0.046	3.3E-09	0.000059	0.0000063	0.000029	0.00000091	3.3E-09	2.0E-09	3.3E-09	5.9E-08	7.2E-08	0.00000037	3.3E-11
HPLC-4	L-10	0.000045	0.00071	0.000058	0.0063	-	-	0.0000029	-	0.044	3.9E-09	0.000058	0.0000058	0.000030	0.00000097	3.2E-09	1.3E-09	1.9E-08	6.5E-08	0.00000017	0.0000038	3.2E-11
HPLC-4	L-11	0.000046	0.00065	0.000052	0.0056	-	-	0.0000029	-	0.042	1.6E-09	0.000061	0.0000051	0.000032	0.00000084	3.2E-09	6.5E-10	3.2E-09	3.9E-08	6.5E-08	0.00000024	3.2E-11
HPLC-4	L-12	0.000046	0.00061	0.000045	0.0047	-	-	0.0000029	-	0.039	1.6E-09	0.000059	0.0000045	0.000026	0.00000097	3.2E-09	1.3E-09	3.2E-09	3.9E-08	7.1E-08	0.00000077	3.2E-11
HPLC-4	L-13	0.000049	0.00057	0.000045	0.0040	-	-	0.0000029	-	0.037	1.6E-09	0.000047	0.0000040	0.000025	0.00000091	3.2E-09	6.5E-10	3.2E-09	3.2E-08	5.8E-08	0.00000021	3.2E-11
HPLC-4	L-14	0.000036	0.00056	0.000046	0.0037	-	-	0.0000030	-	0.037	1.6E-09	0.000046	0.0000036	0.000024	0.00000098	3.3E-09	3.3E-09	3.3E-09	3.3E-08	5.9E-08	0.00000048	3.3E-11
HPLC-4	L-15	0.000048	0.00051	0.000046	0.0031	-	-	0.000029	-	0.034	1.6E-09	0.000049	0.0000030	0.000020	0.00000091	3.3E-09	3.3E-10	3.3E-09	1.6E-08	5.2E-08	0.00000025	3.3E-11
HPLC-4	L-16	0.000046	0.00053	0.000052	0.0030	-	-	0.0000029	-	0.036	1.6E-09	0.000048	0.0000028	0.000022	0.00000091	3.3E-09	3.3E-10	3.3E-09	1.6E-08	5.2E-08	0.00000022	3.3E-11
HPLC-4	L-17	0.000037	0.00044	0.000046	0.0023	-	-	0.0000030	-	0.032	1.6E-09	0.000033	0.0000025	0.000020	0.00000098	3.3E-09	3.3E-10	3.3E-09	1.6E-08	7.8E-08	7.2E-08	6.5E-11

- Parameter not analyzed

Appendix E, Table E-13
HPLC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HPLC-1	L-1	0.0000064	0.00078	0.0000032	0.000047	0.0000042	0.000025	0.00000053	0.00019	0.0000085	0.0000011	0.000075	0.000015	0.000014	-	-	2.4E-09	-
HPLC-1	L-2	0.00000024	0.00040	0.00000029	0.0000032	0.0000012	0.0000063	4.8E-08	0.000053	0.0000016	0.00000019	0.000014	0.0000014	0.0000015	-	-	1.7E-10	-
HPLC-1	L-3	0.00000023	0.00052	9.2E-08	0.0000011	0.0000010	0.0000074	4.6E-08	0.000050	0.0000017	0.00000018	0.0000092	0.0000015	0.00000055	-	-	1.3E-10	-
HPLC-1	L-4	4.6E-08	0.00045	7.3E-08	0.00000053	0.00000051	0.0000049	9.1E-09	0.000026	0.0000013	0.00000015	0.0000062	0.00000075	0.00000018	-	-	4.1E-11	-
HPLC-1	L-5	3.3E-08	0.00038	3.9E-08	0.00000013	0.0000004	0.0000040	6.5E-09	0.000021	0.0000012	0.0000001	0.0000052	0.00000062	0.00000023	-	-	2.6E-11	-
HPLC-1	L-6	1.6E-08	0.00030	2.0E-08	3.9E-08	0.00000031	0.0000031	3.3E-09	0.000016	0.00000078	7.8E-08	0.0000055	0.00000044	7.8E-08	-	-	1.3E-11	-
HPLC-1	L-7	1.6E-08	0.00027	2.0E-08	0.00000015	0.00000029	0.0000031	3.3E-09	0.000014	0.0000006	7.2E-08	0.0000050	0.00000046	3.9E-08	-	-	1.3E-11	-
HPLC-1	L-8	3.3E-08	0.00027	3.9E-08	0.00000035	0.00000034	0.0000031	6.6E-09	0.000017	0.00000085	7.9E-08	0.0000049	0.00000056	0.00000016	-	-	1.9E-11	-
HPLC-1	L-9	3.9E-08	0.00022	2.0E-08	0.00000028	0.00000026	0.0000027	3.3E-09	0.000014	0.00000064	6.5E-08	0.0000048	0.00000044	6.5E-08	-	-	1.4E-11	-
HPLC-1	L-10	1.6E-08	0.00020	2.6E-08	0.0000002	0.00000025	0.0000023	3.3E-09	0.000012	0.00000063	6.5E-08	0.0000042	0.00000042	0.00000023	-	-	1.1E-11	-
HPLC-1	L-11	1.6E-08	0.00018	2.0E-08	7.9E-08	0.00000026	0.0000022	3.3E-09	0.000012	0.00000058	5.9E-08	0.0000039	0.00000039	4.6E-08	-	-	1.1E-11	-
HPLC-1	L-12	1.6E-08	0.00018	1.3E-08	3.3E-08	0.00000025	0.0000021	3.3E-09	0.000012	0.00000059	5.9E-08	0.0000034	0.00000039	3.9E-08	-	-	1.0E-11	-
HPLC-1	L-13	1.6E-08	0.00015	1.3E-08	5.8E-08	0.00000025	0.0000019	3.2E-09	0.000012	0.00000037	6.5E-08	0.0000033	0.00000038	5.8E-08	-	-	1.3E-11	-
HPLC-1	L-14	1.6E-08	0.00014	1.3E-08	4.5E-08	0.00000024	0.0000017	3.2E-09	0.000011	0.00000043	6.5E-08	0.0000029	0.00000036	9.7E-08	-	-	1.2E-11	-
HPLC-1	L-15	1.6E-08	0.00013	1.3E-08	2.6E-08	0.00000022	0.0000016	3.3E-09	0.000010	0.00000039	5.2E-08	0.0000025	0.00000034	4.6E-08	-	-	1.4E-11	-
HPLC-1	L-16	1.6E-08	0.00013	1.3E-08	4.6E-08	0.00000022	0.0000013	3.3E-09	0.000010	0.00000029	5.2E-08	0.0000024	0.00000035	0.00000018	-	-	1.4E-11	-
HPLC-1	L-17	1.6E-08	0.00012	1.3E-08	4.6E-08	0.00000022	0.0000014	3.3E-09	0.000010	0.00000025	5.2E-08	0.0000021	0.00000033	0.00000018	-	-	1.2E-11	-
HPLC-2	L-1	0.0000025	0.0014	0.0000030	0.000039	0.0000080	0.000060	0.0000005	0.00053	0.00032	0.00000099	0.00014	0.000026	0.0000060	-	-	3.2E-09	-
HPLC-2	L-2	0.0000006	0.00051	0.0000009	0.0000018	0.0000014	0.0000092	5.0E-08	0.000083	0.0000017	0.0000002	0.000016	0.0000026	0.000054	-	-	2.1E-10	-
HPLC-2	L-3	0.00000023	0.00055	0.00000018	0.00000091	0.0000013	0.0000091	4.6E-08	0.000066	0.0000016	0.00000027	0.000011	0.0000025	0.00000064	-	-	2.4E-10	-
HPLC-2	L-4	0.00000034	0.00044	0.00000025	0.0000034	0.00000054	0.0000051	9.0E-09	0.000029	0.0000018	0.00000014	0.000010	0.0000012	0.0000006	-	-	5.4E-11	-
HPLC-2	L-5	3.2E-08	0.00040	2.6E-08	0.00000021	0.00000044	0.0000042	6.5E-09	0.000023	0.0000013	0.0000001	0.0000052	0.00000074	0.00000012	-	-	3.0E-11	-
HPLC-2	L-6	3.9E-08	0.00031	2.0E-08	0.00000014	0.00000031	0.0000032	3.3E-09	0.000016	0.00000078	7.8E-08	0.0000057	0.00000049	7.8E-08	-	-	1.5E-11	-
HPLC-2	L-7	1.6E-08	0.00029	2.6E-08	6.5E-08	0.00000031	0.0000031	3.3E-09	0.000016	0.00000063	7.2E-08	0.0000049	0.00000049	3.3E-08	-	-	1.5E-11	-
HPLC-2	L-8	0.0000001	0.00029	6.5E-08	0.0000011	0.00000038	0.0000034	6.5E-09	0.000018	0.0000011	9.1E-08	0.0000059	0.0000007	0.00000021	-	-	3.3E-11	-
HPLC-2	L-9	1.6E-08	0.00023	1.3E-08	5.2E-08	0.00000028	0.0000027	3.3E-09	0.000014	0.00000065	6.5E-08	0.0000039	0.00000046	4.6E-08	-	-	1.5E-11	-
HPLC-2	L-10	1.6E-08	0.00022	2.6E-08	9.1E-08	0.00000027	0.0000024	3.3E-09	0.000013	0.00000065	6.5E-08	0.0000037	0.00000046	9.8E-08	-	-	1.8E-11	-
HPLC-2	L-11	1.6E-08	0.00020	1.3E-08	7.8E-08	0.00000027	0.0000024	3.3E-09	0.000013	0.00000061	5.9E-08	0.0000034	0.00000048	1.6E-08	-	-	1.6E-11	-
HPLC-2	L-12	1.6E-08	0.00019	1.3E-08	5.2E-08	0.00000027	0.0000022	3.2E-09	0.000013	0.00000071	6.5E-08	0.0000030	0.00000046	6.5E-08	-	-	1.5E-11	-
HPLC-2	L-13	1.6E-08	0.00016	1.3E-08	9.5E-08	0.00000026	0.0000020	3.2E-09	0.000013	0.00000045	5.7E-08	0.0000031	0.00000044	1.6E-08	-	-	1.5E-11	-
HPLC-2	L-14	1.6E-08	0.00016	1.3E-08	0.00000019	0.00000026	0.0000018	3.3E-09	0.000012	0.00000049	6.5E-08	0.0000029	0.00000045	1.6E-08	-	-	1.6E-11	-
HPLC-2	L-15	1.6E-08	0.00014	1.3E-08	3.3E-08	0.00000023	0.0000016	3.3E-09	0.000011	0.00000043	5.2E-08	0.0000024	0.0000004	1.6E-08	-	-	1.5E-11	-
HPLC-2	L-16	1.6E-08	0.00014	1.3E-08	3.9E-08	0.00000023	0.0000014	3.3E-09	0.000011	0.00000029	5.2E-08	0.0000025	0.00000041	7.8E-08	-	-	1.3E-11	-
HPLC-2	L-17	1.6E-08	0.00013	2.0E-08	0.00000013	0.00000023	0.0000016	3.3E-09	0.000010	0.00000026	5.2E-08	0.0000025	0.00000039	0.00000013	-	-	1.5E-11	-
HPLC-3	L-1	0.000014	0.0018	0.0000090	0.00016	0.000011	0.000082	0.0000005	0.00075	0.000035	0.0000010	0.00039	0.000046	0.000012	-	-	3.5E-09	-
HPLC-3	L-2	0.00000025	0.00060	0.0000004	0.0000015	0.0000016	0.000011	5.0E-08	0.000096	0.0000017	0.0000003	0.000020	0.0000030	0.000012	-	-	2.5E-10	-
HPLC-3	L-3	0.00000023	0.00062	9.0E-08	0.0000014	0.0000014	0.000011	4.5E-08	0.000073	0.0000019	0.00000027	0.000014	0.0000033	0.00000023	-	-	2.4E-10	-
HPLC-3	L-4	9.0E-08	0.00046	7.2E-08	0.00000065	0.00000056	0.0000049	9.0E-09	0.000031	0.0000013	0.00000014	0.0000059	0.00000099	0.00000032	-	-	4.1E-11	-
HPLC-3	L-5	6.5E-08	0.00041	3.9E-08	0.00000027	0.00000045	0.0000044	6.5E-09	0.000023	0.0000013	0.00000012	0.0000060	0.00000082	9.1E-08	-	-	3.9E-11	-
HPLC-3	L-6	1.6E-08	0.00032	2.0E-08	4.6E-08	0.00000033	0.0000033	3.3E-09	0.000017	0.00000085	8.5E-08	0.0000055	0.00000052	5.9E-08	-	-	1.8E-11	-
HPLC-3	L-7	1.6E-08	0.00029	2.0E-08	5.9E-08	0.00000031	0.0000033	3.3E-09	0.000016	0.00000064	7.8E-08	0.0000049	0.00000052	1.6E-08	-	-	1.6E-11	-
HPLC-3	L-8	3.2E-08	0.00030	5.2E-08	0.00000032	0.00000039	0.0000035	6.5E-09	0.000018	0.0000011	9.1E-08	0.0000049	0.00000068	0.00000048	-	-	3.3E-11	-
HPLC-3	L-9	1.6E-08	0.00023	1.3E-08	5.2E-08	0.00000029	0.0000028	3.3E-09	0.000015	0.00000065	7.2E-08	0.0000038	0.00000049	3.9E-08	-	-	1.8E-11	-
HPLC-3	L-10	5.9E-08	0.00022	3.3E-08	0.00000047	0.00000028	0.0000025	3.3E-09	0.000014	0.00000078	6.5E-08	0.0000041	0.00000053	6.5E-08	-	-	1.4E-11	-
HPLC-3	L-11	1.6E-08	0.00019	1.9E-08	6.5E-08	0.00000027	0.0000024	3.2E-09	0.000013	0.00000061	5.8E-08	0.0000032	0.00000048	0.0000001	-	-	1.6E-11	-
HPLC-3	L-12	3.3E-08	0.00020	3.3E-08	0.0000001	0.00000028	0.0000023	3.3E-09	0.000013	0.00000078	6.5E-08	0.0000031	0.0000005	0.00000021	-	-	1.7E-11	-
HPLC-3	L-13	1.6E-08	0.00017	1.3E-08	0.00000012	0.00000027	0.0000021	3.2E-09	0.000013	0.00000045	6.5E-08	0.0000029	0.00000045	1.6E-08	-	-	1.6E-11	-
HPLC-3	L-14	1.6E-08	0.00016	1.3E-08	7.9E-08	0.00000026	0.0000019	3.3E-09	0.000012	0.00000046	6.5E-08	0.0000024	0.00000045	1.6E-08	-	-	1.5E-11	-
HPLC-3	L-15	1.6E-08	0.00015	6.5E-09	3.9E-08	0.00000023	0.0000016	3.3E-09	0.000011	0.0000004	5.2E-08	0.0000022	0.0000004	1.6E-08	-	-	1.4E-11	-
HPLC-3	L-16	1.6E-08	0.00014	6.5E-09	3.9E-08	0.00000024	0.0000014	3.3E-09	0.000011	0.00000032	5.2E-08	0.0000021	0.00000043	0.00000012	-	-	1.5E-11	-
HPLC-3	L-17	1.6E-08	0.00014	1.3E-08	5.2E-08	0.00000023	0.0000016	3.3E-09	0.000011	0.00000024	5.2E-08	0.0000022	0.00000039	0.00000013	-	-	1.6E-11	-
HPLC-4	L-1	0.000013	0.0015	0.0000079	0.00015	0.0000088	0.000063	0.00000049	0.00055	0.000030	0.00000098	0.00028	0.000037	0.000011	-	-	3.5E-09	-
HPLC-4	L-2	0.00000024	0.00076	0.00000019	0.0000015	0.0000019	0.000013	4.8E-08	0.00012	0.0000021	0.00000029	0.000021	0.0000040	0.0000027	-	-	2.6E-10	-
HPLC-4	L-3	0.00000023	0.00064	9.1E-08	0.0000012	0.0000016	0.000013	4.5E-08	0.000089	0.0000016	0.00000027	0.000016	0.0000040	0.00000023	-	-	3.9E-10	-
HPLC-4	L-4	4.4E-08	0.00046	7.1E-08	0.00000037	0.00000055	0.0000050	8.9E-09	0.000030	0.0000013	0.00000014	0.0000050	0.0000010	0.00000041	-	-	3.6E-11	-
HPLC-4	L-5	0.00000014	0.00042	7.7E-08	0.0000011	0.00000044	0.0000046	6.5E-09	0.000023	0.0000014	0.00000012	0.0000066	0.0000009	0.00000012	-	-	3.4E-11	-
HPLC-4	L-6	7.2E-08	0.00032	4.6E-08	0.00000059	0.00000033	0.0000033	6.5E-09	0.000016	0.00000091	8.5E-08	0.0000063	0.00000056	9.1E-08	-	-	1.9E-11	-
HPLC-4	L-7	1.6E-08	0.00031	1.3E-08	7.2E-08	0.00000031	0.0000033	3.3E-09	0.000016	0.00000072	7.8E-08	0.0000053	0.00000052	1.6E-08	-	-	1.8E-11	-
HPLC-4	L-8	3.3E-08	0.00030	2.6E-08	0.0000002	0.00000039	0.0000035	6.5E-09	0.000018	0.0000011	9.1E-08	0.0000051	0.00000069	7.8E-08	-	-	3.2E-11	-
HPLC-4	L-9	1.6E-08	0.00024	2.0E-08	6.5E-08	0.00000029	0.0000027	3.3E-09	0.000015	0.00000072	7.2E-08	0.0000040	0.0000005	4.6E-08	-	-	1.9E-11	-
HPLC-4	L-10	6.5E-08	0.00023	3.9E-08	0.00000059	0.00000028	0.0000025	3.2E-09	0.000014	0.00000084	6.5E-08	0.0000041	0.00000054	7.8E-08	-	-	1.9E-11	-
HPLC-4	L-11	1.6E-08	0.00020	1.9E-08	7.1E-08	0.00000027	0.0000024	3.2E-09	0.000013	0.00000064	5.8E-08	0.0000029	0.0000005	7.1E-08	-	-	1.6E-11	-
HPLC-4	L-12	1.6E-08	0.00019	1.9E-08	0.00000014	0.00000028	0.0000022	3.2E-09	0.000013	0.00000071	6.5E-08	0.0000029	0.0000005	6.5E-08	-	-	1.6E-11	-
HPLC-4	L-13	1.6E-08	0.00017	1.3E-08	5.8E-08	0.00000027	0.0000020	3.2E-09	0.000013	0.00000045	6.5E-08	0.0000029	0.00000047	3.9E-08	-	-	1.8E-11	-
HPLC-4	L-14	1.6E-08	0.00016	1.3E-08	0.00000011	0.00000027	0.0000018	3.3E-09	0.000012	0.00000048	6.5E-08	0.0000025	0.00000048	7.2E-08	-	-	1.7E-11	-
HPLC-4	L-15	1.6E-08	0.00015	1.3E-08	5.9E-08	0.00000023	0.0000017	3.3E-09	0.000012	0.00000042	5.2E-08	0.0000020	0.00000044	3.9E-08	-	-	1.5E-11	-
HPLC-4	L-16	1.6E-08	0.00014	6.5E-09	4.6E-08	0.00000024	0.0000015	3.3E-09	0.000012	0.00000033	5.2E-08	0.0000021	0.00000044	0.0000001	-	-	1.6E-11	-
HPLC-4	L-17	1.6E-08	0.00014	1.3E-08	3.9E-08	0.00000024	0.0000016	3.3E-09	0.000011	0.00000028	5.2E-08	0.0000023	0.0000004	0.00000011	-	-	1.5E-11	-

- Parameter not analyzed

Appendix E, Table E-14
HPHC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s
HPHC-1	L-1	2019-10-08	0.080	0.076	0.14	0.00065	4075	1.00	4.1	0.043	9.4	0.83	1277	0.0068	0.19	0.21	0.014	0.0068	0.29	0.027	0.014	0.0014
HPHC-1	L-2	2019-10-09	1.0	0.076	0.14	0.00065	4323	1.00	4.3	0.043	10	0.83	1277	0.00063	0.088	0.00063	0.045	0.0038	0.20	0.014	0.0058	0.00038
HPHC-1	L-3	2019-10-10	2.0	0.076	0.14	0.00065	4327	1.00	4.3	0.043	10	0.83	1277	0.00058	0.082	0.00058	0.046	0.0023	0.15	0.013	0.0052	0.00023
HPHC-1	L-4	2019-10-15	7.0	0.076	0.14	0.00065	4324	1.00	4.3	0.043	10	0.83	1277	0.00012	0.037	0.00012	0.014	0.0046	0.066	0.0070	0.0028	0.00023
HPHC-1	L-5	2019-10-22	14	0.076	0.14	0.00065	4323	1.00	4.3	0.043	10	0.83	1277	0.000083	0.026	0.000083	0.0058	0.0055	0.028	0.012	0.0050	0.00033
HPHC-1	L-6	2019-11-05	28	0.076	0.14	0.00065	4326	1.00	4.3	0.043	10	0.83	1277	0.000041	0.015	0.000041	0.0028	0.0036	0.020	0.011	0.0042	0.000041
HPHC-1	L-7	2019-11-19	42	0.076	0.14	0.00065	4331	1.00	4.3	0.043	10	0.83	1277	0.000042	0.014	0.000042	0.0032	0.0029	0.017	0.012	0.0046	0.000042
HPHC-1	L-8	2019-11-26	49	0.076	0.14	0.00065	4330	1.00	4.3	0.043	10	0.83	1277	0.000083	0.018	0.000083	0.0053	0.0030	0.024	0.016	0.0063	0.000083
HPHC-1	L-9	2019-12-10	63	0.076	0.14	0.00065	4330	1.00	4.3	0.043	10	0.83	1277	0.000041	0.011	0.000041	0.0030	0.0022	0.015	0.011	0.0045	0.000041
HPHC-1	L-10	2019-12-24	77	0.076	0.14	0.00065	4325	1.00	4.3	0.043	10	0.83	1277	0.000041	0.012	0.000041	0.0030	0.0023	0.014	0.0099	0.0040	0.000041
HPHC-1	L-11	2020-01-07	91	0.076	0.14	0.00065	4329	1.00	4.3	0.043	10	0.83	1277	0.000041	0.011	0.000041	0.0030	0.0019	0.013	0.010	0.0041	0.000041
HPHC-1	L-12	2020-01-21	105	0.076	0.14	0.00065	4325	1.00	4.3	0.043	10	0.83	1277	0.000041	0.010	0.000041	0.0027	0.0019	0.012	0.011	0.0044	0.000041
HPHC-1	L-13	2020-02-04	119	0.076	0.14	0.00065	4327	1.00	4.3	0.043	10	0.83	1277	0.000041	0.012	0.000041	0.0028	0.0024	0.012	0.010	0.0041	0.000041
HPHC-1	L-14	2020-02-18	133	0.076	0.14	0.00065	4327	1.00	4.3	0.043	10	0.83	1277	0.000041	0.0070	0.000041	0.0022	0.0012	0.012	0.011	0.0042	0.0000083
HPHC-1	L-15	2020-03-03	147	0.076	0.14	0.00065	4331	1.00	4.3	0.043	10	0.83	1277	0.000041	0.0099	0.000041	0.0028	0.0017	0.013	0.010	0.0041	0.000041
HPHC-1	L-16	2020-03-17	161	0.076	0.14	0.00065	4328	1.00	4.3	0.043	10	0.83	1277	0.000041	0.0074	0.000041	0.0029	0.00083	0.013	0.0093	0.0037	0.0000083
HPHC-1	L-17	2020-03-31	175	0.076	0.14	0.00065	4327	1.00	4.3	0.043	10	0.83	1277	0.000041	0.0076	0.000041	0.0026	0.0012	0.013	0.0083	0.0033	0.0000083
HPHC-2	L-1	2019-10-08	0.080	0.076	0.14	0.00064	3997	1.00	4.0	0.042	9.4	0.80	1266	0.0068	0.14	0.14	0.014	0.0068	0.34	0.027	0.014	0.00068
HPHC-2	L-2	2019-10-09	1.0	0.076	0.14	0.00064	4252	1.00	4.3	0.042	10	0.80	1266	0.00063	0.081	0.00063	0.044	0.0025	0.17	0.014	0.0055	0.00050
HPHC-2	L-3	2019-10-10	2.0	0.076	0.14	0.00064	4256	1.00	4.3	0.042	10	0.80	1266	0.00058	0.072	0.00058	0.042	0.00058	0.14	0.012	0.0049	0.00023
HPHC-2	L-4	2019-10-15	7.0	0.076	0.14	0.00064	4252	1.00	4.3	0.042	10	0.80	1266	0.00012	0.037	0.00012	0.014	0.0044	0.066	0.0063	0.0026	0.00023
HPHC-2	L-5	2019-10-22	14	0.076	0.14	0.00064	4254	1.00	4.3	0.042	10	0.80	1266	0.000083	0.026	0.000083	0.0060	0.0053	0.030	0.012	0.0046	0.000083
HPHC-2	L-6	2019-11-05	28	0.076	0.14	0.00064	4254	1.00	4.3	0.042	10	0.80	1266	0.000041	0.015	0.000041	0.0028	0.0034	0.018	0.011	0.0043	0.000041
HPHC-2	L-7	2019-11-19	42	0.076	0.14	0.00064	4258	1.00	4.3	0.042	10	0.80	1266	0.000041	0.013	0.000041	0.0029	0.0029	0.017	0.012	0.0047	0.000041
HPHC-2	L-8	2019-11-26	49	0.076	0.14	0.00064	4260	1.00	4.3	0.042	10	0.80	1266	0.000083	0.018	0.000083	0.0058	0.0030	0.024	0.017	0.0070	0.000083
HPHC-2	L-9	2019-12-10	63	0.076	0.14	0.00064	4257	1.00	4.3	0.042	10	0.80	1266	0.000041	0.011	0.000041	0.0027	0.0021	0.014	0.012	0.0046	0.000041
HPHC-2	L-10	2019-12-24	77	0.076	0.14	0.00064	4252	1.00	4.3	0.042	10	0.80	1266	0.000041	0.012	0.000041	0.0034	0.0022	0.015	0.011	0.0045	0.000041
HPHC-2	L-11	2020-01-07	91	0.076	0.14	0.00064	4254	1.00	4.3	0.042	10	0.80	1266	0.000041	0.011	0.000041	0.0033	0.0018	0.013	0.011	0.0043	0.000041
HPHC-2	L-12	2020-01-21	105	0.076	0.14	0.00064	4256	1.00	4.3	0.042	10	0.80	1266	0.000041	0.011	0.000041	0.0027	0.0021	0.012	0.011	0.0045	0.000041
HPHC-2	L-13	2020-02-04	119	0.076	0.14	0.00064	4257	1.00	4.3	0.042	10	0.80	1266	0.000041	0.012	0.000041	0.0032	0.0022	0.014	0.011	0.0043	0.000041
HPHC-2	L-14	2020-02-18	133	0.076	0.14	0.00064	4257	1.00	4.3	0.042	10	0.80	1266	0.000041	0.0071	0.000041	0.0024	0.0011	0.012	0.010	0.0041	0.0000083
HPHC-2	L-15	2020-03-03	147	0.076	0.14	0.00064	4258	1.00	4.3	0.042	10	0.80	1266	0.000041	0.0095	0.000041	0.0027	0.0017	0.013	0.0093	0.0037	0.000041
HPHC-2	L-16	2020-03-17	161	0.076	0.14	0.00064	4258	1.00	4.3	0.042	10	0.80	1266	0.000042	0.0066	0.000042	0.0024	0.00091	0.013	0.0095	0.0038	0.000017
HPHC-2	L-17	2020-03-31	175	0.076	0.14	0.00064	4258	0.98	4.3	0.042	10	0.80	1266	0.000042	0.0078	0.000042	0.0030	0.00093	0.013	0.0084	0.0034	0.0000084
HPHC-3	L-1	2019-10-08	0.080	0.076	0.14	0.00064	4036	1.00	4.0	0.043	9.4	0.82	1279	0.0068	0.20	0.25	0.0068	0.0068	0.082	0.0068	0.0041	0.00068
HPHC-3	L-2	2019-10-09	1.0	0.076	0.14	0.00064	4300	1.00	4.3	0.043	10	0.82	1279	0.00063	0.074	0.00063	0.044	0.00063	0.18	0.013	0.0049	0.00038
HPHC-3	L-3	2019-10-10	2.0	0.076	0.14	0.00064	4303	1.00	4.3	0.043	10	0.82	1279	0.00058	0.075	0.0046	0.043	0.00058	0.14	0.010	0.0043	0.00023
HPHC-3	L-4	2019-10-15	7.0	0.076	0.14	0.00064	4299	1.00	4.3	0.043	10	0.82	1279	0.00012	0.038	0.00012	0.016	0.0042	0.065	0.0053	0.0021	0.00023
HPHC-3	L-5	2019-10-22	14	0.076	0.14	0.00064	4302	1.00	4.3	0.043	10	0.82	1279	0.000083	0.025	0.000083	0.0066	0.0050	0.033	0.011	0.0043	0.000083
HPHC-3	L-6	2019-11-05	28	0.076	0.14	0.00064	4301	1.00	4.3	0.043	10	0.82	1279	0.000041	0.015	0.000041	0.0030	0.0033	0.020	0.011	0.0043	0.000041
HPHC-3	L-7	2019-11-19	42	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.82	1279	0.000041	0.013	0.000041	0.0028	0.0029	0.016	0.012	0.0047	0.000041
HPHC-3	L-8	2019-11-26	49	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.82	1279	0.000083	0.019	0.000083	0.0056	0.0032	0.024	0.017	0.0068	0.000083
HPHC-3	L-9	2019-12-10	63	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.82	1279	0.000041	0.010	0.000041	0.0029	0.0018	0.016	0.011	0.0045	0.000041
HPHC-3	L-10	2019-12-24	77	0.076	0.14	0.00064	4300	1.00	4.3	0.043	10	0.82	1279	0.000041	0.012	0.000041	0.0029	0.0023	0.015	0.011	0.0043	0.000041
HPHC-3	L-11	2020-01-07	91	0.076	0.14	0.00064	4305	1.00	4.3	0.043	10	0.82	1279	0.000041	0.011	0.000041	0.0033	0.0017	0.012	0.010	0.0041	0.000041
HPHC-3	L-12	2020-01-21	105	0.076	0.14	0.00064	4304	1.00	4.3	0.043	10	0.82	1279	0.000041	0.0096	0.000041	0.0028	0.0017	0.014	0.011	0.0044	0.000041
HPHC-3	L-13	2020-02-04	119	0.076	0.14	0.00064	4305	1.00	4.3	0.043	10	0.82	1279	0.000041	0.012	0.000041	0.0032	0.0022	0.015	0.010	0.0041	0.000041
HPHC-3	L-14	2020-02-18	133	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.82	1279	0.000041	0.0067	0.000041	0.0023	0.00100	0.012	0.010	0.0041	0.0000083
HPHC-3	L-15	2020-03-03	147	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.82	1279	0.000042	0.0092	0.000042	0.0029	0.0015	0.013	0.010	0.0041	0.000042
HPHC-3	L-16	2020-03-17	161	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.82	1279	0.000042	0.0065	0.000042	0.0026	0.00075	0.012	0.0095	0.0038	0.0000083
HPHC-3	L-17	2020-03-31	175	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.82	1279	0.000042	0.0073	0.000042	0.0028	0.00091	0.012	0.0087	0.0035	0.0000083
HPHC-4	L-1	2019-10-08	0.080	0.076	0.14	0.00064	4034	1.00	4.0	0.043	9.4	0.80	1236	0.0068	0.14	0.14	0.014	0.0068	0.23	0.027	0.011	0.00068
HPHC-4	L-2	2019-10-09	1.0	0.076	0.14	0.00064	4296	1.00	4.3	0.043	10	0.80	1236	0.0013	0.069	0.00063	0.040	0.00063	0.17	0.014	0.0050	0.00050
HPHC-4	L-3	2019-10-10	2.0	0.076	0.14	0.00064	4304	1.00	4.3	0.043	10	0.80	1236	0.00058	0.065	0.00058	0.039	0.00058	0.13	0.013	0.0048	0.00035
HPHC-4	L-4	2019-10-15	7.0	0.076	0.14	0.00064	4301	1.00	4.3	0.043	10	0.80	1236	0.00012	0.035	0.00012	0.014	0.0039	0.063	0.0058	0.0023	0.00023
HPHC-4	L-5	2019-10-22	14	0.076	0.14	0.00064	4302	1.00	4.3	0.043	10	0.80	1236	0.000083	0.024	0.000083	0.0060	0.0048	0.032	0.011	0.0043	0.000083
HPHC-4	L-6	2019-11-05	28	0.076	0.14	0.00064	4304	1.00	4.3	0.043	10	0.80	1236	0.000041	0.014	0.000041	0.0030	0.0032	0.019	0.010	0.0041	0.000041
HPHC-4	L-7	2019-11-19	42	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.80	1236	0.000042	0.012	0.000042	0.0029	0.0026	0.017	0.011	0.0045	0.000042
HPHC-4	L-8	2019-11-26	49	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.80	1236	0.000083	0.018	0.000083	0.0058	0.0028	0.025	0.016	0.0065	0.000083
HPHC-4	L-9	2019-12-10	63	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.80	1236	0.000041	0.010	0.000041	0.0031	0.0017	0.015	0.011	0.0045	0.000041
HPHC-4	L-10	2019-12-24	77	0.076	0.14	0.00064	4301	1.00	4.3	0.043	10	0.80	1236	0.000041	0.011	0.000041	0.0026	0.0022	0.014	0.011	0.0045	0.000041
HPHC-4	L-11	2020-01-07	91	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.80	1236	0.000041	0.010	0.000041	0.0033	0.0017	0.012	0.011	0.0042	0.000041
HPHC-4	L-12	2020-01-21	105	0.076	0.14	0.00064	4303	1.00	4.3	0.043	10	0.80	1236	0.000041	0.0092	0.000041	0.0026	0.0017	0.014	0.011	0.0043	0.000041
HPHC-4	L-13	2020-02-04	119	0.076	0.14	0.00064	4303	1.00	4.3	0.043	10	0.80	1236	0.000041	0.011	0.000041	0.0026	0.0022	0.015	0.011	0.0042	0.000041
HPHC-4	L-14	2020-02-18	133	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.80	1236	0.000041	0.0066	0.000041	0.0021	0.00100	0.011	0.010	0.0041	0.0000083
HPHC-4	L-15	2020-03-03	147	0.076	0.14	0.00064	4308	1.00	4.3	0.043	10	0.80	1236	0.000042	0.0086	0.000042	0.0025	0.0015	0.013	0.010	0.0042	0.000042
HPHC-4	L-16	2020-03-17	161	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.80	1236	0.000042	0.0067	0.000042	0.0027	0.00075	0.013	0.0095	0.0038	0.0000083
HPHC-4	L-17	2020-03-31	175	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.80	1236	0.000042	0.0070	0.000042	0.0026	0.00091	0.012	0.0087	0.0035	0.0000083

- Parameter not analyzed

Appendix E, Table E-14
HPHC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-P/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HPHC-1	L-1	0.00014	0.053	0.00068	0.046	0.000068	0.000062	0.000062	0.000068	0.029	0.00000034	0.00013	0.000029	0.000068	0.000052	0.00000068	0.00000014	0.00000068	0.000016	0.0000041	0.000060	6.8E-09
HPHC-1	L-2	0.00020	0.032	0.000063	0.030	0.0000063	0.0000057	0.0000057	0.0000063	0.033	3.2E-08	0.000045	0.000011	0.000076	0.000014	6.3E-08	2.5E-08	6.3E-08	0.000013	0.0000005	0.000018	6.3E-10
HPHC-1	L-3	0.000093	0.027	0.000058	0.021	0.0000058	0.0000053	0.0000052	0.0000058	0.012	2.9E-08	0.000044	0.0000044	0.000035	0.000014	5.8E-08	1.2E-08	5.8E-08	0.0000045	0.00000023	0.0000092	5.8E-10
HPHC-1	L-4	0.000030	0.014	0.000012	0.0077	0.0000070	0.0000011	0.0000010	0.0000023	0.0032	5.8E-09	0.000074	0.0000015	0.0000070	0.0000035	1.2E-08	2.3E-09	1.2E-08	0.0000013	4.6E-08	0.0000015	1.2E-10
HPHC-1	L-5	0.000013	0.0065	0.0000083	0.0023	0.0000066	0.00000075	0.00000075	0.00000083	0.0011	4.1E-09	0.00011	0.00000053	0.0000033	0.0000027	8.3E-09	8.3E-10	8.3E-09	0.00000038	1.7E-08	0.0000008	8.3E-11
HPHC-1	L-6	0.0000083	0.0019	0.0000041	0.00067	0.0000083	0.00000038	0.00000037	0.00000041	0.00053	2.1E-09	0.000080	0.00000022	0.00000083	0.0000016	4.1E-09	4.1E-10	4.1E-09	0.00000015	3.3E-08	0.0000002	8.3E-11
HPHC-1	L-7	0.0000050	0.00083	0.0000042	0.00026	0.0000058	0.00000038	0.00000037	0.00000042	0.00043	2.1E-09	0.000090	0.00000013	0.00000042	0.0000017	4.2E-09	4.2E-10	4.2E-09	1.0E-07	2.5E-08	0.00000028	4.2E-11
HPHC-1	L-8	0.0000033	0.00070	0.0000083	0.00017	0.0000050	0.00000076	0.0000030	0.00000083	0.00041	4.1E-09	0.00014	0.00000012	0.00000083	0.0000027	8.3E-09	8.3E-10	8.3E-09	4.1E-08	3.3E-08	0.00000088	8.3E-11
HPHC-1	L-9	0.0000041	0.00031	0.0000041	0.000083	0.0000050	0.00000038	0.00000037	0.0000017	0.00037	2.1E-09	0.000086	9.1E-08	0.00000041	0.0000018	4.1E-09	4.1E-10	4.1E-09	5.0E-08	1.7E-08	0.00000027	4.1E-11
HPHC-1	L-10	0.0000025	0.00023	0.0000041	0.000058	0.0000017	0.00000038	0.00000037	0.00000083	0.00026	2.1E-09	0.000091	8.3E-08	0.00000041	0.0000021	4.1E-09	4.1E-10	4.1E-09	4.1E-08	2.5E-08	0.00000041	4.1E-11
HPHC-1	L-11	0.0000017	0.00019	0.0000041	0.000041	0.00000041	0.00000038	0.00000037	0.00000041	0.00027	2.1E-09	0.000086	7.5E-08	0.00000041	0.0000024	4.1E-09	4.1E-10	4.1E-09	5.0E-08	1.7E-08	0.00000044	4.1E-11
HPHC-1	L-12	0.0000017	0.00015	0.0000041	0.000033	0.0000025	0.00000038	0.00000037	0.00000041	0.00022	2.1E-09	0.000085	7.5E-08	0.00000041	0.0000027	4.1E-09	8.3E-10	4.1E-09	4.1E-08	1.7E-08	0.0000004	4.1E-11
HPHC-1	L-13	0.00000083	0.00013	0.0000041	0.000025	0.0000033	0.00000038	0.00000037	0.00000041	0.00025	2.1E-09	0.000079	6.6E-08	0.00000041	0.0000030	4.1E-09	4.1E-10	4.1E-09	2.1E-08	2.5E-08	0.00000069	4.1E-11
HPHC-1	L-14	0.00000041	0.00012	0.0000041	0.000025	0.0000041	0.00000038	0.00000037	0.00000041	0.00022	2.1E-09	0.000083	6.6E-08	0.00000041	0.0000033	4.1E-09	4.1E-10	4.1E-09	2.1E-08	8.3E-09	0.0000005	4.1E-11
HPHC-1	L-15	0.0000017	0.00012	0.0000041	0.000025	0.0000050	0.00000038	0.00000037	0.00000041	0.00023	2.1E-09	0.000081	6.6E-08	0.00000041	0.0000037	4.1E-09	4.1E-10	4.1E-09	2.1E-08	8.3E-09	0.00000037	4.1E-11
HPHC-1	L-16	0.00000083	0.000091	0.0000041	0.000017	0.0000033	0.00000038	0.00000037	0.00000041	0.00023	2.1E-09	0.000078	6.6E-08	0.00000041	0.0000040	4.1E-09	4.1E-10	4.1E-09	2.1E-08	2.5E-08	0.00000066	4.1E-11
HPHC-1	L-17	0.00000083	0.000091	0.0000041	0.000017	0.0000033	0.00000038	0.0000011	0.00000041	0.00024	2.1E-09	0.000077	6.6E-08	0.00000041	0.0000043	4.1E-09	8.3E-10	4.1E-09	2.1E-08	8.3E-09	0.00000035	4.1E-11
HPHC-2	L-1	0.00014	0.055	0.00068	0.049	0.000068	0.000062	0.000061	0.000068	0.035	0.00000034	0.00018	0.000033	0.000068	0.000061	0.00000068	6.8E-08	0.00000068	0.000023	0.0000041	0.00011	6.8E-09
HPHC-2	L-2	0.00019	0.030	0.00013	0.030	0.0000063	0.0000057	0.0000057	0.0000063	0.038	3.2E-08	0.000043	0.000010	0.000076	0.000014	6.3E-08	1.3E-08	6.3E-08	0.000015	0.00000038	0.000011	6.3E-10
HPHC-2	L-3	0.00010	0.024	0.000058	0.020	0.0000058	0.0000053	0.0000052	0.0000058	0.013	2.9E-08	0.000044	0.0000044	0.000046	0.000013	5.8E-08	5.8E-09	5.8E-08	0.0000052	0.00000012	0.0000073	5.8E-10
HPHC-2	L-4	0.000032	0.013	0.000012	0.0079	0.0000093	0.0000011	0.0000010	0.0000023	0.0039	5.8E-09	0.000063	0.0000016	0.0000093	0.0000032	1.2E-08	4.6E-09	1.2E-08	0.0000015	2.3E-08	0.0000013	1.2E-10
HPHC-2	L-5	0.000013	0.0066	0.0000083	0.0025	0.0000066	0.00000075	0.00000075	0.00000083	0.0012	4.1E-09	0.000099	0.00000061	0.0000033	0.0000027	8.3E-09	1.7E-09	8.3E-09	0.00000055	1.7E-08	0.00000056	8.3E-11
HPHC-2	L-6	0.0000075	0.0020	0.0000041	0.00066	0.0000083	0.00000038	0.00000037	0.00000041	0.00058	2.1E-09	0.000080	0.00000026	0.0000017	0.0000016	4.1E-09	4.1E-10	4.1E-09	0.00000018	1.7E-08	0.00000036	4.1E-11
HPHC-2	L-7	0.0000058	0.00091	0.0000041	0.00025	0.0000050	0.00000038	0.00000037	0.0000033	0.00046	2.1E-09	0.000090	0.00000015	0.00000041	0.0000017	4.1E-09	4.1E-10	4.1E-09	0.00000012	2.5E-08	0.00000063	4.1E-11
HPHC-2	L-8	0.0000033	0.00075	0.0000083	0.00017	0.0000083	0.00000076	0.0000030	0.0000050	0.00040	4.2E-09	0.00014	0.00000013	0.00000083	0.0000023	8.3E-09	8.3E-10	8.3E-09	0.00000012	1.7E-08	0.0000010	8.3E-11
HPHC-2	L-9	0.0000041	0.00032	0.0000041	0.000083	0.0000041	0.00000038	0.00000075	0.00000041	0.00041	2.1E-09	0.000089	0.00000011	0.00000041	0.0000017	4.1E-09	4.1E-10	4.1E-09	6.6E-08	8.3E-09	0.00000043	4.1E-11
HPHC-2	L-10	0.0000025	0.00024	0.0000041	0.000050	0.0000017	0.00000038	0.00000037	0.0000017	0.00028	2.1E-09	0.000094	8.3E-08	0.00000041	0.0000019	4.1E-09	4.1E-10	4.1E-09	5.0E-08	8.3E-09	0.0000006	4.1E-11
HPHC-2	L-11	0.0000025	0.00019	0.0000041	0.000041	0.0000017	0.00000038	0.00000037	0.00000041	0.00030	2.1E-09	0.000088	7.5E-08	0.00000041	0.0000022	4.1E-09	4.1E-10	4.1E-09	5.0E-08	1.7E-08	0.00000048	4.1E-11
HPHC-2	L-12	0.0000017	0.00015	0.0000041	0.000033	0.00000083	0.00000038	0.00000075	0.00000041	0.00026	2.1E-09	0.000086	6.6E-08	0.00000041	0.0000027	4.1E-09	4.1E-10	4.1E-09	5.0E-08	8.3E-09	0.00000047	4.1E-11
HPHC-2	L-13	0.00000083	0.00014	0.0000041	0.000025	0.0000050	0.00000038	0.00000037	0.00000041	0.00028	2.1E-09	0.000082	7.5E-08	0.00000041	0.0000028	4.1E-09	8.3E-10	4.1E-09	4.1E-08	1.7E-08	0.0000007	4.1E-11
HPHC-2	L-14	0.00000041	0.00012	0.0000041	0.000025	0.0000041	0.00000038	0.00000037	0.00000041	0.00024	2.1E-09	0.000085	6.6E-08	0.00000041	0.0000032	4.1E-09	4.1E-10	4.1E-09	4.1E-08	1.7E-08	0.00000076	4.1E-11
HPHC-2	L-15	0.0000017	0.000100	0.0000041	0.000017	0.0000041	0.00000038	0.00000037	0.00000041	0.00026	2.1E-09	0.000084	6.6E-08	0.00000041	0.0000036	4.1E-09	4.1E-10	4.1E-09	4.1E-08	1.7E-08	0.00000071	4.1E-11
HPHC-2	L-16	0.00000083	0.000091	0.0000042	0.000017	0.0000033	0.00000038	0.00000037	0.00000042	0.00024	2.1E-09	0.000081	6.6E-08	0.00000042	0.0000038	4.2E-09	4.2E-10	4.2E-09	2.1E-08	1.7E-08	0.00000068	4.2E-11
HPHC-2	L-17	0.00000084	0.000093	0.0000042	0.000017	0.0000017	0.00000038	0.00000095	0.00000042	0.00025	2.1E-09	0.000080	6.7E-08	0.00000042	0.0000041	4.2E-09	8.4E-10	4.2E-09	4.2E-08	8.4E-09	0.00000046	4.2E-11
HPHC-3	L-1	0.00014	0.052	0.00068	0.046	0.000068	0.000062	0.000061	0.000068	0.029	0.00000034	0.00015	0.000027	0.000068	0.000048	0.00000068	0.00000082	0.00000068	0.000016	0.0000054	0.00010	6.8E-09
HPHC-3	L-2	0.00019	0.030	0.00013	0.029	0.0000063	0.0000057	0.0000057	0.0000063	0.038	3.2E-08	0.000035	0.0000096	0.000076	0.000014	6.3E-08	6.3E-09	6.3E-08	0.000013	0.00000025	0.0000072	6.3E-10
HPHC-3	L-3	0.00012	0.023	0.000058	0.019	0.0000058	0.0000053	0.0000052	0.0000058	0.013	2.9E-08	0.000045	0.0000044	0.000046	0.000012	5.8E-08	2.3E-08	5.8E-08	0.0000046	0.00000012	0.0000066	5.8E-10
HPHC-3	L-4	0.000032	0.014	0.000012	0.0079	0.0000070	0.0000011	0.0000010	0.0000023	0.0035	5.8E-09	0.000063	0.0000017	0.0000093	0.0000028	1.2E-08	4.6E-09	1.2E-08	0.0000013	2.3E-08	0.0000014	1.2E-10
HPHC-3	L-5	0.000013	0.0070	0.0000083	0.0027	0.0000066	0.00000075	0.00000075	0.00000083	0.0012	4.1E-09	0.00010	0.00000066	0.0000033	0.0000023	8.3E-09	3.3E-09	8.3E-09	0.0000004	1.7E-08	0.00000053	8.3E-11
HPHC-3	L-6	0.0000075	0.0021	0.0000041	0.00067	0.0000058	0.00000038	0.00000037	0.00000041	0.00059	2.1E-09	0.000076	0.00000027	0.00000083	0.0000015	4.1E-09	4.1E-10	4.1E-09	0.00000017	8.3E-09	0.00000026	4.1E-11
HPHC-3	L-7	0.0000058	0.00091	0.0000041	0.00024	0.0000066	0.00000038	0.00000037	0.0000017	0.00050	2.1E-09	0.000089	0.00000016	0.00000041	0.0000017	4.1E-09	4.1E-10	4.1E-09	1.0E-07	1.7E-08	0.00000045	4.1E-11
HPHC-3	L-8	0.0000033	0.00075	0.0000083	0.00015	0.0000100	0.00000076	0.0000052	0.00000083	0.00046	4.1E-09	0.00015	0.00000013	0.00000083	0.0000023	8.3E-09	8.3E-10	8.3E-09	1.0E-07	1.7E-08	0.00000086	8.3E-11
HPHC-3	L-9	0.0000050	0.00032	0.0000041	0.000083	0.0000041	0.00000038	0.00000037	0.00000041	0.00038	2.1E-09	0.000091	9.1E-08	0.00000083	0.0000017	4.1E-09	4.1E-10	4.1E-09	6.6E-08	8.3E-09	0.00000037	4.1E-11
HPHC-3	L-10	0.0000025	0.00023	0.0000041	0.000050	0.0000033	0.00000038	0.00000037	0.0000017	0.00031	2.1E-09	0.000094	8.3E-08	0.00000041	0.0000019	4.1E-09	4.1E-10	4.1E-09	5.0E-08	8.3E-09	0.00000045	4.1E-11
HPHC-3	L-11	0.0000025	0.00018	0.0000041	0.000041	0.00000083	0.00000038	0.00000037	0.00000083	0.00030	2.1E-09	0.000087	8.3E-08	0.00000041	0.0000022	4.1E-09	4.1E-10	4.1E-09	5.0E-08	8.3E-09	0.00000045	4.1E-11
HPHC-3	L-12	0.0000017	0.00015	0.0000041	0.000033	0.0000017	0.00000038	0.00000037	0.00000041	0.00028	2.1E-09	0.000085	7.5E-08	0.00000041	0.0000026	4.1E-09	4.1E-10	4.1E-09	4.1E-08	1.7E-08	0.00000056	4.1E-11
HPHC-3	L-13	0.00000083	0.00013	0.0000041	0.000025	0.0000033	0.00000038	0.00000037	0.00000041	0.00030	2.1E-09	0.000080	7.5E-08	0.00000041	0.0000029	4.1E-09	4.1E-10	4.1E-09	2.1E-08	8.3E-09	0.00000061	4.1E-11
HPHC-3	L-14	0.00000041	0.00012	0.0000041	0.000025	0.0000058	0.00000038	0.00000037	0.00000041	0.00027	2.1E-09	0.000084	6.6E-08	0.00000041	0.0000032	4.1E-09	4.1E-10	4.1E-09	2.1E-08	8.3E-09	0.00000061	4.1E-11
HPHC-3	L-15	0.0000017	0.00011	0.0000042	0.000017	0.0000050	0.00000038	0.00000037	0.00000042	0.00030	2.1E-09	0.000082	6.6E-08	0.00000042	0.0000037	4.2E-09	4.2E-10	4.2E-09	2.1E-08	8.3E-09	0.00000063	4.2E-11
HPHC-3	L-16	0.00000083	0.000100	0.0000042	0.000017	0.0000033	0.00000038	0.00000037	0.00000042	0.00026	2.1E-09	0.000081	6.6E-08	0.00000042	0.0000039	4.2E-09	4.2E-10	4.2E-09	2.1E-08	1.7E-08	0.00000083	4.2E-11
HPHC-3	L-17	0.00000083	0.000091	0.0000042	0.000017	0.0000033	0.00000038	0.00000094	0.00000042	0.00027	2.1E-09	0.000077	6.6E-08	0.00000042	0.0000042	4.2E-09	8.3E-10	4.2E-09	2.1E-08	8.3E-09	0.00000037	4.2E-11
HPHC-4	L-1	0.00014	0.049	0.00068	0.044	0.000068	0.000062	0.000061	0.000068	0.031	0.00000034	0.00016	0.000029	0.000068	0.000060	0.00000068	0.00000014	0.00000068	0.000015	0.0000041	0.000094	6.8E-09
HPHC-4	L-2	0.00018	0.029	0.00025	0.029	0.0000063	0.0000057	0.0000057	0.0000063	0.042	3.1E-08	0.000039	0.0000098	0.000063	0.000013	6.3E-08	1.3E-08	6.3E-08	0.000014	0.00000025	0.0000081	6.3E-10
HPHC-4	L-3	0.00012	0.022	0.00012	0.017	0.0000058	0.0000053	0.0000052	0.0000058	0.013	2.9E-08	0.000044	0.0000042	0.000046	0.000013	5.8E-08	1.2E-08	5.8E-08	0.0000045	0.00000012	0.0000060	5.8E-10
HPHC-4	L-4	0.000035	0.013	0.000012	0.0077	0.000019	0.0000011	0.0000010	0.0000023	0.0037	5.8E-09	0.000053	0.0000016	0.000012	0.0000028	1.2E-08	4.6E-09	1.2E-08	0.0000013	2.3E-08	0.00000088	1.2E-10
HPHC-4	L-5	0.000015	0.0068	0.0000083	0.0027	0.0000066	0.00000075	0.00000075	0.00000083	0.0012	4.1E-09	0.000093	0.00000065	0.0000033	0.0000025	8.3E-09	8.3E-10	8.3E-09	0.00000041	1.7E-08	0.00000058	8.3E-11
HPHC-4	L-6	0.0000075	0.0021	0.0000041	0.00069	0.0000083	0.00000038	0.00000037	0.00000041	0.00059	2.1E-09	0.000075	0.00000026	0.0000017	0.0000015	4.1E-09	8.3E-10	4.1E-09	0.00000015	8.3E-09	0.0000002	4.1E-11
HPHC-4	L-7	0.0000058	0.00091	0.0000042	0.00025	0.0000058	0.00000038	0.00000037	0.00000083	0.00051	2.1E-09	0.000085	0.00000015	0.00000083	0.0000016	4.2E-09	4.2E-10	4.2E-09	0.00000012	1.7E-08	0.00000039	4.2E-11
HPHC-4	L-8	0.0000083	0.00076	0.0000083	0.00017	0.0000100	0.00000076	0.0000030	0.00000083	0.00050	4.1E-09	0.00014	0.00000013	0.00000083	0.0000023	8.3E-09	8.3E-10	8.3E-09	8.3E-08	1.7E-08	0.00000098	8.3E-11
HPHC-4	L-9	0.0000050	0.00032	0.0000041	0.000083	0.0000025	0.00000038	0.00000037	0.00000041	0.00050	2.1E-09	0.000085	1.0E-07	0.00000041	0.0000017	4.1E-09	8.3E-10	4.1E-09	5.8E-08	8.3E-09	0.00000028	4.1E-11
HPHC-4	L-10	0.0000033	0.00024	0.0000041	0.000058	0.00000041	0.00000038	0.00000037	0.0000017	0.00033	2.1E-09	0.000088	8.3E-08	0.00000041	0.0000019	4.1E-09	4.1E-10	4.1E-09	5.0E-08	8.3E-09	0.00000038	4.1E-11
HPHC-4	L-11	0.0000025	0.00019	0.0000041	0.000041	0.0000058	0.00000038	0.00000037	0.00000041	0.00035	2.1E-09	0.000086	8.3E-08	0.00000041	0.0000023	4.1E-09	4.1E-10	4.1E-09	5.0E-08	1.7E-08	0.0000005	4.1E-11
HPHC-4	L-12	0.0000017	0.00015	0.0000041	0.000033	0.00000083	0.00000038	0.00000037	0.00000041	0.00030	2.1E-09	0.000085	8.3E-08	0.00000041	0.0000027	4.1E-09	4.1E-10	4.1E-09	5.8E-08	1.7E-08	0.00000044	4.1E-11
HPHC-4	L-13	0.00000083	0.00013	0.0000041	0.000025	0.0000041	0.00000038	0.00000037	0.00000041	0.00033	2.1E-09	0.000083	6.6E-08	0.00000041	0.0000031	4.1E-09	4.1E-10	4.1E-09	4.1E-08	2.5E-08	0.00000083	4.1E-11
HPHC-4	L-14	0.00000041	0.00012	0.0000041	0.000025	0.0000050	0.00000038	0.00000037	0.00000041	0.00028	2.1E-09	0.000084	6.6E-08	0.00000041	0.0000034	4.1E-09	8.3E-10	4.1E-09	4.1E-08	8.3E-09	0.00000061	4.1E-11
HPHC-4	L-15	0.0000017	0.00011	0.0000042	0.000017	0.0000033	0.00000038	0.00000037	0.00000042	0.00031	2.1E-09	0.000083	6.6E-08	0.00000042	0.0000039	4.2E-09	4.2E-10	4.2E-09	4.2E-08	1.7E-08	0.00000091	4.2E-11
HPHC-4	L-16	0.0000017	0.000100	0.0000042	0.000017	0.0000033	0.00000038	0.00000037	0.00000042	0.00028	2.1E-09	0.000077	6.6E-08	0.00000042	0.0000042	4.2E-09	4.2E-10	4.2E-09	2.1E-08	1.7E-08	0.00000061	4.2E-11
HPHC-4	L-17	0.00000083	0.000091	0.0000042	0.000017	0.0000025	0.00000038	0.00000094	0.00000042	0.00030	2.1E-09	0.000076	5.8E-08	0.00000042	0.0000045	4.2E-09	8.3E-10	4.2E-09	4.2E-08	8.3E-09	0.00000034	4.2E-11

- Parameter not analyzed

Appendix E, Table E-14
HPHC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s	mg/m²s
HPHC-1	L-1	0.0000034	0.0010	0.0000014	0.000025	0.000015	0.000025	0.00000068	0.00011	0.0000068	0.0000014	0.00018	0.0000082	0.0000082	1.5E-12	2.1E-14	3.2E-10	1.4E-13
HPHC-1	L-2	0.00000032	0.00071	0.00000013	0.0000057	0.000012	0.000020	6.3E-08	0.000064	0.0000035	0.00000013	0.000050	0.000012	0.00000032	-	-	-	-
HPHC-1	L-3	0.00000029	0.00030	5.8E-08	0.0000030	0.0000059	0.0000056	5.8E-08	0.000049	0.0000015	0.00000012	0.000016	0.0000056	0.0000007	3.1E-13	4.6E-15	1.2E-10	5.8E-15
HPHC-1	L-4	5.8E-08	0.00011	1.2E-08	0.00000093	0.0000021	0.0000013	1.2E-08	0.000019	0.00000037	2.3E-08	0.0000022	0.0000016	5.8E-08	-	-	-	-
HPHC-1	L-5	4.1E-08	0.000039	8.3E-09	0.00000093	0.00000066	0.00000055	8.3E-09	0.000030	9.9E-08	1.7E-08	0.00000096	0.00000056	4.1E-08	-	-	-	-
HPHC-1	L-6	2.1E-08	0.000017	4.1E-09	0.00000082	0.00000024	0.00000037	4.1E-09	0.000037	5.0E-08	8.3E-09	0.00000053	0.00000027	2.1E-08	8.6E-14	1.7E-16	2.1E-11	1.7E-15
HPHC-1	L-7	2.1E-08	0.0000090	4.2E-09	0.0000010	0.00000022	0.00000037	4.2E-09	0.000045	4.2E-08	8.3E-09	0.00000058	0.00000028	2.1E-08	-	-	-	-
HPHC-1	L-8	4.1E-08	0.0000065	8.3E-09	0.0000013	0.00000032	0.00000038	8.3E-09	0.000066	3.3E-08	1.7E-08	0.0000011	0.00000033	4.1E-08	-	-	-	-
HPHC-1	L-9	2.1E-08	0.0000046	4.1E-09	0.00000091	0.00000019	0.00000033	4.1E-09	0.000043	3.3E-08	8.3E-09	0.00000059	0.00000022	2.1E-08	6.8E-14	1.5E-16	1.7E-11	2.5E-15
HPHC-1	L-10	2.1E-08	0.0000040	4.1E-09	0.00000099	0.00000018	0.00000032	4.1E-09	0.000044	2.5E-08	8.3E-09	0.00000065	0.00000022	2.1E-08	-	-	-	-
HPHC-1	L-11	2.1E-08	0.0000038	4.1E-09	0.0000011	0.00000019	0.00000034	4.1E-09	0.000043	1.7E-08	8.3E-09	0.00000079	0.00000021	2.1E-08	-	-	-	-
HPHC-1	L-12	2.1E-08	0.0000036	4.1E-09	0.0000011	0.00000018	0.00000031	4.1E-09	0.000042	3.3E-08	8.3E-09	0.00000074	0.00000021	2.1E-08	8.3E-14	3.4E-16	2.1E-11	2.5E-15
HPHC-1	L-13	2.1E-08	0.0000036	4.1E-09	0.0000012	0.00000017	0.00000031	4.1E-09	0.000041	5.8E-08	8.3E-09	0.00000079	0.00000017	2.1E-08	-	-	-	-
HPHC-1	L-14	2.1E-08	0.0000035	4.1E-09	0.0000012	0.00000017	0.00000031	4.1E-09	0.000041	3.3E-08	8.3E-09	0.00000083	0.00000018	2.1E-08	-	-	-	-
HPHC-1	L-15	2.1E-08	0.0000032	4.1E-09	0.0000012	0.00000017	0.0000003	4.1E-09	0.000038	2.5E-08	8.3E-09	0.00000082	0.00000017	2.1E-08	9.8E-14	2.4E-16	2.5E-11	2.9E-15
HPHC-1	L-16	2.1E-08	0.0000032	4.1E-09	0.0000012	0.00000017	0.0000003	4.1E-09	0.000037	4.1E-08	8.3E-09	0.00000091	0.00000017	2.1E-08	-	-	-	-
HPHC-1	L-17	2.1E-08	0.0000032	4.1E-09	0.0000012	0.00000017	0.00000031	4.1E-09	0.000037	8.3E-09	8.3E-09	0.00000083	0.00000015	2.1E-08	8.6E-14	2.4E-16	2.9E-11	5.8E-15
HPHC-2	L-1	0.0000034	0.0030	0.0000014	0.000033	0.000015	0.000025	0.00000068	0.00010	0.000015	0.0000014	0.00016	0.0000095	0.000011	2.9E-12	3.8E-14	4.8E-10	1.4E-13
HPHC-2	L-2	0.00000032	0.00079	6.3E-08	0.0000039	0.000013	0.000020	6.3E-08	0.000062	0.0000032	0.00000013	0.000040	0.000011	0.00000063	-	-	-	-
HPHC-2	L-3	0.00000029	0.00033	5.8E-08	0.0000028	0.0000062	0.0000071	5.8E-08	0.000046	0.0000013	0.00000012	0.000019	0.0000067	0.00000029	2.8E-13	3.6E-15	1.2E-10	5.8E-15
HPHC-2	L-4	5.8E-08	0.00013	1.2E-08	0.00000086	0.0000023	0.0000016	1.2E-08	0.000017	0.00000044	2.3E-08	0.0000023	0.0000018	5.8E-08	-	-	-	-
HPHC-2	L-5	4.1E-08	0.000051	8.3E-09	0.00000086	0.00000075	0.00000063	8.3E-09	0.000027	0.00000018	1.7E-08	0.00000098	0.00000065	4.1E-08	-	-	-	-
HPHC-2	L-6	2.1E-08	0.000023	4.1E-09	0.00000083	0.00000027	0.00000039	4.1E-09	0.000036	6.6E-08	8.3E-09	0.00000052	0.00000029	2.1E-08	9.8E-14	2.0E-16	1.9E-11	2.5E-15
HPHC-2	L-7	2.1E-08	0.000012	4.1E-09	0.0000011	0.00000023	0.00000037	4.1E-09	0.000046	8.3E-08	8.3E-09	0.00000083	0.00000027	2.1E-08	-	-	-	-
HPHC-2	L-8	4.2E-08	0.0000081	8.3E-09	0.0000014	0.00000032	0.0000004	8.3E-09	0.000068	6.6E-08	1.7E-08	0.0000011	0.00000032	4.2E-08	-	-	-	-
HPHC-2	L-9	2.1E-08	0.0000056	4.1E-09	0.0000010	0.0000002	0.00000033	4.1E-09	0.000045	3.3E-08	8.3E-09	0.00000066	0.00000023	4.1E-08	7.4E-14	2.0E-16	1.6E-11	2.5E-15
HPHC-2	L-10	2.1E-08	0.0000046	4.1E-09	0.0000011	0.00000018	0.00000032	4.1E-09	0.000045	2.5E-08	8.3E-09	0.0000007	0.00000022	2.1E-08	-	-	-	-
HPHC-2	L-11	2.1E-08	0.0000042	4.1E-09	0.0000012	0.0000002	0.00000033	4.1E-09	0.000044	2.5E-08	8.3E-09	0.00000083	0.00000022	2.1E-08	-	-	-	-
HPHC-2	L-12	2.1E-08	0.0000040	4.1E-09	0.0000012	0.00000018	0.00000032	4.1E-09	0.000042	2.5E-08	8.3E-09	0.0000008	0.00000021	2.1E-08	9.2E-14	9.3E-16	2.2E-11	2.5E-15
HPHC-2	L-13	2.1E-08	0.0000036	4.1E-09	0.0000012	0.00000018	0.00000031	4.1E-09	0.000042	4.1E-08	8.3E-09	0.00000082	0.00000017	2.1E-08	-	-	-	-
HPHC-2	L-14	2.1E-08	0.0000035	4.1E-09	0.0000012	0.00000019	0.00000032	4.1E-09	0.000041	6.6E-08	8.3E-09	0.00000091	0.00000019	2.1E-08	-	-	-	-
HPHC-2	L-15	2.1E-08	0.0000034	4.1E-09	0.0000012	0.00000017	0.00000031	4.1E-09	0.000038	4.1E-08	8.3E-09	0.00000091	0.00000018	9.1E-08	9.5E-14	3.4E-16	2.5E-11	2.9E-15
HPHC-2	L-16	2.1E-08	0.0000033	4.2E-09	0.0000012	0.00000017	0.00000031	4.2E-09	0.000037	5.0E-08	8.3E-09	0.00000091	0.00000018	2.1E-08	-	-	-	-
HPHC-2	L-17	2.1E-08	0.0000035	4.2E-09	0.0000013	0.00000018	0.00000032	4.2E-09	0.000037	3.4E-08	8.4E-09	0.00000093	0.00000017	2.1E-08	9.0E-14	3.5E-16	-	-
HPHC-3	L-1	0.0000034	0.0015	0.0000014	0.000033	0.000014	0.000019	0.00000068	0.000054	0.000011	0.0000014	0.00015	0.0000082	0.000014	-	-	-	-
HPHC-3	L-2	0.00000032	0.00077	6.3E-08	0.0000028	0.000013	0.000021	6.3E-08	0.000068	0.0000033	0.00000013	0.000040	0.000012	0.00000032	-	-	-	-
HPHC-3	L-3	0.00000029	0.00033	5.8E-08	0.0000027	0.0000065	0.0000073	5.8E-08	0.000046	0.0000015	0.00000012	0.000017	0.0000070	0.00000029	-	-	-	-
HPHC-3	L-4	5.8E-08	0.00013	1.2E-08	0.00000079	0.0000023	0.0000017	1.2E-08	0.000015	0.00000046	2.3E-08	0.0000023	0.0000019	5.8E-08	-	-	-	-
HPHC-3	L-5	4.1E-08	0.000055	8.3E-09	0.00000078	0.00000075	0.00000063	8.3E-09	0.000023	0.00000015	1.7E-08	0.00000091	0.00000063	4.1E-08	-	-	-	-
HPHC-3	L-6	2.1E-08	0.000022	4.1E-09	0.00000079	0.00000025	0.0000004	4.1E-09	0.000038	6.6E-08	8.3E-09	0.00000048	0.0000003	2.1E-08	-	-	-	-
HPHC-3	L-7	2.1E-08	0.000012	4.1E-09	0.0000010	0.00000023	0.00000038	4.1E-09	0.000047	5.0E-08	8.3E-09	0.00000061	0.00000029	2.1E-08	-	-	-	-
HPHC-3	L-8	4.1E-08	0.0000086	8.3E-09	0.0000014	0.00000033	0.0000004	8.3E-09	0.000070	5.0E-08	1.7E-08	0.0000010	0.00000033	4.1E-08	-	-	-	-
HPHC-3	L-9	2.1E-08	0.0000059	4.1E-09	0.0000010	0.0000002	0.00000035	4.1E-09	0.000045	4.1E-08	8.3E-09	0.00000061	0.00000023	2.1E-08	-	-	-	-
HPHC-3	L-10	2.1E-08	0.0000050	4.1E-09	0.00000099	0.00000019	0.00000034	4.1E-09	0.000045	4.1E-08	8.3E-09	0.00000065	0.00000023	2.1E-08	-	-	-	-
HPHC-3	L-11	2.1E-08	0.0000045	4.1E-09	0.0000011	0.00000021	0.00000035	4.1E-09	0.000045	2.5E-08	8.3E-09	0.00000079	0.00000022	2.1E-08	-	-	-	-
HPHC-3	L-12	2.1E-08	0.0000040	4.1E-09	0.0000012	0.00000019	0.00000035	4.1E-09	0.000043	3.3E-08	8.3E-09	0.00000077	0.00000022	2.1E-08	-	-	-	-
HPHC-3	L-13	2.1E-08	0.0000036	4.1E-09	0.0000012	0.00000019	0.00000033	4.1E-09	0.000042	6.6E-08	8.3E-09	0.00000077	0.00000019	2.1E-08	-	-	-	-
HPHC-3	L-14	2.1E-08	0.0000034	4.1E-09	0.0000012	0.00000019	0.00000034	4.1E-09	0.000041	5.0E-08	8.3E-09	0.00000083	0.00000019	2.1E-08	-	-	-	-
HPHC-3	L-15	2.1E-08	0.0000033	4.2E-09	0.0000012	0.00000018	0.00000034	4.2E-09	0.000039	5.0E-08	8.3E-09	0.00000083	0.00000019	2.1E-08	-	-	-	-
HPHC-3	L-16	2.1E-08	0.0000032	4.2E-09	0.0000012	0.00000019	0.00000033	4.2E-09	0.000038	5.0E-08	8.3E-09	0.00000091	0.00000018	2.1E-08	-	-	-	-
HPHC-3	L-17	2.1E-08	0.0000032	4.2E-09	0.0000012	0.00000017	0.00000035	4.2E-09	0.000037	2.5E-08	8.3E-09	0.00000091	0.00000017	2.1E-08	-	-	-	-
HPHC-4	L-1	0.0000034	0.0018	0.0000014	0.000027	0.000012	0.000018	0.00000068	0.000087	0.000011	0.0000014	0.00014	0.0000082	0.0000082	-	-	-	-
HPHC-4	L-2	0.00000031	0.00084	6.3E-08	0.0000028	0.000012	0.000020	6.3E-08	0.000058	0.0000033	0.00000013	0.000038	0.000010	0.00000031	-	-	-	-
HPHC-4	L-3	0.00000029	0.00034	5.8E-08	0.0000024	0.0000065	0.0000089	5.8E-08	0.000044	0.0000013	0.00000012	0.000017	0.0000074	0.00000029	-	-	-	-
HPHC-4	L-4	5.8E-08	0.00014	1.2E-08	0.00000065	0.0000026	0.0000019	1.2E-08	0.000015	0.00000046	2.3E-08	0.0000020	0.0000020	5.8E-08	-	-	-	-
HPHC-4	L-5	4.1E-08	0.000055	8.3E-09	0.00000076	0.00000083	0.0000007	8.3E-09	0.000025	0.00000018	1.7E-08	0.00000091	0.00000071	8.3E-08	-	-	-	-
HPHC-4	L-6	2.1E-08	0.000020	4.1E-09	0.00000069	0.00000028	0.00000041	4.1E-09	0.000036	5.0E-08	8.3E-09	0.00000046	0.00000032	2.1E-08	-	-	-	-
HPHC-4	L-7	2.1E-08	0.000012	4.2E-09	0.00000091	0.00000025	0.0000004	4.2E-09	0.000046	5.0E-08	8.3E-09	0.00000056	0.00000031	2.1E-08	-	-	-	-
HPHC-4	L-8	4.1E-08	0.0000085	8.3E-09	0.0000012	0.00000033	0.00000041	8.3E-09	0.000070	3.3E-08	1.7E-08	0.00000096	0.00000035	4.1E-08	-	-	-	-
HPHC-4	L-9	2.1E-08	0.0000059	4.1E-09	0.00000091	0.00000021	0.00000035	4.1E-09	0.000046	3.3E-08	8.3E-09	0.00000069	0.00000024	2.1E-08	-	-	-	-
HPHC-4	L-10	2.1E-08	0.0000049	4.1E-09	0.00000099	0.00000019	0.00000034	4.1E-09	0.000045	4.1E-08	8.3E-09	0.00000065	0.00000023	2.1E-08	-	-	-	-
HPHC-4	L-11	2.1E-08	0.0000046	4.1E-09	0.0000011	0.00000021	0.00000034	4.1E-09	0.000046	4.1E-08	8.3E-09	0.00000083	0.00000023	0.00000015	-	-	-	-
HPHC-4	L-12	2.1E-08	0.0000043	4.1E-09	0.0000012	0.00000021	0.00000034	4.1E-09	0.000044	5.0E-08	8.3E-09	0.00000073	0.00000022	2.1E-08	-	-	-	-
HPHC-4	L-13	2.1E-08	0.0000037	4.1E-09	0.0000012	0.00000019	0.00000033	4.1E-09	0.000044	6.6E-08	8.3E-09	0.0000008	0.0000002	5.0E-08	-	-	-	-
HPHC-4	L-14	2.1E-08	0.0000035	4.1E-09	0.0000012	0.00000019	0.00000034	4.1E-09	0.000042	3.3E-08	8.3E-09	0.00000083	0.0000002	2.1E-08	-	-	-	-
HPHC-4	L-15	2.1E-08	0.0000034	4.2E-09	0.0000012	0.00000019	0.00000035	4.2E-09	0.000039	5.8E-08	8.3E-09	0.00000091	0.00000019	5.0E-08	-	-	-	-
HPHC-4	L-16	2.1E-08	0.0000033	4.2E-09	0.0000012	0.00000018	0.00000035	4.2E-09	0.000038	3.3E-08	8.3E-09	0.00000091	0.00000018	2.1E-08	-	-	-	-
HPHC-4	L-17	2.1E-08	0.0000033	4.2E-09	0.0000012	0.00000018	0.00000035	4.2E-09	0.000037	2.5E-08	8.3E-09	0.00000083	0.00000017	2.1E-08	-	-	-	-

- Parameter not analyzed

Appendix E, Table E-15
HHGPLC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s
HHGPLC-1	L-1	2019-12-11	0.080	0.10	0.057	0.00047	503	1.0	0.50	0.0082	6.1	0.69	1471	-	0.089	0.11	0.0044	0.0044	4.9	3.3	1.3	0.0044
HHGPLC-1	L-2	2019-12-12	1.0	0.10	0.057	0.00047	620	1.00	0.62	0.0082	7.6	0.69	1471	-	0.0057	0.0067	0.00048	0.00048	0.70	0.43	0.17	0.0029
HHGPLC-1	L-3	2019-12-13	2.0	0.10	0.057	0.00047	630	1.00	0.63	0.0082	7.7	0.69	1471	-	0.014	0.018	0.00045	0.00045	0.59	0.35	0.14	0.0018
HHGPLC-1	L-4	2019-12-18	7.0	0.10	0.057	0.00047	621	1.00	0.62	0.0082	7.6	0.69	1471	-	0.0021	0.0026	0.000088	0.000088	0.18	0.090	0.036	0.0025
HHGPLC-1	L-5	2019-12-25	14	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1471	-	0.0016	0.0020	0.000065	0.000065	0.16	0.070	0.028	0.0030
HHGPLC-1	L-6	2020-01-08	28	0.10	0.057	0.00047	638	1.0	0.64	0.0082	7.8	0.69	1471	-	0.0013	0.0015	0.000032	0.000032	0.11	0.039	0.016	0.0026
HHGPLC-1	L-7	2020-01-22	42	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.8	0.69	1471	-	0.0018	0.0021	0.000032	0.000032	0.11	0.041	0.016	0.0023
HHGPLC-1	L-8	2020-01-29	49	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1471	-	0.0010	0.0013	0.000065	0.000065	0.14	0.059	0.023	0.0023
HHGPLC-1	L-9	2020-02-12	63	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.69	1471	-	0.0018	0.0022	0.000033	0.000033	0.10	0.038	0.015	0.0016
HHGPLC-1	L-10	2020-02-26	77	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.69	1471	-	0.0014	0.0018	0.000033	0.000033	0.096	0.038	0.015	0.0012
HHGPLC-1	L-11	2020-03-11	91	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.9	0.69	1471	-	0.0011	0.0014	0.000032	0.000032	0.091	0.038	0.015	0.00097
HHGPLC-1	L-12	2020-03-25	105	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1471	-	0.0010	0.0013	0.000033	0.000033	0.087	0.037	0.015	0.00085
HHGPLC-1	L-13	2020-04-08	119	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.69	1471	-	0.00078	0.00097	0.000032	0.000032	0.082	0.036	0.014	0.00058
HHGPLC-1	L-14	2020-04-22	133	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1471	-	0.0025	0.0030	0.000033	0.000033	0.079	0.037	0.015	0.00046
HHGPLC-1	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1471	-	0.0016	0.0020	0.000033	0.000033	0.070	0.036	0.015	0.00039
HHGPLC-1	L-16	2020-05-20	161	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1471	-	0.0011	0.0014	0.000033	0.000033	0.068	0.041	0.016	0.00026
HHGPLC-1	L-17	2020-06-03	175	0.10	0.057	0.00047	645	1.00	0.64	0.0082	7.9	0.69	1471	-	0.0015	0.0018	0.000033	0.000033	0.068	0.036	0.014	0.00026
HHGPLC-1	L-18	2020-07-01	203	0.10	0.057	0.00047	631	1.00	0.63	0.0082	7.7	0.69	1471	-	0.00045	0.00054	0.000016	0.000016	0.050	0.026	0.010	0.00022
HHGPLC-1	L-19	2020-07-29	231	0.10	0.057	0.00047	640	1.0	0.64	0.0082	7.8	0.69	1471	-	0.00042	0.00052	0.000016	0.000016	0.048	0.027	0.011	0.00019
HHGPLC-1	L-20	2020-08-26	259	0.10	0.057	0.00047	638	1.0	0.64	0.0082	7.8	0.69	1471	-	0.00045	0.00055	0.000016	0.000016	0.044	0.026	0.011	0.00013
HHGPLC-1	L-21	2020-09-23	287	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.69	1471	-	0.00068	0.00084	0.000016	0.000016	0.041	0.026	0.010	0.000097
HHGPLC-2	L-1	2019-12-11	0.080	0.10	0.057	0.00047	488	1.0	0.49	0.0082	6.0	0.69	1477	-	0.18	0.22	0.0043	0.0043	8.1	5.4	2.2	0.0043
HHGPLC-2	L-2	2019-12-12	1.0	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1477	-	0.0069	0.0079	0.00050	0.00050	0.75	0.46	0.18	0.0020
HHGPLC-2	L-3	2019-12-13	2.0	0.10	0.057	0.00047	631	1.00	0.63	0.0082	7.7	0.69	1477	-	0.012	0.014	0.00045	0.00045	0.62	0.38	0.15	0.0018
HHGPLC-2	L-4	2019-12-18	7.0	0.10	0.057	0.00047	622	1.00	0.62	0.0082	7.6	0.69	1477	-	0.0023	0.0028	0.000088	0.000088	0.20	0.091	0.036	0.0035
HHGPLC-2	L-5	2019-12-25	14	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.69	1477	-	0.0012	0.0014	0.000065	0.000065	0.18	0.069	0.028	0.0043
HHGPLC-2	L-6	2020-01-08	28	0.10	0.057	0.00047	639	1.0	0.64	0.0082	7.8	0.69	1477	-	0.0016	0.0019	0.000032	0.000032	0.12	0.040	0.016	0.0035
HHGPLC-2	L-7	2020-01-22	42	0.10	0.057	0.00047	649	1.0	0.65	0.0082	7.9	0.69	1477	-	0.0016	0.0020	0.000033	0.000033	0.12	0.041	0.016	0.0026
HHGPLC-2	L-8	2020-01-29	49	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.69	1477	-	0.0021	0.0026	0.000065	0.000065	0.15	0.057	0.023	0.0024
HHGPLC-2	L-9	2020-02-12	63	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.69	1477	-	0.0014	0.0017	0.000033	0.000033	0.10	0.038	0.015	0.0015
HHGPLC-2	L-10	2020-02-26	77	0.10	0.057	0.00047	647	1.0	0.65	0.0082	7.9	0.69	1477	-	0.0016	0.0019	0.000033	0.000033	0.097	0.039	0.016	0.0011
HHGPLC-2	L-11	2020-03-11	91	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.69	1477	-	0.0014	0.0017	0.000032	0.000032	0.091	0.039	0.015	0.00084
HHGPLC-2	L-12	2020-03-25	105	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.69	1477	-	0.0011	0.0014	0.000033	0.000033	0.087	0.038	0.015	0.00065
HHGPLC-2	L-13	2020-04-08	119	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.69	1477	-	0.00097	0.0012	0.000032	0.000032	0.080	0.036	0.015	0.00052
HHGPLC-2	L-14	2020-04-22	133	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.69	1477	-	0.0013	0.0016	0.000033	0.000033	0.079	0.038	0.015	0.00039
HHGPLC-2	L-15	2020-05-06	147	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1477	-	0.0018	0.0018	0.00013	0.000033	0.070	0.038	0.015	0.00026
HHGPLC-2	L-16	2020-05-20	161	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.69	1477	-	0.0017	0.0021	0.000033	0.000033	0.068	0.042	0.017	0.00020
HHGPLC-2	L-17	2020-06-03	175	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1477	-	0.00072	0.00085	0.000033	0.000033	0.067	0.036	0.015	0.00020
HHGPLC-2	L-18	2020-07-01	203	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1477	-	0.00046	0.00055	0.000016	0.000016	0.045	0.027	0.011	0.00016
HHGPLC-2	L-19	2020-07-29	231	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1477	-	0.00052	0.00065	0.000016	0.000016	0.045	0.027	0.011	0.00013
HHGPLC-2	L-20	2020-08-26	259	0.10	0.057	0.00047	645	1.0	0.64	0.0082	7.9	0.69	1477	-	0.00052	0.00065	0.000016	0.000016	0.043	0.027	0.011	0.000098
HHGPLC-2	L-21	2020-09-23	287	0.10	0.057	0.00047	640	1.0	0.64	0.0082	7.8	0.69	1477	-	0.00081	0.00097	0.000016	0.000016	0.040	0.027	0.011	0.000065
HHGPLC-3	L-1	2019-12-11	0.080	0.10	0.057	0.00047	480	1.0	0.48	0.0082	5.9	0.68	1461	-	0.085	0.10	0.0042	0.0042	8.3	5.5	2.2	0.0042
HHGPLC-3	L-2	2019-12-12	1.0	0.10	0.057	0.00047	633	1.00	0.63	0.0082	7.8	0.68	1461	-	0.020	0.025	0.00049	0.00049	0.74	0.47	0.19	0.0020
HHGPLC-3	L-3	2019-12-13	2.0	0.10	0.057	0.00047	622	1.00	0.62	0.0082	7.6	0.68	1461	-	0.020	0.025	0.00044	0.00044	0.69	0.42	0.17	0.0026
HHGPLC-3	L-4	2019-12-18	7.0	0.10	0.057	0.00047	618	1.00	0.62	0.0082	7.6	0.68	1461	-	0.0025	0.0030	0.000088	0.000088	0.21	0.097	0.039	0.0032
HHGPLC-3	L-5	2019-12-25	14	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.68	1461	-	0.0018	0.0022	0.000065	0.000065	0.17	0.072	0.029	0.0031
HHGPLC-3	L-6	2020-01-08	28	0.10	0.057	0.00047	635	1.0	0.63	0.0082	7.8	0.68	1461	-	0.0011	0.0013	0.000032	0.000032	0.11	0.041	0.016	0.0026
HHGPLC-3	L-7	2020-01-22	42	0.10	0.057	0.00047	646	1.0	0.65	0.0082	7.9	0.68	1461	-	0.00072	0.00072	0.000065	0.000033	0.11	0.043	0.017	0.0022
HHGPLC-3	L-8	2020-01-29	49	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.68	1461	-	0.0018	0.0022	0.000065	0.000065	0.15	0.064	0.025	0.0021
HHGPLC-3	L-9	2020-02-12	63	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.68	1461	-	0.0018	0.0021	0.000032	0.000032	0.099	0.040	0.016	0.0014
HHGPLC-3	L-10	2020-02-26	77	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.68	1461	-	0.0016	0.0019	0.000032	0.000032	0.095	0.039	0.016	0.0012
HHGPLC-3	L-11	2020-03-11	91	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.68	1461	-	0.0013	0.0016	0.000033	0.000033	0.090	0.040	0.016	0.00098
HHGPLC-3	L-12	2020-03-25	105	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.68	1461	-	0.0010	0.0013	0.000032	0.000032	0.087	0.038	0.015	0.00078
HHGPLC-3	L-13	2020-04-08	119	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.68	1461	-	0.0010	0.0013	0.000033	0.000033	0.083	0.037	0.015	0.00065
HHGPLC-3	L-14	2020-04-22	133	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.68	1461	-	0.0018	0.0022	0.000033	0.000033	0.079	0.038	0.015	0.00046
HHGPLC-3	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.68	1461	-	0.0018	0.0019	0.00013	0.000033	0.073	0.037	0.015	0.00039
HHGPLC-3	L-16	2020-05-20	161	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.68	1461	-	0.0014	0.0017	0.000032	0.000032	0.071	0.041	0.016	0.00026
HHGPLC-3	L-17	2020-06-03	175	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.68	1461	-	0.0017	0.0021	0.000033	0.000033	0.070	0.035	0.014	0.00026
HHGPLC-3	L-18	2020-07-01	203	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.68	1461	-	0.00045	0.00055	0.000016	0.000016	0.048	0.027	0.011	0.00023
HHGPLC-3	L-19	2020-07-29	231	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.9	0.68	1461	-	0.00052	0.00065	0.000016	0.000016	0.047	0.026	0.011	0.00016
HHGPLC-3	L-20	2020-08-26	259	0.10	0.057	0.00047	639	1.0	0.64	0.0082	7.8	0.68	1461	-	0.00052	0.00064	0.000016	0.000016	0.044	0.027	0.011	0.00016
HHGPLC-3	L-21	2020-09-23	287	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.68	1461	-	0.00068	0.00085	0.000016	0.000016	0.041	0.026	0.011	0.000098
HHGPLC-4	L-1	2019-12-11	0.080	0.10	0.057	0.00047	490	1.0	0.49	0.0082	6.0	0.69	1485	-	0.11	0.14	0.0043	0.0043	4.5	3.0	1.2	0.0043
HHGPLC-4	L-2	2019-12-12	1.0	0.10	0.057	0.00047	614	1.00	0.61	0.0082	7.5	0.69	1485	-	0.021	0.026	0.00047	0.00047	0.79	0.50	0.20	0.00095
HHGPLC-4	L-3	2019-12-13	2.0	0.10	0.057	0.00047	620	1.00	0.62	0.0082	7.6	0.69	1485	-	0.0018	0.0018	0.00044	0.00044	0.73	0.44	0.18	0.0018
HHGPLC-4	L-4	2019-12-18	7.0	0.10	0.057	0.00047	612	1.00	0.61	0.0082	7.5	0.69	1485	-	0.0024	0.0029	0.000087	0.000087	0.20	0.097	0.039	0.0033
HHGPLC-4	L-5	2019-12-25	14	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.69	1485	-	0.0013	0.0016	0.000065	0.000065	0.17	0.071	0.028	0.0036
HHGPLC-4	L-6	2020-01-08	28	0.10	0.057	0.00047	639	1.0	0.64	0.0082	7.8	0.69	1485	-	0.0014	0.0017	0.000032	0.000032	0.12	0.043	0.017	0.0030
HHGPLC-4	L-7	2020-01-22	42	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.9	0.69	1485	-	0.0014	0.0016	0.000065	0.000032	0.11	0.042	0.017	0.0024
HHGPLC-4	L-8	2020-01-29	49	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1485	-	0.0021	0.0026	0.000065	0.000065	0.15	0.062	0.025	0.0022
HHGPLC-4	L-9	2020-02-12	63	0.10	0.057	0.00047	634	1.0	0.63	0.0082	7.8	0.69	1485	-	0.0013	0.0017	0.000032	0.000032	0.10	0.041	0.016	0.0015
HHGPLC-4	L-10	2020-02-26	77	0.10	0.057	0.00047	644	1.0	0.64	0.0082	7.9	0.69	1485	-	0.0014	0.0018	0.000033	0.000033	0.098	0.040	0.016	0.0012
HHGPLC-4	L-11	2020-03-11	91	0.10	0.057	0.00047	645	1.0	0.64	0.0082	7.9	0.69	1485	-	0.0013	0.0016	0.000033	0.000033	0.092	0.040	0.016	0.00091
HHGPLC-4	L-12	2020-03-25	105	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.69	1485	-	0.0016	0.0019	0.000032	0.000032	0.090	0.039	0.015	0.00078
HHGPLC-4	L-13	2020-04-08	119	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.69	1485	-	0.00084	0.0010	0.000032	0.000032	0.082	0.037	0.015	0.00065
HHGPLC-4	L-14	2020-04-22	133	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1485	-	0.0021	0.0025	0.000033	0.000033	0.080	0.039	0.015	0.00046
HHGPLC-4	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1485	-	0.0012	0.0011	0.00013	0.000033	0.074	0.037	0.015	0.00033
HHGPLC-4	L-16	2020-05-20	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1485	-	0.0011	0.0014	0.000033	0.000033	0.071	0.041	0.017	0.00026
HHGPLC-4	L-17	2020-06-03	175	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1485	-	0.0014	0.0017	0.000033	0.000033	0.069	0.035	0.014	0.00026
HHGPLC-4	L-18	2020-07-01	203	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.69	1485	-	0.00065	0.00078	0.000016	0.000016	0.049	0.027	0.011	0.00019
HHGPLC-4	L-19	2020-07-29	231	0.10	0.057	0.00047	644	1.0	0.64	0.0082	7.9	0.69	1485	-	0.00049	0.00059	0.000016	0.000016	0.047	0.027	0.011	0.00016
HHGPLC-4	L-20	2020-08-26	259	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.8	0.69	1485	-	0.00049	0.00052	0.000032	0.000016	0.043	0.027	0.011	0.00013
HHGPLC-4	L-21	2020-09-23	287	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.9	0.69	1485	-	0.00084	0.0010	0.000016	0.000016	0.042	0.027	0.011	0.000097

- Parameter not analyzed

Appendix E, Table E-15
HHGPLC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	$mg\text{-}N/m^2s$	$mg\text{-}N/m^2s$	$mg\text{-}N/m^2s$	$mg\text{-}P/m^2s$	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s
HHGPLC-1	L-1	0.00098	0.0062	0.0018	0.018	-	-	0.00016	-	3.0	0.00000022	0.0081	0.000040	0.00036	0.00025	0.00000044	4.4E-08	0.0000027	0.000011	0.000020	0.00052	4.4E-09
HHGPLC-1	L-2	0.00017	0.0036	0.00038	0.025	-	-	0.0000043	-	0.44	2.4E-08	0.00073	0.000015	0.000095	0.000014	4.8E-08	4.8E-09	4.8E-08	0.0000014	0.00000057	0.000011	4.8E-10
HHGPLC-1	L-3	0.00013	0.0029	0.00027	0.022	-	-	0.0000040	-	0.36	2.2E-08	0.00087	0.000012	0.000071	0.000024	4.5E-08	1.8E-08	4.5E-08	0.0000012	0.00000045	0.0000073	4.5E-10
HHGPLC-1	L-4	0.000060	0.0017	0.00011	0.015	-	-	0.00000079	-	0.12	4.4E-09	0.00015	0.0000067	0.000032	0.0000025	8.8E-09	3.5E-09	3.5E-08	0.00000083	0.00000032	0.0000046	1.8E-10
HHGPLC-1	L-5	0.000044	0.0016	0.000078	0.016	-	-	0.00000059	-	0.098	3.3E-09	0.00011	0.0000070	0.000022	0.0000022	6.5E-09	2.6E-09	2.6E-08	0.00000076	0.00000029	0.0000044	6.5E-11
HHGPLC-1	L-6	0.000026	0.0011	0.000045	0.015	-	-	0.00000029	-	0.069	3.9E-09	0.000071	0.0000068	0.000019	0.0000011	3.2E-09	5.2E-09	2.6E-08	0.00000077	0.00000024	0.0000043	3.2E-11
HHGPLC-1	L-7	0.000020	0.0011	0.000039	0.017	-	-	0.00000029	-	0.071	1.6E-09	0.000069	0.0000076	0.000018	0.0000011	3.2E-09	3.9E-09	3.2E-09	0.00000078	0.0000001	0.00000018	3.2E-11
HHGPLC-1	L-8	0.000023	0.0013	0.000052	0.019	-	-	0.0000059	-	0.091	3.3E-09	0.00011	0.0000086	0.000022	0.0000020	6.5E-09	6.5E-10	6.5E-09	0.00000083	0.00000013	0.00000043	6.5E-11
HHGPLC-1	L-9	0.000011	0.00091	0.000033	0.013	-	-	0.0000029	-	0.063	1.6E-09	0.000069	0.0000067	0.000015	0.0000012	3.3E-09	2.6E-09	3.3E-09	0.00000062	9.8E-08	0.0000002	3.3E-11
HHGPLC-1	L-10	0.000010	0.00085	0.000033	0.013	-	-	0.0000029	-	0.061	1.6E-09	0.000064	0.0000062	0.000014	0.0000010	3.3E-09	2.0E-09	1.3E-08	0.00000059	0.00000014	0.0000010	3.3E-11
HHGPLC-1	L-11	0.000011	0.00078	0.000032	0.011	-	-	0.0000029	-	0.057	1.6E-09	0.000068	0.0000057	0.000014	0.0000012	3.2E-09	3.2E-09	1.3E-08	0.0000005	0.00000017	0.0000023	3.2E-11
HHGPLC-1	L-12	0.000011	0.00072	0.000026	0.0095	-	-	0.0000029	-	0.054	1.6E-09	0.000068	0.0000052	0.000013	0.0000014	3.3E-09	3.3E-10	3.3E-09	0.00000042	9.8E-08	0.00000027	3.3E-11
HHGPLC-1	L-13	0.0000097	0.00065	0.000026	0.0081	-	-	0.0000029	-	0.051	1.6E-09	0.000063	0.0000046	0.000012	0.0000012	3.2E-09	6.5E-10	3.2E-09	0.00000037	0.0000001	0.00000027	3.2E-11
HHGPLC-1	L-14	0.0000098	0.00063	0.000026	0.0074	-	-	0.0000029	-	0.051	1.6E-09	0.000056	0.0000040	0.000012	0.0000012	3.3E-09	3.3E-10	1.3E-08	0.00000031	0.00000012	0.0000012	3.3E-11
HHGPLC-1	L-15	0.0000098	0.00055	0.000026	0.0063	-	-	0.000029	-	0.047	1.6E-09	0.000058	0.0000035	0.0000098	0.0000012	3.3E-09	3.3E-10	3.3E-09	0.00000025	9.1E-08	0.00000021	3.3E-11
HHGPLC-1	L-16	0.0000065	0.00059	0.000033	0.0062	-	-	0.0000029	-	0.050	1.6E-09	0.000055	0.0000033	0.0000098	0.0000011	3.3E-09	3.3E-10	3.3E-09	0.00000025	9.1E-08	0.0000003	3.3E-11
HHGPLC-1	L-17	0.0000078	0.00048	0.000026	0.0046	-	-	0.0000029	-	0.043	1.6E-09	0.000053	0.0000029	0.0000098	0.0000012	3.3E-09	1.3E-09	3.3E-09	0.00000022	7.8E-08	0.00000014	6.5E-11
HHGPLC-1	L-18	0.0000048	0.00038	0.000019	0.0037	-	-	0.0000014	-	0.032	8.0E-10	0.000032	0.0000021	0.0000077	0.00000067	1.6E-09	3.5E-08	1.6E-09	0.00000016	5.1E-08	4.5E-08	3.2E-11
HHGPLC-1	L-19	0.0000042	0.00039	0.000019	0.0029	-	-	0.0000015	-	0.031	8.1E-10	0.000029	0.0000020	0.0000074	0.00000068	1.6E-09	3.2E-08	1.6E-09	0.00000015	4.9E-08	8.1E-08	3.2E-11
HHGPLC-1	L-20	0.0000019	0.00035	0.000019	0.0022	-	-	0.0000015	-	0.029	8.0E-10	0.000021	0.0000016	0.0000071	0.00000061	1.6E-09	1.6E-09	1.6E-09	0.00000013	3.5E-08	7.1E-08	3.2E-11
HHGPLC-1	L-21	0.0000032	0.00030	0.000019	0.0016	-	-	0.0000015	-	0.028	8.1E-10	0.000030	0.0000015	0.0000068	0.00000062	1.6E-09	6.5E-10	1.6E-09	0.00000014	5.2E-08	0.00000032	1.6E-11
HHGPLC-2	L-1	0.0014	0.0069	0.0026	0.012	-	-	0.00016	-	4.9	0.00000022	0.012	0.000066	0.00043	0.00022	0.00000043	4.3E-08	0.0000026	0.000016	0.000026	0.00062	4.3E-09
HHGPLC-2	L-2	0.00019	0.0038	0.00040	0.020	-	-	0.0000045	-	0.47	2.5E-08	0.00077	0.000015	0.000099	0.000017	5.0E-08	9.9E-09	5.0E-08	0.0000012	0.0000005	0.0000065	5.0E-10
HHGPLC-2	L-3	0.00014	0.0029	0.00027	0.018	-	-	0.0000040	-	0.38	2.2E-08	0.00095	0.000011	0.000072	0.000027	4.5E-08	8.9E-09	0.00000027	0.0000027	0.0000018	0.000059	4.5E-10
HHGPLC-2	L-4	0.000058	0.0019	0.00011	0.020	-	-	0.00000079	-	0.13	4.4E-09	0.00016	0.0000079	0.000033	0.0000026	8.8E-09	1.1E-08	3.5E-08	0.00000092	0.00000032	0.0000046	8.8E-11
HHGPLC-2	L-5	0.000044	0.0018	0.000078	0.024	-	-	0.00000058	-	0.11	3.2E-09	0.00012	0.0000096	0.000025	0.0000023	6.5E-09	3.9E-09	2.6E-08	0.0000011	0.00000034	0.0000027	6.5E-11
HHGPLC-2	L-6	0.000025	0.0014	0.000045	0.021	-	-	0.00000029	-	0.078	3.2E-09	0.000066	0.0000085	0.000021	0.0000010	3.2E-09	5.2E-09	6.5E-09	0.00000097	0.00000015	0.00000071	3.2E-11
HHGPLC-2	L-7	0.000022	0.0014	0.000046	0.021	-	-	0.0000003	-	0.081	3.9E-09	0.000067	0.0000091	0.000020	0.00000092	3.3E-09	3.9E-09	1.3E-08	0.00000098	0.00000013	0.00000066	3.3E-11
HHGPLC-2	L-8	0.000027	0.0014	0.000052	0.021	-	-	0.0000059	-	0.096	3.3E-09	0.000099	0.0000094	0.000024	0.0000014	6.5E-09	6.5E-10	6.5E-09	0.00000092	0.00000016	0.00000037	6.5E-11
HHGPLC-2	L-9	0.000012	0.00098	0.000033	0.015	-	-	0.0000029	-	0.065	1.6E-09	0.000070	0.0000072	0.000015	0.00000098	3.3E-09	5.2E-09	6.5E-09	0.00000065	0.00000012	0.0000004	3.3E-11
HHGPLC-2	L-10	0.0000098	0.00092	0.000033	0.013	-	-	0.0000030	-	0.063	1.6E-09	0.000056	0.0000064	0.000015	0.0000010	3.3E-09	2.0E-09	6.5E-09	0.0000006	0.00000012	0.00000034	3.3E-11
HHGPLC-2	L-11	0.0000097	0.00084	0.000032	0.011	-	-	0.0000029	-	0.058	1.6E-09	0.000058	0.0000056	0.000016	0.0000010	3.2E-09	3.2E-10	6.5E-09	0.00000047	0.00000012	0.00000051	3.2E-11
HHGPLC-2	L-12	0.000010	0.00072	0.000026	0.0090	-	-	0.0000030	-	0.054	1.6E-09	0.000067	0.0000051	0.000014	0.0000012	3.3E-09	3.3E-10	3.3E-09	0.00000042	0.00000011	0.00000057	3.3E-11
HHGPLC-2	L-13	0.000010	0.00065	0.000026	0.0075	-	-	0.0000029	-	0.050	1.6E-09	0.000062	0.0000043	0.000012	0.0000010	3.2E-09	1.9E-09	3.2E-09	0.00000034	0.0000001	0.00000034	3.2E-11
HHGPLC-2	L-14	0.0000079	0.00064	0.000033	0.0064	-	-	0.0000030	-	0.050	1.6E-09	0.000056	0.0000038	0.000012	0.0000012	3.3E-09	2.0E-09	3.3E-09	0.00000029	9.8E-08	0.00000046	3.3E-11
HHGPLC-2	L-15	0.0000098	0.00057	0.000026	0.0054	-	-	0.000029	-	0.046	1.6E-09	0.000059	0.0000032	0.000010	0.0000013	3.3E-09	3.9E-09	3.3E-09	0.00000023	7.8E-08	0.00000017	3.3E-11
HHGPLC-2	L-16	0.0000052	0.00059	0.000033	0.0050	-	-	0.0000030	-	0.048	1.6E-09	0.000056	0.0000029	0.000011	0.0000012	3.3E-09	3.3E-10	3.3E-09	0.00000023	8.5E-08	0.00000044	3.3E-11
HHGPLC-2	L-17	0.0000072	0.00048	0.000026	0.0038	-	-	0.0000030	-	0.042	1.6E-09	0.000053	0.0000026	0.0000098	0.0000012	3.3E-09	3.3E-09	3.3E-09	0.0000002	8.5E-08	0.00000029	1.3E-10
HHGPLC-2	L-18	0.0000049	0.00036	0.000020	0.0026	-	-	0.0000015	-	0.031	8.1E-10	0.000032	0.0000018	0.0000078	0.00000065	1.6E-09	3.3E-08	1.6E-09	0.00000014	5.2E-08	0.00000019	3.3E-11
HHGPLC-2	L-19	0.0000036	0.00033	0.000023	0.0021	-	-	0.0000015	-	0.030	8.1E-10	0.000022	0.0000016	0.0000072	0.00000065	1.6E-09	2.8E-08	1.6E-09	0.00000013	5.2E-08	0.00000026	6.5E-11
HHGPLC-2	L-20	0.0000026	0.00031	0.000023	0.0015	-	-	0.0000015	-	0.029	8.1E-10	0.000024	0.0000014	0.0000072	0.00000065	1.6E-09	6.5E-10	1.6E-09	0.00000011	3.3E-08	6.5E-08	1.6E-11
HHGPLC-2	L-21	0.0000026	0.00027	0.000019	0.0011	-	-	0.0000015	-	0.027	8.1E-10	0.000033	0.0000013	0.0000068	0.00000065	1.6E-09	1.6E-09	1.6E-09	0.00000011	4.2E-08	0.0000002	1.6E-11
HHGPLC-3	L-1	0.0014	0.0068	0.0025	0.012	-	-	0.00015	-	5.0	0.00000021	0.014	0.000064	0.00042	0.00022	0.00000042	4.2E-08	0.0000051	0.000013	0.000039	0.0010	4.2E-09
HHGPLC-3	L-2	0.00020	0.0033	0.00039	0.014	-	-	0.0000044	-	0.46	2.4E-08	0.00079	0.000013	0.000098	0.000014	4.9E-08	2.0E-08	4.9E-08	0.00000088	0.00000049	0.0000083	4.9E-10
HHGPLC-3	L-3	0.00014	0.0030	0.00026	0.019	-	-	0.0000040	-	0.42	2.2E-08	0.0010	0.000012	0.000079	0.000028	4.4E-08	1.8E-08	0.00000035	0.0000012	0.0000022	0.000071	4.4E-10
HHGPLC-3	L-4	0.000061	0.0019	0.00011	0.020	-	-	0.00000079	-	0.13	4.4E-09	0.00018	0.0000084	0.000033	0.0000035	8.8E-09	5.3E-09	8.8E-09	0.00000091	0.00000023	0.0000019	8.8E-11
HHGPLC-3	L-5	0.000044	0.0017	0.000078	0.019	-	-	0.00000058	-	0.11	3.2E-09	0.00011	0.0000083	0.000023	0.0000019	6.5E-09	3.9E-09	2.6E-08	0.00000088	0.00000027	0.0000030	6.5E-11
HHGPLC-3	L-6	0.000023	0.0012	0.000045	0.016	-	-	0.00000029	-	0.071	1.6E-09	0.000062	0.0000068	0.000019	0.0000009	3.2E-09	6.4E-10	6.4E-09	0.00000077	0.00000015	0.00000083	3.2E-11
HHGPLC-3	L-7	0.000020	0.0012	0.000039	0.016	-	-	0.00000029	-	0.074	1.6E-09	0.000067	0.0000073	0.000018	0.0000010	3.3E-09	5.9E-09	3.3E-09	0.00000078	0.00000012	0.00000029	3.3E-11
HHGPLC-3	L-8	0.000025	0.0013	0.000052	0.018	-	-	0.0000059	-	0.094	3.3E-09	0.00012	0.0000078	0.000022	0.0000021	6.5E-09	3.9E-09	6.5E-09	0.00000078	0.00000014	0.0000003	6.5E-11
HHGPLC-3	L-9	0.000012	0.00084	0.000032	0.013	-	-	0.0000029	-	0.062	1.6E-09	0.000076	0.0000062	0.000014	0.0000014	3.2E-09	3.2E-09	3.2E-09	0.0000006	0.0000001	0.00000036	3.2E-11
HHGPLC-3	L-10	0.000011	0.00078	0.000032	0.012	-	-	0.0000029	-	0.060	1.6E-09	0.000065	0.0000059	0.000014	0.0000011	3.2E-09	6.5E-10	6.5E-09	0.00000056	0.00000012	0.00000054	3.2E-11
HHGPLC-3	L-11	0.000010	0.00078	0.000033	0.010	-	-	0.0000029	-	0.057	1.6E-09	0.000061	0.0000054	0.000014	0.0000013	3.3E-09	2.6E-09	6.5E-09	0.00000048	0.00000012	0.00000059	3.3E-11
HHGPLC-3	L-12	0.0000091	0.00065	0.000026	0.0089	-	-	0.0000029	-	0.053	1.6E-09	0.000066	0.0000049	0.000013	0.0000012	3.2E-09	1.9E-09	3.2E-09	0.00000044	8.4E-08	0.00000047	3.2E-11
HHGPLC-3	L-13	0.000010	0.00062	0.000026	0.0077	-	-	0.0000029	-	0.051	1.6E-09	0.000064	0.0000044	0.000012	0.0000012	3.3E-09	3.3E-09	3.3E-09	0.00000038	7.2E-08	0.00000044	3.3E-11
HHGPLC-3	L-14	0.0000078	0.00059	0.000026	0.0071	-	-	0.0000030	-	0.051	1.6E-09	0.000063	0.0000041	0.000012	0.0000012	3.3E-09	1.3E-09	3.3E-09	0.00000033	5.9E-08	0.00000045	3.3E-11
HHGPLC-3	L-15	0.0000091	0.00053	0.000026	0.0062	-	-	0.000029	-	0.048	1.6E-09	0.000057	0.0000035	0.0000098	0.0000012	3.3E-09	1.3E-09	3.3E-09	0.00000027	5.9E-08	0.0000001	3.3E-11
HHGPLC-3	L-16	0.0000065	0.00056	0.000032	0.0060	-	-	0.0000029	-	0.050	1.6E-09	0.000045	0.0000032	0.000010	0.0000012	3.2E-09	3.9E-09	3.2E-09	0.00000026	5.2E-08	0.00000017	3.2E-11
HHGPLC-3	L-17	0.0000085	0.00046	0.000026	0.0046	-	-	0.0000030	-	0.044	1.6E-09	0.000054	0.0000029	0.0000098	0.0000012	3.3E-09	2.6E-09	1.3E-08	0.00000024	0.0000001	0.0000018	6.5E-11
HHGPLC-3	L-18	0.0000049	0.00036	0.000019	0.0035	-	-	0.0000015	-	0.032	8.1E-10	0.000034	0.0000020	0.0000078	0.00000062	1.6E-09	3.2E-08	1.6E-09	0.00000016	3.6E-08	0.00000023	1.6E-11
HHGPLC-3	L-19	0.0000036	0.00036	0.000019	0.0030	-	-	0.0000015	-	0.031	8.1E-10	0.000027	0.0000018	0.0000068	0.00000065	1.6E-09	3.1E-08	3.2E-09	0.00000015	4.5E-08	0.00000045	3.2E-11
HHGPLC-3	L-20	0.0000016	0.00032	0.000019	0.0024	-	-	0.0000015	-	0.030	8.1E-10	0.000026	0.0000016	0.0000064	0.00000061	1.6E-09	1.3E-09	1.6E-09	0.00000013	3.5E-08	0.00000016	1.6E-11
HHGPLC-3	L-21	0.0000026	0.00030	0.000020	0.0018	-	-	0.0000015	-	0.028	8.1E-10	0.000031	0.0000015	0.0000065	0.00000065	1.6E-09	6.5E-10	1.6E-09	0.00000014	3.9E-08	0.00000024	1.6E-11
HHGPLC-4	L-1	0.00078	0.0052	0.0017	0.010	-	-	0.00016	-	2.7	0.00000022	0.0073	0.000036	0.00026	0.00021	0.00000043	8.7E-08	0.00000043	0.0000078	0.000012	0.00021	4.3E-09
HHGPLC-4	L-2	0.00017	0.0034	0.00038	0.015	-	-	0.0000043	-	0.49	2.4E-08	0.00087	0.000013	0.000095	0.000016	4.7E-08	9.5E-09	9.5E-08	0.0000011	0.00000095	0.000024	4.7E-10
HHGPLC-4	L-3	0.00014	0.0029	0.00026	0.018	-	-	0.0000040	-	0.45	2.2E-08	0.0011	0.000011	0.000079	0.000031	4.4E-08	8.8E-09	0.00000018	0.0000011	0.0000014	0.000043	4.4E-10
HHGPLC-4	L-4	0.000055	0.0019	0.00010	0.020	-	-	0.00000078	-	0.13	4.3E-09	0.00016	0.0000083	0.000033	0.0000028	8.7E-09	3.5E-09	8.7E-09	0.00000087	0.00000019	0.0000014	8.7E-11
HHGPLC-4	L-5	0.000040	0.0017	0.000078	0.021	-	-	0.00000058	-	0.11	3.2E-09	0.00011	0.0000092	0.000023	0.0000019	6.5E-09	6.5E-10	1.3E-08	0.00000089	0.00000025	0.0000025	6.5E-11
HHGPLC-4	L-6	0.000024	0.0012	0.000045	0.018	-	-	0.00000029	-	0.075	3.2E-09	0.000070	0.0000078	0.000019	0.0000011	3.2E-09	5.8E-09	6.5E-09	0.00000078	0.00000016	0.00000047	3.2E-11
HHGPLC-4	L-7	0.000021	0.0012	0.000039	0.017	-	-	0.00000029	-	0.071	1.6E-09	0.000070	0.0000080	0.000018	0.0000010	3.2E-09	2.6E-09	6.5E-09	0.00000078	0.00000014	0.00000065	3.2E-11
HHGPLC-4	L-8	0.000025	0.0013	0.000052	0.019	-	-	0.0000059	-	0.094	3.3E-09	0.00012	0.0000085	0.000022	0.0000023	6.5E-09	1.3E-09	3.9E-08	0.00000083	0.00000033	0.0000068	6.5E-11
HHGPLC-4	L-9	0.0000083	0.00090	0.000032	0.013	-	-	0.0000029	-	0.064	1.6E-09	0.000082	0.0000067	0.000015	0.0000015	3.2E-09	2.6E-09	1.9E-08	0.00000063	0.0000002	0.0000037	3.2E-11
HHGPLC-4	L-10	0.0000098	0.00085	0.000033	0.012	-	-	0.0000029	-	0.062	1.6E-09	0.000069	0.0000063	0.000014	0.0000012	3.3E-09	1.3E-09	1.3E-08	0.00000058	0.00000017	0.0000022	3.3E-11
HHGPLC-4	L-11	0.0000091	0.00078	0.000033	0.011	-	-	0.0000029	-	0.059	1.6E-09	0.000065	0.0000057	0.000014	0.0000013	3.3E-09	1.3E-09	3.3E-09	0.00000048	0.0000001	0.00000037	3.3E-11
HHGPLC-4	L-12	0.000010	0.00071	0.000032	0.0090	-	-	0.0000029	-	0.055	1.6E-09	0.000064	0.0000051	0.000012	0.0000012	3.2E-09	2.6E-09	3.2E-09	0.00000044	0.0000001	0.00000051	3.2E-11
HHGPLC-4	L-13	0.0000091	0.00063	0.000026	0.0077	-	-	0.0000029	-	0.051	1.6E-09	0.000061	0.0000045	0.000012	0.0000011	3.2E-09	3.2E-09	3.2E-09	0.00000037	7.1E-08	0.00000027	3.2E-11
HHGPLC-4	L-14	0.0000078	0.00062	0.000026	0.0071	-	-	0.0000029	-	0.051	1.6E-09	0.000063	0.0000040	0.000011	0.0000014	3.3E-09	3.3E-09	3.3E-09	0.00000031	6.5E-08	0.00000046	3.3E-11
HHGPLC-4	L-15	0.0000091	0.00053	0.000026	0.0059	-	-	0.000029	-	0.048	1.6E-09	0.000060	0.0000034	0.000010	0.0000014	3.3E-09	2.6E-09	3.3E-09	0.00000026	5.9E-08	0.0000003	3.3E-11
HHGPLC-4	L-16	0.0000059	0.00056	0.000026	0.0058	-	-	0.0000029	-	0.050	1.6E-09	0.000058	0.0000032	0.000010	0.0000012	3.3E-09	1.3E-09	3.3E-09	0.00000025	6.5E-08	0.00000065	3.3E-11
HHGPLC-4	L-17	0.0000078	0.00046	0.000026	0.0044	-	-	0.0000029	-	0.044	1.6E-09	0.000056	0.0000028	0.0000098	0.0000012	3.3E-09	2.0E-09	6.5E-09	0.00000023	8.5E-08	0.0000011	1.3E-10
HHGPLC-4	L-18	0.0000045	0.00036	0.000019	0.0033	-	-	0.0000015	-	0.032	8.1E-10	0.000028	0.0000019	0.0000074	0.00000068	1.6E-09	3.2E-08	6.5E-09	0.00000016	4.5E-08	0.00000071	9.7E-11
HHGPLC-4	L-19	0.0000039	0.00036	0.000020	0.0028	-	-	0.0000015	-	0.031	8.1E-10	0.000032	0.0000018	0.0000072	0.00000068	1.6E-09	3.1E-08	3.3E-09	0.00000014	5.5E-08	0.00000059	3.3E-11
HHGPLC-4	L-20	0.0000029	0.00032	0.000019	0.0022	-	-	0.0000015	-	0.030	8.1E-10	0.000029	0.0000016	0.0000071	0.00000065	1.6E-09	2.3E-09	1.6E-09	0.00000012	3.9E-08	0.0000001	1.6E-11
HHGPLC-4	L-21	0.0000026	0.00031	0.000019	0.0017	-	-	0.0000015	-	0.029	8.1E-10	0.000031	0.0000014	0.0000062	0.00000068	1.6E-09	1.6E-10	1.6E-09	0.00000012	3.6E-08	0.00000013	1.6E-11

- Parameter not analyzed

Appendix E, Table E-15
HHGPLC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HHGPLC-1	L-1	0.0000080	0.0014	0.0000062	0.000070	0.0000098	0.000060	0.00000044	0.00069	0.000020	0.00000089	0.00045	0.000042	0.000063	-	-	3.4E-09	-
HHGPLC-1	L-2	0.00000024	0.00074	0.00000019	0.0000016	0.0000017	0.0000095	4.8E-08	0.00012	0.0000025	0.00000038	0.000039	0.0000054	0.00000057	-	-	2.1E-10	-
HHGPLC-1	L-3	0.00000022	0.00065	8.9E-08	0.0000012	0.0000016	0.0000089	4.5E-08	0.000098	0.0000019	0.00000036	0.000029	0.0000055	0.00000022	-	-	2.9E-10	-
HHGPLC-1	L-4	4.4E-08	0.00039	0.00000011	0.00000072	0.00000049	0.0000030	8.8E-09	0.000032	0.0000013	0.00000016	0.0000055	0.0000017	0.00000053	-	-	5.7E-11	-
HHGPLC-1	L-5	7.8E-08	0.00039	5.2E-08	0.00000074	0.00000042	0.0000030	6.5E-09	0.000025	0.0000014	0.00000013	0.0000047	0.0000014	0.0000001	-	-	3.3E-11	-
HHGPLC-1	L-6	5.8E-08	0.00039	5.8E-08	0.0000006	0.00000028	0.0000025	3.2E-09	0.000017	0.0000011	0.0000001	0.0000042	0.0000011	0.00000059	-	-	1.9E-11	-
HHGPLC-1	L-7	1.6E-08	0.00040	2.6E-08	4.5E-08	0.00000029	0.0000027	3.2E-09	0.000016	0.00000091	9.7E-08	0.0000029	0.0000011	1.6E-08	-	-	1.9E-11	-
HHGPLC-1	L-8	3.3E-08	0.00044	3.9E-08	9.1E-08	0.00000035	0.0000030	6.5E-09	0.000021	0.0000014	0.00000012	0.0000026	0.0000014	3.3E-08	-	-	3.3E-11	-
HHGPLC-1	L-9	1.6E-08	0.00033	2.6E-08	4.6E-08	0.00000025	0.0000023	3.3E-09	0.000015	0.00000098	9.1E-08	0.0000026	0.0000010	1.6E-08	-	-	2.1E-11	-
HHGPLC-1	L-10	1.6E-08	0.00032	3.3E-08	0.00000017	0.00000025	0.0000020	3.3E-09	0.000014	0.00000098	8.5E-08	0.0000023	0.0000010	3.3E-08	-	-	1.9E-11	-
HHGPLC-1	L-11	1.6E-08	0.00027	5.2E-08	0.00000034	0.00000024	0.0000020	3.2E-09	0.000013	0.00000091	7.8E-08	0.0000022	0.0000010	0.00000019	-	-	1.8E-11	-
HHGPLC-1	L-12	1.6E-08	0.00026	2.6E-08	6.5E-08	0.00000024	0.0000018	3.3E-09	0.000014	0.00000098	7.8E-08	0.0000018	0.0000010	1.6E-08	-	-	2.1E-11	-
HHGPLC-1	L-13	1.6E-08	0.00022	1.9E-08	0.00000011	0.00000023	0.0000016	3.2E-09	0.000014	0.00000059	7.8E-08	0.0000016	0.0000010	3.9E-08	-	-	1.7E-11	-
HHGPLC-1	L-14	1.6E-08	0.00020	2.6E-08	0.00000022	0.00000023	0.0000014	3.3E-09	0.000013	0.00000063	7.8E-08	0.0000023	0.00000091	3.9E-08	-	-	1.9E-11	-
HHGPLC-1	L-15	1.6E-08	0.00018	2.0E-08	5.9E-08	0.0000002	0.0000012	3.3E-09	0.000012	0.00000048	6.5E-08	0.0000016	0.00000085	0.00000018	-	-	1.7E-11	-
HHGPLC-1	L-16	1.6E-08	0.00017	2.6E-08	5.9E-08	0.0000002	0.0000010	3.3E-09	0.000012	0.00000038	6.5E-08	0.0000014	0.00000085	0.00000022	-	-	1.5E-11	-
HHGPLC-1	L-17	1.6E-08	0.00016	2.0E-08	3.9E-08	0.0000002	0.0000011	3.3E-09	0.000012	0.00000025	5.9E-08	0.0000012	0.00000085	0.0000002	-	-	1.6E-11	-
HHGPLC-1	L-18	8.0E-09	0.00013	1.3E-08	1.3E-08	0.00000014	0.00000073	1.6E-09	0.0000086	0.00000025	3.8E-08	0.0000011	0.00000054	1.9E-08	-	-	1.1E-11	-
HHGPLC-1	L-19	8.1E-09	0.00012	1.3E-08	1.9E-08	0.00000015	0.00000074	1.6E-09	0.0000091	0.00000024	3.9E-08	0.00000081	0.00000055	4.5E-08	-	-	1.1E-11	-
HHGPLC-1	L-20	8.0E-09	0.00011	2.6E-08	1.6E-08	0.00000012	0.00000064	1.6E-09	0.0000087	0.00000048	3.5E-08	0.0000011	0.00000051	2.6E-08	-	-	1.2E-11	-
HHGPLC-1	L-21	8.1E-09	0.00010	5.2E-08	1.9E-08	0.00000012	0.00000065	3.2E-09	0.0000088	0.00000019	3.6E-08	0.00000088	0.00000052	5.8E-08	-	-	1.1E-11	-
HHGPLC-2	L-1	0.0000086	0.0019	0.0000086	0.000082	0.000013	0.000086	0.00000043	0.0011	0.000025	0.00000086	0.00086	0.000066	0.000095	-	-	2.2E-09	-
HHGPLC-2	L-2	0.00000025	0.00072	9.9E-08	0.00000099	0.0000019	0.000011	5.0E-08	0.00014	0.0000018	0.0000004	0.000040	0.0000061	0.00000069	-	-	2.1E-10	-
HHGPLC-2	L-3	0.00000072	0.00057	0.00000089	0.0000081	0.0000016	0.0000098	4.5E-08	0.00011	0.0000025	0.00000036	0.000041	0.0000065	0.00000054	-	-	3.1E-10	-
HHGPLC-2	L-4	4.4E-08	0.00047	8.8E-08	0.00000063	0.00000053	0.0000035	8.8E-09	0.000033	0.0000016	0.00000018	0.0000062	0.0000019	0.00000037	-	-	5.7E-11	-
HHGPLC-2	L-5	3.2E-08	0.00053	5.2E-08	0.00000055	0.00000043	0.0000036	6.5E-09	0.000026	0.0000017	0.00000016	0.0000048	0.0000017	0.0000001	-	-	3.5E-11	-
HHGPLC-2	L-6	1.6E-08	0.00049	3.9E-08	0.00000013	0.0000003	0.0000030	3.2E-09	0.000017	0.0000012	0.00000012	0.0000043	0.0000012	0.00000019	-	-	1.7E-11	-
HHGPLC-2	L-7	1.6E-08	0.00047	3.9E-08	0.00000012	0.00000029	0.0000031	3.3E-09	0.000016	0.0000011	0.00000011	0.0000033	0.0000012	1.6E-08	-	-	1.7E-11	-
HHGPLC-2	L-8	3.3E-08	0.00047	5.2E-08	9.2E-08	0.00000035	0.0000031	6.5E-09	0.000020	0.0000016	0.00000013	0.0000030	0.0000014	0.00000027	-	-	2.7E-11	-
HHGPLC-2	L-9	1.6E-08	0.00034	3.3E-08	8.5E-08	0.00000026	0.0000023	3.3E-09	0.000016	0.0000010	9.8E-08	0.0000021	0.0000011	3.3E-08	-	-	1.8E-11	-
HHGPLC-2	L-10	1.6E-08	0.00032	3.3E-08	7.9E-08	0.00000025	0.0000020	3.3E-09	0.000014	0.00000098	9.2E-08	0.0000024	0.0000010	1.6E-08	-	-	1.9E-11	-
HHGPLC-2	L-11	1.6E-08	0.00026	3.9E-08	0.00000012	0.00000024	0.0000019	3.2E-09	0.000013	0.00000084	7.8E-08	0.0000022	0.0000010	0.00000011	-	-	1.6E-11	-
HHGPLC-2	L-12	1.6E-08	0.00025	2.6E-08	9.8E-08	0.00000025	0.0000018	3.3E-09	0.000014	0.00000092	7.9E-08	0.0000020	0.0000010	1.6E-08	-	-	1.8E-11	-
HHGPLC-2	L-13	1.6E-08	0.00021	1.9E-08	6.5E-08	0.00000023	0.0000015	3.2E-09	0.000014	0.00000052	7.8E-08	0.0000014	0.0000010	3.9E-08	-	-	1.6E-11	-
HHGPLC-2	L-14	1.6E-08	0.00019	2.0E-08	0.00000012	0.00000022	0.0000014	3.3E-09	0.000014	0.00000064	7.9E-08	0.0000020	0.00000092	3.9E-08	-	-	1.9E-11	-
HHGPLC-2	L-15	1.6E-08	0.00017	1.3E-08	5.2E-08	0.0000002	0.0000012	3.3E-09	0.000013	0.00000051	6.5E-08	0.0000012	0.00000085	3.9E-08	-	-	1.7E-11	-
HHGPLC-2	L-16	1.6E-08	0.00016	2.0E-08	5.9E-08	0.0000002	0.0000010	3.3E-09	0.000013	0.00000037	5.9E-08	0.0000012	0.00000092	0.00000016	-	-	1.5E-11	-
HHGPLC-2	L-17	1.6E-08	0.00015	1.3E-08	3.9E-08	0.0000002	0.0000010	3.3E-09	0.000012	0.00000031	5.2E-08	0.0000012	0.00000085	0.00000016	-	-	1.8E-11	-
HHGPLC-2	L-18	8.1E-09	0.00012	9.8E-09	3.3E-08	0.00000014	0.00000065	1.6E-09	0.0000088	0.00000022	3.6E-08	0.00000081	0.00000055	2.0E-08	-	-	1.1E-11	-
HHGPLC-2	L-19	8.1E-09	0.00010	1.3E-08	4.2E-08	0.00000015	0.00000072	1.6E-09	0.0000091	0.00000021	3.6E-08	0.0000013	0.00000049	2.6E-08	-	-	1.1E-11	-
HHGPLC-2	L-20	8.1E-09	0.00010	2.0E-08	1.6E-08	0.00000012	0.00000062	6.5E-09	0.0000088	0.00000039	3.3E-08	0.0000011	0.00000052	8.1E-09	-	-	1.1E-11	-
HHGPLC-2	L-21	8.1E-09	0.000098	2.3E-08	2.9E-08	0.00000012	0.00000065	1.6E-09	0.0000091	0.00000019	3.2E-08	0.00000071	0.00000052	8.4E-08	-	-	8.8E-12	-
HHGPLC-3	L-1	0.000013	0.0018	0.000012	0.00014	0.000014	0.000093	0.00000042	0.0011	0.000025	0.00000085	0.0012	0.000073	0.000053	-	-	2.2E-09	-
HHGPLC-3	L-2	0.00000024	0.00061	0.0000002	0.0000012	0.0000020	0.0000098	4.9E-08	0.00014	0.0000020	0.00000039	0.000050	0.0000059	0.00000024	-	-	1.6E-10	-
HHGPLC-3	L-3	0.00000088	0.00061	0.00000053	0.000011	0.0000018	0.000011	4.4E-08	0.00011	0.0000030	0.00000035	0.000052	0.0000073	0.00000071	-	-	3.6E-10	-
HHGPLC-3	L-4	4.4E-08	0.00050	5.3E-08	0.00000028	0.00000056	0.0000035	8.8E-09	0.000035	0.0000014	0.00000018	0.0000058	0.0000021	0.00000028	-	-	5.2E-11	-
HHGPLC-3	L-5	3.2E-08	0.00046	5.2E-08	0.00000052	0.00000042	0.0000034	6.5E-09	0.000026	0.0000014	0.00000014	0.0000038	0.0000016	3.2E-08	-	-	2.9E-11	-
HHGPLC-3	L-6	1.6E-08	0.00038	3.2E-08	0.00000017	0.00000028	0.0000025	3.2E-09	0.000017	0.0000010	0.00000011	0.0000036	0.0000011	5.1E-08	-	-	1.6E-11	-
HHGPLC-3	L-7	1.6E-08	0.00038	2.6E-08	5.9E-08	0.00000028	0.0000025	3.3E-09	0.000017	0.00000091	9.8E-08	0.0000027	0.0000012	1.6E-08	-	-	1.7E-11	-
HHGPLC-3	L-8	3.3E-08	0.00040	3.9E-08	7.8E-08	0.00000034	0.0000027	6.5E-09	0.000021	0.0000013	0.00000012	0.0000029	0.0000016	0.00000038	-	-	3.5E-11	-
HHGPLC-3	L-9	1.6E-08	0.00032	3.2E-08	6.5E-08	0.00000025	0.0000021	3.2E-09	0.000016	0.00000091	9.1E-08	0.0000025	0.0000011	3.9E-08	-	-	2.8E-11	-
HHGPLC-3	L-10	1.6E-08	0.00030	2.6E-08	0.00000011	0.00000025	0.0000019	3.2E-09	0.000014	0.00000091	8.4E-08	0.0000023	0.0000011	3.2E-08	-	-	1.9E-11	-
HHGPLC-3	L-11	1.6E-08	0.00026	3.3E-08	0.00000011	0.00000024	0.0000018	3.3E-09	0.000014	0.00000085	7.8E-08	0.0000026	0.0000010	5.2E-08	-	-	1.9E-11	-
HHGPLC-3	L-12	1.6E-08	0.00026	2.6E-08	9.1E-08	0.00000024	0.0000017	3.2E-09	0.000014	0.00000091	7.8E-08	0.0000016	0.0000011	1.6E-08	-	-	1.8E-11	-
HHGPLC-3	L-13	1.6E-08	0.00022	2.6E-08	9.1E-08	0.00000024	0.0000016	3.3E-09	0.000014	0.00000055	7.8E-08	0.0000023	0.0000010	1.6E-08	-	-	1.9E-11	-
HHGPLC-3	L-14	1.6E-08	0.00020	2.0E-08	5.9E-08	0.00000023	0.0000014	3.3E-09	0.000014	0.00000059	7.8E-08	0.0000014	0.0000010	1.6E-08	-	-	1.8E-11	-
HHGPLC-3	L-15	1.6E-08	0.00018	2.0E-08	5.2E-08	0.00000021	0.0000012	3.3E-09	0.000012	0.00000056	6.5E-08	0.0000012	0.00000091	0.00000022	-	-	1.5E-11	-
HHGPLC-3	L-16	1.6E-08	0.00017	1.9E-08	4.5E-08	0.00000021	0.0000010	3.2E-09	0.000012	0.0000004	6.5E-08	0.0000018	0.00000084	0.00000011	-	-	1.7E-11	-
HHGPLC-3	L-17	1.6E-08	0.00017	2.6E-08	0.00000026	0.00000021	0.0000012	3.3E-09	0.000012	0.00000035	5.9E-08	0.0000020	0.00000085	7.8E-08	-	-	1.7E-11	-
HHGPLC-3	L-18	8.1E-09	0.00013	1.3E-08	3.9E-08	0.00000015	0.00000071	1.6E-09	0.0000084	0.00000025	3.9E-08	0.00000075	0.00000058	8.1E-09	-	-	1.1E-11	-
HHGPLC-3	L-19	8.1E-09	0.00011	1.3E-08	7.5E-08	0.00000015	0.00000075	1.6E-09	0.0000084	0.00000023	3.9E-08	0.0000014	0.00000052	2.9E-08	-	-	1.1E-11	-
HHGPLC-3	L-20	8.1E-09	0.00011	1.9E-08	2.3E-08	0.00000013	0.00000064	1.6E-09	0.0000084	0.00000048	3.5E-08	0.0000011	0.00000055	8.1E-09	-	-	1.1E-11	-
HHGPLC-3	L-21	8.1E-09	0.00010	1.6E-08	3.6E-08	0.00000013	0.00000068	3.3E-09	0.0000085	0.00000021	3.6E-08	0.0000010	0.00000052	3.9E-08	-	-	8.8E-12	-
HHGPLC-4	L-1	0.0000022	0.0011	0.0000043	0.000023	0.0000095	0.000055	0.00000043	0.00062	0.0000069	0.00000087	0.00026	0.000036	0.000053	-	-	2.3E-09	-
HHGPLC-4	L-2	0.00000024	0.00060	0.00000019	0.0000032	0.0000020	0.000010	4.7E-08	0.00014	0.0000023	0.00000038	0.000041	0.0000069	0.00000076	-	-	2.1E-10	-
HHGPLC-4	L-3	0.00000053	0.00058	0.00000035	0.0000061	0.0000020	0.000011	4.4E-08	0.00012	0.0000027	0.00000035	0.000040	0.0000075	0.00000044	-	-	4.0E-10	-
HHGPLC-4	L-4	4.3E-08	0.00048	5.2E-08	0.00000019	0.00000052	0.0000035	8.7E-09	0.000035	0.0000014	0.00000017	0.0000049	0.0000019	0.00000014	-	-	3.8E-11	-
HHGPLC-4	L-5	3.2E-08	0.00049	3.9E-08	0.0000004	0.00000043	0.0000034	6.5E-09	0.000026	0.0000017	0.00000014	0.0000036	0.0000017	6.5E-08	-	-	3.1E-11	-
HHGPLC-4	L-6	1.6E-08	0.00043	2.6E-08	8.4E-08	0.00000029	0.0000028	3.2E-09	0.000017	0.0000012	0.00000011	0.0000031	0.0000012	4.5E-08	-	-	1.7E-11	-
HHGPLC-4	L-7	1.6E-08	0.00042	7.1E-08	9.7E-08	0.00000029	0.0000028	3.2E-09	0.000016	0.0000010	0.0000001	0.0000023	0.0000012	1.6E-08	-	-	1.8E-11	-
HHGPLC-4	L-8	7.8E-08	0.00042	7.8E-08	0.00000099	0.00000036	0.0000029	6.5E-09	0.000021	0.0000016	0.00000013	0.0000036	0.0000017	0.00000016	-	-	3.5E-11	-
HHGPLC-4	L-9	4.5E-08	0.00032	5.1E-08	0.00000056	0.00000026	0.0000023	3.2E-09	0.000015	0.0000011	9.6E-08	0.0000028	0.0000012	7.1E-08	-	-	2.6E-11	-
HHGPLC-4	L-10	1.6E-08	0.00032	3.9E-08	0.00000033	0.00000025	0.0000020	3.3E-09	0.000015	0.00000098	9.1E-08	0.0000021	0.0000012	5.9E-08	-	-	1.9E-11	-
HHGPLC-4	L-11	1.6E-08	0.00027	2.6E-08	8.5E-08	0.00000023	0.0000019	3.3E-09	0.000014	0.00000078	7.8E-08	0.0000018	0.0000011	3.3E-08	-	-	1.9E-11	-
HHGPLC-4	L-12	1.6E-08	0.00026	2.6E-08	0.0000001	0.00000025	0.0000017	3.2E-09	0.000014	0.00000097	8.4E-08	0.0000017	0.0000011	1.6E-08	-	-	1.8E-11	-
HHGPLC-4	L-13	1.6E-08	0.00021	1.9E-08	6.5E-08	0.00000024	0.0000015	3.2E-09	0.000014	0.00000055	7.8E-08	0.0000013	0.0000010	3.9E-08	-	-	1.8E-11	-
HHGPLC-4	L-14	1.6E-08	0.00020	2.0E-08	0.0000001	0.00000024	0.0000014	3.3E-09	0.000014	0.00000065	7.8E-08	0.0000014	0.0000010	1.6E-08	-	-	2.1E-11	-
HHGPLC-4	L-15	1.6E-08	0.00018	2.0E-08	7.2E-08	0.00000022	0.0000012	3.3E-09	0.000013	0.0000005	6.5E-08	0.0000012	0.00000091	6.5E-08	-	-	1.8E-11	-
HHGPLC-4	L-16	1.6E-08	0.00017	2.0E-08	9.8E-08	0.00000021	0.0000010	3.3E-09	0.000013	0.00000038	6.5E-08	0.0000012	0.00000098	9.1E-08	-	-	1.6E-11	-
HHGPLC-4	L-17	1.6E-08	0.00016	2.0E-08	0.00000021	0.0000002	0.0000012	3.3E-09	0.000012	0.00000031	5.9E-08	0.0000012	0.00000091	6.5E-08	-	-	1.8E-11	-
HHGPLC-4	L-18	8.1E-09	0.00013	1.6E-08	0.0000001	0.00000015	0.00000068	1.6E-09	0.0000084	0.00000026	3.9E-08	0.0000013	0.00000058	8.1E-09	-	-	1.2E-11	-
HHGPLC-4	L-19	8.1E-09	0.00011	1.3E-08	9.1E-08	0.00000015	0.00000075	1.6E-09	0.0000088	0.00000024	3.9E-08	0.00000078	0.00000059	4.6E-08	-	-	8.8E-12	-
HHGPLC-4	L-20	8.1E-09	0.00011	1.3E-08	2.3E-08	0.00000013	0.00000065	1.6E-09	0.0000084	0.00000039	3.6E-08	0.00000071	0.00000058	8.1E-09	-	-	1.2E-11	-
HHGPLC-4	L-21	8.1E-09	0.00010	1.6E-08	2.6E-08	0.00000013	0.00000065	1.6E-09	0.0000088	0.00000019	3.6E-08	0.0000010	0.00000052	3.6E-08	-	-	1.1E-11	-

