CMD 25-H12.1-Ref11

Date: 2026-01-12

Reference from
NexGen Energy Ltd.

In the matter of

NexGen Energy Ltd.

Licence application to prepare a site for and construct its Rook 1 uranium mine and mill project

Commission Public Hearing
Part 2

February 9-12, 2026

Référence de
NexGen Energy Ltd

À l'égard de

NexGen Energy Ltd.

Demande de permis concernant la préparation de l'emplacement et la construction de son projet de mine et d'usine de concentration d'uranium Rook I

Audience publique de la Commission
Partie 2

Les 9 - 12 février 2026

Document ID: QQQVZZNDK725-166150894-9639

Canada

Volume 2, Part 1: Rook I Project Environmental Impact Statement Baseline Annexes

Part 1

- **Annex I, Atmospheric Baseline Report**
- **Annex II, Noise and Light Baseline Report**
- **Annex III, Hydrogeology Baseline Report**

Part 2

- Annex IV, Hydrology Baseline Road Map
  - Annex IV.1, Regional Meteorological and Hydrological Characterization Report
  - Annex IV.2, Hydrometric Monitoring Characterization Report
  - Annex IV.3, Geomorphology Characterization Report
  - Annex IV.4, Patterson Lake Currents Assessment Report
  - Annex IV.5, Forrest Lake Mixing Study Report

Part 3

- Annex V, Aquatic Baseline Road Map
  - Annex V.1, Aquatic Environment Baseline Report
  - Annex V.2, Overwintering Fish Habitat Report
  - Annex V.3, Naomi Lake Bathymetry Report

Part 4

- Annex VI, Terrain and Soils Baseline Report
- Annex VII, Vegetation Baseline Road Map
  - Annex VII.1, Vegetation Baseline Report 1 (Mapping)
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  - Annex VII.3, Vegetation Chemistry Characterization Report

Part 5

- Annex VIII, Wildlife Baseline Road Map
  - Annex VIII.1, Wildlife Baseline Report 1 (Mammals, Waterfowl, and Raptors)
  - Annex VIII.2, Wildlife Baseline Report 2 (Amphibians, Birds, and Bats)
  - Annex VIII.3, Wildlife Baseline Report 3 (Bird Migration and Bats)
- Annex IX, Heritage Resources Impact Assessment and Cover Letter
- Annex X, Socio-economic Baseline Report
- Annex XI, Geology Baseline Report

Rook I Project

Environmental Impact Statement

Annex I: Atmospheric Baseline Report

GOLDER
MEMBER OF WSP

ATMOSPHERIC BASELINE REPORT FOR THE ROOK I PROJECT

Prepared for:

NexGen Energy Ltd.

Prepared by:

Golder Associates Ltd.

March 2022

Executive Summary

Potential changes to air quality resulting from mining and milling operations can create adverse effects on both the social and biophysical environments in the anticipated area of the Rook I Project (Project). The atmospheric baseline program was undertaken to provide context from which the potential atmospheric effects from the Project can be assessed in the Rook I Environmental Impact Statement.

The objective of the atmospheric baseline study was to gather information on the existing atmospheric environment of the anticipated area of the Project. Specifically, the atmospheric baseline study was conducted to characterize the measured climate and meteorology and to describe the historical and existing air quality environment. Doing so entailed a desktop review and a field monitoring program.

The air quality environment was evaluated based on a comparison of available ambient air quality measurements against relevant air quality criteria and guidelines (e.g., Saskatchewan Ambient Air Quality Standards [SAAQS], Alberta Environment and Parks [AEP] dustfall guidelines) and the background concentrations of the anticipated area of the Project. The Saskatchewan air quality monitoring guidelines, which outline requirements for air quality monitoring in Saskatchewan, were followed for the design and execution of the field monitoring program. The Saskatchewan air quality modelling guideline provided guidance on deriving the background concentration from monitoring data and provided the prescribed background concentrations for the anticipated area of the Project. The Environment and Climate Change Canada (ECCC), Canadian Council of Ministers of the Environment (CCME), and World Meteorological Organization (WMO) guidance was followed when processing the meteorological and air quality data.

Meteorological information on temperature, precipitation, wind speed and wind direction, relative humidity, and solar radiation was compiled from observations made within the anticipated area of the Project during the baseline monitoring program. Long-term measurements of temperature, precipitation, wind speed and wind direction, and relative humidity were collected from one or both of two long-term Climate Normal monitoring stations: the Cluff Lake Station and the Fort McMurray A Station. The observed meteorological conditions in the anticipated area of the Project were similar to the long-term measurements.

Local air quality was monitored through a baseline program started in September 2018. All data available at the end of 2020 were incorporated into the baseline study. Continuous particulate monitoring was conducted for total suspended particulate (TSP) and particulate matter less than 2.5 µm ($PM_{2.5}$). Passive sampling of nitrogen dioxide, sulphur dioxide, dustfall, and radon was conducted on a monthly basis. Radon passive sampling was performed at nine discrete locations in the planned area of the Project. Dustfall and rainfall samples collected in the anticipated area of the Project were analyzed to determine the concentration of metals in dust and rainfall, respectively. Regional air quality monitoring data from other programs at four remote locations were used to supplement data collected in the anticipated area of the Project and characterize baseline air quality conditions. No SAAQS exceedances were observed from the local and regional air quality monitoring data, except for 24-hour $PM_{2.5}$ and particulate matter less than 10 µm (PM_{10}). The derived background concentrations from monitoring data were close to or lower than the prescribed background concentrations.

The baseline study achieved the objective of characterizing the existing atmospheric environment in the planned area of the Project. Specifically, climate, meteorology, and air quality characterized in the baseline program provided a representative baseline against which potential air quality effects from the Project could be assessed.

If referencing this report, please use for the following citation:

Golder (Golder Associates Ltd.). 2022. Atmospheric Baseline Report for the Rook I Project. Prepared for NexGen Energy Ltd.

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APPENDICES

APPENDIX A
Joint Working Group Feedback Applicable to Atmospheric Baseline

APPENDIX B
Quality Control Report

Abbreviations and Units of Measure

Acronym	Definition Air Baseline
AEP	Alberta Environment and Parks
AOSR	Athabasca Oil Sands Region
AQSA	air quality study area
CAAQS	Canadian Ambient Air Quality Standards
CALA	Canadian Association for Laboratory Accreditation Inc.
CCME	Canadian Council of Ministers of the Environment
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
NexGen	NexGen Energy Ltd.
PM_{10}	particulate matter with a mean aerodynamic diameter less than 10 µm
$PM_{2.5}$	particulate matter with a mean aerodynamic diameter less than 2.5 µm
Project	Rook I Project
RDL	reportable detection limit
SAAQS	Saskatchewan Ambient Air Quality Standards
SAQMG	Saskatchewan Air Quality Modelling Guideline
TSP	total suspended particulate
WBEA	Wood Buffalo Environmental Association

Units	Definition Air Baseline
%	percent
°	degrees
°C	degrees Celsius
µg/m^3	micrograms per cubic metre
µm	micron
Bq/m^3	becquerels per cubic metre
cm	centimetre
km	kilometre
km/h	kilometres per hour
m	metre
m/s	metres per second
mg/100 cm^2/30 d	milligrams per 100 square centimetres per 30 days
mg/L	milligrams per litre
mm	millimetre
pH	potential of hydrogen
W	watt
W/m^2	watts per square metre

1.0 INTRODUCTION

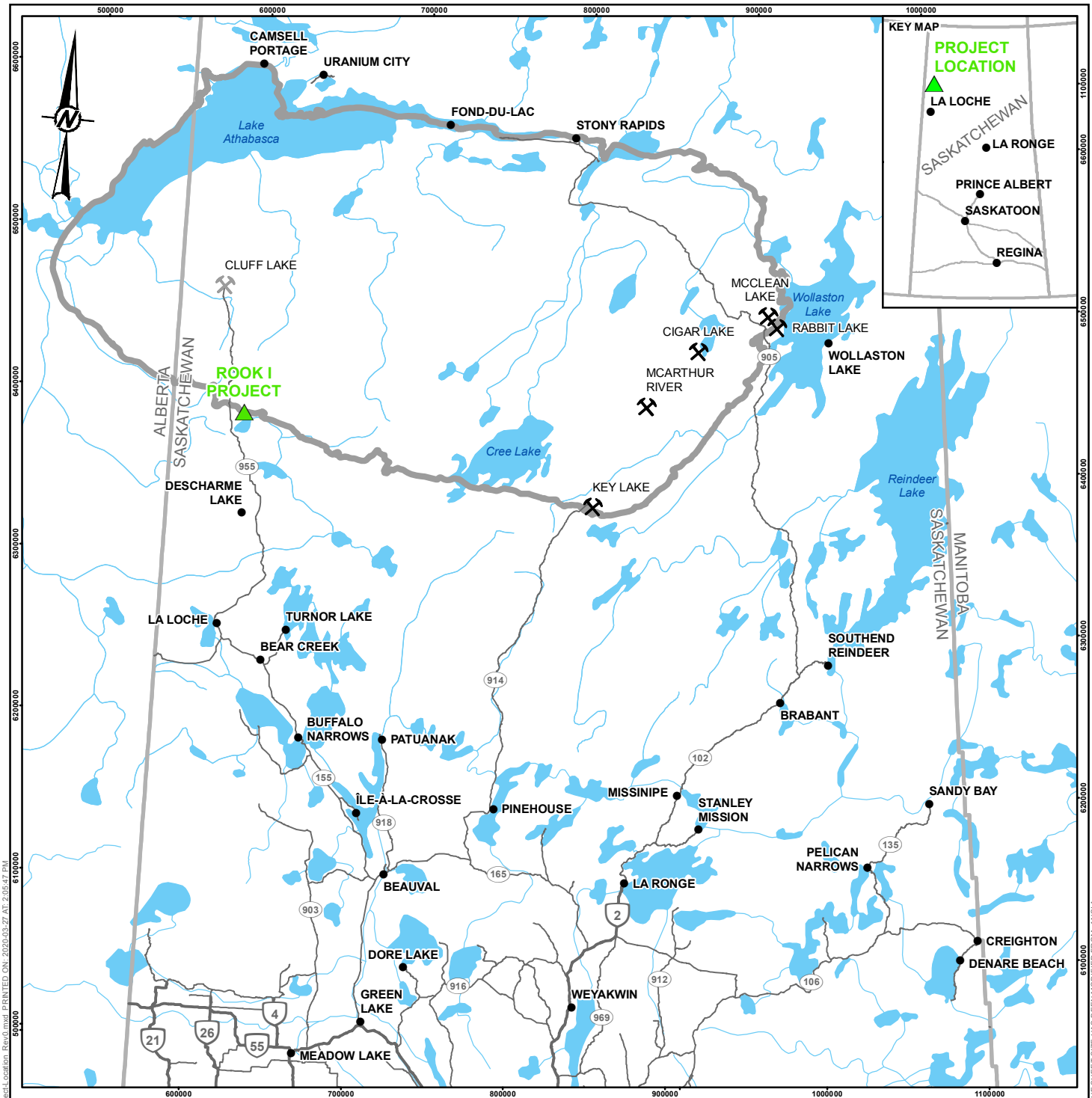
The Rook I Project (Project) is a proposed new uranium mining and milling operation that is 100% owned by NexGen Energy Ltd. (NexGen). The Project would be located in northwestern Saskatchewan, approximately 40 km east of the Saskatchewan-Alberta border, 130 km north of the town of La Loche, and 640 km northwest of the city of Saskatoon (Figure 1). The Project would reside within Treaty 8 territory and within the Métis Homeland. At a regional scale, the Project would be situated within the southern Athabasca Basin adjacent to Patterson Lake and along the upper Clearwater River system (Figure 2). Access to the Project would be from an existing road off Highway 955. The Project would include underground and surface facilities to support the extraction and processing of uranium ore from the Arrow deposit, a land-based, basement-hosted, high-grade uranium deposit.

The atmospheric baseline report represents a component of a comprehensive baseline program that documents the natural and socio-economic environments in the anticipated area of the Project. Potential changes to air quality resulting from mining and milling operations can create adverse effects on both the social and biophysical environments in the anticipated area of the Project. The atmospheric baseline program was undertaken to provide context from which Project environmental atmospheric effects could be assessed in the Environmental Impact Statement (EIS).

Since exploration at the Project commenced in 2013, NexGen has engaged regularly and established relationships with local First Nation and Métis Groups (collectively referred to as Indigenous Groups) and northern communities, specifically those closest and with greatest access to the proposed Project. NexGen respects the rights of Indigenous Peoples and the unique relationship Indigenous Peoples have with the environment and recognizes the importance of full and open discussion with interested or potentially affected Indigenous communities regarding the development, operation, and decommissioning of the proposed Project. Engagement activities to date, as well as future planned engagement activities, reflect the value NexGen places on meaningful engagement with Indigenous Peoples and northern communities who could be potentially affected by the proposed Project. Engagement mechanisms have included, but are not limited to: meetings with leadership, workshops and community information sessions, Project site tours, establishing Joint Working Groups to support the gathering and incorporation of Indigenous and Local Knowledge throughout the Environmental Assessment (EA) process, and providing funding for Traditional Land Use (TLU) Studies[1] to understand how the proposed Project may interact with the Indigenous communities traditional use of the anticipated area of the Project.

Feedback received during engagement activities was documented for contribution to the EIS for the Project; examples of feedback received include discussion of concerns, interests, potential adverse effects, mitigation, and design alternatives. Many baseline studies were initiated in advance of formal engagement on the EA for the Project; however, engagement during the execution of baseline studies has helped inform the understanding of baseline conditions and confirmed components of the natural and socio-economic environments that required study. A summary of feedback related to the atmospheric baseline program is presented in Appendix A.

[1] Traditional Land Use Studies include all land use studies developed by the Project's affected Indigenous Groups, including Traditional Land Use and Occupancy studies, Traditional Knowledge and Use studies, and Indigenous Rights and Knowledge studies, henceforth referred collectively as TLU studies



LEGEND

- POPULATED PLACE
- URANIUM MINING FACILITY (ACTIVE)
- URANIUM MINING FACILITY (DECOMMISSIONED)
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- ATHABASCA BASIN BOUNDARY
- PROJECT LOCATION

0 100 200

1:3,500,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

LOCATION OF THE ROOK I PROJECT, SASKATCHEWAN

CONSULTANT

GOLDER

YYYY-MM-DD	2020-03-27
DESIGNED	SS
PREPARED	NO/AK
REVIEWED	JMC
APPROVED	MM

PROJECT NO.	PHASE	REV.	FIGURE
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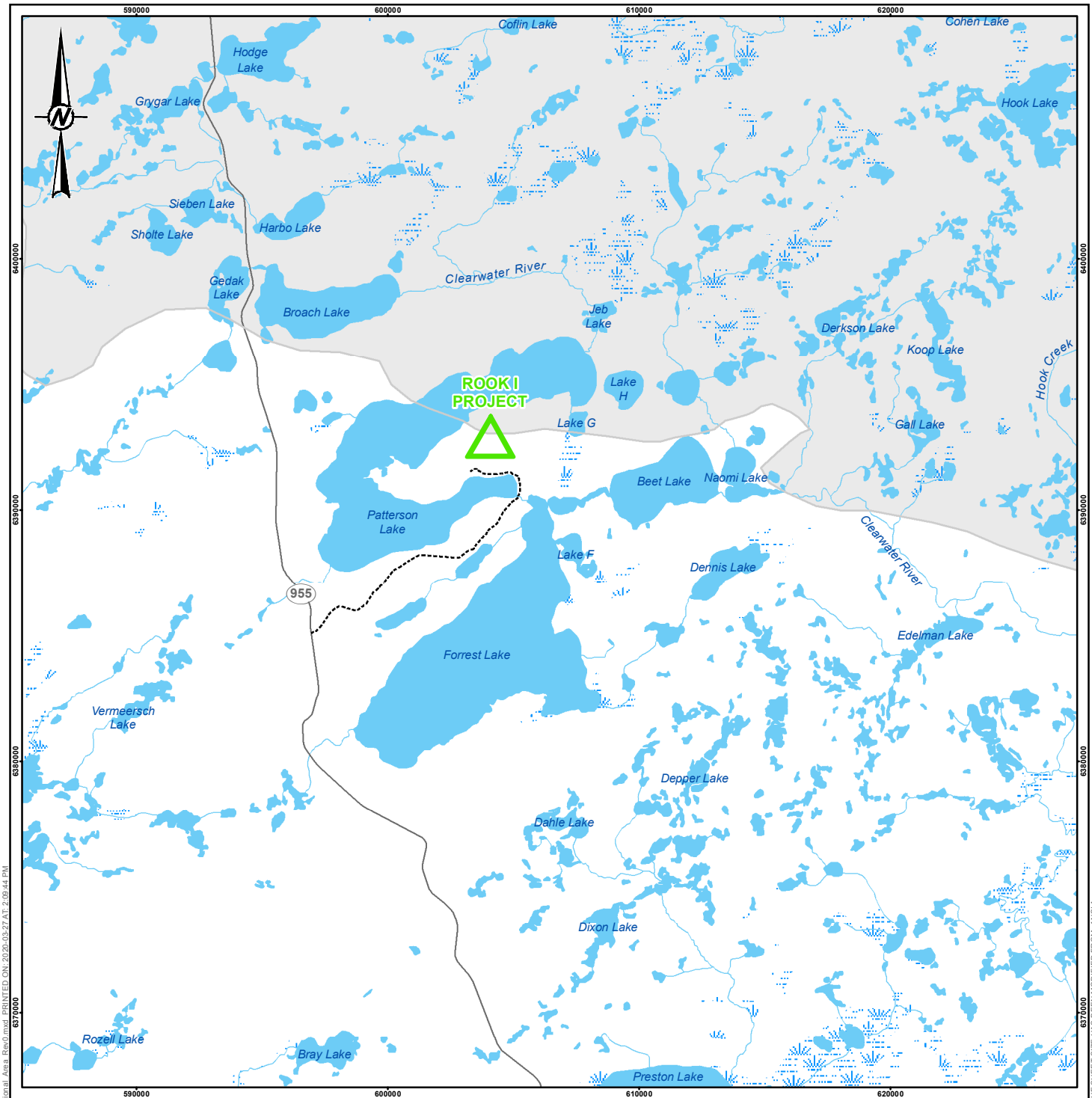

LEGEND

- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- WETLAND
- ATHABASCA BASIN
- PROJECT LOCATION
- EXISTING ACCESS ROAD

0 5,000 10,000

1:225,000 METRES

REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

REGIONAL AREA OF THE ROOK I PROJECT

CONSULTANT

GOLDER

YYYY-MM-DD	2020-03-27
DESIGNED	JMC
PREPARED	NO/AK
REVIEWED	JMC
APPROVED	MM

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2.0 STUDY OBJECTIVE

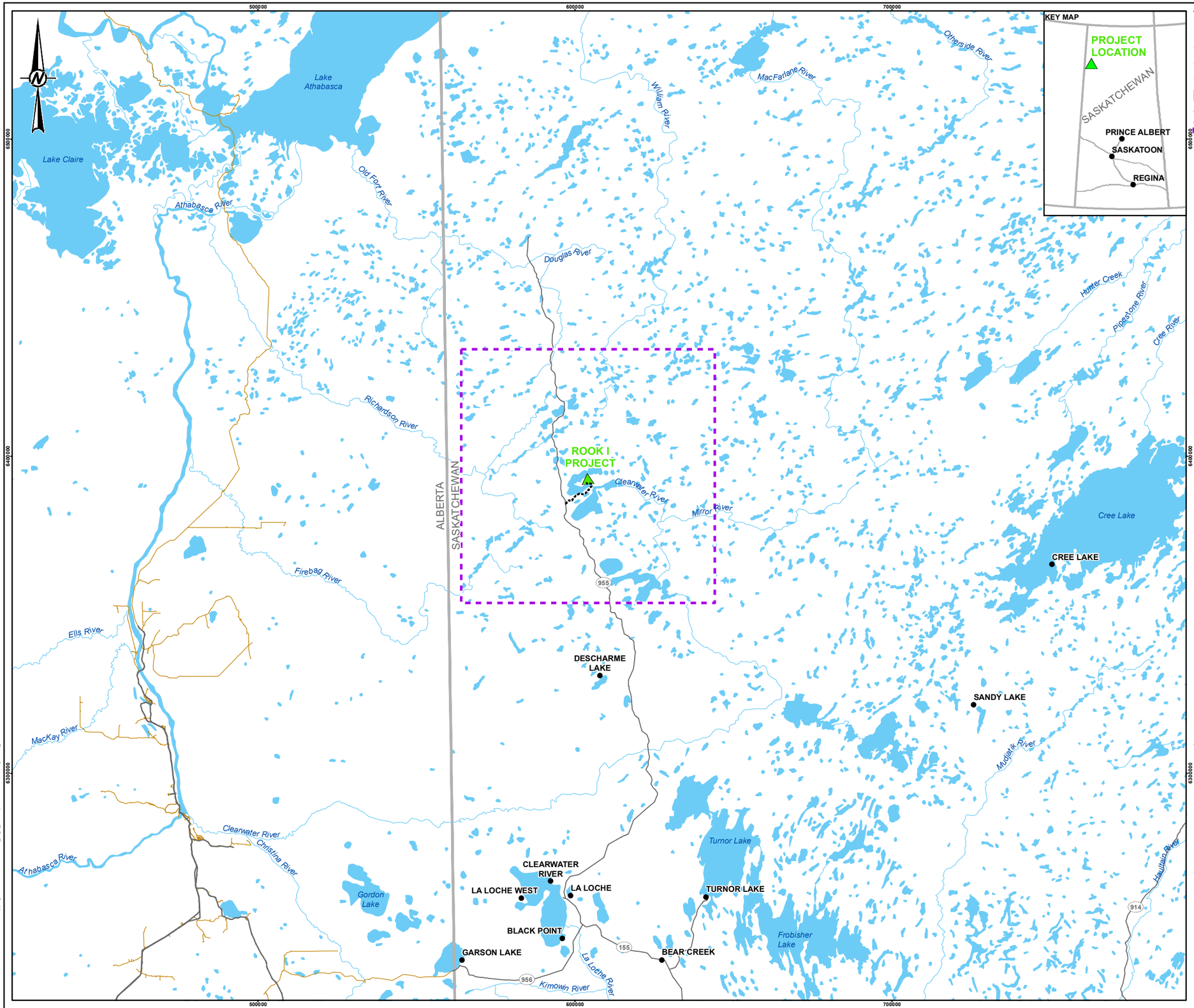
An atmospheric baseline study was completed to describe the existing atmospheric conditions in the local and regional area prior to potential development of the Project. This study describes the existing climate, weather, and air quality. Climate considers the occurrence and trends of weather conditions over a long period of time. Weather is the conditions of the atmosphere over a short period of time in terms of meteorological parameters (e.g., temperature, humidity, precipitation, and wind). Air quality includes measurement parameters such as radon, particulate matter (i.e., a mixture of solid particles and liquid droplets in the air), carbon monoxide, nitrogen dioxide, and sulphur dioxide.

The objectives of the atmospheric baseline study were to:

- characterize the natural variability of climate in the region and the anticipated area of the Project;
- characterize meteorological parameters in the area that influence existing air quality, including temperature, precipitation, and wind;
- identify compounds expected to be emitted from the Project and describe the historical and existing air quality environment for these compounds;
- acquire baseline information that supports the Project EA, and that can inform Project design and potential mitigation measures that may be required; and
- provide supporting information for other components of the EA, such as human health, ecological risk assessment, aquatics (e.g., surface water quality and quantity, and fish and fish habitat), and terrestrial (e.g., soils, vegetation, and wildlife and wildlife habitat).

3.0 STUDY AREA

The baseline study area was selected to characterize the existing climate, meteorological, and air quality conditions for the region in support of the EA. Therefore, the baseline study area is equivalent to the air quality study area (AQSA) that will be used to assess potential effects of the Project on the atmospheric environment. The AQSA is defined as the region adequate to address potential direct air quality effects anticipated to result from the Project. Since the atmospheric baseline study and the air quality assessment provide information to other components of the EA, the AQSA also encompasses the areas being assessed for human health, ecological risk, aquatic (i.e., surface water quality and quantity, and fish and fish habitat), and terrestrial (i.e., soils, vegetation, and wildlife and wildlife habitat) components. The AQSA is defined by an area of 80 km by 80 km centred on the proposed Project site (Figure 3).



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PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT
NEXGEN

PROJECT
ROOK 1 ATMOSPHERIC BASELINE

TITLE
ATMOSPHERIC BASELINE STUDY AREA

CONSULTANT
GOLDER

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PREPARED	NO/AK
REVIEWED	ZY
APPROVED	CM

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4.0 METHODS

The baseline study for atmospheric conditions included the following two components:

- desktop review of the publicly available regional monitoring data in the AQSA; and
- baseline field monitoring program to collect local meteorology and air quality data in the anticipated area of the Project.

The air monitoring program was conducted according to the general guidance outlined in the Air Monitoring Guideline for Saskatchewan (ENV 2012a). The guideline lists the monitoring requirements for an air monitoring station including site selection, sampling system design, station operations, data validation, and reporting. The guideline also provides technical information and instructions for passive sampling.

Feedback related to the atmospheric baseline program received during engagement activities was considered during the desktop review and the field monitoring program. The feedback helped inform the understanding of the baseline conditions and improve the baseline field monitoring program. For example, feedback received during Joint Working Group (JWG) meetings included the following comments (MN-S-JWG 2020):

> “We live in a very clean environment, other than Fort McMurray - we can sometimes smell the oil. The air is very clean; we can drink the water and eat the berries wherever they are. As you come south, those things change. We live in a very clean land; in our culture we call it the “land of the white eagle” because of the snow, and that represents clean”.
>
> “When we see the damage Fort McMurray is doing to our area – it’s 100+ miles from us, but it’s still affecting us. So much sulphur is put into the air and it comes down as acid rain. That changes our lake structures and the pH balance. It gets rid of the aquatic life. That oil industry is vastly affecting our area. Our lakes are turning to blue-green algae from the lower pH from acid rain. They have no concern for me if my fishing industry dies, as long as they get the last gallon of oil. They should be a lot more aware. Our government doesn't care about it as long as they get their percentage. It’s about money with everything”.

A summary of feedback that was provided through JWG meetings that is related to the atmospheric baseline program is presented in Appendix A.

4.1 Climate

The climate of a region is often characterized by 30 continuous years of meteorological observations (IPCC 2013), and the Climate Normals are used to summarize or describe the average climatic conditions of a given location. Environment and Climate Change Canada (ECCC) provides Climate Normals for stations with at least 15 years of data for the periods between 1961 and 1990, 1971 and 2000, and 1981 and 2010. The Cluff Lake Station, 82 km north-northwest of the Project, is the closest station to the Project with a long enough record to provide Climate Normals data (Figure 4); data are available for the period from 1971 to 2000. The Cluff Lake Station Climate Normals parameters include temperature, precipitation, and wind speed and direction. The Fort McMurray A Station, the next nearest ECCC Climate Normals station, is located at the Fort McMurray airport, approximately 164 km southwest of the Project (Figure 4). Climate Normals data at the Fort McMurray A Station are available for the period from 1981 to 2010; parameters include temperature, precipitation, wind speed and direction, bright sunshine, humidex, wind chill, humidity, pressure, visibility, cloud amount, and frost. Both stations are used to characterize the regional climate though the Fort McMurray A Station offers measurements for more climate parameters and provides a more recent record than the Cluff

Lake Station. On the other hand, Fort McMurray is located in a river valley that affects wind speed and direction, so Cluff Lake provides a more representative dataset for regional wind patterns.

4.2 Weather

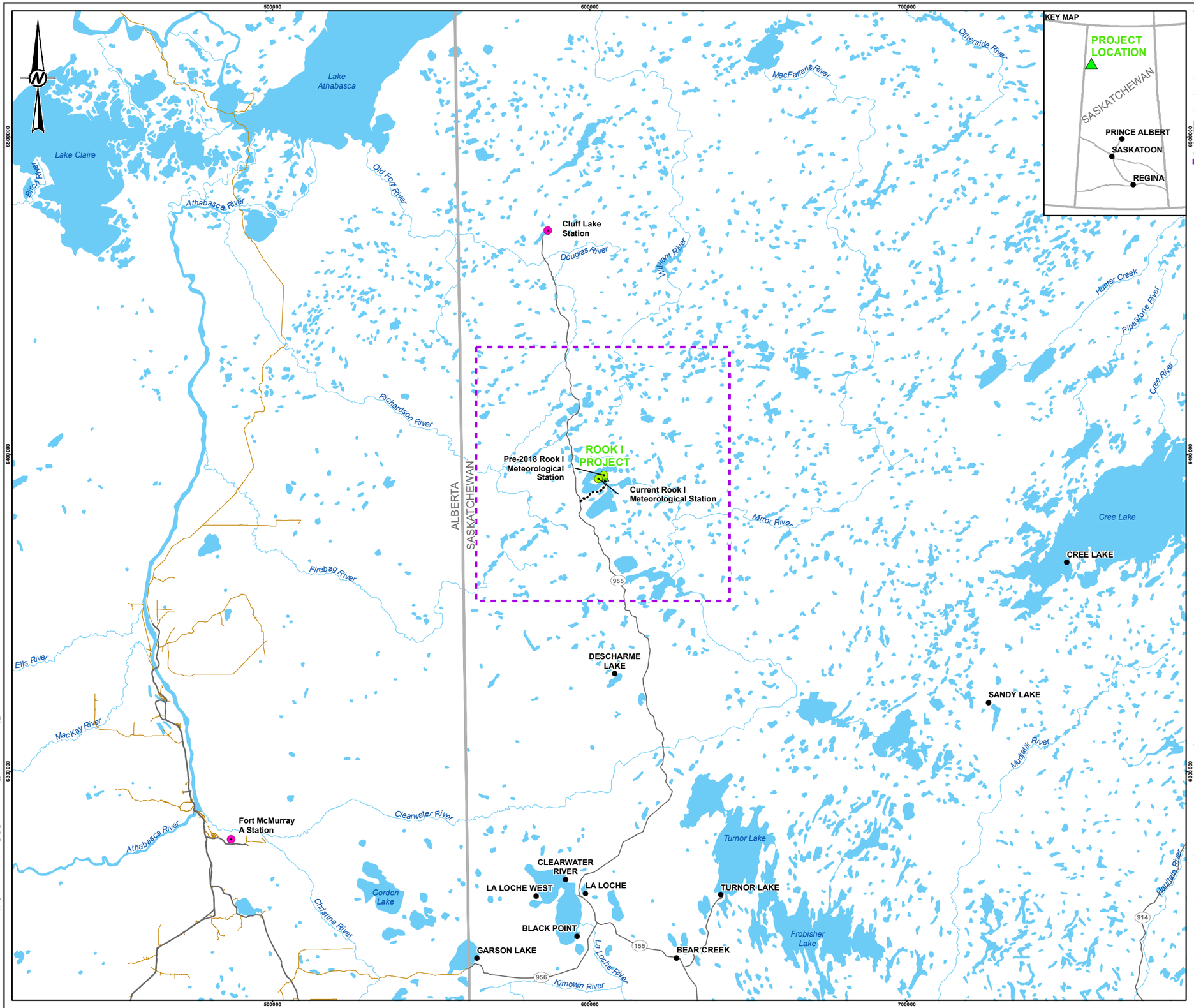
To monitor meteorological parameters (e.g., temperature, rainfall, wind speed, wind direction, relative humidity, and solar radiation) in the anticipated area of the Project, the Rook I Meteorological Station, operated by NexGen, was installed and has been collecting data since November 2015. The original station location (i.e., from November 2015 to September 2018) was based on topography, local interferences (i.e., trees), and site accessibility (Figure 4). Once the location of the Project infrastructure was better known, the meteorological station was relocated in September 2018 to its current location so that the future project construction and operation activities would not affect the data collecting program (Figure 4). As a part of the relocation, the instruments were re-calibrated and additional instrumentation (e.g., total precipitation sensor) was installed. Hourly measurements of wind speed, wind direction, solar radiation, temperature, relative humidity, rainfall, and total precipitation were collected from instruments mounted on or adjacent to a 10 m tower (Figure 5). Table 1 provides a description of the parameters measured and the instrumentation used for the measurements.

Local meteorology baseline data were measured and reported from November 2015 to December 2020. Statistics similar to the Climate Normals were generated. The calculation methods and the data completeness requirements followed the guidance provided by ECCC (ECCC 2020) and the World Meteorology Organization (WMO 2017).

Large uncertainties could be introduced into the meteorological statistics if the data completeness requirements are not met. The data completeness requirements adopted from ECCC and the WMO for this study include:

- **temperature:** 3 and 5 rule (i.e., no more than 3 consecutive missing data points and no more than 5 missing data points in total);
- **rainfall and precipitation:** 100% completeness;
- **wind speed and direction:** 90% completeness;
- **relative humidity:** 90% completeness; and
- **solar radiation:** 11 and 5 rule (i.e., no more than 11 missing data points and no more than 5 consecutive missing data points).

These completeness requirements were followed when calculating daily, monthly, and annual statistics. For example, the 3 and 5 rule needs to be followed when calculating daily maximum temperature from hourly temperature; the 100% completeness requirement needs to be met when calculating monthly total precipitation from daily precipitation.



REFERENCE(S)

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CLIENT
NEXGEN

PROJECT
ROOK 1 ATMOSPHERIC BASELINE

TITLE
CLIMATE AND METEOROLOGY STATIONS USED FOR BASELINE STUDY

CONSULTANT
GOLDER

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DESIGNED	MC
PREPARED	NO/AK
REVIEWED	ZY
APPROVED	CM

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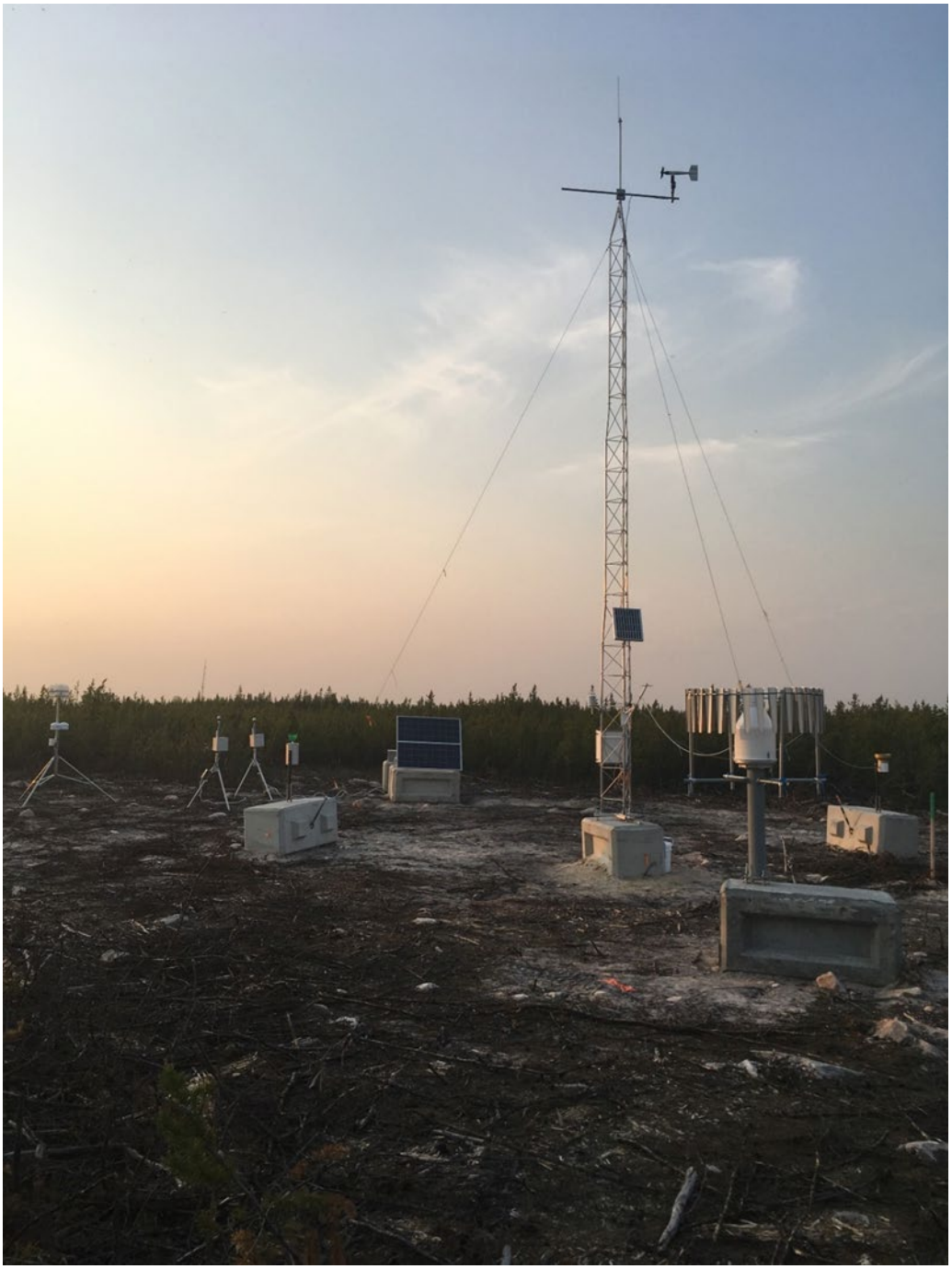
Figure 5: Current Rook I Meteorological Station



Note: The tower and instruments are level/plumb; any apparent off-vertical angles of the instrumentation are an artifact of the camera image.

Table 1: Rook I Meteorological Station Components

Parameter	Instrumentation
Temperature and Relative Humidity	Temperature and relative humidity (RH) sensors are housed in a radiation shield that is mounted on the tower at approximately 2 m above ground
Air temperature (-50°C to +50°C)	Rotronic HC2-S3 temperature and RH gauge
Relative humidity (%)	
Wind	Anemometer is mounted to the tower cross-arm 10 m above ground
Wind speed (km/h)	RM Young 05103 anemometer
Wind direction (˚)	
Solar Radiation	Device mounted on the tower approximately 2 m above ground level
Incoming solar radiation (W/m^2)	Kipp and Zonen SPLITE2 pyranometer
Precipitation	
Total rainfall (mm)	Texas Electronics TE525M tipping bucket rain gauge; located on the northeast anchor block of the station at approximately 1.5 m above ground
Rainfall (mm)	Palmex Rain Sampler 1B non-evaporative rainfall collector; located on the northwest anchor block of the station at approximately 1.5 m above ground
Total precipitation (mm)	Geonor T-200B total precipitation sensor with alter wind shield; located on the south anchor block at approximately 2.5 m above ground
Rainfall deposition of metals, pH, sulphates, and nitrates [a)]	Palmex Rain Sampler 1B non-evaporative rainfall collector; located on the northwest anchor block of the station at approximately 1.5 m above ground
Data Storage and Retrieval	
Datalogger	Campbell Scientific CR1000 data logger
Power supply	20 W solar cell and 26 Ah backup battery
Retrieval device	SC115 USB stick

a) Rainfall metals deposition monitoring discussed further in Section 4.3.1, Local Air Quality.
Ah = ampere hour; RH = relative humidity.

4.3 Air Quality

4.3.1 Local Air Quality

Air quality monitoring stations were installed in the planned area of the Project in September 2018. The air quality monitoring network includes the Rook I Particulate Monitoring Station, the Rook I Tripod Station, and multiple radon monitoring locations. Table 2 and Figure 6 provide the descriptions and locations of the monitoring stations, respectively. The data collected from the air quality monitoring are described below.

- **Particulate monitoring:** Two Met One E-Samplers were installed at the Rook I Particulate Monitoring Station. Sampling was conducted for total suspended particulate (TSP) and fine particulate matter with a mean aerodynamic diameter less than 2.5 microns (µm; $PM_{2.5}$). The E-Samplers provide continuous, hourly particulate matter concentrations and had a sample filter installed during the spring redeployment in 2019 and during the site visit in 2020 to allow for calibration.

  A limitation of most nephelometer instruments (e.g., E-samplers) is that the accuracy of the mass output can be negatively affected by variation in size, color, shape, and index of refraction of the sampled particles. A gravimetric K-Factor was generated for the E-sampler to compensate for local particulate characteristics. To do this, a filter disc was weighed on a microbalance scale under laboratory conditions, then placed into the E-sampler filter holder and run for a predetermined period of time (e.g., June 11, 2019 to July 10, 2019 and

May 17, 2020 to June 16, 2020). The filter was then reweighed in the lab, and the resulting total mass of the particles on the filter was correlated with the volume of air sampled to calculate the concentrations. The concentrations were then compared with the concentrations that the E-sampler recorded over the same time period to calculate a correction factor (i.e., K-Factor). The K-Factors derived from the 2019 calibration were applied to the data collected before 2020; the K-Factor constants derived from the 2020 calibration were applied to the 2020 data.

The E-Samplers were demobilized for the winter season at the end of October and reinstalled in the spring when conditions allowed. The Rook I Particulate Monitoring Station location was reviewed in May 2019, as the initial deployment location was close to anticipated activities (i.e., lower core facility) that could influence ambient particulate measurements and overestimate the background levels. The review identified that a semi-permanent location would be more appropriate for background particulate monitoring than the initial location, as it is farther from fugitive dust sources. As a result, the station was relocated in May 2019 to a nearby temporary location while preparing the semi-permanent location. The station was moved to the semi-permanent location adjacent to the Rook I Meteorological Station (Figure 4) in June 2019. A solar power supply was also installed at this time.

- **Passive gas monitoring:** Monthly passive gas sampling for nitrogen dioxide and sulphur dioxide was performed at the Rook I Tripod Station. Passive samples were deployed each month, usually at the beginning of the month, and retrieved after approximately 30 days, at which time they were sent to an accredited laboratory for analysis. Duplicate samples were taken each month. Where concentrations of the compounds were below the reportable detection limit (RDL), the results were presented as one-half of the RDL. The RDL is the smallest concentration (or amount) of analyte (e.g., nitrogen dioxide and sulphur dioxide), that can be reported by a laboratory.

- **Dustfall monitoring:** Dustfall is the settleable fraction of the total particulate matter in air.

  Dustfall is collected in an open-topped jar with an opening of a known size that contains a liquid collecting medium such as diluted copper sulphate solution. Three litres of a 10 mg/L copper sulphate solution were used to collect samples for total and fixed dustfall analysis at the station, and 3 L of de-ionized water were used to collect samples for deposited metals. A sample jar of the solution was mounted at 3 m height above ground on a tripod at the station and exposed to the air for approximately 30 days on a monthly cycle during the non-winter months (i.e., June to October).

  Total dustfall is defined as the amount of dried material from the sample while total fixed dustfall is the inorganic portion of the total dustfall that remains after the total sample is combusted in the laboratory. Both the total dustfall and fixed dustfall were sampled at the Rook I Tripod Station. Dustfall samples were also collected for deposited metal analysis.

  Duplicate samples were taken for the dustfall and metals samples. One sample was deployed for the winter seasons, from 16 November 2018 through 10 May 2019 and from 26 October 2019 through 29 May 2020. The samples were retrieved from the field and sent to an accredited laboratory for analysis.

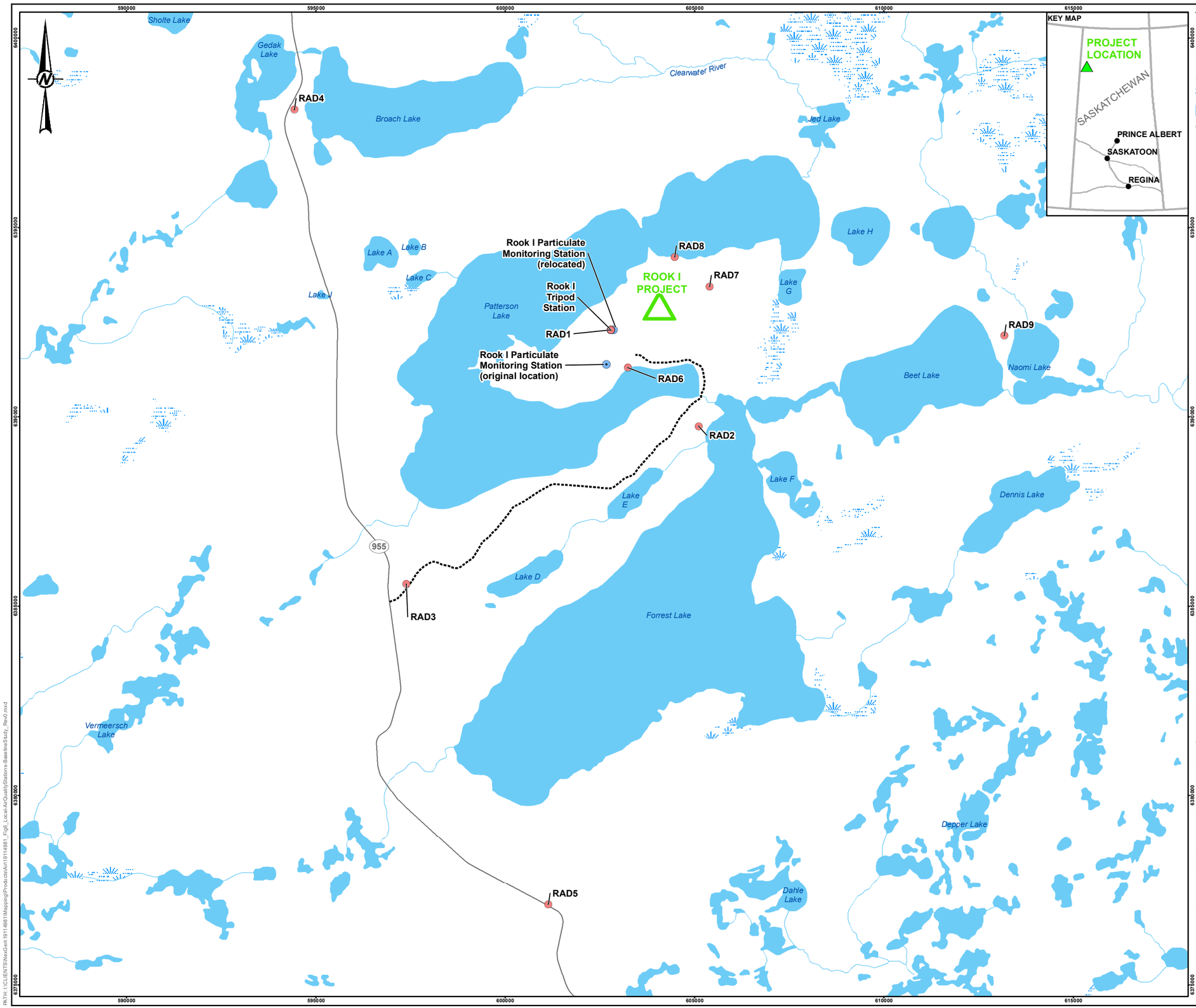
- **Metals, sulphates, and nitrates in rainfall monitoring**: Rainfall was collected approximately monthly in the non-evaporative rainfall collector located at the Rook I Meteorological Station and retrieved for analysis at an accredited laboratory for concentrations of selected metals as listed in Table 21, sulphates, nitrates, and pH.

- **Radon monitoring:** Rapidos alpha track detectors were deployed at nine locations (Figure 6), chosen to represent near-field (i.e., where Project effects are anticipated to be measurable) and far-field (i.e., where Project effects are anticipated to have declined to background levels). These detectors sample for radon entering the detectors by diffusion. Radon samplers were retrieved for analysis at an ISO/IEC 17025 - accredited laboratory (e.g., Radonova Laboratories AB). Duplicate radon samples were also taken at the Rook I Tripod Station. A transit control kit was used during retrieval and was submitted with the samples to the laboratory.

Table 2: Rook I Air Quality Monitoring Locations

Air Quality Monitoring	Station ID	Monitoring Type	Coordinates (m)[a]	
			Easting	Northing
Particulate	Rook I Particulate Monitoring Station	Continuous sampling	602673[b], 602792[c]	6391382[b], 6392297[c]
Passive gas	Rook I Tripod Station	Passive sampling	602788	6392298
Dustfall		Dustfall jar sampling		
Metals, sulphates, and nitrates in rainfall	Rook I Meteorological Station	Rainfall deposition sampling	602795	6392291
Radon	RAD1	Radon passive sampling	602788	6392298
	RAD2		605114	6389753
	RAD3		597386	6385583
	RAD4		594435	6398118
	RAD5		601139	6377127
	RAD6		603240	6391302
	RAD7		605399	6393444
	RAD8		604473	6394224
	RAD9		613181	6392145

a) Coordinates presented are in UTM NAD 83 Zone 12.
b) Initial particulate monitoring station location chosen during September 2018 install due to reliance online power.
c) Relocated particulate monitoring station in June of 2019 away from activities that could influence particulate monitoring.
UTM = Universal Transverse Mercator; NAD = North American Datum; $PM_{2.5}$ = fine particulate matter with a mean aerodynamic diameter less than 2.5 µm; TSP = total suspended particulate.



REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT
NEXGEN

PROJECT
ROOK 1

TITLE
LOCAL AIR QUALITY STATIONS USED FOR BASELINE STUDY

CONSULTANT
GOLDER

YYYY-MM-DD	2022-02-08
DESIGNED	MC
PREPARED	NO/AK
REVIEWED	ZY
APPROVED	CM

PROJECT NO.	PHASE	REV.	FIGURE
19114981	3000	0	**6**

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4.3.2 Regional Air Quality

Two types of monitoring approaches were used in the region for ambient air quality monitoring: continuous monitoring and passive monitoring. Continuous monitoring refers to the rapid sampling of the air (e.g., one measurement per second) using an electronic instrument that analyzes the air for compounds of interest (e.g., nitrogen dioxide, sulphur dioxide, and $PM_{2.5}$) and stores averages of the samples (e.g., each hour) over a longer period of time (e.g., days, months, or years). Passive monitoring consists of exposing a contaminant-sensitive sample medium (e.g., tape treated with triethanolamine) to the atmosphere for a fixed period of time so that the contaminant can accumulate on the medium. The ambient concentrations can then be determined by laboratory analysis of the exposed media given the known time of exposure.

Ambient air quality monitoring in the AQSA is limited due to the low level of development and remoteness of the region. Two continuous monitoring stations were identified in the search of publicly available ambient air quality monitoring data. Stations were chosen based on available monitoring data and their representativeness of air quality conditions in the AQSA. Stations likely to be influenced by human activities, such as those at industrial operations or in urban settings, were not included. Table 3 provides summary station information. The baseline study presents the most recent five years (i.e., 2016 to 2020) of available monitoring data.

The closest regional station monitoring compounds of interest is the Wood Buffalo Environmental Association (WBEA) Fort Chipewyan Station located approximately 160 km northwest of the Project, adjacent to the community of Fort Chipewyan in northeastern Alberta (Figure 7). The WBEA operates meteorological and air quality continuous monitoring stations located in communities or near major industrial developments in the Athabasca Oil Sands Region (AOSR) encompassing the northeast region of Alberta bordering Saskatchewan. Community stations, such as the one located at Fort Chipewyan, are permanent monitoring stations strategically located to measure the air quality in the communities and to track trends or changes to air quality over time. Data collected continuously through WBEA's network of monitoring stations are quality controlled and available online through direct download of the historical database (WBEA 2020a).

The Fort Chipewyan Station monitors continuously for compounds of interest. The station also monitors meteorological parameters and additional air quality contaminants including nitric oxide, total oxides of nitrogen, and ozone. The station is located near the small community of Fort Chipewyan and may be influenced by community-related emissions (e.g., local traffic and building heating) more than might be reasonably expected under baseline conditions in the anticipated area of the Project. However, the Fort Chipewyan Station was considered a reasonable surrogate for existing atmospheric conditions within the AQSA due to its position typically upwind from the AQSA and major oil sands developments in the AOSR (Davidson C. and D. Spink 2018).

Additional WBEA monitoring locations, such as the Firebag Station located approximately 110 km west-southwest of the Project, and others in the AOSR are not presented in the atmospheric baseline study. These stations are located at or near industrial oil sands sites and would be influenced by activities that do not represent baseline conditions within the AQSA.

A second regional air quality motoring station is located near the small, remote community of Buffalo Narrows, approximately 210 km south-southeast of the Project (Figure 7). This station is part of the ECCC National Air Pollution Surveillance program that collects air quality data across Canada. The Buffalo Narrows Station continuously monitors compounds of interest including nitrogen dioxide, sulphur dioxide, $PM_{2.5}$, and particulate matter with a mean aerodynamic diameter less than 10 µm (PM_{10}). The station also monitors meteorological

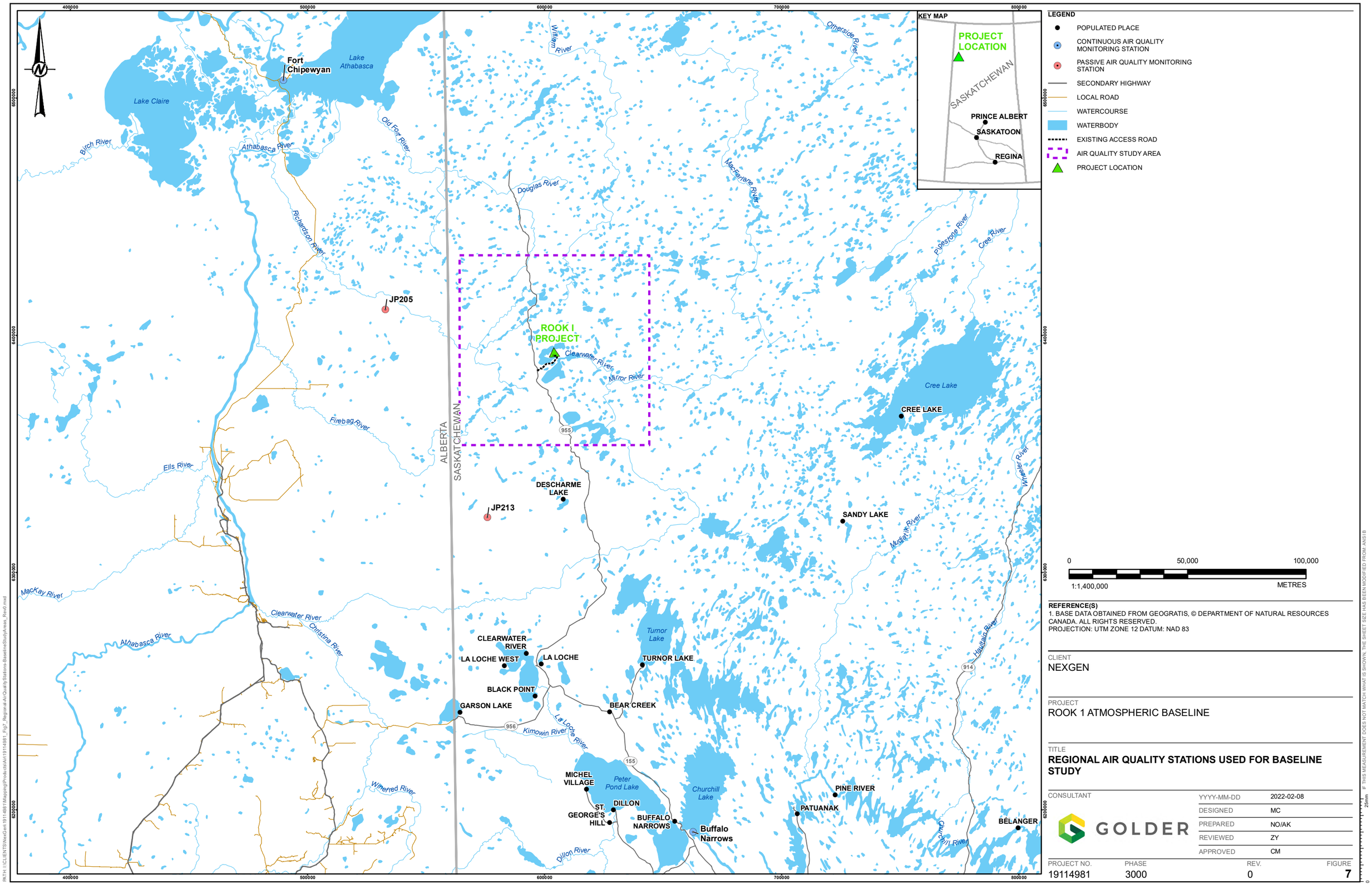
parameters and additional air quality contaminants including nitric oxide, oxides of nitrogen, and ozone. The data are available publicly for download through the Government of Saskatchewan historical air quality database (Government of Saskatchewan 2020). Similar to Fort Chipewyan station, the station is located at the airport of the small community of Buffalo Narrows and therefore may be influenced by community-related emissions (e.g., local traffic, building heating, and airstrip) more than might be reasonably expected in the anticipated area of the Project. It was considered a reasonable surrogate for atmospheric conditions within the AQSA due to its displacement from major industrial developments and its rural, northern Saskatchewan location.

The WBEA operates a network of passive monitoring stations in the AOSR. Typically, within the WBEA network, the samples are exposed for a one-month period. Two passive-only stations, JP205 Station and JP213 Station located approximately 73 km west-northwest and 75 km southwest of the Project, respectively, are considered in the baseline study (Figure 7). These stations were chosen based on data availability and the location of passive monitors that are often upwind of the AQSA and remote from major oil sands developments in the AOSR to reflect the expected conditions within the AQSA.

Table 3: Regional Air Quality Monitoring Locations used in the Baseline Study

Station Name	Station Type	Station Operator	Coordinates (m)[a]		Approximate Distance and Direction from Project (km, direction)	Compounds Monitored[b]	Monitoring Period
			Easting	Northing			
Fort Chipewyan Station	Continuous sampling	WBEA	489861	6507689	160 km NW	nitrogen dioxide, sulphur dioxide, $PM_{2.5}$	July 1998 - Present
Buffalo Narrows Station	Continuous sampling	ECCC NAPS	662619	6190717	210 km SSE	nitrogen dioxide, sulphur dioxide, $PM_{2.5}$	March 2012 - Present
JP205 Station	Passive sampling	WBEA	532866	6411054	73 km WNW	nitrogen dioxide, sulphur dioxide	2007 - Present
JP213 Station	Passive sampling	WBEA	575855	6323351	75 km SW	nitrogen dioxide, sulphur dioxide	2007- Present

a) Coordinates presented are UTM NAD 83 Zone 12.
b) Compounds presented are those of interest for the Project, additional compounds and parameters are monitored that are not presented here.
NAPS = National Air Pollution Surveillance; NW = northwest; $PM_{2.5}$ = particulate matter with a mean aerodynamic diameter less than 2.5 µm; SSE = south-southeast; SW = southwest; WBEA = Wood Buffalo Environmental Association; WNW = west-northwest; UTM = Universal Transvers Mercator; NAD = North American Datum.



REFERENCE(S)

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PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT
NEXGEN

PROJECT
ROOK 1 ATMOSPHERIC BASELINE

TITLE
REGIONAL AIR QUALITY STATIONS USED FOR BASELINE STUDY

CONSULTANT
GOLDER

YYYY-MM-DD	2022-02-08
DESIGNED	MC
PREPARED	NO/AK
REVIEWED	ZY
APPROVED	CM

PROJECT NO.	PHASE	REV.	FIGURE
19114981	3000	0	7

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Historical radon data from August 2017 to August 2018 are available for the Cluff Lake region located in the Athabasca Basin. A mining and milling facility, the Cluff Lake Mine, was previously operated by Orano Canadian Inc. in the region from 1981 until 2002. An Independent Environmental Monitoring Program was conducted by the Canadian Nuclear Safety Commission (CNSC) from 2017 to 2018 to observe and monitor any lasting environmental effects after the closure of the facility in the surrounding area. Ambient air sampling was conducted to measure radon concentrations in the region (CNSC 2018).

4.3.3 Ambient Air Quality Criteria

The air quality environment is evaluated based on a comparison of available ambient air quality measurements against relevant air quality criteria and guidelines. Measured data were compared to the Saskatchewan Ambient Air Quality Standards (SAAQS; Government of Saskatchewan 2015) for relevant compounds, as listed in Table 4. The guidelines refer to averaging periods ranging from one hour to one year. Other compounds either not predicted to be directly emitted by the Project (e.g., ozone) or not expected to affect local air quality (e.g., carbon monoxide) are excluded from this analysis.

Table 4: Relevant Saskatchewan Ambient Air Quality Standards

Compound	Ambient Air Quality Standard (µg/m^3)		
	1-Hour	24-Hour	Annual
$PM_{2.5}$	n/a	28[(a)]	10
PM_{10}	n/a	50	n/a
TSP	n/a	100	60[(b)]
Nitrogen dioxide	300	200	45[(c)]
Sulphur dioxide	450	125	20[(c)]

Source: Government of Saskatchewan 2015.
a) average of the annual 98th percentile of the daily 24-hour average concentrations for three consecutive years.
b) Geometric mean.
c) Arithmetic mean.
n/a = not applicable; $PM_{2.5}$ = particulate matter with a mean aerodynamic diameter less than 2.5 µm; PM_{10} = particulate matter with a mean aerodynamic diameter less than 10 µm; TSP = total suspended particulate.

In 2012, the Canadian Council of Ministers of the Environment (CCME) and the Canadian provinces and territories, excluding Quebec, agreed to implement a national Air Quality Management System (CCME 2012). The framework resulted in the development of the Canadian Ambient Air Quality Standards (CAAQS) for $PM_{2.5}$, ozone, nitrogen dioxide, and sulphur dioxide. The CAAQS are human health-based air quality objectives for compound concentrations in ambient air (Table 5). The CAAQS were implemented in a two-phased approach for achievement, namely 2015 and 2020 for $PM_{2.5}$ and ozone (CCME 2012), respectively, and 2020 and 2025 for nitrogen dioxide and sulphur dioxide (Government of Canada 2017a, 2017b), respectively.

The SAAQS for $PM_{2.5}$ are equivalent to the CAAQS derived for 2015 achievement. The CCME has developed guidance documents on achievement determination of CAAQS for $PM_{2.5}$, nitrogen dioxide, and sulphur dioxide (CCME 2020). Before determining the achievement of CAAQS, transboundary flows and exceptional events need to be identified, and the weight of evidence approach needs to be used to demonstrate the influence of transboundary flows and exceptional events. Without accounting for the transboundary flows and exceptional events, it is not appropriate to make direct comparisons to the CAAQS. Therefore, the remaining CAAQS are presented here for information only.

Table 5: Canadian Ambient Air Quality Standards

Compound	Ambient Air Quality Standard (µg/m³)								
	2015			2020			2025		
	1-Hour	24-Hour	Annual	1-Hour	24-Hour	Annual	1-Hour	24-Hour	Annual
$PM_{2.5}$	n/a	28[a]	10[b]	n/a	27[a]	8.8[b]	n/a	n/a	n/a
Nitrogen dioxide	n/a	n/a	n/a	113 (60 ppb)[c]	n/a	32 (17.0 ppb)	79 (42 ppb)[c]	n/a	22.6 (12.0 ppb)
Sulphur dioxide	n/a	n/a	n/a	183 (70 ppb)[d]	n/a	13 (5.0 ppb)	170 (65 ppb)[d]	n/a	10.5 (4.0 ppb)

Source: CCME 2012, 2016, 2017.
a) Average of the annual 98th percentile of the daily 24-hour average concentrations for three consecutive years.
b) Average of the annual average of 1-hour concentrations for three consecutive years.
c) Average of the annual 98th percentile of the daily maximum 1-hour average concentrations for three consecutive years.
d) Average of the annual 99th percentile of the daily maximum 1-hour average concentrations for three consecutive years.
n/a = not applicable; $PM_{2.5}$ = fine particulate matter with a mean aerodynamic diameter less than 2.5 µm; ppb = parts per billion.

In the absence of dustfall standards for Saskatchewan, the Alberta Ambient Air Quality Guideline for dustfall was used to assess baseline dustfall measurements (Alberta Environment and Parks [AEP] 2019). The AEP guidelines apply to the mass of dustfall per unit area over a 30-day period for both residential and recreational areas or for commercial and industrial areas (Table 6).

Table 6: Relevant Dustfall Standards

Compound	Alberta Ambient Air Quality Guideline (mg/100 cm²/30 d)	
	Residential and Recreation Areas	Commercial and Industrial Areas
Dustfall	53	158

Source: AEP 2019.
mg/100 cm²/30 d = milligrams per 100 square centimetres per 30 days.

There are no ambient air quality standards in place for the other air quality parameters measured in the planned area of the Project (e.g., ambient radon exposure and metals deposition). The baseline study of these air quality parameters will help characterize the existing conditions, put the air quality modelling results into context, and provide a basis for comparison against operational values if the project proceeds.

4.3.4 Background Air Quality Concentrations

In accordance with the Saskatchewan Air Quality Modelling Guideline (SAQMG; ENV 2012b), the inclusion of a background air contaminant concentration is to be added to air dispersion modelling predictions to obtain the total concentration to use in comparisons with ambient air quality criteria. The background concentrations were chosen from the SAQMG to represent the portion of ambient concentrations that occur naturally or due to sources not evaluated in the model. Regional background concentration values, derived from air quality monitoring data, are required to be added to dispersion modelling predictions to account for natural, distant, or minor sources. The background concentrations from the representative “background monitors” are prescribed in the SAQMG (ENV 2012b). As the expected area of the Project is in the northern air dispersion modelling zone defined in the SAQMG, the appropriate background concentrations will be added to the modelled predictions for the EA as presented in the SAQMG.

The SAQMG also lists the methods used to determine a site-specific background concentration, including:

- at least one year of monitoring data are required;
- all monitoring data are subjected to validation and quality control;
- the 90th percentile value from the monitoring data is selected to represent the 1-hour and 24-hour background concentrations; and
- the 50th percentile value from the monitoring data is selected to represent the annual background concentration.

Where applicable, the local and regional air quality monitoring data were processed and used to create site-specific background concentrations following the SAQMG methods. The site-specific background concentrations were compared against the regional background concentrations listed in Table 7.

Table 7:Northern Air Dispersion Modelling Zone Regional Background Air Compound Concentrations

Compound	Background Concentration for Air Dispersion Modelling (µg/m^3)[(a)(b)]			
	1-Hour	8-Hour	24-Hour	Annual
$PM_{2.5}$	n/a	n/a	6.5	3.1
PM_{10}	n/a	n/a	23.1	n/a
Carbon monoxide	527.5 (500 ppb)	527.5 (500 ppb)	n/a	n/a
Nitrogen dioxide	11.3 (6 ppb)	n/a	9.4 (5 ppb)	3.8 (2 ppb)
Sulphur dioxide	0	n/a	0	0.000

Source: SMOE 2012.
a) 90th percentile value of monitoring data is added to the 1-hour and 24-hour predictions and 50th percentile value of the monitoring data is added to the annual predictions per the SAQMG guidance.
b) TSP background concentration is not available in the Northern air dispersion modelling zone.
n/a = not applicable; ppb = parts per billion; $PM_{2.5}$ = fine particulate matter with a mean aerodynamic diameter less than 2.5 µm; PM_{10} = particulate matter with a mean aerodynamic diameter less than 10 µm; SAQMG = Saskatchewan Air Quality Modelling Guideline.

4.4 Quality Assurance and Quality Control

Quality assurance and quality control (QC) practices determine data integrity and are relevant to all aspects of a study, from sample collection to data analysis and reporting. Quality assurance encompasses management and technical practices designed to confirm that the data generated are of consistent high quality. Quality control is an aspect of quality assurance and includes the procedures used to measure and evaluate data quality and the corrective actions to be taken when data quality objectives are not met.

4.4.1 Quality Assurance

Quality assurance applicable to this study covers field and laboratory management. Meteorological and air quality monitoring instruments are subject to maintenance and calibration per their specifications. Thorough checkups were performed to identify gaps and abnormal data points from the data collected. For the field sampling program, one field crew member managed the sample shipping process for the field program to confirm that samples were properly labelled, documentation was completed, and samples were delivered to the laboratory. The other member of the field crew was designated as the laboratory liaison. The laboratory

selected for the analysis of samples is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). Under CALA's accreditation program, performance evaluation assessments are conducted annually for laboratory procedures, methods, and internal quality control.

4.4.2 Quality Control

The QC program consisted of the collection and analysis of field replicate samples and laboratory QC analysis. Laboratory QC analysis included a variety of techniques, such as the analysis of reference materials, control samples/field blank, and spike recovery measurements to verify the validity of the analytical results. A sample QC report is shown in Appendix B. If QC issues were identified, the samples were re-analyzed or other corrective action was undertaken to demonstrate that the analytical results are within the expected measurement uncertainty.

5.0 RESULTS

5.1 Climate

5.1.1 Cluff Lake Station

Climate Normals from 1971 to 2000 from the Cluff Lake Station are used to characterize the climate of the region for several observed meteorological parameters (Table 8). Wind was measured at the Cluff Lake Station during this period as hourly maximum wind speed and wind direction; average wind speeds were not available from this station.

Table 8: Cluff Lake Station Climate Normals, 1971 to 2000

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Temperature													
Daily average (°C)	-20.4	-16.4	-9.5	0.5	8.8	14.6	16.9	15.6	9	1.1	-11	-17.6	-0.7
Average daily maximum (°C)	-15.4	-11	-3.3	6.1	14.9	20.8	22.7	21.3	13.6	4.6	-7.3	-13.3	4.5
Average daily minimum (°C)	-25.5	-21.8	-15.6	-5.1	2.7	8.4	11.1	9.9	4.3	-2.4	-14.6	-21.9	-5.9
Extreme maximum (°C)	9	11.5	14.5	24	34.5	33	34.5	36	29.5	26.5	9	6.5	n/a
Extreme minimum (°C)	-49	-46	-44	-36	-14	-4.5	0.5	-0.5	-7.5	-25	-39	-45	n/a
Precipitation													
Rainfall (mm)	0.1	0.5	1.8	6.6	24	58.6	88.2	71.7	50.7	15.8	0.8	0.6	319.3
Snowfall (cm)	24.3	21.9	21.4	9.7	2	0	0	0	1.2	19.4	36.4	26.5	162.8
Total precipitation (mm)	18.9	18.1	19.8	15.8	26	58.6	88.2	71.7	51.9	33.6	27.9	20.6	451
Extreme daily total precipitation (mm)	9.4	9	20.6	17	37.4	34	62.2	40.9	49.6	18.7	20	12.2	n/a
Days with precipitation >0.2 mm	12.9	11	9.4	6.7	10	13.5	15.2	15.5	13.9	14.7	15.1	12.3	150.2
Wind													
Maximum hourly speed (km/h)	35	39	42	42	35	43	48	43	43	40	35	40	48
Direction of maximum hourly speed	NW	SW	NW	NW	N	NW	NW	SW	W	NW	SE	NW	NW

Source: ECCC 2019.
> = greater than; N = north; NW = northwest; SE = southeast; SW = southwest; W = west; n/a = not applicable.

5.1.1.1 Temperature

Observations at the Cluff Lake Station show that the mean air temperature has a large seasonal dependence (Table 8). In the winter (January), a daily mean of -20.4°C was recorded, while in the summer (July) the recorded daily mean was 16.9°C (ECCC 2019). By November, mean temperatures were generally below freezing at -11°C and remained below freezing until April. The annual daily mean obtained from the data recorded at the Cluff Lake Station from 1981 to 2010 was -0.7°C.

5.1.1.2 Precipitation

Mean annual total rainfall at the Cluff Lake Station was 319.3 mm, with approximately 98% occurring from May to October (ECCC 2019). Most snow falls between October and April with the greatest amount of snowfall occurring in November (Table 8). The average total annual precipitation was 451 mm; therefore, approximately 71% of the precipitation was in the form of rainfall.

5.1.1.3 Wind Speed and Direction

Maximum hourly wind speed and direction of the hourly maximum wind speed are recorded at the Cluff Lake Station. The maximum hourly wind speed varied between 30 km/h and 48 km/h. Maximum wind speeds were recorded from every quadrant but are most commonly from the northwest (Table 8).

5.1.2 Fort McMurray A Station

Climate Normals for 1981 to 2010 from the Fort McMurray A Station were used to characterize the climate of the region for several observed meteorological parameters (Table 9). The Fort McMurray A Station provides additional climate parameters not monitored at the Cluff Lake Station including average wind speed and direction, and relative humidity.

Table 9: Fort McMurray A Station Climate Normals, 1981 to 2010

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Temperature													
Daily average (°C)	-17.4	-13.3	-6.2	3.3	9.9	14.6	17.1	15.4	9.5	2.3	-8.6	-15.1	1.0
Average daily maximum (°C)	-12.2	-7.1	0.6	10.0	16.9	21.5	23.7	22.2	15.8	7.4	-4.3	-10.1	7.0
Average daily minimum (°C)	-22.5	-19.5	-12.9	-3.5	2.8	7.7	10.5	8.6	3.2	-2.8	-12.9	-20	-5.1
Extreme maximum (°C)	15.1	15.0	20.1	30.2	34.8	36.8	35.6	37.0	32.4	28.6	18.9	10.7	n/a
Extreme minimum (°C)	-50.0	-50.6	-44.4	-34.4	-17.3	-4.4	-3.3	-3.1	-15.6	-24.5	-37.8	-47.2	n/a
Precipitation													
Rainfall (mm)	0.4	0.7	2.1	11.0	33.5	73.3	80.7	57.1	38.8	15.6	2.6	0.7	316.3
Snowfall (cm)	23.8	18.4	19.1	11.9	3.5	0.0	0.0	0.0	0.9	12.2	22.9	21.3	133.8
Total precipitation (mm)	17.7	13.2	16.7	21.4	36.5	73.3	80.7	57.1	39.7	26.2	19.9	16.4	418.6
Extreme daily total precipitation (mm)	16.0	13.2	29.7	26.8	39.4	50.0	57.5	94.5	60.5	29.4	15.7	22.6	n/a
Days with precipitation >0.2 mm	12.3	10.4	9.6	8.5	11.3	14.2	15.8	13.2	12.5	10.9	12.0	11.8	142.5
Wind													
Average speed (km/h)	8.6	9.2	10.3	11.3	11.0	9.9	9.2	8.9	9.8	10.2	9.0	8.6	9.7
Most frequent direction	E	E	E	E	E	E	W	W	W	E	E	E	E
Maximum hourly speed (km/h)	89	94	74	79	80	97	113	80	96	97	97	85	113
Direction of maximum hourly speed	W	NW	W	W	W	N	W	N	W	W	W	W	W
Relative Humidity													
Average relative humidity - 06:00 LST (%)	73.2	73.6	73.7	71.7	71.3	76.8	82.8	87.5	86.5	82.1	80.4	75.3	77.9
Average relative humidity - 15:00 LST (%)	68.7	60.7	49.4	40.1	39.5	46.3	51.0	50.6	52.2	58.4	71.7	72.4	55.1

Source: ECCC 2019.
> = greater than; LST = local standard time; N = north; NW = northwest; W = west; E = east; n/a = not applicable.

5.1.2.1 Temperature

Observations at the Fort McMurray A Station, similarly to those observed at the Cluff Lake Station, show that the mean air temperature has a large seasonal dependence (Table 9). The Fort McMurray A Station daily mean of -17.4°C was recorded in the winter (January), while in the summer (July) the recorded daily mean was 17.1°C (ECCC 2019), both slightly warmer than the average climate observed at the Cluff Lake Station. At the Fort McMurray A Station, mean temperatures were generally below freezing at -8.6°C starting in November and remained below freezing until March, slightly earlier than that observed at the Cluff Lake Station (April). The annual daily mean (1.0°C) recorded at the Fort McMurray A Station from 1981 to 2010 was also slightly higher than that observed at the Cluff Lake Station (-0.7°C).

5.1.2.2 Precipitation

Mean annual total rainfall at the Fort McMurray A Station was 316.3 mm with the majority occurring from April to October (ECCC 2019). Snowfall occurred primarily between October and April with the greatest amount of snowfall occurring in January (Table 9). The average total annual precipitation was 418.6 mm, slightly less than that observed at the Cluff Lake Station due to lower recorded snowfall at the Fort McMurray A Station.

5.1.2.3 Wind Speed and Direction

Fort McMurray's geographic location in a river valley heavily influences the wind data (i.e., wind speed and direction) that are measured at the Fort McMurray A Station. Due to this local topographic influence, the Fort McMurray A Station is not a suitable surrogate for wind patterns in the AQSA.

5.1.2.4 Relative Humidity

Climate Normals for average relative humidity (RH) were available for the morning (06:00) and afternoon (15:00) at the Fort McMurray A Station (Table 9). Relative humidity tended to be higher in the mornings than the afternoons throughout every season. The lowest RH occurred in the spring (i.e., April and May) for both the morning and afternoon. The highest morning RH has historically been observed in August, while the highest afternoon RH occurred during the late fall and early winter months (i.e., November to January).

5.2 Weather

Weather describes atmospheric conditions at a specific time and over a shorter duration relative to the long-term averages used to describe climate. The following subsections describe weather in the anticipated area of the Project and within the AQSA. Weather is described rather than climate because the record of measurement is relatively short compared to the long-term records at Cluff Lake and Fort McMurray.

5.2.1 Temperature

The coldest month observed in the anticipated area of the Project was January, with a daily mean of -18.1°C, while the warmest month was July with a recorded daily mean of 17.1°C (Table 10). Mean temperatures below freezing begin in October and continue until May. The annual average temperature observed in the anticipated area of the Project was -0.6°C. Over the monitoring period, the temperature extremes ranged from -39.2°C to 32.4°C.

Table 10: Observed Temperatures at Rook I Meteorological Station, November 2015 to December 2020

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Daily average (°C)	-18.1	-17.9	-9.3	-1.2	9.6	14.6	17.1	14.9	9.2	-0.7	-9.6	-15.3	-0.6
Daily maximum (°C)	-14.2	-13.0	-4.0	4.0	15.2	19.5	22.1	19.5	13.4	2.2	-6.9	-11.8	3.8
Daily minimum (°C)	-21.7	-22.3	-14.3	-6.5	3.7	9.9	12.4	10.8	5.7	-3.2	-12.4	-18.8	-4.7
Extreme maximum (°C)	4.7	11.0	14.0	22.5	31.3	32.4	32.2	30.0	29.5	17.9	11.3	6.8	n/d
Extreme minimum (°C)	-36.7	-38.0	-34.2	-27.9	-14.8	0.4	4.8	2.7	-7.7	-12.8	-23.7	-39.2	n/d

n/d = no data or data completeness requirements not met.

The average temperatures observed from November 2015 to December 2020 are shown in Figure 8 and Figure 9 and compared to the Cluff Lake Station and Fort McMurray Station Climate Normals, respectively. The observed temperatures at the Rook I Meteorological Station aligned closely with the long-term average temperatures observed at the Cluff Lake Station. Slightly milder winter temperatures observed within the most recent five years could be related to the location of the Rook I Meteorological Station, which is approximately 75 km south of Cluff Lake Station. The Rook I Meteorological Station recorded temperatures were also similar to the long-term average temperatures observed at the Fort McMurray A Station.

Figure 8: Rook I Meteorological Station Observed Temperatures Compared to the Cluff Lake Station Climate Normals

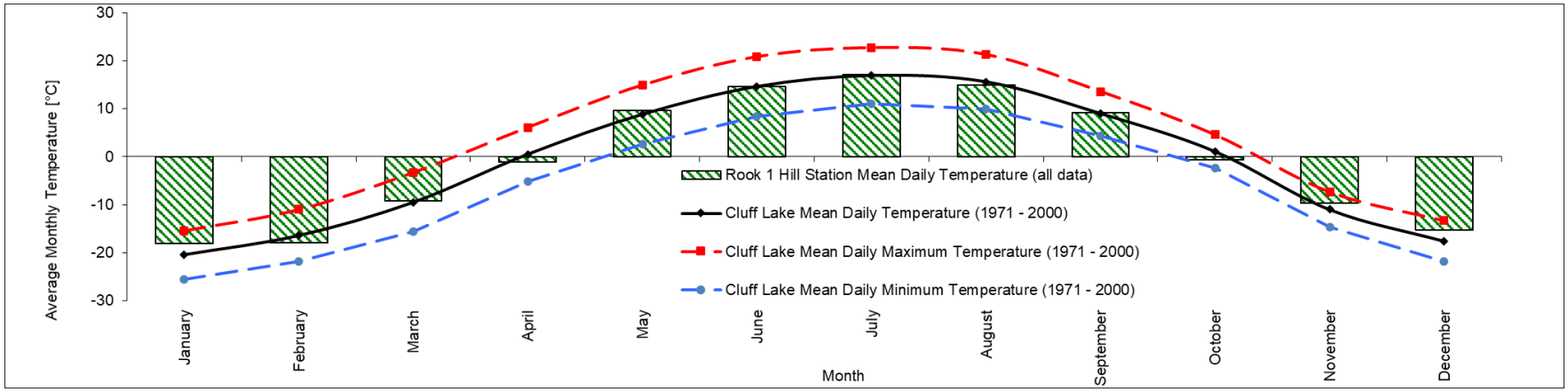
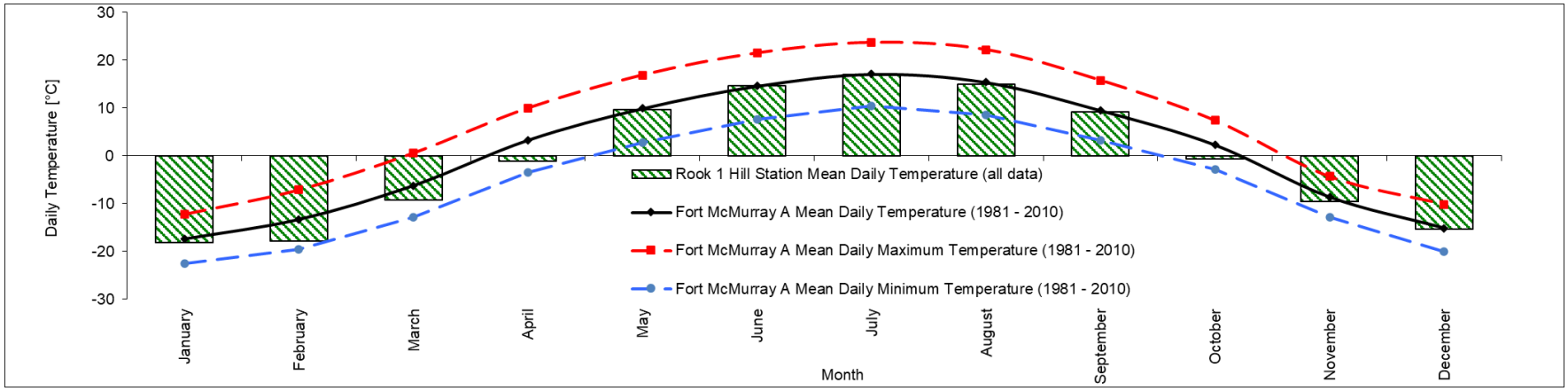


Figure 9: Rook I Meteorological Station Observed Temperatures Compared to the Fort McMurray A Station Climate Normals



5.2.2 Precipitation

At the original Rook I Meteorological Station (i.e., from November 2015 to September 2018), precipitation monitoring was only carried out for rainfall (i.e., tipping bucket). During the station relocation in September 2018, a second analyzer for total precipitation (i.e., rainfall and snowfall) was added. Several data gaps resulted from equipment downtime for rainfall in 2015 and 2016 and for precipitation data in 2018. By the end of 2020, there were four years (i.e., 2017 to 2020) of rainfall data and two years (i.e., 2019 to 2020) of precipitation data with 100% completeness (Table 11). Snowmelt events, characterized by afternoon temperatures above freezing coincident with high solar radiation and low relative humidity (i.e., a sunny winter or spring day), are often recorded by tipping buckets as rainfall events due to the melting of accumulated snow in the bucket. Rainfall values recorded in these days were replaced with zero in the rainfall dataset.

Four full calendar years of rainfall data, 2017 to 2020, were collected at the Rook I Meteorological Station. Total annual rainfall in 2017 (220.1 mm) and 2018 (267.2 mm) was less than the Climate Normals recorded at the Cluff Lake Station (319 mm) and the Fort McMurray A Station (316 mm). Total rainfall in 2019 and 2020 was observed to be higher than Climate Normals rainfall. 2020 was an exceptionally wet year with 506.3 mm of total rainfall. However, the average annual rainfall from 2017 to 2020 was 331.9 mm, which was close to the Climate Normals annual rainfall at both Cluff Lake Station and Fort McMurray A Station.

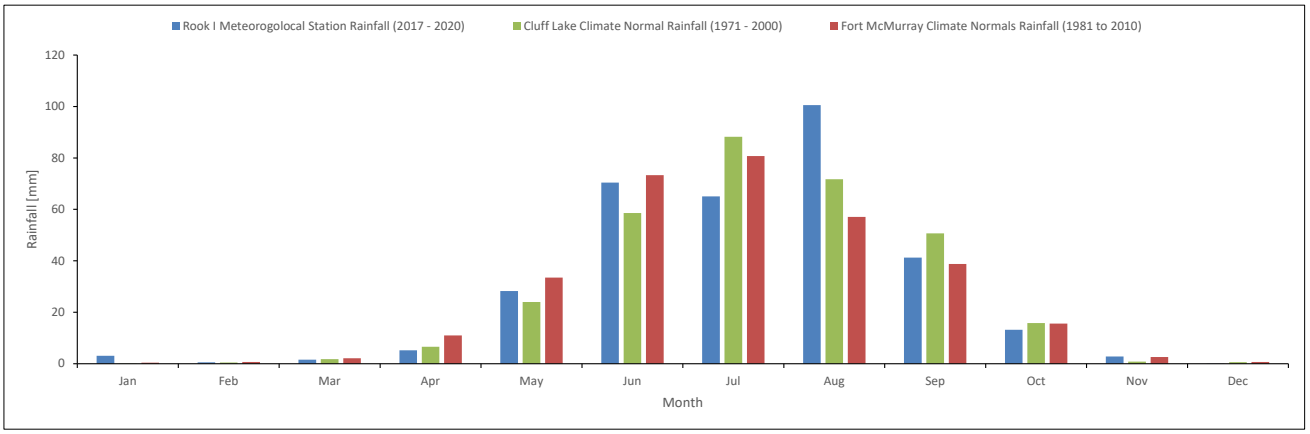
The average monthly rainfalls observed at Rook I Meteorological Station were compared to the Climate Normals at the Cluff Lake Station and the Fort McMurray A station as shown in Figure 10. The observed monthly rainfalls from 2017 to 2020 were similar to the long-term Climate Normals. The observed rainfall in August was higher than the Climate Normals.

Table 11: Observed Rainfall at Rook I Meteorological Station, November 2015 to December 2020

Parameter	Rainfall (mm)[a]												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2015	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	0.2	n/d
2016	n/d	n/d	3.9	10.1	20.0	105.1	n/d	n/d	n/d	10.3	1.4	0.0	n/d
2017	12.4	0.3	1.1	1.6	21.4	52.6	31.3	32.5	41.2	23.9	0.0	0.0	218.3
2018	0.0	0.0	0.6	7.1	26.7	71.7	61.0	56.0	34.7	1.9	0.0	0.0	259.7
2019	0.0	0.0	4.6	9.1	6.5	38.4	51.4	181.6	38.1	6.2	7.3	0.0	343.2
2020	0.0	1.8	0.0	3.2	58.3	118.8	116.4	132.1	50.9	20.8	3.9	0.1	506.3
Average	3.1	0.5	1.6	5.3	28.2	70.4	65.0	100.6	41.2	13.2	2.8	0.0	331.9

a) Winter snowmelt events characterized by afternoon temperatures above freezing coincident with high solar radiation and low relative humidity (i.e., a sunny winter day) were replaced with zero.
n/d = no data or data completeness less than 100%.

Figure 10: Rook I Meteorological Station Observed Rainfall Compared to the Climate Normals



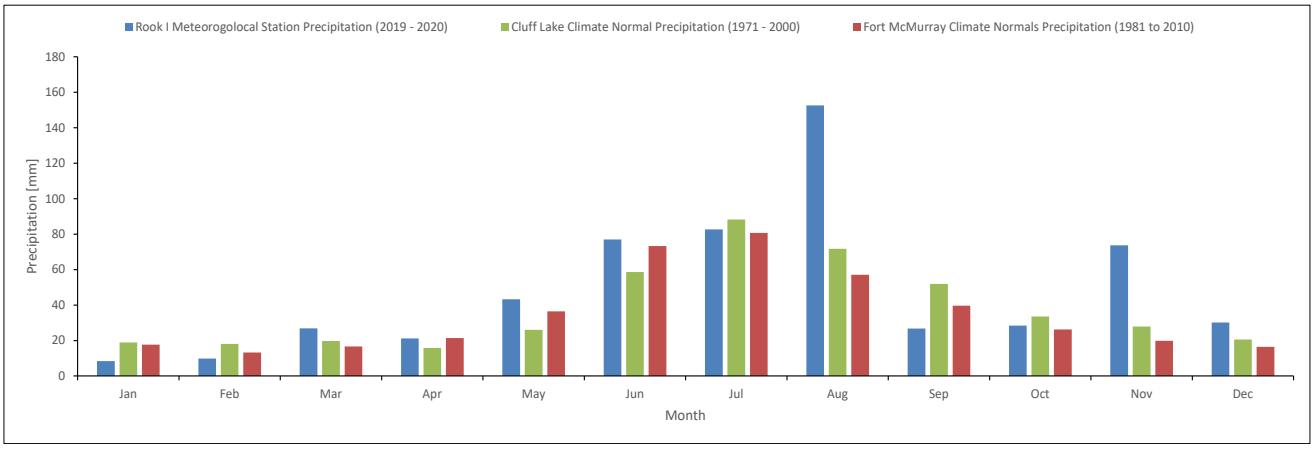
Two complete calendar years (2019 and 2020) of total precipitation data were recorded at the Rook I Meteorological Station (Table 12). In both years, the total precipitation recorded at the Rook I Meteorological Station were higher than the Cluff Lake Station (451 mm) and Fort McMurray A Station (418.6 mm) Climate Normal total precipitation. Figure 11 shows the comparison of average monthly precipitation at the Rook I Meteorological Station to the Climate Normals. Higher than Climate Normal precipitations were recorded in August and November in 2018 and 2019.

Table 12: Observed Total Precipitation at Rook I Meteorological Station, September 2018 to December 2020

Parameter	Total Precipitation (mm)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2018	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	19.1	26.9	28.1	n/d
2019	9.0	6.7	38.6	32.2	29.6	44.6	55.7	206.4	44.8	32.3	38.9	31.4	570.1
2020	7.7	13.1	15.2	10.3	57.0	109.3	109.7	98.8	8.8	33.8	155.4	31.1	650.0
Average	8.4	9.9	26.9	21.2	43.3	76.9	82.7	152.6	26.8	28.4	73.7	30.2	610.1

n/d = no data or data completeness less than 100%.

Figure 11: Rook I Meteorological Station Observed Precipitation Compared to the Climate Normals



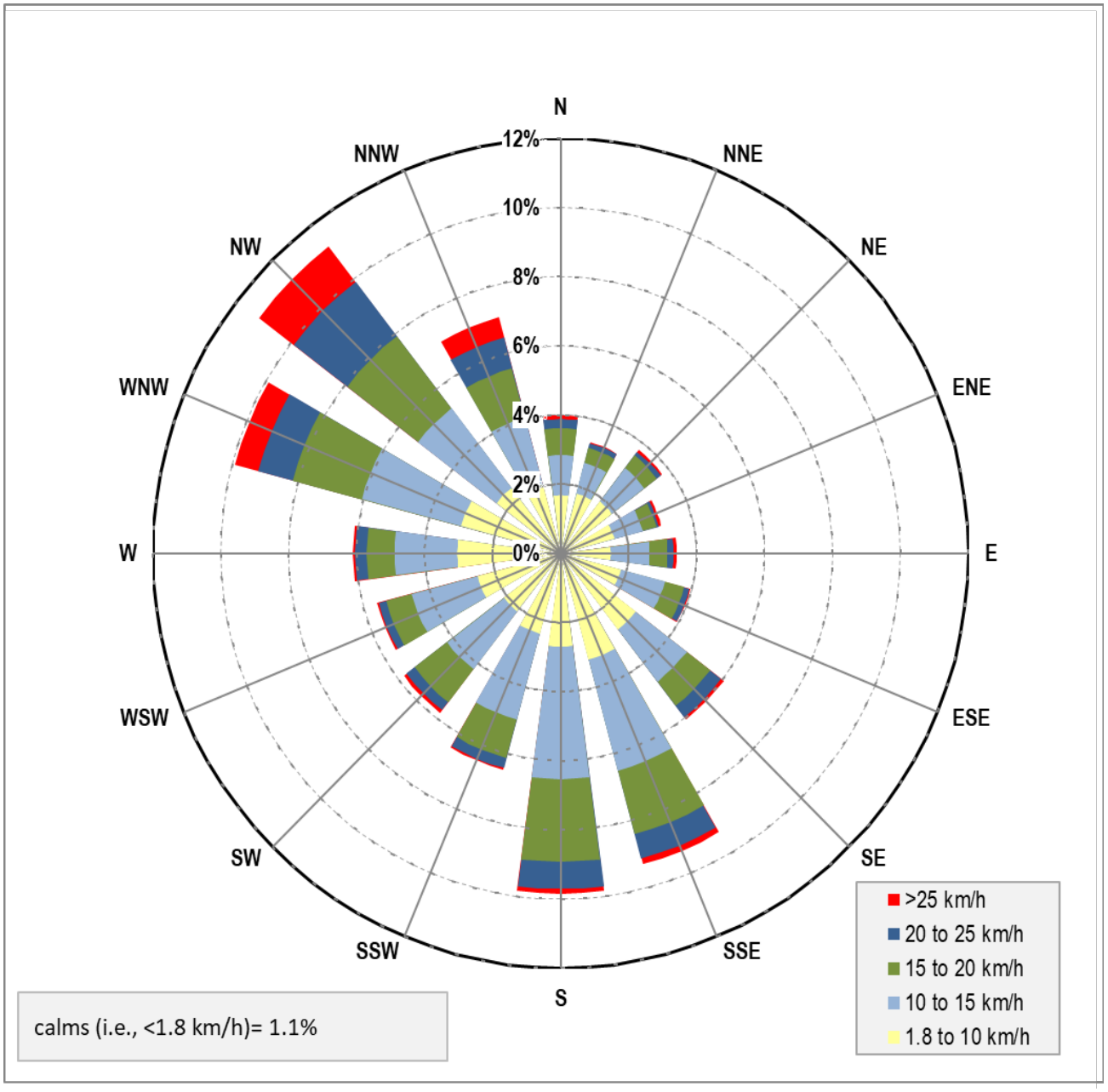
5.2.3 Wind Speed and Direction

A wind rose is often used to illustrate the frequency of wind direction and the magnitude of wind speed. The length of the bars on the wind rose indicate the frequency of the wind from the specified direction. The colour of the bars indicates the wind speed ranges. The direction from which the wind blows is illustrated by the orientation of the bar in 1 of 16 directions.

The dominant wind directions observed were from the northwest throughout the years, with a large portion of higher windspeeds observed from this direction (Figure 12). A considerable portion of the winds (greater than 9%) were also observed from the south, west-northwest, and south-southeast.

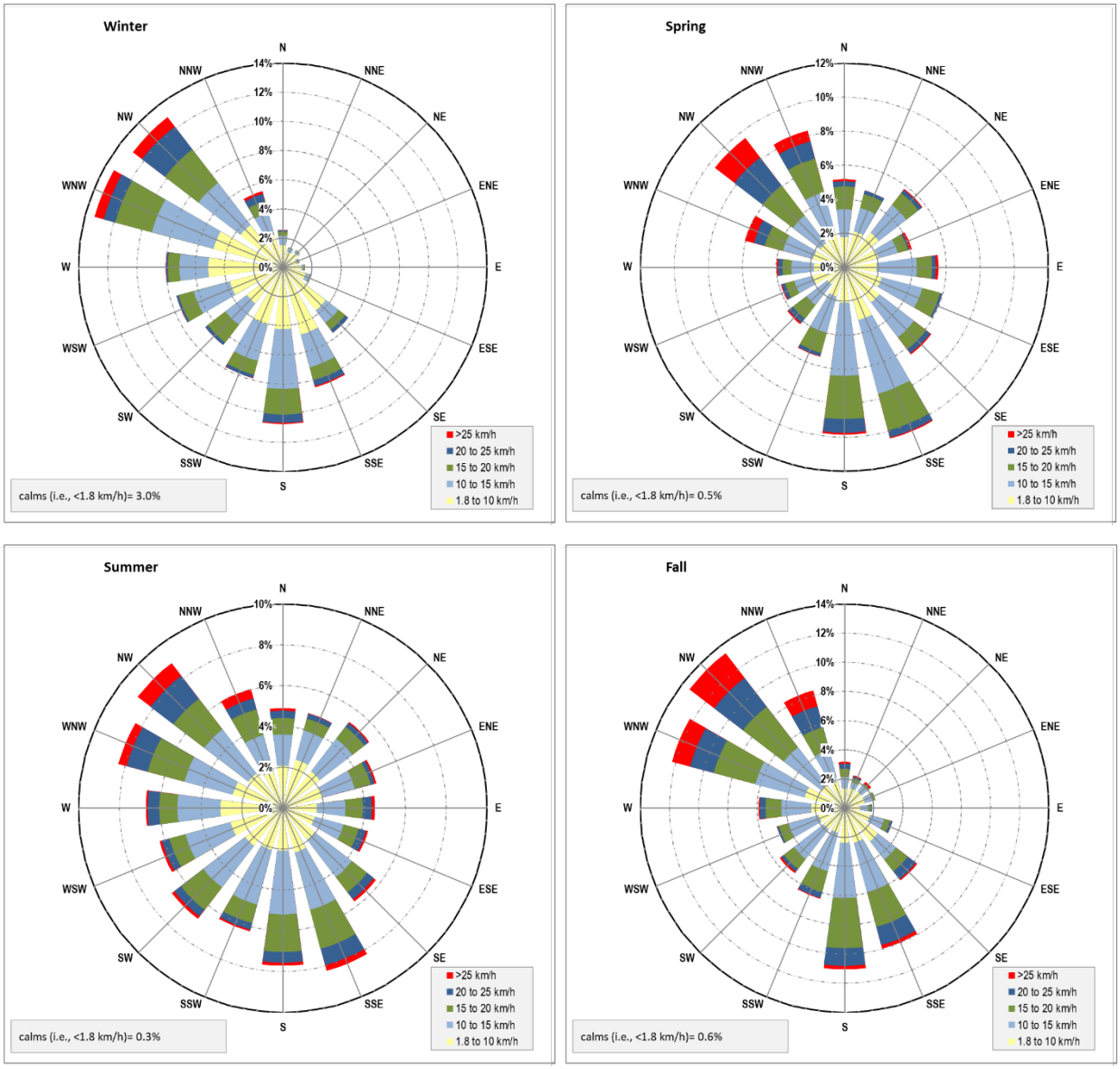
Over the monitoring period, calm wind conditions (i.e., winds less than 0.5 m/s) were observed approximately 1.1% of the time. Low wind conditions (i.e., winds less than 10 km/h), which tend to result in elevated ground-level concentrations of air pollutants, were observed 37.6% of the time. Low winds were observed most frequently from the south-southeast direction 3.3% of the time. High wind conditions (i.e., winds greater than 19.3 km/h when wind erosion of stockpile surfaces starts to occur) were observed for approximately 13.5% of the time. The greatest wind speeds tend to occur in the fall and are typically from the northwest.

Figure 12: Rook I Meteorological Station Wind Rose, November 2015 to December 2020



Wind roses for each season are presented in Figure 13. The dominant wind directions were from the northwest and south throughout all seasons. In the fall and winter, winds tended to be from the northwest and were rarely observed from the northeast. In the spring and summer, southerly winds were more common than northwest winds and a greater distribution of winds were observed from the east. Though the dominant northwest and south winds were observed, winds in the summer tended to be more evenly distributed from all directions more than in other seasons.