- Parameter not analyzed

Appendix E, Table E-16
HHGPHC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s
HHGPHC-1	L-1	2019-10-22	0.080	0.076	0.15	0.00067	4233	1.00	4.2	0.044	9.6	0.85	1260	0.0069	0.18	0.15	0.028	0.0069	1.5	0.51	0.21	0.0028
HHGPHC-1	L-2	2019-10-23	1.0	0.076	0.15	0.00067	4437	1.00	4.4	0.044	10	0.85	1260	0.00063	0.10	0.00063	0.044	0.010	0.71	0.26	0.10	0.0038
HHGPHC-1	L-3	2019-10-24	2.0	0.076	0.15	0.00067	4443	1.00	4.4	0.044	10	0.85	1260	0.00058	0.17	0.00058	0.039	0.035	0.52	0.18	0.072	0.0012
HHGPHC-1	L-4	2019-10-29	7.0	0.076	0.15	0.00067	4442	1.00	4.4	0.044	10	0.85	1260	0.00012	0.068	0.00012	0.0083	0.018	0.27	0.098	0.039	0.00093
HHGPHC-1	L-5	2019-11-12	21	0.076	0.15	0.00067	4446	1.00	4.4	0.044	10	0.85	1260	0.000041	0.044	0.000041	0.0027	0.013	0.12	0.055	0.022	0.00025
HHGPHC-1	L-6	2019-11-26	35	0.076	0.15	0.00067	4445	1.00	4.4	0.044	10	0.85	1260	0.000041	0.031	0.000041	0.0029	0.0090	0.086	0.052	0.021	0.00017
HHGPHC-1	L-7	2019-12-10	49	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	0.000041	0.024	0.000041	0.0039	0.0059	0.072	0.052	0.021	0.000083
HHGPHC-1	L-8	2019-12-17	56	0.076	0.15	0.00067	4445	1.00	4.4	0.044	10	0.85	1260	0.000083	0.039	0.000083	0.0058	0.0099	0.083	0.062	0.025	0.000083
HHGPHC-1	L-9	2019-12-31	70	0.076	0.15	0.00067	4443	1.00	4.4	0.044	10	0.85	1260	0.000041	0.018	0.000041	0.0026	0.0047	0.057	0.044	0.018	0.000041
HHGPHC-1	L-10	2020-01-14	84	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	0.000041	0.020	0.000041	0.0030	0.0051	0.053	0.040	0.016	0.000041
HHGPHC-1	L-11	2020-01-28	98	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	0.000041	0.020	0.000041	0.0017	0.0059	0.051	0.041	0.016	0.000083
HHGPHC-1	L-12	2020-02-11	112	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	0.000041	0.014	0.000041	0.0035	0.0029	0.047	0.037	0.015	0.000041
HHGPHC-1	L-13	2020-02-25	126	0.076	0.15	0.00067	4449	1.00	4.5	0.044	10	0.85	1260	0.000041	0.017	0.000041	0.0025	0.0043	0.047	0.036	0.015	0.000041
HHGPHC-1	L-14	2020-03-10	140	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	0.000041	0.015	0.000041	0.0022	0.0039	0.043	0.032	0.013	0.000041
HHGPHC-1	L-15	2020-03-24	154	0.076	0.15	0.00067	4444	1.00	4.5	0.044	10	0.85	1260	0.000041	0.017	0.000041	0.0020	0.0046	0.041	0.031	0.012	0.000041
HHGPHC-1	L-16	2020-04-07	168	0.076	0.15	0.00067	4447	1.00	4.5	0.044	10	0.85	1260	0.000041	0.016	0.000041	0.0035	0.0033	0.040	0.029	0.011	0.000041
HHGPHC-1	L-17	2020-04-21	182	0.076	0.15	0.00067	4442	1.00	4.4	0.044	10	0.85	1260	0.000041	0.014	0.000041	0.0033	0.0031	0.042	0.030	0.012	0.000041
HHGPHC-2	L-1	2019-10-22	0.080	0.076	0.15	0.00067	4229	1.00	4.2	0.044	9.5	0.84	1251	0.0069	0.17	0.14	0.028	0.0069	1.3	0.55	0.22	0.0055
HHGPHC-2	L-2	2019-10-23	1.0	0.076	0.15	0.00067	4439	1.00	4.4	0.044	10	0.84	1251	0.00063	0.099	0.00063	0.039	0.011	0.71	0.28	0.11	0.0025
HHGPHC-2	L-3	2019-10-24	2.0	0.076	0.15	0.00067	4445	1.00	4.4	0.044	10	0.84	1251	0.00058	0.16	0.00058	0.042	0.030	0.51	0.18	0.073	0.0023
HHGPHC-2	L-4	2019-10-29	7.0	0.076	0.15	0.00067	4446	1.00	4.4	0.044	10	0.84	1251	0.00012	0.065	0.00012	0.0086	0.017	0.27	0.095	0.038	0.00070
HHGPHC-2	L-5	2019-11-12	21	0.076	0.15	0.00067	4447	1.00	4.4	0.044	10	0.84	1251	0.000041	0.042	0.000041	0.0029	0.013	0.12	0.054	0.022	0.00025
HHGPHC-2	L-6	2019-11-26	35	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.84	1251	0.000041	0.029	0.000041	0.0027	0.0085	0.087	0.054	0.021	0.00017
HHGPHC-2	L-7	2019-12-10	49	0.076	0.15	0.00067	4449	1.00	4.5	0.044	10	0.84	1251	0.000041	0.022	0.000041	0.0027	0.0061	0.071	0.052	0.021	0.000041
HHGPHC-2	L-8	2019-12-17	56	0.076	0.15	0.00067	4446	1.00	4.5	0.044	10	0.84	1251	0.000083	0.037	0.000083	0.0048	0.0099	0.081	0.064	0.026	0.000083
HHGPHC-2	L-9	2019-12-31	70	0.076	0.15	0.00067	4446	1.00	4.4	0.044	10	0.84	1251	0.000041	0.019	0.000041	0.0033	0.0045	0.057	0.044	0.018	0.000041
HHGPHC-2	L-10	2020-01-14	84	0.076	0.15	0.00067	4442	1.00	4.4	0.044	10	0.84	1251	0.000041	0.019	0.000041	0.0024	0.0051	0.051	0.039	0.016	0.000041
HHGPHC-2	L-11	2020-01-28	98	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.84	1251	0.000041	0.019	0.000041	0.0021	0.0054	0.050	0.041	0.016	0.000041
HHGPHC-2	L-12	2020-02-11	112	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.84	1251	0.000041	0.013	0.000041	0.0028	0.0029	0.046	0.036	0.015	0.000041
HHGPHC-2	L-13	2020-02-25	126	0.076	0.15	0.00067	4449	1.00	4.5	0.044	10	0.84	1251	0.000041	0.017	0.000041	0.0027	0.0041	0.046	0.036	0.014	0.000041
HHGPHC-2	L-14	2020-03-10	140	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.84	1251	0.000041	0.016	0.000041	0.0026	0.0038	0.042	0.032	0.013	0.000083
HHGPHC-2	L-15	2020-03-24	154	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.84	1251	0.000041	0.016	0.000041	0.0018	0.0046	0.042	0.031	0.012	0.000041
HHGPHC-2	L-16	2020-04-07	168	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.84	1251	0.000041	0.014	0.000041	0.0033	0.0029	0.040	0.029	0.011	0.000041
HHGPHC-2	L-17	2020-04-21	182	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.84	1251	0.000041	0.014	0.000041	0.0031	0.0031	0.040	0.030	0.012	0.000041
HHGPHC-3	L-1	2019-10-22	0.080	0.076	0.15	0.00067	4234	1.00	4.2	0.044	9.6	0.85	1261	0.0069	0.15	0.055	0.069	0.0069	1.4	0.55	0.22	0.0028
HHGPHC-3	L-2	2019-10-23	1.0	0.076	0.15	0.00067	4442	1.00	4.4	0.044	10	0.85	1261	0.00063	0.082	0.00063	0.035	0.0076	0.73	0.28	0.11	0.0025
HHGPHC-3	L-3	2019-10-24	2.0	0.076	0.15	0.00067	4446	1.00	4.5	0.044	10	0.85	1261	0.00058	0.15	0.00058	0.036	0.030	0.51	0.18	0.073	0.0012
HHGPHC-3	L-4	2019-10-29	7.0	0.076	0.15	0.00067	4444	1.00	4.4	0.044	10	0.85	1261	0.00012	0.064	0.00012	0.0086	0.017	0.26	0.095	0.038	0.00070
HHGPHC-3	L-5	2019-11-12	21	0.076	0.15	0.00067	4447	1.00	4.4	0.044	10	0.85	1261	0.000041	0.042	0.000041	0.0036	0.012	0.12	0.053	0.021	0.00025
HHGPHC-3	L-6	2019-11-26	35	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1261	0.000041	0.032	0.000041	0.0028	0.0092	0.085	0.054	0.022	0.00017
HHGPHC-3	L-7	2019-12-10	49	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1261	0.000041	0.022	0.000041	0.0030	0.0059	0.071	0.052	0.021	0.000041
HHGPHC-3	L-8	2019-12-17	56	0.076	0.15	0.00067	4447	1.00	4.5	0.044	10	0.85	1261	0.000083	0.037	0.000083	0.0041	0.010	0.080	0.064	0.026	0.000083
HHGPHC-3	L-9	2019-12-31	70	0.076	0.15	0.00067	4444	1.00	4.4	0.044	10	0.85	1261	0.000041	0.019	0.000041	0.0031	0.0046	0.057	0.044	0.018	0.000041
HHGPHC-3	L-10	2020-01-14	84	0.076	0.15	0.00067	4438	1.00	4.4	0.044	10	0.85	1261	0.000041	0.019	0.000041	0.0023	0.0051	0.052	0.039	0.016	0.000041
HHGPHC-3	L-11	2020-01-28	98	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1261	0.000041	0.020	0.000041	0.0024	0.0055	0.050	0.041	0.016	0.000041
HHGPHC-3	L-12	2020-02-11	112	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.85	1261	0.000041	0.013	0.000041	0.0027	0.0028	0.048	0.037	0.015	0.000041
HHGPHC-3	L-13	2020-02-25	126	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.85	1261	0.000041	0.017	0.000041	0.0033	0.0041	0.047	0.037	0.015	0.000041
HHGPHC-3	L-14	2020-03-10	140	0.076	0.15	0.00067	4449	1.00	4.5	0.044	10	0.85	1261	0.000041	0.015	0.000041	0.0024	0.0039	0.043	0.032	0.013	0.000041
HHGPHC-3	L-15	2020-03-24	154	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.85	1261	0.000041	0.017	0.000041	0.0022	0.0045	0.042	0.032	0.013	0.000041
HHGPHC-3	L-16	2020-04-07	168	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1261	0.000041	0.014	0.000041	0.0027	0.0031	0.040	0.029	0.012	0.000041
HHGPHC-3	L-17	2020-04-21	182	0.076	0.15	0.00067	4452	1.00	4.5	0.044	10	0.85	1261	0.000042	0.015	0.000042	0.0031	0.0032	0.043	0.030	0.012	0.000042
HHGPHC-4	L-1	2019-10-22	0.080	0.076	0.15	0.00068	4275	1.00	4.3	0.045	9.5	0.85	1252	0.0069	0.11	0.0069	0.069	0.0069	1.5	0.51	0.21	0.0028
HHGPHC-4	L-2	2019-10-23	1.0	0.076	0.15	0.00068	4489	1.00	4.5	0.045	10	0.85	1252	0.00063	0.11	0.00063	0.037	0.018	0.69	0.26	0.10	0.0025
HHGPHC-4	L-3	2019-10-24	2.0	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	0.00058	0.17	0.00058	0.041	0.036	0.51	0.19	0.074	0.0023
HHGPHC-4	L-4	2019-10-29	7.0	0.076	0.15	0.00068	4494	1.00	4.5	0.045	10	0.85	1252	0.00012	0.063	0.00012	0.0079	0.017	0.27	0.100	0.040	0.00093
HHGPHC-4	L-5	2019-11-12	21	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	0.000041	0.045	0.000041	0.0026	0.014	0.13	0.057	0.023	0.00025
HHGPHC-4	L-6	2019-11-26	35	0.076	0.15	0.00068	4494	1.00	4.5	0.045	10	0.85	1252	0.000041	0.033	0.000041	0.0027	0.0096	0.089	0.055	0.022	0.00017
HHGPHC-4	L-7	2019-12-10	49	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	0.000041	0.022	0.000041	0.0027	0.0061	0.072	0.053	0.021	0.000041
HHGPHC-4	L-8	2019-12-17	56	0.076	0.15	0.00068	4494	1.00	4.5	0.045	10	0.85	1252	0.000083	0.038	0.000083	0.0058	0.0096	0.082	0.064	0.026	0.000083
HHGPHC-4	L-9	2019-12-31	70	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	0.000041	0.017	0.000041	0.0027	0.0044	0.058	0.045	0.018	0.000041
HHGPHC-4	L-10	2020-01-14	84	0.076	0.15	0.00068	4486	1.00	4.5	0.045	10	0.85	1252	0.000041	0.019	0.000041	0.0026	0.0050	0.051	0.041	0.016	0.000041
HHGPHC-4	L-11	2020-01-28	98	0.076	0.15	0.00068	4780	1.00	4.8	0.045	11	0.85	1252	0.000044	0.021	0.000044	0.0028	0.0056	0.053	0.044	0.017	0.000044
HHGPHC-4	L-12	2020-02-11	112	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	0.000041	0.013	0.000041	0.0026	0.0028	0.047	0.038	0.015	0.000083
HHGPHC-4	L-13	2020-02-25	126	0.076	0.15	0.00068	4496	1.00	4.5	0.045	10	0.85	1252	0.000041	0.017	0.000041	0.0030	0.0041	0.048	0.036	0.015	0.000041
HHGPHC-4	L-14	2020-03-10	140	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	0.000041	0.016	0.000041	0.0026	0.0038	0.043	0.032	0.013	0.000041
HHGPHC-4	L-15	2020-03-24	154	0.076	0.15	0.00068	4496	1.00	4.5	0.045	10	0.85	1252	0.000041	0.017	0.000041	0.0022	0.0045	0.042	0.032	0.013	0.000041
HHGPHC-4	L-16	2020-04-07	168	0.076	0.15	0.00068	4496	1.00	4.5	0.045	10	0.85	1252	0.000041	0.014	0.000041	0.0028	0.0031	0.040	0.030	0.012	0.000041
HHGPHC-4	L-17	2020-04-21	182	0.076	0.15	0.00068	4497	1.00	4.5	0.045	10	0.85	1252	0.000042	0.016	0.000042	0.0035	0.0033	0.041	0.029	0.012	0.000042

- Parameter not analyzed

Appendix E, Table E-16
HHGPHC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-P/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HHGPHC-1	L-1	0.00028	0.094	0.00069	0.17	0.000069	0.000063	0.000062	0.000069	0.83	0.00000035	0.0021	0.00014	0.000069	0.000098	0.00000069	6.9E-08	0.0000014	0.00017	0.000014	0.00050	6.9E-09
HHGPHC-1	L-2	0.000088	0.043	0.00013	0.098	0.000088	0.0000057	0.0000057	0.0000063	0.35	3.1E-08	0.00094	0.000025	0.0000063	0.000044	6.3E-08	6.3E-08	0.00000013	0.000055	0.0000013	0.000035	6.3E-10
HHGPHC-1	L-3	0.000058	0.027	0.000058	0.077	0.000035	0.0000053	0.0000052	0.0000058	0.21	2.9E-08	0.00065	0.000013	0.0000058	0.000036	5.8E-08	2.3E-08	5.8E-08	0.000035	0.00000058	0.000014	5.8E-10
HHGPHC-1	L-4	0.000037	0.013	0.000012	0.043	0.000021	0.0000011	0.0000010	0.0000012	0.11	5.8E-09	0.000063	0.0000093	0.0000012	0.000012	1.2E-08	1.2E-08	1.2E-08	0.000025	0.0000003	0.0000014	1.2E-10
HHGPHC-1	L-5	0.000016	0.0041	0.0000041	0.015	0.000016	0.00000038	0.00000037	0.00000041	0.053	2.1E-09	0.0000042	0.0000045	0.00000041	0.0000047	4.1E-09	7.5E-09	8.3E-09	0.000012	0.00000018	0.00000036	8.3E-11
HHGPHC-1	L-6	0.000012	0.0013	0.0000041	0.0056	0.000012	0.00000038	0.0000015	0.00000041	0.035	2.1E-09	0.0000048	0.0000027	0.00000041	0.0000053	4.1E-09	4.1E-09	4.1E-09	0.0000069	0.00000017	0.00000036	4.1E-11
HHGPHC-1	L-7	0.000012	0.00048	0.0000041	0.0020	0.0000083	0.00000038	0.00000037	0.0000017	0.027	2.1E-09	0.0000064	0.0000017	0.00000041	0.0000057	4.1E-09	8.3E-10	4.1E-09	0.0000049	0.00000013	0.0000004	4.1E-11
HHGPHC-1	L-8	0.000013	0.00028	0.0000083	0.0010	0.000015	0.00000075	0.00000075	0.0000033	0.027	4.1E-09	0.000045	0.0000015	0.00000083	0.000012	8.3E-09	8.3E-10	8.3E-09	0.0000048	0.00000017	0.0000012	8.3E-11
HHGPHC-1	L-9	0.0000091	0.00014	0.0000041	0.00043	0.0000033	0.00000038	0.00000037	0.0000033	0.022	2.1E-09	0.0000099	0.0000011	0.00000041	0.0000055	4.1E-09	1.7E-09	4.1E-09	0.0000035	0.00000012	0.00000051	4.1E-11
HHGPHC-1	L-10	0.0000083	0.000099	0.0000041	0.00021	0.000012	0.00000038	0.00000037	0.00000041	0.020	2.1E-09	0.000012	0.00000083	0.00000041	0.0000060	4.1E-09	2.5E-09	4.1E-09	0.0000032	0.00000011	0.00000052	4.1E-11
HHGPHC-1	L-11	0.0000075	0.000075	0.0000041	0.00012	0.0000041	0.00000038	0.0000011	0.00000041	0.019	2.1E-09	0.000015	0.00000075	0.00000041	0.0000059	4.1E-09	4.1E-10	4.1E-09	0.0000030	9.9E-08	0.00000075	4.1E-11
HHGPHC-1	L-12	0.0000083	0.000058	0.0000041	0.000075	0.000013	0.00000038	0.00000037	0.00000041	0.017	2.1E-09	0.000017	0.00000065	0.00000041	0.0000060	4.1E-09	4.1E-10	4.1E-09	0.0000027	9.9E-08	0.00000051	4.1E-11
HHGPHC-1	L-13	0.0000091	0.000050	0.0000041	0.000066	0.0000100	0.00000038	0.00000037	0.00000041	0.017	2.1E-09	0.000021	0.0000006	0.00000041	0.0000058	4.1E-09	4.1E-10	4.1E-09	0.0000025	9.1E-08	0.00000061	4.1E-11
HHGPHC-1	L-14	0.0000050	0.000050	0.0000041	0.000050	0.000013	0.00000038	0.00000037	0.00000041	0.016	2.1E-09	0.000023	0.00000054	0.00000041	0.0000061	4.1E-09	8.3E-10	4.1E-09	0.0000022	1.0E-07	0.00000082	4.1E-11
HHGPHC-1	L-15	0.0000066	0.000041	0.0000041	0.000041	0.0000033	0.00000038	0.00000037	0.00000041	0.016	2.1E-09	0.000027	0.00000047	0.00000041	0.0000056	4.1E-09	1.7E-09	4.1E-09	0.0000021	8.3E-08	0.00000056	4.1E-11
HHGPHC-1	L-16	0.0000066	0.000033	0.0000041	0.000033	0.00000041	0.00000038	0.00000037	0.0000017	0.015	2.1E-09	0.000031	0.0000005	0.00000041	0.0000057	4.1E-09	1.7E-09	4.1E-09	0.0000021	8.3E-08	0.00000055	4.1E-11
HHGPHC-1	L-17	0.0000066	0.000033	0.0000041	0.000033	0.00000041	0.00000038	0.00000037	0.00000041	0.015	2.1E-09	0.000034	0.00000046	0.00000041	0.0000058	4.1E-09	8.3E-10	4.1E-09	0.0000020	8.3E-08	0.00000078	4.1E-11
HHGPHC-2	L-1	0.00028	0.083	0.00069	0.14	0.000069	0.000063	0.000062	0.000069	0.76	0.00000035	0.0022	0.00014	0.000069	0.00010	0.00000069	0.00000028	0.0000028	0.00017	0.000017	0.00069	6.9E-09
HHGPHC-2	L-2	0.000088	0.042	0.00013	0.093	0.000088	0.0000057	0.0000057	0.0000063	0.38	3.1E-08	0.00088	0.000026	0.000013	0.000043	6.3E-08	2.5E-08	6.3E-08	0.000059	0.0000010	0.000018	6.3E-10
HHGPHC-2	L-3	0.000058	0.026	0.000058	0.074	0.000035	0.0000053	0.0000052	0.0000058	0.22	2.9E-08	0.00066	0.000012	0.0000058	0.000036	5.8E-08	2.3E-08	5.8E-08	0.000036	0.00000058	0.000014	5.8E-10
HHGPHC-2	L-4	0.000032	0.012	0.000012	0.042	0.000023	0.0000011	0.0000010	0.0000046	0.11	5.8E-09	0.000067	0.0000090	0.0000012	0.000013	1.2E-08	7.0E-09	1.2E-08	0.000026	0.0000003	0.0000020	1.2E-10
HHGPHC-2	L-5	0.000017	0.0040	0.0000041	0.015	0.000014	0.00000038	0.0000011	0.00000041	0.052	2.1E-09	0.0000044	0.0000045	0.00000041	0.0000048	4.1E-09	6.6E-09	8.3E-09	0.000012	0.00000018	0.00000042	1.7E-10
HHGPHC-2	L-6	0.0000099	0.0013	0.0000041	0.0056	0.000012	0.00000038	0.0000022	0.00000041	0.034	2.1E-09	0.0000050	0.0000026	0.00000041	0.0000054	4.1E-09	2.5E-09	4.1E-09	0.0000074	0.00000016	0.00000046	4.1E-11
HHGPHC-2	L-7	0.000012	0.00047	0.0000041	0.0020	0.0000091	0.00000038	0.00000037	0.00000041	0.027	2.1E-09	0.0000069	0.0000017	0.00000041	0.0000059	4.1E-09	2.5E-09	4.1E-09	0.0000053	0.00000013	0.00000041	4.1E-11
HHGPHC-2	L-8	0.000015	0.00028	0.0000083	0.00098	0.000015	0.00000075	0.00000075	0.00000083	0.027	4.1E-09	0.000046	0.0000014	0.00000083	0.000012	8.3E-09	1.7E-09	8.3E-09	0.0000051	0.00000015	0.0000017	8.3E-11
HHGPHC-2	L-9	0.0000083	0.00014	0.0000041	0.00042	0.0000041	0.00000038	0.00000037	0.0000041	0.022	2.1E-09	0.000012	0.0000011	0.00000041	0.0000057	4.1E-09	1.7E-09	4.1E-09	0.0000038	0.00000012	0.0000007	4.1E-11
HHGPHC-2	L-10	0.0000075	0.000091	0.0000041	0.00020	0.000012	0.00000038	0.00000037	0.00000083	0.020	2.1E-09	0.000013	0.00000091	0.00000041	0.0000060	4.1E-09	8.3E-10	4.1E-09	0.0000036	0.00000011	0.00000056	4.1E-11
HHGPHC-2	L-11	0.0000066	0.000083	0.0000041	0.00012	0.0000058	0.00000038	0.00000094	0.00000041	0.020	2.1E-09	0.000015	0.00000074	0.00000041	0.0000059	4.1E-09	4.1E-10	4.1E-09	0.0000032	9.9E-08	0.00000083	4.1E-11
HHGPHC-2	L-12	0.0000091	0.000058	0.0000041	0.000075	0.000012	0.00000038	0.00000037	0.00000041	0.018	2.1E-09	0.000018	0.00000066	0.00000041	0.0000060	4.1E-09	8.3E-10	4.1E-09	0.0000029	9.1E-08	0.00000059	4.1E-11
HHGPHC-2	L-13	0.0000058	0.000050	0.0000041	0.000066	0.000012	0.00000038	0.00000037	0.00000041	0.017	2.1E-09	0.000021	0.00000059	0.00000041	0.0000058	4.1E-09	8.3E-10	4.1E-09	0.0000027	1.0E-07	0.00000091	4.1E-11
HHGPHC-2	L-14	0.0000041	0.000050	0.0000041	0.000050	0.0000075	0.00000038	0.00000037	0.00000041	0.016	2.1E-09	0.000023	0.00000053	0.00000041	0.0000060	4.1E-09	1.7E-09	4.1E-09	0.0000025	8.3E-08	0.00000061	4.1E-11
HHGPHC-2	L-15	0.0000058	0.000041	0.0000041	0.000041	0.00000041	0.00000038	0.00000037	0.00000041	0.016	2.1E-09	0.000027	0.0000005	0.00000041	0.0000056	4.1E-09	4.1E-10	4.1E-09	0.0000023	7.5E-08	0.00000058	4.1E-11
HHGPHC-2	L-16	0.0000066	0.000033	0.0000041	0.000033	0.00000041	0.00000038	0.00000037	0.0000017	0.015	2.1E-09	0.000032	0.00000048	0.00000041	0.0000058	4.1E-09	4.1E-10	4.1E-09	0.0000023	8.3E-08	0.00000083	4.1E-11
HHGPHC-2	L-17	0.0000066	0.000033	0.0000041	0.000033	0.00000041	0.00000038	0.00000037	0.00000041	0.015	2.1E-09	0.000035	0.00000044	0.00000041	0.0000058	4.1E-09	1.7E-09	4.1E-09	0.0000022	7.5E-08	0.0000006	4.1E-11
HHGPHC-3	L-1	0.00028	0.086	0.00069	0.15	0.000069	0.000063	0.000062	0.000069	0.79	0.00000035	0.0019	0.00014	0.000069	0.00010	0.00000069	6.9E-08	0.0000014	0.00014	0.000014	0.00057	6.9E-09
HHGPHC-3	L-2	0.000088	0.043	0.00013	0.091	0.00010	0.0000057	0.0000057	0.0000063	0.38	3.2E-08	0.00079	0.000026	0.0000063	0.000042	6.3E-08	6.3E-09	6.3E-08	0.000053	0.0000010	0.000015	6.3E-10
HHGPHC-3	L-3	0.000058	0.026	0.000058	0.075	0.000046	0.0000053	0.0000052	0.0000058	0.22	2.9E-08	0.00065	0.000013	0.0000058	0.000035	5.8E-08	1.2E-08	5.8E-08	0.000033	0.00000058	0.000014	5.8E-10
HHGPHC-3	L-4	0.000037	0.012	0.000012	0.042	0.000016	0.0000011	0.0000010	0.0000012	0.11	5.8E-09	0.000067	0.0000090	0.0000012	0.000013	1.2E-08	4.6E-09	1.2E-08	0.000022	0.00000028	0.0000015	1.2E-10
HHGPHC-3	L-5	0.000017	0.0038	0.0000041	0.015	0.000012	0.00000038	0.00000037	0.00000041	0.051	2.1E-09	0.0000041	0.0000044	0.00000041	0.0000048	4.1E-09	1.7E-09	8.3E-09	0.000011	0.00000017	0.00000063	8.3E-11
HHGPHC-3	L-6	0.000012	0.0012	0.0000041	0.0055	0.000012	0.00000038	0.0000017	0.00000041	0.034	2.1E-09	0.0000051	0.0000026	0.00000041	0.0000054	4.1E-09	2.5E-09	4.1E-09	0.0000061	0.00000016	0.00000049	4.1E-11
HHGPHC-3	L-7	0.000012	0.00046	0.0000041	0.0019	0.000011	0.00000038	0.00000037	0.00000041	0.027	2.1E-09	0.0000068	0.0000017	0.00000041	0.0000059	4.1E-09	2.5E-09	4.1E-09	0.0000042	0.00000013	0.0000008	4.1E-11
HHGPHC-3	L-8	0.000015	0.00028	0.0000083	0.00096	0.000017	0.00000075	0.00000075	0.00000083	0.027	4.1E-09	0.000046	0.0000014	0.00000083	0.000012	8.3E-09	3.3E-09	8.3E-09	0.0000041	0.00000015	0.0000018	8.3E-11
HHGPHC-3	L-9	0.0000091	0.00014	0.0000041	0.00041	0.0000066	0.00000038	0.00000037	0.00000041	0.022	2.1E-09	0.000012	0.0000011	0.00000041	0.0000056	4.1E-09	8.3E-10	4.1E-09	0.0000031	0.00000011	0.00000052	4.1E-11
HHGPHC-3	L-10	0.0000066	0.000099	0.0000041	0.00020	0.000013	0.00000038	0.00000037	0.00000041	0.020	2.1E-09	0.000012	0.00000083	0.00000041	0.0000060	4.1E-09	4.1E-10	4.1E-09	0.0000028	0.00000012	0.00000091	4.1E-11
HHGPHC-3	L-11	0.0000066	0.000083	0.0000041	0.00012	0.0000066	0.00000038	0.00000075	0.00000041	0.019	2.1E-09	0.000015	0.00000074	0.00000041	0.0000059	4.1E-09	8.3E-10	4.1E-09	0.0000025	9.9E-08	0.00000067	4.1E-11
HHGPHC-3	L-12	0.0000083	0.000058	0.0000041	0.000075	0.000012	0.00000038	0.00000037	0.00000041	0.018	2.1E-09	0.000017	0.00000064	0.00000041	0.0000060	4.1E-09	4.1E-10	4.1E-09	0.0000023	9.1E-08	0.00000062	1.7E-10
HHGPHC-3	L-13	0.0000050	0.000050	0.0000041	0.000066	0.000011	0.00000038	0.00000037	0.00000041	0.017	2.1E-09	0.000020	0.00000058	0.00000041	0.0000056	4.1E-09	8.3E-10	4.1E-09	0.0000021	9.1E-08	0.00000059	4.1E-11
HHGPHC-3	L-14	0.0000050	0.000041	0.0000041	0.000050	0.0000083	0.00000038	0.00000037	0.00000041	0.017	2.1E-09	0.000022	0.00000053	0.00000041	0.0000059	4.1E-09	4.1E-10	4.1E-09	0.0000019	9.1E-08	0.00000059	4.1E-11
HHGPHC-3	L-15	0.0000058	0.000041	0.0000041	0.000033	0.00000041	0.00000038	0.00000037	0.00000041	0.016	2.1E-09	0.000026	0.0000005	0.00000041	0.0000056	4.1E-09	8.3E-10	4.1E-09	0.0000017	8.3E-08	0.00000091	4.1E-11
HHGPHC-3	L-16	0.0000066	0.000033	0.0000041	0.000033	0.00000041	0.00000038	0.00000037	0.0000017	0.015	2.1E-09	0.000030	0.00000048	0.00000041	0.0000058	4.1E-09	4.1E-10	4.1E-09	0.0000017	9.1E-08	0.0000010	4.1E-11
HHGPHC-3	L-17	0.0000058	0.000033	0.0000042	0.000033	0.00000042	0.00000038	0.00000037	0.00000042	0.015	2.1E-09	0.000035	0.00000044	0.00000042	0.0000058	4.2E-09	4.2E-10	4.2E-09	0.0000017	7.5E-08	0.0000007	4.2E-11
HHGPHC-4	L-1	0.00014	0.086	0.00069	0.18	0.000069	0.000063	0.000062	0.000069	0.79	0.00000035	0.0022	0.00011	0.000069	0.00011	0.00000069	0.00000014	0.0000028	0.00017	0.000018	0.00073	6.9E-09
HHGPHC-4	L-2	0.000088	0.040	0.000063	0.088	0.00032	0.0000057	0.0000057	0.0000063	0.33	3.2E-08	0.00068	0.000023	0.0000063	0.000047	6.3E-08	6.3E-09	6.3E-08	0.000053	0.0000010	0.000028	6.3E-10
HHGPHC-4	L-3	0.000070	0.027	0.000058	0.075	0.000058	0.0000053	0.0000052	0.0000058	0.20	2.9E-08	0.00046	0.000012	0.0000058	0.000036	5.8E-08	5.8E-09	5.8E-08	0.000033	0.00000058	0.000014	5.8E-10
HHGPHC-4	L-4	0.000039	0.013	0.000012	0.042	0.000016	0.0000011	0.0000010	0.0000012	0.11	5.8E-09	0.000042	0.0000093	0.0000012	0.000012	1.2E-08	1.4E-08	1.2E-08	0.000022	0.0000003	0.0000021	1.2E-10
HHGPHC-4	L-5	0.000017	0.0041	0.0000041	0.016	0.000014	0.00000038	0.00000037	0.00000041	0.055	2.1E-09	0.0000030	0.0000047	0.00000041	0.0000047	4.1E-09	4.1E-09	8.3E-09	0.000011	0.00000017	0.00000055	8.3E-11
HHGPHC-4	L-6	0.000012	0.0013	0.0000041	0.0056	0.000013	0.00000038	0.0000013	0.00000041	0.036	2.1E-09	0.0000041	0.0000027	0.00000041	0.0000055	4.1E-09	8.3E-10	4.1E-09	0.0000063	0.00000016	0.00000036	4.1E-11
HHGPHC-4	L-7	0.000012	0.00047	0.0000041	0.0019	0.0000099	0.00000038	0.00000037	0.00000041	0.027	2.1E-09	0.0000057	0.0000017	0.00000041	0.0000059	4.1E-09	8.3E-10	4.1E-09	0.0000043	0.00000013	0.00000033	4.1E-11
HHGPHC-4	L-8	0.000012	0.00028	0.0000083	0.00098	0.000017	0.00000075	0.00000075	0.0000033	0.028	4.1E-09	0.000041	0.0000015	0.00000083	0.000012	8.3E-09	1.7E-09	8.3E-09	0.0000043	0.00000015	0.0000014	8.3E-11
HHGPHC-4	L-9	0.0000083	0.00013	0.0000041	0.00041	0.0000050	0.00000038	0.00000037	0.00000083	0.022	2.1E-09	0.0000099	0.0000011	0.00000041	0.0000057	4.1E-09	8.3E-10	4.1E-09	0.0000031	0.00000012	0.00000041	4.1E-11
HHGPHC-4	L-10	0.0000066	0.000099	0.0000041	0.00020	0.000013	0.00000038	0.00000037	0.00000041	0.021	2.1E-09	0.000012	0.00000091	0.00000041	0.0000060	4.1E-09	1.7E-09	4.1E-09	0.0000029	0.00000012	0.00000048	4.1E-11
HHGPHC-4	L-11	0.0000079	0.000088	0.0000044	0.00012	0.0000071	0.0000004	0.0000012	0.00000044	0.021	2.2E-09	0.000014	0.00000081	0.00000044	0.0000064	4.4E-09	1.8E-09	4.4E-09	0.0000027	0.00000011	0.00000047	4.4E-11
HHGPHC-4	L-12	0.0000075	0.000058	0.0000041	0.000075	0.000012	0.00000038	0.00000037	0.00000041	0.018	2.1E-09	0.000017	0.00000067	0.00000041	0.0000061	4.1E-09	8.3E-10	4.1E-09	0.0000023	9.9E-08	0.0000008	4.1E-11
HHGPHC-4	L-13	0.0000050	0.000050	0.0000041	0.000058	0.000012	0.00000038	0.00000037	0.00000041	0.017	2.1E-09	0.000018	0.00000061	0.00000041	0.0000058	4.1E-09	4.1E-10	4.1E-09	0.0000022	9.1E-08	0.00000056	4.1E-11
HHGPHC-4	L-14	0.0000050	0.000050	0.0000041	0.000050	0.0000083	0.00000038	0.00000037	0.00000041	0.017	2.1E-09	0.000022	0.00000053	0.00000041	0.0000061	4.1E-09	8.3E-10	4.1E-09	0.0000019	9.1E-08	0.0000006	4.1E-11
HHGPHC-4	L-15	0.0000050	0.000041	0.0000041	0.000033	0.00000041	0.00000038	0.00000037	0.00000041	0.016	2.1E-09	0.000025	0.00000051	0.00000041	0.0000058	4.1E-09	4.1E-10	4.1E-09	0.0000017	9.1E-08	0.0000007	4.1E-11
HHGPHC-4	L-16	0.0000066	0.000041	0.0000041	0.000033	0.00000041	0.00000038	0.00000037	0.0000017	0.015	2.1E-09	0.000028	0.0000005	0.00000041	0.0000060	4.1E-09	4.1E-10	4.1E-09	0.0000017	8.3E-08	0.00000068	4.1E-11
HHGPHC-4	L-17	0.0000058	0.000033	0.0000042	0.000025	0.00000042	0.00000038	0.00000037	0.00000042	0.015	2.1E-09	0.000035	0.00000043	0.00000042	0.0000059	4.2E-09	4.2E-10	4.2E-09	0.0000017	7.5E-08	0.00000051	4.2E-11

- Parameter not analyzed

Appendix E, Table E-16
HHGPHC LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HHGPHC-1	L-1	0.0000083	0.0085	0.0000041	0.000057	0.0000041	0.0000083	0.00000069	0.00035	0.000037	0.0000014	0.000084	0.000050	0.000017	3.4E-12	3.7E-14	4.5E-10	6.9E-14
HHGPHC-1	L-2	0.00000031	0.0023	0.00000025	0.0000064	0.00000038	0.0000018	6.3E-08	0.00021	0.0000068	0.00000076	0.0000081	0.000030	0.0000013	-	-	-	-
HHGPHC-1	L-3	0.00000029	0.0013	0.00000012	0.0000058	0.00000012	0.0000012	5.8E-08	0.00017	0.0000039	0.0000007	0.0000063	0.000015	0.00000081	2.8E-13	1.1E-15	1.5E-10	5.8E-15
HHGPHC-1	L-4	5.8E-08	0.00088	4.6E-08	0.0000063	2.3E-08	0.00000086	2.3E-08	0.00012	0.0000021	0.00000044	0.0000025	0.0000039	0.00000012	-	-	-	-
HHGPHC-1	L-5	2.1E-08	0.00043	3.3E-08	0.0000048	8.3E-09	0.00000043	4.1E-09	0.000076	0.00000099	0.00000017	0.0000012	0.00000099	6.6E-08	-	-	-	-
HHGPHC-1	L-6	2.1E-08	0.00024	2.5E-08	0.0000037	8.3E-09	0.00000025	4.1E-09	0.000069	0.00000068	0.00000011	0.00000091	0.00000083	5.0E-08	5.9E-16	7.8E-17	1.7E-11	7.5E-16
HHGPHC-1	L-7	2.1E-08	0.00016	1.7E-08	0.0000030	8.3E-09	0.00000017	4.1E-09	0.000060	0.00000055	7.5E-08	0.00000078	0.00000077	5.8E-08	-	-	-	-
HHGPHC-1	L-8	4.1E-08	0.00014	1.7E-08	0.0000031	6.6E-08	0.00000017	8.3E-09	0.000063	0.0000004	8.3E-08	0.0000011	0.0000013	0.00000012	-	-	-	-
HHGPHC-1	L-9	2.1E-08	0.00011	1.7E-08	0.0000020	1.7E-08	0.00000012	4.1E-09	0.000044	0.00000037	4.1E-08	0.0000006	0.00000083	2.1E-08	9.8E-14	9.7E-17	2.1E-11	1.7E-14
HHGPHC-1	L-10	2.1E-08	0.000093	1.7E-08	0.0000019	1.7E-08	0.00000012	4.1E-09	0.000041	0.00000025	3.3E-08	0.00000066	0.00000083	4.1E-08	-	-	-	-
HHGPHC-1	L-11	2.1E-08	0.000082	1.7E-08	0.0000019	1.7E-08	9.9E-08	4.1E-09	0.000039	0.00000022	2.5E-08	0.00000062	0.00000091	2.1E-08	-	-	-	-
HHGPHC-1	L-12	2.1E-08	0.000071	1.7E-08	0.0000017	2.5E-08	9.1E-08	4.1E-09	0.000036	0.00000022	2.5E-08	0.00000061	0.00000091	6.6E-08	6.5E-14	4.9E-17	2.2E-11	2.5E-15
HHGPHC-1	L-13	2.1E-08	0.000065	8.3E-09	0.0000016	2.5E-08	8.3E-08	4.1E-09	0.000032	0.00000023	2.5E-08	0.00000061	0.00000091	2.1E-08	-	-	-	-
HHGPHC-1	L-14	2.1E-08	0.000058	1.7E-08	0.0000015	3.3E-08	8.3E-08	4.1E-09	0.000028	0.00000017	1.7E-08	0.00000056	0.00000091	2.1E-08	-	-	-	-
HHGPHC-1	L-15	2.1E-08	0.000053	8.3E-09	0.0000013	3.3E-08	7.5E-08	4.1E-09	0.000027	0.00000017	1.7E-08	0.00000056	0.00000099	2.1E-08	9.5E-14	9.8E-17	2.2E-11	2.9E-15
HHGPHC-1	L-16	2.1E-08	0.000051	8.3E-09	0.0000013	3.3E-08	6.6E-08	4.1E-09	0.000027	0.00000017	1.7E-08	0.00000056	0.0000011	2.1E-08	-	-	-	-
HHGPHC-1	L-17	2.1E-08	0.000048	8.3E-09	0.0000012	4.1E-08	7.5E-08	4.1E-09	0.000024	0.00000013	1.7E-08	0.00000054	0.00000099	2.1E-08	6.8E-14	9.7E-17	2.2E-11	2.9E-15
HHGPHC-2	L-1	0.000011	0.0089	0.0000041	0.000073	0.0000055	0.0000083	0.00000069	0.00036	0.000050	0.0000014	0.000087	0.000047	0.000018	3.2E-12	4.5E-14	5.2E-10	6.9E-14
HHGPHC-2	L-2	0.00000031	0.0025	0.00000013	0.0000050	0.0000005	0.0000018	6.3E-08	0.00023	0.0000078	0.00000076	0.0000059	0.000033	0.0000015	-	-	-	-
HHGPHC-2	L-3	0.00000029	0.0013	0.00000012	0.0000058	0.00000012	0.0000012	5.8E-08	0.00017	0.0000037	0.0000007	0.0000059	0.000017	0.00000029	2.7E-13	1.0E-15	1.4E-10	5.8E-15
HHGPHC-2	L-4	5.8E-08	0.00089	4.6E-08	0.0000060	2.3E-08	0.00000086	1.2E-08	0.00012	0.0000021	0.00000044	0.0000026	0.0000044	0.00000014	-	-	-	-
HHGPHC-2	L-5	2.1E-08	0.00043	3.3E-08	0.0000046	8.3E-09	0.00000043	4.1E-09	0.000075	0.00000099	0.00000017	0.0000011	0.0000011	5.0E-08	-	-	-	-
HHGPHC-2	L-6	2.1E-08	0.00024	2.5E-08	0.0000036	8.3E-09	0.00000025	4.1E-09	0.000068	0.00000066	0.00000011	0.00000083	0.00000083	5.0E-08	3.0E-16	7.3E-17	1.8E-11	6.6E-16
HHGPHC-2	L-7	2.1E-08	0.00016	1.7E-08	0.0000029	1.7E-08	0.00000017	4.1E-09	0.000059	0.00000052	7.5E-08	0.00000073	0.0000008	7.5E-08	-	-	-	-
HHGPHC-2	L-8	4.1E-08	0.00014	1.7E-08	0.0000031	6.6E-08	0.00000018	8.3E-09	0.000063	0.0000005	8.3E-08	0.0000012	0.0000014	9.9E-08	-	-	-	-
HHGPHC-2	L-9	2.1E-08	0.00011	1.7E-08	0.0000019	1.7E-08	0.00000012	4.1E-09	0.000044	0.00000033	4.1E-08	0.0000006	0.00000083	5.0E-08	9.2E-14	9.7E-17	2.2E-11	1.7E-14
HHGPHC-2	L-10	2.1E-08	0.000091	1.7E-08	0.0000019	2.5E-08	0.00000012	4.1E-09	0.000041	0.00000025	3.3E-08	0.00000066	0.00000091	5.0E-08	-	-	-	-
HHGPHC-2	L-11	2.1E-08	0.000082	8.3E-09	0.0000018	1.7E-08	9.9E-08	4.1E-09	0.000038	0.00000022	2.5E-08	0.00000061	0.00000091	2.1E-08	-	-	-	-
HHGPHC-2	L-12	2.1E-08	0.000070	1.7E-08	0.0000017	2.5E-08	8.3E-08	4.1E-09	0.000036	0.00000021	2.5E-08	0.00000061	0.00000091	4.1E-08	7.1E-14	9.8E-17	2.2E-11	2.5E-15
HHGPHC-2	L-13	2.1E-08	0.000064	1.7E-08	0.0000016	2.5E-08	8.3E-08	4.1E-09	0.000032	0.00000022	2.5E-08	0.0000006	0.00000091	2.1E-08	-	-	-	-
HHGPHC-2	L-14	2.1E-08	0.000059	8.3E-09	0.0000014	3.3E-08	7.5E-08	4.1E-09	0.000028	0.0000002	1.7E-08	0.00000053	0.00000091	2.1E-08	-	-	-	-
HHGPHC-2	L-15	2.1E-08	0.000053	4.1E-09	0.0000013	3.3E-08	7.5E-08	4.1E-09	0.000027	0.0000002	1.7E-08	0.00000057	0.00000091	2.1E-08	7.4E-14	9.8E-17	2.2E-11	2.9E-15
HHGPHC-2	L-16	2.1E-08	0.000051	8.3E-09	0.0000013	3.3E-08	6.6E-08	4.1E-09	0.000027	0.00000015	1.7E-08	0.00000058	0.0000010	2.1E-08	-	-	-	-
HHGPHC-2	L-17	2.1E-08	0.000047	4.1E-09	0.0000012	4.1E-08	7.5E-08	4.1E-09	0.000024	0.00000013	1.7E-08	0.00000053	0.0000011	2.1E-08	6.8E-14	9.8E-17	2.2E-11	2.9E-15
HHGPHC-3	L-1	0.0000097	0.0083	0.0000041	0.000058	0.0000041	0.0000069	0.00000069	0.00036	0.000035	0.0000014	0.000070	0.000044	0.000014	-	-	-	-
HHGPHC-3	L-2	0.00000032	0.0024	0.00000013	0.0000053	0.0000005	0.0000018	6.3E-08	0.00023	0.0000073	0.00000076	0.0000063	0.000034	0.00000076	-	-	-	-
HHGPHC-3	L-3	0.00000029	0.0014	0.00000012	0.0000058	0.00000012	0.0000012	5.8E-08	0.00017	0.0000046	0.0000007	0.0000068	0.000019	0.0000007	-	-	-	-
HHGPHC-3	L-4	5.8E-08	0.00087	4.6E-08	0.0000058	2.3E-08	0.00000083	1.2E-08	0.00012	0.0000019	0.00000044	0.0000026	0.0000044	5.8E-08	-	-	-	-
HHGPHC-3	L-5	2.1E-08	0.00041	3.3E-08	0.0000046	8.3E-09	0.00000042	4.1E-09	0.000076	0.00000099	0.00000017	0.0000012	0.0000011	5.8E-08	-	-	-	-
HHGPHC-3	L-6	2.1E-08	0.00024	2.5E-08	0.0000036	8.3E-09	0.00000025	4.1E-09	0.000069	0.0000007	9.9E-08	0.00000083	0.00000083	5.8E-08	-	-	-	-
HHGPHC-3	L-7	2.1E-08	0.00016	1.7E-08	0.0000030	1.7E-08	0.00000017	4.1E-09	0.000060	0.00000056	6.6E-08	0.00000075	0.00000077	5.0E-08	-	-	-	-
HHGPHC-3	L-8	4.1E-08	0.00014	1.7E-08	0.0000032	6.6E-08	0.00000017	8.3E-09	0.000063	0.00000038	6.6E-08	0.0000012	0.0000014	9.9E-08	-	-	-	-
HHGPHC-3	L-9	2.1E-08	0.00011	1.7E-08	0.0000020	1.7E-08	0.00000012	4.1E-09	0.000045	0.00000036	4.1E-08	0.00000059	0.00000083	2.1E-08	-	-	-	-
HHGPHC-3	L-10	2.1E-08	0.000091	1.7E-08	0.0000020	2.5E-08	0.00000011	4.1E-09	0.000041	0.00000024	3.3E-08	0.00000069	0.00000091	5.0E-08	-	-	-	-
HHGPHC-3	L-11	2.1E-08	0.000082	8.3E-09	0.0000019	1.7E-08	9.9E-08	4.1E-09	0.000040	0.00000021	2.5E-08	0.00000063	0.00000091	2.1E-08	-	-	-	-
HHGPHC-3	L-12	2.1E-08	0.000070	1.7E-08	0.0000017	2.5E-08	9.1E-08	4.1E-09	0.000036	0.00000022	2.5E-08	0.0000006	0.00000091	2.1E-08	-	-	-	-
HHGPHC-3	L-13	2.1E-08	0.000064	8.3E-09	0.0000017	2.5E-08	8.3E-08	4.1E-09	0.000032	0.00000021	2.5E-08	0.00000058	0.00000091	2.1E-08	-	-	-	-
HHGPHC-3	L-14	2.1E-08	0.000058	8.3E-09	0.0000014	3.3E-08	7.5E-08	4.1E-09	0.000028	0.00000017	1.7E-08	0.00000052	0.00000091	2.1E-08	-	-	-	-
HHGPHC-3	L-15	2.1E-08	0.000052	8.3E-09	0.0000014	3.3E-08	7.5E-08	4.1E-09	0.000027	0.00000023	1.7E-08	0.00000059	0.00000091	4.1E-08	-	-	-	-
HHGPHC-3	L-16	2.1E-08	0.000053	8.3E-09	0.0000014	3.3E-08	6.6E-08	4.1E-09	0.000027	0.00000017	1.7E-08	0.00000059	0.0000010	2.1E-08	-	-	-	-
HHGPHC-3	L-17	2.1E-08	0.000047	8.3E-09	0.0000012	4.2E-08	6.6E-08	4.2E-09	0.000023	0.00000013	1.7E-08	0.00000051	0.0000010	2.1E-08	-	-	-	-
HHGPHC-4	L-1	0.000012	0.0080	0.0000041	0.000081	0.0000041	0.0000069	0.00000069	0.00039	0.000046	0.0000014	0.000087	0.000043	0.000019	-	-	-	-
HHGPHC-4	L-2	0.00000032	0.0023	0.00000025	0.0000072	0.00000038	0.0000018	6.3E-08	0.00023	0.0000068	0.00000088	0.0000077	0.000025	0.0000025	-	-	-	-
HHGPHC-4	L-3	0.00000029	0.0013	5.8E-08	0.0000077	0.00000012	0.0000012	5.8E-08	0.00019	0.0000036	0.00000081	0.0000068	0.000014	0.00000058	-	-	-	-
HHGPHC-4	L-4	5.8E-08	0.00088	4.6E-08	0.0000077	2.3E-08	0.00000084	1.2E-08	0.00012	0.0000019	0.00000044	0.0000030	0.0000037	0.00000016	-	-	-	-
HHGPHC-4	L-5	2.1E-08	0.00044	3.3E-08	0.0000053	8.3E-09	0.00000043	4.1E-09	0.000080	0.00000099	0.00000017	0.0000012	0.00000099	7.5E-08	-	-	-	-
HHGPHC-4	L-6	2.1E-08	0.00024	2.5E-08	0.0000040	8.3E-09	0.00000025	4.1E-09	0.000070	0.00000069	0.00000011	0.00000099	0.00000083	5.0E-08	-	-	-	-
HHGPHC-4	L-7	2.1E-08	0.00016	1.7E-08	0.0000031	8.3E-09	0.00000017	4.1E-09	0.000060	0.00000055	6.6E-08	0.00000081	0.0000008	7.5E-08	-	-	-	-
HHGPHC-4	L-8	4.1E-08	0.00015	1.7E-08	0.0000033	5.0E-08	0.00000017	8.3E-09	0.000063	0.0000004	8.3E-08	0.0000012	0.0000014	9.9E-08	-	-	-	-
HHGPHC-4	L-9	2.1E-08	0.00011	1.7E-08	0.0000022	1.7E-08	0.00000012	4.1E-09	0.000045	0.00000034	4.1E-08	0.00000063	0.00000083	2.1E-08	-	-	-	-
HHGPHC-4	L-10	2.1E-08	0.000092	1.7E-08	0.0000021	1.7E-08	0.00000011	4.1E-09	0.000041	0.00000022	3.3E-08	0.00000069	0.00000091	4.1E-08	-	-	-	-
HHGPHC-4	L-11	2.2E-08	0.000088	1.8E-08	0.0000020	1.8E-08	9.7E-08	4.4E-09	0.000041	0.00000019	2.6E-08	0.00000067	0.00000097	0.00000014	-	-	-	-
HHGPHC-4	L-12	2.1E-08	0.000070	1.7E-08	0.0000018	2.5E-08	9.1E-08	4.1E-09	0.000036	0.00000028	2.5E-08	0.00000062	0.00000091	2.1E-08	-	-	-	-
HHGPHC-4	L-13	2.1E-08	0.000065	8.3E-09	0.0000017	2.5E-08	8.3E-08	4.1E-09	0.000032	0.00000021	1.7E-08	0.00000058	0.0000010	2.1E-08	-	-	-	-
HHGPHC-4	L-14	2.1E-08	0.000059	8.3E-09	0.0000015	2.5E-08	7.5E-08	4.1E-09	0.000029	0.0000002	1.7E-08	0.00000051	0.00000099	2.1E-08	-	-	-	-
HHGPHC-4	L-15	2.1E-08	0.000053	8.3E-09	0.0000014	3.3E-08	7.5E-08	4.1E-09	0.000027	0.00000018	1.7E-08	0.00000058	0.0000010	2.1E-08	-	-	-	-
HHGPHC-4	L-16	2.1E-08	0.000052	8.3E-09	0.0000014	3.3E-08	6.6E-08	4.1E-09	0.000027	0.00000015	1.7E-08	0.00000056	0.0000011	2.1E-08	-	-	-	-
HHGPHC-4	L-17	2.1E-08	0.000046	8.3E-09	0.0000012	4.2E-08	6.6E-08	4.2E-09	0.000023	0.00000012	8.3E-09	0.00000051	0.0000011	2.1E-08	-	-	-	-

- Parameter not analyzed

Appendix E, Table E-17
HLC-S LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s	mg/m^2s
HLC-S-1	L-1	2020-01-13	0.080	0.10	0.057	0.00047	573	1.00	0.57	0.0082	7.0	0.86	1842	-	0.030	0.041	0.0051	0.0051	0.56	0.38	0.15	0.0041
HLC-S-1	L-2	2020-01-14	1.0	0.10	0.057	0.00047	635	1.00	0.64	0.0082	7.8	0.86	1842	-	0.0039	0.0049	0.00049	0.00049	0.51	0.14	0.054	0.031
HLC-S-1	L-3	2020-01-15	2.0	0.10	0.057	0.00047	634	1.00	0.63	0.0082	7.8	0.86	1842	-	0.0045	0.0054	0.00045	0.00045	0.36	0.081	0.032	0.023
HLC-S-1	L-4	2020-01-20	7.0	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.86	1842	-	0.0018	0.0022	0.000090	0.000090	0.20	0.039	0.015	0.018
HLC-S-1	L-5	2020-01-27	14	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.86	1842	-	0.0019	0.0010	0.00065	0.000065	0.16	0.031	0.012	0.013
HLC-S-1	L-6	2020-02-10	28	0.10	0.057	0.00047	636	1.0	0.64	0.0082	7.8	0.86	1842	-	0.0021	0.0019	0.00032	0.000032	0.11	0.021	0.0083	0.0072
HLC-S-1	L-7	2020-02-24	42	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.86	1842	-	0.0021	0.0018	0.00039	0.000032	0.091	0.019	0.0074	0.0069
HLC-S-1	L-8	2020-03-02	49	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.86	1842	-	0.0038	0.0034	0.00065	0.000065	0.097	0.020	0.0079	0.0068
HLC-S-1	L-9	2020-03-16	63	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.86	1842	-	0.0022	0.0019	0.00039	0.000032	0.068	0.016	0.0062	0.0049
HLC-S-1	L-10	2020-03-30	77	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.86	1842	-	0.0017	0.0014	0.00032	0.000032	0.064	0.014	0.0056	0.0038
HLC-S-1	L-11	2020-04-13	91	0.10	0.057	0.00047	633	1.00	0.63	0.0082	7.7	0.86	1842	-	0.0014	0.0014	0.00013	0.000032	0.059	0.013	0.0052	0.0029
HLC-S-1	L-12	2020-04-27	105	0.10	0.057	0.00047	634	1.00	0.63	0.0082	7.8	0.86	1842	-	0.0022	0.0019	0.00039	0.000032	0.054	0.012	0.0049	0.0021
HLC-S-1	L-13	2020-05-11	119	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.86	1842	-	0.0021	0.0018	0.00039	0.000033	0.044	0.012	0.0046	0.0016
HLC-S-1	L-14	2020-05-25	133	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.86	1842	-	0.0016	0.0014	0.00033	0.000033	0.044	0.011	0.0046	0.0013
HLC-S-1	L-15	2020-06-08	147	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.86	1842	-	0.0021	0.0017	0.00045	0.000032	0.040	0.011	0.0043	0.0010
HLC-S-1	L-16	2020-06-22	161	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.86	1842	-	0.0013	0.0011	0.00026	0.000032	0.036	0.010	0.0041	0.00084
HLC-S-1	L-17	2020-07-06	175	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.86	1842	-	0.00091	0.00046	0.00033	0.000033	0.035	0.010	0.0042	0.00065
HLC-S-1	L-18	2020-08-03	203	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.86	1842	-	0.00081	0.00097	0.000016	0.000016	0.027	0.0088	0.0035	0.00045
HLC-S-1	L-19	2020-08-31	231	0.10	0.057	0.00047	639	1.0	0.64	0.0082	7.8	0.86	1842	-	0.00081	0.00035	0.00032	0.000016	0.024	0.0087	0.0035	0.00032
HLC-S-1	L-20	2020-09-28	259	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.86	1842	-	0.00074	0.00091	0.000016	0.000016	0.019	0.0086	0.0034	0.00019
HLC-S-2	L-1	2020-01-13	0.080	0.10	0.057	0.00047	587	1.00	0.59	0.0082	7.2	0.85	1828	-	0.042	0.052	0.0052	0.0052	1.0	0.62	0.25	0.0052
HLC-S-2	L-2	2020-01-14	1.0	0.10	0.057	0.00047	625	1.00	0.63	0.0082	7.7	0.85	1828	-	0.0039	0.0048	0.00048	0.00048	0.43	0.12	0.048	0.026
HLC-S-2	L-3	2020-01-15	2.0	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0046	0.0055	0.00046	0.00046	0.32	0.071	0.028	0.022
HLC-S-2	L-4	2020-01-20	7.0	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.85	1828	-	0.0035	0.0042	0.000091	0.000091	0.20	0.038	0.015	0.017
HLC-S-2	L-5	2020-01-27	14	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.85	1828	-	0.0030	0.0027	0.00052	0.000065	0.15	0.028	0.011	0.012
HLC-S-2	L-6	2020-02-10	28	0.10	0.057	0.00047	645	1.0	0.65	0.0082	7.9	0.85	1828	-	0.0016	0.0012	0.00039	0.000033	0.097	0.021	0.0083	0.0072
HLC-S-2	L-7	2020-02-24	42	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0021	0.0019	0.00033	0.000033	0.082	0.018	0.0072	0.0058
HLC-S-2	L-8	2020-03-02	49	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0028	0.0024	0.00053	0.000066	0.086	0.020	0.0079	0.0059
HLC-S-2	L-9	2020-03-16	63	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0021	0.0014	0.00052	0.000033	0.063	0.015	0.0061	0.0044
HLC-S-2	L-10	2020-03-30	77	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.85	1828	-	0.0021	0.0013	0.00065	0.000032	0.058	0.013	0.0053	0.0038
HLC-S-2	L-11	2020-04-13	91	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0016	0.0011	0.00039	0.000033	0.057	0.013	0.0051	0.0032
HLC-S-2	L-12	2020-04-27	105	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0024	0.0019	0.00046	0.000033	0.051	0.012	0.0048	0.0024
HLC-S-2	L-13	2020-05-11	119	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0016	0.00078	0.00052	0.000033	0.044	0.011	0.0043	0.0019
HLC-S-2	L-14	2020-05-25	133	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0019	0.0015	0.00039	0.000033	0.043	0.011	0.0043	0.0012
HLC-S-2	L-15	2020-06-08	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0015	0.00072	0.00052	0.000033	0.040	0.010	0.0042	0.0014
HLC-S-2	L-16	2020-06-22	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	0.00078	0.00033	0.00033	0.000033	0.038	0.010	0.0041	0.0012
HLC-S-2	L-17	2020-07-06	175	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0014	0.0014	0.00013	0.000033	0.037	0.010	0.0041	0.00098
HLC-S-2	L-18	2020-08-03	203	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.85	1828	-	0.00081	0.00058	0.00019	0.000016	0.029	0.0088	0.0035	0.00071
HLC-S-2	L-19	2020-08-31	231	0.10	0.057	0.00047	635	1.0	0.63	0.0082	7.8	0.85	1828	-	0.00080	0.00035	0.00032	0.000016	0.026	0.0081	0.0032	0.00048
HLC-S-2	L-20	2020-09-28	259	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	0.00081	0.00075	0.00013	0.000016	0.024	0.0085	0.0034	0.00033
HLC-S-3	L-1	2020-01-13	0.080	0.10	0.057	0.00047	600	1.00	0.60	0.0082	7.4	0.85	1825	-	0.032	0.043	0.0053	0.0053	0.85	0.30	0.12	0.012
HLC-S-3	L-2	2020-01-14	1.0	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.85	1825	-	0.0049	0.0059	0.00049	0.00049	0.39	0.093	0.037	0.027
HLC-S-3	L-3	2020-01-15	2.0	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.85	1825	-	0.0045	0.0054	0.00045	0.00045	0.32	0.059	0.024	0.022
HLC-S-3	L-4	2020-01-20	7.0	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.85	1825	-	0.0029	0.0036	0.000091	0.000091	0.19	0.035	0.014	0.016
HLC-S-3	L-5	2020-01-27	14	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1825	-	0.0020	0.00078	0.00078	0.000065	0.15	0.028	0.011	0.012
HLC-S-3	L-6	2020-02-10	28	0.10	0.057	0.00047	644	1.0	0.64	0.0082	7.9	0.85	1825	-	0.0021	0.0018	0.00039	0.000033	0.097	0.020	0.0080	0.0077
HLC-S-3	L-7	2020-02-24	42	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1825	-	0.0016	0.0015	0.00026	0.000033	0.082	0.018	0.0070	0.0060
HLC-S-3	L-8	2020-03-02	49	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1825	-	0.0031	0.0031	0.00026	0.000065	0.082	0.019	0.0076	0.0060
HLC-S-3	L-9	2020-03-16	63	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1825	-	0.0014	0.00039	0.00065	0.000033	0.063	0.015	0.0060	0.0046
HLC-S-3	L-10	2020-03-30	77	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.85	1825	-	0.0018	0.0011	0.00052	0.000033	0.059	0.013	0.0054	0.0039
HLC-S-3	L-11	2020-04-13	91	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.85	1825	-	0.0019	0.0017	0.00032	0.000032	0.057	0.012	0.0050	0.0034
HLC-S-3	L-12	2020-04-27	105	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1825	-	0.0023	0.0015	0.00065	0.000033	0.052	0.011	0.0046	0.0024
HLC-S-3	L-13	2020-05-11	119	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1825	-	0.0015	0.0012	0.00033	0.000033	0.044	0.011	0.0044	0.0020
HLC-S-3	L-14	2020-05-25	133	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1825	-	0.0017	0.0021	0.000033	0.000033	0.044	0.011	0.0042	0.0016
HLC-S-3	L-15	2020-06-08	147	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1825	-	0.0020	0.0017	0.00039	0.000033	0.041	0.010	0.0041	0.0013
HLC-S-3	L-16	2020-06-22	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1825	-	0.0013	0.0013	0.00013	0.000033	0.039	0.0099	0.0040	0.0012
HLC-S-3	L-17	2020-07-06	175	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1825	-	0.0014	0.0017	0.000033	0.000033	0.037	0.0099	0.0040	0.00098
HLC-S-3	L-18	2020-08-03	203	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1825	-	0.00085	0.00055	0.00023	0.000016	0.028	0.0087	0.0035	0.00065
HLC-S-3	L-19	2020-08-31	231	0.10	0.057	0.00047	637	1.0	0.64	0.0082	7.8	0.85	1825	-	0.00087	0.00058	0.00023	0.000016	0.025	0.0084	0.0033	0.00045
HLC-S-3	L-20	2020-09-28	259	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1825	-	0.00078	0.00094	0.000016	0.000016	0.023	0.0083	0.0033	0.00026
HLC-S-4	L-1	2020-01-13	0.080	0.10	0.057	0.00047	574	1.00	0.58	0.0082	7.0	0.85	1828	-	0.041	0.051	0.0051	0.0051	0.90	0.54	0.21	0.0041
HLC-S-4	L-2	2020-01-14	1.0	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.85	1828	-	0.0088	0.011	0.00049	0.00049	0.47	0.15	0.061	0.024
HLC-S-4	L-3	2020-01-15	2.0	0.10	0.057	0.00047	634	1.00	0.63	0.0082	7.8	0.85	1828	-	0.0054	0.0063	0.00045	0.00045	0.35	0.088	0.035	0.020
HLC-S-4	L-4	2020-01-20	7.0	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.85	1828	-	0.0047	0.0052	0.00018	0.000090	0.21	0.041	0.016	0.018
HLC-S-4	L-5	2020-01-27	14	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0041	0.0037	0.00065	0.000065	0.17	0.031	0.013	0.013
HLC-S-4	L-6	2020-02-10	28	0.10	0.057	0.00047	644	1.0	0.64	0.0082	7.9	0.85	1828	-	0.0023	0.0020	0.00039	0.000033	0.11	0.021	0.0084	0.0073
HLC-S-4	L-7	2020-02-24	42	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.85	1828	-	0.0021	0.0016	0.00045	0.000032	0.090	0.018	0.0074	0.0066
HLC-S-4	L-8	2020-03-02	49	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0034	0.0031	0.00052	0.000065	0.10	0.020	0.0081	0.0069
HLC-S-4	L-9	2020-03-16	63	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0025	0.0018	0.00065	0.000033	0.072	0.016	0.0063	0.0050
HLC-S-4	L-10	2020-03-30	77	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0020	0.0014	0.00052	0.000033	0.065	0.014	0.0056	0.0039
HLC-S-4	L-11	2020-04-13	91	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0020	0.0018	0.00033	0.000033	0.061	0.013	0.0054	0.0031
HLC-S-4	L-12	2020-04-27	105	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0021	0.00098	0.00078	0.000033	0.053	0.013	0.0052	0.0022
HLC-S-4	L-13	2020-05-11	119	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0016	0.00072	0.00065	0.000033	0.046	0.012	0.0048	0.0016
HLC-S-4	L-14	2020-05-25	133	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0015	0.00085	0.00046	0.000033	0.045	0.011	0.0046	0.0013
HLC-S-4	L-15	2020-06-08	147	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	0.0022	0.0016	0.00052	0.000033	0.040	0.011	0.0045	0.0010
HLC-S-4	L-16	2020-06-22	161	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0018	0.0014	0.00039	0.000033	0.036	0.011	0.0043	0.00078
HLC-S-4	L-17	2020-07-06	175	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	0.0015	0.0014	0.00026	0.000033	0.036	0.011	0.0044	0.00065
HLC-S-4	L-18	2020-08-03	203	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.85	1828	-	0.00082	0.00053	0.00023	0.000016	0.027	0.0097	0.0039	0.00043
HLC-S-4	L-19	2020-08-31	231	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.85	1828	-	0.00071	0.00087	0.000016	0.000016	0.024	0.0092	0.0037	0.00026
HLC-S-4	L-20	2020-09-28	259	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	0.00068	0.00085	0.000016	0.000016	0.021	0.0090	0.0036	0.00016

- Parameter not analyzed

Appendix E, Table E-17
HLC-S LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH$_3$	NO$_2$	NO$_3$	PO$_4$	SO$_4$	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-P/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HLC-S-1	L-1	0.00041	0.0051	0.00051	0.069	-	-	0.000046	-	0.46	0.0000012	0.00031	0.000026	0.00010	0.000052	0.00000051	0.0000001	0.00000051	0.0000025	0.000010	0.000032	1.0E-08
HLC-S-1	L-2	0.00017	0.0023	0.00020	0.095	-	-	0.0000044	-	0.33	0.0000026	0.000015	0.000021	0.000059	0.000015	4.9E-08	3.9E-08	4.9E-08	0.00000024	0.0000013	0.0000016	6.9E-09
HLC-S-1	L-3	0.00013	0.0016	0.000090	0.072	-	-	0.0000040	-	0.23	0.0000017	0.000022	0.000016	0.000036	0.000012	4.5E-08	4.5E-08	9.0E-08	0.00000022	0.00000081	0.0000086	1.8E-09
HLC-S-1	L-4	0.000072	0.00096	0.000036	0.046	-	-	0.000081	-	0.14	0.00000034	0.0000058	0.000010	0.000016	0.0000036	9.0E-09	5.4E-09	1.8E-08	4.5E-08	0.00000016	0.0000013	9.0E-11
HLC-S-1	L-5	0.000057	0.00079	0.000026	0.037	-	-	0.000058	-	0.11	0.00000015	0.0000026	0.0000085	0.000014	0.0000028	6.5E-09	3.9E-09	1.3E-08	3.2E-08	0.0000001	0.00000022	6.5E-11
HLC-S-1	L-6	0.000037	0.00052	0.000013	0.024	-	-	0.000029	-	0.073	7.7E-08	0.0000017	0.0000059	0.000013	0.0000017	3.2E-08	1.3E-08	3.2E-08	0.00000016	6.4E-08	0.00000016	3.2E-11
HLC-S-1	L-7	0.000028	0.00045	0.000013	0.020	-	-	0.000029	-	0.060	3.9E-08	0.0000019	0.0000052	0.0000065	0.0000015	3.2E-08	3.2E-09	3.2E-08	0.00000016	6.5E-08	0.00000016	3.2E-11
HLC-S-1	L-8	0.000026	0.00051	0.000013	0.021	-	-	0.0000059	-	0.061	2.7E-08	0.0000034	0.0000060	0.000012	0.0000019	6.5E-09	6.5E-10	6.5E-09	3.2E-08	7.8E-08	0.00000018	6.5E-11
HLC-S-1	L-9	0.000019	0.00036	0.000013	0.015	-	-	0.0000029	-	0.045	1.9E-08	0.0000019	0.0000044	0.0000078	0.0000014	3.2E-09	5.8E-09	3.2E-09	1.6E-08	3.9E-08	0.00000013	3.2E-11
HLC-S-1	L-10	0.000028	0.00032	0.000013	0.013	-	-	0.0000029	-	0.041	1.4E-08	0.0000019	0.0000041	0.0000078	0.0000014	3.2E-09	5.2E-09	3.2E-09	1.6E-08	3.9E-08	0.00000012	3.2E-11
HLC-S-1	L-11	0.000031	0.00029	0.0000064	0.011	-	-	0.0000029	-	0.037	1.2E-08	0.000012	0.0000036	0.0000070	0.0000012	3.2E-09	3.2E-09	6.4E-09	1.6E-08	5.1E-08	0.00000031	3.2E-11
HLC-S-1	L-12	0.000015	0.00026	0.0000064	0.010	-	-	0.0000058	-	0.032	7.1E-09	0.0000018	0.0000033	0.0000071	0.0000012	3.2E-09	3.9E-09	3.2E-09	1.6E-08	2.6E-08	0.00000017	3.2E-11
HLC-S-1	L-13	0.000021	0.00023	0.0000065	0.0088	-	-	0.0000029	-	0.029	5.9E-09	0.0000020	0.0000030	0.0000059	0.0000010	3.3E-09	2.0E-09	3.3E-09	1.6E-08	2.6E-08	9.8E-08	3.3E-11
HLC-S-1	L-14	0.000020	0.00023	0.000013	0.0082	-	-	0.0000029	-	0.027	4.6E-09	0.0000020	0.0000028	0.0000059	0.0000010	3.3E-09	2.0E-09	3.3E-09	1.6E-08	3.3E-08	7.2E-08	3.3E-11
HLC-S-1	L-15	0.000019	0.00021	0.0000032	0.0071	-	-	0.0000029	-	0.024	4.5E-09	0.0000018	0.0000026	0.0000058	0.0000010	3.2E-09	1.3E-09	3.2E-09	1.6E-08	3.9E-08	9.1E-08	6.5E-11
HLC-S-1	L-16	0.000019	0.00019	0.0000032	0.0064	-	-	0.0000029	-	0.023	3.2E-09	0.0000018	0.0000023	0.0000058	0.0000010	3.2E-09	3.2E-10	3.2E-09	1.6E-08	3.9E-08	6.5E-08	6.5E-11
HLC-S-1	L-17	0.000018	0.00019	0.0000033	0.0059	-	-	0.000038	-	0.021	1.6E-09	0.0000020	0.0000021	0.0000059	0.00000098	3.3E-09	4.6E-09	3.3E-09	1.6E-08	2.0E-08	7.2E-08	3.3E-11
HLC-S-1	L-18	0.000011	0.00014	0.0000032	0.0043	-	-	0.0000015	-	0.017	2.3E-09	0.00000097	0.0000016	0.0000039	0.00000084	1.6E-09	2.3E-09	1.6E-09	8.1E-09	1.6E-08	6.1E-08	6.5E-11
HLC-S-1	L-19	0.0000097	0.00014	0.0000032	0.0037	-	-	0.0000015	-	0.015	8.1E-10	0.0000011	0.0000015	0.0000045	0.00000077	1.6E-09	3.9E-09	1.6E-09	8.1E-09	1.3E-08	2.3E-08	1.6E-11
HLC-S-1	L-20	0.000012	0.00013	0.0000032	0.0030	-	-	0.000025	-	0.014	8.1E-10	0.0000013	0.0000013	0.0000039	0.00000071	1.6E-09	3.2E-09	1.6E-09	8.1E-09	3.2E-08	3.9E-08	1.6E-11
HLC-S-2	L-1	0.00073	0.0062	0.0010	0.10	-	-	0.000047	-	0.79	0.0000017	0.00048	0.000040	0.00021	0.000078	0.00000052	5.2E-08	0.0000021	0.0000026	0.000011	0.000094	1.0E-08
HLC-S-2	L-2	0.00014	0.0020	0.00019	0.080	-	-	0.0000043	-	0.28	0.0000016	0.000053	0.000017	0.000048	0.000014	4.8E-08	1.9E-08	0.00000019	0.00000024	0.0000018	0.000016	3.9E-09
HLC-S-2	L-3	0.00013	0.0015	0.000091	0.068	-	-	0.0000041	-	0.22	0.0000011	0.000021	0.000015	0.000036	0.000011	4.6E-08	3.6E-08	4.6E-08	0.00000023	0.00000073	0.0000060	4.6E-10
HLC-S-2	L-4	0.000067	0.00094	0.000036	0.046	-	-	0.00000082	-	0.14	0.00000024	0.0000040	0.000010	0.000016	0.0000038	9.1E-09	1.5E-08	1.8E-08	4.5E-08	0.00000015	0.00000093	9.1E-11
HLC-S-2	L-5	0.000056	0.00071	0.000026	0.033	-	-	0.000058	-	0.10	9.2E-08	0.0000022	0.0000081	0.000013	0.0000028	6.5E-09	1.2E-08	1.3E-08	3.2E-08	0.0000001	0.00000032	6.5E-11
HLC-S-2	L-6	0.000035	0.00048	0.000013	0.021	-	-	0.000029	-	0.065	3.3E-08	0.0000023	0.0000054	0.000013	0.0000017	3.3E-08	6.5E-09	3.3E-08	0.00000016	6.5E-08	0.00000033	3.3E-11
HLC-S-2	L-7	0.000021	0.00040	0.000013	0.017	-	-	0.000029	-	0.053	2.8E-08	0.0000016	0.0000047	0.0000085	0.0000014	3.3E-09	5.2E-09	3.3E-09	1.6E-08	3.9E-08	0.00000017	3.3E-11
HLC-S-2	L-8	0.000028	0.00045	0.000013	0.018	-	-	0.0000059	-	0.054	2.5E-08	0.0000034	0.0000055	0.000011	0.0000020	6.6E-09	1.2E-08	6.6E-09	3.3E-08	7.9E-08	0.00000016	6.6E-11
HLC-S-2	L-9	0.000022	0.00032	0.0000065	0.013	-	-	0.0000030	-	0.041	1.6E-08	0.0000018	0.0000041	0.0000072	0.0000015	3.3E-09	4.6E-09	3.3E-09	1.6E-08	5.2E-08	8.5E-08	3.3E-11
HLC-S-2	L-10	0.000025	0.00029	0.000013	0.011	-	-	0.0000029	-	0.037	1.0E-08	0.0000021	0.0000040	0.0000065	0.0000013	3.2E-09	1.3E-09	3.2E-09	1.6E-08	3.2E-08	0.00000018	3.2E-11
HLC-S-2	L-11	0.000025	0.00026	0.0000065	0.011	-	-	0.0000029	-	0.034	8.5E-09	0.0000023	0.0000035	0.0000072	0.0000013	3.3E-09	3.3E-09	3.3E-09	1.6E-08	3.9E-08	0.00000018	3.3E-11
HLC-S-2	L-12	0.000011	0.00025	0.0000033	0.0099	-	-	0.0000030	-	0.031	7.2E-09	0.0000022	0.0000035	0.0000065	0.0000012	3.3E-09	3.3E-10	3.3E-09	1.6E-08	2.6E-08	9.8E-08	3.3E-11
HLC-S-2	L-13	0.000020	0.00022	0.0000065	0.0088	-	-	0.0000030	-	0.028	7.2E-09	0.0000020	0.0000031	0.0000059	0.0000010	3.3E-09	1.3E-09	3.3E-09	1.6E-08	2.6E-08	9.2E-08	3.3E-11
HLC-S-2	L-14	0.000019	0.00021	0.000013	0.0082	-	-	0.0000030	-	0.027	5.9E-09	0.0000022	0.0000029	0.0000052	0.0000011	3.3E-09	6.5E-10	3.3E-09	1.6E-08	3.3E-08	0.0000001	3.3E-11
HLC-S-2	L-15	0.000018	0.00020	0.0000033	0.0076	-	-	0.0000029	-	0.025	5.2E-09	0.0000023	0.0000028	0.0000059	0.0000011	3.3E-09	2.6E-09	3.3E-09	1.6E-08	3.3E-08	7.2E-08	6.5E-11
HLC-S-2	L-16	0.000018	0.00020	0.0000033	0.0072	-	-	0.0000030	-	0.025	4.6E-09	0.0000020	0.0000032	0.0000059	0.00000091	3.3E-09	3.9E-09	3.3E-09	1.6E-08	3.3E-08	0.00000012	6.5E-11
HLC-S-2	L-17	0.000018	0.00018	0.0000033	0.0068	-	-	0.000040	-	0.023	4.6E-09	0.0000021	0.0000025	0.0000059	0.0000010	3.3E-09	3.9E-09	3.3E-09	1.6E-08	2.6E-08	9.8E-08	6.5E-11
HLC-S-2	L-18	0.000011	0.00014	0.0000032	0.0053	-	-	0.0000015	-	0.019	3.2E-09	0.0000010	0.0000019	0.0000042	0.00000088	1.6E-09	2.3E-09	1.6E-09	8.1E-09	1.6E-08	5.2E-08	6.5E-11
HLC-S-2	L-19	0.0000096	0.00013	0.0000016	0.0045	-	-	0.0000014	-	0.016	2.2E-09	0.0000011	0.0000018	0.0000042	0.00000077	1.6E-09	6.4E-10	1.6E-09	8.0E-09	1.6E-08	1.9E-08	1.6E-11
HLC-S-2	L-20	0.0000088	0.00014	0.0000033	0.0038	-	-	0.000024	-	0.016	2.0E-09	0.0000022	0.0000016	0.0000039	0.00000075	1.6E-09	1.6E-10	1.6E-09	8.1E-09	2.6E-08	5.2E-08	1.6E-11
HLC-S-3	L-1	0.00064	0.0053	0.0011	0.17	-	-	0.000048	-	0.62	0.0000051	0.00048	0.000041	0.00011	0.000059	0.00000053	5.3E-08	0.0000021	0.0000027	0.000011	0.000077	4.3E-08
HLC-S-3	L-2	0.00015	0.0021	0.000049	0.085	-	-	0.0000044	-	0.27	0.0000012	0.000042	0.000016	0.000039	0.0000098	4.9E-08	2.9E-08	0.0000002	0.00000025	0.0000012	0.0000093	2.0E-09
HLC-S-3	L-3	0.00011	0.0020	0.000091	0.064	-	-	0.0000041	-	0.20	0.00000058	0.000021	0.000013	0.000027	0.0000072	4.5E-08	4.5E-08	4.5E-08	0.00000023	0.00000045	0.0000036	4.5E-10
HLC-S-3	L-4	0.000069	0.00093	0.000036	0.043	-	-	0.00000082	-	0.13	0.00000012	0.0000056	0.0000095	0.000015	0.0000024	9.1E-09	1.6E-08	1.8E-08	4.5E-08	0.00000013	0.00000082	9.1E-11
HLC-S-3	L-5	0.000052	0.00073	0.000026	0.033	-	-	0.000059	-	0.10	7.1E-08	0.0000033	0.0000077	0.000013	0.0000018	6.5E-09	1.4E-08	2.6E-08	3.3E-08	0.00000013	0.0000010	1.3E-10
HLC-S-3	L-6	0.000034	0.00048	0.000013	0.022	-	-	0.000029	-	0.065	3.3E-08	0.0000017	0.0000053	0.000013	0.0000012	3.3E-08	6.5E-09	3.3E-08	0.00000016	6.5E-08	0.00000016	3.3E-11
HLC-S-3	L-7	0.000023	0.00041	0.000013	0.018	-	-	0.000029	-	0.054	2.5E-08	0.0000013	0.0000047	0.0000085	0.0000011	3.3E-09	3.9E-09	6.5E-09	1.6E-08	3.3E-08	0.00000018	3.3E-11
HLC-S-3	L-8	0.000027	0.00046	0.000013	0.018	-	-	0.0000059	-	0.054	2.4E-08	0.0000029	0.0000054	0.000010	0.0000016	6.5E-09	1.2E-08	6.5E-09	3.3E-08	6.5E-08	0.00000037	6.5E-11
HLC-S-3	L-9	0.000021	0.00033	0.0000065	0.013	-	-	0.0000030	-	0.042	1.3E-08	0.0000016	0.0000041	0.0000078	0.0000012	3.3E-09	6.5E-10	3.3E-09	1.6E-08	2.6E-08	9.1E-08	3.3E-11
HLC-S-3	L-10	0.000026	0.00029	0.0000065	0.012	-	-	0.0000030	-	0.039	7.9E-09	0.0000018	0.0000039	0.0000072	0.0000012	3.3E-09	3.9E-09	3.3E-09	1.6E-08	2.6E-08	0.00000013	3.3E-11
HLC-S-3	L-11	0.000025	0.00027	0.0000032	0.011	-	-	0.0000029	-	0.035	7.1E-09	0.0000018	0.0000036	0.0000078	0.0000012	3.2E-09	6.5E-10	3.2E-09	1.6E-08	2.6E-08	0.00000012	3.2E-11
HLC-S-3	L-12	0.000014	0.00025	0.0000065	0.0099	-	-	0.0000030	-	0.031	5.2E-09	0.0000018	0.0000035	0.0000072	0.0000011	3.3E-09	3.3E-09	3.3E-09	1.6E-08	2.6E-08	0.00000012	3.3E-11
HLC-S-3	L-13	0.000020	0.00022	0.0000033	0.0090	-	-	0.0000030	-	0.029	6.5E-09	0.0000016	0.0000031	0.0000059	0.00000098	3.3E-09	7.9E-09	3.3E-09	1.6E-08	2.6E-08	7.2E-08	3.3E-11
HLC-S-3	L-14	0.000020	0.00022	0.0000065	0.0085	-	-	0.0000029	-	0.028	5.9E-09	0.0000019	0.0000029	0.0000059	0.00000098	3.3E-09	3.3E-10	3.3E-09	1.6E-08	3.3E-08	0.00000011	3.3E-11
HLC-S-3	L-15	0.000018	0.00021	0.0000033	0.0079	-	-	0.0000030	-	0.025	5.9E-09	0.0000018	0.0000029	0.0000065	0.0000010	3.3E-09	1.3E-09	3.3E-09	1.6E-08	3.3E-08	0.00000014	3.3E-11
HLC-S-3	L-16	0.000019	0.00020	0.0000033	0.0075	-	-	0.0000029	-	0.025	3.9E-09	0.0000017	0.0000026	0.0000059	0.00000098	3.3E-09	4.6E-09	3.3E-09	1.6E-08	3.3E-08	0.00000012	3.3E-11
HLC-S-3	L-17	0.000018	0.00020	0.0000033	0.0069	-	-	0.000040	-	0.023	4.6E-09	0.0000027	0.0000024	0.0000059	0.00000098	3.3E-09	3.3E-10	3.3E-09	1.6E-08	5.2E-08	0.00000014	1.3E-10
HLC-S-3	L-18	0.000010	0.00015	0.0000033	0.0053	-	-	0.0000015	-	0.019	2.0E-09	0.0000010	0.0000019	0.0000046	0.00000078	1.6E-09	2.0E-09	1.6E-09	8.1E-09	1.6E-08	0.00000012	3.3E-11
HLC-S-3	L-19	0.0000084	0.00014	0.0000032	0.0044	-	-	0.0000015	-	0.016	1.6E-09	0.0000011	0.0000017	0.0000042	0.00000077	1.6E-09	1.6E-10	1.6E-09	2.9E-08	2.6E-08	0.00000022	1.6E-11
HLC-S-3	L-20	0.0000039	0.00014	0.0000033	0.0036	-	-	0.000024	-	0.015	8.1E-10	0.0000016	0.0000014	0.0000039	0.00000072	1.6E-09	1.6E-10	1.6E-09	8.1E-09	2.0E-08	3.6E-08	1.6E-11
HLC-S-4	L-1	0.00061	0.0051	0.0010	0.088	-	-	0.000046	-	0.65	0.0000016	0.00032	0.000038	0.00020	0.000071	0.00000051	5.1E-08	0.0000010	0.0000025	0.000011	0.000060	1.0E-08
HLC-S-4	L-2	0.00016	0.0022	0.00020	0.080	-	-	0.0000044	-	0.31	0.0000021	0.000030	0.000019	0.000049	0.000016	4.9E-08	9.8E-09	9.8E-08	0.00000025	0.00000088	0.0000059	4.9E-09
HLC-S-4	L-3	0.00013	0.0016	0.000090	0.066	-	-	0.0000040	-	0.22	0.0000012	0.000022	0.000015	0.000036	0.000013	4.5E-08	3.6E-08	4.5E-08	0.00000022	0.00000045	0.0000057	4.5E-10
HLC-S-4	L-4	0.000067	0.00096	0.000036	0.046	-	-	0.00000081	-	0.14	0.00000036	0.0000040	0.000010	0.000016	0.0000043	9.0E-09	7.2E-09	1.8E-08	4.5E-08	0.00000014	0.00000062	9.0E-11
HLC-S-4	L-5	0.000059	0.00080	0.000026	0.038	-	-	0.000059	-	0.12	0.00000016	0.0000026	0.0000089	0.000014	0.0000031	6.5E-09	1.3E-08	1.3E-08	3.3E-08	9.2E-08	0.00000052	6.5E-11
HLC-S-4	L-6	0.000038	0.00051	0.000013	0.025	-	-	0.000029	-	0.072	5.2E-08	0.0000018	0.0000063	0.000013	0.0000018	3.3E-08	6.5E-09	3.3E-08	0.00000016	6.5E-08	0.00000016	3.3E-11
HLC-S-4	L-7	0.000025	0.00044	0.000013	0.020	-	-	0.000029	-	0.060	3.9E-08	0.0000017	0.0000053	0.0000065	0.0000017	3.2E-08	6.5E-09	3.2E-08	0.00000016	6.5E-08	0.00000016	3.2E-11
HLC-S-4	L-8	0.000025	0.00051	0.000013	0.022	-	-	0.0000059	-	0.063	3.3E-08	0.0000040	0.0000065	0.000012	0.0000024	6.5E-09	1.4E-08	6.5E-09	3.3E-08	6.5E-08	7.8E-08	6.5E-11
HLC-S-4	L-9	0.000020	0.00035	0.000013	0.015	-	-	0.0000030	-	0.046	1.6E-08	0.0000018	0.0000046	0.0000078	0.0000016	3.3E-09	1.3E-09	3.3E-09	1.6E-08	2.6E-08	0.00000012	3.3E-11
HLC-S-4	L-10	0.000028	0.00032	0.0000065	0.013	-	-	0.0000029	-	0.042	1.1E-08	0.0000020	0.0000043	0.0000072	0.0000014	3.3E-09	5.9E-09	3.3E-09	1.6E-08	2.6E-08	0.00000022	3.3E-11
HLC-S-4	L-11	0.000027	0.00029	0.0000065	0.012	-	-	0.0000029	-	0.038	9.8E-09	0.0000020	0.0000038	0.0000078	0.0000014	3.3E-09	3.9E-09	3.3E-09	1.6E-08	3.3E-08	0.00000014	3.3E-11
HLC-S-4	L-12	0.000016	0.00029	0.0000065	0.011	-	-	0.0000029	-	0.035	7.2E-09	0.0000023	0.0000036	0.0000072	0.0000013	3.3E-09	3.9E-09	3.3E-09	1.6E-08	2.6E-08	0.0000001	3.3E-11
HLC-S-4	L-13	0.000022	0.00025	0.0000065	0.0091	-	-	0.0000029	-	0.030	5.9E-09	0.0000022	0.0000031	0.0000059	0.0000011	3.3E-09	3.3E-09	3.3E-09	5.2E-08	2.6E-08	0.00000026	3.3E-11
HLC-S-4	L-14	0.000021	0.00023	0.0000065	0.0081	-	-	0.0000030	-	0.027	5.2E-09	0.0000024	0.0000029	0.0000059	0.0000012	3.3E-09	3.3E-09	3.3E-09	1.6E-08	3.3E-08	8.5E-08	3.3E-11
HLC-S-4	L-15	0.000019	0.00022	0.0000033	0.0071	-	-	0.0000029	-	0.025	3.9E-09	0.0000022	0.0000027	0.0000059	0.0000012	3.3E-09	3.3E-09	3.3E-09	1.6E-08	3.9E-08	9.1E-08	6.5E-11
HLC-S-4	L-16	0.000020	0.00021	0.0000065	0.0064	-	-	0.0000029	-	0.023	1.6E-09	0.0000025	0.0000025	0.0000059	0.0000012	3.3E-09	1.3E-09	3.3E-09	1.6E-08	3.3E-08	0.00000021	3.3E-11
HLC-S-4	L-17	0.000019	0.00020	0.0000065	0.0060	-	-	0.000035	-	0.022	3.3E-09	0.0000031	0.0000023	0.0000059	0.0000011	3.3E-09	3.3E-10	3.3E-09	1.6E-08	3.3E-08	0.00000014	1.3E-10
HLC-S-4	L-18	0.000012	0.00014	0.0000066	0.0044	-	-	0.0000015	-	0.017	1.6E-09	0.0000012	0.0000017	0.0000043	0.00000095	1.6E-09	3.3E-10	1.6E-09	8.2E-09	1.6E-08	7.2E-08	6.6E-11
HLC-S-4	L-19	0.0000091	0.00014	0.0000032	0.0037	-	-	0.0000015	-	0.016	2.3E-09	0.0000010	0.0000014	0.0000039	0.00000094	1.6E-09	2.3E-09	1.6E-09	8.1E-09	1.9E-08	6.2E-08	3.2E-11
HLC-S-4	L-20	0.0000059	0.00013	0.0000033	0.0029	-	-	0.000024	-	0.014	8.1E-10	0.0000015	0.0000013	0.0000039	0.00000085	1.6E-09	4.2E-09	1.6E-09	8.1E-09	3.3E-08	8.1E-09	1.6E-11

- Parameter not analyzed

Appendix E, Table E-17
HLC-S LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HLC-S-1	L-1	0.0000025	0.0015	0.0000020	0.000016	0.000011	0.00013	0.00000051	0.00026	0.0000071	0.0000010	0.00011	0.0000030	0.000024	-	-	1.5E-09	-
HLC-S-1	L-2	0.00000024	0.0027	0.0000002	0.0000015	0.0000065	0.000082	4.9E-08	0.00012	0.0000071	0.00000049	0.000020	0.0000019	0.0000017	-	-	6.6E-10	-
HLC-S-1	L-3	0.00000045	0.0022	0.00000027	0.0000050	0.0000043	0.000067	4.5E-08	0.000074	0.0000058	0.00000036	0.000015	0.0000015	0.0000034	-	-	4.4E-10	-
HLC-S-1	L-4	4.5E-08	0.0015	5.4E-08	0.00000045	0.0000017	0.000040	9.0E-09	0.000038	0.0000038	0.00000016	0.0000017	0.00000096	0.00000022	-	-	2.0E-10	-
HLC-S-1	L-5	3.2E-08	0.0013	5.2E-08	0.00000019	0.0000013	0.000030	6.5E-09	0.000031	0.0000030	0.00000014	0.0000018	0.00000089	3.2E-08	-	-	1.4E-10	-
HLC-S-1	L-6	0.00000016	0.00085	3.2E-08	0.00000013	0.00000077	0.000015	3.2E-08	0.000022	0.0000027	6.4E-08	0.0000010	0.00000051	0.00000016	-	-	8.9E-11	-
HLC-S-1	L-7	0.00000016	0.00074	3.2E-08	0.00000013	0.00000065	0.000014	3.2E-08	0.000019	0.0000024	6.5E-08	0.00000091	0.00000065	0.00000016	-	-	7.2E-11	-
HLC-S-1	L-8	3.2E-08	0.00080	2.6E-08	0.00000021	0.00000079	0.000017	6.5E-09	0.000021	0.0000023	0.0000001	0.0000013	0.0000008	0.00000016	-	-	7.7E-11	-
HLC-S-1	L-9	1.6E-08	0.00056	1.9E-08	0.00000013	0.00000058	0.000011	3.2E-09	0.000015	0.0000016	7.1E-08	0.0000011	0.00000054	1.6E-08	-	-	6.3E-11	-
HLC-S-1	L-10	1.6E-08	0.00050	1.9E-08	0.00000014	0.00000054	0.0000078	3.2E-09	0.000015	0.0000012	7.1E-08	0.0000012	0.00000053	9.7E-08	-	-	5.9E-11	-
HLC-S-1	L-11	1.6E-08	0.00043	3.2E-08	0.00000024	0.00000051	0.0000070	3.2E-09	0.000013	0.0000010	6.4E-08	0.0000012	0.00000047	0.00000022	-	-	5.5E-11	-
HLC-S-1	L-12	1.6E-08	0.00038	1.9E-08	0.0000001	0.00000049	0.0000064	3.2E-09	0.000012	0.0000010	5.8E-08	0.00000096	0.0000005	0.0000001	-	-	4.5E-11	-
HLC-S-1	L-13	1.6E-08	0.00033	1.3E-08	0.0000001	0.00000041	0.0000058	3.3E-09	0.000011	0.00000085	4.6E-08	0.00000085	0.00000047	0.00000012	-	-	3.9E-11	-
HLC-S-1	L-14	1.6E-08	0.00032	1.3E-08	9.1E-08	0.00000041	0.0000051	3.3E-09	0.000011	0.00000064	5.2E-08	0.00000085	0.00000046	0.0000001	-	-	3.3E-11	-
HLC-S-1	L-15	1.6E-08	0.00029	1.9E-08	0.0000001	0.00000039	0.0000056	3.2E-09	0.000010	0.00000053	4.5E-08	0.0000012	0.00000045	0.00000029	-	-	3.5E-11	-
HLC-S-1	L-16	1.6E-08	0.00026	1.3E-08	8.4E-08	0.00000042	0.0000049	3.2E-09	0.0000097	0.00000065	3.9E-08	0.00000071	0.00000041	0.0000002	-	-	3.0E-11	-
HLC-S-1	L-17	1.6E-08	0.00026	1.3E-08	8.5E-08	0.0000004	0.0000043	3.3E-09	0.0000098	0.00000044	3.9E-08	0.00000056	0.00000029	0.00000012	-	-	2.8E-11	-
HLC-S-1	L-18	8.1E-09	0.00016	1.3E-08	5.5E-08	0.00000026	0.0000028	1.6E-09	0.0000081	0.00000074	2.9E-08	0.00000087	0.00000029	4.8E-08	-	-	2.8E-11	-
HLC-S-1	L-19	8.1E-09	0.00018	9.7E-09	5.2E-08	0.00000025	0.0000031	1.6E-09	0.0000081	0.00000035	2.9E-08	0.00000042	0.00000032	8.1E-09	-	-	2.4E-11	-
HLC-S-1	L-20	8.1E-09	0.00016	1.3E-08	6.1E-08	0.00000024	0.0000026	1.6E-09	0.0000078	0.00000028	2.6E-08	0.00000068	0.00000026	5.8E-08	-	-	2.6E-11	-
HLC-S-2	L-1	0.0000026	0.0025	0.0000021	0.00012	0.000019	0.00022	0.00000052	0.00044	0.000021	0.0000010	0.00021	0.0000052	0.000017	-	-	2.2E-09	-
HLC-S-2	L-2	0.00000067	0.0024	0.00000067	0.000021	0.0000056	0.000087	4.8E-08	0.00011	0.0000080	0.00000039	0.000035	0.0000019	0.000023	-	-	6.0E-10	-
HLC-S-2	L-3	0.00000023	0.0021	0.00000018	0.0000027	0.0000037	0.000064	4.6E-08	0.000067	0.0000052	0.00000027	0.000013	0.0000015	0.0000025	-	-	4.2E-10	-
HLC-S-2	L-4	4.5E-08	0.0015	3.6E-08	0.00000036	0.0000017	0.000040	9.1E-09	0.000036	0.0000036	0.00000016	0.0000015	0.0000010	0.00000015	-	-	1.9E-10	-
HLC-S-2	L-5	3.2E-08	0.0012	2.6E-08	0.00000022	0.0000012	0.000031	6.5E-09	0.000028	0.0000027	0.00000013	0.0000014	0.00000088	3.2E-08	-	-	1.4E-10	-
HLC-S-2	L-6	0.00000016	0.00075	3.3E-08	0.00000046	0.00000072	0.000014	3.3E-08	0.000021	0.0000023	6.5E-08	0.0000012	0.00000052	0.00000016	-	-	8.8E-11	-
HLC-S-2	L-7	1.6E-08	0.00064	2.0E-08	0.00000021	0.00000064	0.000014	3.3E-09	0.000018	0.0000021	7.8E-08	0.00000098	0.00000057	4.6E-08	-	-	7.2E-11	-
HLC-S-2	L-8	3.3E-08	0.00071	2.6E-08	0.00000026	0.0000008	0.000016	6.6E-09	0.000020	0.0000020	9.2E-08	0.0000016	0.00000077	6.6E-08	-	-	7.4E-11	-
HLC-S-2	L-9	1.6E-08	0.00053	1.3E-08	0.00000013	0.00000058	0.000010	3.3E-09	0.000014	0.0000015	6.5E-08	0.00000098	0.00000052	1.6E-08	-	-	6.5E-11	-
HLC-S-2	L-10	1.6E-08	0.00048	1.3E-08	0.00000017	0.00000053	0.0000078	3.2E-09	0.000014	0.0000012	6.5E-08	0.00000084	0.00000052	1.6E-08	-	-	5.6E-11	-
HLC-S-2	L-11	1.6E-08	0.00044	1.3E-08	0.0000002	0.00000051	0.0000078	3.3E-09	0.000013	0.0000010	5.9E-08	0.00000085	0.00000051	0.00000016	-	-	4.9E-11	-
HLC-S-2	L-12	1.6E-08	0.00040	1.3E-08	0.00000012	0.00000048	0.0000072	3.3E-09	0.000012	0.0000011	5.2E-08	0.0000012	0.00000051	1.6E-08	-	-	4.2E-11	-
HLC-S-2	L-13	1.6E-08	0.00035	1.3E-08	0.00000012	0.00000041	0.0000060	3.3E-09	0.000010	0.00000085	4.6E-08	0.00000098	0.00000048	1.6E-08	-	-	3.7E-11	-
HLC-S-2	L-14	1.6E-08	0.00032	1.3E-08	0.00000016	0.00000042	0.0000053	3.3E-09	0.000010	0.00000072	4.6E-08	0.0000011	0.00000046	0.00000019	-	-	3.9E-11	-
HLC-S-2	L-15	1.6E-08	0.00031	1.3E-08	0.00000014	0.00000039	0.0000059	3.3E-09	0.000010	0.00000059	4.6E-08	0.00000098	0.00000046	0.00000016	-	-	3.5E-11	-
HLC-S-2	L-16	0.00000027	0.00031	2.0E-08	0.00000012	0.00000043	0.0000054	3.3E-09	0.000010	0.00000078	3.9E-08	0.00000098	0.00000045	4.6E-08	-	-	3.5E-11	-
HLC-S-2	L-17	1.6E-08	0.00028	1.3E-08	0.00000014	0.0000004	0.0000046	3.3E-09	0.0000098	0.00000045	4.6E-08	0.0000016	0.00000035	0.00000038	-	-	3.2E-11	-
HLC-S-2	L-18	8.1E-09	0.00019	6.5E-09	7.1E-08	0.00000026	0.0000030	1.6E-09	0.0000081	0.00000084	3.2E-08	0.00000088	0.00000031	2.9E-08	-	-	3.0E-11	-
HLC-S-2	L-19	8.0E-09	0.00019	6.4E-09	6.4E-08	0.00000026	0.0000033	1.6E-09	0.0000080	0.00000042	3.2E-08	0.00000054	0.00000032	8.0E-09	-	-	2.6E-11	-
HLC-S-2	L-20	8.1E-09	0.00018	1.3E-08	7.5E-08	0.00000024	0.0000029	1.6E-09	0.0000078	0.00000033	2.9E-08	0.00000098	0.00000029	0.00000011	-	-	2.6E-11	-
HLC-S-3	L-1	0.0000027	0.0043	0.0000021	0.00010	0.000012	0.00020	0.00000053	0.00023	0.000027	0.0000011	0.00018	0.0000043	0.000014	-	-	1.9E-09	-
HLC-S-3	L-2	0.00000025	0.0025	0.00000029	0.000015	0.0000039	0.000083	4.9E-08	0.000082	0.0000078	0.00000039	0.000023	0.0000020	0.0000038	-	-	4.2E-10	-
HLC-S-3	L-3	0.00000054	0.0019	0.00000036	0.0000022	0.0000026	0.000058	4.5E-08	0.000058	0.0000048	0.00000027	0.0000078	0.0000014	0.0000063	-	-	3.7E-10	-
HLC-S-3	L-4	4.5E-08	0.0014	3.6E-08	0.00000035	0.0000013	0.000038	9.1E-09	0.000035	0.0000033	0.00000016	0.0000010	0.00000098	0.00000022	-	-	1.4E-10	-
HLC-S-3	L-5	3.3E-08	0.0012	3.9E-08	0.0000011	0.0000010	0.000027	6.5E-09	0.000029	0.0000030	0.00000013	0.0000018	0.00000086	6.5E-08	-	-	1.1E-10	-
HLC-S-3	L-6	0.00000016	0.00077	0.00000013	0.0000002	0.00000059	0.000014	3.3E-08	0.000020	0.0000025	6.5E-08	0.00000065	0.00000052	0.00000016	-	-	6.2E-11	-
HLC-S-3	L-7	1.6E-08	0.00065	2.0E-08	0.00000018	0.00000057	0.000013	3.3E-09	0.000018	0.0000021	7.8E-08	0.00000065	0.00000057	8.5E-08	-	-	5.6E-11	-
HLC-S-3	L-8	3.3E-08	0.00071	2.6E-08	0.00000033	0.00000072	0.000014	6.5E-09	0.000020	0.0000022	9.1E-08	0.00000099	0.00000073	9.1E-08	-	-	6.0E-11	-
HLC-S-3	L-9	1.6E-08	0.00053	1.3E-08	8.5E-08	0.00000054	0.0000098	3.3E-09	0.000014	0.0000016	6.5E-08	0.00000041	0.00000052	1.6E-08	-	-	5.3E-11	-
HLC-S-3	L-10	1.6E-08	0.00049	1.3E-08	0.00000014	0.00000051	0.0000079	3.3E-09	0.000014	0.0000012	6.5E-08	0.00000059	0.00000052	1.6E-08	-	-	5.1E-11	-
HLC-S-3	L-11	1.6E-08	0.00044	1.3E-08	0.00000012	0.00000048	0.0000071	3.2E-09	0.000013	0.0000010	5.8E-08	0.00000078	0.00000049	6.5E-08	-	-	4.9E-11	-
HLC-S-3	L-12	1.6E-08	0.00041	1.3E-08	8.5E-08	0.00000046	0.0000065	3.3E-09	0.000012	0.0000011	5.2E-08	0.0000006	0.00000051	3.9E-08	-	-	4.6E-11	-
HLC-S-3	L-13	1.6E-08	0.00035	1.3E-08	9.2E-08	0.00000039	0.0000059	3.3E-09	0.000010	0.00000079	4.6E-08	0.00000072	0.00000046	9.8E-08	-	-	3.7E-11	-
HLC-S-3	L-14	1.6E-08	0.00033	1.3E-08	0.00000013	0.0000004	0.0000053	3.3E-09	0.000010	0.00000072	5.2E-08	0.00000078	0.00000046	7.8E-08	-	-	3.5E-11	-
HLC-S-3	L-15	1.6E-08	0.00032	1.3E-08	0.00000018	0.00000039	0.0000058	3.3E-09	0.000010	0.00000063	4.6E-08	0.00000092	0.00000046	6.5E-08	-	-	3.7E-11	-
HLC-S-3	L-16	1.6E-08	0.00030	1.3E-08	0.00000013	0.00000043	0.0000052	3.3E-09	0.0000098	0.00000072	3.9E-08	0.00000098	0.00000043	0.0000001	-	-	3.2E-11	-
HLC-S-3	L-17	1.6E-08	0.00029	3.3E-08	9.2E-08	0.00000042	0.0000047	3.3E-09	0.0000098	0.00000033	3.9E-08	0.0000014	0.00000035	0.00000063	-	-	3.4E-11	-
HLC-S-3	L-18	8.1E-09	0.00018	6.5E-09	0.0000001	0.00000028	0.0000031	1.6E-09	0.0000078	0.00000081	3.3E-08	0.00000062	0.00000033	1.6E-08	-	-	2.8E-11	-
HLC-S-3	L-19	8.0E-09	0.00019	5.1E-08	0.00000013	0.00000025	0.0000032	1.6E-09	0.0000077	0.00000042	2.9E-08	0.0000008	0.00000032	0.00000026	-	-	2.8E-11	-
HLC-S-3	L-20	8.1E-09	0.00017	2.6E-08	6.5E-08	0.00000024	0.0000027	1.6E-09	0.0000078	0.0000003	2.9E-08	0.00000091	0.00000026	0.0000001	-	-	2.6E-11	-
HLC-S-4	L-1	0.0000025	0.0022	0.0000020	0.000080	0.000019	0.00020	0.00000051	0.00039	0.000014	0.0000010	0.00019	0.0000041	0.000015	-	-	2.1E-09	-
HLC-S-4	L-2	0.00000025	0.0022	0.0000002	0.0000081	0.0000078	0.000088	4.9E-08	0.00013	0.0000064	0.00000039	0.000024	0.0000020	0.0000016	-	-	5.8E-10	-
HLC-S-4	L-3	0.00000022	0.0019	0.00000018	0.0000028	0.0000049	0.000064	4.5E-08	0.000079	0.0000047	0.00000036	0.000012	0.0000016	0.0000013	-	-	4.6E-10	-
HLC-S-4	L-4	4.5E-08	0.0015	3.6E-08	0.00000065	0.0000020	0.000042	9.0E-09	0.000040	0.0000038	0.00000018	0.0000020	0.0000010	0.00000016	-	-	2.2E-10	-
HLC-S-4	L-5	3.3E-08	0.0013	2.6E-08	0.00000051	0.0000013	0.000033	6.5E-09	0.000031	0.0000033	0.00000014	0.0000020	0.00000094	3.3E-08	-	-	1.6E-10	-
HLC-S-4	L-6	0.00000016	0.00089	6.5E-08	0.00000013	0.00000078	0.000017	3.3E-08	0.000021	0.0000026	6.5E-08	0.00000091	0.00000059	0.00000016	-	-	9.7E-11	-
HLC-S-4	L-7	0.00000016	0.00072	3.2E-08	0.00000013	0.00000071	0.000016	3.2E-08	0.000019	0.0000025	6.5E-08	0.0000012	0.00000065	0.00000016	-	-	7.7E-11	-
HLC-S-4	L-8	3.3E-08	0.00082	2.6E-08	0.0000003	0.00000086	0.000018	6.5E-09	0.000021	0.0000024	0.0000001	0.0000025	0.00000086	3.3E-08	-	-	9.2E-11	-
HLC-S-4	L-9	1.6E-08	0.00060	1.3E-08	0.00000014	0.00000059	0.000012	3.3E-09	0.000015	0.0000017	7.2E-08	0.00000091	0.00000058	3.9E-08	-	-	6.9E-11	-
HLC-S-4	L-10	1.6E-08	0.00050	2.0E-08	0.00000023	0.00000055	0.0000085	3.3E-09	0.000015	0.0000013	7.2E-08	0.0000011	0.00000057	1.6E-08	-	-	6.2E-11	-
HLC-S-4	L-11	1.6E-08	0.00045	1.3E-08	0.00000017	0.00000053	0.0000078	3.3E-09	0.000014	0.0000012	6.5E-08	0.0000014	0.00000055	6.5E-08	-	-	5.1E-11	-
HLC-S-4	L-12	1.6E-08	0.00039	1.3E-08	0.00000014	0.0000005	0.0000072	3.3E-09	0.000013	0.0000010	5.9E-08	0.00000085	0.00000055	1.6E-08	-	-	4.9E-11	-
HLC-S-4	L-13	1.6E-08	0.00035	2.0E-08	0.00000018	0.00000044	0.0000062	3.3E-09	0.000012	0.00000078	5.2E-08	0.00000078	0.00000052	3.9E-08	-	-	4.2E-11	-
HLC-S-4	L-14	1.6E-08	0.00032	1.3E-08	0.00000018	0.00000043	0.0000054	3.3E-09	0.000012	0.00000072	5.2E-08	0.0000012	0.00000049	8.5E-08	-	-	3.9E-11	-
HLC-S-4	L-15	1.6E-08	0.00031	1.3E-08	0.00000017	0.00000042	0.0000059	3.3E-09	0.000011	0.00000061	4.6E-08	0.0000014	0.0000005	6.5E-08	-	-	3.9E-11	-
HLC-S-4	L-16	1.6E-08	0.00028	2.0E-08	0.00000025	0.00000046	0.0000053	3.3E-09	0.000010	0.00000078	4.6E-08	0.00000085	0.00000048	6.5E-08	-	-	3.3E-11	-
HLC-S-4	L-17	1.6E-08	0.00027	1.3E-08	0.00000018	0.00000044	0.0000046	3.3E-09	0.000010	0.00000048	3.9E-08	0.0000021	0.00000038	0.00000025	-	-	3.7E-11	-
HLC-S-4	L-18	8.2E-09	0.00018	6.6E-09	0.00000012	0.00000029	0.0000031	1.6E-09	0.0000089	0.00000089	3.3E-08	0.0000011	0.00000033	8.2E-09	-	-	7.0E-11	-
HLC-S-4	L-19	8.1E-09	0.00019	1.9E-08	9.7E-08	0.00000028	0.0000031	1.6E-09	0.0000087	0.00000039	3.2E-08	0.0000020	0.00000028	0.00000031	-	-	3.1E-11	-
HLC-S-4	L-20	8.1E-09	0.00017	2.0E-08	6.5E-08	0.00000029	0.0000029	1.6E-09	0.0000081	0.00000032	2.9E-08	0.0000013	0.00000026	7.2E-08	-	-	3.0E-11	-

- Parameter not analyzed

Appendix E, Table E-18
HHC-S LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HHC-S-1	L-1	2020-01-13	0.080	0.076	0.15	0.00067	4262	1.00	4.3	0.044	9.7	0.98	1472	0.0070	0.48	0.0070	0.25	0.014	0.64	0.042	0.020	0.0028
HHC-S-1	L-2	2020-01-14	1.0	0.076	0.15	0.00067	4403	1.00	4.4	0.044	10.0	0.98	1472	0.00063	0.17	0.00063	0.060	0.024	0.28	0.014	0.0054	0.011
HHC-S-1	L-3	2020-01-15	2.0	0.076	0.15	0.00067	4416	1.00	4.4	0.044	10	0.98	1472	0.00058	0.100	0.00058	0.039	0.012	0.18	0.013	0.0051	0.00070
HHC-S-1	L-4	2020-01-20	7.0	0.076	0.15	0.00067	4422	1.00	4.4	0.044	10	0.98	1472	0.00012	0.048	0.00012	0.011	0.0100	0.072	0.0070	0.0028	0.0026
HHC-S-1	L-5	2020-01-27	14	0.076	0.15	0.00067	4425	1.00	4.4	0.044	10	0.98	1472	0.000083	0.031	0.000083	0.0061	0.0070	0.042	0.0078	0.0032	0.0012
HHC-S-1	L-6	2020-02-10	28	0.076	0.15	0.00067	4424	1.00	4.4	0.044	10	0.98	1472	0.000041	0.015	0.000041	0.0039	0.0028	0.022	0.0068	0.0027	0.00066
HHC-S-1	L-7	2020-02-24	42	0.076	0.15	0.00067	4424	1.00	4.4	0.044	10	0.98	1472	0.000041	0.013	0.000041	0.0036	0.0022	0.020	0.0075	0.0030	0.00050
HHC-S-1	L-8	2020-03-02	49	0.076	0.15	0.00067	4427	1.00	4.4	0.044	10	0.98	1472	0.000083	0.018	0.000083	0.0060	0.0027	0.023	0.012	0.0050	0.00050
HHC-S-1	L-9	2020-03-16	63	0.076	0.15	0.00067	4422	1.00	4.4	0.044	10	0.98	1472	0.000041	0.012	0.000041	0.0038	0.0018	0.012	0.0075	0.0030	0.00033
HHC-S-1	L-10	2020-03-30	77	0.076	0.15	0.00067	4426	1.00	4.4	0.044	10	0.98	1472	0.000042	0.011	0.000042	0.0026	0.0022	0.014	0.0079	0.0032	0.00033
HHC-S-1	L-11	2020-04-13	91	0.076	0.15	0.00067	4426	1.00	4.4	0.044	10	0.98	1472	0.000042	0.0095	0.000042	0.0028	0.0017	0.015	0.0081	0.0032	0.00025
HHC-S-1	L-12	2020-04-27	105	0.076	0.15	0.00067	4422	1.00	4.4	0.044	10	0.98	1472	0.000041	0.011	0.000041	0.0026	0.0022	0.013	0.0080	0.0032	0.00025
HHC-S-1	L-13	2020-05-11	119	0.076	0.15	0.00067	4424	1.00	4.4	0.044	10	0.98	1472	0.000041	0.0095	0.000041	0.0017	0.0023	0.0091	0.0075	0.0030	0.00017
HHC-S-1	L-14	2020-05-25	133	0.076	0.15	0.00067	4428	1.00	4.4	0.044	10	0.98	1472	0.000042	0.0095	0.000042	0.0026	0.0017	0.016	0.0064	0.0026	0.00017
HHC-S-1	L-15	2020-06-08	147	0.076	0.15	0.00067	4425	1.00	4.4	0.044	10	0.98	1472	0.000041	0.0090	0.000041	0.0020	0.0019	0.011	0.0066	0.0027	0.00017
HHC-S-1	L-16	2020-06-22	161	0.076	0.15	0.00067	4425	1.00	4.4	0.044	10	0.98	1472	0.000041	0.0083	0.000041	0.0023	0.0015	0.0092	0.0071	0.0028	0.00017
HHC-S-1	L-17	2020-07-06	175	0.076	0.15	0.00067	4425	1.00	4.4	0.044	10	0.98	1472	0.000041	0.0082	0.000041	0.0018	0.0017	0.013	0.0064	0.0026	0.000025
HHC-S-1	L-18	2020-08-03	203	0.076	0.15	0.00067	4423	1.00	4.4	0.044	10	0.98	1472	0.000021	0.0045	0.000021	0.0013	0.00075	0.0073	0.0042	0.0017	0.00012
HHC-S-1	L-19	2020-08-31	231	0.076	0.15	0.00067	4423	1.0	4.4	0.044	10.0	0.98	1472	0.000021	0.0051	0.000021	0.0013	0.00099	0.0066	0.0050	0.0020	0.00012
HHC-S-1	L-20	2020-09-28	259	0.076	0.15	0.00067	4424	1.00	4.4	0.044	10	0.98	1472	0.000021	0.0043	0.000021	0.0015	0.00066	0.0073	0.0043	0.0017	0.000083
HHC-S-2	L-1	2020-01-13	0.080	0.076	0.15	0.00066	4266	1.00	4.3	0.044	9.7	0.96	1451	0.0070	0.59	0.028	0.34	0.0070	0.72	0.042	0.018	0.0028
HHC-S-2	L-2	2020-01-14	1.0	0.076	0.15	0.00066	4387	1.00	4.4	0.044	10	0.96	1451	0.00063	0.15	0.00063	0.052	0.023	0.29	0.013	0.0049	0.013
HHC-S-2	L-3	2020-01-15	2.0	0.076	0.15	0.00066	4395	1.00	4.4	0.044	10	0.96	1451	0.00058	0.097	0.00058	0.037	0.012	0.16	0.012	0.0048	0.00070
HHC-S-2	L-4	2020-01-20	7.0	0.076	0.15	0.00066	4396	1.00	4.4	0.044	10	0.96	1451	0.00012	0.050	0.00012	0.012	0.010	0.074	0.0070	0.0028	0.0028
HHC-S-2	L-5	2020-01-27	14	0.076	0.15	0.00066	4400	1.00	4.4	0.044	10	0.96	1451	0.000083	0.030	0.000083	0.0056	0.0071	0.044	0.0075	0.0030	0.0012
HHC-S-2	L-6	2020-02-10	28	0.076	0.15	0.00066	4398	1.00	4.4	0.044	10	0.96	1451	0.000041	0.016	0.000041	0.0051	0.0026	0.022	0.0062	0.0025	0.00066
HHC-S-2	L-7	2020-02-24	42	0.076	0.15	0.00066	4401	1.00	4.4	0.044	10	0.96	1451	0.000041	0.013	0.000041	0.0039	0.0022	0.019	0.0075	0.0030	0.00050
HHC-S-2	L-8	2020-03-02	49	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	0.000083	0.018	0.000083	0.0063	0.0023	0.023	0.012	0.0048	0.00050
HHC-S-2	L-9	2020-03-16	63	0.076	0.15	0.00066	4400	1.00	4.4	0.044	10	0.96	1451	0.000041	0.011	0.000041	0.0036	0.0017	0.011	0.0072	0.0029	0.00033
HHC-S-2	L-10	2020-03-30	77	0.076	0.15	0.00066	4401	1.00	4.4	0.044	10	0.96	1451	0.000042	0.011	0.000042	0.0027	0.0022	0.013	0.0076	0.0031	0.00033
HHC-S-2	L-11	2020-04-13	91	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	0.000042	0.0096	0.000042	0.0031	0.0015	0.015	0.0066	0.0027	0.00025
HHC-S-2	L-12	2020-04-27	105	0.076	0.15	0.00066	4401	1.00	4.4	0.044	10	0.96	1451	0.000041	0.010	0.000041	0.0019	0.0023	0.013	0.0076	0.0031	0.00025
HHC-S-2	L-13	2020-05-11	119	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	0.000041	0.0095	0.000041	0.0018	0.0022	0.0086	0.0075	0.0030	0.00017
HHC-S-2	L-14	2020-05-25	133	0.076	0.15	0.00066	4401	1.00	4.4	0.044	10	0.96	1451	0.000041	0.0091	0.000041	0.0022	0.0018	0.012	0.0062	0.0025	0.00017
HHC-S-2	L-15	2020-06-08	147	0.076	0.15	0.00066	4400	1.00	4.4	0.044	10	0.96	1451	0.000041	0.0097	0.000041	0.0031	0.0016	0.010	0.0075	0.0030	0.00017
HHC-S-2	L-16	2020-06-22	161	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	0.000041	0.0085	0.000041	0.0027	0.0014	0.0090	0.0066	0.0027	0.00017
HHC-S-2	L-17	2020-07-06	175	0.076	0.15	0.00066	4400	1.00	4.4	0.044	10	0.96	1451	0.000041	0.0082	0.000041	0.0021	0.0016	0.013	0.0068	0.0027	0.000017
HHC-S-2	L-18	2020-08-03	203	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	0.000021	0.0045	0.000021	0.0014	0.00075	0.0071	0.0041	0.0017	0.00012
HHC-S-2	L-19	2020-08-31	231	0.076	0.15	0.00066	4399	1.0	4.4	0.044	10	0.96	1451	0.000021	0.0052	0.000021	0.0014	0.00099	0.0066	0.0048	0.0019	0.00021
HHC-S-2	L-20	2020-09-28	259	0.076	0.15	0.00066	4398	1.00	4.4	0.044	10	0.96	1451	0.000021	0.0042	0.000021	0.0015	0.00058	0.0069	0.0044	0.0017	0.00012
HHC-S-3	L-1	2020-01-13	0.080	0.076	0.15	0.00066	4288	1.00	4.3	0.044	9.8	0.99	1498	0.0071	0.61	0.0071	0.34	0.014	0.74	0.043	0.020	0.0028
HHC-S-3	L-2	2020-01-14	1.0	0.076	0.15	0.00066	4359	1.00	4.4	0.044	10.0	0.99	1498	0.00063	0.16	0.00063	0.059	0.023	0.30	0.013	0.0052	0.010
HHC-S-3	L-3	2020-01-15	2.0	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.99	1498	0.00058	0.097	0.00058	0.039	0.012	0.16	0.012	0.0046	0.00070
HHC-S-3	L-4	2020-01-20	7.0	0.076	0.15	0.00066	4376	1.00	4.4	0.044	10	0.99	1498	0.00012	0.047	0.00012	0.012	0.0093	0.072	0.0070	0.0028	0.0026
HHC-S-3	L-5	2020-01-27	14	0.076	0.15	0.00066	4376	1.00	4.4	0.044	10	0.99	1498	0.000083	0.030	0.000083	0.0056	0.0068	0.040	0.0083	0.0033	0.00100
HHC-S-3	L-6	2020-02-10	28	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	0.000041	0.015	0.000041	0.0044	0.0027	0.023	0.0071	0.0028	0.00066
HHC-S-3	L-7	2020-02-24	42	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	0.000041	0.013	0.000041	0.0037	0.0023	0.019	0.0080	0.0032	0.00050
HHC-S-3	L-8	2020-03-02	49	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	0.000083	0.018	0.000083	0.0061	0.0025	0.024	0.012	0.0050	0.00033
HHC-S-3	L-9	2020-03-16	63	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	0.000042	0.011	0.000042	0.0038	0.0017	0.012	0.0076	0.0031	0.00033
HHC-S-3	L-10	2020-03-30	77	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	0.000042	0.011	0.000042	0.0029	0.0022	0.0097	0.0060	0.0024	0.00025
HHC-S-3	L-11	2020-04-13	91	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	0.000042	0.0098	0.000042	0.0031	0.0016	0.015	0.0068	0.0027	0.00025
HHC-S-3	L-12	2020-04-27	105	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	0.000041	0.010	0.000041	0.0019	0.0024	0.013	0.0079	0.0032	0.00017
HHC-S-3	L-13	2020-05-11	119	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	0.000042	0.0096	0.000042	0.0020	0.0022	0.011	0.0076	0.0031	0.00017
HHC-S-3	L-14	2020-05-25	133	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	0.000042	0.0089	0.000042	0.0024	0.0017	0.012	0.0064	0.0026	0.00017
HHC-S-3	L-15	2020-06-08	147	0.076	0.15	0.00066	4379	1.00	4.4	0.044	10	0.99	1498	0.000042	0.0094	0.000042	0.0027	0.0017	0.0090	0.0075	0.0030	0.00017
HHC-S-3	L-16	2020-06-22	161	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	0.000041	0.0089	0.000041	0.0032	0.0012	0.0087	0.0071	0.0028	0.00017
HHC-S-3	L-17	2020-07-06	175	0.076	0.15	0.00066	4379	1.00	4.4	0.044	10	0.99	1498	0.000042	0.0082	0.000042	0.0019	0.0017	0.013	0.0068	0.0027	0.0000083
HHC-S-3	L-18	2020-08-03	203	0.076	0.15	0.00066	4379	1.00	4.4	0.044	10	0.99	1498	0.000021	0.0042	0.000021	0.0012	0.00075	0.0071	0.0040	0.0016	0.00012
HHC-S-3	L-19	2020-08-31	231	0.076	0.15	0.00066	4376	1.0	4.4	0.044	10	0.99	1498	0.000021	0.0053	0.000021	0.0014	0.00095	0.0063	0.0046	0.0019	0.00012
HHC-S-3	L-20	2020-09-28	259	0.076	0.15	0.00066	4374	1.00	4.4	0.044	10	0.99	1498	0.000021	0.0042	0.000021	0.0015	0.00062	0.0070	0.0042	0.0017	0.000083
HHC-S-4	L-1	2020-01-13	0.080	0.076	0.15	0.00068	4275	1.00	4.3	0.045	9.6	1.00	1477	0.0069	0.50	0.0069	0.28	0.0069	0.72	0.056	0.021	0.0028
HHC-S-4	L-2	2020-01-14	1.0	0.076	0.15	0.00068	4456	1.00	4.5	0.045	10.0	1.00	1477	0.00063	0.16	0.00063	0.060	0.020	0.28	0.014	0.0057	0.011
HHC-S-4	L-3	2020-01-15	2.0	0.076	0.15	0.00068	4467	1.00	4.5	0.045	10	1.00	1477	0.00058	0.10	0.00058	0.037	0.013	0.15	0.013	0.0053	0.00058
HHC-S-4	L-4	2020-01-20	7.0	0.076	0.15	0.00068	4467	1.00	4.5	0.045	10	1.00	1477	0.00012	0.048	0.00012	0.012	0.0095	0.074	0.0074	0.0030	0.0026
HHC-S-4	L-5	2020-01-27	14	0.076	0.15	0.00068	4471	1.00	4.5	0.045	10	1.00	1477	0.000083	0.031	0.000083	0.0063	0.0068	0.042	0.0083	0.0033	0.0012
HHC-S-4	L-6	2020-02-10	28	0.076	0.15	0.00068	4472	1.00	4.5	0.045	10	1.00	1477	0.000041	0.015	0.000041	0.0046	0.0027	0.021	0.0068	0.0027	0.00058
HHC-S-4	L-7	2020-02-24	42	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	0.000041	0.013	0.000041	0.0038	0.0022	0.018	0.0079	0.0032	0.00041
HHC-S-4	L-8	2020-03-02	49	0.076	0.15	0.00068	4474	1.00	4.5	0.045	10	1.00	1477	0.000083	0.019	0.000083	0.0080	0.0020	0.024	0.013	0.0051	0.00033
HHC-S-4	L-9	2020-03-16	63	0.076	0.15	0.00068	4472	1.00	4.5	0.045	10	1.00	1477	0.000041	0.011	0.000041	0.0038	0.0017	0.012	0.0079	0.0032	0.00033
HHC-S-4	L-10	2020-03-30	77	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	0.000042	0.011	0.000042	0.0033	0.0019	0.013	0.0081	0.0032	0.00025
HHC-S-4	L-11	2020-04-13	91	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	0.000042	0.0095	0.000042	0.0029	0.0016	0.015	0.0071	0.0028	0.00025
HHC-S-4	L-12	2020-04-27	105	0.076	0.15	0.00068	4472	1.00	4.5	0.045	10	1.00	1477	0.000041	0.010	0.000041	0.0020	0.0023	0.012	0.0079	0.0032	0.00017
HHC-S-4	L-13	2020-05-11	119	0.076	0.15	0.00068	4474	1.00	4.5	0.045	10	1.00	1477	0.000042	0.0095	0.000042	0.0020	0.0021	0.010	0.0076	0.0031	0.00017
HHC-S-4	L-14	2020-05-25	133	0.076	0.15	0.00068	4475	1.00	4.5	0.045	10	1.00	1477	0.000042	0.0095	0.000042	0.0028	0.0017	0.012	0.0072	0.0029	0.00017
HHC-S-4	L-15	2020-06-08	147	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	0.000041	0.0095	0.000041	0.0025	0.0018	0.0096	0.0072	0.0029	0.00017
HHC-S-4	L-16	2020-06-22	161	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	0.000041	0.0090	0.000041	0.0032	0.0012	0.0093	0.0075	0.0030	0.00017
HHC-S-4	L-17	2020-07-06	175	0.076	0.15	0.00068	4475	1.00	4.5	0.045	10	1.00	1477	0.000042	0.0081	0.000042	0.0020	0.0017	0.013	0.0071	0.0028	0.000017
HHC-S-4	L-18	2020-08-03	203	0.076	0.15	0.00068	4476	1.00	4.5	0.045	10	1.00	1477	0.000021	0.0042	0.000021	0.0012	0.00075	0.0069	0.0039	0.0016	0.00012
HHC-S-4	L-19	2020-08-31	231	0.076	0.15	0.00068	4467	1.0	4.5	0.045	10.0	1.00	1477	0.000021	0.0052	0.000021	0.0014	0.00095	0.0062	0.0047	0.0019	0.00012
HHC-S-4	L-20	2020-09-28	259	0.076	0.15	0.00068	4469	1.00	4.5	0.045	10	1.00	1477	0.000021	0.0043	0.000021	0.0015	0.00058	0.0073	0.0044	0.0017	0.000083

- Parameter not analyzed

Appendix E, Table E-18
HHC-S LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH$_3$	NO$_2$	NO$_3$	PO$_4$	SO$_4$	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-N/m^{2}s	mg-P/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HHC-S-1	L-1	0.00070	0.042	0.00070	0.27	0.00042	0.000064	0.000063	0.000070	0.34	0.00000035	0.0036	0.000024	0.00014	0.000036	0.0000007	7.0E-08	0.0000007	0.0000035	0.0000070	0.00020	7.0E-09
HHC-S-1	L-2	0.00019	0.014	0.000063	0.092	0.00023	0.0000057	0.0000057	0.000013	0.10	3.1E-08	0.0019	0.0000098	0.000038	0.0000035	6.3E-08	3.8E-08	0.00000013	0.0000015	0.00000063	0.000024	6.3E-10
HHC-S-1	L-3	0.000058	0.0083	0.000058	0.044	0.00013	0.0000053	0.0000052	0.000023	0.032	2.9E-08	0.0013	0.0000046	0.000012	0.0000027	5.8E-08	5.8E-08	5.8E-08	0.00000081	0.00000035	0.000015	5.8E-10
HHC-S-1	L-4	0.000035	0.0039	0.000012	0.019	0.000065	0.0000011	0.0000010	0.0000023	0.0086	5.8E-09	0.00075	0.0000022	0.0000046	0.00000072	1.2E-08	1.2E-09	4.6E-08	0.00000039	0.00000014	0.0000051	1.2E-10
HHC-S-1	L-5	0.000017	0.0027	0.0000083	0.0095	0.000055	0.00000075	0.00000075	0.0000050	0.0038	4.1E-09	0.00047	0.0000010	0.0000017	0.00000061	8.3E-09	5.0E-09	1.7E-08	0.00000015	6.6E-08	0.0000020	6.6E-10
HHC-S-1	L-6	0.000014	0.0013	0.0000041	0.0043	0.000031	0.00000038	0.0000037	0.00000041	0.0023	2.1E-09	0.00026	0.00000058	0.00000083	0.00000045	4.1E-09	8.3E-10	8.3E-09	6.6E-08	5.8E-08	0.0000012	4.1E-11
HHC-S-1	L-7	0.0000066	0.00091	0.0000041	0.0027	0.000023	0.00000038	0.00000037	0.00000041	0.0019	2.1E-09	0.00021	0.00000038	0.00000041	0.00000047	4.1E-09	3.3E-09	8.3E-09	2.1E-08	4.1E-08	0.00000091	4.1E-11
HHC-S-1	L-8	0.0000083	0.00093	0.0000083	0.0023	0.000013	0.00000076	0.00000075	0.0000017	0.0015	4.2E-09	0.00030	0.00000038	0.00000083	0.00000078	8.3E-09	8.3E-10	8.3E-09	4.2E-08	6.6E-08	0.0000014	8.3E-11
HHC-S-1	L-9	0.0000050	0.00049	0.0000041	0.0014	0.000012	0.00000038	0.00000037	0.00000041	0.0015	2.1E-09	0.00018	0.00000027	0.00000041	0.00000049	4.1E-09	8.3E-10	4.1E-09	2.1E-08	2.5E-08	0.0000006	8.3E-11
HHC-S-1	L-10	0.0000075	0.00040	0.0000042	0.0012	0.0000083	0.00000038	0.00000037	0.0000017	0.0018	2.1E-09	0.00018	0.00000025	0.00000042	0.00000051	4.2E-09	8.3E-10	4.2E-09	2.1E-08	2.5E-08	0.00000066	4.2E-11
HHC-S-1	L-11	0.0000066	0.00032	0.0000042	0.00091	0.0000083	0.00000038	0.00000037	0.00000042	0.0015	2.1E-09	0.00017	0.00000022	0.00000042	0.00000051	4.2E-09	4.2E-10	4.2E-09	2.1E-08	2.5E-08	0.0000005	4.2E-11
HHC-S-1	L-12	0.0000050	0.00030	0.0000041	0.00083	0.0000066	0.00000038	0.00000037	0.00000083	0.0018	2.1E-09	0.00017	0.00000022	0.00000041	0.00000051	4.1E-09	8.3E-10	4.1E-09	2.1E-08	2.5E-08	0.00000059	4.1E-11
HHC-S-1	L-13	0.0000050	0.00022	0.0000041	0.00065	0.0000058	0.00000038	0.00000037	0.00000041	0.0013	2.1E-09	0.00015	0.00000018	0.00000041	0.00000047	4.1E-09	1.7E-09	4.1E-09	2.1E-08	1.7E-08	0.00000061	4.1E-11
HHC-S-1	L-14	0.0000042	0.00020	0.0000042	0.00056	0.0000066	0.00000038	0.00000037	0.0000025	0.0017	2.1E-09	0.00015	0.00000018	0.00000042	0.00000049	4.2E-09	4.2E-10	4.2E-09	2.1E-08	2.5E-08	0.00000061	4.2E-11
HHC-S-1	L-15	0.0000041	0.00017	0.0000041	0.00051	0.0000050	0.00000038	0.00000037	0.00000083	0.0017	2.1E-09	0.00015	0.00000017	0.00000041	0.0000005	4.1E-09	4.1E-10	4.1E-09	2.1E-08	8.3E-09	0.00000037	4.1E-11
HHC-S-1	L-16	0.0000041	0.00016	0.0000041	0.00046	0.0000050	0.00000038	0.00000037	0.00000083	0.0017	2.1E-09	0.00014	0.00000017	0.00000041	0.00000049	4.1E-09	4.1E-10	4.1E-09	2.1E-08	2.5E-08	0.00000075	4.1E-11
HHC-S-1	L-17	0.0000041	0.00014	0.0000041	0.00043	0.0000041	0.00000038	0.00000037	0.0000041	0.0013	2.1E-09	0.00014	0.00000017	0.00000041	0.0000005	4.1E-09	4.1E-10	4.1E-09	2.1E-08	2.5E-08	0.00000064	4.1E-11
HHC-S-1	L-18	0.0000021	0.000095	0.0000021	0.00034	0.0000021	0.00000019	0.00000019	0.0000021	0.0011	1.0E-09	0.000081	0.00000012	0.00000041	0.00000033	2.1E-09	2.1E-10	2.1E-09	1.0E-08	1.2E-08	0.00000023	2.1E-11
HHC-S-1	L-19	0.0000025	0.000095	0.0000021	0.00031	0.0000029	0.00000019	0.00000019	0.00000021	0.0014	1.0E-09	0.000087	0.00000012	0.00000021	0.00000036	2.1E-09	2.1E-10	2.1E-09	1.0E-08	1.2E-08	0.00000018	2.1E-11
HHC-S-1	L-20	0.0000012	0.000087	0.0000083	0.00027	0.0000017	0.00000019	0.00000019	0.00000083	0.0012	1.0E-09	0.000083	1.0E-07	0.00000021	0.00000036	2.1E-09	2.1E-10	2.1E-09	1.0E-08	1.2E-08	0.00000014	2.1E-11
HHC-S-2	L-1	0.00070	0.044	0.00070	0.30	0.00056	0.000064	0.000063	0.00014	0.49	0.00000035	0.0035	0.000030	0.000070	0.000030	0.0000007	0.00000042	0.0000007	0.0000035	0.0000056	0.00023	7.0E-09
HHC-S-2	L-2	0.00016	0.014	0.000063	0.088	0.00021	0.0000057	0.0000057	0.0000063	0.12	3.1E-08	0.0017	0.000010	0.000025	0.0000013	6.3E-08	6.3E-08	0.00000013	0.0000014	0.00000063	0.000025	6.3E-10
HHC-S-2	L-3	0.000070	0.0080	0.000058	0.044	0.00014	0.0000053	0.0000052	0.000012	0.035	2.9E-08	0.0013	0.0000046	0.000023	0.0000013	5.8E-08	1.2E-08	5.8E-08	0.00000081	0.00000035	0.000016	5.8E-10
HHC-S-2	L-4	0.000035	0.0039	0.000012	0.020	0.000070	0.0000011	0.0000010	0.0000012	0.0093	5.8E-09	0.00073	0.0000023	0.0000046	0.00000042	1.2E-08	7.0E-09	2.3E-08	0.00000039	9.3E-08	0.0000037	1.2E-10
HHC-S-2	L-5	0.000018	0.0027	0.0000083	0.010	0.000050	0.00000075	0.00000075	0.0000017	0.0040	4.1E-09	0.00045	0.0000011	0.0000017	0.0000004	8.3E-09	6.6E-09	8.3E-09	0.00000015	6.6E-08	0.0000017	8.3E-11
HHC-S-2	L-6	0.000012	0.0014	0.0000041	0.0046	0.000029	0.00000038	0.0000037	0.00000041	0.0024	2.1E-09	0.00025	0.0000006	0.00000083	0.00000033	4.1E-09	1.7E-09	8.3E-09	6.6E-08	4.1E-08	0.00000066	4.1E-11
HHC-S-2	L-7	0.0000058	0.00100	0.0000041	0.0027	0.000020	0.00000038	0.00000037	0.00000041	0.0019	2.1E-09	0.00020	0.00000039	0.00000041	0.00000039	4.1E-09	3.3E-09	4.1E-09	2.1E-08	2.5E-08	0.00000053	4.1E-11
HHC-S-2	L-8	0.0000083	0.00100	0.0000083	0.0023	0.000015	0.00000076	0.00000075	0.00000083	0.0017	4.1E-09	0.00030	0.0000004	0.00000083	0.00000065	8.3E-09	1.7E-09	8.3E-09	4.1E-08	3.3E-08	0.00000088	8.3E-11
HHC-S-2	L-9	0.0000041	0.00052	0.0000041	0.0015	0.000014	0.00000038	0.00000037	0.00000041	0.0015	2.1E-09	0.00017	0.00000028	0.00000041	0.00000042	4.1E-09	4.1E-10	4.1E-09	2.1E-08	1.7E-08	0.00000046	4.1E-11
HHC-S-2	L-10	0.0000066	0.00043	0.0000042	0.0012	0.0000083	0.00000038	0.00000037	0.0000017	0.0018	2.1E-09	0.00017	0.00000027	0.00000042	0.00000044	4.2E-09	4.2E-10	4.2E-09	2.1E-08	2.5E-08	0.00000046	4.2E-11
HHC-S-2	L-11	0.0000058	0.00034	0.0000042	0.00091	0.0000083	0.00000038	0.00000037	0.00000042	0.0015	2.1E-09	0.00017	0.00000022	0.00000042	0.00000048	4.2E-09	4.2E-10	4.2E-09	2.1E-08	1.7E-08	0.0000004	4.2E-11
HHC-S-2	L-12	0.0000050	0.00030	0.0000041	0.00081	0.0000058	0.00000038	0.00000037	0.00000083	0.0019	2.1E-09	0.00016	0.00000022	0.00000041	0.00000047	4.1E-09	8.3E-10	4.1E-09	2.1E-08	1.7E-08	0.00000038	4.1E-11
HHC-S-2	L-13	0.0000050	0.00023	0.0000041	0.00063	0.0000083	0.00000038	0.00000037	0.00000083	0.0013	2.1E-09	0.00014	0.00000019	0.00000041	0.00000044	4.1E-09	4.1E-10	4.1E-09	2.1E-08	8.3E-09	0.00000044	4.1E-11
HHC-S-2	L-14	0.0000041	0.00020	0.0000041	0.00056	0.0000050	0.00000038	0.00000037	0.0000017	0.0018	2.1E-09	0.00015	0.00000018	0.00000041	0.00000046	4.1E-09	1.7E-09	4.1E-09	2.1E-08	8.3E-09	0.00000042	4.1E-11
HHC-S-2	L-15	0.0000041	0.00018	0.0000041	0.00050	0.0000041	0.00000038	0.00000037	0.0000025	0.0017	2.1E-09	0.00015	0.00000017	0.00000041	0.00000047	4.1E-09	4.1E-10	4.1E-09	2.1E-08	8.3E-09	0.00000038	4.1E-11
HHC-S-2	L-16	0.0000041	0.00016	0.0000041	0.00044	0.0000033	0.00000038	0.00000037	0.0000025	0.0018	2.1E-09	0.00013	0.00000017	0.00000041	0.00000046	4.1E-09	4.1E-10	4.1E-09	2.1E-08	8.3E-09	0.00000042	4.1E-11
HHC-S-2	L-17	0.0000041	0.00014	0.0000041	0.00041	0.0000033	0.00000038	0.00000037	0.0000017	0.0015	2.1E-09	0.00014	0.00000017	0.00000041	0.00000048	4.1E-09	4.1E-10	4.1E-09	2.1E-08	8.3E-09	0.00000034	4.1E-11
HHC-S-2	L-18	0.0000021	0.000095	0.0000021	0.00032	0.0000021	0.00000019	0.00000019	0.00000083	0.0011	1.0E-09	0.000080	0.00000012	0.00000021	0.00000031	2.1E-09	2.1E-10	2.1E-09	1.0E-08	8.3E-09	0.00000017	2.1E-11
HHC-S-2	L-19	0.0000021	0.000095	0.0000021	0.00029	0.0000017	0.00000019	0.00000019	0.00000021	0.0014	1.0E-09	0.000088	0.00000012	0.00000021	0.00000033	2.1E-09	8.3E-10	2.1E-09	1.0E-08	8.3E-09	0.00000014	2.1E-11
HHC-S-2	L-20	0.0000029	0.000087	0.0000083	0.00025	0.0000012	0.00000019	0.00000019	0.00000021	0.0012	1.0E-09	0.000083	0.00000011	0.00000021	0.00000033	2.1E-09	2.1E-09	2.1E-09	1.0E-08	8.3E-09	0.00000011	2.1E-11
HHC-S-3	L-1	0.00071	0.048	0.00071	0.30	0.00043	0.000065	0.000064	0.000071	0.38	0.00000036	0.0041	0.000030	0.000071	0.000036	0.00000071	7.1E-08	0.00000071	0.0000036	0.0000057	0.00016	7.1E-09
HHC-S-3	L-2	0.00015	0.015	0.000063	0.089	0.00023	0.0000057	0.0000057	0.0000063	0.096	3.1E-08	0.0020	0.0000089	0.000038	0.0000031	6.3E-08	8.8E-08	0.00000013	0.0000015	0.00000063	0.000025	6.3E-10
HHC-S-3	L-3	0.000046	0.0084	0.000058	0.042	0.00013	0.0000053	0.0000052	0.000012	0.030	2.9E-08	0.0014	0.0000043	0.000012	0.0000024	5.8E-08	2.3E-08	5.8E-08	0.00000081	0.00000035	0.000015	5.8E-10
HHC-S-3	L-4	0.000030	0.0039	0.000012	0.019	0.000077	0.0000011	0.0000010	0.0000012	0.0086	5.8E-09	0.00076	0.0000021	0.0000046	0.00000067	1.2E-08	2.3E-09	2.3E-08	0.00000042	9.3E-08	0.0000037	1.2E-10
HHC-S-3	L-5	0.000017	0.0025	0.0000083	0.0093	0.000051	0.00000075	0.00000075	0.0000033	0.0036	4.1E-09	0.00048	0.0000011	0.0000017	0.00000063	8.3E-09	8.3E-10	1.7E-08	0.00000017	6.6E-08	0.0000018	5.0E-10
HHC-S-3	L-6	0.000012	0.0013	0.0000041	0.0042	0.000030	0.00000038	0.0000037	0.00000041	0.0023	2.1E-09	0.00026	0.00000056	0.00000083	0.00000046	4.1E-09	4.1E-10	8.3E-09	6.6E-08	4.1E-08	0.00000073	4.1E-11
HHC-S-3	L-7	0.0000075	0.00091	0.0000041	0.0026	0.000023	0.00000038	0.00000037	0.00000041	0.0018	2.1E-09	0.00022	0.00000038	0.00000041	0.00000051	4.1E-09	8.3E-10	4.1E-09	4.1E-08	3.3E-08	0.00000058	4.1E-11
HHC-S-3	L-8	0.0000066	0.00090	0.0000083	0.0022	0.000013	0.00000076	0.00000075	0.0000033	0.0017	4.1E-09	0.00031	0.00000037	0.00000083	0.00000085	8.3E-09	3.3E-09	8.3E-09	4.1E-08	3.3E-08	0.00000083	8.3E-11
HHC-S-3	L-9	0.0000050	0.00048	0.0000042	0.0014	0.000012	0.00000038	0.00000037	0.00000042	0.0015	2.1E-09	0.00018	0.00000027	0.00000042	0.00000056	4.2E-09	8.3E-10	4.2E-09	2.1E-08	2.5E-08	0.00000059	8.3E-11
HHC-S-3	L-10	0.0000066	0.00039	0.0000042	0.0012	0.0000083	0.00000038	0.00000037	0.0000025	0.0017	2.1E-09	0.00018	0.00000025	0.00000042	0.00000057	4.2E-09	4.2E-10	4.2E-09	2.1E-08	1.7E-08	0.00000051	4.2E-11
HHC-S-3	L-11	0.0000058	0.00032	0.0000042	0.00091	0.0000083	0.00000038	0.00000037	0.00000042	0.0015	2.1E-09	0.00017	0.00000022	0.00000042	0.0000006	4.2E-09	4.2E-10	4.2E-09	2.1E-08	1.7E-08	0.00000046	4.2E-11
HHC-S-3	L-12	0.0000050	0.00028	0.0000041	0.00083	0.0000066	0.00000038	0.00000037	0.00000083	0.0018	2.1E-09	0.00017	0.00000021	0.00000041	0.00000058	4.1E-09	4.1E-10	4.1E-09	2.1E-08	1.7E-08	0.00000051	4.1E-11
HHC-S-3	L-13	0.0000042	0.00022	0.0000042	0.00066	0.0000091	0.00000038	0.00000037	0.00000042	0.0012	2.1E-09	0.00014	0.00000018	0.00000042	0.00000056	4.2E-09	4.2E-10	4.2E-09	2.1E-08	8.3E-09	0.00000047	4.2E-11
HHC-S-3	L-14	0.0000042	0.00020	0.0000042	0.00059	0.0000058	0.00000038	0.00000037	0.0000017	0.0017	2.1E-09	0.00015	0.00000018	0.00000042	0.0000006	4.2E-09	4.2E-10	4.2E-09	2.1E-08	1.7E-08	0.00000046	4.2E-11
HHC-S-3	L-15	0.0000033	0.00018	0.0000042	0.00052	0.0000058	0.00000038	0.00000037	0.0000025	0.0015	2.1E-09	0.00015	0.00000017	0.00000042	0.00000059	4.2E-09	8.3E-10	4.2E-09	2.1E-08	8.3E-09	0.00000045	4.2E-11
HHC-S-3	L-16	0.0000041	0.00016	0.0000041	0.00046	0.0000041	0.00000038	0.00000037	0.0000041	0.0017	2.1E-09	0.00013	0.00000015	0.00000041	0.00000059	4.1E-09	4.1E-10	4.1E-09	2.1E-08	1.7E-08	0.00000053	4.1E-11
HHC-S-3	L-17	0.0000033	0.00014	0.0000042	0.00044	0.0000042	0.00000038	0.00000037	0.00000042	0.0013	2.1E-09	0.00014	0.00000015	0.00000042	0.00000059	4.2E-09	8.3E-10	4.2E-09	2.1E-08	8.3E-09	0.00000051	4.2E-11
HHC-S-3	L-18	0.0000017	0.000100	0.0000021	0.00035	0.0000037	0.00000019	0.00000019	0.00000021	0.0010	1.0E-09	0.000081	0.00000012	0.00000021	0.00000039	2.1E-09	2.1E-10	2.1E-09	1.0E-08	1.2E-08	0.00000027	2.1E-11
HHC-S-3	L-19	0.0000025	0.000095	0.0000021	0.00032	0.0000025	0.00000019	0.00000019	0.00000021	0.0013	1.0E-09	0.000086	0.00000012	0.00000021	0.00000041	2.1E-09	2.1E-10	2.1E-09	1.0E-08	1.2E-08	0.00000013	2.1E-11
HHC-S-3	L-20	0.0000012	0.000091	0.0000021	0.00028	0.0000017	0.00000019	0.00000019	0.0000012	0.0011	1.0E-09	0.000081	0.0000001	0.00000021	0.00000046	2.1E-09	8.3E-10	2.1E-09	1.0E-08	1.2E-08	0.00000014	2.1E-11
HHC-S-4	L-1	0.00069	0.043	0.00069	0.26	0.00056	0.000063	0.000062	0.000069	0.39	0.00000035	0.0042	0.000026	0.000069	0.000022	0.00000069	0.00000014	0.00000069	0.0000035	0.0000056	0.00013	6.9E-09
HHC-S-4	L-2	0.00018	0.014	0.000063	0.086	0.00021	0.0000057	0.0000057	0.0000063	0.097	3.1E-08	0.0020	0.0000082	0.000025	0.0000033	6.3E-08	7.5E-08	0.00000013	0.0000016	0.0000005	0.000021	6.3E-10
HHC-S-4	L-3	0.000058	0.0079	0.000058	0.042	0.00017	0.0000053	0.0000052	0.000035	0.030	2.9E-08	0.0014	0.0000039	0.000012	0.0000024	5.8E-08	2.3E-08	5.8E-08	0.00000093	0.00000035	0.000014	5.8E-10
HHC-S-4	L-4	0.000032	0.0039	0.000012	0.019	0.000072	0.0000011	0.0000010	0.0000070	0.0084	5.8E-09	0.00074	0.0000021	0.0000046	0.00000072	1.2E-08	1.2E-09	2.3E-08	0.00000046	9.3E-08	0.0000030	1.2E-10
HHC-S-4	L-5	0.000017	0.0027	0.0000083	0.0096	0.000046	0.00000075	0.00000075	0.00000083	0.0038	4.1E-09	0.00047	0.0000011	0.00000083	0.00000065	8.3E-09	5.0E-09	8.3E-09	0.00000017	6.6E-08	0.0000016	3.3E-10
HHC-S-4	L-6	0.0000100	0.0013	0.0000041	0.0045	0.000035	0.00000038	0.0000037	0.00000041	0.0023	2.1E-09	0.00026	0.00000057	0.00000083	0.00000049	4.1E-09	2.5E-09	8.3E-09	6.6E-08	4.1E-08	0.00000066	4.1E-11
HHC-S-4	L-7	0.0000058	0.00091	0.0000041	0.0027	0.000013	0.00000038	0.00000037	0.00000041	0.0018	2.1E-09	0.00021	0.00000038	0.00000041	0.00000053	4.1E-09	1.7E-09	4.1E-09	4.1E-08	2.5E-08	0.00000051	4.1E-11
HHC-S-4	L-8	0.0000083	0.00093	0.0000083	0.0022	0.000012	0.00000076	0.00000075	0.00000083	0.0017	4.1E-09	0.00030	0.00000038	0.00000083	0.00000088	8.3E-09	1.7E-09	8.3E-09	4.1E-08	3.3E-08	0.00000081	8.3E-11
HHC-S-4	L-9	0.0000041	0.00050	0.0000041	0.0014	0.000012	0.00000038	0.00000037	0.00000041	0.0015	2.1E-09	0.00018	0.00000027	0.00000041	0.00000056	4.1E-09	8.3E-10	4.1E-09	2.1E-08	2.5E-08	0.00000048	4.1E-11
HHC-S-4	L-10	0.0000066	0.00042	0.0000042	0.0012	0.0000091	0.00000038	0.00000037	0.0000033	0.0018	2.1E-09	0.00017	0.00000025	0.00000042	0.0000006	4.2E-09	4.2E-10	4.2E-09	2.1E-08	2.5E-08	0.00000048	4.2E-11
HHC-S-4	L-11	0.0000058	0.00032	0.0000042	0.00091	0.0000083	0.00000038	0.00000037	0.00000042	0.0015	2.1E-09	0.00017	0.00000023	0.00000042	0.00000063	4.2E-09	1.7E-09	4.2E-09	2.1E-08	1.7E-08	0.0000004	4.2E-11
HHC-S-4	L-12	0.0000041	0.00029	0.0000041	0.00083	0.0000066	0.00000038	0.00000037	0.00000083	0.0019	2.1E-09	0.00017	0.00000022	0.00000041	0.00000061	4.1E-09	4.1E-10	4.1E-09	5.0E-08	2.5E-08	0.00000058	4.1E-11
HHC-S-4	L-13	0.0000042	0.00022	0.0000042	0.00066	0.000011	0.00000038	0.00000037	0.00000042	0.0013	2.1E-09	0.00014	0.00000018	0.00000042	0.00000056	4.2E-09	1.7E-09	4.2E-09	2.1E-08	8.3E-09	0.00000042	4.2E-11
HHC-S-4	L-14	0.0000042	0.00020	0.0000042	0.00058	0.0000050	0.00000038	0.00000037	0.00000042	0.0017	2.1E-09	0.00015	0.00000018	0.00000042	0.00000059	4.2E-09	8.3E-10	4.2E-09	2.1E-08	8.3E-09	0.0000004	4.2E-11
HHC-S-4	L-15	0.0000033	0.00017	0.0000041	0.00051	0.0000041	0.00000038	0.00000037	0.00000041	0.0016	2.1E-09	0.00014	0.00000017	0.00000041	0.00000059	4.1E-09	8.3E-10	4.1E-09	2.1E-08	8.3E-09	0.00000036	4.1E-11
HHC-S-4	L-16	0.0000041	0.00016	0.0000041	0.00046	0.0000033	0.00000038	0.00000037	0.00000083	0.0017	2.1E-09	0.00013	0.00000017	0.00000041	0.0000006	4.1E-09	8.3E-10	4.1E-09	2.1E-08	8.3E-09	0.00000037	4.1E-11
HHC-S-4	L-17	0.0000033	0.00014	0.0000042	0.00043	0.0000042	0.00000038	0.00000037	0.0000017	0.0013	2.1E-09	0.00014	0.00000016	0.00000042	0.0000006	4.2E-09	8.3E-10	4.2E-09	2.1E-08	8.3E-09	0.00000073	4.2E-11
HHC-S-4	L-18	0.0000021	0.000095	0.0000021	0.00034	0.0000037	0.00000019	0.00000019	0.0000012	0.0010	1.0E-09	0.000081	0.00000012	0.00000021	0.00000039	2.1E-09	4.2E-10	2.1E-09	1.0E-08	1.2E-08	0.00000022	2.1E-11
HHC-S-4	L-19	0.0000017	0.000099	0.0000021	0.00032	0.0000025	0.00000019	0.00000019	0.00000021	0.0013	1.0E-09	0.000086	0.00000011	0.00000021	0.00000041	2.1E-09	2.1E-10	2.1E-09	1.0E-08	1.2E-08	0.00000017	2.1E-11
HHC-S-4	L-20	0.0000012	0.000091	0.0000021	0.00028	0.0000017	0.00000019	0.00000019	0.00000021	0.0010	1.0E-09	0.000081	0.0000001	0.00000021	0.00000041	2.1E-09	2.1E-10	2.1E-09	1.0E-08	8.3E-09	0.00000012	2.1E-11

- Parameter not analyzed

Appendix E, Table E-18
HHC-S LEAF Interval Mass Flux Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s	mg/m^{2}s
HHC-S-1	L-1	0.0000084	0.022	0.0000007	0.000092	0.000017	0.00021	0.0000007	0.000074	0.000098	0.0000014	0.00014	0.000066	0.0000084	6.0E-12	9.9E-14	5.7E-10	4.2E-13
HHC-S-1	L-2	0.00000031	0.0059	6.3E-08	0.0000062	0.0000045	0.000050	6.3E-08	0.000019	0.000015	0.00000013	0.000036	0.000020	0.00000063	-	-	-	-
HHC-S-1	L-3	0.00000029	0.0018	5.8E-08	0.0000044	0.0000019	0.000019	5.8E-08	0.000013	0.0000052	0.00000012	0.000020	0.0000066	0.0000007	3.3E-13	3.4E-15	3.8E-11	4.1E-14
HHC-S-1	L-4	0.0000012	0.00083	1.2E-08	0.0000028	0.00000058	0.0000063	1.2E-08	0.0000056	0.0000022	4.6E-08	0.0000079	0.0000028	5.8E-08	-	-	-	-
HHC-S-1	L-5	4.1E-08	0.00038	8.3E-09	0.0000020	0.00000025	0.0000023	8.3E-09	0.0000066	0.00000096	5.0E-08	0.0000037	0.0000012	4.1E-08	-	-	-	-
HHC-S-1	L-6	5.0E-08	0.00023	8.3E-09	0.0000014	0.00000013	0.0000013	4.1E-09	0.0000077	0.00000077	3.3E-08	0.0000018	0.00000058	5.0E-08	1.3E-13	6.3E-16	9.6E-12	2.5E-15
HHC-S-1	L-7	2.1E-08	0.00015	4.1E-09	0.0000012	1.0E-07	0.0000010	4.1E-09	0.000011	0.00000061	3.3E-08	0.0000015	0.00000043	2.1E-08	-	-	-	-
HHC-S-1	L-8	4.2E-08	0.00014	8.3E-09	0.0000016	0.00000013	0.0000010	8.3E-09	0.000018	0.00000055	5.0E-08	0.0000023	0.0000005	4.2E-08	-	-	-	-
HHC-S-1	L-9	2.1E-08	0.00011	4.1E-09	0.0000010	1.0E-07	0.00000083	4.1E-09	0.000013	0.00000032	2.5E-08	0.0000012	0.00000033	2.1E-08	1.1E-13	2.9E-16	9.9E-12	2.5E-15
HHC-S-1	L-10	2.1E-08	0.000099	4.2E-09	0.0000011	9.1E-08	0.00000076	4.2E-09	0.000015	0.00000032	2.5E-08	0.0000013	0.00000031	2.1E-08	-	-	-	-
HHC-S-1	L-11	2.1E-08	0.000088	4.2E-09	0.0000010	9.1E-08	0.0000008	4.2E-09	0.000016	0.00000024	2.5E-08	0.0000012	0.0000003	2.1E-08	-	-	-	-
HHC-S-1	L-12	2.1E-08	0.000081	4.1E-09	0.00000091	9.1E-08	0.00000082	4.1E-09	0.000016	0.00000024	2.5E-08	0.0000012	0.00000027	2.1E-08	1.1E-13	2.0E-16	9.0E-12	2.9E-15
HHC-S-1	L-13	2.1E-08	0.000068	4.1E-09	0.00000091	8.3E-08	0.00000071	4.1E-09	0.000015	0.00000021	1.7E-08	0.0000011	0.00000024	2.1E-08	-	-	-	-
HHC-S-1	L-14	2.1E-08	0.000061	4.2E-09	0.00000091	9.1E-08	0.00000068	4.2E-09	0.000015	0.00000018	1.7E-08	0.0000012	0.00000022	2.1E-08	-	-	-	-
HHC-S-1	L-15	2.1E-08	0.000059	4.1E-09	0.00000078	9.1E-08	0.00000075	4.1E-09	0.000015	0.00000015	1.7E-08	0.0000011	0.00000023	5.8E-08	8.3E-14	1.5E-16	7.4E-12	2.5E-15
HHC-S-1	L-16	2.1E-08	0.000053	4.1E-09	0.00000091	0.00000011	0.00000076	4.1E-09	0.000014	0.00000022	1.7E-08	0.0000012	0.00000022	2.1E-08	-	-	-	-
HHC-S-1	L-17	2.1E-08	0.000054	4.1E-09	0.00000091	0.00000011	0.00000072	4.1E-09	0.000014	0.00000015	1.7E-08	0.0000012	0.0000002	2.1E-08	1.0E-13	3.9E-16	8.7E-12	2.9E-15
HHC-S-1	L-18	1.0E-08	0.000045	2.1E-09	0.00000054	5.4E-08	0.00000046	2.1E-09	0.0000091	0.00000019	1.2E-08	0.00000058	0.00000015	1.0E-08	7.6E-14	1.7E-16	5.2E-12	1.5E-15
HHC-S-1	L-19	1.0E-08	0.000044	2.1E-09	0.00000058	5.8E-08	0.00000054	2.1E-09	0.0000099	9.9E-08	1.2E-08	0.00000058	0.00000014	1.0E-08	6.6E-14	1.5E-16	5.1E-12	1.4E-15
HHC-S-1	L-20	1.0E-08	0.000036	2.1E-09	0.00000058	6.2E-08	0.0000005	2.1E-09	0.0000095	7.9E-08	1.2E-08	0.00000058	0.00000012	1.0E-08	6.7E-14	1.2E-16	5.7E-12	1.2E-15
HHC-S-2	L-1	0.0000084	0.028	0.0000007	0.000075	0.000017	0.00021	0.0000007	0.000031	0.00012	0.0000014	0.00015	0.000084	0.0000084	6.0E-12	6.6E-14	3.8E-10	4.2E-13
HHC-S-2	L-2	0.00000031	0.0068	6.3E-08	0.0000060	0.0000043	0.000048	6.3E-08	0.0000078	0.000016	0.00000013	0.000033	0.000021	0.00000031	-	-	-	-
HHC-S-2	L-3	0.00000029	0.0021	5.8E-08	0.0000045	0.0000017	0.000016	5.8E-08	0.0000074	0.0000053	0.00000012	0.000017	0.0000079	0.00000029	3.7E-13	6.8E-15	2.2E-11	4.1E-14
HHC-S-2	L-4	0.00000035	0.00093	1.2E-08	0.0000022	0.00000051	0.0000065	1.2E-08	0.0000046	0.0000022	4.6E-08	0.0000074	0.0000032	5.8E-08	-	-	-	-
HHC-S-2	L-5	4.1E-08	0.00039	8.3E-09	0.0000017	0.00000023	0.0000025	8.3E-09	0.0000060	0.00000098	5.0E-08	0.0000036	0.0000014	4.1E-08	-	-	-	-
HHC-S-2	L-6	2.1E-08	0.00023	8.3E-09	0.0000011	0.00000011	0.0000013	4.1E-09	0.0000064	0.0000007	3.3E-08	0.0000017	0.00000064	0.00000011	8.0E-14	2.4E-16	6.7E-12	2.5E-15
HHC-S-2	L-7	2.1E-08	0.00015	4.1E-09	0.0000010	1.0E-07	0.0000010	4.1E-09	0.0000091	0.00000051	3.3E-08	0.0000014	0.00000046	2.1E-08	-	-	-	-
HHC-S-2	L-8	4.1E-08	0.00014	8.3E-09	0.0000013	0.00000013	0.0000010	8.3E-09	0.000016	0.0000005	3.3E-08	0.0000023	0.00000053	4.1E-08	-	-	-	-
HHC-S-2	L-9	2.1E-08	0.00011	4.1E-09	0.00000083	9.1E-08	0.00000083	4.1E-09	0.000012	0.00000033	2.5E-08	0.0000012	0.00000035	2.1E-08	8.9E-14	2.4E-16	7.2E-12	2.5E-15
HHC-S-2	L-10	2.1E-08	0.00010	4.2E-09	0.00000091	9.1E-08	0.00000075	4.2E-09	0.000013	0.0000003	2.5E-08	0.0000013	0.00000032	2.1E-08	-	-	-	-
HHC-S-2	L-11	2.1E-08	0.000090	4.2E-09	0.00000083	9.1E-08	0.0000008	4.2E-09	0.000014	0.00000021	2.5E-08	0.0000012	0.00000031	2.1E-08	-	-	-	-
HHC-S-2	L-12	2.1E-08	0.000082	4.1E-09	0.00000081	1.0E-07	0.00000083	4.1E-09	0.000015	0.00000025	1.7E-08	0.0000012	0.00000028	2.1E-08	1.0E-13	1.5E-16	7.0E-12	2.9E-15
HHC-S-2	L-13	2.1E-08	0.000070	4.1E-09	0.00000078	9.1E-08	0.00000075	4.1E-09	0.000014	0.00000021	1.7E-08	0.0000011	0.00000026	2.1E-08	-	-	-	-
HHC-S-2	L-14	2.1E-08	0.000062	4.1E-09	0.00000081	1.0E-07	0.00000072	4.1E-09	0.000014	0.00000017	1.7E-08	0.0000012	0.00000024	2.1E-08	-	-	-	-
HHC-S-2	L-15	2.1E-08	0.000060	4.1E-09	0.00000076	0.00000011	0.0000008	4.1E-09	0.000014	0.00000014	1.7E-08	0.0000011	0.00000023	2.1E-08	8.9E-14	1.5E-16	7.8E-12	2.5E-15
HHC-S-2	L-16	2.1E-08	0.000053	4.1E-09	0.00000076	0.00000012	0.00000083	4.1E-09	0.000013	0.00000017	8.3E-09	0.0000011	0.00000022	2.1E-08	-	-	-	-
HHC-S-2	L-17	2.1E-08	0.000055	4.1E-09	0.00000071	0.00000012	0.00000078	4.1E-09	0.000013	9.1E-08	8.3E-09	0.0000010	0.0000002	5.0E-08	8.3E-14	2.0E-16	8.1E-12	5.8E-15
HHC-S-2	L-18	1.0E-08	0.000046	2.1E-09	0.0000005	5.8E-08	0.00000046	2.1E-09	0.0000091	0.00000022	8.3E-09	0.00000058	0.00000015	1.0E-08	7.9E-14	1.2E-16	4.8E-12	1.5E-15
HHC-S-2	L-19	1.0E-08	0.000044	2.1E-09	0.00000054	5.8E-08	0.00000054	2.1E-09	0.0000095	9.5E-08	1.2E-08	0.00000062	0.00000014	1.0E-08	6.5E-14	9.7E-17	5.3E-12	1.4E-15
HHC-S-2	L-20	1.0E-08	0.000037	2.1E-09	0.00000054	6.2E-08	0.00000054	2.1E-09	0.0000095	6.6E-08	1.2E-08	0.00000058	0.00000012	1.0E-08	5.5E-14	9.8E-17	6.0E-12	1.2E-15
HHC-S-3	L-1	0.0000071	0.019	0.0000014	0.000071	0.000017	0.00021	0.00000071	0.000078	0.000078	0.0000014	0.00014	0.000063	0.000011	-	-	-	-
HHC-S-3	L-2	0.00000031	0.0053	6.3E-08	0.0000068	0.0000047	0.000052	6.3E-08	0.000016	0.000014	0.00000013	0.000036	0.000018	0.00000088	-	-	-	-
HHC-S-3	L-3	0.00000029	0.0017	5.8E-08	0.0000045	0.0000017	0.000015	5.8E-08	0.000012	0.0000045	0.00000012	0.000017	0.0000063	0.00000029	-	-	-	-
HHC-S-3	L-4	0.00000014	0.00083	1.2E-08	0.0000023	0.00000056	0.0000058	1.2E-08	0.0000060	0.0000021	7.0E-08	0.0000070	0.0000026	5.8E-08	-	-	-	-
HHC-S-3	L-5	4.1E-08	0.00038	8.3E-09	0.0000020	0.00000027	0.0000023	8.3E-09	0.0000081	0.0000011	5.0E-08	0.0000035	0.0000011	4.1E-08	-	-	-	-
HHC-S-3	L-6	2.1E-08	0.00023	4.1E-09	0.0000012	0.00000012	0.0000013	4.1E-09	0.0000091	0.00000066	3.3E-08	0.0000015	0.00000057	2.1E-08	-	-	-	-
HHC-S-3	L-7	2.1E-08	0.00015	4.1E-09	0.0000011	0.00000011	0.00000091	4.1E-09	0.000012	0.00000049	3.3E-08	0.0000013	0.00000043	2.1E-08	-	-	-	-
HHC-S-3	L-8	4.1E-08	0.00014	8.3E-09	0.0000014	0.00000013	0.0000010	8.3E-09	0.000020	0.00000051	5.0E-08	0.0000022	0.0000005	4.1E-08	-	-	-	-
HHC-S-3	L-9	2.1E-08	0.00011	4.2E-09	0.0000010	9.1E-08	0.00000083	4.2E-09	0.000013	0.00000032	2.5E-08	0.0000012	0.00000034	2.1E-08	-	-	-	-
HHC-S-3	L-10	2.1E-08	0.000098	4.2E-09	0.0000010	1.0E-07	0.00000075	4.2E-09	0.000016	0.0000003	2.5E-08	0.0000012	0.00000032	2.1E-08	-	-	-	-
HHC-S-3	L-11	2.1E-08	0.000086	4.2E-09	0.0000010	1.0E-07	0.00000076	4.2E-09	0.000016	0.00000027	2.5E-08	0.0000012	0.0000003	2.1E-08	-	-	-	-
HHC-S-3	L-12	2.1E-08	0.000080	4.1E-09	0.00000091	9.1E-08	0.00000078	4.1E-09	0.000016	0.00000022	2.5E-08	0.0000011	0.00000027	2.1E-08	-	-	-	-
HHC-S-3	L-13	2.1E-08	0.000068	4.2E-09	0.00000083	8.3E-08	0.00000068	4.2E-09	0.000014	0.00000018	1.7E-08	0.0000011	0.00000025	2.1E-08	-	-	-	-
HHC-S-3	L-14	2.1E-08	0.000060	4.2E-09	0.00000083	9.1E-08	0.00000067	4.2E-09	0.000015	0.00000015	1.7E-08	0.0000010	0.00000023	2.1E-08	-	-	-	-
HHC-S-3	L-15	2.1E-08	0.000057	4.2E-09	0.00000083	9.1E-08	0.0000007	4.2E-09	0.000014	0.00000012	1.7E-08	0.0000011	0.00000022	2.1E-08	-	-	-	-
HHC-S-3	L-16	2.1E-08	0.000051	4.1E-09	0.00000083	0.00000011	0.00000073	4.1E-09	0.000013	0.00000023	1.7E-08	0.0000010	0.00000022	2.1E-08	-	-	-	-
HHC-S-3	L-17	2.1E-08	0.000052	4.2E-09	0.00000083	1.0E-07	0.00000068	4.2E-09	0.000013	0.00000012	1.7E-08	0.0000011	0.00000018	2.1E-08	-	-	-	-
HHC-S-3	L-18	1.0E-08	0.000044	2.1E-09	0.00000058	5.4E-08	0.00000046	2.1E-09	0.0000087	0.00000022	1.2E-08	0.00000058	0.00000015	1.0E-08	6.7E-14	2.0E-16	5.7E-12	1.5E-15
HHC-S-3	L-19	1.0E-08	0.000042	2.1E-09	0.00000058	5.4E-08	0.00000054	2.1E-09	0.0000091	8.7E-08	1.2E-08	0.00000058	0.00000014	1.0E-08	6.8E-14	1.5E-16	6.3E-12	1.4E-15
HHC-S-3	L-20	1.0E-08	0.000035	2.1E-09	0.00000058	5.8E-08	0.0000005	2.1E-09	0.0000091	9.9E-08	1.2E-08	0.00000058	0.00000012	1.0E-08	6.2E-14	1.2E-16	6.0E-12	1.2E-15
HHC-S-4	L-1	0.0000035	0.021	0.0000014	0.000053	0.000018	0.00019	0.00000069	0.000083	0.000083	0.0000014	0.00012	0.000060	0.000011	-	-	-	-
HHC-S-4	L-2	0.00000031	0.0060	6.3E-08	0.0000049	0.0000043	0.000048	6.3E-08	0.000019	0.000015	0.00000013	0.000031	0.000018	0.00000031	-	-	-	-
HHC-S-4	L-3	0.00000029	0.0018	5.8E-08	0.0000038	0.0000017	0.000015	5.8E-08	0.000013	0.0000044	0.00000012	0.000016	0.0000066	0.00000029	-	-	-	-
HHC-S-4	L-4	5.8E-08	0.00084	1.2E-08	0.0000023	0.00000051	0.0000056	1.2E-08	0.0000065	0.0000019	4.6E-08	0.0000065	0.0000028	5.8E-08	-	-	-	-
HHC-S-4	L-5	4.1E-08	0.00037	8.3E-09	0.0000018	0.00000022	0.0000022	8.3E-09	0.0000083	0.00000091	5.0E-08	0.0000033	0.0000012	4.1E-08	-	-	-	-
HHC-S-4	L-6	2.1E-08	0.00022	4.1E-09	0.0000012	0.00000012	0.0000012	4.1E-09	0.0000083	0.00000066	3.3E-08	0.0000016	0.00000059	2.1E-08	-	-	-	-
HHC-S-4	L-7	2.1E-08	0.00015	4.1E-09	0.0000011	1.0E-07	0.00000091	4.1E-09	0.000012	0.0000005	3.3E-08	0.0000013	0.00000043	2.1E-08	-	-	-	-
HHC-S-4	L-8	4.1E-08	0.00014	5.0E-08	0.0000014	0.00000015	0.0000010	8.3E-09	0.000018	0.00000046	5.0E-08	0.0000022	0.00000051	4.1E-08	-	-	-	-
HHC-S-4	L-9	2.1E-08	0.00011	4.1E-09	0.00000091	9.1E-08	0.00000083	4.1E-09	0.000013	0.00000032	2.5E-08	0.0000012	0.00000034	2.1E-08	-	-	-	-
HHC-S-4	L-10	2.1E-08	0.000096	4.2E-09	0.0000010	9.1E-08	0.00000077	4.2E-09	0.000015	0.00000027	2.5E-08	0.0000012	0.00000031	2.1E-08	-	-	-	-
HHC-S-4	L-11	2.1E-08	0.000086	4.2E-09	0.00000091	1.0E-07	0.00000079	4.2E-09	0.000015	0.0000002	2.5E-08	0.0000012	0.00000029	2.1E-08	-	-	-	-
HHC-S-4	L-12	2.1E-08	0.000080	1.7E-08	0.00000083	1.0E-07	0.00000081	4.1E-09	0.000015	0.00000023	2.5E-08	0.0000011	0.00000027	2.1E-08	-	-	-	-
HHC-S-4	L-13	2.1E-08	0.000066	4.2E-09	0.00000082	9.1E-08	0.00000074	4.2E-09	0.000014	0.00000022	1.7E-08	0.0000010	0.00000025	2.1E-08	-	-	-	-
HHC-S-4	L-14	2.1E-08	0.000060	4.2E-09	0.00000081	1.0E-07	0.00000071	4.2E-09	0.000015	0.00000015	1.7E-08	0.0000011	0.00000023	2.1E-08	-	-	-	-
HHC-S-4	L-15	2.1E-08	0.000057	4.1E-09	0.0000008	1.0E-07	0.00000076	4.1E-09	0.000014	0.00000012	1.7E-08	0.0000011	0.00000023	2.1E-08	-	-	-	-
HHC-S-4	L-16	2.1E-08	0.000051	4.1E-09	0.00000075	1.0E-07	0.00000077	4.1E-09	0.000013	0.00000017	8.3E-09	0.0000010	0.00000022	2.1E-08	-	-	-	-
HHC-S-4	L-17	2.1E-08	0.000053	4.2E-09	0.00000078	0.00000011	0.00000072	4.2E-09	0.000013	1.0E-07	1.7E-08	0.0000010	0.00000019	2.1E-08	-	-	-	-
HHC-S-4	L-18	1.0E-08	0.000043	2.1E-09	0.00000054	5.4E-08	0.00000046	2.1E-09	0.0000087	0.00000019	1.2E-08	0.00000058	0.00000015	1.0E-08	7.0E-14	2.2E-16	6.5E-12	1.5E-15
HHC-S-4	L-19	1.0E-08	0.000041	2.1E-09	0.00000058	5.8E-08	0.00000054	2.1E-09	0.0000095	9.5E-08	1.2E-08	0.00000058	0.00000014	1.0E-08	6.2E-14	1.7E-16	5.7E-12	1.4E-15
HHC-S-4	L-20	1.0E-08	0.000036	2.1E-09	0.00000054	5.4E-08	0.0000005	2.1E-09	0.0000091	5.8E-08	1.2E-08	0.00000058	0.00000011	1.0E-08	7.1E-14	1.2E-16	5.7E-12	1.2E-15

- Parameter not analyzed

Appendix E, Table E-19
HLC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HLC-1	L-1	2019-12-11	0.080	0.10	0.057	0.00047	664	1.00	0.67	0.0082	8.1	0.86	1846	-	1.1E-09	9.3E-09	3.6E-11	2.5E-08	2.1E-10	1.9E-10	1.9E-10	5.5E-11
HLC-1	L-2	2019-12-12	1.0	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.86	1846	-	8.5E-11	7.8E-10	5.4E-12	3.7E-09	6.3E-11	3.3E-11	3.3E-11	7.5E-10
HLC-1	L-3	2019-12-13	2.0	0.10	0.057	0.00047	663	1.00	0.66	0.0082	8.1	0.86	1846	-	4.2E-11	2.7E-10	1.7E-11	1.1E-08	1.5E-10	7.7E-11	7.7E-11	2.3E-09
HLC-1	L-4	2019-12-18	7.0	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.86	1846	-	5.5E-11	4.6E-10	1.8E-12	1.2E-09	1.1E-10	6.9E-11	6.8E-11	2.4E-09
HLC-1	L-5	2019-12-25	14	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.86	1846	-	1.7E-10	1.5E-09	2.3E-12	1.5E-09	1.6E-10	1.0E-10	9.9E-11	2.7E-09
HLC-1	L-6	2020-01-08	28	0.10	0.057	0.00047	649	1.00	0.65	0.0082	7.9	0.86	1846	-	8.7E-11	7.8E-10	1.2E-12	7.8E-10	1.5E-10	1.0E-10	1.0E-10	1.9E-09
HLC-1	L-7	2020-01-22	42	0.10	0.057	0.00047	660	1.00	0.66	0.0082	8.1	0.86	1846	-	1.5E-10	5.2E-10	3.2E-11	1.4E-09	2.1E-10	1.4E-10	1.3E-10	1.7E-09
HLC-1	L-8	2020-01-29	49	0.10	0.057	0.00047	657	1.00	0.66	0.0082	8.0	0.86	1846	-	5.9E-11	6.7E-10	1.1E-11	7.1E-09	2.9E-10	2.1E-10	2.0E-10	1.8E-09
HLC-1	L-9	2020-02-12	63	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	3.9E-10	3.7E-09	3.2E-12	2.1E-09	2.4E-10	1.7E-10	1.7E-10	1.3E-09
HLC-1	L-10	2020-02-26	77	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.86	1846	-	4.2E-10	4.1E-09	4.0E-12	2.7E-09	2.5E-10	1.9E-10	1.9E-10	8.9E-10
HLC-1	L-11	2020-03-11	91	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.86	1846	-	5.8E-10	9.3E-10	4.7E-10	3.2E-09	2.9E-10	2.1E-10	2.1E-10	7.2E-10
HLC-1	L-12	2020-03-25	105	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1846	-	7.8E-10	3.8E-09	8.9E-11	3.8E-09	2.6E-10	1.8E-10	1.8E-10	6.0E-10
HLC-1	L-13	2020-04-08	119	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.86	1846	-	1.9E-10	9.1E-10	2.5E-11	4.3E-09	2.4E-10	1.8E-10	1.8E-10	4.5E-10
HLC-1	L-14	2020-04-22	133	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.86	1846	-	3.5E-10	3.4E-09	7.0E-12	4.7E-09	2.7E-10	1.9E-10	1.9E-10	3.0E-10
HLC-1	L-15	2020-05-06	147	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	3.3E-09	2.3E-08	1.3E-10	5.4E-09	2.1E-10	2.0E-10	2.0E-10	2.7E-10
HLC-1	L-16	2020-05-20	161	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	7.8E-10	8.8E-10	8.8E-10	5.9E-09	2.2E-10	2.3E-10	2.3E-10	1.3E-10
HLC-1	L-17	2020-06-03	175	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1846	-	3.4E-09	3.2E-08	9.5E-12	6.5E-09	2.3E-10	2.1E-10	2.1E-10	1.5E-10
HLC-2	L-1	2019-12-11	0.080	0.10	0.057	0.00047	667	1.00	0.67	0.0082	8.2	0.86	1844	-	2.8E-11	1.1E-10	5.1E-11	2.5E-08	2.9E-11	1.5E-11	1.2E-11	1.1E-10
HLC-2	L-2	2019-12-12	1.0	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.86	1844	-	3.6E-11	2.6E-10	7.5E-12	3.6E-09	1.4E-10	7.8E-11	7.8E-11	2.1E-09
HLC-2	L-3	2019-12-13	2.0	0.10	0.057	0.00047	672	1.00	0.67	0.0082	8.2	0.86	1844	-	2.1E-10	1.3E-09	2.4E-11	1.2E-08	3.5E-10	1.9E-10	1.9E-10	3.8E-09
HLC-2	L-4	2019-12-18	7.0	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.86	1844	-	4.9E-11	2.7E-10	2.5E-12	1.2E-09	2.5E-10	1.7E-10	1.7E-10	4.1E-09
HLC-2	L-5	2019-12-25	14	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1844	-	1.4E-10	8.5E-10	3.3E-12	1.6E-09	3.7E-10	2.5E-10	2.5E-10	4.9E-09
HLC-2	L-6	2020-01-08	28	0.10	0.057	0.00047	662	1.00	0.66	0.0082	8.1	0.86	1844	-	4.8E-10	1.9E-09	2.7E-11	8.1E-10	3.5E-10	2.5E-10	2.5E-10	3.7E-09
HLC-2	L-7	2020-01-22	42	0.10	0.057	0.00047	661	1.00	0.66	0.0082	8.1	0.86	1844	-	3.0E-10	3.0E-10	2.8E-10	1.4E-09	5.2E-10	3.4E-10	3.4E-10	3.1E-09
HLC-2	L-8	2020-01-29	49	0.10	0.057	0.00047	658	1.00	0.66	0.0082	8.1	0.86	1844	-	1.3E-10	8.0E-10	1.5E-11	7.2E-09	5.7E-10	4.9E-10	4.9E-10	2.9E-09
HLC-2	L-9	2020-02-12	63	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1844	-	4.1E-10	1.6E-09	1.8E-11	2.2E-09	5.3E-10	4.1E-10	4.0E-10	1.9E-09
HLC-2	L-10	2020-02-26	77	0.10	0.057	0.00047	654	1.00	0.65	0.0082	8.0	0.86	1844	-	6.8E-10	3.1E-09	2.2E-11	2.7E-09	5.2E-10	4.5E-10	4.4E-10	1.5E-09
HLC-2	L-11	2020-03-11	91	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1844	-	2.9E-10	1.5E-11	6.8E-10	3.3E-09	5.5E-10	4.5E-10	4.5E-10	1.2E-09
HLC-2	L-12	2020-03-25	105	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1844	-	1.2E-09	4.3E-09	1.3E-10	3.8E-09	5.4E-10	4.3E-10	4.3E-10	1.1E-09
HLC-2	L-13	2020-04-08	119	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1844	-	3.0E-09	1.3E-08	1.4E-10	4.3E-09	5.7E-10	4.3E-10	4.3E-10	6.9E-10
HLC-2	L-14	2020-04-22	133	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1844	-	3.1E-09	1.8E-08	1.0E-11	4.9E-09	6.3E-10	4.9E-10	4.9E-10	5.4E-10
HLC-2	L-15	2020-05-06	147	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1844	-	2.2E-10	6.1E-12	1.8E-10	5.5E-09	4.5E-10	4.9E-10	4.9E-10	3.9E-10
HLC-2	L-16	2020-05-20	161	0.10	0.057	0.00047	654	1.00	0.65	0.0082	8.0	0.86	1844	-	1.1E-09	9.6E-10	1.2E-09	6.0E-09	5.0E-10	5.4E-10	5.4E-10	2.4E-10
HLC-2	L-17	2020-06-03	175	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1844	-	7.3E-10	4.2E-09	1.4E-11	6.6E-09	5.0E-10	4.8E-10	4.8E-10	2.6E-10
HLC-3	L-1	2019-12-11	0.080	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1842	-	1.1E-10	3.3E-10	6.0E-11	2.4E-08	1.3E-11	6.8E-12	7.3E-12	4.6E-12
HLC-3	L-2	2019-12-12	1.0	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1842	-	1.6E-11	5.1E-11	9.2E-12	3.7E-09	8.2E-11	4.4E-11	4.4E-11	7.3E-10
HLC-3	L-3	2019-12-13	2.0	0.10	0.057	0.00047	659	1.00	0.66	0.0082	8.1	0.86	1842	-	2.0E-10	9.8E-10	2.8E-11	1.1E-08	1.7E-10	9.2E-11	9.1E-11	2.0E-09
HLC-3	L-4	2019-12-18	7.0	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	3.5E-11	1.6E-10	3.1E-12	1.3E-09	1.5E-10	9.8E-11	9.7E-11	2.7E-09
HLC-3	L-5	2019-12-25	14	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	2.8E-11	1.4E-10	4.0E-12	1.6E-09	2.2E-10	1.4E-10	1.4E-10	3.1E-09
HLC-3	L-6	2020-01-08	28	0.10	0.057	0.00047	658	1.00	0.66	0.0082	8.1	0.86	1842	-	5.2E-10	1.6E-09	3.2E-11	8.1E-10	2.1E-10	1.4E-10	1.4E-10	2.3E-09
HLC-3	L-7	2020-01-22	42	0.10	0.057	0.00047	656	1.00	0.66	0.0082	8.0	0.86	1842	-	1.5E-10	2.3E-10	5.4E-11	1.4E-09	3.0E-10	1.9E-10	1.9E-10	2.0E-09
HLC-3	L-8	2020-01-29	49	0.10	0.057	0.00047	658	1.00	0.66	0.0082	8.1	0.86	1842	-	5.1E-10	2.5E-09	1.8E-11	7.2E-09	3.6E-10	2.6E-10	2.6E-10	2.0E-09
HLC-3	L-9	2020-02-12	63	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1842	-	4.1E-10	1.9E-09	5.4E-12	2.2E-09	2.8E-10	2.1E-10	2.1E-10	1.3E-09
HLC-3	L-10	2020-02-26	77	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1842	-	3.0E-10	2.4E-10	4.4E-10	2.7E-09	3.2E-10	2.5E-10	2.5E-10	1.1E-09
HLC-3	L-11	2020-03-11	91	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	2.9E-10	1.1E-11	8.1E-10	3.3E-09	2.9E-10	2.5E-10	2.5E-10	9.1E-10
HLC-3	L-12	2020-03-25	105	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	6.1E-10	1.3E-09	1.5E-10	3.8E-09	3.2E-10	2.3E-10	2.3E-10	7.5E-10
HLC-3	L-13	2020-04-08	119	0.10	0.057	0.00047	654	1.00	0.66	0.0082	8.0	0.86	1842	-	1.1E-09	2.6E-09	1.7E-10	4.4E-09	3.4E-10	2.4E-10	2.4E-10	5.7E-10
HLC-3	L-14	2020-04-22	133	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.86	1842	-	1.1E-09	4.9E-09	1.2E-11	4.9E-09	3.7E-10	2.7E-10	2.7E-10	4.6E-10
HLC-3	L-15	2020-05-06	147	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1842	-	3.9E-10	7.5E-11	8.7E-10	5.4E-09	3.3E-10	2.5E-10	2.5E-10	3.4E-10
HLC-3	L-16	2020-05-20	161	0.10	0.057	0.00047	654	1.00	0.65	0.0082	8.0	0.86	1842	-	1.3E-09	1.0E-09	1.5E-09	6.0E-09	3.1E-10	2.9E-10	2.9E-10	1.7E-10
HLC-3	L-17	2020-06-03	175	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1842	-	1.0E-09	5.0E-09	1.6E-11	6.5E-09	2.7E-10	2.6E-10	2.6E-10	2.4E-10
HLC-4	L-1	2019-12-11	0.080	0.10	0.057	0.00047	659	1.00	0.66	0.0082	8.1	0.86	1846	-	1.0E-10	3.8E-10	5.0E-11	2.4E-08	1.3E-11	9.1E-12	9.3E-12	2.8E-12
HLC-4	L-2	2019-12-12	1.0	0.10	0.057	0.00047	655	1.00	0.66	0.0082	8.0	0.86	1846	-	9.7E-11	5.2E-10	7.7E-12	3.7E-09	7.8E-11	5.1E-11	5.1E-11	8.8E-10
HLC-4	L-3	2019-12-13	2.0	0.10	0.057	0.00047	663	1.00	0.66	0.0082	8.1	0.86	1846	-	1.1E-10	7.1E-10	2.4E-11	1.1E-08	1.9E-10	1.0E-10	1.0E-10	2.1E-09
HLC-4	L-4	2019-12-18	7.0	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	4.6E-11	2.4E-10	2.6E-12	1.2E-09	1.5E-10	9.7E-11	9.7E-11	2.9E-09
HLC-4	L-5	2019-12-25	14	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	1.3E-10	7.4E-10	3.2E-12	1.6E-09	2.2E-10	1.4E-10	1.4E-10	3.3E-09
HLC-4	L-6	2020-01-08	28	0.10	0.057	0.00047	660	1.00	0.66	0.0082	8.1	0.86	1846	-	4.8E-10	1.8E-09	2.7E-11	8.1E-10	2.1E-10	1.4E-10	1.4E-10	2.6E-09
HLC-4	L-7	2020-01-22	42	0.10	0.057	0.00047	658	1.00	0.66	0.0082	8.1	0.86	1846	-	2.0E-10	1.3E-10	2.8E-10	1.4E-09	2.7E-10	1.9E-10	1.9E-10	2.0E-09
HLC-4	L-8	2020-01-29	49	0.10	0.057	0.00047	657	1.00	0.66	0.0082	8.0	0.86	1846	-	1.2E-10	6.9E-10	1.5E-11	7.1E-09	3.6E-10	2.7E-10	2.7E-10	2.1E-09
HLC-4	L-9	2020-02-12	63	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1846	-	4.4E-10	2.4E-09	4.5E-12	2.2E-09	3.0E-10	2.2E-10	2.2E-10	1.3E-09
HLC-4	L-10	2020-02-26	77	0.10	0.057	0.00047	654	1.00	0.65	0.0082	8.0	0.86	1846	-	1.4E-09	7.7E-09	5.6E-12	2.7E-09	3.4E-10	2.4E-10	2.4E-10	1.1E-09
HLC-4	L-11	2020-03-11	91	0.10	0.057	0.00047	653	1.00	0.65	0.0082	8.0	0.86	1846	-	2.2E-10	5.1E-11	4.3E-10	3.2E-09	3.2E-10	2.5E-10	2.5E-10	8.6E-10
HLC-4	L-12	2020-03-25	105	0.10	0.057	0.00047	649	1.00	0.65	0.0082	8.0	0.86	1846	-	1.1E-09	3.7E-09	1.2E-10	3.7E-09	3.2E-10	2.4E-10	2.4E-10	7.0E-10
HLC-4	L-13	2020-04-08	119	0.10	0.057	0.00047	649	1.00	0.65	0.0082	8.0	0.86	1846	-	3.6E-10	6.0E-10	1.4E-10	4.3E-09	3.3E-10	2.5E-10	2.5E-10	5.3E-10
HLC-4	L-14	2020-04-22	133	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.86	1846	-	5.0E-10	2.7E-09	9.9E-12	4.8E-09	3.6E-10	2.6E-10	2.6E-10	3.5E-10
HLC-4	L-15	2020-05-06	147	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.86	1846	-	4.6E-10	3.4E-10	7.1E-10	5.4E-09	2.5E-10	2.5E-10	2.5E-10	2.5E-10
HLC-4	L-16	2020-05-20	161	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.86	1846	-	6.2E-10	9.2E-11	1.2E-09	5.9E-09	2.8E-10	2.8E-10	2.8E-10	1.6E-10
HLC-4	L-17	2020-06-03	175	0.10	0.057	0.00047	651	1.00	0.65	0.0082	8.0	0.86	1846	-	3.3E-09	1.8E-08	1.3E-11	6.5E-09	3.0E-10	2.7E-10	2.7E-10	1.7E-10

- Parameter not analyzed

Appendix E, Table E-19
HLC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HLC-1	L-1	4.9E-09	5.8E-10	0.00000015	4.4E-10	-	-	2.4E-08	-	1.8E-10	4.5E-12	0.00000033	1.5E-10	1.1E-10	3.1E-09	2.5E-08	2.5E-10	6.1E-09	5.5E-08	0.00000039	0.0000083	5.4E-11
HLC-1	L-2	7.3E-10	2.5E-10	9.2E-10	4.1E-10	-	-	0.00000036	-	4.1E-11	7.9E-13	0.00000011	6.8E-11	6.5E-11	4.1E-10	3.7E-09	5.9E-10	0.00000013	6.4E-10	0.00000045	0.00010	2.6E-15
HLC-1	L-3	2.3E-09	6.5E-10	7.1E-10	1.3E-09	-	-	1.1E-08	-	1.3E-10	1.1E-12	9.7E-08	2.1E-10	2.0E-10	8.4E-10	1.1E-08	1.8E-09	2.9E-09	2.0E-09	3.2E-08	0.0000026	8.0E-15
HLC-1	L-4	2.2E-09	5.5E-10	1.2E-09	1.1E-09	-	-	1.2E-09	-	1.1E-10	7.7E-13	3.8E-09	2.6E-10	1.4E-10	2.6E-10	1.2E-09	1.2E-11	1.2E-09	2.1E-10	3.1E-08	0.0000010	1.4E-14
HLC-1	L-5	2.7E-09	7.7E-10	1.5E-09	1.4E-09	-	-	1.5E-09	-	1.5E-10	5.3E-13	9.6E-09	3.4E-10	2.5E-10	2.7E-10	1.5E-09	1.5E-11	1.5E-09	2.7E-10	2.1E-08	0.0000030	1.7E-14
HLC-1	L-6	2.8E-09	6.6E-10	1.8E-09	1.2E-09	-	-	7.6E-10	-	1.5E-10	4.9E-13	9.1E-10	3.1E-10	2.2E-10	2.5E-10	7.8E-10	7.8E-10	1.9E-10	1.4E-10	5.5E-09	8.0E-09	8.7E-15
HLC-1	L-7	3.8E-09	9.8E-10	3.1E-09	1.3E-09	-	-	1.3E-09	-	1.8E-10	3.4E-13	1.9E-09	4.0E-10	4.9E-10	4.0E-10	1.4E-09	2.2E-10	3.4E-10	2.4E-10	1.2E-08	0.00000021	9.6E-16
HLC-1	L-8	7.1E-09	1.5E-09	1.8E-09	1.8E-09	-	-	0.0000007	-	2.6E-10	2.1E-13	4.5E-08	5.2E-10	7.9E-10	7.9E-10	7.1E-09	1.1E-09	2.8E-08	1.2E-09	0.00000016	0.000029	2.0E-14
HLC-1	L-9	2.6E-09	9.2E-10	2.1E-09	1.1E-09	-	-	0.00000021	-	2.0E-10	3.8E-14	1.2E-08	3.9E-10	7.7E-10	7.3E-10	2.1E-09	1.4E-09	8.6E-09	3.7E-10	3.4E-08	0.0000058	2.4E-14
HLC-1	L-10	3.3E-09	1.0E-09	2.7E-09	1.1E-09	-	-	0.00000027	-	2.2E-10	2.2E-14	4.2E-09	4.4E-10	9.7E-10	7.3E-10	2.7E-09	1.1E-10	6.7E-10	4.7E-10	1.1E-08	0.00000011	1.9E-15
HLC-1	L-11	4.0E-09	1.0E-09	3.2E-09	1.1E-09	-	-	0.00000032	-	2.3E-10	1.7E-14	9.8E-09	5.0E-10	1.2E-09	1.1E-09	3.2E-09	1.3E-10	8.0E-10	5.6E-10	1.3E-08	0.00000013	8.9E-15
HLC-1	L-12	4.6E-09	9.1E-10	3.8E-09	8.4E-10	-	-	0.00000037	-	2.2E-10	1.1E-14	8.4E-09	4.2E-10	1.1E-09	1.0E-09	3.8E-09	3.8E-11	9.4E-10	6.5E-10	6.7E-09	3.8E-08	2.6E-15
HLC-1	L-13	5.3E-09	9.4E-10	4.3E-09	7.4E-10	-	-	0.00000042	-	2.1E-10	1.0E-14	1.1E-08	4.4E-10	1.2E-09	1.1E-09	4.3E-09	4.3E-11	1.1E-09	7.4E-10	7.6E-09	6.8E-08	3.0E-15
HLC-1	L-14	4.7E-09	9.7E-10	1.2E-09	7.2E-10	-	-	0.00000047	-	2.1E-10	8.6E-15	1.3E-08	4.0E-10	1.3E-09	1.1E-09	4.7E-09	1.9E-10	1.2E-09	8.2E-10	8.4E-09	6.1E-08	3.3E-15
HLC-1	L-15	8.0E-09	9.3E-10	1.3E-09	6.0E-10	-	-	0.000053	-	2.2E-10	5.0E-15	2.9E-08	3.9E-10	1.2E-09	1.3E-09	5.4E-09	2.2E-10	1.3E-09	9.3E-10	5.4E-09	5.4E-09	3.8E-15
HLC-1	L-16	5.9E-09	1.1E-09	1.5E-09	5.5E-10	-	-	0.00000058	-	2.4E-10	1.4E-15	2.4E-08	3.7E-10	1.7E-09	1.2E-09	5.9E-09	2.1E-09	1.5E-09	1.0E-09	1.1E-08	0.00000059	4.1E-15
HLC-1	L-17	8.0E-09	9.2E-10	1.6E-09	4.0E-10	-	-	0.00000064	-	2.4E-10	1.5E-15	2.0E-08	4.0E-10	1.4E-09	1.5E-09	6.5E-09	6.5E-11	1.6E-09	1.1E-09	5.8E-08	0.0000002	7.2E-14
HLC-2	L-1	1.6E-09	3.1E-10	0.00000016	4.0E-10	-	-	2.4E-08	-	2.2E-11	5.5E-13	0.00000014	1.7E-11	3.2E-11	1.5E-10	2.5E-08	2.5E-10	2.5E-08	4.3E-09	0.00000047	0.000057	2.2E-12
HLC-2	L-2	9.1E-10	5.8E-10	2.3E-10	1.2E-09	-	-	0.00000036	-	1.1E-10	1.8E-12	2.7E-09	1.1E-10	7.4E-11	6.8E-11	3.6E-09	3.6E-09	9.1E-10	6.3E-10	4.0E-08	0.0000008	1.3E-12
HLC-2	L-3	1.7E-09	1.3E-09	7.3E-10	2.1E-09	-	-	1.1E-08	-	2.4E-10	2.0E-12	6.8E-08	2.3E-10	2.4E-10	2.0E-10	1.2E-08	4.7E-10	2.9E-09	2.0E-09	4.7E-08	0.0000063	1.0E-12
HLC-2	L-4	2.3E-09	9.9E-10	1.2E-09	2.1E-09	-	-	1.2E-09	-	2.4E-10	8.7E-13	2.6E-09	2.6E-10	1.6E-10	9.4E-11	1.2E-09	4.9E-11	3.1E-10	2.1E-10	2.0E-08	0.0000014	2.5E-13
HLC-2	L-5	4.2E-09	1.4E-09	1.6E-09	2.7E-09	-	-	1.5E-09	-	3.3E-10	5.8E-13	3.1E-09	3.8E-10	2.0E-10	1.4E-10	1.6E-09	6.3E-11	4.0E-10	2.7E-10	1.1E-08	0.00000043	1.4E-13
HLC-2	L-6	2.1E-09	1.2E-09	1.8E-09	2.4E-09	-	-	8.0E-10	-	3.2E-10	5.7E-13	6.1E-10	3.5E-10	2.7E-10	1.8E-10	8.1E-10	1.2E-09	2.0E-10	1.4E-10	3.3E-09	1.3E-08	4.5E-15
HLC-2	L-7	4.8E-09	1.7E-09	1.4E-09	2.6E-09	-	-	1.3E-09	-	4.5E-10	4.4E-13	7.4E-10	4.6E-10	7.0E-10	3.3E-10	1.4E-09	8.8E-10	3.4E-10	2.4E-10	2.2E-08	4.9E-08	3.1E-14
HLC-2	L-8	9.1E-09	2.7E-09	1.8E-09	3.4E-09	-	-	0.00000071	-	5.8E-10	2.5E-13	3.2E-09	5.3E-10	1.3E-09	6.4E-10	7.2E-09	1.1E-09	1.8E-09	1.2E-09	2.0E-08	0.00000066	4.0E-14
HLC-2	L-9	3.4E-09	1.7E-09	2.2E-09	2.2E-09	-	-	0.00000021	-	4.6E-10	6.6E-14	1.4E-09	4.3E-10	1.1E-09	5.7E-10	2.2E-09	1.4E-09	5.5E-10	3.8E-10	8.7E-09	0.00000015	1.2E-14
HLC-2	L-10	4.2E-09	1.8E-09	2.7E-09	2.1E-09	-	-	0.00000027	-	4.7E-10	5.5E-14	1.2E-09	4.4E-10	1.1E-09	6.0E-10	2.7E-09	1.1E-10	6.8E-10	4.7E-10	7.6E-09	8.5E-08	1.5E-14
HLC-2	L-11	4.1E-09	1.8E-09	3.3E-09	1.9E-09	-	-	0.00000032	-	4.9E-10	4.4E-14	2.1E-09	4.5E-10	1.4E-09	7.2E-10	3.3E-09	5.2E-10	8.2E-10	5.7E-10	9.1E-09	0.00000015	1.8E-14
HLC-2	L-12	3.8E-09	1.7E-09	9.6E-10	1.6E-09	-	-	0.00000038	-	4.9E-10	3.1E-14	2.9E-09	4.6E-10	1.2E-09	7.6E-10	3.8E-09	3.8E-11	9.6E-10	6.6E-10	6.8E-09	0.00000018	2.1E-14
HLC-2	L-13	6.7E-09	1.7E-09	1.1E-09	1.4E-09	-	-	0.00000043	-	4.7E-10	2.2E-14	8.5E-09	4.6E-10	1.4E-09	7.8E-10	4.3E-09	8.5E-09	1.1E-09	7.5E-10	1.7E-08	0.0000026	2.4E-14
HLC-2	L-14	4.9E-09	1.8E-09	1.2E-09	1.4E-09	-	-	0.00000048	-	4.8E-10	2.0E-14	7.0E-09	4.5E-10	1.6E-09	9.8E-10	4.9E-09	7.8E-10	1.2E-09	8.5E-10	2.0E-08	0.0000016	2.7E-14
HLC-2	L-15	1.0E-08	1.7E-09	1.4E-09	1.2E-09	-	-	0.000054	-	4.9E-10	8.2E-15	7.9E-09	4.0E-10	1.4E-09	1.1E-09	5.5E-09	5.5E-09	1.4E-09	9.5E-10	9.7E-09	5.5E-09	3.0E-14
HLC-2	L-16	6.0E-09	1.8E-09	1.5E-09	1.1E-09	-	-	0.00000059	-	5.4E-10	6.2E-15	8.6E-09	4.1E-10	2.0E-09	1.1E-09	6.0E-09	2.2E-09	1.5E-09	1.0E-09	1.1E-08	0.00000014	3.3E-14
HLC-2	L-17	6.6E-09	1.6E-09	1.6E-09	7.5E-10	-	-	0.00000065	-	4.9E-10	1.7E-15	7.5E-09	4.1E-10	2.2E-09	1.2E-09	6.6E-09	2.6E-10	1.6E-09	1.1E-09	1.2E-08	0.00000024	5.9E-13
HLC-3	L-1	6.0E-11	6.0E-11	1.5E-09	3.4E-11	-	-	2.3E-08	-	7.0E-12	1.0E-13	0.0000001	4.2E-12	3.1E-11	1.3E-10	2.4E-08	9.6E-10	2.4E-08	3.1E-09	0.00000029	0.000035	2.8E-14
HLC-3	L-2	5.9E-10	3.0E-10	2.3E-10	4.3E-10	-	-	0.00000036	-	6.0E-11	6.7E-13	6.0E-09	5.4E-11	7.5E-11	1.3E-10	3.7E-09	5.9E-10	9.2E-10	4.7E-10	2.3E-08	0.0000050	4.3E-15
HLC-3	L-3	1.0E-09	7.1E-10	7.1E-10	1.1E-09	-	-	1.1E-08	-	1.3E-10	1.2E-12	7.3E-08	1.7E-10	2.3E-10	2.8E-10	1.1E-08	4.5E-10	2.8E-09	1.4E-09	1.8E-08	0.0000029	1.3E-14
HLC-3	L-4	1.8E-09	6.6E-10	1.3E-09	1.4E-09	-	-	1.2E-09	-	1.4E-10	7.8E-13	5.5E-09	2.7E-10	1.6E-10	1.3E-10	1.3E-09	1.3E-11	1.3E-09	1.6E-10	1.1E-08	0.0000014	2.4E-14
HLC-3	L-5	2.7E-09	9.1E-10	1.6E-09	1.7E-09	-	-	1.6E-09	-	2.0E-10	3.2E-13	5.8E-09	3.9E-10	2.9E-10	1.8E-10	1.6E-09	5.7E-10	6.4E-09	2.0E-10	0.0000036	0.0000057	3.0E-14
HLC-3	L-6	2.1E-09	8.1E-10	1.8E-09	1.5E-09	-	-	7.9E-10	-	1.8E-10	3.5E-13	1.3E-09	3.5E-10	3.3E-10	2.1E-10	8.1E-10	8.1E-10	8.1E-10	1.0E-10	3.2E-09	0.00000028	9.4E-16
HLC-3	L-7	3.1E-09	1.1E-09	1.4E-09	1.6E-09	-	-	1.3E-09	-	2.3E-10	2.4E-13	1.9E-09	4.3E-10	6.9E-10	3.5E-10	1.4E-09	2.2E-10	3.4E-10	1.7E-10	6.9E-09	0.00000022	1.6E-15
HLC-3	L-8	5.8E-09	1.7E-09	1.8E-09	2.0E-09	-	-	0.00000071	-	3.3E-10	1.6E-13	1.0E-08	5.4E-10	1.3E-09	6.4E-10	7.2E-09	7.2E-11	1.8E-09	9.2E-10	2.9E-08	0.0000068	8.4E-15
HLC-3	L-9	1.4E-09	1.0E-09	2.2E-09	1.3E-09	-	-	0.00000021	-	2.5E-10	1.5E-13	3.0E-09	4.2E-10	9.0E-10	5.7E-10	2.2E-09	1.4E-09	5.4E-10	2.8E-10	6.7E-09	0.00000061	2.6E-15
HLC-3	L-10	2.2E-09	1.2E-09	2.7E-09	1.4E-09	-	-	0.00000027	-	2.8E-10	3.4E-14	5.1E-09	4.8E-10	1.1E-09	6.5E-10	2.7E-09	1.1E-10	6.8E-10	3.5E-10	1.1E-08	0.0000013	3.2E-15
HLC-3	L-11	3.3E-09	1.2E-09	3.3E-09	1.3E-09	-	-	0.00000032	-	2.7E-10	1.7E-14	7.8E-09	5.1E-10	1.3E-09	7.8E-10	3.3E-09	5.2E-10	3.3E-09	4.2E-10	1.3E-08	0.0000029	1.5E-14
HLC-3	L-12	3.1E-09	1.1E-09	9.5E-10	1.1E-09	-	-	0.00000037	-	2.7E-10	1.1E-14	4.5E-09	5.0E-10	1.2E-09	8.3E-10	3.8E-09	1.4E-09	9.5E-10	4.9E-10	2.1E-09	0.00000014	4.5E-15
HLC-3	L-13	4.4E-09	1.1E-09	1.1E-09	9.6E-10	-	-	0.00000043	-	2.6E-10	1.2E-14	1.0E-08	5.1E-10	1.4E-09	9.6E-10	4.4E-09	1.7E-10	1.1E-09	5.6E-10	6.8E-09	0.00000023	5.1E-15
HLC-3	L-14	4.9E-09	1.2E-09	1.2E-09	9.4E-10	-	-	0.00000048	-	2.9E-10	1.0E-14	1.6E-08	5.0E-10	1.6E-09	1.2E-09	4.9E-09	2.0E-10	1.2E-09	6.2E-10	4.9E-09	0.00000031	5.7E-15
HLC-3	L-15	5.4E-09	1.1E-09	1.4E-09	7.7E-10	-	-	0.000053	-	2.7E-10	5.9E-15	1.5E-08	4.1E-10	1.4E-09	1.2E-09	5.4E-09	5.4E-11	1.4E-09	6.9E-10	3.1E-09	5.4E-09	6.4E-15
HLC-3	L-16	2.9E-09	1.2E-09	1.5E-09	7.1E-10	-	-	0.00000059	-	3.0E-10	9.4E-15	1.6E-08	4.5E-10	2.0E-09	1.3E-09	6.0E-09	6.0E-11	1.5E-09	7.7E-10	3.4E-09	9.6E-08	7.0E-15
HLC-3	L-17	4.1E-09	1.0E-09	1.6E-09	5.3E-10	-	-	0.00000064	-	2.6E-10	1.8E-14	2.6E-08	4.5E-10	1.6E-09	1.5E-09	6.5E-09	6.5E-11	1.6E-09	8.3E-10	2.0E-08	0.0000013	1.2E-13
HLC-4	L-1	7.5E-11	6.0E-11	1.5E-09	4.3E-11	-	-	2.4E-08	-	9.2E-12	2.2E-13	0.0000001	5.3E-12	2.4E-11	1.1E-10	2.4E-08	9.7E-10	6.0E-09	3.1E-09	9.7E-08	0.000026	1.2E-13
HLC-4	L-2	4.1E-10	3.3E-10	9.3E-10	4.9E-10	-	-	0.00000036	-	6.3E-11	6.5E-13	1.8E-09	6.9E-11	5.8E-11	9.5E-11	3.7E-09	5.9E-10	9.3E-10	2.2E-08	3.7E-09	0.0000020	1.8E-14
HLC-4	L-3	1.3E-09	7.1E-10	7.1E-10	1.3E-09	-	-	1.1E-08	-	1.3E-10	1.0E-12	0.0000001	2.1E-10	1.8E-10	2.2E-10	1.1E-08	4.6E-10	2.9E-09	1.5E-09	4.1E-09	0.0000025	1.4E-14
HLC-4	L-4	2.2E-09	6.7E-10	1.2E-09	1.4E-09	-	-	1.2E-09	-	1.4E-10	6.4E-13	1.9E-09	3.0E-10	1.2E-10	9.7E-11	1.2E-09	5.0E-11	3.1E-10	1.6E-10	5.0E-09	0.0000015	5.5E-14
HLC-4	L-5	3.3E-09	9.2E-10	1.6E-09	1.8E-09	-	-	1.5E-09	-	2.0E-10	4.9E-13	2.5E-09	4.5E-10	1.5E-10	1.4E-10	1.6E-09	2.5E-10	1.6E-09	2.0E-10	5.1E-09	0.0000015	3.1E-14
HLC-4	L-6	2.5E-09	8.1E-10	1.8E-09	1.5E-09	-	-	7.9E-10	-	1.9E-10	4.1E-13	9.4E-10	4.0E-10	3.1E-10	1.7E-10	8.1E-10	8.1E-12	2.0E-10	1.0E-10	1.2E-09	0.00000074	9.9E-16
HLC-4	L-7	3.8E-09	1.1E-09	1.4E-09	1.6E-09	-	-	1.3E-09	-	2.4E-10	2.6E-13	1.6E-09	4.9E-10	5.3E-10	3.1E-10	1.4E-09	1.4E-11	3.4E-10	1.7E-10	3.5E-09	0.00000033	6.7E-15
HLC-4	L-8	7.1E-09	1.8E-09	1.8E-09	2.1E-09	-	-	0.0000007	-	3.4E-10	1.7E-13	7.1E-09	6.2E-10	1.0E-09	5.6E-10	7.1E-09	2.8E-10	1.8E-09	9.1E-10	1.0E-08	0.0000050	8.7E-15
HLC-4	L-9	1.7E-09	1.1E-09	2.2E-09	1.3E-09	-	-	0.00000021	-	2.6E-10	1.4E-13	2.2E-09	4.7E-10	6.8E-10	5.0E-10	2.2E-09	8.6E-11	5.4E-10	2.8E-10	3.1E-09	0.00000038	2.7E-15
HLC-4	L-10	3.3E-09	1.2E-09	2.7E-09	1.4E-09	-	-	0.00000027	-	2.9E-10	2.5E-14	4.2E-09	5.3E-10	1.1E-09	5.7E-10	2.7E-09	4.3E-10	6.8E-10	3.5E-10	5.3E-09	0.0000014	3.3E-15
HLC-4	L-11	4.0E-09	1.2E-09	3.2E-09	1.3E-09	-	-	0.00000032	-	2.8E-10	2.0E-14	5.8E-09	5.4E-10	1.0E-09	6.3E-10	3.2E-09	5.2E-10	3.2E-09	4.1E-10	8.3E-09	0.0000030	1.6E-14
HLC-4	L-12	4.6E-09	1.1E-09	3.7E-09	1.1E-09	-	-	0.00000037	-	2.8E-10	1.1E-14	6.7E-09	5.3E-10	9.4E-10	7.3E-10	3.7E-09	1.5E-10	9.4E-10	4.8E-10	1.3E-09	4.9E-08	4.6E-15
HLC-4	L-13	6.4E-09	1.1E-09	1.1E-09	8.9E-10	-	-	0.00000042	-	2.9E-10	7.5E-15	6.7E-09	5.7E-10	1.1E-09	8.3E-10	4.3E-09	4.3E-11	1.1E-09	5.5E-10	2.7E-09	0.00000039	5.3E-15
HLC-4	L-14	4.8E-09	1.3E-09	1.2E-09	8.6E-10	-	-	0.00000047	-	3.0E-10	8.4E-15	9.6E-09	5.2E-10	1.2E-09	9.3E-10	4.8E-09	1.7E-09	1.2E-09	6.1E-10	4.8E-09	0.00000083	5.9E-15
HLC-4	L-15	6.7E-09	1.1E-09	1.4E-09	7.1E-10	-	-	0.000053	-	2.8E-10	6.9E-15	8.4E-09	4.4E-10	1.0E-09	9.5E-10	5.4E-09	3.5E-09	1.4E-09	6.9E-10	1.9E-09	5.4E-09	6.6E-15
HLC-4	L-16	3.6E-09	1.2E-09	1.5E-09	6.6E-10	-	-	0.00000058	-	2.8E-10	7.6E-15	6.9E-09	4.4E-10	1.5E-09	9.5E-10	5.9E-09	5.9E-11	1.5E-09	7.7E-09	2.1E-09	0.00000011	7.3E-15
HLC-4	L-17	6.5E-09	1.1E-09	1.6E-09	4.8E-10	-	-	0.00000064	-	2.8E-10	5.8E-15	2.6E-08	4.4E-10	1.6E-09	1.3E-09	6.5E-09	2.3E-09	1.6E-09	8.3E-10	6.5E-09	0.0000012	1.3E-13

- Parameter not analyzed

Appendix E, Table E-19
HLC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HLC-1	L-1	2.5E-08	2.7E-10	5.5E-08	2.7E-08	1.5E-09	4.0E-10	2.5E-08	9.6E-11	1.1E-09	3.5E-10	0.00000013	1.5E-10	0.0000025	-	-	2.3E-09	-
HLC-1	L-2	2.1E-08	2.7E-10	3.3E-08	0.0000035	4.5E-10	9.9E-11	3.7E-09	2.3E-11	2.4E-09	1.5E-10	0.0000005	2.9E-11	0.00000026	-	-	6.3E-10	-
HLC-1	L-3	1.1E-08	9.2E-10	1.1E-08	6.4E-09	1.4E-09	2.7E-10	1.1E-08	5.8E-11	8.8E-10	2.9E-10	6.0E-08	6.9E-11	0.00000018	-	-	4.9E-10	-
HLC-1	L-4	1.2E-09	9.2E-10	2.8E-09	2.2E-08	7.8E-10	2.2E-10	1.2E-09	5.2E-11	7.1E-10	2.8E-10	1.4E-08	4.6E-11	0.00000013	-	-	2.6E-10	-
HLC-1	L-5	1.5E-09	1.4E-09	3.5E-09	2.9E-08	1.1E-09	2.3E-10	1.5E-09	7.1E-11	1.5E-09	3.5E-10	9.6E-09	7.6E-11	2.0E-08	-	-	3.5E-10	-
HLC-1	L-6	7.8E-10	1.7E-09	1.8E-09	2.0E-09	1.1E-09	2.2E-10	7.8E-10	7.4E-11	8.7E-10	3.6E-10	3.2E-09	8.1E-11	2.4E-08	-	-	2.9E-10	-
HLC-1	L-7	1.4E-09	2.5E-09	1.4E-09	5.2E-09	1.6E-09	2.8E-10	1.4E-09	1.0E-10	1.1E-09	4.9E-10	4.4E-09	1.4E-10	2.2E-08	-	-	3.8E-10	-
HLC-1	L-8	7.1E-09	3.9E-09	7.1E-09	0.00000064	2.8E-09	3.7E-10	7.1E-09	1.4E-10	6.5E-09	7.3E-10	0.0000001	2.5E-10	0.00000037	-	-	6.1E-10	-
HLC-1	L-9	2.1E-09	3.6E-09	8.6E-09	0.00000014	2.3E-09	3.3E-10	2.1E-09	1.3E-10	3.3E-09	6.7E-10	4.1E-08	2.0E-10	0.00000012	-	-	5.4E-10	-
HLC-1	L-10	2.7E-09	4.3E-09	1.7E-08	1.7E-09	2.7E-09	2.6E-10	2.7E-09	1.4E-10	3.5E-09	7.3E-10	1.4E-08	2.5E-10	0.00000025	-	-	5.5E-10	-
HLC-1	L-11	3.2E-09	5.4E-09	7.2E-09	4.2E-09	3.5E-09	3.8E-10	3.2E-09	1.5E-10	3.9E-09	7.4E-10	2.3E-08	3.6E-10	4.1E-08	-	-	6.2E-10	-
HLC-1	L-12	3.8E-09	5.9E-09	3.8E-09	3.8E-09	3.2E-09	3.4E-10	3.8E-09	1.4E-10	5.9E-09	8.6E-10	2.8E-08	3.3E-10	0.00000014	-	-	4.4E-10	-
HLC-1	L-13	4.3E-09	5.7E-09	1.1E-09	4.3E-09	3.9E-09	3.2E-10	4.3E-09	1.6E-10	3.1E-09	9.8E-10	2.2E-08	3.4E-10	8.2E-08	-	-	5.7E-10	-
HLC-1	L-14	4.7E-09	5.9E-09	4.7E-09	3.4E-09	3.5E-09	2.6E-10	4.7E-09	1.5E-10	5.1E-09	9.2E-10	2.1E-08	3.2E-10	0.00000033	-	-	6.3E-10	-
HLC-1	L-15	5.4E-09	6.9E-09	3.4E-10	3.9E-09	3.8E-09	2.8E-10	5.4E-09	1.7E-10	4.7E-09	7.0E-10	5.3E-08	3.7E-10	5.5E-08	-	-	5.4E-10	-
HLC-1	L-16	5.9E-09	7.1E-09	5.9E-09	5.3E-09	3.5E-09	2.0E-10	5.9E-09	1.5E-10	3.0E-09	7.7E-10	4.3E-08	3.7E-10	0.00000074	-	-	4.3E-10	-
HLC-1	L-17	6.5E-09	8.7E-09	6.5E-09	7.1E-09	4.1E-09	2.8E-10	6.5E-09	1.6E-10	2.5E-09	6.6E-10	3.4E-08	4.4E-10	0.00000015	-	-	5.5E-10	-
HLC-2	L-1	2.5E-08	4.0E-11	5.6E-08	0.0000001	4.2E-11	2.1E-11	2.5E-08	3.2E-12	2.5E-10	4.0E-11	4.8E-08	1.2E-11	0.0000011	-	-	7.1E-11	-
HLC-2	L-2	3.6E-09	3.2E-10	3.6E-09	1.8E-09	1.7E-10	7.7E-11	3.6E-09	2.3E-11	2.4E-10	9.3E-11	5.0E-09	1.6E-11	5.8E-08	-	-	9.2E-11	-
HLC-2	L-3	1.2E-08	8.0E-10	1.2E-08	4.2E-08	5.0E-10	1.9E-10	1.2E-08	5.7E-11	6.9E-10	3.0E-10	2.3E-08	5.2E-11	6.8E-08	-	-	1.7E-10	-
HLC-2	L-4	1.2E-09	8.3E-10	2.8E-09	7.1E-09	4.5E-10	1.6E-10	1.2E-09	5.3E-11	6.5E-10	2.4E-10	3.7E-09	4.7E-11	0.0000001	-	-	9.7E-11	-
HLC-2	L-5	1.6E-09	1.5E-09	1.6E-09	4.6E-09	6.8E-10	2.3E-10	1.6E-09	7.4E-11	1.3E-09	3.6E-10	2.7E-09	7.8E-11	3.1E-08	-	-	1.8E-10	-
HLC-2	L-6	8.1E-10	1.7E-09	1.8E-09	4.0E-10	7.9E-10	2.1E-10	8.1E-10	7.9E-11	9.6E-10	3.8E-10	1.5E-09	8.4E-11	5.2E-08	-	-	2.1E-10	-
HLC-2	L-7	1.4E-09	2.7E-09	1.4E-09	4.9E-10	1.3E-09	3.0E-10	1.4E-09	1.1E-10	1.3E-09	5.6E-10	1.4E-09	1.6E-10	2.2E-08	-	-	3.1E-10	-
HLC-2	L-8	7.2E-09	4.0E-09	7.2E-09	1.1E-08	2.1E-09	3.1E-10	7.2E-09	1.4E-10	4.1E-09	7.3E-10	5.4E-09	2.4E-10	0.00000041	-	-	5.2E-10	-
HLC-2	L-9	2.2E-09	3.8E-09	2.2E-09	3.7E-09	1.8E-09	2.9E-10	2.2E-09	1.3E-10	2.6E-09	6.8E-10	3.3E-09	2.1E-10	1.7E-08	-	-	4.2E-10	-
HLC-2	L-10	2.7E-09	4.5E-09	2.7E-09	6.8E-10	2.2E-09	2.6E-10	2.7E-09	1.3E-10	4.1E-09	7.4E-10	2.8E-09	2.4E-10	2.7E-09	-	-	4.7E-10	-
HLC-2	L-11	3.3E-09	4.7E-09	3.3E-09	1.4E-09	2.4E-09	2.8E-10	3.3E-09	1.3E-10	3.9E-09	6.3E-10	3.3E-09	2.7E-10	1.9E-08	-	-	4.7E-10	-
HLC-2	L-12	3.8E-09	6.0E-09	3.8E-09	4.2E-09	2.8E-09	2.8E-10	3.8E-09	1.5E-10	6.6E-09	8.8E-10	5.5E-09	3.2E-10	0.0000002	-	-	4.5E-10	-
HLC-2	L-13	4.3E-09	5.9E-09	1.1E-09	3.0E-08	3.1E-09	2.6E-10	4.3E-09	1.7E-10	3.4E-09	8.4E-10	1.3E-08	3.3E-10	1.7E-08	-	-	4.3E-10	-
HLC-2	L-14	4.9E-09	6.4E-09	4.9E-09	3.1E-08	3.1E-09	2.5E-10	4.9E-09	1.6E-10	4.5E-09	9.5E-10	1.1E-08	3.5E-10	0.00000025	-	-	5.3E-10	-
HLC-2	L-15	5.5E-09	7.3E-09	1.4E-09	3.1E-09	3.3E-09	2.4E-10	5.5E-09	1.6E-10	4.7E-09	7.1E-10	8.7E-09	3.6E-10	8.8E-08	-	-	4.7E-10	-
HLC-2	L-16	6.0E-09	7.6E-09	1.5E-09	1.8E-09	3.2E-09	1.8E-10	6.0E-09	1.5E-10	2.5E-09	7.8E-10	9.5E-09	3.9E-10	0.00000014	-	-	3.9E-10	-
HLC-2	L-17	6.6E-09	8.8E-09	1.6E-09	6.6E-09	3.5E-09	2.4E-10	6.6E-09	1.7E-10	2.7E-09	6.7E-10	1.2E-08	4.3E-10	0.00000051	-	-	4.7E-10	-
HLC-3	L-1	9.6E-08	1.2E-11	5.4E-08	0.0000011	4.8E-11	1.2E-11	2.4E-08	3.3E-12	3.4E-08	4.2E-11	2.4E-08	3.3E-12	0.00000065	-	-	1.2E-10	-
HLC-3	L-2	3.7E-09	2.0E-10	1.5E-08	5.1E-08	2.0E-10	6.0E-11	3.7E-09	2.3E-11	3.3E-10	1.0E-10	3.1E-09	1.5E-11	0.00000024	-	-	1.4E-10	-
HLC-3	L-3	1.1E-08	6.7E-10	1.1E-08	8.9E-09	6.3E-10	1.8E-10	1.1E-08	5.5E-11	4.8E-10	3.1E-10	2.1E-09	4.7E-11	8.9E-08	-	-	2.8E-10	-
HLC-3	L-4	1.3E-09	9.2E-10	2.8E-09	1.8E-08	5.2E-10	1.8E-10	1.3E-09	5.7E-11	8.9E-10	3.1E-10	1.1E-09	4.7E-11	0.00000012	-	-	1.7E-10	-
HLC-3	L-5	1.6E-09	1.5E-09	6.4E-09	5.9E-08	7.2E-10	2.7E-10	1.6E-09	7.9E-11	1.7E-09	4.0E-10	1.6E-09	8.4E-11	0.0000015	-	-	2.0E-10	-
HLC-3	L-6	8.1E-10	1.8E-09	1.8E-09	9.2E-09	7.3E-10	2.2E-10	8.1E-10	8.8E-11	1.3E-09	4.5E-10	5.6E-10	9.1E-11	2.9E-08	-	-	2.1E-10	-
HLC-3	L-7	1.4E-09	2.8E-09	1.4E-09	7.4E-09	1.1E-09	2.9E-10	1.4E-09	1.2E-10	1.6E-09	6.0E-10	5.7E-10	1.7E-10	1.1E-08	-	-	3.2E-10	-
HLC-3	L-8	7.2E-09	4.0E-09	1.8E-09	9.9E-08	1.8E-09	3.4E-10	7.2E-09	1.5E-10	6.1E-09	1.0E-09	2.8E-09	2.7E-10	0.00000011	-	-	4.3E-10	-
HLC-3	L-9	2.2E-09	3.6E-09	2.2E-09	2.1E-08	1.3E-09	3.0E-10	2.2E-09	1.4E-10	3.4E-09	7.4E-10	1.1E-09	2.0E-10	2.8E-08	-	-	4.0E-10	-
HLC-3	L-10	2.7E-09	4.6E-09	2.7E-09	3.2E-08	1.7E-09	2.9E-10	2.7E-09	1.5E-10	5.2E-09	8.0E-10	1.7E-09	2.7E-10	1.1E-08	-	-	4.4E-10	-
HLC-3	L-11	3.3E-09	5.0E-09	3.3E-09	6.9E-08	1.8E-09	3.3E-10	3.3E-09	1.5E-10	6.1E-09	8.1E-10	2.3E-09	2.9E-10	1.3E-08	-	-	4.4E-10	-
HLC-3	L-12	3.8E-09	6.3E-09	3.8E-09	2.3E-09	2.0E-09	3.2E-10	3.8E-09	1.7E-10	8.3E-09	9.5E-10	9.8E-10	3.4E-10	0.0000001	-	-	4.8E-10	-
HLC-3	L-13	4.4E-09	6.2E-09	1.1E-09	1.1E-08	2.3E-09	3.2E-10	4.4E-09	1.8E-10	3.7E-09	1.1E-09	2.5E-09	3.9E-10	0.00000012	-	-	5.8E-10	-
HLC-3	L-14	4.9E-09	7.2E-09	1.2E-09	1.2E-08	2.4E-09	3.2E-10	4.9E-09	1.8E-10	6.4E-09	1.0E-09	3.1E-09	4.1E-10	4.9E-09	-	-	6.5E-10	-
HLC-3	L-15	5.4E-09	7.1E-09	3.4E-10	4.3E-09	2.3E-09	2.6E-10	5.4E-09	1.7E-10	6.9E-09	9.5E-10	3.6E-09	3.8E-10	3.1E-08	-	-	5.1E-10	-
HLC-3	L-16	6.0E-09	8.1E-09	1.5E-09	5.4E-09	2.4E-09	2.2E-10	6.0E-09	1.8E-10	3.6E-09	1.0E-09	4.2E-09	5.0E-10	0.00000016	-	-	4.3E-10	-
HLC-3	L-17	6.5E-09	9.3E-09	1.6E-09	1.2E-08	2.6E-09	2.8E-10	6.5E-09	1.8E-10	3.2E-09	9.1E-10	4.1E-09	5.2E-10	0.00000015	-	-	5.5E-10	-
HLC-4	L-1	2.4E-08	1.4E-11	2.4E-08	0.00000079	2.7E-11	1.1E-11	2.4E-08	4.5E-12	4.9E-10	4.2E-11	2.5E-08	7.5E-12	0.00000031	-	-	1.3E-10	-
HLC-4	L-2	3.7E-09	2.0E-10	3.7E-09	1.2E-08	9.3E-11	4.4E-11	3.7E-09	2.6E-11	1.9E-10	1.0E-10	2.0E-09	2.2E-11	0.00000012	-	-	1.1E-10	-
HLC-4	L-3	1.1E-08	6.5E-10	2.9E-09	7.3E-09	2.9E-10	1.6E-10	1.1E-08	5.9E-11	4.6E-10	3.2E-10	2.8E-09	6.7E-11	1.1E-08	-	-	2.1E-10	-
HLC-4	L-4	1.2E-09	8.3E-10	1.2E-09	1.1E-08	2.2E-10	1.6E-10	1.2E-09	5.7E-11	9.1E-10	3.1E-10	1.0E-09	5.3E-11	0.00000016	-	-	1.4E-10	-
HLC-4	L-5	1.6E-09	1.3E-09	1.6E-09	2.5E-08	3.3E-10	2.1E-10	1.6E-09	7.8E-11	1.4E-09	3.9E-10	1.3E-09	9.1E-11	2.0E-08	-	-	2.0E-10	-
HLC-4	L-6	8.1E-10	1.6E-09	1.8E-09	6.6E-09	3.4E-10	1.9E-10	8.1E-10	8.3E-11	1.1E-09	4.5E-10	7.7E-10	1.0E-10	2.2E-08	-	-	2.0E-10	-
HLC-4	L-7	1.4E-09	2.3E-09	1.4E-09	1.3E-08	5.2E-10	2.6E-10	1.4E-09	1.2E-10	1.3E-09	6.0E-10	1.1E-09	1.8E-10	5.4E-09	-	-	3.1E-10	-
HLC-4	L-8	7.1E-09	3.6E-09	7.1E-09	0.00000013	8.3E-10	2.8E-10	7.1E-09	1.5E-10	4.4E-09	1.0E-09	4.9E-09	2.7E-10	0.00000014	-	-	6.1E-10	-
HLC-4	L-9	2.2E-09	3.1E-09	2.2E-09	1.7E-08	6.5E-10	2.4E-10	2.2E-09	1.4E-10	2.5E-09	7.3E-10	1.5E-09	2.1E-10	1.7E-08	-	-	4.6E-10	-
HLC-4	L-10	2.7E-09	4.1E-09	2.7E-09	4.3E-08	8.4E-10	2.4E-10	2.7E-09	1.5E-10	4.1E-09	7.9E-10	2.9E-09	2.8E-10	2.8E-08	-	-	3.9E-10	-
HLC-4	L-11	3.2E-09	4.4E-09	7.3E-09	8.6E-08	8.9E-10	2.6E-10	3.2E-09	1.3E-10	4.5E-09	8.1E-10	3.9E-09	3.2E-10	3.3E-08	-	-	4.6E-10	-
HLC-4	L-12	3.7E-09	5.4E-09	9.4E-10	7.3E-09	1.1E-09	2.7E-10	3.7E-09	1.7E-10	7.1E-09	9.4E-10	3.6E-09	3.5E-10	4.9E-08	-	-	4.7E-10	-
HLC-4	L-13	4.3E-09	5.4E-09	9.6E-09	1.4E-08	1.2E-09	2.7E-10	4.3E-09	1.8E-10	2.8E-09	1.1E-09	4.1E-09	4.0E-10	4.4E-08	-	-	5.7E-10	-
HLC-4	L-14	4.8E-09	5.9E-09	1.2E-09	3.9E-08	1.2E-09	2.2E-10	4.8E-09	1.8E-10	5.5E-09	1.0E-09	4.3E-09	4.1E-10	9.3E-08	-	-	4.8E-10	-
HLC-4	L-15	5.4E-09	6.0E-09	3.4E-10	6.2E-09	1.1E-09	1.8E-10	5.4E-09	1.7E-10	5.6E-09	9.4E-10	4.4E-09	3.6E-10	5.4E-09	-	-	5.0E-10	-
HLC-4	L-16	5.9E-09	6.6E-09	5.9E-09	9.5E-09	1.2E-09	1.5E-10	5.9E-09	1.6E-10	3.1E-09	8.3E-10	3.8E-09	4.3E-10	9.5E-08	-	-	4.3E-10	-
HLC-4	L-17	6.5E-09	8.0E-09	6.5E-09	5.1E-08	1.4E-09	2.2E-10	6.5E-09	1.8E-10	2.7E-09	9.1E-10	6.2E-09	5.2E-10	0.0000019	-	-	5.1E-10	-

- Parameter not analyzed

Appendix E, Table E-20
HHC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHC-1	L-1	2019-10-08	0.080	0.076	0.15	0.00066	4176	1.00	4.2	0.044	9.6	0.89	1346	0.00000026	1.9E-12	0.000013	1.2E-11	1.3E-13	9.7E-12	6.4E-12	6.4E-12	2.5E-10
HHC-1	L-2	2019-10-09	1.0	0.076	0.15	0.00066	4367	1.00	4.4	0.044	10	0.89	1346	1.1E-08	4.3E-12	0.0000063	4.1E-10	2.1E-14	6.9E-10	9.9E-11	8.3E-11	6.8E-10
HHC-1	L-3	2019-10-10	2.0	0.076	0.15	0.00066	4374	1.00	4.4	0.044	10	0.89	1346	3.3E-08	1.3E-11	0.000063	1.0E-10	6.4E-14	1.3E-09	1.7E-10	1.5E-10	2.0E-09
HHC-1	L-4	2019-10-15	7.0	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	3.7E-09	2.2E-11	3.7E-09	4.1E-09	1.4E-12	8.4E-10	1.0E-10	1.0E-10	2.8E-09
HHC-1	L-5	2019-10-22	14	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	4.7E-09	1.0E-10	4.7E-09	5.2E-09	4.5E-11	4.3E-10	1.5E-10	1.5E-10	1.2E-09
HHC-1	L-6	2019-11-05	28	0.076	0.15	0.00066	4370	1.00	4.4	0.044	10	0.89	1346	2.3E-09	8.2E-11	2.3E-09	2.3E-09	4.6E-11	3.0E-10	1.8E-10	1.8E-10	5.8E-10
HHC-1	L-7	2019-11-19	42	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	4.0E-09	1.3E-10	4.0E-09	5.4E-09	6.0E-11	3.3E-10	3.6E-10	3.6E-10	2.5E-10
HHC-1	L-8	2019-11-26	49	0.076	0.15	0.00066	4375	1.00	4.4	0.044	10	0.89	1346	2.1E-08	3.2E-10	2.1E-08	1.6E-08	1.3E-10	6.3E-10	8.4E-10	8.3E-10	3.2E-10
HHC-1	L-9	2019-12-10	63	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	6.4E-09	1.5E-10	6.4E-09	8.3E-09	6.1E-11	3.7E-10	6.2E-10	6.2E-10	1.0E-10
HHC-1	L-10	2019-12-24	77	0.076	0.15	0.00066	4365	1.00	4.4	0.044	10	0.89	1346	8.0E-09	2.1E-10	8.0E-09	8.4E-09	1.0E-10	4.3E-10	6.3E-10	6.3E-10	1.2E-10
HHC-1	L-11	2020-01-07	91	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.89	1346	9.6E-09	2.2E-10	9.6E-09	1.0E-08	9.8E-11	4.1E-10	7.9E-10	7.9E-10	3.7E-11
HHC-1	L-12	2020-01-21	105	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	1.1E-08	2.2E-10	1.1E-08	1.1E-08	9.6E-11	4.8E-10	8.7E-10	8.6E-10	1.7E-10
HHC-1	L-13	2020-02-04	119	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	1.3E-08	3.3E-10	1.3E-08	1.1E-08	1.7E-10	5.8E-10	8.6E-10	8.6E-10	5.0E-11
HHC-1	L-14	2020-02-18	133	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.89	1346	1.4E-08	1.5E-10	1.4E-08	1.3E-08	4.1E-11	4.9E-10	9.9E-10	9.9E-10	5.6E-11
HHC-1	L-15	2020-03-03	147	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	1.6E-08	2.7E-10	1.6E-08	1.6E-08	9.8E-11	5.4E-10	1.1E-09	1.1E-09	6.2E-11
HHC-1	L-16	2020-03-17	161	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.89	1346	1.8E-08	1.8E-10	1.8E-08	1.8E-08	4.5E-11	6.3E-10	1.0E-09	9.9E-10	2.8E-10
HHC-1	L-17	2020-03-31	175	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.89	1346	1.9E-08	2.4E-10	1.9E-08	2.4E-08	5.4E-11	6.0E-10	8.9E-10	8.9E-10	7.5E-11
HHC-1	L-18	2020-04-28	203	0.076	0.15	0.00066	4374	1.00	4.4	0.044	10	0.89	1346	5.4E-09	1.5E-10	5.4E-09	5.7E-09	7.5E-11	2.5E-10	4.2E-10	4.2E-10	2.1E-11
HHC-1	L-19	2020-05-26	231	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	6.2E-09	1.5E-10	6.2E-09	7.6E-09	6.0E-11	3.2E-10	4.6E-10	4.6E-10	2.4E-11
HHC-1	L-20	2020-06-23	259	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	7.0E-09	2.1E-10	7.0E-09	4.5E-09	1.4E-10	3.0E-10	6.2E-10	6.2E-10	2.7E-11
HHC-1	L-21	2020-07-24	290	0.076	0.15	0.00066	4372	1.00	4.4	0.044	10	0.89	1346	6.4E-09	2.0E-10	6.4E-09	4.4E-09	1.3E-10	2.7E-10	6.4E-10	6.4E-10	2.5E-11
HHC-1	L-22	2020-08-21	318	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	8.7E-09	2.4E-10	8.7E-09	7.7E-09	1.3E-10	3.8E-10	8.3E-10	8.3E-10	3.4E-11
HHC-1	L-23	2020-09-18	346	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	9.5E-09	2.5E-10	9.5E-09	6.1E-09	1.4E-10	4.0E-10	8.4E-10	8.3E-10	3.7E-11
HHC-1	L-24	2020-10-16	374	0.076	0.15	0.00066	4371	1.00	4.4	0.044	10	0.89	1346	1.0E-08	1.8E-10	1.0E-08	9.7E-09	7.3E-11	4.1E-10	8.3E-10	8.3E-10	4.0E-11
HHC-2	L-1	2019-10-08	0.080	0.076	0.14	0.00065	4139	1.00	4.1	0.043	9.5	0.87	1331	6.5E-08	1.3E-12	0.0000093	7.0E-12	1.3E-13	1.3E-11	9.0E-12	8.0E-12	4.1E-11
HHC-2	L-2	2019-10-09	1.0	0.076	0.14	0.00065	4338	1.00	4.3	0.043	10	0.87	1331	1.1E-08	4.8E-12	0.000014	1.2E-10	2.3E-14	6.9E-10	1.5E-10	1.2E-10	6.9E-10
HHC-2	L-3	2019-10-10	2.0	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	3.3E-08	1.1E-11	0.000030	3.6E-10	6.9E-14	1.5E-09	3.3E-10	3.0E-10	4.7E-09
HHC-2	L-4	2019-10-15	7.0	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	3.8E-09	1.1E-11	3.8E-09	1.9E-09	3.1E-14	1.2E-09	2.2E-10	2.2E-10	3.8E-09
HHC-2	L-5	2019-10-22	14	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1331	4.8E-09	9.1E-11	4.8E-09	2.8E-09	3.8E-11	4.9E-10	1.5E-10	1.5E-10	2.7E-09
HHC-2	L-6	2019-11-05	28	0.076	0.14	0.00065	4348	1.00	4.4	0.043	10	0.87	1331	2.4E-09	8.0E-11	2.4E-09	1.3E-09	4.8E-11	3.1E-10	1.4E-10	1.4E-10	6.0E-10
HHC-2	L-7	2019-11-19	42	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	4.1E-09	1.2E-10	4.1E-09	3.3E-09	5.7E-11	2.9E-10	3.0E-10	3.0E-10	2.5E-10
HHC-2	L-8	2019-11-26	49	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	2.1E-08	3.1E-10	2.1E-08	1.3E-08	1.0E-10	5.3E-10	8.2E-10	8.2E-10	3.3E-10
HHC-2	L-9	2019-12-10	63	0.076	0.14	0.00065	4347	1.00	4.4	0.043	10	0.87	1331	6.5E-09	1.3E-10	6.5E-09	4.8E-09	5.2E-11	3.3E-10	5.6E-10	5.6E-10	1.0E-10
HHC-2	L-10	2019-12-24	77	0.076	0.14	0.00065	4347	1.00	4.4	0.043	10	0.87	1331	8.2E-09	2.0E-10	8.2E-09	4.8E-09	9.3E-11	3.8E-10	5.7E-10	5.7E-10	1.3E-10
HHC-2	L-11	2020-01-07	91	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	9.8E-09	2.0E-10	9.8E-09	7.5E-09	7.3E-11	3.4E-10	7.4E-10	7.4E-10	3.8E-11
HHC-2	L-12	2020-01-21	105	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	1.1E-08	1.8E-10	1.1E-08	5.1E-09	8.0E-11	3.7E-10	9.3E-10	9.3E-10	1.8E-10
HHC-2	L-13	2020-02-04	119	0.076	0.14	0.00065	4349	1.00	4.4	0.043	10	0.87	1331	1.3E-08	2.7E-10	1.3E-08	3.8E-09	1.7E-10	4.4E-10	8.7E-10	8.7E-10	2.0E-10
HHC-2	L-14	2020-02-18	133	0.076	0.14	0.00065	4353	1.00	4.4	0.043	10	0.87	1331	1.5E-08	1.4E-10	1.5E-08	6.6E-09	4.0E-11	4.1E-10	9.5E-10	9.6E-10	5.8E-11
HHC-2	L-15	2020-03-03	147	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	1.6E-08	2.7E-10	1.6E-08	9.2E-09	1.1E-10	4.4E-10	1.0E-09	1.0E-09	6.4E-11
HHC-2	L-16	2020-03-17	161	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1331	1.8E-08	1.5E-10	1.8E-08	9.6E-09	3.4E-11	5.4E-10	9.7E-10	9.7E-10	7.0E-11
HHC-2	L-17	2020-03-31	175	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	2.0E-08	1.8E-10	2.0E-08	8.2E-09	5.3E-11	5.3E-10	8.6E-10	8.6E-10	7.7E-11
HHC-2	L-18	2020-04-28	203	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	5.5E-09	1.3E-10	5.5E-09	2.9E-09	7.0E-11	2.1E-10	4.1E-10	4.2E-10	2.2E-11
HHC-2	L-19	2020-05-26	231	0.076	0.14	0.00065	4349	1.00	4.4	0.043	10	0.87	1331	6.3E-09	1.3E-10	6.3E-09	3.6E-09	5.4E-11	2.7E-10	4.4E-10	4.3E-10	2.5E-11
HHC-2	L-20	2020-06-23	259	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1331	7.2E-09	2.2E-10	7.2E-09	3.8E-09	1.3E-10	2.2E-10	6.3E-10	6.3E-10	2.8E-11
HHC-2	L-21	2020-07-24	290	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1331	6.5E-09	2.0E-10	6.5E-09	2.7E-09	1.3E-10	2.1E-10	5.4E-10	5.4E-10	2.6E-11
HHC-2	L-22	2020-08-21	318	0.076	0.14	0.00065	4353	1.00	4.4	0.043	10	0.87	1331	8.9E-09	2.2E-10	8.9E-09	4.5E-09	1.2E-10	3.1E-10	7.5E-10	7.5E-10	3.5E-11
HHC-2	L-23	2020-09-18	346	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1331	9.7E-09	2.3E-10	9.7E-09	2.8E-09	1.4E-10	2.7E-10	6.9E-10	7.0E-10	3.8E-11
HHC-2	L-24	2020-10-16	374	0.076	0.14	0.00065	4349	1.00	4.4	0.043	10	0.87	1331	1.1E-08	1.3E-10	1.1E-08	3.8E-09	5.9E-11	2.9E-10	6.5E-10	6.5E-10	4.1E-11
HHC-3	L-1	2019-10-08	0.080	0.076	0.14	0.00065	4119	1.00	4.1	0.043	9.5	0.87	1333	6.4E-08	1.7E-12	0.000013	7.0E-12	1.2E-13	1.9E-11	1.7E-11	1.6E-11	7.9E-12
HHC-3	L-2	2019-10-09	1.0	0.076	0.14	0.00065	4348	1.00	4.4	0.043	10	0.87	1333	1.1E-08	6.5E-12	0.000018	2.4E-10	2.1E-14	8.5E-10	2.2E-10	1.9E-10	5.5E-10
HHC-3	L-3	2019-10-10	2.0	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	3.3E-08	2.1E-11	0.000071	5.2E-10	6.2E-14	1.5E-09	4.7E-10	4.3E-10	3.7E-09
HHC-3	L-4	2019-10-15	7.0	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	3.8E-09	9.1E-12	1.5E-08	1.9E-09	7.0E-15	1.2E-09	3.2E-10	3.2E-10	3.0E-09
HHC-3	L-5	2019-10-22	14	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	4.8E-09	7.2E-11	4.8E-09	3.0E-09	2.6E-11	4.3E-10	2.0E-10	2.0E-10	2.1E-09
HHC-3	L-6	2019-11-05	28	0.076	0.14	0.00065	4352	1.00	4.4	0.043	10	0.87	1333	2.4E-09	6.8E-11	2.4E-09	1.7E-09	3.4E-11	2.8E-10	9.4E-11	9.4E-11	4.7E-10
HHC-3	L-7	2019-11-19	42	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	4.0E-09	1.1E-10	4.0E-09	3.9E-09	4.6E-11	2.7E-10	3.1E-10	3.1E-10	2.0E-10
HHC-3	L-8	2019-11-26	49	0.076	0.14	0.00065	4355	1.00	4.4	0.043	10	0.87	1333	2.1E-08	2.7E-10	2.1E-08	9.4E-09	1.1E-10	4.8E-10	7.9E-10	7.9E-10	2.6E-10
HHC-3	L-9	2019-12-10	63	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	6.5E-09	1.1E-10	6.5E-09	4.5E-09	3.8E-11	2.9E-10	5.5E-10	5.5E-10	8.0E-11
HHC-3	L-10	2019-12-24	77	0.076	0.14	0.00065	4347	1.00	4.4	0.043	10	0.87	1333	8.1E-09	1.7E-10	8.1E-09	4.3E-09	8.3E-11	3.3E-10	5.3E-10	5.3E-10	2.5E-11
HHC-3	L-11	2020-01-07	91	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	9.8E-09	1.8E-10	9.8E-09	6.8E-09	7.0E-11	3.2E-10	5.9E-10	5.9E-10	3.0E-11
HHC-3	L-12	2020-01-21	105	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	1.1E-08	1.7E-10	1.1E-08	6.8E-09	6.6E-11	3.3E-10	8.6E-10	8.6E-10	1.4E-10
HHC-3	L-13	2020-02-04	119	0.076	0.14	0.00065	4349	1.00	4.4	0.043	10	0.87	1333	1.3E-08	2.9E-10	1.3E-08	1.0E-08	1.2E-10	3.7E-10	8.4E-10	8.3E-10	1.6E-10
HHC-3	L-14	2020-02-18	133	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	1.5E-08	1.3E-10	1.5E-08	6.5E-09	3.5E-11	3.5E-10	9.1E-10	9.1E-10	4.5E-11
HHC-3	L-15	2020-03-03	147	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	1.6E-08	2.1E-10	1.6E-08	9.2E-09	7.0E-11	4.4E-10	1.0E-09	1.0E-09	5.0E-11
HHC-3	L-16	2020-03-17	161	0.076	0.14	0.00065	4350	1.00	4.4	0.043	10	0.87	1333	1.8E-08	1.4E-10	1.8E-08	1.1E-08	2.6E-11	5.2E-10	9.8E-10	9.8E-10	2.2E-10
HHC-3	L-17	2020-03-31	175	0.076	0.14	0.00065	4351	1.00	4.4	0.043	10	0.87	1333	2.0E-08	1.4E-10	2.0E-08	9.8E-09	2.9E-11	4.6E-10	8.3E-10	8.2E-10	6.1E-11
HHC-4	L-1	2019-10-08	0.080	0.076	0.14	0.00064	4020	1.00	4.0	0.043	9.4	0.84	1319	6.4E-08	9.0E-13	0.0000064	7.0E-12	1.4E-13	1.1E-11	8.5E-12	7.6E-12	1.0E-11
HHC-4	L-2	2019-10-09	1.0	0.076	0.14	0.00064	4275	1.00	4.3	0.043	10	0.84	1319	1.1E-08	4.8E-12	0.0000045	3.1E-10	2.5E-14	8.5E-10	1.8E-10	1.5E-10	7.1E-10
HHC-4	L-3	2019-10-10	2.0	0.076	0.14	0.00064	4279	1.00	4.3	0.043	10	0.84	1319	3.4E-08	2.2E-11	0.000060	5.3E-10	7.5E-14	1.6E-09	3.8E-10	3.4E-10	2.1E-09
HHC-4	L-4	2019-10-15	7.0	0.076	0.14	0.00064	4276	1.00	4.3	0.043	10	0.84	1319	3.8E-09	5.1E-12	0.00000098	6.0E-10	8.4E-15	1.3E-09	2.9E-10	2.9E-10	2.2E-09
HHC-4	L-5	2019-10-22	14	0.076	0.14	0.00064	4279	1.00	4.3	0.043	10	0.84	1319	4.9E-09	7.6E-11	4.9E-09	2.4E-09	2.9E-11	5.5E-10	1.9E-10	1.9E-10	1.9E-09
HHC-4	L-6	2019-11-05	28	0.076	0.14	0.00064	4277	1.00	4.3	0.043	10	0.84	1319	2.4E-09	7.5E-11	2.4E-09	1.1E-09	4.5E-11	3.2E-10	1.1E-10	1.1E-10	3.4E-10
HHC-4	L-7	2019-11-19	42	0.076	0.14	0.00064	4278	1.00	4.3	0.043	10	0.84	1319	4.1E-09	1.2E-10	4.1E-09	2.6E-09	6.1E-11	3.1E-10	2.7E-10	2.7E-10	2.6E-10
HHC-4	L-8	2019-11-26	49	0.076	0.14	0.00064	4282	1.00	4.3	0.043	10	0.84	1319	2.2E-08	4.0E-10	2.2E-08	5.4E-09	2.5E-10	6.1E-10	7.3E-10	7.2E-10	3.4E-10
HHC-4	L-9	2019-12-10	63	0.076	0.14	0.00064	4279	1.00	4.3	0.043	10	0.84	1319	6.6E-09	1.2E-10	6.6E-09	4.6E-09	4.0E-11	3.7E-10	4.9E-10	4.9E-10	1.0E-10
HHC-4	L-10	2019-12-24	77	0.076	0.14	0.00064	4273	1.00	4.3	0.043	10	0.84	1319	8.3E-09	2.0E-10	8.3E-09	4.7E-09	9.5E-11	4.0E-10	5.1E-10	5.1E-10	1.3E-10
HHC-4	L-11	2020-01-07	91	0.076	0.14	0.00064	4280	1.00	4.3	0.043	10	0.84	1319	1.0E-08	2.0E-10	1.0E-08	5.6E-09	8.5E-11	4.0E-10	5.1E-10	5.1E-10	3.9E-11
HHC-4	L-12	2020-01-21	105	0.076	0.14	0.00064	4276	1.00	4.3	0.043	10	0.84	1319	1.2E-08	2.3E-10	1.2E-08	7.3E-09	8.6E-11	4.9E-10	7.3E-10	7.4E-10	1.8E-10
HHC-4	L-13	2020-02-04	119	0.076	0.14	0.00064	4281	1.00	4.3	0.043	10	0.84	1319	1.3E-08	3.5E-10	1.3E-08	8.4E-09	1.6E-10	5.1E-10	7.5E-10	7.5E-10	2.1E-10
HHC-4	L-14	2020-02-18	133	0.076	0.14	0.00064	4281	1.00	4.3	0.043	10	0.84	1319	1.5E-08	1.6E-10	1.5E-08	6.7E-09	4.8E-11	4.4E-10	8.4E-10	8.4E-10	5.9E-11
HHC-4	L-15	2020-03-03	147	0.076	0.14	0.00064	4281	1.00	4.3	0.043	10	0.84	1319	1.7E-08	2.7E-10	1.7E-08	1.0E-08	8.5E-11	5.8E-10	9.4E-10	9.4E-10	6.5E-11
HHC-4	L-16	2020-03-17	161	0.076	0.14	0.00064	4280	1.00	4.3	0.043	10	0.84	1319	1.8E-08	1.7E-10	1.8E-08	1.0E-08	3.2E-11	6.2E-10	8.9E-10	8.9E-10	7.2E-11
HHC-4	L-17	2020-03-31	175	0.076	0.14	0.00064	4282	1.00	4.3	0.043	10	0.84	1319	2.0E-08	1.5E-10	2.0E-08	7.3E-09	4.5E-11	6.2E-10	7.6E-10	7.6E-10	7.8E-11