Figure 13: Rook I Meteorological Station Seasonal Wind Roses, November 2015 to December 2020



5.2.4 Relative Humidity

Relative humidity is the ratio of the amount of water vapour present in the air to the amount of vapour necessary for saturation at the same temperature and pressure. Relative humidity was generally higher during the winter (i.e., October through February) and lower in spring and summer (Table 13). The lowest relative humidity observations were recorded in May in the anticipated area of the Project.

Table 13: Observed Relative Humidity at Rook I Meteorological Station, November 2015 to December 2020

Parameter	Relative Humidity (%)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2015	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	86.9	n/d
2016	86.2	n/d	74.2	60.3	55.4	62.5	n/d	n/d	n/d	n/d	85.2	82.8	n/d
2017	84.7	77.5	68.5	56.7	53.2	60.4	61.2	57.4	70.4	86.3	83.6	83.9	70.3
2018	82.1	77.0	68.4	59.1	49.6	64.6	64.0	65.0	n/d	79.0	89.5	86.9	71.5
2019	80.7	75.8	65.6	65.0	54.0	67.4	62.8	82.6	81.1	85.3	90.2	86.5	74.7
2020	84.7	81.0	73.8	67.6	61.4	66.1	73.7	78.7	80.9	86.6	87.4	82.4	77.0
Average	83.7	77.8	70.1	61.7	54.7	64.2	65.4	70.9	77.5	84.3	87.2	84.9	73.4

n/d = no data or data completeness requirements not met.

5.2.5 Solar Radiation

Solar radiation levels measured at the surface are a function of hours of sunlight and sun azimuth angle, as well as local weather conditions. Changes in weather parameters may cause the annual peak in solar radiation to fluctuate from year to year.

Average daily solar radiation at the Rook I Meteorological Station varied seasonally (Table 14). The highest solar radiation was recorded during the spring, summer, and early fall months (i.e., April to September) after which the observations drop off substantially during the darker winter days. The peak solar radiation was observed in May in the expected area of the Project, though both June and July were nearly as high. As expected, solar radiation was weakest in December and January.

Table 14: Observed Daily Solar Radiation at Rook I Meteorological Station, November 2015 to December 2020

Parameter	Daily Solar Radiation (MJ/m^2)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2015	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	2.3	0.6	n/d
2016	1.4	n/d	9.7	16.5	19.8	20.7	n/d	n/d	n/d	n/d	2.0	0.4	n/d
2017	1.4	4.1	10.6	17.0	21.6	19.6	19.6	17.1	10.7	3.8	2.3	1.2	10.8
2018	0.5	3.4	12.0	18.5	21.4	18.6	18.6	15.0	10.4	5.4	1.3	0.8	10.5
2019	1.5	3.3	11.5	15.8	23.2	18.6	20.1	12.5	10.3	4.6	2.2	0.5	10.4
2020	0.6	4.9	10.9	16.2	19.5	19.2	17.8	13.5	9.3	4.1	2.0	1.0	10.0
Average	1.1	3.9	10.9	16.8	21.1	19.4	19.0	14.5	10.2	4.5	2.0	0.7	10.4

MJ/m^2 = Megajoule per square metre; n/d = no data or data completeness requirement not met.

5.3 Air Quality

5.3.1 Local Air Quality

5.3.1.1 Particulates

5.3.1.1.1 Total Suspended Particulate

TSP in remote and rural areas is often a result of windblown dust from erosion and re-entrainment, wildfire smoke, long-range transport of dust, and vehicle travel on gravel roads. No exceedances of the 24-hour SAAQS for TSP (i.e., 100 µg/m^3) were recorded over the baseline study period. The highest 24-hour TSP concentration was recorded on 24 July 2019 (Table 15) and was characterized by an 11-hour period of elevated 1-hour TSP measurements, which indicates a short-term event in the area above typical ambient levels.

The TSP concentrations remained below the 24-hour SAAQS. The 90th percentile values for each month were observed to be below one-third of the SAAQS, with the highest TSP observed in the drier summer months in 2019 (i.e., May through July). The 90th percentile 24-hour concentrations for each month were usually well below and occasionally slightly above the SAQMG prescribed background for the northern air modelling zone of 23.1 µg/m^3; the PM_{10} background value was applied in the absence of a TSP background concentration. The average of the 90th percentile 24-hour concentrations of all data collected by the end of 2020 was 9.7 µg/m^3, which was lower than the background concentration. The average of all 24-hour TSP concentrations from all data was 3.4 µg/m^3, which is well below the annual SAAQS of 60 µg/m^3 and the prescribed background concentration of 11.6 µg/m^3.

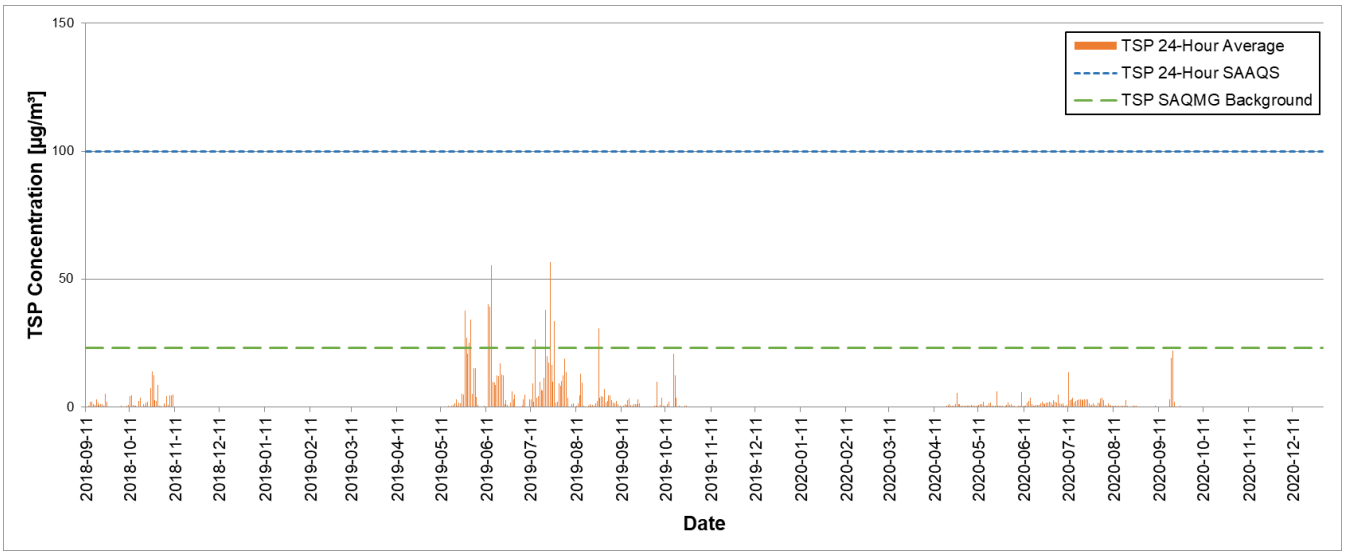
Table 15: Rook I Particulate Monitoring Station 24-Hour Total Suspended Particulate Monitoring Results

Month and Year	Total Suspended Particulate Concentration (µg/m^3)			
	Maximum 24-Hour	90th Percentile[(a)] 24-Hour	50th Percentile[(b)] 24-Hour	Number of Days >100 µg/m^3
Sep-18	5.1	2.6	1.0	0
Oct-18	13.7	7.8	0.8	0
Nov-18	4.7	4.6	1.3	0
May-19	37.6	**28.4**	1.3	0
Jun-19	55.4	**23.7**	5.5	0
Jul-19	56.5	**26.4**	4.7	0
Aug-19	30.7	12.9	1.4	0
Sep-19	4.5	3.0	0.9	0
Oct-19	20.8	7.3	0.1	0
Apr-20	5.5	1.2	0.4	0
May-20	6.0	1.7	0.3	0
Jun-20	5.6	2.1	0.8	0
Jul-20	13.6	3.0	1.9	0
Aug-20	3.7	2.7	0.1	0
Sep-20	21.9	1.9	0.0	0
All Data	56.5	9.7	0.7	0

Bolded values are above the Saskatchewan Air Quality Modelling Guideline prescribed background for the northern air modelling zone of 23.1 µg/m^3.
a) The 90th percentile value from the monitoring data is selected to represent 24-hour background concentrations.
b) The 50th percentile value from the monitoring data is selected to represent the annual background concentration.
> = greater than.

A visual representation of the TSP monitoring data at the Rook I Particulate Monitoring Station is presented in Figure 14. The figure shows that, for the majority of the monitoring period, the 24-hour average concentrations are shown to be below the background concentration prescribed for modelling in the SAQMG, indicating that concentrations of TSP at the anticipated area of the Project are low.

Figure 14: Total Suspended Particulate 24-Hour Average Concentrations at the Rook I Particulate Monitoring Station



TSP = total suspended particulate; SAAQS = Saskatchewan Ambient Air Quality Standards; SAQMG = Saskatchewan Air Quality Modelling Guideline.

5.3.1.1.2 Fine Particulate Matter

$PM_{2.5}$ is either emitted directly (primary $PM_{2.5}$) or formed in the atmosphere from precursor emissions (secondary $PM_{2.5}$). Primary $PM_{2.5}$ is formed predominantly by combustion processes such as fossil fuel burning and forest fires. Key precursors of secondary $PM_{2.5}$ are oxides of nitrogen, sulphur dioxide, ammonia, and volatile organic compounds. The chemical composition of the particulate matter can vary depending on the processes involved in its formation.

The highest 24-hour $PM_{2.5}$ concentration of 28.5 µg/m^3 (Table 16) was recorded on 24 July 2019 and was likely due to smoke from regional wildfires given that the measured $PM_{2.5}$ and TSP concentrations were nearly identical during the event. Although this concentration appears to be above the 24-hour SAAQS of 28 µg/m^3, it does not indicate an exceedance of the standard as compliance is based on the metric of 98th percentile of 24-hour average concentration over a year, averaged over three consecutive years. The highest $PM_{2.5}$ concentrations were observed in the drier summer months in 2019 (i.e., May through July), which is consistent with the trend observed in the TSP data.

The $PM_{2.5}$ concentrations were low compared to the SAAQS (Table 16). The 90th percentile 24-hour concentrations for each month are in the range of the SAQMG prescribed background for the northern air modelling zone of 6.5 µg/m^3. The 90th percentile of all 24-hour $PM_{2.5}$ concentrations collected by 2020 was 4.1 µg/m^3, which is lower than the prescribed background value. The 90th percentile of all 24-hour $PM_{2.5}$ concentrations collected by 2020 was 4.1 µg/m^3, which is lower than the prescribed background value.

The average of all 24-hour $PM_{2.5}$ concentrations was 1.6 µg/m^3, which is lower than the prescribed annual background of 3.1 µg/m^3.

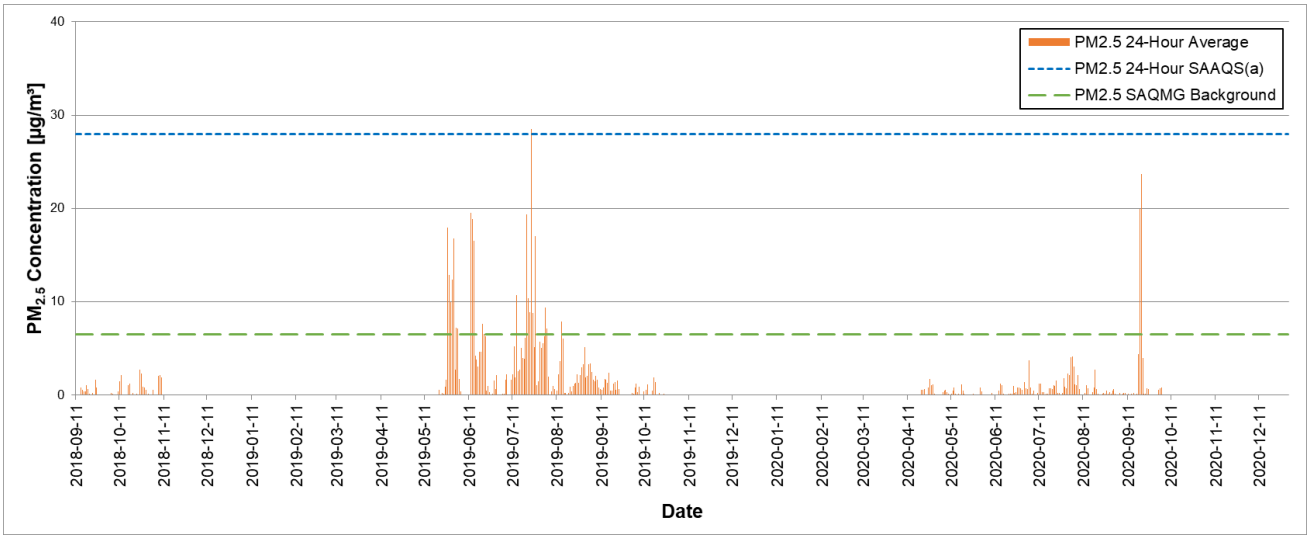
In August and September 2020, the monitored maximum 24-hour $PM_{2.5}$ concentrations were slightly higher than the maximum 24-hour TSP concentrations. Due to the lower sensitivity of TSP samplers to fine particulate matter than the $PM_{2.5}$ sampler, this could happen when the ambient suspended particulate matter is all in the size range of particles less than 2.5 µm.

Table 16: Rook I Particulate Monitoring Station 24-Hour Fine Particulate Matter Monitoring Results

Month and Year	Fine Particulate Matter Concentration (µg/m^3)		
	Maximum 24-Hour	90th Percentile 24-Hour	50th Percentile 24-Hour
Sep-18	1.6	0.9	0.3
Oct-18	2.7	1.6	0.1
Nov-18	2.1	2.0	0.0
May-19	17.9	13.6	0.1
Jun-19	19.5	10.3	2.4
Jul-19	28.5	10.7	2.7
Aug-19	9.3	6.3	1.3
Sep-19	3.4	2.4	1.0
Oct-19	1.9	1.2	0.1
Apr-20	1.7	1.1	0.5
May-20	1.1	0.5	0.0
Jun-20	1.2	0.8	0.0
Jul-20	3.7	1.5	0.6
Aug-20	4.1	2.7	0.3
Sep-20	23.7	4.0	0.1
All Data	28.5	4.1	0.3

A visual representation of the $PM_{2.5}$ baseline monitoring data at the Rook I Particulate Monitoring Station is presented in Figure 15. Although the 24-hour SAAQS of 28 µg/m^3 is presented alongside the data, the data shown above the SAAQS line on this graph does not indicate an exceedance of the standard due to the metric of the $PM_{2.5}$ SAAAQS. For a large portion of the monitoring period, the 24-hour average concentrations were below the background concentration prescribed for modelling in the SAQMG (i.e., 6.5 µg/m^3), indicating that concentrations of $PM_{2.5}$ in the anticipated area of the Project site are low.

Figure 15: Fine Particulate Matter 24-Hour Average Concentrations at the Rook I Particulate Monitoring Station



a) 24-hour SAAQS of 28 µg/m^3 is presented alongside the data; data shown above the SAAQS line does not indicate an exceedance of the standard, as the standard metric is the comparison against the 98th percentile of a full year of monitoring data.
$PM_{2.5}$ = particulate matter with a mean aerodynamic diameter less than 2.5 µm; SAAQS = Saskatchewan Ambient Air Quality Standards; SAQMG = Saskatchewan Air Quality Modelling Guideline.

5.3.1.2 Nitrogen Dioxide and Sulphur Dioxide

Nitrogen dioxide can be directly released to the air, but more often it is produced by the conversion of nitric oxide released from combustion processes. Together, nitrogen dioxide and nitric oxide are typically referred as oxides of nitrogen. The primary anthropogenic sources of oxides of nitrogen emissions in the expected area of the Project are related to fossil fuel combustion. Nitrogen dioxide can cause short-term health effects in humans and is a component of smog, acid rain, and secondary particulate formation.

Sulphur dioxide is a colourless gas with a weak odour. Exposure to higher levels of sulphur dioxide can cause both short-term and long-term health effects in humans and can affect vegetation. Ambient sulphur dioxide is also a contributor to the formation of acid rain and secondary particulate matter. Sulphur dioxide can be released by burning of fossil fuels, industrial process, and natural sources such as volcanoes.

The monthly passive monitoring results for the anticipated area of the Project are presented in Table 17. There are no SAAQS for monthly nitrogen dioxide or sulphur dioxide for comparison to the monthly measurements. The annual average measured concentrations for nitrogen dioxide and sulphur dioxide can be conservatively compared to the annual SAAQS of 45 µg/m^3 and 20 µg/m^3, respectively. The passive monitoring indicates that concentrations of nitrogen dioxide remained below the annual SAAQS of 45 µg/m^3 over the monitoring period with an annual average concentration of 0.39 µg/m^3. Similarly, the annual average sulphur dioxide concentration was measured to be 0.83 µg/m^3, lower than the annual SAAQS of 20 µg/m^3.

Measured nitrogen dioxide concentrations were below the SAQMG annual background concentration of 3.8 µg/m^3. The SAQMG annual background concentration for sulphur dioxide for the northern air modelling zone is 0 µg/m^3; therefore, measured concentrations at the anticipated area of the Project were above the prescribed background concentration. This indicates that local activities in the area (e.g., traffic and fuel combustion) may be contributing to ambient sulphur dioxide levels, though levels remained low.

Table 17: Rook I Tripod Station Passive Monitoring Results

Month and Year	Concentration (µg/m³)[a]	
	Nitrogen Dioxide	Sulphur Dioxide
Sep-18	0.38	0.52
Oct-18	0.47	0.65
Nov-18	1.69	2.49
Dec-18	0.85	0.79
Jan-19	1.41	1.83
Feb-19	0.09	1.05
Mar-19	0.09	0.65
Apr-19	0.14	0.13
May-19	0.09	0.39
Jun-19	0.09	0.13
Jul-19	0.09	0.26
Aug-19	0.09	0.26
Sep-19	0.38	0.52
Nov-19	0.42	1.05
Dec-19	0.19	0.92
Jan-20	0.14	1.83
Feb-20	0.14	0.79
Apr-20	0.09	0.65
May-20	0.12	0.39
Jun-20	0.09	0.52
Jul-20	0.38	0.52
Aug-20	0.19	0.79
Oct-20	0.47	0.92
Nov-20	1.13	1.83
Annual[b]	0.39	0.83

a) Duplicate samples were taken at this station. The average value is presented.
b) Laboratory concentrations were measured in ppb and converted to µg/m³. Values below the reportable detection limit of 0.1 ppb were treated as one-half of the detection limit (0.05 ppb).
ppb = parts per billion.

5.3.1.3 Dustfall

The dustfall monitoring program measured the quantities of dust deposited in the anticipated area of the Project. The maximum monthly fixed dustfall deposition measured at the Rook I Tripod Station was 37.2 milligrams per 100 square centimetres per 30 days (mg/100 cm^2/30 d) in June 2019, which is below both the Alberta residential and industrial dustfall guidelines (Table 18). As expected, the overwinter samples produced much lower dustfall due to the frozen conditions and presence of snow cover. The summer months tended to produce the highest dustfall measurements due to the warmer, drier conditions and greater likelihood of dust emissions from high wind and on-site activities.

Table 18: Rook I Tripod Station Monthly Total and Fixed Dustfall Monitoring Results

Month and Year	Dustfall (mg/100 cm^2/30 d)[a][b]	
	Total	Fixed
Sep-18	24.0	18.0
Oct-18	25.0	23.5
Overwinter (18-19)[c]	5.0	7.5
May-19	14.9	7.5
Jun-19	66.8	37.2
Jul-19	30.5	11.3
Aug-19	32.5	29.5
Sep-19	24.9	18.9
Overwinter (19-20)[c]	7.1	7.5
Jun-20	16.4	7.5
Jul-20	23.5	17.0
Aug-20	32.0	23.0
Sep-20	31.0	23.0
Oct-20	26.0	21.5
All data	*16.7*	13.2
Alberta residential dustfall guideline	**53**	
Alberta industrial dustfall guideline	**158**	

a) Duplicate samples were taken at this station. The geometric mean value is presented.
b) Calculated on a 30-day basis.
c) Overwinter sampled from 16 November 2018 through 10 May 2019 and from 26 October 2019 through 29 May 2020.
d) Values below the reportable detection limit were assumed to be one-half of the detection limit for annual averages.
mg/100 cm^2/30 d = milligrams per 100 square centimetres per 30 days; n/d = no data or invalid data.

Dustfall samples were also analyzed for metals (Table 19). Averages for the year are presented for values above the RDL. Most of the metals analyzed were not observed above the RDL during the monitoring (e.g., arsenic, beryllium, bismuth, boron). Antimony and lead were measured above RDL for only one month of the monitoring period. A few metals were detected above the RDL in several of the monthly samples: aluminium, barium, calcium, copper, magnesium, manganese, and strontium. Of the metals that were measured above the RDL, the highest metals depositions were observed in either May or June.

Table 19: Rook I Tripod Station Monthly Metals in Dustfall Monitoring Results

Metals (Dustfall)	Metals (Dustfall)														
	mg/dm^2/day														
	Sep-18	Oct-18	Winter 18-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Winter 19-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Average[a]
Aluminum (Al), total	< 7.50E-03	< 2.40E-03	9.90E-05	8.70E-04	< 5.80E-04	< 9.60E-04	< 1.40E-03	< 8.70E-04	3.15E-04	5.95E-04	< 1.80E-04	5.90E-04	3.70E-04	7.10E-04	5.07E-04
Antimony (Sb), total	< 2.50E-04	< 8.00E-05	< 1.30E-06	2.25E-05	< 1.90E-05	< 3.20E-05	< 4.80E-05	< 2.90E-05	< 6.20E-06	< 5.70E-06	< 6.10E-06	< 8.10E-06	< 8.10E-06	< 1.10E-05	2.25E-05
Arsenic (As), total	< 2.50E-04	< 8.00E-05	< 1.30E-06	< 1.50E-05	< 1.90E-05	< 3.20E-05	< 4.80E-05	< 2.90E-05	< 6.20E-06	< 5.70E-06	< 6.10E-06	< 8.10E-06	< 8.10E-06	< 1.10E-05	-
Barium (Ba), total	< 1.20E-04	< 4.00E-05	7.08E-06	5.64E-05	4.09E-05	< 1.60E-05	< 2.40E-05	1.55E-05	3.09E-05	4.25E-05	2.01E-05	1.05E-04	2.78E-05	2.81E-05	3.75E-05
Beryllium (Be), total	< 1.20E-03	< 4.00E-04	< 6.70E-06	< 7.30E-05	< 9.70E-05	< 1.60E-04	< 2.40E-04	< 1.40E-04	< 3.10E-05	< 2.80E-05	< 3.00E-05	< 4.10E-05	< 4.00E-05	< 5.30E-05	-
Bismuth (Bi), total	< 1.20E-03	< 4.00E-04	< 6.70E-06	< 7.30E-05	< 9.70E-05	< 1.60E-04	< 2.40E-04	< 1.40E-04	< 3.10E-05	< 2.80E-05	< 3.00E-05	< 4.10E-05	< 4.00E-05	< 5.30E-05	-
Boron (B), total	< 2.50E-02	< 8.00E-03	< 1.30E-04	< 1.50E-03	< 1.90E-03	< 3.20E-03	< 4.80E-03	< 2.90E-03	< 6.20E-04	< 5.70E-04	< 6.10E-04	< 8.10E-04	< 8.10E-04	< 1.10E-03	-
Cadmium (Cd), total	< 1.20E-04	< 4.00E-05	< 6.70E-07	< 7.30E-06	< 9.70E-06	< 1.60E-05	< 2.40E-05	< 1.40E-05	< 3.10E-06	< 2.80E-06	< 3.00E-06	< 4.10E-06	< 4.00E-06	< 5.30E-06	-
Calcium (Ca), total	< 5.00E-02	< 1.60E-02	1.11E-03	1.13E-02	1.25E-02	< 6.40E-03	< 9.60E-03	< 5.80E-03	6.50E-03	9.55E-03	4.85E-03	1.57E-02	3.70E-03	6.55E-03	7.96E-03
Chromium (Cr), total	< 1.20E-03	< 4.00E-04	< 6.70E-06	< 7.30E-05	< 9.70E-05	< 1.60E-04	< 2.40E-04	< 1.40E-04	< 3.10E-05	< 2.80E-05	< 3.00E-05	< 4.10E-05	< 4.00E-05	< 5.30E-05	-
Cobalt (Co), total	< 2.50E-04	< 8.00E-05	< 1.30E-06	< 1.50E-05	< 1.90E-05	< 3.20E-05	< 4.80E-05	< 2.90E-05	< 6.20E-06	< 5.70E-06	< 6.10E-06	< 8.10E-06	< 8.10E-06	< 1.10E-05	-
Copper (Cu), total	< 2.50E-04	< 8.00E-05	8.05E-05	1.03E-04	3.90E-04	1.80E-04	1.88E-04	1.45E-04	3.62E-04	3.75E-04	1.88E-04	3.03E-04	1.43E-04	5.70E-05	2.09E-04
Iron (Fe), total	< 7.50E-02	< 2.40E-02	< 4.00E-04	< 4.40E-03	< 5.80E-03	< 9.60E-03	< 1.40E-02	< 8.70E-03	< 1.90E-03	< 1.70E-03	< 1.80E-03	< 2.40E-03	< 2.40E-03	< 3.20E-03	-
Lead (Pb), total	< 1.20E-04	< 4.00E-05	< 6.70E-07	1.02E-05	< 9.70E-06	< 1.60E-05	< 2.40E-05	< 1.40E-05	1.58E-05	3.03E-06	< 3.00E-06	6.58E-06	5.05E-06	< 5.30E-06	8.12E-06
Lithium (Li), total	< 1.20E-02	< 4.00E-03	< 6.70E-05	< 7.30E-04	< 9.70E-04	< 1.60E-03	< 2.40E-03	< 1.40E-03	< 3.10E-04	< 2.80E-04	< 3.00E-04	< 4.10E-04	< 4.00E-04	< 5.30E-04	-
Magnesium (Mg), total	< 1.20E-02	< 4.00E-03	2.71E-04	2.44E-03	6.25E-03	3.45E-03	< 2.40E-03	< 1.40E-03	8.90E-04	1.86E-03	1.07E-03	3.59E-03	7.85E-04	9.45E-04	2.15E-03
Manganese (Mn), total	< 1.20E-04	< 4.00E-05	1.10E-05	1.35E-04	1.53E-04	7.50E-05	9.15E-05	2.60E-05	4.12E-05	1.43E-04	2.52E-05	8.07E-05	4.84E-05	5.77E-05	7.39E-05
Molybdenum (Mo), total	< 1.20E-04	< 4.00E-05	< 6.70E-07	< 7.30E-06	< 9.70E-06	< 1.60E-05	< 2.40E-05	< 1.40E-05	< 3.10E-06	< 2.80E-06	< 3.00E-06	1.09E-05	< 4.00E-06	7.73E-06	9.31E-06
Nickel (Ni), total	< 1.20E-03	< 4.00E-04	< 6.70E-06	< 7.30E-05	< 9.70E-05	< 1.60E-04	< 2.40E-04	< 1.40E-04	< 3.10E-05	< 2.80E-05	< 3.00E-05	< 4.10E-05	< 4.00E-05	< 5.30E-05	-
Phosphorus (P), total	< 7.50E-01	< 2.40E-01	< 4.00E-03	< 4.40E-02	< 5.80E-02	< 9.60E-02	< 1.40E-01	< 8.70E-02	< 1.90E-02	< 1.70E-02	< 1.80E-02	< 2.40E-02	< 2.40E-02	< 3.20E-02	-
Potassium (K), total	< 1.20E-01	< 4.00E-02	< 6.70E-04	< 7.30E-03	< 9.70E-03	< 1.60E-02	< 2.40E-02	< 1.40E-02	< 3.10E-03	3.75E-03	< 3.00E-03	< 4.10E-03	< 4.00E-03	< 5.30E-03	3.75E-03
Selenium (Se), total	< 2.50E-03	< 8.00E-04	< 1.30E-05	< 1.50E-04	< 1.90E-04	< 3.20E-04	< 4.80E-04	< 2.90E-04	< 6.20E-05	< 5.70E-05	< 6.10E-05	< 8.10E-05	< 8.10E-05	< 1.10E-04	-
Silicon (Si), total	< 1.20E-01	< 4.00E-02	< 6.70E-04	< 7.30E-03	< 9.70E-03	< 1.60E-02	< 2.40E-02	< 1.40E-02	< 3.10E-03	< 2.80E-03	< 3.00E-03	< 4.10E-03	< 4.00E-03	< 5.30E-03	-
Silver (Ag), total	< 2.50E-05	< 8.00E-06	< 1.30E-07	< 1.50E-06	< 1.90E-06	< 3.20E-06	< 4.80E-06	< 2.90E-06	< 6.20E-07	< 5.70E-07	< 6.10E-07	< 8.10E-07	< 8.10E-07	< 1.10E-06	-
Sodium (Na), total	< 1.20E-01	< 4.00E-02	< 6.70E-04	< 7.30E-03	< 9.70E-03	< 1.60E-02	< 2.40E-02	< 1.40E-02	< 3.10E-03	< 2.80E-03	< 3.00E-03	1.45E-02	< 4.00E-03	< 5.30E-03	1.45E-02
Strontium (Sr), total	< 2.50E-04	< 8.00E-05	5.25E-06	5.60E-05	8.35E-05	< 3.20E-05	5.40E-05	< 2.90E-05	2.78E-05	3.45E-05	3.38E-05	1.19E-04	1.15E-05	2.55E-05	4.51E-05
Thallium (Tl), total	< 2.50E-04	< 8.00E-05	< 1.30E-06	< 1.50E-05	< 1.90E-05	< 3.20E-05	< 4.80E-05	< 2.90E-05	< 6.20E-06	< 5.70E-06	< 6.10E-06	< 8.10E-06	< 8.10E-06	< 1.10E-05	-
Tin (Sn), total	< 2.50E-04	< 8.00E-05	< 1.30E-06	< 1.50E-05	< 1.90E-05	< 3.20E-05	< 4.80E-05	< 2.90E-05	< 6.20E-06	< 5.70E-06	< 6.10E-06	1.74E-05	< 8.10E-06	< 1.10E-05	1.74E-05

Table 19: Rook I Tripod Station Monthly Metals in Dustfall Monitoring Results

Metals (Dustfall)	Metals (Dustfall)														
	mg/dm^2/day														
	Sep-18	Oct-18	Winter 18-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Winter 19-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Average[a]
Titanium (Ti), total	< 2.50E-02	< 8.00E-03	< 1.30E-04	< 1.50E-03	< 1.90E-03	< 3.20E-03	< 4.80E-03	< 2.90E-03	< 6.20E-04	< 5.70E-04	< 6.10E-04	< 8.10E-04	< 8.10E-04	< 1.10E-03	-
Uranium (U), total	< 2.50E-05	< 8.00E-06	< 1.30E-07	< 1.50E-06	< 1.90E-06	< 3.20E-06	< 4.80E-06	< 2.90E-06	1.78E-06	< 5.70E-07	< 6.10E-07	< 8.10E-07	< 8.10E-07	< 1.10E-06	1.78E-06
Vanadium (V), total	< 2.50E-03	< 8.00E-04	< 1.30E-05	< 1.50E-04	< 1.90E-04	< 3.20E-04	< 4.80E-04	< 2.90E-04	< 6.20E-05	< 5.70E-05	< 6.10E-05	< 8.10E-05	< 8.10E-05	< 1.10E-04	-
Zinc (Zn), total	< 7.50E-03	< 2.40E-03	< 4.00E-05	< 4.40E-04	< 5.80E-04	< 9.60E-04	< 1.40E-03	< 8.70E-04	< 1.90E-04	< 1.70E-04	< 1.80E-04	6.05E-04	< 2.40E-04	< 3.20E-04	6.05E-04

a) Average represents average of values above the RDL.
mg/dm^2/d = milligrams per square decimetre per day; "-" = not applicable

5.3.1.4 pH, Anions, and Nutrients in Rainfall

Rainfall water was collected and analysed for the following parameters: pH, ammonia, nitrate, nitrite, and sulphate. The anions and nutrients were consistently above RDL for the entire duration of the sampling period. The results are shown in Table 20. No air quality or other standards are currently in place for these parameters in rainfall.

Table 20: Rook I Meteorological Station Monthly pH, Anions, and Nutrient concentrations in Rainfall Monitoring Results

pH, Anions, and Nutrients (Water)	Rainfall (Water)[b] mg/L													
	Sep-18	Overwinter[a] 2018-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Overwinter[c] 2019-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Average
pH[d]	6.22	7.13	6.42	6.52	6.21	5.95	6.26	6.34	5.86	6.55	6.47	6.53	6.27	6.36
Ammonia (as N)	0.146	<0.005	0.191	<0.005	<0.005	0.0085	0.0214	0.142	0.0493	<0.005	0.0053	0.0106	0.0961	0.07
Nitrate (as N)	0.165	0.376	0.218	0.0076	0.0854	0.036	0.0396	0.163	0.12	<0.005	0.0157	0.0388	0.111	0.11
Nitrite (as N)	0.0039	0.002	0.0045	<0.001	<0.001	<0.001	<0.001	0.0024	0.0029	<0.001	<0.001	0.0012	<0.001	0.00
Sulphate (SO_4)	2.24	3.04	0.873	0.342	0.334	0.656	1.22	0.959	0.383	0.684	0.531	1.01	0.714	1.00

a) Overwinter sampled from 20 October 2018 through 10 May 2019.
b) Average represents average of values above RDL.
c) Overwinter sampled from 26 October 2019 through 29 May 2020.
d) pH data expressed in units of pH.
"-" = not applicable

5.3.1.5 Metals in Rainfall

Selected metals concentrations were obtained from the non-evaporative rainfall collector at the Rook I Meteorological Station. There are no air quality standards in place for concentrations of metals in rainfall. Of the analysed metals, some were consistently detected above the RDL in all the samples including barium, cadmium, calcium, chromium, copper, lead, manganese, magnesium, nickel, and zinc (Table 21). Beryllium, bismuth, boron, lithium, tellurium, thorium, and vanadium were not observed above the RDL during the monitoring. The remaining metals (i.e., antimony, barium, cesium, cobalt, iron, mercury, molybdenum, phosphorus, potassium, rubidium, selenium, silicon, silver, sodium, strontium, sulphur, thallium, tin, titanium, tungsten, uranium, and zirconium) measured above RDL for at least one month of the monitoring period.

Table 21: Rook I Meteorological Station Monthly Metals Concentration in Rainfall Monitoring Results

Metals	Rainfall (Metals in Water)[b]													
	mg/L													
	Sep-18	Overwinter[a] 2018-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Overwinter[c] 2019-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Average
Aluminum (Al), total	2.83E-02	4.26E-02	3.60E-02	2.33E-02	4.80E-03	3.10E-03	4.90E-02	9.60E-03	4.10E-03	7.40E-03	4.00E-03	<3.00E-03	1.10E-02	1.86E-02
Antimony (Sb), total	1.50E-04	3.80E-04	<5.00E-04	1.30E-04	<1.00E-04	<1.00E-04	<5.00E-04	2.00E-04	2.40E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	2.20E-04
Arsenic (As), total	<1.00E-04	1.90E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	1.90E-04
Barium (Ba), total	1.01E-01	1.85E-02	1.06E-02	4.65E-03	1.85E-03	1.31E-03	3.56E-03	1.49E-03	1.15E-03	8.20E-04	7.30E-04	8.50E-04	1.71E-03	1.14E-02
Beryllium (Be), total	<1.00E-04	<1.00E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	-
Bismuth (Bi), total	<5.00E-05	<5.00E-05	<2.50E-04	<5.00E-05	<5.00E-05	<5.00E-05	<2.50E-04	<5.00E-05	<5.00E-05	<5.00E-05	<5.00E-05	<5.00E-05	<5.00E-05	-
Boron (B), total	<1.00E-02	<1.00E-02	<5.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<5.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	-
Cadmium (Cd), total	1.68E-04	4.90E-04	1.74E-04	1.06E-04	6.82E-05	1.16E-04	2.52E-04	8.13E-05	7.27E-05	9.19E-05	6.04E-05	9.67E-05	9.44E-05	1.44E-04
Calcium (Ca), total	1.73E+00	1.91E+00	9.00E-01	4.61E-01	1.89E-01	3.08E-01	6.00E-01	4.05E-01	4.25E-01	6.17E-01	5.83E-01	8.31E-01	6.01E-01	7.35E-01
Cesium (Cs), total	<1.00E-05	1.50E-05	<5.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	<5.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	1.50E-05
Chromium (Cr), total	7.32E-03	7.85E-03	1.76E-03	1.94E-03	1.20E-04	1.50E-04	1.00E-02	2.33E-03	1.20E-04	2.50E-04	2.20E-04	1.30E-04	2.20E-04	2.49E-03
Cobalt (Co), total	2.70E-04	5.30E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	4.00E-04
Copper (Cu), total	6.53E-03	2.67E-02	4.80E-03	2.07E-03	9.90E-04	1.20E-03	7.80E-03	3.05E-03	1.20E-03	1.76E-03	6.50E-04	1.04E-03	2.40E-03	4.63E-03
Iron (Fe), total	6.50E-02	1.12E-01	5.60E-02	3.60E-02	<1.00E-02	<1.00E-02	1.23E-01	2.30E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	1.50E-02	6.14E-02
Lead (Pb), total	2.14E-03	4.46E-03	4.83E-03	3.24E-03	1.28E-03	9.16E-04	5.14E-03	1.40E-03	5.33E-04	1.01E-03	2.69E-04	4.77E-04	1.03E-03	2.06E-03
Lithium (Li), total	<1.00E-03	<1.00E-03	<5.00E-03	<1.00E-03	<1.00E-03	<1.00E-03	<5.00E-03	<1.00E-03	<1.00E-03	<1.00E-03	<1.00E-03	<1.00E-03	<1.00E-03	-
Magnesium (Mg), total	5.66E-02	2.09E-01	1.04E-01	6.39E-02	1.71E-02	2.66E-02	5.20E-02	3.64E-02	4.04E-02	1.91E-02	2.19E-02	3.21E-02	3.86E-02	5.52E-02
Manganese (Mn), total	9.03E-03	1.25E-02	1.14E-02	4.81E-03	1.47E-03	1.74E-03	5.97E-03	2.66E-03	3.28E-03	9.80E-04	1.27E-03	1.69E-03	3.20E-03	4.62E-03
Mercury (Hg), total	<5.00E-06	<5.00E-06	<5.00E-06	<5.00E-06	<5.00E-06	<5.00E-06	1.28E-05	2.23E-05	<5.00E-06	<5.00E-06	<5.00E-06	8.60E-06	<5.00E-06	1.46E-05
Molybdenum (Mo), total	4.89E-04	4.72E-04	<2.50E-04	1.35E-04	<5.00E-05	<5.00E-05	2.70E-04	1.15E-04	<5.00E-05	<5.00E-05	5.10E-05	<5.00E-05	<5.00E-05	2.55E-04
Nickel (Ni), total	3.12E-02	1.38E-01	1.04E-01	1.88E-01	1.31E-01	2.58E-01	2.57E-01	1.24E-01	1.30E-01	1.61E-01	1.15E-01	1.52E-01	1.11E-01	1.46E-01
Phosphorus (P), total	2.75E-01	2.04E-01	<2.50E-01	7.40E-02	<5.00E-02	<5.00E-02	<2.50E-01	<5.00E-02	<5.00E-02	<5.00E-02	<5.00E-02	<5.00E-02	<5.00E-02	1.84E-01
Potassium (K), total	2.23E-01	5.61E-01	<2.50E-01	3.15E-01	<5.00E-02	<5.00E-02	<2.50E-01	5.10E-02	6.40E-02	<5.00E-02	<5.00E-02	<5.00E-02	2.88E-01	2.50E-01
Rubidium (Rb), total	2.40E-04	4.70E-04	<1.00E-03	9.70E-04	<2.00E-04	<2.00E-04	<1.00E-03	<2.00E-04	2.10E-04	<2.00E-04	<2.00E-04	<2.00E-04	3.00E-04	4.38E-04
Selenium (Se), total	<5.00E-05	1.58E-04	<2.50E-04	<5.00E-05	<5.00E-05	<5.00E-05	<2.50E-04	1.21E-04	5.10E-05	<5.00E-05	<5.00E-05	<5.00E-05	<5.00E-05	1.10E-04

Table 21: Rook I Meteorological Station Monthly Metals Concentration in Rainfall Monitoring Results

Metals	Rainfall (Metals in Water)[b]													
	mg/L													
	Sep-18	Overwinter[a] 2018-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Overwinter[c] 2019-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Average
Silicon (Si), total	2.80E-01	2.06E-01	<2.50E-01	6.80E-02	<5.00E-02	<5.00E-02	<2.50E-01	7.90E-02	<5.00E-02	<5.00E-02	<5.00E-02	<5.00E-02	<1.00E-01	1.58E-01
Silver (Ag), total	<1.00E-05	1.50E-05	<5.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	<5.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	1.50E-05
Sodium (Na), total	1.27E+00	7.95E-01	<2.50E-01	1.44E-01	6.00E-02	1.15E-01	3.80E-01	1.07E-01	7.60E-02	9.64E-01	2.95E-01	1.68E-01	5.42E-01	4.10E-01
Strontium (Sr), total	2.64E-03	4.05E-03	2.20E-03	7.40E-04	4.50E-04	3.60E-04	<1.00E-03	6.80E-04	6.40E-04	5.30E-04	4.40E-04	6.70E-04	6.80E-04	1.17E-03
Sulphur (S), total	9.60E-01	1.23E+00	<2.50E+00	<5.00E-01	<5.00E-01	<5.00E-01	<2.50E+00	8.70E-01	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	1.02E+00
Tellurium (Te), total	<2.00E-04	<2.00E-04	<1.00E-03	<2.00E-04	<2.00E-04	<2.00E-04	<1.00E-03	<2.00E-04	<2.00E-04	<2.00E-04	<2.00E-04	<2.00E-04	<2.00E-04	-
Thallium (Tl), total	1.90E-05	2.15E-04	<5.00E-05	4.20E-05	1.90E-05	6.40E-05	9.30E-05	1.90E-05	4.00E-05	3.50E-05	2.70E-05	3.30E-05	5.00E-05	5.47E-05
Thorium (Th), total	<1.00E-04	<1.00E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	-
Tin (Sn), total	1.80E-04	2.50E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<5.00E-04	1.10E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	1.80E-04
Titanium (Ti), total	5.70E-04	9.30E-04	<1.50E-03	5.80E-04	<3.00E-04	<3.00E-04	<1.50E-03	<3.00E-04	<3.00E-04	<3.00E-04	<3.00E-04	<3.00E-04	<3.00E-04	6.93E-04
Tungsten (W), total	1.40E-04	1.50E-04	<5.00E-04	1.30E-04	<1.00E-04	<1.00E-04	<5.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	<1.00E-04	1.40E-04
Uranium (U), total	<1.00E-05	2.74E-04	<5.00E-05	<1.00E-05	<1.00E-05	<1.00E-05	<5.00E-05	1.20E-05	<1.00E-05	1.20E-05	<1.00E-05	<1.00E-05	<1.00E-05	9.93E-05
Vanadium (V), total	<5.00E-04	<5.00E-04	<2.50E-03	<5.00E-04	<5.00E-04	<5.00E-04	<2.50E-03	<5.00E-04	<5.00E-04	<5.00E-04	<5.00E-04	<5.00E-04	<5.00E-04	-
Zinc (Zn), total	2.41E-01	6.34E-01	6.88E-01	3.07E-01	1.51E-01	2.60E-01	3.27E-01	2.54E-01	1.84E-01	1.72E-01	1.70E-01	2.58E-01	3.06E-01	3.04E-01
Zirconium (Zr), total	<6.00E-05	8.10E-05	<3.00E-04	1.19E-03	<6.00E-05	<2.00E-04	<1.00E-03	<2.00E-04	<2.00E-04	<2.00E-04	<2.00E-04	<2.00E-04	<2.00E-04	6.36E-04

a) Overwinter sampled from 20 October 2018 through 10 May 2019.
b) Average represents average of values above RDL.
c) Overwinter sampled from 26 October 2019 through 29 May 2020.
"-" = not applicable

5.3.1.6 Radon

Radon is a colourless, odourless, and tasteless gas. It is radioactive and naturally occurs in the environment and is released to the environment during the breakdown of uranium found in all soil and rock. Radon is linked to adverse health effects such as lung cancer, and there is no threshold below which radon exposure is considered without risk (World Health Organization [WHO] 2016).

The average outdoor radon level varies from 5 to 15 becquerels per cubic metre (Bq/m^3; WHO 2016). Depending on rock type in the area, outdoor radon levels can vary from place to place; one study found outdoor summer radon measurements in communities in Saskatchewan to average 61 Bq/m^3 (Gratsy 1994). Typically, in outdoor spaces, radon gas disperses to a low concentration, but in confined areas the gas can build up (WorkSafe Saskatchewan 2019). There are standards in place for radon levels in residential homes and occupational exposure standards but no ambient radon exposure or concentration standards. For reference, Health Canada's permissible radon concentration level is 200 Bq/m^3 in any area of residential homes (Health Canada 2013). Occupational exposure limits for workers in Saskatchewan are given in units of annual effective dose (millisieverts [mSv]). The Saskatchewan occupational exposure limit for nuclear energy workers is 50 mSv, or 100 mSv over five years, while the occupational exposure limit for a non-nuclear energy worker is 1 mSv (Carex Canada 2019). Thirty Bq/m^3 is associated with an exposure of 1 mSv per year.

Monitoring results for radon concentrations obtained from the anticipated area of the Project are provided in Table 22. No detectable radon was measured at all locations during the sampling periods from September 2018 to December 2018, from March 2019 to June 2019, and from September 2019 to December 2019. Detectable radon was observed in the anticipated area of the Project during the winter period in 2019 (i.e., December to March) at all monitoring sites except for RAD5, though radon was detected there in the summer period (i.e., June to September). During the winter period of 2019 to 2020, only detectable radon was measured at RAD2 and RAD9. Radon was also detected at RAD3 in the summer monitoring period. The concentrations measured were on the lower end of the range of background radon concentrations (i.e., 5 to 15 Bq/m^3; WHO 2016) and markedly lower than summer outdoor radon measurements of 61 Bq/m^3 (Gratsy 1994) except for measurements in RAD9 for one sampling period (i.e., December 2019 to May 2020), which were 79 Bq/m^3.

Table 22: Rook I Radon Concentration Monitoring Results

Sampling Period	Exposure Days	RDL (Bq/m^3)	Radon Concentration (Bq/m^3)								
			RAD1[a]	RAD2	RAD3	RAD4	RAD5	RAD6	RAD7	RAD8	RAD9
Sep-18 to Dec-18	85-88	5.0, 4.0[b]	**< 5.0**	**< 5.0**	**< 4.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**n/d**
Dec-18 to Mar-19	94-95	4.0	**4.5**	**6.0**	**6.0**	**6.0**	**< 4.0**	**4.0**	**7.0**	**6.0**	**n/d**
Mar-19 to Jun-19	89-90	4.0	**< 4.0**	**< 4.0**	**< 4.0**	**< 4.0**	**< 4.0**	**< 4.0**	**< 4.0**	**< 4.0**	**n/d**
Jun-19 to Sep-19	94	4.0, 6.0[b]	**< 4.0**	**< 4.0**	**6.0**	**< 4.0**	**4.0**	**< 4.0**	**< 4.0**	**< 4.0**	**< 6.0**
Sep-19 to Dec-19	87	9.0, 10.0[b]	**< 9.0**	**< 10.0**	**< 10.0**	**< 10.0**	**< 10.0**	**< 10.0**	**< 10.0**	**< 10.0**	**n/d**
Dec-19 to May-20	170, 171, 259	3.0	**< 3.0**	**11**	**< 3.0**	**< 3.0**	**< 3.0**	**< 3.0**	**< 3.0**	**< 3.0**	**79**
May-20 to Aug-20	94-95	3.0	**< 3.0**	**< 3.0**	**< 3.0**	**< 3.0**	**< 3.0**	**< 3.0**	**< 3.0**	**< 3.0**	**< 3.0**
Average[c]	n/d		4.5	8.5	6.0	6.0	4.0	4.0	7.0	6.0	79

a) Duplicate samples were taken at this station. The geometric mean value is presented.
b) Reportable detection limits for Rapidos alpha trackers vary based on the sample medium in the detector.
c) Average represents average of values above RDL.Bq/m^3 = becquerel per cubic metre; RDL = reportable detection limit; n/d = no data or invalid data.

5.3.2 Regional Air Quality

Regional surrogate monitoring stations were used to support the local data from the Rook I monitoring stations to characterize baseline air quality parameters (i.e., $PM_{2.5}$, PM_{10}, nitrogen dioxide, and sulphur dioxide) in the AQSA. Regional data included continuous monitoring at Fort Chipewyan and Buffalo Narrows and passive sampling at JP13 and JP205 (Figure 7).

There are SAAQS for 24-hour and annual $PM_{2.5}$; 24-hour PM_{10}; and 1-hour, 24-hour, and annual nitrogen dioxide and sulphur dioxide. Each criterion uses a different metric to evaluate the data (e.g., 98th percentile, maximum value, and average value). The monitoring data are compared to the applicable criteria using the appropriate method.

The most recent five years (i.e., 2016 to 2020) of monitoring data are presented in this report. An annual data completeness requirement of 75% adopted from the Alberta air quality modelling guideline (AEP 2019) was applied. The years where more than 25% of the hourly ambient data are missing were not used in the study. For 24-hour $PM_{2.5}$, the metric for the SAAQS is an average of the 98th percentiles from three consecutive years. Thus, for the years 2016 and 2017, the monitoring data from previous years need to be used. At the Buffalo Narrows station, the 2015 monitoring has a large amount of missing data, resulting in data completeness of less than 75%. Therefore, no SAAQS comparison can be made for these two years.

5.3.2.1 PM_{10}

Continuous PM_{10} monitoring was conducted at the Buffalo Narrows Station. Table 23 presents the monitoring results for the most recent five-year period (i.e., 2016 to 2020). The first three years (i.e., from 2016 to 2018) of monitoring data contain many missing values resulting in data completeness of less than 75%. Therefore, only the data from 2019 and 2020 are presented. The following summarizes the PM_{10} data over the monitoring period.

- Exceedances of the 24-hour SAAQS were recorded at the Buffalo Narrows Station for three days in 2019. There was no exceedance of SAAQS in 2020. Wildfire activity or local events were likely the primary contributor to the high recorded concentrations of PM_{10} in 2020.
- The highest recorded concentrations occurred at the end of May, indicating that seasonal factors such as drier conditions (e.g., increased windblown and road dust particulate) and episodic events such as forest fire smoke play key roles in ambient levels of PM_{10}.
- The 90th percentile concentrations of 24-hour PM_{10} were 14.4 µg/m^3, which was well below the prescribed PM_{10} background concentration (i.e., 23.1 µg/m^3).

Table 23: Continuous Monitoring PM_{10} Concentrations

Averaging Period	Parameter	SAAQS	PM_{10} Concentration (µg/m^3)					
			2016	2017	2018	2019	2020	2016-2020 Average[(a)]
Buffalo Narrows Station								
24-Hour	Maximum (µg/m^3)	50	n/d	n/d	n/d	**72.7**	47.4	60.0
	days ≥ 50 µg/m^3	n/a	n/d	n/d	n/d	3	0	n/a
	90th percentile (µg/m^3)	n/a	n/d	n/d	n/d	14.4	14.4	14.4

Note: **Bold values** indicate exceedance of the applicable Saskatchewan Ambient Air Quality Standards (SAAQS).
a) The apparent average or mean may differ from the reported average or mean due to rounding.
PM_{10}= particulate matter with a mean aerodynamic diameter less than 10 µm; SAAQS = Saskatchewan Ambient Air Quality Standard; ≥= greater than or equal to; n/a = not applicable; n/d = no data available or data completeness less than 75%.$PM_{2.5}$

The continuous $PM_{2.5}$ monitoring results from the surrogate air quality stations for the most recent five-year period (i.e., 2016 to 2020) are presented in Table 24. The following summarizes the $PM_{2.5}$ data over the monitoring period.

- Exceedances of the 24-hour SAAQS were recorded at the Fort Chipewyan Station in 2016 and 2017, after which ambient concentrations decreased. Wildfire activity was likely the primary contributor to the high recorded concentrations of $PM_{2.5}$ during these periods.
- The high $PM_{2.5}$ values at the Fort Chipewyan Station indicate that the events resulting in increased ambient particulate matter are widespread and likely not related to industry. The maximum 24-hour $PM_{2.5}$ concentrations in 2017 was 22.7 µg/m^3; however, the three-year average of 98th percentiles was 40.79 µg/m^3, resulting from the high 98th percentile concentrations observed in 2015 and 2016. Large, widespread forest fires in 2015 and 2016 resulted in substantially higher ambient $PM_{2.5}$ concentrations than typically recorded at WBEA air monitoring stations (WBEA 2020b).
- A comparison of the Buffalo Narrows Station data to the 24-hour SAAQS was not possible in 2016 and 2017 due to incomplete datasets in 2015. In 2018, the 24-hour SAAQS was exceeded, and the concentrations were decreased in the latter two years.
- The highest recorded concentrations occur during the summer months at both of the stations, indicating that seasonal factors such as drier conditions (e.g., increased windblown and road dust particulate) and episodic events such as forest fire smoke play key roles in ambient levels of $PM_{2.5}$.
- No exceedances of the annual SAAQS for $PM_{2.5}$ were recorded at either of the continuous monitoring stations.
- The 90th percentile values from the 24-hour $PM_{2.5}$ monitoring data in some years were higher than the prescribed background concentration of 6.5 µg/m^3 (i.e., 9.2 µg/m^3 in 2019 at Fort Chipewyan Station and 9.6 µg/m^3 in 2018 at Buffalo Narrows Station); however, in the most recent year (i.e., 2020), the 90th percentile values are lower than the background concentration.
- The 50th percentile values used to represent background concentrations from all years at both stations were close to the prescribed background concentration of 3.1 µg/m^3.
- The Fort Chipewyan Station is in an often-upwind direction from the anticipated area of the Project; therefore, it is a more representative surrogate of air quality in the AQSA.

Table 24: Continuous Monitoring $PM_{2.5}$ Concentrations

Averaging Period	Parameter	SAAQS	$PM_{2.5}$ Concentration (µg/m³)					
			2016	2017	2018	2019	2020	2016-2020 Average[a]
Fort Chipewyan Station								
24-Hour	Maximum (µg/m³)	n/a	106.2	22.7	70.9	73.2	19.9	58.6
	3-year average of the annual 98th percentile (µg/m³)	28	**49.2**	**40.8**	22.8	22.2	20.9	n/a
	Exceedance of the SAAQS (Y/N)[b]	n/a	**Y**	**Y**	N	N	N	n/a
	90th percentile (µg/m³)	n/a	6.5	7.0	8.9	9.2	6.0	7.5
Annual	Average (µg/m³)	10	4.6	3.6	4.9	5.2	3.7	4.4
	Exceedance of the SAAQS (Y/N)[b]	n/a	N	N	N	N	N	n/a
	50th percentile (µg/m³)[c]	n/a	2.7	2.3	2.8	3.3	3.3	2.8
Buffalo Narrows Station								
24-Hour	Maximum (µg/m³)	n/a	171.7	79.5	230.5	70.1	38.7	118.1
	3-year average of the annual 98th percentile (µg/m³)	28	n/d	n/d	**32.9**	24.2	22.7	n/a
	Exceedance of the SAAQS (Y/N)[b]	n/a	n/d	n/d	Y	N	N	n/a
	90th percentile (µg/m³)	n/a	6.3	7.1	9.6	7.6	6.4	7.4
Annual	Average (µg/m³)	10	4.6	4.5	5.5	4.2	3.9	4.5
	Exceedance of the SAAQS (Y/N)[b]	n/a	N	N	N	N	N	n/a
	50th percentile (µg/m³)[c]	n/a	2.2	3.0	2.7	3.1	3.3	2.9

Note: **Bold values** indicate exceedance of the applicable Saskatchewan Ambient Air Quality Standards (SAAQS).
a) The apparent average or mean may differ from the reported average or mean due to rounding.
b) Exceedances of the 24-hour and Annual SAAQS are presented as a binary result as the method of comparison produces a single value to compare to the criteria and is thus binary (i.e., exceeds or does not exceed the criteria).
c) The 50th percentile value from hourly monitoring data.
N = no; $PM_{2.5}$= fine particulate matter with a mean aerodynamic diameter less than 2.5 µm; SAAQS = Saskatchewan Ambient Air Quality Standard; Y = yes; n/a = not applicable; n/d = no data available or data completeness less than 75%.

5.3.2.2 Nitrogen Dioxide

The continuous nitrogen dioxide monitoring results from the surrogate air quality monitoring stations for the most recent five-year period (i.e., 2016 to 2020) are presented in Table 25. The following summarizes the available nitrogen dioxide continuous data.

- No exceedances of the 1-hour, 24-hour, or annual SAAQS were recorded at the Fort Chipewyan Station between 2016 and 2020. The highest hourly measurement occurred in 2016 at 57.0 µg/m^3, below 20% of the 1-hour standard.
- No exceedances of the 1-hour, 24-hour, or annual SAAQS were recorded at the Buffalo Narrows Station between 2016 and 2020. The highest hourly measurement occurred in 2020 at 43.1 µg/m^3, below 15% of the 1-hour standard. The highest 24-hour average measurement occurred in 2020 at 15.4 µg/m^3, below 8% of the 24-hour standard, and the highest annual average measurement occurred in 2018 at 1.6 µg/m^3, approximately 3% of the annual standard.
- The 90th percentile of 1-hour nitrogen dioxide concentrations for all years at both stations were lower than the prescribed 1-hour nitrogen dioxide background concentrations of 11.3 µg/m^3.
- The 90th percentile of 24-hour nitrogen dioxide concentrations for all years at both stations were lower than the prescribed 24-hour nitrogen dioxide background concentration of 9.4 µg/m^3.
- The 50th percentile of 1-hour nitrogen dioxide concentrations for all years at both stations were lower than the prescribed annual nitrogen dioxide background concentration of 3.8 µg/m^3.

Table 25: Continuous Monitoring Nitrogen Dioxide Concentrations

Averaging Period	Parameter	SAAQS	Nitrogen Dioxide Concentration (µg/m^3)					
			2016	2017	2018	2019	2020	2016-2020 Average[a]
Fort Chipewyan Station								
1-Hour	Maximum (µg/m^3)	300	57.0	51.4	49.1	42.1	43.3	48.6
	Hours ≥300 µg/m^3	n/a	0	0	0	0	0	n/a
	90th percentile (µg/m^3)	n/a	4.5	3.0	4.9	7.9	7.1	5.5
24-Hour	Maximum (µg/m^3)	200	23.3	23.0	23.3	21.4	23.7	22.9
	Days ≥200 µg/m^3	n/a	0	0	0	0	0	n/a
	90th percentile (µg/m^3)	n/a	4.7	3.1	4.6	8.3	6.9	5.5
Annual	Average (µg/m^3)	45	2.0	1.5	2.8	3.8	4.0	2.8
	Exceedance of the SAAQS (Y/N)[b]	n/a	N	N	N	N	N	n/a
	50th percentile (µg/m^3)[c]	n/a	0.8	0.6	1.9	2.4	3.2	1.8
Buffalo Narrows Station								
1-Hour	Maximum (µg/m^3)	300	27.1	14.1	16.6	19.6	43.1	24.1
	Hours ≥300 µg/m^3	n/a	0	0	**0**	0	0	n/a
	90th percentile (µg/m^3)	n/a	2.4	2.8	3.4	2.8	3.0	2.9
24-Hour	Maximum (µg/m^3)	200	8.5	7.0	6.6	6.1	15.4	8.7
	Days ≥ 200 µg/m^3	n/a	0	0	0	0	0	n/a
	90th percentile (µg/m^3)	n/a	2.7	2.6	2.9	2.6	3.1	2.8

Table 25: Continuous Monitoring Nitrogen Dioxide Concentrations

Averaging Period	Parameter	SAAQS	Nitrogen Dioxide Concentration (µg/m³)					
			2016	2017	2018	2019	2020	2016-2020 Average[a]
Annual	Average (µg/m³)	45	2.0	1.5	2.8	3.8	4.0	2.8
	Exceedance of the SAAQS (Y/N)[b]	n/a	N	N	N	N	N	n/a
	50th percentile (µg/m³)[c]	n/a	0.6	0.9	1.1	0.8	0.8	0.8

a) The apparent average or mean may differ from the reported average or mean due to rounding.
b) Exceedances of the annual SAAQS are presented as a binary result as the method of comparison produces a single value to compare to the criteria and is thus binary (i.e., exceeds or does not exceed the criteria).
c) The 50th percentile value from hourly monitoring data.
N= no; SAAQS = Saskatchewan Ambient Air Quality Standard; ≥= greater than or equal to; n/a = not applicable.

Table 26 presents the results of the passive regional nitrogen dioxide monitoring. Annual average nitrogen dioxide concentrations monitored passively between 2016 and 2020 remained low compared to the annual SAAQS of 45 µg/m³. The measured concentrations ranged from 0.6 µg/m³ at JP213 Station from 2017 to 2020 to 1.3 µg/m³ at the JP205 Station in 2016.

Table 26: Passive Monitoring Nitrogen Dioxide Concentrations

Monitoring Station	Annual Average Nitrogen Dioxide Concentration (µg/m³)					
	2016	2017	2018	2019	2020	2016-2020 Average[a]
JP205 Station	1.3	1.1	1.1	0.9	1.1	1.1
JP213 Station	0.8	0.6	0.6	0.6	0.6	0.6
Annual nitrogen dioxide SAAQS	45					

a) The apparent average or mean may differ from the reported average or mean due to rounding.
SAAQS = Saskatchewan Ambient Air Quality Standard

5.3.2.3 Sulphur Dioxide

Table 27 presents the continuous sulphur dioxide monitoring results from the surrogate air quality monitoring stations for the most recent five-year period (i.e., 2015 to 2019). The following summarizes the available sulphur dioxide continuous monitoring data.

- There were no exceedances of 1-hour, 24-hour, or annual SAAQS between 2016 and 2020 at either of the continuous monitoring stations.
- The 90th percentiles of the 1-hour and 24-hour data, the and the long-term (i.e., annual) averages were similar at both stations. Because the Fort Chipewyan Station is located upwind of the anticipated area of the Project; it is a more representative surrogate of air quality in the AQSA.
- The derived 1-hour, 24-hour, and annual sulphur dioxide background concentrations from monitoring data at both stations were slightly above the prescribed background sulphur dioxide concentrations of zero. Since the background concentrations listed in SAQMG are shown in the units of parts per million, the slight differences between derived and prescribed background concentrations might have been influenced by rounding with loss of precision. For example, the 90th percentile concentration in 2020 at Fort Chipewyan Station was 1.1 µg/m³, which can be converted to 0.00042 parts per million.

Table 27: Continuous Monitoring Sulphur Dioxide Concentrations

Averaging Period	Parameter	SAAQS	Sulphur Dioxide Concentration (µg/m³)					
			2016	2017	2018	2019	2020	2015-2019 Average[a]
Fort Chipewyan Station								
1-Hour	Maximum (µg/m³)	450	27.6	53.8	47.8	94.1	29.4	50.5
	Hours ≥450 µg/m³	n/a	0	0	0	0	0	n/a
	90th percentile (µg/m³)	n/a	1.0	0.9	0.8	1.5	1.1	1.1
24-Hour	Maximum (µg/m³)	125	4.0	15.4	13.8	28.4	6.2	13.8
	Days ≥125 µg/m³	n/a	0	0	0	0	0	n/a
	90th percentile (µg/m³)	n/a	1.3	1.8	1.4	1.4	1.7	1.5
Annual	Average (µg/m³)	20	0.4	0.6	0.5	0.6	0.5	0.6
	Exceedance of the SAAQS (Y/N)[b]	n/a	N	N	N	N	N	n/a
	50th percentile (µg/m³)[c]	n/a	0.1	0.1	0.1	0.2	0.2	0.1
Buffalo Narrows Station								
1-Hour	Maximum (µg/m³)	450	n/d	11.5	12.8	14.1	13.4	13.0
	Hours ≥450 µg/m³	n/a	n/d	0	0	0	0	n/a
	90th percentile (µg/m³)	n/a	n/d	0.8	1.3	1.0	1.0	1.0
24-Hour	Maximum (µg/m³)	125	n/d	2.2	3.7	4.2	2.2	3.1
	Days ≥125 µg/m³	n/a	n/d	0	0	0	0	n/a
	90th percentile (µg/m³)	n/a	n/d	0.9	1.3	1.1	1.0	1.1
Annual	Average (µg/m³)	20	n/d	0.3	0.7	0.7	0.3	0.5
	Exceedance of the SAAQS (Y/N)[b]	n/a	n/d	N	N	N	N	n/a
	50th percentile (µg/m³)[c]	n/a	n/d	0.0	0.5	0.5	0.0	0.3

a) The apparent average or mean may differ from the reported average or mean due to rounding.
b) Exceedances of the annual SAAQS are presented as a binary result as the method of comparison produces a single value to compare to the criteria and is thus binary (i.e., exceeds or does not exceed the criteria).
c) The 50th percentile value from hourly monitoring data.
N = no; SAAQS = Saskatchewan Ambient Air Quality Standard; ≥ = greater than or equal to; n/a = not applicable; n/d = no data available or data completeness less than 75%.

The results of the regional passive sulphur dioxide monitoring are presented in Table 28. Annual average sulphur dioxide concentrations monitored passively between 2016 and 2020 remained low compared to the annual SAAQS of 20 µg/m³. The measured concentrations ranged from 1.0 µg/m³ at the JP213 Station in 2020 to 2.1 µg/m³ for two consecutive years at the JP205 Station in 2017 and 2018.

Table 28: Passive Monitoring Sulphur Dioxide Concentrations

Monitoring Station	Annual Average Sulphur Dioxide Concentration (µg/m³)					
	2016	2017	2018	2019	2020	2016-2020 Average[a]
JP205 Station	1.3	2.1	2.1	1.8	1.8	1.8
JP213 Station	1.1	1.3	1.6	1.3	1.0	1.3
Annual sulphur dioxide SAAQS	20					

a) The apparent average or mean may differ from the reported average or mean due to rounding.
SAAQS = Saskatchewan Ambient Air Quality Standard.

5.3.2.4 Radon

A summary of the ambient air quality radon results is shown in Table 29. The results from the program demonstrate that the radon content present in ambient air at Cluff Lake is within natural background concentrations.

Table 29: Independent Environmental Monitoring Program: Ambient Air Radon Concentrations

Station Name	Coordinates (m)[a]		Sampling Period	Radon Concentration (Bq/m^3)
	Easting	Northing		
Cluff Lake Reference Station	588849	6449269	August 2017 - February 2018	<3
			August 2017 - February 2018	<3
			August 2017 - February 2018	<3
			February 2018 - August 2018	<3
Cluff Lake Exposure Station #1	588849	6449270	August 2017 – February 2018	<3
			August 2017 – February 2018	<3
			August 2017 – February 2018	<3
			February 2018 – August 2018	<4
			February 2018 – August 2018	4
			February 2018 – August 2018	<4
Cluff Lake Exposure Station #2	583107	6467775	August 2017 - February 2018	<3
			August 2017 - February 2018	<3
			August 2017 - February 2018	<3
			February 2018 - August 2018	7
			February 2018 - August 2018	5
			February 2018 - August 2018	5
			August 2017 - February 2018	<3

a) Coordinates presented are in UTM NAD 83 Zone 12.

5.3.3 Background Air Quality Concentrations

To support the derivation of background air quality concentrations, the following conclusions can be drawn from Section 5.3.1, Local Air Quality, and Section 5.3.2, Regional Air Quality:

- For all averaging periods, the derived background concentrations of TSP, $PM_{2.5}$, nitrogen dioxide, and sulphur dioxide from local and regional air quality monitoring data were either close to or much lower than the prescribed background concentrations.
- The derived PM_{10} background concentration from Buffalo Narrows Station in 2019 and 2020 was 14.4 µg/m^3, which is lower than the prescribed background concentration of 23.1 µg/m^3.

Given these conclusions, the prescribed background concentrations for $PM_{2.5}$, nitrogen dioxide, and sulphur dioxide were adopted for the air quality assessment. On the other hand, the prescribed PM_{10} background concentration is likely an overestimate of the true rural background of the anticipated area of the Project as it is 60% higher than the derived background concentration . The prescribed PM_{10} background data were collected from an area with considerably more particulate-generating activity (i.e., La Loche) than a truly rural setting like at of the anticipated area of the Project. The data collected at Buffalo Narrows station are more consistent with

the Rook I on-site observations. After consultation with and agreement from ENV, the 90th percentile of the PM_{10} data from 2019 measured at the Buffalo Narrows Station (i.e., 14.4 µg/m³) is considered a more reasonable background value to use in the air quality assessment. The PM_{10} 24-hour background value was applied for

24-hour TSP background in the absence of a prescribed value for 24-hour TSP background. The 50th percentile of the PM_{10} monitoring data in 2019 (i.e., 6.2 µg/m³) is applied for annual TSP background in the absence of a prescribed value for annual TSP background. Table 30 summarizes the background concentrations used in the air quality assessment.

Table 30: Background Air Compound Concentrations

Compound	Background Concentration for Air Dispersion Modelling (µg/m³)[(a)]			
	1-Hour	8-Hour	24-Hour	Annual
$PM_{2.5}$	n/a	n/a	6.5	3.1
PM_{10}	n/a	n/a	14.4	n/a
TSP	n/a	n/a	14.4	6.2
Carbon monoxide	527.5 (500 ppb)	527.5 (500 ppb)	n/a	n/a
Nitrogen dioxide	11.3 (6 ppb)	n/a	9.4 (5 ppb)	3.8 (2 ppb)
Sulphur dioxide	0	n/a	0	0

a) 90th percentile value of monitoring data is added to the 1-hour and 24-hour predictions and 50th percentile value of the monitoring data is added to the annual predictions per the SAQMG guidance.

n/a = not applicable; ppb = parts per billion; $PM_{2.5}$ = fine particulate matter with a mean aerodynamic diameter less than 2.5 µm; PM_{10} = particulate matter with a mean aerodynamic diameter less than 10 µm; TSP = total suspended particulate.

6.0 SUMMARY

6.1 Climate and Weather

Meteorological information on temperature, precipitation, wind speed and wind direction, relative humidity, and solar radiation was available from observations made within the anticipated area of the Project during the baseline monitoring program. Long-term measurements of temperature, precipitation, wind speed and wind direction, and relative humidity were available from one or both of two long-term Climate Normal monitoring stations: the Cluff Lake Station and the Fort McMurray A Station. Both Climate Normal monitoring stations are considered representative of the existing conditions within the AQSA and are operated by ECCC. The following is a summary of the climate and meteorology data from the baseline study:

- **Temperature:** Mean ambient temperatures in the expected area of the Project ranged from a daily average low of -18.1°C in February to 17.1°C in July. Temperatures at the Rook I Meteorological Station were similar to temperatures recorded at the Fort McMurray A Station. Winters in the anticipated area of the Project were marginally milder than those recorded at the Cluff Lake Station, while summer temperatures were similar.
- **Precipitation:** The observed monthly rainfall from 2017 to 2020, on average, was similar to the long-term climate averages. The observed rainfall in August was higher than the Climate Normals. Two complete calendar years (i.e., 2019 and 2020) of total precipitation data were recorded at the Rook I Meteorological Station. In both years, the total precipitation recorded at the Rook I Meteorological Station was higher than the Cluff Lake Station and Fort McMurray A Station Climate Normals total precipitation record.
- **Wind Speed and Direction:** Prevailing winds and the strongest winds in the expected area of the Project were from the northwest. This is consistent with the dominant wind direction for maximum wind speeds at the Cluff Lake Station. The same wind pattern was not observed at the Fort McMurray A Station due to the influence of local topography.
- **Relative Humidity:** There is substantial seasonal variation in the relative humidity recorded at the Rook I Meteorological Station, with the lowest measurements occurring in the spring and higher relative humidity recorded during the winter months. This trend was consistent with the Climate Normals relative humidity trends observed at the Fort McMurray A Station.
- **Solar Radiation:** Average daily solar radiation at the Rook I Meteorological Station varied seasonally with the highest solar radiation recorded between April and September and peak solar radiation in May. Solar radiation was the weakest in the anticipated area of the Project in January and December.

6.2 Air Quality

Local air quality was monitored through a baseline program started in September 2018. All data available at the end of 2020 were incorporated into the baseline study. The baseline program monitored selected compounds of interest either continuously or passively at several discrete locations including the Rook I Particulate Monitoring Station, the Rook I Tripod Station, and a number of radon sampling locations. Continuous particulate monitoring was conducted for TSP and $PM_{2.5}$. Passive sampling of nitrogen dioxide, sulphur dioxide, dustfall, and radon was conducted monthly. Radon was passively sampled at nine discrete locations in the expected area of the Project.

Dustfall samples and rainfall collected in the anticipated area of the Project were analyzed to determine concentration of metals in dust and rainfall, respectively. The local air quality observations collected in the anticipated area of the Project were considered in relation to applicable air quality standards and guidelines (i.e., SAAQS and Alberta Ambient Air Quality Guideline).

Regional air quality monitoring data collected under other programs not specifically linked to the Rook I Project from four remote locations were used to supplement data collected in the anticipated area of the Project and characterize baseline air quality conditions in the AQSA. Two remote northern communities and two additional remote sites were chosen for the baseline study.

The following summarizes the available local and regional air quality in the baseline study:

- **Continuous TSP monitoring:** No exceedances of the 24-hour SAAQS for TSP were recorded over the monitoring period between September 2018 and December 2020; the monitoring was demobilized over the winter seasons. The 24-hour TSP concentrations remained below the 24-hour SAAQS with the highest 24-hour TSP concentration in July 2020, which was primarily due to several hours of high concentrations, with the days preceding and following measured at typical background levels. Annual TSP concentrations are not presented as the baseline program did not capture a full calendar year of data for comparison to the annual SAAQS of 60 µg/m^3. The 90th percentile 24-hour concentrations of all valid data collected by end of 2020 was 9.7 µg/m^3, which was lower than the prescribed background concentration. The average of all 24-hour TSP concentrations from all data was 3.4 µg/m^3, which is well below the prescribed background concentration of 11.6 µg/m^3.
- **Continuous PM_{10} monitoring:** Exceedances of the 24-hour SAAQS were recorded at the Buffalo Narrows Station in 2019. There was no exceedance of SAAQS in 2020. The 90th percentile concentrations of 24-hour PM_{10} are 14.4 µg/m^3, which is below the prescribed PM_{10} background concentration (i.e., 23.1 µg/m^3).
- **Continuous $PM_{2.5}$ monitoring:** Calculations of SAAQS, equivalent to the $PM_{2.5}$ CAAQS, for 24-hour $PM_{2.5}$ were based on three years of continuous monitoring data (i.e., three-year average of the 98th percentile of 24-hour average concentrations) and the annual $PM_{2.5}$ SAAQS was based on an average of one calendar year. Baseline continuous $PM_{2.5}$ monitoring was supplemented by the regional continuous $PM_{2.5}$ data available from the Fort Chipewyan Station and Buffalo Narrows Station. Measured $PM_{2.5}$ was generally below the 24-hour and annual air quality standards in the most recent five years of monitoring, except for the Fort Chipewyan Station between 2016 and 2017 and for the Buffalo Narrows Station in 2018, which both had measurements exceeding the 24-hour SAAQS. Intense and extensive wildfire activity was likely the primary contributor to the high recorded concentrations of $PM_{2.5}$ during these periods. The derived background concentrations from local and regional monitoring data were similar to the prescribed background concentrations.
- **Nitrogen dioxide and sulphur dioxide passive monitoring:** The passive sampling data collected in the expected area of the Project for nitrogen dioxide and sulphur dioxide indicated that concentrations remained below the annual SAAQS for each compound. Measured nitrogen dioxide concentrations were observed to be below the SAQMG annual background concentration of 3.8 µg/m^3. The measured sulphur dioxide indicated that local activities in the area (e.g., traffic and fuel combustion) may be contributing to ambient sulphur dioxide levels above the SAQMG annual background concentration for sulphur dioxide, though levels remain low. Baseline passive nitrogen dioxide and sulphur dioxide monitoring was supplemented by the regional passive nitrogen dioxide and sulphur dioxide data available from the

JP205 Station and the JP213 Station. The regional surrogate passive monitoring indicated that ambient nitrogen dioxide and sulphur dioxide concentrations in AQSA are below ambient air quality criteria.

- **Nitrogen dioxide and sulphur dioxide continuous monitoring:** Baseline passive nitrogen dioxide and sulphur dioxide monitoring was supplemented by the regional continuous nitrogen dioxide and sulphur dioxide data available from Fort Chipewyan Station and Buffalo Narrows Station. Generally, nitrogen dioxide and sulphur dioxide concentrations at the regional surrogate stations suggest that the air quality in the AQSA would remain below the SAAQS. This prediction is supported by the results from the Rook I passive nitrogen dioxide and sulphur dioxide monitoring stations. No exceedance of the 1-hour, 24-hour, and annual nitrogen dioxide SAAQS was recorded at either station. The derived background concentrations were similar to the prescribed background concentrations.
- **Dustfall monitoring:** Monthly dustfall deposition measured in the anticipated area of the Project remained below the residential and industrial dustfall guidelines in place in Alberta (AEP 2019), which were used as surrogate criteria in the absence of a Saskatchewan dustfall standard. Of the metals that were measured above the RDL, the highest metals depositions were observed in either May or June.
- **Metals in rainfall monitoring:** Selected metals concentrations were obtained from the non-evaporative rainfall collector at the Rook I Meteorological Station. Of the analyzed metals, some were consistently above the RDL in all of the samples including aluminum, barium, cadmium, calcium, cobalt, iron, lithium, manganese, molybdenum, and potassium. Other metals, such as antimony, arsenic, chromium, copper, lead, and nickel were measured above the RDL for at least one month of the monitoring period. Beryllium, bismuth, boron, magnesium, and vanadium were not observed above the RDL during monitoring. There are no standards for metals concentrations in rainfall.
- **Radon monitoring:** Radon exposure and concentrations in the anticipated area of the Project were generally below the RDL of the sampling media. The concentrations measured were within the range of background radon concentrations in Canada and low compared to measured values from a previous radon study (Gratsy 1994) for outdoor, summer radon concentrations in Saskatchewan communities.

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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APPENDIX A

Joint Working Group Feedback Applicable to Atmospheric Baseline

Table A-1 presents the comments and feedbacks NexGen has received from members of local Indigenous communities through established Joint Working Group meetings. NexGen continues to engage with communities, and the feedback presented in Table A-1 reflects comments and feedback received through March 2020 that were related to atmospheric baseline or the comprehensive baseline program generally.

Table A-1: Joint Working Group Feedback Related to Atmospheric Baseline

Community	Comment
Birch Narrows Dene Nation (BNDN)	What is the environmental effect of the west winds from the Tar Sands in Fort MacMurray?
	Important topics for the JWG moving forward are Indigenous knowledge, traditional land use, the species discussion, water quality, environmental monitoring, employment and business opportunities
	Are you aware of any huge adverse environmental impacts in any of the current mine sites?
	Could we ask that you take samples here? That way we can see changes into the future. Even if it isn't affected by the mine. Respectfully, I request that samples are taken here.
	What about climate change?
Buffalo River Dene Nation (BRDN)	Have you gone to communities to show what you are doing? If so, what was the feedback?
	It's important to explain the Project to elders in a way that they can then explain it to other elders in the communities.
	Will you be taking air quality samples in Dillon?
	In 2001 in Dillon, the water was shallow. Since then it never went down; still going up. This lake is still full here. In Dillon the water is just about full now. But a lot of things are going to change; there are signs of acid rain from Alberta – changes to trees. Half of the trees are different colours. Every time it rains, the trees look a little but different.
	Another comparison you could probably do is the impact from Fort McMurray.
	Some are straightforward words; the more difficult ones are "valued component". We have no word for air – we could maybe say "white wind". We could ask.
Clearwater River Dene Nation (CRDN)	Remember we're trying to implement a plain speak document because of visual concepts of understanding. That is what the chief is talking about.
	In terms of baseline studies, are there any opportunities for community involvement with any of your residual baseline work, from fish, terrestrial, etc.?
	So Golder is the environmental part of this. What happened to CanNorth?
	And we will eventually throw in our environmental monitors. I don't know if you knew that. We want to train our own people because of lack of trust of government and industry.
	The interim CRDN Rights and Knowledge study will come out of the CRDN-defined initial list of VCs that we want to talk to you about. As we go through there may be additional ones. We know there's a certain window, but we'll try to be as comprehensive as possible. It may not be as linear as moose; it might be having undisturbed places on waterbodies. They might be more complex.
	There are things that haven't happened in our area, but eventually they will, like earthquakes. We didn't have tornados in Canada before and now we're having them.
	Golder does the same thing – hires three or four band members to do the interviews, then takes the notes and puts the document together. When you find the stuff it's not always based on the relationship to the stuff. It's based on what the government's qualifications are on the environmental assessment's impacts, and not the actual concerns of it. I'm trying to reach what [CRDN Member] is saying between traditional and modern ways.
	When we started looking at the strategy process, there's that interpretation of cumulative effects. Then we define and introduce an interpretation for that. It's not just one side, western science, we're doing the traditional side as well. That's what the Chief's referring to.
	Both traditional and western science are very important.
	All the studies I've ever seen done is more or less where you hunt and trap, and you can come back in 10 or 20 years when we've finished here. I would like to see it based on how much land has been lost already over the last 5-6 mines compared to the fears on fishing etc. – really saying this is what the impacts are, not the traditional knowledge like where they hunted, fished or gathered or what's sacred to them. In certain areas, communities can't even practice their traditional activities or do their ceremonies on the land within 1 km of a gas well. Nobody takes that into account. So what if you smell gas, so what if you hear a noise – there's actually impacts. When you're talking about total loss, and continually being squeezed in, this is just another step. That's what I would like to see in indigenous knowledge. Fear of eating that moose or fish or drinking the water.
	Will we see the results of those studies?
	How many other projects are in that square box (referring to map)?
	Do other companies have mineral holdings in that box on the map – like for oil and gas?
	I think it's really important to compare Cluff Lake to what's happening in the baseline studies. It's a good question.
	With global warming, each year we won't have the same amount of snowfall, so you will see the water drop.
	The wind's not going the same way every day.
	What's the purpose of trying to gather all this information?
Métis Nation–Saskatchewan (MN-S)	We have to understand all living and non-living things.
	Are any community members involved in the establishment of the baseline for environmental monitoring, so can they verify their accuracy?
	Would the results be released and reviewed by the community?
	From a trust point of view, our people will want to know that those numbers are accurate now, not later. Just a comment to think about.
	How would this group know – is there a way for the people involved in the studies to inform the group of what they saw and if they are confident they are accurate? Once the stuff hits the EIS, how do we know that it's good? If community folks that were involved in that process and they can validate the results, that brings comfort to community members.
	How often are you monitoring?
	It's that validation we're looking for. When I had to involve community members in monitoring, I would get them to write a report if they couldn't speak to the broader community in general. If they didn't feel like writing it, they could talk so someone who would transcribe it. That report could give a summary of how things went, what they saw, were the readings accurate; that could come back to this group, if they couldn't present themselves. The point [MN-S Member]'s trying to make is, we need some connection to that community resource that's out there doing the monitoring and seeing this stuff. We know who they are, and we're confident in the results. That builds trust.
	Do you have instruments or people taking samples? What does an instrument look like?
	What's your method of collecting dust?
	We've already lost it around Cluff Lake. Do you pick and eat blueberries right there, or just leave them because they're scary? If there's dust on that berry, am I eating raw uranium? The worst way to be involved with uranium is to ingest. If you get it on your hands you can wash it off, but once it's inside you've got a serious problem.
	The studies we did a few years back, these guys don't want to use them. That's what I heard.

Table A-1: Joint Working Group Feedback Related to Atmospheric Baseline

Community	Comment
Métis Nation-Saskatchewan (MN-S)	I had feedback on community engagement, and I'm trying to figure out how we can move forward in a responsible way where people have their input without being offended. We're working towards a bigger goal than what is currently perceived. We need a discussion on how we can approach it. I can offer some high-level thinking to help bring my community around.
	I learned a lot from this first meeting. More youth would be good for this because in future it would be something we would have to carry on. Climate change is a huge thing right now; it's kind of terrifying because would this add on to climate change?
	We should have more of these meetings with other companies like this. I'd like to get a Métis community member to work side by side with you guys and report the environmental side to the community instead of you guys doing it, so we know where we are and how much damage is being done to the land.
	This is general – the same information will come back to all the JWGs?
	We live in a very clean environment, other than Fort McMurray - we can sometimes smell the oil. The air is very clean; we can drink the water and eat the berries wherever they are. As you come south, those things change. We live in a very clean land; in our culture we call it the "land of the white eagle" because of the snow, and that represents clean.
	About 15 years ago at a workshop in Saskatoon, we knew why there were dying trees along the road – acid rain on the lakes. I said at least where I live, that nice clean water. I was introduced to a political scientist. She said the water looks clean but it's not. But I still drink water out of the lake when I camp, but it's getting there.
	When we see the damage Fort McMurray is doing to our area – it's 100+ miles from us, but it's still affecting us. So much sulphur is put into the air and it comes down as acid rain. That changes our lake structures and the pH balance. It gets rid of the aquatic life. That oil industry is vastly affecting our area. Our lakes are turning to blue-green algae from the lower pH from acid rain. They have no concern for me if my fishing industry dies, as long as they get the last gallon of oil. They should be a lot more aware. Our government doesn't care about it as long as they get their percentage. It's about money with everything.
	It gets you one way or another. The height of land changes at Wasagamio; everything flows from the Clearwater to Fort Chipewyan. We're lucky on the Churchill River that we don't get that flow coming our way. Yet we get the westerly winds coming over us
	There's so much humidity in the air from that steam that Syncrude creates its own clouds. It rains just about every day. It's always drizzling or wet there.

APPENDIX B

Quality Control Report

Quality Control Report

Workorder: L2528602 Report Date: 20-NOV-20

Client: NexGen Energy Ltd.
Suite 200 - 475 2nd Avenue S
Saskatoon SK S7K 1P4
Contact: Keith Shannon

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DUSTFALL-TOT-ED	**Air**							
Batch	**R5286278**							
WG3442130-2	**LCS**							
Total Dustfall (mg/100cm2/30days)			99.7		%		80-120	16-NOV-20
WG3442130-1	**MB**							
Total Dustfall (mg/100cm2/30days)			<10		mg		10	16-NOV-20
DUSTFALL-TOTFIX-ED	**Air**							
Batch	**R5286278**							
WG3442130-2	**LCS**							
Total Fixed Dustfall (mg/100cm2/30days)			98.4		%		80-120	16-NOV-20
WG3442130-1	**MB**							
Total Fixed Dustfall (mg/100cm2/30days)			<15		mg		15	16-NOV-20
MET-DUST-DM2-CCMS-ED	**Dustfall**							
Batch	**R5292038**							
WG3448776-1	**MB**							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	20-NOV-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-NOV-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-NOV-20
Barium (Ba)-Total			<0.000050		mg/L		0.00005	20-NOV-20
Beryllium (Be)-Total			<0.00050		mg/L		0.0005	20-NOV-20
Bismuth (Bi)-Total			<0.00050		mg/L		0.0005	20-NOV-20
Boron (B)-Total			<0.010		mg/L		0.01	20-NOV-20
Cadmium (Cd)-Total			<0.000050		mg/L		0.00005	20-NOV-20
Calcium (Ca)-Total			<0.020		mg/L		0.02	20-NOV-20
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	20-NOV-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-NOV-20
Iron (Fe)-Total			<0.030		mg/L		0.03	20-NOV-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-NOV-20
Lithium (Li)-Total			<0.0050		mg/L		0.005	20-NOV-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-NOV-20
Manganese (Mn)-Total			<0.000050		mg/L		0.00005	20-NOV-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-NOV-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-NOV-20
Phosphorus (P)-Total			<0.30		mg/L		0.3	20-NOV-20
Potassium (K)-Total			<0.050		mg/L		0.05	20-NOV-20
Selenium (Se)-Total			<0.0010		mg/L		0.001	20-NOV-20
Silicon (Si)-Total			<0.050		mg/L		0.05	20-NOV-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	20-NOV-20

[redacted]

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DUST-DM2-CCMS-ED	**Dustfall**							
Batch R5292038								
WG3448776-1 MB								
Sodium (Na)-Total			<0.050		mg/L		0.05	20-NOV-20
Strontium (Sr)-Total			<0.00010		mg/L		0.0001	20-NOV-20
Thallium (Tl)-Total			<0.00010		mg/L		0.0001	20-NOV-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-NOV-20
Titanium (Ti)-Total			<0.010		mg/L		0.01	20-NOV-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-NOV-20
Vanadium (V)-Total			<0.0010		mg/L		0.001	20-NOV-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-NOV-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Rook I Project

Environmental Impact Statement

Annex II: Noise and Light Baseline Report

GOLDER
MEMBER OF WSP

NOISE AND LIGHT CHARACTERIZATION BASELINE REPORT FOR THE ROOK I PROJECT

Prepared for:

NexGen Energy Ltd.

Prepared by:

Golder Associates Ltd.

March 2022

Executive Summary

Potential changes to noise and light conditions resulting from mining and milling operations can create adverse effects to both the social and biophysical environments. For the Rook I Project, Indigenous Peoples have expressed concerns about sensory disturbance from industrial facilities, including noise and light effects on cultural practices and wildlife. In consideration of these potential changes and concerns, a baseline study on noise and light was conducted for the Rook I Project.

The objective of the noise and light baseline study was to gather information on representative existing environmental noise and light levels in the anticipated area of the Rook I Project. Information gathered during the field study provided a baseline against which potential noise and light effects from the Rook I Project could be assessed.

Saskatchewan does not have regulations or guidelines for the assessment of environmental noise from mining or industrial developments. Similarly, there are no specific federal or provincial regulatory requirements to assess potential light effects from mining or industrial developments. In addition, there is no existing information about representative environmental noise and light levels in the anticipated area of the Rook I Project.

In the absence of Saskatchewan-specific guidance, baseline noise levels were characterized using thresholds from Environment Canada, Health Canada, and the Alberta Energy Regulator. In the absence of federal or provincial guidance, baseline light trespass and sky glow levels were characterized using thresholds from light assessment literature published by the Illuminating Engineering Society of North America, the International Commission on Illumination, and the Institution of Lighting Professionals.

The baseline study was conducted in September 2018 and March 2020. Baseline noise levels were measured at three stations, and baseline light trespass and sky glow levels were measured at nine stations. Noise and light levels measured during the field study were post-processed, as required, to exclude influence from Rook I exploration activities and other unrepresentative data sources (i.e., to establish representative existing baseline conditions).

Baseline noise levels for all three measurement stations were observed to be less than thresholds set out in the Environment Canada, Health Canada, and Alberta Energy Regulator guidance documents. Baseline noise levels were generally observed to be higher and more variable at the measurement stations located close to waterbodies than at the measurement station located in a forested area. This suggests that wave action and other water-related sources have an influence on baseline noise levels near waterbodies.

Baseline light trespass levels for all nine measurement stations were observed to be less than thresholds from light assessment literature. Baseline sky glow at two of the nine measurement stations were observed to exceed thresholds from light assessment literature. Baseline sky glow at the other seven measurement stations were observed to be less than thresholds from light assessment literature. Elevated sky glow observed in the baseline data likely results from the combined influence of aurora activity during the field study and the presence of Fort McMurray approximately 150 km southwest of the Rook I Project.

The baseline study achieved the objective of characterizing existing environmental noise and light levels in the anticipated area of the Rook I Project. Specifically, noise and light levels measured during the field study provided a representative baseline against which potential noise and light effects from the Rook I Project could be assessed.

If referencing this report, please use for the following citation:

Golder (Golder Associates Ltd.). 2022. Noise and Light Characterization Baseline Report for the Rook I Project. Prepared for NexGen Energy Ltd.

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APPENDICES

APPENDIX A
Joint Working Group Feedback Applicable to Noise and Light Baseline

APPENDIX B
Data Samples Excluded from Measurement Station Noise 1

APPENDIX C
Data Samples Excluded from Measurement Station Noise 2

APPENDIX D
Data Samples Excluded from Measurement Station Noise 3

Abbreviations and Units of Measure

Acronym	Definition
%HA	percent highly annoyed
AER	Alberta Energy Regulator
CIE	International Commission on Illumination
CST	Central Standard Time
EA	Environmental Assessment
EIS	Environmental Impact Statement
IESNA	Illuminating Engineering Society of North America
ILP	Institution of Lighting Professionals
$L_{eq,1min}$	energy equivalent sound levels over a one-minute averaging period
$L_{eq,day}$	energy equivalent sound levels for each daytime period
$L_{eq,night}$	energy equivalent sound levels for each nighttime period
LFN	low frequency noise
LSA	local study area
NexGen	NexGen Energy Ltd.
Project	Rook I Project
RSA	regional study area
SLM	sound level meter
TSD	technical support document

Unit/Symbol	Definition
%	percent
dBA	A-weighted decibel
dBC	C-weighted decibel
h	hour
Hz	hertz
km	kilometres
m	metres
$mag/arcsec^2$	magnitude per square second of arc
mlux	millilux

1.0 INTRODUCTION

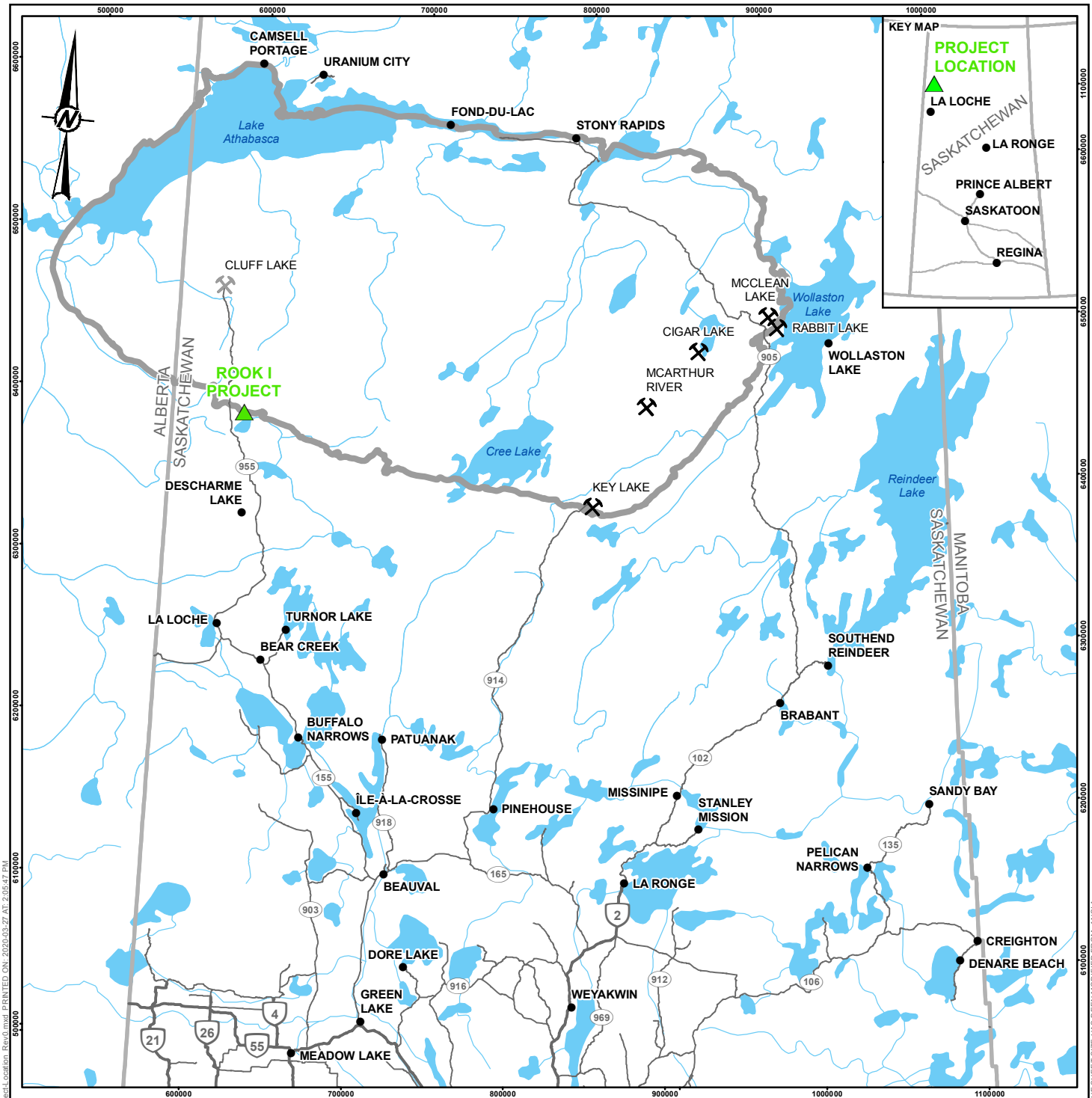
The Rook I Project (Project) is a proposed new uranium mining and milling operation that is 100% owned by NexGen Energy Ltd. (NexGen). The Project is located in northwestern Saskatchewan, approximately 40 km east of the Saskatchewan-Alberta border, 130 km north of the town of La Loche, and 640 km northwest of the city of Saskatoon (Figure 1). The Project resides within Treaty 8 territory and within the Métis Homeland. At a regional scale, the Project is situated within the southern Athabasca Basin adjacent to Patterson Lake, and along the upper Clearwater River system (Figure 2). Access to the Project will be from an existing road off Highway 955. The Project would include underground and surface facilities to support the extraction and processing of uranium ore from the Arrow deposit, a land-based, basement-hosted, high-grade uranium deposit.

The noise and light baseline report represents a component of a comprehensive baseline program that documents the natural and socio-economic environments in the anticipated area of the Project. The noise and light baseline program was undertaken to provide context from which Project environmental noise and light effects could be assessed in the Environmental Impact Statement (EIS).

Since exploration at the Project commenced in 2013, NexGen has engaged regularly and established relationships with local First Nation and Métis Groups (collectively referred to as Indigenous Groups), specifically those closest and with greatest access to the proposed Project. NexGen respects the rights of Indigenous Peoples, the unique relationship Indigenous Peoples have with the environment, and recognizes the importance of full and open discussion with interested or potentially affected Indigenous Groups regarding the development, operation, and decommissioning of the proposed Project. Engagement activities to date, as well as future planned engagement activities, reflect the value NexGen places on meaningful engagement with Indigenous Groups who could be potentially affected by the proposed Project. Engagement mechanisms have included, but are not limited to: meetings with leadership, workshops and community information sessions, Project site tours, establishing Joint Working Groups to support the gathering and incorporation of Indigenous and Local Knowledge throughout the Environmental Assessment (EA) process, and providing funding for traditional land use studies[1] to understand how the proposed Project may interact with the Indigenous Groups' traditional use of the anticipated area of the Project.

Feedback received during engagement activities was documented for contribution to the EIS for the Project; examples of feedback received include discussion of concerns, interests, potential adverse effects, mitigation, and design alternatives. Many baseline studies were initiated in advance of formal engagement on the EA for the Project; however, engagement during the execution of baseline studies has helped inform the understanding of baseline conditions and confirmed components of the natural and socio-economic environments that required study. A summary of feedback related to the noise and light baseline program is presented in Appendix A.