- Parameter not analyzed

Appendix E, Table E-20
HHC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHC-1	L-1	5.2E-09	5.6E-11	0.00000026	2.9E-10	1.6E-10	6.5E-08	3.9E-09	6.4E-08	2.0E-09	6.4E-10	0.00000037	2.1E-09	1.6E-08	4.1E-11	6.4E-08	6.4E-10	6.4E-08	1.7E-09	0.00000014	0.00026	6.4E-08
HHC-1	L-2	7.2E-08	5.1E-10	0.0000098	3.7E-09	1.7E-09	1.1E-08	6.6E-10	1.1E-08	3.0E-08	1.1E-10	0.0000011	9.1E-09	0.00000022	5.7E-11	1.1E-08	4.3E-10	1.1E-08	2.4E-08	1.1E-08	0.000039	1.1E-08
HHC-1	L-3	0.00000013	6.8E-10	0.0000047	7.5E-09	1.3E-09	3.3E-08	2.0E-09	3.3E-08	5.1E-08	3.3E-10	0.0000055	1.1E-08	0.0000004	1.1E-10	3.3E-08	1.3E-09	3.3E-08	3.3E-08	5.1E-08	0.00012	0.00000013
HHC-1	L-4	3.6E-08	4.0E-10	1.5E-08	5.8E-09	1.3E-09	3.8E-09	2.2E-10	3.7E-09	2.8E-08	3.7E-11	0.000020	5.5E-09	3.3E-08	6.0E-11	3.7E-09	3.7E-09	3.7E-09	2.5E-08	5.8E-09	0.0000019	3.7E-09
HHC-1	L-5	2.4E-08	2.2E-10	4.7E-09	3.0E-09	1.2E-09	4.8E-09	2.8E-10	4.7E-09	1.0E-08	4.7E-11	0.000062	3.0E-09	1.2E-09	1.3E-10	4.7E-09	3.0E-09	4.7E-09	1.7E-08	4.7E-09	0.0000023	0.00000017
HHC-1	L-6	1.4E-08	5.8E-11	2.3E-09	8.9E-10	5.2E-09	2.4E-09	1.4E-10	2.3E-09	4.1E-09	2.3E-11	0.000035	2.0E-09	1.5E-10	2.1E-10	2.3E-09	8.4E-10	2.3E-09	9.7E-09	7.1E-09	0.00000072	3.7E-08
HHC-1	L-7	1.8E-08	1.7E-11	4.0E-09	2.2E-10	2.5E-09	4.0E-09	2.4E-10	4.0E-09	2.7E-09	4.0E-11	0.000053	1.5E-09	2.5E-10	5.8E-10	4.0E-09	6.3E-10	4.0E-09	9.8E-09	8.9E-09	0.00000087	4.0E-09
HHC-1	L-8	2.1E-08	1.0E-11	2.1E-08	7.6E-11	5.2E-09	2.1E-08	2.6E-08	8.3E-08	3.8E-09	2.1E-10	0.00016	1.3E-09	1.3E-09	1.7E-09	2.1E-08	8.3E-10	2.1E-08	1.0E-08	2.1E-08	0.000065	2.1E-08
HHC-1	L-9	1.9E-08	2.2E-12	6.4E-09	1.6E-11	6.4E-09	6.5E-09	3.9E-10	6.4E-09	2.6E-09	6.4E-11	0.000073	8.3E-10	4.0E-10	1.2E-09	6.4E-09	4.1E-09	6.4E-09	7.4E-09	1.0E-08	0.0000014	6.4E-09
HHC-1	L-10	2.3E-08	1.2E-12	8.0E-09	5.2E-12	2.0E-09	8.1E-09	4.8E-10	8.0E-09	2.7E-09	8.0E-11	0.000086	6.1E-10	5.0E-10	1.6E-09	8.0E-09	3.2E-10	8.0E-09	7.4E-09	1.2E-08	0.0000029	8.0E-09
HHC-1	L-11	2.0E-08	8.1E-13	9.6E-09	1.8E-12	2.4E-09	9.8E-09	5.8E-10	3.8E-08	2.7E-09	9.6E-11	0.000092	6.0E-10	6.0E-10	2.9E-09	9.6E-09	3.5E-09	9.6E-09	7.5E-09	2.2E-08	0.000011	9.6E-09
HHC-1	L-12	2.3E-08	5.9E-13	1.1E-08	1.3E-12	2.8E-11	1.1E-08	6.8E-10	1.1E-08	2.7E-09	1.1E-10	0.00010	5.2E-10	7.0E-10	3.3E-09	1.1E-08	4.5E-10	1.1E-08	8.0E-09	1.7E-08	0.0000071	4.5E-08
HHC-1	L-13	1.7E-08	4.5E-13	1.3E-08	5.2E-13	4.6E-09	1.3E-08	7.8E-10	1.3E-08	2.7E-09	1.3E-10	0.00010	4.6E-10	8.0E-10	3.8E-09	1.3E-08	5.1E-10	1.3E-08	6.8E-09	2.9E-08	0.000029	1.3E-08
HHC-1	L-14	4.7E-09	3.1E-13	1.4E-08	5.9E-13	1.7E-08	1.5E-08	8.7E-10	1.4E-08	2.5E-09	1.4E-10	0.00012	4.3E-10	9.0E-10	4.3E-09	1.4E-08	2.3E-09	1.4E-08	6.9E-09	1.4E-08	0.000011	1.4E-08
HHC-1	L-15	3.3E-08	3.4E-13	1.6E-08	2.9E-13	5.8E-09	1.6E-08	9.7E-10	1.6E-08	2.8E-09	1.6E-10	0.00013	4.0E-10	1.0E-09	4.8E-09	1.6E-08	2.6E-09	1.6E-08	7.7E-09	1.6E-08	0.000024	1.6E-08
HHC-1	L-16	2.3E-08	1.9E-13	1.8E-08	3.2E-13	7.0E-10	1.8E-08	1.1E-09	1.8E-08	2.7E-09	1.8E-10	0.00013	4.0E-10	1.1E-09	5.2E-09	1.8E-08	2.8E-09	1.8E-08	7.5E-09	4.0E-08	0.000041	1.8E-08
HHC-1	L-17	1.4E-08	2.1E-13	1.9E-08	2.0E-13	4.8E-09	2.0E-08	1.1E-08	1.9E-08	2.8E-09	1.9E-10	0.00014	4.0E-10	1.2E-09	5.7E-09	1.9E-08	3.1E-09	1.9E-08	9.2E-09	1.9E-08	0.000037	1.9E-08
HHC-1	L-18	1.1E-08	1.5E-13	5.4E-09	1.5E-13	1.3E-11	5.5E-09	3.3E-10	2.2E-08	1.7E-09	5.4E-11	0.000052	3.2E-10	3.4E-10	2.5E-09	5.4E-09	5.4E-11	5.4E-09	5.4E-09	1.2E-08	0.0000070	5.4E-09
HHC-1	L-19	1.3E-08	1.3E-13	6.2E-09	2.5E-13	2.5E-10	6.3E-09	3.8E-10	6.2E-09	1.8E-09	6.2E-11	0.000051	3.0E-10	3.9E-10	2.5E-09	6.2E-09	2.5E-10	6.2E-09	6.2E-09	1.4E-08	0.0000070	6.2E-09
HHC-1	L-20	1.4E-08	1.1E-13	7.0E-09	2.0E-13	2.8E-10	7.2E-09	8.7E-09	7.0E-09	1.9E-09	7.0E-11	0.000056	3.0E-10	4.4E-10	2.8E-09	7.0E-09	0.00000015	7.0E-09	6.5E-09	1.1E-08	0.0000085	7.0E-09
HHC-1	L-21	1.3E-08	1.4E-13	6.4E-09	1.8E-13	1.6E-11	6.5E-09	3.9E-10	6.4E-09	1.8E-09	6.4E-11	0.000049	3.0E-10	4.0E-10	2.6E-09	6.4E-09	0.00000016	6.4E-09	6.4E-09	1.4E-08	0.000012	6.4E-09
HHC-1	L-22	1.1E-08	9.4E-14	8.7E-09	1.6E-13	3.5E-10	8.9E-09	5.3E-10	8.7E-09	2.1E-09	8.7E-11	0.000054	3.5E-10	5.4E-10	3.0E-09	8.7E-09	1.4E-09	8.7E-09	6.2E-09	2.7E-08	0.000023	8.7E-09
HHC-1	L-23	3.1E-09	6.6E-14	9.5E-09	4.3E-14	9.5E-11	9.7E-09	5.7E-10	9.5E-09	2.4E-09	9.5E-11	0.000068	4.0E-10	5.9E-10	3.3E-09	9.5E-09	9.5E-11	9.5E-09	8.1E-09	2.1E-08	0.000011	9.5E-09
HHC-1	L-24	5.2E-09	1.1E-13	1.0E-08	1.0E-13	1.0E-10	1.1E-08	6.2E-10	1.0E-08	2.4E-09	1.0E-10	0.000061	3.7E-10	6.4E-10	3.1E-09	1.0E-08	4.1E-10	1.0E-08	7.4E-09	1.6E-08	0.000016	1.0E-08
HHC-2	L-1	5.3E-09	4.9E-11	0.00000026	3.1E-10	1.1E-10	6.6E-08	3.9E-09	6.5E-08	2.6E-09	6.5E-10	0.0000017	2.3E-09	6.5E-08	4.0E-11	6.5E-08	6.5E-10	6.5E-08	2.6E-09	4.2E-08	0.00027	6.5E-08
HHC-2	L-2	6.5E-08	3.4E-10	0.000018	3.1E-09	1.2E-09	1.1E-08	6.7E-10	1.1E-08	3.7E-08	1.1E-10	0.0000044	7.6E-09	0.0000004	6.4E-11	1.1E-08	1.1E-10	1.1E-08	3.3E-08	1.1E-08	0.000051	1.1E-08
HHC-2	L-3	0.00000015	5.0E-10	0.000013	6.4E-09	2.1E-09	3.4E-08	2.0E-09	3.3E-08	6.7E-08	3.3E-10	0.000019	8.0E-09	0.00000053	1.5E-10	3.3E-08	1.3E-09	3.3E-08	4.4E-08	3.3E-08	0.00014	0.00000013
HHC-2	L-4	5.2E-08	3.2E-10	0.00000024	5.9E-09	1.7E-09	3.9E-09	2.3E-10	3.8E-09	5.1E-08	3.8E-11	0.000044	6.6E-09	9.4E-08	7.2E-11	3.8E-09	1.4E-09	3.8E-09	3.7E-08	5.4E-09	0.0000021	3.8E-09
HHC-2	L-5	2.8E-08	1.9E-10	4.8E-09	3.5E-09	1.2E-09	4.9E-09	2.9E-10	4.8E-09	1.6E-08	4.8E-11	0.00028	3.3E-09	4.8E-09	1.0E-10	4.8E-09	7.6E-10	4.8E-09	2.3E-08	4.8E-09	0.0000025	4.8E-09
HHC-2	L-6	1.6E-08	5.5E-11	2.4E-09	1.1E-09	2.8E-09	2.4E-09	1.4E-10	2.4E-09	4.2E-09	2.4E-11	0.00020	1.9E-09	1.5E-10	1.6E-10	2.4E-09	1.5E-09	2.4E-09	1.2E-08	4.7E-09	0.00000084	2.4E-09
HHC-2	L-7	1.6E-08	2.0E-11	4.1E-09	3.0E-10	2.3E-09	4.1E-09	2.5E-10	4.1E-09	2.8E-09	4.1E-11	0.00031	1.4E-09	2.5E-10	4.9E-10	4.1E-09	1.5E-09	4.1E-09	1.2E-08	5.8E-09	0.0000015	4.1E-09
HHC-2	L-8	2.1E-08	1.2E-11	2.1E-08	1.1E-10	1.3E-09	2.2E-08	2.6E-08	8.5E-08	3.1E-09	2.1E-10	0.00094	1.2E-09	1.3E-09	1.5E-09	2.1E-08	2.1E-10	2.1E-08	1.2E-08	2.1E-08	0.000012	2.1E-08
HHC-2	L-9	2.6E-08	2.4E-12	6.5E-09	2.2E-11	3.7E-09	6.7E-09	4.0E-10	6.5E-09	2.1E-09	6.5E-11	0.00038	7.6E-10	4.1E-10	1.1E-09	6.5E-09	2.3E-09	6.5E-09	8.0E-09	6.5E-09	0.0000019	6.5E-09
HHC-2	L-10	2.4E-08	1.3E-12	8.2E-09	6.8E-12	5.1E-10	8.3E-09	5.0E-10	0.00000013	2.2E-09	8.2E-11	0.00049	5.9E-10	5.1E-10	1.6E-09	8.2E-09	3.3E-10	8.2E-09	8.2E-09	1.2E-08	0.0000071	8.2E-09
HHC-2	L-11	2.0E-08	8.6E-13	9.8E-09	2.2E-12	1.1E-09	1.0E-08	6.0E-10	9.8E-09	2.1E-09	9.8E-11	0.00052	5.4E-10	6.1E-10	2.2E-09	9.8E-09	1.6E-09	9.8E-09	8.5E-09	1.4E-08	0.000019	9.8E-09
HHC-2	L-12	2.3E-08	5.6E-13	1.1E-08	1.2E-12	2.0E-11	1.2E-08	7.0E-10	1.1E-08	2.0E-09	1.1E-10	0.00057	4.6E-10	7.2E-10	3.1E-09	1.1E-08	1.1E-10	1.1E-08	9.1E-09	1.6E-08	0.000018	1.1E-08
HHC-2	L-13	1.3E-08	4.5E-13	1.3E-08	5.6E-13	9.1E-09	1.3E-08	7.9E-10	1.3E-08	2.0E-09	1.3E-10	0.00058	4.3E-10	8.2E-10	3.6E-09	1.3E-08	5.2E-10	1.3E-08	8.1E-09	1.9E-08	0.000054	1.3E-08
HHC-2	L-14	4.8E-09	3.2E-13	1.5E-08	6.3E-13	6.6E-09	1.5E-08	9.0E-10	5.9E-08	1.9E-09	1.5E-10	0.00070	3.7E-10	9.2E-10	4.0E-09	1.5E-08	2.4E-09	1.5E-08	8.3E-09	9.4E-09	0.000012	1.5E-08
HHC-2	L-15	1.2E-08	2.7E-13	1.6E-08	3.6E-13	4.1E-09	1.7E-08	9.9E-10	1.6E-08	2.2E-09	1.6E-10	0.00075	3.6E-10	1.0E-09	4.5E-09	1.6E-08	1.6E-10	1.6E-08	9.2E-09	1.0E-08	0.000032	1.6E-08
HHC-2	L-16	1.3E-08	2.2E-13	1.8E-08	2.5E-13	5.0E-10	1.8E-08	1.1E-09	1.8E-08	2.0E-09	1.8E-10	0.00078	3.6E-10	1.1E-09	5.9E-09	1.8E-08	2.9E-09	1.8E-08	8.3E-09	2.6E-08	0.000074	1.8E-08
HHC-2	L-17	1.0E-08	1.7E-13	2.0E-08	1.5E-13	1.4E-10	2.0E-08	7.5E-09	2.0E-08	2.1E-09	2.0E-10	0.00080	3.4E-10	1.2E-09	6.4E-09	2.0E-08	2.0E-10	2.0E-08	9.1E-09	2.0E-08	0.000045	2.0E-08
HHC-2	L-18	1.1E-08	9.3E-14	5.5E-09	1.2E-13	9.6E-12	5.6E-09	3.4E-10	2.2E-08	1.3E-09	5.5E-11	0.00032	2.7E-10	3.5E-10	2.8E-09	5.5E-09	5.5E-11	5.5E-09	5.5E-09	5.5E-09	0.0000057	5.5E-09
HHC-2	L-19	1.3E-08	1.1E-13	6.3E-09	1.4E-13	1.8E-10	6.5E-09	3.8E-10	6.3E-09	1.3E-09	6.3E-11	0.00032	2.6E-10	4.0E-10	2.8E-09	6.3E-09	2.5E-10	6.3E-09	6.3E-09	1.2E-08	0.000017	6.3E-09
HHC-2	L-20	1.5E-08	8.8E-14	7.2E-09	1.6E-13	5.0E-11	7.3E-09	7.0E-09	7.2E-09	1.2E-09	7.2E-11	0.00037	2.5E-10	4.5E-10	3.2E-09	7.2E-09	0.00000014	7.2E-09	6.2E-09	1.0E-08	0.000011	7.2E-09
HHC-2	L-21	1.3E-08	1.1E-13	6.5E-09	1.4E-13	1.8E-10	6.7E-09	4.0E-10	6.5E-09	1.2E-09	6.5E-11	0.00034	2.2E-10	4.1E-10	3.3E-09	6.5E-09	0.00000012	6.5E-09	5.6E-09	0.00000019	0.000042	6.5E-09
HHC-2	L-22	1.8E-08	7.6E-14	8.9E-09	1.2E-13	2.5E-10	9.1E-09	5.4E-10	0.00000014	1.3E-09	8.9E-11	0.00042	2.4E-10	5.6E-10	4.0E-09	8.9E-09	8.9E-11	8.9E-09	6.0E-09	1.7E-08	0.000036	8.9E-09
HHC-2	L-23	1.8E-09	5.3E-14	9.7E-09	3.4E-14	6.7E-11	9.9E-09	5.9E-10	9.7E-09	1.3E-09	9.7E-11	0.00045	2.3E-10	6.1E-10	4.3E-09	9.7E-09	9.7E-11	9.7E-09	6.0E-09	2.5E-08	0.000062	9.7E-09
HHC-2	L-24	3.4E-09	9.0E-14	1.1E-08	8.3E-14	7.3E-11	1.1E-08	1.3E-08	4.2E-08	1.2E-09	1.1E-10	0.00042	2.1E-10	6.6E-10	4.0E-09	1.1E-08	1.7E-09	4.2E-08	5.4E-09	4.2E-08	0.00023	1.1E-08
HHC-3	L-1	4.0E-09	5.2E-11	0.0000010	3.2E-10	5.5E-11	6.6E-08	2.2E-09	6.4E-08	2.4E-09	6.4E-10	0.0000092	1.9E-09	0.0000010	6.2E-11	6.4E-08	6.4E-10	0.0000010	1.8E-09	0.00000037	0.0030	6.4E-08
HHC-3	L-2	6.9E-08	3.1E-10	0.000022	2.7E-09	6.1E-10	1.1E-08	3.8E-10	1.1E-08	2.8E-08	1.1E-10	0.0000069	6.8E-09	0.0000075	1.0E-10	1.1E-08	1.1E-10	4.4E-08	2.1E-08	2.8E-08	0.00016	1.1E-08
HHC-3	L-3	0.00000012	4.6E-10	0.000016	5.4E-09	2.9E-09	3.4E-08	1.1E-09	3.3E-08	4.8E-08	3.3E-10	0.000028	6.9E-09	0.000011	2.1E-10	3.3E-08	8.3E-11	3.3E-08	2.8E-08	4.8E-08	0.00026	3.3E-08
HHC-3	L-4	3.7E-08	2.9E-10	0.00000024	4.7E-09	1.1E-09	3.9E-09	1.3E-10	3.8E-09	3.9E-08	3.8E-11	0.000056	5.4E-09	0.0000015	9.6E-11	3.8E-09	3.8E-11	3.8E-09	2.2E-08	5.4E-09	0.0000037	3.8E-09
HHC-3	L-5	1.3E-08	1.6E-10	4.8E-09	2.6E-09	5.9E-10	4.9E-09	1.6E-10	4.8E-09	1.1E-08	4.8E-11	0.00032	2.8E-09	7.6E-08	1.5E-10	4.8E-09	4.8E-11	4.8E-09	1.4E-08	4.8E-09	0.0000037	4.8E-09
HHC-3	L-6	1.3E-08	5.0E-11	2.4E-09	9.0E-10	2.1E-09	2.4E-09	8.1E-11	2.4E-09	3.4E-09	2.4E-11	0.00023	1.5E-09	2.4E-09	2.0E-10	2.4E-09	9.5E-11	2.4E-09	7.4E-09	4.7E-09	0.0000007	2.4E-09
HHC-3	L-7	1.4E-08	1.8E-11	4.0E-09	2.3E-10	6.9E-10	4.1E-09	1.4E-10	4.0E-09	1.8E-09	4.0E-11	0.00037	1.1E-09	4.0E-09	5.8E-10	4.0E-09	1.6E-10	4.0E-09	6.9E-09	7.9E-09	0.0000050	4.0E-09
HHC-3	L-8	2.1E-08	1.2E-11	2.1E-08	9.0E-11	1.2E-09	2.2E-08	1.5E-08	2.1E-08	2.3E-09	2.1E-10	0.0011	1.0E-09	2.1E-08	1.8E-09	2.1E-08	2.1E-10	2.1E-08	7.0E-09	1.4E-08	0.000013	2.1E-08
HHC-3	L-9	1.7E-08	2.3E-12	6.5E-09	2.0E-11	1.8E-09	6.7E-09	2.2E-10	6.5E-09	1.5E-09	6.5E-11	0.00050	6.0E-10	6.5E-09	1.3E-09	6.5E-09	5.9E-10	6.5E-09	4.7E-09	9.4E-09	0.0000023	6.5E-09
HHC-3	L-10	1.8E-08	1.2E-12	8.1E-09	6.1E-12	2.5E-10	8.3E-09	2.8E-10	3.3E-08	1.5E-09	8.1E-11	0.00058	5.5E-10	8.1E-09	1.8E-09	8.1E-09	2.0E-09	8.1E-09	4.7E-09	8.1E-09	0.0000045	8.1E-09
HHC-3	L-11	1.9E-08	7.8E-13	9.8E-09	2.1E-12	8.5E-10	1.0E-08	3.3E-10	9.8E-09	1.5E-09	9.8E-11	0.00062	4.4E-10	9.8E-09	2.4E-09	9.8E-09	9.8E-11	9.8E-09	5.2E-09	1.4E-08	0.000019	9.8E-09
HHC-3	L-12	1.8E-08	5.1E-13	1.1E-08	1.2E-12	3.6E-10	1.2E-08	3.9E-10	1.1E-08	1.5E-09	1.1E-10	0.00070	4.1E-10	1.1E-08	3.5E-09	1.1E-08	1.1E-10	1.1E-08	5.1E-09	1.6E-08	0.000018	1.1E-08
HHC-3	L-13	1.0E-08	4.1E-13	1.3E-08	6.1E-13	3.7E-09	1.3E-08	4.5E-10	1.3E-08	1.5E-09	1.3E-10	0.00071	3.6E-10	1.3E-08	3.9E-09	1.3E-08	3.3E-11	1.3E-08	4.8E-09	2.6E-08	0.000075	1.3E-08
HHC-3	L-14	3.7E-09	3.7E-13	1.5E-08	5.3E-13	3.3E-09	1.5E-08	5.0E-10	1.5E-08	1.4E-09	1.5E-10	0.00086	3.2E-10	1.5E-08	4.4E-09	1.5E-08	1.5E-10	1.5E-08	4.9E-09	9.4E-09	0.000015	1.5E-08
HHC-3	L-15	9.2E-09	2.5E-13	1.6E-08	3.0E-13	2.0E-09	1.7E-08	5.6E-10	1.6E-08	1.6E-09	1.6E-10	0.00092	3.2E-10	1.6E-08	4.9E-09	1.6E-08	6.5E-10	1.6E-08	5.4E-09	1.6E-08	0.000051	1.6E-08
HHC-3	L-16	7.0E-09	2.0E-13	1.8E-08	2.1E-13	5.6E-10	1.8E-08	6.1E-10	1.8E-08	1.5E-09	1.8E-10	0.00097	3.0E-10	1.8E-08	6.5E-09	1.8E-08	1.8E-10	1.8E-08	4.8E-09	1.8E-08	0.000041	1.8E-08
HHC-3	L-17	1.1E-08	1.5E-13	2.0E-08	1.3E-13	2.7E-10	2.0E-08	4.2E-09	2.0E-08	1.5E-09	2.0E-10	0.00095	3.1E-10	2.0E-08	7.1E-09	2.0E-08	2.0E-10	2.0E-08	5.2E-09	1.3E-08	0.000024	2.0E-08
HHC-4	L-1	5.3E-09	6.4E-11	0.0000010	2.5E-10	1.3E-10	6.6E-08	2.9E-09	6.4E-08	8.6E-10	6.4E-10	0.0000003	2.2E-09	0.0000010	5.6E-11	6.4E-08	2.6E-09	6.4E-08	1.6E-09	0.00000033	0.00026	6.4E-08
HHC-4	L-2	7.5E-08	5.0E-10	0.000024	3.1E-09	2.3E-09	1.2E-08	5.1E-10	1.1E-08	1.5E-08	1.1E-10	0.0000006	8.5E-09	0.0000055	1.3E-10	1.1E-08	4.5E-10	1.1E-08	2.5E-08	1.1E-08	0.000036	1.1E-08
HHC-4	L-3	0.00000014	7.3E-10	0.000020	6.5E-09	2.8E-10	3.5E-08	1.5E-09	3.4E-08	3.1E-08	3.4E-10	0.0000024	8.0E-09	0.0000087	2.6E-10	3.4E-08	5.4E-09	3.4E-08	3.2E-08	3.4E-08	0.000026	3.4E-08
HHC-4	L-4	4.5E-08	4.7E-10	0.00000038	6.0E-09	2.0E-09	3.9E-09	1.7E-10	3.8E-09	2.3E-08	3.8E-11	0.0000055	6.2E-09	0.0000012	1.3E-10	3.8E-09	1.4E-09	3.8E-09	2.6E-08	6.0E-09	0.0000012	3.8E-09
HHC-4	L-5	2.9E-08	2.7E-10	4.9E-09	3.4E-09	2.6E-09	5.0E-09	2.2E-10	4.9E-09	7.1E-09	4.9E-11	0.000039	3.4E-09	7.8E-08	2.1E-10	4.9E-09	4.9E-11	4.9E-09	1.7E-08	7.6E-09	0.0000013	4.9E-09
HHC-4	L-6	1.6E-08	7.4E-11	2.4E-09	1.1E-09	1.6E-09	2.5E-09	1.1E-10	2.4E-09	1.9E-09	2.4E-11	0.000031	2.0E-09	9.7E-09	2.8E-10	2.4E-09	1.6E-09	2.4E-09	8.7E-09	9.7E-09	0.0000011	2.4E-09
HHC-4	L-7	2.2E-08	2.4E-11	4.1E-09	2.5E-10	1.7E-09	4.2E-09	1.8E-10	4.1E-09	1.1E-09	4.1E-11	0.000049	1.5E-09	4.1E-09	8.0E-10	4.1E-09	1.6E-10	4.1E-09	8.6E-09	1.3E-08	0.0000025	4.1E-09
HHC-4	L-8	2.2E-08	1.5E-11	2.2E-08	8.8E-11	4.5E-09	2.2E-08	2.0E-08	0.00000035	1.4E-09	2.2E-10	0.00016	1.3E-09	2.2E-08	2.4E-09	2.2E-08	2.2E-10	2.2E-08	9.3E-09	3.4E-08	0.000012	2.2E-08
HHC-4	L-9	2.3E-08	3.1E-12	6.6E-09	1.7E-11	4.4E-09	6.8E-09	2.7E-09	6.6E-09	1.0E-09	6.6E-11	0.000064	8.2E-10	6.6E-09	1.7E-09	6.6E-09	2.4E-09	6.6E-09	6.2E-09	1.0E-08	0.0000011	6.6E-09
HHC-4	L-10	2.4E-08	1.6E-12	8.3E-09	5.4E-12	1.7E-09	8.5E-09	3.7E-10	8.3E-09	1.1E-09	8.3E-11	0.000085	6.1E-10	8.3E-09	2.5E-09	8.3E-09	1.3E-09	8.3E-09	6.7E-09	1.9E-08	0.000010	8.3E-09
HHC-4	L-11	2.0E-08	1.1E-12	1.0E-08	1.9E-12	1.3E-09	1.0E-08	4.5E-10	1.0E-08	1.1E-09	1.0E-10	0.000092	5.8E-10	1.0E-08	3.5E-09	1.0E-08	1.6E-09	1.0E-08	6.8E-09	2.2E-08	0.000012	1.0E-08
HHC-4	L-12	2.4E-08	8.2E-13	1.2E-08	1.3E-12	1.5E-09	1.2E-08	5.2E-10	1.2E-08	1.0E-09	1.2E-10	0.00010	5.2E-10	1.2E-08	4.9E-09	1.2E-08	1.2E-10	1.2E-08	7.3E-09	1.8E-08	0.000010	1.2E-08
HHC-4	L-13	1.7E-08	6.5E-13	1.3E-08	5.4E-13	5.4E-09	1.4E-08	6.0E-10	1.3E-08	1.0E-09	1.3E-10	0.00010	4.6E-10	1.3E-08	5.6E-09	1.3E-08	2.1E-09	1.3E-08	6.3E-09	2.1E-08	0.000017	1.3E-08
HHC-4	L-14	4.9E-09	4.7E-13	1.5E-08	6.1E-13	1.2E-08	1.5E-08	6.7E-10	1.5E-08	1.0E-09	1.5E-10	0.00013	4.5E-10	1.5E-08	6.3E-09	1.5E-08	6.0E-10	1.5E-08	7.1E-09	1.5E-08	0.000013	1.5E-08
HHC-4	L-15	1.2E-08	4.0E-13	1.7E-08	3.0E-13	5.0E-09	1.7E-08	7.4E-10	1.7E-08	1.2E-09	1.7E-10	0.00014	4.2E-10	1.7E-08	7.0E-09	1.7E-08	1.7E-10	1.7E-08	7.9E-09	2.6E-08	0.000045	1.7E-08
HHC-4	L-16	1.3E-08	3.2E-13	1.8E-08	3.3E-13	6.1E-10	1.9E-08	8.2E-10	1.8E-08	1.1E-09	1.8E-10	0.00015	4.2E-10	1.8E-08	7.7E-09	1.8E-08	1.8E-10	1.8E-08	7.1E-09	4.1E-08	0.000066	1.8E-08
HHC-4	L-17	1.0E-08	3.5E-13	2.0E-08	2.0E-13	6.6E-10	2.0E-08	5.6E-09	2.0E-08	1.1E-09	2.0E-10	0.00015	4.3E-10	2.0E-08	1.0E-08	2.0E-08	2.0E-10	2.0E-08	7.7E-09	2.0E-08	0.000023	2.0E-08

- Parameter not analyzed

Appendix E, Table E-20
HHC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHC-1	L-1	6.4E-08	2.0E-11	0.00000014	1.8E-12	0.00000058	3.8E-11	0.00000026	1.5E-13	5.4E-10	8.2E-11	4.0E-09	0.00000058	0.00000083	0.00000032	0.00000092	1.9E-11	2.8E-10
HHC-1	L-2	1.1E-08	3.8E-10	2.7E-09	2.2E-13	0.0000043	1.9E-10	1.1E-08	1.2E-12	1.0E-09	1.4E-11	1.1E-08	0.0000059	1.1E-08	-	-	-	-
HHC-1	L-3	3.3E-08	5.5E-10	8.2E-09	6.7E-13	0.0000074	4.5E-10	3.3E-08	2.6E-12	1.3E-09	4.2E-11	5.0E-09	0.000029	0.00000019	4.3E-08	0.00000011	3.8E-11	3.6E-11
HHC-1	L-4	3.7E-09	5.2E-10	2.3E-10	6.8E-14	0.0000023	1.8E-10	3.7E-09	4.1E-12	1.0E-09	4.2E-11	8.0E-10	0.00010	3.7E-09	-	-	-	-
HHC-1	L-5	4.7E-09	4.1E-10	2.9E-10	2.4E-13	0.00000056	6.2E-11	4.7E-09	1.2E-11	7.2E-10	5.4E-11	1.4E-09	0.000048	4.7E-09	-	-	-	-
HHC-1	L-6	2.3E-09	2.7E-10	5.8E-10	3.7E-13	0.00000015	2.2E-11	2.3E-09	2.8E-11	2.7E-10	2.7E-11	5.8E-10	0.000011	1.8E-08	3.7E-08	1.1E-09	6.8E-11	8.4E-12
HHC-1	L-7	4.0E-09	2.6E-10	2.5E-10	9.2E-13	0.00000014	2.0E-11	4.0E-09	7.2E-11	5.0E-10	4.5E-11	1.2E-09	0.0000086	4.0E-09	-	-	-	-
HHC-1	L-8	2.1E-08	3.3E-10	1.3E-09	1.9E-12	0.00000052	2.6E-11	2.1E-08	1.6E-10	6.5E-10	2.7E-11	3.3E-09	0.000015	2.1E-08	-	-	-	-
HHC-1	L-9	6.4E-09	2.7E-10	4.0E-10	1.6E-12	0.00000016	1.7E-11	6.4E-09	1.0E-10	5.7E-10	3.3E-11	1.5E-09	0.0000071	6.4E-09	7.8E-08	1.6E-09	2.4E-10	2.6E-10
HHC-1	L-10	8.0E-09	2.5E-10	5.0E-10	2.2E-12	0.0000002	1.7E-11	8.0E-09	1.1E-10	4.8E-10	1.0E-11	2.4E-09	0.0000072	8.0E-09	-	-	-	-
HHC-1	L-11	9.6E-09	2.5E-10	6.0E-10	3.5E-12	0.00000035	2.1E-11	9.6E-09	1.2E-10	4.1E-10	1.2E-11	3.5E-09	0.0000068	9.6E-09	-	-	-	-
HHC-1	L-12	1.1E-08	2.5E-10	7.0E-10	3.9E-12	0.00000055	2.2E-11	1.1E-08	1.2E-10	3.8E-10	1.4E-11	4.0E-09	0.0000080	6.4E-08	0.00000014	1.1E-08	6.7E-10	4.5E-10
HHC-1	L-13	1.3E-08	2.2E-10	8.0E-10	5.2E-12	0.00000063	2.0E-11	1.3E-08	1.1E-10	4.4E-10	1.6E-11	3.9E-09	0.0000070	1.3E-08	-	-	-	-
HHC-1	L-14	1.4E-08	2.0E-10	9.0E-10	5.5E-12	0.00000092	2.3E-11	1.4E-08	1.1E-10	5.8E-10	1.8E-11	5.2E-09	0.0000078	1.4E-08	-	-	-	-
HHC-1	L-15	1.6E-08	2.0E-10	1.0E-09	6.1E-12	0.0000010	2.6E-11	1.6E-08	1.0E-10	5.4E-10	2.0E-11	6.8E-09	0.0000087	1.6E-08	0.00000026	1.6E-08	9.5E-10	8.7E-10
HHC-1	L-16	1.8E-08	1.8E-10	1.1E-09	7.2E-12	0.0000011	2.8E-11	1.8E-08	1.0E-10	6.5E-10	2.2E-11	7.4E-09	0.0000083	1.8E-08	-	-	-	-
HHC-1	L-17	1.9E-08	1.8E-10	1.2E-09	7.7E-12	0.0000016	3.4E-11	1.9E-08	9.6E-11	1.6E-10	2.5E-11	8.1E-09	0.0000090	1.9E-08	0.00000039	7.7E-08	1.4E-09	1.0E-09
HHC-1	L-18	5.4E-09	1.5E-10	3.4E-10	4.4E-12	0.00000044	1.3E-11	5.4E-09	5.4E-11	1.5E-10	6.9E-12	2.6E-09	0.0000038	0.00000012	0.00000011	5.4E-09	4.6E-10	2.2E-10
HHC-1	L-19	6.2E-09	1.4E-10	3.9E-10	5.1E-12	0.00000062	1.2E-11	6.2E-09	5.3E-11	1.8E-10	7.9E-12	3.0E-09	0.0000034	6.2E-09	0.00000015	1.4E-08	5.3E-10	2.5E-10
HHC-1	L-20	7.0E-09	1.4E-10	4.4E-10	5.7E-12	0.0000010	1.2E-11	7.0E-09	5.8E-11	1.5E-10	8.9E-12	3.4E-09	0.0000033	7.0E-09	0.00000051	8.6E-08	8.2E-10	2.8E-10
HHC-1	L-21	6.4E-09	1.4E-10	4.0E-10	5.2E-12	0.00000092	1.1E-11	6.4E-09	5.5E-11	1.7E-10	8.2E-12	2.7E-09	0.0000035	2.6E-08	0.00000021	2.6E-08	8.0E-10	2.6E-10
HHC-1	L-22	8.7E-09	1.4E-10	0.00000018	7.1E-12	0.0000010	1.4E-11	8.7E-09	5.5E-11	1.0E-10	1.1E-11	4.3E-09	0.0000041	8.9E-08	0.00000046	0.00000014	7.4E-10	4.7E-10
HHC-1	L-23	9.5E-09	1.6E-10	3.8E-08	6.5E-12	0.0000011	1.5E-11	9.5E-09	5.4E-11	2.2E-10	1.2E-11	4.0E-09	0.0000044	5.5E-08	0.00000034	3.8E-08	5.6E-10	3.8E-10
HHC-1	L-24	1.0E-08	1.6E-10	6.4E-10	5.8E-12	0.0000010	1.5E-11	1.0E-08	4.5E-11	2.2E-10	1.3E-11	3.7E-09	0.0000048	1.0E-08	0.00000026	2.3E-08	7.4E-10	4.1E-10
HHC-2	L-1	6.5E-08	2.1E-11	1.6E-08	1.1E-12	0.00000058	5.1E-11	6.5E-08	1.9E-13	2.7E-10	7.2E-11	8.3E-09	0.00000058	0.00000066	0.00000023	0.00000044	8.5E-12	2.9E-10
HHC-2	L-2	1.1E-08	3.5E-10	2.8E-09	2.0E-13	0.0000049	2.7E-10	1.1E-08	1.1E-12	1.0E-09	1.2E-11	3.0E-08	0.0000044	1.1E-08	-	-	-	-
HHC-2	L-3	3.3E-08	5.0E-10	8.4E-09	6.1E-13	0.0000097	5.3E-10	3.3E-08	3.7E-12	1.1E-09	3.7E-11	1.7E-08	0.000013	0.00000019	3.7E-08	6.1E-08	4.2E-11	3.7E-11
HHC-2	L-4	3.8E-09	5.3E-10	2.4E-10	3.6E-14	0.0000039	2.9E-10	3.8E-09	4.4E-12	8.4E-10	3.8E-11	1.1E-09	0.000074	3.8E-09	-	-	-	-
HHC-2	L-5	4.8E-09	4.6E-10	3.0E-10	1.6E-13	0.0000012	1.5E-10	4.8E-09	7.9E-12	7.1E-10	4.8E-11	2.9E-09	0.000075	4.8E-09	-	-	-	-
HHC-2	L-6	2.4E-09	2.6E-10	6.0E-10	2.5E-13	0.00000029	4.2E-11	2.4E-09	1.7E-11	3.8E-10	2.4E-11	1.5E-09	0.000019	2.4E-09	3.8E-08	1.2E-09	4.3E-11	1.1E-11
HHC-2	L-7	4.1E-09	2.4E-10	2.5E-10	6.2E-13	0.00000026	3.3E-11	4.1E-09	5.0E-11	5.2E-10	4.1E-11	3.5E-09	0.000013	4.1E-09	-	-	-	-
HHC-2	L-8	2.1E-08	2.8E-10	5.3E-09	1.4E-12	0.00000053	4.2E-11	2.1E-08	1.3E-10	6.8E-10	2.4E-11	7.8E-09	0.000019	0.0000031	-	-	-	-
HHC-2	L-9	6.5E-09	2.4E-10	4.1E-10	1.1E-12	0.00000023	2.6E-11	6.5E-09	8.4E-11	5.1E-10	7.2E-12	3.3E-09	0.0000088	6.5E-09	6.9E-08	1.0E-09	1.9E-10	2.6E-10
HHC-2	L-10	8.2E-09	2.2E-10	5.1E-10	1.7E-12	0.00000029	2.3E-11	8.2E-09	8.9E-11	5.4E-10	9.1E-12	4.2E-09	0.0000091	8.2E-09	-	-	-	-
HHC-2	L-11	9.8E-09	2.2E-10	6.1E-10	2.6E-12	0.00000048	2.8E-11	9.8E-09	1.0E-10	5.1E-10	1.1E-11	7.2E-09	0.0000098	9.8E-09	-	-	-	-
HHC-2	L-12	1.1E-08	2.3E-10	7.2E-10	3.1E-12	0.00000056	3.0E-11	1.1E-08	1.1E-10	3.9E-10	1.3E-11	8.4E-09	0.000010	1.1E-08	0.00000021	7.2E-08	6.1E-10	4.6E-10
HHC-2	L-13	1.3E-08	1.9E-10	8.2E-10	4.2E-12	0.00000047	3.1E-11	1.3E-08	1.1E-10	5.2E-10	1.5E-11	9.6E-09	0.0000093	1.3E-08	-	-	-	-
HHC-2	L-14	1.5E-08	1.8E-10	9.2E-10	4.0E-12	0.00000094	3.2E-11	1.5E-08	1.0E-10	5.9E-10	1.6E-11	1.1E-08	0.000010	1.5E-08	-	-	-	-
HHC-2	L-15	1.6E-08	1.7E-10	1.0E-09	4.7E-12	0.0000010	3.5E-11	1.6E-08	9.7E-11	5.2E-10	1.8E-11	1.4E-08	0.000012	1.6E-08	0.00000037	3.7E-08	9.7E-10	8.9E-10
HHC-2	L-16	1.8E-08	1.6E-10	1.1E-09	6.2E-12	0.0000012	3.9E-11	1.8E-08	9.5E-11	6.2E-10	2.0E-11	1.8E-08	0.000011	1.8E-08	-	-	-	-
HHC-2	L-17	2.0E-08	1.5E-10	1.2E-09	5.8E-12	0.0000016	4.3E-11	2.0E-08	9.2E-11	2.0E-10	2.2E-11	2.0E-08	0.000012	2.0E-08	0.0000009	4.4E-08	1.2E-09	1.1E-09
HHC-2	L-18	5.5E-09	1.2E-10	3.5E-10	3.1E-12	0.00000055	1.9E-11	5.5E-09	4.9E-11	1.2E-10	6.1E-12	5.5E-09	0.0000050	5.7E-08	1.0E-07	5.5E-09	5.5E-10	2.2E-10
HHC-2	L-19	6.3E-09	1.1E-10	4.0E-10	3.6E-12	0.00000063	2.0E-11	6.3E-09	4.9E-11	1.9E-10	7.0E-12	7.3E-09	0.0000045	3.6E-08	0.00000019	2.5E-08	5.0E-10	2.5E-10
HHC-2	L-20	7.2E-09	1.0E-10	4.5E-10	4.9E-12	0.0000010	1.7E-11	7.2E-09	5.8E-11	1.1E-10	8.0E-12	7.2E-09	0.0000045	2.9E-08	0.00000038	0.00000011	9.0E-10	2.9E-10
HHC-2	L-21	6.5E-09	9.8E-11	1.6E-09	5.3E-12	0.00000094	1.7E-11	6.5E-09	4.8E-11	1.3E-10	7.3E-12	7.5E-09	0.0000041	0.00000027	0.00000015	4.1E-08	7.1E-10	3.6E-10
HHC-2	L-22	8.9E-09	9.2E-11	2.0E-08	6.1E-12	0.0000013	1.9E-11	8.9E-09	5.0E-11	1.2E-10	9.9E-12	1.0E-08	0.0000056	7.0E-08	0.00000064	0.00000014	8.9E-10	4.8E-10
HHC-2	L-23	9.7E-09	8.5E-11	2.4E-09	6.7E-12	0.0000014	2.5E-11	9.7E-09	4.5E-11	1.6E-10	1.1E-11	1.1E-08	0.0000053	5.6E-08	0.00000058	8.7E-08	7.6E-10	3.9E-10
HHC-2	L-24	6.1E-08	7.9E-11	1.1E-08	8.6E-12	0.0000013	2.5E-11	1.1E-08	3.8E-11	3.4E-10	1.2E-11	1.4E-08	0.0000057	0.00000017	0.00000067	0.00000044	8.3E-10	4.2E-10
HHC-3	L-1	0.00000083	2.3E-11	0.00000014	1.7E-11	0.00000058	1.4E-10	0.00000026	1.9E-13	1.2E-09	6.7E-11	3.4E-08	0.0000018	0.0000017	-	-	-	-
HHC-3	L-2	6.4E-08	3.7E-10	1.1E-08	9.0E-13	0.0000054	6.9E-10	1.1E-08	1.9E-12	1.4E-09	4.6E-11	6.0E-08	0.0000100	6.4E-08	-	-	-	-
HHC-3	L-3	3.3E-08	5.1E-10	3.3E-08	1.5E-12	0.0000096	1.4E-09	3.3E-08	4.9E-12	1.5E-09	3.5E-11	3.3E-08	0.000030	0.00000019	-	-	-	-
HHC-3	L-4	3.8E-09	5.4E-10	9.4E-10	6.8E-14	0.0000041	8.1E-10	3.8E-09	6.8E-12	1.2E-09	6.3E-11	1.1E-09	0.00014	3.8E-09	-	-	-	-
HHC-3	L-5	4.8E-09	4.7E-10	3.0E-10	2.0E-13	0.0000012	3.3E-10	4.8E-09	1.1E-11	1.1E-09	4.5E-11	2.6E-09	0.00015	4.8E-09	-	-	-	-
HHC-3	L-6	2.4E-09	2.9E-10	6.0E-10	2.8E-13	0.00000029	1.1E-10	2.4E-09	1.8E-11	4.4E-10	4.0E-11	1.3E-09	0.000045	2.4E-09	-	-	-	-
HHC-3	L-7	4.0E-09	2.6E-10	1.0E-09	8.2E-13	0.00000026	8.7E-11	4.0E-09	5.0E-11	5.4E-10	3.8E-11	2.6E-09	0.000033	4.0E-09	-	-	-	-
HHC-3	L-8	2.1E-08	3.2E-10	1.3E-09	1.8E-12	0.00000077	1.2E-10	2.1E-08	1.3E-10	6.2E-10	2.2E-11	7.5E-09	0.000048	0.00000049	-	-	-	-
HHC-3	L-9	6.5E-09	2.7E-10	4.1E-10	1.3E-12	0.00000023	7.0E-11	6.5E-09	8.0E-11	8.0E-10	2.7E-11	2.9E-09	0.000022	2.6E-08	-	-	-	-
HHC-3	L-10	8.1E-09	2.3E-10	5.1E-10	1.8E-12	0.00000029	6.5E-11	8.1E-09	8.8E-11	6.6E-10	8.5E-12	3.6E-09	0.000022	8.1E-09	-	-	-	-
HHC-3	L-11	9.8E-09	2.4E-10	6.1E-10	3.2E-12	0.00000048	7.2E-11	9.8E-09	1.0E-10	5.8E-10	1.0E-11	7.4E-09	0.000024	9.8E-09	-	-	-	-
HHC-3	L-12	1.1E-08	2.4E-10	7.1E-10	3.6E-12	0.00000056	7.7E-11	1.1E-08	1.0E-10	3.9E-10	1.2E-11	7.3E-09	0.000026	1.1E-08	-	-	-	-
HHC-3	L-13	1.3E-08	2.2E-10	3.3E-09	5.6E-12	0.00000064	8.1E-11	1.3E-08	1.0E-10	9.1E-10	1.4E-11	9.8E-09	0.000024	5.2E-08	-	-	-	-
HHC-3	L-14	1.5E-08	1.9E-10	9.2E-10	4.8E-12	0.00000094	8.3E-11	1.5E-08	1.0E-10	5.1E-10	1.5E-11	1.1E-08	0.000027	1.5E-08	-	-	-	-
HHC-3	L-15	1.6E-08	1.9E-10	4.1E-09	6.2E-12	0.0000010	1.0E-10	1.6E-08	9.6E-11	5.6E-10	1.7E-11	1.4E-08	0.000026	1.6E-08	-	-	-	-
HHC-3	L-16	1.8E-08	1.7E-10	1.1E-09	6.7E-12	0.0000015	1.1E-10	1.8E-08	9.4E-11	8.3E-10	1.9E-11	1.6E-08	0.000029	1.8E-08	-	-	-	-
HHC-3	L-17	2.0E-08	1.7E-10	1.2E-09	6.4E-12	0.0000016	1.2E-10	2.0E-08	9.7E-11	3.2E-10	2.0E-11	1.7E-08	0.000028	2.0E-08	-	-	-	-
HHC-4	L-1	6.4E-08	2.4E-11	6.4E-08	3.0E-12	0.00000026	1.1E-10	6.4E-08	3.1E-13	6.4E-10	1.2E-10	1.6E-08	0.00000079	0.00000066	-	-	-	-
HHC-4	L-2	1.1E-08	5.2E-10	2.8E-09	4.0E-13	0.0000045	8.4E-10	1.1E-08	3.3E-12	1.7E-09	8.6E-11	7.6E-08	0.0000071	1.1E-08	-	-	-	-
HHC-4	L-3	3.4E-08	6.8E-10	2.1E-09	4.0E-13	0.0000087	1.8E-09	3.4E-08	9.3E-12	1.5E-09	6.4E-11	2.9E-08	0.000026	3.4E-08	-	-	-	-
HHC-4	L-4	3.8E-09	6.8E-10	2.4E-10	5.4E-14	0.0000037	9.6E-10	3.8E-09	1.3E-11	1.4E-09	1.2E-10	1.2E-09	0.00013	3.8E-09	-	-	-	-
HHC-4	L-5	4.9E-09	6.0E-10	3.0E-10	2.5E-13	0.0000011	4.6E-10	4.9E-09	2.2E-11	9.5E-10	8.3E-11	3.3E-09	0.00016	4.9E-09	-	-	-	-
HHC-4	L-6	2.4E-09	3.8E-10	6.1E-10	4.4E-13	0.00000024	1.3E-10	2.4E-09	3.9E-11	4.6E-10	4.1E-11	2.4E-09	0.000041	2.4E-09	-	-	-	-
HHC-4	L-7	4.1E-09	3.6E-10	2.6E-10	1.2E-12	0.00000026	1.1E-10	4.1E-09	1.1E-10	7.2E-10	7.0E-11	3.5E-09	0.000030	4.1E-09	-	-	-	-
HHC-4	L-8	2.2E-08	4.5E-10	1.4E-09	2.7E-12	0.00000054	1.6E-10	2.2E-08	2.9E-10	7.3E-10	4.1E-11	1.2E-08	0.000044	0.00000035	-	-	-	-
HHC-4	L-9	6.6E-09	3.8E-10	4.2E-10	2.0E-12	0.00000024	1.0E-10	6.6E-09	1.8E-10	1.2E-09	5.0E-11	4.6E-09	0.000020	6.6E-09	-	-	-	-
HHC-4	L-10	8.3E-09	3.4E-10	5.2E-10	3.3E-12	0.00000021	9.1E-11	8.3E-09	1.8E-10	8.8E-10	1.6E-11	5.8E-09	0.000021	8.3E-09	-	-	-	-
HHC-4	L-11	1.0E-08	3.5E-10	6.2E-10	4.9E-12	0.00000049	1.1E-10	1.0E-08	2.2E-10	8.5E-10	1.9E-11	1.2E-08	0.000023	1.0E-08	-	-	-	-
HHC-4	L-12	1.2E-08	3.6E-10	7.3E-10	5.7E-12	0.00000057	1.1E-10	1.2E-08	2.2E-10	4.3E-10	2.2E-11	1.2E-08	0.000024	1.2E-08	-	-	-	-
HHC-4	L-13	1.3E-08	3.4E-10	8.3E-10	7.5E-12	0.00000065	1.1E-10	1.3E-08	2.3E-10	9.5E-10	2.5E-11	1.3E-08	0.000021	1.3E-08	-	-	-	-
HHC-4	L-14	1.5E-08	2.9E-10	9.4E-10	8.5E-12	0.00000096	1.2E-10	1.5E-08	2.2E-10	7.6E-10	2.8E-11	1.8E-08	0.000024	1.5E-08	-	-	-	-
HHC-4	L-15	1.7E-08	2.8E-10	1.0E-09	1.0E-11	0.0000011	1.5E-10	1.7E-08	2.0E-10	9.1E-10	3.2E-11	2.3E-08	0.000027	1.7E-08	-	-	-	-
HHC-4	L-16	1.8E-08	2.5E-10	1.1E-09	1.3E-11	0.0000015	1.7E-10	1.8E-08	2.1E-10	1.2E-09	3.5E-11	2.5E-08	0.000026	1.8E-08	-	-	-	-
HHC-4	L-17	2.0E-08	2.5E-10	1.3E-09	1.2E-11	0.0000016	1.8E-10	2.0E-08	2.0E-10	3.1E-10	3.8E-11	2.7E-08	0.000028	2.0E-08	-	-	-	-

- Parameter not analyzed

Appendix E, Table E-21
HPLC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HPLC-1	L-1	2019-12-11	0.080	0.10	0.057	0.00047	599	1.00	0.60	0.0082	7.3	0.76	1637	-	9.4E-10	1.6E-09	4.0E-10	2.5E-08	4.0E-11	3.9E-11	4.0E-11	4.2E-14
HPLC-1	L-2	2019-12-12	1.0	0.10	0.057	0.00047	626	1.00	0.63	0.0082	7.7	0.76	1637	-	1.0E-10	1.9E-10	6.7E-11	4.3E-09	5.1E-11	3.9E-11	4.0E-11	7.1E-11
HPLC-1	L-3	2019-12-13	2.0	0.10	0.057	0.00047	652	1.00	0.65	0.0082	8.0	0.76	1637	-	3.3E-10	6.1E-10	2.2E-10	1.4E-08	1.8E-10	1.1E-10	1.1E-10	4.5E-10
HPLC-1	L-4	2019-12-18	7.0	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1637	-	1.1E-10	1.7E-10	2.4E-11	1.5E-09	1.5E-10	6.6E-11	6.5E-11	1.0E-09
HPLC-1	L-5	2019-12-25	14	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1637	-	3.5E-10	5.7E-10	3.0E-11	1.9E-09	2.5E-10	1.1E-10	1.1E-10	1.7E-09
HPLC-1	L-6	2020-01-08	28	0.10	0.057	0.00047	645	1.00	0.64	0.0082	7.9	0.76	1637	-	5.2E-10	9.0E-10	1.5E-11	9.8E-10	2.5E-10	1.1E-10	1.1E-10	1.4E-09
HPLC-1	L-7	2020-01-22	42	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1637	-	1.4E-09	2.4E-09	2.6E-11	1.7E-09	3.9E-10	1.8E-10	1.8E-10	1.3E-09
HPLC-1	L-8	2020-01-29	49	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.76	1637	-	2.1E-10	3.8E-10	1.4E-10	8.8E-09	7.1E-10	3.8E-10	3.8E-10	1.3E-09
HPLC-1	L-9	2020-02-12	63	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1637	-	2.5E-09	4.2E-09	4.2E-11	2.7E-09	4.7E-10	2.6E-10	2.5E-10	6.3E-10
HPLC-1	L-10	2020-02-26	77	0.10	0.057	0.00047	645	1.00	0.64	0.0082	7.9	0.76	1637	-	3.2E-10	5.8E-10	5.2E-11	3.3E-09	5.4E-10	3.0E-10	3.0E-10	4.3E-10
HPLC-1	L-11	2020-03-11	91	0.10	0.057	0.00047	644	1.00	0.65	0.0082	7.9	0.76	1637	-	1.7E-09	3.1E-09	6.3E-11	4.0E-09	5.7E-10	3.5E-10	3.5E-10	3.2E-10
HPLC-1	L-12	2020-03-25	105	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1637	-	1.8E-09	3.3E-09	7.3E-11	4.7E-09	6.3E-10	3.7E-10	3.7E-10	2.0E-10
HPLC-1	L-13	2020-04-08	119	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.76	1637	-	3.8E-10	5.8E-10	8.2E-11	5.2E-09	6.4E-10	3.9E-10	3.9E-10	1.2E-10
HPLC-1	L-14	2020-04-22	133	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.76	1637	-	7.1E-10	1.3E-09	9.3E-11	6.0E-09	6.9E-10	4.5E-10	4.5E-10	6.3E-11
HPLC-1	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1637	-	1.2E-09	2.0E-09	1.0E-10	6.7E-09	5.8E-10	4.8E-10	4.8E-10	7.0E-11
HPLC-1	L-16	2020-05-20	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1637	-	1.1E-09	1.8E-09	1.2E-10	7.4E-09	6.4E-10	5.0E-10	5.0E-10	4.4E-11
HPLC-1	L-17	2020-06-03	175	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1637	-	9.6E-10	1.7E-09	1.3E-10	8.0E-09	6.5E-10	5.1E-10	5.1E-10	4.7E-11
HPLC-2	L-1	2019-12-11	0.080	0.10	0.057	0.00047	562	1.0	0.56	0.0082	6.9	0.76	1638	-	4.0E-09	6.5E-09	3.5E-10	2.2E-08	4.1E-10	4.5E-10	4.5E-10	4.8E-12
HPLC-2	L-2	2019-12-12	1.0	0.10	0.057	0.00047	650	1.00	0.65	0.0082	8.0	0.76	1638	-	1.1E-10	2.0E-10	7.2E-11	4.6E-09	1.3E-10	1.2E-10	1.2E-10	1.0E-10
HPLC-2	L-3	2019-12-13	2.0	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.76	1638	-	7.2E-10	1.2E-09	2.1E-10	1.4E-08	3.4E-10	2.4E-10	2.4E-10	4.2E-10
HPLC-2	L-4	2019-12-18	7.0	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.76	1638	-	3.8E-10	6.7E-10	2.4E-11	1.5E-09	1.8E-10	9.3E-11	9.2E-11	1.1E-09
HPLC-2	L-5	2019-12-25	14	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.76	1638	-	2.9E-10	4.8E-10	3.0E-11	1.9E-09	3.1E-10	1.4E-10	1.4E-10	2.1E-09
HPLC-2	L-6	2020-01-08	28	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1638	-	4.2E-10	7.4E-10	1.5E-11	9.7E-10	2.8E-10	1.3E-10	1.3E-10	1.9E-09
HPLC-2	L-7	2020-01-22	42	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1638	-	1.9E-09	3.3E-09	2.6E-11	1.7E-09	4.4E-10	2.1E-10	2.1E-10	1.7E-09
HPLC-2	L-8	2020-01-29	49	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1638	-	1.9E-09	3.4E-09	1.4E-10	8.7E-09	8.5E-10	4.8E-10	4.8E-10	1.9E-09
HPLC-2	L-9	2020-02-12	63	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1638	-	2.1E-09	3.6E-09	4.2E-11	2.7E-09	5.2E-10	3.0E-10	3.0E-10	1.0E-09
HPLC-2	L-10	2020-02-26	77	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1638	-	3.3E-09	6.0E-09	5.2E-11	3.3E-09	6.1E-10	3.6E-10	3.6E-10	7.4E-10
HPLC-2	L-11	2020-03-11	91	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1638	-	1.2E-09	2.0E-09	6.2E-11	4.0E-09	6.6E-10	4.2E-10	4.2E-10	5.8E-10
HPLC-2	L-12	2020-03-25	105	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.76	1638	-	9.9E-10	1.8E-09	7.2E-11	4.6E-09	6.9E-10	4.3E-10	4.2E-10	4.8E-10
HPLC-2	L-13	2020-04-08	119	0.10	0.057	0.00047	628	1.00	0.63	0.0082	7.7	0.76	1638	-	1.5E-09	2.6E-09	7.9E-11	5.1E-09	6.9E-10	4.3E-10	4.3E-10	2.8E-10
HPLC-2	L-14	2020-04-22	133	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.76	1638	-	1.5E-09	2.7E-09	9.4E-11	6.0E-09	8.0E-10	5.3E-10	5.3E-10	1.9E-10
HPLC-2	L-15	2020-05-06	147	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.76	1638	-	3.9E-09	6.7E-09	1.0E-10	6.7E-09	6.7E-10	5.5E-10	5.5E-10	1.4E-10
HPLC-2	L-16	2020-05-20	161	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1638	-	4.8E-09	8.7E-09	1.2E-10	7.4E-09	7.2E-10	5.7E-10	5.7E-10	1.0E-10
HPLC-2	L-17	2020-06-03	175	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1638	-	2.3E-09	4.0E-09	1.3E-10	8.1E-09	7.4E-10	5.4E-10	5.4E-10	1.1E-10
HPLC-3	L-1	2019-12-11	0.080	0.10	0.057	0.00047	567	1.0	0.57	0.0082	6.9	0.76	1635	-	4.2E-09	8.9E-09	2.3E-10	2.3E-08	8.9E-10	1.1E-09	1.1E-09	2.9E-12
HPLC-3	L-2	2019-12-12	1.0	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1635	-	1.5E-10	2.9E-10	4.6E-11	4.6E-09	1.7E-10	1.6E-10	1.6E-10	8.5E-11
HPLC-3	L-3	2019-12-13	2.0	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.76	1635	-	1.4E-09	2.8E-09	1.3E-10	1.3E-08	3.9E-10	3.2E-10	3.2E-10	2.5E-10
HPLC-3	L-4	2019-12-18	7.0	0.10	0.057	0.00047	636	1.00	0.64	0.0082	7.8	0.76	1635	-	2.8E-10	5.9E-10	1.5E-11	1.5E-09	1.8E-10	1.1E-10	1.1E-10	7.0E-10
HPLC-3	L-5	2019-12-25	14	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.76	1635	-	3.6E-10	7.6E-10	1.9E-11	1.9E-09	3.1E-10	1.7E-10	1.7E-10	1.3E-09
HPLC-3	L-6	2020-01-08	28	0.10	0.057	0.00047	645	1.00	0.64	0.0082	7.9	0.76	1635	-	7.8E-10	1.5E-09	9.8E-12	9.8E-10	2.8E-10	1.4E-10	1.4E-10	1.2E-09
HPLC-3	L-7	2020-01-22	42	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1635	-	1.1E-09	2.3E-09	1.7E-11	1.7E-09	4.3E-10	2.3E-10	2.3E-10	1.1E-09
HPLC-3	L-8	2020-01-29	49	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.76	1635	-	6.9E-09	1.4E-08	8.6E-11	8.6E-09	8.2E-10	5.2E-10	5.1E-10	1.1E-09
HPLC-3	L-9	2020-02-12	63	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1635	-	2.3E-09	4.8E-09	2.7E-11	2.7E-09	5.2E-10	3.2E-10	3.2E-10	6.1E-10
HPLC-3	L-10	2020-02-26	77	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1635	-	3.1E-09	6.3E-09	3.3E-11	3.3E-09	6.0E-10	3.9E-10	3.9E-10	4.4E-10
HPLC-3	L-11	2020-03-11	91	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.76	1635	-	2.9E-09	5.8E-09	4.0E-11	4.0E-09	6.1E-10	4.4E-10	4.4E-10	3.5E-10
HPLC-3	L-12	2020-03-25	105	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.76	1635	-	1.0E-09	2.1E-09	4.7E-11	4.7E-09	6.1E-10	4.6E-10	4.6E-10	2.4E-10
HPLC-3	L-13	2020-04-08	119	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.76	1635	-	3.0E-09	6.3E-09	5.3E-11	5.3E-09	6.9E-10	4.8E-10	4.8E-10	1.8E-10
HPLC-3	L-14	2020-04-22	133	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1635	-	3.1E-09	6.1E-09	6.1E-11	6.1E-09	7.5E-10	5.6E-10	5.6E-10	1.1E-10
HPLC-3	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1635	-	3.8E-09	7.9E-09	6.7E-11	6.7E-09	6.4E-10	5.8E-10	5.7E-10	1.2E-10
HPLC-3	L-16	2020-05-20	161	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.76	1635	-	1.6E-09	3.3E-09	7.4E-11	7.4E-09	7.0E-10	7.0E-10	7.0E-10	6.1E-11
HPLC-3	L-17	2020-06-03	175	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.76	1635	-	3.0E-09	6.2E-09	8.1E-11	8.1E-09	7.2E-10	5.8E-10	5.7E-10	6.7E-11
HPLC-4	L-1	2019-12-11	0.080	0.10	0.057	0.00047	555	1.0	0.55	0.0082	6.8	0.75	1619	-	8.4E-09	1.8E-08	2.2E-10	2.2E-08	4.5E-10	5.7E-10	5.7E-10	2.7E-12
HPLC-4	L-2	2019-12-12	1.0	0.10	0.057	0.00047	626	1.00	0.63	0.0082	7.7	0.75	1619	-	5.3E-10	1.1E-09	4.4E-11	4.4E-09	2.7E-10	2.8E-10	2.8E-10	7.8E-11
HPLC-4	L-3	2019-12-13	2.0	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.75	1619	-	4.0E-09	8.2E-09	1.4E-10	1.4E-08	5.5E-10	5.2E-10	5.2E-10	2.4E-10
HPLC-4	L-4	2019-12-18	7.0	0.10	0.057	0.00047	626	1.00	0.63	0.0082	7.7	0.75	1619	-	3.2E-10	6.9E-10	1.5E-11	1.5E-09	1.8E-10	1.1E-10	1.1E-10	7.1E-10
HPLC-4	L-5	2019-12-25	14	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.75	1619	-	8.4E-10	1.8E-09	2.0E-11	2.0E-09	4.1E-10	1.7E-10	1.6E-10	1.4E-09
HPLC-4	L-6	2020-01-08	28	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.75	1619	-	6.5E-10	1.4E-09	1.0E-11	1.0E-09	2.8E-10	1.4E-10	1.3E-10	1.3E-09
HPLC-4	L-7	2020-01-22	42	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.75	1619	-	4.9E-10	1.0E-09	1.7E-11	1.7E-09	4.5E-10	2.5E-10	2.4E-10	1.1E-09
HPLC-4	L-8	2020-01-29	49	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.75	1619	-	1.9E-09	4.1E-09	8.9E-11	8.9E-09	8.4E-10	5.2E-10	5.1E-10	1.1E-09
HPLC-4	L-9	2020-02-12	63	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.75	1619	-	2.5E-09	5.1E-09	2.7E-11	2.7E-09	4.9E-10	3.4E-10	3.3E-10	5.9E-10
HPLC-4	L-10	2020-02-26	77	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.75	1619	-	2.6E-09	5.4E-09	3.4E-11	3.4E-09	5.9E-10	4.0E-10	3.9E-10	4.2E-10
HPLC-4	L-11	2020-03-11	91	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.75	1619	-	1.9E-09	4.1E-09	4.1E-11	4.1E-09	6.4E-10	4.6E-10	4.5E-10	3.4E-10
HPLC-4	L-12	2020-03-25	105	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.75	1619	-	3.4E-09	7.1E-09	4.7E-11	4.7E-09	6.5E-10	4.6E-10	4.6E-10	2.3E-10
HPLC-4	L-13	2020-04-08	119	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.75	1619	-	3.2E-09	6.4E-09	5.4E-11	5.4E-09	6.9E-10	5.1E-10	5.0E-10	1.7E-10
HPLC-4	L-14	2020-04-22	133	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.75	1619	-	4.4E-09	9.3E-09	6.2E-11	6.2E-09	7.6E-10	5.9E-10	5.9E-10	1.1E-10
HPLC-4	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.75	1619	-	2.0E-09	4.1E-09	6.8E-11	6.8E-09	6.3E-10	6.2E-10	6.1E-10	8.4E-11
HPLC-4	L-16	2020-05-20	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.75	1619	-	1.9E-09	4.0E-09	7.5E-11	7.5E-09	6.8E-10	8.0E-10	7.8E-10	6.0E-11
HPLC-4	L-17	2020-06-03	175	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.75	1619	-	3.1E-09	6.8E-09	8.3E-11	8.3E-09	7.3E-10	6.3E-10	6.3E-10	6.5E-11

\- Parameter not analyzed

Appendix E, Table E-21
HPLC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HPLC-1	L-1	2.4E-10	1.6E-11	1.8E-10	6.7E-13	-	-	0.0000004	-	2.7E-11	2.5E-10	9.1E-10	2.9E-12	3.6E-11	1.8E-08	2.5E-08	2.5E-10	0.0000004	3.0E-11	2.5E-08	0.000015	2.5E-08
HPLC-1	L-2	5.4E-10	1.2E-10	4.8E-10	4.6E-11	-	-	4.2E-09	-	4.1E-11	4.3E-11	1.2E-10	1.6E-11	1.9E-10	3.6E-10	4.3E-09	1.7E-10	1.7E-08	3.0E-11	3.6E-09	0.00000079	4.3E-09
HPLC-1	L-3	1.9E-09	5.3E-10	1.6E-09	3.3E-10	-	-	1.4E-08	-	1.5E-10	5.6E-10	4.8E-10	1.0E-10	7.2E-10	1.3E-09	1.4E-08	1.4E-10	1.4E-08	2.7E-10	4.2E-09	0.00000039	1.4E-08
HPLC-1	L-4	2.3E-09	6.0E-10	1.5E-09	7.2E-10	-	-	1.5E-09	-	1.3E-10	5.6E-10	2.0E-10	3.0E-10	6.4E-10	1.6E-10	1.5E-09	2.5E-10	6.2E-09	5.8E-11	6.8E-09	0.00000013	1.5E-09
HPLC-1	L-5	3.2E-09	1.1E-09	2.6E-09	1.3E-09	-	-	1.9E-09	-	2.2E-10	7.8E-11	2.2E-10	6.7E-10	9.0E-10	1.8E-10	1.9E-09	1.9E-09	1.9E-09	4.5E-11	5.2E-09	1.4E-08	1.9E-09
HPLC-1	L-6	3.1E-09	1.1E-09	2.7E-09	1.4E-09	-	-	9.6E-10	-	2.3E-10	1.0E-10	1.7E-10	8.0E-10	1.2E-09	1.4E-10	9.8E-10	1.9E-09	9.8E-10	2.7E-11	3.9E-09	3.1E-09	9.8E-10
HPLC-1	L-7	5.2E-09	1.5E-09	3.7E-09	1.8E-09	-	-	1.6E-09	-	3.5E-10	1.7E-10	2.7E-10	1.2E-09	1.7E-09	2.3E-10	1.7E-09	4.3E-09	6.7E-09	2.6E-11	7.3E-09	0.00000012	1.7E-09
HPLC-1	L-8	8.5E-09	2.3E-09	8.8E-09	2.5E-09	-	-	0.00000087	-	6.3E-10	8.8E-11	7.4E-10	1.5E-09	3.4E-09	8.4E-10	8.8E-09	3.2E-09	3.5E-08	4.2E-11	1.4E-08	0.0000011	8.8E-09
HPLC-1	L-9	2.7E-09	1.3E-09	4.7E-09	1.6E-09	-	-	0.00000026	-	4.1E-10	1.1E-10	4.3E-10	1.2E-09	1.9E-09	4.6E-10	2.7E-09	2.7E-09	4.3E-08	2.5E-11	8.8E-09	0.00000085	2.7E-09
HPLC-1	L-10	2.9E-09	1.6E-09	5.9E-09	1.7E-09	-	-	0.00000033	-	4.7E-10	1.3E-10	4.2E-10	1.2E-09	2.1E-09	5.1E-10	3.3E-09	3.3E-11	1.3E-08	2.3E-11	7.1E-09	0.00000033	3.3E-09
HPLC-1	L-11	5.3E-09	1.6E-09	7.2E-09	1.6E-09	-	-	0.0000004	-	5.3E-10	4.0E-11	3.8E-10	1.2E-09	2.3E-09	6.6E-10	4.0E-09	1.6E-10	4.0E-09	4.9E-12	4.0E-09	4.0E-09	4.0E-09
HPLC-1	L-12	4.8E-09	1.5E-09	6.4E-09	1.4E-09	-	-	0.00000046	-	5.4E-10	4.7E-11	4.5E-10	1.1E-09	2.3E-09	7.7E-10	4.7E-09	4.7E-11	4.7E-09	5.6E-12	2.5E-09	8.6E-10	4.7E-09
HPLC-1	L-13	8.1E-09	1.5E-09	7.1E-09	1.2E-09	-	-	0.00000052	-	5.6E-10	5.2E-11	4.3E-10	9.6E-10	2.4E-09	8.0E-10	5.2E-09	5.2E-09	5.2E-09	6.3E-12	3.5E-09	3.2E-09	5.2E-09
HPLC-1	L-14	4.5E-09	1.7E-09	8.1E-09	1.1E-09	-	-	0.00000059	-	6.4E-10	6.0E-11	4.0E-10	8.9E-10	2.3E-09	9.7E-10	6.0E-09	6.0E-11	6.0E-09	7.2E-12	3.2E-09	3.7E-09	6.0E-09
HPLC-1	L-15	9.3E-09	1.6E-09	6.7E-09	9.4E-10	-	-	0.000065	-	6.1E-10	6.7E-11	3.5E-10	6.9E-10	2.0E-09	1.2E-09	6.7E-09	2.7E-10	6.7E-09	8.1E-12	2.7E-09	4.1E-09	6.7E-09
HPLC-1	L-16	8.4E-09	1.6E-09	1.0E-08	7.4E-10	-	-	0.00000073	-	6.3E-10	7.4E-11	3.7E-10	6.3E-10	2.5E-09	1.3E-09	7.4E-09	7.4E-11	7.4E-09	8.9E-12	3.0E-09	5.4E-09	7.4E-09
HPLC-1	L-17	6.1E-09	1.5E-09	8.0E-09	6.3E-10	-	-	0.00000079	-	6.8E-10	8.0E-11	2.3E-10	5.3E-10	2.4E-09	1.7E-09	8.0E-09	1.3E-09	8.0E-09	3.9E-11	5.4E-09	8.0E-09	3.2E-08
HPLC-2	L-1	8.1E-10	2.5E-11	1.8E-09	1.6E-12	-	-	0.00000035	-	3.2E-10	2.2E-10	2.7E-09	1.9E-11	1.4E-10	2.4E-08	2.2E-08	2.2E-10	0.00000036	3.2E-11	7.3E-09	0.0000047	2.2E-08
HPLC-2	L-2	9.8E-10	1.9E-10	8.5E-10	5.6E-11	-	-	4.5E-09	-	1.0E-10	4.6E-11	4.4E-10	2.8E-11	3.5E-10	9.0E-10	4.6E-09	7.4E-10	4.6E-09	3.8E-11	3.0E-09	0.00000017	4.6E-09
HPLC-2	L-3	2.3E-09	5.8E-10	2.5E-09	3.5E-10	-	-	1.3E-08	-	2.4E-10	1.4E-10	2.1E-09	1.3E-10	8.8E-10	6.3E-09	1.4E-08	4.9E-09	1.4E-08	1.9E-11	1.1E-09	0.00000015	1.4E-08
HPLC-2	L-4	2.1E-09	6.7E-10	1.5E-09	8.2E-10	-	-	1.5E-09	-	1.5E-10	7.0E-10	4.3E-10	3.1E-10	7.1E-10	4.1E-10	1.5E-09	5.4E-10	0.0000003	1.7E-10	1.2E-08	0.0000085	1.5E-09
HPLC-2	L-5	4.0E-09	1.2E-09	1.9E-09	1.7E-09	-	-	1.9E-09	-	2.6E-10	1.1E-10	3.3E-10	7.7E-10	1.1E-09	3.1E-10	1.9E-09	7.0E-10	1.9E-09	5.4E-11	1.1E-09	2.5E-08	1.9E-09
HPLC-2	L-6	3.5E-09	1.1E-09	2.4E-09	1.7E-09	-	-	9.5E-10	-	2.5E-10	7.6E-11	2.5E-10	9.4E-10	1.3E-09	1.9E-10	9.7E-10	3.5E-10	3.9E-09	4.4E-11	9.7E-10	4.1E-08	9.7E-10
HPLC-2	L-7	4.0E-09	1.7E-09	3.4E-09	2.3E-09	-	-	1.6E-09	-	3.9E-10	9.5E-11	3.3E-10	1.4E-09	2.0E-09	2.6E-10	1.7E-09	2.6E-10	1.7E-09	3.8E-11	1.1E-09	3.2E-09	1.7E-09
HPLC-2	L-8	1.0E-08	2.8E-09	6.4E-09	3.4E-09	-	-	0.00000086	-	7.2E-10	8.7E-11	1.2E-09	2.0E-09	3.9E-09	2.0E-09	8.7E-09	3.5E-10	0.00000031	9.8E-11	1.0E-08	0.0000052	8.7E-09
HPLC-2	L-9	3.0E-09	1.7E-09	4.4E-09	2.1E-09	-	-	0.00000026	-	4.5E-10	2.7E-11	5.5E-10	1.5E-09	2.2E-09	6.1E-10	2.7E-09	1.1E-10	2.7E-09	3.9E-11	1.0E-09	4.2E-09	2.7E-09
HPLC-2	L-10	2.7E-09	1.8E-09	4.4E-09	2.2E-09	-	-	0.00000033	-	5.2E-10	3.3E-11	4.9E-10	1.6E-09	2.5E-09	7.7E-10	3.3E-09	1.2E-09	3.3E-09	3.8E-11	1.1E-09	1.4E-08	3.3E-09
HPLC-2	L-11	6.0E-09	1.8E-09	5.2E-09	2.1E-09	-	-	0.00000039	-	5.9E-10	4.0E-11	5.6E-10	1.6E-09	3.0E-09	1.3E-09	4.0E-09	4.0E-11	4.0E-09	3.3E-11	9.1E-10	2.2E-09	4.0E-09
HPLC-2	L-12	5.7E-09	1.7E-09	4.6E-09	1.8E-09	-	-	0.00000046	-	6.0E-10	4.6E-11	5.9E-10	1.5E-09	2.7E-09	1.3E-09	4.6E-09	4.6E-11	4.6E-09	3.8E-11	6.7E-10	5.1E-09	4.6E-09
HPLC-2	L-13	7.2E-09	1.7E-09	5.1E-09	1.5E-09	-	-	0.0000005	-	5.9E-10	5.1E-11	5.7E-10	1.3E-09	2.5E-09	1.4E-09	5.1E-09	3.3E-09	5.1E-09	2.9E-11	9.3E-10	3.7E-08	5.1E-09
HPLC-2	L-14	5.8E-09	1.9E-09	6.0E-09	1.5E-09	-	-	0.00000059	-	7.0E-10	6.0E-11	6.9E-10	1.2E-09	2.8E-09	1.9E-09	6.0E-09	6.0E-11	2.4E-08	8.6E-12	1.6E-09	0.00000025	6.0E-09
HPLC-2	L-15	8.9E-09	1.7E-09	6.7E-09	1.2E-09	-	-	0.000065	-	6.7E-10	6.7E-11	7.0E-10	1.0E-09	2.3E-09	2.1E-09	6.7E-09	1.1E-09	6.7E-09	9.6E-12	7.4E-10	2.0E-09	6.7E-09
HPLC-2	L-16	5.8E-09	1.8E-09	7.4E-09	1.1E-09	-	-	0.00000073	-	7.2E-10	7.4E-11	5.3E-10	9.7E-10	2.9E-09	1.7E-09	7.4E-09	7.4E-11	7.4E-09	1.1E-11	8.2E-10	3.6E-09	7.4E-09
HPLC-2	L-17	7.3E-09	1.7E-09	5.9E-09	8.4E-10	-	-	0.00000079	-	6.7E-10	8.1E-11	4.0E-10	8.4E-10	2.8E-09	2.2E-09	8.1E-09	8.1E-11	3.2E-08	4.6E-11	2.2E-09	0.00000024	3.2E-08
HPLC-3	L-1	1.4E-09	2.8E-11	1.9E-09	1.3E-12	-	-	0.00000036	-	7.5E-10	2.3E-10	6.0E-09	2.4E-11	1.7E-10	3.4E-08	2.3E-08	9.1E-10	0.0000033	1.8E-10	5.1E-08	0.00010	2.3E-08
HPLC-3	L-2	1.1E-09	1.8E-10	1.5E-09	5.7E-11	-	-	4.5E-09	-	1.4E-10	4.6E-11	5.6E-10	2.9E-11	3.1E-10	1.7E-09	4.6E-09	4.6E-11	4.6E-09	4.7E-12	5.1E-10	0.00000014	4.6E-09
HPLC-3	L-3	3.0E-09	5.1E-10	2.5E-09	2.9E-10	-	-	1.3E-08	-	3.1E-10	1.3E-10	2.8E-09	1.2E-10	7.8E-10	9.2E-09	1.3E-08	1.3E-10	1.3E-08	1.4E-11	8.4E-10	0.00000037	1.3E-08
HPLC-3	L-4	2.2E-09	5.2E-10	1.5E-09	5.6E-10	-	-	1.5E-09	-	1.6E-10	3.5E-10	3.5E-10	2.2E-10	6.1E-10	5.6E-10	1.5E-09	2.4E-10	6.0E-09	4.9E-11	1.2E-09	0.00000021	1.5E-09
HPLC-3	L-5	4.1E-09	9.7E-10	2.5E-09	1.2E-09	-	-	1.9E-09	-	2.6E-10	1.9E-11	3.5E-10	5.4E-10	9.2E-10	6.2E-10	1.9E-09	7.0E-10	7.8E-09	4.6E-11	1.3E-09	8.6E-08	1.9E-09
HPLC-3	L-6	3.4E-09	9.8E-10	2.4E-09	1.2E-09	-	-	9.6E-10	-	2.5E-10	7.7E-11	2.3E-10	6.8E-10	1.1E-09	3.1E-10	9.8E-10	3.5E-10	9.8E-10	3.6E-11	4.4E-10	1.7E-09	9.8E-10
HPLC-3	L-7	4.9E-09	1.5E-09	3.4E-09	1.7E-09	-	-	1.6E-09	-	3.7E-10	9.6E-11	3.4E-10	1.0E-09	1.6E-09	4.5E-10	1.7E-09	6.7E-11	1.7E-09	4.0E-11	6.5E-10	3.2E-09	1.7E-09
HPLC-3	L-8	9.8E-09	2.3E-09	6.4E-09	2.3E-09	-	-	0.00000085	-	7.1E-10	8.6E-11	1.1E-09	1.4E-09	2.8E-09	2.4E-09	8.6E-09	8.6E-11	3.5E-08	5.1E-11	1.8E-09	0.00000045	8.6E-09
HPLC-3	L-9	1.4E-09	1.3E-09	4.4E-09	1.4E-09	-	-	0.00000026	-	4.5E-10	2.7E-11	5.3E-10	1.0E-09	1.6E-09	8.5E-10	2.7E-09	1.7E-09	2.7E-09	2.8E-11	5.6E-10	4.0E-09	2.7E-09
HPLC-3	L-10	3.6E-09	1.4E-09	5.5E-09	1.5E-09	-	-	0.00000033	-	5.1E-10	1.3E-10	5.9E-10	1.1E-09	2.0E-09	1.1E-09	3.3E-09	1.2E-09	0.00000012	4.5E-11	3.1E-09	0.0000021	3.3E-09
HPLC-3	L-11	7.7E-09	1.4E-09	5.2E-09	1.4E-09	-	-	0.00000039	-	5.7E-10	4.0E-11	5.4E-10	1.1E-09	2.3E-09	1.5E-09	4.0E-09	4.0E-11	4.0E-09	2.3E-11	6.9E-10	8.9E-09	4.0E-09
HPLC-3	L-12	5.5E-09	1.4E-09	6.1E-09	1.2E-09	-	-	0.00000046	-	5.8E-10	4.7E-11	6.6E-10	1.0E-09	2.2E-09	1.7E-09	4.7E-09	4.7E-09	4.7E-09	6.3E-11	8.2E-10	0.00000012	4.7E-09
HPLC-3	L-13	8.8E-09	1.4E-09	5.3E-09	1.1E-09	-	-	0.00000053	-	5.9E-10	5.3E-11	6.2E-10	9.0E-10	2.2E-09	2.0E-09	5.3E-09	2.1E-10	5.3E-09	3.2E-11	7.5E-10	7.4E-08	5.3E-09
HPLC-3	L-14	5.4E-09	1.5E-09	6.1E-09	9.9E-10	-	-	0.0000006	-	6.8E-10	6.1E-11	7.7E-10	8.7E-10	2.3E-09	2.3E-09	6.1E-09	6.1E-11	6.1E-09	6.3E-12	6.8E-10	3.0E-08	6.1E-09
HPLC-3	L-15	8.7E-09	1.3E-09	6.7E-09	8.1E-10	-	-	0.000066	-	6.2E-10	6.7E-11	5.9E-10	6.5E-10	1.8E-09	2.1E-09	6.7E-09	4.3E-09	6.7E-09	6.9E-12	5.7E-10	5.3E-09	6.7E-09
HPLC-3	L-16	8.9E-09	1.5E-09	7.4E-09	7.9E-10	-	-	0.00000073	-	7.4E-10	7.4E-11	8.3E-10	6.6E-10	2.3E-09	2.4E-09	7.4E-09	7.4E-11	7.4E-09	7.6E-12	6.3E-10	8.3E-09	7.4E-09
HPLC-3	L-17	7.1E-09	1.3E-09	5.9E-09	5.3E-10	-	-	0.0000008	-	6.6E-10	8.1E-11	4.3E-10	5.7E-10	2.2E-09	3.0E-09	8.1E-09	1.3E-09	8.1E-09	3.3E-11	9.0E-10	1.6E-08	3.2E-08
HPLC-4	L-1	1.4E-12	2.5E-11	2.5E-09	9.0E-13	-	-	0.000092	-	3.6E-10	1.7E-11	4.2E-09	1.5E-11	1.0E-10	2.2E-08	2.2E-08	2.2E-10	0.0000032	1.5E-10	0.00000012	0.00022	2.2E-08
HPLC-4	L-2	1.6E-09	1.9E-10	2.0E-09	5.2E-11	-	-	4.3E-09	-	2.2E-10	1.4E-11	9.0E-10	3.7E-11	4.1E-10	1.5E-09	4.4E-09	1.6E-09	4.4E-09	1.6E-11	1.3E-09	0.00000044	4.4E-09
HPLC-4	L-3	3.2E-09	4.3E-10	6.1E-09	1.8E-10	-	-	1.3E-08	-	4.1E-10	1.1E-11	4.5E-09	1.0E-10	8.9E-10	2.0E-08	1.4E-08	2.2E-09	1.4E-08	1.2E-11	2.2E-09	0.00000067	1.4E-08
HPLC-4	L-4	2.4E-09	4.6E-10	2.0E-09	4.8E-10	-	-	1.5E-09	-	1.6E-10	3.1E-11	4.2E-10	1.9E-10	5.5E-10	5.1E-10	1.5E-09	9.5E-10	1.5E-09	4.1E-11	2.6E-09	0.00000021	1.5E-09
HPLC-4	L-5	3.9E-09	1.0E-09	2.7E-09	1.1E-09	-	-	1.9E-09	-	2.7E-10	8.7E-12	4.8E-10	5.0E-10	8.5E-10	6.6E-10	2.0E-09	3.1E-10	7.0E-08	6.2E-11	8.9E-09	0.0000058	2.0E-09
HPLC-4	L-6	3.1E-09	8.9E-10	3.4E-09	1.1E-09	-	-	9.8E-10	-	2.5E-10	7.9E-12	2.9E-10	6.2E-10	1.0E-09	2.9E-10	1.0E-09	3.6E-10	6.4E-08	4.6E-11	4.5E-09	0.0000032	1.0E-09
HPLC-4	L-7	5.3E-09	1.3E-09	4.7E-09	1.6E-09	-	-	1.7E-09	-	3.9E-10	1.0E-11	3.8E-10	9.8E-10	1.6E-09	5.0E-10	1.7E-09	1.1E-09	1.7E-09	2.9E-11	1.5E-09	1.9E-08	1.7E-09
HPLC-4	L-8	1.1E-08	2.2E-09	8.9E-09	2.2E-09	-	-	0.00000087	-	7.4E-10	6.8E-12	1.2E-09	1.3E-09	3.1E-09	2.2E-09	8.9E-09	5.7E-09	8.9E-09	4.5E-11	3.2E-09	0.00000046	8.9E-09
HPLC-4	L-9	4.0E-09	1.2E-09	6.1E-09	1.3E-09	-	-	0.00000027	-	4.5E-10	8.4E-12	5.9E-10	9.3E-10	1.6E-09	9.3E-10	2.7E-09	9.8E-10	2.7E-09	3.1E-11	1.5E-09	7.3E-08	2.7E-09
HPLC-4	L-10	4.2E-09	1.3E-09	7.6E-09	1.3E-09	-	-	0.00000033	-	5.2E-10	1.5E-11	7.0E-10	9.9E-10	2.1E-09	1.3E-09	3.4E-09	5.4E-10	0.00000012	4.8E-11	1.1E-08	0.0000097	3.4E-09
HPLC-4	L-11	5.3E-09	1.3E-09	7.2E-09	1.2E-09	-	-	0.0000004	-	5.7E-10	3.1E-12	9.4E-10	9.4E-10	2.8E-09	1.2E-09	4.1E-09	1.6E-10	4.1E-09	2.1E-11	1.8E-09	4.6E-08	4.1E-09
HPLC-4	L-12	6.3E-09	1.3E-09	6.4E-09	1.0E-09	-	-	0.00000046	-	5.6E-10	3.6E-12	1.0E-09	8.5E-10	2.2E-09	1.8E-09	4.7E-09	7.5E-10	4.7E-09	2.4E-11	2.5E-09	0.00000056	4.7E-09
HPLC-4	L-13	7.9E-09	1.3E-09	7.4E-09	8.4E-10	-	-	0.00000053	-	5.9E-10	4.2E-12	7.6E-10	7.5E-10	2.2E-09	1.8E-09	5.4E-09	2.2E-10	5.4E-09	1.9E-11	1.9E-09	4.6E-08	5.4E-09
HPLC-4	L-14	4.9E-09	1.4E-09	8.4E-09	7.9E-10	-	-	0.00000061	-	6.7E-10	4.8E-12	8.0E-10	7.0E-10	2.4E-09	2.4E-09	6.2E-09	6.2E-09	6.2E-09	2.2E-11	2.2E-09	0.00000028	6.2E-09
HPLC-4	L-15	9.5E-09	1.3E-09	9.3E-09	6.1E-10	-	-	0.000067	-	6.2E-10	5.3E-12	1.0E-09	5.4E-10	1.9E-09	2.3E-09	6.8E-09	6.8E-11	6.8E-09	6.1E-12	1.9E-09	8.2E-08	6.8E-09
HPLC-4	L-16	9.9E-09	1.5E-09	1.3E-08	6.5E-10	-	-	0.00000074	-	7.6E-10	5.8E-12	1.1E-09	5.2E-10	2.4E-09	2.6E-09	7.5E-09	7.5E-11	7.5E-09	6.7E-12	2.1E-09	6.8E-08	7.5E-09
HPLC-4	L-17	7.0E-09	1.2E-09	1.1E-08	4.1E-10	-	-	0.00000081	-	6.6E-10	6.4E-12	5.4E-10	4.4E-10	2.3E-09	3.2E-09	8.3E-09	8.3E-11	8.3E-09	7.3E-12	5.3E-09	8.3E-09	3.3E-08

- Parameter not analyzed

Appendix E, Table E-21
HPLC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HPLC-1	L-1	0.00000015	1.1E-11	5.7E-08	0.0000020	1.2E-10	5.2E-11	2.5E-08	4.0E-11	1.6E-10	2.5E-10	2.6E-10	1.0E-10	5.3E-08	-	-	2.6E-10	-
HPLC-1	L-2	4.3E-09	5.6E-11	9.7E-09	0.00000019	1.9E-10	6.5E-11	4.3E-09	6.4E-11	1.2E-10	1.7E-10	2.0E-10	2.0E-11	1.4E-08	-	-	2.9E-11	-
HPLC-1	L-3	1.4E-08	3.4E-10	3.5E-09	8.1E-08	5.2E-10	3.2E-10	1.4E-08	2.0E-10	4.5E-10	5.6E-10	2.9E-10	7.4E-11	6.2E-09	-	-	5.4E-11	-
HPLC-1	L-4	1.5E-09	7.2E-10	6.2E-09	5.2E-08	3.7E-10	4.0E-10	1.5E-09	1.5E-10	8.0E-10	9.9E-10	3.6E-10	5.4E-11	1.9E-09	-	-	1.6E-11	-
HPLC-1	L-5	1.9E-09	1.2E-09	4.4E-09	7.8E-09	5.7E-10	6.6E-10	1.9E-09	2.5E-10	1.8E-09	1.2E-09	6.3E-10	9.2E-11	7.8E-09	-	-	1.6E-11	-
HPLC-1	L-6	9.8E-10	1.6E-09	2.2E-09	1.4E-09	6.6E-10	7.7E-10	9.8E-10	2.8E-10	1.4E-09	1.4E-09	1.4E-09	9.1E-11	1.7E-09	-	-	8.4E-12	-
HPLC-1	L-7	1.7E-09	2.1E-09	3.7E-09	3.5E-08	1.0E-09	1.4E-09	1.7E-09	4.0E-10	1.4E-09	2.0E-09	2.0E-09	1.7E-10	7.4E-10	-	-	1.3E-11	-
HPLC-1	L-8	8.8E-09	2.7E-09	2.0E-08	0.00000026	1.8E-09	1.8E-09	8.8E-09	7.3E-10	3.7E-09	3.2E-09	2.5E-09	3.4E-10	1.6E-08	-	-	3.8E-11	-
HPLC-1	L-9	1.5E-08	2.2E-09	6.0E-09	0.0000002	1.3E-09	1.6E-09	2.7E-09	5.8E-10	2.6E-09	2.7E-09	2.9E-09	2.5E-10	3.3E-09	-	-	2.7E-11	-
HPLC-1	L-10	3.3E-09	2.3E-09	1.3E-08	0.00000012	1.6E-09	1.5E-09	3.3E-09	6.0E-10	3.1E-09	3.3E-09	2.8E-09	2.8E-10	5.4E-08	-	-	1.8E-11	-
HPLC-1	L-11	4.0E-09	2.3E-09	9.1E-09	2.3E-08	1.9E-09	1.7E-09	4.0E-09	6.5E-10	3.1E-09	3.3E-09	2.9E-09	3.0E-10	2.4E-09	-	-	2.4E-11	-
HPLC-1	L-12	4.7E-09	2.6E-09	4.7E-09	4.7E-09	2.2E-09	1.7E-09	4.7E-09	7.5E-10	3.8E-09	3.8E-09	2.6E-09	3.5E-10	2.1E-09	-	-	2.4E-11	-
HPLC-1	L-13	5.2E-09	2.1E-09	5.2E-09	1.7E-08	2.3E-09	1.6E-09	5.2E-09	8.4E-10	1.8E-09	5.2E-09	2.8E-09	3.8E-10	5.2E-09	-	-	4.3E-11	-
HPLC-1	L-14	6.0E-09	2.2E-09	6.0E-09	1.2E-08	2.5E-09	1.4E-09	6.0E-09	8.5E-10	2.6E-09	6.0E-09	2.4E-09	3.9E-10	1.7E-08	-	-	4.0E-11	-
HPLC-1	L-15	6.7E-09	2.0E-09	6.7E-09	4.3E-09	2.4E-09	1.4E-09	6.7E-09	8.5E-10	2.4E-09	4.3E-09	2.0E-09	3.7E-10	4.0E-09	-	-	5.9E-11	-
HPLC-1	L-16	7.4E-09	2.1E-09	7.4E-09	1.4E-08	2.6E-09	1.1E-09	7.4E-09	9.3E-10	1.4E-09	4.7E-09	2.0E-09	4.3E-10	7.2E-08	-	-	6.7E-11	-
HPLC-1	L-17	8.0E-09	2.1E-09	8.0E-09	1.6E-08	2.9E-09	1.4E-09	8.0E-09	1.0E-09	1.2E-09	5.1E-09	1.8E-09	4.1E-10	7.8E-08	-	-	5.2E-11	-
HPLC-2	L-1	2.2E-08	4.1E-11	5.0E-08	0.00000028	4.0E-10	2.9E-10	2.2E-08	3.1E-10	0.00000024	2.7E-10	7.8E-10	3.1E-10	2.0E-09	-	-	4.8E-10	-
HPLC-2	L-2	2.7E-08	1.1E-10	9.4E-08	1.2E-08	2.5E-10	1.4E-10	4.6E-09	1.6E-10	1.4E-10	2.3E-10	2.1E-10	6.5E-11	0.0000034	-	-	4.1E-11	-
HPLC-2	L-3	1.4E-08	4.7E-10	1.4E-08	1.1E-08	7.4E-10	4.8E-10	1.4E-08	3.5E-10	4.6E-10	1.5E-09	3.5E-10	2.2E-10	1.7E-09	-	-	1.9E-10	-
HPLC-2	L-4	8.7E-08	8.4E-10	7.4E-08	0.00000045	3.8E-10	4.2E-10	1.5E-09	1.9E-10	1.6E-09	1.2E-09	8.4E-10	1.3E-10	4.1E-09	-	-	2.7E-11	-
HPLC-2	L-5	1.9E-09	1.7E-09	1.9E-09	4.1E-09	6.2E-10	7.1E-10	1.9E-09	3.1E-10	2.0E-09	1.5E-09	5.5E-10	1.3E-10	3.9E-10	-	-	2.1E-11	-
HPLC-2	L-6	5.6E-09	2.1E-09	2.2E-09	3.9E-09	6.2E-10	8.3E-10	9.7E-10	3.0E-10	1.5E-09	1.7E-09	1.3E-09	1.1E-10	3.5E-10	-	-	1.0E-11	-
HPLC-2	L-7	1.7E-09	3.0E-09	6.6E-09	1.4E-09	1.0E-09	1.4E-09	1.7E-09	4.7E-10	1.6E-09	2.5E-09	1.7E-09	2.0E-10	1.0E-10	-	-	1.8E-11	-
HPLC-2	L-8	8.9E-08	4.0E-09	5.4E-08	0.00000053	2.0E-09	2.1E-09	8.7E-09	8.4E-10	6.9E-09	5.3E-09	3.1E-09	5.2E-10	5.6E-09	-	-	1.1E-10	-
HPLC-2	L-9	2.7E-09	3.1E-09	2.7E-09	1.4E-09	1.4E-09	1.7E-09	2.7E-09	6.4E-10	2.8E-09	3.3E-09	1.7E-09	2.8E-10	3.3E-10	-	-	2.9E-11	-
HPLC-2	L-10	3.3E-09	3.5E-09	1.3E-08	5.4E-09	1.6E-09	1.6E-09	3.3E-09	6.6E-10	3.5E-09	4.1E-09	1.9E-09	3.5E-10	1.9E-09	-	-	5.0E-11	-
HPLC-2	L-11	4.0E-09	3.5E-09	4.0E-09	4.8E-09	2.0E-09	1.9E-09	4.0E-09	7.9E-10	3.6E-09	4.0E-09	1.9E-09	4.4E-10	6.2E-11	-	-	4.7E-11	-
HPLC-2	L-12	4.6E-09	3.7E-09	4.6E-09	2.4E-09	2.3E-09	1.9E-09	4.6E-09	9.1E-10	5.8E-09	5.7E-09	1.8E-09	4.8E-10	1.2E-09	-	-	5.2E-11	-
HPLC-2	L-13	5.1E-09	3.1E-09	5.1E-09	9.5E-09	2.4E-09	1.7E-09	5.1E-09	1.0E-09	2.7E-09	5.1E-09	2.1E-09	5.0E-10	7.9E-11	-	-	5.9E-11	-
HPLC-2	L-14	6.0E-09	3.3E-09	6.0E-09	4.2E-08	2.7E-09	1.7E-09	6.0E-09	1.1E-09	3.5E-09	7.4E-09	2.2E-09	5.9E-10	9.4E-11	-	-	7.7E-11	-
HPLC-2	L-15	6.7E-09	3.0E-09	6.7E-09	1.4E-09	2.3E-09	1.5E-09	6.7E-09	9.5E-10	3.0E-09	5.3E-09	1.6E-09	5.3E-10	1.0E-10	-	-	7.0E-11	-
HPLC-2	L-16	7.4E-09	3.2E-09	7.4E-09	2.2E-09	2.5E-09	1.3E-09	7.4E-09	1.1E-09	1.6E-09	5.8E-09	1.9E-09	5.9E-10	2.7E-09	-	-	5.9E-11	-
HPLC-2	L-17	8.1E-09	3.2E-09	1.8E-08	2.7E-08	2.7E-09	1.7E-09	8.1E-09	1.0E-09	1.3E-09	6.4E-09	2.2E-09	5.8E-10	8.1E-09	-	-	8.5E-11	-
HPLC-3	L-1	0.00000071	4.5E-11	0.00000012	0.00000033	6.9E-10	3.7E-10	2.3E-08	6.1E-10	1.7E-09	2.3E-10	7.5E-09	9.1E-10	2.3E-09	-	-	5.7E-10	-
HPLC-3	L-2	4.6E-09	1.1E-10	4.6E-09	5.9E-10	3.0E-10	1.4E-10	4.6E-09	2.0E-10	7.9E-11	4.1E-10	4.0E-10	7.8E-11	4.6E-08	-	-	6.0E-11	-
HPLC-3	L-3	1.3E-08	4.0E-10	8.4E-10	1.7E-09	8.7E-10	4.7E-10	1.3E-08	4.2E-10	3.5E-10	1.2E-09	6.6E-10	3.3E-10	5.8E-11	-	-	2.0E-10	-
HPLC-3	L-4	6.0E-09	6.3E-10	1.5E-09	1.1E-09	3.7E-10	2.7E-10	1.5E-09	2.1E-10	4.6E-10	9.7E-10	3.6E-10	8.6E-11	3.4E-10	-	-	1.6E-11	-
HPLC-3	L-5	7.8E-09	1.2E-09	1.1E-09	4.8E-10	6.0E-10	5.5E-10	1.9E-09	3.0E-10	1.1E-09	1.6E-09	8.9E-10	1.5E-10	6.6E-11	-	-	3.5E-11	-
HPLC-3	L-6	9.8E-10	1.6E-09	5.5E-10	2.7E-11	6.2E-10	6.2E-10	9.8E-10	3.1E-10	9.8E-10	1.7E-09	1.5E-09	1.2E-10	5.5E-11	-	-	1.5E-11	-
HPLC-3	L-7	1.7E-09	2.1E-09	9.4E-10	7.7E-11	9.7E-10	1.1E-09	1.7E-09	4.5E-10	9.5E-10	2.4E-09	2.0E-09	2.0E-10	7.2E-12	-	-	2.1E-11	-
HPLC-3	L-8	8.6E-09	2.9E-09	8.6E-09	3.1E-09	2.0E-09	1.5E-09	8.6E-09	8.0E-10	3.4E-09	4.2E-09	2.7E-09	4.4E-10	8.2E-09	-	-	1.1E-10	-
HPLC-3	L-9	2.7E-09	2.2E-09	6.7E-10	9.7E-11	1.3E-09	1.2E-09	2.7E-09	6.7E-10	1.6E-09	3.2E-09	2.0E-09	2.8E-10	6.7E-11	-	-	4.0E-11	-
HPLC-3	L-10	4.3E-08	2.5E-09	5.2E-09	9.8E-09	1.6E-09	1.2E-09	3.3E-09	7.0E-10	2.9E-09	3.3E-09	2.9E-09	4.2E-10	2.3E-10	-	-	3.1E-11	-
HPLC-3	L-11	4.0E-09	2.3E-09	2.2E-09	2.3E-10	1.8E-09	1.3E-09	4.0E-09	7.5E-10	2.1E-09	3.2E-09	2.1E-09	4.1E-10	7.0E-10	-	-	5.0E-11	-
HPLC-3	L-12	1.9E-08	2.7E-09	7.4E-09	6.8E-10	2.2E-09	1.4E-09	4.7E-09	8.9E-10	4.0E-09	4.7E-09	2.2E-09	5.1E-10	3.3E-09	-	-	6.6E-11	-
HPLC-3	L-13	5.3E-09	2.3E-09	1.3E-09	9.8E-10	2.4E-09	1.3E-09	5.3E-09	1.0E-09	1.5E-09	5.3E-09	2.3E-09	4.9E-10	2.3E-11	-	-	6.7E-11	-
HPLC-3	L-14	6.1E-09	2.3E-09	1.5E-09	5.0E-10	2.5E-09	1.2E-09	6.1E-09	1.0E-09	1.8E-09	6.1E-09	1.7E-09	5.5E-10	2.6E-11	-	-	6.7E-11	-
HPLC-3	L-15	6.7E-09	2.1E-09	4.2E-10	1.4E-10	2.2E-09	1.0E-09	6.7E-09	9.2E-10	1.5E-09	4.3E-09	1.7E-09	4.9E-10	2.9E-11	-	-	5.9E-11	-
HPLC-3	L-16	7.4E-09	2.3E-09	4.6E-10	1.5E-10	2.6E-09	8.8E-10	7.4E-09	1.0E-09	1.1E-09	4.8E-09	1.6E-09	6.1E-10	1.7E-09	-	-	7.6E-11	-
HPLC-3	L-17	8.1E-09	2.4E-09	2.0E-09	2.9E-10	2.6E-09	1.1E-09	8.1E-09	1.1E-09	6.5E-10	5.2E-09	2.0E-09	5.5E-10	2.2E-09	-	-	9.7E-11	-
HPLC-4	L-1	0.0000006	2.7E-11	0.00000016	0.000010	5.0E-10	2.2E-10	2.2E-08	3.2E-10	1.1E-09	1.8E-10	4.2E-09	6.1E-10	1.4E-08	-	-	5.6E-10	-
HPLC-4	L-2	4.4E-09	1.4E-10	2.0E-09	2.3E-08	4.9E-10	2.1E-10	4.4E-09	2.9E-10	1.1E-10	3.3E-10	5.2E-10	1.5E-10	1.8E-08	-	-	6.5E-11	-
HPLC-4	L-3	1.4E-08	3.6E-10	1.5E-09	4.7E-08	1.2E-09	6.6E-10	1.4E-08	6.0E-10	2.3E-10	1.0E-09	1.1E-09	5.0E-10	4.4E-10	-	-	5.2E-10	-
HPLC-4	L-4	1.5E-09	5.3E-10	2.6E-09	1.3E-08	4.0E-10	2.9E-10	1.5E-09	1.9E-10	4.2E-10	7.9E-10	2.9E-10	9.5E-11	4.0E-09	-	-	1.3E-11	-
HPLC-4	L-5	3.8E-08	1.1E-09	7.8E-09	0.00000029	6.3E-10	6.2E-10	2.0E-09	2.9E-10	1.2E-09	1.3E-09	1.2E-09	1.8E-10	8.1E-10	-	-	2.8E-11	-
HPLC-4	L-6	1.9E-08	1.2E-09	5.4E-09	0.00000017	6.9E-10	6.1E-10	4.0E-09	2.8E-10	1.0E-09	1.4E-09	2.3E-09	1.4E-10	1.0E-09	-	-	1.8E-11	-
HPLC-4	L-7	1.7E-09	2.0E-09	7.5E-10	4.2E-09	1.1E-09	1.1E-09	1.7E-09	4.4E-10	1.0E-09	2.0E-09	2.7E-09	2.0E-10	5.4E-11	-	-	2.5E-11	-
HPLC-4	L-8	8.9E-09	2.5E-09	3.9E-09	4.1E-08	2.2E-09	1.6E-09	8.9E-09	7.9E-10	3.1E-09	3.6E-09	3.3E-09	4.7E-10	1.6E-09	-	-	1.1E-10	-
HPLC-4	L-9	2.7E-09	1.9E-09	2.7E-09	5.6E-09	1.5E-09	1.2E-09	2.7E-09	6.5E-10	1.7E-09	2.7E-09	2.6E-09	3.0E-10	6.8E-10	-	-	4.9E-11	-
HPLC-4	L-10	5.4E-08	2.1E-09	1.3E-08	0.00000057	1.7E-09	1.2E-09	3.4E-09	6.7E-10	2.9E-09	2.8E-09	3.4E-09	4.5E-10	2.5E-09	-	-	6.0E-11	-
HPLC-4	L-11	4.1E-09	2.1E-09	4.1E-09	1.0E-08	2.0E-09	1.4E-09	4.1E-09	7.4E-10	2.0E-09	2.7E-09	2.0E-09	4.6E-10	2.5E-09	-	-	5.2E-11	-
HPLC-4	L-12	4.7E-09	2.2E-09	4.7E-09	4.6E-08	2.4E-09	1.3E-09	4.7E-09	8.5E-10	2.9E-09	3.9E-09	2.3E-09	5.4E-10	2.4E-09	-	-	5.6E-11	-
HPLC-4	L-13	5.4E-09	1.9E-09	2.4E-09	8.9E-09	2.7E-09	1.3E-09	5.4E-09	9.8E-10	1.3E-09	4.5E-09	2.6E-09	5.3E-10	9.9E-10	-	-	8.0E-11	-
HPLC-4	L-14	6.2E-09	2.0E-09	2.7E-09	3.6E-08	3.0E-09	1.2E-09	6.2E-09	1.0E-09	1.7E-09	5.1E-09	2.3E-09	6.2E-10	3.8E-09	-	-	8.8E-11	-
HPLC-4	L-15	6.8E-09	1.8E-09	3.0E-09	1.1E-08	2.5E-09	1.1E-09	6.8E-09	1.0E-09	1.4E-09	3.6E-09	1.6E-09	6.0E-10	1.3E-09	-	-	7.4E-11	-
HPLC-4	L-16	7.5E-09	1.9E-09	8.4E-10	7.5E-09	2.9E-09	9.7E-10	7.5E-09	1.1E-09	1.0E-09	4.0E-09	1.9E-09	6.6E-10	9.9E-09	-	-	9.7E-11	-
HPLC-4	L-17	8.3E-09	1.9E-09	3.7E-09	6.1E-09	3.1E-09	1.2E-09	8.3E-09	1.1E-09	7.8E-10	4.4E-09	2.5E-09	5.8E-10	1.2E-08	-	-	9.1E-11	-

- Parameter not analyzed

Appendix E, Table E-22
HPHC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HPHC-1	L-1	2019-10-08	0.080	0.076	0.14	0.00065	4075	1.00	4.1	0.043	9.4	0.83	1277	6.9E-08	2.6E-11	0.000062	3.4E-12	6.5E-13	3.7E-12	3.5E-13	5.4E-13	6.8E-13
HPHC-1	L-2	2019-10-09	1.0	0.076	0.14	0.00065	4323	1.00	4.3	0.043	10	0.83	1277	1.2E-08	1.2E-10	1.2E-08	7.8E-10	4.1E-12	3.7E-11	1.8E-12	2.0E-12	1.1E-12
HPHC-1	L-3	2019-10-10	2.0	0.076	0.14	0.00065	4327	1.00	4.3	0.043	10	0.83	1277	3.6E-08	3.6E-10	3.6E-08	2.9E-09	5.5E-12	7.1E-11	5.5E-12	5.7E-12	1.4E-12
HPHC-1	L-4	2019-10-15	7.0	0.076	0.14	0.00065	4324	1.00	4.3	0.043	10	0.83	1277	4.1E-09	2.1E-10	4.1E-09	7.3E-10	6.2E-11	4.0E-11	4.6E-12	4.6E-12	4.0E-12
HPHC-1	L-5	2019-10-22	14	0.076	0.14	0.00065	4323	1.00	4.3	0.043	10	0.83	1277	5.2E-09	2.5E-10	5.2E-09	3.1E-10	2.1E-10	1.7E-11	3.7E-11	3.6E-11	2.0E-11
HPHC-1	L-6	2019-11-05	28	0.076	0.14	0.00065	4326	1.00	4.3	0.043	10	0.83	1277	2.6E-09	1.7E-10	2.6E-09	1.5E-10	1.8E-10	1.8E-11	5.2E-11	5.3E-11	6.3E-13
HPHC-1	L-7	2019-11-19	42	0.076	0.14	0.00065	4331	1.00	4.3	0.043	10	0.83	1277	4.4E-09	2.4E-10	4.4E-09	3.2E-10	2.0E-10	2.3E-11	1.1E-10	1.1E-10	1.1E-12
HPHC-1	L-8	2019-11-26	49	0.076	0.14	0.00065	4330	1.00	4.3	0.043	10	0.83	1277	2.3E-08	5.1E-10	2.3E-08	1.2E-09	2.8E-10	5.8E-11	2.6E-10	2.6E-10	5.7E-12
HPHC-1	L-9	2019-12-10	63	0.076	0.14	0.00065	4330	1.00	4.3	0.043	10	0.83	1277	7.1E-09	2.5E-10	7.1E-09	4.6E-10	1.8E-10	3.0E-11	1.6E-10	1.6E-10	1.7E-12
HPHC-1	L-10	2019-12-24	77	0.076	0.14	0.00065	4325	1.00	4.3	0.043	10	0.83	1277	8.9E-09	3.4E-10	8.9E-09	5.7E-10	2.6E-10	3.3E-11	1.6E-10	1.6E-10	2.2E-12
HPHC-1	L-11	2020-01-07	91	0.076	0.14	0.00065	4329	1.00	4.3	0.043	10	0.83	1277	1.1E-08	3.5E-10	1.1E-08	6.9E-10	2.1E-10	3.1E-11	2.1E-10	2.1E-10	2.6E-12
HPHC-1	L-12	2020-01-21	105	0.076	0.14	0.00065	4325	1.00	4.3	0.043	10	0.83	1277	1.2E-08	3.6E-10	1.2E-08	6.3E-10	2.5E-10	3.3E-11	2.7E-10	2.7E-10	3.0E-12
HPHC-1	L-13	2020-02-04	119	0.076	0.14	0.00065	4327	1.00	4.3	0.043	10	0.83	1277	1.4E-08	5.5E-10	1.4E-08	8.2E-10	4.5E-10	3.6E-11	2.8E-10	2.8E-10	3.5E-12
HPHC-1	L-14	2020-02-18	133	0.076	0.14	0.00065	4327	1.00	4.3	0.043	10	0.83	1277	1.6E-08	2.3E-10	1.6E-08	5.4E-10	1.2E-10	4.4E-11	3.2E-10	3.3E-10	1.6E-13
HPHC-1	L-15	2020-03-03	147	0.076	0.14	0.00065	4331	1.00	4.3	0.043	10	0.83	1277	1.8E-08	4.9E-10	1.8E-08	1.0E-09	3.0E-10	5.1E-11	3.5E-10	3.5E-10	4.4E-12
HPHC-1	L-16	2020-03-17	161	0.076	0.14	0.00065	4328	1.00	4.3	0.043	10	0.83	1277	2.0E-08	3.0E-10	2.0E-08	1.2E-09	7.4E-11	5.8E-11	3.1E-10	3.1E-10	1.9E-13
HPHC-1	L-17	2020-03-31	175	0.076	0.14	0.00065	4327	1.00	4.3	0.043	10	0.83	1277	2.1E-08	3.5E-10	2.1E-08	1.0E-09	1.6E-10	6.2E-11	2.7E-10	2.7E-10	2.1E-13
HPHC-2	L-1	2019-10-08	0.080	0.076	0.14	0.00064	3997	1.00	4.0	0.042	9.4	0.80	1266	7.0E-08	6.7E-12	0.000028	1.9E-12	3.1E-13	3.2E-12	2.0E-13	3.1E-13	1.0E-13
HPHC-2	L-2	2019-10-09	1.0	0.076	0.14	0.00064	4252	1.00	4.3	0.042	10	0.80	1266	1.2E-08	4.8E-11	1.2E-08	4.1E-10	8.7E-13	1.7E-11	1.1E-12	1.1E-12	1.2E-12
HPHC-2	L-3	2019-10-10	2.0	0.076	0.14	0.00064	4256	1.00	4.3	0.042	10	0.80	1266	3.7E-08	1.4E-10	3.7E-08	1.3E-09	1.6E-13	4.0E-11	2.7E-12	2.9E-12	8.8E-13
HPHC-2	L-4	2019-10-15	7.0	0.076	0.14	0.00064	4252	1.00	4.3	0.042	10	0.80	1266	4.2E-09	1.0E-10	4.2E-09	4.2E-10	2.7E-11	2.5E-11	2.2E-12	2.3E-12	2.5E-12
HPHC-2	L-5	2019-10-22	14	0.076	0.14	0.00064	4254	1.00	4.3	0.042	10	0.80	1266	5.3E-09	1.2E-10	5.3E-09	1.9E-10	9.5E-11	1.2E-11	1.9E-11	1.9E-11	7.8E-13
HPHC-2	L-6	2019-11-05	28	0.076	0.14	0.00064	4254	1.00	4.3	0.042	10	0.80	1266	2.6E-09	7.9E-11	2.6E-09	8.3E-11	7.8E-11	9.3E-12	3.2E-11	3.2E-11	3.9E-13
HPHC-2	L-7	2019-11-19	42	0.076	0.14	0.00064	4258	1.00	4.3	0.042	10	0.80	1266	4.5E-09	1.1E-10	4.5E-09	1.5E-10	9.7E-11	1.4E-11	6.5E-11	6.5E-11	6.7E-13
HPHC-2	L-8	2019-11-26	49	0.076	0.14	0.00064	4260	1.00	4.3	0.042	10	0.80	1266	2.4E-08	2.8E-10	2.4E-08	7.8E-10	1.3E-10	3.7E-11	1.9E-10	1.9E-10	3.5E-12
HPHC-2	L-9	2019-12-10	63	0.076	0.14	0.00064	4257	1.00	4.3	0.042	10	0.80	1266	7.2E-09	1.1E-10	7.2E-09	2.0E-10	8.0E-11	1.4E-11	1.0E-10	1.0E-10	1.1E-12
HPHC-2	L-10	2019-12-24	77	0.076	0.14	0.00064	4252	1.00	4.3	0.042	10	0.80	1266	9.0E-09	1.8E-10	9.0E-09	4.1E-10	1.1E-10	2.1E-11	1.2E-10	1.2E-10	1.3E-12
HPHC-2	L-11	2020-01-07	91	0.076	0.14	0.00064	4254	1.00	4.3	0.042	10	0.80	1266	1.1E-08	1.8E-10	1.1E-08	4.7E-10	9.3E-11	1.9E-11	1.3E-10	1.3E-10	1.6E-12
HPHC-2	L-12	2020-01-21	105	0.076	0.14	0.00064	4256	1.00	4.3	0.042	10	0.80	1266	1.3E-08	2.0E-10	1.3E-08	3.5E-10	1.4E-10	1.8E-11	1.7E-10	1.7E-10	1.9E-12
HPHC-2	L-13	2020-02-04	119	0.076	0.14	0.00064	4257	1.00	4.3	0.042	10	0.80	1266	1.4E-08	2.9E-10	1.4E-08	5.7E-10	1.9E-10	3.1E-11	1.8E-10	1.8E-10	2.2E-12
HPHC-2	L-14	2020-02-18	133	0.076	0.14	0.00064	4257	1.00	4.3	0.042	10	0.80	1266	1.6E-08	1.2E-10	1.6E-08	3.7E-10	4.9E-11	2.4E-11	1.7E-10	1.8E-10	9.7E-14
HPHC-2	L-15	2020-03-03	147	0.076	0.14	0.00064	4258	1.00	4.3	0.042	10	0.80	1266	1.8E-08	2.3E-10	1.8E-08	5.0E-10	1.4E-10	3.3E-11	1.6E-10	1.6E-10	2.7E-12
HPHC-2	L-16	2020-03-17	161	0.076	0.14	0.00064	4258	1.00	4.3	0.042	10	0.80	1266	2.0E-08	1.2E-10	2.0E-08	4.6E-10	4.3E-11	3.4E-11	1.9E-10	1.9E-10	4.7E-13
HPHC-2	L-17	2020-03-31	175	0.076	0.14	0.00064	4258	0.98	4.3	0.042	10	0.80	1266	2.2E-08	1.8E-10	2.2E-08	7.9E-10	4.8E-11	3.9E-11	1.6E-10	1.6E-10	1.3E-13
HPHC-3	L-1	2019-10-08	0.080	0.076	0.14	0.00064	4036	1.00	4.0	0.043	9.4	0.82	1279	6.8E-08	3.1E-11	0.000089	4.9E-13	9.8E-13	3.2E-13	2.1E-14	4.6E-14	1.9E-13
HPHC-3	L-2	2019-10-09	1.0	0.076	0.14	0.00064	4300	1.00	4.3	0.043	10	0.82	1279	1.2E-08	8.6E-11	1.2E-08	4.3E-10	1.7E-13	3.3E-11	1.5E-12	1.4E-12	1.2E-12
HPHC-3	L-3	2019-10-10	2.0	0.076	0.14	0.00064	4303	1.00	4.3	0.043	10	0.82	1279	3.6E-08	3.1E-10	0.0000023	1.4E-09	5.2E-13	7.3E-11	3.6E-12	3.7E-12	1.6E-12
HPHC-3	L-4	2019-10-15	7.0	0.076	0.14	0.00064	4299	1.00	4.3	0.043	10	0.82	1279	4.1E-09	2.3E-10	4.1E-09	5.3E-10	7.6E-11	4.2E-11	2.6E-12	2.6E-12	4.5E-12
HPHC-3	L-5	2019-10-22	14	0.076	0.14	0.00064	4302	1.00	4.3	0.043	10	0.82	1279	5.2E-09	2.5E-10	5.2E-09	2.4E-10	2.7E-10	2.7E-11	2.6E-11	2.6E-11	1.4E-12
HPHC-3	L-6	2019-11-05	28	0.076	0.14	0.00064	4301	1.00	4.3	0.043	10	0.82	1279	2.6E-09	1.7E-10	2.6E-09	9.7E-11	2.4E-10	2.0E-11	5.3E-11	5.3E-11	7.2E-13
HPHC-3	L-7	2019-11-19	42	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.82	1279	4.4E-09	2.2E-10	4.4E-09	1.5E-10	3.1E-10	2.1E-11	1.1E-10	1.1E-10	1.2E-12
HPHC-3	L-8	2019-11-26	49	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.82	1279	2.3E-08	5.9E-10	2.3E-08	7.7E-10	4.8E-10	6.5E-11	2.9E-10	2.9E-10	6.4E-12
HPHC-3	L-9	2019-12-10	63	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.82	1279	7.1E-09	2.2E-10	7.1E-09	2.5E-10	2.0E-10	3.5E-11	1.6E-10	1.6E-10	2.0E-12
HPHC-3	L-10	2019-12-24	77	0.076	0.14	0.00064	4300	1.00	4.3	0.043	10	0.82	1279	8.8E-09	3.6E-10	8.8E-09	3.1E-10	4.0E-10	3.6E-11	1.8E-10	1.8E-10	2.5E-12
HPHC-3	L-11	2020-01-07	91	0.076	0.14	0.00064	4305	1.00	4.3	0.043	10	0.82	1279	1.1E-08	3.6E-10	1.1E-08	4.9E-10	2.7E-10	2.9E-11	1.9E-10	1.9E-10	3.0E-12
HPHC-3	L-12	2020-01-21	105	0.076	0.14	0.00064	4304	1.00	4.3	0.043	10	0.82	1279	1.2E-08	3.4E-10	1.2E-08	4.1E-10	2.8E-10	4.5E-11	2.6E-10	2.6E-10	3.4E-12
HPHC-3	L-13	2020-02-04	119	0.076	0.14	0.00064	4305	1.00	4.3	0.043	10	0.82	1279	1.4E-08	5.9E-10	1.4E-08	5.9E-10	5.5E-10	5.8E-11	2.7E-10	2.7E-10	3.9E-12
HPHC-3	L-14	2020-02-18	133	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.82	1279	1.6E-08	2.1E-10	1.6E-08	3.6E-10	1.3E-10	4.3E-11	3.0E-10	3.0E-10	1.8E-13
HPHC-3	L-15	2020-03-03	147	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.82	1279	1.8E-08	4.5E-10	1.8E-08	6.3E-10	3.3E-10	5.5E-11	3.2E-10	3.2E-10	4.9E-12
HPHC-3	L-16	2020-03-17	161	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.82	1279	2.0E-08	2.4E-10	2.0E-08	5.4E-10	9.1E-11	5.5E-11	3.1E-10	3.1E-10	2.2E-13
HPHC-3	L-17	2020-03-31	175	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.82	1279	2.1E-08	3.4E-10	2.1E-08	7.1E-10	1.5E-10	6.3E-11	2.9E-10	2.8E-10	2.4E-13
HPHC-4	L-1	2019-10-08	0.080	0.076	0.14	0.00064	4034	1.00	4.0	0.043	9.4	0.80	1236	7.3E-08	6.0E-12	0.000029	1.1E-12	3.5E-13	1.4E-12	1.7E-13	1.7E-13	1.0E-13
HPHC-4	L-2	2019-10-09	1.0	0.076	0.14	0.00064	4296	1.00	4.3	0.043	10	0.80	1236	5.2E-08	3.2E-11	1.3E-08	2.1E-10	6.1E-14	1.6E-11	9.0E-13	7.4E-13	1.2E-12
HPHC-4	L-3	2019-10-10	2.0	0.076	0.14	0.00064	4304	1.00	4.3	0.043	10	0.80	1236	3.9E-08	1.0E-10	3.9E-08	7.0E-10	1.8E-13	3.4E-11	2.7E-12	2.3E-12	2.0E-12
HPHC-4	L-4	2019-10-15	7.0	0.076	0.14	0.00064	4301	1.00	4.3	0.043	10	0.80	1236	4.4E-09	8.3E-11	4.4E-09	2.5E-10	2.4E-11	2.2E-11	1.6E-12	1.6E-12	2.5E-12
HPHC-4	L-5	2019-10-22	14	0.076	0.14	0.00064	4302	1.00	4.3	0.043	10	0.80	1236	5.5E-09	9.8E-11	5.5E-09	1.1E-10	8.8E-11	1.3E-11	1.3E-11	1.3E-11	7.8E-13
HPHC-4	L-6	2019-11-05	28	0.076	0.14	0.00064	4304	1.00	4.3	0.043	10	0.80	1236	2.8E-09	6.9E-11	2.8E-09	5.6E-11	7.6E-11	9.8E-12	2.5E-11	2.5E-11	3.9E-13
HPHC-4	L-7	2019-11-19	42	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.80	1236	4.7E-09	8.8E-11	4.7E-09	9.0E-11	8.6E-11	1.3E-11	4.9E-11	4.9E-11	6.7E-13
HPHC-4	L-8	2019-11-26	49	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.80	1236	2.5E-08	2.4E-10	2.5E-08	4.7E-10	1.4E-10	3.6E-11	1.3E-10	1.3E-10	3.5E-12
HPHC-4	L-9	2019-12-10	63	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.80	1236	7.6E-09	9.3E-11	7.6E-09	1.6E-10	5.7E-11	1.6E-11	7.9E-11	7.9E-11	1.1E-12
HPHC-4	L-10	2019-12-24	77	0.076	0.14	0.00064	4301	1.00	4.3	0.043	10	0.80	1236	9.5E-09	1.3E-10	9.5E-09	1.4E-10	1.3E-10	1.7E-11	9.9E-11	9.9E-11	1.3E-12
HPHC-4	L-11	2020-01-07	91	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.80	1236	1.1E-08	1.4E-10	1.1E-08	2.9E-10	8.6E-11	1.7E-11	1.1E-10	1.1E-10	1.6E-12
HPHC-4	L-12	2020-01-21	105	0.076	0.14	0.00064	4303	1.00	4.3	0.043	10	0.80	1236	1.3E-08	1.4E-10	1.3E-08	2.0E-10	1.0E-10	2.5E-11	1.3E-10	1.3E-10	1.9E-12
HPHC-4	L-13	2020-02-04	119	0.076	0.14	0.00064	4303	1.00	4.3	0.043	10	0.80	1236	1.5E-08	2.2E-10	1.5E-08	2.3E-10	2.1E-10	3.2E-11	1.4E-10	1.4E-10	2.2E-12
HPHC-4	L-14	2020-02-18	133	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.80	1236	1.7E-08	8.8E-11	1.7E-08	1.7E-10	4.7E-11	2.2E-11	1.5E-10	1.5E-10	9.7E-14
HPHC-4	L-15	2020-03-03	147	0.076	0.14	0.00064	4308	1.00	4.3	0.043	10	0.80	1236	1.9E-08	1.7E-10	1.9E-08	2.7E-10	1.2E-10	2.9E-11	1.7E-10	1.7E-10	2.7E-12
HPHC-4	L-16	2020-03-17	161	0.076	0.14	0.00064	4307	1.00	4.3	0.043	10	0.80	1236	2.1E-08	1.1E-10	2.1E-08	3.4E-10	3.2E-11	3.5E-11	1.6E-10	1.6E-10	1.2E-13
HPHC-4	L-17	2020-03-31	175	0.076	0.14	0.00064	4306	1.00	4.3	0.043	10	0.80	1236	2.3E-08	1.3E-10	2.3E-08	3.4E-10	5.2E-11	3.1E-11	1.4E-10	1.4E-10	1.3E-13

- Parameter not analyzed

Appendix E, Table E-22
HPHC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HPHC-1	L-1	1.7E-10	2.7E-11	6.9E-08	3.9E-12	8.8E-11	7.1E-08	6.8E-08	6.9E-08	1.5E-13	6.9E-10	1.3E-08	5.8E-12	6.9E-08	2.0E-10	6.9E-08	2.8E-09	1.1E-09	1.2E-12	3.1E-10	0.00000068	6.9E-08
HPHC-1	L-2	7.7E-09	1.9E-10	1.2E-08	3.4E-11	1.5E-11	1.2E-08	1.2E-08	1.2E-08	4.1E-12	1.2E-10	3.2E-08	1.6E-11	0.0000017	2.9E-10	1.2E-08	1.9E-09	1.9E-10	1.4E-11	9.6E-11	0.0000012	1.2E-08
HPHC-1	L-3	5.8E-09	4.9E-10	3.6E-08	5.8E-11	4.6E-11	3.7E-08	3.6E-08	3.6E-08	1.8E-12	3.6E-10	0.00000011	9.9E-12	0.0000013	1.0E-09	3.6E-08	1.5E-09	5.7E-10	6.6E-12	7.2E-11	0.0000012	3.6E-08
HPHC-1	L-4	1.7E-09	3.9E-10	4.1E-09	2.2E-11	1.9E-10	4.2E-09	4.0E-09	1.6E-08	4.0E-13	4.1E-11	0.00000087	3.3E-12	0.00000015	1.8E-10	4.1E-09	1.6E-10	6.4E-11	1.6E-12	8.1E-12	8.3E-08	4.1E-09
HPHC-1	L-5	8.3E-10	2.0E-10	5.2E-09	5.0E-12	4.2E-10	5.3E-09	5.1E-09	5.2E-09	1.1E-13	5.2E-11	0.0000050	1.0E-12	8.3E-08	2.6E-10	5.2E-09	5.2E-11	8.1E-11	3.3E-13	2.6E-12	6.1E-08	5.2E-09
HPHC-1	L-6	6.5E-10	3.5E-11	2.6E-09	8.3E-13	1.3E-09	2.7E-09	2.5E-09	2.6E-09	5.3E-14	2.6E-11	0.0000049	3.6E-13	1.0E-08	1.9E-10	2.6E-09	2.6E-11	4.1E-11	1.0E-13	2.1E-11	7.6E-09	1.0E-08
HPHC-1	L-7	4.0E-10	1.1E-11	4.4E-09	2.1E-13	1.1E-09	4.5E-09	4.3E-09	4.4E-09	6.0E-14	4.4E-11	0.000011	2.1E-13	4.4E-09	3.5E-10	4.4E-09	4.4E-11	6.9E-11	7.6E-14	2.0E-11	2.6E-08	4.4E-09
HPHC-1	L-8	2.3E-10	1.0E-11	2.3E-08	1.1E-13	1.1E-09	2.4E-08	0.00000037	2.3E-08	7.3E-14	2.3E-10	0.000035	2.1E-13	2.3E-08	1.2E-09	2.3E-08	2.3E-10	3.6E-10	1.7E-14	4.6E-11	0.00000033	2.3E-08
HPHC-1	L-9	4.4E-10	2.5E-12	7.1E-09	3.5E-14	1.3E-09	7.3E-09	7.0E-09	0.00000011	6.9E-14	7.1E-11	0.000016	1.6E-13	7.1E-09	6.8E-10	7.1E-09	7.1E-11	1.1E-10	3.0E-14	1.4E-11	3.7E-08	7.1E-09
HPHC-1	L-10	2.0E-10	1.8E-12	8.9E-09	2.1E-14	1.8E-10	9.1E-09	8.7E-09	3.6E-08	4.3E-14	8.9E-11	0.000022	1.7E-13	8.9E-09	1.1E-09	8.9E-09	8.9E-11	1.4E-10	2.6E-14	3.9E-11	0.00000011	8.9E-09
HPHC-1	L-11	1.1E-10	1.4E-12	1.1E-08	1.3E-14	1.4E-11	1.1E-08	1.0E-08	1.1E-08	5.8E-14	1.1E-10	0.000024	1.6E-13	1.1E-08	1.8E-09	1.1E-08	1.1E-10	1.7E-10	4.6E-14	2.1E-11	0.00000015	1.1E-08
HPHC-1	L-12	1.2E-10	1.0E-12	1.2E-08	9.7E-15	5.7E-10	1.3E-08	1.2E-08	1.2E-08	4.6E-14	1.2E-10	0.000027	1.9E-13	1.2E-08	2.7E-09	1.2E-08	5.0E-10	1.9E-10	3.7E-14	2.5E-11	0.00000015	1.2E-08
HPHC-1	L-13	3.6E-11	9.2E-13	1.4E-08	6.3E-15	1.2E-09	1.5E-08	1.4E-08	1.4E-08	6.4E-14	1.4E-10	0.000027	1.7E-13	1.4E-08	3.7E-09	1.4E-08	1.4E-10	2.2E-10	1.1E-14	6.3E-11	0.0000005	1.4E-08
HPHC-1	L-14	1.0E-11	7.9E-13	1.6E-08	7.1E-15	2.0E-09	1.6E-08	1.6E-08	1.6E-08	5.4E-14	1.6E-10	0.000033	1.9E-13	1.6E-08	5.1E-09	1.6E-08	1.6E-10	2.5E-10	1.2E-14	7.9E-12	0.00000029	1.6E-08
HPHC-1	L-15	1.8E-10	8.8E-13	1.8E-08	7.9E-15	3.3E-09	1.8E-08	1.7E-08	1.8E-08	7.0E-14	1.8E-10	0.000035	2.2E-13	1.8E-08	6.8E-09	1.8E-08	1.8E-10	2.8E-10	1.3E-14	8.8E-12	0.00000018	1.8E-08
HPHC-1	L-16	4.9E-11	6.0E-13	2.0E-08	3.8E-15	1.6E-09	2.0E-08	1.9E-08	2.0E-08	7.7E-14	2.0E-10	0.000036	2.4E-13	2.0E-08	9.0E-09	2.0E-08	2.0E-10	3.1E-10	1.5E-14	8.7E-11	0.00000062	2.0E-08
HPHC-1	L-17	5.3E-11	6.5E-13	2.1E-08	4.2E-15	1.7E-09	2.2E-08	0.00000019	2.1E-08	9.0E-14	2.1E-10	0.000038	2.6E-13	2.1E-08	1.1E-08	2.1E-08	8.6E-10	3.3E-10	1.6E-14	1.1E-11	0.00000019	2.1E-08
HPHC-2	L-1	1.7E-10	1.6E-11	1.7E-08	2.6E-12	3.6E-11	7.2E-08	6.8E-08	7.0E-08	1.5E-13	7.0E-12	0.0000019	2.8E-12	7.0E-10	2.7E-10	7.0E-10	7.0E-12	7.0E-10	8.1E-13	2.5E-10	0.0000007	7.0E-08
HPHC-2	L-2	6.9E-09	1.0E-10	1.2E-08	2.0E-11	6.4E-12	1.3E-08	1.2E-08	1.2E-08	3.5E-12	1.2E-12	0.0000023	5.9E-12	1.8E-08	2.9E-10	1.2E-10	4.9E-12	1.2E-10	7.1E-12	4.4E-11	0.00000016	1.2E-08
HPHC-2	L-3	7.5E-09	2.4E-10	9.2E-09	3.0E-11	1.9E-11	3.8E-08	3.6E-08	3.7E-08	1.4E-12	3.7E-12	0.0000085	3.7E-12	2.4E-08	8.6E-10	3.7E-10	3.7E-12	3.7E-10	3.0E-12	1.5E-11	0.00000023	3.7E-08
HPHC-2	L-4	2.0E-09	2.0E-10	1.0E-09	1.4E-11	1.4E-10	4.3E-09	4.1E-09	1.7E-08	3.8E-13	4.2E-13	0.000049	1.4E-12	2.7E-09	1.6E-10	4.2E-11	6.7E-12	4.2E-11	7.3E-13	1.7E-12	2.2E-08	4.2E-09
HPHC-2	L-5	8.4E-10	1.2E-10	1.3E-09	3.4E-12	1.7E-10	5.4E-09	5.2E-09	5.3E-09	9.4E-14	5.3E-13	0.00030	5.0E-13	8.4E-10	2.6E-10	5.3E-11	2.1E-12	5.3E-11	2.3E-13	2.1E-12	9.8E-09	5.3E-09
HPHC-2	L-6	5.3E-10	2.2E-11	6.6E-10	4.8E-13	5.4E-10	2.7E-09	2.6E-09	2.6E-09	4.1E-14	2.6E-13	0.00039	1.8E-13	4.2E-10	1.8E-10	2.6E-11	2.6E-13	2.6E-11	5.1E-14	4.2E-12	7.8E-09	2.6E-09
HPHC-2	L-7	5.5E-10	7.9E-12	1.1E-09	1.2E-13	3.3E-10	4.6E-09	4.4E-09	0.00000029	4.4E-14	4.5E-13	0.00084	1.0E-13	4.5E-11	3.5E-10	4.5E-11	4.5E-13	4.5E-11	3.5E-14	1.6E-11	4.1E-08	4.5E-09
HPHC-2	L-8	2.4E-10	7.0E-12	5.9E-09	6.7E-14	1.2E-09	2.4E-08	0.00000037	0.00000085	4.3E-14	2.4E-12	0.0028	1.0E-13	2.4E-10	8.9E-10	2.4E-10	2.4E-12	2.4E-10	4.6E-14	9.4E-12	0.00000014	2.4E-08
HPHC-2	L-9	4.5E-10	1.5E-12	1.8E-09	2.1E-14	3.7E-10	7.4E-09	2.8E-08	7.2E-09	5.5E-14	7.2E-13	0.0013	8.5E-14	7.2E-11	6.1E-10	7.2E-11	7.2E-13	7.2E-11	1.8E-14	2.9E-12	3.1E-08	7.2E-09
HPHC-2	L-10	2.0E-10	1.1E-12	2.3E-09	9.3E-15	7.5E-11	9.2E-09	8.8E-09	0.00000014	3.3E-14	9.0E-13	0.0019	6.2E-14	9.0E-11	9.2E-10	9.0E-11	9.0E-13	9.0E-11	1.3E-14	3.6E-12	7.5E-08	9.0E-09
HPHC-2	L-11	2.4E-10	8.4E-13	2.7E-09	7.7E-15	9.0E-11	1.1E-08	1.1E-08	1.1E-08	4.4E-14	1.1E-12	0.0019	6.1E-14	1.1E-10	1.5E-09	1.1E-10	1.1E-12	1.1E-10	1.6E-14	1.7E-11	5.8E-08	1.1E-08
HPHC-2	L-12	1.3E-10	6.0E-13	3.2E-09	5.8E-15	2.6E-11	1.3E-08	5.0E-08	1.3E-08	3.8E-14	1.3E-12	0.0022	5.6E-14	1.3E-10	2.5E-09	1.3E-10	1.3E-12	1.3E-10	1.8E-14	5.1E-12	6.6E-08	1.3E-08
HPHC-2	L-13	3.6E-11	6.1E-13	3.6E-09	3.7E-15	1.1E-09	1.5E-08	1.4E-08	1.4E-08	5.3E-14	1.4E-12	0.0023	8.1E-14	1.4E-10	3.2E-09	1.4E-10	5.8E-12	1.4E-10	1.4E-14	2.3E-11	0.00000016	1.4E-08
HPHC-2	L-14	1.0E-11	4.7E-13	4.1E-09	4.2E-15	8.4E-10	1.7E-08	1.6E-08	1.6E-08	4.3E-14	1.6E-12	0.0028	7.2E-14	1.6E-10	4.5E-09	1.6E-10	1.6E-12	1.6E-10	1.6E-14	2.6E-11	0.00000022	1.6E-08
HPHC-2	L-15	1.8E-10	3.8E-13	4.5E-09	2.1E-15	9.4E-10	1.9E-08	1.8E-08	1.8E-08	5.5E-14	1.8E-12	0.0030	8.0E-14	1.8E-10	6.5E-09	1.8E-10	1.8E-12	1.8E-10	1.8E-14	2.9E-11	0.00000021	1.8E-08
HPHC-2	L-16	5.0E-11	3.5E-13	5.0E-09	2.3E-15	6.6E-10	2.0E-08	2.0E-08	2.0E-08	5.3E-14	2.0E-12	0.0031	8.8E-14	2.0E-10	8.1E-09	2.0E-10	2.0E-12	2.0E-10	5.0E-15	3.2E-11	0.00000021	2.0E-08
HPHC-2	L-17	5.6E-11	4.0E-13	5.6E-09	2.6E-15	1.9E-10	2.3E-08	0.00000014	2.2E-08	6.4E-14	2.2E-12	0.0032	9.9E-14	2.2E-10	1.0E-08	2.2E-10	9.0E-12	2.2E-10	2.2E-14	9.0E-12	0.0000001	2.2E-08
HPHC-3	L-1	6.8E-10	3.1E-11	6.8E-08	5.0E-12	2.7E-11	7.0E-08	6.7E-08	6.8E-08	1.6E-13	6.8E-12	0.0000001	2.2E-12	6.8E-10	1.7E-10	6.8E-10	9.8E-10	6.8E-10	5.1E-13	6.8E-10	0.0000006	6.8E-08
HPHC-3	L-2	2.7E-08	2.2E-10	4.8E-08	4.1E-11	4.8E-12	1.2E-08	1.2E-08	1.2E-08	5.9E-12	1.2E-12	0.00000012	5.7E-12	1.7E-08	2.9E-10	1.2E-10	1.2E-12	1.2E-10	6.2E-12	3.0E-11	6.3E-08	1.2E-08
HPHC-3	L-3	3.6E-08	4.6E-10	3.6E-08	5.9E-11	1.4E-11	3.7E-08	3.5E-08	3.6E-08	2.4E-12	3.6E-12	0.00000068	4.3E-12	2.3E-08	7.2E-10	3.6E-10	5.8E-11	3.6E-10	3.0E-12	2.3E-11	0.00000019	3.6E-08
HPHC-3	L-4	8.0E-09	4.7E-10	4.1E-09	3.0E-11	5.9E-11	4.2E-09	4.0E-09	1.6E-08	5.0E-13	4.1E-13	0.0000037	1.8E-12	2.6E-09	1.2E-10	4.1E-11	6.5E-12	4.1E-11	7.1E-13	2.6E-12	2.3E-08	4.1E-09
HPHC-3	L-5	3.3E-09	2.9E-10	5.2E-09	8.4E-12	1.3E-10	5.3E-09	5.1E-09	5.2E-09	1.4E-13	5.2E-13	0.000025	6.8E-13	8.3E-10	2.0E-10	5.2E-11	8.3E-12	5.2E-11	1.5E-13	3.2E-12	8.5E-09	5.2E-09
HPHC-3	L-6	2.1E-09	5.2E-11	2.6E-09	1.1E-12	2.0E-10	2.6E-09	2.5E-09	2.6E-09	7.0E-14	2.6E-13	0.000027	2.2E-13	1.0E-10	1.7E-10	2.6E-11	2.6E-13	2.6E-11	5.3E-14	1.6E-12	4.0E-09	2.6E-09
HPHC-3	L-7	2.2E-09	1.7E-11	4.4E-09	2.4E-13	4.5E-10	4.5E-09	4.3E-09	7.0E-08	8.6E-14	4.4E-13	0.000062	1.3E-13	4.4E-11	3.5E-10	4.4E-11	4.4E-13	4.4E-11	3.3E-14	1.1E-11	2.1E-08	4.4E-09
HPHC-3	L-8	9.2E-10	1.5E-11	2.3E-08	1.2E-13	1.3E-09	2.4E-08	0.0000011	2.3E-08	9.8E-14	2.3E-12	0.00022	1.2E-13	2.3E-10	9.0E-10	2.3E-10	2.3E-12	2.3E-10	4.3E-14	1.4E-11	1.0E-07	2.3E-08
HPHC-3	L-9	2.5E-09	3.3E-12	7.1E-09	4.5E-14	2.8E-10	7.2E-09	6.9E-09	7.1E-09	8.1E-14	7.1E-13	0.00011	7.0E-14	2.8E-10	5.6E-10	7.1E-11	7.1E-13	7.1E-11	2.3E-14	4.4E-12	2.2E-08	7.1E-09
HPHC-3	L-10	8.0E-10	2.2E-12	8.8E-09	2.0E-14	2.3E-10	9.0E-09	8.6E-09	0.00000014	6.9E-14	8.8E-13	0.00014	7.2E-14	8.8E-11	9.3E-10	8.8E-11	8.8E-13	8.8E-11	1.6E-14	5.5E-12	4.1E-08	8.8E-09
HPHC-3	L-11	9.6E-10	1.6E-12	1.1E-08	1.7E-14	1.7E-11	1.1E-08	1.0E-08	4.3E-08	7.5E-14	1.1E-12	0.00014	8.7E-14	1.1E-10	1.5E-09	1.1E-10	1.1E-12	1.1E-10	2.0E-14	6.6E-12	5.0E-08	1.1E-08
HPHC-3	L-12	5.0E-10	1.3E-12	1.2E-08	1.3E-14	7.9E-11	1.3E-08	1.2E-08	1.2E-08	7.8E-14	1.2E-12	0.00016	8.2E-14	1.2E-10	2.4E-09	1.2E-10	1.2E-12	1.2E-10	1.6E-14	3.1E-11	8.9E-08	1.2E-08
HPHC-3	L-13	1.4E-10	1.2E-12	1.4E-08	8.1E-15	3.6E-10	1.5E-08	1.4E-08	1.4E-08	9.9E-14	1.4E-12	0.00016	9.4E-14	1.4E-10	3.4E-09	1.4E-10	1.4E-12	1.4E-10	4.6E-15	8.9E-12	0.00000012	1.4E-08
HPHC-3	L-14	4.0E-11	1.0E-12	1.6E-08	9.2E-15	1.3E-09	1.6E-08	1.6E-08	1.6E-08	8.8E-14	1.6E-12	0.00020	8.3E-14	1.6E-10	4.8E-09	1.6E-10	1.6E-12	1.6E-10	5.2E-15	1.0E-11	0.00000014	1.6E-08
HPHC-3	L-15	7.1E-10	9.6E-13	1.8E-08	4.5E-15	1.0E-09	1.8E-08	1.7E-08	1.8E-08	1.2E-13	1.8E-12	0.00022	9.3E-14	1.8E-10	6.8E-09	1.8E-10	1.8E-12	1.8E-10	5.7E-15	1.1E-11	0.00000016	1.8E-08
HPHC-3	L-16	2.0E-10	9.0E-13	2.0E-08	5.0E-15	5.0E-10	2.0E-08	1.9E-08	2.0E-08	1.0E-13	2.0E-12	0.00023	1.0E-13	2.0E-10	8.6E-09	2.0E-10	2.0E-12	2.0E-10	6.3E-15	4.9E-11	0.00000031	2.0E-08
HPHC-3	L-17	2.1E-10	8.2E-13	2.1E-08	5.4E-15	5.5E-10	2.2E-08	0.00000013	2.1E-08	1.3E-13	2.1E-12	0.00023	1.1E-13	2.1E-10	1.1E-08	2.1E-10	8.5E-12	2.1E-10	6.9E-15	1.3E-11	6.6E-08	2.1E-08
HPHC-4	L-1	1.8E-10	1.4E-11	1.8E-08	2.1E-12	1.1E-11	7.5E-08	7.2E-08	7.3E-08	1.1E-13	7.3E-12	0.0000017	2.0E-12	7.3E-10	2.5E-10	7.3E-10	2.9E-11	7.3E-10	3.4E-13	2.6E-10	0.00000056	7.3E-08
HPHC-4	L-2	6.3E-09	9.9E-11	5.2E-08	1.9E-11	2.0E-12	1.3E-08	1.3E-08	1.3E-08	3.9E-12	1.3E-12	0.0000020	4.9E-12	1.3E-08	2.2E-10	1.3E-10	5.2E-12	1.3E-10	6.0E-12	2.1E-11	8.5E-08	1.3E-08
HPHC-4	L-3	9.7E-09	2.0E-10	3.9E-08	2.5E-11	6.1E-12	4.0E-08	3.8E-08	3.9E-08	1.3E-12	3.9E-12	0.0000090	3.1E-12	2.5E-08	8.1E-10	3.9E-10	1.6E-11	3.9E-10	2.3E-12	1.6E-11	0.00000017	3.9E-08
HPHC-4	L-4	2.5E-09	2.0E-10	1.1E-09	1.4E-11	1.8E-10	4.5E-09	4.3E-09	1.8E-08	3.1E-13	4.4E-13	0.000037	1.3E-12	4.4E-09	1.1E-10	4.4E-11	7.0E-12	4.4E-11	5.7E-13	1.8E-12	1.0E-08	4.4E-09
HPHC-4	L-5	1.1E-09	1.3E-10	1.4E-09	4.0E-12	5.5E-11	5.7E-09	5.4E-09	5.5E-09	8.3E-14	5.5E-13	0.00028	5.3E-13	8.9E-10	2.2E-10	5.5E-11	5.5E-13	5.5E-11	1.3E-13	2.2E-12	1.1E-08	5.5E-09
HPHC-4	L-6	5.6E-10	2.5E-11	6.9E-10	5.4E-13	1.7E-10	2.8E-09	2.7E-09	2.8E-09	3.9E-14	2.8E-13	0.00036	1.7E-13	4.4E-10	1.6E-10	2.8E-11	1.1E-12	2.8E-11	3.5E-14	1.1E-12	2.6E-09	2.8E-09
HPHC-4	L-7	5.8E-10	8.2E-12	1.2E-09	1.2E-13	1.4E-10	4.8E-09	4.6E-09	1.9E-08	5.1E-14	4.7E-13	0.00078	9.5E-14	1.9E-10	2.9E-10	4.7E-11	4.7E-13	4.7E-11	3.6E-14	7.5E-12	1.7E-08	4.7E-09
HPHC-4	L-8	1.5E-09	7.6E-12	6.2E-09	7.1E-14	5.6E-10	2.5E-08	0.00000039	2.5E-08	6.2E-14	2.5E-12	0.0028	9.9E-14	2.5E-10	8.4E-10	2.5E-10	2.5E-12	2.5E-10	2.4E-14	9.9E-12	0.00000014	2.5E-08
HPHC-4	L-9	6.8E-10	1.7E-12	1.9E-09	2.2E-14	4.3E-11	7.8E-09	7.4E-09	7.6E-09	7.6E-14	7.6E-13	0.0013	6.8E-14	7.6E-11	5.3E-10	7.6E-11	3.0E-12	7.6E-11	1.4E-14	3.0E-12	1.4E-08	7.6E-09
HPHC-4	L-10	3.8E-10	1.2E-12	2.4E-09	1.3E-14	1.5E-12	9.7E-09	9.3E-09	0.00000015	4.2E-14	9.5E-13	0.0017	5.9E-14	9.5E-11	8.7E-10	9.5E-11	9.5E-13	9.5E-11	1.3E-14	3.8E-12	3.2E-08	9.5E-09
HPHC-4	L-11	2.6E-10	8.7E-13	2.9E-09	8.1E-15	3.5E-10	1.2E-08	1.1E-08	1.1E-08	5.6E-14	1.1E-12	0.0020	7.1E-14	1.1E-10	1.5E-09	1.1E-10	1.1E-12	1.1E-10	1.6E-14	1.8E-11	6.6E-08	1.1E-08
HPHC-4	L-12	1.3E-10	6.2E-13	3.3E-09	6.1E-15	8.3E-12	1.4E-08	1.3E-08	1.3E-08	4.8E-14	1.3E-12	0.0022	8.3E-14	1.3E-10	2.4E-09	1.3E-10	1.3E-12	1.3E-10	2.5E-14	2.1E-11	6.0E-08	1.3E-08
HPHC-4	L-13	3.8E-11	5.6E-13	3.8E-09	3.9E-15	2.4E-10	1.6E-08	1.5E-08	1.5E-08	6.8E-14	1.5E-12	0.0024	6.1E-14	1.5E-10	3.6E-09	1.5E-10	1.5E-12	1.5E-10	1.5E-14	5.5E-11	0.00000024	1.5E-08
HPHC-4	L-14	1.1E-11	4.9E-13	4.3E-09	4.4E-15	3.9E-10	1.8E-08	1.7E-08	1.7E-08	5.5E-14	1.7E-12	0.0028	6.9E-14	1.7E-10	5.0E-09	1.7E-10	6.9E-12	1.7E-10	1.6E-14	6.9E-12	0.00000015	1.7E-08
HPHC-4	L-15	1.9E-10	4.7E-13	4.8E-09	2.2E-15	1.9E-10	1.9E-08	1.9E-08	1.9E-08	7.3E-14	1.9E-12	0.0030	7.6E-14	1.9E-10	7.3E-09	1.9E-10	1.9E-12	1.9E-10	1.8E-14	3.0E-11	0.00000037	1.9E-08
HPHC-4	L-16	2.1E-10	4.4E-13	5.2E-09	2.4E-15	2.1E-10	2.1E-08	2.0E-08	2.1E-08	6.8E-14	2.1E-12	0.0029	8.4E-14	2.1E-10	9.1E-09	2.1E-10	2.1E-12	2.1E-10	5.0E-15	3.4E-11	0.00000018	2.1E-08
HPHC-4	L-17	5.7E-11	4.0E-13	5.7E-09	2.6E-15	1.3E-10	2.3E-08	0.00000014	2.3E-08	8.3E-14	2.3E-12	0.0031	7.0E-14	2.3E-10	1.2E-08	2.3E-10	9.1E-12	2.3E-10	2.2E-14	9.1E-12	6.1E-08	2.3E-08

- Parameter not analyzed

Appendix E, Table E-22
HPHC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HPHC-1	L-1	6.9E-08	4.9E-12	1.7E-10	7.4E-11	0.0000084	3.6E-10	6.9E-08	1.5E-12	1.9E-11	4.3E-11	6.9E-08	2.1E-10	0.0000004	3.9E-08	0.00000012	7.6E-12	3.1E-10
HPHC-1	L-2	1.2E-08	5.0E-11	3.0E-11	8.1E-11	0.00012	5.0E-09	1.2E-08	1.0E-11	1.1E-10	7.6E-12	0.00000011	9.4E-09	1.2E-08	-	-	-	-
HPHC-1	L-3	3.6E-08	3.1E-11	2.3E-11	8.1E-11	0.000095	1.3E-09	3.6E-08	2.1E-11	6.8E-11	2.3E-11	4.2E-08	6.9E-09	0.00000021	0.00000013	0.00000042	7.8E-11	4.0E-11
HPHC-1	L-4	4.1E-09	1.3E-11	2.6E-12	2.2E-11	0.000033	2.2E-10	4.1E-09	8.7E-12	1.2E-11	2.6E-12	2.1E-09	1.6E-09	4.1E-09	-	-	-	-
HPHC-1	L-5	5.2E-09	3.7E-12	3.2E-12	5.4E-11	0.0000083	9.0E-11	5.2E-09	5.5E-11	2.1E-12	3.2E-12	1.0E-09	5.0E-10	5.2E-09	-	-	-	-
HPHC-1	L-6	2.6E-09	1.5E-12	1.6E-12	8.4E-11	0.0000022	8.4E-11	2.6E-09	1.7E-10	1.0E-12	1.6E-12	6.3E-10	2.3E-10	2.6E-09	0.00000014	7.5E-09	3.3E-11	4.6E-11
HPHC-1	L-7	4.4E-09	6.6E-13	2.8E-12	2.1E-10	0.0000032	1.4E-10	4.4E-09	4.3E-10	1.2E-12	2.8E-12	1.3E-09	4.2E-10	4.4E-09	-	-	-	-
HPHC-1	L-8	2.3E-08	4.5E-13	1.4E-11	5.0E-10	0.0000084	2.0E-10	2.3E-08	1.2E-09	1.0E-12	1.4E-11	6.5E-09	7.7E-10	2.3E-08	-	-	-	-
HPHC-1	L-9	7.1E-09	2.9E-13	4.4E-12	2.8E-10	0.0000038	1.8E-10	7.1E-09	6.3E-10	1.3E-12	4.4E-12	2.1E-09	4.0E-10	7.1E-09	0.00000024	1.6E-08	5.9E-11	2.8E-10
HPHC-1	L-10	8.9E-09	2.6E-13	5.5E-12	4.2E-10	0.0000043	2.2E-10	8.9E-09	8.2E-10	8.9E-13	5.5E-12	3.2E-09	5.0E-10	8.9E-09	-	-	-	-
HPHC-1	L-11	1.1E-08	2.9E-13	6.7E-12	6.0E-10	0.0000056	2.9E-10	1.1E-08	9.5E-10	4.7E-13	6.7E-12	5.7E-09	5.5E-10	1.1E-08	-	-	-	-
HPHC-1	L-12	1.2E-08	3.1E-13	7.8E-12	6.9E-10	0.0000060	2.7E-10	1.2E-08	1.1E-09	2.2E-12	7.8E-12	5.8E-09	6.4E-10	1.2E-08	0.00000061	0.00000015	1.6E-10	5.0E-10
HPHC-1	L-13	1.4E-08	3.4E-13	8.9E-12	9.2E-10	0.0000057	3.1E-10	1.4E-08	1.2E-09	7.8E-12	8.9E-12	7.6E-09	5.2E-10	1.4E-08	-	-	-	-
HPHC-1	L-14	1.6E-08	3.6E-13	1.0E-11	1.0E-09	0.0000071	3.5E-10	1.6E-08	1.3E-09	2.8E-12	1.0E-11	9.5E-09	6.4E-10	1.6E-08	-	-	-	-
HPHC-1	L-15	1.8E-08	3.5E-13	1.1E-11	1.2E-09	0.0000071	3.7E-10	1.8E-08	1.2E-09	1.8E-12	1.1E-11	1.0E-08	6.5E-10	1.8E-08	0.0000012	0.00000011	3.2E-10	9.7E-10
HPHC-1	L-16	2.0E-08	3.6E-13	1.2E-11	1.5E-09	0.0000078	4.1E-10	2.0E-08	1.3E-09	5.4E-12	1.2E-11	1.4E-08	6.5E-10	2.0E-08	-	-	-	-
HPHC-1	L-17	2.1E-08	4.2E-13	1.3E-11	1.4E-09	0.0000086	4.7E-10	2.1E-08	1.4E-09	2.4E-13	1.3E-11	1.3E-08	5.7E-10	2.1E-08	0.0000011	0.00000013	5.4E-10	4.7E-09
HPHC-2	L-1	7.0E-10	1.5E-11	7.8E-11	2.8E-11	8.5E-08	1.5E-10	7.0E-10	3.8E-13	3.3E-11	1.4E-11	2.1E-08	3.4E-10	7.2E-09	0.00000015	0.00000039	1.8E-11	3.1E-10
HPHC-2	L-2	1.2E-10	2.1E-11	3.4E-12	8.2E-12	0.0000012	2.1E-09	1.2E-10	2.9E-12	3.0E-11	2.5E-12	2.6E-08	1.0E-08	4.9E-10	-	-	-	-
HPHC-2	L-3	3.7E-10	1.3E-11	1.0E-11	1.5E-11	0.0000010	9.0E-10	3.7E-10	5.8E-12	1.7E-11	7.5E-12	2.0E-08	1.2E-08	3.7E-10	0.00000011	0.00000025	7.5E-11	4.1E-11
HPHC-2	L-4	4.2E-11	5.6E-12	1.2E-12	4.0E-12	0.00000042	1.3E-10	4.2E-11	2.2E-12	5.8E-12	8.5E-13	8.3E-10	2.5E-09	4.2E-11	-	-	-	-
HPHC-2	L-5	5.3E-11	2.1E-12	1.5E-12	9.9E-12	0.00000011	5.0E-11	5.3E-11	1.3E-11	2.5E-12	1.1E-12	3.8E-10	8.0E-10	5.3E-11	-	-	-	-
HPHC-2	L-6	2.6E-11	8.3E-13	7.3E-13	1.8E-11	2.7E-08	3.8E-11	2.6E-11	5.0E-11	6.5E-13	5.4E-13	2.2E-10	3.2E-10	2.6E-11	0.00000018	1.2E-08	2.9E-11	1.1E-10
HPHC-2	L-7	4.5E-11	4.0E-13	1.2E-12	5.3E-11	3.5E-08	6.0E-11	4.5E-11	1.4E-10	1.7E-12	9.2E-13	9.3E-10	4.9E-10	4.5E-11	-	-	-	-
HPHC-2	L-8	2.4E-10	2.4E-13	6.5E-12	1.2E-10	8.5E-08	8.9E-11	2.4E-10	3.9E-10	1.4E-12	4.8E-12	2.1E-09	8.5E-10	2.4E-10	-	-	-	-
HPHC-2	L-9	7.2E-11	1.4E-13	2.0E-12	7.2E-11	4.2E-08	7.6E-11	7.2E-11	2.1E-10	4.4E-13	1.5E-12	9.3E-10	5.7E-10	2.9E-10	0.00000028	2.9E-08	5.3E-11	2.9E-10
HPHC-2	L-10	9.0E-11	1.2E-13	2.5E-12	1.1E-10	4.4E-08	9.0E-11	9.0E-11	2.6E-10	3.1E-13	1.8E-12	1.3E-09	6.6E-10	9.0E-11	-	-	-	-
HPHC-2	L-11	1.1E-10	1.2E-13	3.0E-12	1.5E-10	6.2E-08	1.1E-10	1.1E-10	3.0E-10	3.8E-13	2.2E-12	2.2E-09	7.3E-10	1.1E-10	-	-	-	-
HPHC-2	L-12	1.3E-10	1.2E-13	3.5E-12	1.7E-10	6.1E-08	1.2E-10	1.3E-10	3.2E-10	4.4E-13	2.6E-12	2.4E-09	7.9E-10	1.3E-10	0.00000076	0.0000011	1.8E-10	5.1E-10
HPHC-2	L-13	1.4E-10	1.2E-13	4.0E-12	2.3E-10	7.0E-08	1.3E-10	1.4E-10	3.7E-10	1.4E-12	3.0E-12	2.9E-09	6.4E-10	1.4E-10	-	-	-	-
HPHC-2	L-14	1.6E-10	1.2E-13	4.5E-12	2.5E-10	8.6E-08	1.5E-10	1.6E-10	3.8E-10	4.0E-12	3.3E-12	4.1E-09	8.6E-10	1.6E-10	-	-	-	-
HPHC-2	L-15	1.8E-10	1.3E-13	5.0E-12	2.8E-10	8.0E-08	1.6E-10	1.8E-10	3.7E-10	1.7E-12	3.7E-12	4.5E-09	8.8E-10	3.5E-09	0.0000012	0.00000022	3.3E-10	9.9E-10
HPHC-2	L-16	2.0E-10	1.4E-13	5.5E-12	3.1E-10	8.8E-08	1.8E-10	2.0E-10	3.9E-10	2.8E-12	4.1E-12	5.0E-09	9.7E-10	2.0E-10	-	-	-	-
HPHC-2	L-17	2.2E-10	1.6E-13	6.2E-12	3.5E-10	9.9E-08	2.1E-10	2.2E-10	4.2E-10	1.4E-12	4.6E-12	5.6E-09	9.0E-10	2.2E-10	0.0000013	0.00000027	-	-
HPHC-3	L-1	6.8E-10	4.2E-12	7.6E-11	6.5E-11	6.8E-08	1.1E-10	6.8E-10	2.3E-13	1.8E-11	2.7E-11	2.3E-08	1.5E-10	1.1E-08	-	-	-	-
HPHC-3	L-2	1.2E-10	2.3E-11	3.4E-12	9.6E-12	0.0000012	2.8E-09	1.2E-10	7.3E-12	3.4E-11	4.8E-12	3.4E-08	6.2E-09	1.2E-10	-	-	-	-
HPHC-3	L-3	3.6E-10	1.5E-11	1.0E-11	3.1E-11	0.0000011	1.2E-09	3.6E-10	1.2E-11	2.5E-11	1.4E-11	2.3E-08	7.7E-09	3.6E-10	-	-	-	-
HPHC-3	L-4	4.1E-11	7.2E-12	1.1E-12	7.8E-12	0.00000041	1.7E-10	4.1E-11	3.5E-12	6.8E-12	1.6E-12	1.1E-09	1.6E-09	4.1E-11	-	-	-	-
HPHC-3	L-5	5.2E-11	3.0E-12	1.4E-12	1.9E-11	0.0000001	6.1E-11	5.2E-11	2.1E-11	1.7E-12	2.1E-12	4.3E-10	4.4E-10	5.2E-11	-	-	-	-
HPHC-3	L-6	2.6E-11	9.4E-13	7.2E-13	3.8E-11	2.3E-08	4.9E-11	2.6E-11	1.1E-10	6.9E-13	1.0E-12	2.4E-10	2.0E-10	2.6E-11	-	-	-	-
HPHC-3	L-7	4.4E-11	4.8E-13	1.2E-12	1.0E-10	3.4E-08	7.6E-11	4.4E-11	3.0E-10	6.6E-13	1.8E-12	6.7E-10	3.2E-10	4.4E-11	-	-	-	-
HPHC-3	L-8	2.3E-10	3.3E-13	6.4E-12	2.7E-10	9.2E-08	1.1E-10	2.3E-10	8.4E-10	8.6E-13	9.2E-12	2.5E-09	5.5E-10	2.3E-10	-	-	-	-
HPHC-3	L-9	7.1E-11	1.9E-13	2.0E-12	1.7E-10	4.1E-08	1.0E-10	7.1E-11	4.3E-10	7.4E-13	2.8E-12	1.1E-09	3.3E-10	7.1E-11	-	-	-	-
HPHC-3	L-10	8.8E-11	1.7E-13	2.5E-12	2.1E-10	4.7E-08	1.2E-10	8.8E-11	5.3E-10	9.2E-13	3.5E-12	1.5E-09	4.1E-10	8.8E-11	-	-	-	-
HPHC-3	L-11	1.1E-10	1.6E-13	3.0E-12	3.0E-10	6.6E-08	1.5E-10	1.1E-10	6.4E-10	4.0E-13	4.3E-12	2.7E-09	4.6E-10	1.1E-10	-	-	-	-
HPHC-3	L-12	1.2E-10	1.5E-13	3.4E-12	4.0E-10	6.6E-08	1.8E-10	1.2E-10	6.9E-10	8.3E-13	5.0E-12	3.0E-09	5.0E-10	1.2E-10	-	-	-	-
HPHC-3	L-13	1.4E-10	1.4E-13	3.9E-12	4.6E-10	7.5E-08	1.9E-10	1.4E-10	7.6E-10	3.8E-12	5.7E-12	3.4E-09	4.4E-10	1.4E-10	-	-	-	-
HPHC-3	L-14	1.6E-10	1.4E-13	4.4E-12	5.1E-10	8.5E-08	2.2E-10	1.6E-10	8.3E-10	2.4E-12	6.4E-12	4.4E-09	5.0E-10	1.6E-10	-	-	-	-
HPHC-3	L-15	1.8E-10	1.5E-13	4.9E-12	5.7E-10	8.6E-08	2.4E-10	1.8E-10	8.1E-10	2.7E-12	7.1E-12	4.9E-09	5.6E-10	1.8E-10	-	-	-	-
HPHC-3	L-16	2.0E-10	1.5E-13	5.4E-12	7.2E-10	0.0000001	2.6E-10	2.0E-10	8.5E-10	2.9E-12	7.8E-12	6.6E-09	5.6E-10	2.0E-10	-	-	-	-
HPHC-3	L-17	2.1E-10	1.6E-13	5.9E-12	6.9E-10	9.4E-08	3.1E-10	2.1E-10	8.9E-10	8.0E-13	8.5E-12	7.2E-09	5.1E-10	2.1E-10	-	-	-	-
HPHC-4	L-1	7.3E-10	4.5E-12	8.1E-11	1.5E-11	5.9E-08	7.7E-11	7.3E-10	2.3E-13	1.5E-11	1.5E-11	1.2E-08	3.3E-10	4.2E-09	-	-	-	-
HPHC-4	L-2	1.3E-10	2.1E-11	3.6E-12	3.2E-12	0.0000011	2.1E-09	1.3E-10	2.1E-12	2.8E-11	2.6E-12	1.9E-08	1.0E-08	1.3E-10	-	-	-	-
HPHC-4	L-3	3.9E-10	1.2E-11	1.1E-11	8.7E-12	0.0000012	1.4E-09	3.9E-10	4.3E-12	1.5E-11	7.9E-12	1.4E-08	2.0E-08	3.9E-10	-	-	-	-
HPHC-4	L-4	4.4E-11	5.8E-12	1.2E-12	1.8E-12	0.00000053	1.8E-10	4.4E-11	1.5E-12	5.6E-12	8.9E-13	5.2E-10	4.2E-09	4.4E-11	-	-	-	-
HPHC-4	L-5	5.5E-11	2.3E-12	1.5E-12	6.0E-12	0.00000014	6.1E-11	5.5E-11	9.6E-12	2.1E-12	1.1E-12	2.7E-10	1.3E-09	2.2E-10	-	-	-	-
HPHC-4	L-6	2.8E-11	6.2E-13	7.7E-13	9.7E-12	3.2E-08	4.3E-11	2.8E-11	4.1E-11	3.2E-13	5.7E-13	1.3E-10	5.2E-10	2.8E-11	-	-	-	-
HPHC-4	L-7	4.7E-11	3.4E-13	1.3E-12	2.9E-11	4.2E-08	6.8E-11	4.7E-11	1.1E-10	5.4E-13	9.6E-13	3.5E-10	8.0E-10	4.7E-11	-	-	-	-
HPHC-4	L-8	2.5E-10	2.4E-13	6.9E-12	6.9E-11	9.9E-08	9.7E-11	2.5E-10	3.4E-10	3.2E-13	5.0E-12	1.3E-09	1.3E-09	2.5E-10	-	-	-	-
HPHC-4	L-9	7.6E-11	1.4E-13	2.1E-12	4.7E-11	4.7E-08	8.4E-11	7.6E-11	1.8E-10	3.9E-13	1.5E-12	8.4E-10	7.9E-10	7.6E-11	-	-	-	-
HPHC-4	L-10	9.5E-11	1.2E-13	2.6E-12	7.0E-11	5.0E-08	1.0E-10	9.5E-11	2.1E-10	7.6E-13	1.9E-12	9.2E-10	9.2E-10	9.5E-11	-	-	-	-
HPHC-4	L-11	1.1E-10	1.3E-13	3.2E-12	9.8E-11	7.1E-08	1.2E-10	1.1E-10	2.7E-10	9.1E-13	2.3E-12	1.8E-09	1.1E-09	5.9E-09	-	-	-	-
HPHC-4	L-12	1.3E-10	1.3E-13	3.7E-12	1.3E-10	8.3E-08	1.4E-10	1.3E-10	2.9E-10	1.5E-12	2.7E-12	1.6E-09	1.2E-09	1.3E-10	-	-	-	-
HPHC-4	L-13	1.5E-10	1.1E-13	4.2E-12	1.7E-10	8.0E-08	1.5E-10	1.5E-10	3.3E-10	3.1E-12	3.1E-12	2.3E-09	1.1E-09	8.8E-10	-	-	-	-
HPHC-4	L-14	1.7E-10	1.1E-13	4.8E-12	1.7E-10	9.1E-08	1.8E-10	1.7E-10	3.4E-10	8.7E-13	3.5E-12	2.7E-09	1.2E-09	1.7E-10	-	-	-	-
HPHC-4	L-15	1.9E-10	1.2E-13	5.3E-12	2.2E-10	0.0000001	2.1E-10	1.9E-10	3.2E-10	3.0E-12	3.9E-12	3.7E-09	1.2E-09	1.1E-09	-	-	-	-
HPHC-4	L-16	2.1E-10	1.2E-13	5.8E-12	2.1E-10	0.0000001	2.3E-10	2.1E-10	3.4E-10	1.1E-12	4.3E-12	4.1E-09	1.3E-09	2.1E-10	-	-	-	-
HPHC-4	L-17	2.3E-10	1.3E-13	6.3E-12	2.3E-10	0.00000011	2.5E-10	2.3E-10	3.6E-10	6.6E-13	4.7E-12	3.7E-09	1.1E-09	2.3E-10	-	-	-	-

- Parameter not analyzed

Appendix E, Table E-23
HHGPLC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHGPLC-1	L-1	2019-12-11	0.080	0.10	0.057	0.00047	503	1.0	0.50	0.0082	6.1	0.69	1471	-	4.5E-10	4.4E-10	2.2E-08	2.2E-08	6.5E-10	1.8E-09	1.8E-09	2.5E-12
HHGPLC-1	L-2	2019-12-12	1.0	0.10	0.057	0.00047	620	1.00	0.62	0.0082	7.6	0.69	1471	-	3.8E-11	3.5E-11	5.2E-09	5.2E-09	2.8E-10	6.2E-10	6.1E-10	2.1E-11
HHGPLC-1	L-3	2019-12-13	2.0	0.10	0.057	0.00047	630	1.00	0.63	0.0082	7.7	0.69	1471	-	8.5E-10	9.0E-10	1.6E-08	1.6E-08	6.8E-10	1.4E-09	1.4E-09	2.9E-11
HHGPLC-1	L-4	2019-12-18	7.0	0.10	0.057	0.00047	621	1.00	0.62	0.0082	7.6	0.69	1471	-	5.2E-11	5.5E-11	1.8E-09	1.8E-09	1.8E-10	2.8E-10	2.7E-10	1.6E-10
HHGPLC-1	L-5	2019-12-25	14	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1471	-	7.1E-11	7.5E-11	2.4E-09	2.4E-09	3.5E-10	4.1E-10	4.1E-10	5.8E-10
HHGPLC-1	L-6	2020-01-08	28	0.10	0.057	0.00047	638	1.0	0.64	0.0082	7.8	0.69	1471	-	9.7E-11	9.5E-11	1.2E-09	1.2E-09	3.2E-10	2.6E-10	2.6E-10	9.0E-10
HHGPLC-1	L-7	2020-01-22	42	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.8	0.69	1471	-	3.0E-10	3.1E-10	2.0E-09	2.0E-09	6.1E-10	4.7E-10	4.7E-10	1.2E-09
HHGPLC-1	L-8	2020-01-29	49	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1471	-	1.4E-10	1.5E-10	1.1E-08	1.1E-08	1.2E-09	1.3E-09	1.3E-09	1.6E-09
HHGPLC-1	L-9	2020-02-12	63	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.69	1471	-	5.3E-10	5.3E-10	3.3E-09	3.3E-09	7.7E-10	6.8E-10	6.7E-10	8.6E-10
HHGPLC-1	L-10	2020-02-26	77	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.69	1471	-	4.1E-10	4.2E-10	4.1E-09	4.1E-09	8.8E-10	8.4E-10	8.3E-10	6.7E-10
HHGPLC-1	L-11	2020-03-11	91	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.9	0.69	1471	-	2.9E-10	3.0E-10	4.9E-09	4.9E-09	9.4E-10	9.7E-10	9.7E-10	5.0E-10
HHGPLC-1	L-12	2020-03-25	105	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1471	-	3.0E-10	3.2E-10	5.8E-09	5.8E-09	1.0E-09	1.1E-09	1.1E-09	4.4E-10
HHGPLC-1	L-13	2020-04-08	119	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.69	1471	-	1.9E-10	2.0E-10	6.5E-09	6.5E-09	1.0E-09	1.2E-09	1.2E-09	2.4E-10
HHGPLC-1	L-14	2020-04-22	133	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1471	-	2.2E-09	2.2E-09	7.4E-09	7.4E-09	1.1E-09	1.4E-09	1.4E-09	1.6E-10
HHGPLC-1	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1471	-	1.1E-09	1.0E-09	8.3E-09	8.3E-09	9.4E-10	1.5E-09	1.5E-09	1.3E-10
HHGPLC-1	L-16	2020-05-20	161	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1471	-	5.4E-10	5.6E-10	9.1E-09	9.1E-09	9.8E-10	2.1E-09	2.1E-09	6.6E-11
HHGPLC-1	L-17	2020-06-03	175	0.10	0.057	0.00047	645	1.00	0.64	0.0082	7.9	0.69	1471	-	1.1E-09	1.1E-09	1.0E-08	1.0E-08	1.1E-09	1.8E-09	1.7E-09	7.2E-11
HHGPLC-1	L-18	2020-07-01	203	0.10	0.057	0.00047	631	1.00	0.63	0.0082	7.7	0.69	1471	-	1.1E-10	1.1E-10	2.7E-09	2.7E-09	6.5E-10	1.1E-09	1.1E-09	6.0E-11
HHGPLC-1	L-19	2020-07-29	231	0.10	0.057	0.00047	640	1.0	0.64	0.0082	7.8	0.69	1471	-	1.1E-10	1.1E-10	3.2E-09	3.2E-09	6.7E-10	1.3E-09	1.3E-09	5.2E-11
HHGPLC-1	L-20	2020-08-26	259	0.10	0.057	0.00047	638	1.0	0.64	0.0082	7.8	0.69	1471	-	1.4E-10	1.4E-10	3.5E-09	3.5E-09	6.4E-10	1.4E-09	1.4E-09	2.6E-11
HHGPLC-1	L-21	2020-09-23	287	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.69	1471	-	3.6E-10	3.7E-10	4.0E-09	4.0E-09	6.2E-10	1.5E-09	1.5E-09	1.6E-11
HHGPLC-2	L-1	2019-12-11	0.080	0.10	0.057	0.00047	488	1.0	0.49	0.0082	6.0	0.69	1477	-	2.0E-09	2.1E-09	2.1E-08	2.1E-08	1.9E-09	4.7E-09	4.7E-09	2.7E-12
HHGPLC-2	L-2	2019-12-12	1.0	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1477	-	6.1E-11	5.3E-11	5.6E-09	5.6E-09	3.3E-10	7.0E-10	7.0E-10	1.2E-11
HHGPLC-2	L-3	2019-12-13	2.0	0.10	0.057	0.00047	631	1.00	0.63	0.0082	7.7	0.69	1477	-	6.1E-10	6.1E-10	1.6E-08	1.6E-08	7.9E-10	1.7E-09	1.7E-09	3.3E-11
HHGPLC-2	L-4	2019-12-18	7.0	0.10	0.057	0.00047	622	1.00	0.62	0.0082	7.6	0.69	1477	-	6.7E-11	6.7E-11	1.8E-09	1.8E-09	2.3E-10	2.8E-10	2.8E-10	3.7E-10
HHGPLC-2	L-5	2019-12-25	14	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.69	1477	-	4.3E-11	4.3E-11	2.4E-09	2.4E-09	4.6E-10	3.9E-10	3.9E-10	1.3E-09
HHGPLC-2	L-6	2020-01-08	28	0.10	0.057	0.00047	639	1.0	0.64	0.0082	7.8	0.69	1477	-	1.6E-10	1.6E-10	1.2E-09	1.2E-09	4.4E-10	2.7E-10	2.7E-10	1.8E-09
HHGPLC-2	L-7	2020-01-22	42	0.10	0.057	0.00047	649	1.0	0.65	0.0082	7.9	0.69	1477	-	2.9E-10	2.8E-10	2.1E-09	2.1E-09	7.6E-10	4.8E-10	4.7E-10	1.6E-09
HHGPLC-2	L-8	2020-01-29	49	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.69	1477	-	6.1E-10	6.4E-10	1.1E-08	1.1E-08	1.5E-09	1.2E-09	1.2E-09	1.8E-09
HHGPLC-2	L-9	2020-02-12	63	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.69	1477	-	3.2E-10	3.3E-10	3.3E-09	3.3E-09	8.7E-10	6.6E-10	6.6E-10	8.9E-10
HHGPLC-2	L-10	2020-02-26	77	0.10	0.057	0.00047	647	1.0	0.65	0.0082	7.9	0.69	1477	-	5.3E-10	5.2E-10	4.1E-09	4.1E-09	9.4E-10	8.6E-10	8.6E-10	6.2E-10
HHGPLC-2	L-11	2020-03-11	91	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.69	1477	-	5.3E-10	5.3E-10	4.9E-09	4.9E-09	9.8E-10	1.0E-09	1.0E-09	4.3E-10
HHGPLC-2	L-12	2020-03-25	105	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.69	1477	-	3.7E-10	3.8E-10	5.8E-09	5.8E-09	1.1E-09	1.1E-09	1.1E-09	3.0E-10
HHGPLC-2	L-13	2020-04-08	119	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.69	1477	-	3.3E-10	3.1E-10	6.5E-09	6.5E-09	1.0E-09	1.2E-09	1.2E-09	2.1E-10
HHGPLC-2	L-14	2020-04-22	133	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.69	1477	-	6.7E-10	6.4E-10	7.5E-09	7.5E-09	1.1E-09	1.5E-09	1.5E-09	1.4E-10
HHGPLC-2	L-15	2020-05-06	147	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1477	-	1.3E-09	9.6E-10	0.00000013	8.2E-09	9.9E-10	1.6E-09	1.6E-09	6.8E-11
HHGPLC-2	L-16	2020-05-20	161	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.69	1477	-	1.4E-09	1.4E-09	9.1E-09	9.1E-09	1.0E-09	2.2E-09	2.2E-09	4.2E-11
HHGPLC-2	L-17	2020-06-03	175	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1477	-	2.7E-10	2.5E-10	9.9E-09	9.9E-09	1.1E-09	1.8E-09	1.8E-09	4.6E-11
HHGPLC-2	L-18	2020-07-01	203	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1477	-	1.2E-10	1.2E-10	2.8E-09	2.8E-09	5.3E-10	1.1E-09	1.1E-09	3.6E-11
HHGPLC-2	L-19	2020-07-29	231	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1477	-	1.8E-10	1.9E-10	3.2E-09	3.2E-09	6.2E-10	1.3E-09	1.3E-09	2.6E-11
HHGPLC-2	L-20	2020-08-26	259	0.10	0.057	0.00047	645	1.0	0.64	0.0082	7.9	0.69	1477	-	2.0E-10	2.1E-10	3.6E-09	3.6E-09	6.4E-10	1.5E-09	1.5E-09	1.7E-11
HHGPLC-2	L-21	2020-09-23	287	0.10	0.057	0.00047	640	1.0	0.64	0.0082	7.8	0.69	1477	-	5.5E-10	5.3E-10	4.0E-09	4.0E-09	6.3E-10	1.5E-09	1.5E-09	8.2E-12
HHGPLC-3	L-1	2019-12-11	0.080	0.10	0.057	0.00047	480	1.0	0.48	0.0082	5.9	0.68	1461	-	4.8E-10	4.7E-10	2.0E-08	2.0E-08	1.8E-09	5.0E-09	5.0E-09	2.0E-12
HHGPLC-3	L-2	2019-12-12	1.0	0.10	0.057	0.00047	633	1.00	0.63	0.0082	7.8	0.68	1461	-	5.8E-10	6.0E-10	5.5E-09	5.5E-09	2.9E-10	7.5E-10	7.5E-10	8.5E-12
HHGPLC-3	L-3	2019-12-13	2.0	0.10	0.057	0.00047	622	1.00	0.62	0.0082	7.6	0.68	1461	-	2.0E-09	2.0E-09	1.6E-08	1.6E-08	9.2E-10	2.2E-09	2.2E-09	5.5E-11
HHGPLC-3	L-4	2019-12-18	7.0	0.10	0.057	0.00047	618	1.00	0.62	0.0082	7.6	0.68	1461	-	8.3E-11	8.3E-11	1.8E-09	1.8E-09	2.3E-10	3.2E-10	3.2E-10	2.2E-10
HHGPLC-3	L-5	2019-12-25	14	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.68	1461	-	1.1E-10	1.1E-10	2.4E-09	2.4E-09	3.9E-10	4.4E-10	4.4E-10	5.4E-10
HHGPLC-3	L-6	2020-01-08	28	0.10	0.057	0.00047	635	1.0	0.63	0.0082	7.8	0.68	1461	-	8.1E-11	8.4E-11	1.2E-09	1.2E-09	3.3E-10	2.9E-10	2.9E-10	7.3E-10
HHGPLC-3	L-7	2020-01-22	42	0.10	0.057	0.00047	646	1.0	0.65	0.0082	7.9	0.68	1461	-	6.0E-11	4.0E-11	8.4E-09	2.1E-09	5.7E-10	5.4E-10	5.4E-10	9.3E-10
HHGPLC-3	L-8	2020-01-29	49	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.68	1461	-	5.1E-10	5.1E-10	1.1E-08	1.1E-08	1.3E-09	1.5E-09	1.5E-09	1.1E-09
HHGPLC-3	L-9	2020-02-12	63	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.68	1461	-	5.7E-10	5.8E-10	3.3E-09	3.3E-09	7.3E-10	7.5E-10	7.5E-10	6.2E-10
HHGPLC-3	L-10	2020-02-26	77	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.68	1461	-	5.7E-10	5.6E-10	4.2E-09	4.2E-09	8.4E-10	9.1E-10	9.1E-10	5.2E-10
HHGPLC-3	L-11	2020-03-11	91	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.68	1461	-	4.8E-10	4.6E-10	5.0E-09	5.0E-09	9.1E-10	1.1E-09	1.1E-09	4.3E-10
HHGPLC-3	L-12	2020-03-25	105	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.68	1461	-	3.5E-10	3.7E-10	5.8E-09	5.8E-09	9.8E-10	1.2E-09	1.2E-09	3.2E-10
HHGPLC-3	L-13	2020-04-08	119	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.68	1461	-	4.1E-10	4.3E-10	6.7E-09	6.7E-09	1.0E-09	1.3E-09	1.3E-09	2.6E-10
HHGPLC-3	L-14	2020-04-22	133	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.68	1461	-	1.3E-09	1.3E-09	7.6E-09	7.6E-09	1.0E-09	1.5E-09	1.5E-09	1.4E-10
HHGPLC-3	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.68	1461	-	1.6E-09	1.1E-09	0.00000013	8.4E-09	9.8E-10	1.6E-09	1.6E-09	1.2E-10
HHGPLC-3	L-16	2020-05-20	161	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.68	1461	-	9.5E-10	9.8E-10	9.1E-09	9.1E-09	1.0E-09	2.2E-09	2.1E-09	5.6E-11
HHGPLC-3	L-17	2020-06-03	175	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.68	1461	-	1.6E-09	1.7E-09	1.0E-08	1.0E-08	1.1E-09	1.7E-09	1.7E-09	6.2E-11
HHGPLC-3	L-18	2020-07-01	203	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.68	1461	-	1.3E-10	1.3E-10	2.8E-09	2.8E-09	5.7E-10	1.1E-09	1.1E-09	5.3E-11
HHGPLC-3	L-19	2020-07-29	231	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.9	0.68	1461	-	2.0E-10	2.1E-10	3.2E-09	3.2E-09	6.3E-10	1.3E-09	1.3E-09	3.1E-11
HHGPLC-3	L-20	2020-08-26	259	0.10	0.057	0.00047	639	1.0	0.64	0.0082	7.8	0.68	1461	-	2.2E-10	2.3E-10	3.6E-09	3.6E-09	6.4E-10	1.4E-09	1.4E-09	3.5E-11
HHGPLC-3	L-21	2020-09-23	287	0.10	0.057	0.00047	643	1.0	0.64	0.0082	7.9	0.68	1461	-	4.3E-10	4.4E-10	4.1E-09	4.1E-09	6.2E-10	1.6E-09	1.6E-09	1.4E-11
HHGPLC-4	L-1	2019-12-11	0.080	0.10	0.057	0.00047	490	1.0	0.49	0.0082	6.0	0.69	1485	-	8.0E-10	8.2E-10	2.1E-08	2.1E-08	5.7E-10	1.3E-09	1.3E-09	2.7E-12
HHGPLC-4	L-2	2019-12-12	1.0	0.10	0.057	0.00047	614	1.00	0.61	0.0082	7.5	0.69	1485	-	5.6E-10	5.7E-10	5.0E-09	5.0E-09	3.7E-10	7.9E-10	7.9E-10	2.6E-12
HHGPLC-4	L-3	2019-12-13	2.0	0.10	0.057	0.00047	620	1.00	0.62	0.0082	7.6	0.69	1485	-	1.4E-11	9.6E-12	1.5E-08	1.5E-08	1.1E-09	2.2E-09	2.2E-09	3.2E-11
HHGPLC-4	L-4	2019-12-18	7.0	0.10	0.057	0.00047	612	1.00	0.61	0.0082	7.5	0.69	1485	-	7.6E-11	7.7E-11	1.7E-09	1.7E-09	2.5E-10	3.0E-10	3.0E-10	3.2E-10
HHGPLC-4	L-5	2019-12-25	14	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.69	1485	-	5.4E-11	5.3E-11	2.3E-09	2.3E-09	4.4E-10	3.9E-10	3.9E-10	9.5E-10
HHGPLC-4	L-6	2020-01-08	28	0.10	0.057	0.00047	639	1.0	0.64	0.0082	7.8	0.69	1485	-	1.3E-10	1.3E-10	1.2E-09	1.2E-09	4.1E-10	2.9E-10	2.9E-10	1.3E-09
HHGPLC-4	L-7	2020-01-22	42	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.9	0.69	1485	-	2.2E-10	1.8E-10	8.0E-09	2.0E-09	6.4E-10	4.6E-10	4.6E-10	1.4E-09
HHGPLC-4	L-8	2020-01-29	49	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.69	1485	-	6.2E-10	6.6E-10	1.1E-08	1.1E-08	1.5E-09	1.3E-09	1.3E-09	1.6E-09
HHGPLC-4	L-9	2020-02-12	63	0.10	0.057	0.00047	634	1.0	0.63	0.0082	7.8	0.69	1485	-	3.2E-10	3.3E-10	3.1E-09	3.1E-09	8.1E-10	7.0E-10	7.0E-10	8.6E-10
HHGPLC-4	L-10	2020-02-26	77	0.10	0.057	0.00047	644	1.0	0.64	0.0082	7.9	0.69	1485	-	4.5E-10	4.6E-10	4.1E-09	4.1E-09	9.7E-10	8.7E-10	8.7E-10	6.8E-10
HHGPLC-4	L-11	2020-03-11	91	0.10	0.057	0.00047	645	1.0	0.64	0.0082	7.9	0.69	1485	-	4.5E-10	4.4E-10	4.9E-09	4.9E-09	1.0E-09	1.0E-09	1.0E-09	4.9E-10
HHGPLC-4	L-12	2020-03-25	105	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.69	1485	-	7.5E-10	7.4E-10	5.6E-09	5.6E-09	1.1E-09	1.1E-09	1.1E-09	4.2E-10
HHGPLC-4	L-13	2020-04-08	119	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.69	1485	-	2.5E-10	2.6E-10	6.4E-09	6.4E-09	1.1E-09	1.2E-09	1.2E-09	3.3E-10
HHGPLC-4	L-14	2020-04-22	133	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1485	-	1.7E-09	1.7E-09	7.3E-09	7.3E-09	1.2E-09	1.4E-09	1.4E-09	1.9E-10
HHGPLC-4	L-15	2020-05-06	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1485	-	6.0E-10	3.7E-10	0.00000013	8.1E-09	1.1E-09	1.5E-09	1.5E-09	1.0E-10
HHGPLC-4	L-16	2020-05-20	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.69	1485	-	6.0E-10	6.2E-10	9.0E-09	9.0E-09	1.1E-09	2.0E-09	2.0E-09	7.4E-11
HHGPLC-4	L-17	2020-06-03	175	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.69	1485	-	9.9E-10	1.0E-09	9.8E-09	9.8E-09	1.2E-09	1.5E-09	1.5E-09	8.1E-11
HHGPLC-4	L-18	2020-07-01	203	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.69	1485	-	2.5E-10	2.4E-10	2.7E-09	2.7E-09	6.4E-10	1.0E-09	1.0E-09	5.0E-11
HHGPLC-4	L-19	2020-07-29	231	0.10	0.057	0.00047	644	1.0	0.64	0.0082	7.9	0.69	1485	-	1.6E-10	1.6E-10	3.1E-09	3.1E-09	6.8E-10	1.2E-09	1.2E-09	4.1E-11
HHGPLC-4	L-20	2020-08-26	259	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.8	0.69	1485	-	1.8E-10	1.4E-10	1.4E-08	3.5E-09	6.6E-10	1.4E-09	1.4E-09	2.9E-11
HHGPLC-4	L-21	2020-09-23	287	0.10	0.057	0.00047	642	1.0	0.64	0.0082	7.9	0.69	1485	-	6.1E-10	6.3E-10	3.9E-09	3.9E-09	6.7E-10	1.5E-09	1.5E-09	1.8E-11

- Parameter not analyzed

Appendix E, Table E-23
HHGPLC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH$_3$	NO$_2$	NO$_3$	PO$_4$	SO$_4$	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHGPLC-1	L-1	2.7E-08	1.1E-11	9.8E-09	5.0E-13	-	-	0.00000035	-	5.3E-10	2.2E-10	1.4E-09	6.9E-12	1.3E-10	3.0E-08	2.2E-08	2.2E-10	0.0000002	3.1E-11	2.5E-09	0.000024	3.4E-10
HHGPLC-1	L-2	1.7E-08	7.9E-11	9.3E-09	2.0E-11	-	-	5.1E-09	-	2.3E-10	5.2E-11	2.2E-10	2.1E-11	1.9E-10	2.0E-09	5.2E-09	5.2E-11	1.3E-09	1.1E-11	4.5E-11	0.00000023	8.2E-11
HHGPLC-1	L-3	3.6E-08	1.7E-10	1.6E-08	5.7E-11	-	-	1.6E-08	-	5.3E-10	1.6E-10	1.1E-09	4.2E-11	3.8E-10	2.0E-08	1.6E-08	2.6E-09	4.0E-09	3.1E-11	9.6E-11	0.00000034	2.5E-10
HHGPLC-1	L-4	2.1E-08	1.7E-10	7.1E-09	7.8E-11	-	-	1.7E-09	-	1.6E-10	1.8E-11	1.0E-10	4.0E-11	2.1E-10	6.1E-10	1.8E-09	2.8E-10	7.1E-09	3.8E-11	1.4E-10	0.00000037	1.1E-10
HHGPLC-1	L-5	2.8E-08	3.6E-10	9.7E-09	2.2E-10	-	-	2.4E-09	-	2.8E-10	2.4E-11	1.4E-10	1.1E-10	2.6E-10	1.2E-09	2.4E-09	3.9E-10	9.7E-09	7.9E-11	2.8E-10	0.00000086	3.8E-11
HHGPLC-1	L-6	1.9E-08	3.6E-10	6.5E-09	3.8E-10	-	-	1.2E-09	-	2.8E-10	6.8E-11	1.1E-10	2.0E-10	3.9E-10	5.9E-10	1.2E-09	3.0E-09	1.9E-08	1.7E-10	3.8E-10	0.0000016	1.9E-11
HHGPLC-1	L-7	2.0E-08	6.1E-10	8.1E-09	7.8E-10	-	-	2.0E-09	-	5.0E-10	2.0E-11	1.7E-10	4.3E-10	5.9E-10	1.0E-09	2.0E-09	2.9E-09	5.1E-10	2.9E-10	1.2E-10	4.9E-09	3.2E-11
HHGPLC-1	L-8	3.5E-08	1.1E-09	1.9E-08	1.3E-09	-	-	0.0000011	-	1.1E-09	1.1E-10	6.0E-10	7.2E-10	1.1E-09	4.2E-09	1.1E-08	1.1E-10	2.7E-09	4.3E-10	2.5E-10	3.6E-08	1.7E-10
HHGPLC-1	L-9	9.5E-09	6.7E-10	9.1E-09	7.9E-10	-	-	0.00000032	-	6.4E-10	3.3E-11	2.7E-10	5.4E-10	6.4E-10	1.8E-09	3.3E-09	2.1E-09	8.2E-10	3.0E-10	1.7E-10	9.1E-09	5.1E-11
HHGPLC-1	L-10	1.1E-08	7.2E-10	1.1E-08	8.8E-10	-	-	0.00000041	-	7.5E-10	4.1E-11	2.9E-10	5.8E-10	7.4E-10	1.8E-09	4.1E-09	1.5E-09	1.6E-08	3.3E-10	4.3E-10	0.00000033	6.4E-11
HHGPLC-1	L-11	1.4E-08	7.4E-10	1.4E-08	8.1E-10	-	-	0.00000049	-	7.9E-10	4.9E-11	4.0E-10	5.9E-10	8.8E-10	2.8E-09	4.9E-09	4.9E-09	2.0E-08	2.9E-10	7.9E-10	0.0000020	7.7E-11
HHGPLC-1	L-12	1.7E-08	7.3E-10	1.0E-08	6.9E-10	-	-	0.00000057	-	8.3E-10	5.8E-11	4.7E-10	5.7E-10	8.6E-10	4.9E-09	5.8E-09	5.8E-11	1.5E-09	2.4E-10	3.1E-10	3.2E-08	9.1E-11
HHGPLC-1	L-13	1.5E-08	6.8E-10	1.2E-08	5.8E-10	-	-	0.00000064	-	8.4E-10	6.5E-11	4.7E-10	5.1E-10	7.8E-10	4.1E-09	6.5E-09	2.6E-10	1.6E-09	2.1E-10	4.0E-10	3.4E-08	1.0E-10
HHGPLC-1	L-14	1.7E-08	7.3E-10	1.3E-08	5.4E-10	-	-	0.00000073	-	9.3E-10	7.4E-11	4.1E-10	4.4E-10	8.9E-10	4.7E-09	7.4E-09	7.4E-11	3.0E-08	1.7E-10	5.7E-10	0.00000083	1.2E-10
HHGPLC-1	L-15	1.9E-08	6.2E-10	1.5E-08	4.3E-10	-	-	0.000081	-	8.9E-10	8.3E-11	4.9E-10	3.6E-10	6.9E-10	5.2E-09	8.3E-09	8.3E-11	2.1E-09	1.2E-10	3.8E-10	2.6E-08	1.3E-10
HHGPLC-1	L-16	9.1E-09	7.7E-10	2.5E-08	4.6E-10	-	-	0.0000009	-	1.1E-09	9.1E-11	4.9E-10	3.5E-10	7.6E-10	4.6E-09	9.1E-09	9.1E-11	2.3E-09	1.3E-10	4.2E-10	6.0E-08	1.4E-10
HHGPLC-1	L-17	1.4E-08	5.7E-10	1.8E-08	2.8E-10	-	-	0.00000098	-	9.0E-10	1.0E-10	4.9E-10	3.0E-10	8.3E-10	5.6E-09	1.0E-08	1.6E-09	2.5E-09	1.1E-10	3.4E-10	1.4E-08	6.2E-10
HHGPLC-1	L-18	6.0E-09	4.0E-10	1.1E-08	2.0E-10	-	-	0.00000026	-	5.5E-10	2.7E-11	2.0E-10	1.9E-10	5.7E-10	2.1E-09	2.7E-09	0.0000013	6.7E-10	6.8E-11	1.6E-10	1.6E-09	1.7E-10
HHGPLC-1	L-19	5.4E-09	4.8E-10	1.3E-08	1.4E-10	-	-	0.00000031	-	6.0E-10	3.2E-11	1.9E-10	1.9E-10	6.2E-10	2.4E-09	3.2E-09	0.0000013	7.9E-10	6.6E-11	1.7E-10	6.1E-09	2.0E-10
HHGPLC-1	L-20	1.3E-09	4.4E-10	1.4E-08	9.2E-11	-	-	0.00000035	-	5.9E-10	3.5E-11	1.1E-10	1.4E-10	6.3E-10	2.2E-09	3.5E-09	3.5E-09	8.8E-10	5.8E-11	1.0E-10	5.3E-09	2.2E-10
HHGPLC-1	L-21	4.0E-09	3.7E-10	1.6E-08	5.4E-11	-	-	0.00000039	-	6.1E-10	4.0E-11	2.5E-10	1.3E-10	6.5E-10	2.5E-09	4.0E-09	6.4E-10	1.0E-09	7.6E-11	2.4E-10	0.00000012	6.3E-11
HHGPLC-2	L-1	1.3E-08	1.6E-11	2.1E-08	2.6E-13	-	-	0.00000033	-	1.5E-09	2.1E-10	3.3E-09	2.0E-11	1.9E-10	2.2E-08	2.1E-08	2.1E-10	0.00000019	7.3E-11	4.8E-09	0.000010	8.1E-11
HHGPLC-2	L-2	5.0E-09	9.6E-11	9.9E-09	1.4E-11	-	-	5.5E-09	-	2.7E-10	5.6E-11	2.6E-10	2.1E-11	2.1E-10	2.6E-09	5.6E-09	2.2E-10	1.4E-09	7.9E-12	3.6E-11	2.4E-08	2.2E-11
HHGPLC-2	L-3	1.0E-08	2.0E-10	1.6E-08	4.1E-11	-	-	1.6E-08	-	6.6E-10	1.6E-10	1.4E-09	4.0E-11	3.8E-10	2.3E-08	1.6E-08	6.4E-10	0.00000014	1.4E-10	1.7E-09	0.0000069	6.3E-11
HHGPLC-2	L-4	4.8E-09	2.5E-10	7.1E-09	1.5E-10	-	-	1.7E-09	-	2.0E-10	1.8E-11	1.1E-10	6.1E-11	2.4E-10	6.4E-10	1.8E-09	2.5E-09	7.1E-09	4.7E-11	1.5E-10	0.00000012	6.9E-12
HHGPLC-2	L-5	6.9E-09	5.5E-10	9.5E-09	5.0E-10	-	-	2.3E-09	-	3.9E-10	2.4E-11	1.5E-10	2.2E-10	3.2E-10	1.2E-09	2.4E-09	8.6E-10	9.5E-09	1.5E-10	4.2E-10	0.0000001	9.3E-12
HHGPLC-2	L-6	4.3E-09	6.2E-10	6.4E-09	8.1E-10	-	-	1.2E-09	-	3.7E-10	4.7E-11	9.5E-11	3.5E-10	4.5E-10	4.8E-10	1.2E-09	3.0E-09	1.2E-09	2.6E-10	1.6E-10	1.4E-08	4.6E-12
HHGPLC-2	L-7	5.6E-09	1.1E-09	1.1E-08	1.4E-09	-	-	2.0E-09	-	6.9E-10	1.2E-10	1.7E-10	6.7E-10	6.9E-10	6.5E-10	2.1E-09	3.0E-09	8.3E-09	4.5E-10	2.1E-10	2.0E-08	8.1E-12
HHGPLC-2	L-8	1.2E-08	1.5E-09	1.9E-08	1.8E-09	-	-	0.0000011	-	1.3E-09	1.1E-10	4.8E-10	9.5E-10	1.3E-09	2.1E-09	1.1E-08	1.1E-10	2.7E-09	5.1E-10	4.0E-10	8.2E-09	4.2E-11
HHGPLC-2	L-9	2.6E-09	8.7E-10	9.1E-09	1.1E-09	-	-	0.00000032	-	7.2E-10	3.3E-11	3.0E-10	6.7E-10	6.4E-10	1.2E-09	3.3E-09	8.4E-09	3.3E-09	3.2E-10	3.1E-10	1.2E-08	1.3E-11
HHGPLC-2	L-10	2.3E-09	9.6E-10	1.1E-08	1.1E-09	-	-	0.00000041	-	8.4E-10	4.1E-11	2.4E-10	6.8E-10	8.1E-10	1.7E-09	4.1E-09	1.5E-09	4.1E-09	3.3E-10	3.5E-10	1.1E-08	1.6E-11
HHGPLC-2	L-11	2.7E-09	9.8E-10	1.4E-08	8.9E-10	-	-	0.00000048	-	8.5E-10	4.9E-11	3.0E-10	6.3E-10	1.0E-09	2.0E-09	4.9E-09	4.9E-11	4.9E-09	2.5E-10	4.6E-10	2.9E-08	1.9E-11
HHGPLC-2	L-12	3.7E-09	8.3E-10	1.0E-08	7.0E-10	-	-	0.00000057	-	8.6E-10	5.8E-11	4.7E-10	6.0E-10	9.5E-10	3.0E-09	5.8E-09	5.8E-11	1.4E-09	2.3E-10	4.4E-10	4.3E-08	2.3E-11
HHGPLC-2	L-13	4.2E-09	7.7E-10	1.2E-08	5.5E-10	-	-	0.00000064	-	8.5E-10	6.5E-11	4.6E-10	4.8E-10	8.7E-10	2.7E-09	6.5E-09	2.3E-09	1.6E-09	1.8E-10	4.3E-10	1.7E-08	2.5E-11
HHGPLC-2	L-14	2.7E-09	8.5E-10	2.1E-08	4.6E-10	-	-	0.00000074	-	9.5E-10	7.5E-11	4.3E-10	4.3E-10	9.0E-10	4.3E-09	7.5E-09	2.7E-09	1.9E-09	1.4E-10	4.4E-10	3.6E-08	2.9E-11
HHGPLC-2	L-15	4.6E-09	7.4E-10	1.5E-08	3.5E-10	-	-	0.000081	-	8.9E-10	8.2E-11	5.2E-10	3.4E-10	7.8E-10	5.3E-09	8.2E-09	1.2E-08	2.1E-09	1.0E-10	3.1E-10	5.4E-09	3.2E-11
HHGPLC-2	L-16	1.5E-09	8.8E-10	2.5E-08	3.5E-10	-	-	0.0000009	-	1.1E-09	9.1E-11	5.2E-10	3.0E-10	9.8E-10	4.7E-09	9.1E-09	9.1E-11	2.3E-09	1.1E-10	4.0E-10	4.0E-08	3.6E-11
HHGPLC-2	L-17	3.0E-09	6.5E-10	1.8E-08	2.1E-10	-	-	0.00000098	-	9.0E-10	9.9E-11	5.0E-10	2.7E-10	8.2E-10	5.1E-09	9.9E-09	9.9E-09	2.5E-09	9.3E-11	4.4E-10	2.0E-08	6.2E-10
HHGPLC-2	L-18	1.6E-09	4.0E-10	1.1E-08	1.1E-10	-	-	0.00000027	-	5.4E-10	2.8E-11	2.1E-10	1.4E-10	5.9E-10	1.8E-09	2.8E-09	0.0000011	6.9E-10	5.0E-11	1.8E-10	9.4E-09	4.3E-11
HHGPLC-2	L-19	9.6E-10	3.8E-10	1.7E-08	8.0E-11	-	-	0.00000031	-	5.8E-10	3.2E-11	1.1E-10	1.2E-10	5.7E-10	2.0E-09	3.2E-09	0.00000096	7.9E-10	5.0E-11	2.1E-10	2.0E-08	2.0E-10
HHGPLC-2	L-20	5.7E-10	3.9E-10	1.9E-08	5.0E-11	-	-	0.00000035	-	6.1E-10	3.6E-11	1.6E-10	1.1E-10	6.4E-10	2.3E-09	3.6E-09	5.7E-10	9.0E-10	4.0E-11	9.3E-11	1.4E-09	1.4E-11
HHGPLC-2	L-21	6.3E-10	3.3E-10	1.6E-08	2.9E-11	-	-	0.00000039	-	6.2E-10	4.0E-11	3.1E-10	1.1E-10	6.5E-10	2.5E-09	4.0E-09	4.0E-09	9.9E-10	4.7E-11	1.7E-10	1.5E-08	1.5E-11
HHGPLC-3	L-1	5.2E-08	1.2E-11	2.0E-08	1.9E-13	-	-	0.00000032	-	1.4E-09	5.1E-11	4.2E-09	1.6E-11	1.7E-10	2.4E-08	2.0E-08	2.0E-10	0.00000073	3.7E-11	9.0E-09	0.000033	1.4E-10
HHGPLC-3	L-2	2.2E-08	5.9E-11	9.8E-09	5.2E-12	-	-	5.4E-09	-	2.4E-10	1.4E-11	2.8E-10	1.3E-11	1.9E-10	1.9E-09	5.5E-09	8.9E-10	1.4E-09	3.7E-12	2.9E-11	4.4E-08	3.8E-11
HHGPLC-3	L-3	4.1E-08	1.7E-10	1.6E-08	3.7E-11	-	-	1.6E-08	-	7.2E-10	4.0E-11	1.7E-09	4.2E-11	4.5E-10	2.8E-08	1.6E-08	2.6E-09	0.00000026	2.6E-11	2.1E-09	0.000012	1.1E-10
HHGPLC-3	L-4	2.2E-08	2.0E-10	7.2E-09	1.1E-10	-	-	1.7E-09	-	2.0E-10	4.5E-12	1.4E-10	5.5E-11	2.2E-10	1.2E-09	1.8E-09	6.4E-10	4.5E-10	3.9E-11	6.3E-11	2.4E-08	1.2E-11
HHGPLC-3	L-5	2.8E-08	3.8E-10	9.7E-09	2.6E-10	-	-	2.4E-09	-	3.1E-10	6.1E-12	1.4E-10	1.3E-10	2.7E-10	9.5E-10	2.4E-09	8.8E-10	9.7E-09	9.2E-11	2.3E-10	0.00000014	1.7E-11
HHGPLC-3	L-6	1.5E-08	3.5E-10	6.5E-09	3.3E-10	-	-	1.2E-09	-	2.8E-10	3.0E-12	8.6E-11	1.8E-10	3.7E-10	4.0E-10	1.2E-09	4.8E-11	1.2E-09	1.4E-10	1.3E-10	2.2E-08	8.3E-12
HHGPLC-3	L-7	1.9E-08	6.2E-10	8.4E-09	6.3E-10	-	-	2.0E-09	-	5.2E-10	5.2E-12	1.7E-10	3.5E-10	5.6E-10	9.3E-10	2.1E-09	6.8E-09	5.2E-10	2.5E-10	1.4E-10	4.7E-09	1.5E-11
HHGPLC-3	L-8	3.9E-08	9.8E-10	1.9E-08	9.7E-10	-	-	0.0000011	-	1.1E-09	2.7E-11	6.6E-10	5.3E-10	1.1E-09	4.9E-09	1.1E-08	3.9E-09	2.7E-09	3.2E-10	2.8E-10	6.4E-09	7.6E-11
HHGPLC-3	L-9	1.2E-08	5.1E-10	9.2E-09	6.1E-10	-	-	0.00000033	-	6.0E-10	8.3E-12	3.5E-10	4.0E-10	5.5E-10	2.8E-09	3.3E-09	3.3E-09	8.3E-10	2.3E-10	1.8E-10	1.1E-08	2.3E-11
HHGPLC-3	L-10	1.2E-08	5.5E-10	1.2E-08	6.5E-10	-	-	0.00000041	-	7.0E-10	1.0E-11	3.2E-10	4.6E-10	6.9E-10	2.1E-09	4.2E-09	1.7E-10	4.2E-09	2.6E-10	2.8E-10	3.2E-08	2.9E-11
HHGPLC-3	L-11	1.3E-08	6.6E-10	1.4E-08	6.1E-10	-	-	0.00000049	-	7.6E-10	1.3E-11	3.3E-10	4.6E-10	7.6E-10	3.5E-09	5.0E-09	3.2E-09	5.0E-09	2.2E-10	3.4E-10	4.6E-08	3.5E-11
HHGPLC-3	L-12	1.1E-08	5.4E-10	1.0E-08	5.3E-10	-	-	0.00000058	-	7.7E-10	1.5E-11	4.7E-10	4.5E-10	8.0E-10	3.3E-09	5.8E-09	2.1E-09	1.5E-09	2.1E-10	2.1E-10	3.4E-08	4.1E-11
HHGPLC-3	L-13	1.7E-08	5.6E-10	1.2E-08	4.6E-10	-	-	0.00000066	-	8.2E-10	1.7E-11	5.0E-10	4.2E-10	7.4E-10	4.2E-09	6.7E-09	6.7E-09	1.7E-09	1.8E-10	1.7E-10	3.4E-08	4.7E-11
HHGPLC-3	L-14	1.1E-08	5.8E-10	1.4E-08	4.3E-10	-	-	0.00000075	-	9.1E-10	1.9E-11	5.5E-10	3.9E-10	9.4E-10	4.3E-09	7.6E-09	1.2E-09	1.9E-09	1.6E-10	1.3E-10	4.0E-08	5.3E-11
HHGPLC-3	L-15	1.6E-08	5.2E-10	1.5E-08	3.6E-10	-	-	0.000082	-	8.8E-10	2.1E-11	4.9E-10	3.2E-10	6.5E-10	4.7E-09	8.4E-09	1.3E-09	2.1E-09	1.2E-10	1.4E-10	2.4E-09	5.8E-11
HHGPLC-3	L-16	9.1E-09	6.2E-10	2.5E-08	3.8E-10	-	-	0.00000089	-	1.1E-09	2.3E-11	3.4E-10	2.9E-10	8.0E-10	5.1E-09	9.1E-09	1.3E-08	2.3E-09	1.2E-10	1.2E-10	6.8E-09	6.3E-11
HHGPLC-3	L-17	1.7E-08	4.6E-10	1.8E-08	2.4E-10	-	-	0.0000010	-	9.2E-10	2.5E-11	5.4E-10	2.6E-10	7.8E-10	5.7E-09	1.0E-08	6.5E-09	4.1E-08	1.1E-10	5.5E-10	0.00000088	2.8E-10
HHGPLC-3	L-18	6.3E-09	3.1E-10	1.1E-08	1.6E-10	-	-	0.00000028	-	5.4E-10	7.0E-12	2.3E-10	1.5E-10	5.6E-10	1.8E-09	2.8E-09	0.0000011	7.0E-10	5.7E-11	7.1E-11	1.6E-08	2.0E-11
HHGPLC-3	L-19	3.9E-09	3.6E-10	1.3E-08	1.3E-10	-	-	0.00000032	-	5.7E-10	8.1E-12	1.8E-10	1.4E-10	4.9E-10	2.2E-09	3.2E-09	0.0000012	3.2E-09	5.3E-11	1.3E-10	7.0E-08	9.0E-11
HHGPLC-3	L-20	9.0E-10	3.3E-10	1.4E-08	9.2E-11	-	-	0.00000035	-	6.0E-10	9.0E-12	1.9E-10	1.3E-10	4.9E-10	2.3E-09	3.6E-09	2.3E-09	9.0E-10	4.5E-11	9.1E-11	9.6E-09	2.5E-11
HHGPLC-3	L-21	2.6E-09	3.1E-10	1.6E-08	5.9E-11	-	-	0.0000004	-	6.0E-10	1.0E-11	2.9E-10	1.1E-10	5.6E-10	2.8E-09	4.1E-09	6.5E-10	1.0E-09	6.2E-11	1.2E-10	2.4E-08	2.8E-11
HHGPLC-4	L-1	4.2E-09	8.2E-12	9.2E-09	1.9E-13	-	-	0.00000032	-	4.4E-10	2.1E-10	1.2E-09	6.1E-12	7.7E-11	2.1E-08	2.1E-08	8.2E-10	5.2E-09	1.7E-11	1.1E-09	0.0000019	2.3E-11
HHGPLC-4	L-2	4.1E-09	7.2E-11	8.9E-09	8.1E-12	-	-	4.9E-09	-	3.0E-10	5.0E-11	3.5E-10	1.7E-11	2.1E-10	2.5E-09	5.0E-09	2.0E-10	5.0E-09	7.5E-12	1.4E-10	0.0000005	5.6E-12
HHGPLC-4	L-3	9.8E-09	1.9E-10	1.5E-08	3.9E-11	-	-	1.5E-08	-	8.8E-10	1.5E-10	2.1E-09	4.6E-11	5.2E-10	3.3E-08	1.5E-08	6.2E-10	6.2E-08	2.7E-11	1.1E-09	0.0000059	1.7E-11
HHGPLC-4	L-4	4.3E-09	2.3E-10	6.8E-09	1.4E-10	-	-	1.7E-09	-	2.2E-10	1.7E-11	1.2E-10	6.8E-11	2.5E-10	7.5E-10	1.7E-09	2.7E-10	4.2E-10	4.4E-11	5.7E-11	1.6E-08	1.9E-12
HHGPLC-4	L-5	5.6E-09	4.4E-10	9.3E-09	3.9E-10	-	-	2.3E-09	-	3.6E-10	2.3E-11	1.5E-10	2.1E-10	3.2E-10	9.1E-10	2.3E-09	2.3E-11	2.3E-09	1.2E-10	2.3E-10	0.00000013	2.6E-12
HHGPLC-4	L-6	4.0E-09	4.7E-10	6.3E-09	5.6E-10	-	-	1.1E-09	-	3.5E-10	4.7E-11	1.1E-10	2.9E-10	4.4E-10	5.9E-10	1.2E-09	3.8E-09	1.2E-09	1.7E-10	2.0E-10	9.9E-09	1.3E-12
HHGPLC-4	L-7	5.1E-09	7.2E-10	8.0E-09	9.1E-10	-	-	2.0E-09	-	5.2E-10	2.0E-11	1.9E-10	5.3E-10	6.5E-10	8.9E-10	2.0E-09	1.3E-09	2.0E-09	3.0E-10	2.4E-10	3.2E-08	2.2E-12
HHGPLC-4	L-8	9.5E-09	1.2E-09	1.9E-08	1.4E-09	-	-	0.0000010	-	1.2E-09	1.1E-10	8.0E-10	7.8E-10	1.3E-09	5.9E-09	1.1E-08	4.2E-10	9.5E-08	4.5E-10	1.8E-09	0.0000045	1.2E-11
HHGPLC-4	L-9	1.3E-09	6.8E-10	8.7E-09	8.6E-10	-	-	0.00000031	-	6.9E-10	3.1E-11	4.2E-10	5.9E-10	6.9E-10	3.1E-09	3.1E-09	2.0E-09	2.8E-08	3.1E-10	8.4E-10	0.0000017	3.5E-12
HHGPLC-4	L-10	2.3E-09	7.6E-10	1.1E-08	9.0E-10	-	-	0.0000004	-	8.1E-10	4.1E-11	3.8E-10	6.5E-10	8.2E-10	2.5E-09	4.1E-09	6.5E-10	1.6E-08	3.3E-10	7.6E-10	0.00000071	4.5E-12
HHGPLC-4	L-11	2.4E-09	7.8E-10	1.4E-08	8.1E-10	-	-	0.00000048	-	8.7E-10	4.9E-11	4.0E-10	6.5E-10	9.8E-10	3.4E-09	4.9E-09	7.8E-10	1.2E-09	2.7E-10	3.5E-10	2.5E-08	5.4E-12
HHGPLC-4	L-12	3.6E-09	7.6E-10	1.6E-08	6.8E-10	-	-	0.00000056	-	8.8E-10	5.6E-11	4.6E-10	6.0E-10	8.5E-10	3.2E-09	5.6E-09	3.6E-09	1.4E-09	2.6E-10	4.0E-10	5.6E-08	6.3E-12
HHGPLC-4	L-13	3.2E-09	6.7E-10	1.1E-08	5.8E-10	-	-	0.00000064	-	8.9E-10	6.4E-11	4.7E-10	5.4E-10	8.7E-10	3.2E-09	6.4E-09	6.4E-09	1.6E-09	2.2E-10	2.2E-10	1.8E-08	7.2E-12
HHGPLC-4	L-14	2.6E-09	7.4E-10	1.3E-08	5.5E-10	-	-	0.00000072	-	9.8E-10	7.3E-11	5.7E-10	4.8E-10	8.8E-10	5.6E-09	7.3E-09	7.3E-09	1.8E-09	1.8E-10	2.0E-10	5.8E-08	8.2E-12
HHGPLC-4	L-15	4.0E-09	5.9E-10	1.4E-08	4.2E-10	-	-	0.000079	-	9.5E-10	8.1E-11	5.7E-10	3.8E-10	8.7E-10	6.2E-09	8.1E-09	5.2E-09	2.0E-09	1.4E-10	1.8E-10	2.8E-08	9.0E-12
HHGPLC-4	L-16	1.8E-09	7.4E-10	1.6E-08	4.5E-10	-	-	0.00000088	-	1.2E-09	9.0E-11	5.9E-10	3.8E-10	9.6E-10	5.6E-09	9.0E-09	1.4E-09	2.2E-09	1.4E-10	2.5E-10	0.00000014	1.0E-11
HHGPLC-4	L-17	3.5E-09	5.3E-10	1.7E-08	2.8E-10	-	-	0.00000096	-	1.0E-09	9.8E-11	6.0E-10	3.2E-10	9.2E-10	6.1E-09	9.8E-09	3.5E-09	9.8E-09	1.2E-10	4.6E-10	0.00000045	1.7E-10
HHGPLC-4	L-18	1.3E-09	3.6E-10	1.1E-08	1.8E-10	-	-	0.00000027	-	5.7E-10	2.7E-11	1.7E-10	1.7E-10	6.0E-10	2.1E-09	2.7E-09	0.0000011	1.1E-08	7.0E-11	1.5E-10	0.00000021	1.1E-10
HHGPLC-4	L-19	1.1E-09	4.2E-10	1.3E-08	1.5E-10	-	-	0.00000031	-	6.3E-10	3.1E-11	2.4E-10	1.7E-10	6.3E-10	2.4E-09	3.1E-09	0.0000011	3.1E-09	6.3E-11	2.5E-10	0.00000016	1.4E-11
HHGPLC-4	L-20	7.1E-10	3.9E-10	1.4E-08	1.1E-10	-	-	0.00000035	-	6.5E-10	3.5E-11	2.3E-10	1.5E-10	7.1E-10	2.4E-09	3.5E-09	6.9E-09	8.8E-10	5.3E-11	1.4E-10	5.7E-09	3.9E-12
HHGPLC-4	L-21	6.3E-10	3.9E-10	1.6E-08	6.7E-11	-	-	0.00000039	-	6.7E-10	3.9E-11	2.9E-10	1.3E-10	5.9E-10	3.0E-09	3.9E-09	3.9E-11	9.8E-10	5.3E-11	1.3E-10	1.0E-08	4.4E-12

- Parameter not analyzed

Appendix E, Table E-23
HHGPLC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHGPLC-1	L-1	0.00000029	3.0E-11	1.7E-08	0.0000038	2.2E-08	2.7E-11	2.2E-08	2.8E-10	6.9E-10	7.6E-11	0.00000029	2.3E-10	0.000018	-	-	6.4E-10	-
HHGPLC-1	L-2	5.2E-09	1.8E-10	3.3E-10	4.2E-08	1.4E-08	1.4E-11	5.2E-09	1.9E-10	2.1E-10	2.9E-10	4.5E-08	8.0E-11	3.0E-08	-	-	5.2E-11	-
HHGPLC-1	L-3	1.6E-08	4.9E-10	2.5E-10	8.8E-08	4.3E-08	4.5E-11	1.6E-08	4.2E-10	4.2E-10	9.0E-10	9.0E-08	2.9E-10	1.6E-08	-	-	3.5E-10	-
HHGPLC-1	L-4	1.8E-09	4.8E-10	1.0E-09	8.3E-08	1.2E-08	1.4E-11	1.8E-09	1.2E-10	5.5E-10	5.0E-10	8.7E-09	7.4E-11	0.00000026	-	-	3.8E-11	-
HHGPLC-1	L-5	1.4E-08	1.2E-09	6.0E-10	0.00000022	2.0E-08	3.5E-11	2.4E-09	1.9E-10	1.7E-09	8.4E-10	1.6E-08	1.4E-10	2.5E-08	-	-	3.2E-11	-
HHGPLC-1	L-6	1.5E-08	2.4E-09	1.5E-09	0.00000028	1.9E-08	5.0E-11	1.2E-09	1.7E-10	2.0E-09	1.1E-09	2.6E-08	1.6E-10	0.0000016	-	-	2.1E-11	-
HHGPLC-1	L-7	2.0E-09	4.3E-09	5.1E-10	2.8E-09	3.3E-08	9.5E-11	2.0E-09	2.5E-10	2.4E-09	1.6E-09	2.0E-08	2.8E-10	2.0E-09	-	-	3.7E-11	-
HHGPLC-1	L-8	1.1E-08	6.8E-09	1.5E-09	1.5E-08	6.5E-08	1.6E-10	1.1E-08	5.9E-10	7.7E-09	3.0E-09	2.2E-08	6.1E-10	1.1E-08	-	-	1.4E-10	-
HHGPLC-1	L-9	3.3E-09	4.7E-09	8.2E-10	4.5E-09	4.1E-08	1.1E-10	3.3E-09	3.8E-10	4.4E-09	2.2E-09	2.7E-08	4.0E-10	3.3E-09	-	-	7.0E-11	-
HHGPLC-1	L-10	4.1E-09	5.6E-09	1.6E-09	7.7E-08	4.9E-08	1.1E-10	4.1E-09	3.9E-10	5.5E-09	2.4E-09	2.7E-08	5.0E-10	1.6E-08	-	-	7.4E-11	-
HHGPLC-1	L-11	4.9E-09	5.0E-09	4.9E-09	0.00000038	5.6E-08	1.3E-10	4.9E-09	4.3E-10	5.7E-09	2.5E-09	2.9E-08	6.0E-10	0.00000066	-	-	7.3E-11	-
HHGPLC-1	L-12	5.8E-09	5.3E-09	1.5E-09	1.6E-08	6.6E-08	1.3E-10	5.8E-09	5.5E-10	7.7E-09	2.9E-09	2.2E-08	7.0E-10	5.8E-09	-	-	1.2E-10	-
HHGPLC-1	L-13	6.5E-09	4.1E-09	9.2E-10	5.3E-08	7.0E-08	1.0E-10	6.5E-09	6.2E-10	3.2E-09	3.3E-09	1.9E-08	7.9E-10	3.8E-08	-	-	9.0E-11	-
HHGPLC-1	L-14	7.4E-09	3.9E-09	1.9E-09	0.00000024	7.5E-08	1.0E-10	7.4E-09	6.4E-10	4.1E-09	3.7E-09	4.6E-08	6.9E-10	4.3E-08	-	-	1.3E-10	-
HHGPLC-1	L-15	8.3E-09	3.6E-09	1.2E-09	1.9E-08	6.6E-08	8.3E-11	8.3E-09	6.5E-10	2.6E-09	2.9E-09	2.4E-08	6.6E-10	0.00000097	-	-	1.2E-10	-
HHGPLC-1	L-16	9.1E-09	3.7E-09	2.3E-09	2.1E-08	7.2E-08	6.5E-11	9.1E-09	7.1E-10	1.9E-09	3.2E-09	2.1E-08	7.3E-10	0.0000016	-	-	9.8E-11	-
HHGPLC-1	L-17	1.0E-08	3.4E-09	1.4E-09	1.0E-08	7.4E-08	8.0E-11	1.0E-08	7.0E-10	9.0E-10	2.8E-09	1.8E-08	8.0E-10	0.0000014	-	-	1.1E-10	-
HHGPLC-1	L-18	2.7E-09	2.7E-09	6.7E-10	1.2E-09	4.5E-08	3.9E-11	2.7E-09	4.2E-10	9.7E-10	1.3E-09	1.5E-08	3.7E-10	1.5E-08	-	-	6.7E-11	-
HHGPLC-1	L-19	3.2E-09	2.4E-09	7.9E-10	3.2E-09	5.8E-08	4.6E-11	3.2E-09	5.4E-10	1.0E-09	1.6E-09	1.0E-08	4.3E-10	9.9E-08	-	-	6.8E-11	-
HHGPLC-1	L-20	3.5E-09	2.2E-09	3.5E-09	2.5E-09	4.2E-08	3.9E-11	3.5E-09	5.6E-10	4.7E-09	1.5E-09	2.0E-08	4.3E-10	3.6E-08	-	-	1.0E-10	-
HHGPLC-1	L-21	4.0E-09	2.3E-09	1.6E-08	4.0E-09	4.8E-08	4.4E-11	1.6E-08	6.3E-10	8.2E-10	1.7E-09	1.5E-08	4.8E-10	0.00000021	-	-	8.6E-11	-
HHGPLC-2	L-1	0.00000033	5.9E-11	3.2E-08	0.0000029	3.2E-08	5.7E-11	2.1E-08	8.0E-10	1.2E-09	8.1E-11	0.0000011	5.6E-10	0.000040	-	-	2.7E-10	-
HHGPLC-2	L-2	5.6E-09	1.7E-10	8.7E-11	8.7E-09	1.4E-08	1.9E-11	5.6E-09	2.5E-10	1.3E-10	3.5E-10	4.6E-08	1.0E-10	4.4E-08	-	-	5.2E-11	-
HHGPLC-2	L-3	0.00000016	3.7E-10	2.5E-08	0.0000021	3.6E-08	5.4E-11	1.6E-08	5.3E-10	8.8E-10	1.0E-09	0.00000017	4.1E-10	9.3E-08	-	-	4.0E-10	-
HHGPLC-2	L-4	1.8E-09	7.3E-10	6.9E-10	3.6E-08	1.1E-08	2.0E-11	1.8E-09	1.5E-10	9.9E-10	6.9E-10	1.1E-08	1.0E-10	0.00000012	-	-	3.8E-11	-
HHGPLC-2	L-5	2.4E-09	2.3E-09	5.9E-10	6.6E-08	1.8E-08	5.2E-11	2.4E-09	2.2E-10	2.8E-09	1.3E-09	1.7E-08	1.9E-10	2.4E-08	-	-	3.5E-11	-
HHGPLC-2	L-6	1.2E-09	3.8E-09	6.6E-10	7.4E-09	1.8E-08	6.9E-11	1.2E-09	1.8E-10	3.0E-09	1.5E-09	2.6E-08	1.8E-10	0.00000016	-	-	1.6E-11	-
HHGPLC-2	L-7	2.1E-09	6.1E-09	1.2E-09	1.0E-08	2.8E-08	1.3E-10	2.1E-09	2.7E-10	4.1E-09	2.3E-09	2.6E-08	3.5E-10	2.1E-09	-	-	2.8E-11	-
HHGPLC-2	L-8	1.1E-08	7.7E-09	2.7E-09	8.2E-09	5.4E-08	1.7E-10	1.1E-08	5.6E-10	1.1E-08	4.2E-09	2.9E-08	6.2E-10	0.00000076	-	-	9.0E-11	-
HHGPLC-2	L-9	3.3E-09	5.1E-09	1.3E-09	8.6E-09	3.6E-08	1.2E-10	3.3E-09	4.3E-10	5.8E-09	2.9E-09	1.8E-08	4.5E-10	1.3E-08	-	-	4.9E-11	-
HHGPLC-2	L-10	4.1E-09	5.6E-09	1.6E-09	9.3E-09	4.1E-08	1.1E-10	4.1E-09	4.6E-10	6.5E-09	3.2E-09	2.7E-08	5.0E-10	4.1E-09	-	-	7.4E-11	-
HHGPLC-2	L-11	4.9E-09	4.5E-09	2.7E-09	2.5E-08	4.6E-08	1.1E-10	4.9E-09	4.5E-10	5.7E-09	2.7E-09	2.9E-08	5.9E-10	0.00000023	-	-	6.1E-11	-
HHGPLC-2	L-12	5.8E-09	4.8E-09	1.4E-09	2.0E-08	5.8E-08	1.2E-10	5.8E-09	6.4E-10	7.9E-09	3.3E-09	2.7E-08	7.0E-10	5.8E-09	-	-	8.6E-11	-
HHGPLC-2	L-13	6.5E-09	3.7E-09	9.1E-10	1.0E-08	5.5E-08	9.5E-11	6.5E-09	7.2E-10	2.9E-09	3.7E-09	1.6E-08	7.9E-10	3.7E-08	-	-	8.4E-11	-
HHGPLC-2	L-14	7.5E-09	3.6E-09	1.1E-09	3.8E-08	6.0E-08	1.0E-10	7.5E-09	7.6E-10	5.0E-09	4.2E-09	3.7E-08	6.9E-10	4.3E-08	-	-	1.3E-10	-
HHGPLC-2	L-15	8.2E-09	3.2E-09	5.2E-10	8.2E-09	5.5E-08	7.4E-11	8.2E-09	7.6E-10	3.5E-09	3.2E-09	1.5E-08	6.6E-10	4.7E-08	-	-	1.1E-10	-
HHGPLC-2	L-16	9.1E-09	3.2E-09	1.3E-09	1.2E-08	5.7E-08	6.5E-11	9.1E-09	8.4E-10	2.1E-09	2.9E-09	1.5E-08	8.5E-10	0.00000091	-	-	9.3E-11	-
HHGPLC-2	L-17	9.9E-09	3.0E-09	6.2E-10	5.6E-09	6.2E-08	7.0E-11	9.9E-09	8.2E-10	1.6E-09	2.5E-09	1.6E-08	7.9E-10	0.00000091	-	-	1.5E-10	-
HHGPLC-2	L-18	2.8E-09	2.1E-09	3.9E-10	4.3E-09	3.7E-08	3.1E-11	2.8E-09	4.6E-10	9.1E-10	1.3E-09	8.8E-09	3.8E-10	1.6E-08	-	-	5.9E-11	-
HHGPLC-2	L-19	3.2E-09	1.8E-09	7.9E-10	8.4E-09	4.5E-08	4.3E-11	3.2E-09	5.7E-10	9.6E-10	1.5E-09	2.7E-08	3.4E-10	3.3E-08	-	-	6.8E-11	-
HHGPLC-2	L-20	3.6E-09	2.0E-09	2.0E-09	1.4E-09	3.6E-08	3.6E-11	5.7E-08	6.0E-10	3.6E-09	1.4E-09	2.2E-08	4.3E-10	3.6E-09	-	-	7.7E-11	-
HHGPLC-2	L-21	4.0E-09	2.0E-09	3.0E-09	5.0E-09	4.0E-08	4.4E-11	4.0E-09	7.1E-10	9.9E-10	1.5E-09	9.8E-09	4.8E-10	0.00000043	-	-	5.9E-11	-
HHGPLC-3	L-1	0.00000073	4.2E-11	4.9E-08	0.000014	4.3E-08	6.2E-11	5.1E-09	7.2E-10	9.3E-10	6.3E-11	0.0000018	6.5E-10	0.0000032	-	-	2.9E-10	-
HHGPLC-3	L-2	5.5E-09	1.0E-10	2.7E-10	2.2E-08	1.8E-08	1.4E-11	1.4E-09	2.3E-10	1.2E-10	2.7E-10	6.4E-08	8.6E-11	1.4E-09	-	-	3.0E-11	-
HHGPLC-3	L-3	0.00000026	3.5E-10	7.1E-09	0.0000064	5.3E-08	5.8E-11	4.0E-09	5.7E-10	9.5E-10	7.9E-10	0.00000025	4.8E-10	4.1E-08	-	-	5.4E-10	-
HHGPLC-3	L-4	1.8E-09	6.6E-10	2.0E-10	1.3E-08	1.5E-08	1.8E-11	4.5E-10	1.5E-10	5.7E-10	5.5E-10	8.7E-09	1.1E-10	1.8E-08	-	-	3.2E-11	-
HHGPLC-3	L-5	2.4E-09	1.4E-09	4.8E-10	0.00000011	2.1E-08	4.1E-11	6.1E-10	2.0E-10	1.5E-09	9.1E-10	9.1E-09	1.5E-10	6.1E-10	-	-	2.4E-11	-
HHGPLC-3	L-6	1.2E-09	2.0E-09	3.7E-10	2.4E-08	1.9E-08	4.5E-11	3.0E-10	1.8E-10	1.6E-09	1.1E-09	1.7E-08	1.5E-10	3.0E-09	-	-	1.5E-11	-
HHGPLC-3	L-7	2.1E-09	3.3E-09	4.1E-10	4.7E-09	3.2E-08	7.9E-11	5.2E-10	3.0E-10	2.1E-09	1.5E-09	1.6E-08	2.9E-10	5.2E-10	-	-	2.9E-11	-
HHGPLC-3	L-8	1.1E-08	4.8E-09	1.2E-09	1.1E-08	6.1E-08	1.2E-10	2.7E-09	5.9E-10	5.6E-09	2.7E-09	2.3E-08	6.8E-10	0.00000037	-	-	1.6E-10	-
HHGPLC-3	L-9	3.3E-09	3.7E-09	1.0E-09	9.2E-09	4.0E-08	9.0E-11	8.3E-10	4.0E-10	3.3E-09	2.0E-09	2.2E-08	4.2E-10	4.8E-09	-	-	1.3E-10	-
HHGPLC-3	L-10	4.2E-09	4.2E-09	8.2E-10	3.3E-08	5.2E-08	8.7E-11	1.0E-09	4.2E-10	4.2E-09	2.2E-09	2.3E-08	5.2E-10	4.2E-09	-	-	7.5E-11	-
HHGPLC-3	L-11	5.0E-09	3.8E-09	1.5E-09	4.0E-08	5.7E-08	9.8E-11	1.3E-09	4.7E-10	4.3E-09	2.2E-09	3.6E-08	5.6E-10	1.3E-08	-	-	9.0E-11	-
HHGPLC-3	L-12	5.8E-09	4.2E-09	1.2E-09	3.2E-08	6.6E-08	9.9E-11	1.5E-09	5.9E-10	5.8E-09	2.6E-09	1.5E-08	7.3E-10	1.5E-09	-	-	8.7E-11	-
HHGPLC-3	L-13	6.7E-09	3.4E-09	1.3E-09	3.6E-08	7.6E-08	9.7E-11	1.7E-09	6.8E-10	2.5E-09	3.0E-09	3.6E-08	7.4E-10	1.7E-09	-	-	1.2E-10	-
HHGPLC-3	L-14	7.6E-09	3.3E-09	8.4E-10	1.7E-08	7.7E-08	8.4E-11	1.9E-09	7.0E-10	3.2E-09	3.4E-09	1.5E-08	8.4E-10	1.9E-09	-	-	1.1E-10	-
HHGPLC-3	L-15	8.4E-09	3.0E-09	9.3E-10	1.5E-08	7.1E-08	7.6E-11	2.1E-09	6.4E-10	3.2E-09	2.6E-09	1.3E-08	7.1E-10	0.00000039	-	-	9.7E-11	-
HHGPLC-3	L-16	9.1E-09	3.0E-09	1.0E-09	1.2E-08	8.2E-08	5.8E-11	2.3E-09	6.9E-10	1.8E-09	2.8E-09	3.2E-08	6.7E-10	0.0000001	-	-	1.3E-10	-
HHGPLC-3	L-17	1.0E-08	3.0E-09	2.0E-09	0.00000045	8.6E-08	8.2E-11	2.5E-09	7.7E-10	1.5E-09	2.5E-09	4.1E-08	7.4E-10	5.8E-08	-	-	1.5E-10	-
HHGPLC-3	L-18	2.8E-09	2.1E-09	5.6E-10	1.1E-08	4.9E-08	3.4E-11	7.0E-10	4.0E-10	8.3E-10	1.3E-09	6.6E-09	4.0E-10	7.0E-10	-	-	7.1E-11	-
HHGPLC-3	L-19	3.2E-09	1.9E-09	6.4E-10	4.8E-08	5.7E-08	4.3E-11	8.1E-10	4.6E-10	8.6E-10	1.4E-09	2.5E-08	3.6E-10	1.0E-08	-	-	8.1E-11	-
HHGPLC-3	L-20	3.6E-09	1.8E-09	1.6E-09	4.9E-09	4.5E-08	3.6E-11	9.0E-10	5.1E-10	4.1E-09	1.3E-09	2.0E-08	4.5E-10	9.0E-10	-	-	9.0E-11	-
HHGPLC-3	L-21	4.1E-09	1.9E-09	1.3E-09	1.4E-08	5.7E-08	4.5E-11	4.1E-09	5.8E-10	9.1E-10	1.5E-09	1.9E-08	4.5E-10	2.3E-08	-	-	6.1E-11	-
HHGPLC-4	L-1	2.1E-08	2.1E-11	8.1E-09	0.00000042	2.5E-08	2.5E-11	2.1E-08	2.4E-10	9.2E-11	8.1E-11	0.00000011	1.6E-10	0.000012	-	-	3.0E-10	-
HHGPLC-4	L-2	5.0E-09	1.2E-10	3.1E-10	0.00000016	2.2E-08	1.9E-11	5.0E-09	2.6E-10	2.0E-10	3.1E-10	5.5E-08	1.3E-10	5.1E-08	-	-	5.2E-11	-
HHGPLC-4	L-3	8.9E-08	4.0E-10	3.8E-09	0.0000020	8.1E-08	6.8E-11	1.5E-08	6.9E-10	1.0E-09	9.6E-10	0.00000019	5.3E-10	6.2E-08	-	-	6.6E-10	-
HHGPLC-4	L-4	1.7E-09	7.8E-10	2.4E-10	5.7E-09	1.5E-08	2.1E-11	1.7E-09	1.6E-10	7.5E-10	6.6E-10	7.9E-09	9.7E-11	1.7E-08	-	-	1.7E-11	-
HHGPLC-4	L-5	2.3E-09	2.0E-09	3.3E-10	6.2E-08	2.5E-08	4.9E-11	2.3E-09	2.1E-10	2.7E-09	1.1E-09	1.1E-08	1.9E-10	9.3E-09	-	-	2.8E-11	-
HHGPLC-4	L-6	1.2E-09	3.0E-09	2.9E-10	5.5E-09	2.4E-08	6.7E-11	1.2E-09	2.0E-10	2.6E-09	1.3E-09	1.6E-08	2.0E-10	9.1E-09	-	-	1.7E-11	-
HHGPLC-4	L-7	2.0E-09	4.9E-09	3.8E-09	1.2E-08	3.9E-08	1.1E-10	2.0E-09	2.9E-10	3.6E-09	2.0E-09	1.5E-08	3.4E-10	2.0E-09	-	-	3.0E-11	-
HHGPLC-4	L-8	6.1E-08	6.6E-09	5.9E-09	0.0000017	8.2E-08	1.6E-10	1.1E-08	6.2E-10	1.1E-08	4.1E-09	4.9E-08	8.4E-10	0.00000024	-	-	1.6E-10	-
HHGPLC-4	L-9	2.5E-08	4.6E-09	3.1E-09	0.00000066	5.0E-08	1.3E-10	3.1E-09	4.2E-10	6.3E-09	2.8E-09	3.4E-08	5.4E-10	6.1E-08	-	-	1.1E-10	-
HHGPLC-4	L-10	4.1E-09	5.7E-09	2.3E-09	0.00000029	6.2E-08	1.2E-10	4.1E-09	4.9E-10	6.3E-09	3.1E-09	2.5E-08	6.9E-10	5.3E-08	-	-	7.3E-11	-
HHGPLC-4	L-11	4.9E-09	4.8E-09	1.2E-09	2.3E-08	6.3E-08	1.3E-10	4.9E-09	5.4E-10	4.9E-09	2.7E-09	2.3E-08	6.7E-10	2.0E-08	-	-	8.8E-11	-
HHGPLC-4	L-12	5.6E-09	5.3E-09	1.4E-09	4.0E-08	8.1E-08	1.2E-10	5.6E-09	6.3E-10	8.8E-09	3.7E-09	2.3E-08	7.7E-10	5.6E-09	-	-	8.4E-11	-
HHGPLC-4	L-13	6.4E-09	4.1E-09	9.1E-10	1.8E-08	8.8E-08	1.1E-10	6.4E-09	7.2E-10	3.2E-09	3.6E-09	1.5E-08	7.8E-10	3.7E-08	-	-	9.6E-11	-
HHGPLC-4	L-14	7.3E-09	4.0E-09	1.0E-09	5.2E-08	9.5E-08	1.0E-10	7.3E-09	7.4E-10	5.1E-09	4.1E-09	2.1E-08	8.9E-10	7.3E-09	-	-	1.6E-10	-
HHGPLC-4	L-15	8.1E-09	3.7E-09	1.1E-09	2.7E-08	8.8E-08	9.1E-11	8.1E-09	7.5E-10	3.3E-09	3.2E-09	1.7E-08	7.5E-10	0.00000013	-	-	1.2E-10	-
HHGPLC-4	L-16	9.0E-09	3.8E-09	1.3E-09	5.6E-08	9.2E-08	7.1E-11	9.0E-09	8.2E-10	2.1E-09	3.5E-09	1.7E-08	9.5E-10	0.00000028	-	-	1.1E-10	-
HHGPLC-4	L-17	9.8E-09	3.7E-09	1.4E-09	0.00000028	9.4E-08	9.8E-11	9.8E-09	8.1E-10	1.6E-09	3.1E-09	2.1E-08	9.1E-10	0.00000016	-	-	1.5E-10	-
HHGPLC-4	L-18	2.7E-09	2.6E-09	1.1E-09	7.7E-08	5.7E-08	3.7E-11	2.7E-09	4.2E-10	1.2E-09	1.5E-09	2.6E-08	4.1E-10	2.7E-09	-	-	7.9E-11	-
HHGPLC-4	L-19	3.1E-09	2.3E-09	7.9E-10	6.9E-08	7.0E-08	5.1E-11	3.1E-09	5.3E-10	1.2E-09	1.8E-09	1.1E-08	4.8E-10	9.9E-08	-	-	4.7E-11	-
HHGPLC-4	L-20	3.5E-09	2.3E-09	8.8E-10	4.8E-09	5.3E-08	4.3E-11	3.5E-09	5.4E-10	3.5E-09	1.7E-09	1.0E-08	5.4E-10	3.5E-09	-	-	1.0E-10	-
HHGPLC-4	L-21	3.9E-09	2.4E-09	1.5E-09	7.0E-09	6.0E-08	4.9E-11	3.9E-09	6.6E-10	9.5E-10	1.9E-09	2.4E-08	4.8E-10	7.6E-08	-	-	8.4E-11	-

- Parameter not analyzed

Appendix E, Table E-24
HHGPHC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHGPHC-1	L-1	2019-10-22	0.080	0.076	0.15	0.00067	4233	1.00	4.2	0.044	9.6	0.85	1260	7.3E-08	2.8E-11	0.000035	6.5E-12	1.6E-12	6.7E-11	5.1E-11	5.1E-11	2.4E-11
HHGPHC-1	L-2	2019-10-23	1.0	0.076	0.15	0.00067	4437	1.00	4.4	0.044	10	0.85	1260	1.2E-08	1.9E-10	1.2E-08	3.4E-10	7.2E-11	3.1E-10	2.7E-10	2.6E-10	9.2E-10
HHGPHC-1	L-3	2019-10-24	2.0	0.076	0.15	0.00067	4443	1.00	4.4	0.044	10	0.85	1260	3.7E-08	1.7E-09	3.7E-08	9.6E-10	3.0E-09	5.8E-10	4.6E-10	4.5E-10	3.1E-10
HHGPHC-1	L-4	2019-10-29	7.0	0.076	0.15	0.00067	4442	1.00	4.4	0.044	10	0.85	1260	4.2E-09	8.2E-10	4.2E-09	1.2E-10	2.4E-09	4.5E-10	3.9E-10	3.8E-10	5.6E-10
HHGPHC-1	L-5	2019-11-12	21	0.076	0.15	0.00067	4446	1.00	4.4	0.044	10	0.85	1260	1.7E-09	1.1E-09	1.7E-09	3.9E-11	4.1E-09	3.0E-10	3.9E-10	3.9E-10	1.3E-10
HHGPHC-1	L-6	2019-11-26	35	0.076	0.15	0.00067	4445	1.00	4.4	0.044	10	0.85	1260	3.6E-09	1.2E-09	3.6E-09	9.8E-11	3.9E-09	3.1E-10	7.3E-10	7.3E-10	1.2E-10
HHGPHC-1	L-7	2019-12-10	49	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	5.4E-09	1.0E-09	5.4E-09	2.7E-10	2.5E-09	3.2E-10	1.1E-09	1.1E-09	4.5E-11
HHGPHC-1	L-8	2019-12-17	56	0.076	0.15	0.00067	4445	1.00	4.4	0.044	10	0.85	1260	2.7E-08	3.4E-09	2.7E-08	7.5E-10	8.9E-09	5.4E-10	2.0E-09	2.0E-09	5.7E-11
HHGPHC-1	L-9	2019-12-31	70	0.076	0.15	0.00067	4443	1.00	4.4	0.044	10	0.85	1260	8.2E-09	9.1E-10	8.2E-09	1.7E-10	2.4E-09	3.1E-10	1.2E-09	1.2E-09	1.7E-11
HHGPHC-1	L-10	2020-01-14	84	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	1.0E-08	1.3E-09	1.0E-08	2.9E-10	3.4E-09	3.2E-10	1.2E-09	1.2E-09	2.1E-11
HHGPHC-1	L-11	2020-01-28	98	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	1.2E-08	1.6E-09	1.2E-08	1.1E-10	5.4E-09	3.5E-10	1.5E-09	1.5E-09	9.8E-11
HHGPHC-1	L-12	2020-02-11	112	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	1.4E-08	9.2E-10	1.4E-08	5.4E-10	1.5E-09	3.5E-10	1.4E-09	1.4E-09	2.8E-11
HHGPHC-1	L-13	2020-02-25	126	0.076	0.15	0.00067	4449	1.00	4.5	0.044	10	0.85	1260	1.6E-08	1.5E-09	1.6E-08	3.1E-10	3.8E-09	3.9E-10	1.5E-09	1.5E-09	3.2E-11
HHGPHC-1	L-14	2020-03-10	140	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1260	1.7E-08	1.3E-09	1.7E-08	2.6E-10	3.5E-09	3.6E-10	1.3E-09	1.3E-09	3.6E-11
HHGPHC-1	L-15	2020-03-24	154	0.076	0.15	0.00067	4444	1.00	4.5	0.044	10	0.85	1260	1.9E-08	1.8E-09	1.9E-08	2.5E-10	5.5E-09	3.7E-10	1.4E-09	1.4E-09	4.0E-11
HHGPHC-1	L-16	2020-04-07	168	0.076	0.15	0.00067	4447	1.00	4.5	0.044	10	0.85	1260	2.1E-08	1.7E-09	2.1E-08	8.3E-10	3.1E-09	3.8E-10	1.3E-09	1.3E-09	4.3E-11
HHGPHC-1	L-17	2020-04-21	182	0.076	0.15	0.00067	4442	1.00	4.4	0.044	10	0.85	1260	2.3E-08	1.6E-09	2.3E-08	8.1E-10	2.8E-09	4.6E-10	1.5E-09	1.5E-09	4.7E-11
HHGPHC-2	L-1	2019-10-22	0.080	0.076	0.15	0.00067	4229	1.00	4.2	0.044	9.5	0.84	1251	7.3E-08	2.8E-11	0.000029	9.6E-12	1.6E-12	5.5E-11	6.1E-11	6.0E-11	9.7E-11
HHGPHC-2	L-2	2019-10-23	1.0	0.076	0.15	0.00067	4439	1.00	4.4	0.044	10	0.84	1251	1.3E-08	2.1E-10	1.3E-08	3.9E-10	8.7E-11	3.3E-10	3.2E-10	3.1E-10	4.2E-10
HHGPHC-2	L-3	2019-10-24	2.0	0.076	0.15	0.00067	4445	1.00	4.4	0.044	10	0.84	1251	3.8E-08	1.9E-09	3.8E-08	1.6E-09	2.2E-09	6.0E-10	4.8E-10	4.8E-10	1.3E-09
HHGPHC-2	L-4	2019-10-29	7.0	0.076	0.15	0.00067	4446	1.00	4.4	0.044	10	0.84	1251	4.3E-09	9.0E-10	4.3E-09	1.9E-10	2.0E-09	4.7E-10	3.7E-10	3.7E-10	3.2E-10
HHGPHC-2	L-5	2019-11-12	21	0.076	0.15	0.00067	4447	1.00	4.4	0.044	10	0.84	1251	1.7E-09	1.2E-09	1.7E-09	6.9E-11	3.4E-09	3.1E-10	3.8E-10	3.8E-10	1.3E-10
HHGPHC-2	L-6	2019-11-26	35	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.84	1251	3.6E-09	1.2E-09	3.6E-09	1.2E-10	3.3E-09	3.2E-10	7.9E-10	7.8E-10	1.2E-10
HHGPHC-2	L-7	2019-12-10	49	0.076	0.15	0.00067	4449	1.00	4.5	0.044	10	0.84	1251	5.5E-09	1.1E-09	5.5E-09	1.8E-10	2.5E-09	3.3E-10	1.1E-09	1.1E-09	1.1E-11
HHGPHC-2	L-8	2019-12-17	56	0.076	0.15	0.00067	4446	1.00	4.5	0.044	10	0.84	1251	2.8E-08	3.8E-09	2.8E-08	7.6E-10	8.6E-09	5.3E-10	2.1E-09	2.1E-09	5.7E-11
HHGPHC-2	L-9	2019-12-31	70	0.076	0.15	0.00067	4446	1.00	4.4	0.044	10	0.84	1251	8.3E-09	1.1E-09	8.3E-09	4.3E-10	2.1E-09	3.2E-10	1.2E-09	1.2E-09	1.7E-11
HHGPHC-2	L-10	2020-01-14	84	0.076	0.15	0.00067	4442	1.00	4.4	0.044	10	0.84	1251	1.0E-08	1.4E-09	1.0E-08	2.8E-10	3.2E-09	3.1E-10	1.2E-09	1.2E-09	2.1E-11
HHGPHC-2	L-11	2020-01-28	98	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.84	1251	1.2E-08	1.8E-09	1.2E-08	2.5E-10	4.4E-09	3.5E-10	1.5E-09	1.5E-09	2.5E-11
HHGPHC-2	L-12	2020-02-11	112	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.84	1251	1.4E-08	9.3E-10	1.4E-08	5.3E-10	1.5E-09	3.5E-10	1.4E-09	1.4E-09	2.9E-11
HHGPHC-2	L-13	2020-02-25	126	0.076	0.15	0.00067	4449	1.00	4.5	0.044	10	0.84	1251	1.6E-08	1.7E-09	1.6E-08	5.3E-10	3.4E-09	3.9E-10	1.5E-09	1.5E-09	3.3E-11
HHGPHC-2	L-14	2020-03-10	140	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.84	1251	1.8E-08	1.7E-09	1.8E-08	5.5E-10	3.2E-09	3.7E-10	1.3E-09	1.3E-09	1.5E-10
HHGPHC-2	L-15	2020-03-24	154	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.84	1251	2.0E-08	2.0E-09	2.0E-08	3.1E-10	5.1E-09	4.0E-10	1.4E-09	1.4E-09	4.0E-11
HHGPHC-2	L-16	2020-04-07	168	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.84	1251	2.1E-08	1.6E-09	2.1E-08	1.1E-09	2.2E-09	4.0E-10	1.3E-09	1.3E-09	4.4E-11
HHGPHC-2	L-17	2020-04-21	182	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.84	1251	2.3E-08	1.8E-09	2.3E-08	1.0E-09	2.7E-09	4.2E-10	1.5E-09	1.5E-09	4.8E-11
HHGPHC-3	L-1	2019-10-22	0.080	0.076	0.15	0.00067	4234	1.00	4.2	0.044	9.6	0.85	1261	7.2E-08	2.0E-11	0.0000046	2.9E-11	2.6E-12	6.2E-11	5.4E-11	5.3E-11	2.9E-11
HHGPHC-3	L-2	2019-10-23	1.0	0.076	0.15	0.00067	4442	1.00	4.4	0.044	10	0.85	1261	1.2E-08	1.2E-10	1.2E-08	1.5E-10	6.3E-11	3.7E-10	2.8E-10	2.8E-10	5.0E-10
HHGPHC-3	L-3	2019-10-24	2.0	0.076	0.15	0.00067	4446	1.00	4.5	0.044	10	0.85	1261	3.7E-08	1.4E-09	3.7E-08	5.6E-10	3.6E-09	6.5E-10	4.2E-10	4.2E-10	3.7E-10
HHGPHC-3	L-4	2019-10-29	7.0	0.076	0.15	0.00067	4444	1.00	4.4	0.044	10	0.85	1261	4.2E-09	7.3E-10	4.2E-09	9.1E-11	3.2E-09	4.8E-10	3.3E-10	3.3E-10	3.8E-10
HHGPHC-3	L-5	2019-11-12	21	0.076	0.15	0.00067	4447	1.00	4.4	0.044	10	0.85	1261	1.7E-09	9.9E-10	1.7E-09	4.9E-11	5.3E-09	3.2E-10	3.3E-10	3.3E-10	1.5E-10
HHGPHC-3	L-6	2019-11-26	35	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1261	3.6E-09	1.2E-09	3.6E-09	6.5E-11	6.3E-09	3.3E-10	7.1E-10	7.1E-10	1.4E-10
HHGPHC-3	L-7	2019-12-10	49	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1261	5.4E-09	8.9E-10	5.4E-09	1.1E-10	3.9E-09	3.6E-10	9.8E-10	9.8E-10	1.4E-11
HHGPHC-3	L-8	2019-12-17	56	0.076	0.15	0.00067	4447	1.00	4.5	0.044	10	0.85	1261	2.7E-08	3.0E-09	2.7E-08	2.7E-10	1.4E-08	5.7E-10	1.9E-09	1.9E-09	6.8E-11
HHGPHC-3	L-9	2019-12-31	70	0.076	0.15	0.00067	4444	1.00	4.4	0.044	10	0.85	1261	8.2E-09	9.7E-10	8.2E-09	1.9E-10	3.6E-09	3.5E-10	1.1E-09	1.1E-09	2.0E-11
HHGPHC-3	L-10	2020-01-14	84	0.076	0.15	0.00067	4438	1.00	4.4	0.044	10	0.85	1261	1.0E-08	1.2E-09	1.0E-08	1.2E-10	5.4E-09	3.5E-10	1.0E-09	1.0E-09	2.5E-11
HHGPHC-3	L-11	2020-01-28	98	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1261	1.2E-08	1.6E-09	1.2E-08	1.6E-10	7.3E-09	3.9E-10	1.3E-09	1.3E-09	3.0E-11
HHGPHC-3	L-12	2020-02-11	112	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.85	1261	1.4E-08	7.4E-10	1.4E-08	2.2E-10	2.2E-09	4.0E-10	1.3E-09	1.3E-09	3.4E-11
HHGPHC-3	L-13	2020-02-25	126	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.85	1261	1.6E-08	1.5E-09	1.6E-08	3.9E-10	5.3E-09	4.5E-10	1.4E-09	1.4E-09	3.9E-11
HHGPHC-3	L-14	2020-03-10	140	0.076	0.15	0.00067	4449	1.00	4.5	0.044	10	0.85	1261	1.7E-08	1.4E-09	1.7E-08	2.3E-10	5.4E-09	4.2E-10	1.2E-09	1.2E-09	4.3E-11
HHGPHC-3	L-15	2020-03-24	154	0.076	0.15	0.00067	4450	1.00	4.5	0.044	10	0.85	1261	1.9E-08	1.8E-09	1.9E-08	2.0E-10	7.9E-09	4.3E-10	1.3E-09	1.3E-09	4.8E-11
HHGPHC-3	L-16	2020-04-07	168	0.076	0.15	0.00067	4448	1.00	4.5	0.044	10	0.85	1261	2.1E-08	1.3E-09	2.1E-08	3.4E-10	4.1E-09	4.4E-10	1.2E-09	1.2E-09	5.2E-11
HHGPHC-3	L-17	2020-04-21	182	0.076	0.15	0.00067	4452	1.00	4.5	0.044	10	0.85	1261	2.3E-08	1.6E-09	2.3E-08	4.9E-10	4.7E-09	5.4E-10	1.3E-09	1.3E-09	5.7E-11
HHGPHC-4	L-1	2019-10-22	0.080	0.076	0.15	0.00068	4275	1.00	4.3	0.045	9.5	0.85	1252	7.3E-08	1.1E-11	7.3E-08	2.9E-11	2.9E-12	7.4E-11	4.6E-11	4.8E-11	2.9E-11
HHGPHC-4	L-2	2019-10-23	1.0	0.076	0.15	0.00068	4489	1.00	4.5	0.045	10	0.85	1252	1.3E-08	2.3E-10	1.3E-08	1.7E-10	3.8E-10	3.2E-10	2.5E-10	2.5E-10	5.0E-10
HHGPHC-4	L-3	2019-10-24	2.0	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	3.8E-08	1.9E-09	3.8E-08	7.2E-10	5.7E-09	6.3E-10	4.5E-10	4.5E-10	1.5E-09
HHGPHC-4	L-4	2019-10-29	7.0	0.076	0.15	0.00068	4494	1.00	4.5	0.045	10	0.85	1252	4.3E-09	7.3E-10	4.3E-09	7.7E-11	3.6E-09	4.9E-10	3.7E-10	3.7E-10	6.8E-10
HHGPHC-4	L-5	2019-11-12	21	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	1.7E-09	1.2E-09	1.7E-09	2.6E-11	7.6E-09	3.4E-10	3.8E-10	3.8E-10	1.6E-10
HHGPHC-4	L-6	2019-11-26	35	0.076	0.15	0.00068	4494	1.00	4.5	0.045	10	0.85	1252	3.6E-09	1.3E-09	3.6E-09	5.8E-11	7.7E-09	3.6E-10	7.4E-10	7.4E-10	1.5E-10
HHGPHC-4	L-7	2019-12-10	49	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	5.5E-09	9.2E-10	5.5E-09	8.8E-11	4.6E-09	3.6E-10	1.0E-09	1.0E-09	1.4E-11
HHGPHC-4	L-8	2019-12-17	56	0.076	0.15	0.00068	4494	1.00	4.5	0.045	10	0.85	1252	2.8E-08	3.4E-09	2.8E-08	5.3E-10	1.5E-08	5.8E-10	1.9E-09	1.9E-09	6.9E-11
HHGPHC-4	L-9	2019-12-31	70	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	8.3E-09	8.5E-10	8.3E-09	1.3E-10	3.6E-09	3.5E-10	1.1E-09	1.1E-09	2.1E-11
HHGPHC-4	L-10	2020-01-14	84	0.076	0.15	0.00068	4486	1.00	4.5	0.045	10	0.85	1252	1.0E-08	1.3E-09	1.0E-08	1.5E-10	5.9E-09	3.3E-10	1.1E-09	1.1E-09	2.5E-11
HHGPHC-4	L-11	2020-01-28	98	0.076	0.15	0.00068	4780	1.00	4.8	0.045	11	0.85	1252	1.4E-08	1.8E-09	1.4E-08	2.2E-10	8.7E-09	4.2E-10	1.5E-09	1.5E-09	3.4E-11
HHGPHC-4	L-12	2020-02-11	112	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	1.4E-08	7.4E-10	1.4E-08	2.1E-10	2.5E-09	3.8E-10	1.3E-09	1.3E-09	1.4E-10
HHGPHC-4	L-13	2020-02-25	126	0.076	0.15	0.00068	4496	1.00	4.5	0.045	10	0.85	1252	1.6E-08	1.5E-09	1.6E-08	3.2E-10	5.9E-09	4.5E-10	1.4E-09	1.4E-09	3.9E-11
HHGPHC-4	L-14	2020-03-10	140	0.076	0.15	0.00068	4495	1.00	4.5	0.045	10	0.85	1252	1.8E-08	1.4E-09	1.8E-08	2.6E-10	5.8E-09	4.1E-10	1.2E-09	1.2E-09	4.4E-11
HHGPHC-4	L-15	2020-03-24	154	0.076	0.15	0.00068	4496	1.00	4.5	0.045	10	0.85	1252	1.9E-08	1.8E-09	1.9E-08	2.1E-10	8.9E-09	4.3E-10	1.3E-09	1.3E-09	4.9E-11
HHGPHC-4	L-16	2020-04-07	168	0.076	0.15	0.00068	4496	1.00	4.5	0.045	10	0.85	1252	2.1E-08	1.3E-09	2.1E-08	3.8E-10	4.6E-09	4.3E-10	1.3E-09	1.3E-09	5.3E-11
HHGPHC-4	L-17	2020-04-21	182	0.076	0.15	0.00068	4497	1.00	4.5	0.045	10	0.85	1252	2.3E-08	1.9E-09	2.3E-08	6.4E-10	5.8E-09	5.0E-10	1.3E-09	1.3E-09	5.8E-11