[1] Traditional Land Use (TLU) Studies include all land use studies developed by the Project's affected Indigenous Groups, including Traditional Land Use and Occupancy studies, Traditional Knowledge and Use studies, and Indigenous Rights and Knowledge studies, henceforth referred collectively as TLU Studies.



LEGEND

- POPULATED PLACE
- URANIUM MINING FACILITY (ACTIVE)
- URANIUM MINING FACILITY (DECOMMISSIONED)
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- ATHABASCA BASIN BOUNDARY
- PROJECT LOCATION

0 100 200

1:3,500,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

LOCATION OF THE ROOK I PROJECT, SASKATCHEWAN

CONSULTANT

GOLDER

YYYY-MM-DD	2020-03-27
DESIGNED	SS
PREPARED	NO/AK
REVIEWED	JMC
APPROVED	MM

PROJECT NO.	PHASE	REV.	FIGURE
19114981		0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

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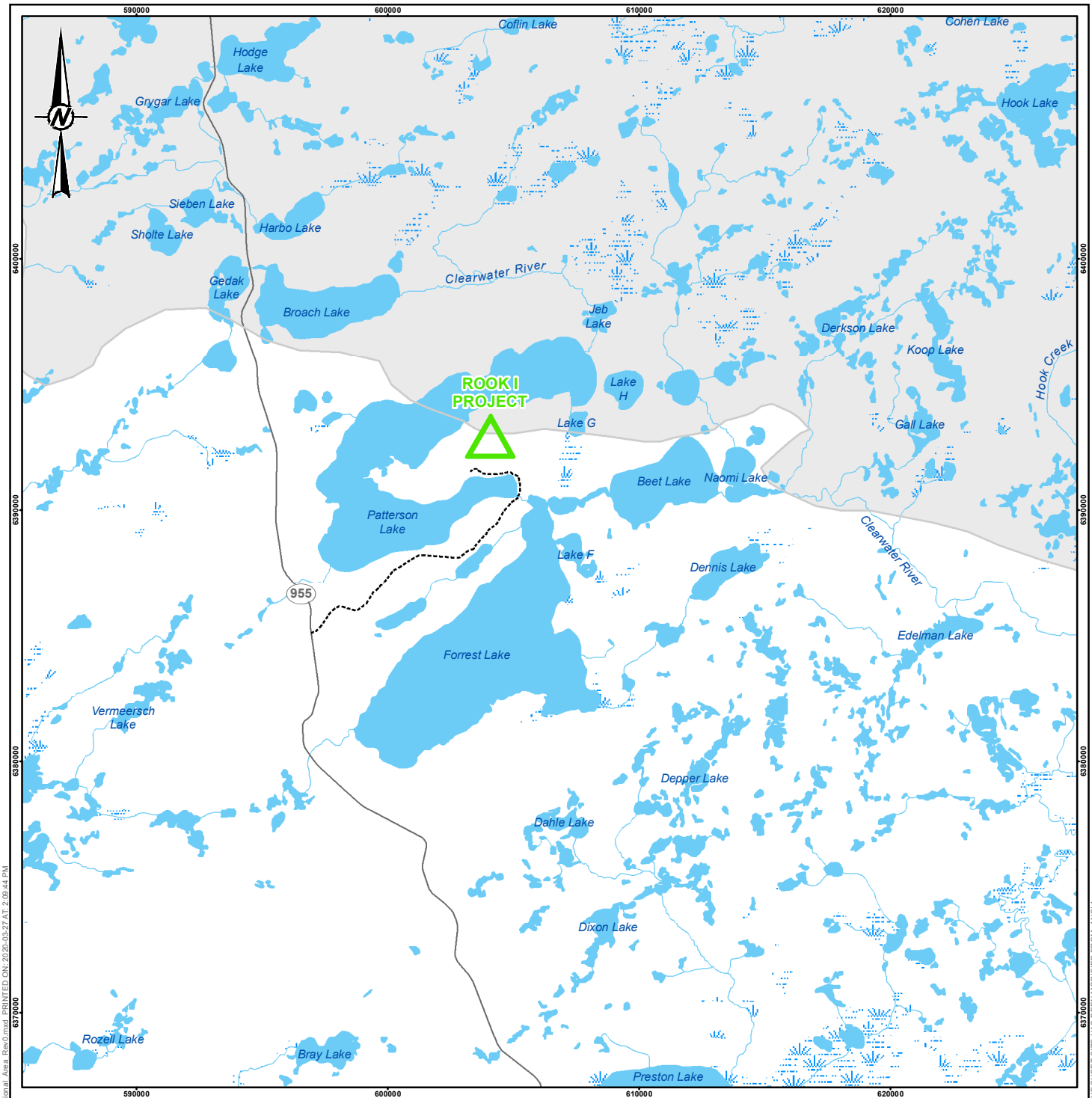

LEGEND

- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- WETLAND
- ATHABASCA BASIN
- PROJECT LOCATION
- EXISTING ACCESS ROAD

0 5,000 10,000

1:225,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

REGIONAL AREA OF THE ROOK I PROJECT

CONSULTANT

GOLDER

YYYY-MM-DD	2020-03-27
DESIGNED	JMC
PREPARED	NO/AK
REVIEWED	JMC
APPROVED	MM

PROJECT NO.	PHASE	REV.	FIGURE
19114981		0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

25mm

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2.0 STUDY OBJECTIVE

The objective of the noise and light baseline study was to gather information on representative existing environmental noise and light levels in the anticipated area of the Project. The gathered information could then be used to support assessments of Project effects.

2.1 Program Guidance

2.1.1 Noise

Saskatchewan does not have regulations or guidelines for the assessment of environmental noise from industrial facilities. As such, noise assessments for industrial facilities in Saskatchewan often utilize federal guidance documents, including Environment Canada's Environmental Code of Practice for Metal Mines (Environment Canada 2009) and Health Canada's Guidance for Evaluating Human Health Impacts in Environmental Assessment – Noise (Health Canada 2017). To supplement this federal guidance, noise assessments for industrial facilities in Saskatchewan often also make use of regulations and guidelines applicable in other Canadian provinces, including Alberta Energy Regulator (AER) Directive 038: Noise Control (AER 2007). Consistent with the practices used for other industrial facilities in Saskatchewan, the noise baseline study applied guidance from the Environment Canada, Health Canada, and AER documents. In particular, the baseline study:

- identified potential noise receptors in accordance with the Health Canada guidance document (Health Canada 2017);
- measured noise levels using methods set out in AER Directive 038 (AER 2007); and
- compared measured noise levels to thresholds from all three guidance documents (Environment Canada 2009; Health Canada 2017; AER 2007).

For the Project, Indigenous Peoples have expressed concerns about sensory disturbance from industrial facilities, including noise effects on cultural practices and wildlife (Birch Narrows Dene Nation [TSD II: BNDN]; Buffalo River Dene Nation [TSD III: BRDN]; Clearwater River Dene Nation [TSD V.1: CRDN]; Métis Nation – Saskatchewan [TSD IV: MN-S]; Ya'thi Néné Lands and Resources Office [TSD VI: YNLRO]; Appendix A). This feedback reinforces the importance of using the guidance outlined above.

2.1.2 Light

There are no specific regulatory requirements to assess potential light effects from mining or industrial developments; however, there are general increased concerns about the effects of light from industrial facilities on migratory birds and other wildlife species (Canada 2015; Horton et al. 2019; Adams et al. 2019). In addition, through NexGen's engagement with local Indigenous communities and groups, Indigenous Peoples have expressed concerns about the effect of industrial facilities on nighttime light levels and the wilderness experience (Appendix A).

In the absence of federal or provincial regulatory guidance, the light baseline study applied guidance from the Illuminating Engineering Society of North America (IESNA 2000), the International Commission on Illumination (CIE 1997, 2017), and the Institution of Lighting Professionals (ILP 2020). The IESNA, CIE, and ILP recommend that light effects be characterized in the context of:

- light trespass, which refers to light or illuminance that strays from its intended purposes onto neighbouring areas where lighting may be undesirable; and
- sky glow, which refers to stray light scattered in the atmosphere, brightening the natural sky and reducing star visibility.

The light baseline study measured representative existing light trespass and sky glow levels using methods set out in the IESNA and CIE guidance documents, and compared measured levels to light trespass and sky glow thresholds recommended by the CIE and ILP.

3.0 STUDY AREAS

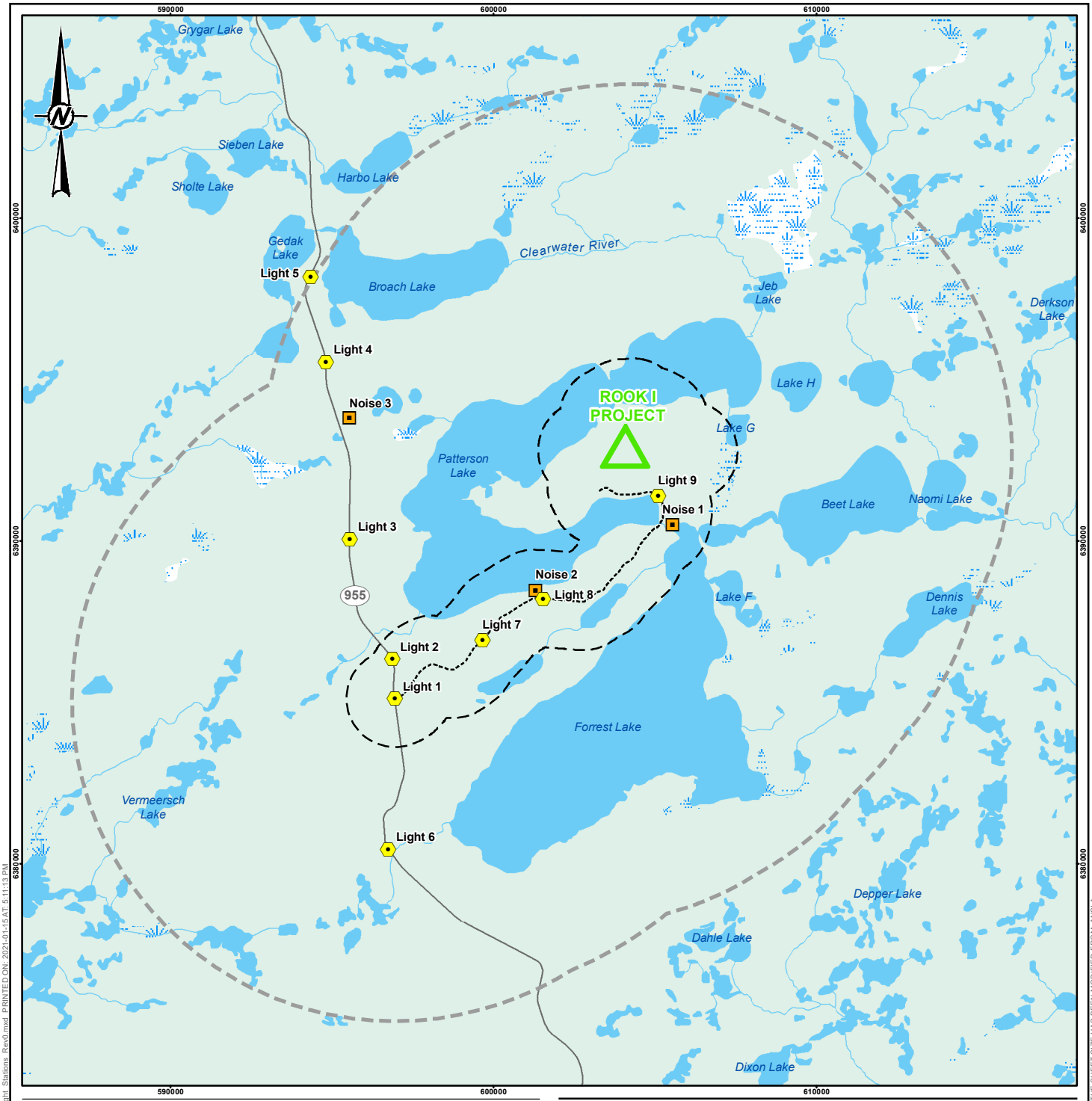
The noise and light baseline study characterized existing conditions at discrete stations located within a local study area (LSA) and regional study area (RSA).

3.1 Local Study Area

The Environment Canada, Health Canada, IESNA, CIE, and ILP guidance documents do not provide recommendations for establishing suitable study areas for noise and light assessments; however, AER Directive 038 requires that environmental noise be assessed at occupied dwellings located within 1.5 km of a development boundary. In the absence of any such dwellings, AER Directive 038 requires that environmental noise be assessed at the most affected unoccupied location(s) 1.5 km from the development boundary. In accordance with guidance from AER Directive 038, the LSA for the noise baseline was defined as a 1.5 km buffer surrounding the anticipated area of the Project (Figure 3). Based on professional experience, the same LSA was used for the light baseline.

3.2 Regional Study Area

Because environmental noise attenuates with propagation distance, research suggests that industrial facilities are unlikely to contribute to cumulative noise levels at distances greater than 5 km (Drew and South 2009). Although environmental light may propagate to greater distances than noise, light also attenuates with propagation distance and terrain features and forest are effective barriers to light propagation. In recognition of propagation differences for noise and light, the RSA for the noise and light baseline was conservatively defined as a 10 km buffer surrounding the anticipated area of the Project (Figure 3). This RSA is expected to be large enough to characterize any potential noise or light effects from the Project.



LEGEND

- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- WETLAND
- WOODED AREA
- EXISTING ACCESS ROAD
- PROJECT LOCATION
- LIGHT STATION
- NOISE STATION
- NOISE AND LIGHT LOCAL STUDY AREA
- NOISE AND LIGHT REGIONAL STUDY AREA

0 4,000 8,000

1:175,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

NOISE AND LIGHT STUDY AREAS AND MEASUREMENT STATIONS

CONSULTANT

GOLDER

YYYY-MM-DD	2021-01-15
DESIGNED	VY
PREPARED	LMS/NO
REVIEWED	VY
APPROVED	AF

PROJECT NO.	PHASE	REV.	FIGURE
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4.0 METHODS

4.1 Review of Existing Information

There was no existing information available regarding representative environmental noise and light levels in the LSA or RSA.

4.2 Approach

4.2.1 Noise

Noise thresholds were taken from Environment Canada, Health Canada, and AER guidance documents (Environment Canada 2009; Health Canada 2017; AER 2007). These noise thresholds provide an instructive framework for gathering and contextualizing baseline noise data.

The Environment Canada guidance document states:

> "In residential areas adjacent to mine sites, the [noise level] from mining activities should not exceed 55 dBA [A-weighted decibels] during the day and 45 dBA at night. Ambient noise can also affect wildlife, so sites in remote locations should also work to meet these objectives for off-site ambient noise levels." (Environment Canada 2009).

The Health Canada guidance document identifies potential adverse effects from noise, including hearing loss, sleep disturbance, interference with speech comprehension, and general annoyance. The noise thresholds associated with hearing loss and interference with speech comprehension are much higher than the noise thresholds associated with sleep disturbance and annoyance. As such, the noise baseline program only considered Health Canada sleep disturbance and annoyance thresholds. Focusing on these lower threshold values represents a conservative approach to contextualizing the baseline noise data.

To protect the public from adverse health effects associated with sleep disturbance, the Health Canada guidance document recommends that the annual average nighttime noise level at receptors be maintained below 40 dBA (Health Canada 2017). The Health Canada guidance also provides a mathematical formula for estimating the percentage of a typical community that would report being highly annoyed (%HA) by given daytime and nighttime noise levels. The Health Canada guidance document indicates that, where practical, increases in%HA should not exceed 6.5% (Health Canada 2017). Note that the Health Canada guidance document defines daytime as the 15-hour period between 7:00 and 22:00 and defines nighttime as the nine-hour period between 22:00 and 7:00 (Health Canada 2017).

For receptors in quiet rural environments (like the LSA and RSA), AER Directive 038 indicates that cumulative noise levels should not exceed 50 dBA during the daytime period and should not exceed 40 dBA during the nighttime period (AER 2007). The AER Directive 038 defines daytime as the 15-hour period between 7:00 and 22:00 and defines nighttime as the nine-hour period between 22:00 and 7:00 (AER 2007).

The AER Directive 038 provides a second set of criteria for identifying potential effects from low frequency noise (LFN). According to AER Directive 038, an LFN issue exists if the difference between the measured C-weighted (dBC) noise level and the dBA noise level is greater than or equal to 20 and a clear tonal component is present at a frequency below 250 hertz (Hz) (AER 2007). To be clear, AER Directive 038 requires that both conditions be present for an LFN issue to exist. Satisfaction of one condition does not result in an LFN issue. Alberta Energy

Regulator Directive 038 provides a numerical technique for identifying clear tonal components as part of the second LFN condition.

The noise monitoring field work was conducted from 12 September 2018 to 15 September 2018. Monitoring data were collected in accordance with methods set out in AER Directive 038. The duration of the monitoring study was greater than 24 hours. Noise monitoring of this duration provides information about the daily variability in noise levels, as well as the typical or average daily condition.

Model 2250 Brüel and Kjær Type I integrating sound level meters (SLMs) were used to collect noise measurements and audio recordings. Data logged by the SLMs included:

- energy equivalent sound levels over a one-minute averaging period ($L_{eq,1min}$) in dBA; and
- one-third octave-band $L_{eq,1min}$ noise levels in unweighted decibels, which were used to calculate dBC levels and identify tonal components in accordance with the LFN analysis from AER Directive 038 (AER 2007).

Each SLM was calibrated with a Model 4231 Brüel and Kjær Type I field calibrator immediately before and after each monitoring period to confirm data validity. The calibration data were logged by the SLM and calibration results were also described in field notes.

The AER Directive 038 requires that monitoring be conducted under environmental conditions acceptable for noise measurement, which includes restrictions on wind speed and the absence of precipitation. Weather data were collected using a Nielsen-Kellerman Kestrel pocket weather meter. The weather meter logged wind speed, wind direction, temperature, and relative humidity data every minute for the duration of the monitoring study. Data from the weather meters were used, as required, for interpretation of the noise data logged by the SLMs. Direct observations of precipitation, cloud cover, wind direction, and audible noise sources were recorded in field notes and were also used, as required, for interpretation of the noise data.

The SLM microphones were deployed at a height of 1.5 m above ground, which is consistent with the height at which human exposure to noise typically occurs in undeveloped natural areas (ISO 1987). The weather meters were deployed at the same height above ground and separated from the SLMs by approximately 15 m. This separation distance was small enough that weather conditions were effectively identical at the two locations but large enough that the weather meters spinning wind sensor was inaudible at the SLM.

Noise and weather data were downloaded to a computer for analysis with the Brüel and Kjær 7820 Evaluator software program. The AER Directive 038 specifies explicit weather conditions that must be met during noise monitoring studies. One-minute data samples that were not recorded under weather conditions specified in AER Directive 038 were excluded from the analysis. In particular, data samples collected during periods when the wind speed exceeded 15 km/h were excluded.

As the objective of the noise monitoring study was to characterize representative existing noise levels in the absence of Project-related factors, one-minute data samples that were influenced by noise from Rook I exploration activities were excluded from the analysis. Noise from traffic on the existing access road and noise from helicopter activities associated with exploration field programs were occasionally audible. Data samples influenced by these activities were excluded when calculating representative baseline noise levels.

Other data samples were also excluded where noise sources occurred that were inconsistent with the representative background environment. Noise from public traffic on Highway 955 was occasionally audible. Since the objective of the baseline study was to obtain baseline noise levels that are generally representative of the LSA and RSA, and Highway 955 is inaudible in most parts of the study areas, this data was excluded. Also, noise sources associated with technician activities, which were clearly audible during deployment and recovery of the monitoring equipment at all three measurement stations, were excluded.

The remaining valid one-minute data samples were used to calculate energy equivalent sound levels for each daytime period ($L_{eq,day}$) and each nighttime period ($L_{eq,night}$), where more than 180 minutes of valid data were available (AER 2007). The daytime and nighttime noise levels were then used to characterize the baseline noise environment in the context of thresholds from the Environment Canada, Health Canada, and AER guidance documents (Environment Canada 2009; Health Canada 2017; AER 2007).

4.2.2 Light

In the absence of federal or provincial guidance, the light baseline study applies guidance from the IESNA, CIE, and ILP. In recognition of the fact that some areas are more sensitive to potential light effects than others (e.g., lighting considered acceptable and appropriate in a busy urban centre may not be acceptable in a remote national park), light assessment literature establishes light trespass and sky glow limits based on environmental lighting zones. The CIE defines five environmental lighting zones:

- E0 – starlight reserves, dark sky parks, and astronomical observatories (intrinsically dark);
- E1 – relatively uninhabited rural areas (dark);
- E2 – sparsely inhabited rural areas (low district brightness);
- E3 – well inhabited rural and urban settlements (medium district brightness); and
- E4 – town and city centres and other commercial areas (high district brightness).

As a remote forested area with very few artificial light sources, the environmental lighting zone for the LSA and RSA is best classified as E1. Note than an E0 classification would not be appropriate since there are no parks or other specially protected areas within the LSA or RSA. Environmental lighting zone E0 is only appropriate in cases where there is a special requirement to reduce light effects, or a specific need for low light levels (e.g., close to an astronomical observatory).

Light trespass levels are typically measured in units of lux, the SI unit of illuminance, which is equal to one lumen per square metre. One thousandth of a lux is referred to as a millilux (mlux). Light assessment literature suggests that 100 mlux is an appropriate light trespass limit for environmental lighting zone E1 (CIE 2017). The light baseline study uses this light trespass limit as a threshold for contextualizing existing light trespass levels in the LSA and RSA.

Sky glow levels are typically measured in units of magnitude per square second of arc (mag/arcsec^2). These units reflect “sky quality” relative to a theoretical condition in which there is zero sky glow. In other words, larger values represent better “sky quality” and less sky glow. For example, a sky glow value of 18 mag/arcsec^2 is representative of a clear night with a full moon, while a sky glow value of 3 mag/arcsec^2 is representative of a clear daytime sky (i.e., full sunshine).

Light assessment literature suggests that 20 mag/arcsec^2 is an appropriate sky glow limit for environmental lighting zone E1 (ILP 2020). The baseline study uses this sky glow limit as a threshold for contextualizing existing sky glow levels in the LSA and RSA. It should be noted that this sky glow limit assumes summertime conditions (i.e., no snow on the ground), clear skies (i.e., no cloud cover), with no moon, and no aurora activity. The presence of snow cover, cloud cover, the moon, and/or aurora activity can reduce “sky quality” and result in measured sky glow levels lower than would be observed in the absence of these factors.

The light baseline study was conducted overnight on:

- 13 September 2018 and 14 September 2018;
- 14 September 2018 and 15 September 2018;
- 18 March 2020 and 19 March 2020;
- 22 March 2020 and 23 March 2020; and
- 23 March 2020 and 24 March 2020.

All measurement data were collected during periods when the night sky was dark (i.e., both sun and moon below the horizon). Measurement data were collected over multiple nighttime periods to capture a variety of environmental conditions: summertime cloudy skies, summertime clear skies, wintertime cloudy skies, and wintertime clear skies.

Measurement data were collected in general accordance with guidance from the IESNA (IESNA 2000) and the CIE (CIE 1997, 2017). Baseline light trespass levels were measured using a Solar Light PMA2010 photometer, outfitted with a PMA2131 scotopic detector. Baseline sky glow levels were measured using a Unihedron sky quality meter.

4.3 Measurement Stations

4.3.1 Noise

Existing noise levels were monitored at three measurement stations. The noise measurement stations were selected to characterize baseline noise conditions experienced by human receptors and terrestrial wildlife in the LSA and RSA. Coordinates for each of the noise measurement stations and rationale for their inclusion in the baseline noise study are provided in Table 1. The three noise measurement stations are also shown in Figure 3.

The AER Directive 038 requires that environmental noise be assessed at occupied dwellings within 1.5 km of a development boundary. There are no occupied dwellings within the LSA (i.e., within 1.5 km of the anticipated area of the Project) or within the RSA. Therefore, occupied dwellings were not considered when selecting noise monitoring stations for the baseline study.

The Environment Canada guidance document indicates that environmental noise should be assessed for “residential areas adjacent to mine sites” (Environment Canada 2009). There are no residential areas adjacent to the LSA. The closest population centre to the anticipated area of the Project is the community of Descharme Lake, which is located approximately 60 km to the south (i.e., beyond the LSA and RSA). Therefore, residential areas were not considered when selecting noise monitoring stations for the baseline study.

The Health Canada guidance document indicates that environmental noise should be assessed at a wide range of receptors, including passive recreation areas, which are described as "[o]utdoor grounds used for hunting, fishing, teaching, etc. … includes locations where Indigenous Peoples may hunt, fish or gather country foods", and seasonal residences, which are described as "[c]ottages, campgrounds and RV parks … includes Indigenous hunting and fishing cabins, and seasonal camping places" (Health Canada 2017). One hunting and fishing outfitter is located on Beet Lake and another located on Jeb Lake. Both outfitters are located beyond the LSA but within the RSA, and both outfitters qualify as noise receptors based on the Health Canada guidance. To characterize representative existing noise levels experienced by outfitters and their clients, the baseline study made use of two measurement stations located adjacent to waterbodies.

Table 1: Noise Measurement Stations

Noise Measurement Station	Description	Universal Transverse Mercator Coordinates (NAD83, Zone 12)		Rationale for Inclusion
		Easting (m)	Northing (m)	
Noise 1	Swampy area on north shore of Forrest Lake	605549	6390528	Conditions at this station are representative of baseline noise levels in swampy areas near waterbodies within the LSA/RSA. Measurements reflect noise levels currently experienced by wildlife, Indigenous Peoples, and recreational fishermen that make use of these waterbodies (including the Beet Lake and Jeb Lake outfitters).
Noise 2	Rocky area on south shore of Patterson Lake	601311	6388505	Conditions at this station are representative of baseline noise levels in rocky areas near waterbodies within the LSA/RSA. Measurements reflect noise levels currently experienced by wildlife, Indigenous Peoples, and recreational fishermen that make use of these waterbodies (including the Beet Lake and Jeb Lake outfitters).
Noise 3	Forested area northwest of Patterson Lake; far from the nearest waterbody	595537	6393834	Conditions at this station are representative of baseline noise levels in forest environments within the LSA/RSA. Measurements reflect noise levels currently experienced by wildlife, Indigenous Peoples, and recreational hunters that make use of these forest environments.

NAD = North American Datum; LSA = local study area; RSA = regional study area

4.3.2 Light

Light trespass and sky glow effects are typically assessed at points of reception corresponding to dwellings, hotels/motels, hospitals, and viewpoints used by sightseers (CIE 2017). As discussed in Section 4.3.1, with the exception of hunting/fishing outfitters located on Beet Lake and Jeb Lake, none of these types of point receptor are present in the anticipated area of the Project. Therefore, dwellings, hotels/motels, hospitals, and viewpoints used by sightseers were not considered when selecting light measurement stations.

The Beet Lake and Jeb Lake outfitters are understood to be the only potential points of reception corresponding to hotels/motels in RSA; however, both outfitters are located in remote areas that were not accessible during nighttime hours when light measurements must be collected. Consequently, existing light trespass and sky glow levels were measured at nine stations along the existing access road and Highway 955 (i.e., stations that were

readily accessible during nighttime hours).These nine measurement stations were selected because they were readily accessible via existing roads. Because there are very few sources of artificial light within the LSA and RSA, light trespass and sky glow levels measured at the nine roadside stations can be considered generally representative of baseline conditions throughout the study areas. The measurement data are representative of light levels currently experienced by wildlife, Indigenous Peoples, and recreational hunters and fisherman that make use of waterbodies and forest environments within the LSA and RSA. In addition, the measurement data are representative of light levels currently experienced by drivers travelling along the section of Highway 955 west of Patterson Lake.

Coordinates for each of the nine light measurement stations are presented in Table 2. The nine light measurement stations are also shown in Figure 3.

Table 2: Light Measurement Stations

Light Measurement Station	Description	Universal Transverse Mercator Coordinates (NAD83, Zone 12)	
		Easting (m)	Northing (m)
Light 1	Junction of existing access road and Highway 955	596945	6385116
Light 2	Highway 955, north of existing access road	596866	6386346
Light 3	Highway 955, north of existing access road	595559	6390063
Light 4	Highway 955, north of existing access road	594807	6395560
Light 5	Highway 955, north of existing access road	594334	6398202
Light 6	Highway 955, south of existing access road	596741	6380461
Light 7	Existing access road	599663	6386938
Light 8	Existing access road	601548	6388206
Light 9	Existing access road	605103	6391406

NAD = North American Datum

5.0 RESULTS

5.1 Noise

Existing noise levels were monitored at three measurement stations. The noise measurement stations were selected to characterize baseline noise conditions experienced by human receptors and terrestrial wildlife in the LSA and RSA.

5.1.1 Noise 1

Monitoring was conducted at measurement station Noise 1 from 10:20 Central Standard Time (CST) on 12 September 2018 until 18:18 CST on 14 September 2018. A photograph showing the monitoring equipment deployed at Noise 1 is presented in Figure 4. Forrest Lake is visible in the background of this photograph.

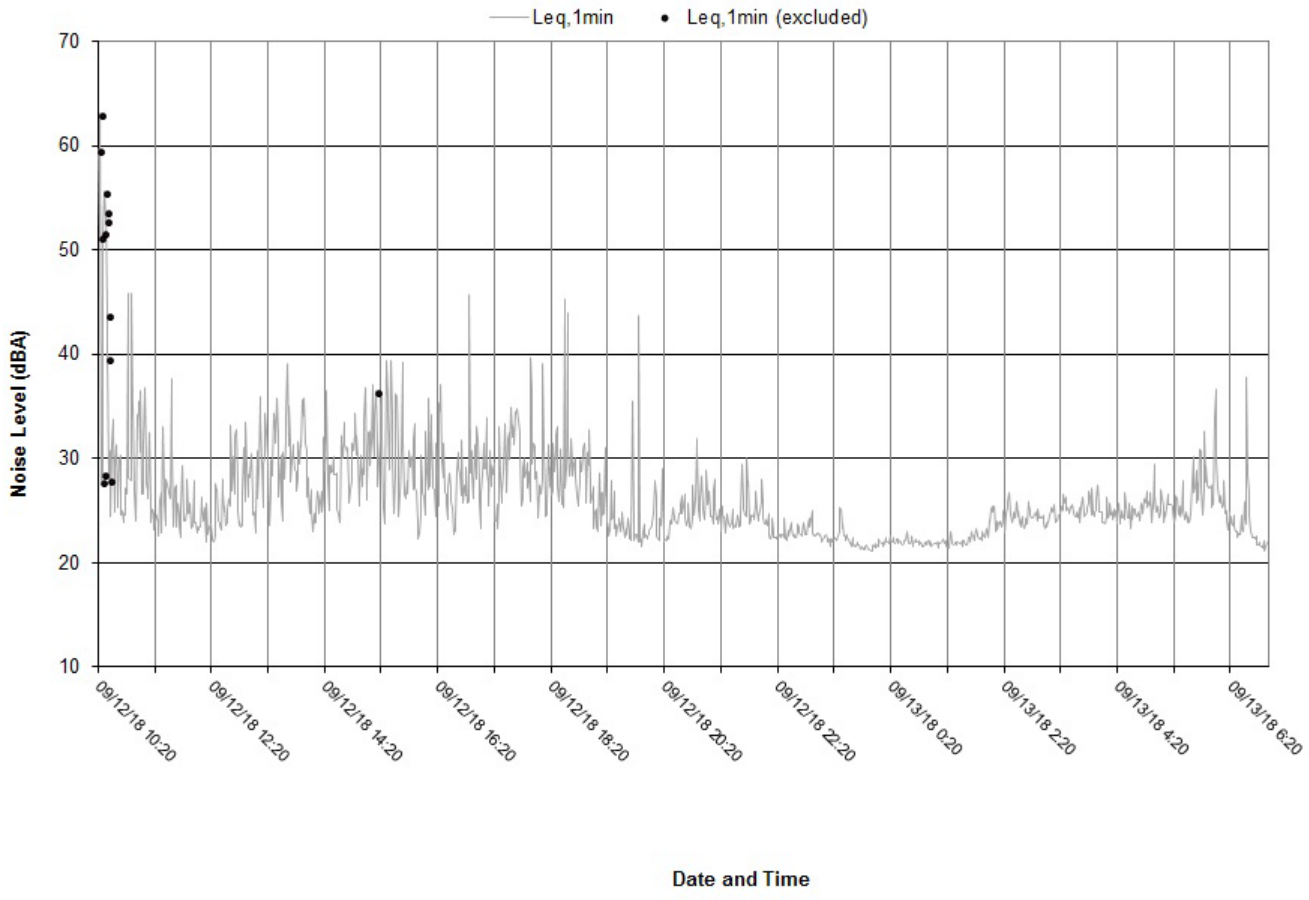
Representative noise sources audible at Noise 1 included:

- birds;
- wave action from Forrest Lake;
- wind in vegetation;
- power boat and fishermen on Forrest Lake (afternoon of 13 September 2018);
- animal footsteps and breathing; and
- animal howling and vocalizing.

Graphs of one-minute noise levels measured at Noise 1 are presented in Figure 5, Figure 6, and Figure 7. These figures show the valid data samples that were used in the calculation of representative $L_{eq,day}$ and $L_{eq,night}$ average noise levels, and the data samples that were excluded because they were logged under unacceptable weather conditions or influenced by noise from exploration or other activities unrepresentative of the existing environment. The excluded data samples have been highlighted using black dots. Appendix B provides a complete list of each data sample that was excluded when establishing representative noise levels for measurement station Noise 1. Appendix B also provides an explanation for why each data sample was excluded.

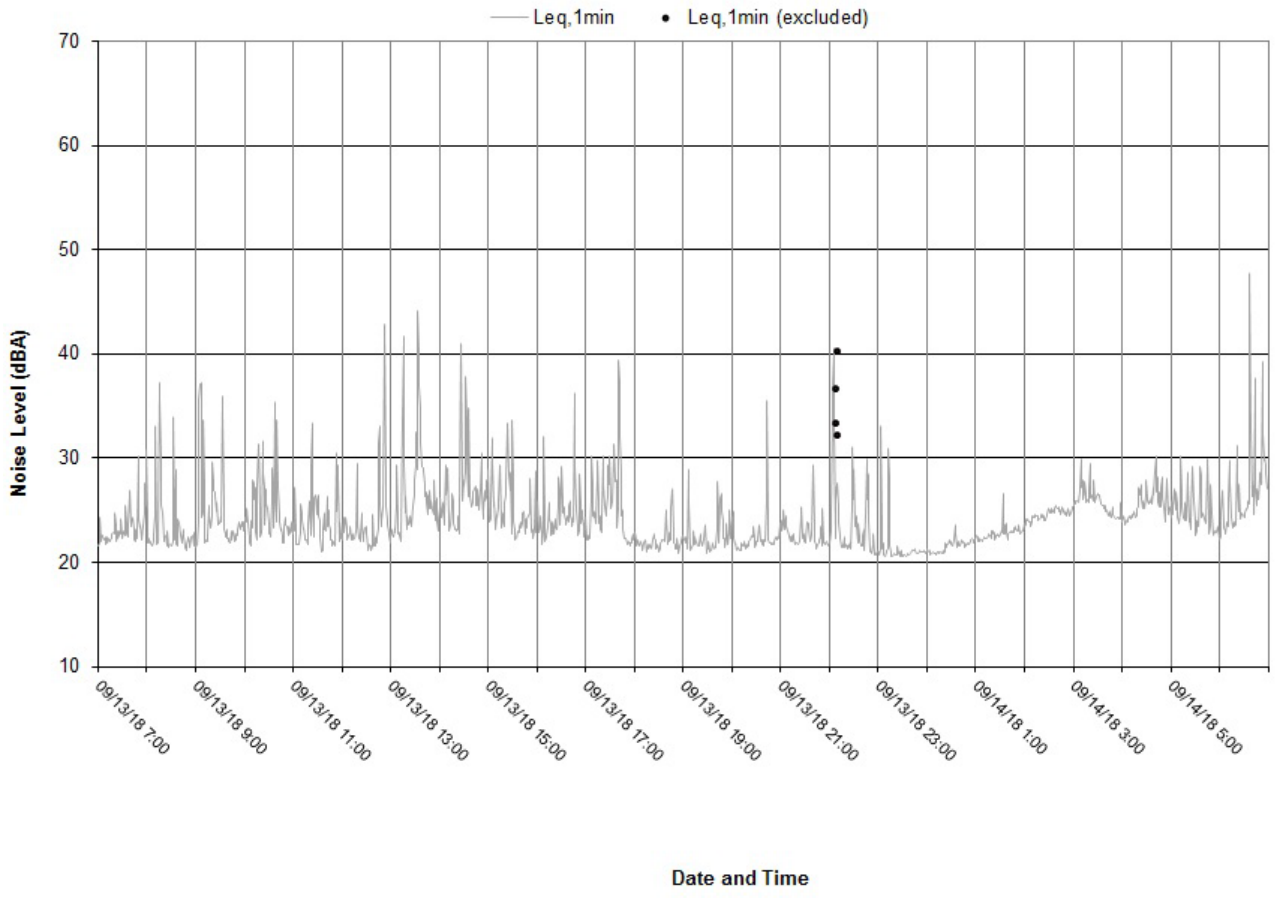
Figure 4: Monitoring Equipment Deployed at Measurement Station Noise 1

Figure 5: Monitoring Data Recorded at Measurement Station Noise 1 (12 Sep 10:20 CST through 13 Sep 6:59 CST)



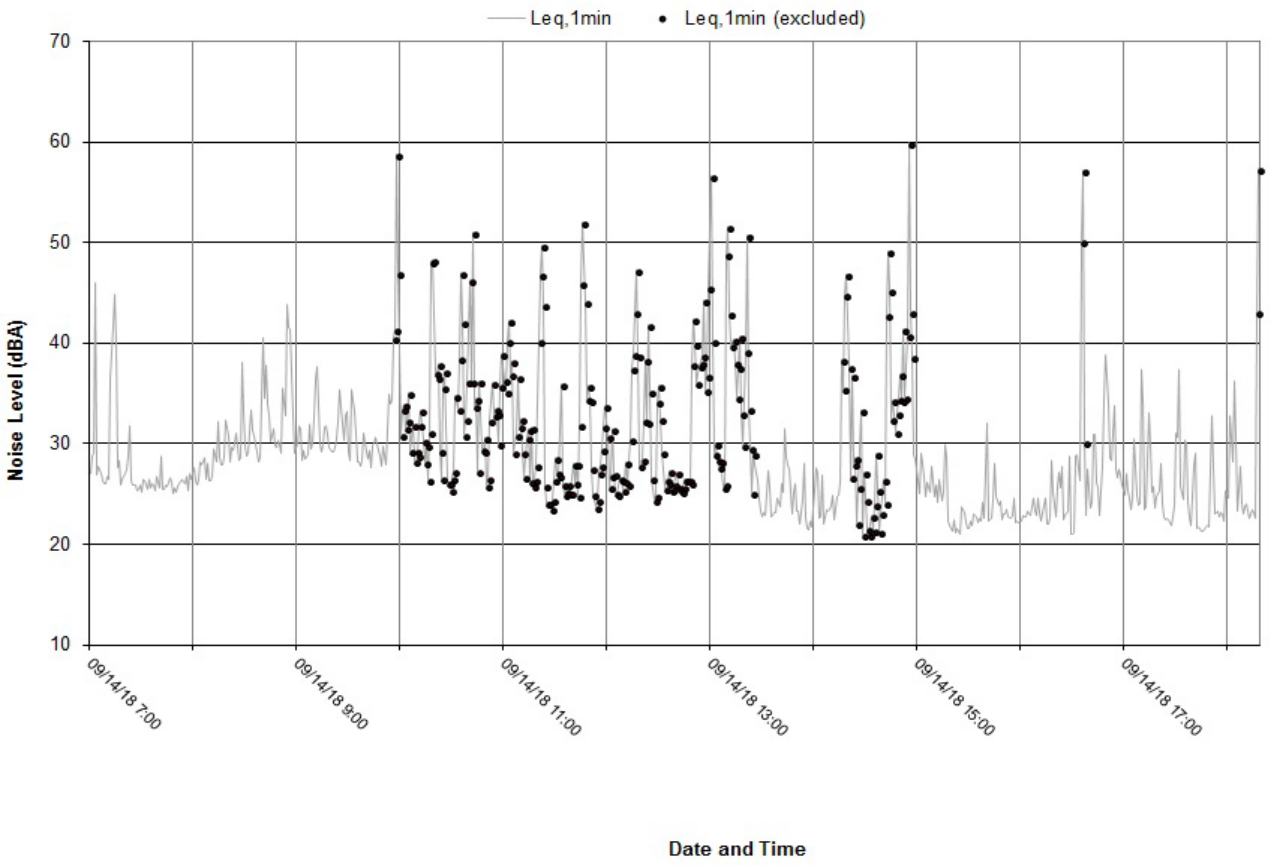
Leq = energy equivalent sound level; dBA = A-weighted decibel

Figure 6: Monitoring Data Recorded at Measurement Station Noise 1 (13 Sep 7:00 CST through 14 Sep 6:59 CST)



Leq = energy equivalent sound level; dBA = A-weighted decibel

Figure 7: Monitoring Data Recorded at Measurement Station Noise 1 (14 Sep 7:00 CST through 14 Sep 18:18 CST)



Leq = energy equivalent sound level; dBA = A-weighted decibel

Representative baseline noise levels (i.e., $L_{eq,day}$ and $L_{eq,night}$) for measurement station Noise 1 are presented in Table 3. These representative values have been calculated by averaging valid one-minute data samples.

Table 3: Representative Baseline Noise Levels for Station Noise 1

Measurement Station	Period[(a)]	Baseline Noise Level (dBA)
Noise 1	12 September 2018 Daytime ($L_{eq,day}$)	31
	12/13 September 2018 Nighttime ($L_{eq,night}$)	25
	13 September 2018 Daytime ($L_{eq,day}$)	27
	13/14 September 2018 Nighttime ($L_{eq,night}$)	26
	14 September 2018 Daytime ($L_{eq,day}$)	30
	Average Daytime ($L_{eq,day}$)	*30*
	Average Nighttime ($L_{eq,night}$)	*26*

a) For consistency with the Health Canada and AER guidance documents, daytime is defined as the 15-hour period from 7:00 to 22:00 and nighttime is defined as the nine-hour period from 22:00 to 7:00 (Health Canada 2017; AER 2007).
dBA = A-weighted decibel;

Table 4, Table 5, and Table 6 characterize the representative baseline noise levels measured at station Noise 1 in the context of relevant thresholds. Table 4 compares average daytime and nighttime noise levels measured at Noise 1 to thresholds from the Environment Canada, Health Canada, and AER guidance documents (Environment Canada 2009; Health Canada 2017; AER 2007). Table 5 presents the average%HA value calculated for Noise 1 using a mathematical formula from the Health Canada guidance document (Health Canada 2017). Table 6 presents LFN analysis of data from Noise 1 in the context of the two-part LFN test set out in AER Directive 038 (AER 2007).

Table 4: Comparison of Baseline Noise Levels to Thresholds for Station Noise 1

Measurement Station	Period[a]	Average Baseline Noise Level (dBA)	Noise Threshold (dBA)		
			Environment Canada[b]	Health Canada[c]	AER Directive 038[d]
Noise 1	Daytime ($L_{eq,day}$)	30	55	n/a[e]	50
	Nighttime ($L_{eq,night}$)	26	45	40	40

a) For consistency with the Health Canada and AER guidance documents, daytime is defined as the 15-hour period from 7:00 to 22:00 and nighttime is defined as the nine-hour period from 22:00 to 7:00 (Health Canada 2017; AER 2007).
b) General noise thresholds from the Environment Canada guidance document (Environment Canada 2009).
c) Sleep disturbance threshold from the Health Canada guidance document (Health Canada 2017).
d) General noise thresholds from AER Directive 038 (AER 2007).
e) The Health Canada sleep disturbance threshold only applies during the nighttime period (Health Canada 2017).
dBA = A-weighted decibel; AER = Alberta Energy Regulator

Table 5: Baseline Percentage Highly Annoyed Values for Station Noise 1

Measurement Station	Average Baseline%HA[a]
Noise 1	0.9%

a) Average baseline%HA value calculated using the average daytime and nighttime noise levels measured at Noise 1 and a formula presented in the Health Canada guidance document (Health Canada 2017).
%HA = percent highly annoyed

Table 6: Baseline Low Frequency Noise Analysis for Station Noise 1

Measurement Station	Period	Baseline Noise Level		Difference: dBC minus dBA	Number of Clear Tonal Components below 250 Hz[a]
		(dBA)	(dBC)		
Noise 1	12 September 2018 Daytime ($L_{eq,day}$)	31	51	20	0
	12/13 September 2018 Nighttime ($L_{eq,night}$)	25	33	8	0
	13 September 2018 Daytime ($L_{eq,day}$)	27	38	11	0
	13/14 September 2018 Nighttime ($L_{eq,night}$)	26	38	12	0
	14 September 2018 Daytime ($L_{eq,day}$)	30	42	12	0

a) Tonal components were identified using a technique described in AER Directive 038 (AER 2007).
dBA = A-weighted decibel; dBC = C-weighted decibel

The results presented in Table 4 indicate that average baseline noise levels measured at station Noise 1 do not exceed any of the thresholds set out in the Environment Canada, Health Canada, or AER guidance documents (Environment Canada 2009; Health Canada 2017; AER 2007). The results presented in Table 5 indicate that 0.9% of a typical community would report being highly annoyed by the baseline noise levels measured at station Noise 1. Based on the two-part test set out in AER Directive 038 (AER 2007), the results presented in Table 6 indicate that there is no LFN issue present in the baseline noise levels measured at station Noise 1. Specifically, the difference between noise levels expressed in dBA and noise levels expressed in dBC is less than 20 for all but one of the measurement periods, and a low frequency tone was not observed for any of the measurement periods.

5.1.2 Noise 2

Monitoring was conducted at measurement station Noise 2 from 11:28 CST on 12 September 2018 until 6:59 CST on 15 September 2018. A photograph showing the monitoring equipment deployed at Noise 2 is presented in Figure 8. Patterson Lake is visible in the background of this photograph.

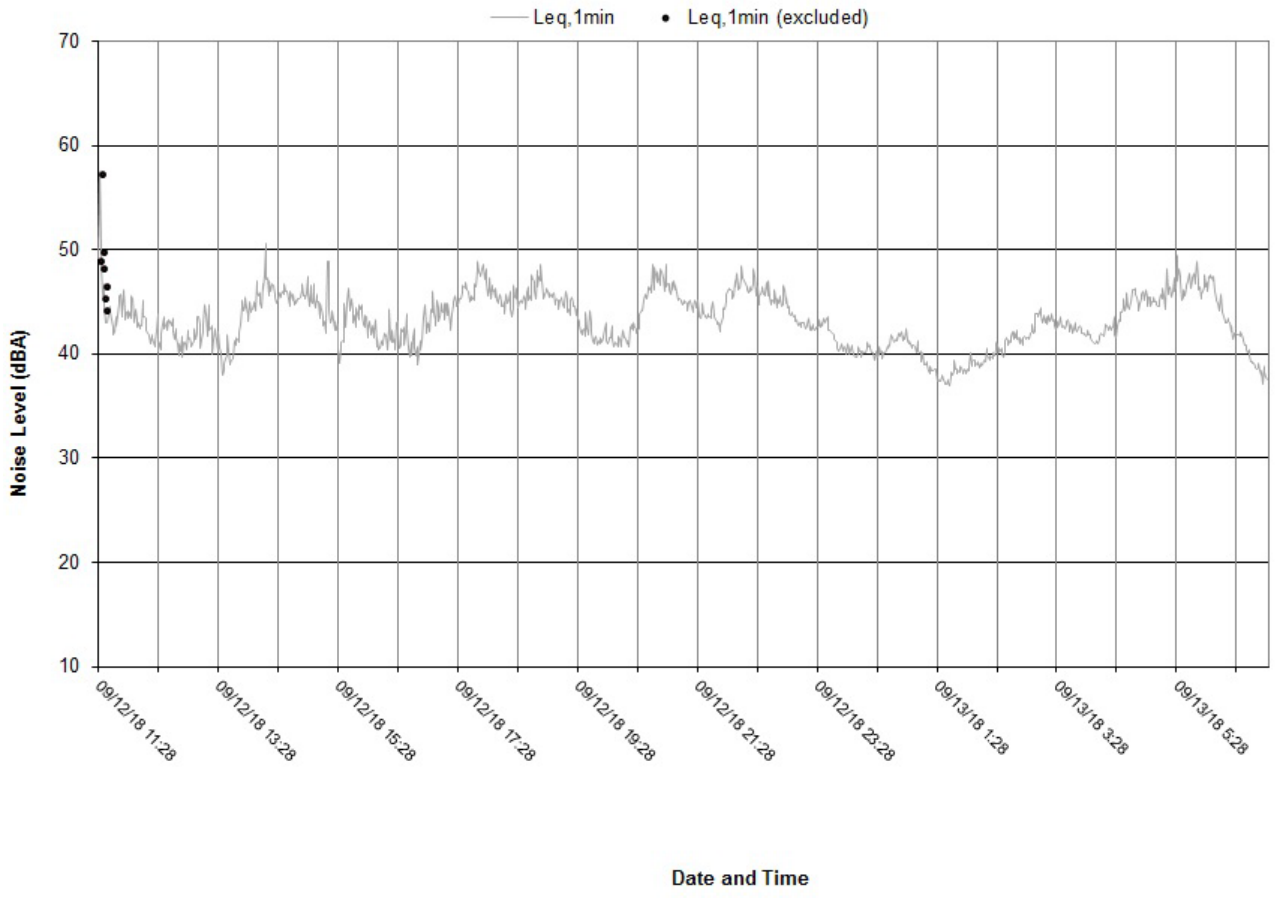
Representative noise sources audible at Noise 2 included:

- wave action from Patterson Lake;
- wind in vegetation; and
- birds.

Graphs of one-minute noise levels measured at Noise 2 are presented in Figure 9, Figure 10, and Figure 11. These figures show the valid data samples that were used in the calculation of representative $L_{eq,day}$ and $L_{eq,night}$ average noise levels, and the data samples that were excluded because they were logged under unacceptable weather conditions or influenced by noise from exploration activities. The excluded data samples have been highlighted using black dots. Appendix C provides a complete list of each data sample that was excluded when establishing representative noise levels for measurement station Noise 2. Appendix C also provides an explanation for why each data sample was excluded.

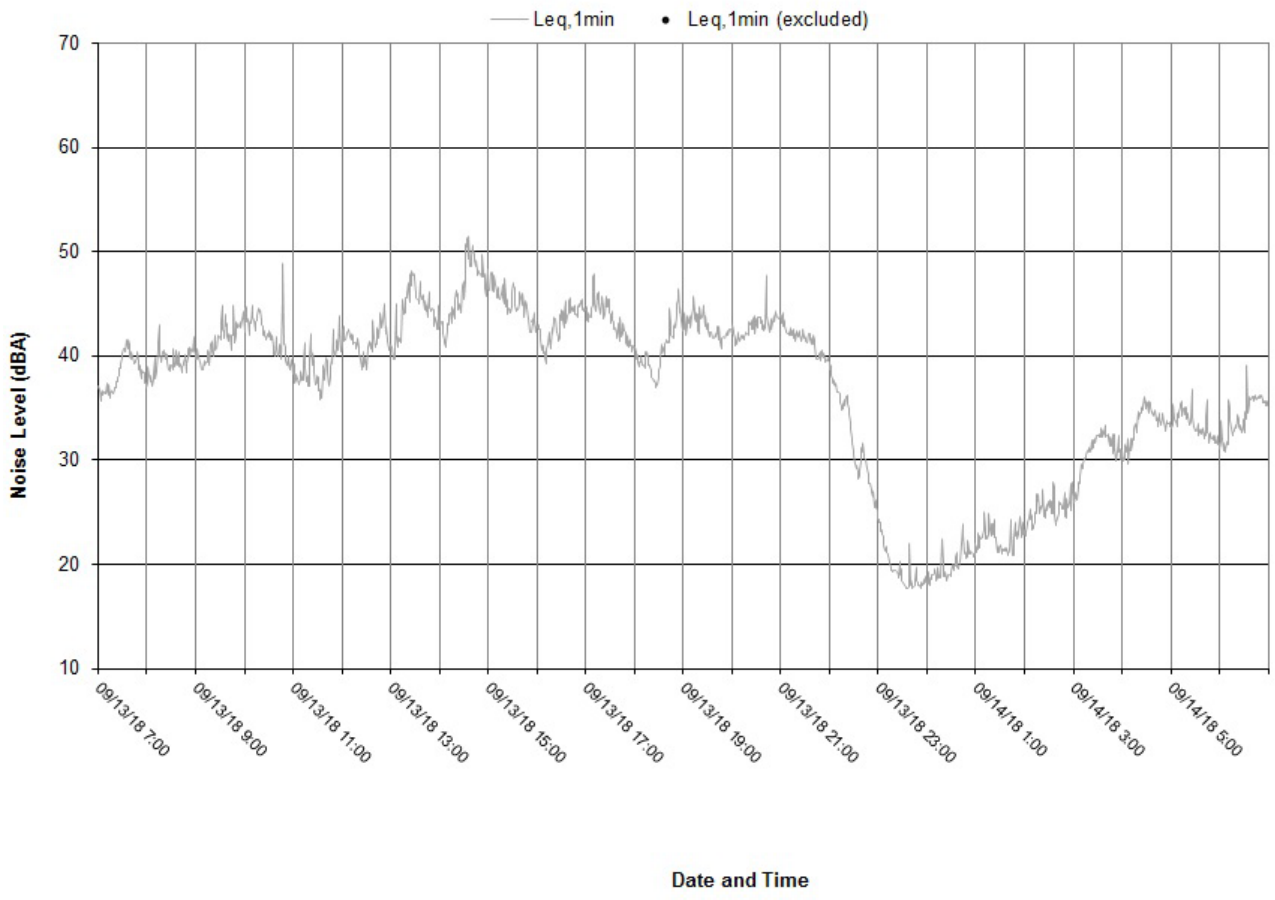
Figure 8: Monitoring Equipment Deployed at Measurement Station Noise 2

Figure 9: Monitoring Data Recorded at Measurement Station Noise 2 (12 Sep 11:28 CST through 13 Sep 6:59 CST)



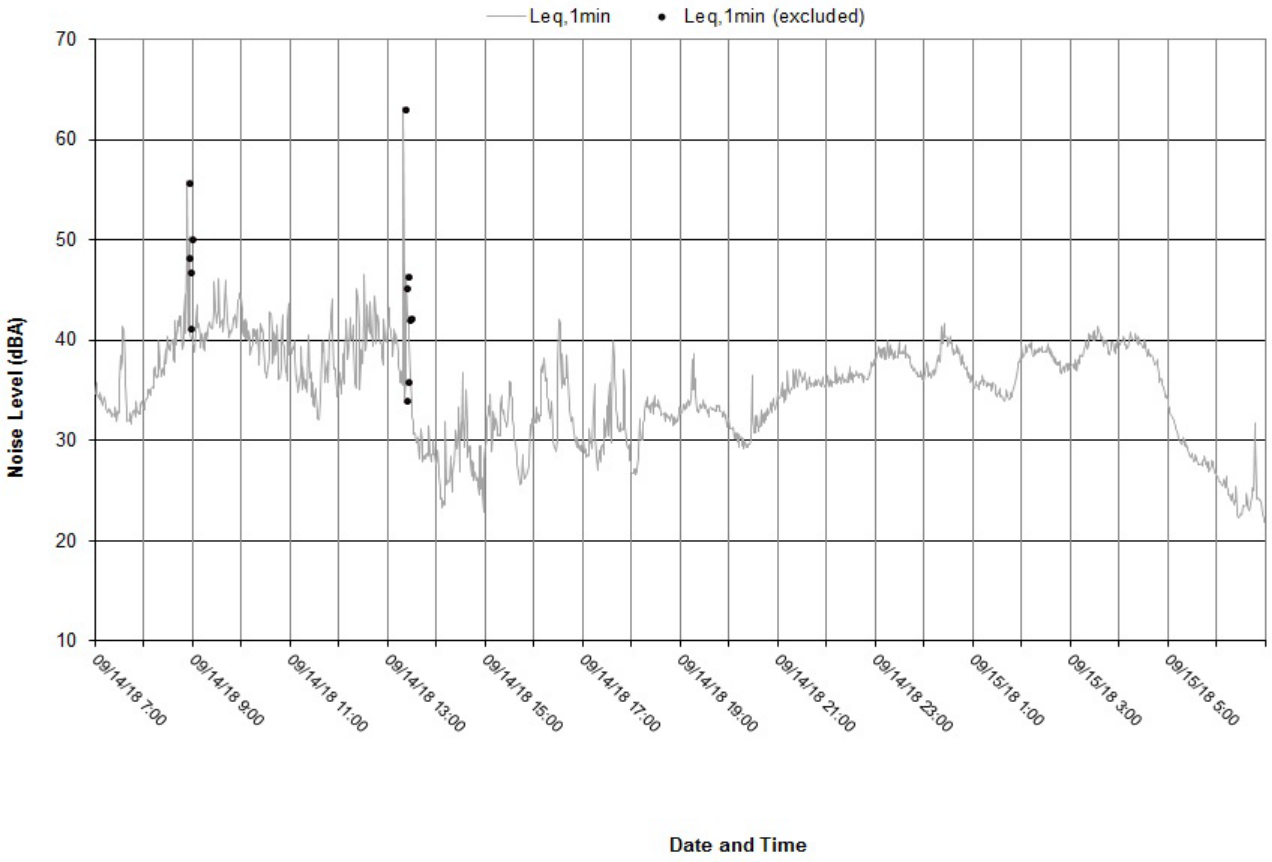
Leq = energy equivalent sound level; dBA = A-weighted decibel

Figure 10: Monitoring Data Recorded at Measurement Station Noise 2 (13 Sep 7:00 CST through 14 Sep 6:59 CST)



Leq = energy equivalent sound level; dBA = A-weighted decibel

Figure 11: Monitoring Data Recorded at Measurement Station Noise 2 (14 Sep 7:00 CST through 15 Sep 6:59 CST)



Leq = energy equivalent sound level; dBA = A-weighted decibel

Table 7 presents representative baseline noise levels (i.e., $L_{eq,day}$ and $L_{eq,night}$) for measurement station Noise 2. These representative values have been calculated by averaging valid one-minute data samples.

Table 7: Representative Baseline Noise Levels for Station Noise 2

Measurement Station	Period[(a)]	Baseline Noise Level (dBA)
Noise 2	12 September 2018 Daytime ($L_{eq,day}$)	44
	12/13 September 2018 Nighttime ($L_{eq,night}$)	43
	13 September 2018 Daytime ($L_{eq,day}$)	43
	13/14 September 2018 Nighttime ($L_{eq,night}$)	31
	14 September 2018 Daytime ($L_{eq,day}$)	37
	14/15 September 2018 Nighttime ($L_{eq,night}$)	37
	Average Daytime ($L_{eq,day}$)	*42*
	Average Nighttime ($L_{eq,night}$)	*39*

a) For consistency with the Health Canada and AER guidance documents, daytime is defined as the 15-hour period from 7:00 to 22:00 and nighttime is defined as the nine-hour period from 22:00 to 7:00 (Health Canada 2017; AER 2007).
dBA = A-weighted decibel

Table 8, Table 9, and Table 10 characterize the representative baseline noise levels measured at station Noise 2 in the context of relevant thresholds. Table 8 compares average daytime and nighttime noise levels measured at Noise 2 to thresholds from the Environment Canada, Health Canada, and AER guidance documents (Environment Canada 2009; Health Canada 2017; AER 2007). Table 9 presents the average%HA value calculated for Noise 2 using a mathematical formula from the Health Canada guidance document (Health Canada 2017). Table 10 presents LFN analysis of data from Noise 2 in the context of the two-part LFN test set out in AER Directive 038 (AER 2007).

Table 8: Comparison of Baseline Noise Levels to Thresholds for Station Noise 2

Measurement Station	Period[a]	Average Baseline Noise Level (dBA)	Noise Threshold (dBA)		
			Environment Canada[b]	Health Canada[c]	AER Directive 038[d]
Noise 2	Daytime ($L_{eq,day}$)	42	55	n/a[e]	50
	Nighttime ($L_{eq,night}$)	39	45	40	40

a) For consistency with the Health Canada and AER guidance documents, daytime is defined as the 15-hour period from 7:00 to 22:00 and nighttime is defined as the nine-hour period from 22:00 to 7:00 (Health Canada 2017; AER 2007).
b) General noise thresholds from the Environment Canada guidance document (Environment Canada 2009).
c) Sleep disturbance threshold from the Health Canada guidance document (Health Canada 2017).
d) General noise thresholds from AER Directive 038 (AER 2007).
e) The Health Canada sleep disturbance threshold only applies during the nighttime period (Health Canada 2017).
dBA = A-weighted decibel; AER = Alberta Energy Regulator

Table 9: Baseline Percentage Highly Annoyed Values for Station Noise 2

Measurement Station	Average Baseline%HA[a]
Noise 2	4.7%

a) Average baseline%HA value calculated using the average daytime and nighttime noise levels measured at Noise 2 and a formula presented in the Health Canada guidance document (Health Canada 2017).
%HA = percent highly annoyed

Table 10: Baseline Low Frequency Noise Analysis for Station Noise 2

Measurement Station	Period	Baseline Noise Level		Difference: dBC minus dBA	Number of Clear Tonal Components below 250 Hz[a]
		(dBA)	(dBC)		
Noise 2	12 September 2018 Daytime ($L_{eq,day}$)	44	48	4	0
	12/13 September 2018 Nighttime ($L_{eq,night}$)	43	46	3	0
	13 September 2018 Daytime ($L_{eq,day}$)	43	45	2	0
	13/14 September 2018 Nighttime ($L_{eq,night}$)	31	34	3	0
	14 September 2018 Daytime ($L_{eq,day}$)	37	41	4	0
	14/15 September 2018 Nighttime ($L_{eq,night}$)	37	40	3	0

a) Tonal components were identified using a technique described in AER Directive 038 (AER 2007).
dBA = A-weighted decibel; dBC = C-weighted decibel

The results presented in Table 8 indicate that average baseline noise levels measured at station Noise 2 do not exceed any of the thresholds set out in the Environment Canada, Health Canada, or AER guidance documents (Environment Canada 2009; Health Canada 2017; AER 2007). The results presented in Table 9 indicate that 4.7% of a typical community would report being highly annoyed by the baseline noise levels measured at station Noise 2. Based on the two-part test set out in AER Directive 038 (AER 2007), the results presented in Table 10 indicate that there is no LFN issue present in the baseline noise levels measured at station Noise 2. Specifically, the difference between noise levels expressed in dBA and noise levels expressed in dBC is less than 20 for all measurement periods, and a low frequency tone was not observed for any of the measurement periods.

5.1.3 Noise 3

Monitoring was conducted at measurement station Noise 3 from 12:46 CST on 12 September 2018 until 6:29 CST on 15 September 2018. A photograph showing the monitoring equipment deployed at Noise 3 is presented in Figure 12.

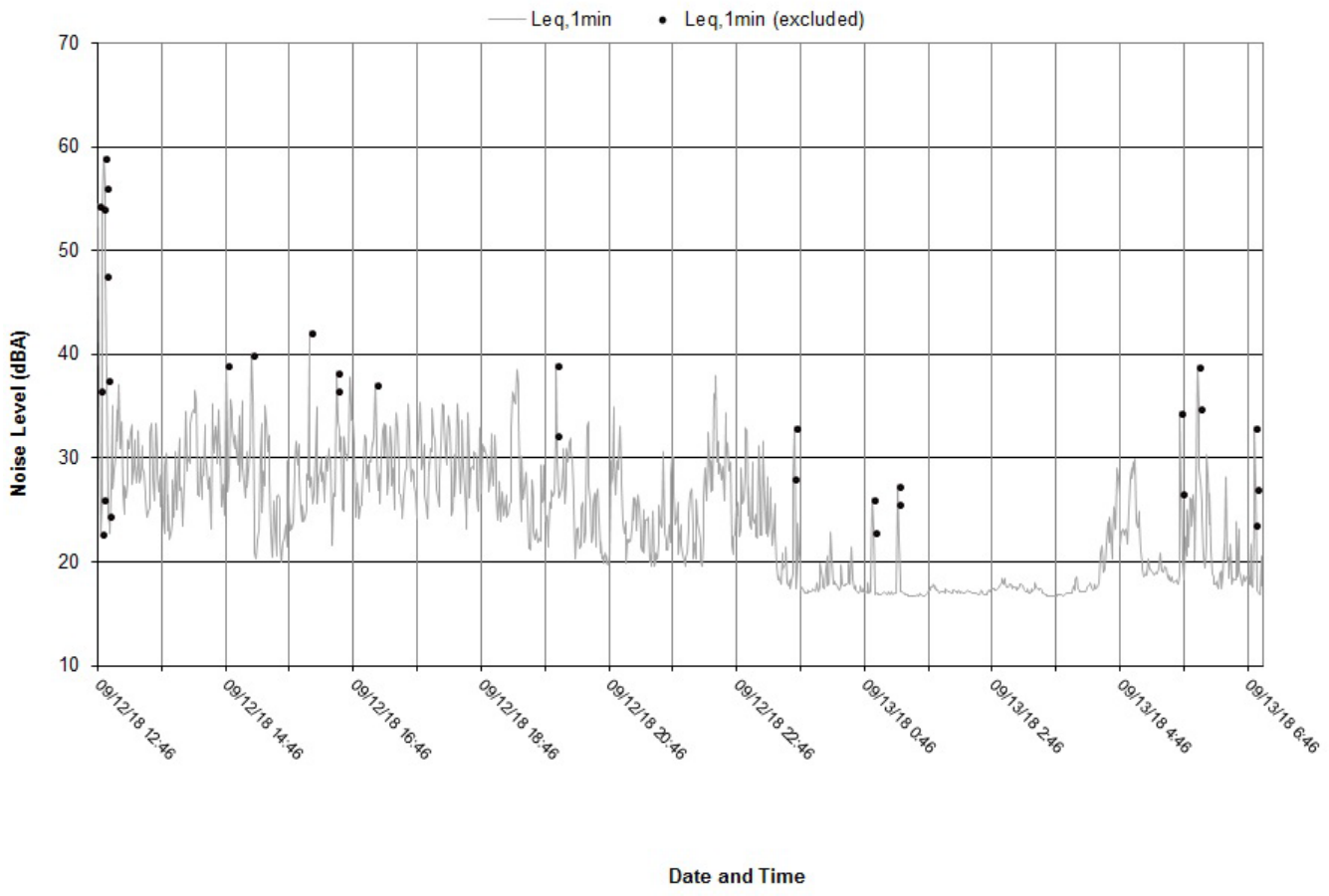
Representative noise sources audible at Noise 3 included:

- wind in vegetation; and
- birds.

Graphs of one-minute noise levels measured at Noise 3 are presented in Figure 13, Figure 14, and Figure 15. These figures show the valid data samples that were used in the calculation of representative $L_{eq,day}$ and $L_{eq,night}$ average noise levels, and the data samples that were excluded because they were logged under unacceptable weather conditions or influenced by noise from exploration activities or by vehicles from Highway 955. The excluded data samples have been highlighted using black dots. Appendix D provides a complete list of each data sample that was excluded when establishing representative noise levels for measurement station Noise 3. Appendix D also provides an explanation for why each data sample was excluded.

Figure 12: Monitoring Equipment Deployed at Measurement Station Noise 3

Figure 13: Monitoring Data Recorded at Measurement Station Noise 3 (12 Sep 12:46 CST through 13 Sep 6:59 CST)



Leq = energy equivalent sound level; dBA = A-weighted decibel

Figure 14: Monitoring Data Recorded at Measurement Station Noise 3 (13 Sep 7:00 CST through 14 Sep 6:59 CST)

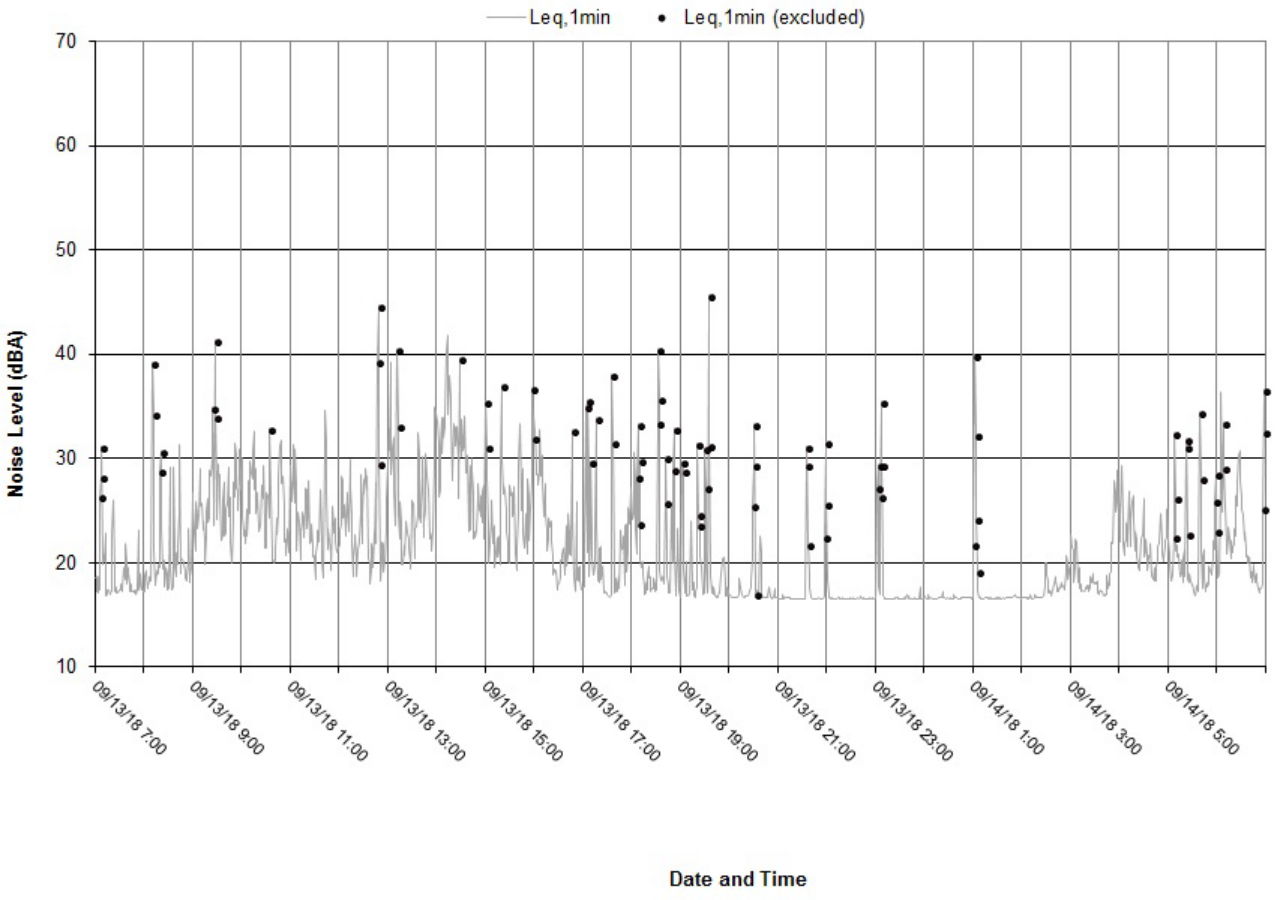
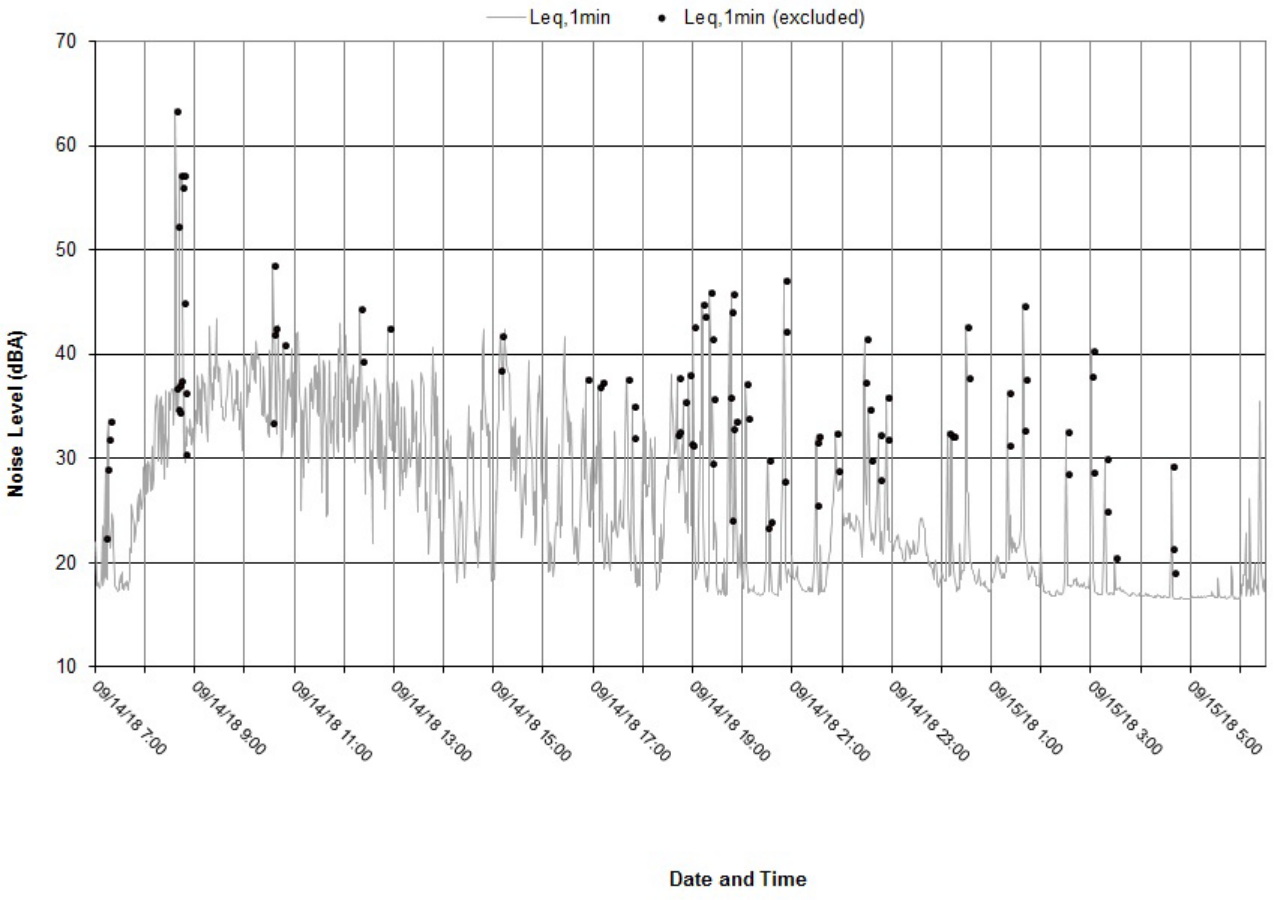


Figure 15: Monitoring Data Recorded at Measurement Station Noise 3 (14 Sep 7:00 CST through 15 Sep 6:29 CST)



Representative baseline noise levels (i.e., $L_{eq,day}$ and $L_{eq,night}$) for measurement station Noise 3 are presented in Table 11. These representative values have been calculated by averaging valid one-minute data samples.

Table 11: Representative Baseline Noise Levels for Station Noise 3

Measurement Station	Period[(a)]	Baseline Noise Level (dBA)
Noise 3	12 September 2018 Daytime ($L_{eq,day}$)	29
	12/13 September 2018 Nighttime ($L_{eq,night}$)	23
	13 September 2018 Daytime ($L_{eq,day}$)	26
	13/14 September 2018 Nighttime ([$L_{eq,night}$)	20
	14 September 2018 Daytime ($L_{eq,day}$)	33
	14/15 September 2018 Nighttime ($L_{eq,night}$)	20
	Average Daytime ($L_{eq,day}$)	*30*
	Average Nighttime ($L_{eq,night}$)	*21*

a) For consistency with the Health Canada and AER guidance documents, daytime is defined as the 15-hour period from 7:00 to 22:00 and nighttime is defined as the nine-hour period from 22:00 to 7:00 (Health Canada 2017; AER 2007).
dBA = A-weighted decibel

Table 12, Table 13, and Table 14 characterize the representative baseline noise levels measured at station Noise 3 in the context of relevant thresholds. Table 12 compares average daytime and nighttime noise levels measured at Noise 3 to thresholds from the Environment Canada, Health Canada, and AER guidance documents (Environment Canada 2009; Health Canada 2017; AER 2007). Table 13 presents the average%HA value calculated for Noise 3 using a mathematical formula from the Health Canada guidance document (Health Canada 2017). Table 14 presents LFN analysis of data from Noise 3 in the context of the two-part LFN test set out in AER Directive 038 (AER 2007).

Table 12: Comparison of Baseline Noise Levels to Thresholds for Station Noise 3

Measurement Station	Period[a]	Average Baseline Noise Level (dBA)	Noise Threshold (dBA)		
			Environment Canada[b]	Health Canada[c]	AER Directive 038[d]
Noise 3	Daytime ($L_{eq,day}$)	30	55	n/a[e]	50
	Nighttime ($L_{eq,night}$)	21	45	40	40

a) For consistency with the Health Canada and AER guidance documents, daytime is defined as the 15-hour period from 7:00 to 22:00 and nighttime is defined as the nine-hour period from 22:00 to 7:00 (Health Canada 2017; AER 2007).
b) General noise thresholds from the Environment Canada guidance document (Environment Canada 2009).
c) Sleep disturbance threshold from the Health Canada guidance document (Health Canada 2017).
d) General noise thresholds from AER Directive 038 (AER 2007).
e) The Health Canada sleep disturbance threshold only applies during the nighttime period (Health Canada 2017).
dBA = A-weighted decibel

Table 13: Baseline Percentage Highly Annoyed Values for Station Noise 3

Measurement Station	Average Baseline%HA[a]
Noise 3	0.6%

a) Average baseline%HA value calculated using the average daytime and nighttime noise levels measured at Noise 3 and a formula presented in the Health Canada guidance document (Health Canada 2017).
%HA = percent highly annoyed

Table 14: Baseline Low Frequency Noise Analysis for Station Noise 3

Measurement Station	Period	Baseline Noise Level		Difference: dBC minus dBA	Number of Clear Tonal Components below 250 Hz[a]
		(dBA)	(dBC)		
Noise 3	12 September 2018 Daytime ($L_{eq,day}$)	29	39	10	0
	12/13 September 2018 Nighttime ($L_{eq,night}$)	23	32	9	0
	13 September 2018 Daytime ($L_{eq,day}$)	26	34	8	0
	13/14 September 2018 Nighttime ($L_{eq,night}$)	20	29	9	0
	14 September 2018 Daytime ($L_{eq,day}$)	33	44	11	0
	14/15 September 2018 Nighttime ($L_{eq,night}$)	20	30	10	0

a) Tonal components were identified using a technique described in AER Directive 038 (AER 2007).
dBA = A-weighted decibel; dBC = C-weighted decibel; Hz = hertz

The results presented in Table 12 indicate that average baseline noise levels measured at station Noise 3 do not exceed any of the thresholds set out in the Environment Canada, Health Canada, or AER guidance documents (Environment Canada 2009; Health Canada 2017; AER 2007). The results presented in Table 13 indicate that 0.6% of a typical community would report being highly annoyed by the baseline noise levels measured at station Noise 3. Based on the two-part test set out in AER Directive 038 (AER 2007), the results presented in Table 14 indicate that there is no LFN issue present in the baseline noise levels measured at station Noise 3. Specifically, the difference between noise levels expressed in dBA and noise levels expressed in dBC is less than 20 for all measurement periods, and a low frequency tone was not observed for any of the measurement periods.

5.2 Light

5.2.1 Light Trespass

Table 15 presents baseline light trespass levels measured at each of the nine light stations. Table 15 also compares baseline light trespass levels to the light trespass threshold for environmental lighting zone E1 (CIE 2017).

Table 15: Baseline Light Trespass Levels

Measurement Station	Environmental Condition	Baseline Light Trespass Level (mlux)	Light Trespass Threshold: Zone E1[(a)] (mlux)
Light 1	summertime cloudy skies	3	100
	summertime clear skies	6	
	wintertime cloudy skies	2	
	wintertime clear skies	3	
Light 2	summertime cloudy skies	5	100
	summertime clear skies	5	
	wintertime cloudy skies	1	
	wintertime clear skies	4	
Light 3	summertime cloudy skies	4	100
	summertime clear skies	1	
	wintertime cloudy skies	3	
	wintertime clear skies	3	
Light 4	summertime cloudy skies	3	100
	summertime clear skies	3	
	wintertime cloudy skies	1	
	wintertime clear skies	3	
Light 5	summertime cloudy skies	6	100
	summertime clear skies	3	
	wintertime cloudy skies	1	
	wintertime clear skies	3	
Light 6	summertime cloudy skies	3	100
	summertime clear skies	7	
	wintertime cloudy skies	1	
	wintertime clear skies	3	

Table 15: Baseline Light Trespass Levels

Measurement Station	Environmental Condition	Baseline Light Trespass Level (mlux)	Light Trespass Threshold: Zone E1[(a)] (mlux)
Light 7	summertime cloudy skies	4	100
	summertime clear skies	4	
	wintertime cloudy skies	4	
	wintertime clear skies	3	
Light 8	summertime cloudy skies	0	100
	summertime clear skies	0	
	wintertime cloudy skies	1	
	wintertime clear skies	3	
Light 9	summertime cloudy skies	3	100
	summertime clear skies	4	
	wintertime cloudy skies	22	
	wintertime clear skies	4	

a) Light trespass limit suggested by light assessment literature for environmental lighting zone E1 (CIE 2017).
mlux = millilux

The results presented in Table 15 indicate that baseline light trespass levels at all nine measurement stations are below the light trespass threshold recommended in light assessment literature (CIE 2017). This result is consistent with the field team's observation that there are very few artificial light sources within the LSA and RSA and that dense forest effectively screens light trespass from these sources.

5.2.2 Sky Glow

Table 16 presents baseline sky glow levels measured at each of the nine light stations, along with the degree of cloud cover observed during each measurement. For the summertime clear skies measurement condition, Table 16 compares baseline sky glow levels to the sky glow threshold for environmental lighting zone E1 (ILP 2020).

Table 16: Baseline Sky Glow Levels

Measurement Station	Environmental Condition	Observed Cloud Cover[(a)]	Baseline Sky Glow Level (mag/arcsec^2)	Sky Glow Threshold: Zone E1[(b)] (mag/arcsec^2)
Light 1	summertime cloudy skies	8/8	19.5	n/a[(c)]
	summertime clear skies	0/8	20.5	20
	wintertime cloudy skies	3/8	21.6	n/a[(c)]
	wintertime clear skies	0/8	20.7	n/a[(c)]
Light 2	summertime cloudy skies	8/8	21.0	n/a[(c)]
	summertime clear skies	0/8	20.9	20
	wintertime cloudy skies	7/8	21.0	n/a[(c)]
	wintertime clear skies	0/8	20.1	n/a[(c)]

Table 16: Baseline Sky Glow Levels

Measurement Station	Environmental Condition	Observed Cloud Cover[a]	Baseline Sky Glow Level (mag/arcsec^2)	Sky Glow Threshold: Zone E1[b] (mag/arcsec^2)
Light 3	summertime cloudy skies	8/8	20.0	n/a[c]
	summertime clear skies	0/8	21.0	20
	wintertime cloudy skies	8/8	20.6	n/a[c]
	wintertime clear skies	0/8	20.0	n/a[c]
Light 4	summertime cloudy skies	8/8	19.9	n/a[c]
	summertime clear skies	2/8	20.6	20
	wintertime cloudy skies	8/8	20.5	n/a[c]
	wintertime clear skies	0/8	20.1	n/a[c]
Light 5	summertime cloudy skies	8/8	19.8	n/a[c]
	summertime clear skies	2/8	20.5	20
	wintertime cloudy skies	8/8	20.8	n/a[c]
	wintertime clear skies	0/8	20.1	n/a[c]
Light 6	summertime cloudy skies	8/8	20.2	n/a[c]
	summertime clear skies	2/8	20.5	20
	wintertime cloudy skies	5/8	21.3	n/a[c]
	wintertime clear skies	0/8	20.2	n/a[c]
Light 7	summertime cloudy skies	8/8	20.0	n/a[c]
	summertime clear skies	2/8	19.7	20
	wintertime cloudy skies	7/8	21.7	n/a[c]
	wintertime clear skies	0/8	19.9	n/a[c]
Light 8	summertime cloudy skies	8/8	20.6	n/a[c]
	summertime clear skies	2/8	19.9	20
	wintertime cloudy skies	8/8	21.6	n/a[c]
	wintertime clear skies	0/8	20.3	n/a[c]
Light 9	summertime cloudy skies	8/8	20.7	n/a[c]
	summertime clear skies	2/8	20.1	20
	wintertime cloudy skies	3/8	20.8	n/a[c]
	wintertime clear skies	0/8	20.7	n/a[c]

a) Field observation of cloud cover; Note: 0/8 indicates clear skies and 8/8 indicates completely overcast skies.
b) Sky glow limit suggested by light assessment literature for environmental lighting zone E1 (ILP 2020). Sky glow limit applies under summertime conditions (i.e., no snow on the ground), clear skies (i.e., no cloud cover), with no moon, and no aurora activity.
c) There are no relevant sky glow limits for cloudy skies or wintertime conditions.
mag/arcsec^2 = magnitude per square second of arc

Although there are no relevant sky glow limits for cloudy skies or wintertime conditions, Table 16 presents sky glow measurements for summertime cloudy skies, wintertime cloudy skies, and wintertime clear skies. These measurement data show the variability in sky glow conditions in the LSA and RSA and will be used to establish a baseline against which potential sky glow effects from the Project can be assessed in the EIS.

For the summertime clear skies condition, the results presented in Table 16 show that baseline sky glow levels at seven measurement stations (Light 1 through 6 and Light 9) are greater than the sky glow threshold (20 mag/arcsec^2), which means baseline sky glow conditions at these stations are considered acceptable for environmental lighting zone E1. Baseline sky glow levels at the other two measurement stations (Light 7 and 8) are less than the sky glow threshold (20 mag/arcsec^2), which means that baseline sky glow conditions at these stations are brighter than suggested for environmental lighting zone E1. For the summertime clear skies condition, the greatest sky glow effect is observed for measurement station Light 7, where the difference between the baseline sky glow level and the E1 threshold is 0.3 mag/arcsec^2.

Aurora activity was present during the summertime clear skies sky glow measurements. Because it was not possible to account for or exclude the influence of this aurora activity, it likely influenced the baseline sky glow measurements. In particular, aurora activity may be partially responsible for elevated sky glow at two of the nine measurement stations (i.e., aurora activity reduced measured mag/arcsec^2 values).

It should also be noted that baseline sky glow levels presented in this report for summertime clear skies conditions do not include the contribution from Rook I exploration activities in the LSA. The field crew observed that sky glow from exploration activities was effectively undetectable during the summertime clear skies measurements. In contrast, the field crew observed obvious sky glow when looking towards the southwest, in the approximate direction of Fort McMurray. Sky glow from Fort McMurray is likely influencing baseline conditions in the LSA and RSA and may be contributing to elevated sky glow at two of the nine measurement stations.

6.0 SUMMARY

Potential changes to noise and light conditions resulting from mining and milling operations can create adverse effects to both the social and biophysical environment. For example, Indigenous Peoples often express concerns about sensory disturbance from industrial facilities, including noise and light effects on cultural practices and wildlife (Appendix A). In consideration of these potential changes and concerns, a baseline study was conducted for the Project.

The objective of the noise and light baseline study was to gather information on representative existing environmental noise and light levels in the anticipated area of the Project. Information gathered during the field study provided a baseline against which potential noise and light effects from the Project were assessed.

Saskatchewan does not have regulations or guidelines for the assessment of environmental noise from mining or industrial developments. Similarly, there are no specific federal or provincial regulatory requirements to assess potential light effects from mining or industrial developments. In addition, there is no existing information about representative environmental noise and light levels in the anticipated area of the Project.

In the absence of Saskatchewan-specific guidance, baseline noise levels were characterized using thresholds from Environment Canada (Environment Canada 2009), Health Canada (Health Canada 2017), and the AER (AER 2007). In the absence of federal or provincial guidance, baseline light trespass and sky glow levels were characterized using thresholds from light assessment literature (IESNA 2000; CIE 1997, 2017; ILP 2020).

The baseline study was conducted in September 2018 and March 2020. Baseline noise levels were measured at three stations (Noise 1, Noise 2, Noise 3) and baseline light trespass and sky glow levels were measured at nine stations (Light 1 through 9). Noise and light levels measured during the field study were post-processed, as required, to exclude influence from Rook I exploration activities and other unrepresentative data sources (i.e., to establish representative existing baseline conditions).

Baseline noise levels for all three measurement stations were observed to be less than thresholds set out in the Environment Canada, Health Canada, and AER guidance documents. Baseline noise levels were generally observed to be higher and more variable at the measurement stations located close to waterbodies (Noise 1 and Noise 2) than at the measurement station located in a forested area (Noise 3). This suggests that wave action and other water-related sources have an influence on baseline noise levels near waterbodies.

Baseline light trespass levels for all nine measurement stations were observed to be less than thresholds from light assessment literature. Baseline sky glow at two of the nine measurement stations (Light 7 and Light 8) were observed to exceed thresholds from light assessment literature. Baseline sky glow at the other seven measurement stations (Light 1 through 6 and Light 9) were observed to be less than thresholds from light assessment literature. Elevated sky glow observed in the baseline data likely results from the combined influence of aurora activity during the field study and the presence of Fort McMurray approximately 150 km southwest of the Project.

The baseline study achieved the objective of characterizing existing environmental noise and light levels in the anticipated area of the Project. Specifically, noise and light levels measured during the field study provided a representative baseline against which potential noise and light effects from the Project were assessed.

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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Acoustic Scientist

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VY/AF/rd/pls

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ISO (International Organization for Standardization). 1987. ISO 1996-2 Acoustics – Description and Measurement of Environmental Noise – Part 2: Acquisition of Data Pertinent to Land Use.

APPENDIX A

Joint Working Group Feedback Applicable to Noise and Light Baseline

Table 1A presents the comments and feedback NexGen has received from members of local Indigenous communities through established Joint Working Group meetings. NexGen continues to engage with communities, and the feedback presented in Table 1A reflects comments and feedback received through March 2020 that were related to baseline noise and light or the comprehensive baseline program generally.

Table 1A: Joint Working Group Feedback - Noise and Light

Community	Comment
Birch Narrows Dene Nation (BNDN)	Are you aware of any huge adverse environmental impacts in any of the current mine sites?
	Important topics for the Joint Working Group (JWG) moving forward are Indigenous Knowledge, traditional land use, the species discussion, water quality, environmental monitoring, employment and business opportunities.
	Could we ask that you take samples here? That way we can see changes into the future. Even if it isn't affected by the mine. Respectfully, I request that samples are taken here.
Buffalo River Dene Nation (BRDN)	Have you gone to communities to show what you are doing? If so, what was the feedback?
	It's important to explain the Project to elders in a way that they can then explain it to other elders in the communities.
	Near Barney Lake, you can hear the Alberta loggers working. When we went down 2-3 years ago, we went to the border (showed on map) and you could hear the machines in the middle of nowhere. There is noise everywhere. We didn't see caribou, but we saw tracks.
Clearwater River Dene Nation (CRDN)	Remember we're trying to implement a plain speak document because of visual concepts of understanding. That is what the Chief is talking about.
	In terms of baseline studies, are there any opportunities for community involvement with any of your residual baseline work, from fish, terrestrial, etc.?
	We will eventually throw in our environmental monitors. I don't know if you knew that. We want to train our own people because of lack of trust of government and industry.
	The interim CRDN Rights and Knowledge study will come out of the CRDN-defined initial list of valued components (VCs) that we want to talk to you about. As we go through there may be additional ones. We know there's a certain window, but we'll try to be as comprehensive as possible. It may not be as linear as moose; it might be having undisturbed places on waterbodies. They might be more complex.
	Not on the old or existing mines that are sitting there?
	Golder does the same thing – hires three or four band members to do the interviews, then takes the notes and puts the document together. When you find the stuff it's not always based on the relationship to the stuff. It's based on what the government's qualifications are on the environmental assessment's impacts, and not the actual concerns of it. I'm trying to reach what [CRDN member]is saying between traditional and modern ways.
	When we started looking at the strategy process, there is that interpretation of cumulative effects. Then we define and introduce an interpretation for that. It's not just one side, western science, we're doing the traditional side as well. That's what the Chief's referring to.
	Both traditional and western science are very important.
	Will we see the results of those studies?
	How many other projects are in that square box (referring to map)?
	Do other companies have mineral holdings in that box on the map – like for oil and gas?
	I think it's really important to compare Cluff Lake to what's happening in the baseline studies. It's a good question.

Table 1A: Joint Working Group Feedback - Noise and Light

Community	Comment
Clearwater River Dene Nation (CRDN)	Are there any herds you've worked on in mitigation, creating an environment – I haven't seen any caribou increasing in Alberta at all. I don't see companies cleaning up another area to mitigate. You're just the first part; there will be another mine and another mine. The biggest thing was the noise; they found out a year or two ago that the humming from the buildings affected them. They're just starting to realize that, so it's not like they're going to come back, or go to another area that's been cleaned up. They'll never come back, just get smaller and smaller.
	What's the purpose of trying to gather all this information?
Métis Nation – Saskatchewan (MN-S)	We have to understand all living and non-living things.
	Are any community members involved in the establishment of the baseline for environmental monitoring, so can they verify their accuracy? Would the results be released and reviewed by the community? From a trust point of view, our people will want to know that those numbers are accurate now, not later. Just a comment to think about.
	How would this group know – is there a way for the people involved in the studies to inform the group of what they saw and if they are confident, they are accurate? Once the stuff hits the Environmental Impact Statement (EIS), how do we know that it is good? If community folks that were involved in that process and they can validate the results, that brings comfort to community members.
	How often are you monitoring?
	It's that validation we're looking for. When I had to involve community members in monitoring, I would get them to write a report if they couldn't speak to the broader community in general. If they didn't feel like writing it, they could talk so someone who would transcribe it. That report could give a summary of how things went, what they saw, were the readings accurate; that could come back to this group, if they couldn't present themselves. The point [MN-S member's] trying to make is, we need some connection to that community resource that's out there doing the monitoring and seeing this stuff. We know who they are, and we're confident in the results. That builds trust.
	Do you have instruments or people taking samples? What does an instrument look like?
	The studies we did a few years back, these guys don't want to use them. That's what I heard.
	I had feedback on community engagement, and I'm trying to figure out how we can move forward in a responsible way where people have their input without being offended. We're working towards a bigger goal than what is currently perceived. We need a discussion on how we can approach it. I can offer some high-level thinking to help bring my community around.
	Aircrafts are considered a disturbance? You see survey planes often.
	We should have more of these meetings with other companies like this. I'd like to get a Métis community member to work side by side with you guys and report the environmental side to the community instead of you guys doing it, so we know where we are and how much damage is being done to the land.
	This is general – the same information will come back to all the JWGs?
	You live here and you listen to all the cars, horns etc. There's no peace. Out in the wilderness you hear the grass rustling, the wind blowing. The only disturbance is the rumbling jets that fly over. It was so quiet during 9-11! The animals are not scared of you because they don't know you, they're isolated from the human factor so you can get close and communicate with them, and they become your friend. Semi-isolation is a good word, because we do have the jets that break the isolation.

Table 1A: Joint Working Group Feedback - Noise and Light

Community	Comment
Métis Nation – Saskatchewan (MN-S)	The mine site at NexGen is only about one km – very small site; I don't know about the noise level on the ground. They do the aerial geological surveys; I didn't know anything about that until we were hunting one fall and a plane kept going back and forth. It's not remote any more. There's noise day and night.