- Parameter not analyzed

Appendix E, Table E-24
HHGPHC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHGPHC-1	L-1	2.9E-09	2.4E-10	7.3E-08	4.5E-11	1.1E-11	7.4E-08	7.1E-08	7.3E-08	6.6E-11	7.3E-10	0.0000041	4.1E-10	1.8E-08	1.5E-09	7.3E-08	7.3E-10	4.5E-09	1.7E-10	8.6E-09	0.000018	4.1E-11
HHGPHC-1	L-2	6.1E-09	1.0E-09	5.0E-08	3.2E-10	3.6E-10	1.3E-08	1.2E-08	1.2E-08	2.5E-10	1.2E-10	0.000017	2.8E-10	3.1E-09	6.3E-09	1.2E-08	1.2E-08	7.7E-10	3.8E-10	1.5E-09	0.0000018	7.0E-12
HHGPHC-1	L-3	9.3E-09	1.4E-09	3.7E-08	6.9E-10	2.0E-10	3.8E-08	3.6E-08	3.7E-08	3.0E-10	3.7E-10	0.000029	2.6E-10	9.3E-09	1.5E-08	3.7E-08	6.0E-09	5.8E-10	5.4E-10	1.1E-09	0.0000010	2.1E-11
HHGPHC-1	L-4	1.1E-08	9.1E-10	4.2E-09	6.2E-10	2.0E-10	4.3E-09	4.1E-09	4.2E-09	2.4E-10	4.2E-11	0.00000077	3.9E-10	1.1E-09	4.9E-09	4.2E-09	4.2E-09	6.6E-11	8.1E-10	8.4E-10	3.1E-08	2.4E-12
HHGPHC-1	L-5	6.1E-09	2.9E-10	1.7E-09	2.5E-10	3.7E-10	1.7E-09	1.7E-09	1.7E-09	1.8E-10	1.7E-11	1.1E-08	2.8E-10	4.3E-10	2.3E-09	1.7E-09	5.5E-09	1.1E-10	5.3E-10	9.8E-10	6.2E-09	3.9E-12
HHGPHC-1	L-6	7.0E-09	6.6E-11	3.6E-09	7.1E-11	4.8E-10	3.7E-09	5.7E-08	3.6E-09	1.6E-10	3.6E-11	3.0E-08	2.1E-10	9.0E-10	6.1E-09	3.6E-09	3.6E-09	5.6E-11	4.0E-10	1.7E-09	1.3E-08	2.0E-12
HHGPHC-1	L-7	1.1E-08	1.3E-11	5.4E-09	1.3E-11	3.2E-10	5.6E-09	5.3E-09	8.7E-08	1.4E-10	5.4E-11	8.1E-08	1.4E-10	1.4E-09	1.1E-08	5.4E-09	2.2E-10	8.5E-11	3.0E-10	1.7E-09	2.4E-08	3.1E-12
HHGPHC-1	L-8	1.8E-08	5.7E-12	2.7E-08	4.3E-12	1.3E-09	2.8E-08	2.7E-08	0.00000044	1.8E-10	2.7E-10	0.0000050	1.2E-10	6.8E-09	5.6E-08	2.7E-08	2.7E-10	4.3E-10	3.7E-10	3.3E-09	0.00000025	1.6E-11
HHGPHC-1	L-9	9.9E-09	1.7E-12	8.2E-09	9.4E-13	7.8E-11	8.4E-09	8.0E-09	0.00000052	1.4E-10	8.2E-11	0.00000029	7.9E-11	2.0E-09	1.5E-08	8.2E-09	1.3E-09	1.3E-10	2.3E-10	1.9E-09	5.8E-08	4.6E-12
HHGPHC-1	L-10	1.0E-08	1.0E-12	1.0E-08	2.7E-13	1.3E-09	1.0E-08	9.8E-09	1.0E-08	1.5E-10	1.0E-10	0.00000049	5.8E-11	2.5E-09	2.2E-08	1.0E-08	3.6E-09	1.6E-10	2.4E-10	2.0E-09	7.5E-08	5.7E-12
HHGPHC-1	L-11	9.6E-09	6.9E-13	1.2E-08	9.9E-14	1.8E-10	1.2E-08	0.00000011	1.2E-08	1.6E-10	1.2E-10	0.00000096	5.5E-11	3.0E-09	2.5E-08	1.2E-08	1.2E-10	1.9E-10	2.5E-10	2.0E-09	0.00000018	6.7E-12
HHGPHC-1	L-12	1.4E-08	4.8E-13	1.4E-08	4.7E-14	2.1E-09	1.4E-08	1.3E-08	1.4E-08	1.5E-10	1.4E-10	0.0000015	4.9E-11	3.4E-09	3.0E-08	1.4E-08	1.4E-10	2.1E-10	2.2E-10	2.3E-09	9.6E-08	7.8E-12
HHGPHC-1	L-13	1.9E-08	4.0E-13	1.6E-08	4.2E-14	1.3E-09	1.6E-08	1.5E-08	1.6E-08	1.6E-10	1.6E-10	0.0000024	4.6E-11	3.9E-09	3.2E-08	1.6E-08	1.6E-10	2.4E-10	2.2E-10	2.2E-09	0.00000016	8.8E-12
HHGPHC-1	L-14	6.2E-09	4.5E-13	1.7E-08	2.7E-14	2.6E-09	1.8E-08	1.7E-08	1.7E-08	1.6E-10	1.7E-10	0.0000034	4.2E-11	4.3E-09	4.0E-08	1.7E-08	6.9E-10	2.7E-10	2.0E-10	3.0E-09	0.00000032	9.8E-12
HHGPHC-1	L-15	1.2E-08	3.4E-13	1.9E-08	2.0E-14	1.8E-10	2.0E-08	1.9E-08	1.9E-08	1.7E-10	1.9E-10	0.0000049	3.6E-11	4.8E-09	3.7E-08	1.9E-08	3.1E-09	3.0E-10	1.9E-10	2.3E-09	0.00000017	1.1E-11
HHGPHC-1	L-16	1.3E-08	2.4E-13	2.1E-08	1.4E-14	3.1E-12	2.1E-08	2.1E-08	0.00000034	1.7E-10	2.1E-10	0.0000072	4.3E-11	5.3E-09	4.2E-08	2.1E-08	3.4E-09	3.3E-10	2.1E-10	2.5E-09	0.00000017	1.2E-11
HHGPHC-1	L-17	1.5E-08	2.6E-13	2.3E-08	1.6E-14	3.4E-12	2.3E-08	2.2E-08	2.3E-08	1.9E-10	2.3E-10	0.0000096	4.0E-11	5.7E-09	4.7E-08	2.3E-08	9.1E-10	3.6E-10	2.1E-10	2.7E-09	0.00000038	1.3E-11
HHGPHC-2	L-1	2.9E-09	2.0E-10	7.3E-08	3.2E-11	1.3E-11	7.5E-08	7.2E-08	7.3E-08	5.8E-11	7.3E-10	0.000027	4.6E-10	1.8E-08	1.7E-09	7.3E-08	1.2E-08	1.8E-08	1.8E-10	1.3E-08	0.00013	4.6E-11
HHGPHC-2	L-2	6.2E-09	1.0E-09	5.0E-08	3.2E-10	4.3E-10	1.3E-08	1.2E-08	1.3E-08	2.9E-10	1.3E-10	0.000087	3.4E-10	1.3E-08	6.1E-09	1.3E-08	2.0E-09	2.0E-10	4.8E-10	9.6E-10	0.0000017	7.9E-12
HHGPHC-2	L-3	9.5E-09	1.4E-09	3.8E-08	7.1E-10	2.4E-10	3.9E-08	3.7E-08	3.8E-08	3.6E-10	3.8E-10	0.00017	2.3E-10	9.5E-09	1.5E-08	3.8E-08	6.1E-09	5.9E-10	6.3E-10	1.1E-09	0.0000038	2.4E-11
HHGPHC-2	L-4	8.4E-09	9.1E-10	4.3E-09	6.4E-10	3.0E-10	4.4E-09	4.2E-09	6.8E-08	2.5E-10	4.3E-11	0.0000051	4.0E-10	1.1E-09	5.2E-09	4.3E-09	1.5E-09	6.7E-11	9.0E-10	8.6E-10	0.00000022	2.7E-12
HHGPHC-2	L-5	6.9E-09	3.0E-10	1.7E-09	2.7E-10	3.5E-10	1.8E-09	1.5E-08	1.7E-09	1.8E-10	1.7E-11	6.9E-08	3.1E-10	4.3E-10	2.4E-09	1.7E-09	4.4E-09	1.1E-10	6.8E-10	9.9E-10	3.1E-08	1.7E-11
HHGPHC-2	L-6	5.3E-09	7.1E-11	3.6E-09	7.5E-11	5.0E-10	3.7E-09	0.00000013	3.6E-09	1.6E-10	3.6E-11	0.00000019	2.2E-10	9.1E-10	6.4E-09	3.6E-09	1.3E-09	5.7E-11	5.0E-10	1.6E-09	7.7E-08	2.3E-12
HHGPHC-2	L-7	1.2E-08	1.4E-11	5.5E-09	1.5E-11	4.6E-10	5.7E-09	5.4E-09	5.5E-09	1.5E-10	5.5E-11	0.00000054	1.4E-10	1.4E-09	1.2E-08	5.5E-09	2.0E-09	8.6E-11	3.9E-10	1.7E-09	9.2E-08	3.5E-12
HHGPHC-2	L-8	2.3E-08	6.1E-12	2.8E-08	4.5E-12	1.6E-09	2.8E-08	2.7E-08	2.8E-08	1.9E-10	2.8E-10	0.000031	1.2E-10	6.9E-09	5.8E-08	2.8E-08	1.1E-09	4.3E-10	4.6E-10	2.7E-09	0.0000019	1.7E-11
HHGPHC-2	L-9	8.3E-09	1.8E-12	8.3E-09	1.0E-12	1.4E-10	8.5E-09	8.1E-09	0.00000083	1.5E-10	8.3E-11	0.0000023	8.7E-11	2.1E-09	1.6E-08	8.3E-09	1.3E-09	1.3E-10	3.1E-10	1.9E-09	0.00000041	5.2E-12
HHGPHC-2	L-10	8.2E-09	9.3E-13	1.0E-08	2.7E-13	1.4E-09	1.0E-08	9.9E-09	4.1E-08	1.5E-10	1.0E-10	0.0000037	7.6E-11	2.5E-09	2.2E-08	1.0E-08	4.1E-10	1.6E-10	3.3E-10	2.0E-09	0.00000033	6.3E-12
HHGPHC-2	L-11	7.7E-09	9.1E-13	1.2E-08	1.1E-13	4.1E-10	1.2E-08	7.4E-08	1.2E-08	1.8E-10	1.2E-10	0.0000055	5.9E-11	3.0E-09	2.5E-08	1.2E-08	1.2E-10	1.9E-10	3.0E-10	2.1E-09	0.00000084	7.5E-12
HHGPHC-2	L-12	1.7E-08	5.2E-13	1.4E-08	5.2E-14	2.2E-09	1.4E-08	1.4E-08	1.4E-08	1.8E-10	1.4E-10	0.0000095	5.5E-11	3.5E-09	3.0E-08	1.4E-08	5.6E-10	2.2E-10	3.0E-10	2.0E-09	0.00000049	8.7E-12
HHGPHC-2	L-13	7.7E-09	4.3E-13	1.6E-08	4.6E-14	2.1E-09	1.6E-08	1.5E-08	1.6E-08	1.6E-10	1.6E-10	0.000014	4.9E-11	3.9E-09	3.2E-08	1.6E-08	6.3E-10	2.5E-10	3.0E-10	2.7E-09	0.0000013	9.9E-12
HHGPHC-2	L-14	4.4E-09	4.8E-13	1.8E-08	2.9E-14	9.9E-10	1.8E-08	1.7E-08	1.8E-08	1.7E-10	1.8E-10	0.000020	4.5E-11	4.4E-09	3.8E-08	1.8E-08	2.8E-09	2.8E-10	2.8E-10	2.1E-09	0.00000065	1.1E-11
HHGPHC-2	L-15	9.6E-09	3.7E-13	2.0E-08	2.2E-14	3.4E-12	2.0E-08	1.9E-08	2.0E-08	1.8E-10	2.0E-10	0.000028	4.4E-11	4.9E-09	3.8E-08	2.0E-08	2.0E-10	3.0E-10	2.7E-10	1.9E-09	0.00000066	1.2E-11
HHGPHC-2	L-16	1.4E-08	2.6E-13	2.1E-08	1.6E-14	3.7E-12	2.2E-08	2.1E-08	0.00000034	1.8E-10	2.1E-10	0.000044	4.5E-11	5.3E-09	4.4E-08	2.1E-08	2.1E-10	3.3E-10	2.9E-10	2.5E-09	0.0000015	1.3E-11
HHGPHC-2	L-17	1.5E-08	2.8E-13	2.3E-08	1.7E-14	4.0E-12	2.4E-08	2.3E-08	2.3E-08	2.0E-10	2.3E-10	0.000058	4.0E-11	5.8E-09	4.7E-08	2.3E-08	3.7E-09	3.6E-10	2.9E-10	2.2E-09	0.00000084	1.5E-11
HHGPHC-3	L-1	2.9E-09	2.5E-10	7.2E-08	5.2E-11	4.9E-12	7.4E-08	7.1E-08	7.2E-08	6.5E-11	7.2E-10	0.000020	1.8E-10	1.8E-08	1.7E-09	7.2E-08	7.2E-10	1.5E-09	6.3E-11	2.3E-09	0.000023	1.5E-10
HHGPHC-3	L-2	6.1E-09	1.3E-09	5.0E-08	3.8E-10	2.1E-10	1.3E-08	1.2E-08	1.2E-08	3.1E-10	1.2E-10	0.000068	1.4E-10	3.1E-09	5.6E-09	1.2E-08	1.2E-10	6.3E-11	1.9E-10	2.5E-10	0.00000034	2.6E-11
HHGPHC-3	L-3	9.3E-09	1.6E-09	3.7E-08	9.3E-10	1.6E-10	3.8E-08	3.6E-08	3.7E-08	3.7E-10	3.7E-10	0.00016	1.1E-10	9.3E-09	1.4E-08	3.7E-08	1.5E-09	1.9E-10	2.5E-10	3.0E-10	0.0000010	7.7E-11
HHGPHC-3	L-4	1.1E-08	1.0E-09	4.2E-09	8.0E-10	5.5E-11	4.3E-09	4.1E-09	4.2E-09	2.6E-10	4.2E-11	0.0000049	1.6E-10	1.1E-09	5.1E-09	4.2E-09	6.7E-10	2.1E-11	3.2E-10	1.9E-10	3.5E-08	8.7E-12
HHGPHC-3	L-5	6.8E-09	3.3E-10	1.7E-09	3.2E-10	1.0E-10	1.7E-09	1.7E-09	1.7E-09	1.8E-10	1.7E-11	5.6E-08	1.2E-10	4.2E-10	2.4E-09	1.7E-09	2.7E-10	3.5E-11	2.5E-10	2.2E-10	1.9E-08	1.4E-11
HHGPHC-3	L-6	8.1E-09	7.3E-11	3.6E-09	9.2E-11	1.9E-10	3.7E-09	7.2E-08	3.6E-09	1.7E-10	3.6E-11	0.00000018	8.8E-11	9.0E-10	6.3E-09	3.6E-09	1.3E-09	1.8E-11	1.7E-10	4.1E-10	2.4E-08	7.4E-12
HHGPHC-3	L-7	1.2E-08	1.5E-11	5.4E-09	1.7E-11	2.5E-10	5.6E-09	5.3E-09	5.4E-09	1.5E-10	5.4E-11	0.00000051	5.5E-11	1.4E-09	1.1E-08	5.4E-09	2.0E-09	2.8E-11	1.2E-10	4.4E-10	9.7E-08	1.1E-11
HHGPHC-3	L-8	2.2E-08	7.2E-12	2.7E-08	5.4E-12	7.3E-10	2.8E-08	2.7E-08	2.7E-08	1.9E-10	2.7E-10	0.000030	5.0E-11	6.8E-09	5.9E-08	2.7E-08	4.4E-09	1.4E-10	1.5E-10	7.1E-10	0.00000063	5.6E-11
HHGPHC-3	L-9	9.9E-09	2.1E-12	8.2E-09	1.2E-12	1.4E-10	8.4E-09	8.0E-09	8.2E-09	1.5E-10	8.2E-11	0.0000022	3.5E-11	2.0E-09	1.6E-08	8.2E-09	3.3E-10	4.2E-11	9.7E-11	4.4E-10	6.1E-08	1.7E-11
HHGPHC-3	L-10	6.4E-09	1.3E-12	1.0E-08	3.4E-13	6.9E-10	1.0E-08	9.8E-09	1.0E-08	1.6E-10	1.0E-10	0.0000031	2.5E-11	2.5E-09	2.2E-08	1.0E-08	1.0E-10	5.1E-11	1.0E-10	6.2E-10	0.00000023	2.1E-11
HHGPHC-3	L-11	7.6E-09	1.1E-12	1.2E-08	1.4E-13	2.0E-10	1.2E-08	4.7E-08	1.2E-08	1.7E-10	1.2E-10	0.0000053	2.4E-11	3.0E-09	2.5E-08	1.2E-08	4.7E-10	6.0E-11	9.2E-11	5.4E-10	0.00000015	2.4E-11
HHGPHC-3	L-12	1.4E-08	6.1E-13	1.4E-08	6.5E-14	8.3E-10	1.4E-08	1.3E-08	1.4E-08	1.8E-10	1.4E-10	0.0000084	2.1E-11	3.4E-09	3.0E-08	1.4E-08	1.4E-10	7.0E-11	9.3E-11	5.3E-10	0.00000015	4.5E-10
HHGPHC-3	L-13	5.6E-09	5.1E-13	1.6E-08	5.8E-14	7.0E-10	1.6E-08	1.5E-08	1.6E-08	1.7E-10	1.6E-10	0.000012	1.9E-11	3.9E-09	3.0E-08	1.6E-08	6.2E-10	7.9E-11	8.4E-11	6.0E-10	0.00000015	3.2E-11
HHGPHC-3	L-14	6.2E-09	3.9E-13	1.7E-08	3.7E-14	4.7E-10	1.8E-08	1.7E-08	1.7E-08	1.9E-10	1.7E-10	0.000017	1.8E-11	4.3E-09	3.6E-08	1.7E-08	1.7E-10	8.8E-11	7.9E-11	6.7E-10	0.00000017	3.6E-11
HHGPHC-3	L-15	9.4E-09	4.4E-13	1.9E-08	1.8E-14	1.3E-12	2.0E-08	1.9E-08	1.9E-08	1.9E-10	1.9E-10	0.000026	1.8E-11	4.8E-09	3.7E-08	1.9E-08	7.7E-10	9.8E-11	7.3E-11	6.1E-10	0.00000044	4.0E-11
HHGPHC-3	L-16	1.3E-08	3.0E-13	2.1E-08	2.0E-14	1.4E-12	2.1E-08	2.1E-08	0.00000034	1.9E-10	2.1E-10	0.000038	1.8E-11	5.2E-09	4.3E-08	2.1E-08	2.1E-10	1.1E-10	8.0E-11	8.1E-10	0.00000057	4.3E-11
HHGPHC-3	L-17	1.1E-08	3.3E-13	2.3E-08	2.2E-14	1.5E-12	2.3E-08	2.2E-08	2.3E-08	2.1E-10	2.3E-10	0.000056	1.6E-11	5.7E-09	4.7E-08	2.3E-08	2.3E-10	1.2E-10	7.9E-11	5.9E-10	0.00000031	4.7E-11
HHGPHC-4	L-1	7.3E-10	2.3E-10	7.3E-08	6.6E-11	5.1E-12	7.5E-08	7.2E-08	7.3E-08	6.3E-11	7.3E-10	0.000013	3.0E-10	1.8E-08	1.9E-09	7.3E-08	2.9E-09	1.8E-08	1.8E-10	1.3E-08	0.00057	7.3E-10
HHGPHC-4	L-2	6.2E-09	1.1E-09	1.3E-08	3.3E-10	2.2E-09	1.3E-08	1.2E-08	1.3E-08	2.2E-10	1.3E-10	0.000025	2.4E-10	3.1E-09	6.6E-09	1.3E-08	1.3E-10	2.0E-10	3.8E-10	8.4E-10	0.000017	1.3E-10
HHGPHC-4	L-3	1.4E-08	1.7E-09	3.8E-08	8.5E-10	2.6E-10	3.9E-08	3.7E-08	3.8E-08	2.9E-10	3.8E-10	0.000042	2.3E-10	9.4E-09	1.4E-08	3.8E-08	3.8E-10	5.9E-10	5.1E-10	9.8E-10	0.000015	3.8E-10
HHGPHC-4	L-4	1.2E-08	1.0E-09	4.3E-09	7.3E-10	5.8E-11	4.4E-09	4.2E-09	4.3E-09	2.4E-10	4.3E-11	0.00000096	4.1E-10	1.1E-09	4.3E-09	4.3E-09	6.1E-09	6.7E-11	6.5E-10	7.5E-10	0.0000010	4.3E-11
HHGPHC-4	L-5	6.9E-09	3.4E-10	1.7E-09	3.3E-10	1.4E-10	1.8E-09	1.7E-09	1.7E-09	2.0E-10	1.7E-11	1.6E-08	3.4E-10	4.3E-10	2.2E-09	1.7E-09	1.7E-09	1.1E-10	5.1E-10	7.2E-10	0.00000021	6.9E-11
HHGPHC-4	L-6	7.1E-09	7.7E-11	3.6E-09	9.0E-11	2.6E-10	3.7E-09	4.4E-08	3.6E-09	1.8E-10	3.6E-11	6.3E-08	2.4E-10	9.1E-10	6.1E-09	3.6E-09	1.5E-10	5.7E-11	3.7E-10	1.4E-09	0.0000002	3.6E-11
HHGPHC-4	L-7	1.1E-08	1.5E-11	5.5E-09	1.6E-11	2.2E-10	5.6E-09	5.4E-09	5.5E-09	1.6E-10	5.5E-11	0.00000018	1.5E-10	1.4E-09	1.1E-08	5.5E-09	2.2E-10	8.6E-11	2.6E-10	1.5E-09	0.00000025	5.5E-11
HHGPHC-4	L-8	1.4E-08	6.6E-12	2.8E-08	5.2E-12	7.7E-10	2.8E-08	2.7E-08	0.00000044	2.1E-10	2.8E-10	0.000012	1.3E-10	6.9E-09	5.5E-08	2.8E-08	1.1E-09	4.3E-10	3.3E-10	2.3E-09	0.0000058	2.8E-10
HHGPHC-4	L-9	8.3E-09	1.8E-12	8.3E-09	1.1E-12	8.3E-11	8.5E-09	8.1E-09	3.3E-08	1.6E-10	8.3E-11	0.00000083	8.4E-11	2.1E-09	1.5E-08	8.3E-09	3.3E-10	1.3E-10	2.0E-10	1.7E-09	0.00000055	8.3E-11
HHGPHC-4	L-10	6.5E-09	1.2E-12	1.0E-08	3.1E-13	7.2E-10	1.0E-08	9.9E-09	1.0E-08	1.7E-10	1.0E-10	0.0000014	7.4E-11	2.5E-09	2.1E-08	1.0E-08	1.6E-09	1.6E-10	2.2E-10	2.1E-09	0.00000095	1.0E-10
HHGPHC-4	L-11	1.1E-08	1.1E-12	1.4E-08	1.4E-13	2.4E-10	1.4E-08	0.00000012	1.4E-08	2.1E-10	1.4E-10	0.0000024	6.9E-11	3.4E-09	2.8E-08	1.4E-08	2.2E-09	2.1E-10	2.3E-10	2.0E-09	0.0000011	1.4E-10
HHGPHC-4	L-12	1.1E-08	5.6E-13	1.4E-08	6.0E-14	7.5E-10	1.4E-08	1.4E-08	1.4E-08	1.8E-10	1.4E-10	0.0000039	5.5E-11	3.5E-09	2.8E-08	1.4E-08	5.5E-10	2.2E-10	1.9E-10	2.1E-09	0.0000035	1.4E-10
HHGPHC-4	L-13	5.7E-09	4.7E-13	1.6E-08	4.1E-14	8.6E-10	1.6E-08	1.5E-08	1.6E-08	1.8E-10	1.6E-10	0.0000053	5.0E-11	3.9E-09	3.0E-08	1.6E-08	1.6E-10	2.5E-10	1.8E-10	2.0E-09	0.0000020	1.6E-10
HHGPHC-4	L-14	6.3E-09	5.2E-13	1.8E-08	3.4E-14	4.9E-10	1.8E-08	1.7E-08	1.8E-08	1.8E-10	1.8E-10	0.0000083	4.3E-11	4.4E-09	3.7E-08	1.8E-08	7.0E-10	2.7E-10	1.6E-10	2.2E-09	0.0000025	1.8E-10
HHGPHC-4	L-15	7.0E-09	4.0E-13	1.9E-08	1.7E-14	1.4E-12	2.0E-08	1.9E-08	1.9E-08	1.8E-10	1.9E-10	0.000012	4.4E-11	4.9E-09	3.7E-08	1.9E-08	1.9E-10	3.0E-10	1.5E-10	2.4E-09	0.0000038	1.9E-10
HHGPHC-4	L-16	1.4E-08	4.4E-13	2.1E-08	1.8E-14	1.5E-12	2.2E-08	2.1E-08	0.00000034	1.8E-10	2.1E-10	0.000017	4.6E-11	5.3E-09	4.2E-08	2.1E-08	2.1E-10	3.3E-10	1.6E-10	2.2E-09	0.0000040	2.1E-10
HHGPHC-4	L-17	1.1E-08	3.1E-13	2.3E-08	1.1E-14	1.6E-12	2.4E-08	2.3E-08	2.3E-08	2.0E-10	2.3E-10	0.000028	3.8E-11	5.8E-09	4.5E-08	2.3E-08	2.3E-10	3.6E-10	1.6E-10	2.0E-09	0.0000025	2.3E-10

- Parameter not analyzed

Appendix E, Table E-24
HHGPHC LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHGPHC-1	L-1	0.00000042	8.2E-10	5.6E-10	5.8E-10	0.00000065	1.2E-10	7.3E-08	1.7E-11	1.6E-09	4.8E-11	1.9E-08	6.5E-09	0.00000029	0.00000022	0.00000038	1.6E-11	8.1E-11
HHGPHC-1	L-2	1.2E-08	1.3E-09	4.3E-11	1.5E-10	0.00000011	1.1E-10	1.2E-08	1.3E-10	1.1E-09	2.9E-10	3.5E-09	5.0E-08	3.4E-08	-	-	-	-
HHGPHC-1	L-3	3.7E-08	1.5E-09	3.2E-11	4.4E-10	3.7E-08	1.7E-10	3.7E-08	3.1E-10	1.3E-09	8.8E-10	7.5E-09	4.4E-08	5.1E-08	0.00000011	2.4E-08	1.2E-10	4.1E-11
HHGPHC-1	L-4	4.2E-09	1.8E-09	1.5E-11	1.4E-09	4.2E-09	2.6E-10	1.7E-08	4.1E-10	1.1E-09	1.0E-09	3.5E-09	8.4E-09	2.9E-09	-	-	-	-
HHGPHC-1	L-5	1.7E-09	1.4E-09	2.4E-11	2.7E-09	1.7E-09	2.0E-10	1.7E-09	5.4E-10	7.6E-10	4.5E-10	2.7E-09	1.7E-09	3.0E-09	-	-	-	-
HHGPHC-1	L-6	3.6E-09	8.9E-10	2.8E-11	3.4E-09	3.6E-09	1.4E-10	3.6E-09	9.2E-10	7.5E-10	4.0E-10	3.0E-09	2.5E-09	3.6E-09	9.0E-12	2.3E-09	3.2E-11	1.3E-11
HHGPHC-1	L-7	5.4E-09	6.5E-10	1.9E-11	3.3E-09	5.4E-09	1.1E-10	5.4E-09	1.0E-09	7.3E-10	2.9E-10	3.3E-09	3.3E-09	7.4E-09	-	-	-	-
HHGPHC-1	L-8	2.7E-08	6.2E-10	2.4E-11	4.7E-09	0.00000044	1.2E-10	2.7E-08	1.5E-09	4.9E-10	4.5E-10	8.8E-09	1.2E-08	3.7E-08	-	-	-	-
HHGPHC-1	L-9	8.2E-09	4.2E-10	2.8E-11	2.2E-09	3.3E-08	7.1E-11	8.2E-09	8.5E-10	5.1E-10	1.3E-10	3.0E-09	5.7E-09	1.4E-09	0.00000056	8.2E-09	1.1E-10	1.5E-08
HHGPHC-1	L-10	1.0E-08	3.8E-10	3.5E-11	2.5E-09	4.0E-08	1.0E-10	1.0E-08	9.0E-10	2.8E-10	1.1E-10	4.5E-09	7.0E-09	7.0E-09	-	-	-	-
HHGPHC-1	L-11	1.2E-08	3.5E-10	4.1E-11	3.0E-09	4.7E-08	7.6E-11	1.2E-08	9.7E-10	2.7E-10	7.0E-11	4.6E-09	1.0E-08	2.1E-09	-	-	-	-
HHGPHC-1	L-12	1.4E-08	3.0E-10	4.7E-11	2.9E-09	0.00000012	7.4E-11	1.4E-08	9.4E-10	2.9E-10	8.1E-11	5.2E-09	1.2E-08	2.4E-08	0.00000041	3.4E-09	2.0E-10	5.5E-10
HHGPHC-1	L-13	1.6E-08	2.9E-10	1.3E-11	2.6E-09	0.00000014	6.9E-11	1.6E-08	8.3E-10	3.8E-10	9.2E-11	5.7E-09	1.3E-08	2.7E-09	-	-	-	-
HHGPHC-1	L-14	1.7E-08	2.6E-10	6.0E-11	2.7E-09	0.00000028	7.7E-11	1.7E-08	7.5E-10	2.4E-10	4.6E-11	5.6E-09	1.5E-08	3.0E-09	-	-	-	-
HHGPHC-1	L-15	1.9E-08	2.4E-10	1.7E-11	2.3E-09	0.00000031	6.9E-11	1.9E-08	7.8E-10	2.6E-10	5.0E-11	6.0E-09	1.9E-08	3.3E-09	0.0000012	1.9E-08	2.9E-10	1.0E-09
HHGPHC-1	L-16	2.1E-08	2.4E-10	1.8E-11	2.5E-09	0.00000034	6.0E-11	2.1E-08	8.0E-10	2.6E-10	5.5E-11	6.8E-09	2.5E-08	3.7E-09	-	-	-	-
HHGPHC-1	L-17	2.3E-08	2.3E-10	2.0E-11	2.1E-09	0.00000057	8.2E-11	2.3E-08	7.1E-10	1.8E-10	6.0E-11	6.7E-09	2.3E-08	4.0E-09	0.00000075	2.3E-08	3.3E-10	1.2E-09
HHGPHC-2	L-1	0.00000075	9.3E-10	6.5E-10	1.1E-09	0.0000012	1.3E-10	7.3E-08	1.9E-11	2.4E-09	4.8E-11	2.4E-08	5.9E-09	0.0000001	0.00000019	0.00000056	2.1E-11	8.2E-11
HHGPHC-2	L-2	1.3E-08	1.5E-09	1.2E-11	1.0E-10	0.0000002	1.3E-10	1.3E-08	1.5E-10	1.2E-09	3.0E-10	2.3E-09	5.9E-08	1.5E-08	-	-	-	-
HHGPHC-2	L-3	3.8E-08	1.5E-09	3.7E-11	4.9E-10	3.8E-08	1.9E-10	3.8E-08	3.2E-10	9.7E-10	9.0E-10	8.1E-09	5.9E-08	2.0E-09	0.0000001	2.1E-08	1.1E-10	4.2E-11
HHGPHC-2	L-4	4.3E-09	1.9E-09	1.7E-11	1.5E-09	4.3E-09	3.0E-10	4.3E-09	4.2E-10	8.7E-10	1.0E-09	4.3E-09	1.1E-08	1.3E-09	-	-	-	-
HHGPHC-2	L-5	1.7E-09	1.4E-09	2.7E-11	2.8E-09	1.7E-09	2.4E-10	1.7E-09	5.4E-10	6.2E-10	5.0E-10	2.4E-09	2.0E-09	5.1E-10	-	-	-	-
HHGPHC-2	L-6	3.6E-09	9.1E-10	3.2E-11	3.5E-09	3.6E-09	1.7E-10	3.6E-09	9.2E-10	5.8E-10	4.1E-10	3.0E-09	2.5E-09	1.1E-09	2.3E-12	2.1E-09	3.6E-11	1.0E-11
HHGPHC-2	L-7	5.5E-09	6.5E-10	2.2E-11	3.5E-09	2.2E-08	1.2E-10	5.5E-09	1.0E-09	5.5E-10	2.9E-10	3.5E-09	3.6E-09	3.7E-09	-	-	-	-
HHGPHC-2	L-8	2.8E-08	6.3E-10	2.7E-11	5.2E-09	0.00000044	1.7E-10	2.8E-08	1.5E-09	6.3E-10	4.6E-10	1.1E-08	1.3E-08	8.3E-09	-	-	-	-
HHGPHC-2	L-9	8.3E-09	4.4E-10	3.2E-11	2.3E-09	3.3E-08	8.3E-11	8.3E-09	8.8E-10	3.3E-10	1.4E-10	3.6E-09	5.8E-09	2.5E-09	0.0000005	8.3E-09	1.1E-10	1.5E-08
HHGPHC-2	L-10	1.0E-08	3.8E-10	4.0E-11	2.8E-09	9.1E-08	1.0E-10	1.0E-08	9.2E-10	2.3E-10	1.1E-10	5.4E-09	8.5E-09	3.0E-09	-	-	-	-
HHGPHC-2	L-11	1.2E-08	3.6E-10	1.2E-11	3.0E-09	4.8E-08	8.8E-11	1.2E-08	9.6E-10	2.2E-10	7.1E-11	5.3E-09	1.0E-08	6.2E-10	-	-	-	-
HHGPHC-2	L-12	1.4E-08	3.0E-10	5.4E-11	3.2E-09	0.00000013	7.1E-11	1.4E-08	9.7E-10	2.2E-10	8.2E-11	6.1E-09	1.2E-08	2.9E-09	0.0000005	1.4E-08	2.0E-10	5.6E-10
HHGPHC-2	L-13	1.6E-08	2.9E-10	6.2E-11	2.9E-09	0.00000014	8.0E-11	1.6E-08	8.6E-10	2.9E-10	9.3E-11	6.8E-09	1.3E-08	8.1E-10	-	-	-	-
HHGPHC-2	L-14	1.8E-08	2.7E-10	1.7E-11	2.6E-09	0.00000028	7.3E-11	1.8E-08	7.7E-10	2.5E-10	4.6E-11	6.0E-09	1.5E-08	9.1E-10	-	-	-	-
HHGPHC-2	L-15	2.0E-08	2.4E-10	4.8E-12	2.6E-09	0.00000031	8.1E-11	2.0E-08	7.5E-10	2.8E-10	5.1E-11	7.7E-09	1.6E-08	1.0E-09	0.00000076	2.0E-08	2.8E-10	1.1E-09
HHGPHC-2	L-16	2.1E-08	2.5E-10	2.1E-11	2.8E-09	0.00000034	7.0E-11	2.1E-08	8.2E-10	1.7E-10	5.6E-11	8.6E-09	2.1E-08	1.1E-09	-	-	-	-
HHGPHC-2	L-17	2.3E-08	2.3E-10	5.7E-12	2.4E-09	0.00000058	9.6E-11	2.3E-08	7.4E-10	1.5E-10	6.1E-11	7.9E-09	2.7E-08	1.2E-09	0.00000077	2.3E-08	3.5E-10	1.3E-09
HHGPHC-3	L-1	0.00000057	2.9E-10	1.8E-10	4.1E-10	0.00000065	3.7E-11	7.2E-08	1.3E-11	5.0E-10	3.4E-11	9.6E-09	5.1E-09	0.0000012	-	-	-	-
HHGPHC-3	L-2	1.2E-08	4.9E-10	3.3E-12	7.0E-11	0.0000002	5.0E-11	1.2E-08	1.1E-10	4.6E-10	2.1E-10	1.6E-09	6.3E-08	7.1E-08	-	-	-	-
HHGPHC-3	L-3	3.7E-08	5.6E-10	1.0E-11	3.0E-10	3.7E-08	7.7E-11	3.7E-08	2.2E-10	6.6E-10	6.3E-10	6.6E-09	6.6E-08	0.00000021	-	-	-	-
HHGPHC-3	L-4	4.2E-09	6.5E-10	4.5E-12	8.4E-10	4.2E-09	1.1E-10	4.2E-09	2.8E-10	3.3E-10	7.2E-10	2.6E-09	1.1E-08	4.2E-09	-	-	-	-
HHGPHC-3	L-5	1.7E-09	4.5E-10	7.3E-12	1.7E-09	1.7E-09	9.1E-11	1.7E-09	3.8E-10	2.7E-10	3.5E-10	1.7E-09	2.0E-09	1.3E-08	-	-	-	-
HHGPHC-3	L-6	3.6E-09	3.2E-10	8.7E-12	2.1E-09	3.6E-09	6.7E-11	3.6E-09	6.6E-10	2.8E-10	2.4E-10	1.8E-09	2.5E-09	2.8E-08	-	-	-	-
HHGPHC-3	L-7	5.4E-09	2.2E-10	5.8E-12	2.2E-09	2.2E-08	4.5E-11	5.4E-09	7.5E-10	2.8E-10	1.6E-10	2.2E-09	3.3E-09	3.1E-08	-	-	-	-
HHGPHC-3	L-8	2.7E-08	2.2E-10	7.3E-12	3.1E-09	0.00000044	5.6E-11	2.7E-08	1.0E-09	1.6E-10	2.1E-10	6.8E-09	1.3E-08	0.00000016	-	-	-	-
HHGPHC-3	L-9	8.2E-09	1.5E-10	8.8E-12	1.5E-09	3.3E-08	3.3E-11	8.2E-09	6.3E-10	1.8E-10	9.7E-11	2.1E-09	5.7E-09	8.2E-09	-	-	-	-
HHGPHC-3	L-10	1.0E-08	1.3E-10	1.1E-11	1.8E-09	9.0E-08	3.5E-11	1.0E-08	6.6E-10	9.3E-11	7.5E-11	3.5E-09	8.4E-09	5.7E-08	-	-	-	-
HHGPHC-3	L-11	1.2E-08	1.3E-10	3.2E-12	2.0E-09	4.7E-08	3.5E-11	1.2E-08	7.2E-10	8.2E-11	5.0E-11	3.5E-09	9.9E-09	1.2E-08	-	-	-	-
HHGPHC-3	L-12	1.4E-08	1.1E-10	1.5E-11	1.9E-09	0.00000012	3.4E-11	1.4E-08	7.0E-10	1.1E-10	5.8E-11	3.6E-09	1.1E-08	1.4E-08	-	-	-	-
HHGPHC-3	L-13	1.6E-08	1.0E-10	4.2E-12	2.0E-09	0.00000014	3.2E-11	1.6E-08	6.3E-10	1.1E-10	6.6E-11	3.9E-09	1.3E-08	1.6E-08	-	-	-	-
HHGPHC-3	L-14	1.7E-08	9.5E-11	4.7E-12	1.6E-09	0.00000028	2.9E-11	1.7E-08	5.3E-10	7.7E-11	3.3E-11	3.5E-09	1.5E-08	1.7E-08	-	-	-	-
HHGPHC-3	L-15	1.9E-08	8.4E-11	5.2E-12	1.8E-09	0.00000031	3.2E-11	1.9E-08	5.6E-10	1.7E-10	3.6E-11	4.9E-09	1.6E-08	7.7E-08	-	-	-	-
HHGPHC-3	L-16	2.1E-08	9.3E-11	5.6E-12	1.9E-09	0.00000034	2.8E-11	2.1E-08	6.1E-10	9.3E-11	4.0E-11	5.4E-09	2.1E-08	2.1E-08	-	-	-	-
HHGPHC-3	L-17	2.3E-08	8.2E-11	6.1E-12	1.4E-09	0.00000057	3.0E-11	2.3E-08	4.8E-10	6.5E-11	4.3E-11	4.5E-09	2.3E-08	2.3E-08	-	-	-	-
HHGPHC-4	L-1	0.00000095	6.5E-10	6.1E-10	1.4E-09	0.00000066	8.2E-11	7.3E-08	2.1E-11	1.8E-09	5.1E-11	3.3E-08	4.9E-09	0.0000023	-	-	-	-
HHGPHC-4	L-2	1.3E-08	1.1E-09	4.6E-11	2.3E-10	0.00000011	1.1E-10	1.3E-08	1.5E-10	8.3E-10	4.3E-10	5.3E-09	3.5E-08	0.0000008	-	-	-	-
HHGPHC-4	L-3	3.8E-08	1.3E-09	8.7E-12	9.3E-10	3.8E-08	1.7E-10	3.8E-08	3.5E-10	8.2E-10	1.3E-09	1.5E-08	3.8E-08	0.00000015	-	-	-	-
HHGPHC-4	L-4	4.3E-09	1.6E-09	1.6E-11	2.6E-09	4.3E-09	2.5E-10	4.3E-09	4.1E-10	6.2E-10	1.1E-09	8.2E-09	7.6E-09	3.3E-08	-	-	-	-
HHGPHC-4	L-5	1.7E-09	1.3E-09	2.5E-11	4.0E-09	1.7E-09	2.1E-10	1.7E-09	5.7E-10	5.6E-10	4.8E-10	4.4E-09	1.7E-09	2.2E-08	-	-	-	-
HHGPHC-4	L-6	3.6E-09	8.2E-10	3.0E-11	4.8E-09	3.6E-09	1.5E-10	3.6E-09	9.2E-10	5.7E-10	4.3E-10	5.9E-09	2.5E-09	2.1E-08	-	-	-	-
HHGPHC-4	L-7	5.5E-09	5.7E-10	2.0E-11	4.5E-09	5.5E-09	9.8E-11	5.5E-09	1.0E-09	5.4E-10	2.4E-10	6.0E-09	3.5E-09	7.1E-08	-	-	-	-
HHGPHC-4	L-8	2.8E-08	5.8E-10	2.5E-11	6.3E-09	0.00000025	1.2E-10	2.8E-08	1.4E-09	3.6E-10	4.8E-10	1.7E-08	1.3E-08	0.00000016	-	-	-	-
HHGPHC-4	L-9	8.3E-09	3.7E-10	3.1E-11	3.2E-09	3.3E-08	7.2E-11	8.3E-09	8.7E-10	3.2E-10	1.4E-10	5.4E-09	5.8E-09	8.3E-09	-	-	-	-
HHGPHC-4	L-10	1.0E-08	3.3E-10	3.7E-11	3.6E-09	4.0E-08	7.6E-11	1.0E-08	9.1E-10	1.7E-10	1.1E-10	8.1E-09	8.5E-09	4.0E-08	-	-	-	-
HHGPHC-4	L-11	1.4E-08	3.6E-10	5.0E-11	4.1E-09	5.4E-08	7.3E-11	1.4E-08	1.1E-09	1.5E-10	8.5E-11	8.9E-09	1.1E-08	0.00000056	-	-	-	-
HHGPHC-4	L-12	1.4E-08	2.6E-10	5.1E-11	3.8E-09	0.00000012	7.5E-11	1.4E-08	9.2E-10	3.6E-10	8.6E-11	8.8E-09	1.2E-08	1.4E-08	-	-	-	-
HHGPHC-4	L-13	1.6E-08	2.6E-10	1.4E-11	3.6E-09	0.00000014	7.0E-11	1.6E-08	8.6E-10	2.2E-10	4.4E-11	8.7E-09	1.6E-08	1.6E-08	-	-	-	-
HHGPHC-4	L-14	1.8E-08	2.4E-10	1.6E-11	3.2E-09	0.00000016	6.3E-11	1.8E-08	7.7E-10	2.3E-10	4.9E-11	7.6E-09	1.8E-08	1.8E-08	-	-	-	-
HHGPHC-4	L-15	1.9E-08	2.1E-10	1.8E-11	3.2E-09	0.00000031	7.0E-11	1.9E-08	7.6E-10	2.1E-10	5.4E-11	1.1E-08	1.9E-08	1.9E-08	-	-	-	-
HHGPHC-4	L-16	2.1E-08	2.2E-10	2.0E-11	3.5E-09	0.00000034	6.1E-11	2.1E-08	7.8E-10	1.6E-10	5.9E-11	1.1E-08	2.5E-08	2.1E-08	-	-	-	-
HHGPHC-4	L-17	2.3E-08	1.9E-10	2.1E-11	2.6E-09	0.00000058	6.6E-11	2.3E-08	6.5E-10	1.0E-10	1.6E-11	9.8E-09	2.7E-08	2.3E-08	-	-	-	-

- Parameter not analyzed

Appendix E, Table E-25
HLC-S LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HLC-S-1	L-1	2020-01-13	0.080	0.10	0.057	0.00047	573	1.00	0.57	0.0082	7.0	0.86	1842	-	1.9E-11	2.2E-11	1.8E-08	1.8E-08	3.1E-12	1.3E-11	1.3E-11	1.1E-13
HLC-S-1	L-2	2020-01-14	1.0	0.10	0.057	0.00047	635	1.00	0.64	0.0082	7.8	0.86	1842	-	6.3E-12	6.6E-12	3.5E-09	3.5E-09	5.3E-11	3.5E-11	3.5E-11	1.3E-10
HLC-S-1	L-3	2020-01-15	2.0	0.10	0.057	0.00047	634	1.00	0.63	0.0082	7.8	0.86	1842	-	3.0E-11	2.8E-11	1.0E-08	1.0E-08	9.4E-11	4.5E-11	4.4E-11	2.6E-10
HLC-S-1	L-4	2020-01-20	7.0	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.86	1842	-	1.4E-11	1.3E-11	1.2E-09	1.2E-09	8.5E-11	2.9E-11	2.8E-11	4.2E-10
HLC-S-1	L-5	2020-01-27	14	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.86	1842	-	3.9E-11	7.3E-12	0.00000015	1.5E-09	1.3E-10	4.5E-11	4.4E-11	5.5E-10
HLC-S-1	L-6	2020-02-10	28	0.10	0.057	0.00047	636	1.0	0.64	0.0082	7.8	0.86	1842	-	8.7E-11	4.8E-11	7.5E-08	7.5E-10	1.2E-10	4.1E-11	4.1E-11	3.4E-10
HLC-S-1	L-7	2020-02-24	42	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.86	1842	-	1.6E-10	7.6E-11	0.00000019	1.3E-09	1.4E-10	5.6E-11	5.5E-11	5.3E-10
HLC-S-1	L-8	2020-03-02	49	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.86	1842	-	6.5E-10	3.5E-10	0.00000068	6.8E-09	2.1E-10	8.3E-11	8.3E-11	6.7E-10
HLC-S-1	L-9	2020-03-16	63	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.86	1842	-	2.7E-10	1.3E-10	0.0000003	2.1E-09	1.3E-10	6.3E-11	6.3E-11	4.4E-10
HLC-S-1	L-10	2020-03-30	77	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.86	1842	-	2.0E-10	9.5E-11	0.00000026	2.6E-09	1.4E-10	6.5E-11	6.4E-11	3.3E-10
HLC-S-1	L-11	2020-04-13	91	0.10	0.057	0.00047	633	1.00	0.63	0.0082	7.7	0.86	1842	-	1.7E-10	1.1E-10	4.9E-08	3.1E-09	1.5E-10	6.6E-11	6.5E-11	2.3E-10
HLC-S-1	L-12	2020-04-27	105	0.10	0.057	0.00047	634	1.00	0.63	0.0082	7.8	0.86	1842	-	4.7E-10	2.3E-10	0.00000052	3.6E-09	1.4E-10	6.8E-11	6.7E-11	1.3E-10
HLC-S-1	L-13	2020-05-11	119	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.86	1842	-	4.9E-10	2.3E-10	0.00000061	4.2E-09	1.1E-10	6.9E-11	6.9E-11	8.8E-11
HLC-S-1	L-14	2020-05-25	133	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.86	1842	-	3.4E-10	1.6E-10	0.00000047	4.7E-09	1.2E-10	7.6E-11	7.6E-11	6.9E-11
HLC-S-1	L-15	2020-06-08	147	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.86	1842	-	6.5E-10	2.7E-10	0.0000010	5.2E-09	1.1E-10	7.7E-11	7.7E-11	4.9E-11
HLC-S-1	L-16	2020-06-22	161	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.86	1842	-	2.6E-10	1.3E-10	0.00000037	5.8E-09	9.7E-11	7.7E-11	7.7E-11	3.5E-11
HLC-S-1	L-17	2020-07-06	175	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.86	1842	-	1.4E-10	2.3E-11	0.00000063	6.3E-09	1.0E-10	8.5E-11	8.5E-11	2.3E-11
HLC-S-1	L-18	2020-08-03	203	0.10	0.057	0.00047	638	1.00	0.64	0.0082	7.8	0.86	1842	-	1.2E-10	1.2E-10	1.8E-09	1.8E-09	6.9E-11	6.8E-11	6.8E-11	1.2E-11
HLC-S-1	L-19	2020-08-31	231	0.10	0.057	0.00047	639	1.0	0.64	0.0082	7.8	0.86	1842	-	1.4E-10	1.8E-11	0.0000008	2.0E-09	6.2E-11	7.7E-11	7.6E-11	7.3E-12
HLC-S-1	L-20	2020-09-28	259	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.86	1842	-	1.4E-10	1.4E-10	2.3E-09	2.3E-09	4.6E-11	8.4E-11	8.3E-11	3.0E-12
HLC-S-2	L-1	2020-01-13	0.080	0.10	0.057	0.00047	587	1.00	0.59	0.0082	7.2	0.85	1828	-	4.4E-11	4.7E-11	2.0E-08	2.0E-08	1.0E-11	3.6E-11	3.6E-11	1.6E-13
HLC-S-2	L-2	2020-01-14	1.0	0.10	0.057	0.00047	625	1.00	0.63	0.0082	7.7	0.85	1828	-	7.8E-12	8.3E-12	3.4E-09	3.4E-09	3.9E-11	2.8E-11	2.8E-11	8.3E-11
HLC-S-2	L-3	2020-01-15	2.0	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	3.9E-11	3.8E-11	1.1E-08	1.1E-08	7.7E-11	3.4E-11	3.4E-11	2.1E-10
HLC-S-2	L-4	2020-01-20	7.0	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.8	0.85	1828	-	6.3E-11	6.2E-11	1.2E-09	1.2E-09	8.6E-11	2.8E-11	2.7E-11	3.7E-10
HLC-S-2	L-5	2020-01-27	14	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.85	1828	-	1.2E-10	6.5E-11	9.9E-08	1.5E-09	1.2E-10	3.9E-11	3.8E-11	4.3E-10
HLC-S-2	L-6	2020-02-10	28	0.10	0.057	0.00047	645	1.0	0.65	0.0082	7.9	0.85	1828	-	7.0E-11	2.4E-11	0.00000011	7.8E-10	9.6E-11	4.1E-11	4.1E-11	3.2E-10
HLC-S-2	L-7	2020-02-24	42	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	1.9E-10	1.1E-10	0.00000013	1.3E-09	1.2E-10	5.3E-11	5.3E-11	3.5E-10
HLC-S-2	L-8	2020-03-02	49	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.85	1828	-	4.4E-10	2.2E-10	0.00000045	7.1E-09	1.7E-10	8.2E-11	8.2E-11	4.7E-10
HLC-S-2	L-9	2020-03-16	63	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1828	-	3.1E-10	1.0E-10	0.00000055	2.2E-09	1.1E-10	6.2E-11	6.1E-11	3.3E-10
HLC-S-2	L-10	2020-03-30	77	0.10	0.057	0.00047	640	1.00	0.64	0.0082	7.8	0.85	1828	-	3.8E-10	1.0E-10	0.0000011	2.6E-09	1.2E-10	5.8E-11	5.7E-11	2.9E-10
HLC-S-2	L-11	2020-04-13	91	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	2.6E-10	8.9E-11	0.00000046	3.2E-09	1.4E-10	6.3E-11	6.3E-11	2.5E-10
HLC-S-2	L-12	2020-04-27	105	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	6.9E-10	3.0E-10	0.00000074	3.8E-09	1.3E-10	6.5E-11	6.5E-11	1.6E-10
HLC-S-2	L-13	2020-05-11	119	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1828	-	3.5E-10	6.0E-11	0.0000011	4.3E-09	1.1E-10	6.1E-11	6.1E-11	1.2E-10
HLC-S-2	L-14	2020-05-25	133	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1828	-	5.8E-10	2.5E-10	0.0000007	4.9E-09	1.2E-10	6.9E-11	6.8E-11	5.8E-11
HLC-S-2	L-15	2020-06-08	147	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	4.0E-10	6.2E-11	0.0000014	5.4E-09	1.1E-10	7.1E-11	7.1E-11	7.8E-11
HLC-S-2	L-16	2020-06-22	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	1.2E-10	1.4E-11	0.00000059	5.9E-09	1.1E-10	7.6E-11	7.6E-11	6.3E-11
HLC-S-2	L-17	2020-07-06	175	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	4.4E-10	3.0E-10	0.0000001	6.4E-09	1.2E-10	8.2E-11	8.2E-11	4.8E-11
HLC-S-2	L-18	2020-08-03	203	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.85	1828	-	1.6E-10	5.6E-11	0.00000026	1.8E-09	8.0E-11	6.8E-11	6.8E-11	2.9E-11
HLC-S-2	L-19	2020-08-31	231	0.10	0.057	0.00047	635	1.0	0.63	0.0082	7.8	0.85	1828	-	1.8E-10	2.3E-11	0.0000008	2.0E-09	7.1E-11	6.6E-11	6.6E-11	1.5E-11
HLC-S-2	L-20	2020-09-28	259	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	2.1E-10	1.2E-10	0.00000015	2.3E-09	7.1E-11	8.3E-11	8.3E-11	7.7E-12
HLC-S-3	L-1	2020-01-13	0.080	0.10	0.057	0.00047	600	1.00	0.60	0.0082	7.4	0.85	1825	-	2.2E-11	2.6E-11	2.0E-08	2.0E-08	7.2E-12	7.7E-12	7.4E-12	8.7E-13
HLC-S-3	L-2	2020-01-14	1.0	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.85	1825	-	1.1E-11	1.0E-11	3.6E-09	3.6E-09	3.1E-11	1.6E-11	1.6E-11	9.9E-11
HLC-S-3	L-3	2020-01-15	2.0	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.85	1825	-	3.2E-11	3.1E-11	1.1E-08	1.1E-08	7.5E-11	2.2E-11	2.2E-11	2.2E-10
HLC-S-3	L-4	2020-01-20	7.0	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.85	1825	-	3.7E-11	3.9E-11	1.2E-09	1.2E-09	7.6E-11	2.3E-11	2.2E-11	3.5E-10
HLC-S-3	L-5	2020-01-27	14	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1825	-	4.2E-11	4.5E-12	0.00000023	1.6E-09	1.1E-10	3.5E-11	3.5E-11	4.6E-10
HLC-S-3	L-6	2020-02-10	28	0.10	0.057	0.00047	644	1.0	0.64	0.0082	7.9	0.85	1825	-	9.5E-11	4.6E-11	0.00000011	7.8E-10	9.5E-11	3.5E-11	3.5E-11	3.8E-10
HLC-S-3	L-7	2020-02-24	42	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1825	-	9.8E-11	5.6E-11	8.5E-08	1.3E-09	1.1E-10	4.7E-11	4.6E-11	3.9E-10
HLC-S-3	L-8	2020-03-02	49	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1825	-	4.8E-10	3.2E-10	0.00000011	7.0E-09	1.5E-10	7.1E-11	7.1E-11	5.2E-10
HLC-S-3	L-9	2020-03-16	63	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1825	-	1.1E-10	6.2E-12	0.00000086	2.2E-09	1.1E-10	5.5E-11	5.5E-11	3.8E-10
HLC-S-3	L-10	2020-03-30	77	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.85	1825	-	2.5E-10	6.2E-11	0.00000069	2.7E-09	1.2E-10	5.5E-11	5.5E-11	3.3E-10
HLC-S-3	L-11	2020-04-13	91	0.10	0.057	0.00047	641	1.00	0.64	0.0082	7.9	0.85	1825	-	3.2E-10	1.7E-10	0.00000032	3.2E-09	1.3E-10	5.7E-11	5.7E-11	3.0E-10
HLC-S-3	L-12	2020-04-27	105	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1825	-	5.5E-10	1.6E-10	0.0000015	3.8E-09	1.3E-10	5.6E-11	5.5E-11	1.8E-10
HLC-S-3	L-13	2020-05-11	119	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1825	-	2.7E-10	1.1E-10	0.00000043	4.3E-09	1.1E-10	5.8E-11	5.8E-11	1.4E-10
HLC-S-3	L-14	2020-05-25	133	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1825	-	3.9E-10	4.0E-10	4.9E-09	4.9E-09	1.2E-10	6.1E-11	6.1E-11	1.1E-10
HLC-S-3	L-15	2020-06-08	147	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1825	-	6.1E-10	2.9E-10	0.00000078	5.4E-09	1.2E-10	6.4E-11	6.4E-11	7.6E-11
HLC-S-3	L-16	2020-06-22	161	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1825	-	2.8E-10	1.9E-10	9.5E-08	5.9E-09	1.1E-10	6.6E-11	6.6E-11	6.7E-11
HLC-S-3	L-17	2020-07-06	175	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1825	-	3.4E-10	3.5E-10	6.5E-09	6.5E-09	1.2E-10	7.2E-11	7.2E-11	5.1E-11
HLC-S-3	L-18	2020-08-03	203	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1825	-	1.4E-10	4.2E-11	0.00000036	1.8E-09	7.6E-11	6.2E-11	6.2E-11	2.5E-11
HLC-S-3	L-19	2020-08-31	231	0.10	0.057	0.00047	637	1.0	0.64	0.0082	7.8	0.85	1825	-	1.7E-10	5.2E-11	0.0000004	2.0E-09	6.7E-11	6.6E-11	6.6E-11	1.4E-11
HLC-S-3	L-20	2020-09-28	259	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1825	-	1.6E-10	1.6E-10	2.3E-09	2.3E-09	6.5E-11	7.4E-11	7.3E-11	5.3E-12
HLC-S-4	L-1	2020-01-13	0.080	0.10	0.057	0.00047	574	1.00	0.58	0.0082	7.0	0.85	1828	-	3.5E-11	3.7E-11	1.9E-08	1.9E-08	8.7E-12	3.1E-11	3.0E-11	1.2E-13
HLC-S-4	L-2	2020-01-14	1.0	0.10	0.057	0.00047	637	1.00	0.64	0.0082	7.8	0.85	1828	-	3.4E-11	3.4E-11	3.6E-09	3.6E-09	4.9E-11	5.0E-11	5.0E-11	7.9E-11
HLC-S-4	L-3	2020-01-15	2.0	0.10	0.057	0.00047	634	1.00	0.63	0.0082	7.8	0.85	1828	-	4.5E-11	4.1E-11	1.1E-08	1.1E-08	9.6E-11	5.9E-11	5.9E-11	2.0E-10
HLC-S-4	L-4	2020-01-20	7.0	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.85	1828	-	9.7E-11	8.2E-11	4.9E-09	1.2E-09	9.6E-11	3.6E-11	3.6E-11	4.7E-10
HLC-S-4	L-5	2020-01-27	14	0.10	0.057	0.00047	647	1.00	0.65	0.0082	7.9	0.85	1828	-	1.8E-10	9.9E-11	0.00000016	1.6E-09	1.5E-10	5.3E-11	5.3E-11	6.3E-10
HLC-S-4	L-6	2020-02-10	28	0.10	0.057	0.00047	644	1.0	0.64	0.0082	7.9	0.85	1828	-	1.1E-10	5.6E-11	0.00000011	7.8E-10	1.3E-10	4.7E-11	4.7E-11	3.8E-10
HLC-S-4	L-7	2020-02-24	42	0.10	0.057	0.00047	639	1.00	0.64	0.0082	7.8	0.85	1828	-	1.6E-10	6.0E-11	0.00000026	1.3E-09	1.5E-10	6.2E-11	6.2E-11	5.2E-10
HLC-S-4	L-8	2020-03-02	49	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	5.6E-10	3.2E-10	0.00000045	7.0E-09	2.5E-10	9.8E-11	9.8E-11	7.6E-10
HLC-S-4	L-9	2020-03-16	63	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	3.9E-10	1.3E-10	0.00000086	2.1E-09	1.6E-10	7.2E-11	7.2E-11	4.8E-10
HLC-S-4	L-10	2020-03-30	77	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.85	1828	-	3.0E-10	9.4E-11	0.00000068	2.7E-09	1.6E-10	7.2E-11	7.2E-11	3.7E-10
HLC-S-4	L-11	2020-04-13	91	0.10	0.057	0.00047	642	1.00	0.64	0.0082	7.9	0.85	1828	-	3.4E-10	1.9E-10	0.00000032	3.2E-09	1.7E-10	8.0E-11	8.0E-11	2.7E-10
HLC-S-4	L-12	2020-04-27	105	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	4.5E-10	6.7E-11	0.0000022	3.8E-09	1.5E-10	8.7E-11	8.7E-11	1.6E-10
HLC-S-4	L-13	2020-05-11	119	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	3.2E-10	4.1E-11	0.0000017	4.3E-09	1.3E-10	8.3E-11	8.3E-11	1.0E-10
HLC-S-4	L-14	2020-05-25	133	0.10	0.057	0.00047	646	1.00	0.65	0.0082	7.9	0.85	1828	-	3.0E-10	6.5E-11	0.00000095	4.9E-09	1.4E-10	8.7E-11	8.7E-11	7.5E-11
HLC-S-4	L-15	2020-06-08	147	0.10	0.057	0.00047	645	1.00	0.65	0.0082	7.9	0.85	1828	-	7.4E-10	2.5E-10	0.0000014	5.4E-09	1.2E-10	9.3E-11	9.3E-11	5.3E-11
HLC-S-4	L-16	2020-06-22	161	0.10	0.057	0.00047	643	1.00	0.64	0.0082	7.9	0.85	1828	-	5.1E-10	2.1E-10	0.00000085	5.9E-09	1.1E-10	9.3E-11	9.3E-11	3.3E-11
HLC-S-4	L-17	2020-07-06	175	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	4.0E-10	2.3E-10	0.00000041	6.5E-09	1.2E-10	1.1E-10	1.1E-10	2.5E-11
HLC-S-4	L-18	2020-08-03	203	0.10	0.057	0.00047	648	1.00	0.65	0.0082	7.9	0.85	1828	-	1.4E-10	3.7E-11	0.00000036	1.8E-09	7.5E-11	9.3E-11	9.3E-11	1.2E-11
HLC-S-4	L-19	2020-08-31	231	0.10	0.057	0.00047	641	1.0	0.64	0.0082	7.8	0.85	1828	-	1.2E-10	1.2E-10	2.1E-09	2.1E-09	6.8E-11	9.7E-11	9.7E-11	5.1E-12
HLC-S-4	L-20	2020-09-28	259	0.10	0.057	0.00047	644	1.00	0.64	0.0082	7.9	0.85	1828	-	1.2E-10	1.3E-10	2.3E-09	2.3E-09	5.6E-11	1.0E-10	1.0E-10	2.3E-12

- Parameter not analyzed

Appendix E, Table E-25
HLC-S LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HLC-S-1	L-1	1.5E-11	3.2E-11	2.9E-10	1.6E-12	-	-	1.8E-08	-	3.6E-12	4.2E-11	5.8E-09	5.5E-12	2.0E-11	7.1E-10	1.8E-10	7.3E-12	1.8E-10	1.8E-10	2.0E-09	3.0E-08	7.3E-08
HLC-S-1	L-2	5.2E-11	1.4E-10	8.8E-10	6.2E-11	-	-	3.4E-09	-	4.0E-11	4.1E-09	2.6E-10	6.9E-11	1.4E-10	1.2E-09	3.5E-11	2.2E-11	3.5E-11	3.5E-11	6.6E-10	1.4E-09	0.00000069
HLC-S-1	L-3	1.0E-10	2.4E-10	6.5E-10	1.3E-10	-	-	1.0E-08	-	6.9E-11	6.0E-09	2.0E-09	1.5E-10	1.9E-10	2.6E-09	1.0E-10	1.0E-10	4.2E-10	1.0E-10	9.4E-10	0.00000015	0.00000017
HLC-S-1	L-4	9.8E-11	2.3E-10	3.0E-10	1.5E-10	-	-	0.000012	-	6.8E-11	6.9E-10	4.1E-10	1.7E-10	1.1E-10	7.1E-10	1.2E-11	4.3E-12	4.8E-11	1.2E-11	1.1E-10	9.4E-09	1.2E-09
HLC-S-1	L-5	1.5E-10	3.9E-10	3.8E-10	2.4E-10	-	-	0.000015	-	1.1E-10	3.5E-10	2.0E-10	2.9E-10	2.0E-10	1.1E-09	1.5E-11	5.4E-12	6.0E-11	1.5E-11	1.1E-10	7.0E-10	1.5E-09
HLC-S-1	L-6	1.2E-10	3.4E-10	1.9E-10	2.0E-10	-	-	0.0000073	-	9.5E-11	1.7E-10	1.7E-10	2.8E-10	3.3E-10	8.1E-10	7.5E-10	1.2E-10	7.5E-10	7.5E-10	8.3E-11	7.5E-10	7.5E-10
HLC-S-1	L-7	1.2E-10	4.3E-10	3.2E-10	2.4E-10	-	-	0.000013	-	1.1E-10	7.4E-11	3.6E-10	3.8E-10	1.4E-10	1.0E-09	1.3E-09	1.3E-11	1.3E-09	1.3E-09	1.4E-10	1.3E-09	1.3E-09
HLC-S-1	L-8	1.4E-10	7.2E-10	4.3E-10	3.3E-10	-	-	0.00000067	-	1.5E-10	4.8E-11	1.5E-09	6.4E-10	6.1E-10	2.3E-09	6.8E-11	6.8E-13	6.8E-11	6.8E-11	2.7E-10	2.1E-09	6.8E-09
HLC-S-1	L-9	9.6E-11	4.4E-10	5.2E-10	2.1E-10	-	-	0.00000021	-	1.0E-10	3.0E-11	5.8E-10	4.3E-10	3.3E-10	1.5E-09	2.1E-11	6.8E-11	2.1E-11	2.1E-11	8.3E-11	1.3E-09	2.1E-09
HLC-S-1	L-10	2.4E-10	4.3E-10	6.5E-10	2.0E-10	-	-	0.00000026	-	1.0E-10	2.0E-11	7.7E-10	4.7E-10	4.2E-10	1.7E-09	2.6E-11	6.6E-11	2.6E-11	2.6E-11	1.0E-10	1.5E-09	2.6E-09
HLC-S-1	L-11	3.7E-10	4.5E-10	1.9E-10	1.8E-10	-	-	0.0000003	-	9.7E-11	1.8E-11	3.3E-08	4.3E-10	4.1E-10	1.6E-09	3.1E-11	3.1E-11	1.2E-10	3.1E-11	2.2E-10	1.1E-08	3.1E-09
HLC-S-1	L-12	1.1E-10	4.2E-10	2.2E-10	1.7E-10	-	-	0.0000014	-	8.8E-11	6.9E-12	9.3E-10	4.3E-10	4.8E-10	1.7E-09	3.6E-11	5.2E-11	3.6E-11	3.6E-11	6.4E-11	3.9E-09	3.6E-09
HLC-S-1	L-13	2.2E-10	3.8E-10	2.6E-10	1.5E-10	-	-	0.00000041	-	8.3E-11	5.5E-12	1.3E-09	4.0E-10	3.8E-10	1.6E-09	4.2E-11	1.5E-11	4.2E-11	4.2E-11	7.5E-11	1.5E-09	4.2E-09
HLC-S-1	L-14	2.2E-10	4.3E-10	1.2E-09	1.4E-10	-	-	0.00000047	-	8.2E-11	3.7E-12	1.4E-09	3.9E-10	4.3E-10	1.8E-09	4.7E-11	1.7E-11	4.7E-11	4.7E-11	1.3E-10	9.2E-10	4.7E-09
HLC-S-1	L-15	2.2E-10	4.0E-10	8.2E-11	1.2E-10	-	-	0.00000052	-	7.0E-11	4.1E-12	1.4E-09	3.7E-10	4.7E-10	2.0E-09	5.2E-11	8.4E-12	5.2E-11	5.2E-11	2.1E-10	1.6E-09	2.1E-08
HLC-S-1	L-16	2.6E-10	3.6E-10	9.0E-11	1.0E-10	-	-	0.00000057	-	6.9E-11	2.3E-12	1.4E-09	3.1E-10	5.2E-10	2.2E-09	5.8E-11	5.8E-13	5.8E-11	5.8E-11	2.3E-10	9.2E-10	2.3E-08
HLC-S-1	L-17	2.5E-10	3.7E-10	9.9E-11	9.9E-11	-	-	0.00011	-	6.3E-11	6.3E-13	2.0E-09	3.1E-10	5.7E-10	2.1E-09	6.3E-11	1.2E-10	6.3E-11	6.3E-11	6.3E-11	1.2E-09	6.3E-09
HLC-S-1	L-18	9.7E-11	2.4E-10	1.1E-10	6.0E-11	-	-	0.00000017	-	4.6E-11	1.4E-12	5.2E-10	1.8E-10	2.8E-10	1.8E-09	1.8E-11	3.4E-11	1.8E-11	1.8E-11	4.9E-11	1.0E-09	2.8E-08
HLC-S-1	L-19	9.2E-11	2.5E-10	1.3E-10	5.1E-11	-	-	0.0000002	-	4.5E-11	2.0E-13	8.1E-10	2.1E-10	4.4E-10	1.7E-09	2.0E-11	1.2E-10	2.0E-11	2.0E-11	3.6E-11	1.6E-10	2.0E-09
HLC-S-1	L-20	1.6E-10	2.7E-10	1.4E-10	3.7E-11	-	-	0.000065	-	3.9E-11	2.3E-13	1.3E-09	1.7E-10	3.6E-10	1.6E-09	2.3E-11	9.1E-11	2.3E-11	2.3E-11	2.5E-10	5.2E-10	2.3E-09
HLC-S-2	L-1	4.3E-11	4.9E-11	1.2E-09	3.6E-12	-	-	1.9E-08	-	1.3E-11	8.0E-11	4.6E-10	1.1E-11	8.7E-11	1.4E-09	2.0E-10	2.0E-12	3.1E-09	2.0E-10	1.5E-09	0.00000025	7.8E-08
HLC-S-2	L-2	3.4E-11	1.1E-10	8.6E-10	4.3E-11	-	-	3.4E-09	-	3.2E-11	1.6E-09	1.2E-10	4.4E-11	9.6E-11	9.9E-10	3.4E-11	5.5E-12	5.5E-10	3.4E-11	7.8E-10	0.00000016	0.00000022
HLC-S-2	L-3	9.5E-11	2.2E-10	6.8E-10	1.1E-10	-	-	1.1E-08	-	7.0E-11	2.5E-09	6.4E-11	1.1E-10	1.9E-10	2.0E-09	1.1E-10	7.0E-11	1.1E-10	1.1E-10	4.4E-10	7.6E-08	1.1E-08
HLC-S-2	L-4	7.5E-11	2.3E-10	3.1E-10	1.4E-10	-	-	1.2E-09	-	7.9E-11	3.3E-10	6.6E-12	1.5E-10	1.1E-10	6.9E-10	1.2E-11	3.1E-11	4.9E-11	1.2E-11	4.9E-11	5.1E-09	1.2E-09
HLC-S-2	L-5	1.3E-10	3.2E-10	3.8E-10	1.8E-10	-	-	0.000015	-	1.0E-10	1.2E-10	4.9E-12	2.4E-10	1.7E-10	9.5E-10	1.5E-11	5.0E-11	6.2E-11	1.5E-11	6.2E-11	1.5E-09	1.5E-09
HLC-S-2	L-6	1.0E-10	3.0E-10	2.0E-10	1.5E-10	-	-	0.0000077	-	8.5E-11	3.1E-11	1.1E-11	2.1E-10	3.5E-10	6.8E-10	7.8E-10	3.1E-11	7.8E-10	7.8E-10	4.9E-11	3.1E-09	7.8E-10
HLC-S-2	L-7	6.4E-11	3.5E-10	3.3E-10	1.6E-10	-	-	0.000013	-	9.6E-11	3.9E-11	9.2E-12	2.7E-10	2.5E-10	8.2E-10	1.3E-11	3.4E-11	1.3E-11	1.3E-11	3.0E-11	1.4E-09	1.3E-09
HLC-S-2	L-8	1.4E-10	5.7E-10	4.4E-10	2.3E-10	-	-	0.0000007	-	1.3E-10	4.1E-11	5.3E-11	4.9E-10	5.0E-10	2.0E-09	7.1E-11	2.3E-10	7.1E-11	7.1E-11	1.6E-10	1.6E-09	7.1E-09
HLC-S-2	L-9	1.1E-10	3.6E-10	1.3E-10	1.5E-10	-	-	0.00000021	-	9.5E-11	2.2E-11	1.9E-11	3.2E-10	2.9E-10	1.5E-09	2.2E-11	4.2E-11	2.2E-11	2.2E-11	8.6E-11	5.8E-10	2.2E-09
HLC-S-2	L-10	1.8E-10	3.6E-10	6.6E-10	1.5E-10	-	-	0.00000026	-	9.6E-11	1.1E-11	3.0E-11	3.9E-10	2.9E-10	1.4E-09	2.6E-11	4.2E-12	2.6E-11	2.6E-11	4.1E-11	3.3E-09	2.6E-09
HLC-S-2	L-11	2.1E-10	3.6E-10	2.0E-10	1.6E-10	-	-	0.00000032	-	1.0E-10	8.7E-12	4.6E-11	3.7E-10	4.3E-10	1.6E-09	3.2E-11	3.2E-11	3.2E-11	3.2E-11	7.2E-11	3.7E-09	3.2E-09
HLC-S-2	L-12	4.8E-11	3.8E-10	5.9E-11	1.6E-10	-	-	0.00000037	-	9.7E-11	7.3E-12	4.6E-11	4.1E-10	4.2E-10	1.6E-09	3.8E-11	3.8E-13	3.8E-11	3.8E-11	3.8E-11	1.4E-09	3.8E-09
HLC-S-2	L-13	1.7E-10	3.3E-10	2.7E-10	1.4E-10	-	-	0.00000043	-	8.9E-11	8.4E-12	4.6E-11	3.7E-10	3.9E-10	1.4E-09	4.3E-11	6.9E-12	4.3E-11	4.3E-11	4.3E-11	1.4E-09	4.3E-09
HLC-S-2	L-14	1.8E-10	3.5E-10	1.2E-09	1.4E-10	-	-	0.00000048	-	9.1E-11	6.3E-12	6.3E-11	3.7E-10	3.5E-10	1.8E-09	4.9E-11	1.9E-12	4.9E-11	4.9E-11	7.6E-11	2.0E-09	4.9E-09
HLC-S-2	L-15	1.9E-10	3.4E-10	8.4E-11	1.3E-10	-	-	0.00000053	-	8.6E-11	5.5E-12	7.7E-11	3.9E-10	4.8E-10	2.0E-09	5.4E-11	3.4E-11	5.4E-11	5.4E-11	8.4E-11	1.0E-09	2.1E-08
HLC-S-2	L-16	2.1E-10	3.7E-10	9.3E-11	1.3E-10	-	-	0.00000058	-	9.5E-11	4.7E-12	6.3E-11	5.6E-10	5.3E-10	1.5E-09	5.9E-11	8.5E-11	5.9E-11	5.9E-11	9.3E-11	3.1E-09	2.4E-08
HLC-S-2	L-17	2.1E-10	3.5E-10	1.0E-10	1.3E-10	-	-	0.00012	-	8.7E-11	5.0E-12	7.3E-11	3.8E-10	5.8E-10	2.1E-09	6.4E-11	9.2E-11	6.4E-11	6.4E-11	6.4E-11	2.3E-09	2.6E-08
HLC-S-2	L-18	8.7E-11	2.3E-10	1.1E-10	8.8E-11	-	-	0.00000018	-	6.7E-11	2.9E-12	2.0E-11	2.3E-10	3.4E-10	1.7E-09	1.8E-11	3.5E-11	1.8E-11	1.8E-11	2.8E-11	7.4E-10	2.9E-08
HLC-S-2	L-19	8.0E-11	2.5E-10	3.1E-11	7.2E-11	-	-	0.0000002	-	5.4E-11	1.6E-12	2.6E-11	2.4E-10	3.8E-10	1.5E-09	2.0E-11	3.2E-12	2.0E-11	2.0E-11	3.1E-11	1.2E-10	2.0E-09
HLC-S-2	L-20	7.6E-11	2.9E-10	1.5E-10	6.0E-11	-	-	0.000059	-	6.0E-11	1.4E-12	1.1E-10	2.1E-10	3.8E-10	1.6E-09	2.3E-11	2.3E-13	2.3E-11	2.3E-11	9.4E-11	9.6E-10	2.3E-09
HLC-S-3	L-1	3.3E-11	3.6E-11	1.3E-09	9.3E-12	-	-	5.0E-09	-	7.2E-12	7.6E-10	1.4E-08	1.2E-11	2.3E-11	7.9E-10	2.0E-10	2.0E-12	3.3E-09	2.0E-10	5.1E-09	0.00000017	0.0000013
HLC-S-3	L-2	3.6E-11	1.1E-10	5.6E-11	4.8E-11	-	-	8.7E-10	-	2.9E-11	8.3E-10	2.3E-09	3.6E-11	6.4E-11	4.6E-10	3.6E-11	1.3E-11	5.7E-10	3.6E-11	1.3E-09	5.2E-08	5.7E-08
HLC-S-3	L-3	6.9E-11	3.6E-10	6.8E-10	9.6E-11	-	-	2.6E-09	-	5.4E-11	7.1E-10	2.0E-09	8.3E-11	1.1E-10	8.8E-10	1.1E-10	1.1E-10	1.1E-10	1.1E-10	6.8E-10	2.8E-08	1.1E-08
HLC-S-3	L-4	7.9E-11	2.2E-10	3.1E-10	1.2E-10	-	-	3.0E-10	-	6.5E-11	8.9E-11	4.1E-10	1.3E-10	8.8E-11	2.7E-10	1.2E-11	4.0E-11	4.9E-11	1.2E-11	1.5E-10	4.0E-09	1.2E-09
HLC-S-3	L-5	1.1E-10	3.4E-10	3.9E-10	1.7E-10	-	-	0.0000038	-	9.7E-11	7.4E-11	3.4E-10	2.1E-10	1.8E-10	3.9E-10	1.6E-11	7.6E-11	2.5E-10	1.6E-11	3.9E-10	1.6E-08	6.3E-09
HLC-S-3	L-6	9.4E-11	3.0E-10	2.0E-10	1.5E-10	-	-	0.0000019	-	8.0E-11	3.1E-11	1.8E-10	2.1E-10	3.5E-10	3.2E-10	7.8E-10	3.1E-11	7.8E-10	7.8E-10	2.0E-10	7.8E-10	7.8E-10
HLC-S-3	L-7	7.6E-11	3.7E-10	3.3E-10	1.7E-10	-	-	0.0000032	-	9.5E-11	3.2E-11	1.8E-10	2.7E-10	2.5E-10	4.9E-10	1.3E-11	1.9E-11	5.3E-11	1.3E-11	8.3E-11	1.7E-09	1.3E-09
HLC-S-3	L-8	1.4E-10	6.0E-10	4.4E-10	2.4E-10	-	-	0.00000017	-	1.2E-10	3.6E-11	1.2E-09	4.6E-10	5.0E-10	1.3E-09	7.0E-11	2.3E-10	7.0E-11	7.0E-11	4.4E-10	8.8E-09	7.0E-09
HLC-S-3	L-9	9.8E-11	3.7E-10	1.3E-10	1.6E-10	-	-	5.3E-08	-	9.2E-11	1.4E-11	4.6E-10	3.2E-10	3.4E-10	9.9E-10	2.2E-11	8.6E-13	2.2E-11	2.2E-11	8.6E-11	6.8E-10	2.2E-09
HLC-S-3	L-10	1.8E-10	3.6E-10	1.7E-10	1.6E-10	-	-	6.6E-08	-	9.8E-11	6.2E-12	6.8E-10	3.8E-10	3.6E-10	1.1E-09	2.7E-11	3.9E-11	2.7E-11	2.7E-11	1.1E-10	1.7E-09	2.7E-09
HLC-S-3	L-11	2.2E-10	3.7E-10	5.0E-11	1.6E-10	-	-	7.8E-08	-	9.7E-11	6.2E-12	8.0E-10	3.8E-10	5.1E-10	1.3E-09	3.2E-11	1.3E-12	3.2E-11	3.2E-11	1.3E-10	1.7E-09	3.2E-09
HLC-S-3	L-12	7.4E-11	3.8E-10	2.4E-10	1.5E-10	-	-	9.2E-08	-	9.1E-11	3.9E-12	1.0E-09	4.1E-10	5.1E-10	1.4E-09	3.8E-11	3.8E-11	3.8E-11	3.8E-11	1.5E-10	2.2E-09	3.8E-09
HLC-S-3	L-13	1.9E-10	3.5E-10	6.8E-11	1.5E-10	-	-	0.00000011	-	9.1E-11	6.9E-12	8.6E-10	3.7E-10	3.9E-10	1.2E-09	4.3E-11	2.5E-10	4.3E-11	4.3E-11	1.7E-10	8.4E-10	4.3E-09
HLC-S-3	L-14	1.9E-10	3.7E-10	3.0E-10	1.5E-10	-	-	0.00000012	-	9.3E-11	6.3E-12	1.4E-09	3.8E-10	4.4E-10	1.4E-09	4.9E-11	4.9E-13	4.9E-11	4.9E-11	3.0E-10	2.2E-09	4.9E-09
HLC-S-3	L-15	1.9E-10	3.8E-10	8.5E-11	1.4E-10	-	-	0.00000013	-	8.6E-11	7.0E-12	1.4E-09	4.1E-10	6.0E-10	1.8E-09	5.4E-11	8.7E-12	5.4E-11	5.4E-11	3.4E-10	3.8E-09	5.4E-09
HLC-S-3	L-16	2.2E-10	3.7E-10	9.3E-11	1.4E-10	-	-	0.00000015	-	8.9E-11	3.4E-12	1.4E-09	3.7E-10	5.3E-10	1.7E-09	5.9E-11	1.2E-10	5.9E-11	5.9E-11	3.7E-10	3.1E-09	5.9E-09
HLC-S-3	L-17	2.3E-10	4.1E-10	1.0E-10	1.3E-10	-	-	0.000029	-	8.3E-11	5.1E-12	3.7E-09	3.5E-10	5.8E-10	1.9E-09	6.5E-11	6.5E-13	6.5E-11	6.5E-11	1.0E-09	4.6E-09	0.0000001
HLC-S-3	L-18	8.2E-11	2.5E-10	1.1E-10	8.5E-11	-	-	4.4E-08	-	6.3E-11	1.0E-12	6.4E-10	2.4E-10	3.9E-10	1.3E-09	1.8E-11	2.6E-11	1.8E-11	1.8E-11	1.1E-10	4.2E-09	7.2E-09
HLC-S-3	L-19	6.1E-11	2.7E-10	1.3E-10	6.7E-11	-	-	5.0E-08	-	5.5E-11	8.1E-13	8.5E-10	2.3E-10	3.8E-10	1.5E-09	2.0E-11	2.0E-13	2.0E-11	2.6E-10	3.2E-10	1.5E-08	2.0E-09
HLC-S-3	L-20	1.5E-11	2.9E-10	1.5E-10	5.0E-11	-	-	0.000015	-	4.9E-11	2.3E-13	1.9E-09	1.8E-10	3.8E-10	1.4E-09	2.3E-11	2.3E-13	2.3E-11	2.3E-11	2.1E-10	4.5E-10	2.3E-09
HLC-S-4	L-1	3.4E-11	3.9E-11	1.2E-09	3.0E-12	-	-	1.8E-08	-	8.5E-12	7.7E-11	3.4E-09	1.1E-11	8.3E-11	1.4E-09	1.9E-10	1.9E-12	7.5E-10	1.9E-10	5.7E-09	0.0000001	7.5E-08
HLC-S-4	L-2	4.7E-11	1.4E-10	8.9E-10	5.1E-11	-	-	3.5E-09	-	4.1E-11	2.5E-09	6.4E-10	5.7E-11	9.9E-11	1.4E-09	3.6E-11	1.4E-12	1.4E-10	3.6E-11	7.2E-10	2.1E-08	0.00000036
HLC-S-4	L-3	1.2E-10	2.8E-10	6.6E-10	1.2E-10	-	-	1.0E-08	-	7.4E-11	2.9E-09	1.2E-09	1.4E-10	1.9E-10	3.1E-09	1.1E-10	6.8E-11	1.1E-10	1.1E-10	6.6E-10	6.7E-08	1.1E-08
HLC-S-4	L-4	8.5E-11	2.8E-10	3.0E-10	1.7E-10	-	-	1.2E-09	-	8.0E-11	7.8E-10	1.1E-10	1.8E-10	1.1E-10	1.0E-09	1.2E-11	7.8E-12	4.9E-11	1.2E-11	1.9E-10	2.3E-09	1.2E-09
HLC-S-4	L-5	1.6E-10	4.9E-10	3.9E-10	2.9E-10	-	-	0.000015	-	1.4E-10	3.6E-10	1.2E-10	3.2E-10	2.1E-10	1.3E-09	1.6E-11	6.3E-11	6.3E-11	1.6E-11	1.9E-10	4.0E-09	1.6E-09
HLC-S-4	L-6	1.3E-10	4.0E-10	2.0E-10	2.4E-10	-	-	0.0000076	-	1.1E-10	8.0E-11	1.1E-10	3.2E-10	3.5E-10	9.1E-10	7.8E-10	3.1E-11	7.8E-10	7.8E-10	2.0E-10	7.8E-10	7.8E-10
HLC-S-4	L-7	1.0E-10	5.0E-10	3.3E-10	2.6E-10	-	-	0.000013	-	1.3E-10	7.5E-11	1.7E-10	3.9E-10	1.5E-10	1.3E-09	1.3E-09	5.2E-11	1.3E-09	1.3E-09	3.3E-10	1.3E-09	1.3E-09
HLC-S-4	L-8	1.3E-10	8.8E-10	4.4E-10	4.2E-10	-	-	0.00000069	-	1.8E-10	7.0E-11	1.3E-09	7.8E-10	6.3E-10	3.4E-09	7.0E-11	3.4E-10	7.0E-11	7.0E-11	4.4E-10	4.0E-10	7.0E-09
HLC-S-4	L-9	9.9E-11	5.2E-10	5.4E-10	2.6E-10	-	-	0.00000021	-	1.2E-10	2.1E-11	3.2E-10	4.8E-10	3.4E-10	2.0E-09	2.1E-11	3.4E-12	2.1E-11	2.1E-11	8.6E-11	1.2E-09	2.1E-09
HLC-S-4	L-10	2.5E-10	5.3E-10	1.7E-10	2.3E-10	-	-	0.00000026	-	1.2E-10	1.2E-11	4.5E-10	5.2E-10	3.6E-10	1.9E-09	2.7E-11	8.6E-11	2.7E-11	2.7E-11	1.1E-10	4.9E-09	2.7E-09
HLC-S-4	L-11	2.9E-10	5.4E-10	2.0E-10	2.3E-10	-	-	0.00000032	-	1.2E-10	1.2E-11	5.4E-10	4.9E-10	5.1E-10	2.1E-09	3.2E-11	4.6E-11	3.2E-11	3.2E-11	2.0E-10	2.5E-09	3.2E-09
HLC-S-4	L-12	1.2E-10	6.0E-10	2.3E-10	2.3E-10	-	-	0.00000037	-	1.2E-10	7.3E-12	9.1E-10	5.0E-10	5.0E-10	2.2E-09	3.8E-11	5.4E-11	3.8E-11	3.8E-11	1.5E-10	1.5E-09	3.8E-09
HLC-S-4	L-13	2.5E-10	5.1E-10	2.7E-10	1.8E-10	-	-	0.00000042	-	1.0E-10	5.6E-12	9.3E-10	4.4E-10	3.9E-10	1.8E-09	4.3E-11	4.3E-11	4.3E-11	4.4E-10	1.7E-10	1.1E-08	4.3E-09
HLC-S-4	L-14	2.5E-10	4.9E-10	3.0E-10	1.6E-10	-	-	0.00000048	-	9.5E-11	5.0E-12	1.2E-09	4.4E-10	4.4E-10	2.3E-09	4.9E-11	4.9E-11	4.9E-11	4.9E-11	3.0E-10	1.3E-09	4.9E-09
HLC-S-4	L-15	2.3E-10	4.8E-10	8.4E-11	1.4E-10	-	-	0.00000053	-	8.6E-11	3.1E-12	1.1E-09	4.2E-10	4.8E-10	2.6E-09	5.4E-11	5.4E-11	5.4E-11	5.4E-11	4.8E-10	1.7E-09	2.2E-08
HLC-S-4	L-16	2.9E-10	5.0E-10	3.7E-10	1.2E-10	-	-	0.00000058	-	8.5E-11	5.9E-13	1.6E-09	3.8E-10	5.3E-10	2.8E-09	5.9E-11	9.4E-12	5.9E-11	5.9E-11	3.7E-10	9.6E-09	5.9E-09
HLC-S-4	L-17	2.8E-10	4.8E-10	4.0E-10	1.2E-10	-	-	0.000092	-	7.8E-11	2.6E-12	2.7E-09	3.5E-10	5.8E-10	2.8E-09	6.5E-11	6.5E-13	6.5E-11	6.5E-11	4.0E-10	4.6E-09	0.0000001
HLC-S-4	L-18	1.4E-10	2.9E-10	4.6E-10	6.9E-11	-	-	0.00000018	-	5.7E-11	7.3E-13	4.5E-10	2.2E-10	3.4E-10	2.3E-09	1.8E-11	7.3E-13	1.8E-11	1.8E-11	1.1E-10	1.4E-09	2.9E-08
HLC-S-4	L-19	8.2E-11	3.1E-10	1.3E-10	5.6E-11	-	-	0.0000002	-	5.2E-11	1.6E-12	3.9E-10	1.7E-10	3.3E-10	2.6E-09	2.1E-11	4.0E-11	2.1E-11	2.1E-11	1.8E-10	1.2E-09	8.2E-09
HLC-S-4	L-20	3.9E-11	3.1E-10	1.5E-10	3.9E-11	-	-	0.000059	-	4.6E-11	2.3E-13	8.9E-10	1.6E-10	3.8E-10	2.3E-09	2.3E-11	1.6E-10	2.3E-11	2.3E-11	5.9E-10	2.3E-11	2.3E-09

- Parameter not analyzed

Appendix E, Table E-25
HLC-S LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HLC-S-1	L-1	1.8E-10	6.8E-12	7.3E-10	1.2E-08	4.8E-12	1.0E-11	1.8E-10	7.3E-12	1.4E-11	1.8E-10	0.00000055	1.1E-12	1.7E-08	-	-	8.0E-11	-
HLC-S-1	L-2	3.5E-11	4.4E-10	1.4E-10	2.0E-09	3.3E-11	8.2E-11	3.5E-11	3.0E-11	3.0E-10	8.8E-10	0.00000035	8.3E-12	1.6E-09	-	-	3.3E-10	-
HLC-S-1	L-3	4.2E-10	1.0E-09	9.4E-10	8.2E-08	5.2E-11	1.9E-10	1.0E-10	4.2E-11	6.9E-10	1.7E-09	0.00000076	2.0E-11	2.4E-08	-	-	5.0E-10	-
HLC-S-1	L-4	1.2E-11	1.4E-09	1.1E-10	1.9E-09	2.4E-11	1.9E-10	1.2E-11	3.1E-11	8.4E-10	9.7E-10	2.5E-08	2.2E-11	2.8E-10	-	-	2.8E-10	-
HLC-S-1	L-5	1.5E-11	2.4E-09	2.4E-10	8.5E-10	3.3E-11	2.6E-10	1.5E-11	5.2E-11	1.3E-09	1.8E-09	7.4E-08	4.7E-11	1.5E-11	-	-	3.4E-10	-
HLC-S-1	L-6	7.5E-10	2.2E-09	1.9E-10	7.5E-10	2.3E-11	1.4E-10	7.5E-10	5.1E-11	2.1E-09	7.5E-10	4.8E-08	3.2E-11	7.5E-10	-	-	2.9E-10	-
HLC-S-1	L-7	1.3E-09	2.8E-09	3.2E-10	1.3E-09	2.8E-11	2.1E-10	1.3E-09	6.4E-11	2.8E-09	1.3E-09	6.3E-08	8.5E-11	1.3E-09	-	-	3.2E-10	-
HLC-S-1	L-8	6.8E-11	4.3E-09	2.7E-10	4.4E-09	5.5E-11	3.8E-10	6.8E-11	1.0E-10	3.5E-09	4.4E-09	0.00000017	1.7E-10	1.6E-09	-	-	4.9E-10	-
HLC-S-1	L-9	2.1E-11	2.6E-09	1.9E-10	2.1E-09	3.6E-11	2.0E-10	2.1E-11	6.5E-11	2.1E-09	2.5E-09	0.00000015	9.4E-11	2.1E-11	-	-	4.0E-10	-
HLC-S-1	L-10	2.6E-11	2.5E-09	2.3E-10	3.1E-09	4.0E-11	1.2E-10	2.6E-11	8.1E-11	1.5E-09	3.1E-09	0.00000023	1.1E-10	9.3E-10	-	-	4.5E-10	-
HLC-S-1	L-11	3.1E-11	2.3E-09	7.6E-10	1.1E-08	4.1E-11	1.2E-10	3.1E-11	8.0E-11	1.3E-09	3.1E-09	0.00000025	1.1E-10	6.0E-09	-	-	4.7E-10	-
HLC-S-1	L-12	3.6E-11	2.1E-09	3.2E-10	2.3E-09	4.5E-11	1.2E-10	3.6E-11	7.7E-11	1.5E-09	2.9E-09	0.0000002	1.4E-10	1.5E-09	-	-	3.6E-10	-
HLC-S-1	L-13	4.2E-11	1.8E-09	1.7E-10	2.7E-09	3.6E-11	1.1E-10	4.2E-11	7.2E-11	1.1E-09	2.1E-09	0.00000018	1.4E-10	2.4E-09	-	-	3.0E-10	-
HLC-S-1	L-14	4.7E-11	1.9E-09	1.9E-10	2.3E-09	4.1E-11	9.5E-11	4.7E-11	8.1E-11	7.3E-10	3.0E-09	0.0000002	1.5E-10	1.9E-09	-	-	2.5E-10	-
HLC-S-1	L-15	5.2E-11	1.7E-09	4.7E-10	3.4E-09	4.1E-11	1.3E-10	5.2E-11	7.9E-11	5.6E-10	2.6E-09	0.00000042	1.6E-10	1.6E-08	-	-	3.1E-10	-
HLC-S-1	L-16	5.8E-11	1.6E-09	2.3E-10	2.4E-09	5.3E-11	1.1E-10	5.8E-11	7.7E-11	9.2E-10	2.1E-09	0.00000017	1.5E-10	8.8E-09	-	-	2.5E-10	-
HLC-S-1	L-17	6.3E-11	1.6E-09	2.5E-10	2.7E-09	5.3E-11	9.1E-11	6.3E-11	8.4E-11	4.6E-10	2.3E-09	0.00000012	8.1E-11	3.7E-09	-	-	2.4E-10	-
HLC-S-1	L-18	1.8E-11	6.8E-10	2.8E-10	1.3E-09	2.4E-11	4.4E-11	1.8E-11	6.5E-11	1.5E-09	1.4E-09	0.00000032	9.3E-11	6.3E-10	-	-	2.7E-10	-
HLC-S-1	L-19	2.0E-11	1.0E-09	1.8E-10	1.3E-09	2.7E-11	6.1E-11	2.0E-11	7.4E-11	3.9E-10	1.6E-09	8.5E-08	1.3E-10	2.0E-11	-	-	2.2E-10	-
HLC-S-1	L-20	2.3E-11	8.8E-10	3.6E-10	2.1E-09	2.7E-11	4.9E-11	2.3E-11	7.8E-11	2.7E-10	1.5E-09	0.00000025	9.8E-11	1.2E-09	-	-	3.0E-10	-
HLC-S-2	L-1	2.0E-10	1.5E-11	7.8E-10	0.00000031	1.5E-11	3.0E-11	2.0E-10	2.0E-11	1.4E-10	2.0E-10	0.0000020	2.8E-12	8.0E-09	-	-	1.8E-10	-
HLC-S-2	L-2	2.7E-10	2.9E-10	1.7E-09	0.00000019	2.7E-11	9.6E-11	3.4E-11	2.5E-11	4.1E-10	5.5E-10	0.0000011	7.8E-12	0.00000032	-	-	2.7E-10	-
HLC-S-2	L-3	1.1E-10	8.0E-10	4.4E-10	1.1E-08	4.2E-11	1.8E-10	1.1E-10	3.5E-11	6.2E-10	9.8E-10	0.00000053	1.8E-11	1.3E-08	-	-	4.7E-10	-
HLC-S-2	L-4	1.2E-11	1.2E-09	4.9E-11	5.5E-10	2.4E-11	2.0E-10	1.2E-11	2.9E-11	8.5E-10	9.9E-10	2.2E-08	2.1E-11	1.3E-10	-	-	2.8E-10	-
HLC-S-2	L-5	1.5E-11	1.7E-09	6.2E-11	4.9E-10	3.0E-11	3.0E-10	1.5E-11	4.4E-11	1.2E-09	1.5E-09	4.7E-08	4.0E-11	1.5E-11	-	-	3.7E-10	-
HLC-S-2	L-6	7.8E-10	1.4E-09	2.0E-10	4.3E-09	2.2E-11	1.3E-10	7.8E-10	4.8E-11	1.7E-09	7.8E-10	6.4E-08	2.8E-11	7.8E-10	-	-	2.9E-10	-
HLC-S-2	L-7	1.3E-11	1.8E-09	1.2E-10	1.5E-09	2.9E-11	2.0E-10	1.3E-11	5.7E-11	2.4E-09	1.9E-09	7.4E-08	5.8E-11	1.0E-10	-	-	3.3E-10	-
HLC-S-2	L-8	7.1E-11	2.9E-09	2.8E-10	3.1E-09	6.0E-11	3.5E-10	7.1E-11	9.4E-11	2.8E-09	3.5E-09	0.00000025	1.4E-10	2.8E-10	-	-	4.6E-10	-
HLC-S-2	L-9	2.2E-11	1.9E-09	8.6E-11	9.6E-10	3.9E-11	1.9E-10	2.2E-11	6.2E-11	2.0E-09	2.2E-09	0.00000012	7.8E-11	2.2E-11	-	-	4.4E-10	-
HLC-S-2	L-10	2.6E-11	2.0E-09	1.1E-10	2.0E-09	4.0E-11	1.3E-10	2.6E-11	7.6E-11	1.5E-09	2.6E-09	0.00000011	9.6E-11	2.6E-11	-	-	4.0E-10	-
HLC-S-2	L-11	3.2E-11	2.0E-09	1.3E-10	3.4E-09	4.6E-11	1.6E-10	3.2E-11	7.6E-11	1.4E-09	2.6E-09	0.00000014	1.1E-10	3.0E-09	-	-	3.7E-10	-
HLC-S-2	L-12	3.8E-11	1.9E-09	1.5E-10	1.4E-09	4.6E-11	1.6E-10	3.8E-11	8.1E-11	1.9E-09	2.4E-09	0.00000031	1.3E-10	3.8E-11	-	-	3.2E-10	-
HLC-S-2	L-13	4.3E-11	1.7E-09	1.7E-10	1.7E-09	3.8E-11	1.3E-10	4.3E-11	6.5E-11	1.3E-09	2.1E-09	0.00000024	1.3E-10	4.3E-11	-	-	2.8E-10	-
HLC-S-2	L-14	4.9E-11	1.6E-09	1.9E-10	3.1E-09	4.6E-11	1.1E-10	4.9E-11	7.4E-11	1.0E-09	2.4E-09	0.00000035	1.4E-10	6.5E-09	-	-	3.5E-10	-
HLC-S-2	L-15	5.4E-11	1.7E-09	2.1E-10	2.9E-09	4.4E-11	1.5E-10	5.4E-11	8.1E-11	7.5E-10	2.6E-09	0.0000003	1.5E-10	4.9E-09	-	-	3.2E-10	-
HLC-S-2	L-16	1.7E-08	1.8E-09	5.3E-10	2.1E-09	5.9E-11	1.4E-10	5.9E-11	9.0E-11	1.5E-09	2.1E-09	0.00000033	1.6E-10	4.7E-10	-	-	3.5E-10	-
HLC-S-2	L-17	6.4E-11	1.6E-09	2.6E-10	3.1E-09	5.5E-11	1.1E-10	6.4E-11	8.5E-11	5.3E-10	3.1E-09	0.00000092	1.1E-10	3.5E-08	-	-	3.1E-10	-
HLC-S-2	L-18	1.8E-11	8.8E-10	7.2E-11	9.7E-10	2.7E-11	5.2E-11	1.8E-11	6.6E-11	2.1E-09	1.8E-09	0.00000033	9.6E-11	2.3E-10	-	-	3.1E-10	-
HLC-S-2	L-19	2.0E-11	1.0E-09	8.0E-11	8.9E-10	3.0E-11	7.5E-11	2.0E-11	7.4E-11	5.9E-10	2.0E-09	0.00000015	1.1E-10	2.0E-11	-	-	2.7E-10	-
HLC-S-2	L-20	2.3E-11	9.3E-10	3.8E-10	1.4E-09	2.9E-11	6.5E-11	2.3E-11	8.0E-11	4.1E-10	1.9E-09	0.00000053	1.1E-10	4.1E-09	-	-	2.9E-10	-
HLC-S-3	L-1	2.0E-10	5.2E-11	3.3E-09	0.00000022	6.1E-12	2.5E-11	2.0E-10	5.9E-12	2.4E-10	2.0E-10	0.0000015	2.0E-12	5.5E-09	-	-	1.3E-10	-
HLC-S-3	L-2	3.6E-11	3.4E-10	1.3E-09	9.0E-08	1.4E-11	8.9E-11	3.6E-11	1.5E-11	4.2E-10	5.7E-10	0.00000047	8.5E-12	8.7E-09	-	-	1.4E-10	-
HLC-S-3	L-3	6.2E-10	7.3E-10	6.9E-09	6.9E-09	2.2E-11	1.5E-10	1.1E-10	2.6E-11	5.7E-10	9.7E-10	0.0000002	1.6E-11	8.5E-08	-	-	3.6E-10	-
HLC-S-3	L-4	1.2E-11	1.2E-09	2.0E-10	4.9E-10	1.6E-11	1.9E-10	1.2E-11	2.6E-11	7.5E-10	1.0E-09	1.0E-08	2.1E-11	2.8E-10	-	-	1.5E-10	-
HLC-S-3	L-5	1.6E-11	1.9E-09	5.7E-10	1.2E-08	2.3E-11	2.4E-10	1.6E-11	4.5E-11	1.6E-09	1.6E-09	7.7E-08	4.1E-11	6.3E-11	-	-	2.4E-10	-
HLC-S-3	L-6	7.8E-10	1.7E-09	1.3E-08	7.8E-10	1.6E-11	1.3E-10	7.8E-10	4.5E-11	2.1E-09	7.8E-10	2.0E-08	3.0E-11	7.8E-10	-	-	1.4E-10	-
HLC-S-3	L-7	1.3E-11	2.0E-09	4.8E-10	1.1E-09	2.5E-11	1.8E-10	1.3E-11	5.7E-11	2.7E-09	1.9E-09	3.3E-08	6.0E-11	3.6E-10	-	-	2.0E-10	-
HLC-S-3	L-8	7.0E-11	3.2E-09	1.1E-09	4.9E-09	5.2E-11	2.9E-10	7.0E-11	9.3E-11	3.8E-09	3.4E-09	0.0000001	1.3E-10	5.5E-10	-	-	3.0E-10	-
HLC-S-3	L-9	2.2E-11	2.2E-09	3.4E-10	4.0E-10	3.6E-11	1.7E-10	2.2E-11	6.2E-11	2.3E-09	2.2E-09	2.1E-08	8.0E-11	2.2E-11	-	-	2.9E-10	-
HLC-S-3	L-10	2.7E-11	2.3E-09	4.3E-10	1.3E-09	4.0E-11	1.3E-10	2.7E-11	7.8E-11	1.8E-09	2.7E-09	5.5E-08	1.0E-10	2.7E-11	-	-	3.4E-10	-
HLC-S-3	L-11	3.2E-11	2.3E-09	5.1E-10	1.3E-09	4.3E-11	1.3E-10	3.2E-11	7.6E-11	1.5E-09	2.6E-09	0.00000012	1.1E-10	5.1E-10	-	-	3.7E-10	-
HLC-S-3	L-12	3.8E-11	2.2E-09	6.0E-10	7.1E-10	4.7E-11	1.3E-10	3.8E-11	7.2E-11	2.1E-09	2.4E-09	8.0E-08	1.4E-10	2.2E-10	-	-	3.8E-10	-
HLC-S-3	L-13	4.3E-11	1.9E-09	6.9E-10	9.4E-10	3.8E-11	1.2E-10	4.3E-11	6.6E-11	1.2E-09	2.1E-09	0.00000013	1.3E-10	1.6E-09	-	-	2.8E-10	-
HLC-S-3	L-14	4.9E-11	1.9E-09	7.8E-10	2.2E-09	4.4E-11	1.1E-10	4.9E-11	7.3E-11	1.1E-09	3.1E-09	0.00000017	1.4E-10	1.1E-09	-	-	2.9E-10	-
HLC-S-3	L-15	5.4E-11	2.0E-09	8.7E-10	4.4E-09	4.6E-11	1.4E-10	5.4E-11	8.2E-11	9.4E-10	2.7E-09	0.00000027	1.6E-10	8.7E-10	-	-	3.6E-10	-
HLC-S-3	L-16	5.9E-11	1.9E-09	9.5E-10	2.6E-09	6.3E-11	1.3E-10	5.9E-11	7.9E-11	1.4E-09	2.1E-09	0.00000033	1.5E-10	2.4E-09	-	-	2.9E-10	-
HLC-S-3	L-17	6.5E-11	1.9E-09	6.5E-09	1.4E-09	6.5E-11	1.2E-10	6.5E-11	8.7E-11	3.2E-10	2.3E-09	0.00000079	1.1E-10	9.8E-08	-	-	3.5E-10	-
HLC-S-3	L-18	1.8E-11	8.1E-10	2.9E-10	1.9E-09	3.3E-11	5.5E-11	1.8E-11	6.2E-11	2.1E-09	1.8E-09	0.00000016	1.1E-10	7.2E-11	-	-	2.8E-10	-
HLC-S-3	L-19	2.0E-11	1.1E-09	2.1E-08	3.8E-09	3.0E-11	7.0E-11	2.0E-11	6.9E-11	6.5E-10	1.6E-09	0.00000032	1.2E-10	2.1E-08	-	-	3.1E-10	-
HLC-S-3	L-20	2.3E-11	1.0E-09	6.0E-09	1.0E-09	3.1E-11	5.5E-11	2.3E-11	8.0E-11	3.7E-10	1.9E-09	0.00000046	9.2E-11	3.8E-09	-	-	3.1E-10	-
HLC-S-4	L-1	1.9E-10	1.4E-11	3.0E-09	0.00000029	1.7E-11	2.8E-11	1.9E-10	1.9E-11	9.2E-11	1.9E-10	0.0000017	2.3E-12	6.7E-09	-	-	1.7E-10	-
HLC-S-4	L-2	3.6E-11	3.1E-10	5.7E-10	6.2E-08	5.6E-11	1.1E-10	3.6E-11	4.2E-11	3.8E-10	5.7E-10	0.00000051	1.1E-11	1.5E-09	-	-	2.6E-10	-
HLC-S-4	L-3	1.1E-10	7.7E-10	1.7E-09	2.5E-08	7.8E-11	2.0E-10	1.1E-10	5.7E-11	7.2E-10	1.7E-09	0.00000045	2.7E-11	3.3E-09	-	-	5.7E-10	-
HLC-S-4	L-4	1.2E-11	1.5E-09	1.9E-10	3.9E-09	3.6E-11	2.4E-10	1.2E-11	4.1E-11	1.3E-09	1.2E-09	3.7E-08	3.2E-11	1.6E-10	-	-	3.7E-10	-
HLC-S-4	L-5	1.6E-11	2.8E-09	2.5E-10	6.0E-09	3.9E-11	3.7E-10	1.6E-11	6.3E-11	2.5E-09	1.9E-09	8.9E-08	6.3E-11	1.6E-11	-	-	4.8E-10	-
HLC-S-4	L-6	7.8E-10	2.4E-09	3.1E-09	7.8E-10	2.7E-11	2.0E-10	7.8E-10	5.9E-11	3.1E-09	7.8E-10	3.8E-08	4.9E-11	7.8E-10	-	-	3.5E-10	-
HLC-S-4	L-7	1.3E-09	2.7E-09	1.3E-09	1.3E-09	3.9E-11	2.8E-10	1.3E-09	7.6E-11	4.7E-09	1.3E-09	0.00000011	1.0E-10	1.3E-09	-	-	3.8E-10	-
HLC-S-4	L-8	7.0E-11	4.6E-09	1.1E-09	9.3E-09	7.4E-11	5.1E-10	7.0E-11	1.2E-10	5.7E-09	4.5E-09	0.00000063	2.4E-10	7.0E-11	-	-	7.0E-10	-
HLC-S-4	L-9	2.1E-11	3.0E-09	3.4E-10	2.6E-09	4.3E-11	2.6E-10	2.1E-11	7.9E-11	3.6E-09	2.6E-09	0.00000011	1.3E-10	1.2E-10	-	-	4.9E-10	-
HLC-S-4	L-10	2.7E-11	2.7E-09	9.6E-10	8.6E-09	4.7E-11	1.7E-10	2.7E-11	9.8E-11	2.7E-09	3.2E-09	0.00000019	1.6E-10	2.7E-11	-	-	4.9E-10	-
HLC-S-4	L-11	3.2E-11	2.5E-09	5.1E-10	5.4E-09	5.3E-11	1.7E-10	3.2E-11	9.8E-11	2.6E-09	3.2E-09	0.00000039	1.8E-10	5.1E-10	-	-	4.0E-10	-
HLC-S-4	L-12	3.8E-11	2.3E-09	6.0E-10	4.1E-09	5.3E-11	1.7E-10	3.8E-11	1.0E-10	2.4E-09	3.0E-09	0.00000016	2.0E-10	3.8E-11	-	-	4.4E-10	-
HLC-S-4	L-13	4.3E-11	2.0E-09	1.5E-09	7.8E-09	4.9E-11	1.4E-10	4.3E-11	9.7E-11	1.5E-09	2.8E-09	0.00000015	2.1E-10	2.5E-10	-	-	3.7E-10	-
HLC-S-4	L-14	4.9E-11	2.0E-09	7.8E-10	8.9E-09	5.2E-11	1.2E-10	4.9E-11	1.1E-10	1.5E-09	3.1E-09	0.00000039	2.1E-10	1.3E-09	-	-	3.5E-10	-
HLC-S-4	L-15	5.4E-11	2.0E-09	8.6E-10	9.1E-09	5.6E-11	1.6E-10	5.4E-11	1.1E-10	1.2E-09	2.6E-09	0.00000059	2.5E-10	8.6E-10	-	-	3.9E-10	-
HLC-S-4	L-16	5.9E-11	1.8E-09	2.1E-09	2.1E-08	7.2E-11	1.4E-10	5.9E-11	1.0E-10	2.1E-09	2.9E-09	0.00000025	2.4E-10	9.4E-10	-	-	3.2E-10	-
HLC-S-4	L-17	6.5E-11	1.8E-09	1.0E-09	1.2E-08	7.3E-11	1.2E-10	6.5E-11	1.1E-10	8.6E-10	2.3E-09	0.0000017	1.7E-10	1.6E-08	-	-	4.2E-10	-
HLC-S-4	L-18	1.8E-11	9.0E-10	2.9E-10	6.6E-09	3.5E-11	6.1E-11	1.8E-11	9.3E-11	3.3E-09	1.8E-09	0.00000053	1.4E-10	1.8E-11	-	-	1.7E-09	-
HLC-S-4	L-19	2.1E-11	1.2E-09	3.0E-09	4.6E-09	3.8E-11	7.0E-11	2.1E-11	1.0E-10	7.4E-10	2.1E-09	0.0000020	1.2E-10	3.0E-08	-	-	4.0E-10	-
HLC-S-4	L-20	2.3E-11	1.1E-09	3.4E-09	2.3E-09	4.5E-11	6.9E-11	2.3E-11	1.0E-10	5.6E-10	1.9E-09	0.00000094	1.2E-10	1.8E-09	-	-	4.0E-10	-

- Parameter not analyzed

Appendix E, Table E-26
HHC-S LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Date	Cumulative Leaching Time	Sample Diameter	Sample Height	Sample Volume	Eluate Mass	Eluate Density	Eluate volume	Surface Area Exposed to Eluent	Liquid:Surface Area Ratio	Sample mass before test	Sample dry density	Acidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Total Dissolved Solids	Total Hardness	Ca	Cl
			d	m	m	m^3	g	g/cm^3	L	m^2	mL/cm^2	kg	kg/m^3	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHC-S-1	L-1	2020-01-13	0.080	0.076	0.15	0.00067	4262	1.00	4.3	0.044	9.7	0.98	1472	5.5E-08	7.0E-11	5.5E-08	1.1E-10	6.2E-12	6.2E-11	3.7E-11	5.1E-11	9.8E-14
HHC-S-1	L-2	2020-01-14	1.0	0.076	0.15	0.00067	4403	1.00	4.4	0.044	10.0	0.98	1472	9.0E-09	1.9E-10	9.0E-09	1.3E-10	3.7E-10	2.5E-10	8.3E-11	7.9E-11	3.3E-11
HHC-S-1	L-3	2020-01-15	2.0	0.076	0.15	0.00067	4416	1.00	4.4	0.044	10	0.98	1472	2.7E-08	2.2E-10	2.7E-08	1.9E-10	3.1E-10	3.6E-10	2.5E-10	2.5E-10	4.4E-13
HHC-S-1	L-4	2020-01-20	7.0	0.076	0.15	0.00067	4422	1.00	4.4	0.044	10	0.98	1472	3.1E-09	1.5E-10	3.1E-09	4.6E-11	6.5E-10	1.6E-10	2.1E-10	2.1E-10	1.7E-11
HHC-S-1	L-5	2020-01-27	14	0.076	0.15	0.00067	4425	1.00	4.4	0.044	10	0.98	1472	3.9E-09	1.5E-10	3.9E-09	3.3E-11	7.8E-10	1.4E-10	6.5E-10	6.7E-10	8.6E-12
HHC-S-1	L-6	2020-02-10	28	0.076	0.15	0.00067	4424	1.00	4.4	0.044	10	0.98	1472	2.0E-09	6.9E-11	2.0E-09	2.7E-11	2.6E-10	7.5E-11	9.9E-10	1.0E-09	5.6E-12
HHC-S-1	L-7	2020-02-24	42	0.076	0.15	0.00067	4424	1.00	4.4	0.044	10	0.98	1472	3.3E-09	8.5E-11	3.3E-09	3.8E-11	2.7E-10	1.0E-10	2.0E-09	2.0E-09	5.4E-12
HHC-S-1	L-8	2020-03-02	49	0.076	0.15	0.00067	4427	1.00	4.4	0.044	10	0.98	1472	1.7E-08	2.2E-10	1.7E-08	1.4E-10	5.1E-10	1.8E-10	7.4E-09	7.4E-09	7.1E-12
HHC-S-1	L-9	2020-03-16	63	0.076	0.15	0.00067	4422	1.00	4.4	0.044	10	0.98	1472	5.3E-09	1.2E-10	5.3E-09	7.0E-11	2.9E-10	6.3E-11	3.3E-09	3.3E-09	3.9E-12
HHC-S-1	L-10	2020-03-30	77	0.076	0.15	0.00067	4426	1.00	4.4	0.044	10	0.98	1472	6.7E-09	1.3E-10	6.7E-09	4.0E-11	5.1E-10	1.0E-10	4.6E-09	4.6E-09	4.8E-12
HHC-S-1	L-11	2020-04-13	91	0.076	0.15	0.00067	4426	1.00	4.4	0.044	10	0.98	1472	8.1E-09	1.2E-10	8.1E-09	5.7E-11	3.6E-10	1.4E-10	5.7E-09	5.8E-09	3.3E-12
HHC-S-1	L-12	2020-04-27	105	0.076	0.15	0.00067	4422	1.00	4.4	0.044	10	0.98	1472	9.4E-09	1.8E-10	9.4E-09	5.5E-11	7.7E-10	1.2E-10	6.7E-09	6.7E-09	3.8E-12
HHC-S-1	L-13	2020-05-11	119	0.076	0.15	0.00067	4424	1.00	4.4	0.044	10	0.98	1472	1.1E-08	1.6E-10	1.1E-08	2.6E-11	9.5E-10	7.0E-11	6.6E-09	6.6E-09	1.9E-12
HHC-S-1	L-14	2020-05-25	133	0.076	0.15	0.00067	4428	1.00	4.4	0.044	10	0.98	1472	1.2E-08	1.7E-10	1.2E-08	7.2E-11	6.0E-10	2.6E-10	5.4E-09	5.5E-09	2.2E-12
HHC-S-1	L-15	2020-06-08	147	0.076	0.15	0.00067	4425	1.00	4.4	0.044	10	0.98	1472	1.3E-08	1.7E-10	1.3E-08	4.8E-11	8.0E-10	1.2E-10	6.5E-09	6.5E-09	2.4E-12
HHC-S-1	L-16	2020-06-22	161	0.076	0.15	0.00067	4425	1.00	4.4	0.044	10	0.98	1472	1.5E-08	1.6E-10	1.5E-08	7.1E-11	5.4E-10	9.8E-11	8.1E-09	8.1E-09	2.7E-12
HHC-S-1	L-17	2020-07-06	175	0.076	0.15	0.00067	4425	1.00	4.4	0.044	10	0.98	1472	1.6E-08	1.8E-10	1.6E-08	4.8E-11	8.0E-10	2.2E-10	7.2E-09	7.3E-09	6.5E-14
HHC-S-1	L-18	2020-08-03	203	0.076	0.15	0.00067	4423	1.00	4.4	0.044	10	0.98	1472	4.5E-09	5.9E-11	4.5E-09	2.8E-11	1.7E-10	7.6E-11	3.6E-09	3.6E-09	1.8E-12
HHC-S-1	L-19	2020-08-31	231	0.076	0.15	0.00067	4423	1.0	4.4	0.044	10.0	0.98	1472	5.2E-09	8.8E-11	5.2E-09	3.3E-11	3.4E-10	7.1E-11	5.6E-09	5.6E-09	2.1E-12
HHC-S-1	L-20	2020-09-28	259	0.076	0.15	0.00067	4424	1.00	4.4	0.044	10	0.98	1472	5.9E-09	7.0E-11	5.9E-09	4.4E-11	1.7E-10	9.7E-11	4.7E-09	4.7E-09	1.1E-12
HHC-S-2	L-1	2020-01-13	0.080	0.076	0.15	0.00066	4266	1.00	4.3	0.044	9.7	0.96	1451	5.7E-08	1.1E-10	0.00000091	2.2E-10	1.1E-12	5.9E-11	5.3E-11	6.3E-11	1.7E-13
HHC-S-2	L-2	2020-01-14	1.0	0.076	0.15	0.00066	4387	1.00	4.4	0.044	10	0.96	1451	9.3E-09	1.4E-10	9.3E-09	1.1E-10	2.3E-10	2.0E-10	9.7E-11	9.3E-11	7.2E-11
HHC-S-2	L-3	2020-01-15	2.0	0.076	0.15	0.00066	4395	1.00	4.4	0.044	10	0.96	1451	2.8E-08	2.1E-10	2.8E-08	1.9E-10	2.2E-10	2.2E-10	2.9E-10	3.1E-10	7.8E-13
HHC-S-2	L-4	2020-01-20	7.0	0.076	0.15	0.00066	4396	1.00	4.4	0.044	10	0.96	1451	3.2E-09	1.5E-10	3.2E-09	5.8E-11	4.7E-10	1.3E-10	3.0E-10	3.0E-10	3.5E-11
HHC-S-2	L-5	2020-01-27	14	0.076	0.15	0.00066	4400	1.00	4.4	0.044	10	0.96	1451	4.0E-09	1.4E-10	4.0E-09	3.1E-11	5.7E-10	1.1E-10	8.5E-10	8.6E-10	1.5E-11
HHC-S-2	L-6	2020-02-10	28	0.076	0.15	0.00066	4398	1.00	4.4	0.044	10	0.96	1451	2.0E-09	8.0E-11	2.0E-09	5.2E-11	1.5E-10	5.6E-11	1.2E-09	1.2E-09	9.9E-12
HHC-S-2	L-7	2020-02-24	42	0.076	0.15	0.00066	4401	1.00	4.4	0.044	10	0.96	1451	3.4E-09	8.9E-11	3.4E-09	5.1E-11	1.9E-10	6.9E-11	2.9E-09	2.9E-09	9.5E-12
HHC-S-2	L-8	2020-03-02	49	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	1.8E-08	2.1E-10	1.8E-08	1.7E-10	2.7E-10	1.4E-10	9.7E-09	9.9E-09	1.2E-11
HHC-S-2	L-9	2020-03-16	63	0.076	0.15	0.00066	4400	1.00	4.4	0.044	10	0.96	1451	5.5E-09	9.9E-11	5.5E-09	6.9E-11	1.7E-10	4.1E-11	4.3E-09	4.4E-09	6.8E-12
HHC-S-2	L-10	2020-03-30	77	0.076	0.15	0.00066	4401	1.00	4.4	0.044	10	0.96	1451	6.9E-09	1.2E-10	6.9E-09	4.8E-11	3.6E-10	7.0E-11	6.1E-09	6.2E-09	8.5E-12
HHC-S-2	L-11	2020-04-13	91	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	8.3E-09	1.2E-10	8.3E-09	7.6E-11	2.1E-10	1.1E-10	5.5E-09	5.6E-09	5.7E-12
HHC-S-2	L-12	2020-04-27	105	0.076	0.15	0.00066	4401	1.00	4.4	0.044	10	0.96	1451	9.7E-09	1.5E-10	9.7E-09	3.4E-11	5.8E-10	9.8E-11	8.5E-09	8.7E-09	6.7E-12
HHC-S-2	L-13	2020-05-11	119	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	1.1E-08	1.5E-10	1.1E-08	3.6E-11	5.7E-10	4.8E-11	9.3E-09	9.4E-09	3.4E-12
HHC-S-2	L-14	2020-05-25	133	0.076	0.15	0.00066	4401	1.00	4.4	0.044	10	0.96	1451	1.2E-08	1.6E-10	1.2E-08	5.7E-11	4.6E-10	1.1E-10	7.3E-09	7.4E-09	3.8E-12
HHC-S-2	L-15	2020-06-08	147	0.076	0.15	0.00066	4400	1.00	4.4	0.044	10	0.96	1451	1.4E-08	2.0E-10	1.4E-08	1.3E-10	3.8E-10	8.6E-11	1.2E-08	1.2E-08	4.2E-12
HHC-S-2	L-16	2020-06-22	161	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	1.5E-08	1.7E-10	1.5E-08	1.0E-10	3.4E-10	7.1E-11	1.0E-08	1.0E-08	4.7E-12
HHC-S-2	L-17	2020-07-06	175	0.076	0.15	0.00066	4400	1.00	4.4	0.044	10	0.96	1451	1.7E-08	1.7E-10	1.7E-08	7.0E-11	4.6E-10	1.6E-10	1.2E-08	1.2E-08	5.1E-14
HHC-S-2	L-18	2020-08-03	203	0.076	0.15	0.00066	4402	1.00	4.4	0.044	10	0.96	1451	4.7E-09	5.7E-11	4.7E-09	3.6E-11	1.2E-10	5.5E-11	4.8E-09	4.9E-09	3.2E-12
HHC-S-2	L-19	2020-08-31	231	0.076	0.15	0.00066	4399	1.0	4.4	0.044	10	0.96	1451	5.3E-09	8.8E-11	5.3E-09	4.1E-11	2.4E-10	5.4E-11	7.3E-09	7.4E-09	1.0E-11
HHC-S-2	L-20	2020-09-28	259	0.076	0.15	0.00066	4398	1.00	4.4	0.044	10	0.96	1451	6.0E-09	6.4E-11	6.0E-09	5.3E-11	9.1E-11	6.6E-11	7.0E-09	7.0E-09	4.2E-12
HHC-S-3	L-1	2020-01-13	0.080	0.076	0.15	0.00066	4288	1.00	4.3	0.044	9.8	0.99	1498	5.4E-08	1.3E-10	5.4E-08	1.7E-10	1.5E-11	9.3E-11	3.7E-11	5.0E-11	2.5E-13
HHC-S-3	L-2	2020-01-14	1.0	0.076	0.15	0.00066	4359	1.00	4.4	0.044	10.0	0.99	1498	8.7E-09	1.9E-10	8.7E-09	1.1E-10	7.9E-10	3.2E-10	6.6E-11	6.9E-11	6.5E-11
HHC-S-3	L-3	2020-01-15	2.0	0.076	0.15	0.00066	4373	1.00	4.4	0.044	10	0.99	1498	2.6E-08	2.4E-10	2.6E-08	1.7E-10	7.3E-10	3.2E-10	2.0E-10	2.0E-10	1.1E-12
HHC-S-3	L-4	2020-01-20	7.0	0.076	0.15	0.00066	4376	1.00	4.4	0.044	10	0.99	1498	3.0E-09	1.6E-10	3.0E-09	4.5E-11	1.3E-09	1.8E-10	2.0E-10	2.0E-10	4.2E-11
HHC-S-3	L-5	2020-01-27	14	0.076	0.15	0.00066	4376	1.00	4.4	0.044	10	0.99	1498	3.8E-09	1.5E-10	3.8E-09	2.4E-11	1.8E-09	1.4E-10	7.1E-10	7.1E-10	1.6E-11
HHC-S-3	L-6	2020-02-10	28	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	1.9E-09	8.2E-11	1.9E-09	2.9E-11	5.7E-10	8.8E-11	1.0E-09	1.0E-09	1.4E-11
HHC-S-3	L-7	2020-02-24	42	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	3.2E-09	1.0E-10	3.2E-09	3.5E-11	7.0E-10	1.1E-10	2.3E-09	2.3E-09	1.3E-11
HHC-S-3	L-8	2020-03-02	49	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	1.7E-08	2.4E-10	1.7E-08	1.3E-10	1.1E-09	2.2E-10	7.2E-09	7.2E-09	7.8E-12
HHC-S-3	L-9	2020-03-16	63	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	5.2E-09	1.2E-10	5.2E-09	6.1E-11	5.7E-10	6.8E-11	3.3E-09	3.3E-09	9.6E-12
HHC-S-3	L-10	2020-03-30	77	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	6.5E-09	1.5E-10	6.5E-09	4.4E-11	1.2E-09	5.6E-11	2.5E-09	2.6E-09	6.7E-12
HHC-S-3	L-11	2020-04-13	91	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	7.8E-09	1.4E-10	7.8E-09	5.9E-11	7.8E-10	1.6E-10	3.9E-09	4.0E-09	8.1E-12
HHC-S-3	L-12	2020-04-27	105	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	9.1E-09	1.8E-10	9.1E-09	2.7E-11	2.1E-09	1.5E-10	6.2E-09	6.2E-09	4.2E-12
HHC-S-3	L-13	2020-05-11	119	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	1.0E-08	1.8E-10	1.0E-08	3.3E-11	1.9E-09	1.2E-10	6.6E-09	6.7E-09	4.8E-12
HHC-S-3	L-14	2020-05-25	133	0.076	0.15	0.00066	4378	1.00	4.4	0.044	10	0.99	1498	1.2E-08	1.7E-10	1.2E-08	5.5E-11	1.3E-09	1.7E-10	5.2E-09	5.3E-09	5.4E-12
HHC-S-3	L-15	2020-06-08	147	0.076	0.15	0.00066	4379	1.00	4.4	0.044	10	0.99	1498	1.3E-08	2.1E-10	1.3E-08	7.4E-11	1.4E-09	9.5E-11	7.9E-09	7.9E-09	6.0E-12
HHC-S-3	L-16	2020-06-22	161	0.076	0.15	0.00066	4377	1.00	4.4	0.044	10	0.99	1498	1.4E-08	2.1E-10	1.4E-08	1.1E-10	8.9E-10	9.9E-11	7.8E-09	7.8E-09	6.6E-12
HHC-S-3	L-17	2020-07-06	175	0.076	0.15	0.00066	4379	1.00	4.4	0.044	10	0.99	1498	1.6E-08	2.0E-10	1.6E-08	4.6E-11	1.9E-09	2.3E-10	7.9E-09	8.0E-09	1.8E-14
HHC-S-3	L-18	2020-08-03	203	0.076	0.15	0.00066	4379	1.00	4.4	0.044	10	0.99	1498	4.4E-09	5.6E-11	4.4E-09	2.0E-11	3.9E-10	8.0E-11	3.1E-09	3.1E-09	4.5E-12
HHC-S-3	L-19	2020-08-31	231	0.076	0.15	0.00066	4376	1.0	4.4	0.044	10	0.99	1498	5.0E-09	1.0E-10	5.0E-09	3.4E-11	7.3E-10	7.2E-11	4.7E-09	4.8E-09	5.2E-12
HHC-S-3	L-20	2020-09-28	259	0.076	0.15	0.00066	4374	1.00	4.4	0.044	10	0.99	1498	5.6E-09	7.4E-11	5.6E-09	3.8E-11	3.5E-10	1.0E-10	4.4E-09	4.5E-09	2.6E-12
HHC-S-4	L-1	2020-01-13	0.080	0.076	0.15	0.00068	4275	1.00	4.3	0.045	9.6	1.00	1477	5.3E-08	8.5E-11	5.3E-08	1.5E-10	1.5E-12	7.8E-11	6.3E-11	5.7E-11	1.9E-13
HHC-S-4	L-2	2020-01-14	1.0	0.076	0.15	0.00068	4456	1.00	4.5	0.045	10.0	1.00	1477	9.0E-09	1.8E-10	9.0E-09	1.5E-10	2.6E-10	2.5E-10	8.1E-11	8.6E-11	6.6E-11
HHC-S-4	L-3	2020-01-15	2.0	0.076	0.15	0.00068	4467	1.00	4.5	0.045	10	1.00	1477	2.7E-08	2.5E-10	2.7E-08	2.0E-10	3.6E-10	2.3E-10	2.4E-10	2.7E-10	6.1E-13
HHC-S-4	L-4	2020-01-20	7.0	0.076	0.15	0.00068	4467	1.00	4.5	0.045	10	1.00	1477	3.1E-09	1.6E-10	3.1E-09	6.2E-11	5.7E-10	1.7E-10	2.3E-10	2.4E-10	3.4E-11
HHC-S-4	L-5	2020-01-27	14	0.076	0.15	0.00068	4471	1.00	4.5	0.045	10	1.00	1477	3.9E-09	1.6E-10	3.9E-09	4.0E-11	7.2E-10	1.3E-10	7.2E-10	7.3E-10	1.7E-11
HHC-S-4	L-6	2020-02-10	28	0.076	0.15	0.00068	4472	1.00	4.5	0.045	10	1.00	1477	1.9E-09	8.2E-11	1.9E-09	4.2E-11	2.2E-10	6.9E-11	9.7E-10	1.0E-09	8.6E-12
HHC-S-4	L-7	2020-02-24	42	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	3.3E-09	9.9E-11	3.3E-09	5.0E-11	2.7E-10	8.8E-11	2.2E-09	2.3E-09	7.5E-12
HHC-S-4	L-8	2020-03-02	49	0.076	0.15	0.00068	4474	1.00	4.5	0.045	10	1.00	1477	1.7E-08	2.8E-10	1.7E-08	2.9E-10	2.8E-10	1.9E-10	7.6E-09	7.9E-09	6.3E-12
HHC-S-4	L-9	2020-03-16	63	0.076	0.15	0.00068	4472	1.00	4.5	0.045	10	1.00	1477	5.3E-09	1.2E-10	5.3E-09	8.1E-11	2.4E-10	6.0E-11	3.6E-09	3.6E-09	7.7E-12
HHC-S-4	L-10	2020-03-30	77	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	6.7E-09	1.5E-10	6.7E-09	7.7E-11	3.9E-10	9.1E-11	4.7E-09	4.8E-09	5.4E-12
HHC-S-4	L-11	2020-04-13	91	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	8.0E-09	1.3E-10	8.0E-09	7.0E-11	3.2E-10	1.5E-10	4.3E-09	4.4E-09	6.5E-12
HHC-S-4	L-12	2020-04-27	105	0.076	0.15	0.00068	4472	1.00	4.5	0.045	10	1.00	1477	9.3E-09	1.7E-10	9.3E-09	3.9E-11	8.1E-10	1.1E-10	6.2E-09	6.4E-09	3.4E-12
HHC-S-4	L-13	2020-05-11	119	0.076	0.15	0.00068	4474	1.00	4.5	0.045	10	1.00	1477	1.1E-08	1.7E-10	1.1E-08	4.4E-11	7.4E-10	8.7E-11	6.7E-09	6.9E-09	3.9E-12
HHC-S-4	L-14	2020-05-25	133	0.076	0.15	0.00068	4475	1.00	4.5	0.045	10	1.00	1477	1.2E-08	1.9E-10	1.2E-08	1.0E-10	5.3E-10	1.4E-10	6.7E-09	6.9E-09	4.4E-12
HHC-S-4	L-15	2020-06-08	147	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	1.3E-08	2.1E-10	1.3E-08	8.6E-11	7.1E-10	9.7E-11	7.5E-09	7.7E-09	4.8E-12
HHC-S-4	L-16	2020-06-22	161	0.076	0.15	0.00068	4473	1.00	4.5	0.045	10	1.00	1477	1.5E-08	2.1E-10	1.5E-08	1.5E-10	3.7E-10	9.9E-11	8.8E-09	9.0E-09	5.3E-12
HHC-S-4	L-17	2020-07-06	175	0.076	0.15	0.00068	4475	1.00	4.5	0.045	10	1.00	1477	1.6E-08	1.9E-10	1.6E-08	6.6E-11	7.1E-10	2.1E-10	8.6E-09	8.7E-09	5.8E-14
HHC-S-4	L-18	2020-08-03	203	0.076	0.15	0.00068	4476	1.00	4.5	0.045	10	1.00	1477	4.5E-09	5.8E-11	4.5E-09	2.9E-11	1.6E-10	6.8E-11	3.0E-09	3.1E-09	3.7E-12
HHC-S-4	L-19	2020-08-31	231	0.076	0.15	0.00068	4467	1.0	4.5	0.045	10.0	1.00	1477	5.1E-09	1.0E-10	5.1E-09	4.5E-11	3.0E-10	6.1E-11	5.0E-09	5.1E-09	4.2E-12
HHC-S-4	L-20	2020-09-28	259	0.076	0.15	0.00068	4469	1.00	4.5	0.045	10	1.00	1477	5.8E-09	7.7E-11	5.8E-09	5.7E-11	1.3E-10	9.6E-11	4.8E-09	4.8E-09	2.1E-12

- Parameter not analyzed

Appendix E, Table E-26
HHC-S LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	F	K	Mg	Na	NH_3	NO_2	NO_3	PO_4	SO_4	Ag	Al	As	B	Ba	Be	Cd	Co	Cr	Cu	Fe	Hg
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHC-S-1	L-1	8.5E-10	6.6E-11	1.4E-08	1.2E-10	2.8E-10	5.6E-08	5.3E-08	5.5E-08	1.2E-10	5.5E-12	1.8E-10	4.2E-11	2.2E-09	9.3E-11	5.5E-10	5.5E-12	1.4E-10	2.0E-11	3.4E-09	3.7E-09	5.5E-08
HHC-S-1	L-2	1.3E-09	1.5E-10	2.3E-09	2.9E-10	1.7E-09	9.2E-09	8.8E-09	3.6E-08	2.3E-10	9.0E-13	1.0E-09	1.5E-10	3.3E-09	1.8E-11	9.0E-11	3.3E-11	9.0E-11	7.7E-11	5.7E-10	1.1E-09	9.0E-09
HHC-S-1	L-3	4.3E-10	1.9E-10	6.8E-09	2.4E-10	1.9E-09	2.8E-08	2.7E-08	0.00000044	8.2E-11	2.7E-12	1.8E-09	1.2E-10	1.1E-09	3.6E-11	2.7E-10	2.7E-10	6.8E-11	7.9E-11	6.1E-10	1.6E-09	2.7E-08
HHC-S-1	L-4	4.3E-10	1.2E-10	7.7E-10	1.3E-10	1.4E-09	3.2E-09	3.0E-09	1.2E-08	1.6E-11	3.1E-13	1.6E-09	7.2E-11	4.9E-10	7.5E-12	3.1E-11	3.1E-13	1.2E-10	5.3E-11	2.8E-10	5.1E-10	3.1E-09
HHC-S-1	L-5	2.4E-10	1.4E-10	9.8E-10	7.6E-11	2.4E-09	4.0E-09	3.8E-09	0.00000014	8.0E-12	3.9E-13	1.5E-09	4.0E-11	1.6E-10	1.3E-11	3.9E-11	1.4E-11	3.9E-11	1.9E-11	1.6E-10	1.9E-10	0.00000025
HHC-S-1	L-6	3.5E-10	6.8E-11	4.9E-10	3.2E-11	1.5E-09	2.0E-09	0.00000019	2.0E-09	5.9E-12	2.0E-13	9.3E-10	2.6E-11	7.8E-11	1.4E-11	2.0E-11	7.8E-13	2.0E-11	7.4E-12	2.4E-10	1.3E-10	2.0E-09
HHC-S-1	L-7	1.3E-10	5.4E-11	8.3E-10	2.0E-11	1.5E-09	3.4E-09	3.2E-09	3.3E-09	6.8E-12	3.3E-13	1.1E-09	1.9E-11	3.3E-11	2.7E-11	3.3E-11	2.1E-11	3.3E-11	1.2E-12	2.1E-10	1.4E-10	3.3E-09
HHC-S-1	L-8	2.7E-10	7.4E-11	4.4E-09	2.1E-11	6.3E-10	1.8E-08	1.7E-08	7.0E-08	5.8E-12	1.7E-12	2.9E-09	2.5E-11	1.7E-10	9.7E-11	1.7E-10	1.7E-12	4.4E-11	6.5E-12	7.0E-10	4.3E-10	1.7E-08
HHC-S-1	L-9	1.2E-10	2.5E-11	1.3E-09	9.3E-12	6.8E-10	5.5E-09	5.2E-09	5.3E-09	6.7E-12	5.3E-13	1.3E-09	1.6E-11	5.3E-11	4.7E-11	5.3E-11	2.1E-12	1.3E-11	2.0E-12	1.2E-10	9.5E-11	2.1E-08
HHC-S-1	L-10	3.4E-10	2.1E-11	1.7E-09	7.9E-12	3.8E-10	6.9E-09	6.6E-09	0.00000011	1.2E-11	6.7E-13	1.5E-09	1.6E-11	6.7E-11	6.5E-11	6.7E-11	2.7E-12	1.7E-11	2.5E-12	1.5E-10	1.4E-10	6.7E-09
HHC-S-1	L-11	3.2E-10	1.7E-11	2.0E-09	5.9E-12	4.6E-10	8.2E-09	7.9E-09	8.1E-09	1.0E-11	8.1E-13	1.7E-09	1.6E-11	8.1E-11	7.5E-11	8.1E-11	8.1E-13	2.0E-11	3.0E-12	1.8E-10	9.9E-11	8.1E-09
HHC-S-1	L-12	2.1E-10	1.6E-11	2.3E-09	5.6E-12	3.4E-10	9.6E-09	9.2E-09	3.8E-08	1.7E-11	9.4E-13	1.8E-09	1.7E-11	9.4E-11	9.1E-11	9.4E-11	3.8E-12	2.3E-11	3.5E-12	2.1E-10	1.6E-10	9.4E-09
HHC-S-1	L-13	2.4E-10	9.8E-12	2.7E-09	3.9E-12	3.0E-10	1.1E-08	1.0E-08	1.1E-08	1.1E-11	1.1E-12	1.6E-09	1.4E-11	1.1E-10	8.8E-11	1.1E-10	1.7E-11	2.7E-11	4.0E-12	1.1E-10	2.0E-10	1.1E-08
HHC-S-1	L-14	1.9E-10	9.4E-12	3.0E-09	3.4E-12	4.4E-10	1.2E-08	1.2E-08	0.00000044	1.9E-11	1.2E-12	1.9E-09	1.6E-11	1.2E-10	1.1E-10	1.2E-10	1.2E-12	3.0E-11	4.5E-12	2.7E-10	2.3E-10	1.2E-08
HHC-S-1	L-15	2.1E-10	8.0E-12	3.4E-09	3.0E-12	2.7E-10	1.4E-08	1.3E-08	5.4E-08	2.1E-11	1.3E-12	2.1E-09	1.6E-11	1.3E-10	1.2E-10	1.3E-10	1.3E-12	3.4E-11	5.0E-12	3.4E-11	8.9E-11	1.3E-08
HHC-S-1	L-16	2.3E-10	7.2E-12	3.7E-09	2.8E-12	3.0E-10	1.5E-08	1.4E-08	5.9E-08	2.3E-11	1.5E-12	2.0E-09	1.6E-11	1.5E-10	1.3E-10	1.5E-10	1.5E-12	3.7E-11	5.5E-12	3.3E-10	4.1E-10	1.5E-08
HHC-S-1	L-17	2.5E-10	6.3E-12	4.0E-09	2.6E-12	2.3E-10	1.6E-08	1.6E-08	0.0000016	1.6E-11	1.6E-12	2.4E-09	1.7E-11	1.6E-10	1.5E-10	1.6E-10	1.6E-12	4.0E-11	6.0E-12	3.6E-10	3.3E-10	1.6E-08
HHC-S-1	L-18	7.1E-11	3.2E-12	1.1E-09	1.8E-12	6.4E-11	4.6E-09	4.4E-09	0.00000045	1.2E-11	4.5E-13	8.5E-10	1.0E-11	1.8E-10	7.3E-11	4.5E-11	4.5E-13	1.1E-11	1.7E-12	1.0E-10	4.9E-11	4.5E-09
HHC-S-1	L-19	1.2E-10	3.7E-12	1.3E-09	1.8E-12	1.4E-10	5.3E-09	5.0E-09	5.2E-09	2.2E-11	5.2E-13	1.1E-09	1.1E-11	5.2E-11	9.8E-11	5.2E-11	5.2E-13	1.3E-11	1.9E-12	1.2E-10	3.4E-11	5.2E-09
HHC-S-1	L-20	3.3E-11	3.5E-12	2.3E-08	1.5E-12	5.3E-11	6.0E-09	5.7E-09	9.4E-08	1.8E-11	5.9E-13	1.2E-09	9.1E-12	5.9E-11	1.1E-10	5.9E-11	5.9E-13	1.5E-11	2.2E-12	1.3E-10	2.3E-11	5.9E-09
HHC-S-2	L-1	8.9E-10	5.7E-11	3.6E-09	1.1E-10	3.9E-10	5.8E-08	5.6E-08	0.00000023	1.6E-10	5.7E-12	1.4E-10	3.7E-11	5.7E-10	6.3E-11	5.7E-10	2.0E-10	3.6E-11	1.2E-11	1.0E-09	2.6E-09	5.7E-08
HHC-S-2	L-2	9.9E-10	1.2E-10	5.8E-10	2.0E-10	1.2E-09	9.5E-09	9.1E-09	9.3E-09	1.8E-10	9.3E-13	6.4E-10	8.9E-11	1.5E-09	2.4E-12	9.3E-11	9.3E-11	2.3E-11	3.9E-11	2.6E-10	6.6E-10	9.3E-09
HHC-S-2	L-3	6.3E-10	1.4E-10	1.8E-09	1.7E-10	1.8E-09	2.9E-08	2.7E-08	0.00000011	5.6E-11	2.8E-12	1.4E-09	6.7E-11	4.5E-09	8.6E-12	2.8E-10	1.1E-11	1.8E-11	4.8E-11	2.8E-10	9.8E-10	2.8E-08
HHC-S-2	L-4	4.5E-10	9.6E-11	2.0E-10	1.0E-10	1.2E-09	3.2E-09	3.1E-09	3.2E-09	1.1E-11	3.2E-13	1.2E-09	4.7E-11	5.1E-10	2.6E-12	3.2E-11	1.1E-11	7.9E-12	3.2E-11	5.7E-11	1.4E-10	3.2E-09
HHC-S-2	L-5	3.0E-10	1.1E-10	2.5E-10	6.6E-11	1.6E-09	4.1E-09	3.9E-09	1.6E-08	5.2E-12	4.0E-13	1.2E-09	2.8E-11	1.6E-10	5.8E-12	4.0E-11	2.6E-11	2.5E-12	1.1E-11	7.1E-11	7.1E-11	4.0E-09
HHC-S-2	L-6	2.8E-10	6.0E-11	1.3E-10	2.6E-11	1.1E-09	2.1E-09	0.0000002	2.0E-09	3.8E-12	2.0E-13	6.8E-10	1.5E-11	8.0E-11	8.1E-12	2.0E-11	3.2E-12	5.0E-12	4.4E-12	5.6E-11	2.3E-11	2.0E-09
HHC-S-2	L-7	1.0E-10	5.1E-11	2.1E-10	1.6E-11	8.5E-10	3.5E-09	3.3E-09	3.4E-09	4.0E-12	3.4E-13	7.8E-10	1.1E-11	3.4E-11	1.9E-11	3.4E-11	2.2E-11	2.1E-12	7.4E-13	3.4E-11	2.5E-11	3.4E-09
HHC-S-2	L-8	2.8E-10	6.7E-11	1.1E-09	1.5E-11	6.3E-10	1.8E-08	1.8E-08	1.8E-08	4.0E-12	1.8E-12	2.2E-09	1.5E-11	1.8E-10	6.9E-11	1.8E-10	7.2E-12	1.1E-11	3.9E-12	8.0E-11	9.0E-11	1.8E-08
HHC-S-2	L-9	8.6E-11	2.3E-11	3.4E-10	7.6E-12	6.9E-10	5.6E-09	5.4E-09	5.5E-09	4.0E-12	5.5E-13	9.2E-10	9.5E-12	5.5E-11	3.6E-11	5.5E-11	5.5E-13	3.4E-12	1.2E-12	2.4E-11	3.0E-11	5.5E-09
HHC-S-2	L-10	2.8E-10	1.9E-11	4.3E-10	5.8E-12	3.0E-10	7.0E-09	6.7E-09	0.00000011	7.4E-12	6.9E-13	1.2E-09	1.1E-11	6.9E-11	4.9E-11	6.9E-11	6.9E-13	4.3E-12	1.5E-12	6.9E-11	3.8E-11	6.9E-09
HHC-S-2	L-11	2.5E-10	1.4E-11	5.2E-10	4.3E-12	3.6E-10	8.5E-09	8.1E-09	8.3E-09	6.0E-12	8.3E-13	1.3E-09	9.0E-12	8.3E-11	7.0E-11	8.3E-11	8.3E-13	5.2E-12	1.8E-12	3.7E-11	3.4E-11	8.3E-09
HHC-S-2	L-12	2.2E-10	1.3E-11	6.0E-10	4.0E-12	2.1E-10	9.9E-09	9.4E-09	3.9E-08	1.1E-11	9.7E-13	1.4E-09	9.7E-12	9.7E-11	7.9E-11	9.7E-11	3.9E-12	6.0E-12	2.1E-12	4.3E-11	3.6E-11	9.7E-09
HHC-S-2	L-13	2.5E-10	9.0E-12	6.9E-10	2.7E-12	4.8E-10	1.1E-08	1.1E-08	4.4E-08	6.3E-12	1.1E-12	1.3E-09	8.7E-12	1.1E-10	7.8E-11	1.1E-10	1.1E-12	6.9E-12	2.4E-12	1.2E-11	5.5E-11	1.1E-08
HHC-S-2	L-14	1.9E-10	7.5E-12	7.8E-10	2.4E-12	1.9E-10	1.3E-08	1.2E-08	0.0000002	1.3E-11	1.2E-12	1.5E-09	8.9E-12	1.2E-10	9.5E-11	1.2E-10	2.0E-11	7.8E-12	2.7E-12	1.4E-11	5.7E-11	1.2E-08
HHC-S-2	L-15	2.2E-10	7.0E-12	8.6E-10	2.1E-12	1.5E-10	1.4E-08	1.4E-08	0.0000005	1.4E-11	1.4E-12	1.6E-09	9.1E-12	1.4E-10	1.1E-10	1.4E-10	1.4E-12	8.6E-12	3.0E-12	1.5E-11	5.2E-11	1.4E-08
HHC-S-2	L-16	2.4E-10	5.7E-12	9.5E-10	1.8E-12	1.1E-10	1.6E-08	1.5E-08	0.00000055	1.6E-11	1.5E-12	1.5E-09	1.0E-11	1.5E-10	1.2E-10	1.5E-10	1.5E-12	9.5E-12	3.3E-12	1.7E-11	7.0E-11	1.5E-08
HHC-S-2	L-17	2.6E-10	5.0E-12	1.0E-09	1.7E-12	1.2E-10	1.7E-08	1.6E-08	0.00000026	1.2E-11	1.7E-12	1.8E-09	9.9E-12	1.7E-10	1.4E-10	1.7E-10	1.7E-12	1.0E-11	3.6E-12	1.8E-11	4.9E-11	1.7E-08
HHC-S-2	L-18	7.3E-11	2.6E-12	2.9E-10	1.2E-12	5.1E-11	4.8E-09	4.6E-09	7.4E-08	7.6E-12	4.7E-13	6.7E-10	6.2E-12	4.7E-11	6.4E-11	4.7E-11	4.7E-13	2.9E-12	1.0E-12	2.1E-11	1.5E-11	4.7E-09
HHC-S-2	L-19	8.3E-11	2.9E-12	3.3E-10	1.1E-12	3.7E-11	5.4E-09	5.2E-09	5.3E-09	1.4E-11	5.3E-13	9.3E-10	6.2E-12	5.3E-11	8.3E-11	5.3E-11	8.5E-12	3.3E-12	1.1E-12	2.4E-11	1.2E-11	5.3E-09
HHC-S-2	L-20	1.8E-10	2.8E-12	6.0E-09	9.6E-13	2.4E-11	6.2E-09	5.9E-09	6.0E-09	1.1E-11	6.0E-13	9.3E-10	6.5E-12	6.0E-11	9.7E-11	6.0E-11	6.0E-11	3.8E-12	1.3E-12	2.7E-11	7.2E-12	6.0E-09
HHC-S-3	L-1	8.5E-10	1.0E-10	1.4E-08	1.7E-10	2.6E-10	5.6E-08	5.3E-08	5.4E-08	1.8E-10	5.4E-12	2.3E-10	6.9E-11	5.4E-10	8.8E-11	5.4E-10	5.4E-12	1.4E-10	2.0E-11	2.2E-09	2.3E-09	2.1E-10
HHC-S-3	L-2	7.9E-10	2.1E-10	2.2E-09	3.2E-10	1.5E-09	8.9E-09	8.6E-09	8.7E-09	2.3E-10	8.7E-13	1.1E-09	1.3E-10	3.1E-09	1.4E-11	8.7E-11	1.7E-10	8.7E-11	7.4E-11	5.5E-10	1.2E-09	3.4E-11
HHC-S-3	L-3	2.6E-10	2.2E-10	6.6E-09	2.5E-10	1.7E-09	2.7E-08	2.6E-08	0.00000011	8.1E-11	2.6E-12	1.8E-09	1.0E-10	1.1E-09	3.0E-11	2.6E-10	4.2E-11	6.6E-11	7.6E-11	5.9E-10	1.5E-09	1.0E-10
HHC-S-3	L-4	3.2E-10	1.4E-10	7.5E-10	1.4E-10	1.8E-09	3.1E-09	2.9E-09	3.0E-09	1.9E-11	3.0E-13	1.6E-09	7.3E-11	4.8E-10	6.5E-12	3.0E-11	1.2E-12	3.0E-11	5.7E-11	1.2E-10	2.6E-10	1.2E-11
HHC-S-3	L-5	2.4E-10	1.4E-10	9.4E-10	8.6E-11	2.0E-09	3.9E-09	3.7E-09	6.0E-08	8.3E-12	3.8E-13	1.5E-09	4.6E-11	1.5E-10	1.4E-11	3.8E-11	3.8E-13	3.8E-11	2.2E-11	1.5E-10	1.6E-10	5.3E-10
HHC-S-3	L-6	2.3E-10	7.9E-11	4.7E-10	3.6E-11	1.3E-09	1.9E-09	0.00000019	1.9E-09	6.7E-12	1.9E-13	9.1E-10	2.5E-11	7.5E-11	1.5E-11	1.9E-11	1.9E-13	1.9E-11	7.1E-12	1.2E-10	5.0E-11	7.4E-12
HHC-S-3	L-7	1.6E-10	6.4E-11	8.0E-10	2.2E-11	1.4E-09	3.3E-09	3.1E-09	3.2E-09	7.0E-12	3.2E-13	1.1E-09	1.9E-11	3.2E-11	3.2E-11	3.2E-11	1.3E-12	8.0E-12	4.7E-12	1.3E-10	5.4E-11	1.3E-11
HHC-S-3	L-8	1.7E-10	8.1E-11	4.2E-09	2.1E-11	5.8E-10	1.7E-08	1.6E-08	0.00000027	7.6E-12	1.7E-12	2.8E-09	2.3E-11	1.7E-10	1.1E-10	1.7E-10	2.7E-11	4.2E-11	6.2E-12	1.7E-10	1.4E-10	6.6E-11
HHC-S-3	L-9	1.2E-10	2.9E-11	1.3E-09	1.1E-11	5.5E-10	5.3E-09	5.1E-09	5.2E-09	7.6E-12	5.2E-13	1.3E-09	1.5E-11	5.2E-11	6.0E-11	5.2E-11	2.1E-12	1.3E-11	1.9E-12	1.2E-10	8.9E-11	8.1E-11
HHC-S-3	L-10	2.6E-10	2.3E-11	1.6E-09	9.2E-12	3.5E-10	6.6E-09	6.3E-09	0.00000023	1.3E-11	6.5E-13	1.5E-09	1.7E-11	6.5E-11	8.0E-11	6.5E-11	6.5E-13	1.6E-11	2.4E-12	6.5E-11	8.3E-11	2.5E-11
HHC-S-3	L-11	2.4E-10	1.8E-11	1.9E-09	6.8E-12	4.2E-10	7.9E-09	7.6E-09	7.8E-09	1.1E-11	7.8E-13	1.7E-09	1.6E-11	7.8E-11	1.0E-10	7.8E-11	7.8E-13	1.9E-11	2.9E-12	7.8E-11	8.4E-11	3.0E-11
HHC-S-3	L-12	2.0E-10	1.7E-11	2.3E-09	6.6E-12	3.1E-10	9.3E-09	8.9E-09	3.6E-08	2.0E-11	9.1E-13	1.8E-09	1.6E-11	9.1E-11	1.2E-10	9.1E-11	9.1E-13	2.3E-11	3.4E-12	9.1E-11	1.2E-10	3.5E-11
HHC-S-3	L-13	1.6E-10	1.2E-11	2.6E-09	4.7E-12	6.8E-10	1.1E-08	1.0E-08	1.0E-08	1.1E-11	1.0E-12	1.5E-09	1.4E-11	1.0E-10	1.2E-10	1.0E-10	1.0E-12	2.6E-11	3.8E-12	2.6E-11	1.2E-10	4.0E-11
HHC-S-3	L-14	1.8E-10	1.1E-11	2.9E-09	4.3E-12	3.1E-10	1.2E-08	1.1E-08	0.00000019	2.1E-11	1.2E-12	1.8E-09	1.6E-11	1.2E-10	1.6E-10	1.2E-10	1.2E-12	2.9E-11	4.3E-12	1.2E-10	1.3E-10	4.6E-11
HHC-S-3	L-15	1.3E-10	1.0E-11	3.2E-09	3.7E-12	3.4E-10	1.3E-08	1.3E-08	0.00000047	1.9E-11	1.3E-12	2.0E-09	1.5E-11	1.3E-10	1.7E-10	1.3E-10	5.2E-12	3.2E-11	4.8E-12	3.2E-11	1.3E-10	5.1E-11
HHC-S-3	L-16	2.2E-10	8.4E-12	3.6E-09	3.2E-12	1.9E-10	1.5E-08	1.4E-08	0.0000014	2.6E-11	1.4E-12	1.8E-09	1.3E-11	1.4E-10	1.9E-10	1.4E-10	1.4E-12	3.6E-11	5.3E-12	1.4E-10	2.0E-10	5.6E-11
HHC-S-3	L-17	1.6E-10	7.4E-12	3.9E-09	3.2E-12	2.1E-10	1.6E-08	1.5E-08	1.6E-08	1.8E-11	1.6E-12	2.2E-09	1.4E-11	1.6E-10	2.0E-10	1.6E-10	6.2E-12	3.9E-11	5.8E-12	3.9E-11	2.0E-10	6.1E-11
HHC-S-3	L-18	4.4E-11	4.1E-12	1.1E-09	2.2E-12	1.9E-10	4.5E-09	4.3E-09	4.4E-09	1.2E-11	4.4E-13	8.2E-10	9.8E-12	4.4E-11	9.8E-11	4.4E-11	4.4E-13	1.1E-11	1.6E-12	9.8E-11	6.1E-11	1.7E-11
HHC-S-3	L-19	1.1E-10	4.3E-12	1.2E-09	2.1E-12	9.7E-11	5.1E-09	4.9E-09	5.0E-09	2.3E-11	5.0E-13	1.1E-09	1.1E-11	5.0E-11	1.3E-10	5.0E-11	5.0E-13	1.2E-11	1.8E-12	1.1E-10	1.6E-11	1.9E-11
HHC-S-3	L-20	3.2E-11	4.5E-12	1.4E-09	1.9E-12	4.9E-11	5.8E-09	5.5E-09	0.0000002	1.7E-11	5.6E-13	1.1E-09	1.0E-11	5.6E-11	1.8E-10	5.6E-11	9.0E-12	1.4E-11	2.1E-12	1.3E-10	2.1E-11	2.2E-11
HHC-S-4	L-1	1.5E-09	7.3E-11	3.3E-09	1.2E-10	2.2E-10	5.5E-08	5.2E-08	5.3E-08	1.5E-10	5.3E-12	2.3E-10	4.7E-11	5.3E-10	3.2E-11	5.3E-10	2.1E-11	1.3E-10	2.0E-11	2.1E-09	1.5E-09	3.3E-09
HHC-S-4	L-2	2.0E-09	1.5E-10	5.6E-10	2.6E-10	6.8E-10	9.2E-09	8.8E-09	9.0E-09	2.0E-10	9.0E-13	1.0E-09	9.3E-11	1.4E-09	1.4E-11	9.0E-11	1.3E-10	9.0E-11	9.0E-11	3.6E-10	8.3E-10	5.6E-10
HHC-S-4	L-3	7.5E-10	1.8E-10	1.7E-09	2.2E-10	1.6E-09	2.8E-08	2.7E-08	0.00000098	6.8E-11	2.7E-12	1.8E-09	7.7E-11	1.1E-09	2.8E-11	2.7E-10	4.3E-11	6.8E-11	1.0E-10	6.1E-10	1.2E-09	1.7E-09
HHC-S-4	L-4	6.7E-10	1.3E-10	1.9E-10	1.3E-10	7.7E-10	3.1E-09	3.0E-09	0.00000011	1.5E-11	3.1E-13	1.5E-09	6.1E-11	4.9E-10	7.0E-12	3.1E-11	3.1E-13	3.1E-11	7.3E-11	1.2E-10	1.7E-10	1.9E-10
HHC-S-4	L-5	4.3E-10	1.4E-10	2.4E-10	8.2E-11	7.9E-10	4.0E-09	3.8E-09	3.9E-09	7.6E-12	3.9E-13	1.5E-09	4.0E-11	3.9E-11	1.4E-11	3.9E-11	1.4E-11	9.7E-12	2.3E-11	1.6E-10	1.1E-10	3.9E-09
HHC-S-4	L-6	3.1E-10	7.0E-11	1.2E-10	3.5E-11	8.9E-10	2.0E-09	0.00000019	1.9E-09	5.6E-12	1.9E-13	8.9E-10	2.3E-11	7.8E-11	1.6E-11	1.9E-11	7.0E-12	1.9E-11	7.3E-12	1.2E-10	3.9E-11	1.2E-10
HHC-S-4	L-7	1.8E-10	5.7E-11	2.1E-10	2.1E-11	2.2E-10	3.4E-09	3.2E-09	3.3E-09	5.9E-12	3.3E-13	1.0E-09	1.7E-11	3.3E-11	3.2E-11	3.3E-11	5.3E-12	8.2E-12	4.9E-12	7.4E-11	3.9E-11	2.1E-10
HHC-S-4	L-8	4.8E-10	7.7E-11	1.1E-09	1.8E-11	2.2E-10	1.8E-08	1.7E-08	1.7E-08	6.4E-12	1.7E-12	2.7E-09	2.2E-11	1.7E-10	1.2E-10	1.7E-10	6.9E-12	4.3E-11	6.4E-12	1.7E-10	1.3E-10	1.1E-09
HHC-S-4	L-9	1.5E-10	2.7E-11	3.3E-10	9.6E-12	2.7E-10	5.4E-09	5.2E-09	5.3E-09	6.4E-12	5.3E-13	1.2E-09	1.4E-11	5.3E-11	5.8E-11	5.3E-11	2.1E-12	1.3E-11	2.0E-12	1.2E-10	5.7E-11	3.3E-10
HHC-S-4	L-10	4.7E-10	2.4E-11	4.2E-10	8.2E-12	2.1E-10	6.8E-09	6.5E-09	0.00000043	1.2E-11	6.7E-13	1.4E-09	1.5E-11	6.7E-11	8.2E-11	6.7E-11	6.7E-13	1.7E-11	2.5E-12	1.5E-10	7.1E-11	4.2E-10
HHC-S-4	L-11	4.4E-10	1.7E-11	5.0E-10	6.0E-12	2.1E-10	8.2E-09	7.8E-09	8.0E-09	9.6E-12	8.0E-13	1.6E-09	1.5E-11	8.0E-11	1.1E-10	8.0E-11	1.3E-11	2.0E-11	3.0E-12	8.0E-11	5.9E-11	5.0E-10
HHC-S-4	L-12	2.6E-10	1.6E-11	5.8E-10	5.8E-12	1.6E-10	9.5E-09	9.1E-09	3.7E-08	1.8E-11	9.3E-13	1.8E-09	1.5E-11	9.3E-11	1.2E-10	9.3E-11	9.3E-13	2.3E-11	2.0E-11	2.1E-10	1.5E-10	5.8E-10
HHC-S-4	L-13	3.0E-10	1.1E-11	6.7E-10	4.2E-12	4.7E-10	1.1E-08	1.0E-08	1.1E-08	1.0E-11	1.1E-12	1.5E-09	1.3E-11	1.1E-10	1.2E-10	1.1E-10	1.7E-11	2.7E-11	3.9E-12	2.7E-11	8.5E-11	6.7E-10
HHC-S-4	L-14	3.3E-10	9.8E-12	7.5E-10	3.7E-12	1.1E-10	1.2E-08	1.2E-08	1.2E-08	2.0E-11	1.2E-12	1.8E-09	1.4E-11	1.2E-10	1.4E-10	1.2E-10	4.8E-12	3.0E-11	4.4E-12	3.0E-11	8.8E-11	7.5E-10
HHC-S-4	L-15	2.4E-10	8.3E-12	8.3E-10	3.2E-12	8.7E-11	1.4E-08	1.3E-08	1.3E-08	1.8E-11	1.3E-12	1.9E-09	1.4E-11	1.3E-10	1.6E-10	1.3E-10	5.3E-12	3.3E-11	4.9E-12	3.3E-11	7.9E-11	8.3E-10
HHC-S-4	L-16	4.1E-10	7.5E-12	9.2E-10	2.9E-12	6.1E-11	1.5E-08	1.4E-08	5.9E-08	2.2E-11	1.5E-12	1.7E-09	1.4E-11	1.5E-10	1.8E-10	1.5E-10	5.9E-12	3.7E-11	5.4E-12	3.7E-11	9.5E-11	9.2E-10
HHC-S-4	L-17	2.8E-10	6.6E-12	1.0E-09	2.7E-12	1.0E-10	1.6E-08	1.6E-08	0.00000026	1.5E-11	1.6E-12	2.0E-09	1.4E-11	1.6E-10	2.0E-10	1.6E-10	6.4E-12	4.0E-11	5.9E-12	4.0E-11	4.0E-10	1.0E-09
HHC-S-4	L-18	1.2E-10	3.4E-12	2.8E-10	1.9E-12	9.5E-11	4.6E-09	4.4E-09	0.00000016	1.0E-11	4.5E-13	8.0E-10	8.6E-12	4.5E-11	9.4E-11	4.5E-11	1.8E-12	1.1E-11	1.7E-12	1.0E-10	4.2E-11	2.8E-10
HHC-S-4	L-19	9.1E-11	4.2E-12	3.2E-10	1.9E-12	4.8E-11	5.2E-09	5.0E-09	5.1E-09	1.9E-11	5.1E-13	1.0E-09	9.1E-12	5.1E-11	1.2E-10	5.1E-11	5.1E-13	1.3E-11	1.9E-12	1.2E-10	2.9E-11	3.2E-10
HHC-S-4	L-20	5.8E-11	4.0E-12	3.6E-10	1.6E-12	2.4E-11	5.9E-09	5.7E-09	5.8E-09	1.3E-11	5.8E-13	1.1E-09	8.9E-12	5.8E-11	1.4E-10	5.8E-11	5.8E-13	1.5E-11	2.1E-12	5.8E-11	1.5E-11	3.6E-10

- Parameter not analyzed

Appendix E, Table E-26
HHC-S LEAF Diffusivity Results
NexGen Rook I Geochemical Characterization Report

Sample Identification	Time Interval	Mn	Mo	Ni	Pb	Sb	Se	Sn	Sr	Ti	Tl	U	V	Zn	Pb-210	Po-210	Ra-226	Ra-228
		m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s	m^2/s
HHC-S-1	L-1	3.1E-09	2.0E-10	5.5E-10	1.4E-10	2.0E-08	1.4E-09	5.5E-10	5.7E-12	4.3E-10	5.5E-10	5.3E-09	7.5E-08	3.1E-09	0.00000049	0.0000020	1.8E-11	2.2E-09
HHC-S-1	L-2	9.0E-11	2.9E-10	9.0E-11	1.3E-11	2.9E-08	1.7E-09	9.0E-11	7.5E-12	2.1E-10	9.0E-11	7.4E-09	0.00000014	3.6E-10	-	-	-	-
HHC-S-1	L-3	2.7E-10	9.5E-11	2.7E-10	2.3E-11	1.7E-08	8.2E-10	2.7E-10	1.2E-11	8.8E-11	2.7E-10	7.7E-09	5.5E-08	1.6E-09	0.00000011	0.00000017	5.8E-12	1.5E-09
HHC-S-1	L-4	1.2E-08	5.7E-11	3.1E-11	2.6E-11	4.8E-09	2.7E-10	3.1E-11	6.6E-12	4.6E-11	1.2E-10	3.5E-09	2.8E-08	3.1E-11	-	-	-	-
HHC-S-1	L-5	3.9E-11	2.9E-11	3.9E-11	3.3E-11	2.2E-09	9.1E-11	3.9E-11	2.3E-11	2.1E-11	3.5E-10	1.8E-09	1.2E-08	3.9E-11	-	-	-	-
HHC-S-1	L-6	1.1E-10	2.1E-11	7.8E-11	3.3E-11	1.3E-09	5.9E-11	2.0E-11	6.3E-11	2.7E-11	3.1E-10	9.2E-10	6.0E-09	1.1E-10	0.00000024	8.3E-08	5.4E-12	7.8E-11
HHC-S-1	L-7	3.3E-11	1.6E-11	3.3E-11	4.4E-11	1.2E-09	5.6E-11	3.3E-11	2.1E-10	2.9E-11	5.3E-10	1.1E-09	5.6E-09	3.3E-11	-	-	-	-
HHC-S-1	L-8	1.7E-10	1.8E-11	1.7E-10	9.3E-11	2.8E-09	7.9E-11	1.7E-10	7.8E-10	3.0E-11	1.6E-09	3.3E-09	9.8E-09	1.7E-10	-	-	-	-
HHC-S-1	L-9	5.3E-11	1.4E-11	5.3E-11	4.6E-11	1.9E-09	6.3E-11	5.3E-11	5.1E-10	1.2E-11	4.8E-10	1.2E-09	5.3E-09	5.3E-11	0.00000043	4.8E-08	1.5E-11	2.1E-10
HHC-S-1	L-10	6.7E-11	1.4E-11	6.7E-11	6.7E-11	2.0E-09	6.7E-11	6.7E-11	8.0E-10	1.6E-11	6.0E-10	1.7E-09	5.7E-09	6.7E-11	-	-	-	-
HHC-S-1	L-11	8.1E-11	1.3E-11	8.1E-11	6.9E-11	2.4E-09	8.8E-11	8.1E-11	1.1E-09	1.1E-11	7.2E-10	1.5E-09	6.5E-09	8.1E-11	-	-	-	-
HHC-S-1	L-12	9.4E-11	1.3E-11	9.4E-11	6.7E-11	2.8E-09	1.1E-10	9.4E-11	1.3E-09	1.3E-11	8.4E-10	1.8E-09	6.0E-09	9.4E-11	0.00000076	3.8E-08	2.2E-11	5.1E-10
HHC-S-1	L-13	1.1E-10	1.0E-11	1.1E-10	7.7E-11	2.7E-09	9.2E-11	1.1E-10	1.3E-09	1.1E-11	4.3E-10	1.8E-09	5.6E-09	1.1E-10	-	-	-	-
HHC-S-1	L-14	1.2E-10	9.4E-12	1.2E-10	8.7E-11	3.7E-09	9.6E-11	1.2E-10	1.4E-09	9.4E-12	4.8E-10	2.3E-09	5.5E-09	1.2E-10	-	-	-	-
HHC-S-1	L-15	1.3E-10	9.6E-12	1.3E-10	7.0E-11	4.1E-09	1.3E-10	1.3E-10	1.6E-09	7.0E-12	5.4E-10	2.2E-09	6.6E-09	1.1E-09	0.00000066	3.0E-08	2.2E-11	5.4E-10
HHC-S-1	L-16	1.5E-10	8.6E-12	1.5E-10	1.1E-10	6.2E-09	1.5E-10	1.5E-10	1.6E-09	1.7E-11	5.9E-10	2.8E-09	6.2E-09	1.5E-10	-	-	-	-
HHC-S-1	L-17	1.6E-10	9.7E-12	1.6E-10	1.2E-10	6.8E-09	1.4E-10	1.6E-10	1.7E-09	8.4E-12	6.4E-10	3.1E-09	5.8E-09	1.6E-10	0.0000012	0.00000026	3.6E-11	8.8E-10
HHC-S-1	L-18	4.5E-11	7.7E-12	4.5E-11	4.5E-11	1.9E-09	6.5E-11	4.5E-11	8.1E-10	1.5E-11	4.1E-10	8.6E-10	3.5E-09	4.5E-11	0.00000073	5.5E-08	1.4E-11	2.5E-10
HHC-S-1	L-19	5.2E-11	8.5E-12	5.2E-11	6.0E-11	2.5E-09	1.0E-10	5.2E-11	1.1E-09	4.8E-12	4.6E-10	9.9E-10	3.5E-09	5.2E-11	0.00000065	4.6E-08	1.6E-11	2.8E-10
HHC-S-1	L-20	5.9E-11	6.4E-12	5.9E-11	6.8E-11	3.3E-09	1.0E-10	5.9E-11	1.1E-09	3.4E-12	5.3E-10	1.1E-09	2.9E-09	5.9E-11	0.00000074	3.7E-08	2.3E-11	2.3E-10
HHC-S-2	L-1	3.3E-09	1.9E-10	5.7E-10	8.1E-11	2.0E-08	1.1E-09	5.7E-10	1.1E-12	4.1E-10	1.4E-10	4.8E-09	8.2E-08	3.3E-09	0.00000051	0.00000091	8.5E-12	2.3E-09
HHC-S-2	L-2	9.3E-11	2.3E-10	9.3E-11	1.1E-11	2.7E-08	1.1E-09	9.3E-11	1.4E-12	1.6E-10	2.3E-11	4.4E-09	0.00000011	9.3E-11	-	-	-	-
HHC-S-2	L-3	2.8E-10	7.4E-11	2.8E-10	2.2E-11	1.6E-08	4.5E-10	2.8E-10	4.4E-12	5.9E-11	7.0E-11	4.4E-09	5.2E-08	2.8E-10	0.00000014	0.0000007	2.0E-12	1.5E-09
HHC-S-2	L-4	1.1E-09	4.3E-11	3.2E-11	1.4E-11	3.8E-09	2.1E-10	3.2E-11	4.9E-12	2.9E-11	3.2E-11	2.3E-09	2.5E-08	3.2E-11	-	-	-	-
HHC-S-2	L-5	4.0E-11	1.9E-11	4.0E-11	2.1E-11	2.0E-09	7.5E-11	4.0E-11	2.0E-11	1.4E-11	9.0E-11	1.3E-09	1.1E-08	4.0E-11	-	-	-	-
HHC-S-2	L-6	2.0E-11	1.3E-11	8.0E-11	1.7E-11	8.5E-10	4.2E-11	2.0E-11	4.6E-11	1.5E-11	8.0E-11	6.1E-10	4.8E-09	5.4E-10	9.2E-08	1.3E-08	2.7E-12	8.0E-11
HHC-S-2	L-7	3.4E-11	9.8E-12	3.4E-11	2.5E-11	1.2E-09	4.1E-11	3.4E-11	1.6E-10	1.3E-11	1.4E-10	6.8E-10	4.1E-09	3.4E-11	-	-	-	-
HHC-S-2	L-8	1.8E-10	1.1E-11	1.8E-10	5.3E-11	2.9E-09	5.7E-11	1.8E-10	6.2E-10	1.6E-11	1.8E-10	2.4E-09	7.3E-09	1.8E-10	-	-	-	-
HHC-S-2	L-9	5.5E-11	8.8E-12	5.5E-11	2.8E-11	1.7E-09	4.5E-11	5.5E-11	4.1E-10	8.8E-12	1.2E-10	7.5E-10	3.9E-09	5.5E-11	0.00000031	3.4E-08	8.4E-12	2.2E-10
HHC-S-2	L-10	6.9E-11	8.4E-12	6.9E-11	4.3E-11	2.1E-09	4.6E-11	6.9E-11	6.8E-10	8.9E-12	1.6E-10	1.2E-09	4.2E-09	6.9E-11	-	-	-	-
HHC-S-2	L-11	8.3E-11	8.1E-12	8.3E-11	4.2E-11	2.5E-09	6.3E-11	8.3E-11	9.2E-10	5.2E-12	1.9E-10	1.3E-09	4.5E-09	8.3E-11	-	-	-	-
HHC-S-2	L-12	9.7E-11	7.9E-12	9.7E-11	4.6E-11	3.5E-09	8.0E-11	9.7E-11	1.2E-09	8.7E-12	9.7E-11	1.3E-09	4.5E-09	9.7E-11	0.0000007	2.2E-08	1.4E-11	5.3E-10
HHC-S-2	L-13	1.1E-10	6.5E-12	1.1E-10	5.0E-11	3.3E-09	7.4E-11	1.1E-10	1.2E-09	6.9E-12	1.1E-10	1.3E-09	4.2E-09	1.1E-10	-	-	-	-
HHC-S-2	L-14	1.2E-10	5.8E-12	1.2E-10	6.1E-11	4.5E-09	7.8E-11	1.2E-10	1.4E-09	5.0E-12	1.2E-10	1.7E-09	4.2E-09	1.2E-10	-	-	-	-
HHC-S-2	L-15	1.4E-10	6.1E-12	1.4E-10	5.8E-11	5.8E-09	1.1E-10	1.4E-10	1.5E-09	4.0E-12	1.4E-10	1.6E-09	4.3E-09	1.4E-10	0.00000078	3.1E-08	2.5E-11	5.5E-10
HHC-S-2	L-16	1.5E-10	5.2E-12	1.5E-10	6.4E-11	7.4E-09	1.3E-10	1.5E-10	1.5E-09	6.7E-12	3.8E-11	1.8E-09	4.1E-09	1.5E-10	-	-	-	-
HHC-S-2	L-17	1.7E-10	6.0E-12	1.7E-10	6.2E-11	8.1E-09	1.2E-10	1.7E-10	1.6E-09	2.0E-12	4.1E-11	1.7E-09	3.8E-09	9.5E-10	0.00000081	6.6E-08	3.2E-11	3.6E-09
HHC-S-2	L-18	4.7E-11	4.7E-12	4.7E-11	3.4E-11	2.3E-09	4.7E-11	4.7E-11	8.7E-10	1.4E-11	4.7E-11	6.3E-10	2.3E-09	4.7E-11	0.00000082	2.9E-08	1.3E-11	2.5E-10
HHC-S-2	L-19	5.3E-11	5.0E-12	5.3E-11	4.6E-11	2.6E-09	7.4E-11	5.3E-11	1.1E-09	2.8E-12	1.2E-10	8.3E-10	2.6E-09	5.3E-11	0.00000064	2.1E-08	1.7E-11	2.9E-10
HHC-S-2	L-20	6.0E-11	4.1E-12	6.0E-11	5.2E-11	3.4E-09	8.4E-11	6.0E-11	1.2E-09	1.5E-12	1.4E-10	8.2E-10	1.9E-09	6.0E-11	0.00000052	2.4E-08	2.6E-11	2.4E-10
HHC-S-3	L-1	2.2E-09	1.7E-10	2.2E-09	1.1E-10	2.0E-08	1.7E-09	5.4E-10	7.1E-12	2.8E-10	5.4E-10	6.2E-09	6.6E-08	5.6E-09	-	-	-	-
HHC-S-3	L-2	8.7E-11	2.7E-10	8.7E-11	2.1E-11	3.0E-08	2.1E-09	8.7E-11	6.4E-12	1.8E-10	8.7E-11	8.7E-09	0.00000011	6.9E-10	-	-	-	-
HHC-S-3	L-3	2.6E-10	1.0E-10	2.6E-10	3.3E-11	1.5E-08	6.3E-10	2.6E-10	1.1E-11	6.8E-11	2.6E-10	7.1E-09	4.8E-08	2.6E-10	-	-	-	-
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HHC-S-3	L-6	1.9E-11	2.4E-11	1.9E-11	3.5E-11	1.1E-09	6.8E-11	1.9E-11	9.9E-11	2.0E-11	3.0E-10	7.3E-10	5.6E-09	1.9E-11	-	-	-	-
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HHC-S-3	L-17	1.6E-10	1.0E-11	1.6E-10	1.3E-10	5.6E-09	1.5E-10	1.6E-10	1.7E-09	5.9E-12	6.2E-10	3.1E-09	4.7E-09	1.6E-10	-	-	-	-
HHC-S-3	L-18	4.4E-11	8.2E-12	4.4E-11	7.1E-11	1.8E-09	7.5E-11	4.4E-11	8.4E-10	2.0E-11	3.9E-10	1.0E-09	3.5E-09	4.4E-11	0.00000055	7.0E-08	1.7E-11	2.4E-10
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HHC-S-4	L-6	1.9E-11	1.8E-11	1.9E-11	2.3E-11	1.1E-09	5.3E-11	1.9E-11	7.5E-11	1.5E-11	3.1E-10	6.8E-10	6.1E-09	1.9E-11	-	-	-	-
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HHC-S-4	L-9	5.3E-11	1.2E-11	5.3E-11	3.8E-11	1.6E-09	6.4E-11	5.3E-11	5.2E-10	9.7E-12	4.8E-10	1.0E-09	5.6E-09	5.3E-11	-	-	-	-
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HHC-S-4	L-11	8.0E-11	1.1E-11	8.0E-11	5.7E-11	2.9E-09	8.7E-11	8.0E-11	1.0E-09	5.8E-12	7.2E-10	1.5E-09	6.1E-09	8.0E-11	-	-	-	-
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HHC-S-4	L-13	1.1E-10	8.8E-12	1.1E-10	6.2E-11	3.2E-09	1.0E-10	1.1E-10	1.2E-09	9.1E-12	4.3E-10	1.5E-09	6.0E-09	1.1E-10	-	-	-	-
HHC-S-4	L-14	1.2E-10	8.3E-12	1.2E-10	6.8E-11	4.3E-09	1.0E-10	1.2E-10	1.5E-09	4.9E-12	4.8E-10	2.0E-09	5.9E-09	1.2E-10	-	-	-	-
HHC-S-4	L-15	1.3E-10	8.2E-12	1.3E-10	7.3E-11	4.8E-09	1.3E-10	1.3E-10	1.5E-09	3.3E-12	5.3E-10	2.2E-09	6.5E-09	1.3E-10	-	-	-	-
HHC-S-4	L-16	1.5E-10	7.2E-12	1.5E-10	7.0E-11	5.3E-09	1.5E-10	1.5E-10	1.4E-09	7.4E-12	1.5E-10	2.1E-09	6.2E-09	1.5E-10	-	-	-	-
HHC-S-4	L-17	1.6E-10	8.4E-12	1.6E-10	8.4E-11	6.8E-09	1.5E-10	1.6E-10	1.6E-09	2.9E-12	6.4E-10	2.3E-09	5.3E-09	1.6E-10	-	-	-	-
HHC-S-4	L-18	4.5E-11	6.4E-12	4.5E-11	4.5E-11	1.9E-09	6.6E-11	4.5E-11	7.6E-10	1.2E-11	4.0E-10	8.6E-10	3.6E-09	4.5E-11	0.00000062	9.1E-08	2.3E-11	2.4E-10
HHC-S-4	L-19	5.1E-11	6.7E-12	5.1E-11	5.9E-11	2.5E-09	1.0E-10	5.1E-11	1.0E-09	3.4E-12	4.6E-10	9.8E-10	3.7E-09	5.1E-11	0.00000056	6.3E-08	2.0E-11	2.8E-10
HHC-S-4	L-20	5.8E-11	5.7E-12	5.8E-11	5.8E-11	2.5E-09	1.0E-10	5.8E-11	1.1E-09	1.4E-12	5.2E-10	1.1E-09	2.6E-09	5.8E-11	0.00000084	3.6E-08	2.2E-11	2.3E-10