BNDN = Birch Narrows Dene Nation; BRDN = Buffalo River Dene Nation; CRDN = Clearwater River Dene Nation; EIS = Environmental Impact Statement; JWG = Joint Working Group; MNS = Métis Nation – Saskatchewan; VC = valued component

APPENDIX B

Data Samples Excluded from Measurement Station Noise 1

This appendix identifies data samples logged at meaurement station Noise 1 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/12/18 10:20 am	technician
09/12/18 10:21 am	technician
09/12/18 10:22 am	technician
09/12/18 10:23 am	technician
09/12/18 10:24 am	technician
09/12/18 10:25 am	technician
09/12/18 10:26 am	technician
09/12/18 10:27 am	technician
09/12/18 10:28 am	technician
09/12/18 10:29 am	technician
09/12/18 10:30 am	technician
09/12/18 10:31 am	technician
09/12/18 3:14 pm	elevated wind speed
09/13/18 10:03 pm	traffic on access road
09/13/18 10:04 pm	traffic on access road
09/13/18 10:05 pm	traffic on access road
09/13/18 10:06 pm	traffic on access road
09/14/18 9:56 am	helicopter nearby
09/14/18 9:57 am	helicopter nearby
09/14/18 9:58 am	helicopter nearby
09/14/18 9:59 am	helicopter nearby
09/14/18 10:00 am	helicopter nearby
09/14/18 10:01 am	helicopter nearby
09/14/18 10:02 am	helicopter nearby
09/14/18 10:03 am	helicopter nearby
09/14/18 10:04 am	helicopter nearby
09/14/18 10:05 am	helicopter nearby
09/14/18 10:06 am	helicopter nearby
09/14/18 10:07 am	helicopter nearby
09/14/18 10:08 am	helicopter nearby
09/14/18 10:09 am	helicopter nearby
09/14/18 10:10 am	helicopter nearby
09/14/18 10:11 am	helicopter nearby
09/14/18 10:12 am	helicopter nearby
09/14/18 10:13 am	helicopter nearby
09/14/18 10:14 am	helicopter nearby
09/14/18 10:15 am	helicopter nearby
09/14/18 10:16 am	helicopter nearby
09/14/18 10:17 am	helicopter nearby
09/14/18 10:18 am	helicopter nearby

This appendix identifies data samples logged at meaurement station Noise 1 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/14/18 10:19 am	helicopter nearby
09/14/18 10:20 am	helicopter nearby
09/14/18 10:21 am	helicopter nearby
09/14/18 10:22 am	helicopter nearby
09/14/18 10:23 am	helicopter nearby
09/14/18 10:24 am	helicopter nearby
09/14/18 10:25 am	helicopter nearby
09/14/18 10:26 am	helicopter nearby
09/14/18 10:27 am	helicopter nearby
09/14/18 10:28 am	helicopter nearby
09/14/18 10:29 am	helicopter nearby
09/14/18 10:30 am	helicopter nearby
09/14/18 10:31 am	helicopter nearby
09/14/18 10:32 am	helicopter nearby
09/14/18 10:33 am	helicopter nearby
09/14/18 10:34 am	helicopter nearby
09/14/18 10:35 am	helicopter nearby
09/14/18 10:36 am	helicopter nearby
09/14/18 10:37 am	helicopter nearby
09/14/18 10:38 am	helicopter nearby
09/14/18 10:39 am	helicopter nearby
09/14/18 10:40 am	helicopter nearby
09/14/18 10:41 am	helicopter nearby
09/14/18 10:42 am	helicopter nearby
09/14/18 10:43 am	helicopter nearby
09/14/18 10:44 am	helicopter nearby
09/14/18 10:45 am	helicopter nearby
09/14/18 10:46 am	helicopter nearby
09/14/18 10:47 am	helicopter nearby
09/14/18 10:48 am	helicopter nearby
09/14/18 10:49 am	helicopter nearby
09/14/18 10:50 am	helicopter nearby
09/14/18 10:51 am	helicopter nearby
09/14/18 10:52 am	helicopter nearby
09/14/18 10:53 am	helicopter nearby
09/14/18 10:54 am	helicopter nearby
09/14/18 10:55 am	helicopter nearby
09/14/18 10:56 am	helicopter nearby
09/14/18 10:57 am	helicopter nearby
09/14/18 10:58 am	helicopter nearby

This appendix identifies data samples logged at meaurement station Noise 1 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/14/18 10:59 am	helicopter nearby
09/14/18 11:00 am	helicopter nearby
09/14/18 11:01 am	helicopter nearby
09/14/18 11:02 am	helicopter nearby
09/14/18 11:03 am	helicopter nearby
09/14/18 11:04 am	helicopter nearby
09/14/18 11:05 am	helicopter nearby
09/14/18 11:06 am	helicopter nearby
09/14/18 11:07 am	helicopter nearby
09/14/18 11:08 am	helicopter nearby
09/14/18 11:09 am	helicopter nearby
09/14/18 11:10 am	helicopter nearby
09/14/18 11:11 am	helicopter nearby
09/14/18 11:12 am	helicopter nearby
09/14/18 11:13 am	helicopter nearby
09/14/18 11:14 am	helicopter nearby
09/14/18 11:15 am	helicopter nearby
09/14/18 11:16 am	helicopter nearby
09/14/18 11:17 am	helicopter nearby
09/14/18 11:18 am	helicopter nearby
09/14/18 11:19 am	helicopter nearby
09/14/18 11:20 am	helicopter nearby
09/14/18 11:21 am	helicopter nearby
09/14/18 11:22 am	helicopter nearby
09/14/18 11:23 am	helicopter nearby
09/14/18 11:24 am	helicopter nearby
09/14/18 11:25 am	helicopter nearby
09/14/18 11:26 am	helicopter nearby
09/14/18 11:27 am	helicopter nearby
09/14/18 11:28 am	helicopter nearby
09/14/18 11:29 am	helicopter nearby
09/14/18 11:30 am	helicopter nearby
09/14/18 11:31 am	helicopter nearby
09/14/18 11:32 am	helicopter nearby
09/14/18 11:33 am	helicopter nearby
09/14/18 11:34 am	helicopter nearby
09/14/18 11:35 am	helicopter nearby
09/14/18 11:36 am	helicopter nearby
09/14/18 11:37 am	helicopter nearby
09/14/18 11:38 am	helicopter nearby

This appendix identifies data samples logged at meaurement station Noise 1 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/14/18 11:39 am	helicopter nearby
09/14/18 11:40 am	helicopter nearby
09/14/18 11:41 am	helicopter nearby
09/14/18 11:42 am	helicopter nearby
09/14/18 11:43 am	helicopter nearby
09/14/18 11:44 am	helicopter nearby
09/14/18 11:45 am	helicopter nearby
09/14/18 11:46 am	helicopter nearby
09/14/18 11:47 am	helicopter nearby
09/14/18 11:48 am	helicopter nearby
09/14/18 11:49 am	helicopter nearby
09/14/18 11:50 am	helicopter nearby
09/14/18 11:51 am	helicopter nearby
09/14/18 11:52 am	helicopter nearby
09/14/18 11:53 am	helicopter nearby
09/14/18 11:54 am	helicopter nearby
09/14/18 11:55 am	helicopter nearby
09/14/18 11:56 am	helicopter nearby
09/14/18 11:57 am	helicopter nearby
09/14/18 11:58 am	helicopter nearby
09/14/18 11:59 am	helicopter nearby
09/14/18 12:00 pm	helicopter nearby
09/14/18 12:01 pm	helicopter nearby
09/14/18 12:02 pm	helicopter nearby
09/14/18 12:03 pm	helicopter nearby
09/14/18 12:04 pm	helicopter nearby
09/14/18 12:05 pm	helicopter nearby
09/14/18 12:06 pm	helicopter nearby
09/14/18 12:07 pm	helicopter nearby
09/14/18 12:08 pm	helicopter nearby
09/14/18 12:09 pm	helicopter nearby
09/14/18 12:10 pm	helicopter nearby
09/14/18 12:11 pm	helicopter nearby
09/14/18 12:12 pm	helicopter nearby
09/14/18 12:13 pm	helicopter nearby
09/14/18 12:14 pm	helicopter nearby
09/14/18 12:15 pm	helicopter nearby
09/14/18 12:16 pm	helicopter nearby
09/14/18 12:17 pm	helicopter nearby
09/14/18 12:18 pm	helicopter nearby

This appendix identifies data samples logged at meaurement station Noise 1 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/14/18 12:19 pm	helicopter nearby
09/14/18 12:20 pm	helicopter nearby
09/14/18 12:21 pm	helicopter nearby
09/14/18 12:22 pm	helicopter nearby
09/14/18 12:23 pm	helicopter nearby
09/14/18 12:24 pm	helicopter nearby
09/14/18 12:25 pm	helicopter nearby
09/14/18 12:26 pm	helicopter nearby
09/14/18 12:27 pm	helicopter nearby
09/14/18 12:28 pm	helicopter nearby
09/14/18 12:29 pm	helicopter nearby
09/14/18 12:30 pm	helicopter nearby
09/14/18 12:31 pm	helicopter nearby
09/14/18 12:32 pm	helicopter nearby
09/14/18 12:33 pm	helicopter nearby
09/14/18 12:34 pm	helicopter nearby
09/14/18 12:35 pm	helicopter nearby
09/14/18 12:36 pm	helicopter nearby
09/14/18 12:37 pm	helicopter nearby
09/14/18 12:38 pm	helicopter nearby
09/14/18 12:39 pm	helicopter nearby
09/14/18 12:40 pm	helicopter nearby
09/14/18 12:41 pm	helicopter nearby
09/14/18 12:42 pm	helicopter nearby
09/14/18 12:43 pm	helicopter nearby
09/14/18 12:44 pm	helicopter nearby
09/14/18 12:45 pm	helicopter nearby
09/14/18 12:46 pm	helicopter nearby
09/14/18 12:47 pm	helicopter nearby
09/14/18 12:48 pm	helicopter nearby
09/14/18 12:49 pm	helicopter nearby
09/14/18 12:50 pm	helicopter nearby
09/14/18 12:51 pm	helicopter nearby
09/14/18 12:52 pm	helicopter nearby
09/14/18 12:53 pm	helicopter nearby
09/14/18 12:54 pm	helicopter nearby
09/14/18 12:55 pm	helicopter nearby
09/14/18 12:56 pm	helicopter nearby
09/14/18 12:57 pm	helicopter nearby
09/14/18 12:58 pm	helicopter nearby

This appendix identifies data samples logged at meaurement station Noise 1 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/14/18 12:59 pm	helicopter nearby
09/14/18 1:00 pm	helicopter nearby
09/14/18 1:01 pm	helicopter nearby
09/14/18 1:02 pm	helicopter nearby
09/14/18 1:03 pm	helicopter nearby
09/14/18 1:04 pm	helicopter nearby
09/14/18 1:05 pm	helicopter nearby
09/14/18 1:06 pm	helicopter nearby
09/14/18 1:07 pm	helicopter nearby
09/14/18 1:08 pm	helicopter nearby
09/14/18 1:09 pm	helicopter nearby
09/14/18 1:10 pm	helicopter nearby
09/14/18 1:11 pm	helicopter nearby
09/14/18 1:12 pm	helicopter nearby
09/14/18 1:13 pm	helicopter nearby
09/14/18 1:14 pm	helicopter nearby
09/14/18 1:15 pm	helicopter nearby
09/14/18 1:16 pm	helicopter nearby
09/14/18 1:17 pm	helicopter nearby
09/14/18 1:18 pm	helicopter nearby
09/14/18 1:19 pm	helicopter nearby
09/14/18 1:20 pm	helicopter nearby
09/14/18 1:21 pm	helicopter nearby
09/14/18 1:22 pm	helicopter nearby
09/14/18 1:23 pm	helicopter nearby
09/14/18 1:24 pm	helicopter nearby
09/14/18 1:25 pm	helicopter nearby
09/14/18 2:16 pm	helicopter nearby
09/14/18 2:17 pm	helicopter nearby
09/14/18 2:18 pm	helicopter nearby
09/14/18 2:19 pm	helicopter nearby
09/14/18 2:20 pm	helicopter nearby
09/14/18 2:21 pm	helicopter nearby
09/14/18 2:22 pm	helicopter nearby
09/14/18 2:23 pm	helicopter nearby
09/14/18 2:24 pm	helicopter nearby
09/14/18 2:25 pm	helicopter nearby
09/14/18 2:26 pm	helicopter nearby
09/14/18 2:27 pm	helicopter nearby
09/14/18 2:28 pm	helicopter nearby

This appendix identifies data samples logged at meaurement station Noise 1 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/14/18 2:29 pm	helicopter nearby
09/14/18 2:30 pm	helicopter nearby
09/14/18 2:31 pm	helicopter nearby
09/14/18 2:32 pm	helicopter nearby
09/14/18 2:33 pm	helicopter nearby
09/14/18 2:34 pm	helicopter nearby
09/14/18 2:35 pm	helicopter nearby
09/14/18 2:36 pm	helicopter nearby
09/14/18 2:37 pm	helicopter nearby
09/14/18 2:38 pm	helicopter nearby
09/14/18 2:39 pm	helicopter nearby
09/14/18 2:40 pm	helicopter nearby
09/14/18 2:41 pm	helicopter nearby
09/14/18 2:42 pm	helicopter nearby
09/14/18 2:43 pm	helicopter nearby
09/14/18 2:44 pm	helicopter nearby
09/14/18 2:45 pm	helicopter nearby
09/14/18 2:46 pm	helicopter nearby
09/14/18 2:47 pm	helicopter nearby
09/14/18 2:48 pm	helicopter nearby
09/14/18 2:49 pm	helicopter nearby
09/14/18 2:50 pm	helicopter nearby
09/14/18 2:51 pm	helicopter nearby
09/14/18 2:52 pm	helicopter nearby
09/14/18 2:53 pm	helicopter nearby
09/14/18 2:54 pm	helicopter nearby
09/14/18 2:55 pm	helicopter nearby
09/14/18 2:56 pm	helicopter nearby
09/14/18 2:57 pm	helicopter nearby
09/14/18 4:35 pm	helicopter nearby
09/14/18 4:36 pm	helicopter nearby
09/14/18 4:37 pm	helicopter nearby
09/14/18 6:17 pm	technician
09/14/18 6:18 pm	technician

APPENDIX C

Data Samples Excluded from Measurement Station Noise 2

This appendix identifies data samples logged at measurement station Noise 2 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/12/18 11:28 am	technician
09/12/18 11:29 am	technician
09/12/18 11:30 am	technician
09/12/18 11:31 am	technician
09/12/18 11:32 am	technician
09/12/18 11:33 am	technician
09/12/18 11:34 am	technician
09/14/18 8:52 am	helicopter nearby
09/14/18 8:53 am	helicopter nearby
09/14/18 8:54 am	helicopter nearby
09/14/18 8:55 am	helicopter nearby
09/14/18 8:56 am	helicopter nearby
09/14/18 1:19 pm	helicopter nearby
09/14/18 1:20 pm	helicopter nearby
09/14/18 1:21 pm	helicopter nearby
09/14/18 1:22 pm	helicopter nearby
09/14/18 1:23 pm	helicopter nearby
09/14/18 1:24 pm	helicopter nearby
09/14/18 1:25 pm	helicopter nearby

APPENDIX D

Data Samples Excluded from Measurement Station Noise 3

This appendix identifies data samples logged at measurement station Noise 3 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/12/18 12:46 pm	technician
09/12/18 12:47 pm	technician
09/12/18 12:48 pm	technician
09/12/18 12:49 pm	technician
09/12/18 12:50 pm	technician
09/12/18 12:51 pm	technician
09/12/18 12:52 pm	technician
09/12/18 12:53 pm	technician
09/12/18 12:54 pm	technician
09/12/18 12:55 pm	technician
09/12/18 2:46 pm	vehicle on Hwy 955
09/12/18 3:10 pm	vehicle on Hwy 955
09/12/18 4:04 pm	vehicle on Hwy 955
09/12/18 4:29 pm	vehicle on Hwy 955
09/12/18 4:30 pm	vehicle on Hwy 955
09/12/18 5:06 pm	vehicle on Hwy 955
09/12/18 7:55 pm	vehicle on Hwy 955
09/12/18 7:56 pm	vehicle on Hwy 955
09/12/18 11:39 pm	vehicle on Hwy 955
09/12/18 11:40 pm	vehicle on Hwy 955
09/13/18 12:53 am	vehicle on Hwy 955
09/13/18 12:54 am	vehicle on Hwy 955
09/13/18 1:16 am	vehicle on Hwy 955
09/13/18 1:17 am	vehicle on Hwy 955
09/13/18 5:42 am	vehicle on Hwy 955
09/13/18 5:43 am	vehicle on Hwy 955
09/13/18 5:58 am	vehicle on Hwy 955
09/13/18 5:59 am	vehicle on Hwy 955
09/13/18 6:51 am	vehicle on Hwy 955
09/13/18 6:52 am	vehicle on Hwy 955
09/13/18 6:53 am	vehicle on Hwy 955
09/13/18 7:06 am	vehicle on Hwy 955
09/13/18 7:07 am	vehicle on Hwy 955
09/13/18 7:08 am	vehicle on Hwy 955
09/13/18 8:10 am	vehicle on Hwy 955
09/13/18 8:11 am	vehicle on Hwy 955
09/13/18 8:20 am	vehicle on Hwy 955
09/13/18 8:21 am	vehicle on Hwy 955
09/13/18 9:24 am	vehicle on Hwy 955
09/13/18 9:27 am	vehicle on Hwy 955
09/13/18 9:28 am	vehicle on Hwy 955
09/13/18 10:35 am	vehicle on Hwy 955
09/13/18 12:47 pm	vehicle on Hwy 955
09/13/18 12:48 pm	vehicle on Hwy 955
09/13/18 12:49 pm	vehicle on Hwy 955
09/13/18 1:11 pm	vehicle on Hwy 955
09/13/18 1:12 pm	vehicle on Hwy 955
09/13/18 2:28 pm	vehicle on Hwy 955
09/13/18 3:00 pm	vehicle on Hwy 955
09/13/18 3:01 pm	vehicle on Hwy 955

This appendix identifies data samples logged at measurement station Noise 3 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
09/13/18 3:20 pm	vehicle on Hwy 955
09/13/18 3:58 pm	vehicle on Hwy 955
09/13/18 3:59 pm	vehicle on Hwy 955
09/13/18 4:47 pm	vehicle on Hwy 955
09/13/18 5:03 pm	vehicle on Hwy 955
09/13/18 5:06 pm	vehicle on Hwy 955
09/13/18 5:10 pm	vehicle on Hwy 955
09/13/18 5:16 pm	vehicle on Hwy 955
09/13/18 5:36 pm	vehicle on Hwy 955
09/13/18 5:37 pm	vehicle on Hwy 955
09/13/18 6:07 pm	people/vehicles nearby
09/13/18 6:08 pm	people/vehicles nearby
09/13/18 6:09 pm	people/vehicles nearby
09/13/18 6:10 pm	people/vehicles nearby
09/13/18 6:32 pm	vehicle on Hwy 955
09/13/18 6:33 pm	vehicle on Hwy 955
09/13/18 6:34 pm	vehicle on Hwy 955
09/13/18 6:41 pm	vehicle on Hwy 955
09/13/18 6:42 pm	vehicle on Hwy 955
09/13/18 6:51 pm	vehicle on Hwy 955
09/13/18 6:52 pm	vehicle on Hwy 955
09/13/18 7:02 pm	vehicle on Hwy 955
09/13/18 7:03 pm	vehicle on Hwy 955
09/13/18 7:21 pm	vehicle on Hwy 955
09/13/18 7:22 pm	vehicle on Hwy 955
09/13/18 7:23 pm	vehicle on Hwy 955
09/13/18 7:30 pm	vehicle on Hwy 955
09/13/18 7:31 pm	vehicle on Hwy 955
09/13/18 7:35 pm	vehicle on Hwy 955
09/13/18 7:36 pm	vehicle on Hwy 955
09/13/18 8:29 pm	vehicle on Hwy 955
09/13/18 8:30 pm	vehicle on Hwy 955
09/13/18 8:31 pm	vehicle on Hwy 955
09/13/18 8:32 pm	vehicle on Hwy 955
09/13/18 9:35 pm	vehicle on Hwy 955
09/13/18 9:36 pm	vehicle on Hwy 955
09/13/18 9:37 pm	vehicle on Hwy 955
09/13/18 9:58 pm	vehicle on Hwy 955
09/13/18 9:59 pm	vehicle on Hwy 955
09/13/18 10:00 pm	vehicle on Hwy 955
09/13/18 11:02 pm	vehicle on Hwy 955
09/13/18 11:03 pm	vehicle on Hwy 955
09/13/18 11:06 pm	vehicle on Hwy 955
09/13/18 11:07 pm	vehicle on Hwy 955
09/13/18 11:08 pm	vehicle on Hwy 955
09/14/18 1:01 am	vehicle on Hwy 955
09/14/18 1:02 am	vehicle on Hwy 955
09/14/18 1:03 am	vehicle on Hwy 955
09/14/18 1:04 am	vehicle on Hwy 955
09/14/18 1:05 am	vehicle on Hwy 955

This appendix identifies data samples logged at measurement station Noise 3 that were excluded when calculating representative noise levels.

Measurement Date / Time [CST]	Reason for Elimination
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09/14/18 5:08 am	vehicle on Hwy 955
09/14/18 5:09 am	vehicle on Hwy 955
09/14/18 5:22 am	vehicle on Hwy 955
09/14/18 5:23 am	vehicle on Hwy 955
09/14/18 5:24 am	vehicle on Hwy 955
09/14/18 5:39 am	vehicle on Hwy 955
09/14/18 5:40 am	vehicle on Hwy 955
09/14/18 5:58 am	vehicle on Hwy 955
09/14/18 5:59 am	vehicle on Hwy 955
09/14/18 6:00 am	vehicle on Hwy 955
09/14/18 6:08 am	vehicle on Hwy 955
09/14/18 6:09 am	vehicle on Hwy 955
09/14/18 6:57 am	vehicle on Hwy 955
09/14/18 6:58 am	vehicle on Hwy 955
09/14/18 6:59 am	vehicle on Hwy 955
09/14/18 7:11 am	vehicle on Hwy 955
09/14/18 7:12 am	vehicle on Hwy 955
09/14/18 7:15 am	vehicle on Hwy 955
09/14/18 7:16 am	vehicle on Hwy 955
09/14/18 8:35 am	helicopter nearby
09/14/18 8:36 am	helicopter nearby
09/14/18 8:37 am	helicopter nearby
09/14/18 8:38 am	helicopter nearby
09/14/18 8:39 am	helicopter nearby
09/14/18 8:40 am	helicopter nearby
09/14/18 8:41 am	helicopter nearby
09/14/18 8:42 am	helicopter nearby
09/14/18 8:43 am	helicopter nearby
09/14/18 8:44 am	helicopter nearby
09/14/18 8:45 am	helicopter nearby
09/14/18 8:46 am	helicopter nearby
09/14/18 8:47 am	helicopter nearby
09/14/18 10:32 am	helicopter nearby
09/14/18 10:33 am	helicopter nearby
09/14/18 10:34 am	helicopter nearby
09/14/18 10:35 am	helicopter nearby
09/14/18 10:46 am	elevated wind speed
09/14/18 12:19 pm	vehicle on Hwy 955
09/14/18 12:20 pm	vehicle on Hwy 955
09/14/18 12:52 pm	vehicle on Hwy 955
09/14/18 3:07 pm	vehicle on Hwy 955
09/14/18 3:08 pm	vehicle on Hwy 955
09/14/18 4:51 pm	vehicle on Hwy 955
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09/14/18 5:40 pm	vehicle on Hwy 955
09/14/18 5:47 pm	vehicle on Hwy 955
09/14/18 5:48 pm	vehicle on Hwy 955
09/14/18 6:40 pm	vehicle on Hwy 955

This appendix identifies data samples logged at measurement station Noise 3 that were excluded when calculating representative noise levels.

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09/14/18 6:48 pm	vehicle on Hwy 955
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09/14/18 6:56 pm	vehicle on Hwy 955
09/14/18 6:57 pm	vehicle on Hwy 955
09/14/18 7:00 pm	vehicle on Hwy 955
09/14/18 7:11 pm	vehicle on Hwy 955
09/14/18 7:12 pm	vehicle on Hwy 955
09/14/18 7:20 pm	vehicle on Hwy 955
09/14/18 7:21 pm	vehicle on Hwy 955
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09/14/18 8:30 pm	vehicle on Hwy 955
09/14/18 8:31 pm	vehicle on Hwy 955
09/14/18 8:48 pm	vehicle on Hwy 955
09/14/18 8:49 pm	vehicle on Hwy 955
09/14/18 8:50 pm	vehicle on Hwy 955
09/14/18 9:27 pm	vehicle on Hwy 955
09/14/18 9:28 pm	vehicle on Hwy 955
09/14/18 9:29 pm	vehicle on Hwy 955
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09/14/18 10:44 pm	vehicle on Hwy 955
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09/15/18 1:19 am	vehicle on Hwy 955
09/15/18 1:20 am	vehicle on Hwy 955
09/15/18 1:37 am	vehicle on Hwy 955
09/15/18 1:38 am	vehicle on Hwy 955
09/15/18 1:39 am	vehicle on Hwy 955

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Measurement Date / Time [CST]	Reason for Elimination
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09/15/18 2:30 am	vehicle on Hwy 955
09/15/18 2:59 am	vehicle on Hwy 955
09/15/18 3:00 am	vehicle on Hwy 955
09/15/18 3:01 am	vehicle on Hwy 955
09/15/18 3:16 am	vehicle on Hwy 955
09/15/18 3:17 am	vehicle on Hwy 955
09/15/18 3:28 am	vehicle on Hwy 955
09/15/18 4:36 am	vehicle on Hwy 955
09/15/18 4:37 am	vehicle on Hwy 955
09/15/18 4:38 am	vehicle on Hwy 955

Rook I Project

Environmental Impact Statement

Annex III: Hydrogeology Baseline Report

HYDROGEOLOGY BASELINE REPORT FOR THE ROOK I PROJECT

Prepared for:

NexGen Energy Ltd.

Prepared by:

WSP Canada Inc.

January 2024

Executive Summary

The hydrogeology baseline report is a component of a comprehensive baseline program that documents the natural and socio-economic environments in the anticipated area of the Rook I Project (Project). The hydrogeology baseline program was undertaken to provide context from which effects on hydrogeology (i.e., the way groundwater moves through soil and rock) from the Project can be assessed in the Environmental Impact Statement (EIS).

The overall objectives of the hydrogeology baseline program were to provide a baseline characterization of the hydrogeological conditions of the Project site, and to develop a conceptual model as the basis to develop a groundwater flow model representing the existing (i.e., predevelopment) conditions for the Project site.

Publicly available groundwater chemistry data are not available for the Project study areas, and there are no current guidelines for concentrations of elements or radionuclides in groundwater for comparisons to the field data collected during the baseline program. Groundwater chemistry baseline data are presented as the basis for understanding changes to groundwater chemistry that may result from the Project, as well as understanding the quality of groundwater that would need to be managed during underground mining operations.

To meet the objectives of the hydrogeology baseline program, the following tasks were completed:

- **Data Review** – Data collected from the third quarter (Q3) of 2017 through Q2 2020, as a part of site investigation and exploration activities, were reviewed. Examples of these data include topographic data for the regional setting in the vicinity of the Project, lithological descriptions and borehole logs, measurements of groundwater elevations and pressures from monitoring wells and vibrating wire piezometers (VWPs), surface water elevations and watercourse flow rates from hydrological surveys. In addition, design components of the mine construction, operation, and underground decommissioning were also reviewed.
- **Baseline Chemistry Compilation and Analyses** – Groundwater chemistry results from sampling events occurring from Q3 2017 through Q2 2020 were reviewed, organized, and compiled into a baseline summary. These analyses were used to describe general groundwater quality across the Project site and at depth.
- **Conceptual Hydrogeological Model Development** – Based on the data review, a conceptual hydrogeological model was developed to identify the primary aquifers (i.e., hydrogeologic units that have the ability to produce relatively large quantities of water) and aquitards (i.e., barriers to groundwater flow or confining units and their hydraulic properties), groundwater flow directions, hydraulic gradients (including both horizontal and vertical components thereof), and the primary areas of groundwater recharge and discharge.
- **Groundwater Flow Model Development** – A three-dimensional (3D), numerical groundwater flow model was developed to reflect the conceptual hydrogeological model and was calibrated based on target groundwater elevations and baseflow information. The model was established to represent existing conditions.

The baseline study achieved the objectives of characterizing hydrogeological conditions of the Project site and developing a groundwater flow model. This model would be used as a part of future work to delineate groundwater flow pathways and travel times from mine waste management facilities through geological pathways to downgradient receptors, and to provide estimates of groundwater inflows to the proposed mine during Operations, and Decommissioning and Reclamation (i.e., Closure).

If referencing this report, please use the following citation:

WSP Canada Inc. 2024. Hydrogeology Baseline Report for the Rook I Project. Prepared for NexGen Energy Ltd.

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Abbreviations and Units of Measure

Abbreviation	Definition
3D	three-dimensional
AqQA	water chemistry data converter software
AQTESOLV	analysis of aquifer tests software
BGC	BGC Engineering Inc.
EA	Environmental Assessment
EIS	Environmental Impact Statement
Golder	Golder Associates Ltd.
ID	identification
NexGen	NexGen Energy Ltd.
pH	potential of hydrogen
Project	Rook I Project
PSR	pressure static recovery
PVC	polyvinyl chloride
Q1, Q2, …	First quarter, second quarter, …
RDL	reportable detection limit
RSA	regional study area
SRC	Saskatchewan Research Council Environmental Analytical Laboratory
SRK	SRK Consulting
UGTMF	underground tailings management facility
VWP	vibrating wire piezometer

Unit	Definition
±	plus or minus
º	degree
%	percent
ºC	degrees Celsius
µg	microgram
µg/L	micrograms per litre
µg	micron
Bq/L	becquerels per litre
mg	milligram
L	litre
L/m	litres per metre
L/min	litres per minute
ng/L	nanograms per litre
mg/L	milligrams per litre
L/s/km^2	litres per second per square kilometre
K	hydraulic conductivity
km	kilometre
mah	metres along hole
masl	metres above sea level
mbgs	metres below ground surface
mbtoc	metres below top of casing
mm	millimetre
mm/yr	millimetres per year
m	metre
m^2	square metre
m^2/s	square metres per second
m^3	cubic metre
m^3/s	cubic metres per second
mH_2O	metres of water pressure
m/m	metre per metre
m/s	metres per second
s	second
min	minute
yr	year
Ga	Giga-annum (billion years)

1.0 INTRODUCTION

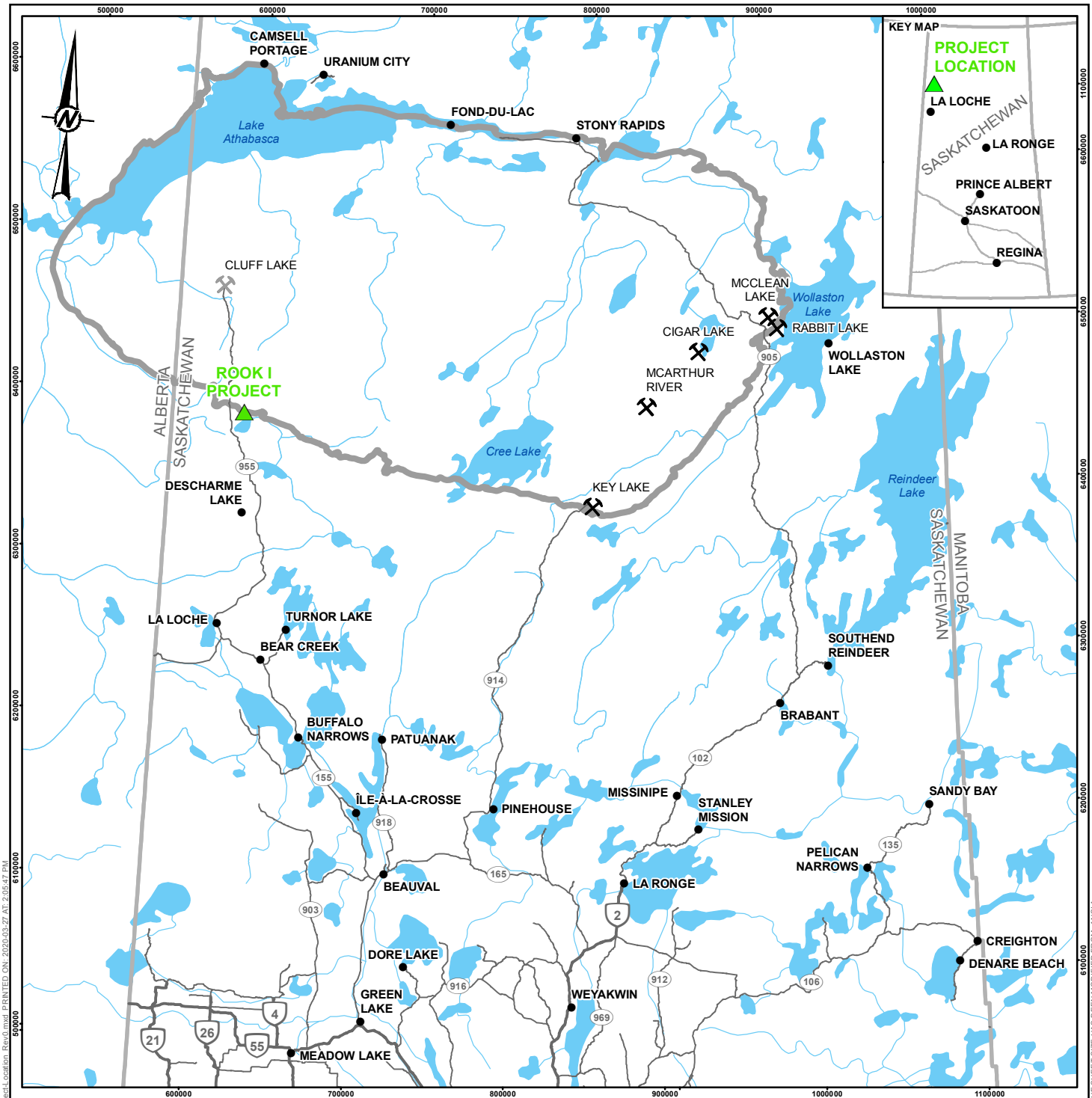
The Rook I Project (Project) is a proposed new uranium mining and milling operation that is 100% owned by NexGen Energy Ltd. (NexGen). The Project would be located in northwestern Saskatchewan, approximately 40 km east of the Saskatchewan-Alberta border, 130 km north of the town of La Loche, and 640 km northwest of the city of Saskatoon (Figure 1). The Project would reside within Treaty 8 territory and within the Métis Homeland. At a regional scale, the Project would be situated within the southern Athabasca Basin adjacent to Patterson Lake, and along the upper Clearwater River system (Figure 2). Access to the Project would be from an existing road off Highway 955. The Project would include underground and surface facilities to support the extraction and processing of uranium ore from the Arrow deposit, a land-based, basement-hosted, high-grade uranium deposit.

The hydrogeology baseline report represents a component of a comprehensive baseline program that documents the natural and socio-economic environments in the anticipated area of the Project. The hydrogeology baseline program was undertaken to provide context from which from which Project effects on hydrogeology could be assessed in the Environmental Impact Statement (EIS).

Since exploration at the Project commenced in 2013, NexGen has engaged regularly and established relationships with local First Nation and Métis Groups (collectively referred to as Indigenous Groups), specifically those closest and with greatest access to the proposed Project. NexGen respects the rights of Indigenous Peoples, the unique relationship Indigenous Peoples have with the environment, and recognizes the importance of full and open discussion with interested or potentially affected Indigenous Groups regarding the development, operation, and decommissioning of the proposed Project. Engagement activities to date, as well as future planned engagement activities, reflect the value NexGen places on meaningful engagement with Indigenous Groups who could be potentially affected by the proposed Project. Engagement mechanisms have included, but are not limited to: meetings with leadership, workshops and community information sessions, Project site tours, establishing Joint Working Groups to support the gathering and incorporation of Indigenous and Local Knowledge throughout the Environmental Assessment (EA) process, and providing funding for traditional land use studies[1] to understand how the proposed Project may interact with the Indigenous Groups' traditional use of the anticipated area of the Project.

Feedback received during engagement activities was documented for contribution to the EIS for the Project; examples of feedback received include discussion of concerns, interests, potential adverse effects, mitigation, and design alternatives. Many baseline studies were initiated in advance of formal engagement on the EA for the Project; however, engagement during the execution of baseline studies has helped inform the understanding of baseline conditions and confirmed components of the natural and socio-economic environments that required study. A summary of feedback related to the hydrogeology baseline program is presented in Appendix A, Joint Working Group Feedback Applicable to the Hydrogeology Baseline.

[1] Traditional Land Use (TLU) Studies include all land use studies developed by the Project's affected Indigenous Groups, including Traditional Land Use and Occupancy studies, Traditional Knowledge and Use studies, and Indigenous Rights and Knowledge studies, henceforth referred collectively as TLU Studies.



LEGEND

- POPULATED PLACE
- URANIUM MINING FACILITY (ACTIVE)
- URANIUM MINING FACILITY (DECOMMISSIONED)
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- ATHABASCA BASIN BOUNDARY
- PROJECT LOCATION

0 100 200

1:3,500,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

LOCATION OF THE ROOK I PROJECT, SASKATCHEWAN

CONSULTANT

wsp

YYYY-MM-DD	2023-02-27
DESIGNED	SS
PREPARED	NO/AK
REVIEWED	JMC
APPROVED	MM

PROJECT NO.	PHASE	REV.	FIGURE
20144150	3104	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

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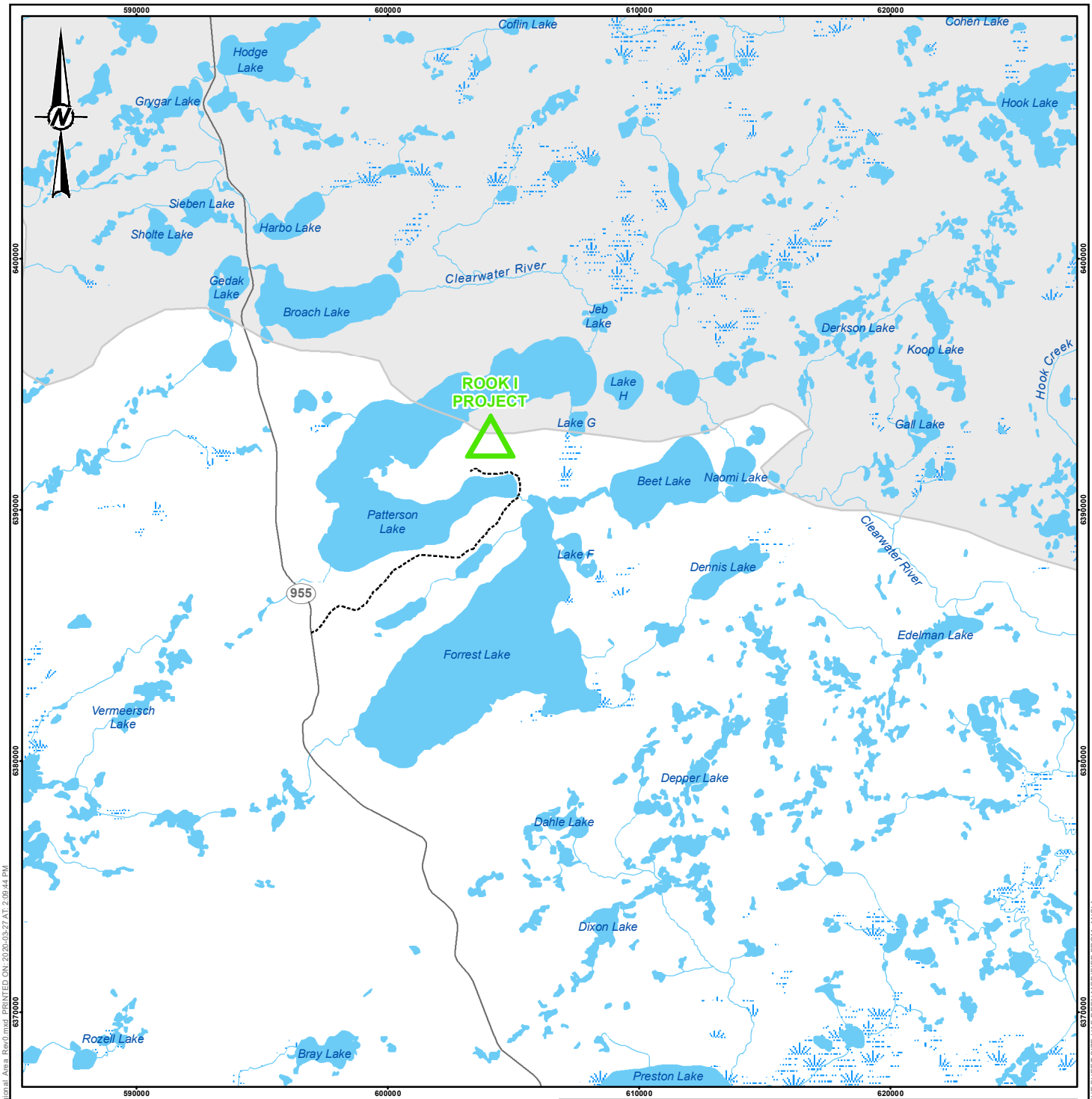

LEGEND

- SECONDARY HIGHWAY
- WATERCOURSE
- WATERBODY
- WETLAND
- ATHABASCA BASIN
- PROJECT LOCATION
- EXISTING ACCESS ROAD

0 5,000 10,000

1:225,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

CLIENT

NexGen Energy Ltd.

PROJECT

ROOK I PROJECT

TITLE

REGIONAL AREA OF THE ROOK I PROJECT

CONSULTANT

wsp

YYYY-MM-DD	2023-02-27
DESIGNED	JMC
PREPARED	NO/AK
REVIEWED	JMC
APPROVED	MM

PROJECT NO.	PHASE	REV.	FIGURE
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2.0 OBJECTIVES

The hydrogeology baseline study was completed to describe the existing hydrogeological conditions prior to potential development of the Project. This study describes the way groundwater (i.e., water present beneath the Earth's surface) moves through soil and fractures in rock. The groundwater flow system represents a potential pathway for transport of soluble constituents from surface and subsurface facilities to surface water receptors, and affects the rate of solute migration both during Operations, Closure, and beyond Closure. Additionally, mining activities have the potential to modify groundwater flow patterns and their interaction with surface waterbodies.

The overall objectives of the hydrogeology baseline program were to:

- provide a baseline characterization of the hydrogeological conditions of the Project site; and
- provide the basis for development and calibration of a groundwater flow model representing the existing (i.e., predevelopment) conditions for the Project site.

The groundwater flow model would be used as a part of future work to delineate groundwater flow pathways and travel times from mine waste management facilities (e.g., waste rock storage areas, the underground tailings management facility [UGTMF]) through geological pathways to downgradient receptors and provide estimates of groundwater inflows to the proposed mine during Operations and during Closure when the underground is reflooded. This analysis would be used as input to a solute transport model to estimate the Project-related solute mass loadings (i.e., rate of dissolved constituents discharging) to the environment, which are documented in Technical Support Document (TSD) XIV, Groundwater Flow and Solute Transport Modelling Report. To meet the above objectives, the following tasks were completed:

- **Data Review** – Data collected as a part of site investigation and exploration activities were reviewed. Examples of these data include topographic data for the regional setting in the vicinity of the Project; lithological descriptions and borehole logs; measurements of groundwater elevations and pressures from monitoring wells, vibrating wire piezometers (VWPs), and deep basement rock Westbay wells installed in the area of the Project; surface water elevations; and watercourse flow rates from hydrological surveys. In addition, design components of the mine construction, operation, and underground decommissioning were also reviewed.
- **Baseline Chemistry Compilation and Analyses** – Groundwater chemistry results from sampling events were reviewed, organized, and compiled into a baseline summary. These results were used to describe general groundwater quality across the Project site and at depth. The results were also used in geochemical modelling of the Project site, and to estimate inflow water quality and mass balance calculations for the proposed underground workings.
- **Conceptual Hydrogeological Model Development** – Based on the data review, a conceptual hydrogeological model was developed to identify the primary aquifers (i.e., hydrostratigraphic units that have the ability to produce relatively large quantities of water) and aquitards (i.e., barriers to groundwater flow or confining units) and their hydraulic properties, groundwater flow directions, and hydraulic gradients (including both horizontal and vertical components thereof), as well as the primary areas of groundwater recharge and discharge.
- **Groundwater Flow Model Development** – A 3-D numerical groundwater flow model was developed to reflect the conceptual hydrogeological model and was calibrated based on target groundwater elevations and baseflow information. The model was established to represent existing conditions.

3.0 STUDY AREAS

The regional study area (RSA) for the hydrogeology baseline program encompasses NexGen's Arrow deposit, a land-based, basement-hosted, high-grade uranium deposit that is 100% owned by NexGen. The RSA is defined as an approximately 26.5 km by 18.5 km rectangular area that is oriented based on the general regional surface drainage of the Patterson Lake watershed, with the northwest portion situated along a topographic high and the southeast portion situated along a topographic low, with drainage to the Clearwater River (Figure 3). The groundwater flow model boundaries replicate the RSA.

The local study area (LSA) is defined as the area immediately surrounding the Arrow deposit and includes the proposed footprint of the Project site infrastructure along the southwest–northeast trending peninsula extending into Patterson Lake (Figure 3).

LEGEND

- Surface Facilities
- Underground Development
- Waste Rock Stockpiles
- Extent of Groundwater Flow Model

CLIENT
NexGen Energy Ltd.

CONSULTANT
WSP

YYYY-MM-DD	2023-02-27
PREPARED	NB
DESIGN	NB
REVIEW	CH
APPROVED	MT

PROJECT
HYDROGEOLOGY BASELINE

TITLE
REGIONAL AND LOCAL STUDY AREAS

PROJECT No.	PHASE	Rev.	FIGURE
20144150	**3104**	**0**	**3**

4.0 METHODS

4.1 Review of Existing Information

A desktop review was conducted on the existing data collected during field investigations from the third quarter (Q3) of 2017 through Q2 of 2020. This review included groundwater chemistry results from sampling events; hydraulic head data from monitoring events; hydraulic conductivity (K) analyses from packer and slug tests; as-built details of standpipe piezometers, VWPs, and Westbay wells; and NexGen's written procedures for the preceding items.

4.2 Hydrostratigraphy

Hydrostratigraphic units (i.e., geological formations characterized by hydraulic properties) were defined based on the geologic model (NexGen 2020), hydraulic response testing data, and groundwater elevation and pressure data. The characteristics defining the hydraulics of each hydrostratigraphic unit included hydraulic conductivity, porosity of rock types, weathering, natural fracture and foliation planes, and shear zones.

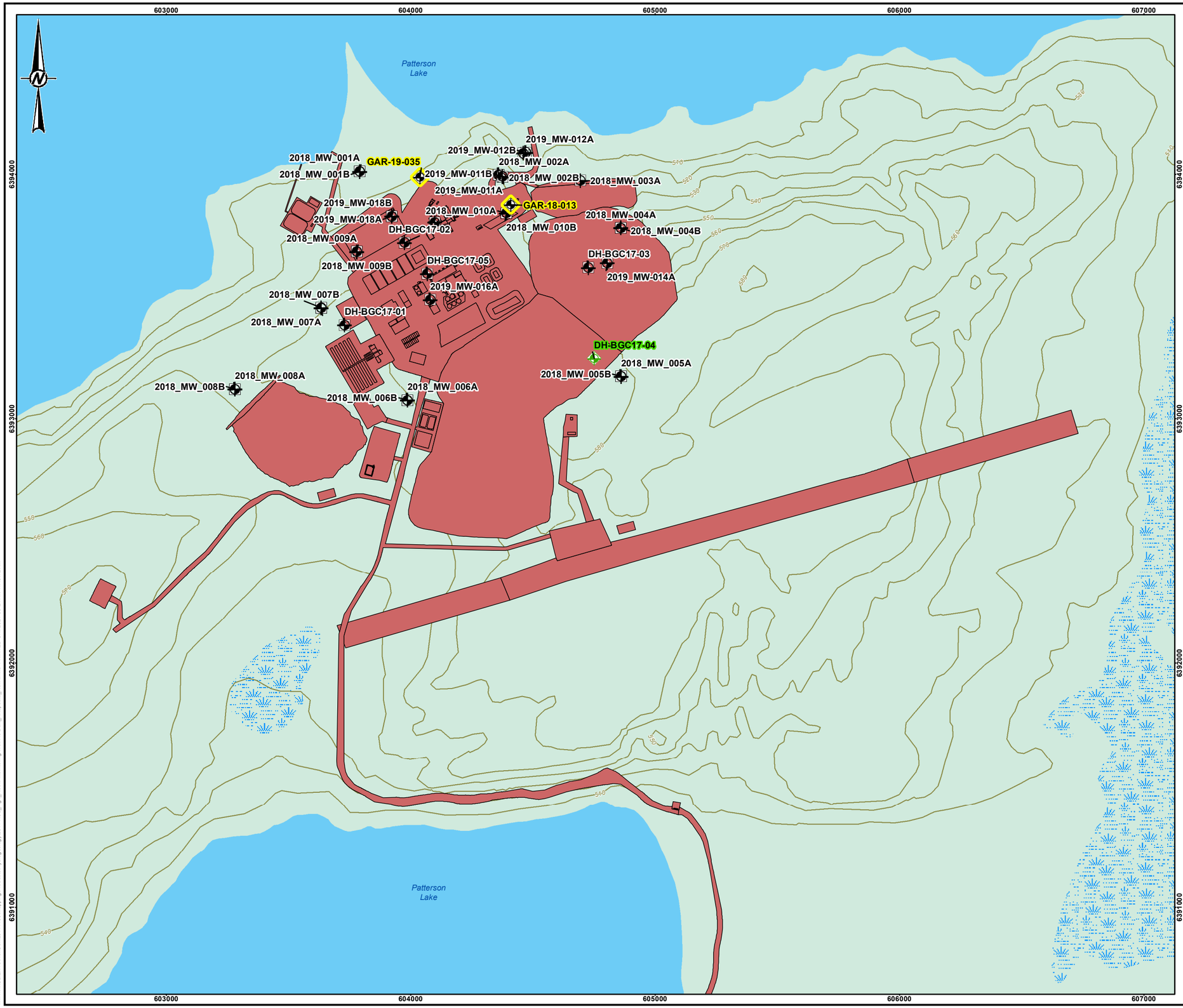
4.3 Hydraulic Head

Hydraulic head, or the measurement of liquid pressure above a particular reference point, is an important parameter in characterizing groundwater systems. Hydraulic head was measured for this study using standpipe piezometers, Westbay wells, and VWPs. Each of these methods is described below.

4.3.1 Standpipe Piezometers

The monitoring network within glacial drift and upper portion of the bedrock formations consists of 34 standpipe piezometers installed during the 2017 through 2019 seasonal groundwater programs by various drilling subcontractors and supervised by various consulting engineering firms. These monitoring wells were installed within the glacial drift overlying the Athabasca Sandstone formation and basement rock formations. A summary of the as-built details and measured groundwater head levels are presented in Section 5.2.1, Hydraulic Head. Groundwater monitoring locations are presented in Figure 4. Borehole logs and standpipe piezometer as-built details are presented in Appendix B, Standpipe Piezometer Installation Details (note: locations named as "sonic" on 2018 borehole logs have been renamed "MW" to reflect the monitoring well completion as presented in Table B-1).

Manual hydraulic head measurements were taken during sampling events prior to sample collection. These measurements were made with an electronic water level tape that made an audible sound when the probe interfaced with the groundwater contact in the well. Depth-to-water measurements were recorded with reference to the top of the piezometer casing. Total hydraulic head was calculated using the surveyed elevations of the piezometers to provide a total head value with reference to sea level.



LEGEND

- ELEVATION CONTOUR (10 m INTERVAL)
- WATERBODY
- WETLAND
- WOODED AREA
- PROPOSED PROJECT FOOTPRINT
- DECOMMISSIONED WELL
- STANDPIPE PIEZOMETER SITES
- WEST BAY MONITORING WELLS

0 0.5 1

1:15,500 KILOMETRE

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

MONITORING WELL LOCATION PLAN

CONSULTANT

wsp

PROJECT		20144150	PHASE	3104
DESIGN	CH	2020-03-13	SCALE AS SHOWN	REV. 0
GIS	NO	2023-02-10		
CHECK	CH	2023-02-10		
REVIEW	MT	2023-02-10		

FIGURE 4

PATH: I:\CLIENTS\NexGen\20144150\Mapping\Products\Hydrogeology\20144150_Fig4_Rook-Monitoring-Well-As-Built_AUpdate_RevA.mxd PRINTED ON: 2021-06-24 AT: 11:15:12 AM

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4.3.2 Basement Rock Westbay Wells

The basement rock groundwater monitoring network consists of two deep Westbay multi-level well systems. These systems were installed in boreholes GAR-18-013 and GAR-19-035 in 2018 and 2019, respectively (Figure 4). The Westbay well system allows monitoring of hydraulic heads, testing of hydraulic conductivity, and collection of groundwater samples from multiple intervals within a single borehole. Well materials consist of 38 mm diameter schedule 80 polyvinyl chloride (PVC) casing, PVC couplings, inflatable bladders (i.e., packers), and measurement (i.e., sampling and pumping) ports installed at selected intervals between packers. The Westbay well systems are designed to isolate sampling intervals within each borehole to obtain groundwater samples representative of different depths. A summary of the as-built details and measured groundwater head levels is presented in Section 5.2.2, Hydraulic Testing.

Westbay well as-built details and installation reports are presented in Appendix C, Westbay Well Installation Reports.

4.3.3 Vibrating Wire Piezometers

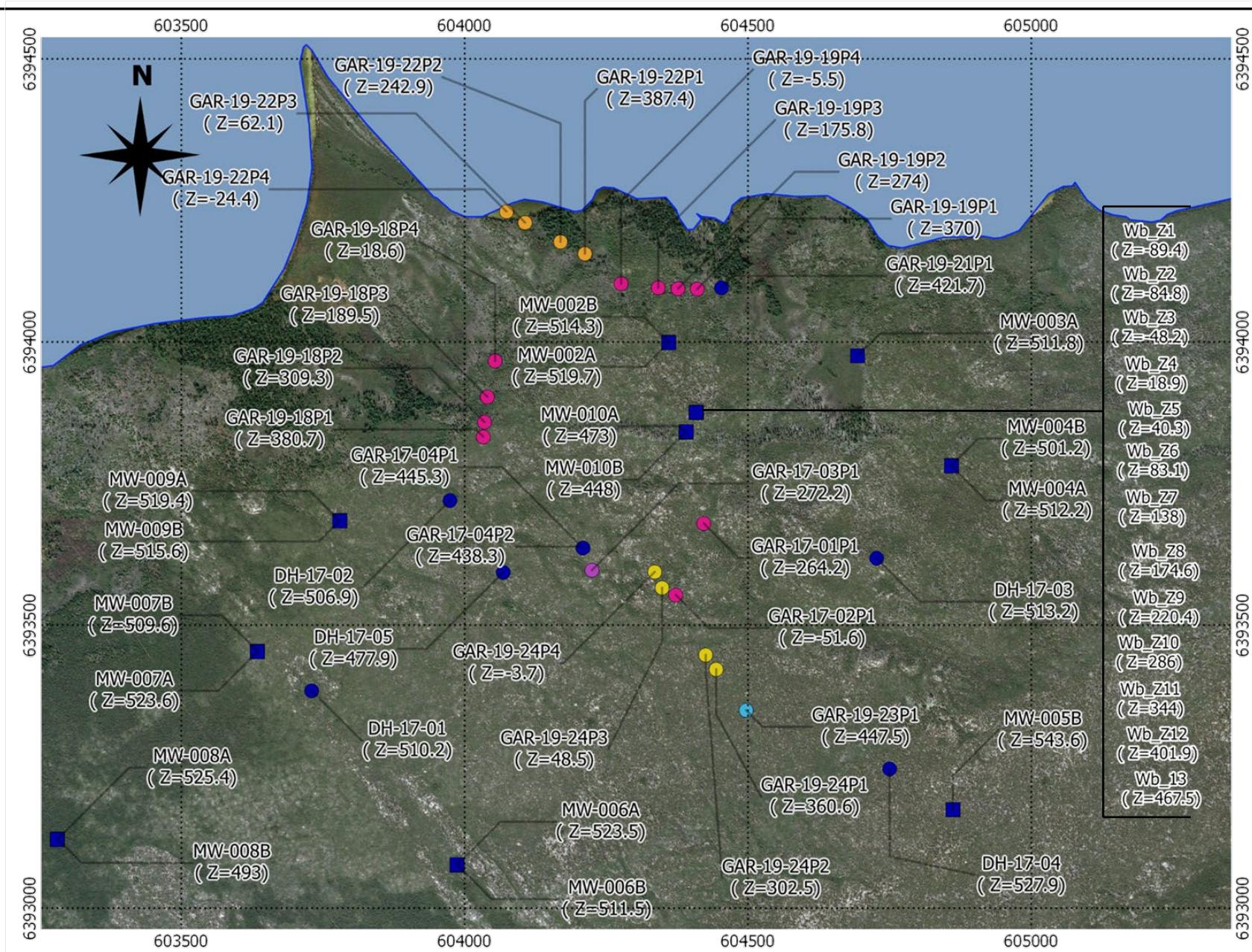
Hydraulic head data were collected within the basement rock formations using VWPs installed within selected boreholes. Twenty-seven VWPs were installed at selected depths along the borehole and were grouted in place using a cement-bentonite mixture. These VWPs were connected to a data logger and programmed to record readings at 12-hour intervals. Raw data readings were output as a frequency and temperature, which correlated to a calculated pressure based on input factors uniquely calibrated for each instrument. Hydraulic head was determined from the calculated pressure and the measured elevation of each instrument. The calibration sheets for VWPs, which include the correlation functions, are included in Appendix D, Vibrating Wire Piezometer Calibration Sheets. Sufficient time was allowed for the monitoring instrumentation to achieve equilibrium with subsurface pressures prior to collection of data. A summary of the VWP installations is presented in Section 5.2.3, Groundwater Chemistry Baseline. The location of the VWPs is illustrated in Figure 5 and are projected to ground surface in the figure from their position along the borehole at depth.

4.4 Hydraulic Testing

4.4.1 Glacial Drift Standpipe Piezometer Testing

Hydraulic response (i.e., slug) testing (i.e., the injection or removal of a known volume of water into a piezometer followed by monitoring the formation's hydraulic response in the piezometer) was completed in all 34 standpipe piezometers installed within the LSA (Figure 5) to determine the hydraulic conductivity of each screened interval. Hydraulic conductivity measurements were compiled for each hydrostratigraphic unit to differentiate zones by their hydraulic properties. BGC Engineering Inc. (BGC) conducted slug testing in all five standpipe piezometers installed in 2017 (i.e., BGC17-01 through BGC17-05) using falling head and rising head response testing, which is suitable for piezometers completed in fast-recovery units such as sandy strata (BGC 2017). Displacement of a known volume of water within the standpipe piezometer was created by the insertion of a slug, and the falling head response was recorded. When static water level was achieved, the slug was removed, and rising head response was recorded. Response data for hydraulic testing were collected using downhole submersible pressure transducers.

Response testing data were entered into AQTESOLV Pro, a commercially available software package used to analyze hydraulic testing data. The Bouwer and Rice (1976) method was applied to determine the hydraulic conductivity for all the response analyses. The response data were plotted as normalized head (metre per metre [m/m]) versus time on a log-normal scale. The most linear trend within the plotted data was chosen, and from this line the hydraulic conductivity was calculated for each test.



LEGEND

Waterbody

GW monitoring type

- Screened borehole (Z=middle of screen)
- Vibrating Wire (Z=measuring location)

Dip

- -60°
- -68°
- -70°
- -80°
- -89°
- -90°

CLIENT

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YYYY-MM-DD	2023-02-27
PREPARED	GI
DESIGN	GI
REVIEW	NB
APPROVED	MT

PROJECT

ROOK I PROJECT

TITLE

STANDPIPE PIEZOMETER AND VIBRATING WIRE PIEZOMETER LOCATION PLAN

PROJECT No.	PHASE	Rev.	FIGURE
20144150	**3104**	0	**5**

4.4.2 Basement Rock Wireline Packer Testing

In situ wireline packer testing was completed during the 2017 and 2018 investigations by BGC and SRK Consulting (Canada) Inc. (SRK), respectively (BGC 2017; SRK 2018). Packer testing was completed in exploration boreholes to obtain hydraulic conductivity measurements of selected geological formations and structures at locations with no permanent installations (e.g., standpipe piezometers). The equipment used for the testing programs included a hydraulically inflated single-packer tool in a wireline configuration.

A schematic diagram of the single-packer wireline tool is shown in Figure 6. The single-packer wireline tool consists of a single packer connected with a seating cone designed to stop in the drill bit so that the seating cone assembly stays inside the core barrel and the packer extends into the open borehole below the bit (BGC 2017). This setup allows a direct connection from surface through the drill string (i.e., a length of pipe extending from a drill rig down a borehole used to drive a core barrel or bit) to the test interval below the lower packer. To perform a test, the drill string was pulled up to expose a section of the borehole selected for testing and the tool was lowered on a wireline through the drill string into the borehole. When the packer was seated in the selected test position, it was inflated using a drill pump, isolating the section of the borehole between the packer and the current borehole bottom (i.e., test interval). After the test was completed, the packer was deflated and removed from the borehole using the wireline.

Pressure response data during each test were collected by two pressure transducers, and an in-situ Level TROLL 700 memory gauge. The Level TROLL memory gauge was programmed to a sample frequency of two to five seconds and placed in a carrier below the packer tool to collect data directly from the test interval for the analyses. Procedures and sequence of packer testing are discussed below.

Pressure Static Recovery

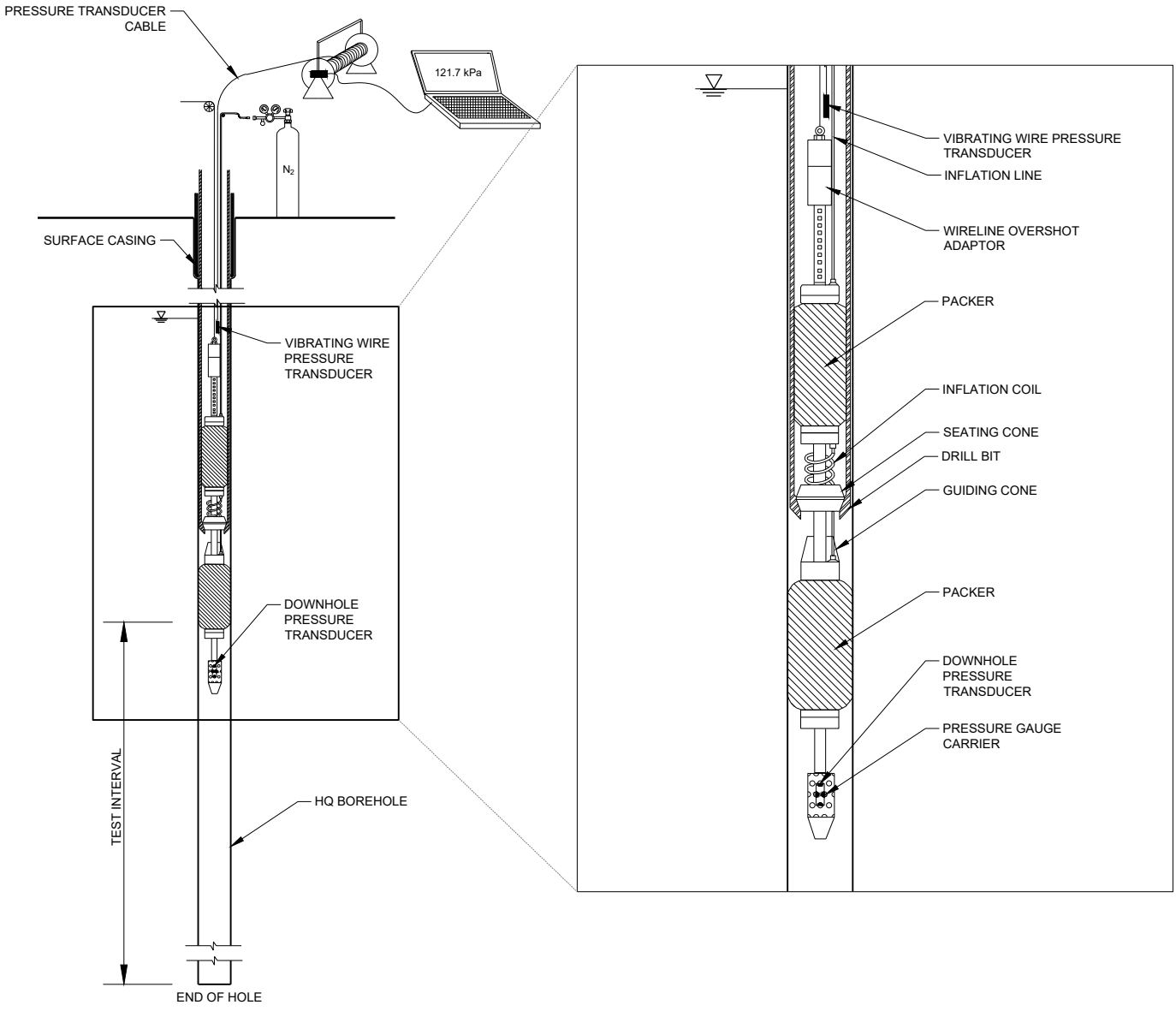
The pressure static recovery (PSR) sequence was carried out to allow the aquifer within the isolated test interval to reach static conditions after packer inflation. The duration of the PSR sequence varied depending on hydraulic conditions. This duration was determined by reaching the pre-test static conditions or collecting sufficient data to extrapolate the static water level corresponding to the test interval.

Slug Injection / Slug Withdrawal

After the PSR sequence, a slug injection or a slug withdrawal test was carried out. This test sequence consisted of adding or removing an instantaneous slug of water into or from the drill string. After the slug displacement, the water level inside the drill string was monitored until it recovered to the pre-test level. If the water was fully recovered within a 30-minute period, the slug test was followed by a constant rate injection test sequence. If full recovery was not reached within 30 minutes, the slug recovery monitoring continued for another 15 minutes to 30 minutes until sufficient data were collected to extrapolate the recovery to pre-test level.

Constant Rate Injection Test

A constant rate injection test was carried out, which consisted of injecting water into the test interval at a constant rate over a period of approximately 10 to 20 minutes. A surface water injection assembly including a pump, flow control valves, flowmeter, pressure transducer, and a header connecting the water injection assembly to the top of the drill string was required to perform a constant rate injection test. Flow rate and injection pressure were recorded during the test with the surface monitoring equipment. Additional data were collected by a downhole memory gauge attached to the lower packer that recorded the pressure changes directly within the test interval during the test.



NOT TO SCALE

SCHEMATIC ONLY

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

SINGLE WIRELINE PACKER ASSEMBLY

CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	2020-03-13	SCALE	NTS	REV. 0
CADD	JMC	2020-03-13			
CHECK	CH	2023-02-27			
REVIEW	MT	2023-02-27			

FIGURE 6

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Schematic.dwg 6/14/2021 3:10 PM

4.5 Groundwater Quality Sampling

Within the LSA, 34 standpipe piezometers were installed during several seasonal investigation programs between 2017 and 2019. These standpipe piezometers were installed by various drilling subcontractors and supervised by various consulting engineering firms. A general description of the sampling methods used to collect groundwater samples for chemical characterization is summarized in this subsection.

4.5.1 Glacial Drift Standpipe Piezometers

Prior to collection of groundwater samples, a hydraulic head measurement was recorded relative to the top of the standpipe piezometer casing and the volume of water in the well was calculated. Depending on hydraulic head levels, purging and sampling of the monitoring well was completed by using either a manual bailer, 15 mm diameter Waterra tubing with a foot valve using a Hydrolift inertial pump, or with a submersible electric Geotech SS Geosub pump. Using one of these methods, water was purged (i.e., removed) from the monitoring well until a minimum of three calculated well volumes were removed. During removal of the three well volumes, water quality parameters (pH, electrical conductivity, and temperature) were recorded using a Hanna water quality probe. These measurements were recorded at regular purge-volume intervals to ensure that parameters have stabilized, which is representative of formation water.

Parameter stabilization was determined by purging selected water volumes, which was dependent on the volume of the piezometer, and measuring parameters after each volume of water was purged. If the measured parameters of three consecutive water samples were within ±0.1°C for temperature, ±0.1 pH units, and ±3% for conductivity of the previous sample, the groundwater parameters were considered stable, and verified that drill fluids did not influence results. If three well volumes were purged and parameters had not stabilized, the process continued until stabilization was achieved. Upon the completion of purging, a representative formation water sample was collected using the same equipment. These steps are laid out in a Standard Operating Procedure (NexGen 2019a).

Representative groundwater samples were collected four times per year from all 34 monitoring locations, with the exception of those that were dry during the monitoring event. Samples were collected and submitted to various accredited laboratories in Saskatoon, Saskatchewan, including ALS Environmental Laboratory and Saskatchewan Research Council Environmental Analytical Laboratory (SRC) for general chemistry, dissolved metals, total metals, total suspended solids, nitrate, acidity, and radionuclide analyses. Samples were collected and submitted to A.E. Lalonde AMS Laboratory at the University of Ottawa in Ottawa, Ontario, for analyses of tritium, and to Ján Veizer Stable Isotope Laboratory at the University of Ottawa for stable isotope analysis.

Water samples for parameters requiring field filtration were filtered using a 0.45 µm in-line filter before being bottled. The analytical laboratories provided nitric acid and sulphuric acid with the sample containers as appropriate. Nitric acid was used to preserve water samples being analyzed for dissolved metals and radionuclides, and sulphuric acid was used to preserve water samples being analyzed for nitrate.

The general chemical composition of groundwater samples collected from the standpipe piezometers was determined using a Piper plot, a graphical representation of water chemistry. Piper plots use milliequivalent data (i.e., one thousandth of a chemical element equivalent) based on the number of charge units of each chemical species, as opposed to the mass-based data used when referring to milligrams per litre. In a Piper plot, the relative contributions of each species of negative (i.e., anion) and positive (i.e., cation) major ions are plotted on the triangles at the lower portion of the diagram. Each triangle apex represents a 100% milliequivalent

concentration of that species for either the cations or anions. The contributions of different positive ions (cations) to the positively charged portion of a sample are shown on the lower left triangle. The contributions of different negative ions (anions) to the negatively charged portion of a sample are shown on the lower right triangle. The points plotted on these smaller triangles are projected to the diamond shape in the centre. Points representing fresh water typically plot near the centre-left apex of the diamond, while more saline water typically plot near the centre-right apex of the diamond. As fresh water becomes more saline along a flow path, water samples generally plot along a curved path from fresh water to more saline.

Groundwater chemistry data were analyzed with AqQA version 1.5 (NexGen 2017), a groundwater analysis software developed by RockWare, Inc. (RockWare 2021).

4.5.2 Basement Rock Westbay Wells

Development of the Westbay wells was required after installation to clear the well and sampling intervals of drilling fluids, and to acquire representative groundwater samples from each sampling interval. After the installation of the Westbay wells, the sampling ports for each zone were opened to allow inflow of the groundwater into the well. This is apparent on the development records of the Westbay wells through the rate at which water was removed over a defined period of time. A combination of submersible pump and Hydrolift inertial pump with Waterra tubing was deployed in the Westbay well to remove a recorded volume of water. During development, water samples were collected at regular time intervals and pH, electrical conductivity, temperature, water clarity were recorded. These steps are laid out in the Westbay Sampling Procedure (NexGen 2019b).

The Westbay wells were sampled using an electric winch with a Westbay MOSDAX sampling probe. This probe is designed to work in conjunction with the sampling ports and general construction of the Westbay well. Under NexGen's Westbay Water Sampling procedure (NexGen 2019b), only operators trained by Westbay Instruments may operate the Westbay well system to collect groundwater samples with the MOSDAX probe.

The MOSDAX probe is controlled remotely from surface using a computer that is interfaced with the probe via the electric winch. The probe is placed into a state of vacuum at surface, then lowered to the appropriate sampling interval port. The vacuum is released, drawing water in the sample tubes within the probe. The probe is then retrieved to the surface with the groundwater sample.

Representative groundwater samples were collected four times per year from all monitoring locations by various consulting contractors or by NexGen. Samples were collected and submitted to SRC for general chemistry, dissolved metals, total suspended solids, nitrate, acidity, radionuclides, and radon analyses. Samples were collected and submitted to A.E. Lalonde AMS Laboratory for analyses of tritium. Samples were collected and submitted to Ján Veizer Stable Isotope Laboratory for stable isotope analysis.

Water samples for parameters requiring field filtration were filtered using a 0.45 µm in-line filter before being bottled. The analytical laboratories provided nitric acid and sulphuric acid with the sampling containers as appropriate. Nitric acid was used to preserve water samples being analyzed for dissolved metals and radionuclides and sulphuric acid was used to preserve water sampler being analyzed for nitrate.

The general chemical composition of groundwater samples collected from Westbay wells was determined by using a Piper plot as described in Section 4.5.1.

4.6 Groundwater Chemistry Statistical Screening

The groundwater chemistry data collected from the glacial drift and bedrock formations is extensive in breadth of parameters tested and the number of data points available for each parameter. A large data set will typically include results that are below method detection limits or that do not appear to be representative of actual conditions. When this occurs, the data set is screened statistically to determine whether a reported value is considered a true outlier.

The screening process for statistical calculations consisted of first replacing values below the reportable detection limit with a value equivalent to half the detection limit. Second, the ionic balance value of each sample was examined to determine if the sample is considered valid. Samples with an ionic balance greater than ±10% were excluded from the statistical calculations as it is well documented that within a water sample, the total charge of cations (positively charged ions) in solution should balance the total charge of anions (negatively charged ions) (ALS 2021). Third, statistical outliers in the chemistry data were identified using a statistical screening tool. This tool determines a value to be a statistical outlier if it fails three statistical tests:

1) Value is greater than three standard deviations above the mean (Pearson 2001);
2) The Hampel identifier (detects outliers relative to the median value) (Hampel 1985); and
3) The combined Rosner-Dixon test (compares z-score of top values to expected z-score for normal distribution, based on rank of the value within the data set) (Rosner 1975; Gilbert 1987; Jain 1981).

If a measurement was identified as an outlier, the origin of the result was investigated to validate the results of the outlier detection tests. Outliers of explainable origins (i.e., there was a reason for the anomalous result) were considered representative of the natural system and included in the statistical calculations without further consideration. Outliers of unknown origin were considered discordant observations and were excluded from the calculations used for the statistical values presented in Section 5.0. These outlying values are identified within the detailed groundwater chemistry results tables in Appendix I.

5.0 RESULTS

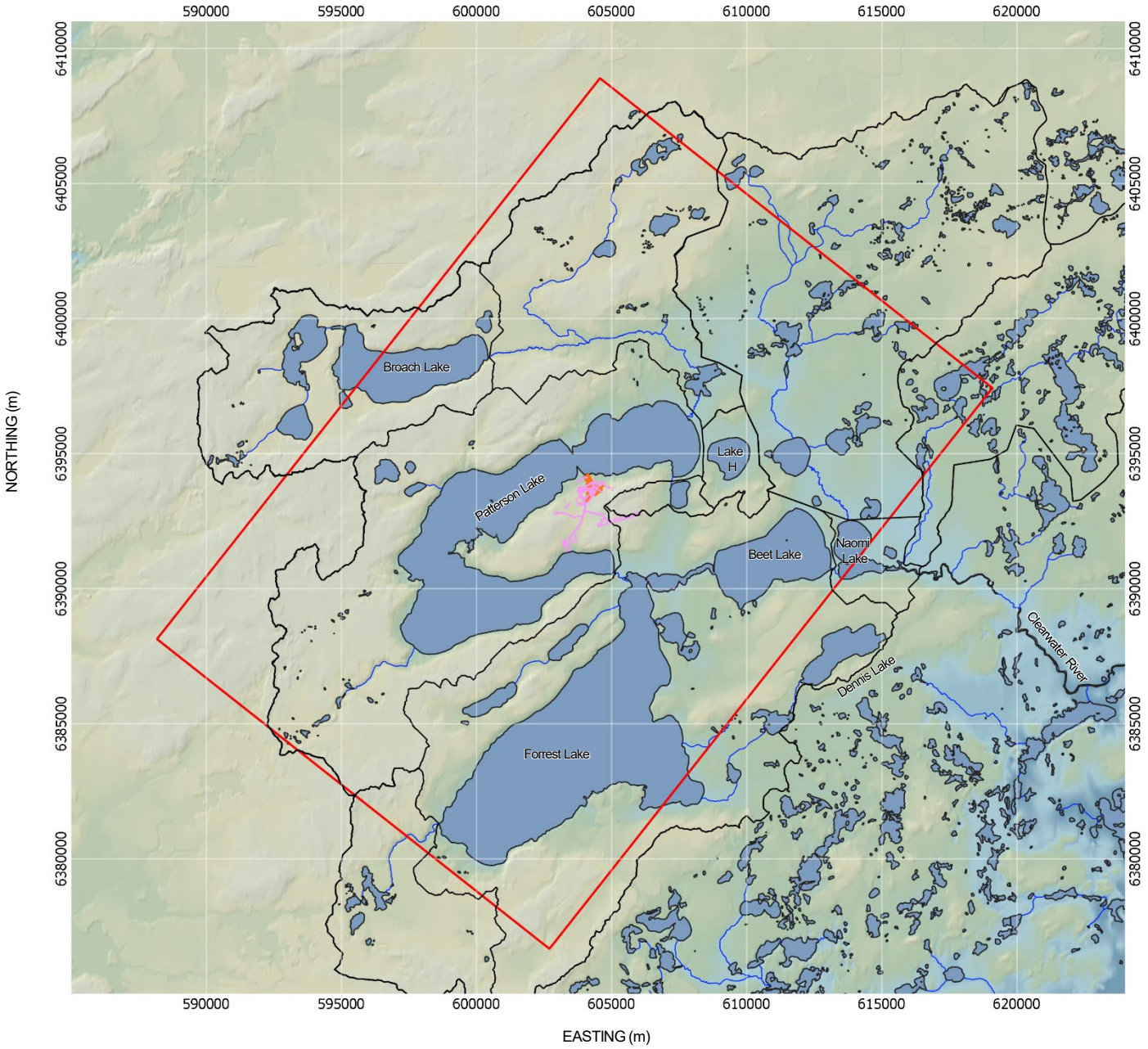
5.1 Regional Study Area

5.1.1 Topography and Drainage

The topography and drainage in the RSA are illustrated in Figure 7. The Project is located along the southwestern rim of the Athabasca Basin, a large Paleoproterozoic-aged, flat-lying sedimentary basin that covers much of northern Saskatchewan and part of northern Alberta (RPA 2017). The topography of the Project site is dominated by glacial features including eskers and drumlins locally modified by wind action following retreat of the Laurentide Ice Sheet (Norris et al. 2017).

Surface drainage in the RSA occurs as a part of the Clearwater River system, which is defined by the topographic divide of the Broach Lake catchment (i.e., the headwaters of the system) and includes, sequentially downstream in the Clearwater River system, the catchments of Patterson Lake, Forrest Lake, Beet Lake, and Naomi Lake and their associated tributaries.

Elevations in the vicinity of the proposed mine range from 593 metres above sea level (masl) at the crest of major drumlins north of Patterson Lake and in the Broach Lake area, to 498.3 masl for Naomi Lake (Annex IV.2). The surface elevation of Patterson Lake, in the immediate vicinity of the Project, is approximately 498.5 masl (Annex IV.2). Within the RSA, the elevation ranges from 601 masl in the southwest to 487 masl at the intersection of the RSA boundary with the Clearwater River.



LEGEND

- Surface Facilities
- Underground Development
- Extent of Groundwater Flow Model
- Surface Drainage Catchments
- Watercourse
- Waterbody

Ground Surface Elevation (masl)

540 — 490

Note:

1) Surface water features shown for Clearwater River catchment only

CLIENT
NexGen Energy Ltd.

CONSULTANT
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YYYY-MM-DD	2023-02-27
PREPARED	NB
DESIGN	NB
REVIEW	CH
APPROVED	MT

PROJECT
ROOK I PROJECT

TITLE
TOPOGRAPHY AND DRAINAGE IN THE REGIONAL STUDY AREA

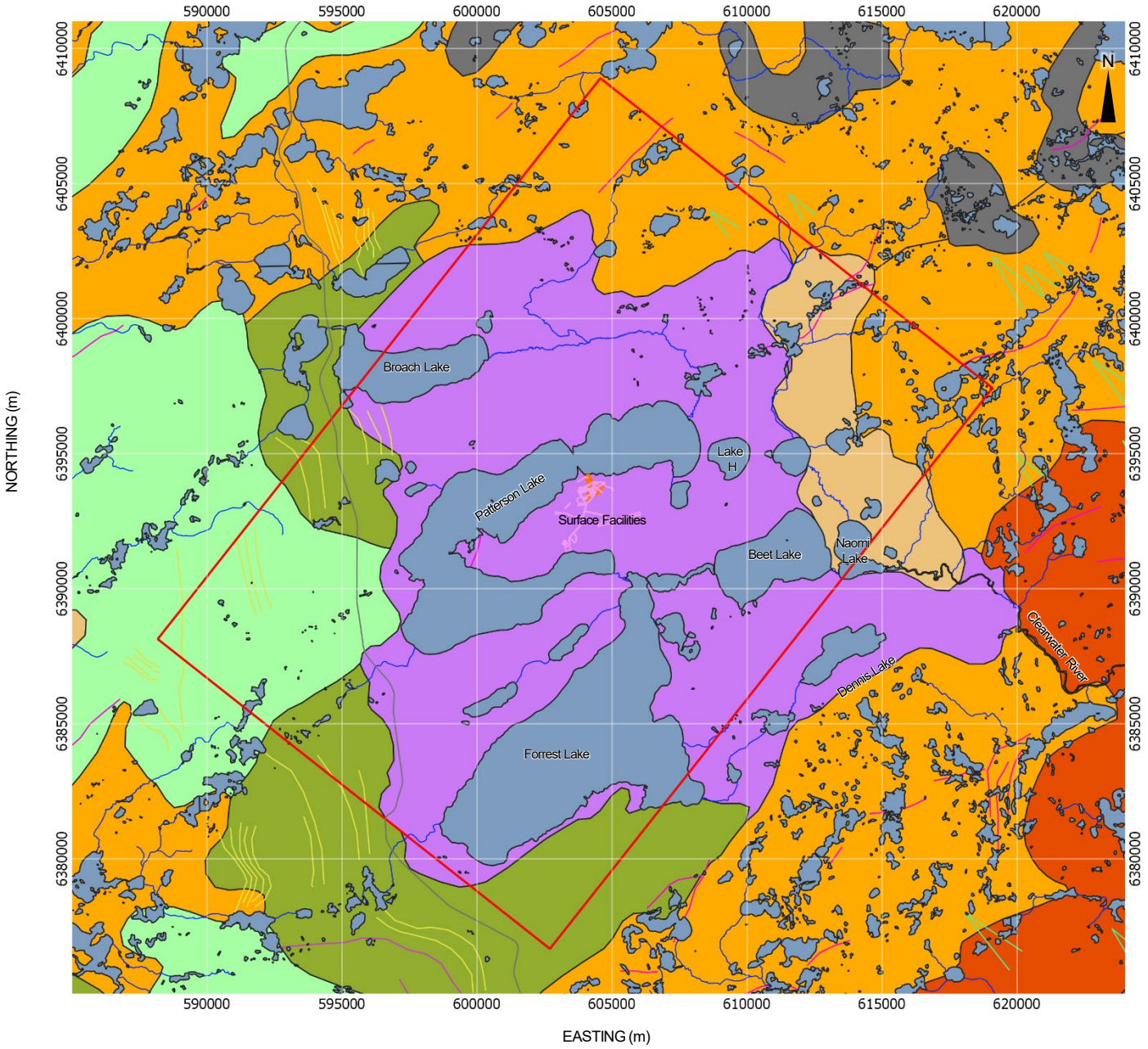
PROJECT No.	PHASE	Rev.	FIGURE
20144150	**3104**	**0**	**7**

5.1.2 Climate

Local meteorological conditions are monitored by the NexGen Rook I Meteorological Station, which is located near the NexGen Rook I Camp (Universal Transverse Mercator 12V 602795 E 6392291 N). The meteorological station has been operating since installation in 2018. The meteorological measurements include air temperature, total precipitation, humidity, solar radiation, rainfall, and wind speed. Historical climate data are available for other sites located in the Athabasca Basin and surrounding area, including Key Lake (located approximately 220 km to the east) and Fort McMurray (Environment and Climate Change Canada [ECCC] station 3062693 located approximately 170 km to the west [ECCC 2021]), which are expected to be similar in terms of the overall climatic conditions in the vicinity of the Project. Climate data from the Fort McMurray station (for the period from 1981 to 2010) indicate a mean annual precipitation of 419 mm, approximately half of which occurs as rainfall from June through August. On average, the mean annual total precipitation at the Project site is expected to be approximately 5% higher relative to Fort McMurray (Golder 2022a, Golder 2022b).

5.1.3 Hydrostratigraphy

The hydrostratigraphic units present in the RSA are described in Section 5.1.3.1 through Section 5.1.3.5. The surficial geology of the RSA is presented in Figure 8, and generalized basement rock geology is presented in Figure 9. Cross-sections of the RSA are presented in Figure 10 and Figure 11. These figures present the lateral and vertical distributions of the hydrostratigraphic units. Figure 12 presents the overburden thickness (i.e., distance between the ground surface and the top of bedrock) and the elevation of the top of bedrock.



LEGEND

- Surface Facilities
- Underground Development
- Extent of Groundwater Flow Model
- Watercourse
- Waterbody
- Roads

Surficial Geology

- Organic Deposits
- Glaciofluvial Gravel, Sand and Silt (hummocky)
- Glaciofluvial Gravel, Sand and Silt (eroded)
- Glaciofluvial Sand Silt and Clay (outwash)
- Glaciolacustrine Sand, Silt, and Clay
- Moraine Till (plain)
- Moraine Till (Ridged)
- Eskers
- Ribbed Moraine
- Dunes

Note:

1) Surface water features shown for Clearwater River catchment only

2) Surficial geology data from Saskatchewan Geological Survey, Ministry of Energy and Resources, 1:250,000 Surficial Geology Map (2008)

3) UTM Zone 12 Datum: North American Datum 83

CLIENT
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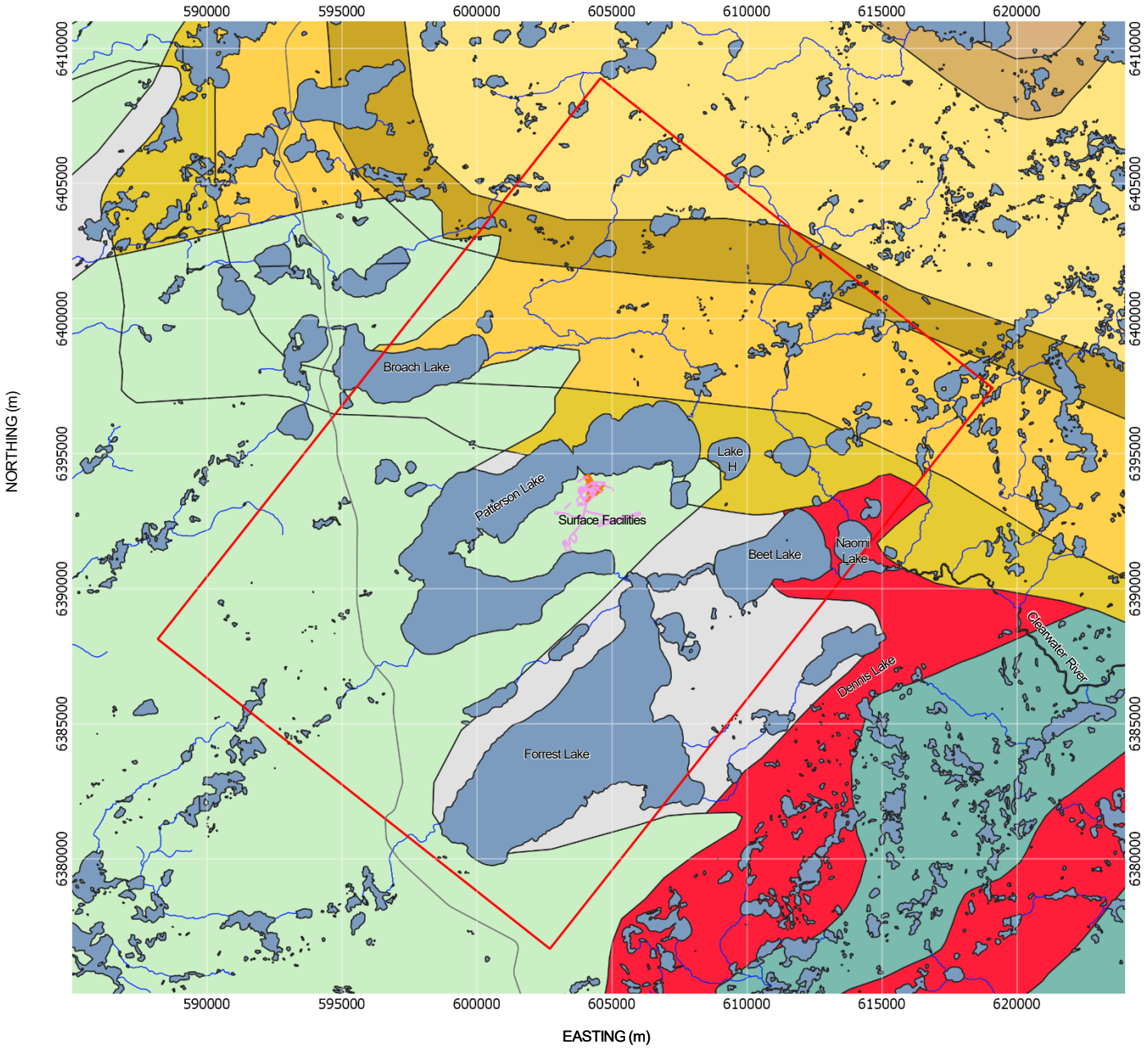
YYYY-MM-DD	2022-03-17
PREPARED	NB
DESIGN	NB
REVIEW	CH
APPROVED	MT

PROJECT
ROOK I PROJECT

TITLE
REGIONAL STUDY AREA SURFICIAL GEOLOGY

PROJECT No.	PHASE	Rev.	FIGURE
20144150	**3104**	**1**	**8**



LEGEND

- Surface Facilities
- Underground Development
- Extent of Groundwater Flow Model
- Watercourse
- Waterbody
- Roads

Bedrock Geology

- Cretaceous Mudstone/Siltstone (Manville Group)

Athabasca Basin Sandstone

Lazenby Lake Formation

- Lartner Group
- Shiels Group

Manitou Falls Formation

- Clampitt-Dunlop Grp.
- Hodge Group
- Warnes Group
- Bird Group

Precambrian Basement Rock

- Taltson Grp. Granite
- Taltson Grp. Felsic Granulite
- Unexposed Precambrian Shield

Note:

1) Surface water features shown for Clearwater River catchment only

2) Bedrock geology data from Saskatchewan Geological Survey, Ministry of Energy and Resources, 1:250,000 Geology Map (2013)

3) UTM Zone 12 Datum: North American Datum 83

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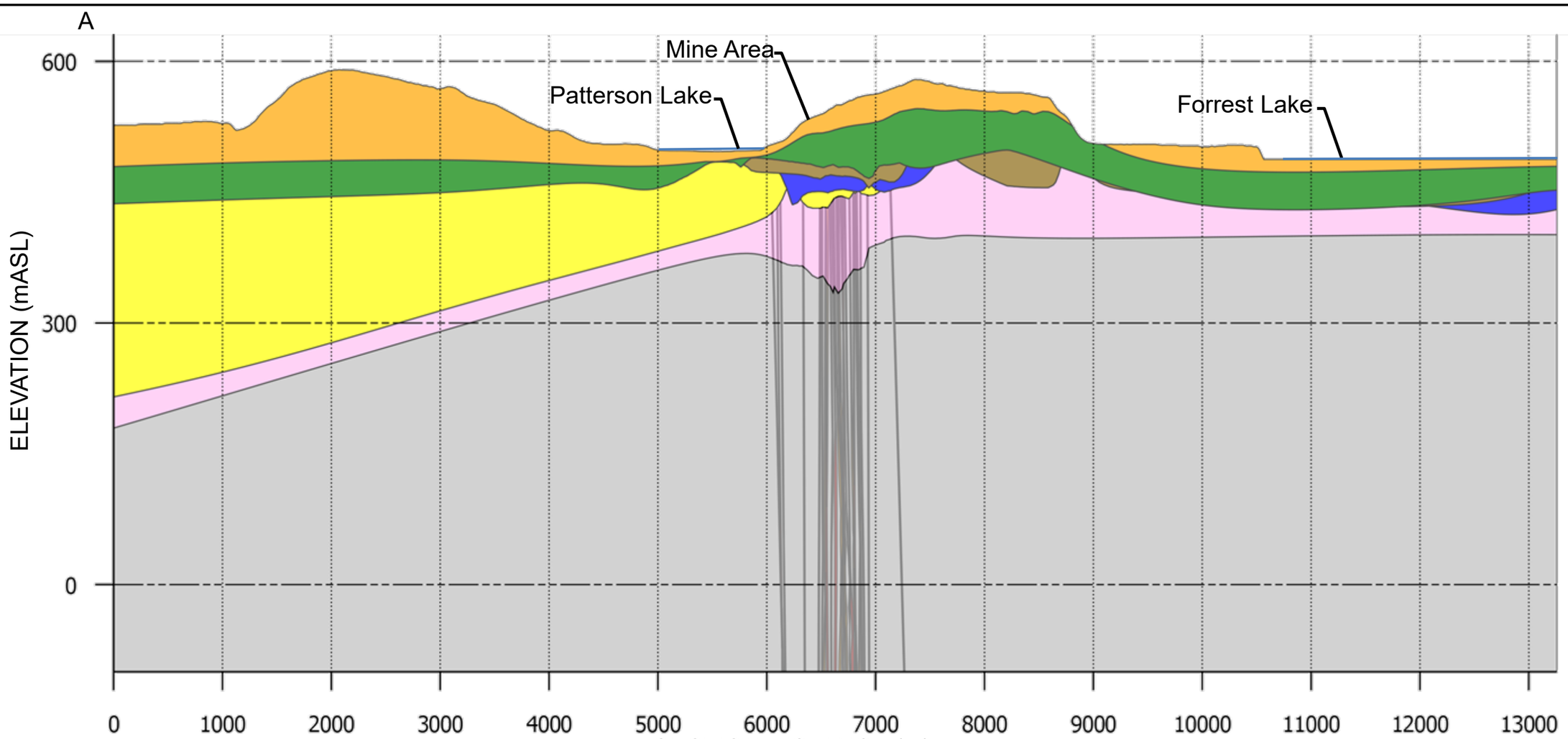
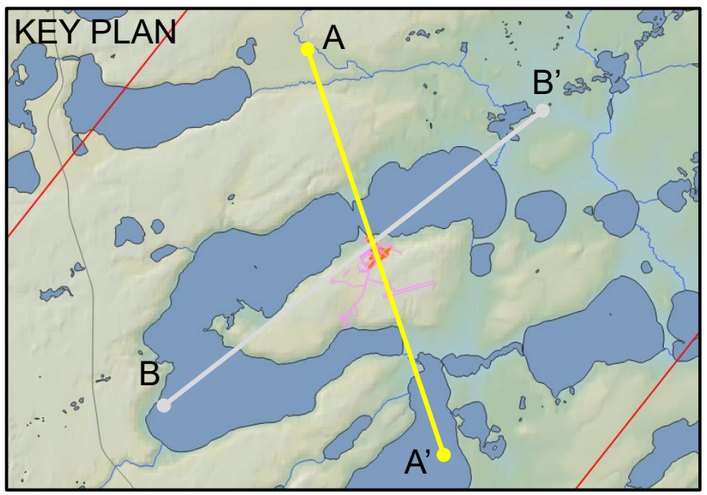
PROJECT
ROOK I PROJECT

TITLE
REGIONAL STUDY AREA BEDROCK GEOLOGY

PROJECT No.	PHASE	Rev.	FIGURE
20144150	**3104**	**1**	**9**





LEGEND

- UPPER OVERBURDEN
- LOWER OVERBURDEN (TILL)
- CRETACEOUS BEDROCK
- DEVONIAN BEDROCK
- SANDSTONE BEDROCK
- PALEOWEATHERED BASEMENT ROCK
- BASEMENT ROCK
- SHEAR ZONE
- FAULT ZONE

Notes:
Vertical exaggeration: 8x

CLIENT
NexGen Energy Ltd.

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YYYY-MM-DD	2023-02-27
PREPARED	CT
DESIGN	CT
REVIEW	CH
APPROVED	MT

PROJECT
ROOK I PROJECT

TITLE
CONCEPTUAL HYDROGEOLOGICAL MODEL
REGIONAL CROSS-SECTION A-A’
(NORTHWEST-SOUTHEAST)

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	10

B

B’

Patterson Lake

Mine Area

Patterson Lake

600

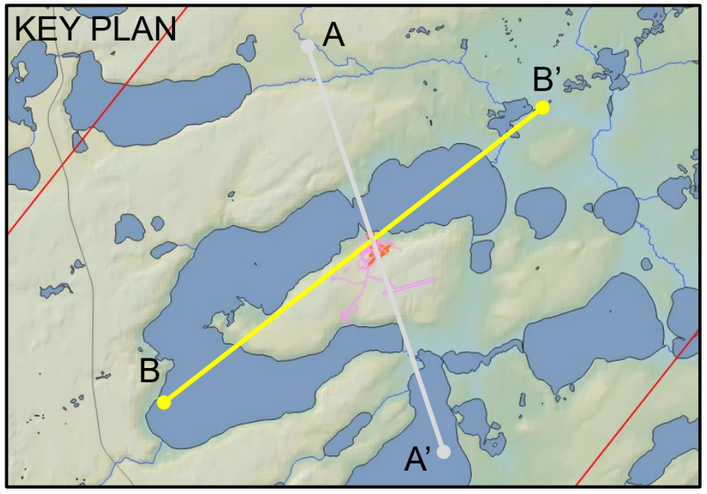
300

0

ELEVATION (mASL)

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000

SECTION DISTANCE (m)



LEGEND

- UPPER OVERBURDEN
- LOWER OVERBURDEN (TILL)
- CRETACEOUS BEDROCK
- DEVONIAN BEDROCK
- SANDSTONE BEDROCK
- PALEOWEATHERED BASEMENT ROCK
- BASEMENT ROCK

Notes:
Vertical exaggeration: 8x

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YYYY-MM-DD	2023-02-27
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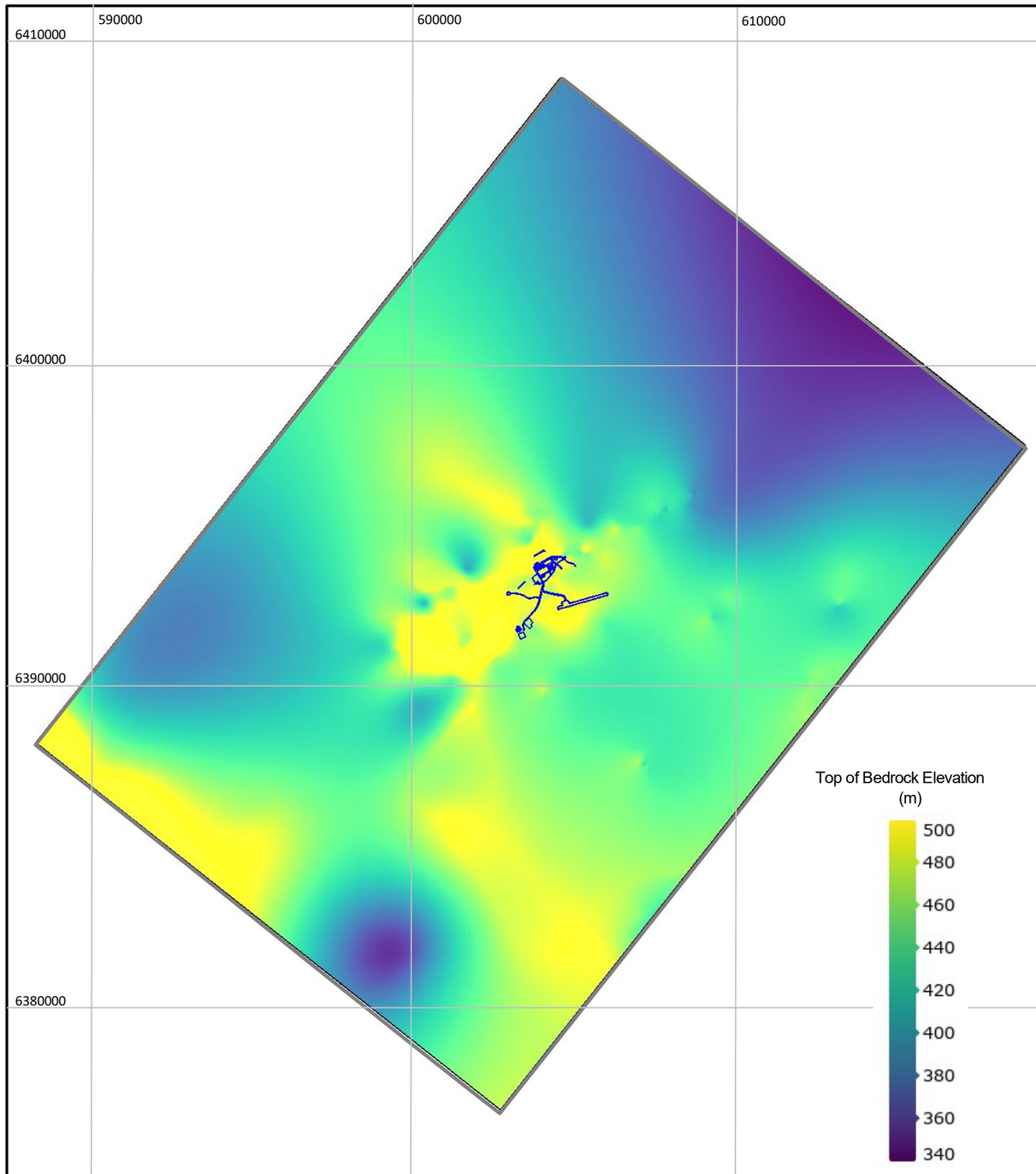
DESIGN	CT
REVIEW	CH
APPROVED	MT

PROJECT
ROOK I PROJECT

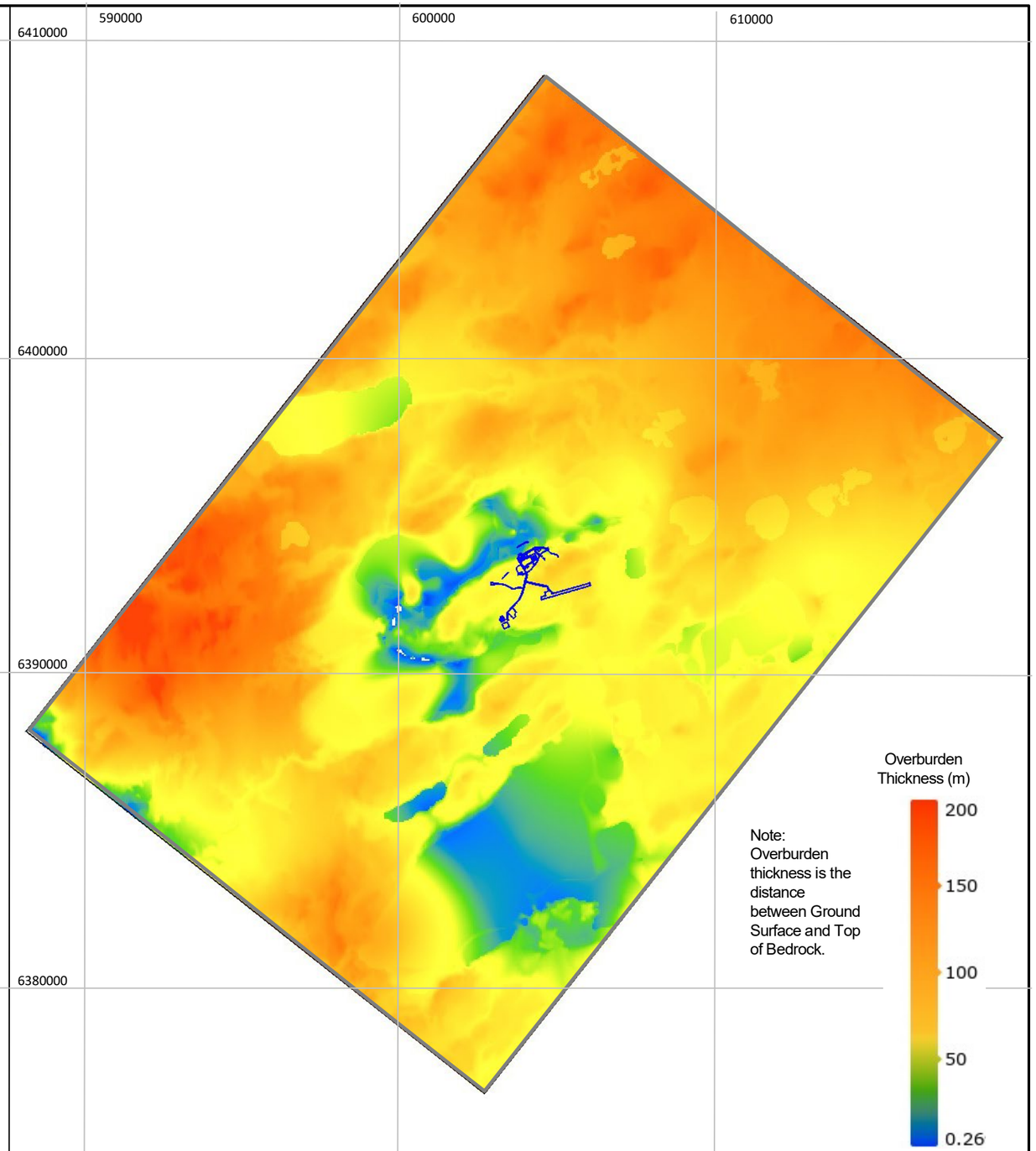
TITLE
CONCEPTUAL HYDROGEOLOGICAL MODEL
REGIONAL CROSS-SECTION B-B’
(SOUTHWEST-NORTHEAST)

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	11



Top of Bedrock Elevation (m)

500
480
460
440
420
400
380
360
340



Note: Overburden thickness is the distance between Ground Surface and Top of Bedrock.

Overburden Thickness (m)

200
150
100
50
0.26

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REVIEW	CH
APPROVED	MT

PROJECT
ROOK I PROJECT

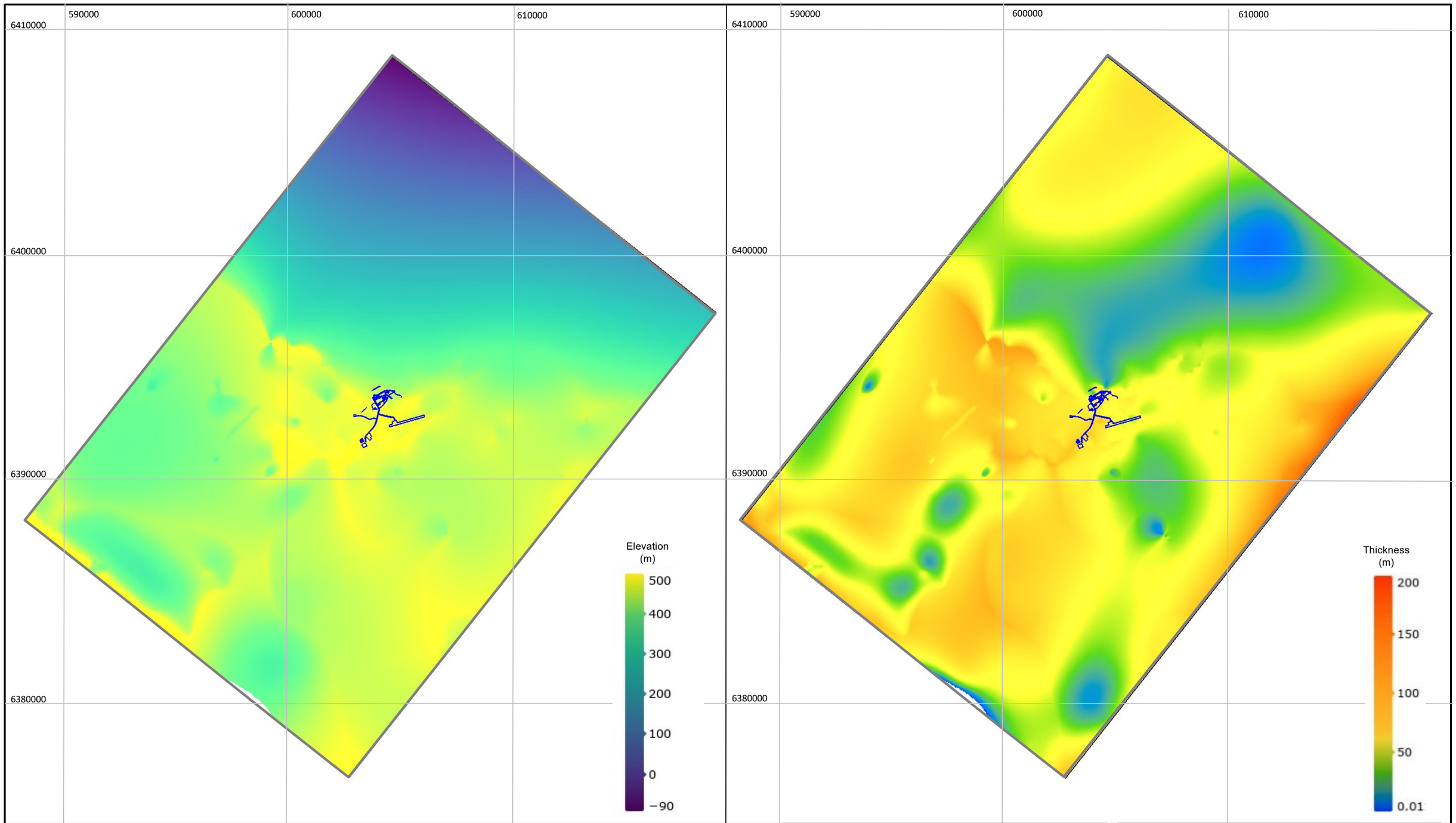
TITLE
BEDROCK SURFACE ELEVATION AND OVERBURDEN ISOPACH

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	12

5.1.3.1 Crystalline Basement Rock

The basement rock within the RSA is considered to be Archean in age and is predominantly a granite or gneiss with a significant zone of paleo-weathering near its top contact. The basement rock contact is encountered at elevations ranging from approximately -90 masl to 430 masl. The paleo-weathered thickness of the basement rock ranges from 20 m to 200 m starting from the upper contact surface of the basement rock. The thickness of the paleo-weather zone within the crystalline basement rock is presented in Figure 13, along with the elevation of the top of the crystalline basement rock / top of paleo-weathered zone.

Due to the relatively low porosity of the crystalline basement rock, the primary hydraulic pathway applicable on the scale of the mine development is through fractures in the bedrock related to fault and shear zones. Although the crystalline rock has a relatively low hydraulic conductivity (refer to Section 5.2.2.2), these enhanced conductivity features define the overall hydraulic conditions of the formation. The shear and fault zones within the RSA were mapped as sub-vertical features as they were encountered during borehole drilling. The extents of these zones within the RSA were interpolated beyond the extent of borehole data using available Z-axis Tipper Electromagnetic (ZTEM) geophysical data provided by NexGen.



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NexGen Energy Ltd.

CONSULTANT
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YYYY-MM-DD	2022-03-18
PREPARED	CH
DESIGN	NB
REVIEW	CH
APPROVED	MT

PROJECT
NEXGEN ENERGY LTD.
ROOK I – HYDROGEOLOGY BASELINE

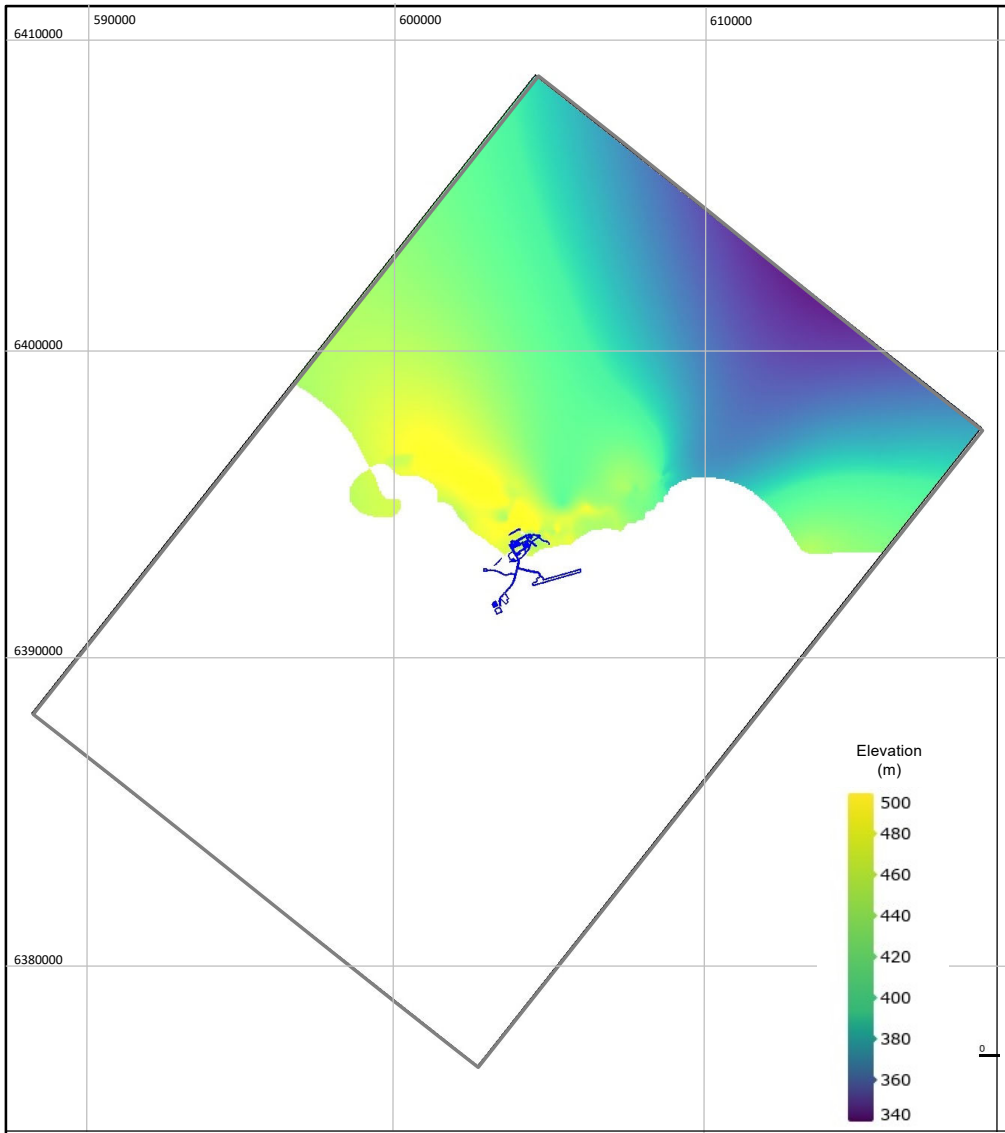
TITLE
PALEOWEATHERED BASEMENT ROCK
SURFACE ELEVATION AND ISOPACH

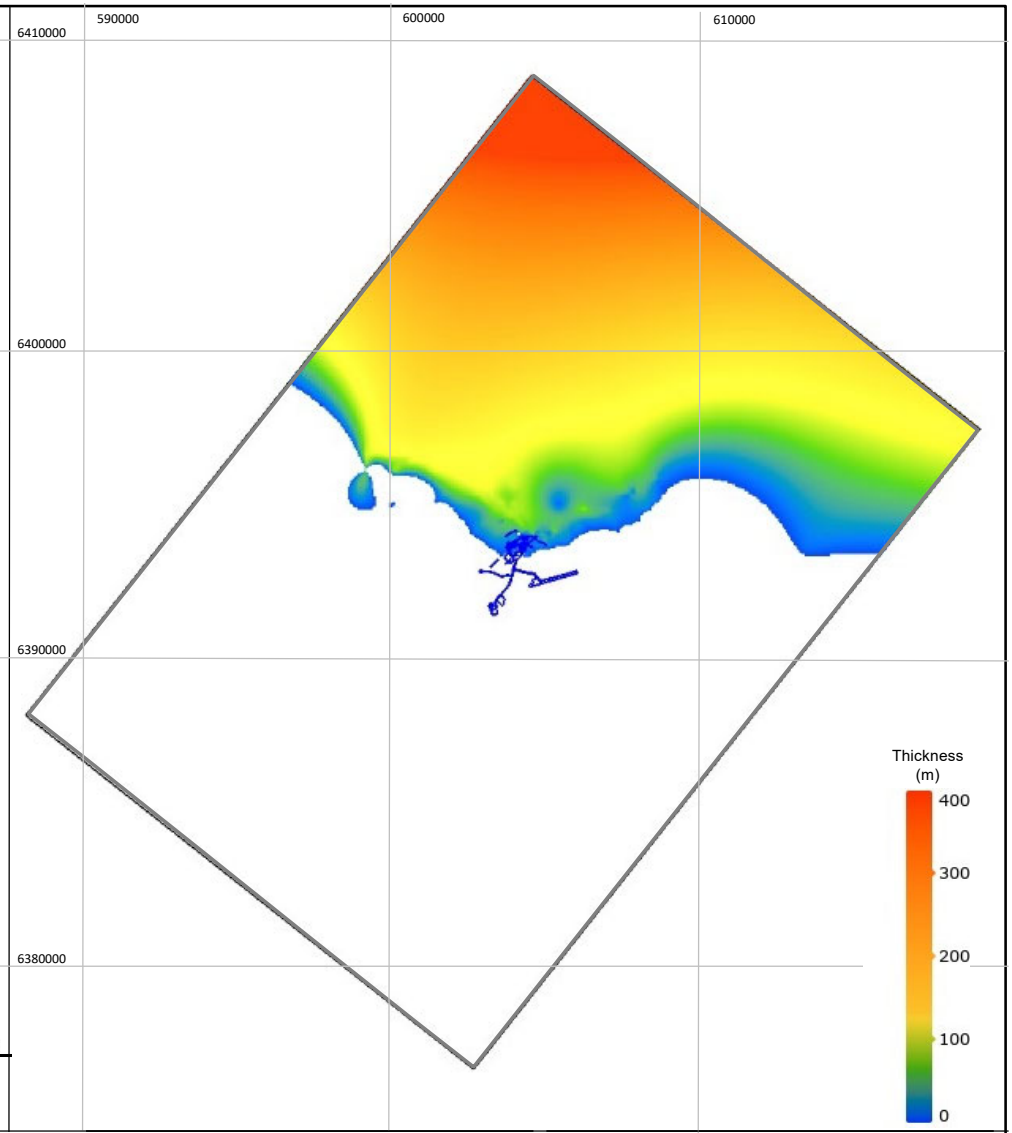
PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	13

5.1.3.2 Athabasca Sandstone Bedrock

The Athabasca Supergroup sandstones lie stratigraphically above the crystalline basement rock and below the discontinuous Devonian bedrock and has been dated at 2.3 Ga to 1.7 Ga (Rainbird et al. 2002). The Athabasca Supergroup is present within the northern half of the RSA and increases in thickness towards the north. The upper contact of the Athabasca Supergroup is encountered at elevations of approximately 490 masl in the vicinity of the Arrow deposit but dips to approximately 340 masl in the northeastern portion of the RSA. The Athabasca Supergroup varies in thickness from 0 m near the Arrow deposit to greater than 400 m in the northern portion of the RSA. The extents and thickness of the Athabasca Supergroup are presented in Figure 14.

The Athabasca Supergroup sandstones vary in grain size and matrix. Grain sizes vary from fine to coarse and are predominantly lithified with silica matrix. Zones of desilicified sandstone are present and often have a vuggy texture (i.e., containing cavities). Layers of sandstones that have been desilicified are locally very friable and weak and are the dominant layers in which groundwater transport occurs making up the primary aquifer (i.e., most permeable zone) within the Athabasca Supergroup. These enhanced permeability zones are likely to dominate the horizontal hydraulic conductivity. The sandstones are interbedded with zones of clay-rich cementation. These zones act as an aquitard within the Athabasca Supergroup, primarily inhibiting the vertical movement of water within the formation. The vertical hydraulic conductivity is therefore considered to be lower than the horizontal hydraulic conductivity.





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PROJECT
ROOK I PROJECT

TITLE
ATHABASCA SANDSTONE SURFACE
ELEVATION AND ISOPACH

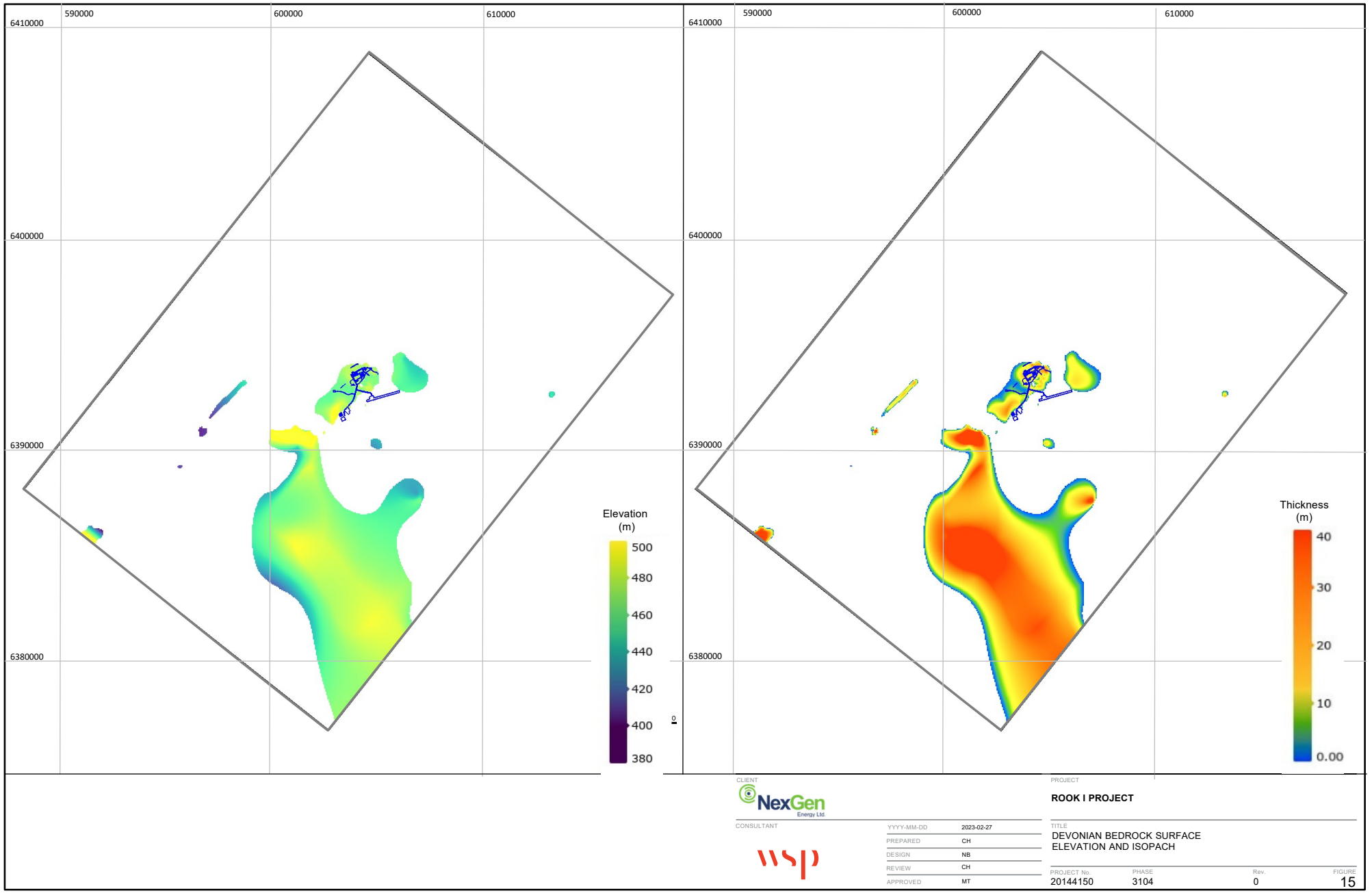
YYYY-MM-DD	2023-02-27
PREPARED	CH
DESIGN	NB
REVIEW	CH
APPROVED	MT

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	14

5.1.3.3 Devonian Bedrock

The Devonian bedrock in the RSA is composed of carbonate-rich interbedded sandstone, siltstone, and mudstone of the Elk Point Group. The Devonian age bedrock is discontinuous within the RSA but is present under the Project site and in the southern portion of the RSA. The Devonian formations are present at elevations ranging from approximately 380 masl to 500 masl and in thicknesses ranging from 0 m to 60 m. The extent of the Devonian bedrock is presented in Figure 15.

The Devonian sandstone units are fine to coarse grained with a carbonate cement and typically have a vuggy texture. The interbedded siltstone and mudstone units are typically present in thicknesses of 10 cm to 30 cm and include clasts of the older Athabasca formation and/or basement rock.



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PROJECT
ROOK I PROJECT

TITLE
DEVONIAN BEDROCK SURFACE
ELEVATION AND ISOPACH

YYYY-MM-DD	2023-02-27
PREPARED	CH
DESIGN	NB
REVIEW	CH
APPROVED	MT

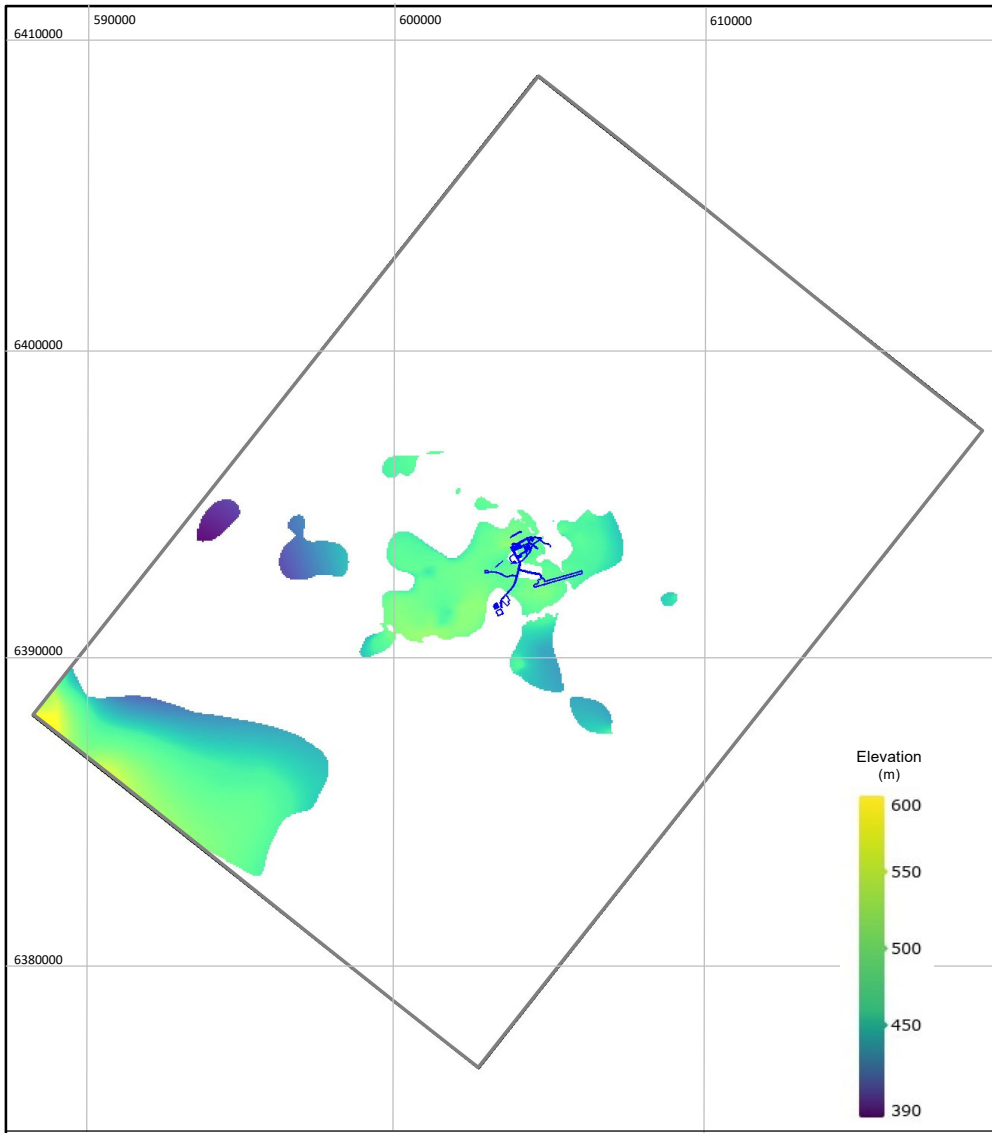
PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	15

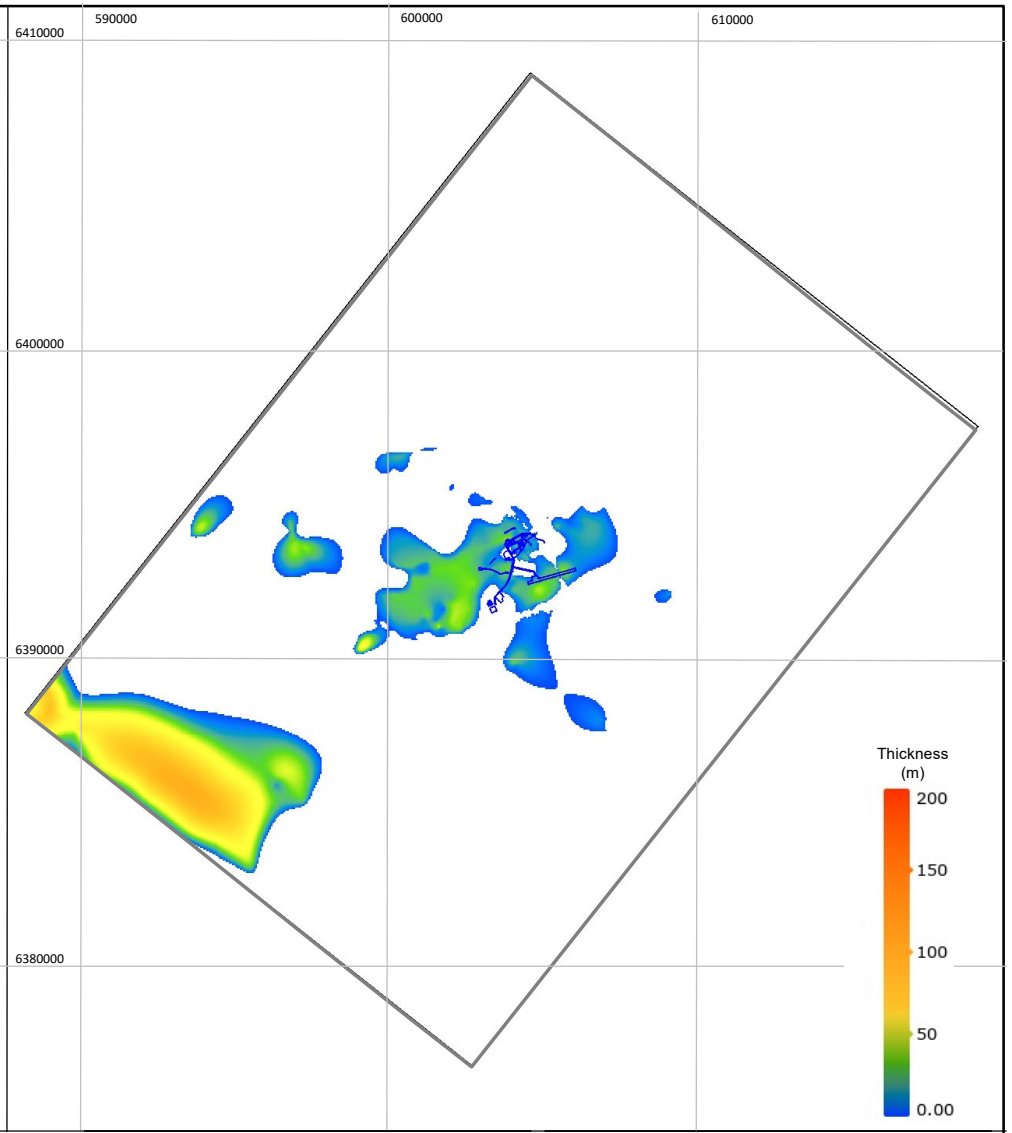
5.1.3.4 Cretaceous Bedrock

The Cretaceous bedrock in the RSA is subdivided into an upper lithotype and lower lithotype. The upper lithotype consists of a green to grey-black, fine to medium grained quartz sandstone interbedded with fissile mudstones. The lower lithotype consists of brown, fine- to coarse- grained quartz sandstones cross-bedded with minimal mudstones. This lower lithotype is commonly saturated with bitumen and is likely a part of the McMurray Formation (Patterson et al. 1978).

The Cretaceous formations are discontinuous within the RSA but are present directly underlying the Project site. It is encountered at elevations of 390 masl to 600 masl and is present in thicknesses from 0 m to 100 m. The extent of the Cretaceous formation within the RSA is presented in Figure 16.

Due to the interbedding of the sandstone and silt/mud stone layers within the formation, the vertical movement of groundwater is impeded by the low conductivity silt/mud stones. The horizontal to sub-horizontal bedding of the sandstones within the formation make up the primary pathways of groundwater movement.





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PROJECT
ROOK I PROJECT

TITLE
CRETACEOUS BEDROCK SURFACE
ELEVATION AND ISOPACH

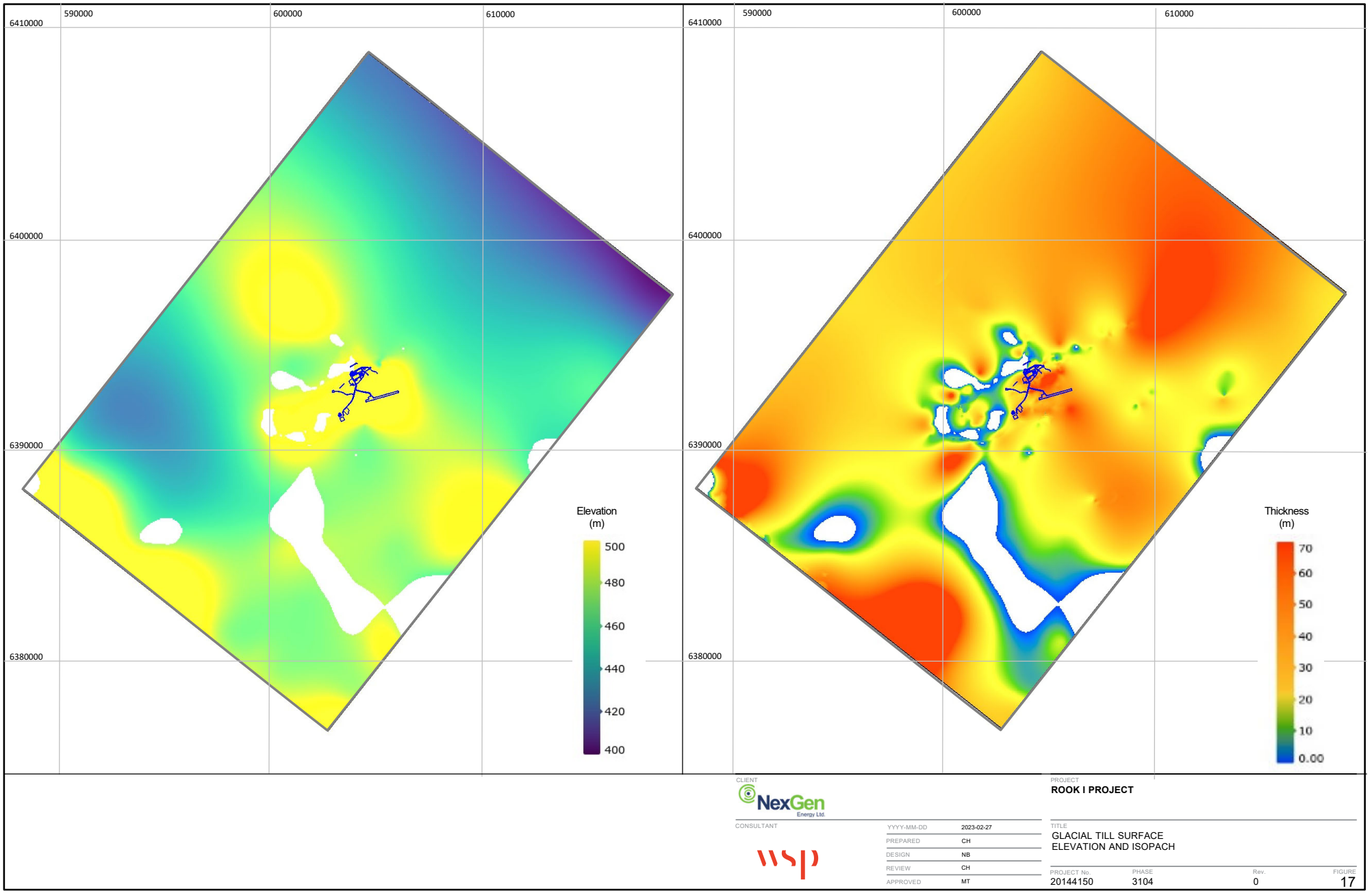
YYYY-MM-DD	2023-02-27
PREPARED	CH
DESIGN	NB
REVIEW	CH
APPROVED	CH

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	16

5.1.3.5 Glacial Drift

The surficial geology of the RSA is composed of glacial drift deposits. The glacial drift is differentiated by the deposition mechanism and the materials deposited. The central portion of the RSA is primarily made up of glaciolacustrine sand, silt, and clay. The north and east corners of the RSA are made up of glaciofluvial gravel, sand, and silt deposits and the south and west corners of the study area are made up of morainal tills (Figure 8). The glacial tills are derived from both crystalline basement rocks as well as relatively soft Athabasca sandstones. In general, the thickness of the glacial tills increases towards the southwest (Campbell 2007).

The glacial drift is divided into two sub-units, referred to as the “upper overburden” and “lower overburden”. The upper overburden is characterized by higher sand and boulder content and is generally located above the water table (NexGen 2019c). The lower overburden is characterized by higher fines content and is generally located below the water table (NexGen 2019d). The glacial drift deposits were differentiated as the upper and lower units. The extents and thickness of the lower glacial drift unit are presented in Figure 17. The extent of the collective glacial drift is presented in Figure 18. The total thickness of the glacial drift ranges from approximately 10 m to 200 m. Based on the available lake bathymetry and the interpreted bedrock surface, the glacial drift is not present in the deeper portions of Patterson Lake and Forrest Lake.



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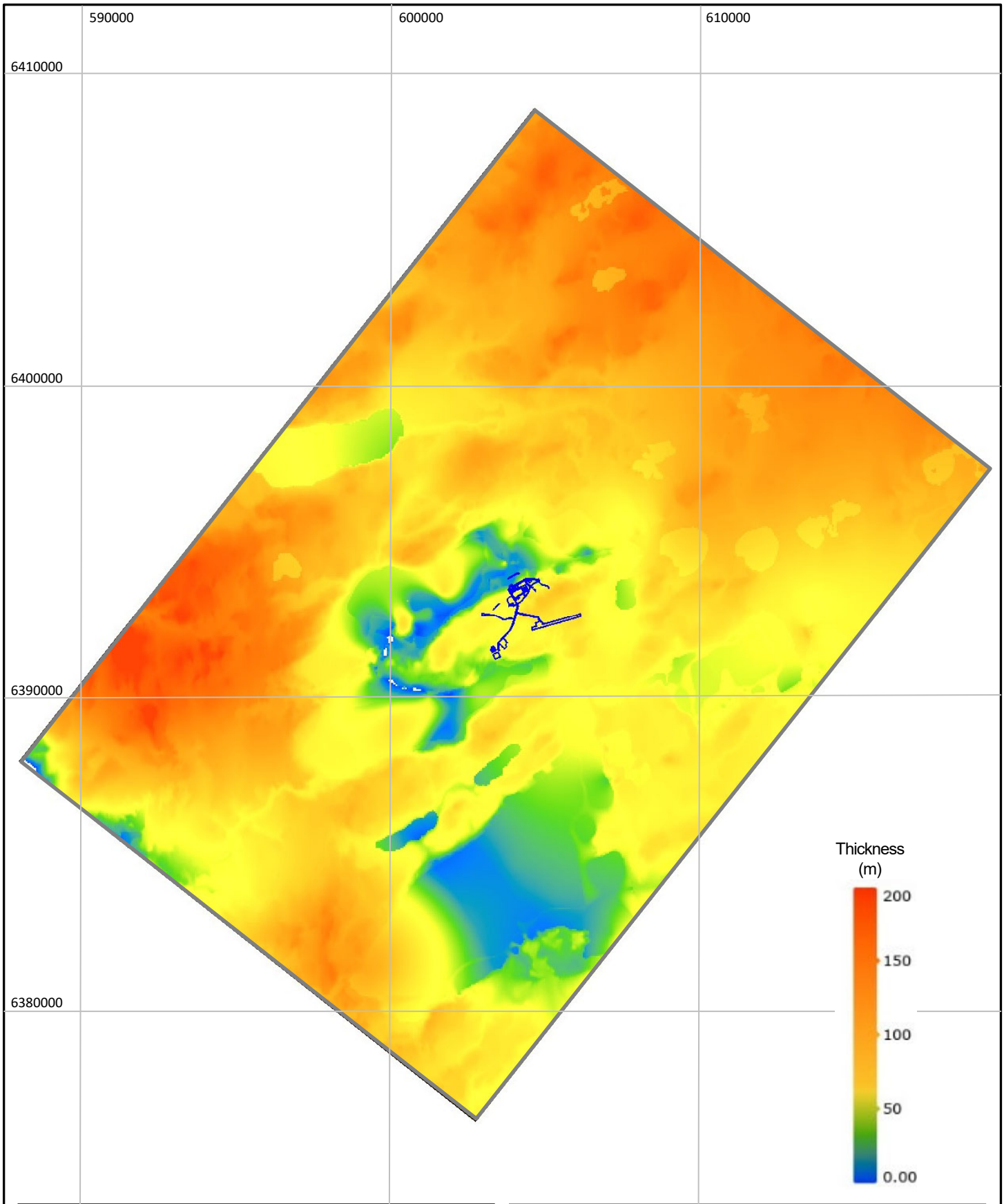
PROJECT
ROOK I PROJECT

TITLE
GLACIAL TILL SURFACE
ELEVATION AND ISOPACH

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	17



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YYYY-MM-DD	2023-02-27
PREPARED	CH
DESIGN	NB
REVIEW	CH
APPROVED	MT

PROJECT
ROOK I PROJECT

TITLE
GLACIAL DRIFT ISOPACH

PROJECT No.	PHASE	Rev.	FIGURE
20144150	**3104**	**0**	**18**

5.2 Local Study Area

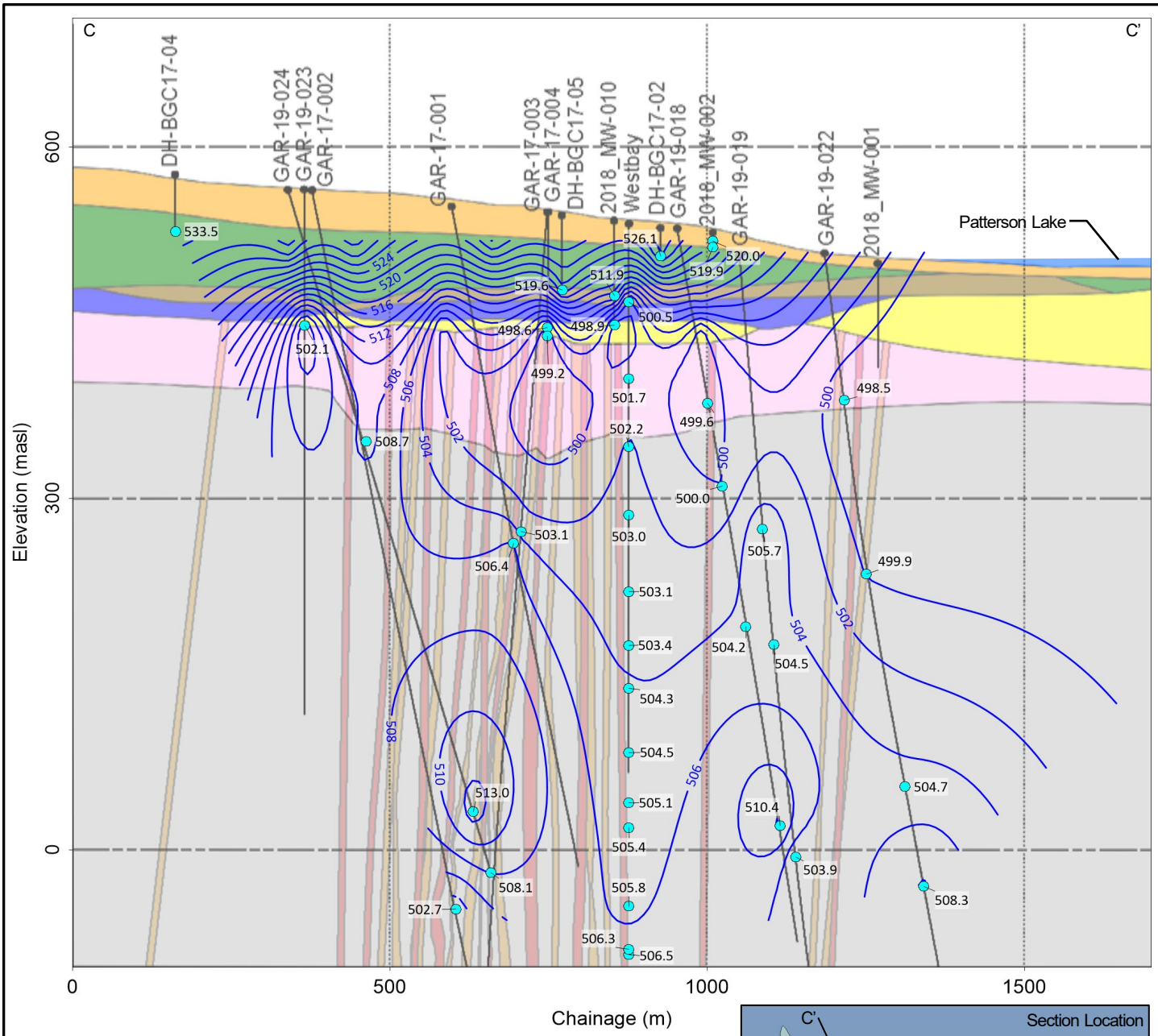
The hydrostratigraphic units present in the LSA are described in Section 5.1.3.1 through Section 5.1.3.5. The surficial geology and generalized basement rock geology within the LSA were previously discussed in Section 5.1 and presented in Figure 8 and Figure 9, respectively. A cross-section of the LSA is presented in Figure 19 and presents the lateral and vertical distributions of the hydrostratigraphic units on a localized scale.

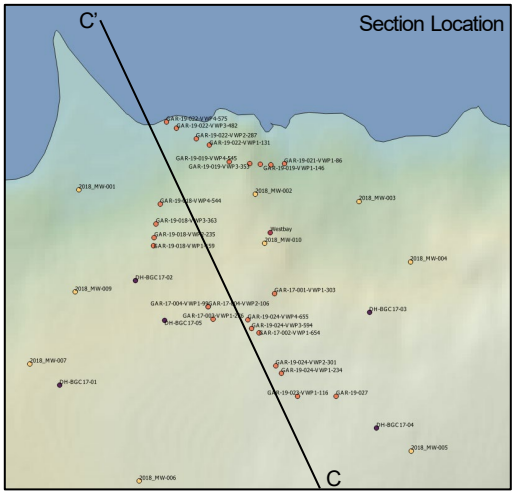
5.2.1 Hydraulic Head

5.2.1.1 Standpipe Piezometer Monitoring Network

A summary of the hydraulic head conditions within the network is presented in Table 1. Table 1 presents data collected in 2019 as it is the most representative snapshot across most monitoring locations. Figure 20 presents the glacial drift groundwater total head contour. Time history plots of the measured groundwater elevation data are provided in Appendix E, Well Hydrographs.

Hydraulic head measurements recorded within the glacial drift standpipe piezometer network indicated that total head varies between approximately 499 masl and 540 masl across the site. Within the area of monitoring well installations in the overburden the direction of groundwater flow is to the north (i.e., towards Patterson Lake) with a hydraulic gradient of generally around 0.02 m/m.





LEGEND

- UPPER OVERBURDEN
- LOWER OVERBURDEN (TILL)
- CRETACEOUS BEDROCK
- DEVONIAN BEDROCK
- SANDSTONE BEDROCK
- PALEOWEATHERED BASEMENT ROCK
- BASEMENT ROCK
- SHEAR ZONE
- FAULT ZONE
- INTERPRETED GROUNDWATER ELEVATION CONTOUR (mASL)

Note:

1) Groundwater contours based on the most recent available measurement as of July 2019.

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YYYY-MM-DD	2023-02-27
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DESIGN	NB
REVIEW	CH
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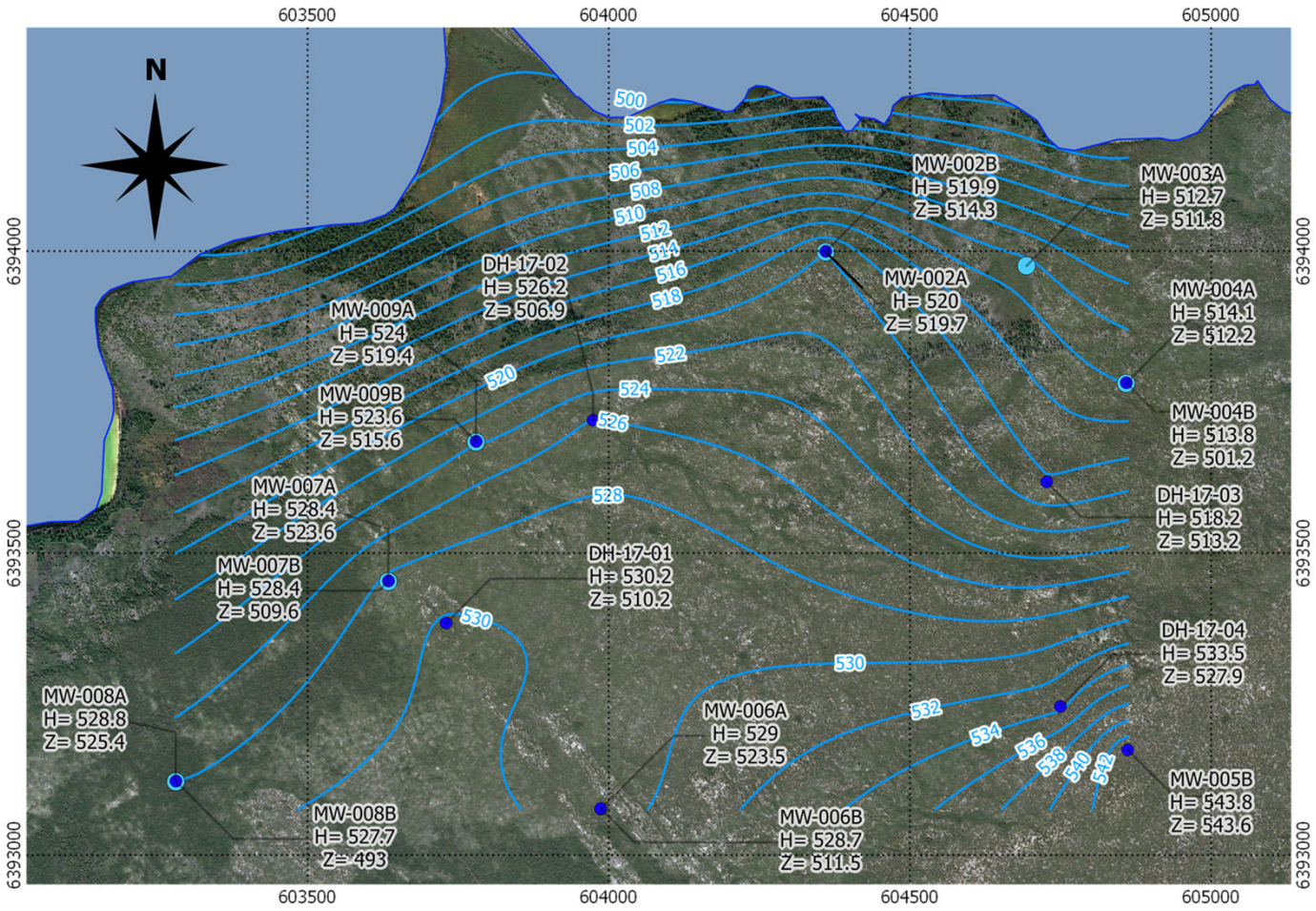
PROJECT

ROOK I PROJECT

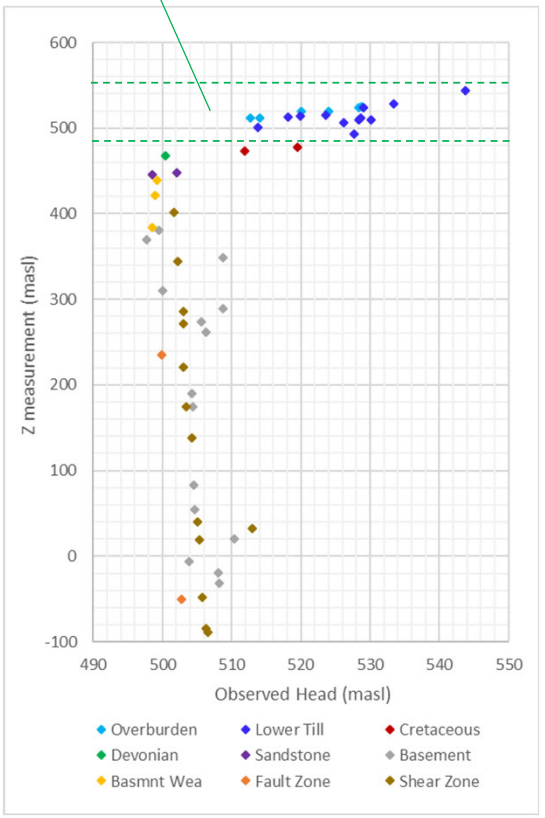
TITLE

CONCEPTUAL HYDROGEOLOGICAL MODEL LOCAL CROSS-SECTION C-C' (NORTHWEST-SOUTHEAST)

PROJECT No.	PHASE	Rev.	FIGURE
20144150	**3104**	**0**	**19**



Observations considered on contour estimation



LEYEND

WATER BODY

GROUNDWATER CONTOUR

OBSERVATION POINT

- Name
- H= GW Elv
- Z= Meas Elv

OBSERVATION POINT BY UNIT

- Overburden
- Lower till

NOTAS

1. Groundwater observation point labels shows name of the borehole, groundwater elevation (GW Elv) and measurement point elevation (Meas Elv) which considers the screen mid-point for screened boreholes, or the exact elevation for vibrating wires.
2. Groundwater contour level shown on top of the line.

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CONSULTANT: wsp

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DESIGN	GI
REVIEW	CH
APPROVED	MT

PROJECT

ROOK I PROJECT

TITLE

CONCEPTUAL HYDROGEOLOGICAL MODEL
GROUNDWATER CONTOUR MAPS (GLACIAL DRIFT)

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	20

Table 1: Standpipe Piezometer As-Built Summary

Monitoring Well ID	Installation Date	UTM Coordinates			Borehole Total Depth (mbgs)	Monitoring Well As-Built						Water Level (mbtoc)	Total Head (masl)	Measurement Date	Instrumented Formation
		Easting (m)	Northing (m)	Ground Elevation (masl)		Casing Stickup (m)	Top of Casing Elevation (masl)	Screened Interval							
								From (mbgs)	To (mbgs)	From (masl)	To (masl)				
DH-BGC17-01	2017-09-05	603730.2	6393383.9	540.13	29.90	1.23	541.36	26.10	29.20	514.03	510.93	11.17	530.19	23-May-19	Glacial Drift
DH-BGC17-02	2017-09-07	603974.4	6393720.2	530.71	23.80	0.95	531.66	11.05	14.15	519.66	516.56	5.51	526.15	23-May-19	Glacial Drift
DH-BGC17-03	2017-09-09	604727.1	6393618.4	552.19	39.00	1.14	553.33	35.30	38.40	516.89	513.79	35.17	518.16	23-May-19	Glacial Drift
DH-BGC17-04	2017-09-11	604750.0	6393246.4	576.11	48.20	1.17	577.28	44.25	47.35	531.86	528.76	48.52	528.76	16-Dec-18	Glacial Drift
DH-BGC17-05	2017-09-13	604068.4	6393593.1	541.29	63.40	1.04	542.33	56.15	58.05	485.14	483.24	22.76	519.57	23-May-19	Cretaceous Bedrock
2018-MW-001A	2018-11-25	603791.7	6394012.2	500.31	14.48	0.88	501.19	3.90	4.90	496.41	495.41	1.22	499.97	23-May-19	Glacial Drift
2018-MW-001B								8.50	9.50	491.81	490.81	1.12	500.07	23-May-19	Glacial Drift
2018-MW-002A	2018-11-21	604360.1	6393998.6	526.45	17.37	0.97	527.42	5.40	6.90	521.05	519.55	6.41	521.01	23-May-19	Glacial Drift
2018-MW-002B								10.80	12.30	515.65	514.15	6.52	520.90	23-May-19	Glacial Drift
2018-MW-003A	2018-11-20	604693.6	6393975.6	513.58	8.53	0.94	514.52	1.30	1.80	512.28	511.78	0.56	513.96	23-May-19	Glacial Drift
2018-MW-004A	2018-11-20	604859.0	6393781.0	527.36	29.57	0.70	528.06	13.80	15.30	513.56	512.06	13.3	514.76	23-May-19	Glacial Drift
2018-MW-004B								24.80	26.30	502.56	501.06	13.54	514.52	23-May-19	Glacial Drift
2018-MW-005A	2018-11-19	604861.4	6393173.0	576.02	39.01	0.96	576.98	11.10	12.60	564.92	563.42	Dry	-	23-May-19	Glacial Drift
2018-MW-005B								30.90	32.40	545.12	543.62	Dry	-	23-May-19	Glacial Drift
2018-MW-006A	2018-11-14	603986.5	6393076.0	545.32	35.97	0.84	546.16	20.40	21.90	524.92	523.42	16.33	529.83	23-May-19	Glacial Drift
2018-MW-006B								32.30	33.80	513.02	511.52	16.67	529.49	23-May-19	Glacial Drift
2018-MW-007A	2018-11-15	603634.0	6393452.8	534.63	32.92	0.86	535.49	9.70	11.20	524.93	523.43	6.24	529.25	23-May-19	Glacial Drift
2018-MW-007B						0.56	535.19	23.50	25.00	511.13	509.63	6.23	528.96	23-May-19	Glacial Drift
2018-MW-008A	2018-11-16	603281.0	6393121.3	534.18	45.11	0.90	535.08	7.30	9.80	526.88	524.38	5.37	529.71	23-May-19	Glacial Drift
2018-MW-008B								39.70	41.20	494.48	492.98	6.51	528.57	23-May-19	Glacial Drift
2018-MW-009A	2018-11-15	603779.5	6393683.8	526.81	14.63	0.86	527.67	6.00	7.50	520.81	519.31	2.84	524.83	23-May-19	Glacial Drift
2018-MW-009B								10.70	11.20	516.11	515.61	3.22	524.45	23-May-19	Glacial Drift
2018-MW-010A	2018-11-24	604390.6	6393840.7	537.04	91.62	0.78	537.82	61.00	64.00	476.04	473.04	25.11	512.71	23-May-19	Cretaceous Bedrock
2018-MW-010B								86.10	89.20	450.94	447.84	38.18	499.64	23-May-19	Devonian Bedrock
2019-MW-011A	2019-08-15	604374.7	6393991.5	525.14	60.40	1.05	526.19	7.00	10.00	518.14	515.14	5.78	520.41	8-Sep-19	Glacial Drift
2019-MW-011B								56.50	59.60	468.64	465.54	22.73	503.46	8-Sep-19	Glacial Drift

Table 1: Standpipe Piezometer As-Built Summary

Monitoring Well ID	Installation Date	UTM Coordinates			Borehole Total Depth (mbgs)	Monitoring Well As-Built						Water Level (mbtoc)	Total Head (masl)	Measurement Date	Instrumented Formation
		Easting (m)	Northing (m)	Ground Elevation (masl)		Casing Stickup (m)	Top of Casing Elevation (masl)	Screened Interval							
								From (mbgs)	To (mbgs)	From (masl)	To (masl)				
2019-MW-012A	2019-08-21	604471.3	6394088.8	506.39	78.40	1.35	507.74	41.00	44.10	465.39	462.29	6.09	501.65	7-Sep-19	Glacial Drift
2019-MW-012B						0.96	507.35	69.00	72.10	437.39	434.29	8.03	499.32	7-Sep-19	Glacial Drift
2019-MW-013A	2019-08-22	604461.1	6394086.4	507.02	17.70	1.51	508.53	14.20	17.30	492.82	489.72	Artesian	-	-	Glacial Drift
2019-MW-014A	2019-08-23	604804.6	6393637.3	543.66	95.47	1.45	545.11	74.20	77.30	469.46	466.36	39.48	505.63	7-Sep-19	Glacial Drift
2019-MW-016A	2019-08-28	604079.9	6393486.6	544.29	29.95	1.15	545.44	25.00	28.10	519.29	516.19	16.40	529.04	8-Sep-19	Glacial Drift
2019-MW-017A	2019-08-31	604098.3	6393803.4	531.01	40.55	1.25	532.26	15.00	18.10	516.01	512.91	7.97	524.29	7-Sep-19	Glacial Drift
2019-MW-018A	2019-08-31	603923.0	6393828.7	520.55	51.25	1.35	521.90	23.00	26.10	497.55	494.45	3.52	518.38	7-Sep-19	Glacial Drift
2019-MW-018B						1.40	521.95	38.00	41.10	482.55	479.45	8.28	513.67	7-Sep-19	Glacial Drift

mbgs = metres below ground surface; masl = metres above sea level; mbtoc = metres below top of casing; UTM = Universal Transverse Mercator; - = no data.

5.2.1.2 Basement Rock Monitoring Network

Table 2 provides a summary of as-built information for the Westbay wells. A summary of the hydraulic head conditions within the Westbay wells is presented in Table 3. Figure 21 and Figure 22 present the basement rock total head contours at mid-mine and deep-mine levels, respectively. Hydraulic head measurements recorded within the bedrock and VWP sensors indicate that total head varies between approximately 498 masl and 513 masl across the site. Horizontal groundwater flow directions were generally towards the north, with hydraulic gradients in the range of approximately 0.003 m/m to 0.01 m/m. Comparatively, vertical gradients are typically between 0.01 m/m and 0.02 m/m (with an upwards direction of groundwater flow). Data from continuously monitored VWPs indicate negligible seasonal variability in bedrock groundwater elevations.

A summary of calculated total head values by hydrostratigraphic unit and instrument ID is presented in Table 4.

Table 2: Westbay Well As-Built Summary

Westbay Well ID	Completed Installation Date	Universal Transverse Mercator Coordinates			Borehole Total Depth (mbgs)	Zone	West Bay As-Built					Pressure Head at Measurement Port (mH_2O)	Total Head (masl)	Date Measured
		Easting (m)	Northing (m)	Ground Elevation (masl)			Measurement Port Depth (mbgs)	Zone Interval						
								From (mbgs)	To (mbgs)	From (masl)	To (masl)			
GAR-18-013	2018-09-13	604408.7	6393875.6	534.19	650.40	1	623.6	620.3	650.4	-86.1	-116.2	610.30	505.39	Dec-2019
						2	582.4	579.1	614.8	-44.9	-80.6	591.40	505.38	Dec-2019
						3	515.3	512.0	578.2	22.2	-44.0	554.70	505.26	Dec-2019
						4	493.9	490.6	511.1	43.6	23.1	487.50	504.99	Dec-2019
						5	451.1	447.9	489.7	86.3	44.5	466.10	504.84	Dec-2019
						6	396.2	392.9	447.0	141.3	87.2	423.30	504.53	Dec-2019
						7	359.6	356.3	392.0	177.9	142.2	368.30	504.13	Dec-2019
						8	313.8	310.5	335.4	223.7	198.8	331.70	503.83	Dec-2019
						9	248.3	245.0	309.6	289.2	224.6	220.30	503.39	Dec-2019
						10	190.4	187.1	244.1	347.1	290.1	162.20	502.64	Dec-2019
						11	132.4	129.2	186.2	405.0	348.0	104.10	501.82	Dec-2019
GAR-19-035	2019-12-10	604037.7	6393987.9	508.19	701.20	1	646.0	642.7	700.0	-134.5	-191.8	612.97	475.16	Dec-2019
						2	588.0	584.7	632.7	-76.5	-124.5	556.98	477.17	Dec-2019
						3	530.0	526.8	583.8	-18.6	-75.6	500.88	479.07	Dec-2019
						4	472.0	468.8	525.9	39.4	-17.7	444.80	480.99	Dec-2019
						5	412.6	409.3	467.9	98.9	40.3	403.28	498.87	Dec-2019
						6	353.1	349.8	408.4	158.4	99.8	329.96	485.05	Dec-2019
						7	301.3	297.9	348.9	210.3	159.3	279.65	486.54	Dec-2019
						8	255.6	252.2	297.0	256.0	211.2	235.60	488.19	Dec-2019
						9	211.4	208.0	251.3	300.2	256.9	193.23	490.02	Dec-2019
						10	167.3	163.8	207.1	344.4	301.1	150.72	491.61	Dec-2019

mbgs = metres below ground surface; masl = metres above sea level; mH_20 = metres of water pressure.

Table 3: Vibrating Wire Piezometer Installation As-Built Summary

Borehole Name	Collar Easting (m)	Collar Northing (m)	Collar Elevation	VWP Identifier	Install Depth (mah)	VWP Serial Number	VWP Easting (m)	VWP Northing (m)	VWP Elevation (masl)	Total Head (masl)
GAR-17-001	604468.78	6393594.18	548.91	VWP1-303	303.40	VW45279	604421.92	6393679.47	261.58	506.37
GAR-17-002	604487.22	6393358.40	562.96	VWP1-654	654.00	VW45278	604372.35	6393553.16	-50.50	502.73
GAR-17-003	604208.40	6393635.62	544.02	VWP1-276	275.60	VW45280	604224.57	6393596.90	271.65	503.09
GAR-17-004	604207.56	6393636.70	544.27	VWP1-99	98.50	VW45281	604208.74	6393636.17	445.78	498.59
				VWP2-106	105.70	VW45282	604208.84	6393636.14	438.58	499.16
GAR-19-018	604030.19	6393776.63	530.12	VWP1-159	159.00	VW55229	604032.91	6393832.33	381.23	499.55
				VWP2-235	234.50	VW55231	604034.93	6393858.52	310.45	500.00
				VWP3-363	362.50	VW55233	604040.05	6393902.87	190.49	504.23
				VWP4-544	544.40	VW55238	604053.62	6393966.47	20.63	510.41
GAR-19-019	604460.10	6394093.80	507.00	VWP1-146	145.80	VW55228	604410.50	6394093.58	369.90	497.74
				VWP2-248	248.00	VW55232	604376.50	6394094.24	273.52	505.67
				VWP3-353	352.50	VW55234	604341.47	6394095.65	175.08	504.45
				VWP4-545	545.40	VW55237	604276.01	6394103.04	-6.21	503.86
GAR-19-021	604454.87	6394093.48	507.39	VWP1-86	85.70	VW55224	604453.33	6394095.70	421.73	498.95
GAR-19-022	604247.88	6394140.11	509.18	VWP1-131	131.30	VW55227	604212.24	6394155.87	383.80	498.55
				VWP2-287	287.20	VW55230	604169.21	6394176.92	235.47	499.90
				VWP3-482	482.20	VW55999	604106.60	6394210.68	53.94	504.69
				VWP4-576	575.50	VW55236	604073.78	6394230.22	-31.18	508.26
GAR-19-023	604498.69	6393347.70	563.47	VWP1-116	116.00	VW55995	604496.84	6393349.43	447.50	502.06
GAR-19-024	604495.00	6393344.22	563.16	VWP1-234	233.90	VW55996	604443.76	6393421.83	348.61	508.73
				VWP2-301	301.00	VW55997	604425.44	6393447.17	289.25	508.73
				VWP3-594	594.30	VW56002	604348.43	6393565.83	32.48	513.01
				VWP4-655	654.60	VW56006	604335.38	6393593.86	-19.29	508.08
GAR-19-027	604620.07	6393349.30	567.18	VWP1-155	155.00	VW55225	604586.62	6393401.83	425.24	n/a
				VWP2-418	418.00	VW55998	604532.32	6393496.42	186.21	n/a
				VWP3-560	560.00	VW56000	604489.82	6393548.34	62.22	n/a
				VWP4-675	675.00	VW56007	604455.40	6393590.40	-37.32	n/a
GAR-19-032	604300.01	6393981.59	528.85	VWP1-115	115.00	VW55226	604280.89	6394014.58	420.36	n/a
				VWP2-225	225.00	VW55235	604263.54	6394044.54	315.95	n/a
				VWP3-568	568.00	VW56001	604221.66	6394149.43	-7.78	n/a

Table 3: Vibrating Wire Piezometer Installation As-Built Summary

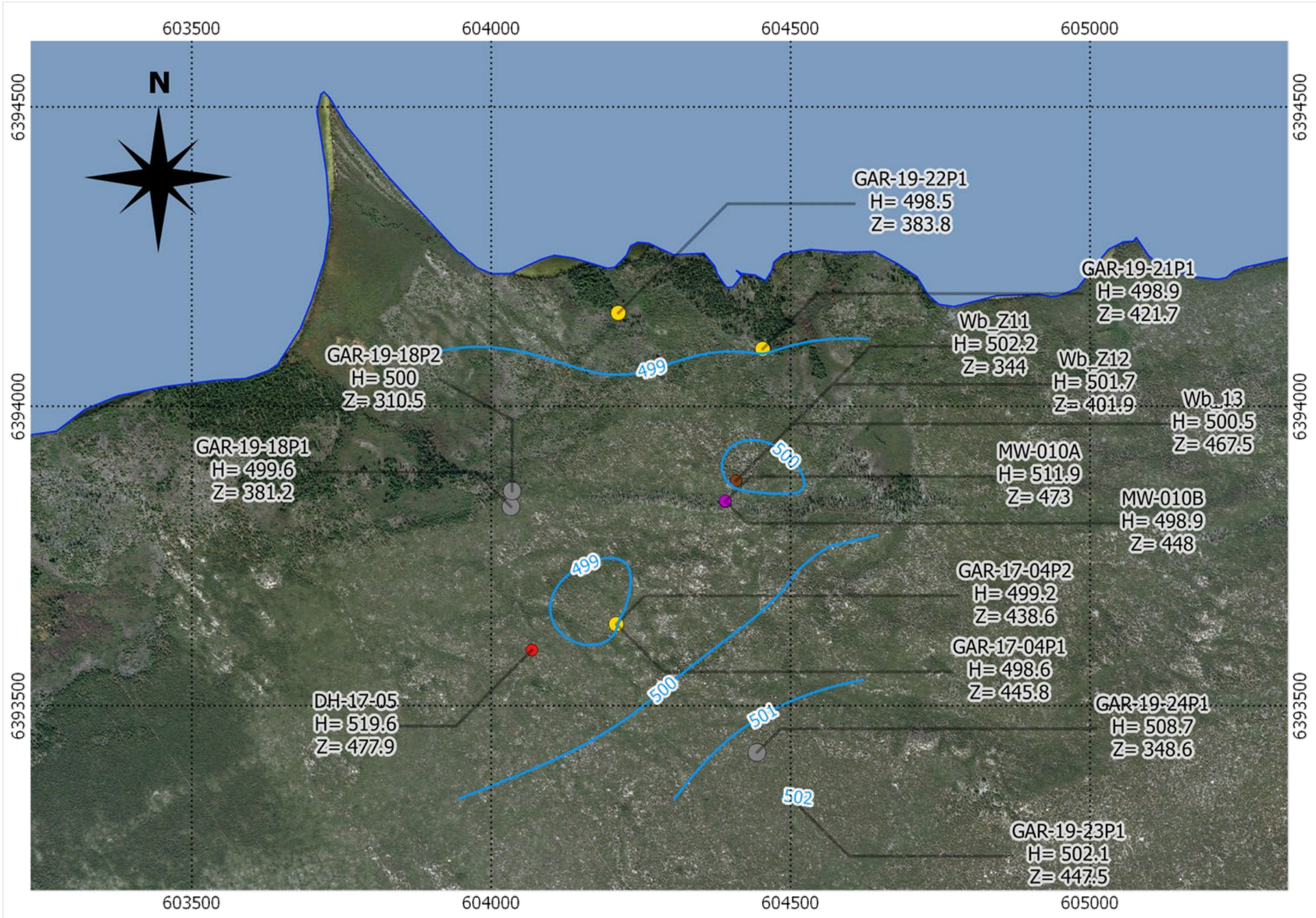
Borehole Name	Collar Easting (m)	Collar Northing (m)	Collar Elevation	VWP Identifier	Install Depth (mah)	VWP Serial Number	VWP Easting (m)	VWP Northing (m)	VWP Elevation (masl)	Total Head (masl)
GAR-19-033	604097.97	6393864.95	527.81	VWP1-147	146.70	VW62178	604070.51	6393906.22	389.75	n/a
				VWP2-250	249.70	VW62179	604052.87	6393935.22	292.50	n/a
				VWP3-550	550.10	VW56004	604008.67	6394027.44	10.07	n/a
GAR-19-034	604293.52	6393765.26	537.53	VWP1-140	140.00	VW62177	604267.39	6393802.16	405.04	n/a
				VWP2-213	212.80	VW62231	604253.90	6393820.72	335.95	n/a
GAR-19-036	604040.39	6393968.30	511.42	VWP1-71	71.00	VW62941	604043.13	6393966.39	440.51	n/a
				VWP2-95	95.00	VW62942	604044.11	6393965.79	416.53	n/a

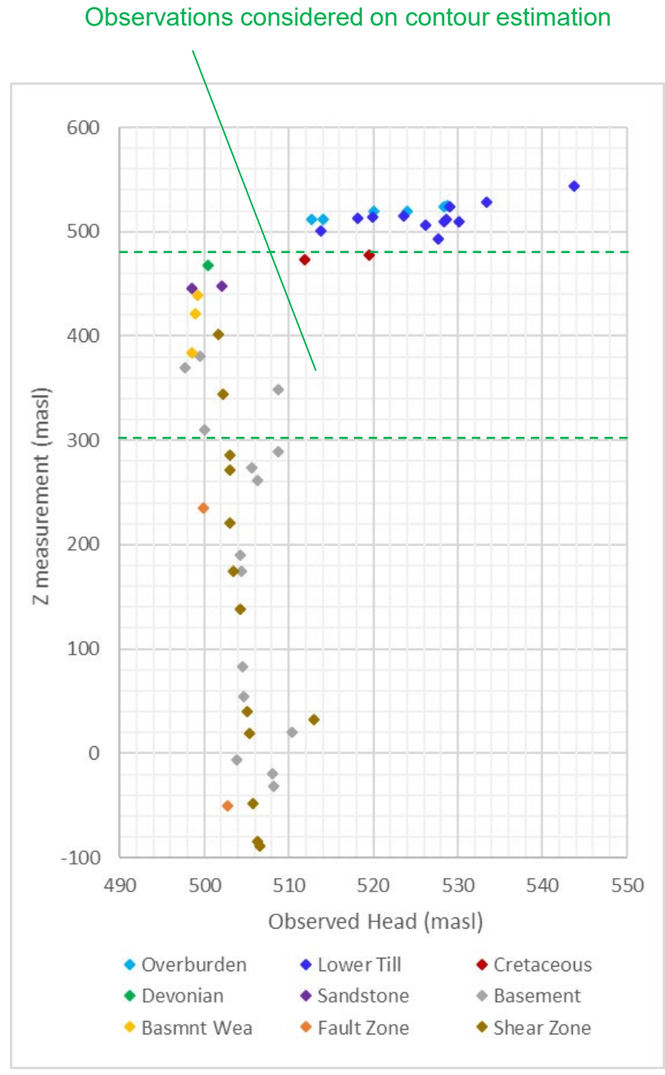
n/a= not available; VWP = vibrating wire piezometer; mah = metres along hole; masl = metres above sea level.

Table 4: Hydrostratigraphic Unit Total Head Values

Hydrostratigraphic Unit	Instrument Type	Instrument ID	Total Head (masl)
Crystalline Basement	VWP	GAR-17-001-VWP1-303	506.37
	VWP	GAR-19-018-VWP1-159	499.55
	VWP	GAR-19-018-VWP2-235	500.00
	VWP	GAR-19-018-VWP3-363	504.23
	VWP	GAR-19-018-VWP4-544	510.41
	VWP	GAR-19-019-VWP1-146	497.74
	VWP	GAR-19-019-VWP2-248	505.67
	VWP	GAR-19-019-VWP3-353	504.45
	VWP	GAR-19-019-VWP4-545	503.86
	VWP	GAR-19-022-VWP3-482	504.69
	VWP	GAR-19-022-VWP4-575	508.26
	VWP	GAR-19-024-VWP1-234	508.73
	VWP	GAR-19-024-VWP2-301	508.73
	VWP	GAR-19-024-VWP4-655	513.01
	VWP	GAR-17-004-VWP2-106	508.08
	VWP	GAR-19-021-VWP1-86	498.95
	VWP	GAR-19-022-VWP1-131	498.55
	Westbay	GAR-18-013_Z6	504.53
Sandstone Bedrock	VWP	GAR-17-004-VWP1-99	498.59
	VWP	GAR-19-023-VWP1-116	502.06

VWP = vibrating wire piezometer; masl = metres above sea level.





LEYEND

WATER BODY

GROUNDWATER CONTOUR

OBSERVATION POINT

Name
H= GW Elv
Z= Meas Elv

OBSERVATION POINT BY UNIT

- Basement
- Basement (w)
- Sandstone
- Cretaceous
- Devonian
- Shear Zone

NOTAS

1. Groundwater observation point labels shows name of the borehole, groundwater elevation (GW Elv) and measurement point elevation (Meas Elv) which considers the screen mid-point for screened boreholes, or the exact elevation for vibrating wires.
2. Groundwater contour level shown on top of the line.
3. Cretaceous and GAR-19-24P1 observations ignored for contour definition. Cretaceous water levels observed shows a behavior similar to shallow boreholes, while GAR-19-24P1 measuring location is deeper than surrounding observations.

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YYYY-MM-DD	2023-02-27
PREPARED	GI
DESIGN	GI
REVIEW	CH
APPROVED	MT

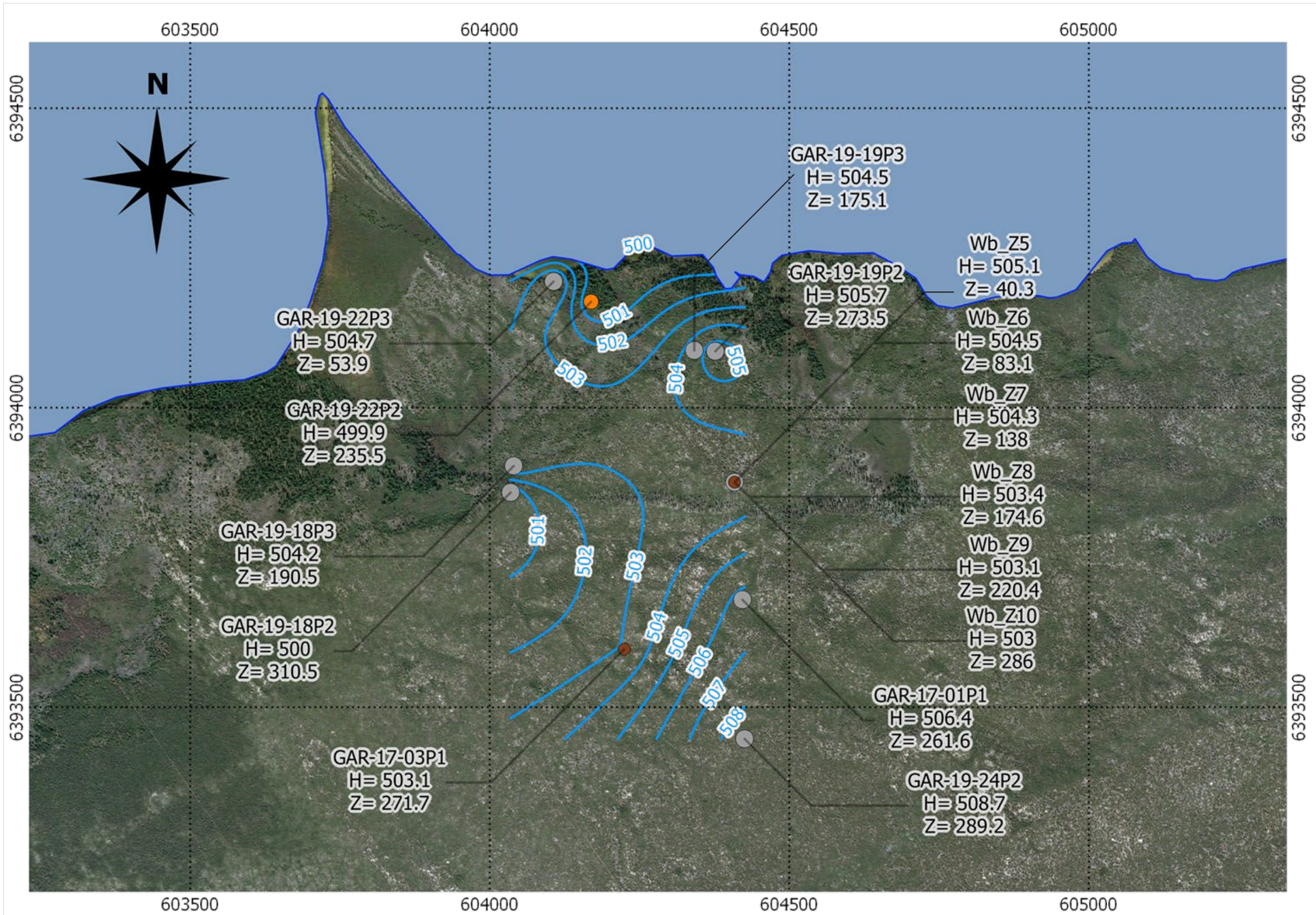
PROJECT

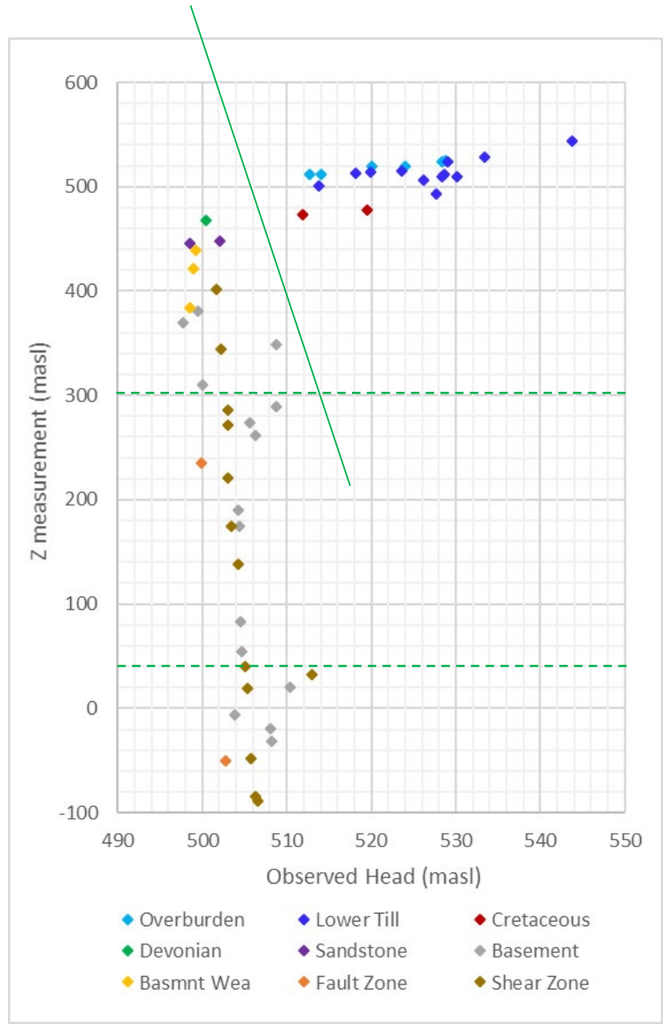
ROOK I PROJECT

TITLE

CONCEPTUAL HYDROGEOLOGICAL MODEL
GROUNDWATER CONTOUR MAPS (MID-MINE LEVEL)

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	21





LEYEND

WATER BODY

GROUNDWATER CONTOUR

OBSERVATION POINT

Name
H= GW Elv
Z= Meas Elv

OBSERVATION POINT BY UNIT

- Basement
- Fault Zone
- Shear Zone

NOTAS

1. Groundwater observation point labels shows name of the borehole, groundwater elevation (GW Elv) and measurement point elevation (Meas Elv) which considers the screen mid-point for screened boreholes, or the exact elevation for vibrating wires.
2. Groundwater contour level shown on top of the line.

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wsp

YYYY-MM-DD	2023-02-27
PREPARED	GI
DESIGN	GI
REVIEW	CH
APPROVED	MT

PROJECT

ROOK I PROJECT

TITLE

CONCEPTUAL HYDROGEOLOGICAL MODEL
GROUNDWATER CONTOUR MAPS (DEEP MINE LEVEL)

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	22

5.2.2 Hydraulic Testing

5.2.2.1 Glacial Drift Standpipe Piezometer Testing

Slug testing of the standpipe piezometers installed in the glacial drift and the analysis of the response data were completed by BGC Engineering Inc (BGC 2017). The standpipe piezometers that were tested (i.e., BGC17-01 to BGC17-05) were all installed within the lower elevations of the glacial drift. Calculations of the hydraulic conditions were completed using AQTESOLV Pro, a commercially available software package used to analyze hydraulic testing data. The Bouwer and Rice (1976) method was applied to determine the hydraulic conductivity for an unconfined aquifer.

The calculated hydraulic conductivity values were plotted as a probability density function to evaluate the distribution of hydraulic conductivity values within the glacial drift (Figure 23).

Collectively, the results of 16 hydraulic tests were plotted on a probability density function for the glacial drift. These values ranged from approximately 1×10^{-4} m/s to 1×10^{-6} m/s. The geomean of the data corresponded to a hydraulic conductivity value of 1×10^{-5} m/s. Slug testing analyses are presented in Appendix F, Standpipe Piezometer Hydraulic Test Results.

5.2.2.2 Basement Rock Packer Testing

Appendix G presents hydraulic conductivity values estimated from packer testing.

Hydraulic conductivity values from packer test data conducted by BGC were reported to be analyzed utilizing the equation below from Hoek and Bray (1981) using the Lugeon interpretation practice proposed by Houlsby (1976) and revisited by Qionones-Rozo (2010) to select a representative hydraulic conductivity (K) value for each test (BGC 2019).

$$K = \frac{Q * \left(\frac{L \sin(A)}{r}\right)}{2 * \pi * L \sin(A) * dH}$$

Where:

K = hydraulic conductivity (m/s);
Q = rate of injection in (m^3/s);
L = test interval length (m);
dH = head differential (m);
A = angle from horizontal (degrees); and
R = drillhole radius (m).

Tabulated hydraulic conductivity data for drillholes GAR-18-010, GAR-18-013, and GAR-18-015 present hydraulic conductivity analysis carried out internally by NexGen. Estimates of hydraulic conductivity were completed using an Excel template, with estimates derived from the Thiem equation (shown below) considered to be the best estimate.

$$T = \frac{Q}{2\pi dH} \times \ln\left(\frac{R_o}{R_w}\right)$$

Where:

T = transmissivity (m^2/s);
Q = rate of injection in (m^3/s);
dH = head differential (m);
Ro = radius of influence (m); and
Rw = radius of drillhole (m).

The radius of influence requires multiple monitoring wells to measure the pressure disturbance with distance from the testing drillhole, and these monitoring wells were not available at the time of testing. The radius of influence assumptions were selected from a literature review, and the radius of influence will have little effect on the calculated hydraulic conductivity as it is within the log normal function of the equation. The radius of influence is smaller for lower permeability rock and is affected by flow rate, test duration, and the properties of the fractures and pores near to the tested well. Given these factors, the assumptions were:

Ro = 1 m; where Q ≤ 0.1 L/min;

Ro = 10 m; where 0.1 L/m ≤ Q ≤10 L/min; and

Ro = 50 m; where Q ≥ 10 L/min.

Hydraulic conductivity of the testing interval was calculated from the transmissivity results by dividing the calculated transmissivity by the length of the test interval:

$$K = T/b$$

Where:

K = hydraulic conductivity (m/s);
T = transmissivity (m^2/s); and
b = test interval length (m).

A summary of the hydraulic parameters calculated for the tested intervals is presented in Figure 23. The figure presents the range of testing results plotted as a probability density function. The geometric mean of the hydraulic conductivity values was used to define the hydraulic conductivity of each hydrostratigraphic unit. Where available, detailed analytical test reports are presented in Appendix G, Packer Test Results.

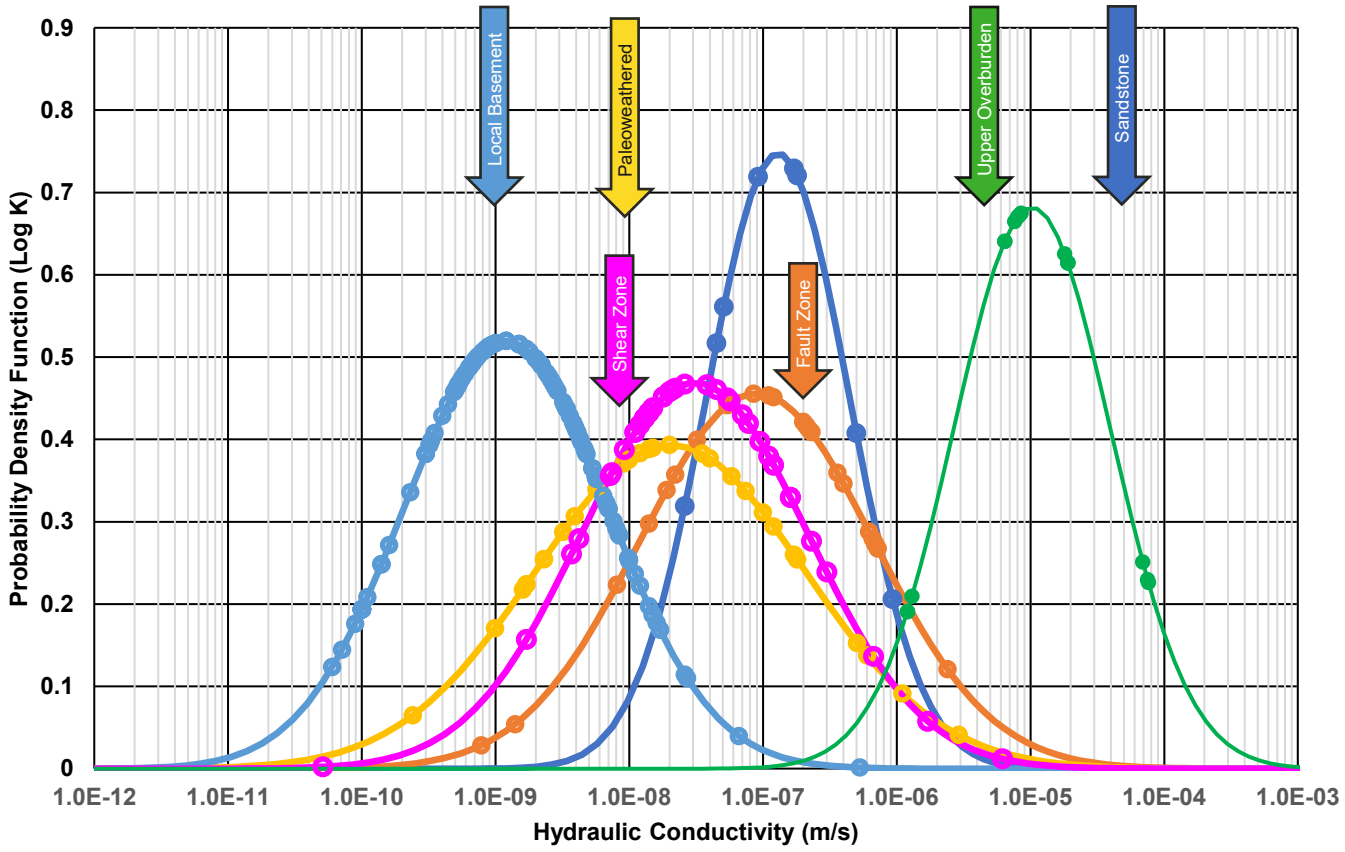
The basement rock was divided into distinct hydrostratigraphic units: paleo-weathered bedrock, basement bedrock, fault zones, and shear zones. Packer testing results for each of these zones were plotted as a probability function (Figure 23) to evaluate the overall distribution in hydraulic conductivity estimates for each unit. The data are summarized as follows:

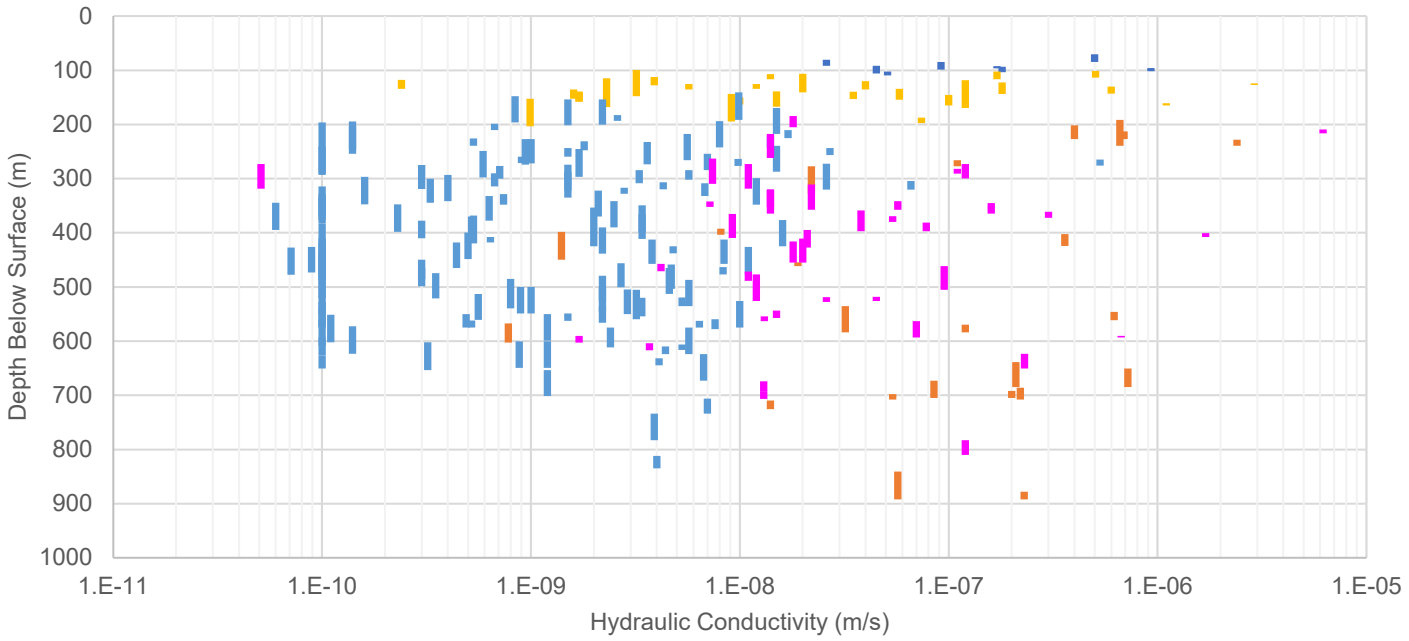
- The geometric mean of 28 packer testing analyses within the paleo-weathered basement rock indicate a hydraulic conductivity of 2×10^{-8} m/s and an overall range from 2×10^{-10} m/s to 3×10^{-6} m/s.
- The geometric mean of 128 packer testing analyses within the basement bedrock indicate a hydraulic conductivity of 1.2×10^{-9} m/s and an overall range from 6×10^{-11} m/s to 5×10^{-7} m/s.
- The geometric mean of 23 packer test analyses within fault zone indicate a hydraulic conductivity of 9.0×10^{-8} m/s and an overall range from 8×10^{-10} m/s to 7×10^{-6} m/s.
- The geometric mean of 40 packer test analyses within the shear zone indicate a hydraulic conductivity of 3.1×10^{-8}m/s and an overall range from 5×10^{-11} m/s to 6×10^{-6} m/s.

The sandstone unit is considered to be the primary bedrock aquifer in the area of the Project. Data from eight packer tests in this unit ranged from 2.6×10^{-8} m/s to 9.3×10^{-7} m/s with a geometric mean value of 1.3×10^{-7} m/s. The limited in situ hydraulic response test data are considered to represent the lower end of the permeability of this unit. Data from laboratory permeability testing indicate higher hydraulic conductivity values (to the 10^{-5} m/s range) for the sandstone (NexGen 2019e).

In situ packer testing of the Devonian bedrock was not available, but hydraulic testing of drill core indicated a horizontal hydraulic conductivity that ranged from 1×10^{-8} m/s to 5×10^{-7} m/s, and a vertical hydraulic conductivity that ranged from 1×10^{-12} m/s to 1×10^{-10} m/s (NexGen 2019f). The high anisotropy associated with this unit reflects the interbedded nature of the siltstones and mudstones.

In situ packer testing of the Cretaceous bedrock was not available, but hydraulic testing of drill core indicated a horizontal hydraulic conductivity that ranged from 1×10^{-8} m/s 5×10^{-7} m/s and vertical hydraulic conductivity that ranged from 1×10^{-10} m/s to 1×10^{-12} m/s (NexGen 2019g).





Note:

1) Not shown are the lower till, Cretaceous and Devonian units, for which specific testing data was unavailable.

Legend:

AthabascaSS
Fault Zone
Paleoweathered
SPG
Shear Zone
Overburden

Arrow Indicates Value Applied in the Groundwater Flow Model

Fault Zone

CLIENT

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wsp

YYYY-MM-DD	2023-02-27
PREPARED	SK
DESIGN	SK
REVIEW	CH
APPROVED	MT

PROJECT

ROOK I PROJECT

TITLE

HYDRAULIC CONDUCTIVITY BY UNIT AND DEPTH

PROJECT No.	PHASE	Rev.	FIGURE
20144150	**3104**	**0**	**23**

5.2.3 Groundwater Chemistry Baseline

Groundwater samples were collected from the standpipe piezometers completed in the glacial drift and Westbay wells completed in bedrock, as summarized in Table 1 and Table 2, respectively. Laboratory analysis reports are presented in Appendix H, Groundwater Laboratory Analysis Results. Detailed groundwater chemistry results are presented in Appendix I, Detailed Groundwater Chemistry Results.

5.2.3.1 Glacial Drift Standpipe Piezometers

Groundwater samples collected from the glacial drift monitoring network that were analyzed for the required parameters were plotted on Piper plots. Groundwater samples collected at 21 monitoring locations provided sufficient chemical analysis to plot on a Piper plot. Sixteen of the shallow groundwater monitoring locations plotted as being of calcium bicarbonate type water and five monitoring locations plotted as sodium/potassium bicarbonate type water. At five monitoring locations, the ionic balance of the water samples was greater than ±10%; therefore, these results were not considered representative of actual groundwater chemistry and were excluded from discussion.