- Parameter not analyzed

APPENDIX F

Kinetic Test Figures

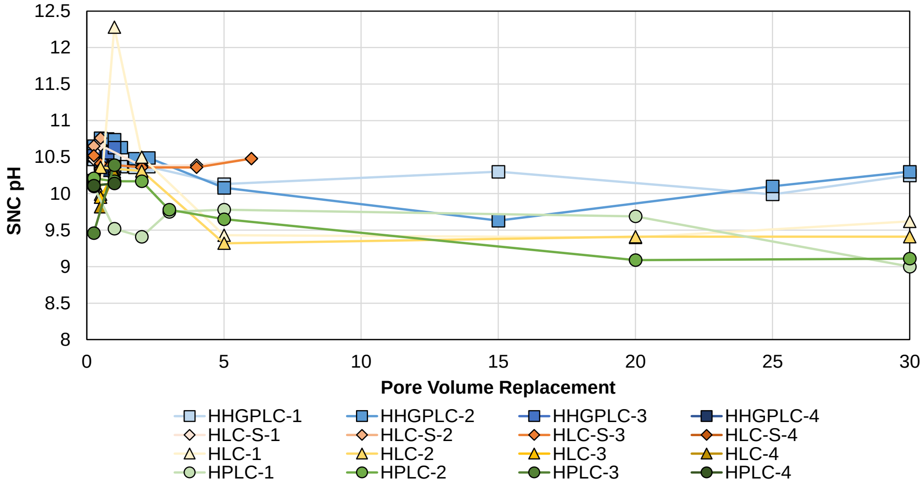

Figure F1-1: pH Measured at SNC-Lavalin Laboratory vs Pore Volume Replacement

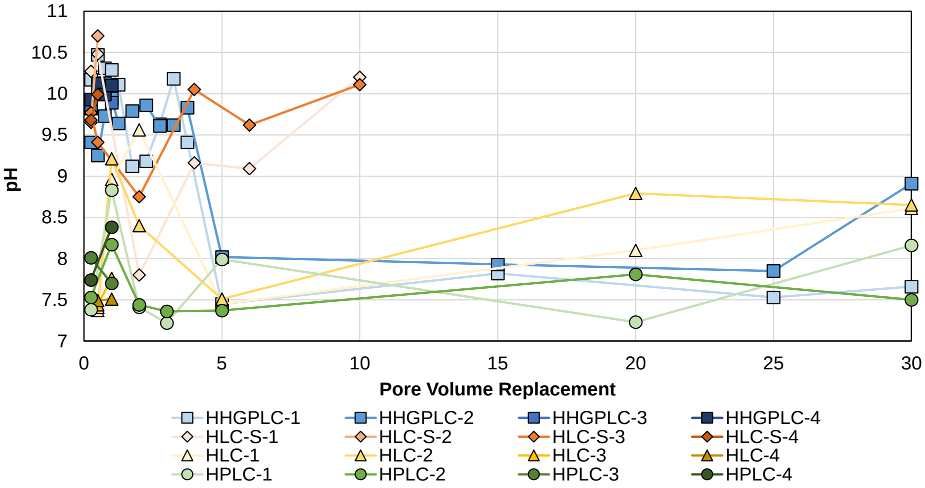

Figure F1-2: pH Measured at SRC Laboratory vs Pore Volume Replacement

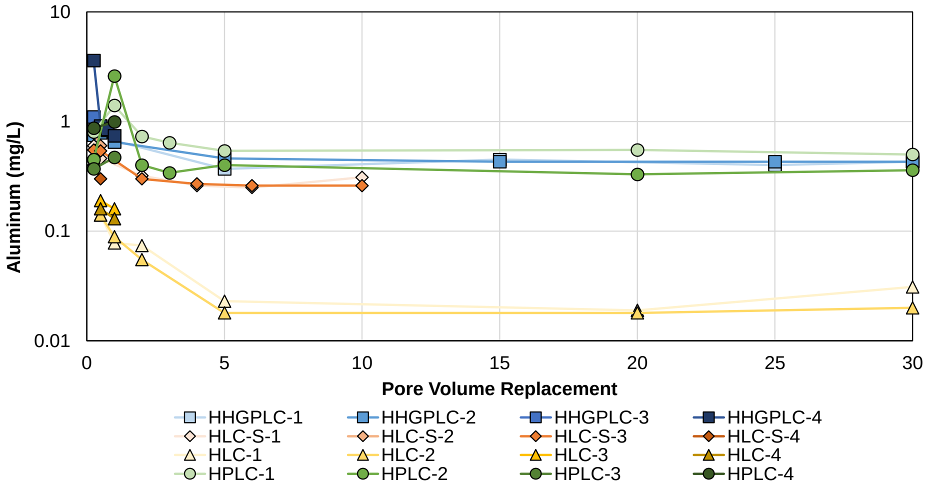

Figure F1-3: Aluminum Concentration vs Pore Volume Replacement

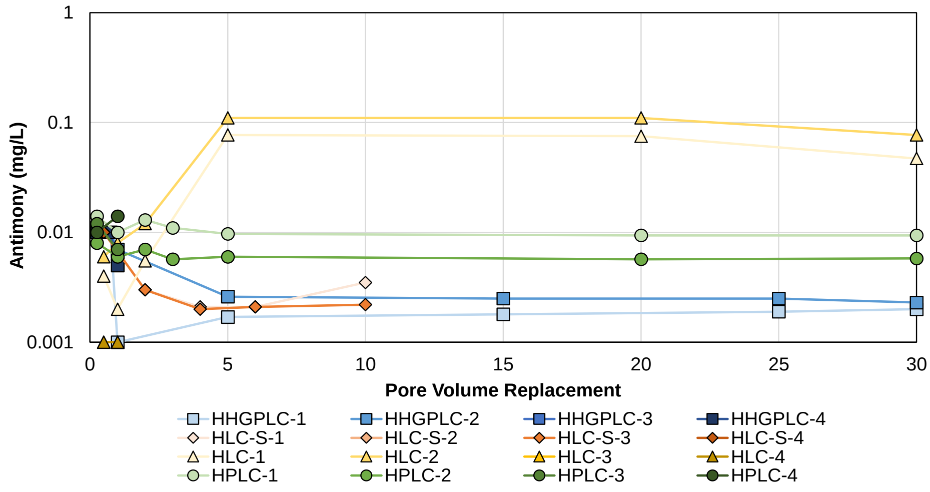

Figure F1-4: Antmony Concentration vs Pore Volume Replacement

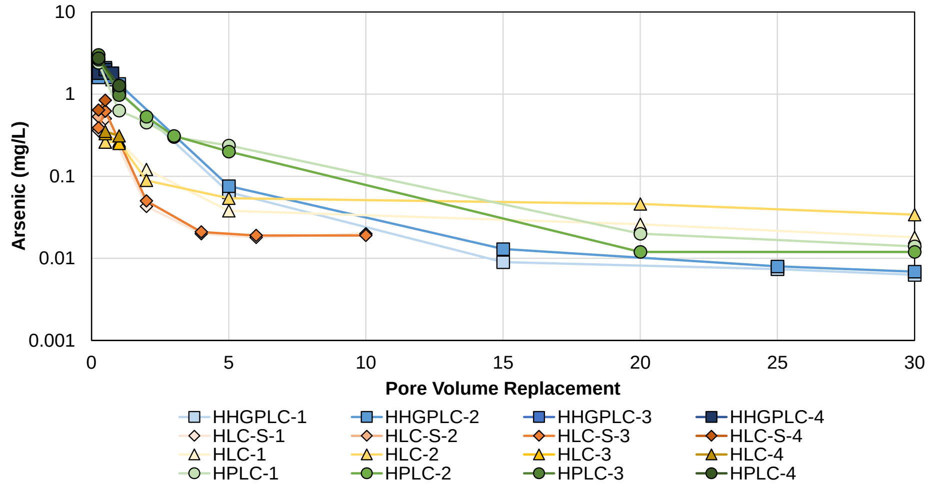

Figure F1-5: Arsenic Concentration vs Pore Volume Replacement

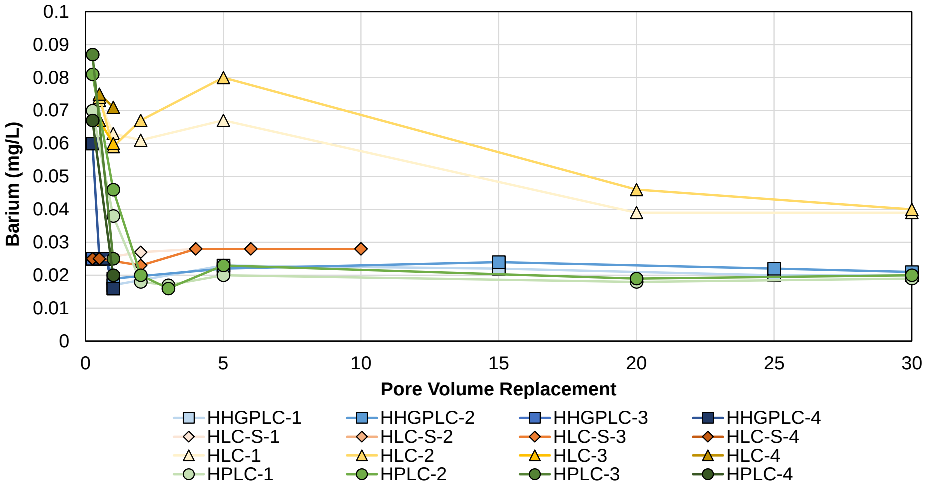

Figure F1-6: Barium Concentration vs Pore Volume Replacement

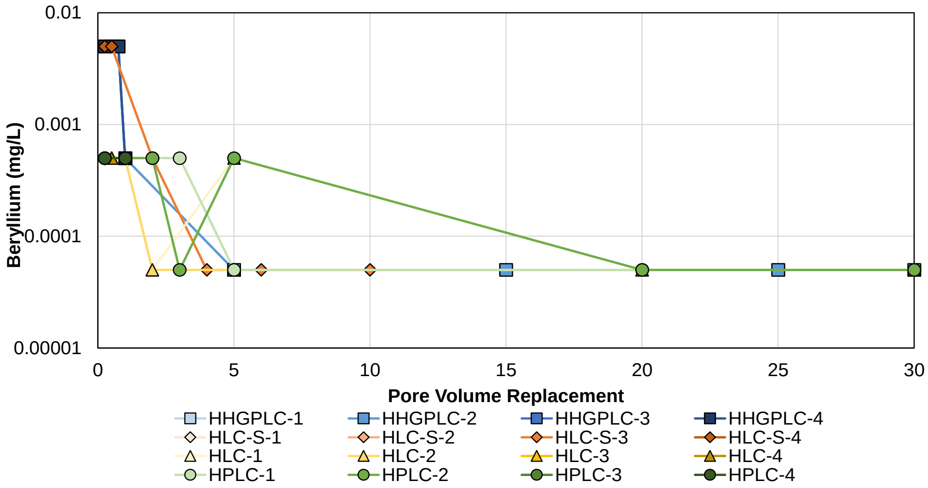

Figure F1-7: Beryllium Concentration vs Pore Volume Replacement

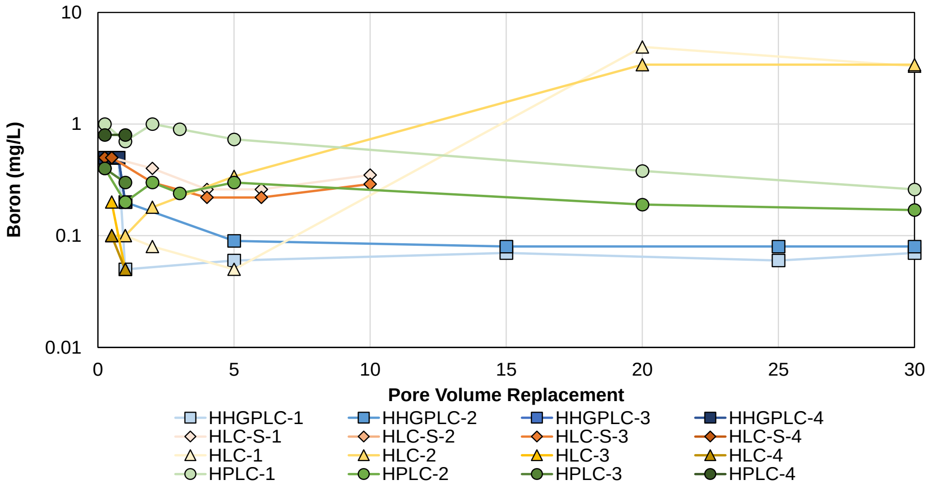

Figure F1-8: Boron Concentration vs Pore Volume Replacement

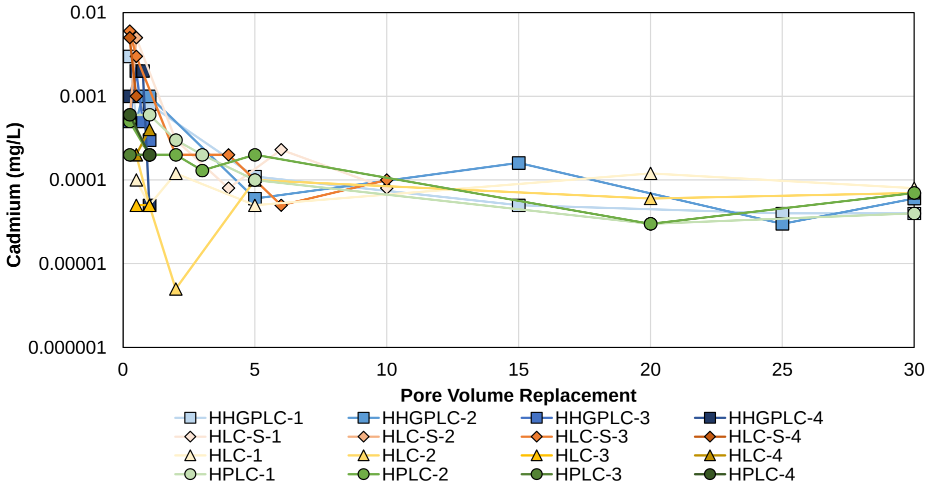

Figure F1-9: Cadmium Concentration vs Pore Volume Replacement

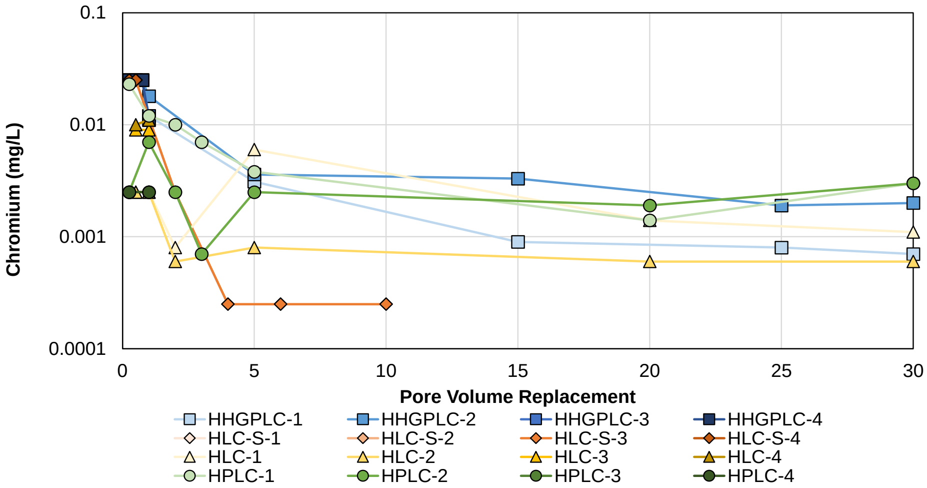

Figure F1-10: Chromium Concentration vs Pore Volume Replacement

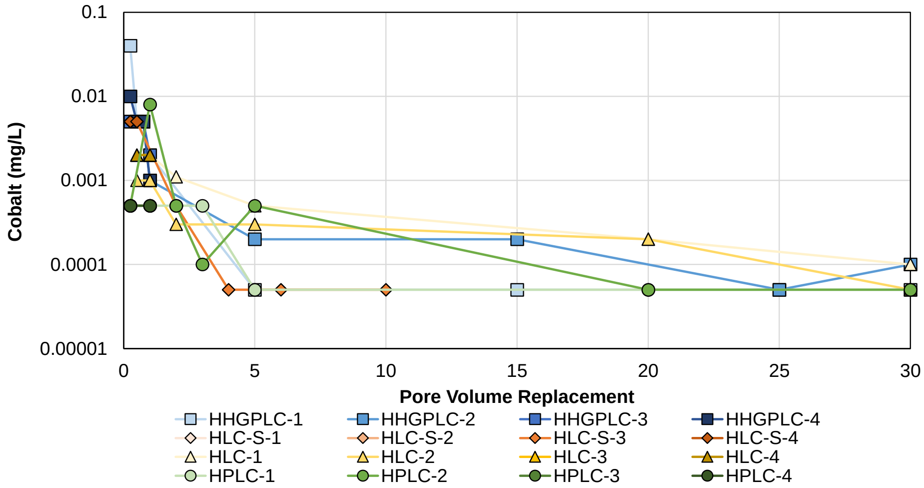

Figure F1-11: Cobalt Concentration vs Pore Volume Replacement

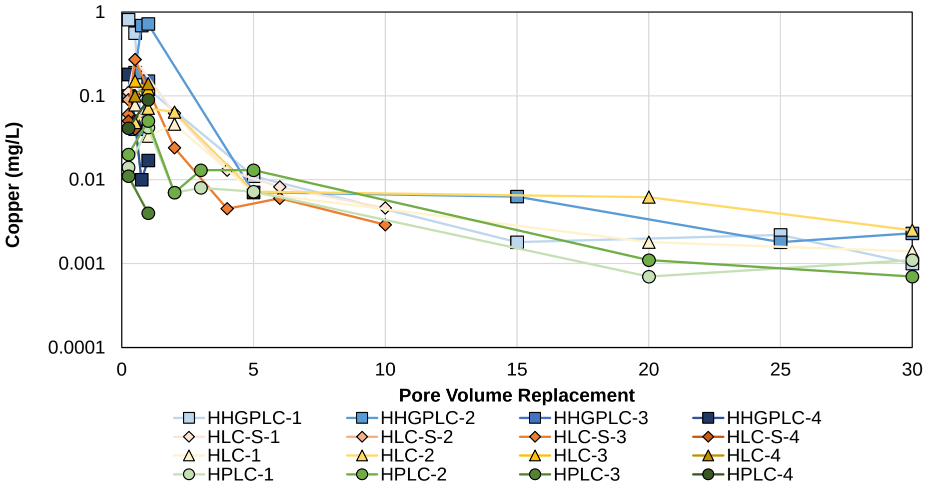

Figure F1-12: Copper Concentration vs Pore Volume Replacement

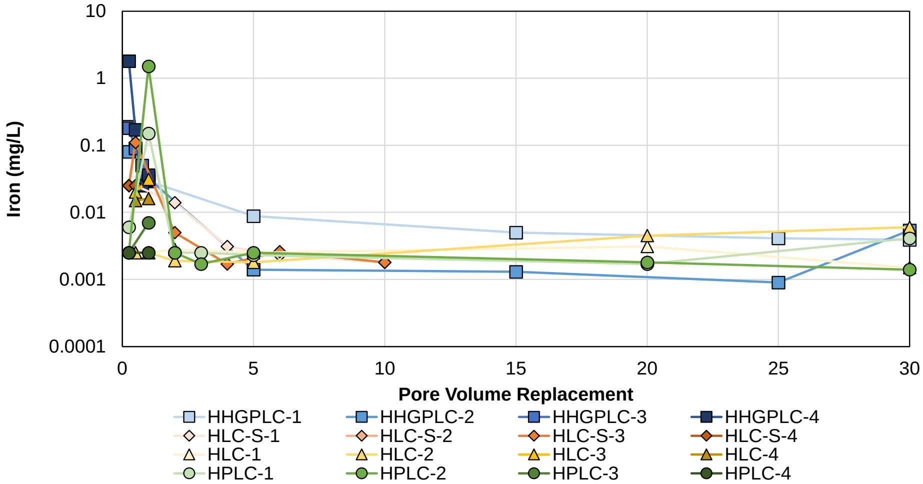

Figure F1-13: Iron Concentration vs Pore Volume Replacement

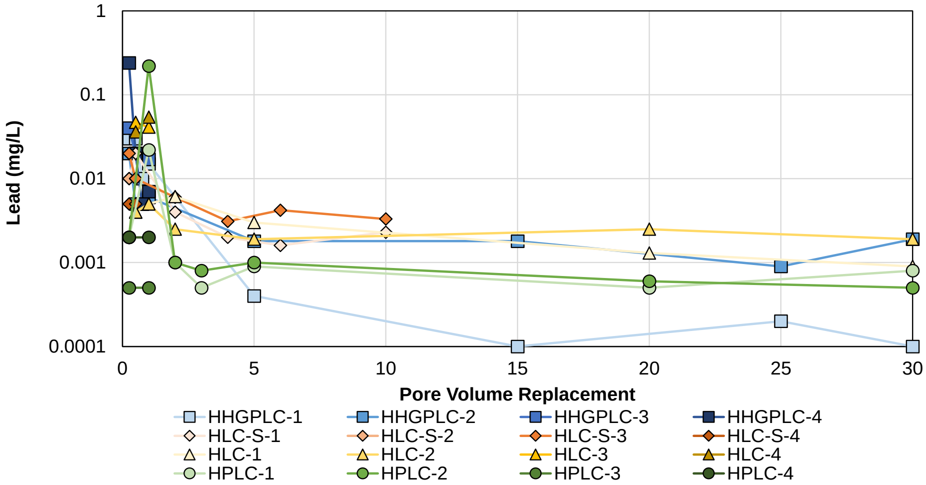

Figure F1-14: Lead Concentration vs Pore Volume Replacement

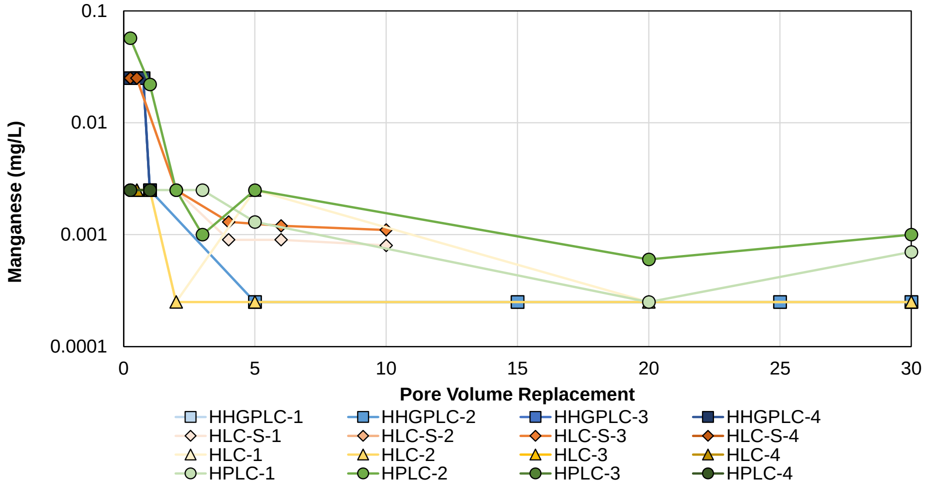

Figure F1-15: Manganese Concentration vs Pore Volume Replacement

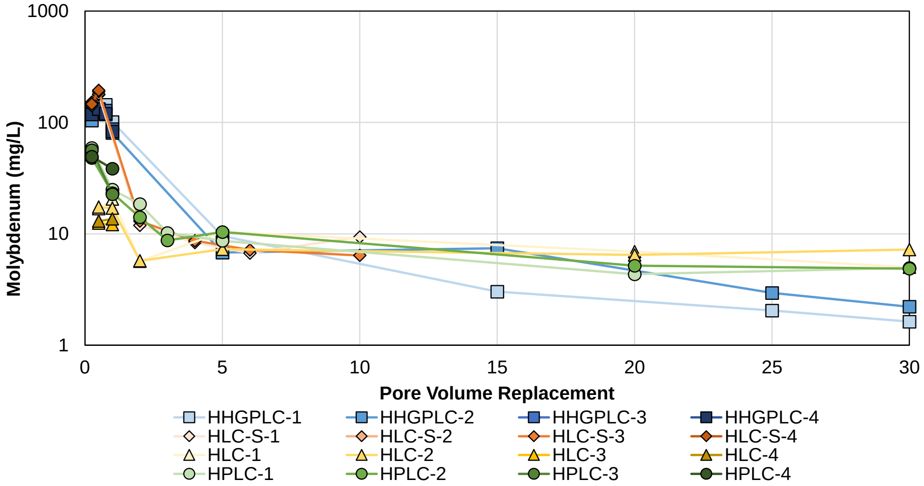

Figure F1-16: Molybdenum Concentration vs Pore Volume Replacement

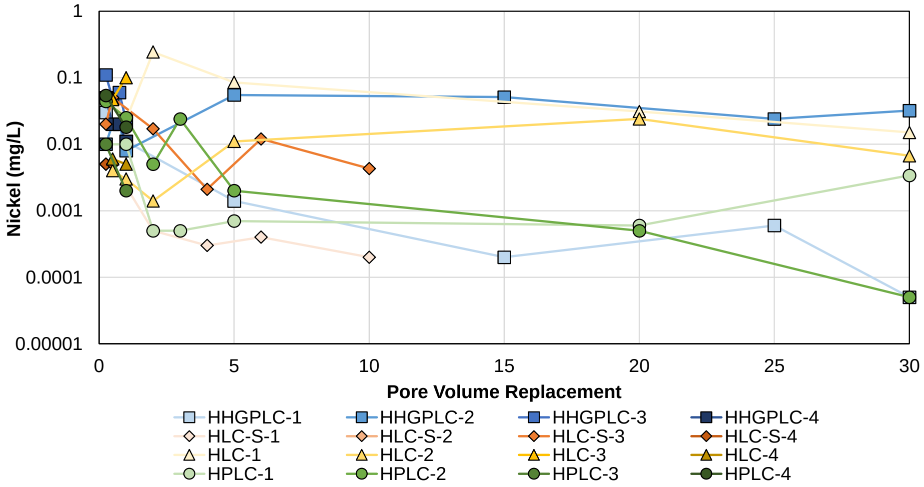

Figure F1-17: Nickel Concentration vs Pore Volume Replacement

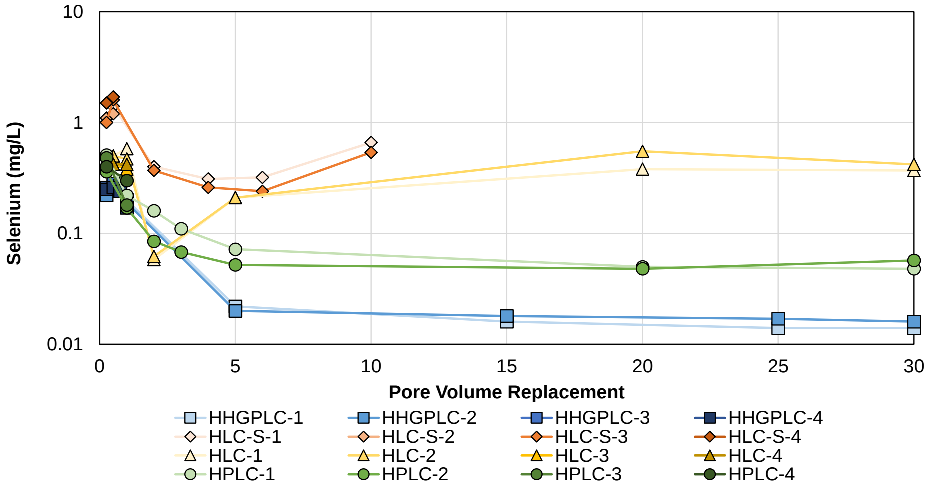

Figure F1-18: Selenium Concentration vs Pore Volume Replacement

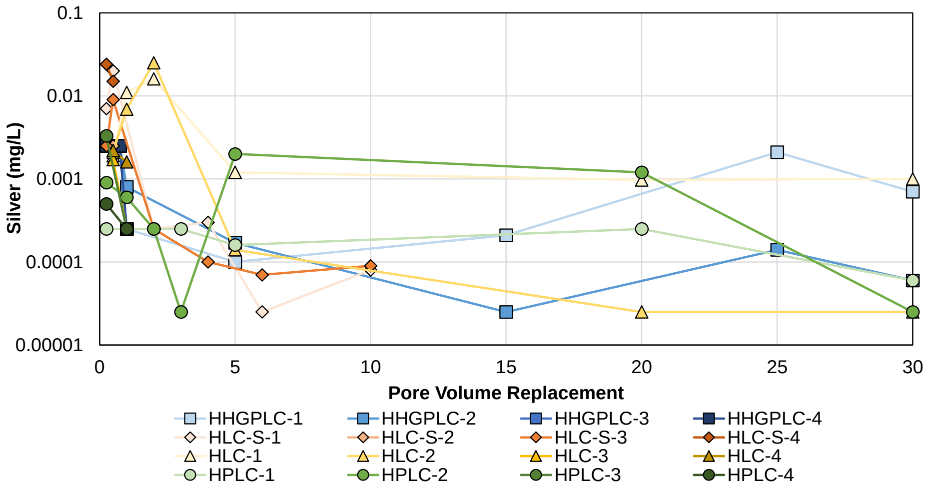

Figure F1-19: Silver Concentration vs Pore Volume Replacement

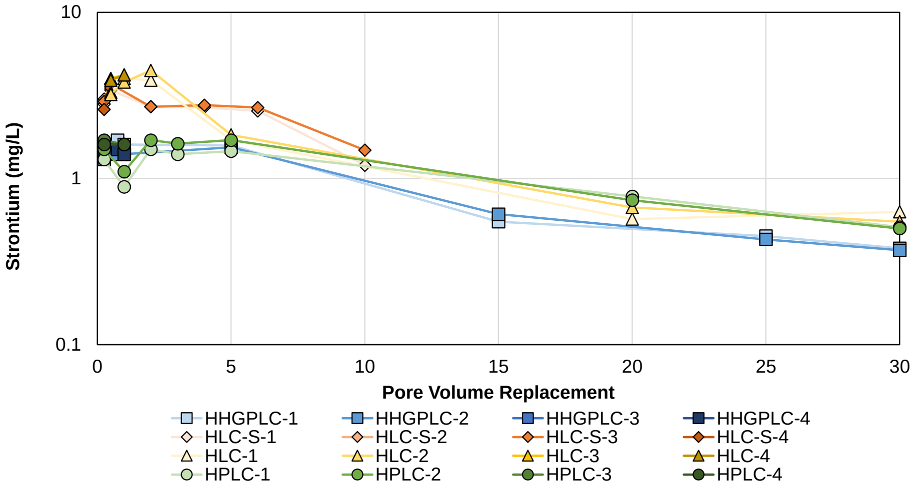

Figure F1-20: Strontium Concentration vs Pore Volume Replacement

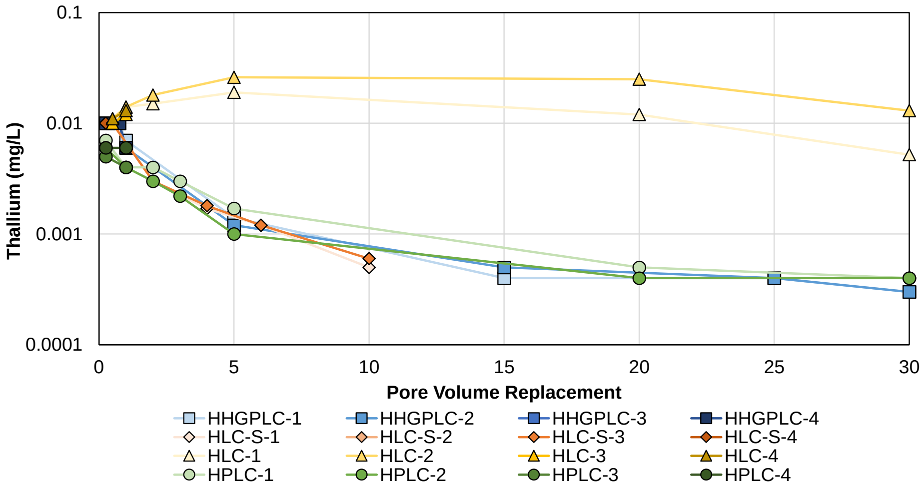

Figure F1-21: Thallium Concentration vs Pore Volume Replacement

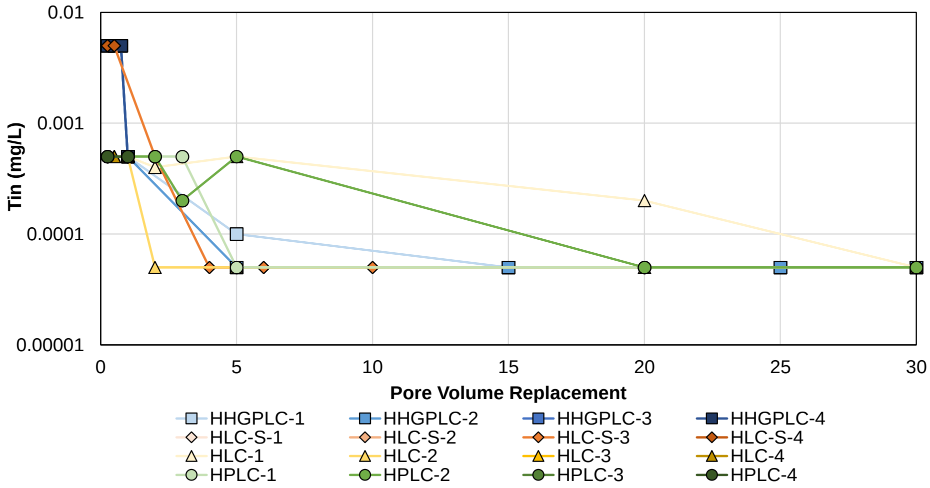

Figure F1-22: Tin Concentration vs Pore Volume Replacement

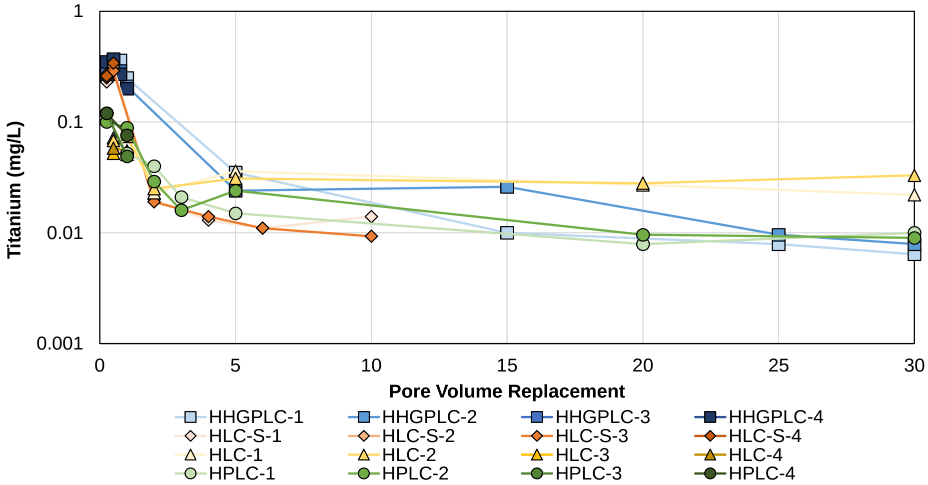

Figure F1-23: Titanium Concentration vs Pore Volume Replacement

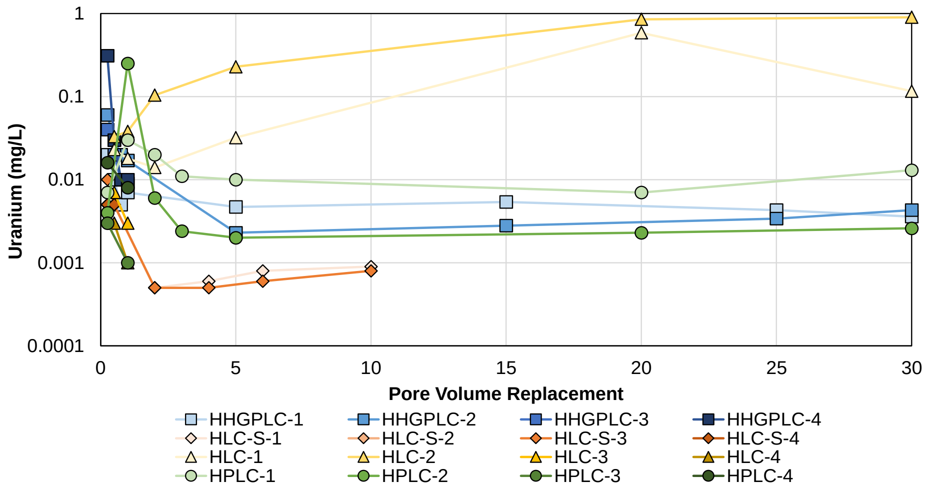

Figure F1-24: Uranium Concentration vs Pore Volume Replacement

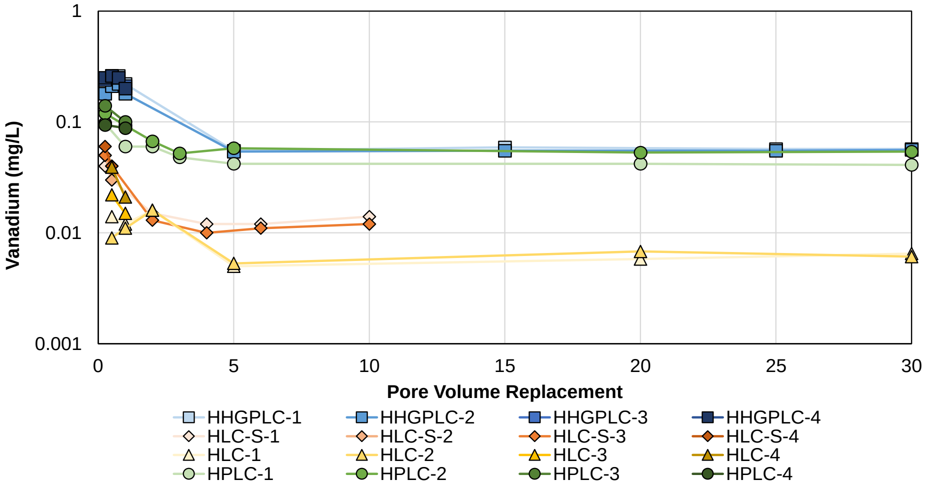

Figure F1-25: Vanadium Concentration vs Pore Volume Replacement

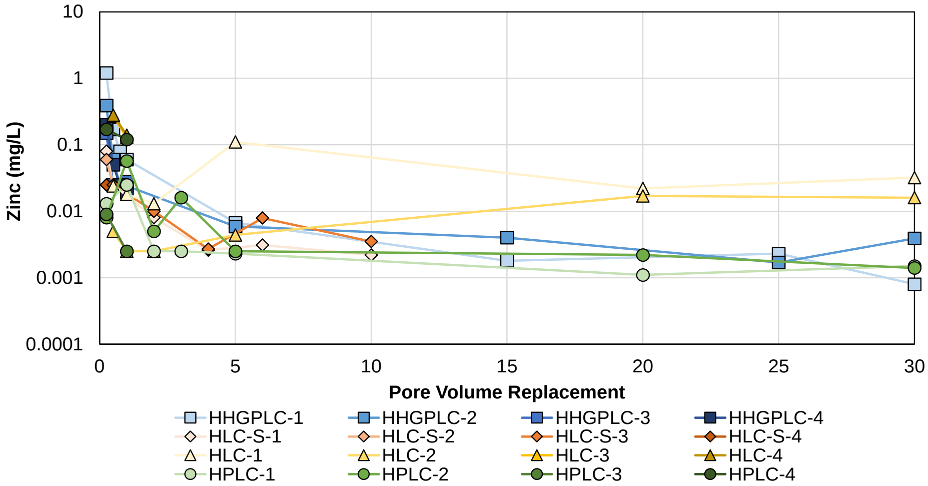

Figure F1-26: Zinc Concentration vs Pore Volume Replacement

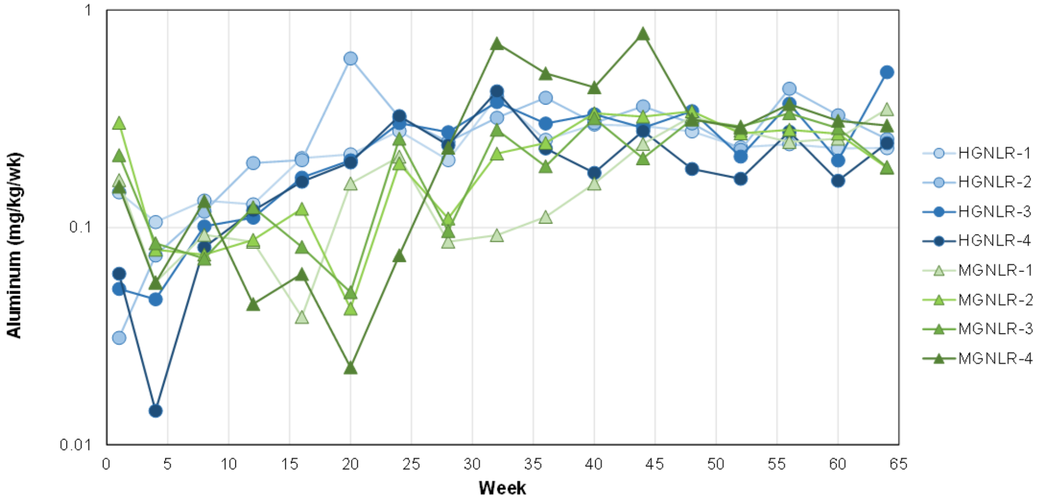

Figure F2-1: HCT Aluminum Mass Loading vs Time

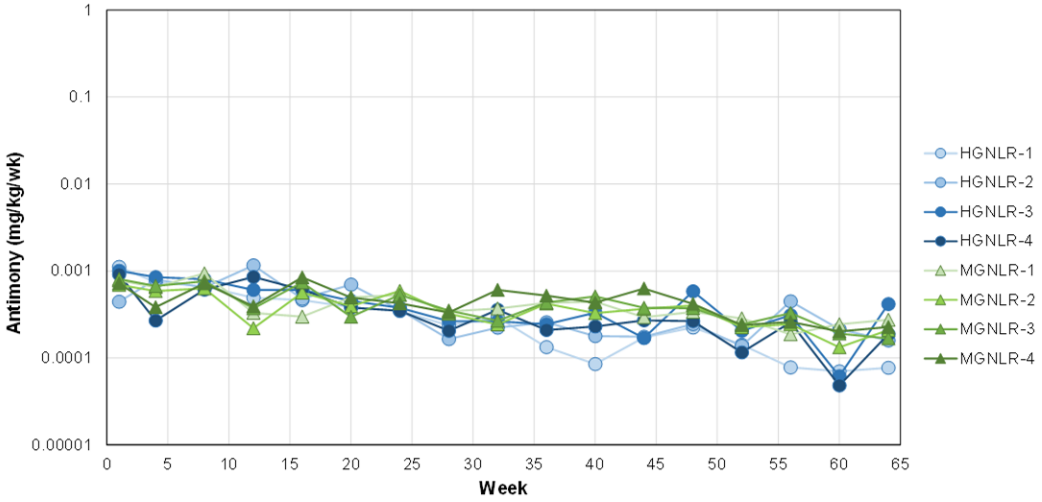

Figure F2-2: HCT Antimony Mass Loading vs Time

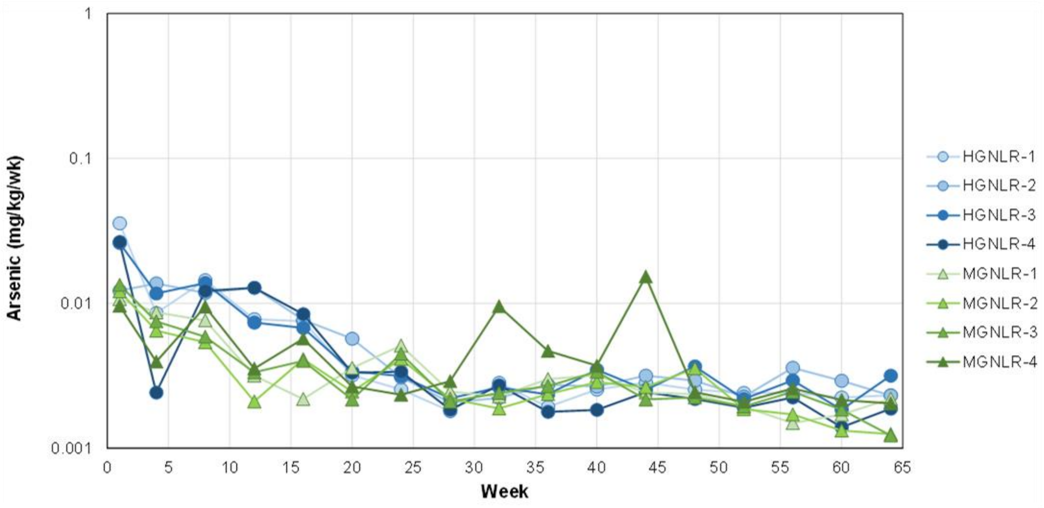

Figure F2-3: HCT Arsenic Mass Loading vs Time

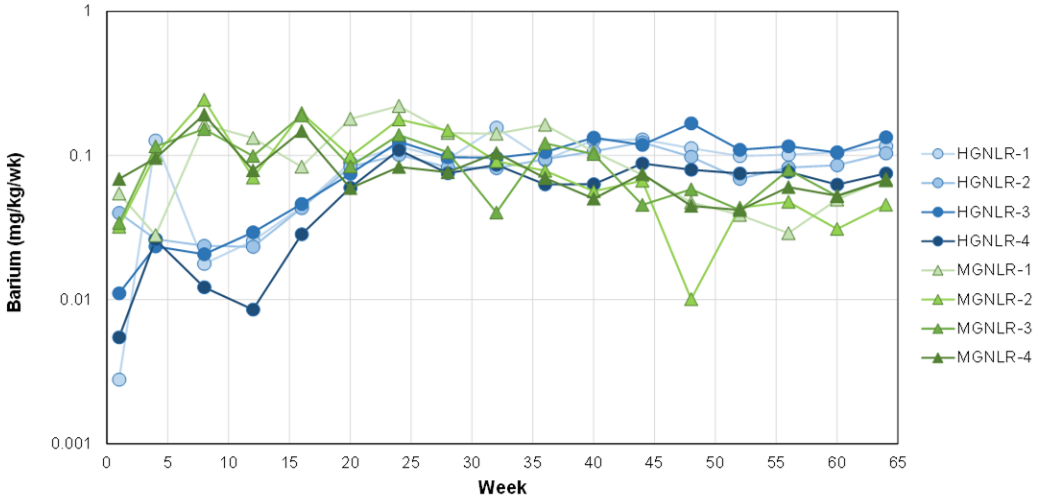

Figure F2-4: HCT Barium Mass Loading vs Time

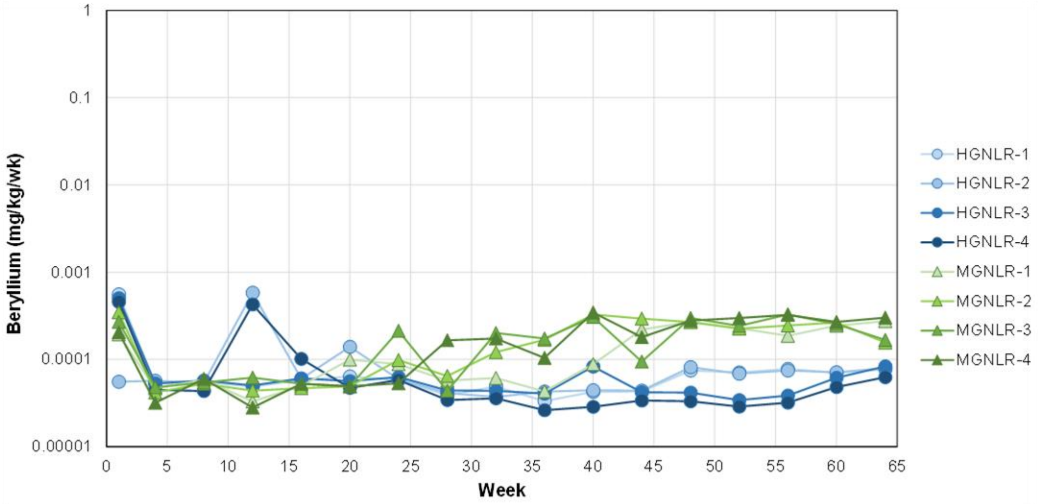

Figure F2-5: HCT Beryllium Mass Loading vs Time

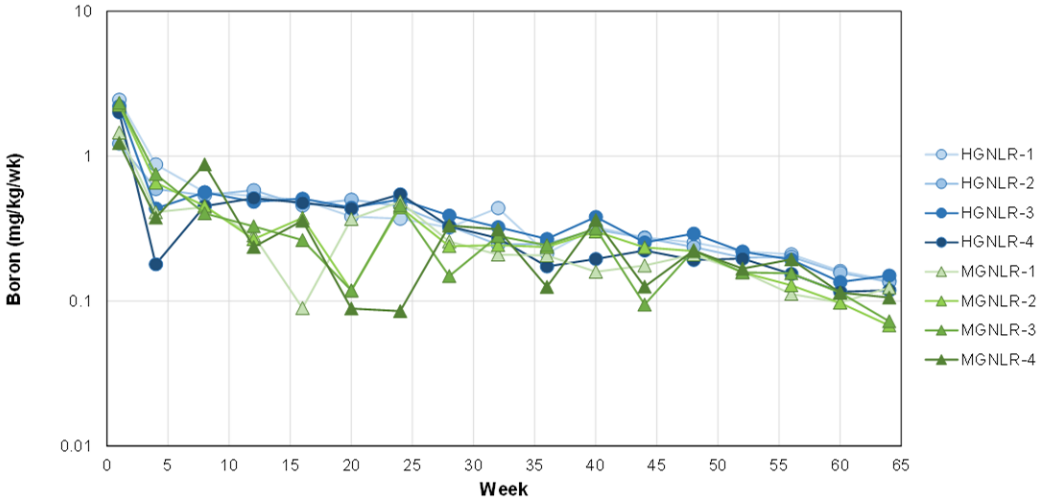

Figure F2-6: HCT Boron Mass Loading vs Time

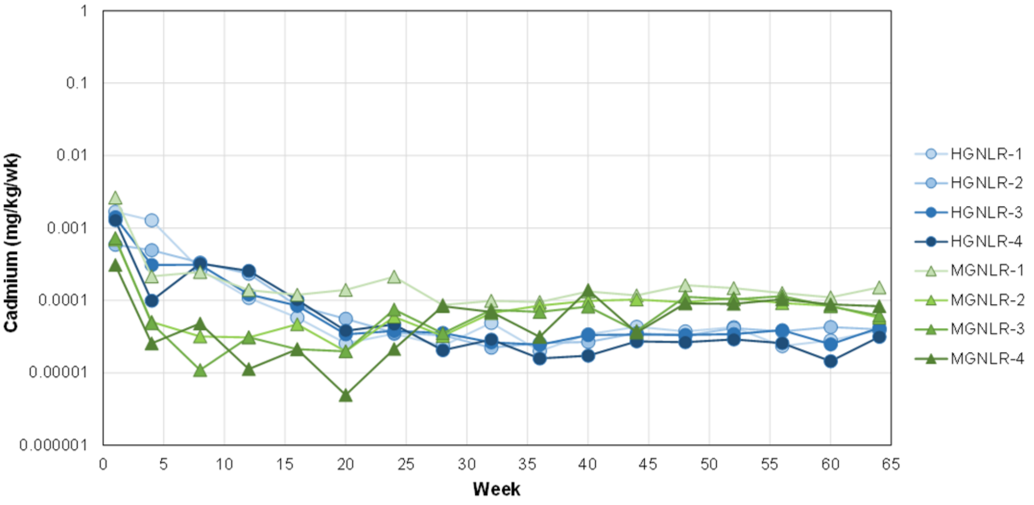

Figure F2-7: HCT Cadmium Mass Loading vs Time

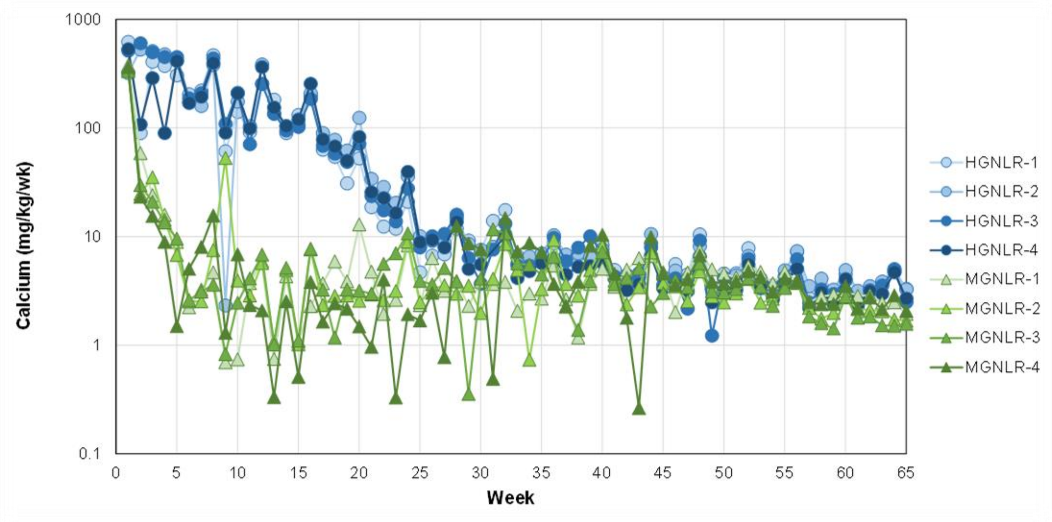

Figure F2-8: HCT Calcium Mass Loading vs Time

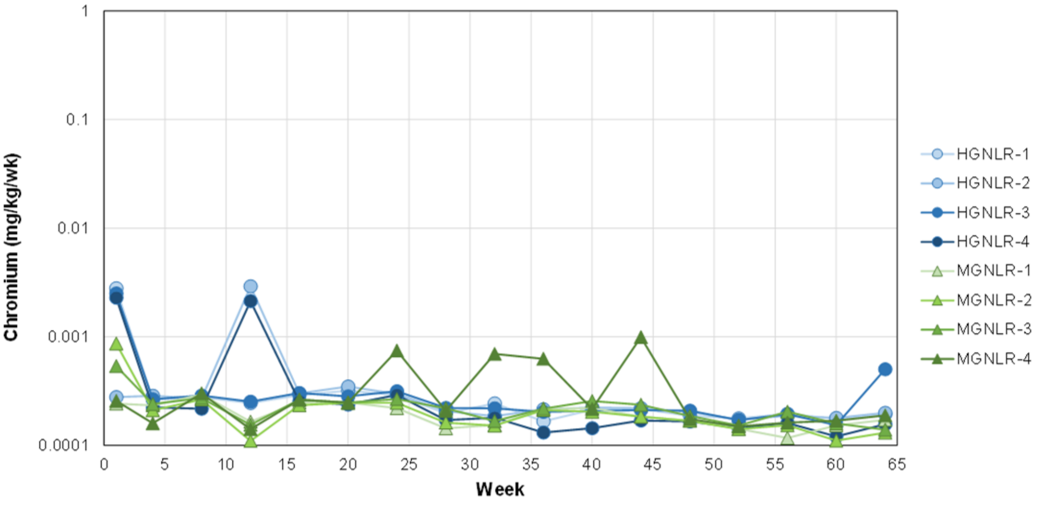

Figure F2-9: HCT Chromium Mass Loading vs Time

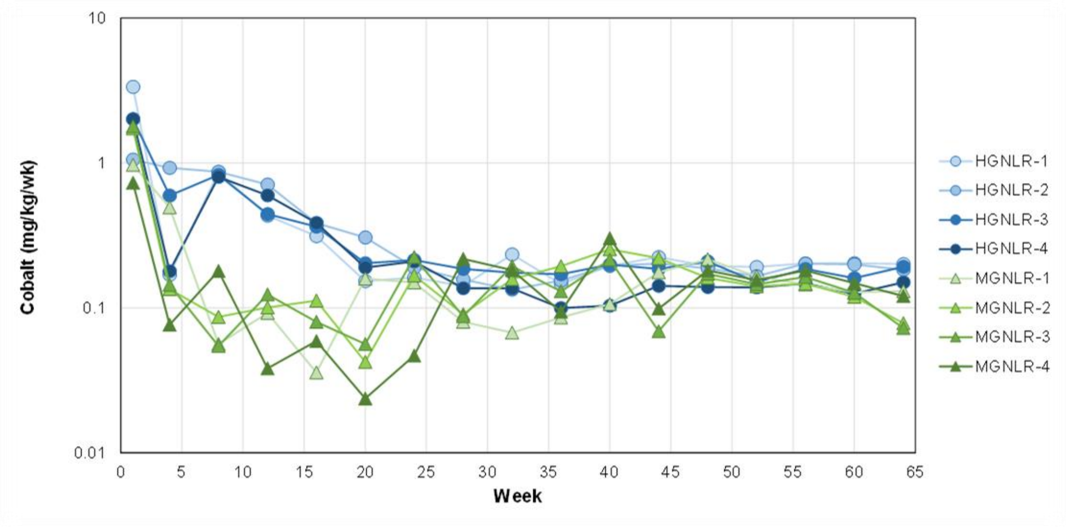

Figure F2-10: HCT Cobalt Mass Loading vs Time

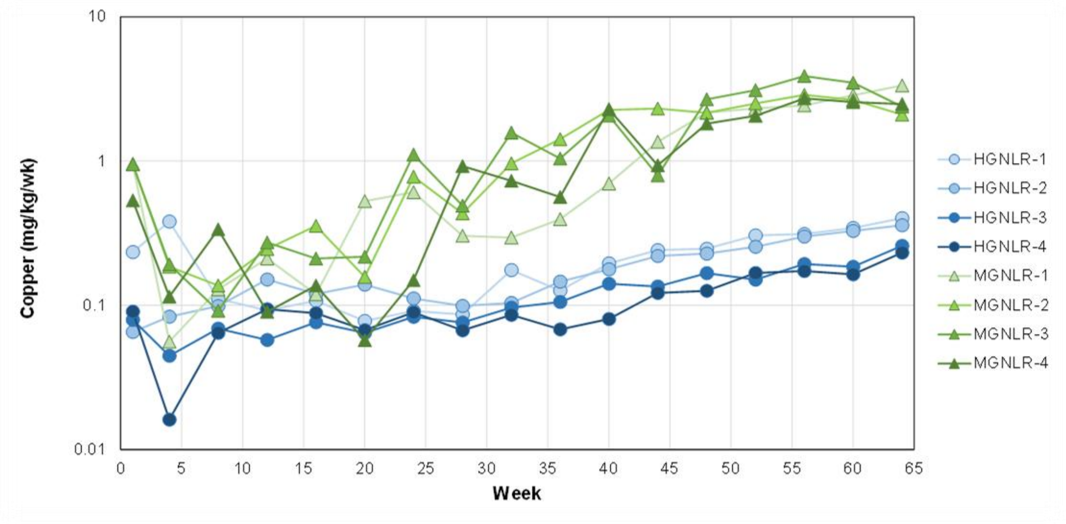

Figure F2-11: HCT Copper Mass Loading vs Time

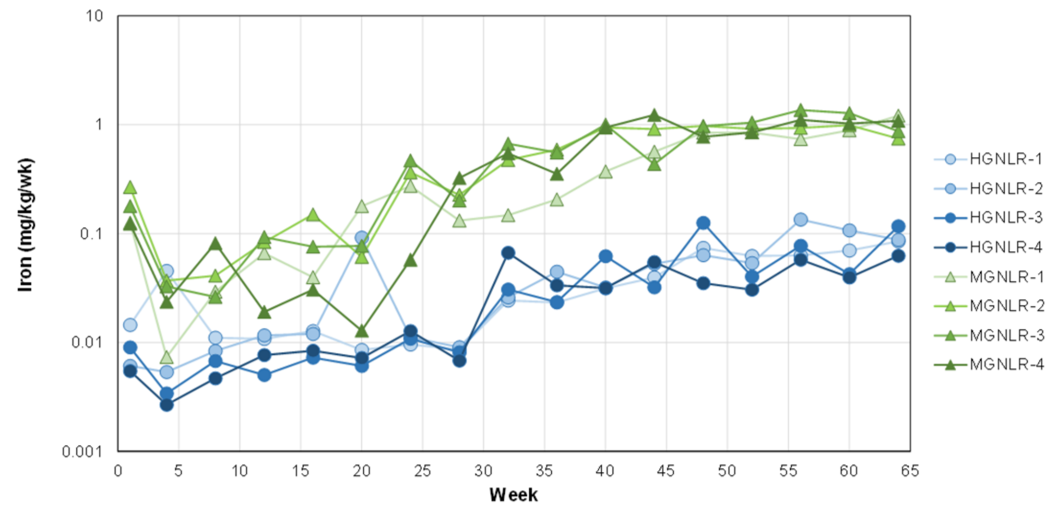

Figure F2-12: HCT Iron Mass Loading vs Time

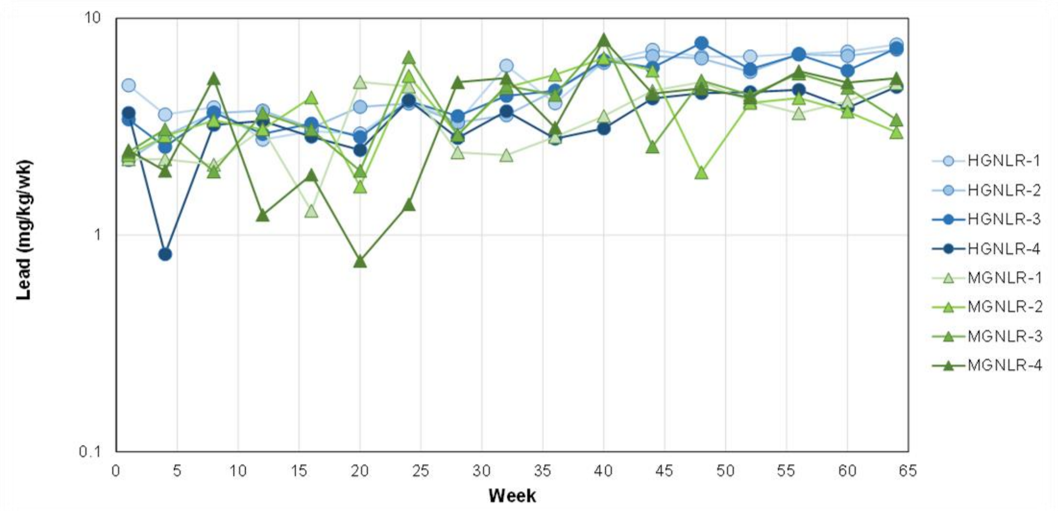

Figure F2-13: HCT Lead Mass Loading vs Time

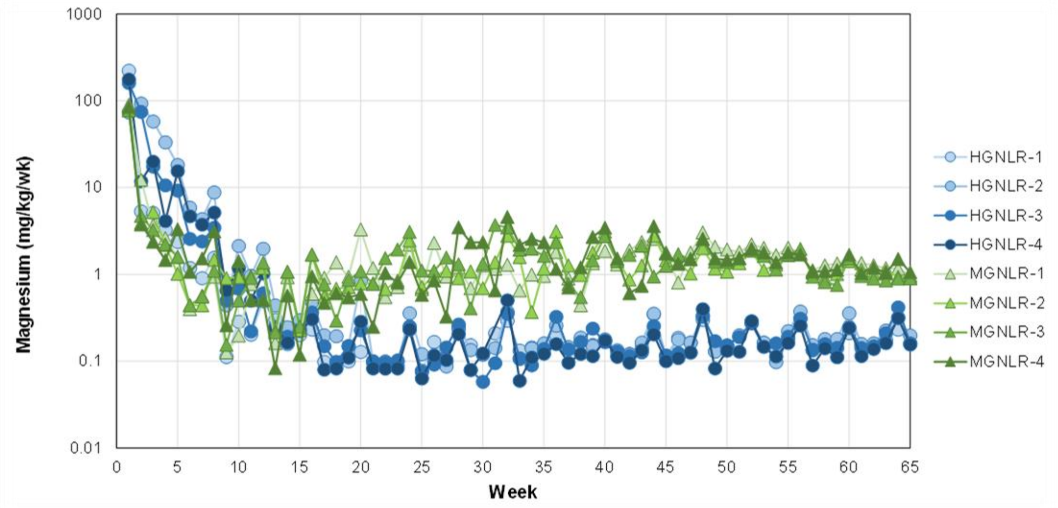

Figure F2-14: HCT Magnesium Mass Loading vs Time

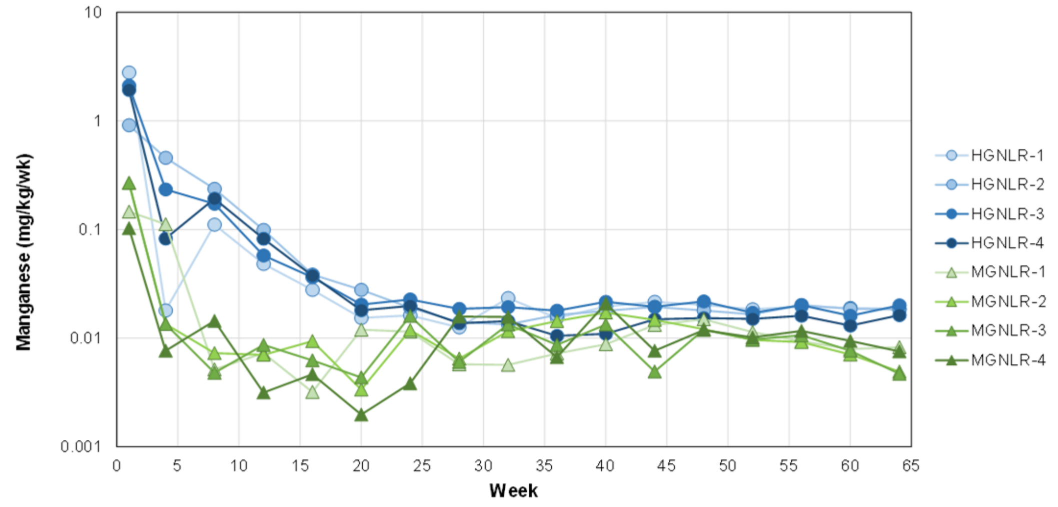

Figure F2-15: HCT Manganese Mass Loading vs Time

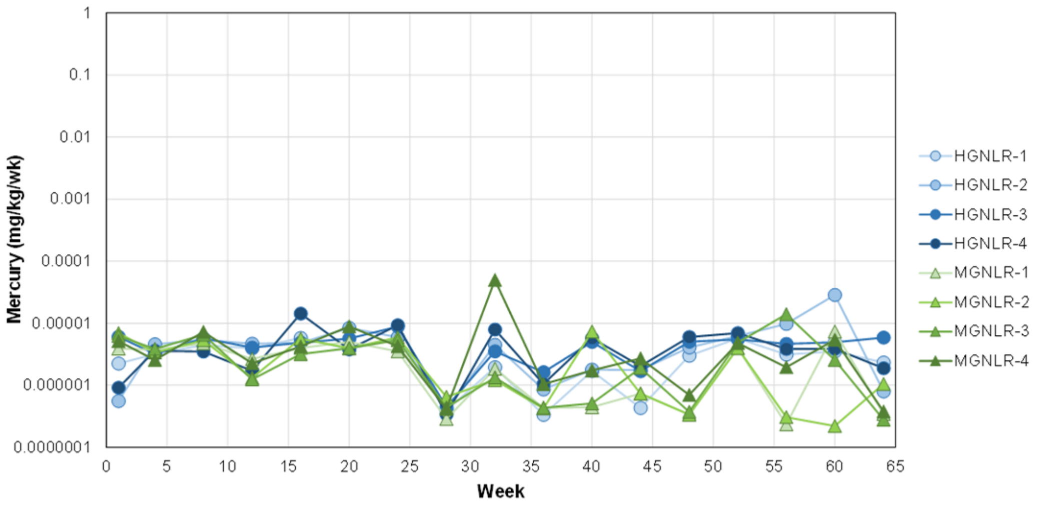

Figure F2-16: HCT Mercury Mass Loading vs Time

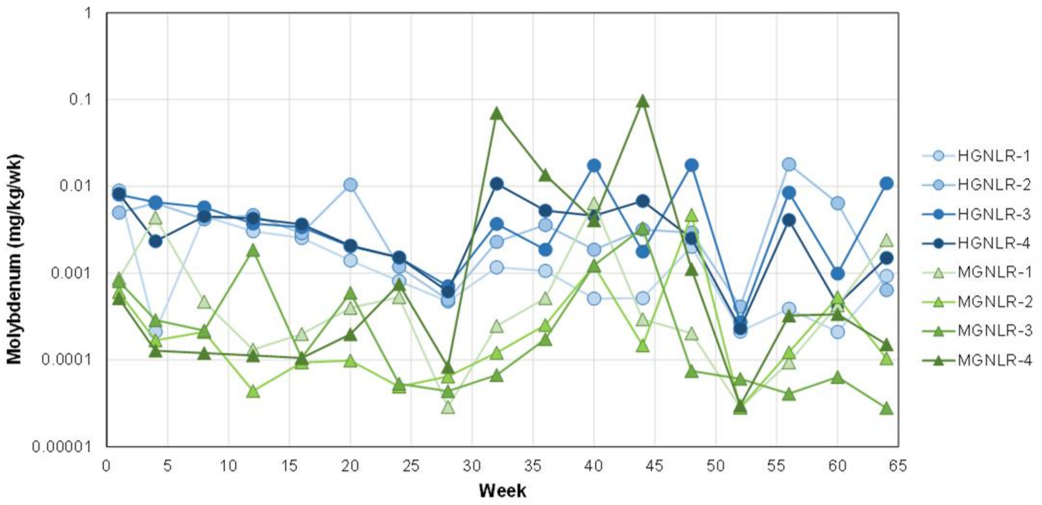

Figure F2-17: HCT Molybdenum Mass Loading vs Time

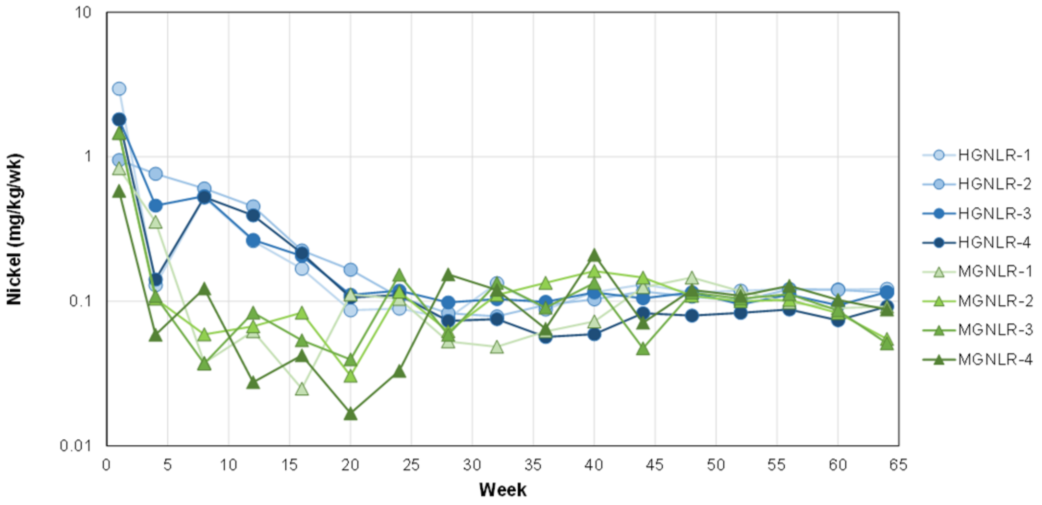

Figure F2-18: HCT Nickel Mass Loading vs Time

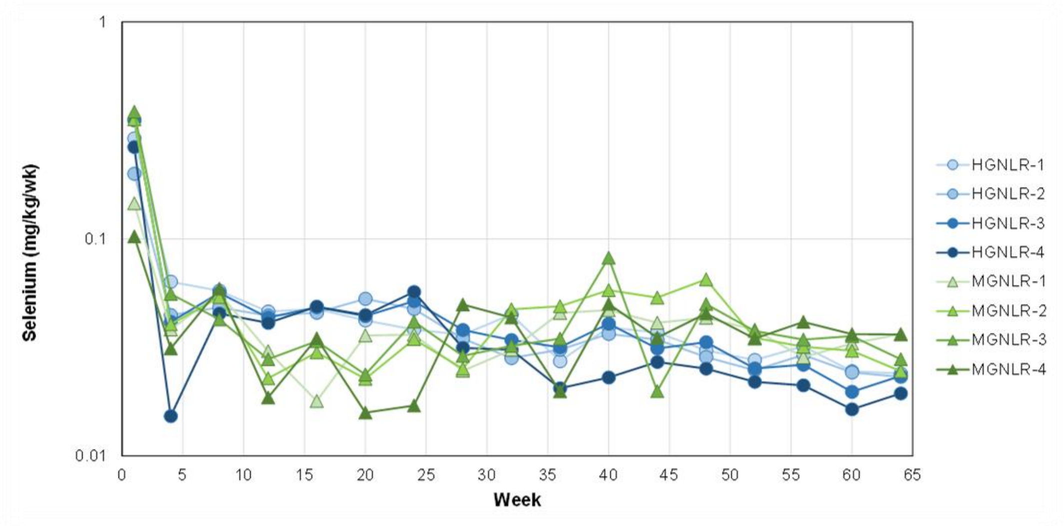

Figure F2-19: HCT Selenium Mass Loading vs Time

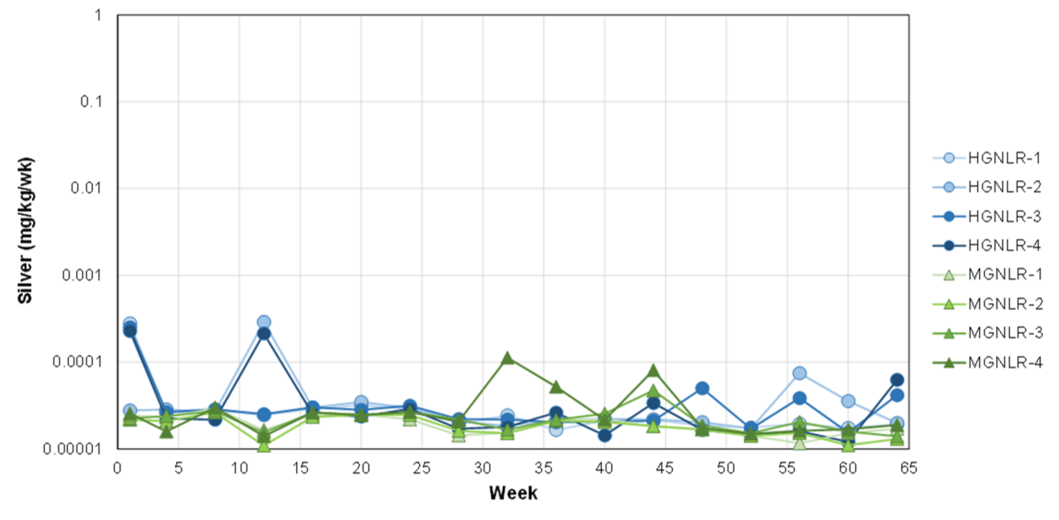

Figure F2-20: HCT Silver Mass Loading vs Time

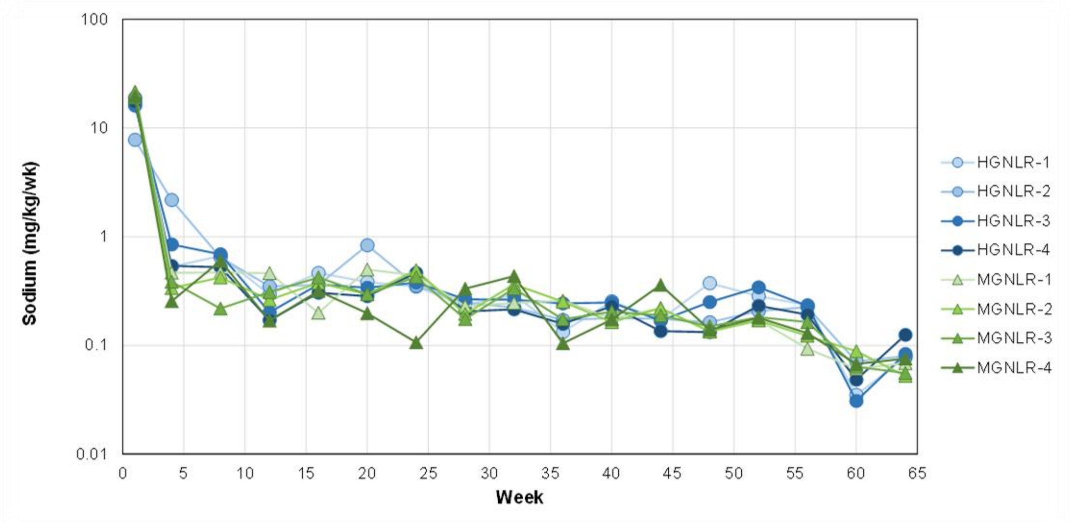

Figure F2-21: HCT Sodium Mass Loading vs Time

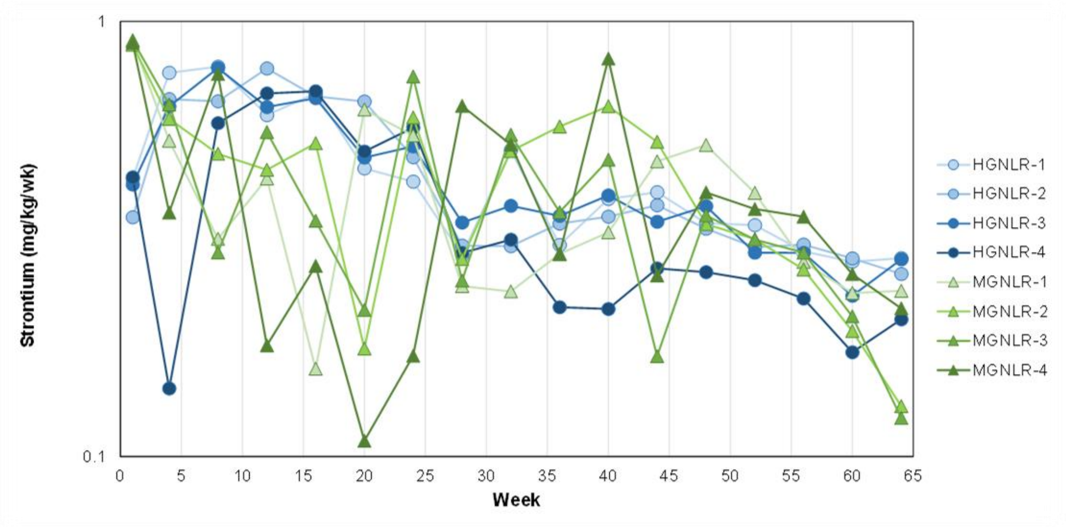

Figure F2-22: HCT Strontium Mass Loading vs Time

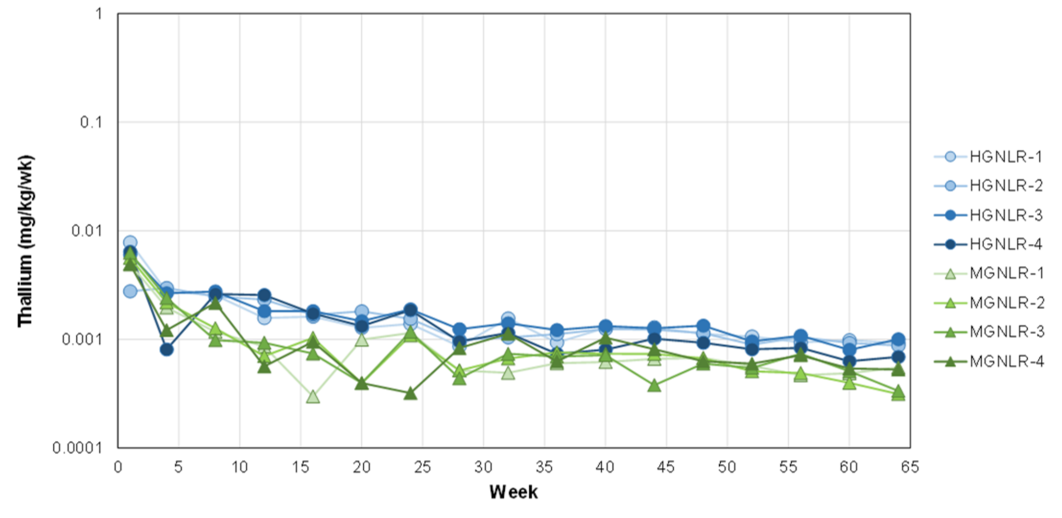

Figure F2-23: HCT Thallium Mass Loading vs Time

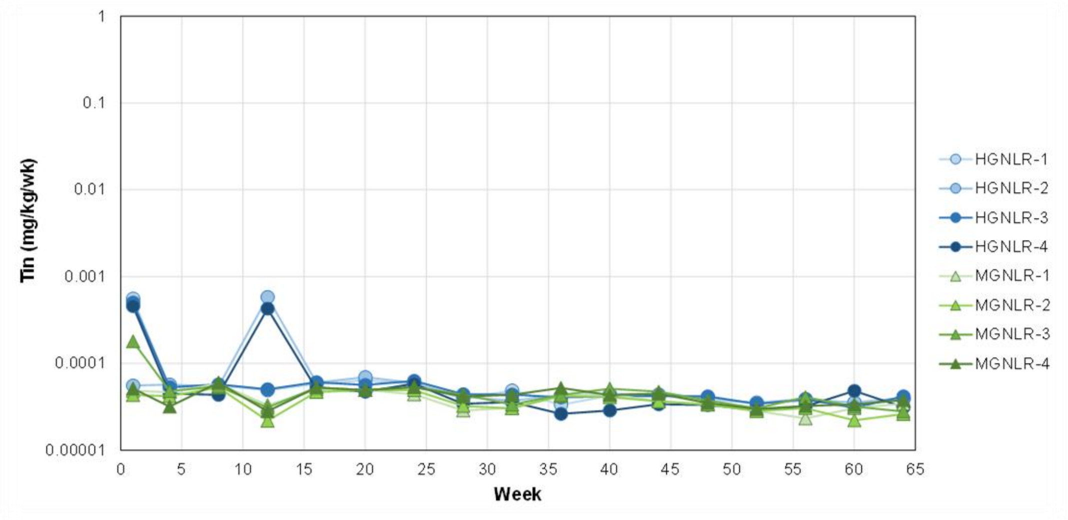

Figure F2-24: HCT Tin Mass Loading vs Time

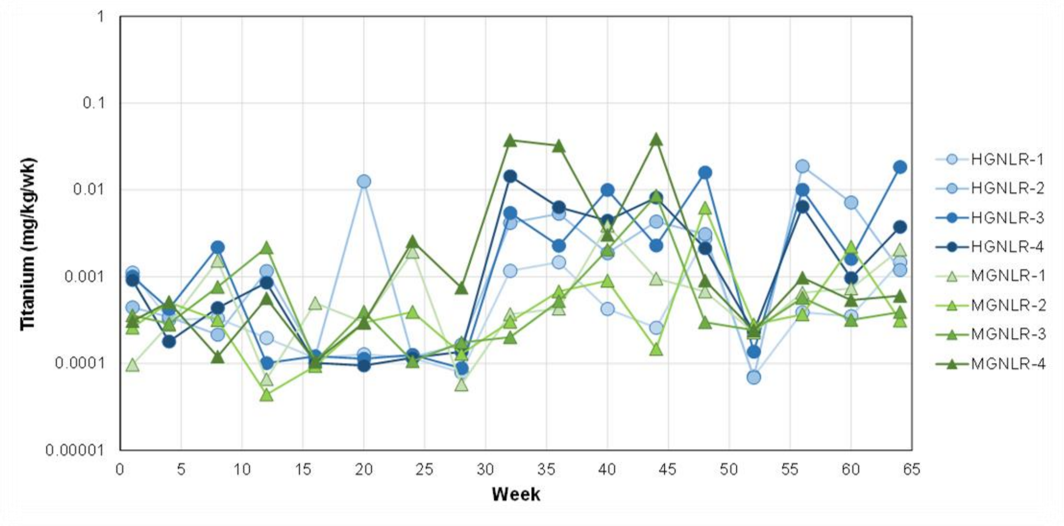

Figure F2-25: HCT Titanium Mass Loading vs Time

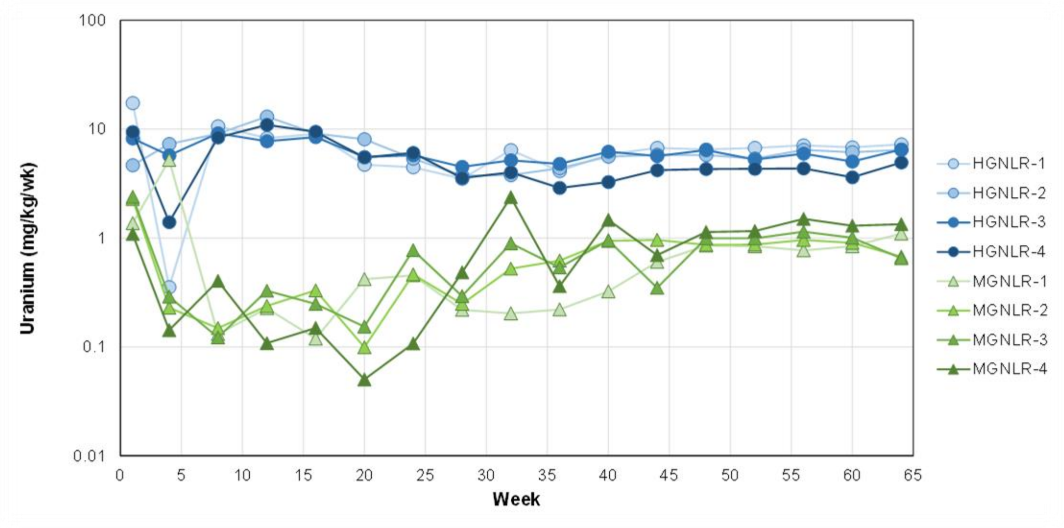

Figure F2-26: HCT Uranium Mass Loading vs Time

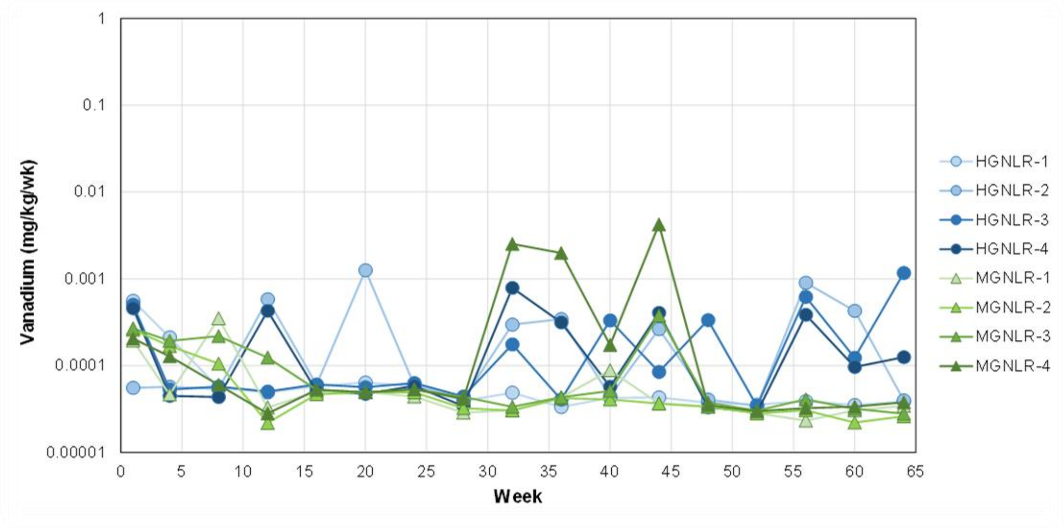

Figure F2-27: HCT Vanadium Mass Loading vs Time

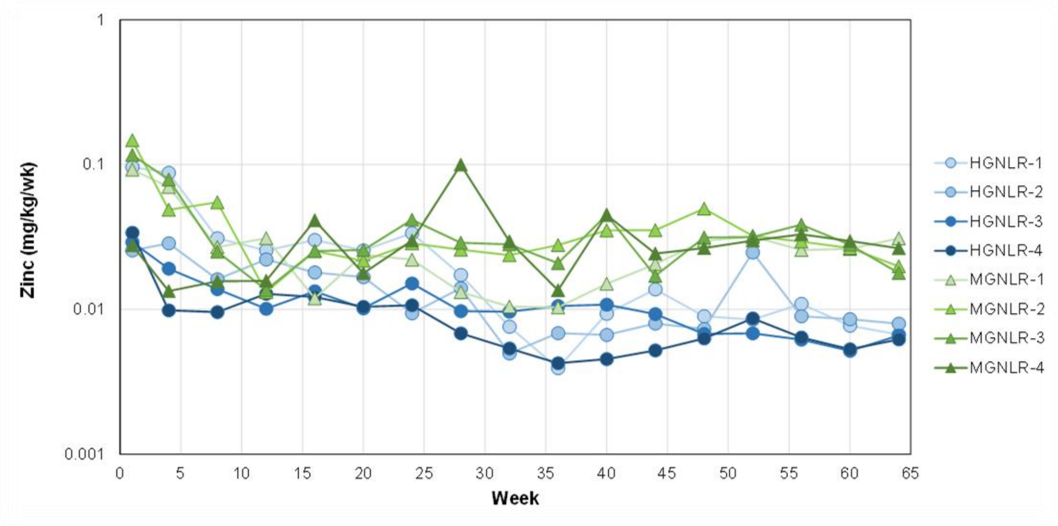

Figure F2-28: HCT Zinc Mass Loading vs Time

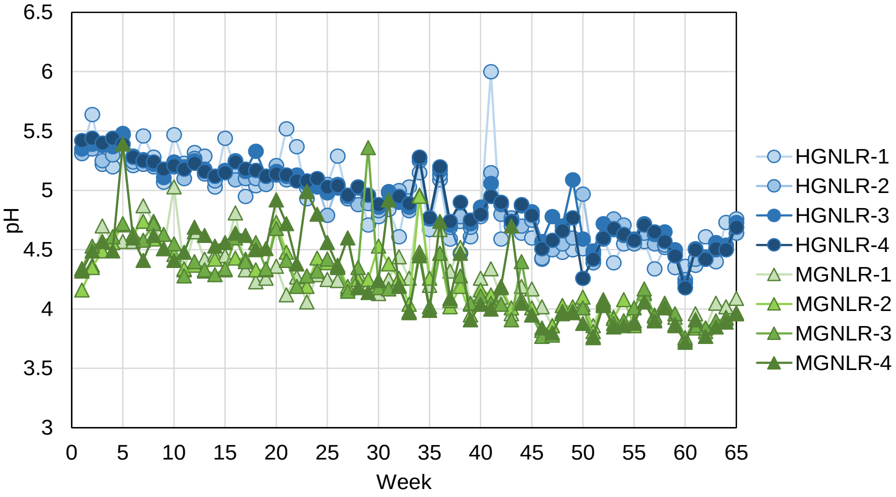

Figure F2-29: HCT Leachate pH vs Time

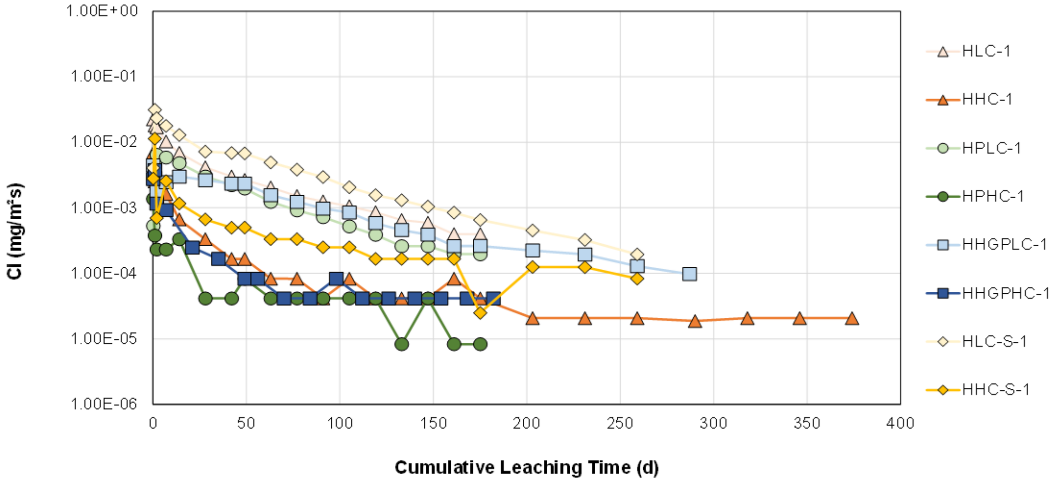

Figure F3-1: Chloride Interval Mass Flux vs Cumulative Leaching Time

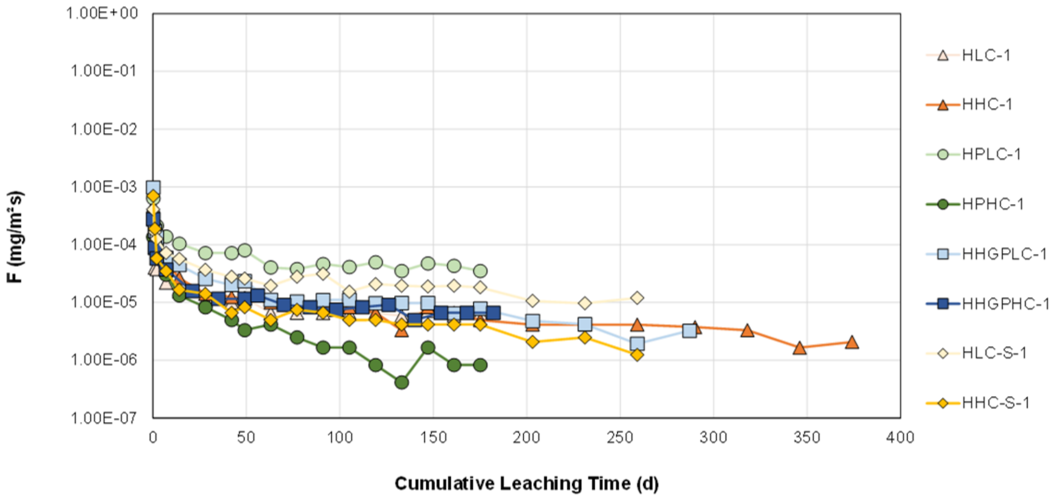

Figure F3-2: Fluoride Interval Mass Flux vs Cumulative Leaching Time

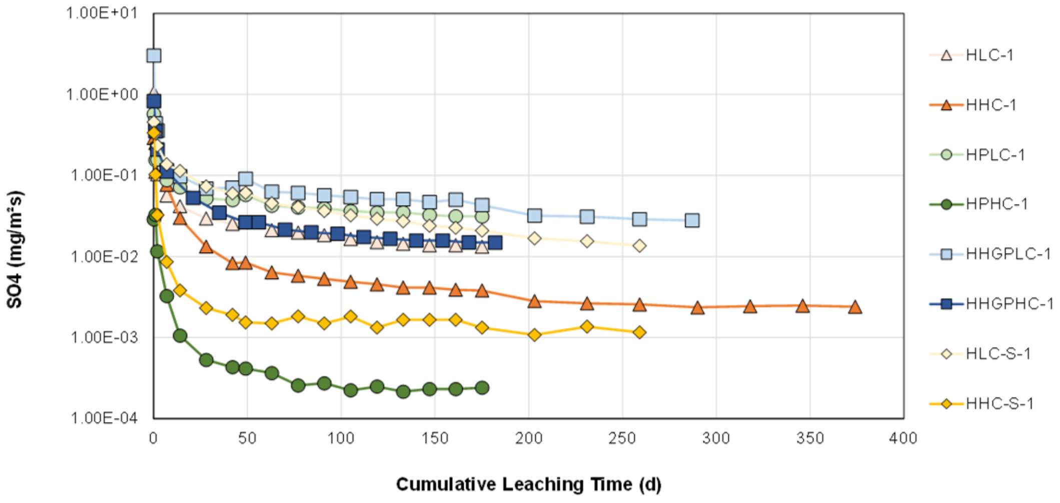

Figure F3-3: Sulphate Interval Mass Flux vs Cumulative Leaching Time

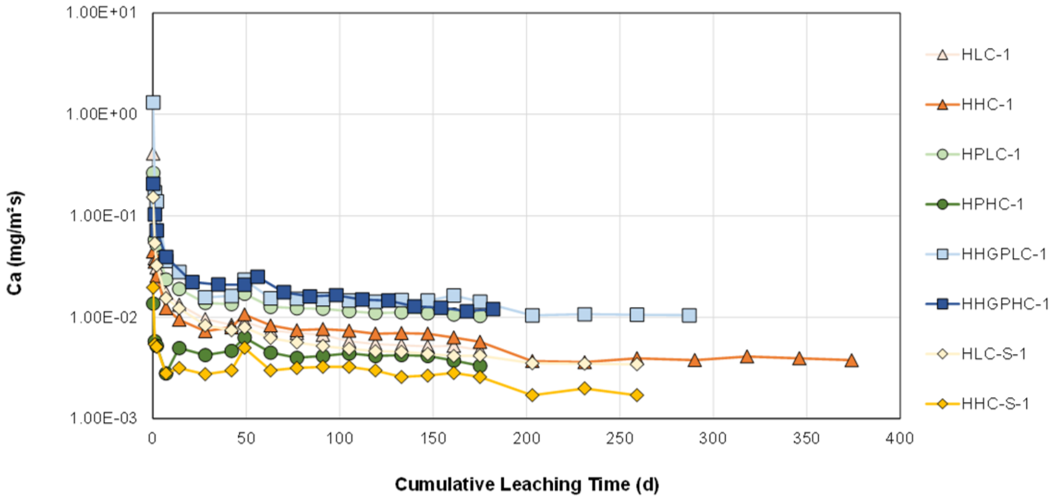

Figure F3-4: Calcium Interval Mass Flux vs Cumulative Leaching Time

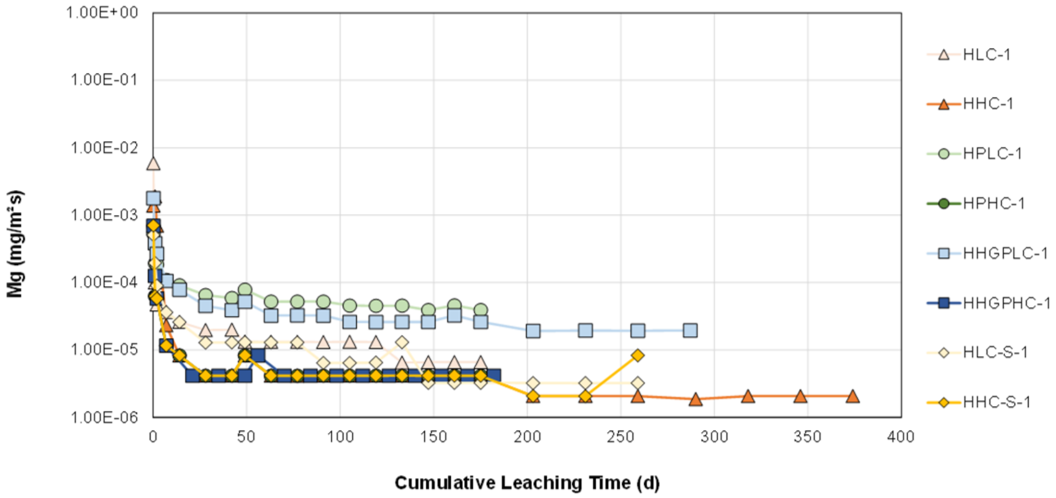

Figure F3-5: Magnesium Interval Mass Flux vs Cumulative Leaching Time

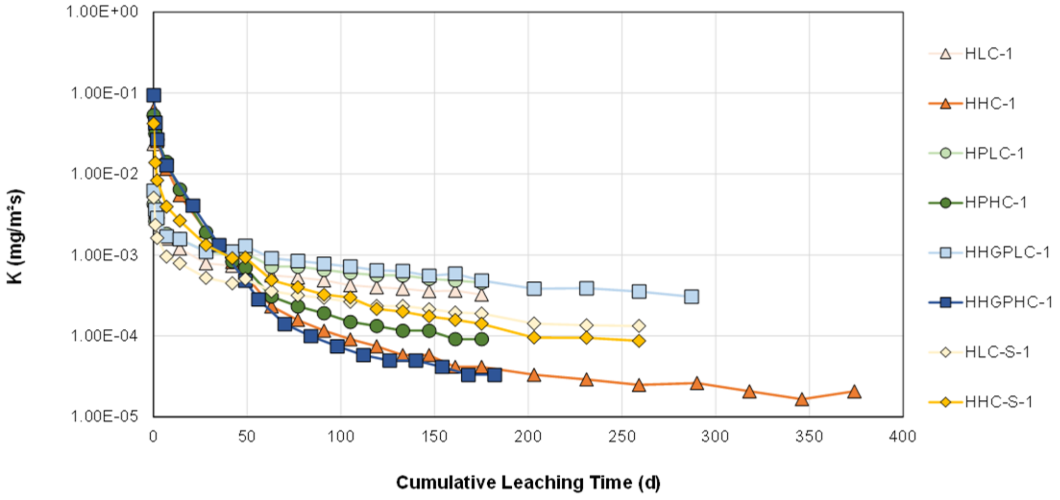

Figure F3-6: Potassium Interval Mass Flux vs Cumulative Leaching Time

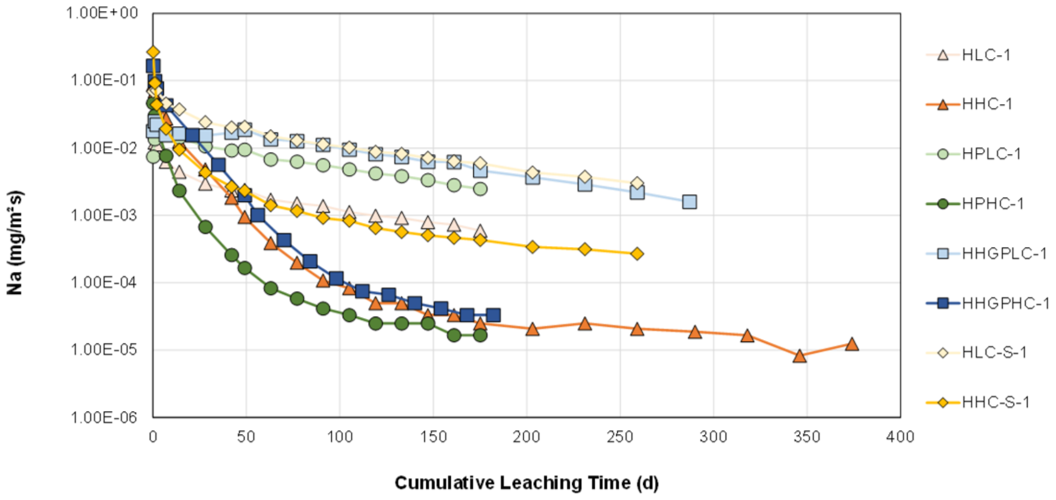

Figure F3-7: Sodium Interval Mass Flux vs Cumulative Leaching Time

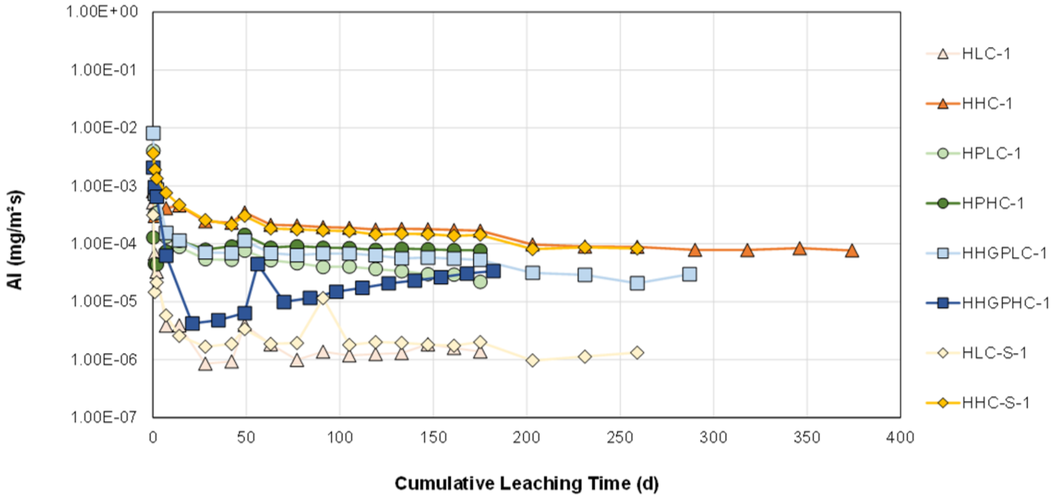

Figure F3-8: Aluminum Interval Mass Flux vs Cumulative Leaching Time

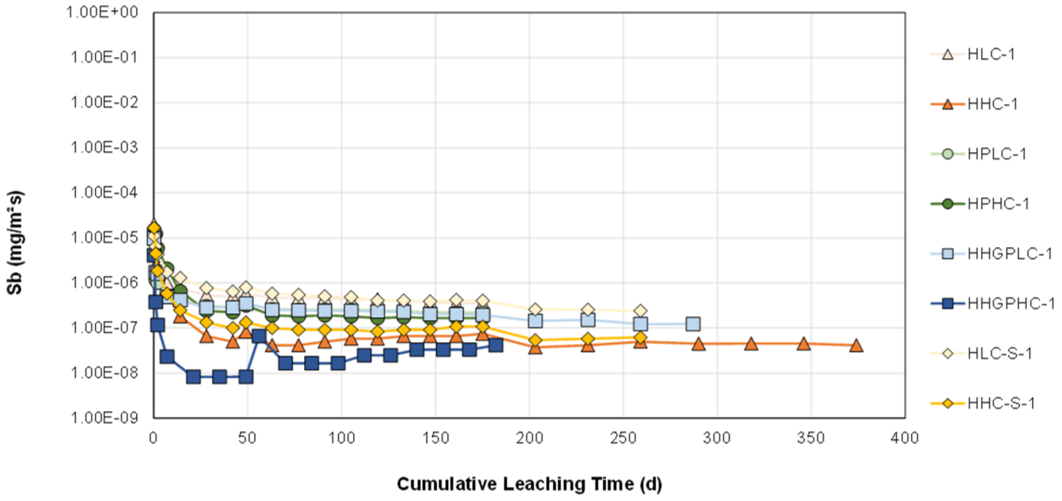

Figure F3-9: Antimony Interval Mass Flux vs Cumulative Leaching Time

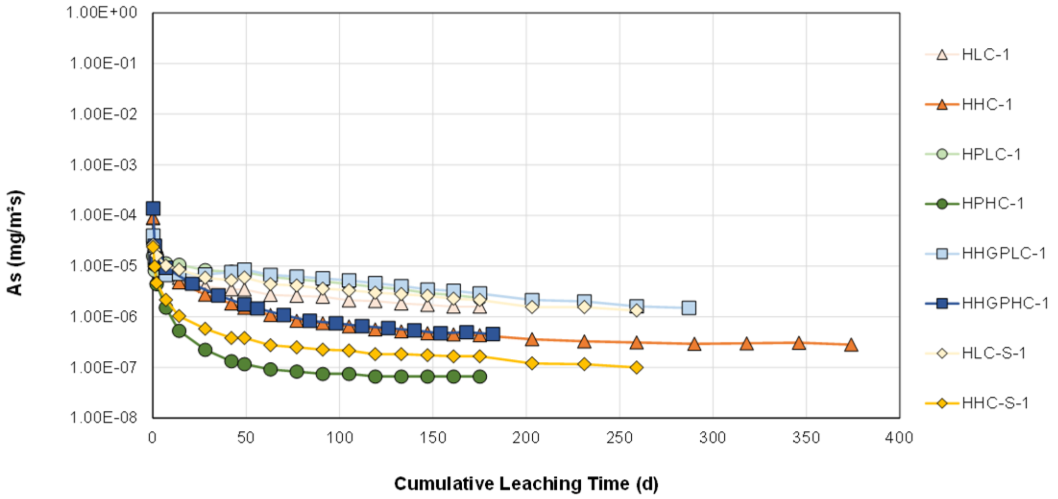

Figure F3-10: Arsenic Interval Mass Flux vs Cumulative Leaching Time

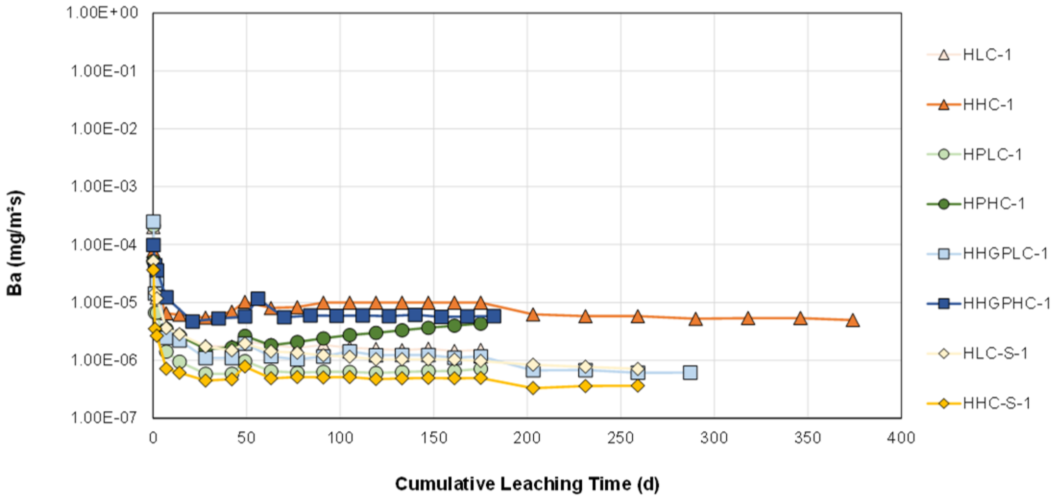

Figure F3-11: Barium Interval Mass Flux vs Cumulative Leaching Time

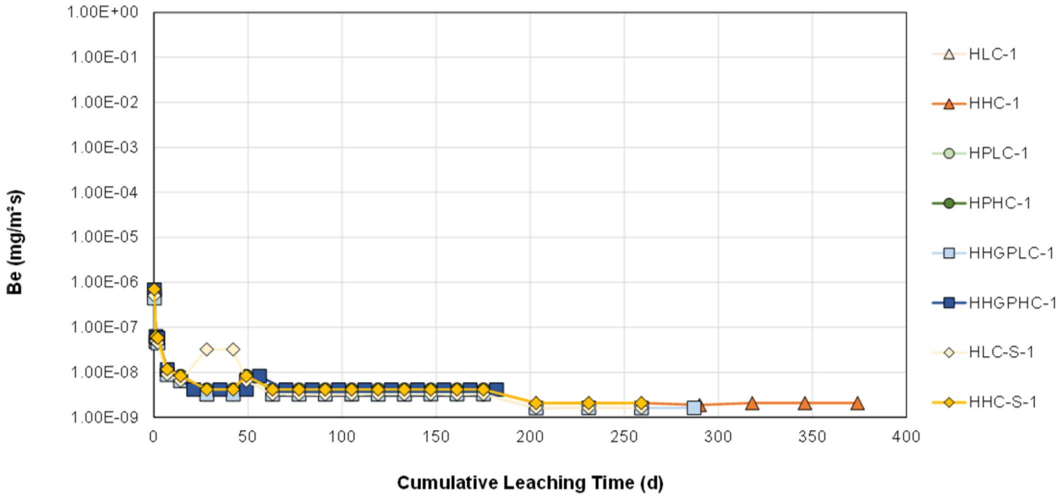

Figure F3-12: Beryllium Interval Mass Flux vs Cumulative Leaching Time

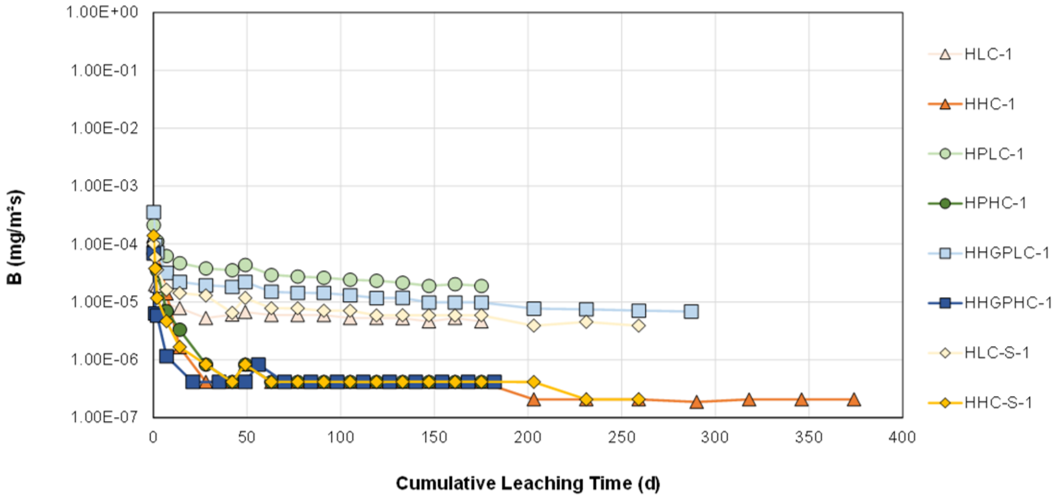

Figure F3-13: Boron Interval Mass Flux vs Cumulative Leaching Time

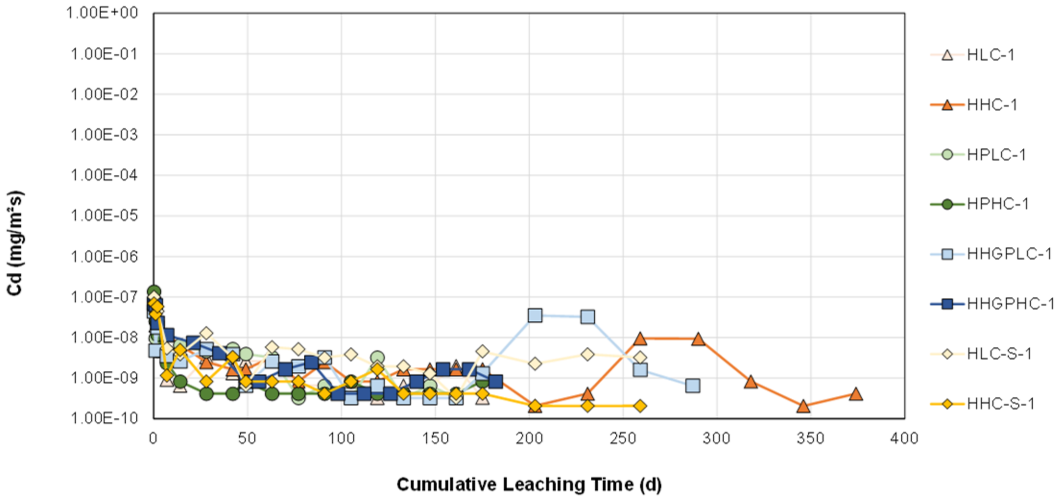

Figure F3-14: Cadmium Interval Mass Flux vs Cumulative Leaching Time

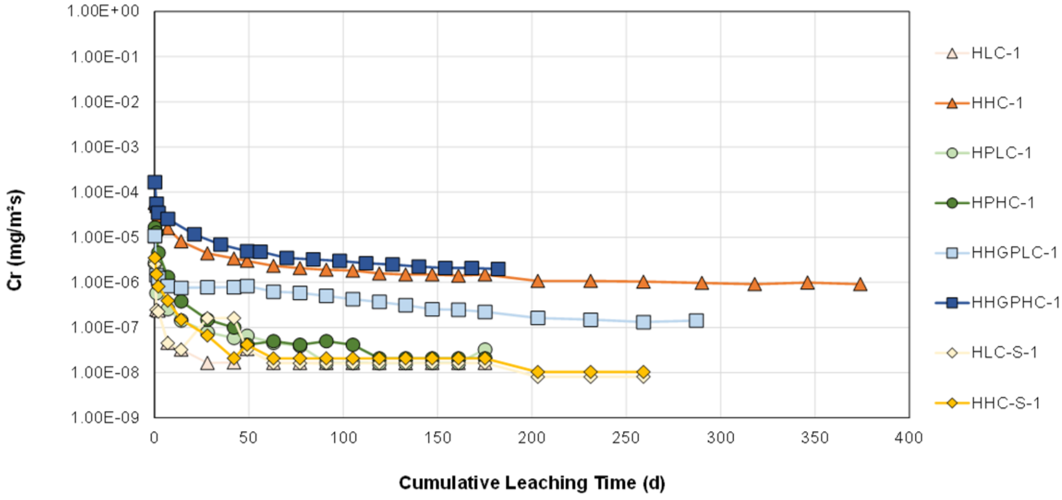

Figure F3-15: Chromium Interval Mass Flux vs Cumulative Leaching Time

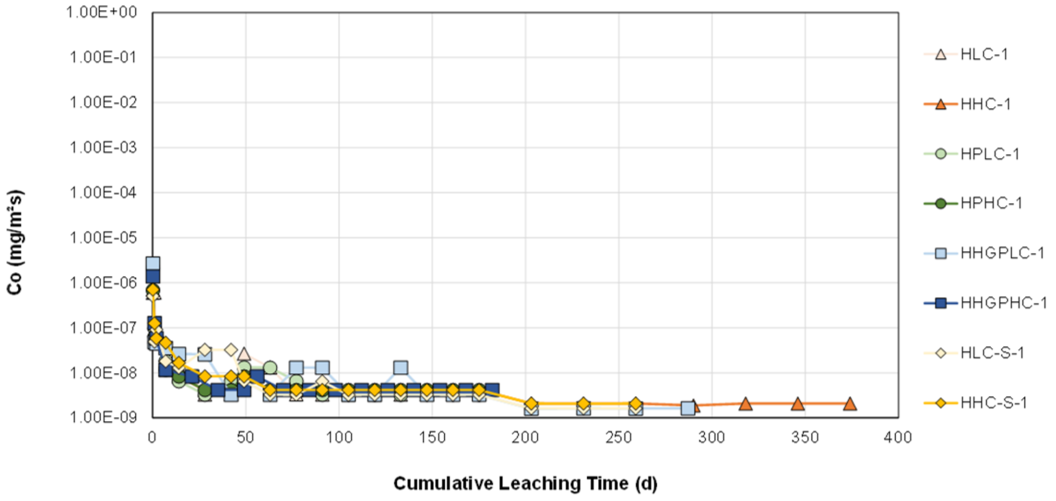

Figure F3-16: Cobalt Interval Mass Flux vs Cumulative Leaching Time

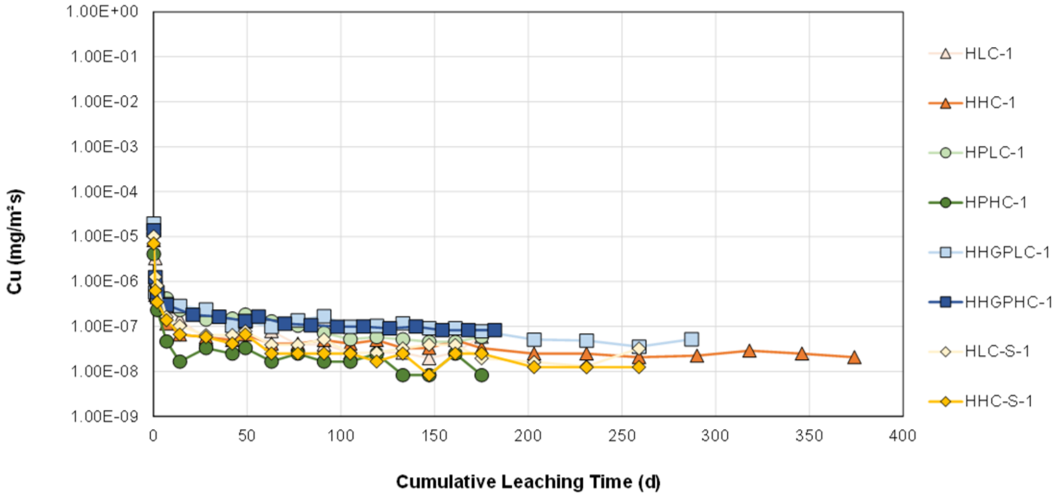

Figure F3-17: Copper Interval Mass Flux vs Cumulative Leaching Time

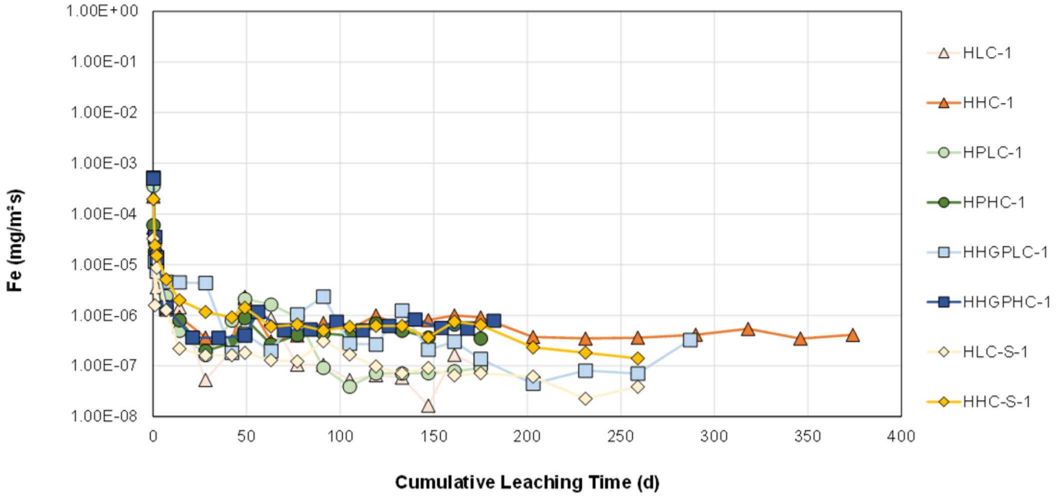

Figure F3-18: Iron Interval Mass Flux vs Cumulative Leaching Time

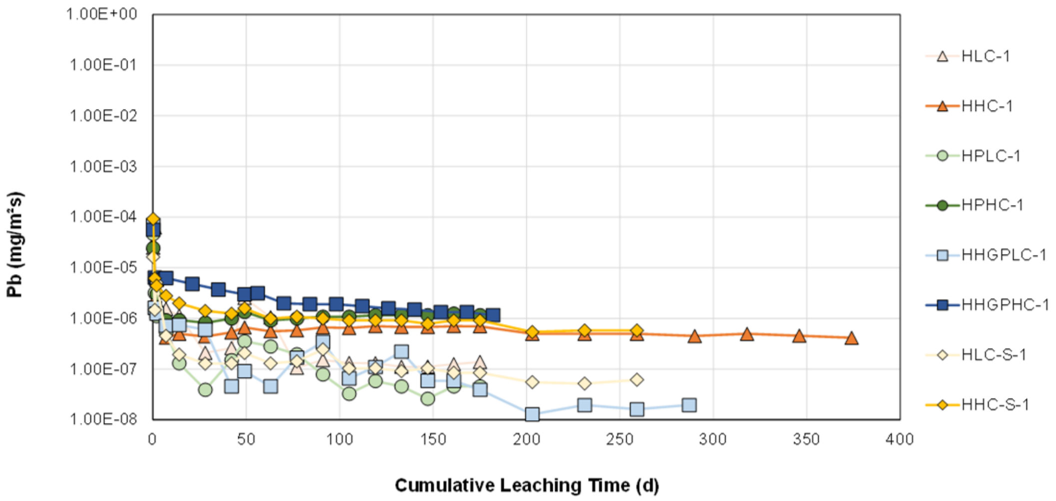

Figure F3-19: Lead Interval Mass Flux vs Cumulative Leaching Time

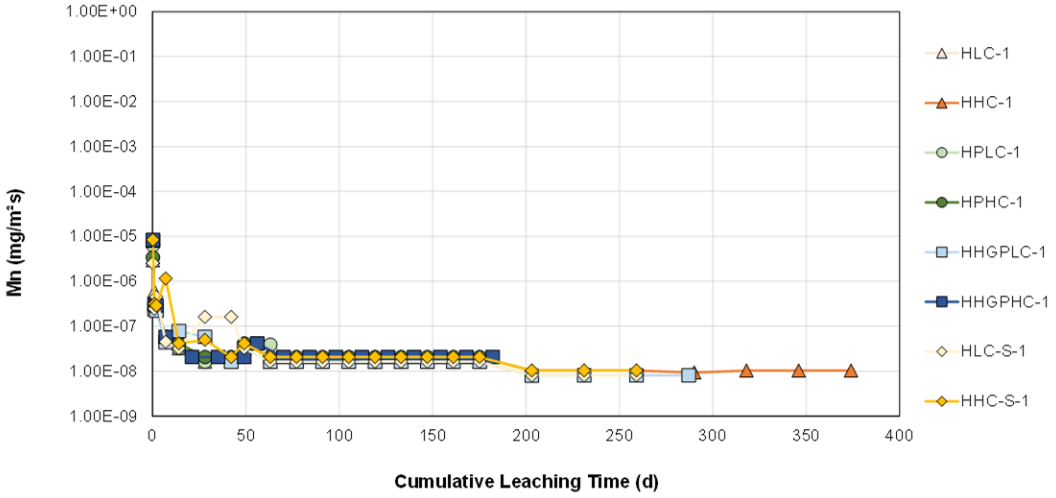

Figure F3-20: Manganese Interval Mass Flux vs Cumulative Leaching Time

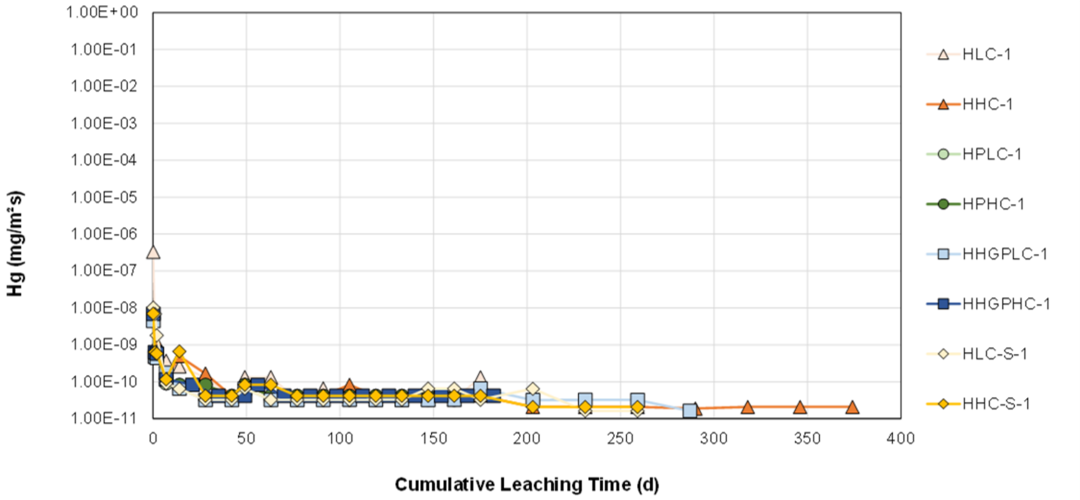

Figure F3-21: Mercury Interval Mass Flux vs Cumulative Leaching Time

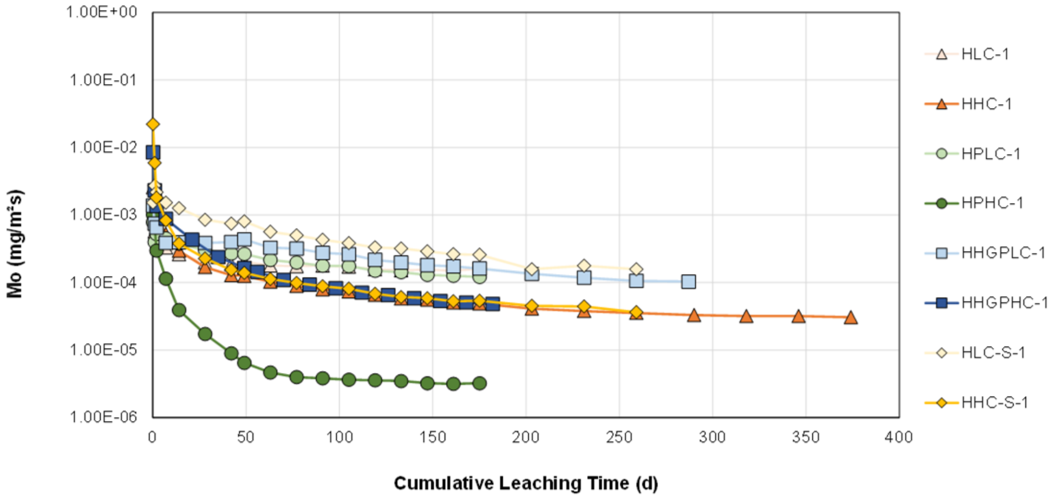

Figure F3-22: Molybdenum Interval Mass Flux vs Cumulative Leaching Time

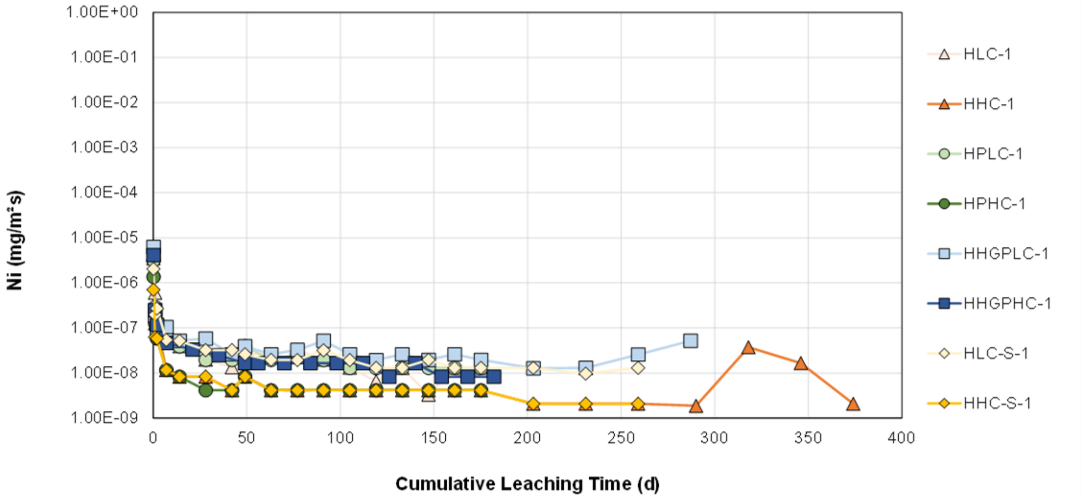

Figure F3-23: Nickel Interval Mass Flux vs Cumulative Leaching Time

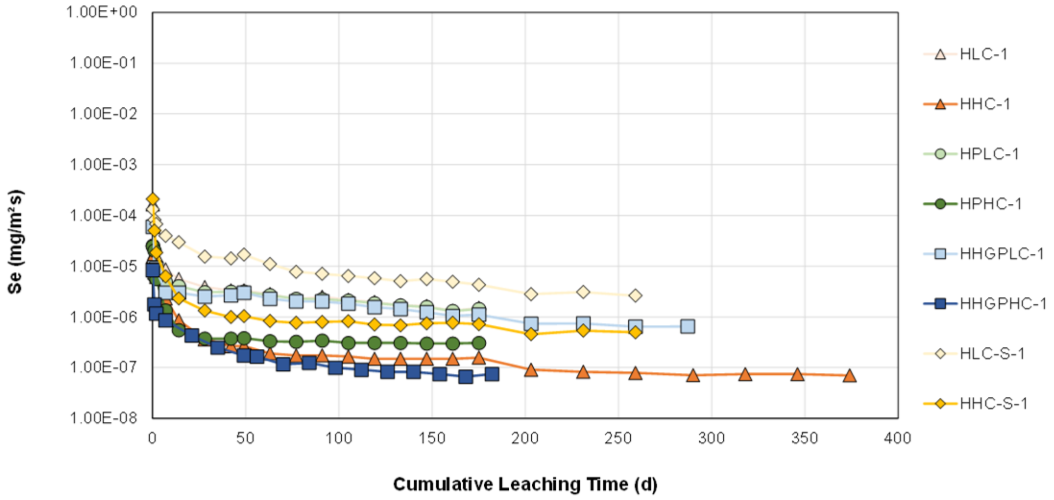

Figure F3-24: Selenium Interval Mass Flux vs Cumulative Leaching Time

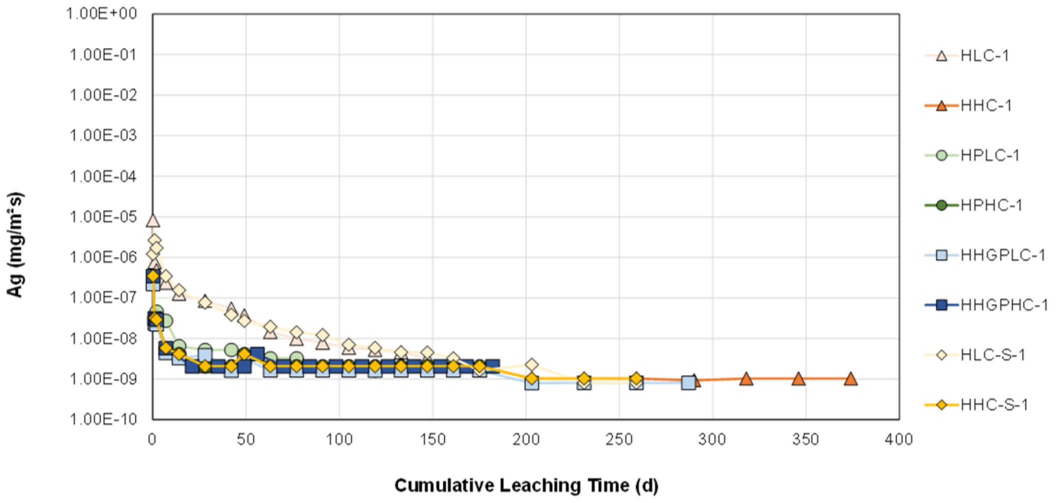

Figure F3-25: Silver Interval Mass Flux vs Cumulative Leaching Time

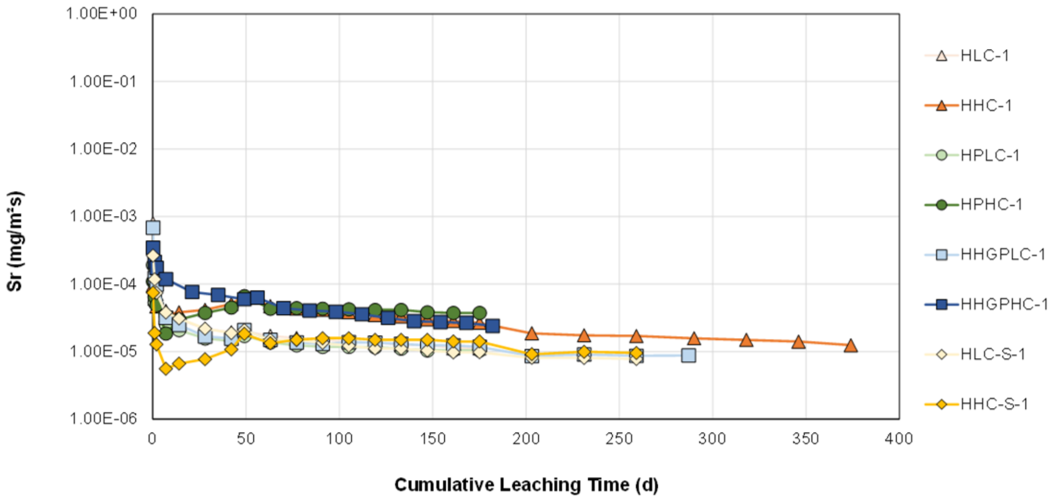

Figure F3-26: Strontium Interval Mass Flux vs Cumulative Leaching Time

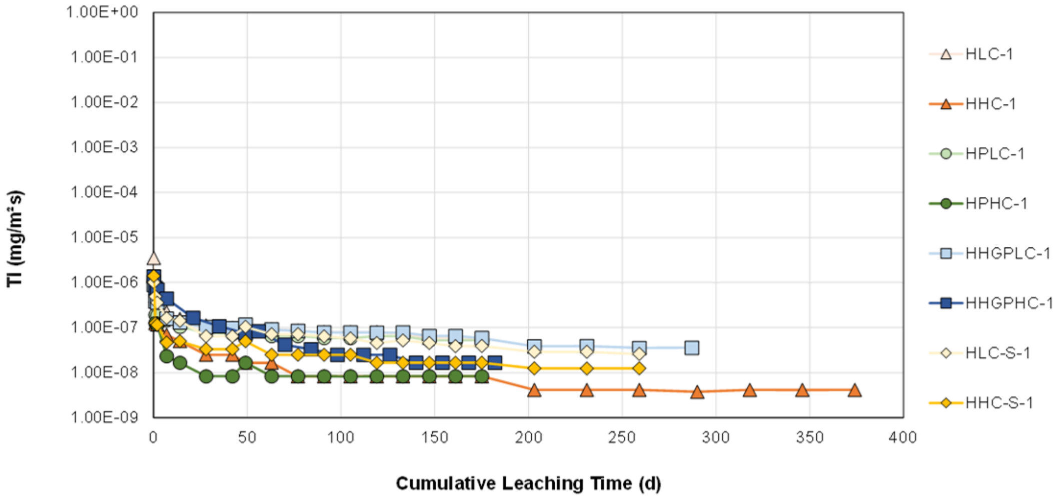

Figure F3-27: Thallium Interval Mass Flux vs Cumulative Leaching Time

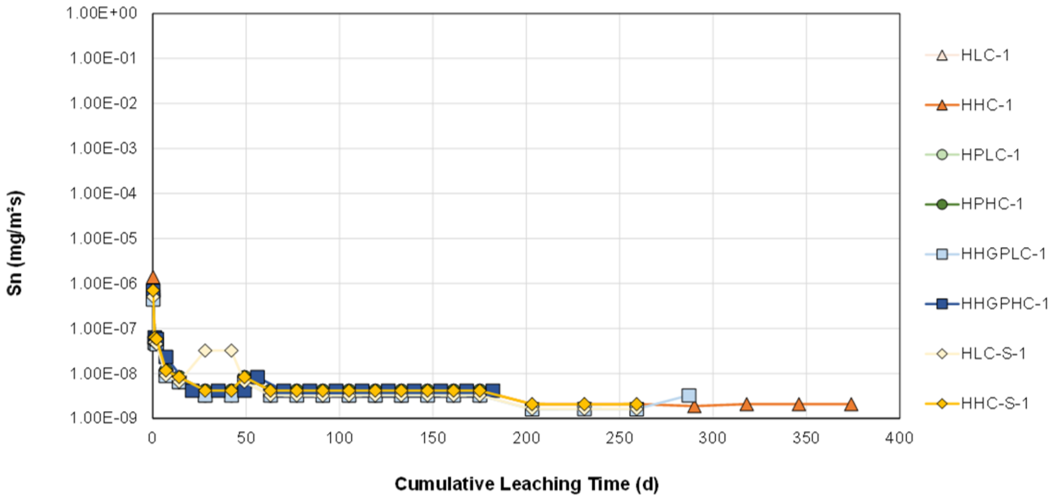

Figure F3-28: Tin Interval Mass Flux vs Cumulative Leaching Time

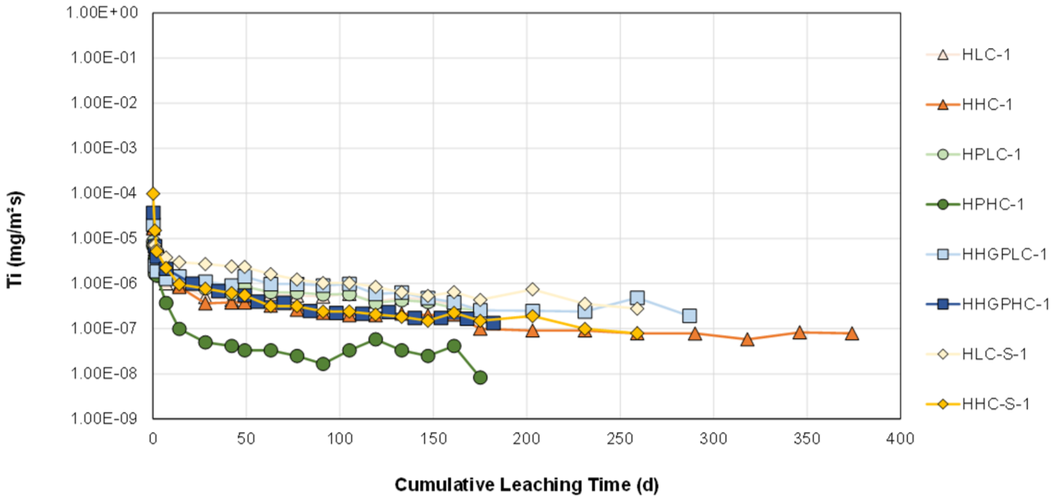

Figure F3-29: Titanium Interval Mass Flux vs Cumulative Leaching Time

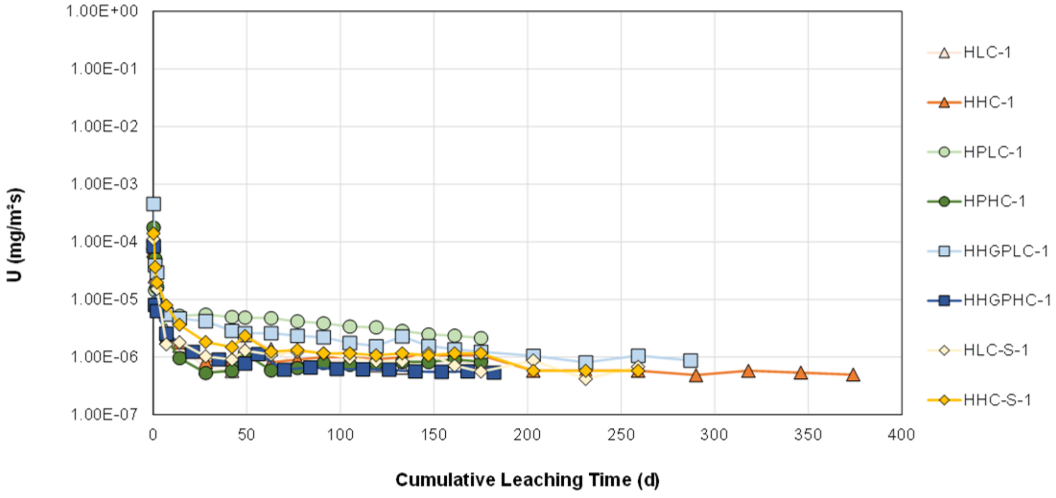

Figure F3-30: Uranium Interval Mass Flux vs Cumulative Leaching Time

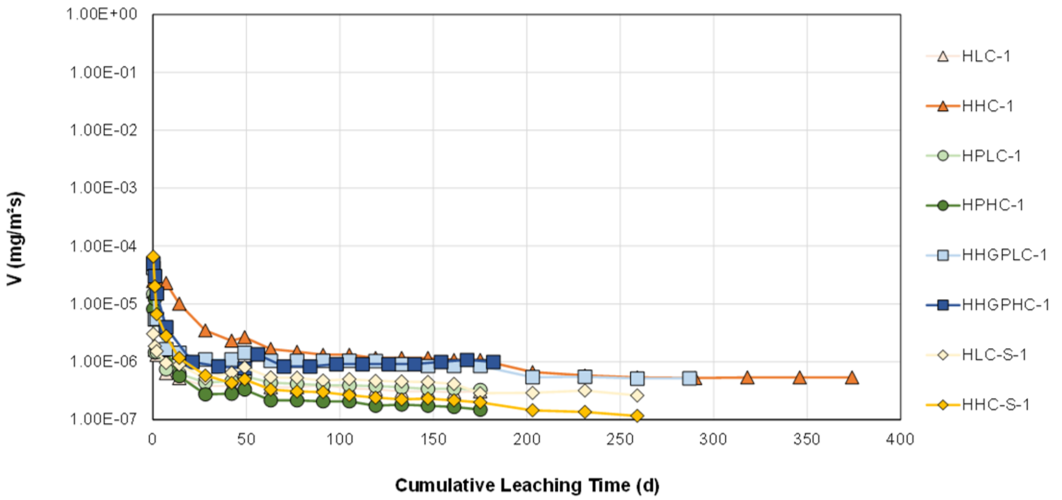

Figure F3-31: Vanadium Interval Mass Flux vs Cumulative Leaching Time

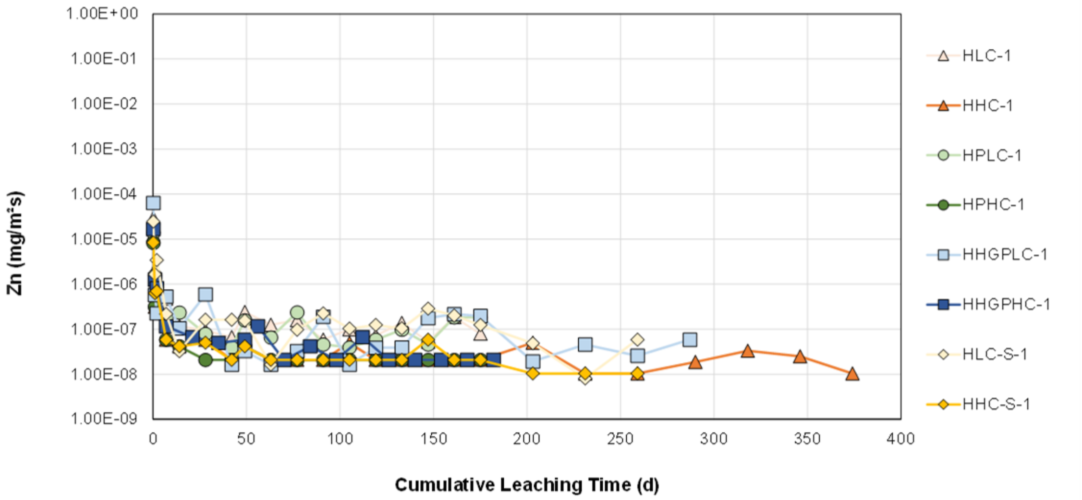

Figure F3-32: Zinc Interval Mass Flux vs Cumulative Leaching Time

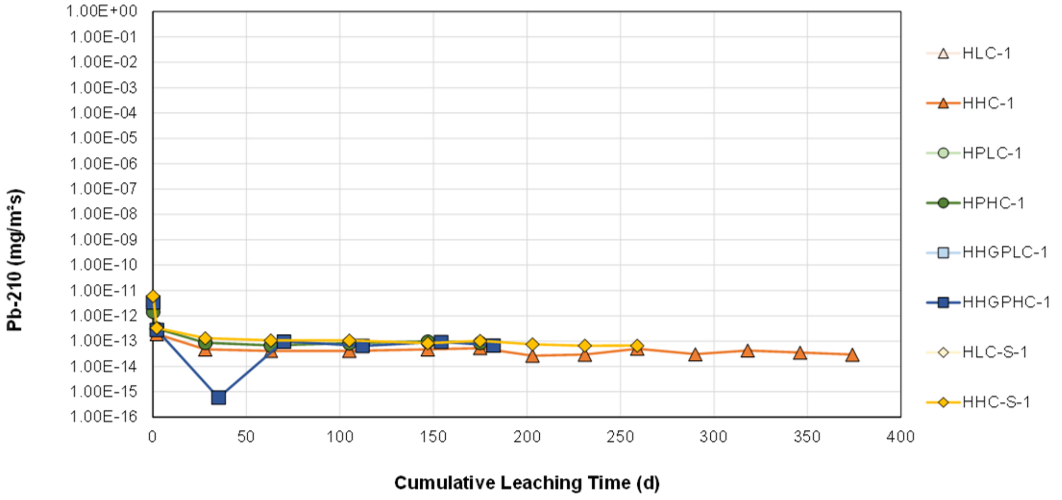

Figure F3-33: Lead-210 Interval Mass Flux vs Cumulative Leaching Time

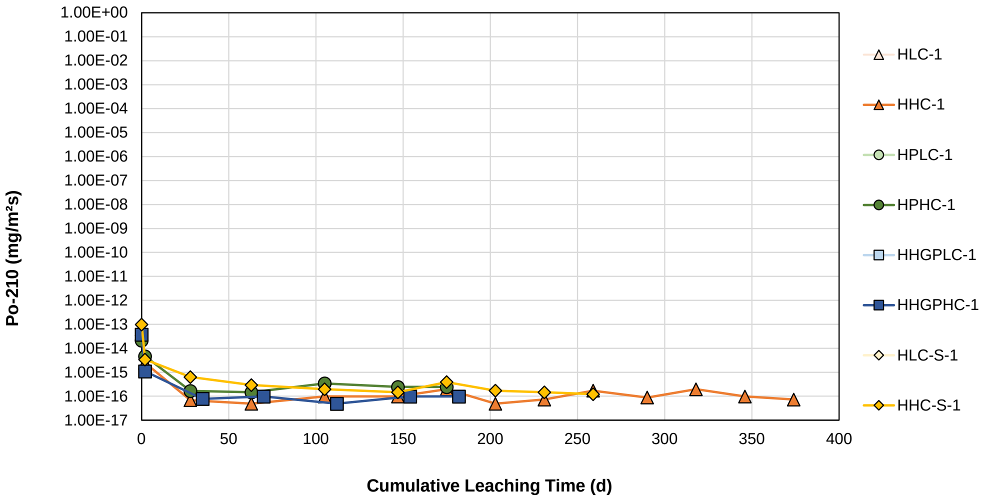

Figure F3-34: Polonium-210 Interval Mass Flux vs Cumulative Leaching Time

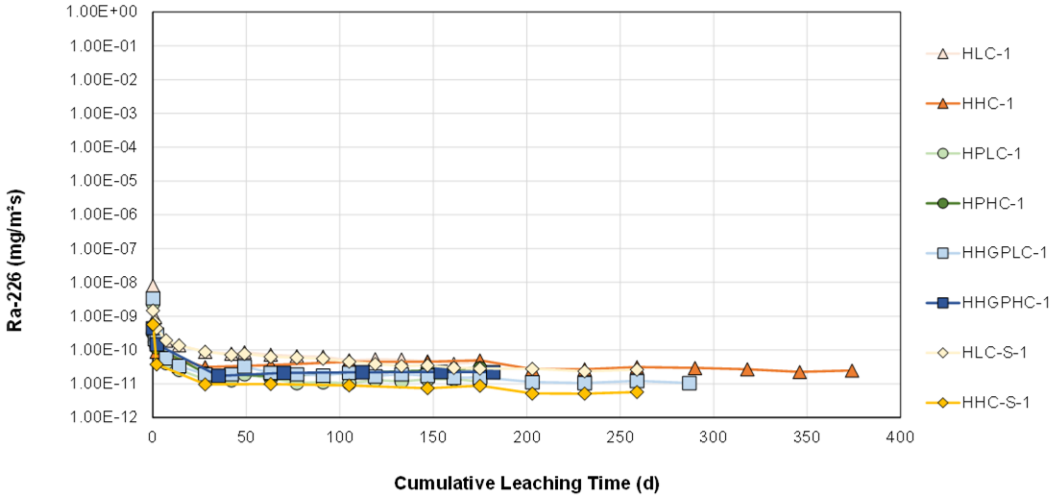

Figure F3-35: Radium-226 Interval Mass Flux vs Cumulative Leaching Time

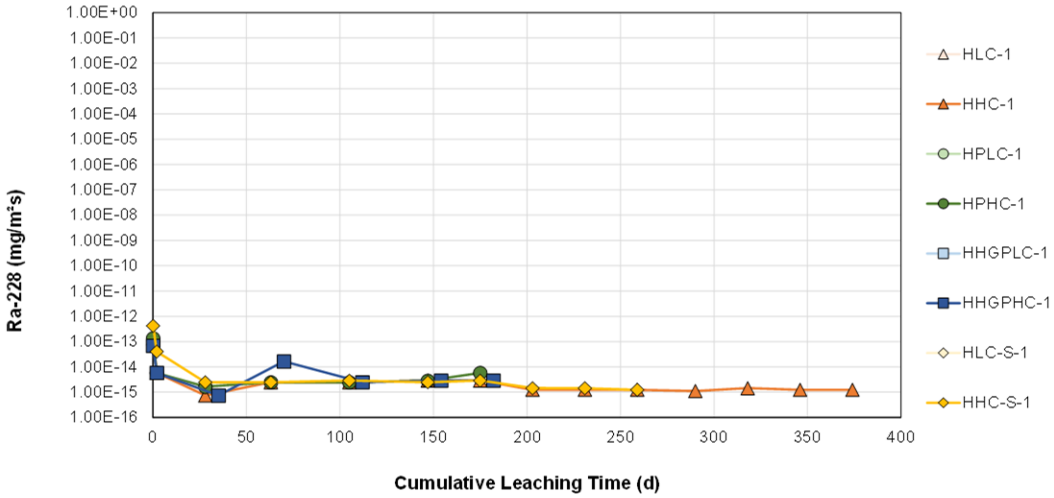

Figure F3-36: Radium-228 Interval Mass Flux vs Cumulative Leaching Time

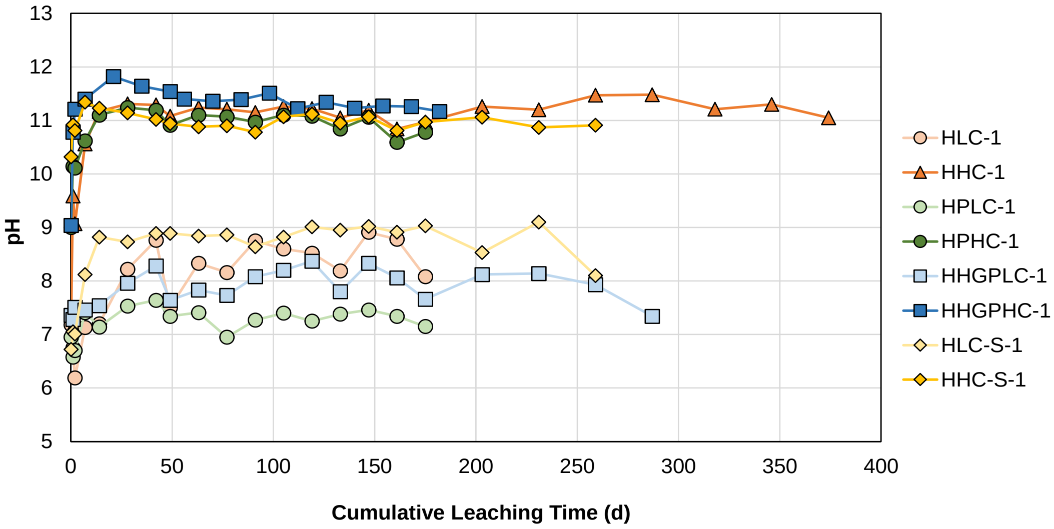

Figure F3-37: pH vs Cumulative Leaching Time

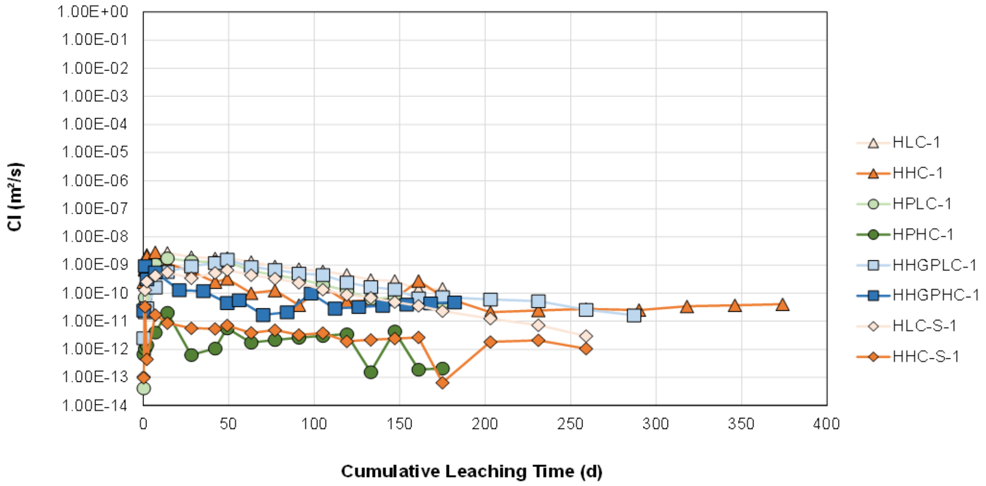

Figure F4-1: Chloride Diffusivity vs Cumulative Leaching Time

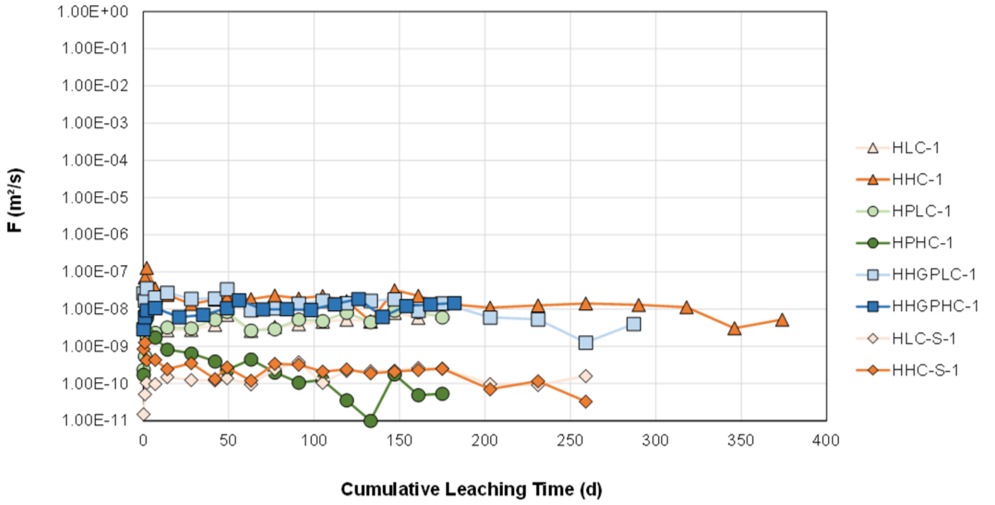

Figure F4-2: Fluoride Diffusivity vs Cumulative Leaching Time

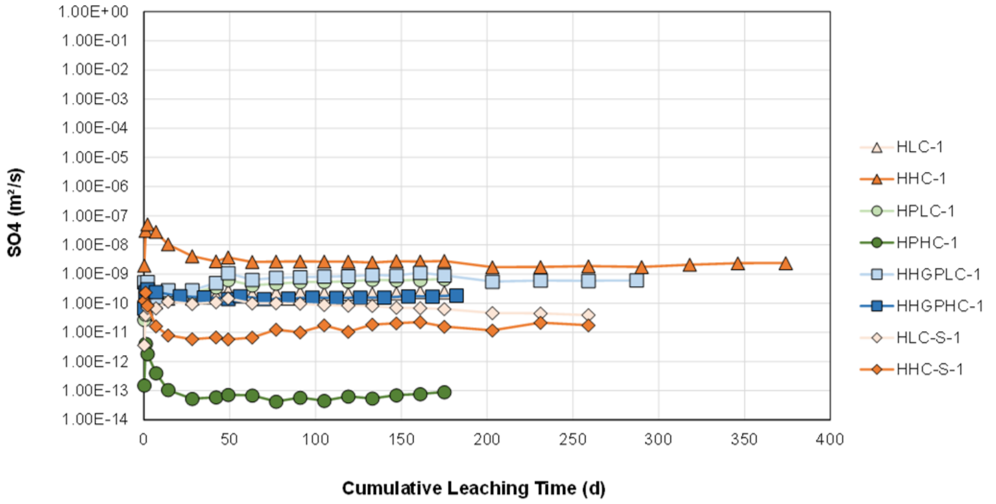

Figure F4-3: Sulphate Diffusivity vs Cumulative Leaching Time

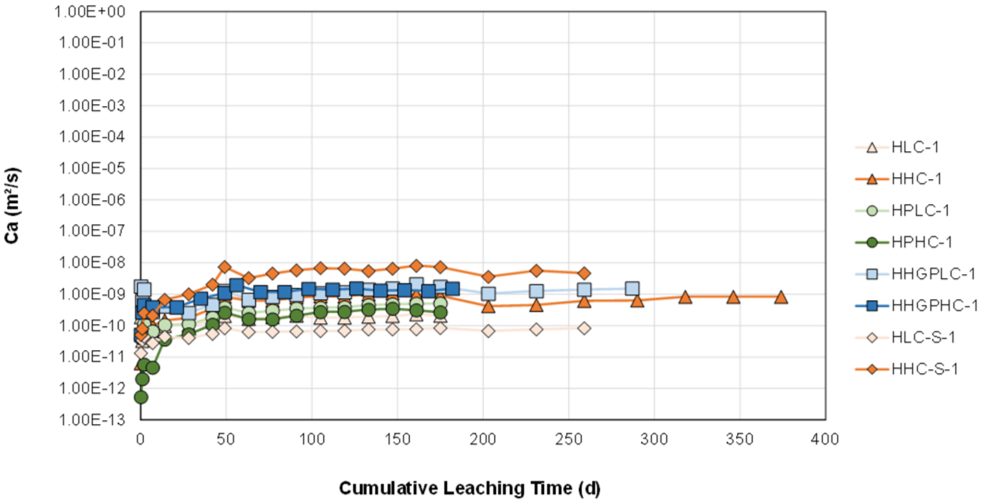

Figure F4-4: Calcium Diffusivity vs Cumulative Leaching Time

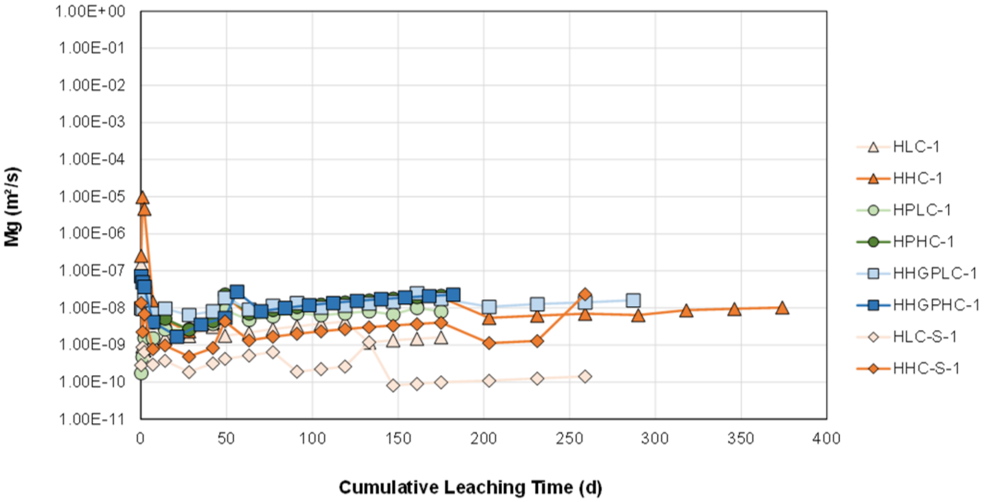

Figure F4-5: Magnesium Diffusivity vs Cumulative Leaching Time

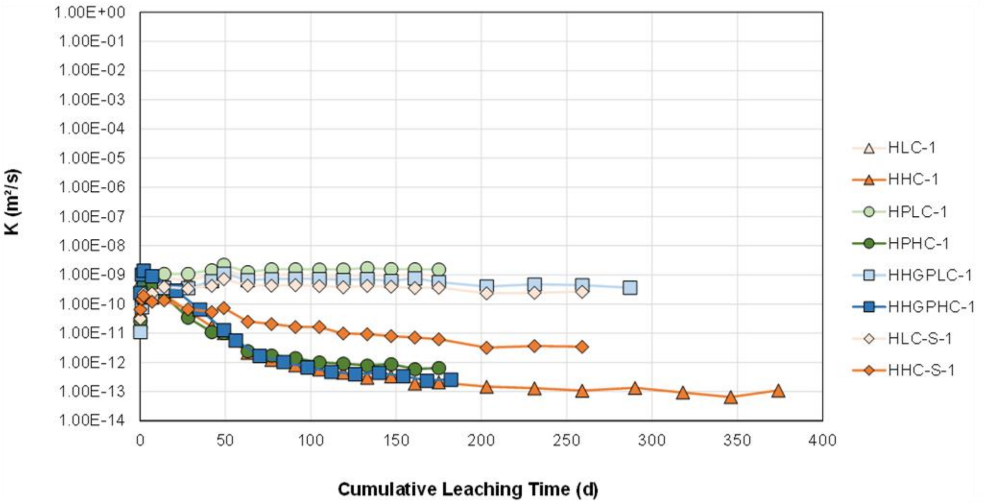

Figure F4-6: Potassium Diffusivity vs Cumulative Leaching Time

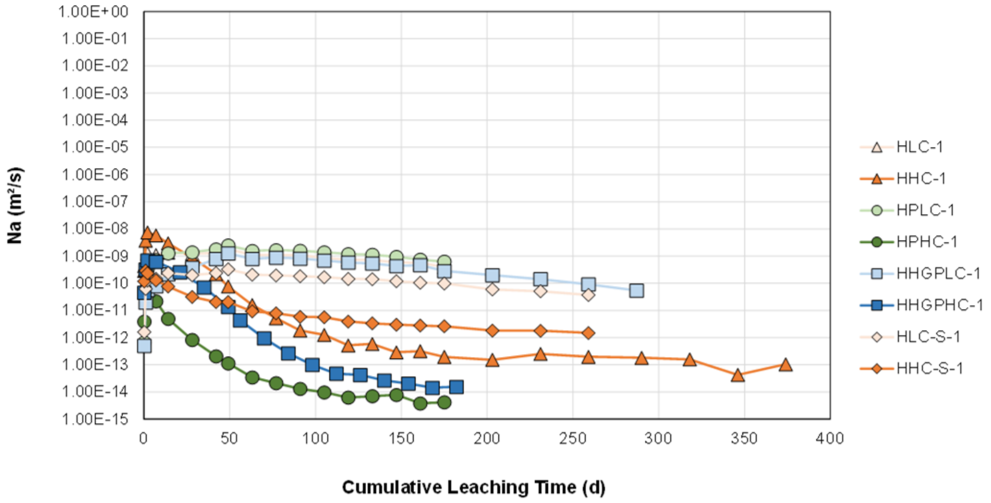

Figure F4-7: Sodium Diffusivity vs Cumulative Leaching Time

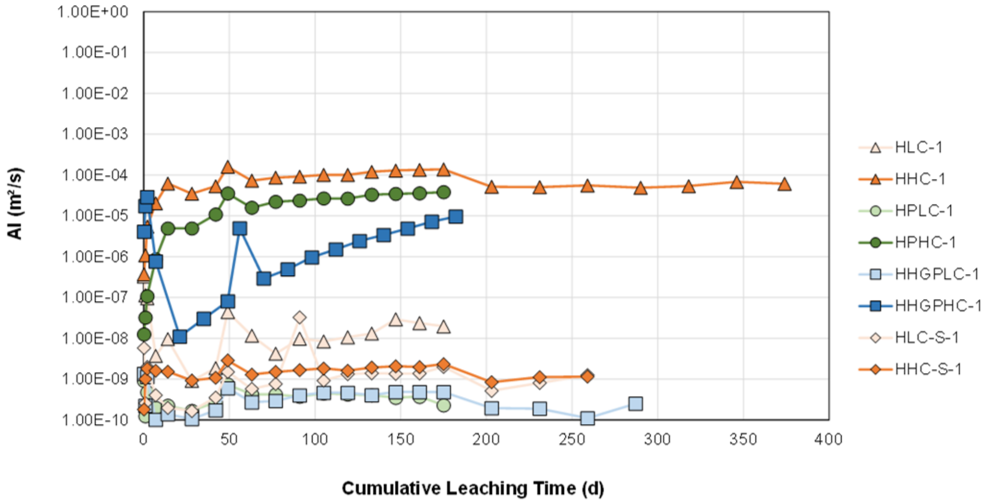

Figure F4-8: Aluminum Diffusivity vs Cumulative Leaching Time

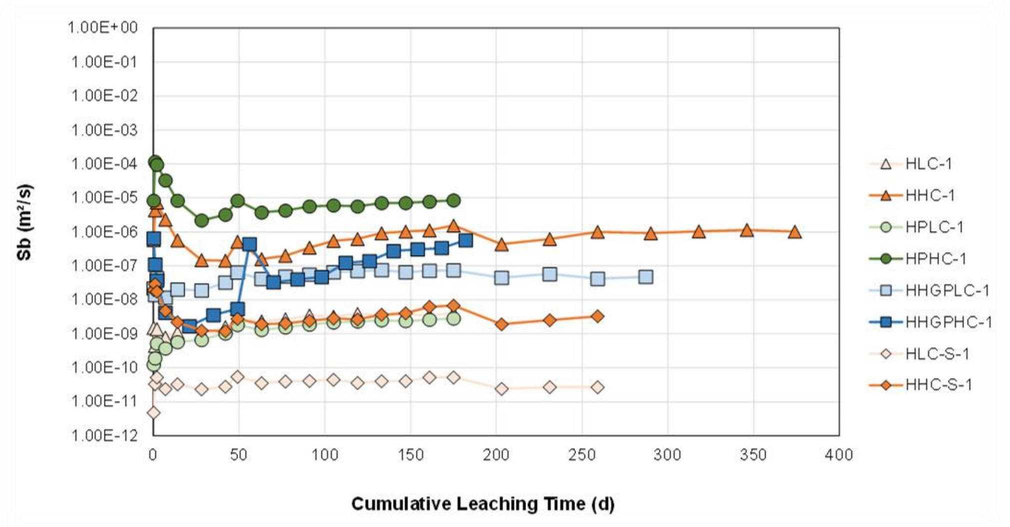

Figure F4-9: Antimony Diffusivity vs Cumulative Leaching Time

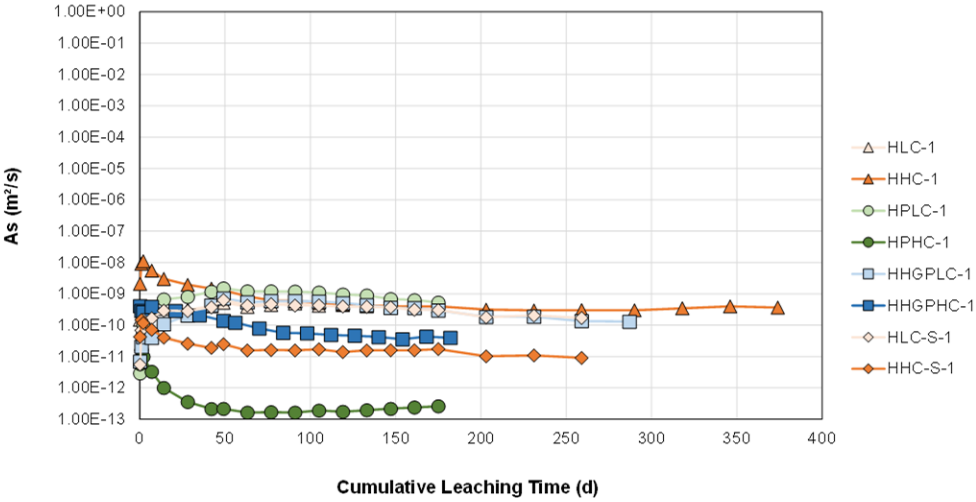

Figure F4-10: Arsenic Diffusivity vs Cumulative Leaching Time

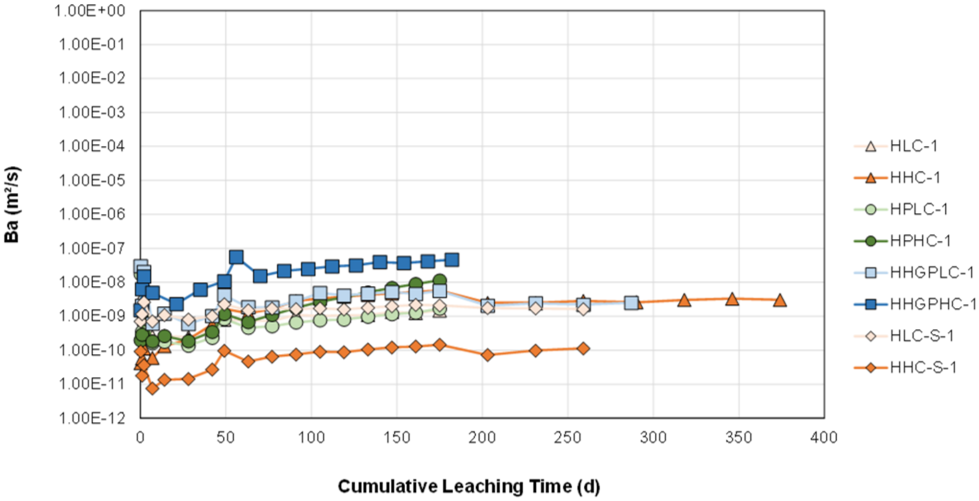

Figure F4-11: Barium Diffusivity vs Cumulative Leaching Time

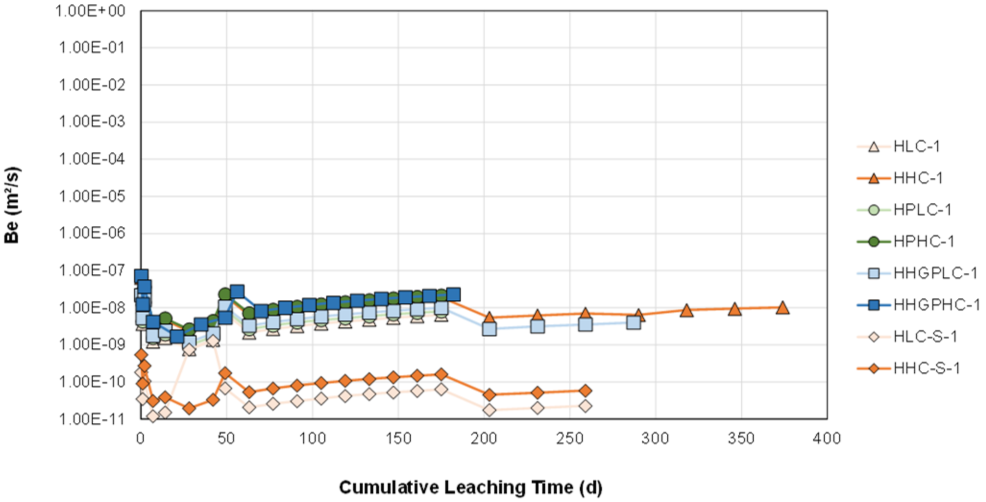

Figure F4-12: Beryllium Diffusivity vs Cumulative Leaching Time

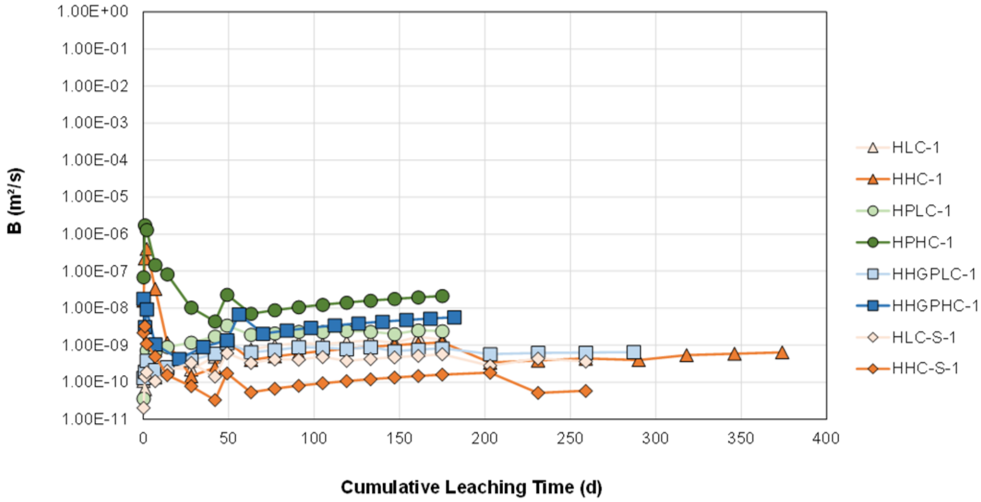

Figure F4-13: Boron Diffusivity vs Cumulative Leaching Time

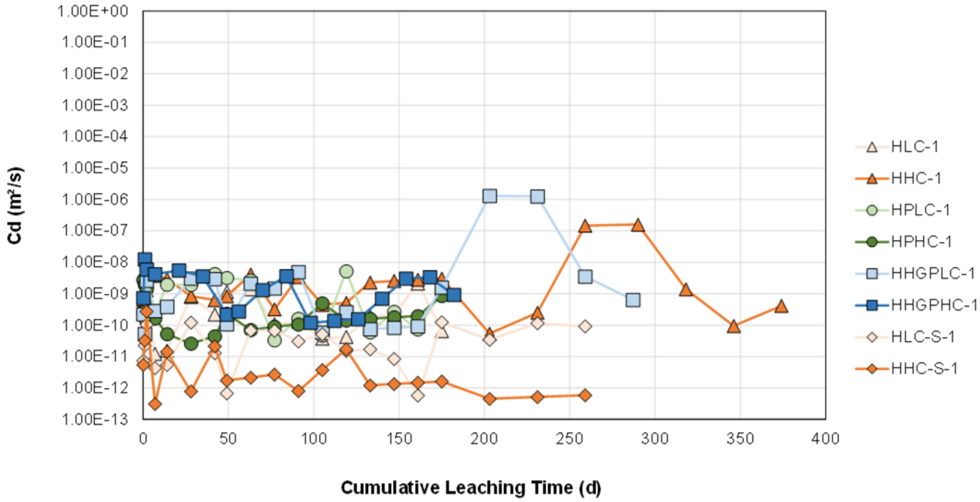

Figure F4-14: Cadmium Diffusivity vs Cumulative Leaching Time

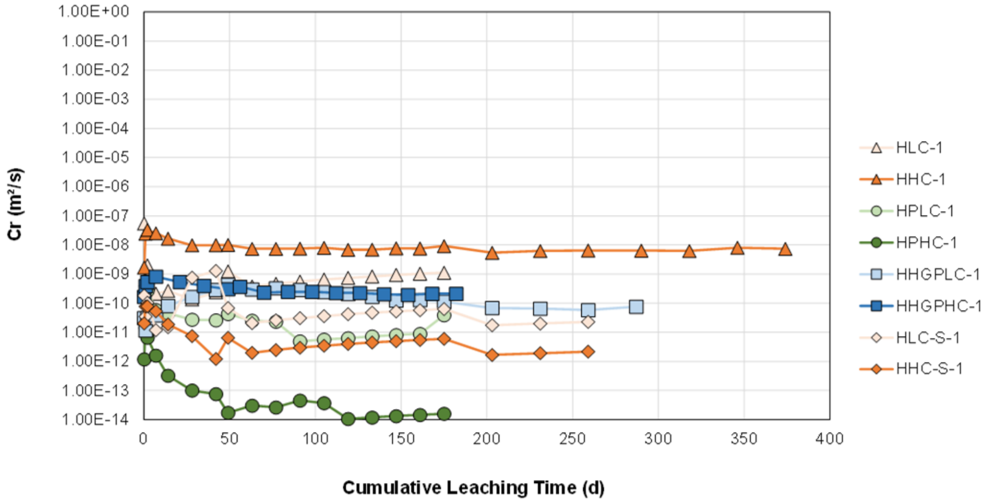

Figure F4-15: Chromium Diffusivity vs Cumulative Leaching Time

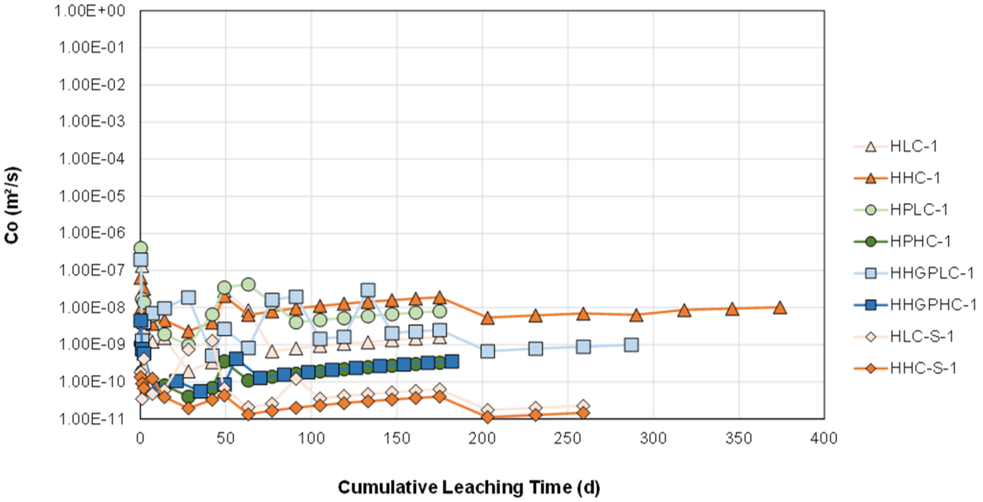

Figure F4-16: Cobalt Diffusivity vs Cumulative Leaching Time

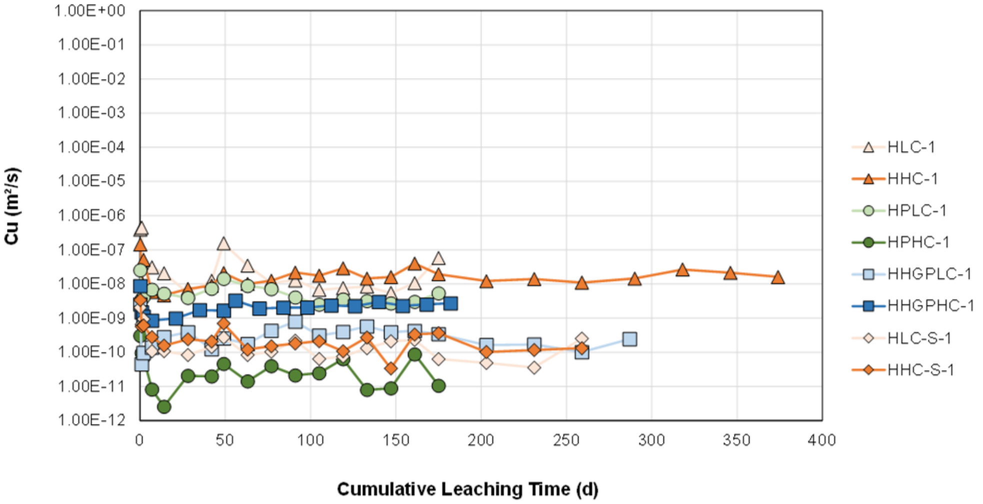

Figure F4-17: Copper Diffusivity vs Cumulative Leaching Time

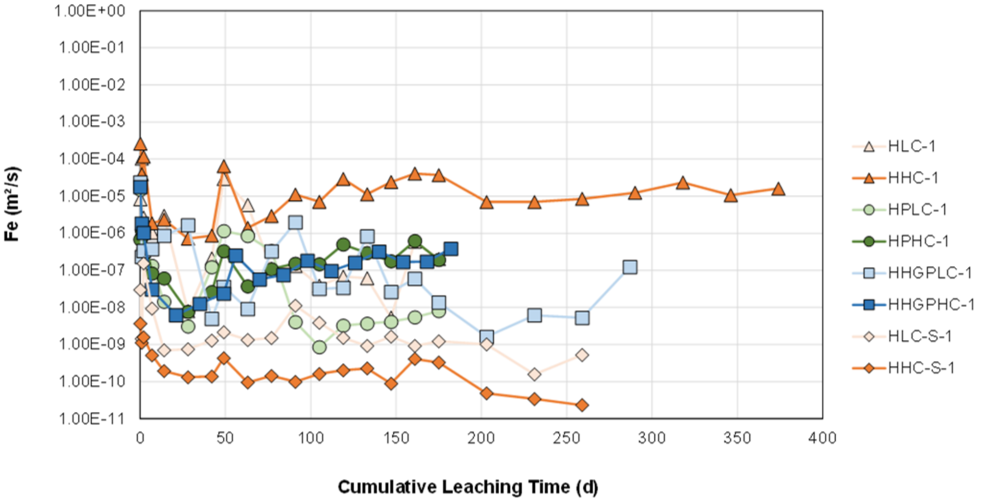

Figure F4-18: Iron Diffusivity vs Cumulative Leaching Time

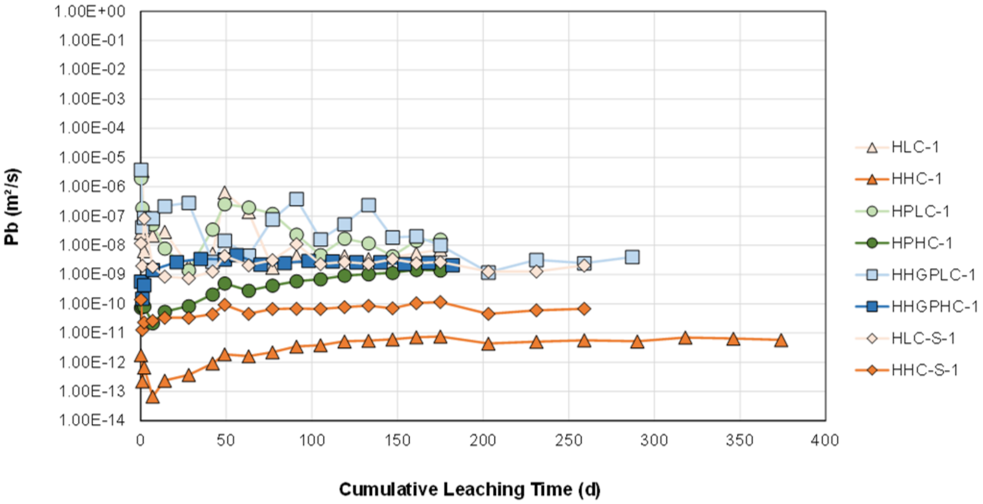

Figure F4-19: Lead Diffusivity vs Cumulative Leaching Time

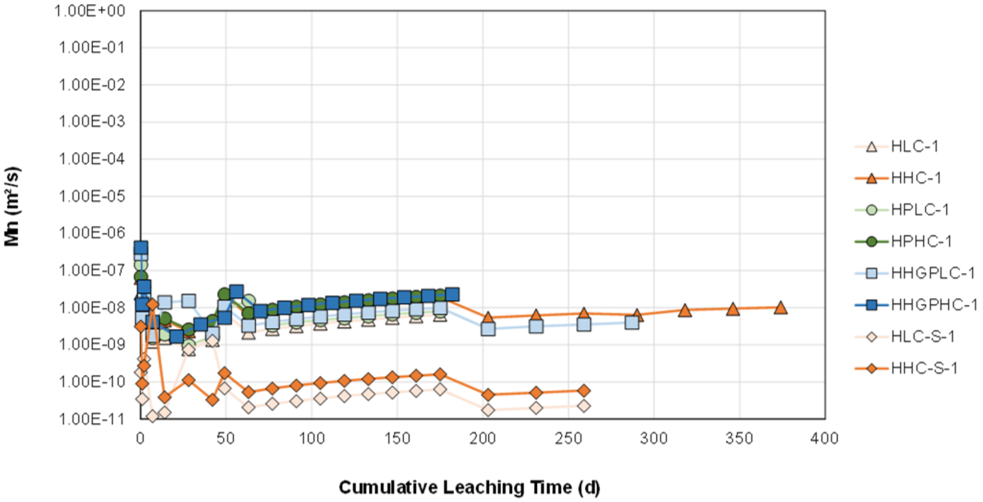

Figure F4-20: Manganese Diffusivity vs Cumulative Leaching Time

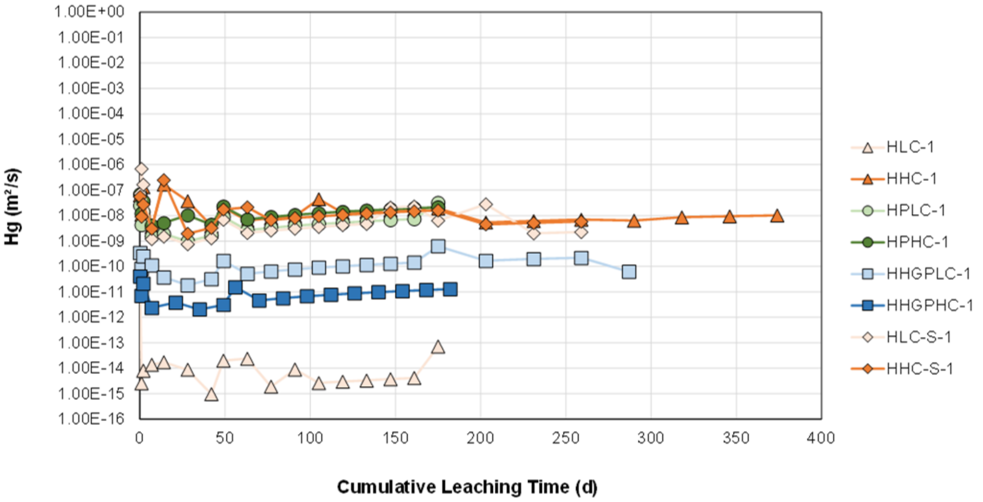

Figure F4-21: Mercury Diffusivity vs Cumulative Leaching Time

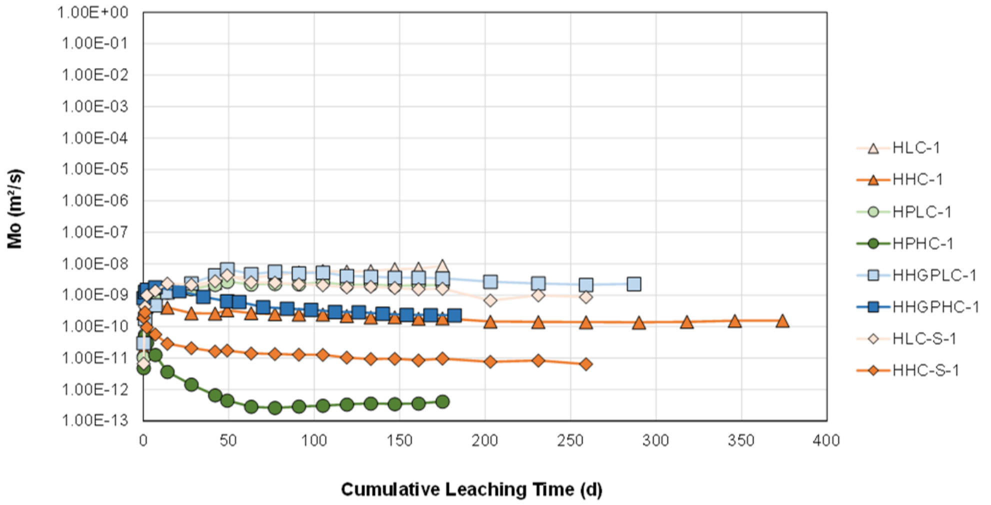

Figure F4-22: Molybdenum Diffusivity vs Cumulative Leaching Time

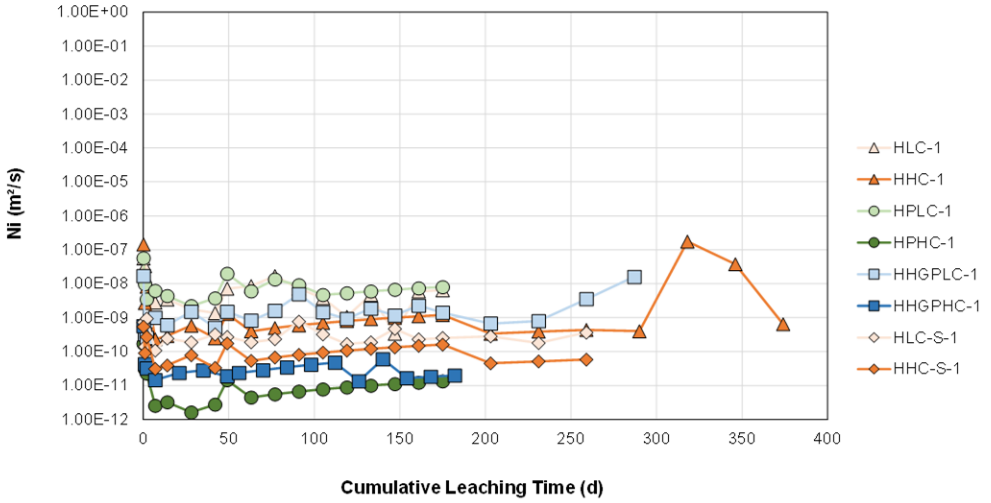

Figure F4-23: Nickel Diffusivity vs Cumulative Leaching Time

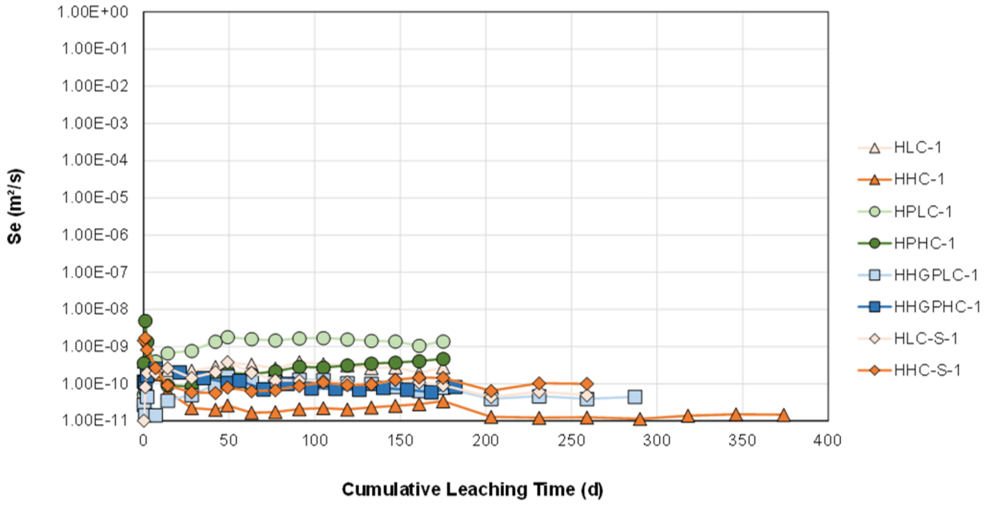

Figure F4-24: Selenium Diffusivity vs Cumulative Leaching Time

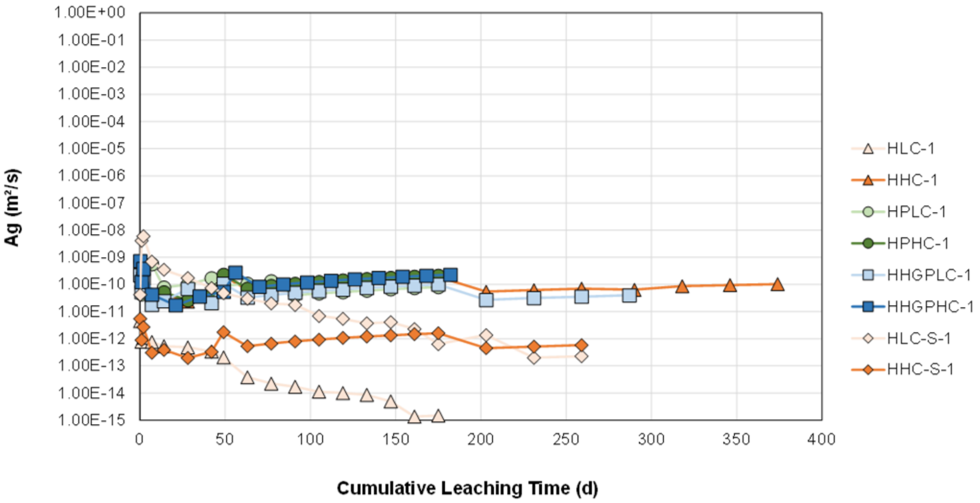

Figure F4-25: Silver Diffusivity vs Cumulative Leaching Time

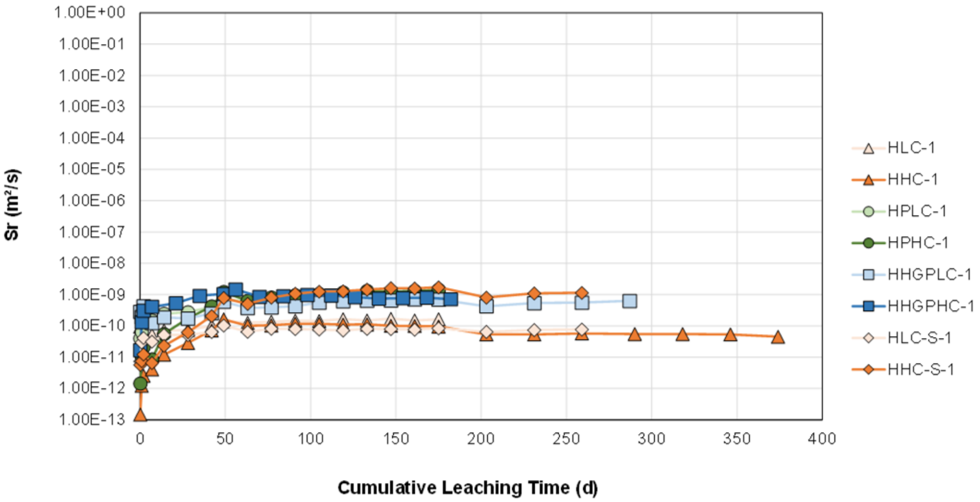

Figure F4-26: Strontium Diffusivity vs Cumulative Leaching Time

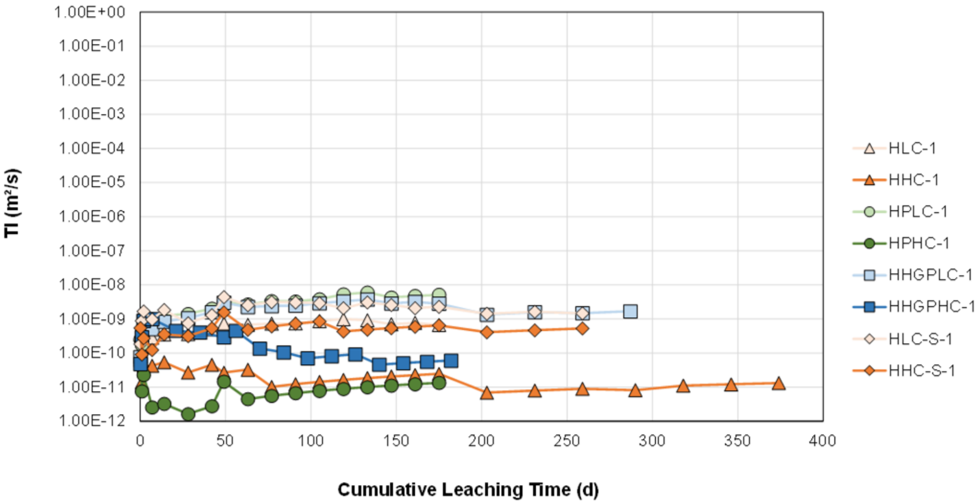

Figure F4-27: Thallium Diffusivity vs Cumulative Leaching Time

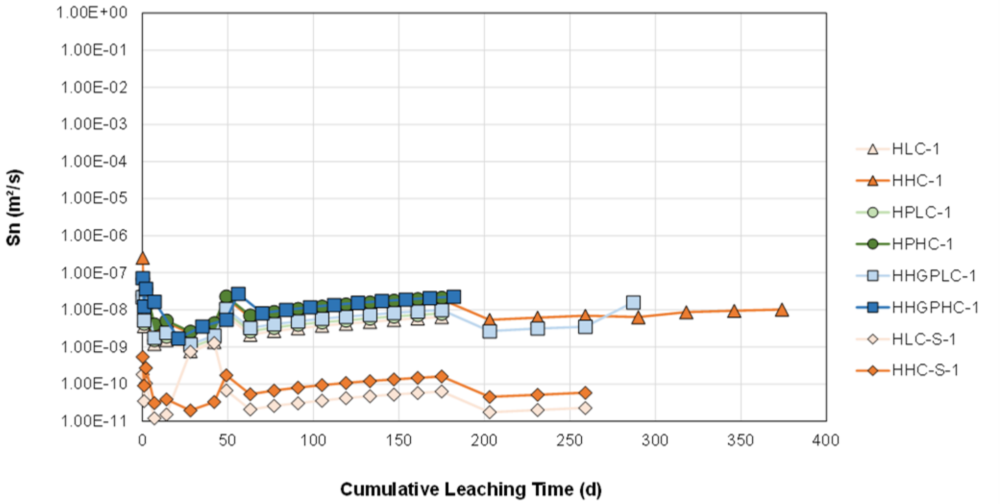

Figure F4-28: Tin Diffusivity vs Cumulative Leaching Time

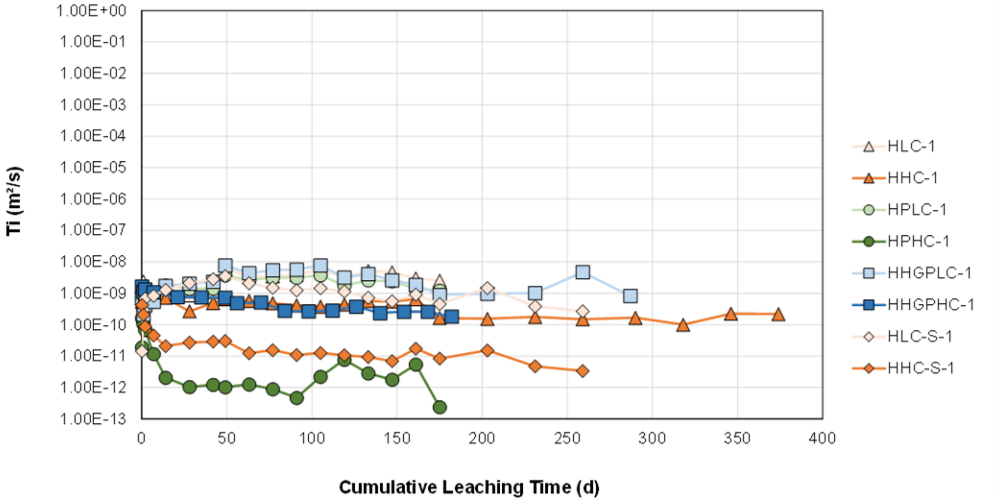

Figure F4-29: Titanium Diffusivity vs Cumulative Leaching Time

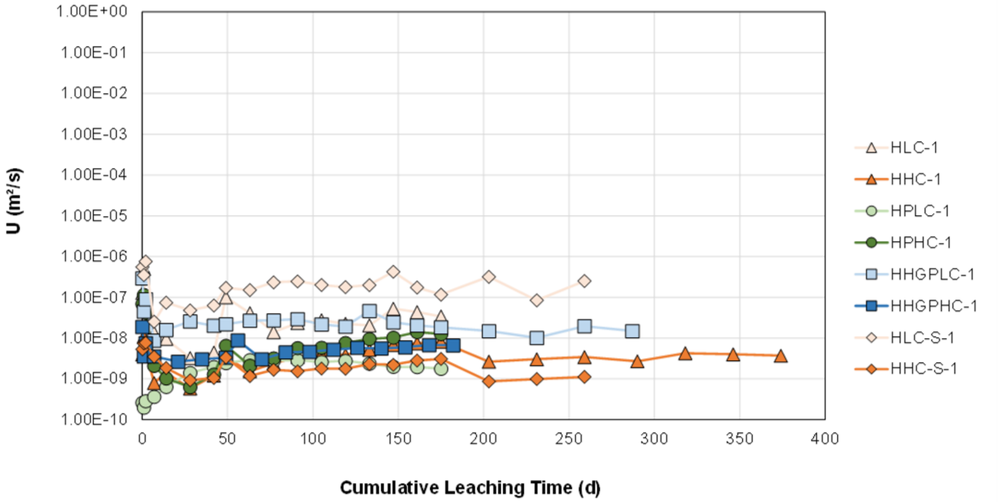

Figure F4-30: Uranium Diffusivity vs Cumulative Leaching Time

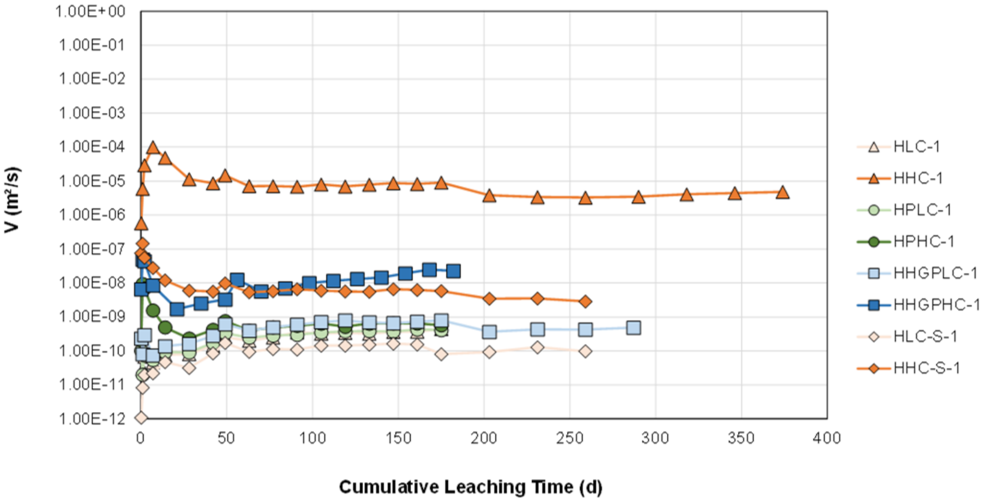

Figure F4-31: Vanadium Diffusivity vs Cumulative Leaching Time

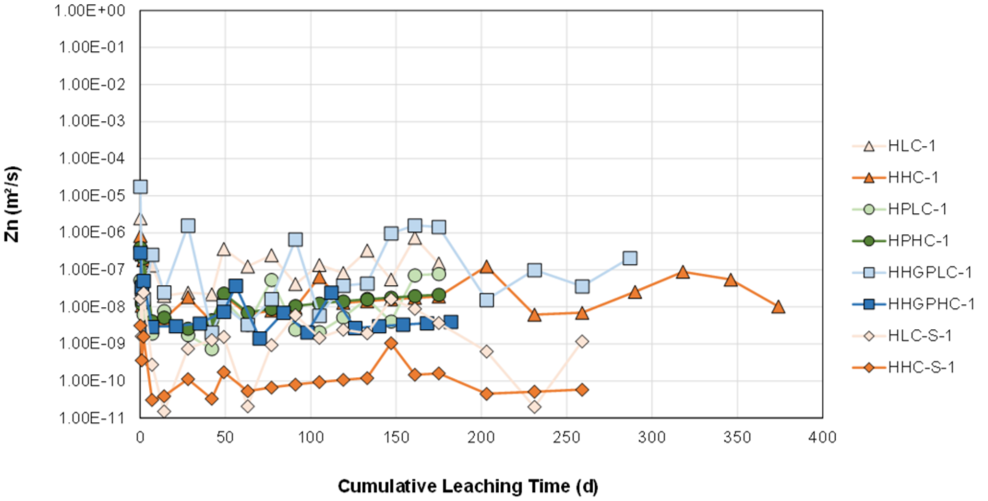

Figure F4-32: Zinc Diffusivity vs Cumulative Leaching Time

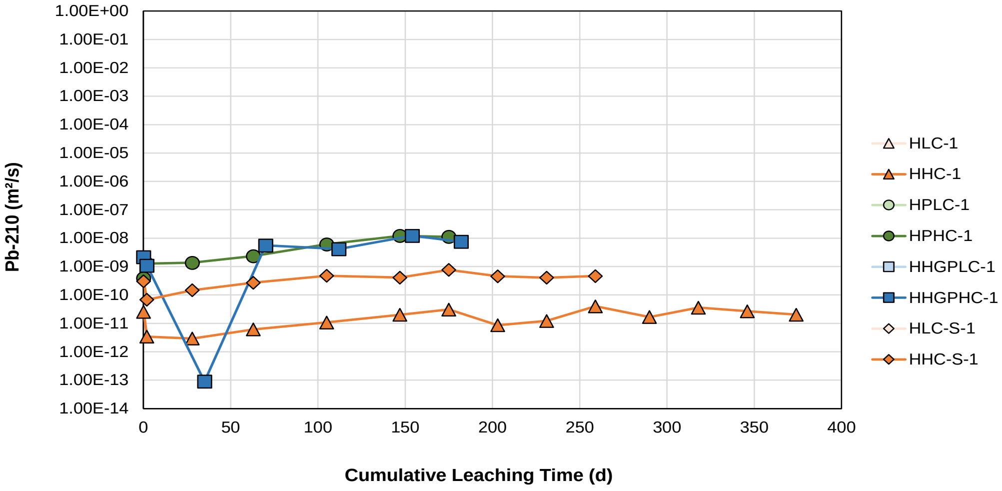

Figure F4-33: Lead-210 Diffusivity vs Cumulative Leaching Time

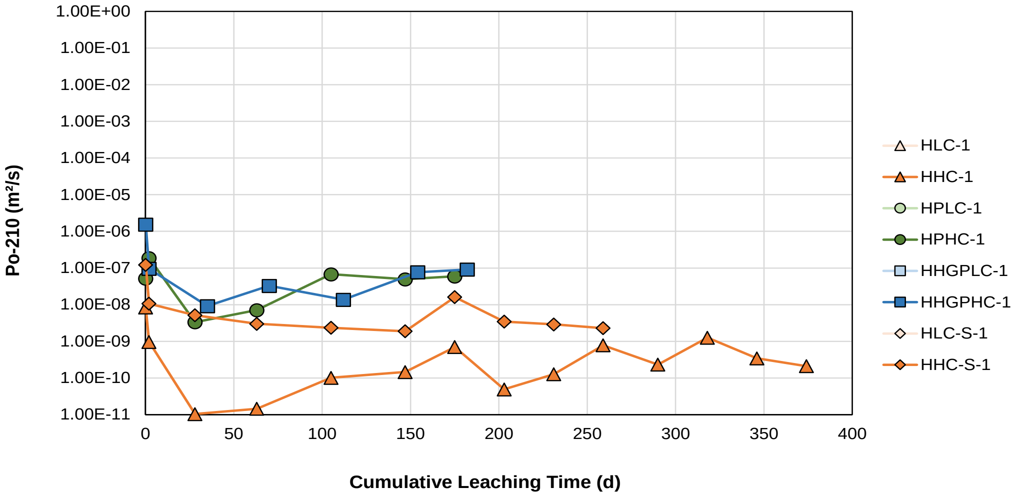

Figure F4-34: Polonium-210 Diffusivity vs Cumulative Leaching Time

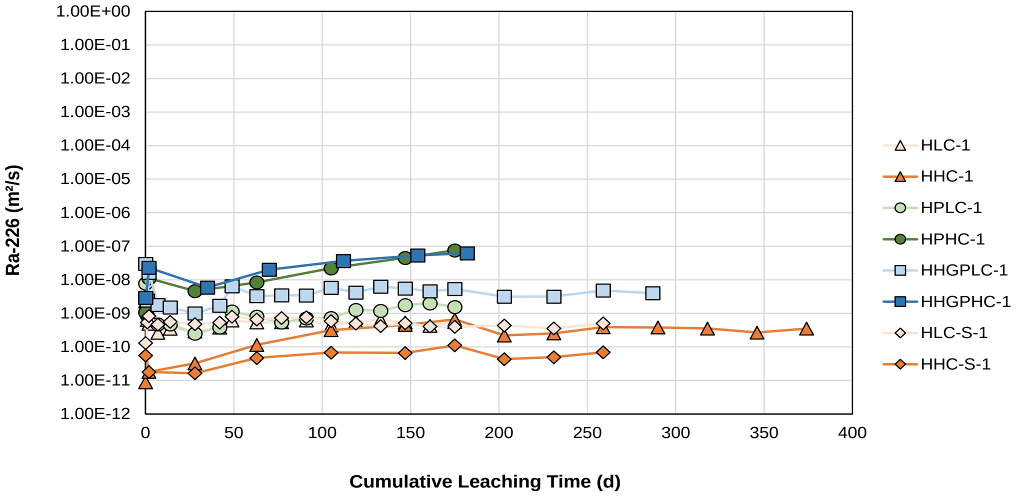

Figure F4-35: Radium-226 Diffusivity vs Cumulative Leaching Time

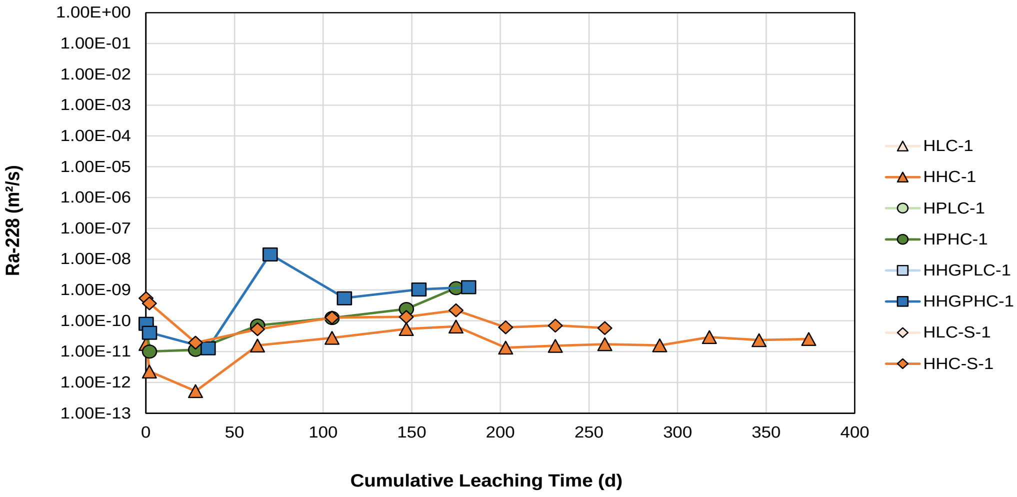

Figure F4-36: Radium-228 Diffusivity vs Cumulative Leaching Time