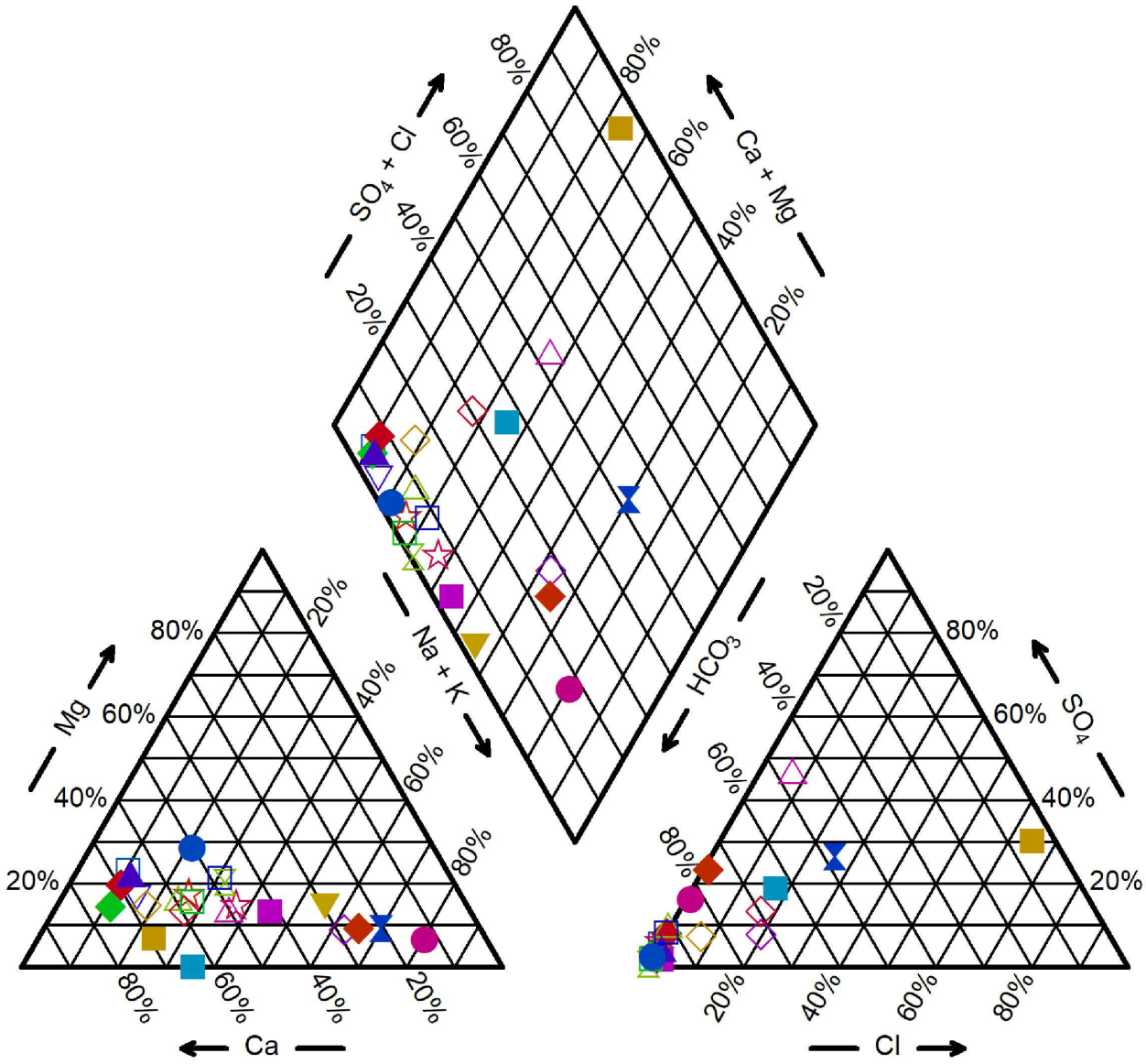
The observed difference in cation dominance between the glacial drift and the underlying basement rock is likely due to the age of the groundwater and its interaction with the surrounding formation. In permeable formations, groundwater chemistry tends to be “fresh” because of a higher water to rock ratio. The groundwater in these cases tends to be less saline. The change in major cation contributions from calcium to sodium would be expected as groundwater “ages”. This occurs via the removal of Ca^{2+} or addition of Na^{+} through precipitation-dissolution and cation exchange effects along a flow path. Based on the groundwater types presented, it is likely that the groundwater is considered “young” and indicative of geologically recent recharge from surface. In locations presenting as sodium/potassium bicarbonate type, it is likely that there is limited mixing occurring with older water from the geologic formation below.

A summary of the water types for monitoring locations with sufficient data to plot is presented in Table 5. A summary Piper plot is presented in Figure 24. Chemistry presented in the figure is representative of the 2019 Q2 and Q3 sampling events. Detailed Piper plots for all monitoring locations with sufficient data and ionic balance considered to be representative of actual groundwater conditions are presented in Appendix J, Groundwater Chemistry Piper Plots.

Groundwater chemistry statistics for sampled parameters within the glacial drift are presented in Table 6.

Table 5: Standpipe Piezometer Groundwater Type Summary

Monitoring Well ID	General Groundwater Type
DH-BGC17-01	Calcium bicarbonate
DH-BGC17-02	Calcium bicarbonate
DH-BGC17-03	Calcium bicarbonate
DH-BGC17-04	Calcium bicarbonate
DH-BGC17-05	Calcium bicarbonate
2018-MW-001B	Calcium bicarbonate
2018-MW-002B	Calcium bicarbonate
2018-MW-004A	Calcium bicarbonate
2018-MW-004B	Sodium/potassium bicarbonate
2018-MW-006A	Calcium bicarbonate
2018-MW-006B	Sodium/potassium bicarbonate
2018-MW-007A	Calcium bicarbonate
2018-MW-007B	Calcium bicarbonate
2018-MW-008A	Calcium bicarbonate
2018-MW-008B	Sodium/potassium bicarbonate
2018-MW-009A	Calcium bicarbonate
2018-MW-009B	Calcium bicarbonate
2019-MW-012A	Calcium bicarbonate
2019-MW-012B	Sodium/potassium bicarbonate
2019-MW-013	Calcium bicarbonate
2019-MW-016A	Sodium/potassium bicarbonate



NOTES

GROUNDWATER CHEMISTRY RESULTS ARE REPRESENTATIVE OF THE Q2-Q3 2019 SAMPLING EVENTS.

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NexGen Energy Ltd.

ROOK I PROJECT

TITLE

GLACIAL DRIFT GROUNDWATER TYPE SUMMARY

CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	2021-06-14	SCALE	NTS	REV. 0
CADD	JMC	2021-06-14			
CHECK	CH	2023-02-27			
REVIEW	MT	2023-02-27			

FIGURE 24

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot.dwg 8/12/2021 10:36 AM

Table 6: Glacial Drift Groundwater Chemistry Summary Statistics

Constituent	Units	Phase	Summary Statistics[a]					
			Count	Minimum	Median	Maximum	Mean	95th Percentile
Anions / Cations								
Ammonia (as Nitrogen)	mg/L	Total	4	0.0050	0.013	0.11	0.033	0.093
Bicarbonate	mg/L	Total	71	0.50	39	140	42	72
Calcium	mg/L	Total	61	3.0	7.0	18	8.0	15
Carbonate	mg/L	Total	70	0.50[a]	0.50[a]	0.50[a]	0.50[a]	0.50[a]
Chloride	mg/L	Total	68	0.040	0.18	110	5.2	27
Fluoride	mg/L	Total	69	0.010	0.060	0.47	0.082	0.16
Magnesium	mg/L	Total	55	0.50	1.2	4.9	1.6	3.4
Nitrate (as Nitrogen)	mg/L	Dissolved	61	0.0025	0.020	0.63	0.097	0.34
	mg/L	Total	14	0.00060	0.17	0.63	0.21	0.56
Phosphorus	mg/L	Total	20	0.020	2.6	8.8	2.8	7.6
Potassium	mg/L	Dissolved	59	0.50	1.1	7.9	1.5	3.4
Sulphate	mg/L	Total	63	0.20	1.6	37	4.3	18
Metals								
Aluminum	µg/L	Dissolved	73	0.10	13	3,300	160	700
Antimony	µg/L	Dissolved	74	0.10	0.10	1,100	46	240
Arsenic	µg/L	Dissolved	76	0.01	0.050	1.8	0.27	1.0
Barium	µg/L	Dissolved	68	0.10	11	38	12	25
Beryllium	µg/L	Dissolved	72	0.10	0.10	500	9.6	34
Bismuth	µg/L	Dissolved	32	0.010	0.10	50	3.0	18
Boron	µg/L	Dissolved	68	0.01	5	75	12	50
Cadmium	µg/L	Dissolved	72	0.0025	0.0050	0.25	0.040	0.25
Cesium	µg/L	Dissolved	2	0.0050[a]	0.0050[a]	0.0050[a]	0.0050[a]	0.0050[a]
Chromium	µg/L	Dissolved	75	0.010	0.25	3.5	0.43	1.1
Cobalt	µg/L	Dissolved	74	0.10	0.30	310	8.0	27
Copper	µg/L	Dissolved	76	0.10	0.10	320	31	22
Iron	µg/L	Dissolved	76	0.10	47	4,300	250	950
Lead	µg/L	Dissolved	68	0.025	0.050	20	2.1	10
Lithium	µg/L	Dissolved	22	0.10	2.5	19	14	18
Manganese	µg/L	Dissolved	71	3.2	73	17,000	320	330
Mercury	µg/L	Dissolved	30	0.00030	0.0020	0.013	0.0021	0.0079
Molybdenum	µg/L	Dissolved	74	0.050	1.7	100	3.9	10
Nickel	µg/L	Dissolved	62	0.01	0.40	2.5	0.61	1.4
Rubidium	µg/L	Dissolved	2	0.46	0.61	0.76	0.61	0.75
Selenium	µg/L	Dissolved	70	0.025	0.050	0.40	0.079	0.20
Silver	µg/L	Dissolved	76	0.0050	0.025[a]	0.10	0.025[a]	0.025[a]
Sodium	µg/L	Dissolved	10	40	2,800	45,000	9,800	33,000
Strontium	µg/L	Dissolved	74	13	34	270	1400	120
Tellurium	µg/L	Dissolved	2	0.10[a]	0.10[a]	0.10[a]	0.10[a]	0.10[a]
Thallium	µg/L	Dissolved	76	0.0050	0.10	4.0	0.26	1.1
Tin	µg/L	Dissolved	75	0.050	0.050	400	10	16
Titanium	µg/L	Dissolved	76	0.050	0.40	43	1.9	5.9
Uranium	µg/L	Dissolved	68	0.011	0.05	1.4	0.11	0.56
Vanadium	µg/L	Dissolved	62	0.050	0.20	7.0	0.94	4.9

Table 6: Glacial Drift Groundwater Chemistry Summary Statistics

Constituent	Units	Phase	Summary Statistics[a]					
			Count	Minimum	Median	Maximum	Mean	95th Percentile
Zinc	µg/L	Dissolved	64	0.25	1.2	100	5.6	19
Zirconium	µg/L	Dissolved	6	0.10	0.50	1.8	0.75	1.6
Radionuclides								
Lead-210	Bq/L	Dissolved	50	0.010	0.010	0.58	0.023	0.020
Polonium-210	Bq/L	Dissolved	26	0.0025	0.0025	0.040	0.0051	0.018
Radium-226	Bq/L	Dissolved	26	0.0025	0.0025	0.010	0.0040	0.0085
Thorium-230	Bq/L	Dissolved	26	0.0050	0.0050	0.020	0.0060	0.010

a) Values reported as less than reportable detection limit (RDL) were assumed to be half of RDL value for calculations.
Bq/L = becquerels per litre.

5.2.3.2 Basement Rock Westbay Wells

Groundwater samples collected from the Westbay monitoring network that were analyzed for the required parameters were plotted on Piper plots. In Westbay well GAR-18-013, four zones plotted as calcium chloride type water, and seven zones plotted as sodium/potassium chloride type water. In Westbay well GAR-19-035, all zones plotted as calcium-chloride type water. However, at two monitoring locations, the ionic balance of the water samples was greater than ±10%; these samples were not considered representative of actual groundwater chemistry and were excluded from discussion.

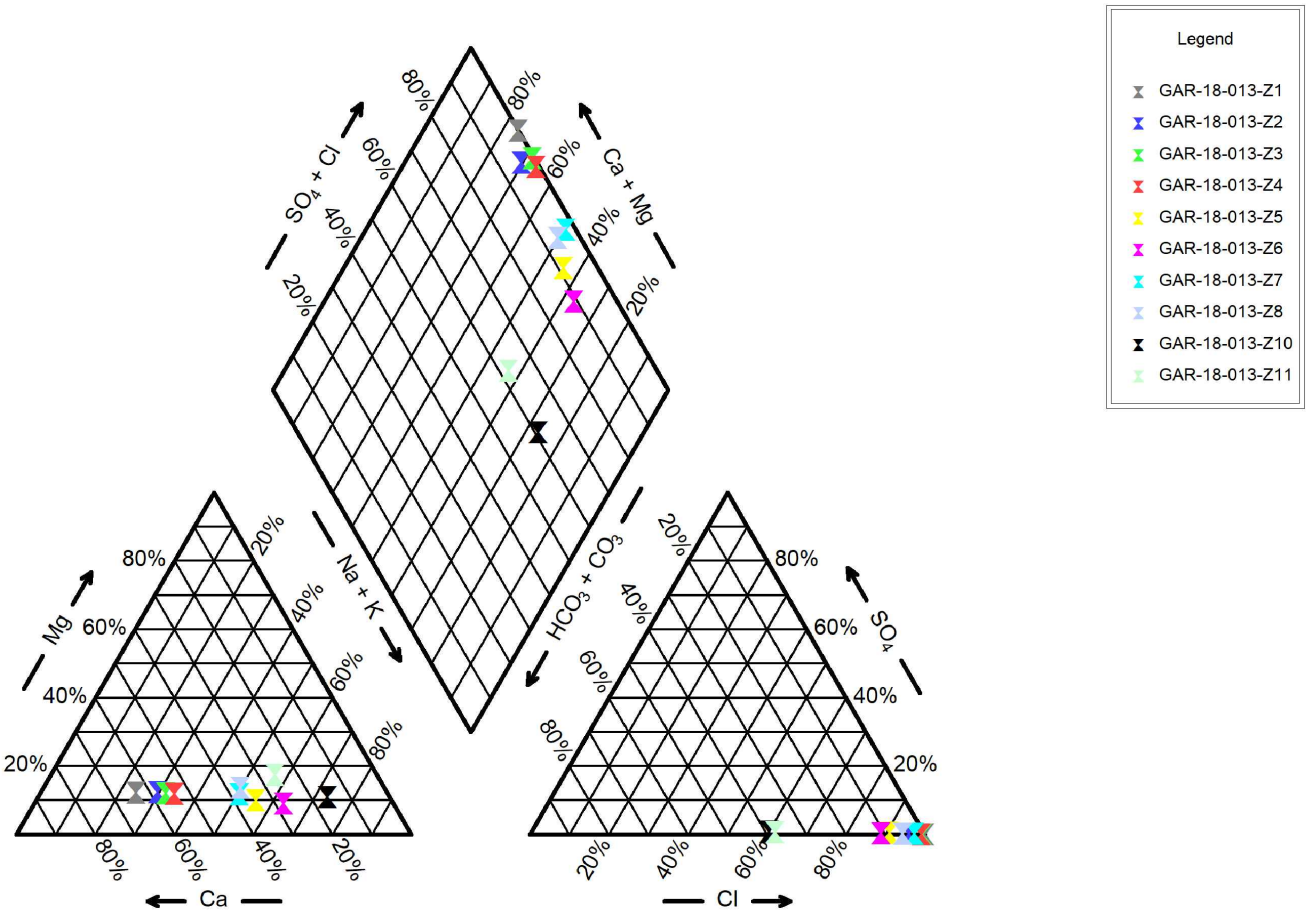
The observed difference in cation dominance between the basement rock and the overlying glacial drift is likely due to the age of the groundwater and its interaction with the surrounding rock. In low permeable rock, groundwater chemistry tends to be rock-dominated because of a low water to rock ratio. The groundwater in these cases tends to be saline. The change in major cation contributions from calcium to sodium would be expected as groundwater "ages". This occurs via the removal of Ca^{2+} or addition of Na^{+} through precipitation-dissolution and cation exchange effects along a flow path. Based on the groundwater types presented, it is likely that the groundwater is considered "older" and indicative of groundwater moving along a flow path as it transitions from calcium to sodium type with depth and age of geologic formation.

A summary of the water types is presented in Table 7. Piper plots are presented in Figure 25 and Figure 26 for GAR-18-013 and GAR-19-035, respectively. Detailed piper plots are presented in Appendix J for all monitored zones with sufficient data and ionic balance considered to be representative of actual groundwater conditions.

Groundwater chemistry summary statistics for sampled parameters within the bedrock hydrostratigraphic units are presented in Table 8.

Table 7: Westbay Well Groundwater Type Summary

Monitoring Well ID	Interval	General Groundwater Type
GAR-18-013	Zone 1	Calcium chloride
	Zone 2	Calcium chloride
	Zone 3	Calcium chloride
	Zone 4	Calcium chloride
	Zone 5	Sodium/potassium chloride
	Zone 6	Sodium/potassium chloride
	Zone 7	Sodium/potassium chloride
	Zone 8	Sodium/potassium chloride
	Zone 9	Sodium/potassium chloride
	Zone 10	Sodium/potassium chloride
	Zone 11	Sodium/potassium chloride
GAR-19-035	Zone 1	Calcium chloride
	Zone 2	Calcium chloride
	Zone 5	Calcium chloride
	Zone 6	Calcium chloride
	Zone 7	Calcium chloride
	Zone 8	Calcium chloride
	Zone 9	Calcium chloride
	Zone 10	Calcium chloride



NOTES

GROUNDWATER CHEMISTRY RESULTS ARE REPRESENTATIVE OF THE Q1 2020 SAMPLING EVENTS.

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
GROUNDWATER TYPE SUMMARY

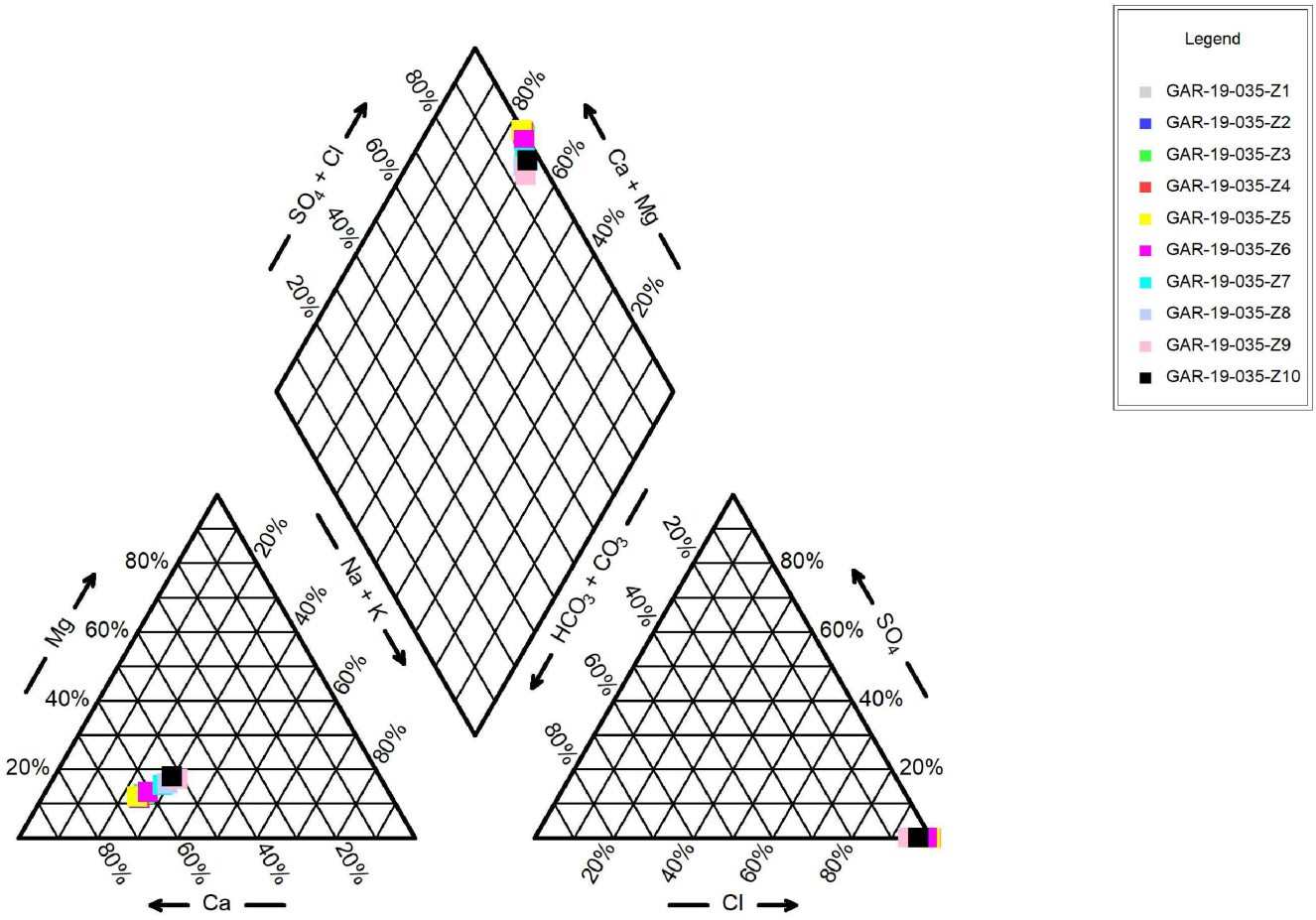
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	2021-06-14	SCALE	NTS	REV. 0
CADD	JMC	2021-06-14			
CHECK	CH	2023-02-27			
REVIEW	MT	2023-02-27			

FIGURE 25

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot.dwg 3/4/2022 11:57 AM



NOTES

GROUNDWATER CHEMISTRY RESULTS ARE REPRESENTATIVE OF THE Q1 2020 SAMPLING EVENTS.

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-19-035
GROUNDWATER TYPE SUMMARY

CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	2021-06-14	SCALE	NTS	REV. 0
CADD	JMC	2021-06-14			
CHECK	CH	2023-02-27			
REVIEW	MT	2023-02-27			

FIGURE 26

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot.dwg 3/4/2022 11:57 AM

Table 8: Bedrock Groundwater Sample Parameter Summary Statistics

Constituent	Units	Phase	Summary Statistics					
			Count	Minimum	Median	Maximum	Mean	95th Percentile
Anions / Cations								
Bicarbonate	mg/L	Total	70	1.2	48	110	49	82
Calcium	mg/L	Total	70	3.9	65	5,100	460	3,300
Carbonate	mg/L	Total	70	0.50	0.50	0.50	0.50	0.50
Chloride	mg/L	Total	70	26	270	17,000	1,500	9,600
Nitrate (as Nitrogen)	mg/L	Total	70	0.0044	0.0088	0.44	0.039	0.21
Magnesium	mg/L	Total	70	1.6	13	570	59	380
Potassium	mg/L	Total	70	4.1	8.7	62	13	44
Sodium	mg/L	Total	70	7.6	76	2,200	250	440
Sulphate	mg/L	Total	70	0.30	1.0	6.4	2.8	1.1
Metals								
Aluminum	µg/L	Dissolved	71	1.0	1.4	400	40	175
Antimony	µg/L	Dissolved	71	0.10	0.10	1.0	0.25	1.0
Arsenic	µg/L	Dissolved	71	0.30	2.0	21	3.10	13
Barium	µg/L	Dissolved	71	220	1,400	4,200	1,400	2,800
Beryllium	µg/L	Dissolved	71	0.050	0.050	5.0	0.27	0.80
Bismuth	µg/L	Dissolved	39	0.10	0.10	1.0	0.27	1.0
Boron	µg/L	Dissolved	71	30	270	2,200	480	2,000
Cadmium	µg/L	Dissolved	71	0.0050	0.070	1.0	0.17	0.60
Chromium	µg/L	Dissolved	71	0.25	0.25	25	1.4	2.5
Cobalt	µg/L	Dissolved	71	0.050	2.3	37	3.7	14
Copper	µg/L	Dissolved	70	0.20	1.3	7.4	1.8	4.7
Iron	µg/L	Dissolved	71	190	2,400	18,000	4,300	13,000
Lead	µg/L	Dissolved	71	0.050	4.7	290	14	35
Manganese	µg/L	Dissolved	71	6.7	97	2,500	308	1,450
Molybdenum	µg/L	Dissolved	71	6.5	20	210	36	96
Nickel	µg/L	Dissolved	71	1.2	6.9	46	10	32
Selenium	µg/L	Dissolved	71	0.050	0.050	5.0	0.28	0.50
Silver	µg/L	Dissolved	71	0.25	0.25	2.5	0.55	2.5
Strontium	µg/L	Dissolved	71	110	1,700	140,000	13,000	83,000
Thallium	µg/L	Dissolved	71	0.10	0.10	1.0	0.25	1.0
Tin	µg/L	Dissolved	71	0.050	0.35	5.0	0.60	0.20
Titanium	µg/L	Dissolved	71	0.10	0.30	9.0	0.74	2.5
Uranium	µg/L	Dissolved	71	0.0050	0.050	0.50	0.15	0.50
Vanadium	µg/L	Dissolved	71	0.050	0.10	5.0	0.41	1.6
Zinc	µg/L	Dissolved	69	25	120	1,500	190	530
Radionuclides								
Lead-210	Bq/L	Dissolved	70	0.040	0.040	1.7	0.090	0.20
Polonium-210	Bq/L	Dissolved	70	0.010	0.010	0.34	0.63	0.020
Radium-226	Bq/L	Dissolved	70	0.010	0.11	13	0.63	2.8
Thorium-230	Bq/L	Dissolved	70	0.020	0.020	0.14	0.023	0.020

Bq/L = becquerels per litre.

6.0 GROUNDWATER FLOW MODEL DEVELOPMENT

6.1 Conceptual Model

The area of the Project has been the subject of previous investigations completed in support of resource exploration, the pre-feasibility study, and the EA. The analysis and interpretation of data collected as a part of these earlier studies has allowed for the development of a conceptual hydrogeological model for the Project. Data used in the development of the conceptual hydrogeological model (e.g., topography and drainage, geology, hydrogeology) is provided in Section 5.0.

Key aspects of the conceptual hydrogeological model that pertain to the development of the numerical groundwater flow model are summarized as follows:

- The primary geological units include crystalline basement rock, paleoweathered basement rock, Athabasca sandstone bedrock, Devonian sandstone/siltstone/mudstone bedrock, Cretaceous sandstone/siltstone/mudstone bedrock, and glacial drift (overburden). Within the crystalline basement rock and paleoweathered basement rock, there are sub-vertical fracture zones and fault zones. Refer to Section 5.1.3 for additional details.
- Based on the results of hydraulic response testing, hydrostratigraphic units were defined to correspond to the geological units. Competent basement rock is considered to have low hydraulic conductivity (on the order of 10^{-10} m/s). Within the crystalline bedrock, the higher permeability fault zones and shear zones are considered to be the primary hydraulic pathway. The sandstone unit is considered to be the primary bedrock aquifer in the area of the Project, with data from laboratory permeability testing indicate hydraulic conductivity values (to the 10^{-5} m/s range). The glacial drift is also considered to be an aquifer, with interpreted hydraulic conductivity values from hydraulic response testing ranging from 10^{-4} m/s to 10^{-6} m/s. Refer to Section 5.2.2 for additional details.
- Within the bedrock, measured hydraulic gradients indicate that under existing conditions the primary groundwater flow direction is upwards and to the north-northwest (i.e., towards Patterson Lake). In the glacial drift deposits, the groundwater flow direction is downwards and to the north-northwest (i.e., towards Patterson Lake). Refer to Section 5.2.1 for additional details on the measured groundwater elevations.
- In areas within the RSA where groundwater elevation monitoring data are not available, it is anticipated that localized discharge of groundwater occurs at surface water features. Groundwater recharge in the RSA occurs within the glacial drift.

Details on the implementation of the hydrogeological conceptual model within the numerical groundwater flow model are described in the Sections 6.2 to 6.6.

6.2 Numerical Modelling Approach

For this stage of the Project, the objectives of the groundwater flow modelling task were to develop and calibrate a groundwater flow model representing the current (predevelopment) conditions for the site. To achieve these objectives, a 3-D numerical groundwater model was constructed and calibrated to represent the “best estimate” of groundwater flow conditions based on the conceptual model. The general assumptions and limitations of the numerical model are summarized below:

- Groundwater flow is laminar (i.e., fluid moving along smooth paths) and steady, and is governed by Darcy’s Law.
- Groundwater flow in the model is represented by an equivalent porous media approach.
- Hydraulic heads are vertically averaged within a given model layer.
- Material properties applied in the model are based on the units defined in the 3-D geological (Leapfrog) model developed by NexGen. Geological contacts were extrapolated within the areas of the groundwater flow model domain that were not covered by the geological model.
- Recharge estimates reflect deeper recharge and discharge characteristics of the groundwater flow system and do not account for shallow infiltration and discharge to intermittent streams (i.e., interflow).
- A regionalized approach to model calibration was employed, such that parameter values were established for the hydrostratigraphic units on a regional scale.
- The most recent available calibration data were used in the calibration process (typically corresponding to December 2019), which were assumed to be representative of steady-state predevelopment conditions.

FEFLOW, a finite element modelling package developed by the DHI-WASY Institute in Germany (Diersch 2009), was used as the numerical simulation tool for the assessment. FEFLOW is capable of simulating saturated and unsaturated groundwater flow and solute and heat transport in three dimensions. FEFLOW was selected for this work given its capabilities to efficiently discretize local features around each of the main mine features (e.g., mine tunnels, mine workings, UGTMF) yet maintain a relatively regional overall footprint with which to estimate changes in more regional groundwater elevations and water balances. FEFLOW v7.2 was used to complete the simulations presented in this report.

6.3 Regional Study Area Flow Model

6.3.1 Model Mesh and Extents

The model extent is illustrated in Figure 3 and defines the RSA boundary. The model was constructed based on a rectangular mesh of approximately 26.5 km by 18.5 km that is oriented based on the general regional surface drainage for the area, with the northwest portion of the model domain situated along a topographic high and the southeast portion of the model situated along a topographic low (with drainage to the Clearwater River).

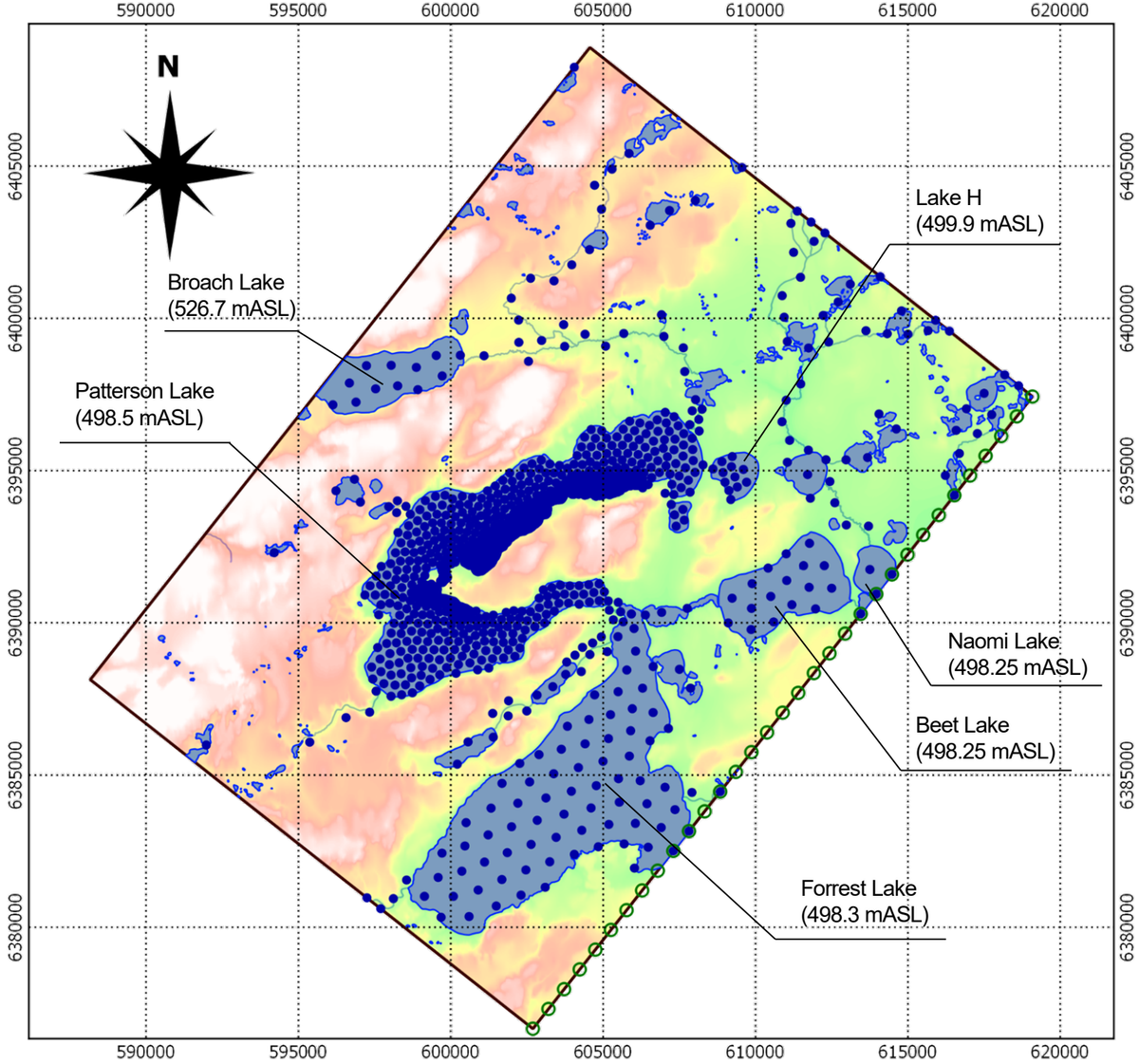
The model mesh was configured with an element size of approximately 600 m along the model periphery, transitioning to approximately 6 m in the central portion of the model in the vicinity of the Project. Vertically, the model was discretized into 38 numerical layers, ranging in thickness from 0.25 m to 20 m. The total number of grid cells was 1,411,038. Details on vertical discretization are provided with reference to the hydrostratigraphic units in Section 5.1.3.

6.3.2 Boundaries

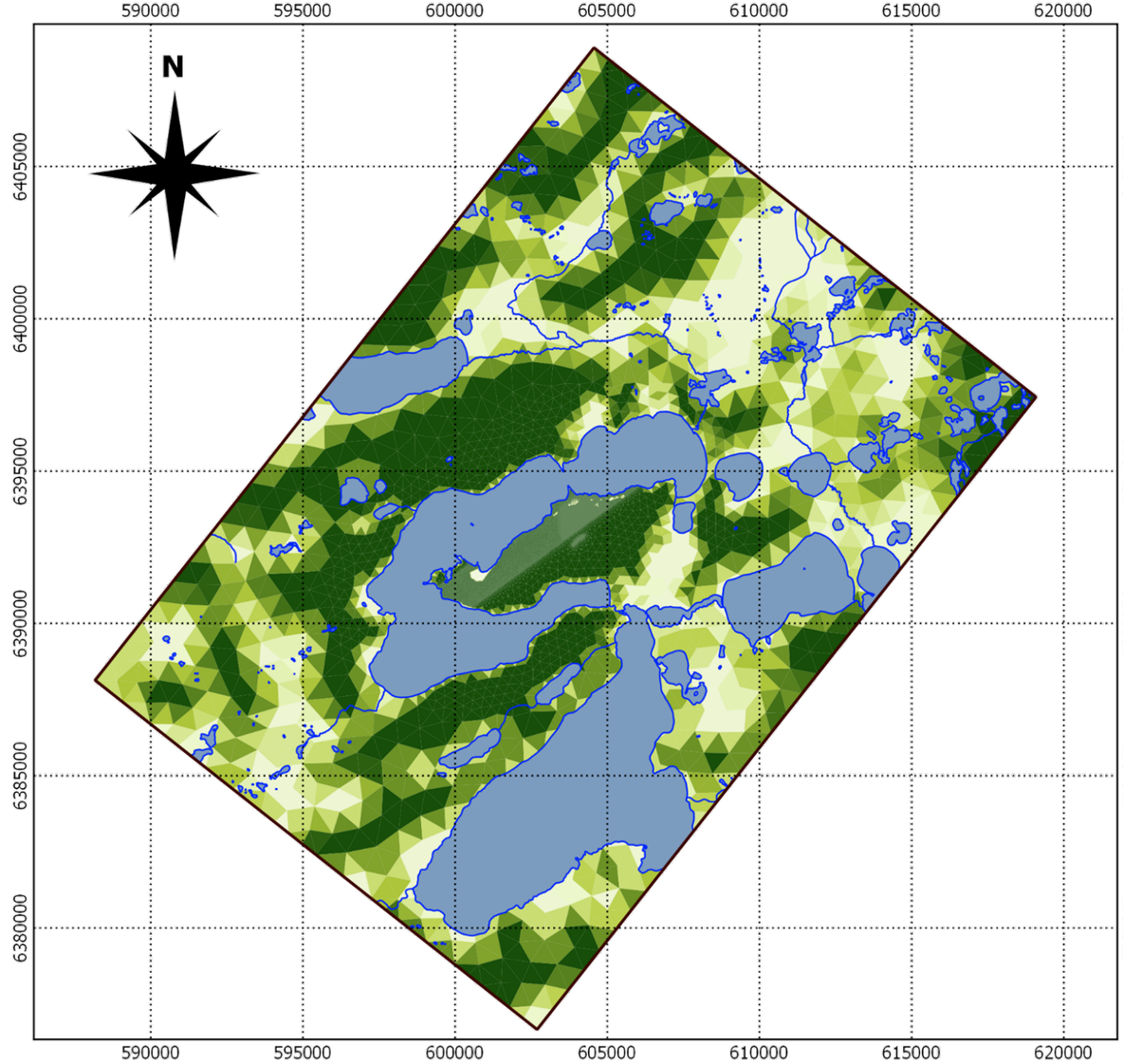
The groundwater flow model boundaries are illustrated in Figure 27. Lakes and watercourses (streams, creeks) within the model domain were represented using fixed head boundaries applied at the elevation of the water feature on model slice 1. Fixed head boundary nodes were also specified along the downstream (southeast) model boundary on slices 6 through 39 to allow regional outflow of groundwater through the bedrock. In the absence of groundwater elevation data in this area, these nodes were assigned an elevation of 485 masl, corresponding to the approximate low point in topography along the periphery of the model.

The model recharge distribution was determined by applying a uniform infiltration rate equivalent to one third of the mean annual precipitation (i.e., an infiltration rate of 140 mm/yr calculated based on a mean annual precipitation of 419 mm) and allowing the model to remove excess infiltration if groundwater elevations in the upper model layer rose above ground surface. This value was assigned as an initial estimate of the infiltration rate and corresponds to an equivalent basin yield of 4.4 L/s/km^2. The recharge rate is a function of the infiltration capability of the soil based on surface elevation, glacial drift thickness, glacial drift hydraulic conductivity and proximity to surface water features. The resulting infiltration rate applied in the model corresponds to a regional average of 93 mm/yr (approximately 3 L/s/km^2), or approximately 22% of the mean annual precipitation.

GROUNDWATER FLOW BOUNDARIES



SURFICIAL RECHARGE DISTRIBUTION



0 2 4 6 8 km

LEGEND

- Watercourse
- Waterbody
- Domain
- Lakes and streams
- Constant head Slice 6 to 39

Net Recharge (mm/yr)

0 - 10	60 - 70	120 - 130
10 - 20	70 - 80	130 - 140
20 - 30	80 - 90	140
30 - 40	90 - 100	
40 - 50	100 - 110	
50 - 60	110 - 120	

NOTES

1. Lake and stream constant head boundaries are placed on model slice 1. Specified elevations correspond to ground surface for streams, and fixed head for lakes.
2. The model recharge distribution was determined by applying a uniform infiltration rate of 140 mm/yr, and allowing the model to remove excess infiltration in the event that groundwater elevations rise above ground surface. Refer to Section 3.3 of the report for additional details.

CLIENT: NexGen Energy Ltd.

CONSULTANT: wsp

YYYY-MM-DD	2023-02-27
PREPARED	GI
DESIGN	GI
REVIEW	CH
APPROVED	MT

PROJECT: **ROOK I PROJECT**

TITLE: MODEL BOUNDARY CONDITIONS AND RECHARGE RATES (EXISTING CONDITIONS)

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	27

6.3.3 Material Properties

The generalized hydrostratigraphy for the Project site is described in Section 5.1 and Section 5.2, and illustrated schematically in Figure 10, Figure 11, and Figure 19. To represent this hydrostratigraphy in the groundwater flow model, a total of 38 numerical layers were used and divided as follows:

- Twelve evenly spaced, laterally variable layers were specified between the ground surface, which ranged from 601 masl to 487 masl, and a horizontal slice at elevation 360 masl. This spacing resulted in a thickness of each layer that ranged from approximately 10 m to 20 m, and model slice elevations that generally aligned with hydrostratigraphic unit contact elevations in the vicinity of the Project. These layers encompass the upper and lower glacial drift units, Cretaceous bedrock, Devonian bedrock, and the upper portions of the sandstone and paleo-weathered rock units.
- Layers of constant thickness were specified below elevation 360 masl, with 30 m thickness for layers 13 through 18 (i.e., to elevation 180 masl), then 20 m thickness for layers 19 through 33 (to elevation -120 masl), and 106 m thickness for layers 34 through 38 (to elevation -650 masl). These layers encompass the lower portions of the sandstone and paleo-weathered basement rock units, and the entire basement rock unit.

Elements within the 3-D model mesh were assigned material properties based on their proximity to the geological units in the 3-D geology model using Leapfrog. In some cases, the interpolation routine resulted in spatial gaps and manual adjustments were made to improve connectivity of the unit across the mesh. This was particularly relevant for the fault zone and shear zone units, which are relatively thin compared to the mesh spacing. The resulting material distribution applied in the model is illustrated in cross-sections in Figure 28 (showing regional northwest–southeast material zones), Figure 29 (showing regional southwest–northeast material zones), and Figure 30 (showing local material zones).

The horizontal and vertical hydraulic conductivity values applied to the main hydrostratigraphic units are summarized in the tables in Figure 28, Figure 29, and Figure 30. A summary of the assignment of material properties is as follows:

- In general, the hydraulic conductivity values applied in the model are in agreement with the measured data. For the basement rock, paleo-weathered basement rock, shear zone and upper glacial drift units the model value was at or slightly below the geometric mean value from the measured data. For the fault zone the model value was slightly above the geometric mean value. For the sandstone unit the hydraulic conductivity was approximately two orders of magnitude above the geometric mean value. The assignment of these values is detailed further as a part of the discussion on model calibration in Section 6.4.
- In the vicinity of the Project (the LSA), the fault zone and shear zone units were mapped individually in the 3-D geological model, and as such have been incorporated in the groundwater flow model as independent material property zones. Therefore, the basement rock in the local area was assigned a lower hydraulic conductivity (1.0×10^{-9} m/s, reflective of competent rock) in the local area as compared to the fault zones (2.0×10^{-7} m/s) and shear zones (8.3×10^{-9} m/s). Based on the geological model, these features extend to the top of the paleo-weathered unit.

- It is understood that the fault zone and shear zone features extend outside of the local area where presently mapped. Based on geophysical survey data (Z-tipper axis electromagnetic [ZTEM] and airborne magnetic data) provided by NexGen, these features extend approximately 4 km to the southwest and approximately 700 m to the northeast (beneath Patterson Lake). To account for the presence of these features, the bedrock in this area was assigned a horizontal hydraulic conductivity of 1.3×10^{-7} m/s with an orientation of 43° from north (i.e., approximating the trend of the fault and shear zones) and 1.0×10^{-8} m/s in the perpendicular (northwest–southeast) direction.
- Outside of the area where fault zone and shear zones are assumed to be present, the bedrock was assigned a hydraulic conductivity value of 1.0×10^{-8} m/s, as determined through the model calibration process.
- A zone of high hydraulic conductivity was used to represent Patterson Lake where necessary to account for the lake bathymetry.
- Based on the interpreted geological surfaces, Patterson Lake is in direct hydraulic connection with the sandstone unit. For the purposes of the hydrogeological assessment, it was conservatively assumed for the purposes of delineating the groundwater flow pathways that lake bottom sediments are not present.
- In the absence of measured data, the porosity values assigned to the units were based on typical values for similar geological units in the Athabasca basin (COGEMA 1997, 2004). The porosity values range from 0.01 for the basement rock to 0.2 for the till.

6.4 Model Calibration

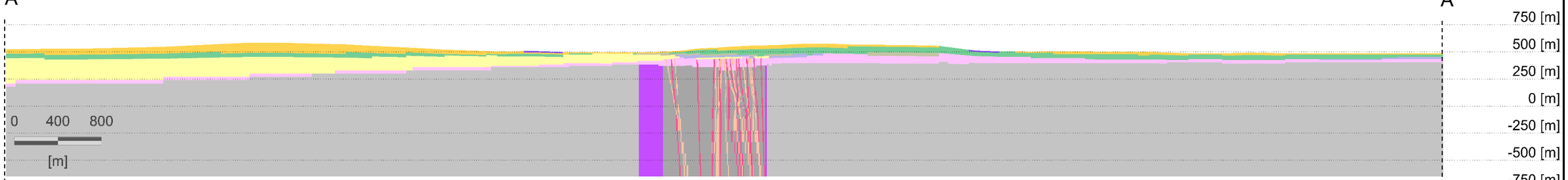
The groundwater flow model was calibrated using PEST optimization software, which iteratively adjusts model parameters (e.g., hydraulic conductivity, recharge) within user-defined constraints until the model error, as calculated based on target data (e.g., groundwater elevations), is minimized. In this instance, PEST was implemented directly through the FEFLOW user interface. Additional details on PEST can be found in the software user's manual (Watermark Numerical Computing 2021).

Following the completion of the optimization routine, the model results were checked for a reasonable match between the simulated and observed groundwater elevations (i.e., calibration statistics and spatial distribution of residuals), and groundwater flow patterns (i.e., discharge areas, depths to groundwater). If a reasonable match was not achieved, the input parameters and/or constraints on the optimization routine were adjusted and the optimization routine was re-run. Specific calibration targets included the most recent available groundwater elevations measured from 34 monitoring wells and 27 VWPs located in the LSA (refer to Section 5.2 for a summary of the monitoring locations).

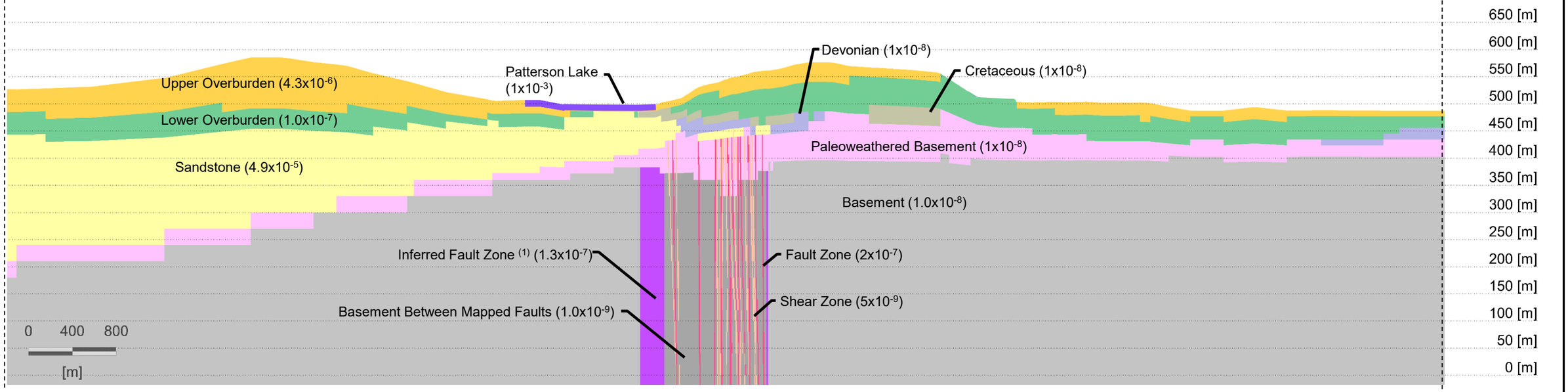
A regionalized approach to parameterization was adopted wherein the calibration process parameter values were associated with regional hydrostratigraphic units and adjusted globally during the calibration process to best match the observed data. Small-scale variations, as may be required to match observed data at the scale of individual wells, were not employed.

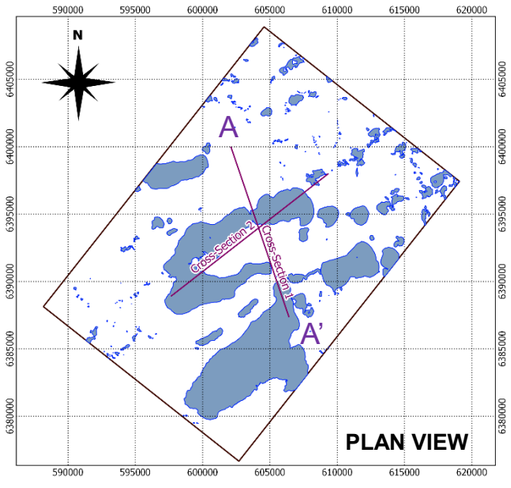
Low flow periods from streamflow measurements at monitored watercourses within the model domain were also used to check model calibration.

CROSS-SECTION A-A' (REGIONAL) NORTHWEST-SOUTHEAST



CROSS-SECTION A-A' (REGIONAL) NORTHWEST-SOUTHEAST (DETAIL ABOVE 0 MASL, VERTICAL EXAGGERATION 5:1)





Unit	Horizontal Hydraulic Conductivity (Kh, m/s)	Vertical Hydraulic Conductivity (Kv, m/s)	Kh:Kv	Porosity (-)
Lake	1.0E-3	1.0E-3	1	1
Upper Overburden	4.3E-06	5.0E-08	87	0.2
Lower Overburden (Till)	1.0E-07	1.4E-09	74	0.2
Cretaceous Bedrock	1.0E-08	5.0E-11	200	0.1
Devonian Bedrock	1.5E-07	5.0E-11	2943	0.1
Sandstone Bedrock	4.9E-05	5.0E-06	9.8	0.1
Paleoweathered Bedrock	1.0E-08	9.5E-10	11	0.05
Basement Bedrock	1.0E-08	8.3E-10	12	0.01
Fault Zone	2.0E-07	1.0E-08	20	0.05
Shear Zones	8.3E-09	1.0E-08	0.8	0.05
Inferred Fault Zone (1)	1.3E-07	1.9E-09	70	0.05
Inner Basement	1.0E-09	1.0E-10	10	0.01

Note:
1) Inferred fault zone refers to the area interpreted to encompass the fault zones and shear zones present in the local 3D geological model. This zone extends approximately 4 km to the southwest from the mine area, and approximately 700 m to the northeast. Preferential horizontal hydraulic conductivity is applied at an angle of 43 degrees from north. Refer to section 4.5.2.4 of the text.

LEGEND

- UPPER OVERBURDEN
- LOWER OVERBURDEN (TILL)
- CRETACEOUS BEDROCK
- DEVONIAN BEDROCK
- SANDSTONE BEDROCK
- PALEOWEATHERED BASEMENT ROCK
- BASEMENT ROCK
- SHEAR ZONE
- FAULT ZONE
- INFERED FAULT ZONE
- BASEMENT BETWEEN MAPPED FAULTS
- LAKE

CLIENT: NexGen Energy Ltd.

CONSULTANT: wsp

PROJECT: **ROOK I PROJECT**

TITLE: CALIBRATED MODEL HYDRAULIC CONDUCTIVITY DISTRIBUTION
CROSS-SECTION A-A' (REGIONAL) NORTHWEST-SOUTHEAST

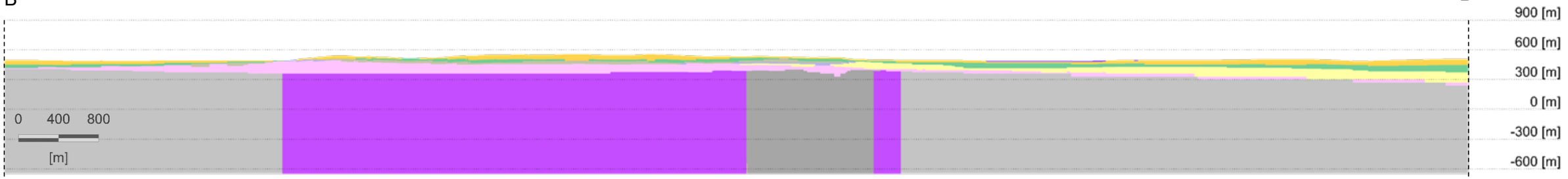
YYYY-MM-DD	2023-02-27
PREPARED	GI
DESIGN	GI
REVIEW	CH
APPROVED	MT

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	28

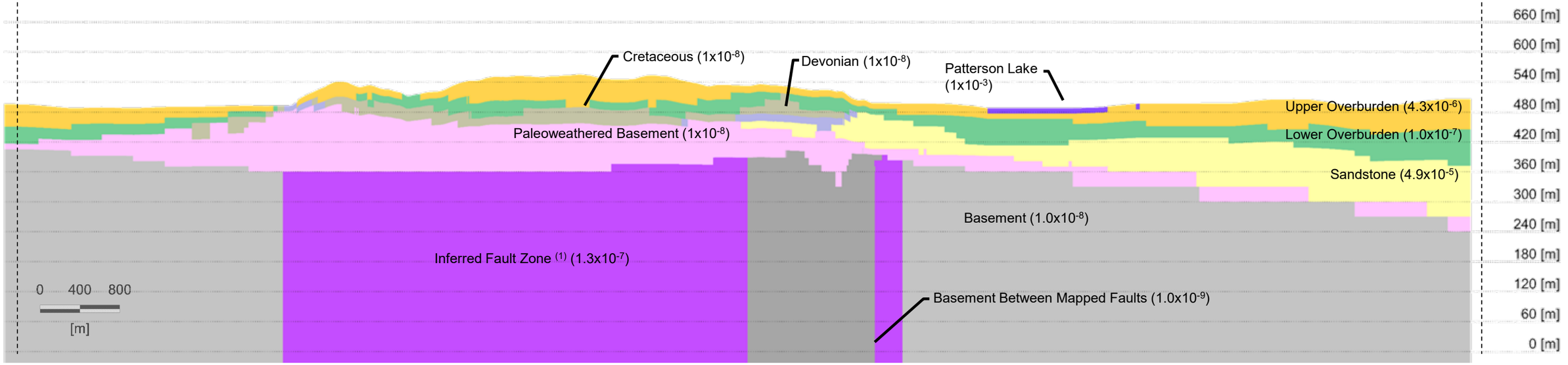
B

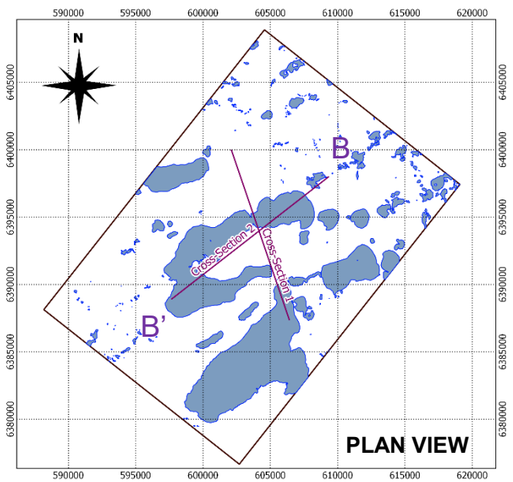
CROSS-SECTION B-B' (REGIONAL) SOUTHWEST-NORTHEAST

B'



CROSS-SECTION B-B' (REGIONAL) SOUTHWEST-NORTHEAST (DETAIL ABOVE 0 MASL, VERTICAL EXAGGERATION 5:1)





Unit	Horizontal Hydraulic Conductivity (Kh, m/s)	Vertical Hydraulic Conductivity (Kv, m/s)	Kh:Kv	Porosity (-)
Lake	1.0E-3	1.0E-3	1	1
Upper Overburden	4.3E-06	5.0E-08	87	0.2
Lower Overburden (Till)	1.0E-07	1.4E-09	74	0.2
Cretaceous Bedrock	1.0E-08	5.0E-11	200	0.1
Devonian Bedrock	1.5E-07	5.0E-11	2943	0.1
Sandstone Bedrock	4.9E-05	5.0E-06	9.8	0.1
Paleoweathered Bedrock	1.0E-08	9.5E-10	11	0.05
Basement Bedrock	1.0E-08	8.3E-10	12	0.01
Fault Zone	2.0E-07	1.0E-08	20	0.05
Shear Zones	8.3E-09	1.0E-08	0.8	0.05
Inferred Fault Zone (1)	1.3E-07	1.9E-09	70	0.05
Inner Basement	1.0E-09	1.0E-10	10	0.01

Note:
1) Inferred fault zone refers to the area interpreted to encompass the fault zones and shear zones present in the local 3D geological model. This zone extends approximately 4 km to the southwest from the mine area, and approximately 700 m to the northeast. Preferential horizontal hydraulic conductivity is applied at an angle of 43 degrees from north. Refer to section 4.5.2.4 of the text.

LEGEND

- UPPER OVERBURDEN
- LOWER OVERBURDEN (TILL)
- CRETACEOUS BEDROCK
- DEVONIAN BEDROCK
- SANDSTONE BEDROCK
- PALEOWEATHERED BASEMENT ROCK
- BASEMENT ROCK
- SHEAR ZONE
- FAULT ZONE
- INFERED FAULT ZONE
- BASEMENT BETWEEN MAPPED FAULTS
- LAKE

CLIENT: NexGen Energy Ltd.

CONSULTANT: wsp

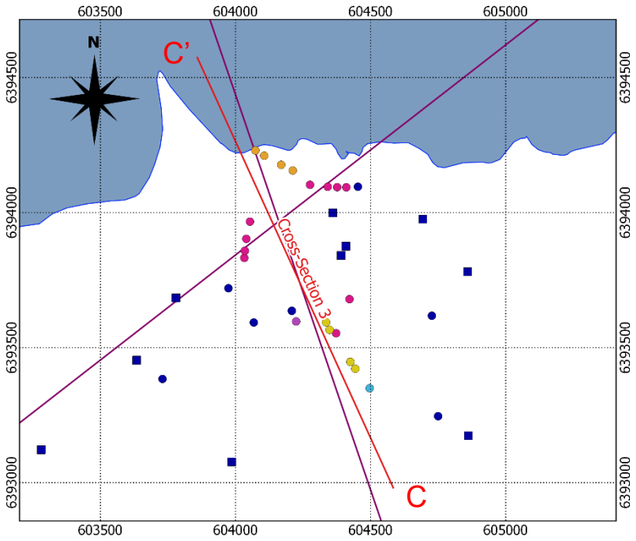
YYYY-MM-DD	2023-02-27
PREPARED	GI
DESIGN	GI
REVIEW	CH
APPROVED	MT

PROJECT: **ROOK I PROJECT**

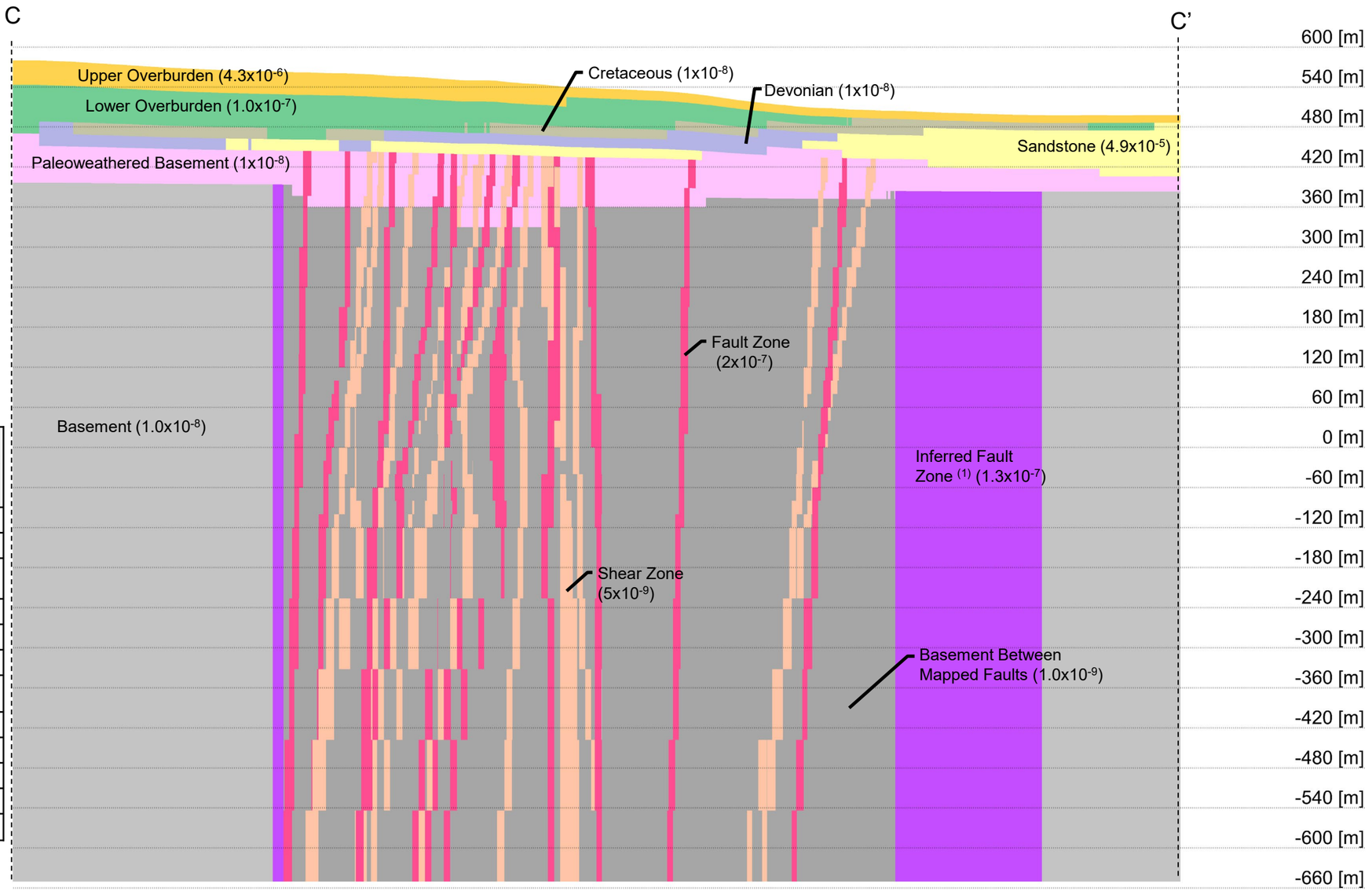
TITLE: CALIBRATED MODEL HYDRAULIC CONDUCTIVITY DISTRIBUTION
CROSS-SECTION B-B' (REGIONAL) SOUTHWEST-NORTHEAST

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	29

PLAN VIEW



CROSS-SECTION C-C' (LOCAL) MINE AREA TO PATTERSON LAKE



Unit	Horizontal Hydraulic Conductivity (Kh, m/s)	Vertical Hydraulic Conductivity (Kv, m/s)	Kh:Kv	Porosity (-)
Lake	1.0E-3	1.0E-3	1	1
Upper Overburden	4.3E-06	5.0E-08	87	0.2
Lower Overburden (Till)	1.0E-07	1.4E-09	74	0.2
Cretaceous Bedrock	1.0E-08	5.0E-11	200	0.1
Devonian Bedrock	1.5E-07	5.0E-11	2943	0.1
Sandstone Bedrock	4.9E-05	5.0E-06	9.8	0.1
Paleoweathered Bedrock	1.0E-08	9.5E-10	11	0.05
Basement Bedrock	1.0E-08	8.3E-10	12	0.01
Fault Zone	2.0E-07	1.0E-08	20	0.05
Shear Zones	8.3E-09	1.0E-08	0.8	0.05
Inferred Fault Zone (1)	1.3E-07	1.9E-09	70	0.05
Inner Basement	1.0E-09	1.0E-10	10	0.01

Note:
1) Inferred fault zone refers to the area interpreted to encompass the fault zones and shear zones present in the local 3D geological model. This zone extends approximately 4 km to the southwest from the mine area, and approximately 700 m to the northeast. Preferential horizontal hydraulic conductivity is applied at an angle of 43 degrees from north. Refer to section 3.4 of the text.

LEGEND

- UPPER OVERBURDEN
- LOWER OVERBURDEN (TILL)
- CRETACEOUS BEDROCK
- DEVONIAN BEDROCK
- SANDSTONE BEDROCK
- PALEOWEATHERED BASEMENT ROCK
- BASEMENT ROCK
- SHEAR ZONE
- FAULT ZONE
- INFERED FAULT ZONE
- BASEMENT BETWEEN MAPPED FAULTS
- LAKE

NOTES

1. Plan view maps shows boreholes for reference. Refer to Figure 5 to check the corresponding name.

CLIENT: NexGen Energy Ltd.

CONSULTANT: wsp

YYYY-MM-DD	2023-02-27
PREPARED	GI
DESIGN	GI
REVIEW	CH
APPROVED	MT

PROJECT: **ROOK I PROJECT**

TITLE: CALIBRATED MODEL HYDRAULIC CONDUCTIVITY DISTRIBUTION CROSS-SECTION C-C' (LOCAL) MINE AREA TO PATTERSON LAKE

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	30

6.5 Calibrated Groundwater Flow Model

The results of the model calibration are illustrated in Figure 31, which shows a statistical summary of the calibration process, and Figure 32 through Figure 35, which show simulated groundwater elevations and flow directions. A comparison of the simulated and measured groundwater elevations is provided in Table 9. A review of the results presented in these tables and figures allowed the following observations:

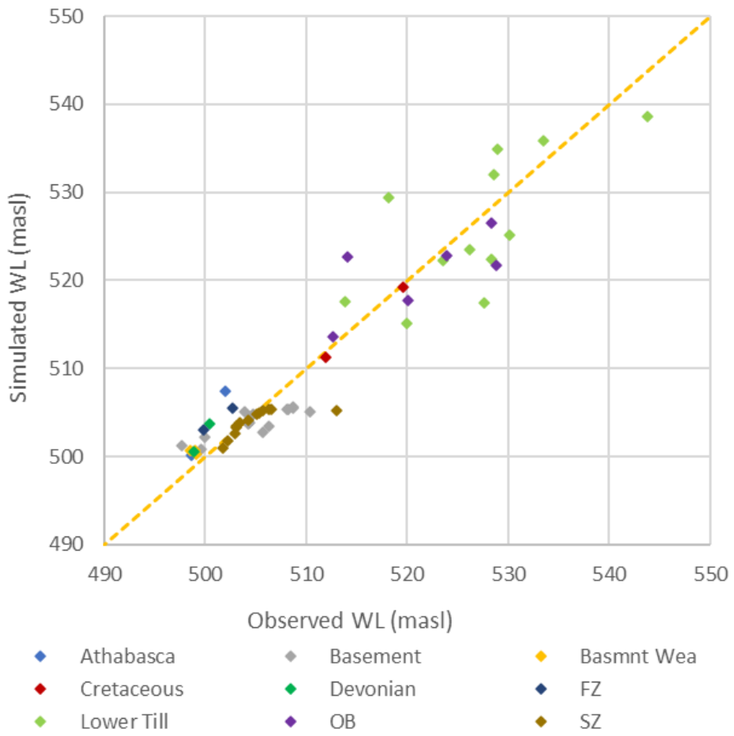
- The calibrated model achieved a normalized root mean squared (nRMS) error of 8.1%, with a root mean square error of 3.7 m and a residual mean error of -0.3 m (Figure 31), which are considered to be reasonable. A strong spatial bias was not observed in the simulated groundwater elevations, as shown on the residual error distribution map in Figure 31.
- The groundwater flow patterns simulated by the model appear reasonable given the conceptual understanding of groundwater flow in the area of the Project. As shown in Figure 20 through Figure 22, groundwater flow is generally simulated to occur from south to north (towards Patterson Lake).

Estimates of baseflow for the surface water catchments (provided in Golder 2022b [EIS Annex IV.1 (Regional Meteorological and Hydrological Characterization Report)]) were approximately 3.5 L/s/km^2. Using the catchment areas for Patterson Lake, this baseflow corresponds to an equivalent recharge rate correspond of approximately 110 mm/yr (3.5 L/s/km^2). The model average recharge rate of 93 mm/yr (2.9 L/s/km^2) is similar to this estimate, and as such is considered to be reasonable.

Table 9: Comparison of Simulated and Observed Groundwater Elevations

Monitoring Location	Groundwater Elevation (masl)		Difference (m)	Monitoring Location	Groundwater Elevation (masl)		Difference (m)
	Observed Value	Calculated Value			Observed Value	Calculated Value	
2018_MW-002A	520.04	517.78	-2.26	GAR-19-018-VWP4-544	510.41	505.04	-5.37
2018_MW-002B	519.93	515.05	-4.88	GAR-19-019-VWP1-146	497.74	501.22	3.47
2018_MW-003A	512.65	513.60	0.95	GAR-19-019-VWP2-248	505.67	502.75	-2.91
2018_MW-004A	514.06	522.68	8.62	GAR-19-019-VWP3-353	504.45	503.85	-0.61
2018_MW-004B	513.82	517.62	3.80	GAR-19-019-VWP4-545	503.86	505.10	1.24
2018_MW-005B	543.78	538.61	-5.17	GAR-19-021-VWP1-86	498.95	500.70	1.75
2018_MW-006A	528.99	534.85	5.86	GAR-19-022-VWP1-131	498.55	500.71	2.17
2018_MW-006B	528.65	532.01	3.36	GAR-19-022-VWP2-287	499.90	503.08	3.18
2018_MW-007A	528.39	526.49	-1.90	GAR-19-022-VWP3-482	504.69	504.80	0.11
2018_MW-007B	528.40	522.43	-5.97	GAR-19-022-VWP4-575	508.26	505.32	-2.95
2018_MW-008A	528.81	521.74	-7.07	GAR-19-023-VWP1-116	502.06	507.38	5.32
2018_MW-008B	527.67	517.49	-10.2	GAR-19-024-VWP1-234	508.73	505.65	-3.09
2018_MW-009A	523.97	522.83	-1.14	GAR-19-024-VWP2-301	508.73	505.46	-3.27
2018_MW-009B	523.59	522.30	-1.29	GAR-19-024-VWP3-594	513.01	505.20	-7.82
2018_MW-010A	511.93	511.27	-0.66	GAR-19-024-VWP4-655	508.08	505.33	-2.74
2018_MW-010B	498.86	500.56	1.70	GAR-18-013_Z1	506.51	505.39	-1.12
DH-BGC17-01	530.19	525.22	-4.97	GAR-18-013_Z2	506.30	505.38	-0.92
DH-BGC17-02	526.15	523.45	-2.70	GAR-18-013_Z3	505.77	505.26	-0.51
DH-BGC17-03	518.16	529.36	11.2	GAR-18-013_Z4	505.40	504.99	-0.42
DH-BGC17-04	533.48	535.81	2.33	GAR-18-013_Z5	505.11	504.84	-0.26
DH-BGC17-05	519.57	519.30	-0.27	GAR-18-013_Z6	504.51	504.53	0.02
GAR-17-001-VWP1-303	506.37	503.48	-2.89	GAR-18-013_Z7	504.26	504.13	-0.13
GAR-17-002-VWP1-654	502.73	505.56	2.83	GAR-18-013_Z8	503.43	503.83	0.40
GAR-17-003-VWP1-276	503.09	503.35	0.27	GAR-18-013_Z9	503.08	503.39	0.32
GAR-17-004-VWP1-99	498.59	500.19	1.60	GAR-18-013_Z10	503.00	502.64	-0.36
GAR-17-004-VWP2-106	499.16	500.24	1.08	GAR-18-013_Z11	502.24	501.82	-0.42
GAR-19-018-VWP1-159	499.55	500.80	1.25	GAR-18-013_Z12	501.70	500.93	-0.77
GAR-19-018-VWP2-235	500.00	502.17	2.17	GAR-18-013_Z13	500.48	503.71	3.23
GAR-19-018-VWP3-363	504.23	503.73	-0.51				

Note: GAR-18-013 refers to the Westbay installation.
masl = metres above sea level.



Calibration statistics

# Observation points	57
Mean error (m)	-0.3
Root mean squared error (m)	3.7
Normalizaed RMSE (%)	8.1%

LEGEND

RESIDUAL ERROR – (SIMULATED MINUS OBSERVED GROUNDWATER ELEVATION (m)

- <-5
- -5 to -2
- -2 to 2
- 2 to 5
- >5

NOTAS

1. Simulated against observed heads graph shows observations based on measured hydrogeological unit.
2. Residual error distribution graph uses brackets to show elevation at nested piezometers
3. Marker size shows the magnitude of the difference between observation and simulated head

CLIENT: NexGen Energy Ltd.

CONSULTANT: wsp

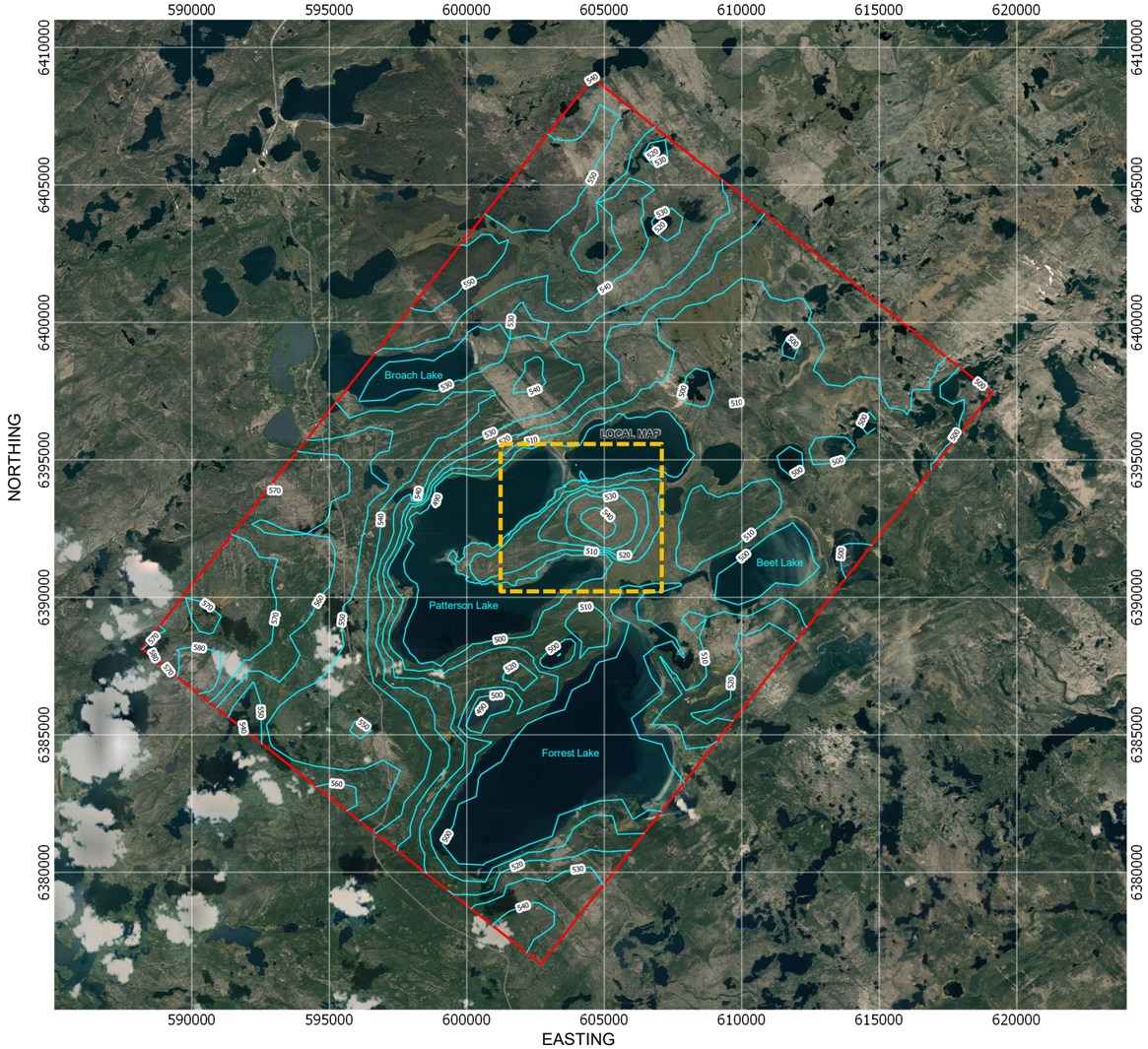
YYYY-MM-DD	2023-02-27
PREPARED	GI
DESIGN	GI
REVIEW	CH
APPROVED	MT

PROJECT: **ROOK I PROJECT**

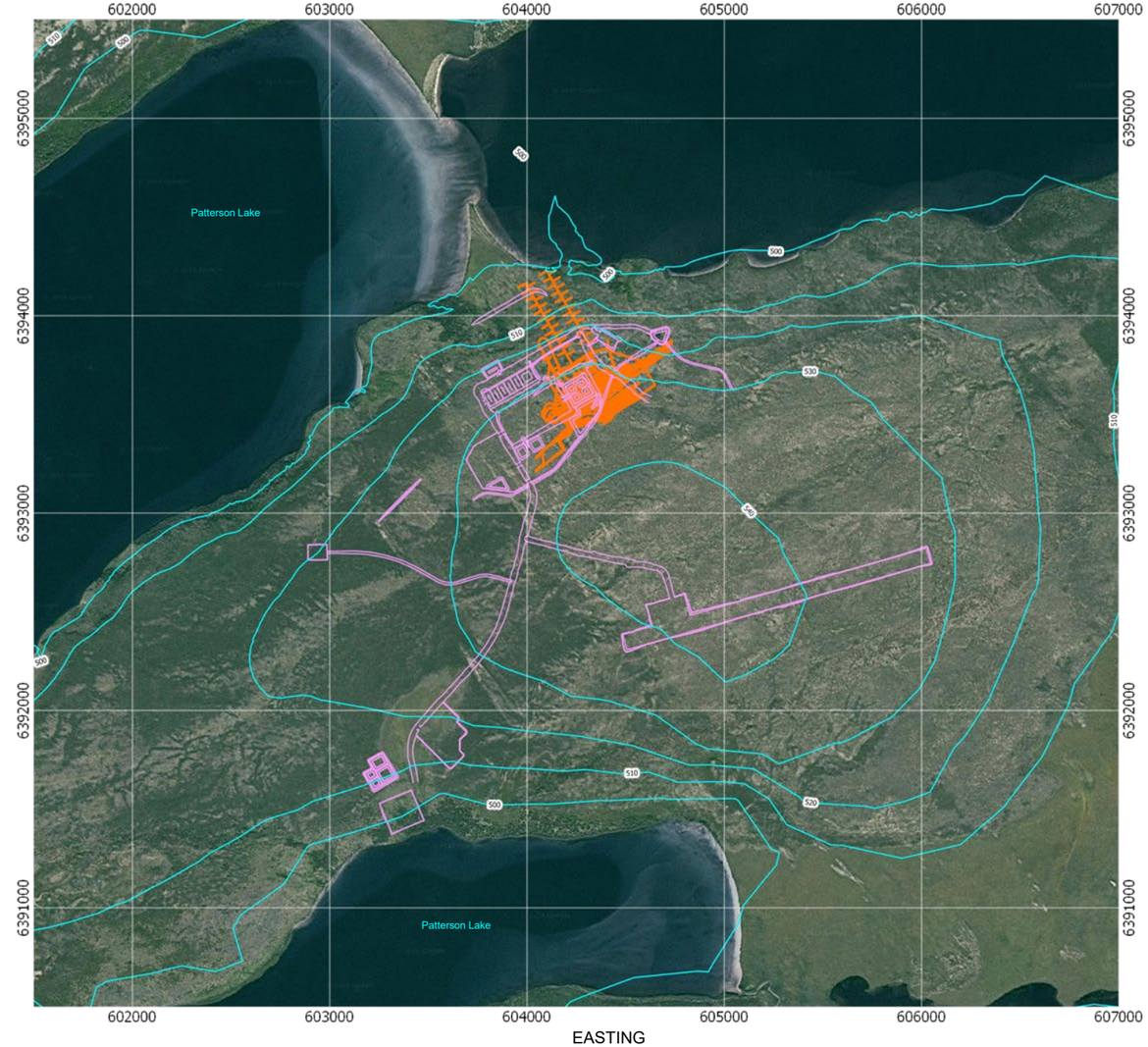
TITLE: MODEL CALIBRATION

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	31

REGIONAL SCALE - FULL MODEL DOMAIN



LOCAL SCALE – MINE AREA



LEGEND

- MODEL DOMAIN
- SIMULATED GROUNDWATER ELEVATION (mASL)
- SURFACE FACILITIES
- UNDERGROUND DEVELOPMENT

Note:
Simulated overburden groundwater elevations correspond to model slice 2 (approx. elevation 520 mASL in the mine area).

CLIENT
NexGen Energy Ltd.

CONSULTANT
wsp

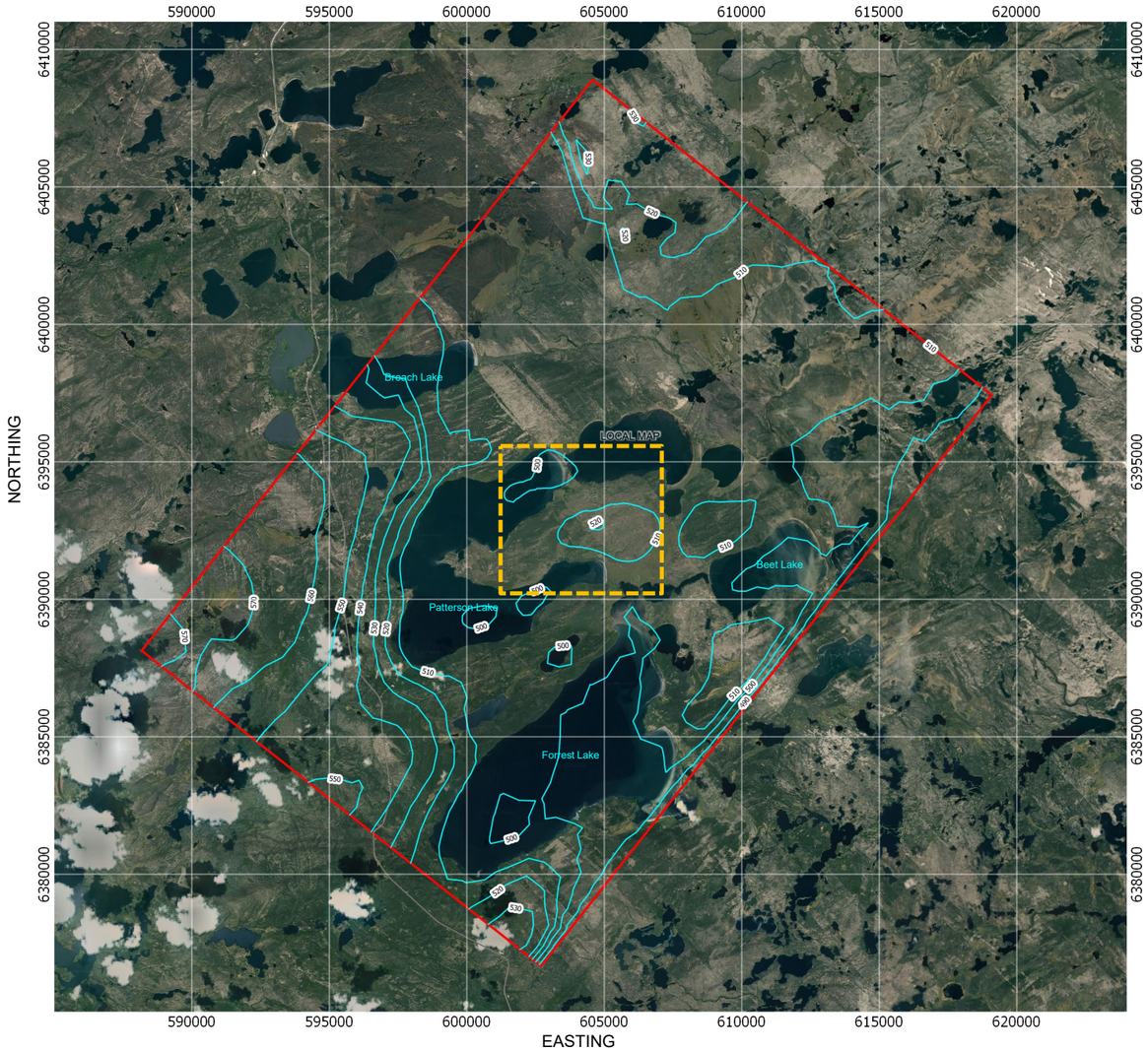
YYYY-MM-DD	2023-02-27
PREPARED	NB
DESIGN	NB
REVIEW	CH
APPROVED	MT

PROJECT
ROOK I PROJECT

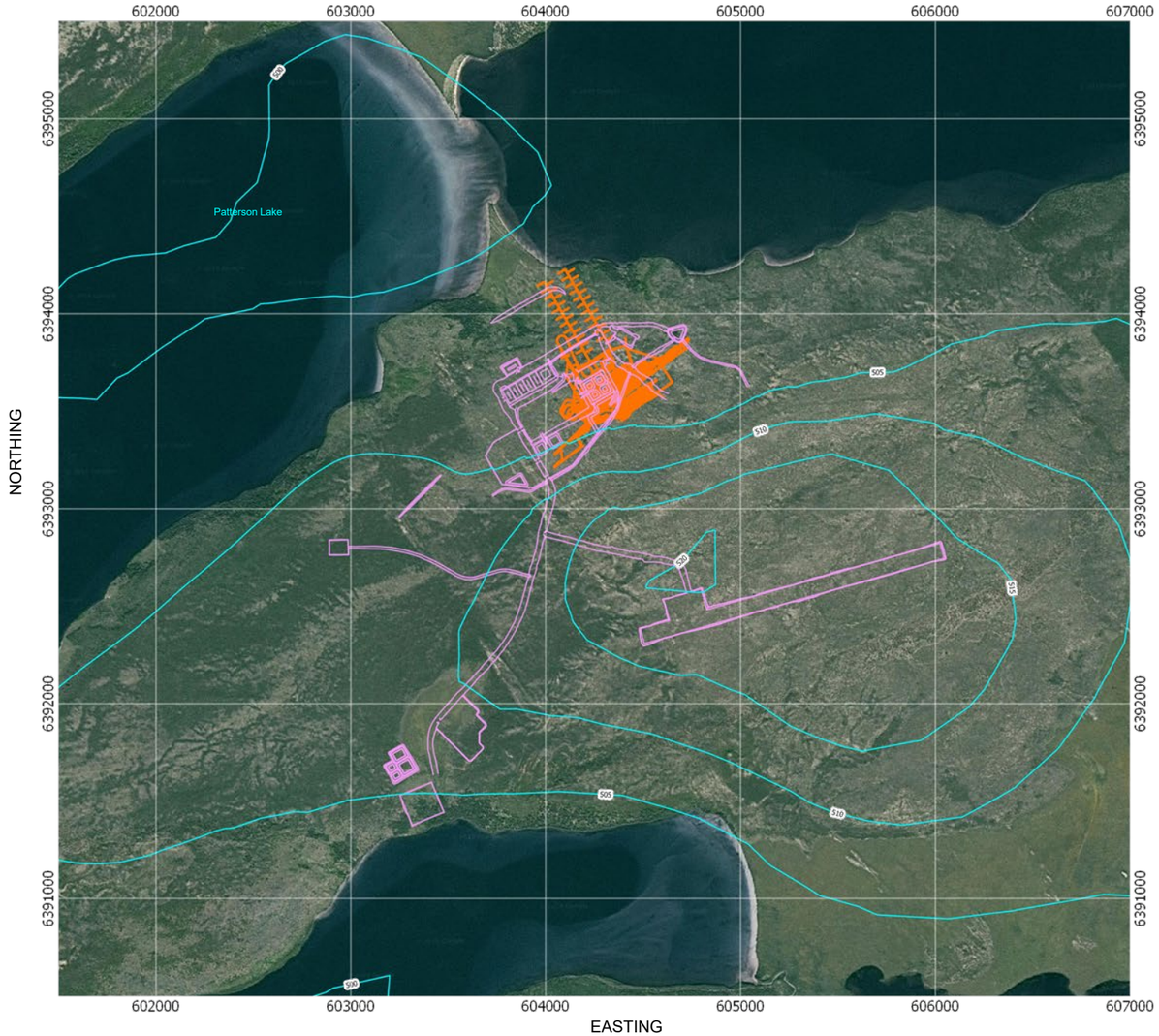
TITLE
SIMULATED GROUNDWATER FLOW ELEVATIONS
FOR CURRENT (PREDEVELOPMENT) CONDITIONS
– GLACIAL DRIFT

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	32

REGIONAL SCALE - FULL MODEL DOMAIN



LOCAL SCALE – MINE AREA



LEGEND

- MODEL DOMAIN
- SIMULATED GROUNDWATER ELEVATION (mASL)
- SURFACE FACILITIES
- UNDERGROUND DEVELOPMENT

Note:
Simulated shallow bedrock groundwater elevations correspond to model slice 10 (approx. elevation 405 mASL in the mine area)

CLIENT
NexGen Energy Ltd.

CONSULTANT
wsp

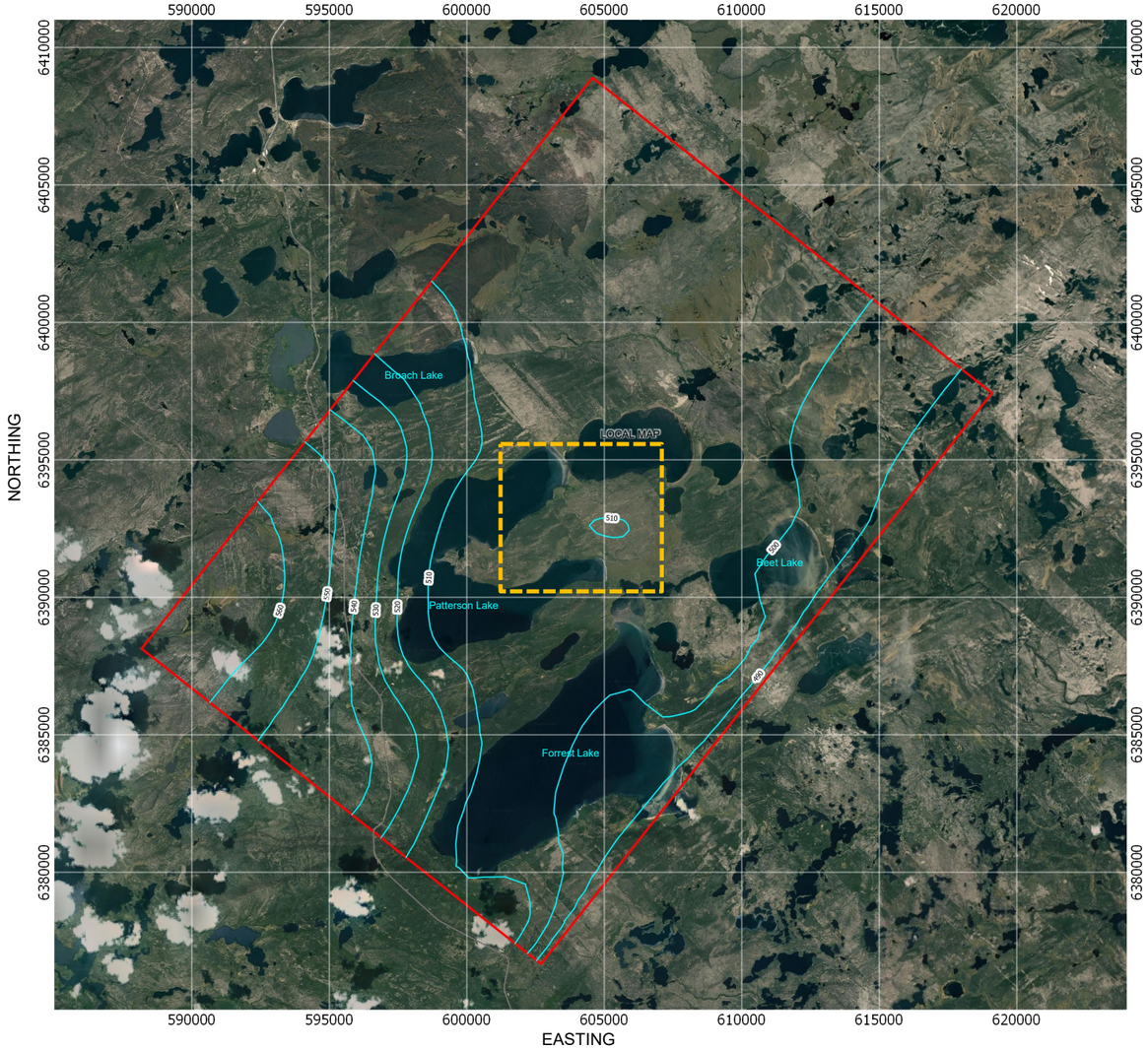
YYYY-MM-DD	2023-02-27
PREPARED	NB
DESIGN	NB
REVIEW	CH
APPROVED	MT

PROJECT
ROOK I PROJECT

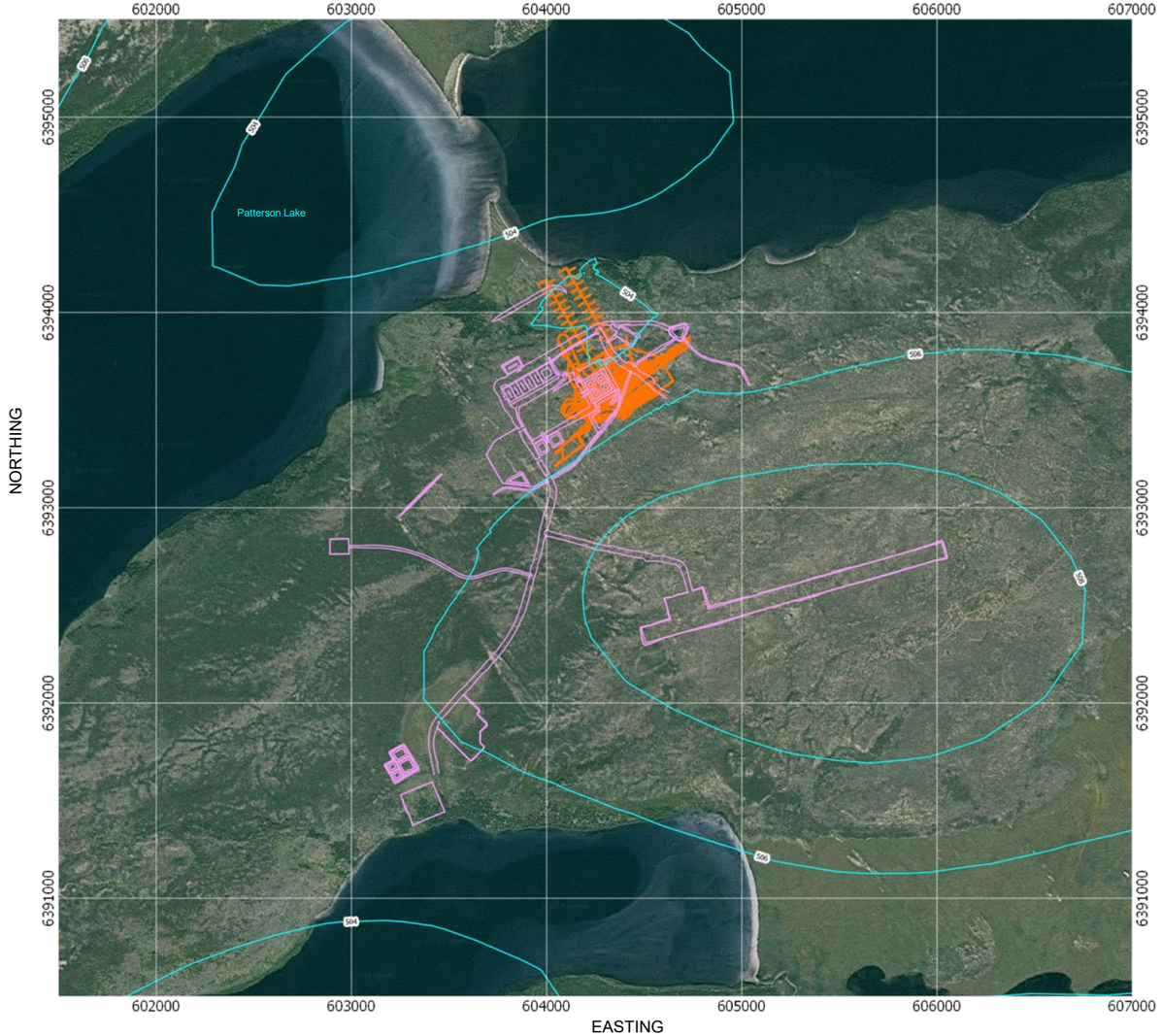
TITLE
SIMULATED GROUNDWATER FLOW ELEVATION FOR CURRENT (PREDEVELOPMENT) CONDITIONS – SHALLOW BEDROCK

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	33

REGIONAL SCALE - FULL MODEL DOMAIN



LOCAL SCALE – MINE AREA



LEGEND

- MODEL DOMAIN
- SIMULATED GROUNDWATER ELEVATION (mASL)
- SURFACE FACILITIES
- UNDERGROUND DEVELOPMENT

Note:
Simulated deep bedrock groundwater elevations correspond to model slice 20 (elevation 160 mASL).

CLIENT
NexGen Energy Ltd.

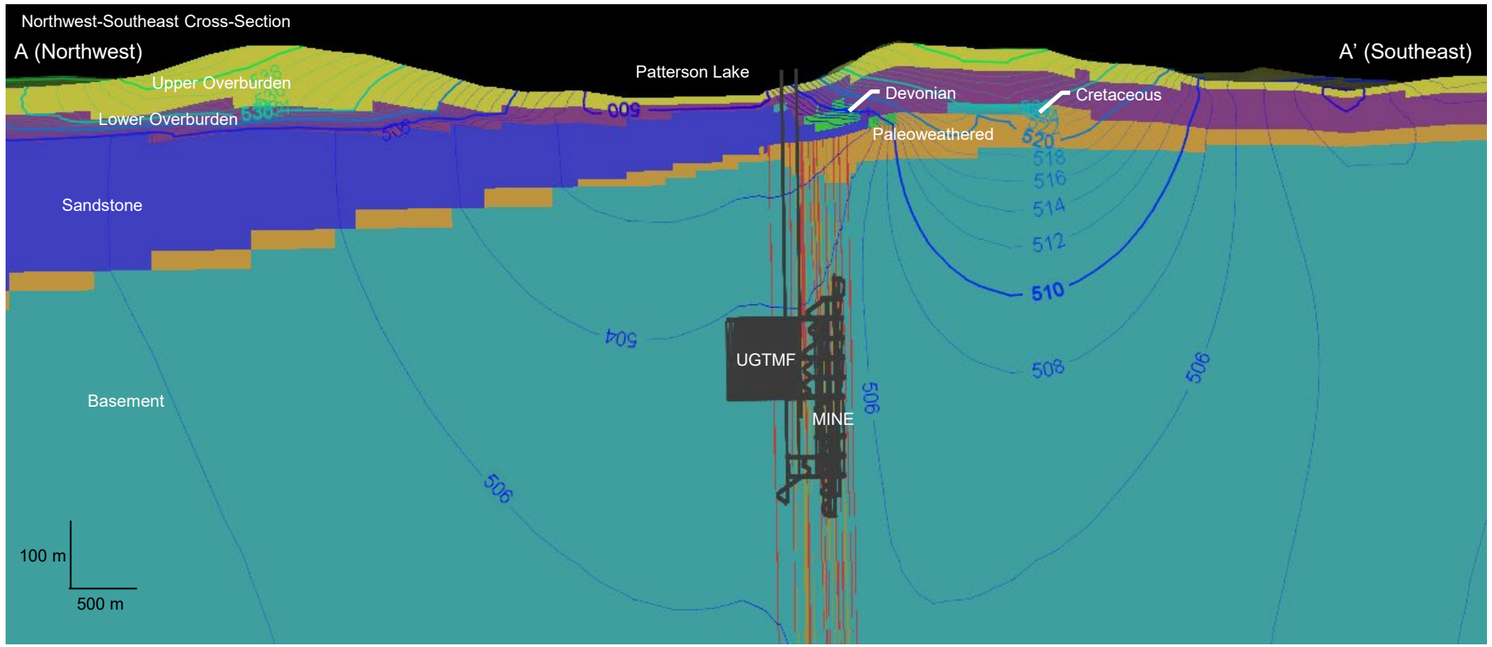
CONSULTANT
wsp

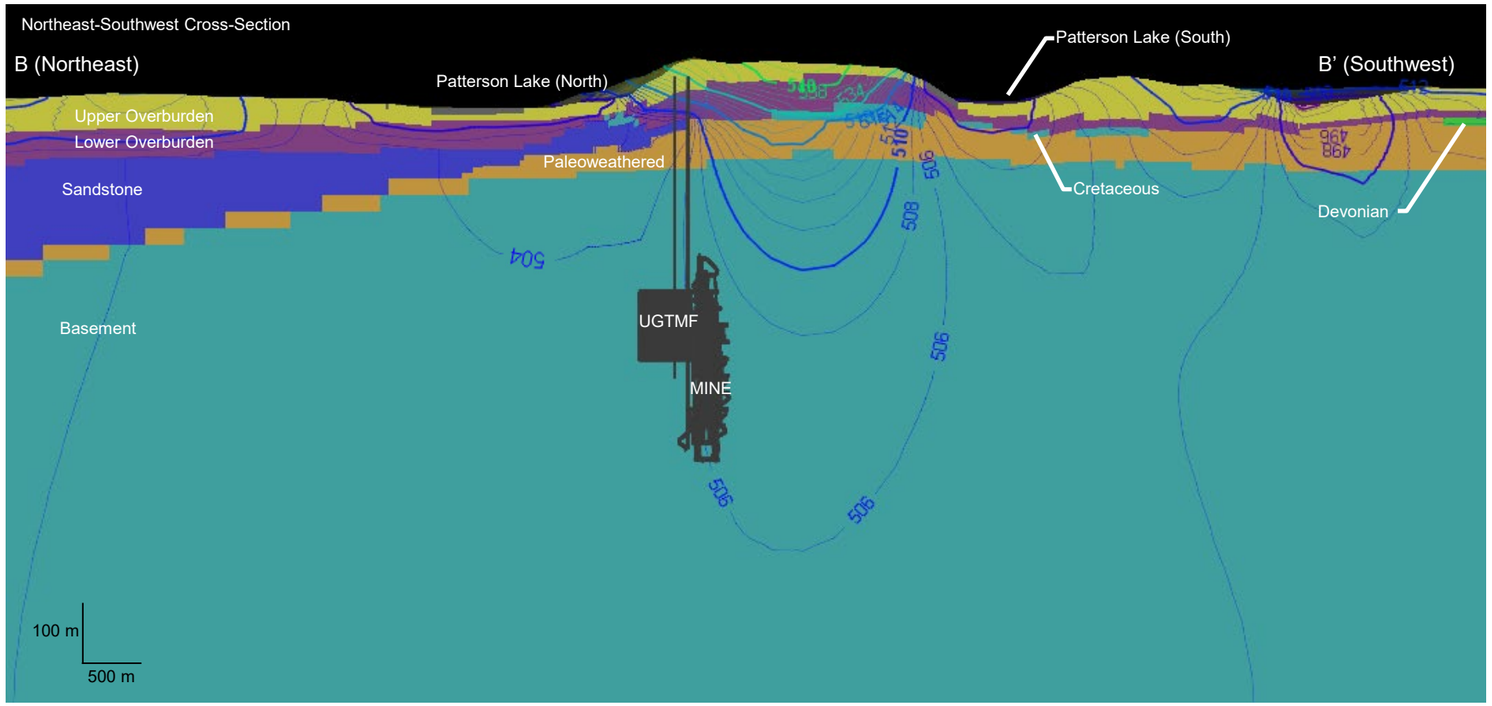
YYYY-MM-DD	2023-02-27
PREPARED	NB
DESIGN	NB
REVIEW	CH
APPROVED	MT

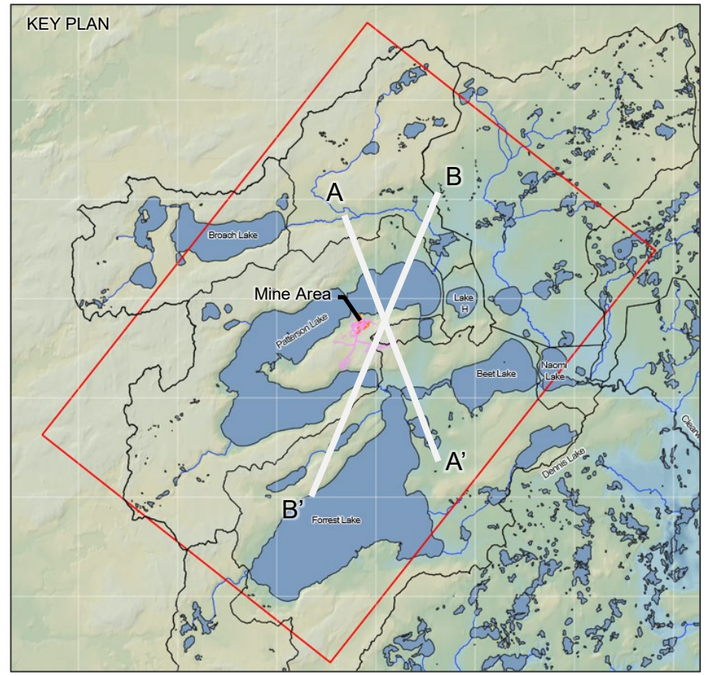
PROJECT
ROOK I PROJECT

TITLE
SIMULATED GROUNDWATER FLOW ELEVATIONS FOR CURRENT (PREDEVELOPMENT) CONDITIONS – DEEP BEDROCK

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	34







LEGEND

- MODEL DOMAIN
- SIMULATED GROUNDWATER ELEVATION (mASL)
- UNDERGROUND DEVELOPMENT

CLIENT
NexGen Energy Ltd.

CONSULTANT
wsp

YYYY-MM-DD	2023-02-27
PREPARED	NB
DESIGN	NB
REVIEW	CH
APPROVED	MT

PROJECT
ROOK I PROJECT

TITLE
SIMULATED GROUNDWATER FLOW ELEVATIONS FOR CURRENT (PREDEVELOPMENT) CONDITIONS – CROSS SECTIONS

PROJECT No.	PHASE	Rev.	FIGURE
20144150	3104	0	35

6.6 Simulated Baseline Flow Regime

The simulated groundwater conditions under current (predevelopment) conditions are illustrated in Figure 31, Figure 32, and Figure 33. Based on the results of the simulation, the groundwater flow regime in the vicinity of the proposed mine and surrounding area is characterized as follows:

- Groundwater flow directions in the glacial drift are predominantly towards the local surface water and drainage features throughout the model domain (Figure 32). In the area of the proposed mine, the groundwater flow direction in the glacial drift is towards Patterson Lake. Because the mine would be situated on a peninsula within Patterson Lake, a groundwater flow divide in the glacial drift exists to the south of the mine, trending parallel to the axis of the peninsula. North of the divide, groundwater flows to the north, and south of the divide, groundwater flows to the south, ultimately discharging to Patterson Lake in both directions.
- The lateral groundwater flow direction in the shallow bedrock (Figure 33) is predominantly from west to east over most of the model domain, with a component of the flow towards toward major water features (e.g., Patterson Lake, Forrest Lake) in localized areas. In the northern portion of the groundwater flow model, flow is towards the south. This flow pattern generally follows the topographic setting of the Clearwater River catchment. Local to the mine area, the groundwater flow in the shallow bedrock is similar to the glacial drift. A groundwater flow divide was simulated to the south of the proposed mine, with flow directed to the northern and southern portions of Patterson Lake on the respective sides of the divide.
- Groundwater flow direction in the deep bedrock is predominantly from west to east, with the highest hydraulic gradient occurring west of Patterson Lake (Figure 34). Local to the proposed mine, the lateral groundwater flow direction is to Patterson Lake to the north. The groundwater flow divide noted above in the shallow bedrock was also simulated to occur in the deep bedrock, although less pronounced.
- The vertical groundwater flow direction is downwards in the area of the topographic high located to the south of the mine, transitioning to upwards in the area of the underground mine and UGTMF (Figure 35). The influence of the structures (i.e., fault zones and shear zones) is evident in the simulated groundwater elevations, as indicated by localized reduction in groundwater pressures near these features. The structures are considered more conductive than the adjacent basement rock and represent the primary groundwater flow path between the mine horizon and groundwater discharge locations in Patterson Lake.

6.7 Model Limitations

Hydrogeological investigations and groundwater modelling are dynamic and inexact sciences. They are dynamic in the sense that the state of any hydrological system is changing with time, and in the sense that the science is continually developing new techniques to evaluate these systems. They are inexact in the sense that groundwater systems are complicated beyond human capability to evaluate them comprehensively in detail, and we invariably do not have sufficient data to do so. A groundwater model uses the laws of science and mathematics to draw together the available data into a mathematical or computer-based representation of the essential features of an existing hydrogeological system. While the model itself obviously lacks the detailed reality of the existing hydrogeological system, the behaviour of a valid groundwater model reasonably approximates that of the real system. The validity and accuracy of the model depends on the amount of data available relative to the degree of complexity of the geologic formations, the site geochemistry, the fate, and transport of the dissolved compounds, and the quality and degree of accuracy of the data entered. Model predictions are expected to differ from measured data collected in the future due to the inherent uncertainty of hydrogeological systems. Therefore, every groundwater model is a simplification of reality, and the model described in this report is not an exception.

7.0 SUMMARY

A baseline study was undertaken to provide a hydrogeological characterization of the RSA encompassing the Rook I Project (Project) site. The baseline study consisted of the compilation of historical data across the study area, collection of site-specific data through intrusive investigations, field and laboratory testing, and baseline monitoring within the RSA.

The overall objectives of the hydrogeology baseline program were to:

- provide a baseline characterization that would define the local groundwater resources within the study area and identify possible pathways within the groundwater system; and
- develop and calibrate a groundwater flow model representing the current (predevelopment) conditions for the Project site that can subsequently be used as a tool to assess the groundwater flow pathways in connection with the Project.

Available borehole data from drilling investigations, in conjunction with hydraulic properties for the various stratigraphic units derived from existing literature, and site-specific testing formed the basis of the conceptual hydrogeological model.

Numerical groundwater flow models were constructed for the study area and calibrated to reasonably reproduce the observed groundwater elevations and the general flow patterns expected near the Project. Based on this, the local groundwater model is considered a useful tool to assist with understanding the potential directions of groundwater flow from beneath potential underground and surface waste management facilities and would form the initial basis for subsequent evaluation of solute transport from facilities associated with the Project.

The objectives of the hydrogeology baseline study, to provide a baseline characterization of the hydrogeological conditions of the Project site and to develop and calibrate a groundwater flow model representing existing conditions, have been met.

CLOSING

WSP 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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Association of Professional Engineers & Geoscientists of Saskatchewan
CERTIFICATE OF AUTHORIZATION
WSP Canada Inc.
Number **C0868**
Permission to Consult held by:

Discipline	Sk. Reg. No.	Signature
Hydrogeology	9446	

STUDY LIMITATIONS

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The scope and the period of WSP's services are as described in WSP's proposal and are subject to restrictions and limitations. WSP did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the report. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by WSP in regard to it. Any assessments, designs and advice made in this report are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this report. Where data supplied by the Client or other external sources (including without limitation, other consultants, laboratories, public databases), including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by WSP for incomplete or inaccurate data supplied by others.

The passage of time affects the information and assessment provided in this report. WSP's opinions are based upon information that existed at the time of the production of the report. The Services provided allowed WSP to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

The report is of a summary nature and is not intended to stand alone without reference to the instructions given to WSP by the Client, communications between WSP and the Client, and to any other reports prepared by WSP 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. WSP 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. WSP 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

Joint Working Group Feedback Applicable to the Hydrogeology Baseline Report

Table A-1 presents the comments and feedback NexGen has received from members of local Indigenous communities through established Joint Working Group meetings. NexGen continues to engage with communities, and the feedback presented in Table A-1 reflects comments and feedback received through March 2020 that were related to the hydrogeology baseline program or the comprehensive baseline program generally.

Table A-1: Joint Working Group Feedback – Hydrogeology

Community	Comment
Birch Narrows Dene Nation (BNDN)	Are you aware of any huge adverse environmental impacts in any of the current mine sites?
	Important topics for the Joint Working Group (JWG) moving forward are Indigenous knowledge, traditional land use, the species discussion, water quality, environmental monitoring, employment, and business opportunities.
	Could we ask that you take samples here? That way we can see changes into the future. Even if it isn't affected by the mine. Respectfully, I request that samples are taken here.
	Who's responsible for the modelling of the water?
Buffalo River Dene Nation (BRDN)	Have you gone to communities to show what you are doing? If so, what was the feedback?
	It's important to explain the Project to Elders in a way that they can then explain it to other Elders in the communities.
	Is hydrogeology just underground water?
	The old guys know there are underground river flows through different areas, in muskeg and sandstone. They stepped through a muskeg and found flowing water.
	Please explain the natural filter systems – the river filters out lots of stuff- rocks, gravel. The Elders think whatever goes into the water will carry all the way done here.
	I like piezos (sampling wells). Are they just around the site? A visual would be good.
Clearwater River Dene Nation (CRDN)	Water is always the key issue back home.
	Remember we're trying to implement a plain speak document because of visual concepts of understanding. That is what the Chief is talking about.
	In terms of baseline studies, are there any opportunities for community involvement with any of your residual baseline work, from fish, terrestrial, etc.?
	So Golder is the environmental part of this. What happened to CanNorth?
	And we will eventually throw in our environmental monitors. I don't know if you knew that. We want to train our own people because of lack of trust of government and industry.
	The interim CRDN Rights and Knowledge study will come out of the CRDN-defined initial list of VCs that we want to talk to you about. As we go through there may be additional ones. We know there's a certain window, but we'll try to be as comprehensive as possible. It may not be as linear as moose; it might be having undisturbed places on waterbodies. They might be more complex.
	Can I bother you for a big map of the project, and get it laminated?
	Not on the old or existing mines that are sitting there?
	Golder does the same thing – hires three or four band members to do the interviews, then takes the notes and puts the document together. When you find the stuff it's not always based on the relationship to the stuff. It's based on what the government's qualifications are on the environmental assessment's impacts, and not the actual concerns of it. I'm trying to reach what [CRDN member] is saying between traditional and modern ways.
	When we started looking at the strategy process, there's that interpretation of cumulative effects. Then we define and introduce an interpretation for that. It's not just one side, western science, we're doing the traditional side as well. That's what the Chief's referring to.
	Both traditional and western science are very important.
	Will we see the results of those studies?

Table A-1: Joint Working Group Feedback – Hydrogeology

Community	Comment
Clearwater River Dene Nation (CRDN)	When you're talking about testing the water, are other studies being done on the Alberta side with the Clearwater system? Do they do their own studies?
	How many other projects are in that square box (referring to map)?
	Do other companies have mineral holdings in that box on the map – like for oil and gas?
	I think it's really important to compare Cluff Lake to what's happening in the baseline studies. It's a good question.
	This is mostly surface water you're talking about? I see a note about diffusion through groundwater – where does that come from?
	This is something we heard about Cluff Lake, and we don't have a great understanding about it – we don't have our own hydrologist; I heard there's still materials leaching out of that facility through the groundwater, at a glacial rate but there is a slow release of materials; is that what you're talking about? That's what I'm trying to understand in terms of your baseline monitoring – how are you measuring what the baseline groundwater movement is? It's quite difficult in the short timespan you're looking at.
	Your hydrogeology model will tell us where this groundwater is and where it would otherwise have gone? Groundwater right now is circulating in these layers and getting deposited in various places. In the future the mine shafts will be a big suck on that groundwater and that's where a lot of that water balance is coming from.
	What's the purpose of trying to gather all this information?
Métis Nation – Saskatchewan (MN-S)	Also, it would be good to see baseline radiometric data.
	We have to understand all living and non-living things.
	Are any community members involved in the establishment of the baseline for environmental monitoring, so can they verify their accuracy?
	Would the results be released and reviewed by the community?
	From a trust point of view, our people will want to know that those numbers are accurate now, not later. Just a comment to think about.
	How would this group know – is there a way for the people involved in the studies to inform the group of what they saw and if they are confident, they are accurate? Once the stuff hits the EIS, how do we know that it's good? If community folks that were involved in that process and they can validate the results, that brings comfort to community members.
	How often are you monitoring?
	It's that validation we're looking for. When I had to involve community members in monitoring, I would get them to write a report if they couldn't speak to the broader community in general. If they didn't feel like writing it, they could talk so someone who would transcribe it. That report could give a summary of how things went, what they saw, were the readings accurate; that could come back to this group, if they couldn't present themselves. The point [MN-S member]'s trying to make is, we need some connection to that community resource that's out there doing the monitoring and seeing this stuff. We know who they are, and we're confident in the results. That builds trust.
	Do you have instruments or people taking samples? What does an instrument look like?
	The studies we did a few years back, these guys don't want to use them. That's what I heard.
	Are you testing underground water also? Are you aware if there's any aquifers – most lakes have aquifers that come and go, especially lakes these sizes.
	It was brought up that some of the leftovers (tailings) will be put down underground. In order to really understand everything, you have to have to understand how water moves underground.
	I normally used groundwater all my life. I used to drink La Loche lake water, but today, you can't do it. Been fishing on Patterson, and on a far lake where I have a cabin. We drink the water right from the lake without boiling it; I'm afraid we will lose that.

Table A-1: Joint Working Group Feedback – Hydrogeology

Community	Comment
Métis Nation – Saskatchewan (MN-S) continued	I had feedback on community engagement, and I'm trying to figure out how we can move forward in a responsible way where people have their input without being offended. We're working towards a bigger goal than what is currently perceived. We need a discussion on how we can approach it. I can offer some high-level thinking to help bring my community around.
	We should have more of these meetings with other companies like this. I'd like to get a Métis community member to work side by side with you guys and report the environmental side to the community instead of you guys doing it, so we know where we are and how much damage is being done to the land.
	This is general – the same information will come back to all the JWGs?
	We are the world's water purifying system – the swamps and muskegs break down all kinds of pollutants and turns it back to normal. That's one of the benefits of our north; we are the filter for most of the world's water. Each forest plays a role in everything, like rainforest in BC.

BNDN = Birch Narrows Dene Nation; BRDN = Buffalo River Dene Nation; CRDN = Clearwater River Dene Nation; EIS = Environmental Impact Statement; JWG = Joint Working Group; MN-S = Métis Nation – Saskatchewan; VC = valued component.

APPENDIX B

Standpipe Piezometer Installation Details

APPENDIX B
Standpipe Piezometer Installation
Details

Reported Monitoring Well ID	Borehole Log ID
DH-BGC17-01	DH-BGC17-01
DH-BGC17-02	DH-BGC17-02
DH-BGC17-03	DH-BGC17-03
DH-BGC17-04	DH-BGC17-04
DH-BGC17-05	DH-BGC17-05
2018-MW-001A	2018_Sonic_001A
2018-MW-001B	2018_Sonic_001B
2018-MW-002A	2018_Sonic_002A
2018-MW-002B	2018_Sonic_002B
2018-MW-003A	2018_Sonic_003
2018-MW-004A	2018_Sonic_004A
2018-MW-004B	2018_Sonic_004B
2018-MW-005A	2018_Sonic_005A
2018-MW-005B	2018_Sonic_005B
2018-MW-006A	2018_Sonic_006A
2018-MW-006B	2018_Sonic_006B
2018-MW-007A	2018_Sonic_007A
2018-MW-007B	2018_Sonic_007B
2018-MW-008A	2018_Sonic_008A
2018-MW-008B	2018_Sonic_008B
2018-MW-009A	2018_Sonic_009A
2018-MW-009B	2018_Sonic_009B
2018-MW-010A	2018_Sonic_010A
2018-MW-010B	2018_Sonic_010B
2019-MW-011A	BGC19-Sonic-011A
2019-MW-011B	BGC19-Sonic-011B
2019-MW-012A	BGC19-Sonic-012A
2019-MW-012B	BGC19-Sonic-012B
2019-MW-013A	BGC19-Sonic-013
2019-MW-014A	BGC19-Sonic-014
2019-MW-016A	BGC19-Sonic-016
2019-MW-017A	BGC19-Sonic-017
2019-MW-018A	BGC19-Sonic-018A
2019-MW-018B	BGC19-Sonic-018B

Project: Snowbird Project Pre-Feasibility Study

DRILL HOLE # DH-BGC17-01

Location: Rook 1 Site

Project No.: 1762-001

Survey Method: DGPS
Co-ordinates (m): 603,730E, 6,393,384N
Ground Elevation (m): 540.1
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 04 Sep 17
Finish Date: 05 Sep 17
Final Depth of Hole (m): 29.9
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa (40, 80, 120, 160); ★ % Fines; RQD; Core Recovery (20, 40, 60, 80); △ Pocket Pen /2; DCT (blows/300mm); ● SPT (blows/300mm); Moisture Content & SPT N W_p% W% W_L% (20, 40, 60, 80)	Elevation (m)
0					TOPSOIL [0.0 - 0.4 m] Sandy, loose, brown, moist, roots and rootlets, organics.				540
		SA-1			SAND [0.4 - 3.8 m] Fine to medium, trace fine gravel, uniformly graded, dense, subrounded, pinkish brown, dry, homogeneous.			★	
1					From 0.4 - 0.6 m: Orange staining.				539
2					From 2.0 - 2.2 m: Boulder, grey.				538
					Below 2.4 m: Becomes gravelly, some cobbles and boulders.				
3		SA-2							537
4					SAND [3.8 - 15.2 m] Fine to medium, silty, some cobbles and boulders, trace gravel, uniformly graded, dense to very dense, subrounded, brown, moist, homogeneous. Boulders and cobble clasts are quartz, sandstone, reddish to pinkish grey, very hard, medium grained.				536
		SA-10						★	
5									535
6		SA-3						★	534
7					At 6.7, 7.5 m and 7.8 m: Boulders (grey), between 100 to 400 mm diameter				533
8		SA-4							532
					Below 8.5 m: Grey to pinkish grey.				
9		SA-5			Below 9.0 m: Brown, wet, visible water.				531
					Below 9.7 m: Grey, visible water. ▽ 10/18/2017				
10									

(Continued on next page)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

Survey Method: DGPS
Co-ordinates (m): 603,730E, 6,393,384N
Ground Elevation (m): 540.1
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 04 Sep 17
Finish Date: 05 Sep 17
Final Depth of Hole (m): 29.9
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Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa / % Fines / RQD / Core Recovery / Pocket Pen /2 / DCT (blows/300mm) / SPT (blows/300mm) / Moisture Content & SPT N	Elevation (m)
10									530
11		SA-6			From 11.0 - 11.4 m: Lens of fine sand, some silt.				529
12		SA-7							528
13					From 13.0 - 13.4 m: Gravelly, possible boulder				527
		SA-8							
14					Below 14.0 m: Orange staining.				526
		SA-9							
15					SAND [15.2 - 21.5 m] Medium, some gravel, some silt, some boulder and cobbles, well graded, dense to very dense, subrounded, dark brown, wet, homogeneous.				525
16									524
17					At 17.3 m: Becomes silty, trace gravel, some boulders/cobbles.				523
18					From 18.1 - 18.3 m: Boulder, pinkish-grey quartz sandstone.				522
19					From 19.0 - 19.3 m: Boulder, pinkish-grey quartz sandstone.				521
20									

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 603,730E, 6,393,384N
Ground Elevation (m): 540.1
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
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Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa (40, 80, 120, 160) / ★ % Fines / RQD / Core Recovery (20, 40, 60, 80) / △ Pocket Pen /2 / DCT (blows/300mm) / ● SPT (blows/300mm) / Moisture Content & SPT N W_p% W% W_L% (20, 40, 60, 80)	Elevation (m)
20		SA-11			From 20.6 - 20.7 m: Boulder, grey.				520
21									519
22					SAND [21.5 - 26.0 m] Fine to coarse, some fine gravel, trace cobbles, well graded, dense to very dense, subrounded, grey, wet.				518
23					Below 23.4 m: Becomes sand and gravel, trace cobbles, brown.				517
24									516
25					At 25.0 m: Cobbles.				515
26					SAND [26.0 - 29.9 m] Fine to coarse, some silt, some fine to coarse gravel, well graded, dense to very dense, subrounded, brown, wet. From 26.6 - 26.7 m: White banding, ~10 mm thick, white, sandy, quartz grains. From 29.6 - 29.9 m: Boulder.				514
27									513
28		SA-12			Hydraulic Conductivity = 8.1 x 10-6 m/s			★	512
29									511
30					END OF HOLE AT 29.9 m.				

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NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

Survey Method: DGPS
Co-ordinates (m): 603,974E, 6,393,720N
Ground Elevation (m): 530.7
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 06 Sep 17
Finish Date: 07 Sep 17
Final Depth of Hole (m): 23.8
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa / % Fines / RQD / Core Recovery / Pocket Pen /2 / DCT (blows/300mm) / SPT (blows/300mm) / Moisture Content & SPT N (W_p% W% W_L%)	Elevation (m)
0					TOPSOIL [0.0 - 0.4 m] Sandy, loose, brown, moist, roots and rootlets, organics.				
					SAND [0.4 - 2.3 m] Fine to medium, gravelly, some cobbles and boulders, gap graded, compact, subrounded, pinkish brown, dry, homogeneous.				530
1									
		SA-1						★	529
2									
		SPT-01			SAND [2.3 - 5.4 m] Fine to medium, trace to some fine gravel, uniformly graded, compact, subrounded, pinkish brown, moist, homogeneous.	2 6 9		●	528
3									
		SA-2							
									527
4		SPT-02				3 3 3		●	
		SA-3							526
5									
		SPT-03			SAND [5.4 - 8.1 m] Fine to coarse, trace to some gravel, some cobbles and boulders, dense to very dense, subrounded, pinkish brown, wet, intermittent orange staining. From 6.5 - 6.6 m: Sandstone boulder, pink and white, fine to medium grained, 20 mm sandy clay above boulder.	25 R		>>●	525
6									
		SA-4			From 6.6 - 6.9 m: silty, grey, wet.			★ ○	524
7					From 6.9 - 7.2 m: Sandstone boulder, 160 mm diameter.				
		SPT-04 SA-5				R		>>●	
					From 7.5 - 7.6 m: Gravelly				523
8									
		SA-6			SAND [8.1 - 13.0 m] Fine to medium, gravelly, trace cobbles and boulders, compact to dense, subrounded, pinkish brown, wet.			★	
		SPT-05				6 R		>>●	522
9									
									521
10									

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 603,974E, 6,393,720N
Ground Elevation (m): 530.7
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 06 Sep 17
Finish Date: 07 Sep 17
Final Depth of Hole (m): 23.8
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Elevation (m)
10		SPT-06				4 10 23		520
11		SA-7						
		SPT-07				3 4 11		519
12		SA-8			At 12.0 m: Traces of orange staining. Hydraulic Conductivity = 1.9 x 10-5 m/s At 12.6 m: Boulder, black.			518
13		SPT-08			SAND [13.0 - 15.3] fine to medium, clayey, some gravel, trace cobbles, well graded, dense, subrounded, grey and brown, wet, traces of orange staining.	16 18 15		517
14		SA-9						
15		SPT-09				4 50 R		516
16					CLAY [15.3 - 23.8 m] Some fine sand, low plasticity, hard, brown, laminated with grey sand layers.			515
17								514
18		SA-10						513
19								512
20								511

Su - kPa: 40, 80, 120, 160
★ % Fines
RQD
Core Recovery: 20, 40, 60, 80
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)
Moisture Content & SPT N: W_p% W% W_L%: 20, 40, 60, 80

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NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

DRILL HOLE # DH-BGC17-02

Location: Rook 1 Site

Project No.: 1762-001

Survey Method: DGPS
Co-ordinates (m): 603,974E, 6,393,720N
Ground Elevation (m): 530.7
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 06 Sep 17
Finish Date: 07 Sep 17
Final Depth of Hole (m): 23.8
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa / % Fines / RQD / Core Recovery / Pocket Pen /2 / DCT (blows/300mm) / SPT (blows/300mm) / Moisture Content & SPT N (W_p% W% W_L%)	Elevation (m)
20									510
21		SPT-10				10 26 38			509
22									508
23									507
24					END OF HOLE AT 23.8 m.				506
25									505
26									504
27									503
28									502
29									501
30									

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NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

Project: Snowbird Project Pre-Feasibility Study

DRILL HOLE # DH-BGC17-03

Location: Rook 1 Site

Project No.: 1762-001

Survey Method: DGPS
Co-ordinates (m): 604,727E, 6,393,618N
Ground Elevation (m): 552.2
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 08 Sep 17
Finish Date: 09 Sep 17
Final Depth of Hole (m): 39.0
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Elevation (m)
0		SPT-01			SAND [0.0 - 1.5 m] Fine to medium, some gravel to gravelly, some boulders/cobbles, well graded, compact, subrounded, brown, dry, homogeneous.	4 4 3		552
1		SA-1						551
2					GRAVEL [1.5 - 4.2 m] Some sand, some cobbles and boulders, gap graded, dense to very dense, angular to subrounded, pinkish brown to grey, moist.			550
		SPT-02				21 30 R		>>
3		SA-2						549
4		SPT-03				16 42 R		>> 548
		SA-3			SAND AND GRAVEL [4.2 - 5.5 m] Trace cobbles, well graded, dense to very dense, subrounded, brown with pink, white, grey gravel, moist.			
5								547
		SPT-04			SAND [5.5 - 12.0 m] Fine to coarse, trace gravel to gravelly, trace to some cobbles/boulders, well graded, dense to very dense, subrounded, pinkish brown to grey, moist to wet, trace orange staining.	3 R		>>
6		SA-4						546
7		SPT-05				10 34 37		545
		SA-5						
8								544
		SPT-06				R		>>
9		SA-6						543
10								

Su - kPa: 40, 80, 120, 160
★ % Fines
RQD
Core Recovery: 20, 40, 60, 80
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)
Moisture Content & SPT N
W_p% W% W_L%
20, 40, 60, 80

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NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

Survey Method: DGPS
Co-ordinates (m): 604,727E, 6,393,618N
Ground Elevation (m): 552.2
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 08 Sep 17
Finish Date: 09 Sep 17
Final Depth of Hole (m): 39.0
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Elevation (m)
10		SPT-07				4 42 42		542
11		SA-7			Below 11.5 m: Gravelly.			541
12		SPT-08				14 36 49		540
		SA-8			SILT [12.0 - 13.8] Sandy, non-plastic, dense to very dense, grey, laminated layers of brown sand, no dilatancy.			
13		SPT-09			From 13.1 - 13.8 m: Transition from clay to sand. At 13.5 m: Boulder/gravel.	R		539
14		SA-9			SAND [13.8 - 14.7 m] Fine to coarse, trace to some gravel, trace to some cobbles and boulders, well graded, dense to very dense, subrounded to subangular, pinkish brown, moist.			538
15		SPT-10			From 14.7 - 15.7 m: gravelly, wet.	25 32 36		537
16					Below 15.7 m: trace orange staining.			536
17								535
18					SAND [17.9 - 19.2 m] Fine, silty, uniformly graded, dense to very dense, subangular, grey, wet.			534
19					Below 18.9 m: Moist.			533
20					SAND [19.2 - 31.3 m] Fine to coarse, trace gravel, well graded, dense to very dense, subangular, pinkish brown, moist, lenses of weak cementation.			

Su - kPa: 40, 80, 120, 160
★ % Fines
RQD
Core Recovery: 20, 40, 60, 80
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)
Moisture Content & SPT N: W_p% W% W_L%: 20, 40, 60, 80

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,727E, 6,393,618N
Ground Elevation (m): 552.2
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 08 Sep 17
Finish Date: 09 Sep 17
Final Depth of Hole (m): 39.0
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa (40, 80, 120, 160); ★ % Fines; RQD; Core Recovery (20, 40, 60, 80); △ Pocket Pen /2; DCT (blows/300mm); ● SPT (blows/300mm); Moisture Content & SPT N W_p% W% W_L% (20, 40, 60, 80)	Elevation (m)
20									532
21									531
22					At 22.3 m: Black staining, some lenses moist, some lenses wet. From 22.3 - 23.3 m: Dark greyish brown.				530
23									529
24					At 23.8 m: Boulder. Below 23.9 m: Gravelly.				528
25									527
26									526
27					Below 27.0 m: Wet, visible water.				525
28									524
29									523
30									

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,727E, 6,393,618N
Ground Elevation (m): 552.2
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 08 Sep 17
Finish Date: 09 Sep 17
Final Depth of Hole (m): 39.0
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa 40 80 120 160 / ★ % Fines / RQD / Core Recovery 20 40 60 80 / △ Pocket Pen /2 / DCT (blows/300mm) / ● SPT (blows/300mm) / Moisture Content & SPT N W_p% W% W_L% 20 40 60 80	Elevation (m)
30					At 30.6 m: Clayey laminations, pink, brown, light brown, grey.				522
31					SILT [31.3 - 35.4 m] Some sand, non-plastic, dense to very dense, stratified with different colours.				521
32					From 32.0 to 32.6m: sand, trace gravel, clayey laminations				520
33									519
34					▽ 10/15/2017				518
35					At 35.3 m: Boulder.				517
36					SAND [35.4 - 39.0 m] Fine to coarse, trace gravel, some cobbles/boulders, dense to very dense, subrounded, pinkish brown, wet, trace orange staining.				516
37					Hydraulic Conductivity = 1.2 x 10-6 m/s				515
38									514
39					END OF HOLE AT 39.0 m.				513
40									

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NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

Project: Snowbird Project Pre-Feasibility Study

DRILL HOLE # DH-BGC17-04

Location: Rook 1 Site

Project No.: 1762-001

Survey Method: DGPS
Co-ordinates (m): 604,750E, 6,393,246N
Ground Elevation (m): 576.1
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 10 Sep 17
Finish Date: 11 Sep 17
Final Depth of Hole (m): 48.2
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa (40, 80, 120, 160) / ★ % Fines / RQD / Core Recovery / Pocket Pen /2 / DCT (blows/300mm) / SPT (blows/300mm) / Moisture Content & SPT N (W_p% W% W_L%) (20, 40, 60, 80)	Elevation (m)
0					TOPSOIL [0.0 - 0.4 m] Sandy, brown, moist, roots and rootlets, organics.				576
1		SA-1			SAND [0.4 - 6.5 m] Fine to medium, some silt, trace to some fine gravel, trace cobbles and boulders, uniformly graded, compact to dense, subrounded, pinkish brown, dry.			★	575
		SPT-01				8 21 40			
2		SA-2							574
					Below 2.4 m: Moist.				
		SPT-02				5 14 15			
3		SA-3						★	573
4		SPT-03				8 14 13			572
		SA-4							
5									571
		SPT-04				10 18 26			
6					From 6.0 - 6.1 m: Gravelly.				570
		SA-5							
					SAND [6.5 - 46.4 m]: Fine to medium, some cobbles and boulders, trace to some fine gravel, well graded, dense to very dense, subrounded, pinkish brown, moist. From 6.6 - 6.7 m: Dark brown staining.				
7		SPT-05				10 39 R		>>	569
8		SA-6							568
9		SPT-06				16 41 R		>>	567
		SA-7							
10									

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NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

Survey Method: DGPS
Co-ordinates (m): 604,750E, 6,393,246N
Ground Elevation (m): 576.1
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" ***Cased To (m)***: N/A
Depth To Rock (m): N/A

Start Date: 10 Sep 17
Finish Date: 11 Sep 17
Final Depth of Hole (m): 48.2
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Elevation (m)
10		SPT-07				46 R		566
11		SA-8						565
12		SPT-08				29 R		564
13		SA-9			At 12.5 m: Boulder or cobble, 100 mm diameter.			
		SPT-09			AT 13.0 m: Cobble - 80 mm	26 40 R		563
14		SA-10						562
15		SPT-10				1 9 R		561
16					Below 16.0 m: Trace orange staining.			560
17								559
18					At 17.7 m: Cobbles ~90 mm.			558
19								557
20					From 19.4 - 20.2 m: Grey and orange staining.			

Su - kPa
40 80 120 160
★ % Fines
RQD
Core Recovery
20 40 60 80
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)
Moisture Content & SPT N
W_p% W% W_L%
20 40 60 80

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,750E, 6,393,246N
Ground Elevation (m): 576.1
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 10 Sep 17
Finish Date: 11 Sep 17
Final Depth of Hole (m): 48.2
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa (40, 80, 120, 160); ★ % Fines; RQD; Core Recovery (20, 40, 60, 80); △ Pocket Pen /2; DCT (blows/300mm); ● SPT (blows/300mm); Moisture Content & SPT N W_p% W% W_L% (20, 40, 60, 80)	Elevation (m)
20									556
21					Below 20.7: Becomes silty, some cobbles and boulders, trace gravel, dark grey and brown.				555
22					From 21.6 - 21.9 m: Sandstone boulder. From 21.9 - 22.6 m: Trace silt.				554
23					From 22.6 - 23.0 m: Silty. From 23.0 - 23.4 m: Sandstone boulder. Below 23.4 m: Trace to some gravel, trace cobbles and boulders.				553
24					Below 23.8: Some silt, grey.				552
25					Below 25.0 m: Fine to coarse sand, gravelly.				551
26					Below 25.6 m: Silty, stratified, grey and brown.				550
27					From 26.8 - 28.3 m: Trace to some silt, some gravel, brown.				549
28					From 28.3 - 29.7 m: Some silt to silty, grey, trace gravel.				548
29									547
30					From 29.7 - 29.9 m: Boulder				

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,750E, 6,393,246N
Ground Elevation (m): 576.1
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 10 Sep 17
Finish Date: 11 Sep 17
Final Depth of Hole (m): 48.2
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa 40 80 120 160 / ★ % Fines / RQD / Core Recovery 20 40 60 80 / △ Pocket Pen /2 / DCT (blows/300mm) / ● SPT (blows/300mm) / Moisture Content & SPT N W_p% W% W_L% 20 40 60 80	Elevation (m)
30									546
31									545
32					From 32.3 - 33.1 m: Gravelly. At 32.3 m: Boulder or cobble.				544
33									543
34					From 33.6 - 34.0 m: Silty lenses, grey.				542
35									541
36									540
37					At 37.2 m: Cobble, 100 mm.				539
38									538
39					From 38.8 - 41.0 m: Silty, weak cementation.				537
40									

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,750E, 6,393,246N
Ground Elevation (m): 576.1
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 10 Sep 17
Finish Date: 11 Sep 17
Final Depth of Hole (m): 48.2
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa 40 80 120 160; ★ % Fines; RQD; Core Recovery 20 40 60 80; △ Pocket Pen /2; DCT (blows/300mm); ● SPT (blows/300mm); Moisture Content & SPT N W_p% W% W_L% 20 40 60 80	Elevation (m)
40					At 40.5 m: Clayey lens, 100 mm thick.				536
41									535
42					From 42.1 - 42.9 m: Silt and clay lenses, sandy, wet.				534
43					From 42.9 - 44.7 m: Sand, wet, some silt lenses.				533
44									532
45					From 44.7 - 46.4 m: Silt and clay lenses, orange staining at 44.7 m.				531
46					Hydraulic Conductivity = 6.4 x 10-6 m/s				530
47					SAND [46.4 - 46.9] Fine to medium, uniformly graded, dense to very dense, subrounded, brown with orange staining, wet, homogeneous. SILT [46.9 - 48.2 m] Some fine sand, low plasticity, pinkish brown, wet, homogeneous.				529
48					END OF HOLE AT 48.2 m.				528
49									527
50									

10/17/2017

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NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

Survey Method: DGPS
Co-ordinates (m): 604,068E, 6,393,593N
Ground Elevation (m): 541.3
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 12 Sep 17
Finish Date: 13 Sep 17
Final Depth of Hole (m): 63.4
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Elevation (m)
0					SAND [0.0 - 1.2 m] Fine to medium, some gravel to gravelly, some cobbles and boulders, well graded, compact, subrounded, pinkish brown, dry, homogeneous.			541
1		SA-1						
		SPT-01			SAND [1.2 - 4.0 m] Fine, silty, uniformly graded, dense, subrounded, pinkish brown, dry, homogeneous.	3 14 18		540
2		SA-2						
		SPT-02				10 16 17		539
3		SA-3			From 3.3 - 3.9 m: Gravelly, cobbles/boulders.			538
4		SPT-03			SAND [4.0 - 5.5 m] Fine to coarse, some gravel, trace cobble and boulders, well graded, dense to very dense, subrounded, pinkish brown, dry to moist, homogeneous.	11 22 33		537
5		SA-4						
					From 5.4 - 5.5 m: Boulder.			536
		SPT-04			SAND [5.5 - 11.6 m] Fine to medium, trace silt, uniformly graded, dense to very dense, subrounded, pinkish brown, moist, homogeneous.	9 29 42		
6								535
7		SPT-06				3 19 22		534
8		SA-5						533
		SPT-07				14 29 44		
9		SA-6						532
10								

Su - kPa: 40, 80, 120, 160
★ % Fines
RQD
Core Recovery: 20, 40, 60, 80
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)
Moisture Content & SPT N
W_p% W% W_L%: 20, 40, 60, 80

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,068E, 6,393,593N
Ground Elevation (m): 541.3
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 12 Sep 17
Finish Date: 13 Sep 17
Final Depth of Hole (m): 63.4
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Elevation (m)
10								
		SPT-08				7 20 39		531
11		SA-7						
		SA-8			SAND [11.6 - 12.0 m] Silty, very dense, brown, pink and grey banding, moist, weak cementation.			530
12		SPT-09				17 44 R		>> 529
					SAND [12.0 - 13.7 m] Fine to medium, trace silt, uniformly graded, very dense, subrounded, pinkish brown, moist.			
13					From 13.0 - 13.7 m: Boulder, white, fine grained.			
		SPT-10				R		>> 528
14		SA-9			SAND [13.7 - 18.6 m] Fine to medium, some gravel to gravelly, some boulders and cobbles, well graded, dense to very dense, subrounded to subangular, pinkish brown, moist. At 14.4 m: Boulder, red.			527
15		SPT-11			At 15.0 m: Wet. From 15.2 - 15.4 m: Boulder, white.	4 20 50		526
16								
		SPT-12				2 3 27		525
17								524
		SPT-13			From 17.6 - 17.7 m: Boulder, red.	17 R		>> 523
18								
19		SA-10			SAND AND SILT [18.6 - 22.4 m] Some gravel, uniformly graded, dense to very dense, subrounded, non-plastic, laminations of grey silt and brown sand.			
		SPT-14				14 48 R		>> 522
20								

Su - kPa: 40, 80, 120, 160
★ % Fines
RQD
Core Recovery: 20, 40, 60, 80
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)
Moisture Content & SPT N: W_p% W% W_L%: 20, 40, 60, 80

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NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

Survey Method: DGPS
Co-ordinates (m): 604,068E, 6,393,593N
Ground Elevation (m): 541.3
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 12 Sep 17
Finish Date: 13 Sep 17
Final Depth of Hole (m): 63.4
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Elevation (m)
20								521
21		SPT-15			10/14/2017 From 21.4 - 21.6 m: Clay, black staining.	20 R		520
22								519
		SPT-16			SILT AND SAND [22.4 - 26.8 m] Non-plastic, dense to very dense, lenses of alternating higher sand and silt contents, grey, moist to wet.	32 R		
23		SA-11						518
24		SPT-17			Below 24.2 m: Silt lenses become clayey lenses, fewer sand layers.	12 28 44		517
25								516
26								515
27		SPT-18			SILT AND CLAY [26.8 - 37.4 m] Some fine sand, laminated non-plastic dense to very dense silt (light grey) and low plasticity hard clay (dark grey), occasional black staining.	10 34 R		514
28								513
29		SA-12						512
30								

Su - kPa: 40, 80, 120, 160
★ % Fines
RQD
Core Recovery: 20, 40, 60, 80
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)
Moisture Content & SPT N
W_p% W% W_L%: 20, 40, 60, 80

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,068E, 6,393,593N
Ground Elevation (m): 541.3
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 12 Sep 17
Finish Date: 13 Sep 17
Final Depth of Hole (m): 63.4
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa / % Fines / RQD / Core Recovery / Pocket Pen /2 / DCT (blows/300mm) / SPT (blows/300mm) / Moisture Content & SPT N	Elevation (m)
30		SPT-19				18 R			>> 511
31									510
32									509
33									508
34									507
35					Below 35.5 m: clay laminations become thicker.				506
36									505
37									504
38					SILT [37.4 - 41.0 m] Trace fine sand, dense to very dense, grey, moist, laminated with clay layers, no dilatancy.				503
39									502
40					Between 39.5 - 40.0 m: Black staining.				

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,068E, 6,393,593N
Ground Elevation (m): 541.3
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 12 Sep 17
Finish Date: 13 Sep 17
Final Depth of Hole (m): 63.4
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa (40, 80, 120, 160); ★ % Fines; RQD; Core Recovery (20, 40, 60, 80); △ Pocket Pen /2; DCT (blows/300mm); ● SPT (blows/300mm); Moisture Content & SPT N W_p% W% W_L% (20, 40, 60, 80)	Elevation (m)
40									501
41					SILT AND CLAY [41.0 - 45.0 m] Some fine sand, laminated non-plastic dense to very dense silt (light grey) and low-plasticity hard clay (dark grey), occasional black staining.				500
42					From 42.1 - 43.0 m: Sandy.				499
43									498
44									497
45					SILT [45.0 - 55.8 m] Low plasticity, dense to very dense, laminated with clay layers, light grey (silt), dark grey (clay), wet, slow to no dilatancy.				496
46		SA-13							495
47					At 47.3 m: Drier than plastic limit, moist to dry.				494
48									493
49		SA-14			From 49.0 - 49.1 m: Black and brown staining, sandy, weakly cemented.				492
50									

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,068E, 6,393,593N
Ground Elevation (m): 541.3
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 12 Sep 17
Finish Date: 13 Sep 17
Final Depth of Hole (m): 63.4
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Su - kPa (40, 80, 120, 160); ★ % Fines; RQD; Core Recovery (20, 40, 60, 80); △ Pocket Pen /2; DCT (blows/300mm); ● SPT (blows/300mm); Moisture Content & SPT N W_p% W% W_L% (20, 40, 60, 80)	Elevation (m)
50									491
51									490
52									489
53									488
54					From 53.6 - 55.8 m: Dark grey to black, weakly cemented. From 54.0 - 54.1 m: Sand, fine to medium, grey, wet.				487
55									486
56					SAND [55.8 - 58.4 m] Fine to medium, some silt, dense to very dense, uniformly graded, subangular, brown, wet, homogeneous. At 56.2 m: Gravel fragments, red, ~0.05 m long, maximum particle size = 30 mm.				485
57					Hydraulic Conductivity = 7.3 x 10-5 m/s				484
58		SA-15						★ ○	483
59					SILT [58.4 - 60.9 m] Sandy, some clay, low plasticity, very dense, grey, lensed. [MUDSTONE]				482
60		SA-16							

(Continued on next page)

Survey Method: DGPS
Co-ordinates (m): 604,068E, 6,393,593N
Ground Elevation (m): 541.3
Datum: NAD83, Zone 12
Dip (degrees from horizontal): N/A
Direction: N/A

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Fluid: Water/Polymer
Casing: 6" **Cased To (m)**: N/A
Depth To Rock (m): N/A

Start Date: 12 Sep 17
Finish Date: 13 Sep 17
Final Depth of Hole (m): 63.4
Logged by: RET
Reviewed by: JL/HP
Approved by: SD

Depth (m)	Sample Type	Sample No.	Weathering Grade	Symbol	Lithologic Description	SPT Blows per 150mm	Instrument Details	Elevation (m)
60								481
61					SAND [60.9 - 61.5 m] Fine, silty, some clay, very dense, light grey. [SANDSTONE]			480
					GRAVEL [61.5 - 62.0 m] Some sand, silty, clayey, angular, grey, wet.			
62					SAND [62.0 - 63.4 m] Fine, silty, some clay, very dense, light grey. [SANDSTONE]			479
63								478
					END OF HOLE AT 63.4 m.			
64								477
65								476
66								475
67								474
68								473
69								472
70								

Su - kPa: 40, 80, 120, 160
★ % Fines
RQD
Core Recovery: 20, 40, 60, 80
△ Pocket Pen /2
DCT (blows/300mm)
● SPT (blows/300mm)
Moisture Content & SPT N
W_p% W% W_L%
20, 40, 60, 80

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NEXGEN (SOIL & ROCK) NEXGEN_ALL.GDL BGC.GDT 1/16/18

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_001
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 25/11/2018 **TO:** 25/11/2018
COORDINATES: 603791.7 E 6394012.2 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 500.31
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 14.48
WATER LEVEL (mbgs): Frozen

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. Grab SPT

Lithologic Symbol
Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing N Value 0 25 50 75 100

Field Index Testing Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details A / B

USCS	Soil Description	Drilling Notes & Additional Comments
PT	Peat (PT) - soft, moist to wet, organics, rootlets, wood.	
SP	Poorly Graded Sand (SP) - Sand is fine, medium dense, wet, pinkish gray, poorly graded, massive. [Glaciofluvial Sands].	2.59-2.69m Some silt, laminated. 2.99-3.19m Some silt, laminated.
ML	Silt (ML) - trace sand, saturated, pink and gray mottled, non-plastic, cohesive, thinly bedded, gradual (>10 cm). [Glaciofluvial Sands].	
SP-SM	Poorly Graded Sand with Silt (SP-SM) - Sand is fine, few silt, dense, saturated, light gray, massive. [Glaciofluvial Sands].	6.51-6.59m Reddish brown, thinly laminated Fe banding.
SM	Silty Sand (SM) - Sand is fine, little silt, dense, saturated, pinkish gray, non-plastic, noncohesive, laminated. [Glaciofluvial Sands].	Alternating dark gray laminations.
SP-SM	Poorly Graded Sand with Silt (SP-SM) - Sand is fine to medium, few silt, saturated, light brownish gray, massive. [Glaciofluvial Sands].	7.36-7.56m oranics, rootlets.
	Sandy Silt (ML) - some sand, stiff, wet, light	

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Well Installation Details
PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

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NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_001
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 25/11/2018 **TO:** 25/11/2018
COORDINATES: 603791.7 E 6394012.2 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 500.31
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 14.48
WATER LEVEL (mbgs): Frozen

Overburden Log — Depth (m); Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
		ML	gray, non-plastic, noncohesive, thinly bedded. fine sand, mottled pink. [Glaciofluvial Sands].	
9	206639	SP	Poorly Graded Sand (SP) - Sand is fine, dense, saturated, pinkish gray, massive. trace pockets of Fe staining. [Glaciofluvial Sands].	
10				
11		SM	Silty Sand (SM) - Sand is fine, some silt, few gravel, medium dense, saturated, gray, subangular, massive. cobbles. [Glaciofluvial Sands].	11.44-11.62m Washed away. 11.44-12.16m Becomes well graded.
12				
13	206640	CL	Sandy Lean Clay (CL) - some silt, some sand, hard, moist, very dark gray, low plasticity, cohesive, subangular to subrounded, well graded, massive, gradual (>10 cm). few gravel. Till. [Glaciofluvial Sands].	Dark gray clay lenses.
14	206641	ML	Sandy Silt (ML) - some sand, trace clay, hard, moist, dark gray, non-plastic, cohesive, poorly graded, thinly bedded, gradual (>10 cm). [Cretaceous].	

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Well Installation Details
PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

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NexGen Energy Ltd.

DRILLHOLE ID:	2018_Sonic_002	**DRILLING DATE:**	20-Nov-18 **TO:** 21-Nov-18
LOCATION:	Patterson Lake	**COORDINATES:**	604360.1 E 6393998.6 N
PROJECT NO:	1CN034.001	**DATUM:**	NAD83 UTM Zone 12N
DRILL TYPE:	Sonic	**GROUND EL (masl):**	526.45
HOLE SIZE:	168mm	**AZIMUTH:**	000° **DIP:** 90°
CONTRACTOR:	Cross Borders Drilling	**TOTAL DEPTH (m):**	17.37
LOGGED BY:	CB/HR	**WATER LEVEL (mbgs):**	5.98 (002A) / 6.20 (002B)

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program

CLIENT: NexGen Energy Ltd.

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

USCS	Soil Description	Drilling Notes & Additional Comments
SW	Well Graded Sand with Gravel (SW) - Sand is fine to medium, some gravel, trace organics, very loose, dry, brownish yellow, subangular, well graded, massive, oxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	
SW-SM	Well Graded Sand with Silt and Gravel (SW-SM) - Sand is fine, some gravel, few silt, very loose, dry, white, no dilatancy, non-plastic, noncohesive, subangular, well graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	
SW	Well Graded Sand with Gravel (SW) - Sand is fine, little gravel, trace silt, very loose, dry to moist, light gray, subangular to subrounded, well graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	Cobbles and Boulders are prevelant throughout unit. 2.13-2.42m Little clay, trace gravel, very dense, poorly graded, thinnly bedded.
SM	Silty Sand (SM) - Some silt, few gravel, very loose, dry, white, well graded, massive, unoxidized, gradual (>10 cm). [Glaciofluvial Sands].	
SW	Well Graded Sand with Gravel (SW) - Sand is fine, little gravel, trace silt, very loose, dry to moist, light gray, subangular to subrounded, well graded, massive, unoxidized, gradual (>10 cm). [Glaciofluvial Sands].	
SW-SC	Well Graded Sand with Clay (SW-SC) - Few clay, trace silt, trace gravel, moist, light gray, thinly bedded. [Glaciofluvial Sands].	
SW	Well Graded Sand (SW) - Sand is fine to medium, few gravel, trace silt, loose, saturated, brown, subangular to subrounded, well graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	
SP-SM	Poorly Graded Sand with Silt (SP-SM) - Sand is fine, few clay, few gravel, medium dense, moist to wet, reddish brown, no dilatancy, non-plastic, noncohesive, subrounded, poorly graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	

Sample No. 206636

SPT Testing — N Value 0 25 50 75 100

9/38/48

8/11/14

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

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Well Installation Details

PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_002
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 20-Nov-18 **TO:** 21-Nov-18
COORDINATES: 604360.1 E 6393998.6 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 526.45
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 17.37
WATER LEVEL (mbgs): 5.98 (002A) / 6.20 (002B)

Overburden Log — Depth (m) / Recovery (%)

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value

Field Index Testing — Pocket Pen, UCS (kPa)

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%)

Well Installation Details — A / B

USCS	Soil Description	Drilling Notes & Additional Comments	Sample No.	SPT N Value
CL	Lean Clay (CL) - little sand, very stiff, moist to wet, dark gray, no dilatancy, low plasticity, cohesive, thinly bedded, unoxidized, moderate cementation, gradual (>10 cm). [Glaciofluvial Sands].			42/50/0
SP	Poorly Graded Sand (SP) - Sand is fine, few clay, trace gravel, loose, wet, white, subrounded to rounded, poorly graded, massive, unoxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	Clay lenses at irregular intervals throughout unit.	206637	
CL	Lean Clay (CL) - few silt, trace sand, very stiff, moist to wet, very dark gray, no dilatancy, low plasticity, cohesive, thinly bedded, unoxidized, moderate cementation, sharp (< 10 cm). [Cretaceous].	15.85-16.60m Some silt, light brownish gray, non-plastic, noncohesive.	206638	

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Well Installation Details — PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

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NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_002
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 20-Nov-18 **TO:** 21-Nov-18
COORDINATES: 604360.1 E 6393998.6 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 526.45
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 17.37
WATER LEVEL (mbgs): 5.98 (002A) / 6.20 (002B)

Overburden Log

Depth (m) | Recovery (%) (0, 25, 50, 75, 100)

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

USCS | **Soil Description** | **Drilling Notes & Additional Comments**

SPT Testing — N Value (0, 25, 50, 75, 100)

Field Index Testing — Pocket Pen, UCS (kPa) (0, 100, 200, 300, 400, 500)

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) (0, 20, 40, 60, 80, 100)

Well Installation Details — A / B

17

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Well Installation Details

PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

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NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_003
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 20-Nov-18 **TO:** 20-Nov-18
COORDINATES: 604693.6 E 6393975.6 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 513.58
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 8.53
WATER LEVEL (mbgs): 0.93 (003A)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. (Grab, SPT)

Lithologic Symbol: Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

USCS	Soil Description	Drilling Notes & Additional Comments
	Boulder. [Glaciofluvial Sands].	
SP	Poorly Graded Sand (SP) - Sand is fine to medium, , medium dense, saturated, light brownish gray, subangular to subrounded, poorly graded, massive. [Glaciofluvial Sands].	
SM	Silty Sand (SM) - Sand is fine, little silt, few gravel, very dense, saturated, dark grayish brown, non-plastic, noncohesive, subangular to subrounded, sharp (< 10 cm). cobbles. [Glaciofluvial Sands].	
SP	Poorly Graded Sand (SP) - Sand is fine, trace silt, trace gravel, medium dense, saturated, dark brown, subangular to subrounded, poorly graded, sharp (< 10 cm). trace cobbles. [Glaciofluvial Sands].	2.1-2.15m Silt lense.
CL	Lean Clay (CL) - some silt, soft, moist, gray, low plasticity, cohesive, laminated, sharp (< 10 cm). [Cretaceous].	
ML	Silt (ML) - few clay, very stiff, moist, dark gray, low plasticity, cohesive. [Cretaceous].	

Sample No.: 206634, 206635

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

DRAFT

Well Installation Details: PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_003
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 20-Nov-18 **TO:** 20-Nov-18
COORDINATES: 604693.6 E 6393975.6 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 513.58
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 8.53
WATER LEVEL (mbgs): 0.93 (003A)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. Grab SPT

Lithologic Symbol
Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

USCS | **Soil Description** | **Drilling Notes & Additional Comments**

SPT Testing N Value 0 25 50 75 100

Field Index Testing Pocket Pen (kPa) 0 100 200 300 400 500 ▲ UCS

PSD Gravel / Sand / Silt / Clay (%) 0 20 40 60 80 100
Moisture Content (%)

Well Installation Details A / B

DRAFT

Well Installation Details
PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_004
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 19-Nov-18 **TO:** 20-Nov-18
COORDINATES: 604859 E 6393781 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 527.36
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 29.57
WATER LEVEL (mbgs): 14.16 (004A) / 13.38 (004B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
0 – 5		SW-SM	Well Graded Sand with Silt and Gravel (SW-SM) - Sand is fine to medium, little gravel, few silt, very loose, dry, pinkish white, no dilatancy, non-plastic, noncohesive, subangular to subrounded, well graded, massive, unoxidized, weak cementation, gradual. [Glaciofluvial Sands].	Lots of cobbles and boulders. 2.45-4.06m Become moist. 4.5-5.0m Some silt, few gravel, white, poorly graded.
5 – 6		ML	Silt (ML) - trace clay, very stiff, moist, light brown, no dilatancy, non-plastic, noncohesive, thinly bedded, unoxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	
6 – 8	206628	CL	Lean Clay (CL) - few silt, hard, wet, reddish yellow, slow dilatancy, low plasticity, cohesive, thinly bedded, oxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	oxidized silt lenses.

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Well Installation Details

PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_004
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 19-Nov-18 **TO:** 20-Nov-18
COORDINATES: 604859 E 6393781 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 527.36
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 29.57
WATER LEVEL (mbgs): 14.16 (004A) / 13.38 (004B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

USCS	Soil Description	Drilling Notes & Additional Comments
SW-SM	Well Graded Sand with Silt and Gravel (SW-SM) - Sand is fine, little gravel, few silt, loose, dry, pinkish gray, no dilatancy, non-plastic, noncohesive, subangular to subrounded, well graded, massive, unoxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	12.6m Boulder.
SW	Well Graded Sand (SW) - Sand is fine to medium, trace gravel, very loose, wet, pinkish white, subrounded to rounded, well graded, massive, unoxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	
	Well Graded Sand with Silt and Gravel	

206630

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

DRAFT

Well Installation Details
PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_004
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 19-Nov-18 **TO:** 20-Nov-18
COORDINATES: 604859 E 6393781 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 527.36
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 29.57
WATER LEVEL (mbgs): 14.16 (004A) / 13.38 (004B)

Overburden Log | Lithologic Symbol: Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery | SPT Testing | Field Index Testing | PSD | Well Installation Details

Depth (m)	Recovery (%)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
17		206629	SW-SM	(SW-SM) - Sand is fine to medium, little gravel, few silt, dense, moist, brown, no dilatancy, non-plastic, noncohesive, subangular, well graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	
18				Poorly Graded Sand with Silt (SP-SM) - Sand is fine to medium, few silt, trace gravel, dense, moist, dark brown, no dilatancy, non-plastic, noncohesive, subrounded to rounded, poorly graded, thinly bedded, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	
19					
20			SP-SM		
21				Poorly Graded Sand with Silt and Gravel (SP-SM) - Sand is fine to medium, little gravel, few silt, medium dense, moist, very dark grayish brown, no dilatancy, non-plastic, noncohesive, subrounded to rounded, poorly graded, thinly bedded, unoxidized, weak cementatin. [Glaciofluvial Sands].	Increasing cobbles and boulders.
22					
23			SP	Poorly Graded Sand with Gravel (SP) - Sand is fine to medium, some gravel, trace silt, medium dense, dry, white, subangular, poorly graded, massive, unoxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	
			CL	Lean Clay (CL) - few gravel, loose, moist to wet, weak red, no dilatancy, medium plasticity, cohesive, subrounded to rounded, poorly graded, massive, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	Sandstone boulders.
24			SP	Poorly Graded Sand (SP) - Sand is fine to medium, few gravel, very loose, saturated, brown, subrounded to rounded, poorly graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial	

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Well Installation Details: PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_004
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 19-Nov-18 **TO:** 20-Nov-18
COORDINATES: 604859 E 6393781 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 527.36
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 29.57
WATER LEVEL (mbgs): 14.16 (004A) / 13.38 (004B)

Overburden Log — Depth (m); Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Clay, Sand, Boulder/Cobbles, No Recovery, Organics, Silt, Gravel, Bedrock

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
			Sands].	
25		SW	Well Graded Sand with Gravel (SW) - Sand is fine to medium, little gravel, trace silt, loose, wet, brown, subangular to subrounded, well graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	
26	206631			
27	206632	CL	Gravelly Lean Clay (CL) - little gravel, trace silt, very stiff, wet, dark gray, slow dilatancy, low plasticity, cohesive, subangular to subrounded, well graded, massive, unoxidized, weak cementation, sharp (< 10 cm), Till. [Glaciofluvial Sands].	
28				
29	206633		Lean Clay (CL) - few silt, hard, moist to wet, black, no dilatancy, low plasticity, cohesive, subangular to subrounded, poorly graded, thinly bedded, unoxidized, moderate cementation, sharp (< 10 cm). [Cretaceous].	

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Well Installation Details
PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_005
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 18-Nov-18 **TO:** 19-Nov-18
COORDINATES: 604861.4 E 6393173 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 576.02
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 39.01
WATER LEVEL (mbgs): 12.45 (005A) / 32.24 (005B)

Overburden Log | Depth (m) | Recovery (%) | Sample No. (Grab, SPT) | Lithologic Symbol (Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery) | SPT Testing (N Value) | Field Index Testing (Pocket Pen, UCS (kPa)) | PSD (Gravel / Sand / Silt / Clay (%), Moisture Content (%)) | Well Installation Details (A / B)

USCS	Soil Description	Drilling Notes & Additional Comments
	Topsoil	
SP	Poorly Graded Sand with Gravel (SP) - Sand is fine, some gravel, trace silt, very loose, dry, reddish yellow, no dilatancy, non-plastic, noncohesive, subrounded to rounded, well graded, massive, oxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	0.81-4.32m little gravel, dry to moist, pinkish white, poorly graded, unoxidized.
SM	Silty Sand with Gravel (SM) - Sand is fine, some gravel, few silt, very loose, dry, white, no dilatancy, non-plastic, noncohesive, subrounded, gap graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	Boulders.
SP	Poorly Graded Sand (SP) - Sand is fine to medium, trace silt, loose, dry to moist, pink, subrounded to rounded, poorly graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	
SM	Silty Sand with Gravel (SM) - Sand is fine to medium, little gravel, little silt, very loose, dry, white, non-plastic, noncohesive, subrounded to rounded, gap graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	

Sample 206623

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Well Installation Details: PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_005
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 18-Nov-18 **TO:** 19-Nov-18
COORDINATES: 604861.4 E 6393173 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 576.02
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 39.01
WATER LEVEL (mbgs): 12.45 (005A) / 32.24 (005B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. (Grab, SPT)

Lithologic Symbol: Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

USCS	Soil Description	Drilling Notes & Additional Comments
SW	Well Graded Sand (SW) - trace silt, trace gravel, medium dense, saturated, light gray, subangular to subrounded, well graded, massive, gradual (>10 cm). fine gravel. [Glaciofluvial Sands].	9.78-9.88m Some silt, moist, brown. 9.88-10.06m Some silt, dry, light gray, fine sand.
	Boulder, Sandstone, pinkish gray	
SP	Poorly Graded Sand (SP) - Sand is fine, trace gravel, dense, saturated, light gray, subangular, poorly graded, massive, sharp (< 10 cm). fine to coarse gravel. [Glaciofluvial Sands].	
SW	Well Graded Sand with Gravel (SW) - Sand is fine to coarse, some gravel, wet, gray, subangular to subrounded, massive. fine to coarse gravel, trace cobbles. [Glaciofluvial Sands].	

Sample 206624 at ~10.5 m; Sample 206625 at ~15 m.

SPT Testing — N Value (0 25 50 75 100)

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

DRAFT

Well Installation Details: PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_005
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 18-Nov-18 **TO:** 19-Nov-18
COORDINATES: 604861.4 E 6393173 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 576.02
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 39.01
WATER LEVEL (mbgs): 12.45 (005A) / 32.24 (005B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. Grab SPT

Lithologic Symbol
Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing N Value 0 25 50 75 100

Field Index Testing Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details A / B

USCS	Soil Description	Drilling Notes & Additional Comments
SP	Poorly Graded Sand (SP) - Sand is fine, trace gravel, dense, moist, pinkish gray, subangular to subrounded, poorly graded, massive, sharp (< 10 cm). fine to coarse gravel, trace cobbles, boulders. [Glaciofluvial Sands].	Cobbles, boulders throughout unit. 17.68-18.13m Little silt, trace clay, dark gray. 19.07-19.3m Little silt, trace clay, dry to moist, dark gray. 29.4-29.87m Few clay, medium dense, dry to moist, laminated. 29.87-31.19m Becomes saturated.

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Well Installation Details
PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_005
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 18-Nov-18 **TO:** 19-Nov-18
COORDINATES: 604861.4 E 6393173 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 576.02
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 39.01
WATER LEVEL (mbgs): 12.45 (005A) / 32.24 (005B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. Grab SPT

Lithologic Symbol
Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

USCS | Soil Description | Drilling Notes & Additional Comments

SPT Testing N Value 0 25 50 75 100

Field Index Testing Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details A / B

25 26 27 28 29 30 31 32

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Well Installation Details
PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_005
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 18-Nov-18 **TO:** 19-Nov-18
COORDINATES: 604861.4 E 6393173 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 576.02
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 39.01
WATER LEVEL (mbgs): 12.45 (005A) / 32.24 (005B)

Overburden Log — Depth (m) 33–39; Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

USCS	Soil Description	Drilling Notes & Additional Comments
CL	Lean Clay (CL) - few silt, soft, saturated, very dark gray, slow dilatancy, low plasticity, cohesive, thinly bedded, unoxidized, weak cementation, sharp (< 10 cm). [Cretaceous].	Thickly bedded clay and silt.
ML	Silt (ML) - few clay, stiff, wet, dark grayish brown, no dilatancy, non-plastic, noncohesive, thinly bedded, unoxidized, weak cementation, gradual (>10 cm). [Cretaceous].	

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

DRAFT

Well Installation Details
PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_006
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 12-Nov-18 **TO:** 14-Nov-18
COORDINATES: 603986.5 E 6393076 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 545.32
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 35.97
WATER LEVEL (mbgs): 16.13 (006A) / 16.83 (006B)

Overburden Log — Depth (m) — Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol: Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
0 – 4	206604	SP	Poorly Graded Sand with Gravel (SP) - Sand is Fine, little gravel, trace silt, stiff, dry to moist, pinkish white, no dilatancy, non-plastic, noncohesive, subrounded to rounded, well graded, massive, unoxidized, weak cementation. [Glaciofluvial Sands].	
4 – 5	206605	SW-SC	Well Graded Sand with Clay (SW-SC) - Sand is Fine, few gravel, few clay, very stiff, moist to wet, pinkish white, no dilatancy, low plasticity, noncohesive, subrounded to rounded, well graded, massive, unoxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	
5 – 6		SW	Well Graded Sand with Gravel (SW) - Sand is fine, little gravel, trace silt, soft, dry, white, no dilatancy, non-plastic, noncohesive, subrounded to rounded, well graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	Cobbles and boulders.
6 – 8		SW	Well Graded Sand with Gravel (SW) - Sand	

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Well Installation Details: PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_006
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 12-Nov-18 **TO:** 14-Nov-18
COORDINATES: 603986.5 E 6393076 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 545.32
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 35.97
WATER LEVEL (mbgs): 16.13 (006A) / 16.83 (006B)

Depth (m)	Recovery (%)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
9				is medium, some gravel, trace clay, stiff, moist to wet, pinkish gray, slow dilatancy, non-plastic, noncohesive, subrounded, well graded, massive, unoxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	Increased boulders.
10					
11			ML	Silt with Sand (ML) - ML is fine, little sand, trace gravel, stiff, moist to wet, gray, no dilatancy, non-plastic, noncohesive, rounded, poorly graded, massive, unoxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	
12			SW	Well Graded Sand with Gravel (SW) - Sand is fine, few silt, trace silt, soft, moist, very pale brown, no dilatancy, non-plastic, noncohesive, subrounded to rounded, well graded, massive, unoxidized, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands]	
			SP	Poorly Graded Sand (SP) - Sand is medium, trace silt, medium stiff, moist to wet, very pale brown, no dilatancy, non-plastic, noncohesive, rounded, poorly graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	
13					
14					
15			SW	Well Graded Sand with Gravel (SW) - Sand is medium, some gravel, trace silt, loose, moist, pinkish gray, no dilatancy, non-plastic, noncohesive, subrounded, well graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	15.57-15.70m Some silt with no gravel, poorly graded, dry. 15.57-17.07m sand is fine, little gravel,white.
16					

Lithologic Symbol: Coal, Clay, Sand, Boulder/Cobbles, No Recovery, Organics, Silt, Gravel, Bedrock

SPT Testing: N Value (0, 25, 50, 75, 100)

Field Index Testing: Pocket Pen, UCS (kPa) (0, 100, 200, 300, 400, 500)

PSD: Gravel / Sand / Silt / Clay (%), Moisture Content (%) (0, 20, 40, 60, 80, 100)

Well Installation Details: A / B

Well Installation Details: PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

DRAFT

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_006
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 12-Nov-18 **TO:** 14-Nov-18
COORDINATES: 603986.5 E 6393076 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 545.32
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 35.97
WATER LEVEL (mbgs): 16.13 (006A) / 16.83 (006B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

USCS	Soil Description	Drilling Notes & Additional Comments
SP-SM	Poorly Graded Sand with Silt (SP-SM) - Sand is fine, few silt, trace gravel, dense, moist to wet, pinkish gray, no dilatancy, non-plastic, noncohesive, subrounded to rounded, poorly graded, massive, unoxidized, gradual (>10 cm). [Glaciofluvial Sands].	17.58-17.68m Some clay, trace yellow staining, trace black streaks. 17.68-20.73m Becomes saturated. 20.73-20.93m Cobbles. 20.0-20.2m silt lense.

Sample 206606 at 19.5 m

DRAFT

Depth ticks: 17, 18, 19, 20, 21, 22, 23, 24

Well Installation Details

PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_006
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 12-Nov-18 **TO:** 14-Nov-18
COORDINATES: 603986.5 E 6393076 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 545.32
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 35.97
WATER LEVEL (mbgs): 16.13 (006A) / 16.83 (006B)

Overburden Log — Depth (m); Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

USCS	Soil Description	Drilling Notes & Additional Comments
SP	Poorly Graded Sand (SP) - Sand is fine, trace silt, dense, wet, light gray, subangular to subrounded, poorly graded, massive, unoxidized. [Glaciofluvial Sands].	25.35-25.65m Silt lenses, reddish brown. 26.82-29.87m Becomes moist, trace black staining.
ML	Silt with Sand (ML) - little sand, trace clay, firm, saturated, gray, rapid dilatancy, non-plastic, noncohesive, laminated, gradual (>10 cm). trace yellowish brown staining, trace black streaks. [Glaciofluvial Sands].	

Depth (m): 25, 26, 27, 28, 29, 30, 31, 32

Sample No.: 206607, 206608

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Well Installation Details
PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_006
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 12-Nov-18 **TO:** 14-Nov-18
COORDINATES: 603986.5 E 6393076 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 545.32
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 35.97
WATER LEVEL (mbgs): 16.13 (006A) / 16.83 (006B)

Overburden Log — Depth (m) — Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol: Coal, Clay, Sand, Boulder/Cobbles, No Recovery, Organics, Silt, Gravel, Bedrock

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
33		CL	Lean Clay (CL) - few silt, very stiff, dry to moist, gray, low plasticity, cohesive, laminated, sharp (< 10 cm). [Glaciofluvial Sands].	
34	206609	SW-SC	Well Graded Sand with Clay and Gravel (SW-SC) - Sand is Fine, little gravel, few clay, stiff, wet, gray, slow dilatancy, low plasticity, cohesive, subangular, well graded, massive, mottled, weak cementation, sharp (< 10 cm), Till. [Glaciofluvial Sands].	
35	206610	CL	Lean Clay (CL) - CL is Fine, trace silt, hard, wet, very dark gray, no dilatancy, high plasticity, cohesive, laminated, unoxidized, moderate cementation, gradual (>10 cm). [Cretaceous].	

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Well Installation Details: PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

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NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_007
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 14-Nov-18 **TO:** 15-Nov-18
COORDINATES: 603634 E 6393452.8 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.63
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 32.92
WATER LEVEL (mbgs): 6.04 (007A) / 5.95 (007B)

Overburden Log | Depth (m) | Recovery (%) | Sample No. (Grab, SPT) | Lithologic Symbol (Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery) | SPT Testing (N Value) | Field Index Testing (Pocket Pen, UCS (kPa)) | PSD (Gravel / Sand / Silt / Clay (%), Moisture Content (%)) | Well Installation Details (A / B)

USCS	Soil Description	Drilling Notes & Additional Comments
	Poorly Graded Sand (SP) - Sand is fine, loose, moist, gray, non-plastic, noncohesive, poorly graded, gradual (>10 cm). Topsoil, oranics, roots and rootlets, frozen. [Glaciofluvial Sands].	
SP	Poorly Graded Sand (SP) - Sand is fine, trace gravel, loose, dry, light gray, subangular to subrounded, poorly graded, massive. trace cobbles, trace boulders. [Glaciofluvial Sands].	2.44-2.67m Little gravel, moist, grayish brown.

Sample 206611

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Well Installation Details: PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

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NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_007
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 14-Nov-18 **TO:** 15-Nov-18
COORDINATES: 603634 E 6393452.8 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.63
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 32.92
WATER LEVEL (mbgs): 6.04 (007A) / 5.95 (007B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
9	206612	SP-SM	Poorly Graded Sand with Silt and Gravel (SP-SM) - Sand is fine, little gravel, few silt, dense, wet, pinkish gray, non-plastic, noncohesive, subangular to subrounded, poorly graded, massive, sharp (< 10 cm). fine to coarse gravel, cobbles. [Glaciofluvial Sands].	5.49-5.80m Yellowish brown staining. 8.53-11.58m Some gravel, saturated. 10.80-13.20m Becomes light brownish gray.
10				
11				
12				
13				
14				
15				
16				

DRAFT

Well Installation Details

PVC, End Cap, Bentonite, Sand, Slough
Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_007
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 14-Nov-18 **TO:** 15-Nov-18
COORDINATES: 603634 E 6393452.8 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.63
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 32.92
WATER LEVEL (mbgs): 6.04 (007A) / 5.95 (007B)

Overburden Log — Depth (m) — Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol: Coal, Clay, Sand, Boulder/Cobbles, No Recovery, Organics, Silt, Gravel, Bedrock

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
17	206613	SM	Silty Sand (SM) - Sand is fine, some silt, few gravel, dense, moist to wet, very dark gray, non-plastic, noncohesive, subangular to subrounded, poorly graded, massive, gradual (>10 cm). fine to coarse gravel, cobbles. [Glaciofluvial Sands].	14.63-20.53m Saturated
21		SW	Well Graded Sand with Gravel (SW) - little gravel, trace silt, medium dense, saturated, very dark gray, subangular, well graded, massive, gradual (>10 cm). fine to coarse gravel, cobbles. [Glaciofluvial Sands].	
23		SM	Silty Sand (SM) - Sand is fine, little silt, trace gravel, dense, moist to wet, very dark gray, subangular to subrounded, poorly graded, massive, gradual (>10 cm). [Glaciofluvial Sands].	

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Well Installation Details: PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_007
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 14-Nov-18 **TO:** 15-Nov-18
COORDINATES: 603634 E 6393452.8 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.63
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 32.92
WATER LEVEL (mbgs): 6.04 (007A) / 5.95 (007B)

Overburden Log — Depth (m); Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

USCS	Soil Description	Drilling Notes & Additional Comments
SW	Well Graded Sand with Gravel (SW) - some gravel, trace silt, dense, moist to wet, gray, subangular to subrounded, well graded, massive, sharp (< 10 cm). Cobbles. [Glaciofluvial Sands].	25.0-25.35m Boulder. 25.70-26.0m Fine sand, few gravel.
CL	Lean Clay (CL) - some silt, little sand, hard, moist, dark gray, low plasticity, cohesive, subangular to subrounded, massive. [Glaciofluvial Sands].	
SW	Well Graded Sand (SW) - Sand is fine, few gravel, trace silt, soft, wet, dark grayish brown, no dilatancy, non-plastic, noncohesive, subangular to subrounded, well graded, massive, weak cementation, sharp (< 10 cm). [Glaciofluvial Sands].	
CL	Lean Clay with Gravel (CL) - Little gravel, trace sand, stiff, moist, very dark gray, no dilatancy, low plasticity, cohesive, subangular, well graded, massive, unoxidized, moderate cementation, gradual (>10 cm). Till. [Glaciofluvial Sands].	32.27-32.72m Some sand, few gravel, soft, wet, very dark grayish brown, well graded.

206614
206615

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Well Installation Details — PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

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NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_007
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 14-Nov-18 **TO:** 15-Nov-18
COORDINATES: 603634 E 6393452.8 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.63
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 32.92
WATER LEVEL (mbgs): 6.04 (007A) / 5.95 (007B)

Overburden Log	Sample No.	Lithologic Symbol	SPT Testing	Field Index Testing	PSD	Well Installation Details
Depth (m) / Recovery (%) (0, 25, 50, 75, 100)	Grab, SPT	Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery	N Value (0, 25, 50, 75, 100)	Pocket Pen, UCS (kPa) (0, 100, 200, 300, 400, 500)	Gravel / Sand / Silt / Clay (%), Moisture Content (%) (0, 20, 40, 60, 80, 100)	A / B

USCS | Soil Description | Drilling Notes & Additional Comments

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Well Installation Details
PVC, End Cap, Bentonite, Sand, Slough
Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_008
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 16-Nov-18 **TO:** 16-Nov-18
COORDINATES: 603281 E 6393121.3 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.18
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 45.11
WATER LEVEL (mbgs): 5.13 (008A) / 6.35 (008B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Clay, Sand, Boulder/Cobbles, No Recovery, Organics, Silt, Gravel, Bedrock

USCS	Soil Description	Drilling Notes & Additional Comments
	Topsoil, sandy, organics, roots, rootlets, frozen.	
	Poorly Graded Sand with Gravel (SP) - Sand is fine, little gravel, very loose, dry, very pale brown, subangular to subrounded, poorly graded, sharp (< 10 cm). fine to coarse gravel, cobbles, boulders. [Glaciofluvial Sands].	Large boulders at top of hole.
SP	Poorly Graded Sand (SP) - Sand is fine, trace gravel, loose, dry, light gray, subangular to subrounded, poorly graded, massive, gradual (>10 cm). fine gravel, trace cobbles. [Glaciofluvial Sands].	2.44-2.64m Some silt, wet, dark gray. 2.64-2.04m Becomes saturated.
SM	Silty Sand (SM) - Sand is fine, little silt, trace gravel, dense, wet, light gray, non-plastic, noncohesive, subangular to subrounded, poorly graded, massive, sharp (< 10 cm). fine to coarse gravel. [Glaciofluvial Sands].	
SP	Poorly Graded Sand (SP) - Sand is fine, few gravel, dense, saturated, light gray, subangular to subrounded, poorly graded, massive, gradual (>10 cm). fine to coarse gravel. [Glaciofluvial Sands].	
SM	Silty Sand (SM) - Sand is fine, little silt, trace gravel, dense, saturated, light gray, subangular to subrounded, poorly graded, massive. fine to coarse gravel, cobbles. [Glaciofluvial Sands].	7.85-8.05m Some silt, dark gray.

Sample 206619

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m): 0 1 2 3 4 5 6 7 8

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Well Installation Details

PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_008
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 16-Nov-18 **TO:** 16-Nov-18
COORDINATES: 603281 E 6393121.3 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.18
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 45.11
WATER LEVEL (mbgs): 5.13 (008A) / 6.35 (008B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. Grab SPT

Lithologic Symbol
Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing N Value 0 25 50 75 100

Field Index Testing Pocket Pen (kPa) 0 100 200 300 400 500 UCS

PSD Gravel / Sand / Silt / Clay (%) Moisture Content (%) 0 20 40 60 80 100

Well Installation Details A / B

Depth (m)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
9				
10				
11	206620			
12		SW	Well Graded Sand (SW) - Sand is fine, trace gravel, dense, saturated, pinkish gray, subangular to subrounded, well graded, massive. fine to coarse gravel, cobbles. [Glaciofluvial Sands].	Mostly fine sand with few medium and course grained sand. 10.06-10.35m Few silt, light brownish gray.
13				
14				
15				
16	206621			

DRAFT

Well Installation Details
PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_008
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 16-Nov-18 **TO:** 16-Nov-18
COORDINATES: 603281 E 6393121.3 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.18
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 45.11
WATER LEVEL (mbgs): 5.13 (008A) / 6.35 (008B)

Overburden Log | Sample No. | Lithologic Symbol (Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery) | SPT Testing | Field Index Testing | PSD | Well Installation Details

Depth (m)	Recovery (%)	USCS	Soil Description	Drilling Notes & Additional Comments
17		SM	Silty Sand (SM) - Sand is fine, little silt, trace gravel, dense, saturated, brown, subangular to subrounded, poorly graded, massive, sharp (< 10 cm). trace cobbles. [Glaciofluvial Sands].	17.38-17.48m Lean clay, stiff, gray and white, moist, low plastic, cohesive, laminated.
18				
19				
20		SW	Well Graded Sand (SW) - few gravel, dense, saturated, pinkish gray, subangular to subrounded, well graded, massive. fine to coarse gravel, cobbles. [Glaciofluvial Sands].	20.73-22.45m Moist to wet, yellowish brown staining. 21.65-22.45m Little gravel, increased cobbles.
21				
22				
23		SM	Silty Sand with Gravel (SM) - little gravel, little silt, dense, moist to wet, gray, non-plastic, noncohesive, subangular to subrounded, well graded, gradual (>10 cm). fine to coarse gravel, cobbles, boulders. [Glaciofluvial Sands].	
24				

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Well Installation Details: PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_008
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 16-Nov-18 **TO:** 16-Nov-18
COORDINATES: 603281 E 6393121.3 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.18
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 45.11
WATER LEVEL (mbgs): 5.13 (008A) / 6.35 (008B)

Overburden Log — Depth (m) — Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol: Coal, Clay, Sand, Boulder/Cobbles, No Recovery; Organics, Silt, Gravel, Bedrock

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	USCS	Soil Description	Drilling Notes & Additional Comments
25–26	SP-SM	Poorly Graded Sand with Silt (SP-SM) - Sand is fine to medium grained, few silt, few gravel, medium dense, wet, light brownish gray, subangular to subrounded. fine to coarse gravel, cobbles. [Glaciofluvial Sands].	
26–29	SM	Silty Sand (SM) - Sand is fine, some silt, trace gravel, dense, moist, gray, subangular to subrounded, poorly graded, massive. [Glaciofluvial Sands].	27.72-27.97m Sandstone cobble, pinkish
29–30		Boulders/cobbles, pinkish sandstone. [Glaciofluvial Sands].	
30–31	SW	Well Graded Sand (SW) - few gravel, dense, saturated, light gray, subangular, well graded, massive, sharp (< 10 cm). fine gravel. [Glaciofluvial Sands].	
31–32	GW	Well Graded Gravel (GW) - , pinkish, light gray, tan, subangular, well graded, sharp (< 10 cm). [Glaciofluvial Sands].	
		Boulder/Cobbles, dark reddish brown and pink Sandstone. [Glaciofluvial Sands].	

DRAFT

Well Installation Details: PVC, End Cap, Bentonite, Sand, Slough; Screen, Cement

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_008
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 16-Nov-18 **TO:** 16-Nov-18
COORDINATES: 603281 E 6393121.3 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.18
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 45.11
WATER LEVEL (mbgs): 5.13 (008A) / 6.35 (008B)

Overburden Log — Depth (m) — Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol: Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	Sample No.	USCS	Soil Description	Drilling Notes & Additional Comments
33		SM	Silty Sand (SM) - Sand is fine, little silt, trace gravel, medium dense, moist, light brownish gray, subangular to subrounded, poorly graded, massive. Boulders. [Glaciofluvial Sands].	32.72-32.92m Sandstone boulder, brownish red.
34				
35	206622			
36				
37		SP	Poorly Graded Sand (SP) - Sand is fine to medium grained, few gravel, trace silt, very soft, moist to wet, very pale brown, no dilatancy, non-plastic, noncohesive, subrounded to rounded, poorly graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	Increased cobbles.
38				
39				
40				

DRAFT

Well Installation Details: PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_008
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 16-Nov-18 **TO:** 16-Nov-18
COORDINATES: 603281 E 6393121.3 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 534.18
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 45.11
WATER LEVEL (mbgs): 5.13 (008A) / 6.35 (008B)

Overburden Log — Depth (m) — Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

Depth (m)	USCS	Soil Description	Drilling Notes & Additional Comments
41			
42	SP-SM	Poorly Graded Sand with Silt (SP-SM) - Sand is fine, few silt, trace gravel, dense, saturated, gray, slow dilatancy, non-plastic, noncohesive, subrounded to rounded, poorly graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	
43			
44			
45	SW	Well Graded Sand (SW) - Sand is fine, few gravel, loose, moist, light brownish gray, non-plastic, noncohesive, subrounded to rounded, well graded, massive, unoxidized, gradual (>10 cm). [Glaciofluvial Sands].	45.11-48.16m No recovery. Core barrel abondoned. Soils identified to 45.11m.

DRAFT

Well Installation Details — PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_009
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 15-Nov-18 **TO:** 15-Nov-18
COORDINATES: 603779.5 E 6393683.8 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 526.81
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 14.63
WATER LEVEL (mbgs): 3.53 (009A) / 3.93 (009B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. (Grab, SPT)

Lithologic Symbol: Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

USCS	Soil Description	Drilling Notes & Additional Comments
SP	Poorly Graded Sand (SP) - Sand is fine, trace silt, trace gravel, loose, dry to moist, brownish yellow, subangular to subrounded, poorly graded, massive. [Glaciofluvial Sands].	0.8-3.8m few gravel, light gray, fine to coarse gravel, trace cobbles, trace boulders. 3.8-8.0m few gravel, soft, saturated, brown, trace boulders.

Sample 206616 at ~1.8 m; Sample 206617 at ~5.4 m

DRAFT

Well Installation Details: PVC, Screen, End Cap, Cement, Bentonite, Sand, Slough

srk consulting

NexGen Energy Ltd.

PROJECT: Arrow Deposit Groundwater Monitoring System Field Program
CLIENT: NexGen Energy Ltd.

DRILLHOLE ID: 2018_Sonic_009
LOCATION: Patterson Lake
PROJECT NO: 1CN034.001
DRILL TYPE: Sonic
HOLE SIZE: 168mm
CONTRACTOR: Cross Borders Drilling
LOGGED BY: CB/HR

DRILLING DATE: 15-Nov-18 **TO:** 15-Nov-18
COORDINATES: 603779.5 E 6393683.8 N
DATUM: NAD83 UTM Zone 12N
GROUND EL (masl): 526.81
AZIMUTH: 000° **DIP:** 90°
TOTAL DEPTH (m): 14.63
WATER LEVEL (mbgs): 3.53 (009A) / 3.93 (009B)

Overburden Log

Depth (m) | Recovery (%) 0 25 50 75 100

Sample No. — Grab, SPT

Lithologic Symbol — Coal, Organics, Clay, Silt, Sand, Gravel, Boulder/Cobbles, Bedrock, No Recovery

SPT Testing — N Value 0 25 50 75 100

Field Index Testing — Pocket Pen, UCS (kPa) 0 100 200 300 400 500

PSD — Gravel / Sand / Silt / Clay (%), Moisture Content (%) 0 20 40 60 80 100

Well Installation Details — A / B

USCS	Soil Description	Drilling Notes & Additional Comments
SW-SM	Well Graded Sand with Silt (SW-SM) - Sand is fine, few clay, few gravel, stiff, wet, brownish yellow, slow dilatancy, non-plastic, noncohesive, subrounded to rounded, well graded, massive, unoxidized, weak cementation, gradual (>10 cm). [Glaciofluvial Sands].	Clay seams, yellowish staining. 8.53-9.5m Becomes pale brown, poorly graded.
	Sandstone Boulder.	
CL	Lean Clay (CL) - Little silt, hard, moist, dark gray, no dilatancy, low plasticity, cohesive, bedded, unoxidized, moderate cementation, sharp (< 10 cm). [Cretaceous].	13.45-13.7m Little sand, trace gravel, medium stiff, moist to wet.

206618

DRAFT

Well Installation Details

PVC, End Cap, Bentonite, Sand, Slough, Screen, Cement

SYMBOLS AND TERMS
FOR SOIL DESCRIPTIONS ON BOREHOLE LOGS

Project: Rook I Feasibility

Project Number: 1762003

CLASSIFICATION BY PARTICLE SIZE [a]

NAME	SIZE RANGE		
	(mm)	US STANDARD SIEVE SIZE	
		Retained	Passing
Boulders	>300	12 inch	-
Cobbles	75 - 300	3 inch	12 inch
Gravel: Coarse Fine	19 - 75 4.75 - 19	0.75 inch No. 4	3 inch 0.75 inch
Sand: Coarse Medium Fine	2 - 4.75 0.43 - 2 0.075 - 0.43	No. 10 No. 40 No. 200	No. 4 No. 10 No. 40
Fines (Silt or Clay)[2]	<0.075	-	No. 200

PROPORTION OF MINOR COMPONENTS BY WEIGHT [b]

And	> 35%
y/ey	20% to 35%
Some	10% to 20%
Trace	> 0% to 10%

PARTICLE SHAPE [c]

Flat	Particles with width/thickness > 3
Elongated	Particles with length/width > 3
Flat and Elongated	Particles that meet both criteria for flat and elongated
Equidimensional	Equal extents

GRADATION

Well Graded	Range of particle sizes
Gap Graded	Range of particle sizes with some absent
Uniformly Graded	Uniform size of particles

ANGULARITY [c]

Angular	Particles have sharp edges and relatively planar sides with unpolished surfaces
Subangular	Particles are similar to angular description but have some rounded edges
Subrounded	Particles have nearly planar sides but have well rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

CEMENTATION [c]

Weak	Crumbles or breaks with handling or little finger pressure
Moderate	Crumbles or breaks with considerable finger pressure
Strong	Will not crumble or break with finger pressure

DENSITY OF GRANULAR SOILS [b]

DESCRIPTION	SPT N [d]	FIELD IDENTIFICATION
Very Loose	0 - 4	Easily penetrated with a 12 mm rod pushed by hand
Loose	4 - 10	
Compact	10 - 30	Penetrated 300 mm with 12 mm rod driven by a 2.3 kg hammer
Dense	30 - 50	
Very Dense	> 50	Penetrated 25 to 50 mm with 12 mm rod driven by a 2.3 kg hammer

NATURAL MOISTURE CONDITION [c]

Dry	Absence of moisture
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

STRUCTURE [c]

Stratified	Alternating layers of varying material or colour with layers at least 6 mm thick
Laminated	Alternating layers of varying material or colour with the layers less than 6 mm thick
Fissured	Breaks along definite planes or fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps
Lensed	Inclusion of small pockets of different soils
Homogeneous	Same colour and appearance throughout
Heterogeneous	Colour and appearance vary throughout

SYMBOLS AND TERMS
FOR SOIL DESCRIPTIONS ON BOREHOLE LOGS

Project: Rook I Feasibility | Project Number: 1762003

PLASTICITY OF COHESIVE SOILS [c]		
DESCRIPTION	**LIQUID LIMIT (LL)[1]**	**FIELD CRITERIA**
High Plasticity	> 50%	It takes considerable time rolling and kneading to reach the plastic limit. A 3 mm thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.
Low Plasticity	< 50%	A 3 mm thread can be rolled (with some difficultly or ease) but cannot be rerolled after reaching the plastic limit. A lump cannot be formed, or crumbles when drier than the plastic limit.
Non Plastic	-	A 3 mm thread cannot be rolled at any water content.

CONSISTENCY OF COHESIVE SOILS [b, d]			
DESCRIPTION	**SPT N**	**UNDRAINED SHEAR STRENGTH - s_u (kPa)**	**FIELD IDENTIFICATION**
Very soft	< 2	< 12	Easily penetrated several centimeters by the fist
Soft	2 - 4	12 - 25	Easily penetrated several centimeters by the thumb
Firm	4 - 8	25 - 50	Can be penetrated several centimeters by the thumb with moderate effort
Stiff	8 - 15	50 - 100	Readily indented by the thumb but penetrated only with great effort.
Very Stiff	15 - 30	100 - 200	Readily indented by the thumbnail
Hard	> 30	> 200	Indented with difficulty by the thumbnail

MOISTURE CONDITION OF PLASTIC COHESIVE SOILS	
Drier than the Plastic Limit (DTPL)	A thread rolled at the natural water content is greater than 3 mm in diameter
Near the Plastic Limit (NPL)	A thread rolled at the natural water content is approximately 3 mm in diameter
Wetter than the Plastic Limit (WTPL)	A thread rolled at the natural water content is greater than 3 mm in diameter

SENSITIVITY [b, d]	
St	**Sensitivity**
St < 2	Low Sensitivity
2 < St < 4	Medium Sensitivity
4 < St < 8	Sensitive
8 < St < 16	Extra Sensitive
St > 16	Quick Clay
St = Ratio of intact to remoulded strength	

DRY STRENGTH [c]	
None	The dry specimen crumbles into powder upon applying pressure or handling
Low	The dry specimen breaks into pieces or crumbles with considerable finger pressure
High	The dry specimen cannot be broken with finger pressure. Specimen will break into pieces between thumb and a hard surface
Very High	The dry specimen cannot be broken between the thumb and a hard surface

DILATANCY [c]	
None	No visible change in the specimen during shaking or squeezing
Slow	Water appears slowly on the surface of the specimen during shaking and disappears slowly upon squeezing
Rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing

SYMBOLS AND TERMS
FOR SOIL DESCRIPTIONS ON BOREHOLE LOGS

Project: Rook I Feasibility

Project Number: 1762003

SOIL/ROCK SYMBOLS		
High Plasticity Clay	Low Plasticity Clay	Silt / Clay
High Plasticity Silt	Low Plasticity Silt	Clay / Sand
Well Graded Sand	Poorly Graded Sand	Well Graded Gravel
Boulders and Cobbles	Poorly Graded Gravel	Silt / Sand
Sand / Gravel	Clay / Gravel	Silt / Gravel
Sandstone	Mudstone	Gneiss

INSTRUMENT DETAILS SYMBOLS		
Grout	Bentonite Chips	VWP Tip in Grout
Bentonite Pellets	Sand	Cuttings / Slough
Standpipe in Bentonite	Standpipe in Grout	Standpipe Screen in Sand

IN SITU AND LABORATORY TESTING SYMBOLS		
○ Moisture Content	↔ Plasticity Index	NP Non Plastic Result
△ Pocket Penetrometer (PP) Result (Expressed as PP/2 in kPa)		

SAMPLE SYMBOLS		
Grab Sample	Core Sample	SPT Sample

REFERENCES

a. American Society for Testing and Materials. Standard D2487-17: Standard Practice for Classification of Soil for Engineering Purposes (Unified Soil Classification System). Developed by Sub-Committee D18.07. West Conshocken, PA.

b. Canadian Geotechnical Society. 2006. Canadian Foundation Engineering Manual (CFEM). 4th Edition.

c. American Society for Testing and Materials. Standard D2488-17: Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). Developed by Sub-Committee D18-07. West Conshocken, PA.

d. Terzaghi, K., Peck, R.B., and Mesri, G. 1996. Soil Mechanics in Engineering Practice, 3rd Edition. John Wiley and Sons, NY.

NOTES

1. Log depths are rounded to the nearest 5 cm.
2. Gradation and plasticity descriptions on logs are a judgment based combination of field visual-manual identification and laboratory index testing where available.
3. Genesis classifications are given where possible in square brackets and are interpretations subject to change.

LIST OF ACRONYMS	
MPS	Maximum Particle Size observed in core
VWP	Vibrating Wire Piezometer
WL	Water Level elevation
masl	Meters Above Sea Level
mbgs	Meters Below Ground Surface
S/N	Serial Number

SYMBOLS AND TERMS
FOR ROCK DESCRIPTIONS ON BOREHOLE LOGS

Project: Rook I Feasibility | Project Number: 1762003

WEATHERING/ALTERATION (11)

GRADE	Description	Field Identification
A/W 1	Fresh and Unweathered	No visible sign of rock material weathering
A/W 1.5	Faintly Weathered	Discolouration on major discontinuity surfaces
A/W 2	Slightly Weathered or Altered	Discolouration indicated weathering of rock material and discontinuity surfaces. All rock material may be discoloured by weathering and may be weaker than in its fresh condition.
A/W 3	Moderately Weathered or Altered	Less than 50% of rock material decomposed and/or disintegrated to soil. Fresh/ discoloured rock present as a continuous framework or corestones.
A/W 4	Highly Weathered or Altered	More than 50% rock material is decomposed or disintegrated to soil. Fresh/Discoloured rock present as discontinuous framework or corestones.
A/W 5	Completely Weathered or Altered	All rock material decomposed and/or disintegrated to soil. Original mass structure still largely intact
A/W 6	Residual Soil	All rock material converted to soil; mass structure and material fabric destroyed.

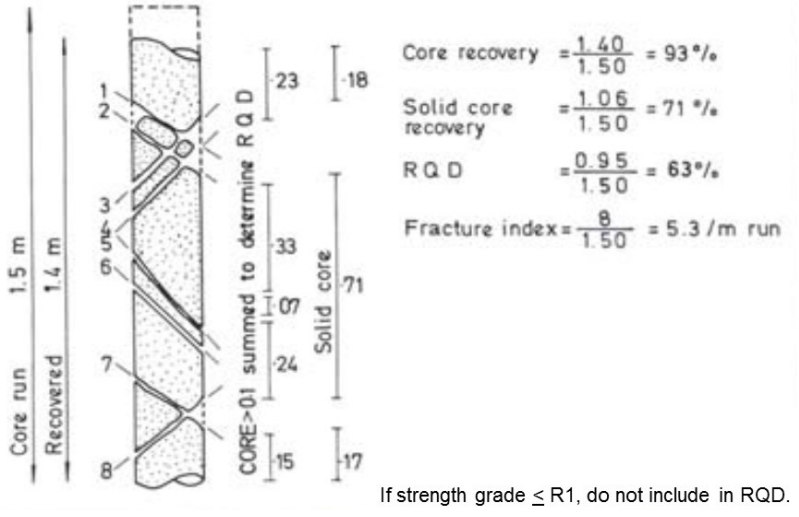
Note: Weathering/alteration half grades can be assigned to indicate a transition zone.

HARDNESS CLASSIFICATION FOR ROCK (11)

GRADE	Description	Field Identification
R6	Extremely Strong	Specimen can only be chipped with flat end of geological hammer
R5	Very Strong	Specimen requires many blows of flat end of geological hammer to fracture
R4	Strong	Specimen requires more than one blow of flat end of geological hammer to fracture
R3	Medium Strong	Cannot be scraped or peeled with pocket knife; can be fractured with single firm blow of flat end of the geologic hammer
R2	Weak	Can be peeled with pocket knife with difficulty; shallow indentation made by firm blow with point of geological hammer
R1	Very Weak	Crumbles under firm blow with point of geological hammer; can be peeled by a pocket knife
R0	Extremely Weak	Indented by thumbnail

JOINT CONDITION(12)

Condition of Joints	Rating
Very rough surfaces. Not continuous. No separation. Hard joint wall rock.	25
Slightly rough surfaces. Separation <1mm. Hard joint wall rock.	20
Slightly rough surfaces. Separation <1mm. Soft joint wall rock.	12
Slickensided surfaces or gouge <5mm thick or joints open 1-5mm. Continuous joints.	6
Soft gouge >5mm thick or joints open >5mm. Continuous joints.	0



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SYMBOLS AND TERMS
FOR ROCK DESCRIPTIONS ON BOREHOLE LOGS

Project: Rook I Feasibility | Project Number: 1762003

Lithological Graphic Log Legend

Rock

Mudstone

Sandstone

Gneiss

Borehole Instrumentation and Completion

Bentonite Grout

Vibrating Wire Piezometer and Wire

Vibrating Wire Readings are reported in the form of B = 8842.7 T = 7.5 °C where,
"B" is the value of an electrical signal generated by the vibrating wire piezometer which is converted to water pressure; and
"T" is the temperature measured by the vibrating wire piezometer at the time of the instrument was read.

Notes:

1) ASTM D2487-17, Unified Soil Classification System (USCS).
2) ASTM D2488-17.
3) Approximate metric conversion.
4) Canadian Foundation Engineering Manual (CFEM, 2006).
5) Fines are classified as silt or clay on the basis of Atterberg limits (refer to Plasticity Chart).
6) Standard Penetration Test (SPT) blow count uncorrected, after Terzaghi, Peck and Mesri, 1996.
7) Undrained shear strength can be estimated by shear vane (gives S_u), pocket penetrometer (gives unconfined compressive strength, $qu = 2 * S_u$), or unconfined compression test (gives $qu = 2 * S_u$).
8) Approximate correlation with Standard Penetration Test blow counts, after Terzaghi, Peck and Mesri, 1996.
9) This plasticity classification conforms to the Unified Soil Classification System (USCS) and to ASTM D-2487-17. Under ASTM and USCS, all clays with a liquid limit less than 50% are classified as low plasticity (CL).
10) W_L = Liquid Limit (%)
11) After ISRM, 1978
12) Joint condition is a numerical index that summarizes the typical surface properties and infilling of discontinuities within an interval (Bieniawski, 1976).
13) After Bieniawski, 1976.

Texture (11)

Term	Particle Size	Examples
Very Coarse	> 60 mm	Porphyritic
Coarse	2 - 60 mm	Breccia, Gneiss (measurable grains)
Medium	0.06 - 2 mm	Sandstone, Gabbro, Granite, Schist (visible grains)
Fine	0.002 - 0.06 mm	Tuff, Siltstone, Claystone, Mudstone, Basalt
Very Fine	< 0.002 mm	

Fabric

Term	Description
Homogeneous/ Uniform	Equigranular or homogeneous grains
Bedded	Deposited in layers, can be sedimentary or volcaniclastic rocks
Foliated	Minerals are aligned due to shearing or metamorphism
Gneissic	Alternating layers of different colour or texture with mineral alignment and typically parts along layers
Porphyritic	Crystalline texture with bimodal grain size distribution, fine to medium grained groundmass with coarse to very coarse phenocrysts
Stockwork	Veins (typically quartz, calcite, or gypsum/anhydrite) make up greater than 10% of the rock mass, they may be aligned with foliation or irregularly oriented
Microfractured	Hairline fractures are the primary fabric of the rock, typically oriented in all directions and intersecting one another
Brecciated	Healed or welded angular clasts with matrix, may be matrix – or clast-supported

Rock Mass Classification(13)

Term	Rock Mass Rating (RMR)
Very Good Quality	81—100
Good Quality	61—80
Fair Quality	41—60
Poor Quality	21—40
Very Poor Quality	<20

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SYMBOLS AND TERMS
FOR ROCK DESCRIPTIONS ON BOREHOLE LOGS

Project: Rook I Feasibility | Project Number: 1762003

REFERENCES

American Society for Testing and Materials. Standard D2487-17: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System). West Conshohocken, PA.

American Society for Testing and Materials. Standard D2488-17: Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). West Conshohocken, PA.

Bieniawski, Z. T. 1976. Rock mass classification in rock engineering. In: Proceedings of the Symposium on Exploration for Rock Engineering. Johannesburg; pg: 92 - 106

Canadian Geotechnical Society 2006. Canadian Foundation Engineering Manual 4th Edition. pp. 488.

International Society of Rock Mechanics (ISRM). 1977. International Society for Rock Mechanics Commission of Standardization of Laboratory and Field Tests: Suggested

Methods for the Quantitative Description of Discontinuities in Rock Masses. Committee on Field Tests, Document No. 4, pp. 319-368.

International Society of Rock Mechanics (ISRM). 1978. Suggested methods for the quantitative descriptions of discontinuities in rock masses. International Journal of Rock Mechanics, Mining Sciences and Geomechanics. 15(6), 319-368.

Terzaghi, K., Ralph B. Peck, and Gholamreza Mesri. 1996, Soil Mechanics in Engineering Practice, John Wiley and Sons, New York.

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-011

Location: Rook 1 Site
Facility: N/A

Co-ordinates (m): 604,374.7 E - 6,393,991.5 N
Ground Elevation (m): 525.1
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 60.4

Start Date: 13 Aug 19
Finish Date: 15 Aug 19
Final Depth (m): 60.4
Depth to Top of Rock (m): 50.0
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
0					Sand, medium, loose, some organics. [COLLUVIUM]
					SAND Fine to medium, some fine gravel (subangular), well graded, loose, pinkish beige to grey, moist, homogeneous. [COLLUVIUM]
1					From 1.25 to 1.41 m - some 2 mm thick silt interbeds.
2					From 2.35 to 2.45 m - dark grey/black siltstone laminae.
		S1	24 49 R		SAND Fine to coarse, and fines, some gravel, downward coarsening, subround to subangular, maximum particle size 60 mm, dense, homogenenous. [ABLATION TILL]
3					From 3.8 to 4 m - boulder (Sandstone).
4		S2	R		Lab test: Gravel 20% Sand 63% Fines 17%
5		S3	R		SILT AND CLAY Sandy, fine, uniformly graded, dense, subround, brown, moist, some high plasticity silty clay laminae from 6.9 to 7.05. [TILL 2]
6					
7		S4	13 22 38		Lab test: Gravel 0% Sand 25% Silt 38% Clay 37%
8		G2			CLAY High plasticity, hard, dark grey, moist, homogeneous. [TILL 2]
		G1 S5	19 46 R		SILT AND CLAY Non-plastic, hard, dark grey, moist, some white coloured laminations (<5 mm thick). [TILL 2] At 9 m - becoming homogeneous.
9		G3			
10					

Instrument Details

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOILONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

DRILL HOLE # BGC19-Sonic-011

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,374.7 E - 6,393,991.5 N
Ground Elevation (m): 525.1
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 60.4

Start Date: 13 Aug 19
Finish Date: 15 Aug 19
Final Depth (m): 60.4
Depth to Top of Rock (m): 50.0
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
10		S6	24 28 40		From 10.8 to 11. 6 m - some gravel.
11					SILT some sand, trace clay, very stiff, medium grey, moist, homogeneous. [TILL 2]
12		S7	22 42 45		
13		S8	13 12 23		Lab test: Gravel 0% Sand 20% Silt 70% Clay 10% CLAY Very stiff, medium brown . Thin (1 mm) laminae of medium plasticity clay. [TILL 2]
14					SILT Some clay, trace sand, uniformly graded, dense. Grey to brown, wet. Light and dark grey irregular stratification. [TILL 2]
15		S9	27 32 R		From 14.6 to 16.6 m - irregular laminations (5 mm) of medium and coarse sand.
16		S10	22 29 45		From 16.6 to 17.6 m - seams of coal with silt and clay. Stiff to very stiff, non plastic.
17					
18		S11	16 R		Lab test: Gravel 0% Sand 4% Silt 85% Clay 11% SAND AND SILT Fine, poorly graded, dense, dark grey, wet. [TILL 2]
19		S12	32 R		From 18.5 to 19.5 m - occasional lenses of black medium sand (possibly coal)
20					

Instrument Details

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
Moisture Content
W_p% W% W_l%
20 40 60 80 20 40 60 80

DRILL HOLE # BGC19-Sonic-011

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,374.7 E - 6,393,991.5 N
Ground Elevation (m): 525.1
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 60.4

Start Date: 13 Aug 19
Finish Date: 15 Aug 19
Final Depth (m): 60.4
Depth to Top of Rock (m): 50.0
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
20					SAND AND SILT Laminations of fine sand and silt. [GLACIOLACUSTRINE]
21		S13	18 31 35		SILT AND CLAY Non plastic, stiff, grey, moist, homogeneous with some laminations. [GLACIOLACUSTRINE]
22					
		S14			Lab test: Gravel 0% Sand 2% Fines 98% SAND AND SILT Laminations of fine sand and silt. [GLACIOLACUSTRINE]
23					
24		S15	46 R		SAND AND SILT Fine, Some clay, uniformly graded, dense, medium to dark grey, wet, thinly laminated (1 - 5mm thick). [TILL 1]
25					
		S16	26 42 R		
26					
27		S17	28 41 R		From 26.8 to 27.2 m - layer of medium sand.
28					From 27.8 to 29.2 m - some fine to medium gravel. Some irregular laminations of soft silty clay.
		S18	26 R		
29					SILT AND CLAY Non-plastic, hard, grey and dark brown, wet, irregular (wavy) laminations . [TILL 1]
30					

Instrument Details

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-011

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,374.7 E - 6,393,991.5 N
Ground Elevation (m): 525.1
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 60.4

Start Date: 13 Aug 19
Finish Date: 15 Aug 19
Final Depth (m): 60.4
Depth to Top of Rock (m): 50.0
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
30		S19	49 46			
31					From 31.4 to 31.8 m - lense of silty clay, with seam of coal.	
32					SAND Medium, uniformly graded, dense, grey-brown, wet. Thinly laminated to 33.6m, then homogeneous. [TILL 1]	
33						
34						
35					SILT Clayey, stiff, non-plastic, grey and dark brown, moist, occasional laminations of silt. [TILL 1]	
36					SAND Fine to medium, trace silt, uniformly graded, dense, grey, moist, homogeneous. Small fining up sequences. [TILL 1]	
37						
38						
39					From 39.2 to 40.8 m - SAND, medium, loose, brown, wet	
40						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_L%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-011

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,374.7 E - 6,393,991.5 N
Ground Elevation (m): 525.1
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 60.4

Start Date: 13 Aug 19
Finish Date: 15 Aug 19
Final Depth (m): 60.4
Depth to Top of Rock (m): 50.0
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
40						
41					CLAY Trace silt, low plastic, hard,moist, homogeneous.[TILL 1]	
42					SAND Fine to medium, and SILT, compact to dense, light grey, wet, homogeneous. Thinly laminated (1 mm) with alternating light grey and black laminae below 42.2 m. [TILL 1]	
43						
44						
45						
46						
47					From 46. 9 to 47 - CLAY, low plastic, very stiff, black, moist. Laminated with medium sand. Fine, very dense, medium grey, homogeneous.	
48					At 48.2 m - 5 cm lens of CLAY, hard, black, with thin sand laminae.	
49						
50						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-011

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,374.7 E - 6,393,991.5 N
Ground Elevation (m): 525.1
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 60.4

Start Date: 13 Aug 19
Finish Date: 15 Aug 19
Final Depth (m): 60.4
Depth to Top of Rock (m): 50.0
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
50					CLAY (MUDSTONE) Low plastic, hard, black, some laminations. [CRETACEOUS]	
51						
52					SAND Fine, lenses of fine gravels, 1 - 3 cm maximum particle size, uniformly graded, compact to dense, subrounded, grey with some orange staining, wet, some laminations. [CRETACEOUS]	
53					CLAY Silty, some sand, dense, with loose broken fragments, subrounded, dark brown to black, moist to wet, blocky, lightly cemented (broken sandstone). [DEVONIAN]	
54					At 54 m - trace clay, light grey	
55						
56						
57		G4			Lab test: Gravel 0% Sand 11% Silt 30% Clay 59%	
58						
59						
60						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-011

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,374.7 E - 6,393,991.5 N
Ground Elevation (m): 525.1
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 60.4

Start Date: 13 Aug 19
Finish Date: 15 Aug 19
Final Depth (m): 60.4
Depth to Top of Rock (m): 50.0
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details	Su - kPa 40 80 120 160 / ★ % Fines / ◇ % LPT Recovery / % Recovery 20 40 60 80	● LPT N (blows/300mm) / Moisture Content W_p% W% W_l% 20 40 60 80
60								
					Bottom of Hole at 60.4 m. NOTES: 1) Hole terminated at target depth. 2) LPT sampler had ID 85 mm, OD 100 mm. LPT hammer weight was 63.5 kg, and drop height was 0.76 m. 3) Nested piezometers installed with 3 m screen lengths, 0.5 mm slot size using 50 mm diameter (sched. 40) PVC and 10/20 filter sand. Stick up 1 m with lockable well protector. 4) Hole was completed with 67 bags of bentonite chips, size 3/8", filled to the collar			
61								
62								
63								
64								
65								
66								
67								
68								
69								
70								

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-012

Location: Rook 1 Site
Facility: N/A

Co-ordinates (m): 604,471.3 E - 6,394,088.8 N
Ground Elevation (m): 506.4
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 78.3

Start Date: 16 Aug 19
Finish Date: 21 Aug 19
Final Depth (m): 78.4
Depth to Top of Rock (m): 30.3
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
0					SAND Fine to coarse, some gravel some cobbles and boulders, fine to coarse gravel, angular to subangular. Well graded, loose, grey and brown, wet. Organic rich in top 0.9m. [UNDIFFERENTIATED COLLUVIUM AND/OR ABLATION TILL]	
5					SILT AND CLAY Light grey, wet, homogeneous, no dilatancy, soft. [TILL 2]	
8		G1			At 8.13 m - single thin lamination of moderate plasticity clay. Above and below are laminae of medium to fine sand.	
9					At 9.7 m - becoming clayey, some fine sand in laminations.	
10						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_L%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOIL ONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

DRILL HOLE # BGC19-Sonic-012

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,471.3 E - 6,394,088.8 N
Ground Elevation (m): 506.4
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 78.3

Start Date: 16 Aug 19
Finish Date: 21 Aug 19
Final Depth (m): 78.4
Depth to Top of Rock (m): 30.3
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
10					SILT AND CLAY Firm to soft, dark brown and black. From 10 to 10.5 m Some thin laminations of moderately plastic clay. Intermittent laminations of silt, firm to stiff, moist, blocky.	
11					At 11.3m - thin laminae of medium sand.	
12						
13					At 12.75 m - 4 cm thick strata dark brown, more organic content. Possible coal seam.	
14					At 13.9 m - becomes dry, no structure, homogeneous.	
					From 14.5 to 15.07 m - CLAY and SILT, non plastic, stiff, mottled brown and black.	
15					SAND Medium, uniformly graded, dense, grey-brown, wet, heterogeneous. [TILL 2]	
16					At 16.25 m - 5 cm lens of coarse sand and fine subround gravel. At 16.3 m - some irregular lenses of clayey silt.	
17						
18					From 17.7 to 17.8 m - clay, low plastic, very stiff, grey, moist, thin laminations of silt.	
19					At 19 m - lens of sand, fine, some clay.	
20					CLAY Some silt, hard, dry, dark brown with light brown (silt) stratifications of	

Su - kPa
40 80 120 160
★ % Fines ● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_P% W% W_L%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-012

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,471.3 E - 6,394,088.8 N
Ground Elevation (m): 506.4
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 78.3

Start Date: 16 Aug 19
Finish Date: 21 Aug 19
Final Depth (m): 78.4
Depth to Top of Rock (m): 30.3
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
20					fine sand [from 20 - 23.5 m], 5 cm thick. [GLACIOLACUSTRINE]	
22					SAND Find to medium, trace clay and silt, compact, medium grey, moist to wet, homogeneous. [GLACIOLACUSTRINE]	
24					CLAY AND SILT Non-plastic, hard, grey, moist. Alternating laminations of higher silt and clay content. [TILL 1]	
26					At 26.25 m - 4 cm thick coal seam.	
28					From 28 to 29.6 m - some fine sand, non-plastic, stiff, grey, homogeneous.	
29					From 29.6 to 29.95 m - BOULDER, fine gravel, angular (boulder fragments).	
30						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-012

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,471.3 E - 6,394,088.8 N
Ground Elevation (m): 506.4
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 78.3

Start Date: 16 Aug 19
Finish Date: 21 Aug 19
Final Depth (m): 78.4
Depth to Top of Rock (m): 30.3
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
30						
					CLAY Low plastic, very stiff to hard, dark brown, moist, light brown laminations, moderately cemented . [CRETACEOUS]	
31					At 31.3 m - seam of coarse gravel, subangular, wet. Some possible sloughing of clay cutttings mixing with gravel.	
32						
33					SAND Medium to coarse, uniformly graded, dense, brown, moist, homogeneous. [CRETACEOUS]	
34					At 34.1 m - becoming fine sand and silt, trace clay, dense, grey, moist, heterogeneous.	
35					At 34.9 m - 10 cm coal seam.	
36					SAND AND SILT Fine, trace clay, uniformly graded, loose, brown moist, non-cemented. [DEVONIAN]	
37						
38						
39					SAND Fine to medium, trace silt, dense, grey/ beige with some orange staining, moist, homogeneous, weakly to moderately cemented. [DEVONIAN]	
40						

Su - kPa
40 80 120 160
★ % Fines ● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_P% W% W_L%
20 40 60 80

DRILL HOLE # BGC19-Sonic-012

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,471.3 E - 6,394,088.8 N
Ground Elevation (m): 506.4
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 78.3

Start Date: 16 Aug 19
Finish Date: 21 Aug 19
Final Depth (m): 78.4
Depth to Top of Rock (m): 30.3
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
40						
41						
42					From 42.0 to 43 m - dark brown clay laminations.	
43						
44						
45						
46						
47						
48						
49					From 48.8 to 49.2 m - CLAY, low plastic, hard, orange/red coloured, dry, with some 2 cm lenses of medium sand.	
50						

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_P% W% W_L%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOIL ONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

DRILL HOLE # BGC19-Sonic-012

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,471.3 E - 6,394,088.8 N
Ground Elevation (m): 506.4
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 78.3

Start Date: 16 Aug 19
Finish Date: 21 Aug 19
Final Depth (m): 78.4
Depth to Top of Rock (m): 30.3
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
50						
		G2				
51						
52						
					SAND Medium to coarse grained, light grey with red and pink staining, weakly to moderately cemented sandstone, heterogeneous. [ATHABASCA]	
53						
54						
55						
56						
57						
58						
59						
60						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

NEXGEN (SOILONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-012

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,471.3 E - 6,394,088.8 N
Ground Elevation (m): 506.4
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 78.3

Start Date: 16 Aug 19
Finish Date: 21 Aug 19
Final Depth (m): 78.4
Depth to Top of Rock (m): 30.3
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details	Su - kPa 40 80 120 160 / ★ % Fines / ● LPT N (blows/300mm) / ◇ % LPT Recovery / % Recovery 20 40 60 80	Moisture Content W_p% W% W_l% 20 40 60 80
60								
61								
62								
63								
64								
65								
66								
67								
68								
69								
70								

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOILONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

DRILL HOLE # BGC19-Sonic-012

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,471.3 E - 6,394,088.8 N
Ground Elevation (m): 506.4
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 78.3

Start Date: 16 Aug 19
Finish Date: 21 Aug 19
Final Depth (m): 78.4
Depth to Top of Rock (m): 30.3
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
70						
71						
72						
73						
74						
75						
76						
77						
78						
79					Bottom of hole at 78.4 m. NOTES: 1) Hole terminated at target unit. 2) Piezometer installed with 3 m screen length, 0.05 mm slot size using 50 mm diameter (sched. 40) PVC, and 10/20 filter sand. Stick up 0.7 m with lockable well protector. 3) Hole was completed with coated benonite pellets, 11 batches of	
80						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-012

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,471.3 E - 6,394,088.8 N
Ground Elevation (m): 506.4
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 78.3

Start Date: 16 Aug 19
Finish Date: 21 Aug 19
Final Depth (m): 78.4
Depth to Top of Rock (m): 30.3
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
80					grout (batch consisting of 4 bags cement, 1 bag bentonite, 35 gal water), and a bentonite chip seal.	
81						
82						
83						
84						
85						
86						
87						
88						
89						
90						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOILONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-013

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,461.1 E - 6,394,086.4 N
Ground Elevation (m): 507.1
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 17.7

Start Date: 22 Aug 19
Finish Date: 22 Aug 19
Final Depth (m): 17.7
Depth to Top of Rock (m): N/A
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
0					SILT AND SAND Loose, non plastic, dark brown and black, moist, organic rich. [UNDIFFERENTIATED COLLUVIUM AND/OR ABLATION TILL]	
1					SAND Medium to coarse, some gravel, some cobbles and boulders, loose, orange brown becoming pinkish-beige, moist to wet, homogeneous. From 2.6 to 4.1 m, interspersed strata of dark grey gravel. [UNDIFFERENTIATED COLLUVIUM AND/OR ABLATION TILL]	
2					From 2.44 to 2.6 m - lens of CLAY and SILT, low plastic, stiff, grey, homogeneous.	
3						
4					CLAY Low plastic, very stiff, dark grey, moist, heterogeneous. Occasional lenses (5-10 cm thick) of some medium sand, subangular fine gravel. [TILL 2]	
5						
6					SILT Some clay, non-plastic, firm to stiff, grey, moist to wet, homogeneous. [TILL 2] From 5.9 to 6.0 m - boulder.	
7						
8					From 8.15 to 8.5 m - layer of sand, medium, some fine, subangular gravel.	
9					CLAY Some silt to silty, very stiff, low plastic, dark grey, moist, thinly laminated (under 1 mm) with light grey silt. [TILL 2]	
10						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOIL ONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-013

Location: Rook 1 Site
Facility: N/A

Co-ordinates (m): 604,461.1 E - 6,394,086.4 N
Ground Elevation (m): 507.1
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 17.7

Start Date: 22 Aug 19
Finish Date: 22 Aug 19
Final Depth (m): 17.7
Depth to Top of Rock (m): N/A
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
10						
11					From 11.3 to 11.6 m - trace medium sand, mottled black and brown, some small voids.	
12					At 12.5 m - mottled brown and dark grey appearance, hard. 1 3 cm lens of dark grey sand.	
13						
14						
15					At 14.6 m - very small pieces of broken coal (coarse sand).	
16						
17						
					From 17.55 to 17.69 m - SAND, medium, dense, grey/brown, moist.	
18					Bottom of hole at 17.69 m.	
19					NOTES: 1) Hole terminated at target depth. 2) Piezometer installed with 3 m screen length, 0.5 mm slot size using 50 mm diameter (sched. 40) PVC and 10/20 filter sand. Stick up 1 m with lockable well protector. 3) Hole was completed with 6 batches of grout (each batch consisting of 4 bags cement, 1 bag bentonite, 35 gal water), and bentonite chips.	
20						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOIL ONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
0					SAND, organic soils, cobble, gravel, sand. [TOPSOIL]	
					SAND Fine to medium, uniformly graded, some silt, dense, beige/pink, moist, heterogeneous. [UNDIFFERENTIATED COLLUVIUM, GLACIOFLUVIAL AND/OR ABLATION TILL]	
4		S1	36 R		Lab test: Gravel 4% Sand 79% Fines 17%	
5		S2	R			
7		S3	R		SAND Fine to medium, some fine to coarse gravel (subangular), gap graded, dense, pinkish-beige with white, mostly homogeneous with occasional laminations (1-2 mm) of dark grey silt. [ABLATION TILL]	
8		S4	R		From 8.4 to 8.7 m - boulder.	
10						

Su - kPa
40 80 120 160
★ % Fines ● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_p% W% W_l%
20 40 60 80

NEXGEN (SOIL ONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
10		S5	39 20		
11					
12		S6	R		
13					From 13.1 to 13.4 m - boulder. From 13.4 to 13.7 m - becoming gravelly fine to coarse, angular.
14					
15		S7	R		Lab test: Gravel 1% Sand 75% Fines 24%
16		S8	R		From 16.15 to 16.35 m - some grey clay laminations (under 3 mm). Lab test: Gravel 0% Sand 78% Silt 11% Clay 6%
17		S9	R		
18					From 17.4 to 17.6 m - gravelly, coarse, subrounded, up to 5 cm diameter. From 18.15 to 18.6 m - some fine subrounded gravel.
19		S10	40 20		From 19.2 to 20.7 m - some clay laminations (under 1 mm), some coarse subrounded gravel.
20					

Instrument Details

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
Moisture Content
W_p% W% W_l%
20 40 60 80 20 40 60 80

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
21		S11	41 R		From 20.7 to 22.3 m - clay lenses (under 2 cm). Lab test: Gravel 0% Sand 90% Fines 10%
22		S12	23 25		From 22.1 m to 23.8 m - occasional orange staining.
23					From 22.7 to 23.0 m - some irregular clay lenses, non-plastic, dark grey.
24		S13	R		SAND AND SILT Fine, some clay, Beige/pink sand. Clay in grey laminations. [ABLATION TILL]
		G1			
25					
		S14	R		SAND AND SILT Fine, some clay, beige/pink sand. [TILL 2]
26					
		G2			SILT Clayey, non-plastic, stiff, trace to some sand mottled brown and grey, wet. [TILL 2] Lab test: Gravel 0% Sand 14% Silt 58% Clay 27%
27					
28					
29					At 28.5 m - boulder. At 28.6 m - becoming CLAY, silty, some medium sand, medium plasticity, hard, moist.
30		S15	43		

Instrument Details

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_p% W% W_l%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOILONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
30			R		SAND Medium to coarse, some gravel (fine, subangular to angular) dense, beige/pink with some orange staining, wet, heterogeneous. [TILL 2]	
31						
32						
33					At 33 m - colour change to grey.	
34					At 34.3 m - some boulders.	
35						
36						
37						
38						▼
39						
40						

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_p% W% W_l%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
40						
41					At 41 m - orange staining.	
					At 41.6 m - boulder.	
42					SAND Medium to coarse, some gravel (fine to coarse, subangular) some clay, poorly graded, dense, dark grey, moist to wet, heterogeneous. [TILL 2]	
43						
44						
45						
46						
47						
48					From 48.2 to 50.4 m - Boulders, some sand, loose, wet. Poor recovery.	
49						
50						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOIL ONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
50					SAND Medium to coarse, silty, some gravel (fine to coarse, subangular), compact to dense, dark grey, wet. Some black clay lenses. [TILL 2]	
51						
52					At 52.3 m - clay laminations (under 1 mm).	
53						
54					SILT Clayey, some sand, low plastic, stiff, dark grey-brown, moist, homogeneous with occasional irregular laminations. [TILL 1]	
55					At 55.4 m - boulder.	
56					CLAY Some silt, some sand, low plastic, hard, dark brown brown to black, mottled with light grey, moist. [TILL 1]	
57						
58					SAND Medium, trace silt, poorly graded, dense, grey, most, 1-2mm laminations. [TILL 1]	
59						
60						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_l%: 20, 40, 60, 80

NEXGEN (SOIL ONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
60					At 60 m - becoming fine to medium, homogeneous.	
61					At 61.4 m - mottled with light brown clay, very dense.	
62						
63					CLAY Silty, low plastic, very stiff, dark brown, thinly laminated (1 - 4 mm of fine and medium sand). [MUDSTONE] [CRETACEOUS]	
64						
65						
66						
67					SAND Fine to medium, dense, grey, wet, trace clay in very thin laminations (under 1 mm). [CRETACEOUS]	
68						
69					At 68.6 m - subangular, fine gravel.	
70					From 69.4 to 70 m - seam of clay, some silt, non plastic, very stiff, homogeneous. [MUDSTONE]	

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
70					At 70 m - becoming homogeneous.	
71						
72					At 71.8 m - 2 cm strata of clay, silty [mudstone]. From 72 to 72.6 m - layer of SAND, coarse, some silt, loose, wet.	
					From 72.4 to 72.6 m - some laminations (2 - 4 mm) of stiff clay, non-plastic.	
73					SAND Medium, some silt, dense, pink and grey, moist, heterogeneous. Clay is low to moderately plastic. [CRETACEOUS]	
74					At 74 m - 2 mm moderately plastic clay.	
75					From 75 to 76.1 m - mudstone, silty clay hard, low plastic, grey, fissile, slickenslides on fracture surfaces.	
76		G3			SAND Medium, some silt, dense, pink and grey, moist, heterogeneous. [DEVONIAN] At 76.4 m - becoming medium to coarse, brown.	
77						
78						
79						
80						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

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Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
80						
81					From 81.1 to 83 m - becoming clayey to and clay.	
82						
83						
84					At 83.7 m - becoming wet	
85						
86					At From 86.1 to 86.3 m - some hard broken pieces of clay/mudstone.	
87					CLAY AND SILT Some sand, gravelly, non-plastic, loose, light grey, wet.	
88						
89						
90						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

DRILL HOLE # BGC19-Sonic-014

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,804.6 E - 6,393,637.3 N
Ground Elevation (m): 543.7
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 95.5

Start Date: 23 Aug 19
Finish Date: 23 Aug 19
Final Depth (m): 95.5
Depth to Top of Rock (m): 63.1
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details	Su - kPa 40 80 120 160 / ★ % Fines / ◇ % LPT Recovery / % Recovery 20 40 60 80	● LPT N (blows/300mm) / Moisture Content W_p% W% W_l% 20 40 60 80
90					SAND Medium compact to dense, some silt, grey some pink, moist to wet. Heterogeneous with cccasional 1 mm clay laminations. [SANDSTONE][DEVONIAN] From 90.4 to 90.6 m - SAND, coarse, loose, red-brown, moist.			
91								
92								
93								
94								
95								
96					Bottom of hole at 95.47 m. NOTES: 1) Hole terminated at target unit. 2) LPT sampler had ID 85 mm, OD 100 mm. LPT hammer weight was 63.5 kg, and drop height was 0.76 m. 3) Piezometer installed with 3 m screen length, 0.5 mm slot size using 50 mm diameter (sched. 40) PVC and 10/20 filter sand. Stick up 0.7 m with lockable well protector. 4) Hole was completed with coated bentonite pellets, 17 batches of grout (each batch consisting of 4 bags cement, 1 bag bentonite, 35 gal water), and a bentonite chip seal.			
97								
98								
99								
100								

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-015

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,162.4 E - 6,393,577.6 N
Ground Elevation (m): 542.8
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 30.0

Start Date: 28 Aug 19
Finish Date: 29 Aug 19
Final Depth (m): 30.0
Depth to Top of Rock (m): N/A
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
0					ORGANICS Roots, fine and medium sand, orange/red, gravel (subangular). [TOPSOIL]
1					SAND Fine to medium, trace silt, trace clay dense, pinkish-beige, moist, heterogeneous. [ABLATION TILL]
2					
3		S1	12 14 18		Lab test: Gravel 0% Sand 93% Fines 7%
4		S2	19 30 35		
5					
6		S3	18 19 20		
7		S4	20 36 R		
8					
9		S5	27 49 32		
10					At 9.5 m - 2 cm of 1 mm thick clay laminations, non-plastic, soft.

Instrument Details

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_p% W% W_l%
20 40 60 80

>>◇ >>● >>

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Client: NexGen Energy Ltd.

NEXGEN (SOIL ONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-015

Location: Rook 1 Site
Facility: N/A

Co-ordinates (m): 604,162.4 E - 6,393,577.6 N
Ground Elevation (m): 542.8
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 30.0

Start Date: 28 Aug 19
Finish Date: 29 Aug 19
Final Depth (m): 30.0
Depth to Top of Rock (m): N/A
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
10		S6	22 29 R		Lab test: Gravel 0% Sand 93% Silt 5% Clay 5%
11					
12		S7	46 R		
13		S8	18 R		At 13.4 m - boulder.
14					
15		S9	31 R		At 14.5 m - boulder - broken angular rock.
16		S10	12 20 21		At 16. m - 2 cm of clay laminations (under 4 mm), low plastic.
17					
18					
19					At 18.8 m - mottled colouring between beige/pink and grey.
20					

Instrument Details

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
Moisture Content
W_p% W% W_L%
20 40 60 80 20 40 60 80

NEXGEN (SOILONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-015

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,162.4 E - 6,393,577.6 N
Ground Elevation (m): 542.8
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 30.0

Start Date: 28 Aug 19
Finish Date: 29 Aug 19
Final Depth (m): 30.0
Depth to Top of Rock (m): N/A
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
20		S11	10 R		
21					SILT Some fine sand, non plastic, stiff, black/dark brown mottled with light brown sand, moist. [TILL 1]
22		S12	27 R		SAND Fine to medium, some clay, dense, grey, moist. [TILL 1] SILT, trace clay, trace sand, non-plastic, hard, dark brown/black, moist.
23					From 23 to 23.8 m - layer of fine to medium sand.
24		S13	28 R		At 23.8 m - increase in sand content.
25		S14	R		CLAY Some silt, low plastic, stiff, dark brown, moist. Thin laminations of light brown silt (under 1mm). [TILL 1]
26					
27		S15	R		
28					
29					SAND Fine, loose to compact, dark brown, moist, homogeneous. [TILL 1] CLAY Low plastic, hard, grey, moist. [TILL 1] From 29.4 to 30 m - thinly laminated with silt, some sand.
30		S16			

Instrument Details

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_p% W% W_l%
20 40 60 80

BGC ENGINEERING INC.
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Client: NexGen Energy Ltd.

NEXGEN (SOILONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

DRILL HOLE # BGC19-Sonic-015

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,162.4 E - 6,393,577.6 N
Ground Elevation (m): 542.8
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 30.0

Start Date: 28 Aug 19
Finish Date: 29 Aug 19
Final Depth (m): 30.0
Depth to Top of Rock (m): N/A
Logged By: JMA
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
30			R		Bottom of hole at 30 m. NOTES: 1) Hole terminated at target depth. 2) LPT sampler had ID 85 mm, OD 100 mm. LPT hammer weight was 63.5 kg, and drop height was 0.76 m. 3) Hole was back-filled with 16 bags of 3/8" bentonite chips.	

Su - kPa: 40, 80, 120, 160
★ % Fines | ● LPT N (blows/300mm)
◇ % LPT Recovery | % Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_L%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-016

Location: Rook 1 Site
Facility: N/A

Co-ordinates (m): 604,079.9 E - 6,393,486.6 N
Ground Elevation (m): 544.3
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 30.0

Start Date: 27 Aug 19
Finish Date: 28 Aug 19
Final Depth (m): 29.9
Depth to Top of Rock (m): N/A
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
0					ORGANICS Medium and fine sands, buff/grey, fine gravel (angular-subangular).
1					SAND Fine to medium some fine gravel, dense, subrounded to subangular, pink/beige, moist, heterogeneous. [UNDIFFERENTIATED GLACIOFLUVIAL AND/OR ABLATION TILL] At 1 m - boulder.
2					
2		S1	33 33 20		At 2.3 m - some 5 mm clay laminations. Lab test: Gravel 0% Sand 34% Fines 66%
3					CLAY Non-plastic, hard, dark grey, wet clay laminated with sand. [UNDIFFERENTIATED GLACIOFLUVIAL AND/OR ABLATION TILL]
4		S2	21 49 R		SAND Medium, dense, wet, orange stained, homogeneous. [ABLATION TILL]
5					
5		S3	27 44 48		SILT, some fine sand, trace gravel, hard Some clay in lenses (non-plastic). [ABLATION TILL] Lab test: Gravel 8% Sand 17% Silt 60% Clay 15%
6					MUDSTONE Laminated with silt, stiff. [ABLATION TILL]
7		S4	31 R		SILT Trace fine sand, hard, non-plastic, pinkish brown, moist, not cemented. [ABLATION TILL] Lab test: Gravel 0% Sand 2% Fines 98%
8					SILT Clayey, low plasticity, hard, dark grey-brown with some oxidation, drier than plastic limit, thin (<1 mm) laminations.
8		S5	26 R		[ABLATION TILL] From 8.5 to 10 m - some 10 cm strata of fine sand. Lab test: Gravel 0% Sand 85% Fines 15%
9					
10					

Instrument Details

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_l%: 20, 40, 60, 80

NEXGEN (SOILONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-016

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,079.9 E - 6,393,486.6 N
Ground Elevation (m): 544.3
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 30.0

Start Date: 27 Aug 19
Finish Date: 28 Aug 19
Final Depth (m): 29.9
Depth to Top of Rock (m): N/A
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
10		S6	25 R		SAND Fine to medium, uniformly graded, dense, subround, pinkish-brown, moist, homogeneous. [ABLATION TILL] From 10.4 to 10.5 m - some silt to silty.	
11						
12		S7	R		From 11.6 to 11.8 m - some gravel, compact.	
13		S8	R			
14					At 13.6 m - some 1 cm fragments of non to low plastic clayey sand.	
15		S9	37 R		SAND Fine to medium, some gravel, uniformly graded, subrounded, dense, pinkish brown/grey, wet, homogeneous. [ABLATION TILL]	
16					From 16 to 16.3 m - cobble.	
17					SAND Fine to medium, some gravel, some silt, some cobbles, uniformly graded, dense to very dense, grey, wet , light cementation, homogeneous. [ABLATION TILL]	
18					At 17.6 m - boulder. From 17.7 to 18.3 m - fine to coarse, gravelly, well graded, subrounded and broken rock, loose, wet, brown. From 18.3 to 18.9 m - broken rock, sand [Boulder].	
19					SAND Fine to medium, some gravel, subrounded, gap graded, compact to dense, dark brown, moist to wet. [TILL 1] At 19.2 to 19.3 m - white sandstone, cobble/boulder.	
20						

Su - kPa
40 80 120 160
★ % Fines ● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_P% W% W_L%
20 40 60 80

DRILL HOLE # BGC19-Sonic-016

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,079.9 E - 6,393,486.6 N
Ground Elevation (m): 544.3
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 30.0

Start Date: 27 Aug 19
Finish Date: 28 Aug 19
Final Depth (m): 29.9
Depth to Top of Rock (m): N/A
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
20					
21		S10	12 R		From 20.6 to 20.8 m - some silt. At 20.8 m - some subangular gravel, compact.
22					
23		S11	R		At 22.3 m - trace silt.
24		S12	R		SAND Fine to medium, some gravel to gravelly, trace to some silt, uniformly graded, subrounded to subangular, dense, dark brown to grey, wet, homogeneous. Some fragments of weakly cemented sand. [TILL 1]
25		S13	20 R		From 25 to 25.2 m - boulder. From 25.2 to 25.4 m - moist.
26					
27		S14	R		
28					
29		s15	11 10 17		Lab test: Gravel 15% Sand 69% Fines 17% At 28.4 m - becoming gravelly. Max particle size to 60 mm, subrounded trace silt, loose. From 29 to 29.15 m - cobble/boulder.
30					

Instrument Details

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_P% W% W_L%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-016

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,079.9 E - 6,393,486.6 N
Ground Elevation (m): 544.3
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 30.0

Start Date: 27 Aug 19
Finish Date: 28 Aug 19
Final Depth (m): 29.9
Depth to Top of Rock (m): N/A
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details	Su - kPa 40 80 120 160 / ★ % Fines / ● LPT N (blows/300mm) / ◇ % LPT Recovery / % Recovery 20 40 60 80 / Moisture Content W_p% W% W_l% 20 40 60 80
30					Bottom of hole at 29.9 m. NOTES: 1) Hole terminated at target unit. 2) LPT sampler had ID 85 mm, OD 100 mm. LPT hammer weight was 63.5 kg, and drop height was 0.76 m. 3) Piezometer installed with 3 m screen length, 0.5 mm slot size using 50 mm diameter (sched. 40) PVC and 10/20 filter sand. Stick up 0.7 m with lockable well protector. 4) Hole was completed with coated bentonite pellets, 6 batches of grout (each batch consisting of 4 bags cement, 1 bag bentonite, 35 gal water), and a bentonite chip seal.		
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-017

Location: Rook 1 Site
Facility: N/A

Co-ordinates (m): 604,098.3 E - 6,393,803.4 N
Ground Elevation (m): 531.0
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 40.6

Start Date: 30 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 40.6
Depth to Top of Rock (m): N/A
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
0					SAND Fine to medium, some silt and clay, trace to some gravel, uniformly graded, compact to dense, moist, pinkish brown orange from 0 - 0.3 m, heterogeneous, non-cemented. [ABLATION TILL]
1					At 1.2 m - fine to coarse, gravelly, dense, whitish-pink.
2					From 1.8 to 2.55 m - boulder - ground up rock.
3					
4		S1	7 14 25		From 3.85 to 3.95 m - boulder - broken angular rock. At 3.95 m - fine to medium, some gravel.
5					
6		S2	9 13 31		At 5.5 m - becoming wet. Lab test: Gravel 9% Sand 70% Fines 21%
7		S3	6 10 49		At 7.05 m - trace fine gravel, dense, wet. From 7.35 to 8.1 m - boulder, white, chalky, weather (high), non-plastic, drilling disturbed.
8					From 8.15 to 8.35 m - boulder.
		S4	R		At 8.35 m - gravelly, dense.
9					
10					

Instrument Details

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_p% W% W_L%
20 40 60 80

>>◇
>>◇
◇ >>●

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

NEXGEN (SOIL ONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

DRILL HOLE # BGC19-Sonic-017

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,098.3 E - 6,393,803.4 N
Ground Elevation (m): 531.0
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 40.6

Start Date: 30 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 40.6
Depth to Top of Rock (m): N/A
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
10					From 9.9 to 10 m - broken rock.
		S5	8 34 48		At 10 m - dense. SILT some clay, trace sand, non-plastic, stiff, dark brown to black, moist, 5mm laminations. [TILL 2]
11					At 11.2 m - silty.
		S6	14 24 R		Lab test: Gravel 0% Sand 7% Silt 86% Clay 12% From 11.55 to 13.05 m - trace fine sand in lense otherwise homoegeneous.
12					
13		S7	6 18 25		SAND Fine, silty, trace clay, well graded, compact, dark grey-black, we, 5 mm laminations of clay, silty throughout. [TILL 2]
14					From 13.4 to 13.55 m - lense of clay, trace silt, moderate to high plasticity stiff.
		S8	14 28 33		SILT Sandy, trace clay, non-plastic, hard, NPL, black-dark grey, 5 mm laminations with sand. [TILL 2]
15					From 14.5 to 14.55 m - 1 - 5 mm laminations of clay, silty, high plasticity, stiff.
					SILT Sandy, clayey, non plastic, hard, dark grey, wet. [TILL 2]
16					Lab test: Gravel 0% Sand 27% Silt 51% Clay 21% From 14.9 to 15 m - 5mm laminations of medium plasticity clay, stiff.
		S9	19 37 43		SILT Sandy, clayey, non plastic, hard, dark grey, wet, homogeneous. [GLACIOLACUSTRINE]
17					SAND Fine, silty, trace clay in discontinuous lenses 5 mm - 20 mm thick, dense, subrounded, dark brown and grey, wet, mottled coloring. [GLACIOLACUSTRINE]
18		S10	8 41 R		SILT Trace fine sand, some clay, non-plastic, stiff, dark grey/brown, moist, homogeneous, moderate dilatancy. [GLACIOLACUSTRINE] Lab test: Gravel 0% Sand 9% Silt 73% Clay 18% At 17.7 m - some sand, trace clay, non - low plastic.
19					SAND Fine, silty, some gravel, dense, wet, dark grey-black, some mottled colouring, to thinly laminated (5 mm). [GLACIOLACUSTRINE]
20					

Instrument Details

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_p% W% W_l%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-017

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,098.3 E - 6,393,803.4 N
Ground Elevation (m): 531.0
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 40.6

Start Date: 30 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 40.6
Depth to Top of Rock (m): N/A
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
21		S11	16 R		Lab test: Gravel 0% Sand 7% Fines 93% SILT Clayey, non-low plastic, hard, homogeneous. [GLACIOLACUSTRINE]	
22		S12	R		SAND Fine, silty, uniformly graded, subround, dense, grey - dark grey, wet, homogeneous. [GLACIOLACUSTRINE]	
23					SILT Sandy, (fine), non-plastic, stiff to very stiff, wet to wetter than plastic limit, homogeneous. [GLACIOLACUSTRINE] At 22.35 m - some 5 - 10 mm clay laminations throughout, rapid dilatancy.	
24		S13	28 R			
25		S14	R		At 25.4 m - occasional laminations of silt with no to trace sand, hard.	
26		G1				
27					From 26.85 m - thin laminations under 2mm thick, rapid dilatancy.	
28		S15	R			
29						
30					SAND Fine, silty, some interbedded silt,sandy, uniformly graded, dense, dark	

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
Moisture Content: W_p% — W% — W_l%
20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-017

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,098.3 E - 6,393,803.4 N
Ground Elevation (m): 531.0
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 40.6

Start Date: 30 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 40.6
Depth to Top of Rock (m): N/A
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
30					grey, wet, 1-5 mm laminations. [GLACIOLACUSTRINE] From 30.35 to 30.45 m - SAND Fine to medium.	
31					SILT Trace clay, trace fine sand, non-plastic, stiff, dark grey-brown, moist-wet, thin (1 - 5 mm) laminations. [TILL 1]	
32		S16			SAND Fine, silty, uniformly graded, dense, grey, wet, homogeneous. [TILL 1]	
33					SILT Some sand, trace clay, non-plastic, stiff, wet, dark brown, moderate dilatancy. [TILL 1]	
34						
35		G2			CLAY Some silt, low plastic, hard, dark brown, DPL, moderate dilatancy, 0.5 - 5 mm laminations, some possible slickened surfaces.[TILL 1]	
36						
37					From 36.5 to 36.7 m - SAND, fine to medium, silty, dense, black, homogeneous. SILT Some sand to sandy, non-plastic, stiff, irregular (wavy) thin 1 - 5 mm laminations throughout, rapid dilatancy, intermittent laminations of silty sand. [TILL 1]	
38					From 37.5 to 39.05 m - SAND, Fine, silty, dense, grey and black, wet, thin 1 - 5 mm irregular laminations.	
39						
40						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
Moisture Content: W_p% — W% — W_l%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-017

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 604,098.3 E - 6,393,803.4 N
Ground Elevation (m): 531.0
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 40.6

Start Date: 30 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 40.6
Depth to Top of Rock (m): N/A
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details	Su - kPa 40 80 120 160 / ★ % Fines / ◇ % LPT Recovery / % Recovery 20 40 60 80	● LPT N (blows/300mm) / Moisture Content W_p% W% W_l% 20 40 60 80
40								
41					Bottom of hole at 40.55 m. NOTES: 1) Hole terminated at target unit. 2) LPT sampler had ID 85 mm, OD 100 mm. LPT hammer weight was 63.5 kg, and drop height was 0.76 m. 3) Piezometer installed with 3 m screen length, 0.5 mm slot size using 50 mm diameter (sched. 40) PVC and 10/20 filter sand. Stick up 0.7 m with lockable well protector. 4) Hole was completed with coated bentonite pellets, 5 batches of grout (each batch consisting of 4 bags cement, 1 bag bentonite, 35 gal water), and a bentonite chip seal.			
42								
43								
44								
45								
46								
47								
48								
49								
50								

Project: Rook I Feasibility
Project No.: 1762-003

DRILL HOLE # BGC19-Sonic-018

Location: Rook 1 Site
Facility: N/A

Co-ordinates (m): 603,923.0 E - 6,393,828.7 N
Ground Elevation (m): 520.5
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 51.3

Start Date: 31 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 51.3
Depth to Top of Rock (m): 36.0
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
0					SAND Fine to medium, compact to dense, subrounded, pink, wet, heterogeneous. Water oozing on surface. Organics in top 1 m. [COLLUVIUM]	
1					From 1.2 to 2.3 m - fine, trace gravel, some silt, compact, grey-brown, moist, heterogeneous.	
2					From 2.3 to 2.45 m - SILT, some fine sand, non-plastic, stiff, moist, dark grey.	
		S1	12 22 37			
3					SILT Sandy, hard, non-plastic, dark grey, occasional 5 mm laminations. From 3.95 m discontinuous strata of medium sand 5-20 mm thick. [GLACIOLACUSTRINE]	
4		S2	12 19 36			
5						
		S3	10 14 20		Lab test: Gravel 0% Sand 66% Fines 34% SAND Fine, silty, trace clay, some clay lenses (low plasticity, 1 cm thick) throughout, unformly graded, compact, wet. [GLACIOLACUSTRINE]	
6						
7		G1			From 6.9 to 7.05 m - thicker (1 - 2 cm), possible high plasticity clay stratification.	
		S4	16 26 29		From 7.05 to 8.55 m - some clay lamination (under 1 cm thick).	
8		G2				
		S5	12 22 R			
9					CLAY Some silt, some sand in irregular lenses of high sand and silt content, low to moderate plasticity, very stiff to hard, dark grey, 1 mm laminations, occassional 5cm beds of sand deeper than 9.6 m.	
		G3				
10						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_l%: 20, 40, 60, 80

NEXGEN (SOILONLY) NEXGEN_ALL.GDL BGC.GDT 12/4/19

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-018

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 603,923.0 E - 6,393,828.7 N
Ground Elevation (m): 520.5
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 51.3

Start Date: 31 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 51.3
Depth to Top of Rock (m): 36.0
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
10		S6	11 27 R		[GLACIOLACUSTRINE] From 9.95 to 10.1 m - layer of SAND, fine, silty, dense, grey wet, 0.5 - 1 cm stratification. From 10.7 to 11.0 m - boulder.	
11					SILT Silty sand in 5 mm laminations, trace clay, trace gravel, stiff to very stiff, low plastic, dark grey, moist to wet, rapid dilatancy. [GLACIOLACUSTRINE]	
12		S7	10 10 15		At 11.65 m - bed thickness increases to 10 mm.	
13		S8	12 30 R		Lab test: Gravel 0% Sand 1% Fines 99%	
14						
15		S9	12 47 R			
16		S10	7 22 38		At 16.15 m - homogeneous with some intermittent 1 - 5mm laminations.	
17						
18		S11	10 26 47			
19		S12	9 6 9		From 19.2 to 19.6 m - layer of SAND, fine to medium, some silt, uniformly graded, loose, subrounded, dark brown-black, wet, homogeneous.	
20					SILT	

Su - kPa
40 80 120 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
20 40 60 80
Moisture Content
W_P% W% W_L%
20 40 60 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-018

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 603,923.0 E - 6,393,828.7 N
Ground Elevation (m): 520.5
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 51.3

Start Date: 31 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 51.3
Depth to Top of Rock (m): 36.0
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description
20					Trace to some clay, trace fine sand, very stiff - hard, low plastic, dark brown, moist, 1 - 2mm irregular laminations, rapid dilantancy. [TILL 1]
21		S13	25 R		At 20.75 m - becoming stiff, with light grey (mottled), irregular 10 mm stratification.
22					From 21.65 to 22.05 m - trace fine sand, soft, non-plastic, wet, dark brown.
					At 22.25 m - homogeneous.
23					
					From 23.55 to 23.8 m - irregular laminations 3 - 5mm thick.
24		S14	R		CLAY Some silt, low plasticity, very stiff, DPL, dark grey - brown, 1 - 5 mm laminations of light brown, silt. Firm from 24.9 to 25 m. [TILL 1]
25					
					From 25.1 - 25.2 m - seam of coal.
26					SILT Trace clay, non-plastic, firm to stiff, brown, wet, heterogeneous, occasional irregulary (wavy) laminations, rapid dilatancy. [TILL 1]
27		S15	R		From 26.85 to 27.45 m - firm.
28					
					At 28.3 m - some sand to sandy, trace clay laminations, some lenses of sand - fine to medium. Becoming stiff to very stiff.
29					
30					

Instrument Details

Su - kPa (40, 80, 120, 160)
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery
Moisture Content
W_P% W% W_L%
(20, 40, 60, 80)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-018

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 603,923.0 E - 6,393,828.7 N
Ground Elevation (m): 520.5
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 51.3

Start Date: 31 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 51.3
Depth to Top of Rock (m): 36.0
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
30		S16	39 R		SAND Fine, silty, trace clay, uniformly graded, Subround, dense, dark brown to grey, wet, homogeneous. Occasional strata of sandy silt up to 0.5m thick. [TILL 1] From 30.5 to 30.9 m - SILT, sandy, trace clay, non-plastic, stiff - very stiff, dark grey, moist, 1 - 5 mm laminations.	
31					At 30.9 m - grey.	
32					SILT Trace clay, trace to some fine sand, non-plastic, stiff, moist, drier than plastic limit, dark grey - brown, 1 - 2mm laminations. [TILL 1]	
33						
34					SAND Fine to medium, unformly graded, compact, subrounded, grey, wet, homogeneous. [TILL 1]	
35						
36					SILT Clayey to and clay, trace fine sand, low plastic, hard, moist, 3mm laminations, lightly cemented. Laminations of silt and clay, dark brown - light grey. [CRETACEOUS]	
37					From 37.5 to 38.3 m - possible slickensided surface.	
38					At 38.5 - 0.25 m layer of SAND, fine to medium, clayey, uniformly graded, dense, dark brown, moist - wet.	
39					At 38.75 m - becoming sandy, no clay, non-plastic, stiff, moist, grey. At 39.05 m - trace clay, wet. 1 - 5 mm laminations to 39.45 m then homogeneous.	
40						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_P% — W% — W_L%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-018

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 603,923.0 E - 6,393,828.7 N
Ground Elevation (m): 520.5
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 51.3

Start Date: 31 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 51.3
Depth to Top of Rock (m): 36.0
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details
40						
41		G4 G7 G5				
42					From 42.1 to 42. 8 m - layer of SAND, fine to medium, silty, trace clay, uniformly graded, dense, wet, grey, homogeneous.	
43					CLAY Trace silt, low plastic, hard, dark brown, moist, homogeneous. [CRETACEOUS] From 43.3 to 43.4 m - boulder - broken rock.	
44						
45						
46		G6			SILT Sandy, fine, non-plastic, stiff, grey, moist, 5 - 10 mm laminations, thin seam of coal at 45.2 m, slight hydrocarbon odour. [CRETACEOUS] From 46 to 46.4 m - boulder.	
47					At 46.95 m - trace clay, one 10 cm fragment of cemented sandy silt and clay with polished surface, trace clay, coal seam at 47.1.	
48					SAND Fine to medium, unformly graded, loose to compact, dark brown, wet, homogeneous. [CRETACEOUS]	
49					SAND Fine to medium, uniformly graded, dense, pink and grey, moist, homogeneous. [DEVONIAN]	
50						

Su - kPa: 40, 80, 120, 160
★ % Fines
● LPT N (blows/300mm)
◇ % LPT Recovery
% Recovery: 20, 40, 60, 80
Moisture Content: W_p% — W% — W_l%: 20, 40, 60, 80

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen Energy Ltd.

DRILL HOLE # BGC19-Sonic-018

Location: Rook 1 Site

Facility: N/A

Co-ordinates (m): 603,923.0 E - 6,393,828.7 N
Ground Elevation (m): 520.5
Survey Method: DGPS
Datum: NAD83, Zone 12
Plunge (°): 90
Trend (°): 0

Drill Designation: R701
Drilling Contractor: Cross Borders
Drill Method: Sonic
Hole Diameter: 4"
Coring Fluid: Water
Cased To (m) : 51.3

Start Date: 31 Aug 19
Finish Date: 31 Aug 19
Final Depth (m): 51.3
Depth to Top of Rock (m): 36.0
Logged By: DP
Reviewed By: RNK

Depth (m)	Sample Type	Sample No.	LPT Blows Per 150mm	Symbol	Lithologic Description	Instrument Details	Su - kPa 40 80 120 160 / ★ % Fines / ◇ % LPT Recovery / % Recovery 20 40 60 80	● LPT N (blows/300mm) / Moisture Content W_P% W% W_L% 20 40 60 80
50								
51								
					Bottom of hole at 51.25 m. NOTES: 1) Hole terminated at target unit. 2) LPT sampler had ID 85 mm, OD 100 mm. LPT hammer weight was 63.5 kg, and drop height was 0.76 m. 3) Nested piezometers installed with 3 m screen lengths, 0.05 mm slot size using 50 mm diameter (sched. 40) PVC and 10/20 filter sand. Stick up 1 m with lockable well protector. 4) Hole was completed with coated bentonite pellets, 6 batches of grout (each batch consisting of 4 bags cement, 1 bag bentonite, 35 gal water), and a bentonite chip seal.			
52								
53								
54								
55								
56								
57								
58								
59								
60								

APPENDIX C

Westbay Well Installation Reports

Completion Report

Well Name: GAR-18-013

September 24, 2018

Completion Report

Well Name: GAR-18-013

Project Number: WB985

Prepared for:

Nexgen Energy

Prepared by:

Westbay Instruments
A Division of Nova Metrix Ground Monitoring (Canada) Limited.
8610 Glenlyon Parkway
Unit 134
Burnaby, BC
V5J 0B6

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APPENDICES

APPENDIX: Monitoring Well: GAR-18-013

1. Introduction

This report and the attached Appendix document the technical services carried out by Westbay Instruments (Westbay) under Nexgen Energy(Nexgen) P.O. Exploration Shaft Pilot Holes - Westbay dated July 13, 2018. A Westbay System completion was installed in borehole GAR-18-013 at the ROOK 1 site, SK, Canada.

Westbay technical services representatives Mr. Mark Lessard and Tony Kim were on site for installation of the Westbay System from September 1 to 13, 2018. Nexgen representatives Mr. Grant Greenwood and Ms. Claudia Piché were on-site to supervise the installation of the Westbay System.

This report documents the installation tasks and related QA checks.

2. Pre-Installation Activities

The borehole was drilled/cored at a nominal diameter of 98 mm (HQ-size) by wireline coring methods. Purevis was used as a lubricant during coring. An HWT surface casing (nominal 114.30 mm OD) was advanced to 122 meters depth in the borehole.

Straddle packer tests and drill core analysis were completed by SRK Consultants (SRK) to determine final desired Westbay monitoring zone depths. After drilling and testing, DGI performed downhole surveys. A temporary guide tube (HQ rods) was set to a pre-determined depth before lowering of the Westbay components.

(Note: all depths are with respect to ground surface. Monitoring well reference elevations were not available at the time of writing).

3. Installation

Westbay Instruments technical services representatives Mr. Lessard and Mr. Kim and representatives of Nexgen were on site to install the Westbay System in GAR-18-013 as indicated below in Table 1.

(Note: Monitoring well reference elevation was not available at the time of writing).

Table 1: Summary of Westbay System Installation

Well Name.	Field Installation Dates	Total Depth (m)	MP38 Tubing Length (m)	No. Monitoring Zones
GAR-18-013	September 1-9 2018	650.4	635.9	11

The Westbay System in GAR-18-013 was installed according to the procedure described below.

3.1 Preparation of Westbay System Design

Packer depths for the borehole were provided to Westbay by Mr. Michael Royle of SRK. A well design was created based on these depths. The well design was used to prepare a Westbay Completion Log, which specifies the location of the Westbay System components in the well. This log was reviewed and approved in the field by Mr. Greenwood and Ms. Piché prior to installation of the Westbay System. The Westbay Completion Log as approved was used as an installation guide in the field. A field copy of the log is in the Appendix.

A measurement port coupling was included in each primary monitoring zone to provide the capability to measure fluid pressures and collect fluid samples. Measurement port couplings were also included in QA zones to provide QA testing capabilities and to permit operation of squeeze relief venting capabilities of the Westbay Model No. 6055 vented inflation tool. A Model 0226 Hydraulic pumping port coupling was also included in each primary monitoring zone except zone 2 and zone 9 to provide purging and hydraulic conductivity testing capabilities. Mr. Greenwood and Ms. Piché requested that optional synthetic (PET) filters were not to be installed over the measurement port couplings.

A summary of the installed Westbay System components is shown on Table 2 below and in the Summary Completion Log Legend in the Appendix.

Table 2: Summary of Installed Westbay System Components

Well Name	Packers (0238)	Measurement Ports (0205)	Pumping Ports (0226)
GAR-13-018	13	13	9

3.2 Layout of Westbay System Tubing Components

Prior to the installation, the Westbay System components were set out at the borehole according to the sequence indicated on the Westbay Completion Log. Each casing length was numbered beginning with the lowermost as an aid to confirming the proper sequence of components. The appropriate Westbay System couplings were attached to each casing section. Magnetic location collars were attached 0.6 meter below the top of the measurement port couplings in the monitoring intervals. Locations of key components are listed in Tables 5 and 6 in the Appendix.

Each component was visually inspected. Serial numbers for each packer, pumping port and measurement port coupling were recorded on the Westbay Completion Log. The component layout was confirmed with the log before the components were lowered into the borehole.

3.3 Lowering of Westbay System Components

Steel HQ drill rods were lowered into the borehole to a depth of 570 meters to provide temporary protection from caving during installation of the Westbay tubing string. The Westbay System components were lowered into the HQ rods by hand. Each joint was tested with a minimum internal hydraulic pressure of 150-psi for one minute to confirm hydraulic seals. A record of each successful joint test and the placement of each component are noted by check marks on the Westbay Completion Log. Clean water supplied by

Aggressive Drilling was added to the Westbay System when necessary to counter buoyancy effects while components were lowered into the borehole and was used for testing of joint seals during lowering.

3.4 Hydraulic Integrity Testing

After the Westbay System string was lowered into the HQ rods, the water level inside the Westbay System completion was monitored at a depth different from the open borehole water level for a minimum period of thirty minutes to confirm hydraulic integrity of the completion. There was another hydraulic integrity test after lowering 2-inch PVC tubing (Upper 46m of completion). The data from the hydraulic integrity tests are shown on the forth page of the Westbay Completion Log in the Appendix and in Table 3 and Table 4 below. Each of these tests indicated that the installed tubing was water tight. It was noticed during training day, September 11, 2018 that pressure inside Westbay tubing had increased by about 15 psi compared to the post inflation data. The cause of changing water level inside Westbay tubing is not known.

Table 3: Hydraulic Integrity Test (Westbay Only)

Well Name	September 8, 2018	Fluid Levels	
	Time	Inside Tubing	Outside Tubing
GAR-13-018	3:44	83.63 m	27 m
	3:54	83.63 m	27 m
	4:04	83.63 m	27 m
	4:14	83.63 m	27 m

Table 4: Hydraulic Integrity Test (Westbay with 2-inch PVC Tubing)

Well Name	September 8, 2018	Fluid Levels	
	Time	Inside Tubing	Outside Tubing
GAR-13-018	19:00	722.36 psi	861.14 psi
	19:02	722.33 psi	861.14 psi
	19:10	722.33 psi	861.14 psi
	19:15	722.37 psi	861.14 psi
	19:25	722.36 psi	861.14 psi
	19:35	722.35 psi	861.14 psi
	19:45	722.35 psi	861.14 psi

3.5 Positioning of Westbay System Completion

After the Westbay System components were lowered into the well, the Westbay System was positioned as illustrated on the Westbay Completion Log. The Westbay System was supported in this position while packer inflation was carried out. The positioning of the Westbay System components is based on the "nominal" lengths of Westbay System components. The positioning calculations do not include allowances for borehole temperature or deviation effects.

The attached figure titled “MOSDAX Transducer Position” provides information to correlate the position of the MOSDAX transducer sensor to the reference position at the top of the measurement port. The attached figure titled “Dimensions of Packer Seals and Monitoring Zones” outlines the calculations used to determine the packer depths and zone length. The Summary Completion Log, which shows the final “as-built” locations of the components in the well, is included in the Appendix.

3.6 Pre-inflation Profile

A pre-inflation pressure profile was carried out at the well prior to inflating the packers to confirm the proper position and operation of measurement ports and magnetic collars. The ports operated properly and were positioned correctly in the well. A plot of the Pre-inflation Piezometric levels in all zones is shown on Figure 3 in the Appendix.

3.7 Inflation of Westbay System Packers

The packer inflation was coordinated with retrieval of the temporary guide tube. The guide tube was initially positioned to at a depth of 570 meters leaving the bottom 3 packers exposed in the open hole section. After the three exposed bottom packers were inflated, the guide tube was pulled to a depth of 167 meters leaving eight packers exposed in the open hole section. After the eight packers were inflated, the guide tube was removed from the hole. The last two packers were inflated after all the guide tube was removed. During removal of the guide tube, the weight of the Westbay tubing was supported by the inflated packers.

The Westbay System packers were inflated sequentially beginning at the bottom of the well using clean water provided by Aggressive Drilling. The Westbay Model No. 6055 vented inflation tool was used for packer inflation. All the packers appear to have inflated normally. The data for inflation of each packer are provided on the Westbay Packer Inflation Records included in the Appendix.

During inflation of the packers, Westbay’s procedure for de-stressing the Westbay tubing was followed. This procedure allows the suspended weight of the Westbay tubing string to be incrementally transferred to the inflated packers. The data for component positions listed in Table 5 and 6 including corrections for de-stressing.

4. Fluid Pressure Measurements

After packer inflation was completed, fluid pressures were measured at each measurement port. At that time, the in-situ formation pressures may not have recovered from the pre-installation activities and potential groundwater pressure changes in monitoring zones that may result from packer inflation. This latter effect may be more likely to occur in monitoring zones located in low-permeability geological formations. Longer term monitoring may be required to establish representative fluid pressures.

A plot of the Post-Inflation Piezometric levels in all zones in the well is shown on Figure 4 in the Appendix. The data were examined to confirm proper operation of the measurement ports and as a check on the

presence of annulus seals between monitoring zones. The calculation sheets for all pressure profiles of the Westbay System are also enclosed in the Appendix.

5. Westbay Operator Training

Training was provided to Ms. Claudia Piché and Mr. Keith Shannon of Nexgen. The training covered the following areas:

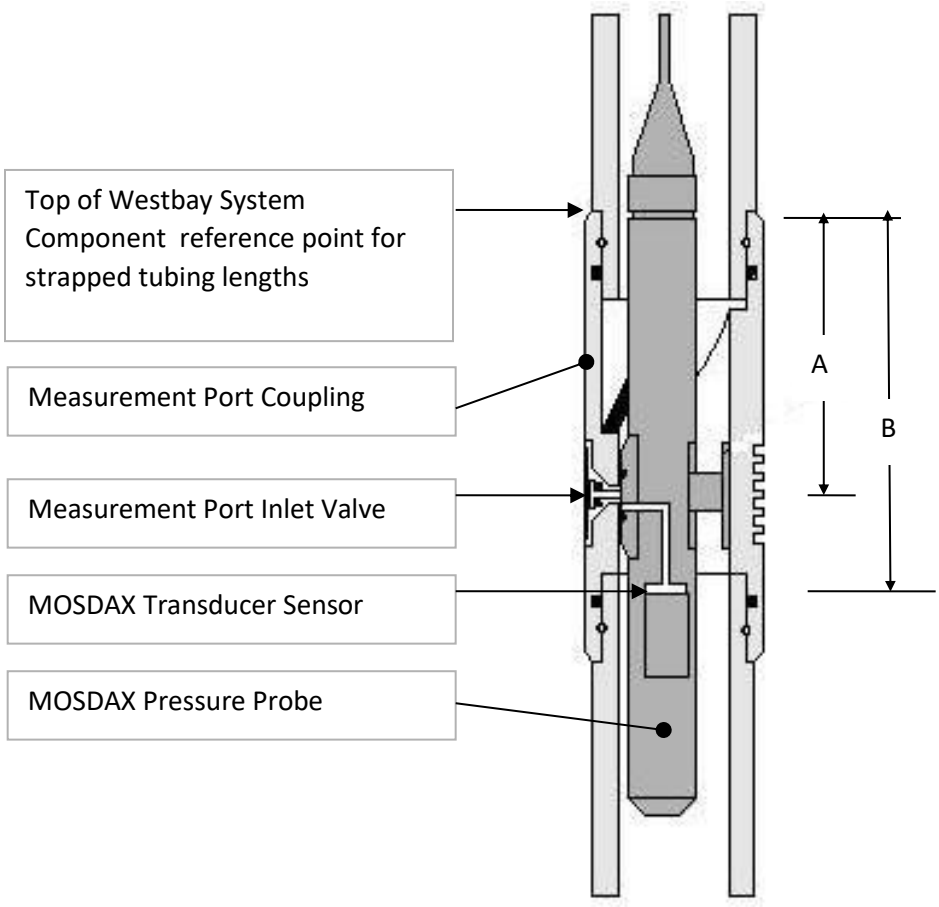
- Operation and maintenance of Model 2532 Sampler Probe and MAGI controller in pressure profiling, sample collection.
- Cable reheading and troubleshooting.
- Open and close Hydraulic Pumping port.

Ms. Claudia Piché and Mr. Keith Shannon are certified for un-supervised operation and field maintenance of this Westbay equipment.

Figure 1:

MOSDAX Transducer Position

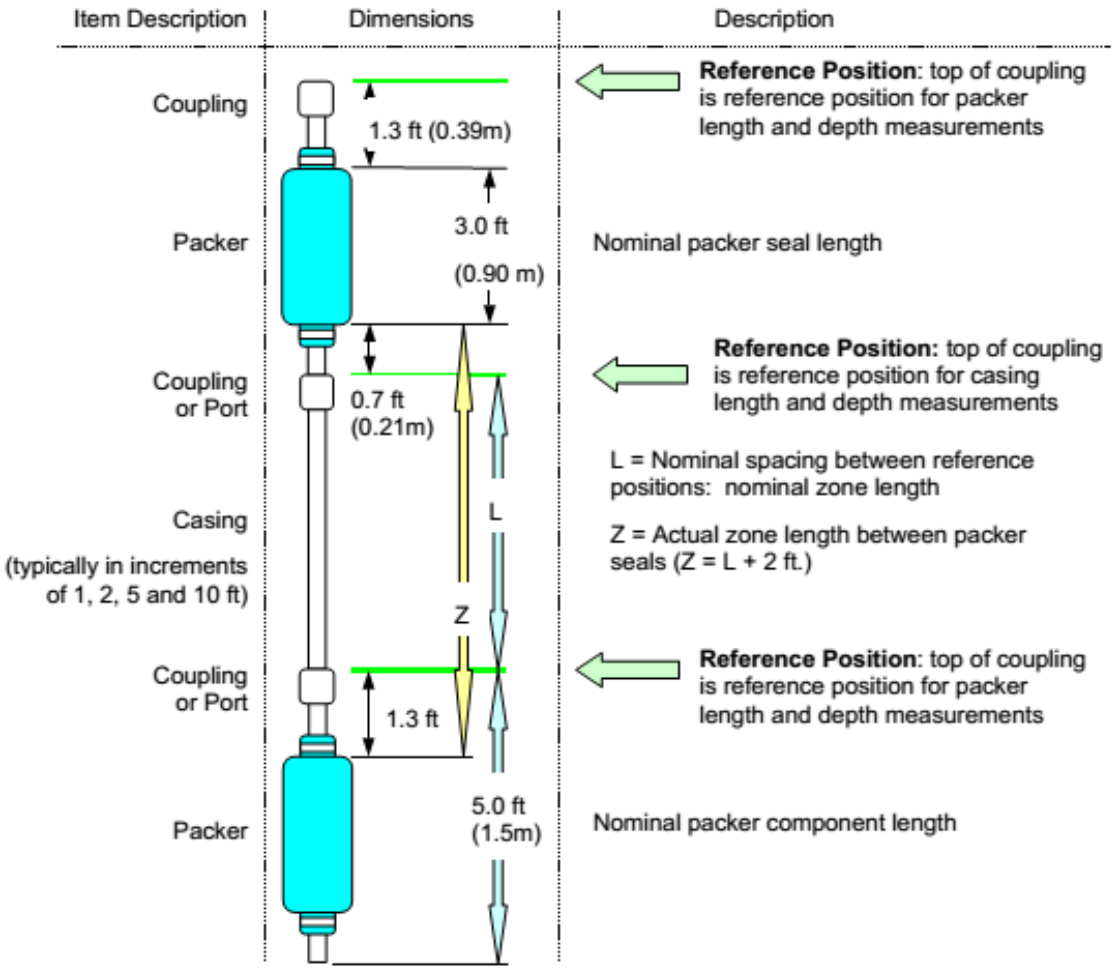
In a Westbay System Measurement Port Coupling



System	Measurement Port	A	B
Plastic MP38	0205	0.37 ft. (114.3 mm)	0.54 ft. (165.1 mm)

Figure 2:

Dimensions of Packer Seals and Monitoring Zones Westbay MP38 System 0238 Packers



Discussion Points:

- The top of a coupling (Regular Coupling, Measurement Port or Pumping Port) is the reference point for describing nominal depths and nominal lengths. Actual positions of packer seals and zone lengths are determined with respect to the appropriate reference positions.
- Packer Position Example: A packer with a nominal depth of 50 ft (15.2m), will have a nominal packer seal position of 51.3 to 54.3 ft. (15.59 to 16.49m)
- Zone Length Example: A zone whose upper packer is at 50 ft (15.2m) and bottom packer is at 70 ft (21.3m) will have a nominal zone length of 15 ft (4.6m) and an actual zone length (between packer seals) of 15.0+1.3+0.7 = 17.0ft. (4.6 + 0.39 + 0.2 = 5.19m)
- Information on the position of Measurement Port Valve and MOSDAX Transducer sensor, used for detailed calculation of piezometric level measurements, are described separately.

APPENDIX: MONITORING WELL: GAR-13-018

Westbay Field QA Summary Form	- 1 page
As-Built Packer and Port Summary (Table 5)	- 1 page
As-Built Tubing Summary (Table 6)	- 4 pages
Summary Completion Log	- 5 pages
Pre-Inflation Piezometric Pressure/ Levels	
Field Data and Calculation Sheet (September 8)	- 1 page
Figure 3, Pre-Inflation Profile	- 1 page
Post- Inflation Piezometric Pressure/Levels	
Field Data and Calculation Sheet (September 10)	- 1 page
Figure 4, Post-Inflation Profile	- 1 page
Westbay Completion Log (field copy)	- 24 pages
Westbay System Packer Inflation Records	- 13 pages

Westbay Field QA Summary Form

Client: Hexagon / SRK Project: WR 985.

Well: GAR - 18 - 013

			Check ✔	Initials	Date
1	**Client Data and Approvals**				
	1.1	Client design request and Borehole/Well information	✓	TK	Sept 6/18
	1.2	Client approved final design (file name: GAR-F1)	✓	TK	Sept 6/18
	1.3	Client decision on filter sleeves for Measurement Ports NO FILTER SOCK	✓	TK	Sept 7/18
	1.4	Client approval to install, including well and borehole conditions	✓	TK	Sept 7/18
Comments					
		Hold Point – Design and well information are complete			
2	**Layout of Completion Components**				
	2.1	Installation Log and Confirmation Log printed from approved design (file name: GAR-F1)	✓	TK	Sept 7/18
	2.2	Components taken from inventory	✓	TK	"
	2.3	Layout completed according to log, plus copy S/N and packer data)	✓	TK	"
	2.3	Independent confirmation of layout (use Confirmation Log)	✓	TK	"
	2.4	Independent check on laid out length vs design length	✓	TK	"
Comments					
		Hold Point – Layout is good to install			
3	**Lowering of Completion String**				
	3.1	Independent staff for layout rack and installation check list	✓	TK	Sept 7/18
	3.2	Components individually verified with approved log (with call-back repeat)	✓	TK	Sept 7/18
	3.3	Pressure test tool and apparatus verified	✓	ML	Sept 7/18
	3.4	Components pass pressure test	✓	TK	Sept 8/18
	3.5	Tensile loads managed within system limits	✓	TK	Sept 8/18
	3.6	Depth to water in Westbay tube checked and adjusted	✓	TK	Sept 8/18
	3.7	Hydraulic integrity test is passed	✓	ML	Sept 8/18
	3.8	Pre-Inflation profile is completed, analyzed and accepted	✓	ML	Sept 8/18
	3.9	Top of Westbay tubing is positioned according to the approved log	✓	TK	Sept 8/18
Comments					
		Hold Point – Completion is good to inflate packers			
4	**Packer Inflation**				
	4.1	Inflation tool and apparatus verified	✓	ML	Sept 9/18
	4.2	Inflation data recorded on forms at time of inflation	✓	ML	Sept 10/18
	4.3	Inflation V and P consistent with BH diameter and packer model	✓	ML	Sept 10/18
	4.4	De-stressing procedure followed (if required)	✓	ML	Sept 10/18
	4.5	All packers inflated normally	✓	ML	Sept 10/18
	4.6	Post inflation profile completed, analyzed and accepted	✓	TK	Sept 10/18
Comments					
		Hold Point – Packer inflation is complete			
5	**Documentation**				
	5.1	Wellhead completion sketch completed	✓	TK	Sept 10/18
	5.2	Draft completion Log and pressure profile data given to client	✓	TK	Sept 10/18
	5.3	Completion Report data appendix is complete	✓	TK	Sept 18/18
		Installation and Documents Complete			

Signature: _____ **Date:** Sept 18/18

Port No.	Zone	Measurement Port Depth (m)	Pumping Port Depth (m)	Magnetic Collar Depth (m)	Top of Zone (m)	Bottom of Zone (m)	Comments
1	Zone 1	623.6	632.7	624.2	620.3	650.4	
2	QA 1	619.0			615.7	619.4	
3	Zone 2	582.4		583.0	579.1	614.8	No Pumping Port
4	Zone 3	515.3	524.4	515.9	512.0	578.2	
5	Zone 4	493.9	503.0	494.5	490.6	511.1	
6	Zone 5	451.1	460.3	451.7	447.9	489.7	
7	Zone 6	396.2	405.4	396.8	392.9	447.0	
8	Zone 7	359.6	368.7	360.2	356.3	392.0	
9	Zone 8	313.8	322.9	314.4	310.5	355.4	
10	Zone 9	248.3		248.9	245.0	309.6	No Pumping Port
11	Zone 10	190.4	199.5	191.0	187.1	244.1	
12	Zone 11	132.4	141.6	133.0	129.2	186.2	
13	QA 2	67.0			63.8	128.3	

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Lenghts (m)	Final Depth (m)
223	703205		0000				-0.9	0.50	N/A	-0.4
222	703210		0000				-0.4	1.00	N/A	0.1
221	703229		0000				0.6	2.90	N/A	1.1
220	703229		0000				3.5	2.90	N/A	4.0
219	703229		0000				6.4	2.90	N/A	6.9
218	703229		0000				9.3	2.90	N/A	9.8
217	703229		0000				12.2	2.90	N/A	12.6
216	703229		0000				15.1	2.90	N/A	15.5
215	703229		0000				18.0	2.90	N/A	18.4
214	703229		0000				20.9	2.90	N/A	21.3
213	703229		0000				23.8	2.90	N/A	24.2
212	703229		0000				26.7	2.90	N/A	27.1
211	703229		0000				29.6	2.90	N/A	30.0
210	703229		0000				32.5	2.90	N/A	32.9
209	703229		0000				35.4	2.90	N/A	35.8
208	703229		0000				38.3	2.90	N/A	38.7
207	703229		0000				41.2	2.90	N/A	41.6
206	703229		0000				44.1	2.90	N/A	44.5
205	020110		027500C1				47.0	2.98	2.98	47.3
204	020110		0202				50.0	3.05	3.05	50.3
203	020110		0202				53.0	3.05	3.05	53.4
202	020110		0202				56.1	3.05	3.05	56.4
201	020110		0202				59.1	3.05	3.05	59.4
200	0238	19663	0202			63.1	62.2	1.52	1.52	62.5
199	020110		0202				63.7	3.05	3.05	64.0
198	020110		0205	9397			66.7	3.05	3.05	67.0
197	020105		0202				69.8	1.52	1.52	70.1
196	020105		0202				71.3	1.52	1.52	71.6
195	020110		0202				72.8	3.05	3.05	73.1
194	020110		0202				75.9	3.05	3.05	76.2
193	020110		0202				78.9	3.05	3.05	79.2
192	020110		0202				82.0	3.05	3.05	82.2
191	020110		0202				85.0	3.05	3.05	85.3
190	020110		0202				88.1	3.05	3.05	88.3
189	020110		0202				91.1	3.05	3.05	91.4
188	020110		0202				94.2	3.05	3.05	94.4
187	020110		0202				97.2	3.05	3.05	97.5
186	020110		0202				100.3	3.04	3.05	100.5
185	020110		0202				103.3	3.05	3.05	103.5
184	020110		0202				106.4	3.05	3.05	106.6
183	020110		0202				109.4	3.05	3.05	109.6
182	020110		0202				112.5	3.04	3.05	112.7
181	020110		0202				115.5	3.05	3.05	115.7
180	020110		0202				118.5	3.05	3.05	118.7
179	020110		0202				121.6	3.05	3.05	121.8
178	020110		0202				124.6	3.05	3.05	124.8
177	0238	19648	0202			128.5	127.7	1.52	1.52	127.9
176	020110		0202				129.2	3.05	3.05	129.4
175	020110		0205	9393	0216	133.0	132.3	3.05	3.05	132.4
174	020110		0202				135.3	3.04	3.05	135.5
173	020110		0202				138.4	3.05	3.05	138.5
172	020110		0206	433			141.4	3.13	3.12	141.6
171	020105		0202				144.5	1.52	1.52	144.7
170	020110		0202				146.1	3.05	3.05	146.2
169	020110		0202				149.1	3.05	3.05	149.3
168	020110		0202				152.2	3.04	3.05	152.3
167	020110		0202				155.2	3.05	3.05	155.3
166	020110		0202				158.2	3.05	3.05	158.4
165	020110		0202				161.3	3.05	3.05	161.4
164	020110		0202				164.3	3.04	3.05	164.5
163	020110		0202				167.4	3.05	3.05	167.5
162	020110		0202				170.4	3.05	3.05	170.6
161	020110		0202				173.5	3.05	3.05	173.6

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Lenghts (m)	Final Depth (m)
160	020110		0202				176.5	3.05	3.05	176.7
159	020110		0202				179.6	3.04	3.05	179.7
158	020110		0202				182.6	3.05	3.05	182.7
157	0238	19651	0202			186.4	185.7	1.53	1.52	185.8
156	020110		0202				187.2	3.04	3.05	187.3
155	020110		0205	9389	0216	191.0	190.2	3.05	3.05	190.4
154	020110		0202				193.3	3.05	3.05	193.4
153	020110		0202				196.3	3.05	3.05	196.4
152	020110		0206	434			199.4	3.12	3.12	199.5
151	020105		0202				202.5	1.53	1.52	202.6
150	020110		0202				204.0	3.04	3.05	204.1
149	020110		0202				207.1	3.05	3.05	207.2
148	020110		0202				210.1	3.05	3.05	210.2
147	020110		0202				213.2	3.05	3.05	213.3
146	020110		0202				216.2	3.04	3.05	216.3
145	020110		0202				219.3	3.05	3.05	219.4
144	020110		0202				222.3	3.05	3.05	222.4
143	020110		0202				225.4	3.05	3.05	225.5
142	020110		0202				228.4	3.05	3.05	228.5
141	020110		0202				231.5	3.04	3.05	231.6
140	020110		0202				234.5	3.05	3.05	234.6
139	020110		0202				237.6	3.05	3.05	237.6
138	020110		0202				240.6	3.05	1.52	240.7
137	0238	19656	0202			244.3	243.7	1.52	1.52	243.7
136	020110		0202				245.2	3.05	3.05	245.3
135	020110		0205	9392	0216	248.9	248.2	3.05	3.05	248.3
134	020110		0202				251.3	3.04	3.05	251.3
133	020110		0202				254.3	3.05	3.05	254.4
132	020110		0202				257.4	3.05	3.05	257.4
131	020110		0202				260.4	3.05	3.05	260.5
130	020110		0202				263.5	3.05	3.05	263.5
129	020110		0202				266.5	3.04	3.05	266.6
128	020110		0202				269.6	3.05	3.05	269.6
127	020110		0202				272.6	3.05	3.05	272.7
126	020110		0202				275.7	3.05	3.05	275.7
125	020110		0202				278.7	3.05	3.05	278.8
124	020110		0202				281.8	3.04	3.05	281.8
123	020110		0202				284.8	3.05	3.05	284.8
122	020110		0202				287.9	3.05	3.05	287.9
121	020110		0202				290.9	3.05	3.05	290.9
120	020110		0202				294.0	3.04	3.05	294.0
119	020110		0202				297.0	3.05	3.05	297.0
118	020110		0202				300.0	3.05	3.05	300.1
117	020110		0202				303.1	3.05	3.05	303.1
116	020110		0202				306.1	3.05	3.05	306.2
115	0238	19652	0202			309.8	309.2	1.52	1.52	309.2
114	020110		0202				310.7	3.05	3.05	310.7
113	020110		0205	9384	0216	314.4	313.8	3.05	3.05	313.8
112	020110		0202				316.8	3.04	3.05	316.8
111	020110		0202				319.9	3.05	3.05	319.9
110	020110		0206	431			322.9	3.13	3.12	322.9
109	020105		0202				326.0	1.52	1.52	326.1
108	020110		0202				327.6	3.05	3.05	327.6
107	020110		0202				330.6	3.04	3.05	330.6
106	020110		0202				333.6	3.05	3.05	333.7
105	020110		0202				336.7	3.05	3.05	336.7
104	020110		0202				339.7	3.05	3.05	339.8
103	020110		0202				342.8	3.05	3.05	342.8
102	020110		0202				345.8	3.04	3.05	345.9
101	020110		0202				348.9	3.05	3.05	348.9
100	020110		0202				351.9	3.05	3.05	351.9
99	0238	19646	0202			355.6	355.0	1.52	1.52	355.0
98	020110		0202				356.5	3.05	3.05	356.5

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Lenghts (m)	Final Depth (m)
97	020110		0205	9386	0216	360.2	359.6	3.05	3.05	359.6
96	020110		0202				362.6	3.05	3.05	362.6
95	020110		0202				365.7	3.05	3.05	365.7
94	020110		0206	432			368.7	3.12	3.12	368.7
93	020105		0202				371.8	1.52	1.52	371.8
92	020110		0202				373.3	3.05	3.05	373.3
91	020110		0202				376.4	3.05	3.05	376.4
90	020110		0202				379.4	3.05	3.05	379.4
89	020110		0202				382.5	3.04	3.05	382.5
88	020110		0202				385.5	3.05	3.05	385.5
87	020110		0202				388.6	3.05	3.05	388.6
86	0238	19661	0202			392.2	391.6	1.52	1.52	391.6
85	020110		0202				393.2	3.05	3.05	393.2
84	020110		0205	9381	0216	396.8	396.2	3.05	3.05	396.2
83	020110		0202				399.3	3.05	3.05	399.3
82	020110		0202				402.3	3.05	3.05	402.3
81	020110		0206	427			405.4	3.12	3.12	405.4
80	020105		0202				408.5	1.52	1.52	408.5
79	020110		0202				410.0	3.05	3.05	410.0
78	020110		0202				413.0	3.05	3.05	413.0
77	020110		0202				416.1	3.05	3.05	416.1
76	020110		0202				419.1	3.05	3.05	419.1
75	020110		0202				422.2	3.04	3.05	422.2
74	020110		0202				425.2	3.05	3.05	425.2
73	020110		0202				428.3	3.05	3.05	428.3
72	020110		0202				431.3	3.05	3.05	431.3
71	020110		0202				434.4	3.04	3.05	434.4
70	020110		0202				437.4	3.05	3.05	437.4
69	020110		0202				440.5	3.05	3.05	440.5
68	020110		0202				443.5	3.05	3.05	443.5
67	0238	19658	0202			447.2	446.6	1.52	1.52	446.6
66	020110		0202				448.1	3.05	3.05	448.1
65	020110		0205	9383	0216	451.7	451.1	3.05	3.05	451.1
64	020110		0202				454.2	3.05	3.05	454.2
63	020110		0202				457.2	3.04	3.05	457.2
62	020110		0206	430			460.3	3.13	3.12	460.3
61	020105		0202				463.4	1.52	1.53	463.4
60	020110		0202				464.9	3.05	3.05	464.9
59	020110		0202				468.0	3.05	3.05	468.0
58	020110		0202				471.0	3.04	3.05	471.0
57	020110		0202				474.1	3.05	3.05	474.1
56	020110		0202				477.1	3.05	3.05	477.1
55	020110		0202				480.2	3.05	3.05	480.2
54	020110		0202				483.2	3.05	3.05	483.2
53	020110		0202				486.3	3.04	3.05	486.3
52	0238	19655	0202			489.9	489.3	1.53	1.52	489.3
51	020110		0202				490.8	3.05	3.05	490.8
50	020110		0205	9387	0216	494.5	493.9	3.04	3.05	493.9
49	020110		0202				496.9	3.05	3.05	496.9
48	020110		0202				500.0	3.05	3.05	500.0
47	020110		0206	428			503.0	3.12	3.12	503.0
46	020105		0202				506.2	1.53	1.52	506.2
45	020110		0202				507.7	3.05	3.05	507.7
44	0238	19659	0202			511.3	510.7	1.52	1.52	510.7
43	020110		0202				512.3	3.05	3.05	512.3
42	020110		0205	9395	0216	515.9	515.3	3.04	3.05	515.3
41	020110		0202				518.3	3.05	3.05	518.3
40	020110		0202				521.4	3.05	3.05	521.4
39	020110		0206	429			524.4	3.12	3.12	524.4
38	020105		0202				527.6	1.53	1.52	527.6
37	020110		0202				529.1	3.05	3.05	529.1
36	020110		0202				532.1	3.04	3.05	532.1
35	020110		0202				535.2	3.05	3.05	535.2

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Lenghts (m)	Final Depth (m)
34	020110		0202				538.2	3.05	3.05	538.2
33	020110		0202				541.3	3.05	3.05	541.3
32	020110		0202				544.3	3.05	3.05	544.3
31	020110		0202				547.4	3.04	3.05	547.4
30	020110		0202				550.4	3.05	3.05	550.4
29	020110		0202				553.5	3.05	3.05	553.5
28	020110		0202				556.5	3.05	3.05	556.5
27	020110		0202				559.6	3.04	3.05	559.6
26	020110		0202				562.6	3.05	3.05	562.6
25	020110		0202				565.7	3.05	3.05	565.7
24	020110		0202				568.7	3.05	3.05	568.7
23	020110		0202				571.8	3.05	3.05	571.8
22	020110		0202				574.8	3.04	3.05	574.8
21	0238	19654	0202			578.5	577.9	1.53	1.52	577.9
20	020110		0202				579.4	3.05	3.05	579.4
19	020110		0205	9385	0216	583.0	582.4	3.04	3.05	582.4
18	020110		0202				585.5	3.05	3.05	585.5
17	020110		0202				588.5	3.05	3.05	588.5
16	020110		0202				591.6	3.05	3.05	591.6
15	020110		0202				594.6	3.05	3.05	594.6
14	020110		0202				597.7	3.04	3.05	597.7
13	020110		0202				600.7	3.05	3.05	600.7
12	020105		0202				603.8	1.52	1.52	603.8
11	020110		0202				605.3	3.05	3.05	605.3
10	020110		0202				608.3	3.05	3.05	608.3
9	020110		0202				611.4	3.05	3.05	611.4
8	0238	19653	0202			615.0	614.4	1.52	1.52	614.4
7	020110		0202				616.0	3.05	3.05	616.0
6	0238	19657	0205	9398		619.6	619.0	1.52	1.53	619.0
5	020110		0202				620.5	3.05	3.05	620.5
4	020110		0205	9399	0216	624.2	623.6	3.05	3.05	623.6
3	020110		0202				626.6	3.05	3.05	626.6
2	020110		0202				629.7	3.05	3.05	629.7
1	020110		0206	391			632.7	3.12	3.12	632.7
0	0203						635.8			635.8

Depths are with respect to the ground level.

* Component positions are referenced to the top of the subject Westbay System coupling.

* Packer positions are referenced to the top Westbay System coupling on the packer.

Monitoring zone dimensions are determined as described on the attached “Dimensions of Packer Seals and Monitoring Zones”.

The position of a MOSDAX Transducer in a Measurement Port is illustrated in the attached “MOSDAX Transducer Position”.

This information may be used in calculating piezometric levels.

Summary Completion Log

Company: SRK/NexGen **Job No: WB985**
Well: GAR-18-013 **Author: DL/TK**
Site: ROOK 1
Project: Groundwater Characterization Study

Well Information

Reference Datum: Ground Level
Elevation of Datum: 0.00 m.
MP Casing Top: 0.00 m.
MP Casing Length: 635.89 m.

Borehole Depth: 650.40 m.
Borehole Inclination: Vertical
Borehole Diameter: 98.00 mm

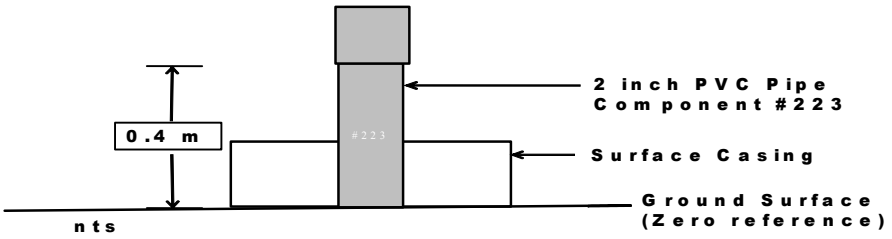
Well Description:
Plastic MP38 System
Other References:

File Information

File Name: GAR-AB.WWD
Report Date: Wed Sep 19 14:39:19 2018

File Date: Sep 19 14:34:54 2018

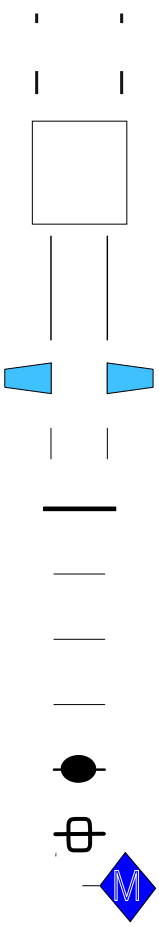
Sketch of Wellhead Completion



Legend

(Qty) MP Components

(Library - WD Library 04/29/15)



(1) 703205 - 2" PVC Casing - 0.5M

(1) 703210 - 2" PVC Casing - 1.0 M

(16) 703229 - 2" PVC Casing - 2.9 M

(181) 020110 - MP38 Casing 1 (10F/3M)

(13) 0238 - MP38 Packer - 74mm (5F/1.5M)

(11) 020105 - MP38 Casing 2 (5F/1.5M)

(2) 0203 - MP38 End Cap

(18) 0000 - 2" PVC Joint for Illustration

(1) 027500C1 - 2" PVC Flush Joint Adaptor

(182) 0202 - MP38 Regular Coupling

(13) 0205 - MP38 Measurement Port

(9) 0206 - MP38 Hydraulic Pumping Port

(11) 0216 - Magnetic Location Collar

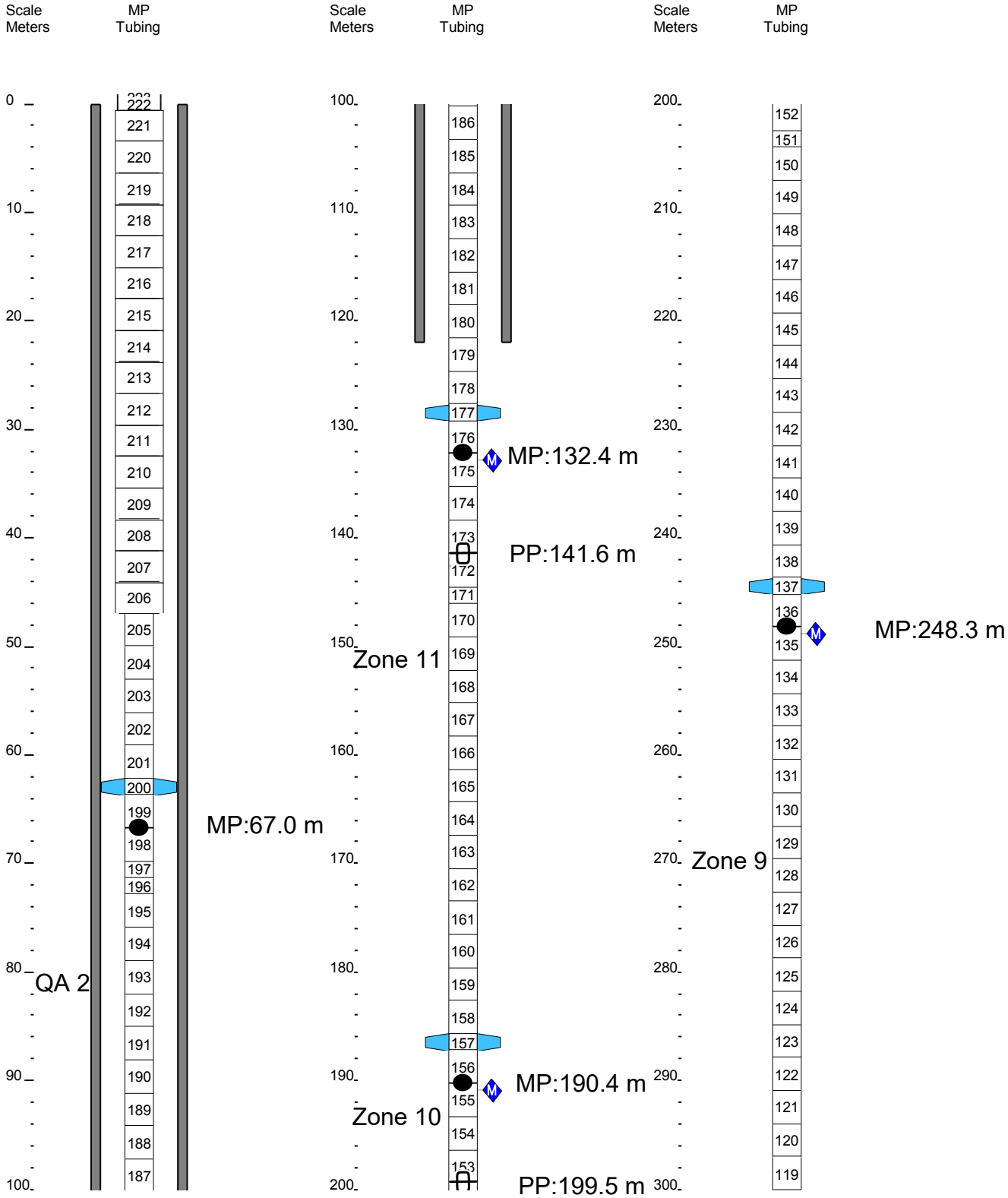
Geology

Backfill/Casing

Mild Steel

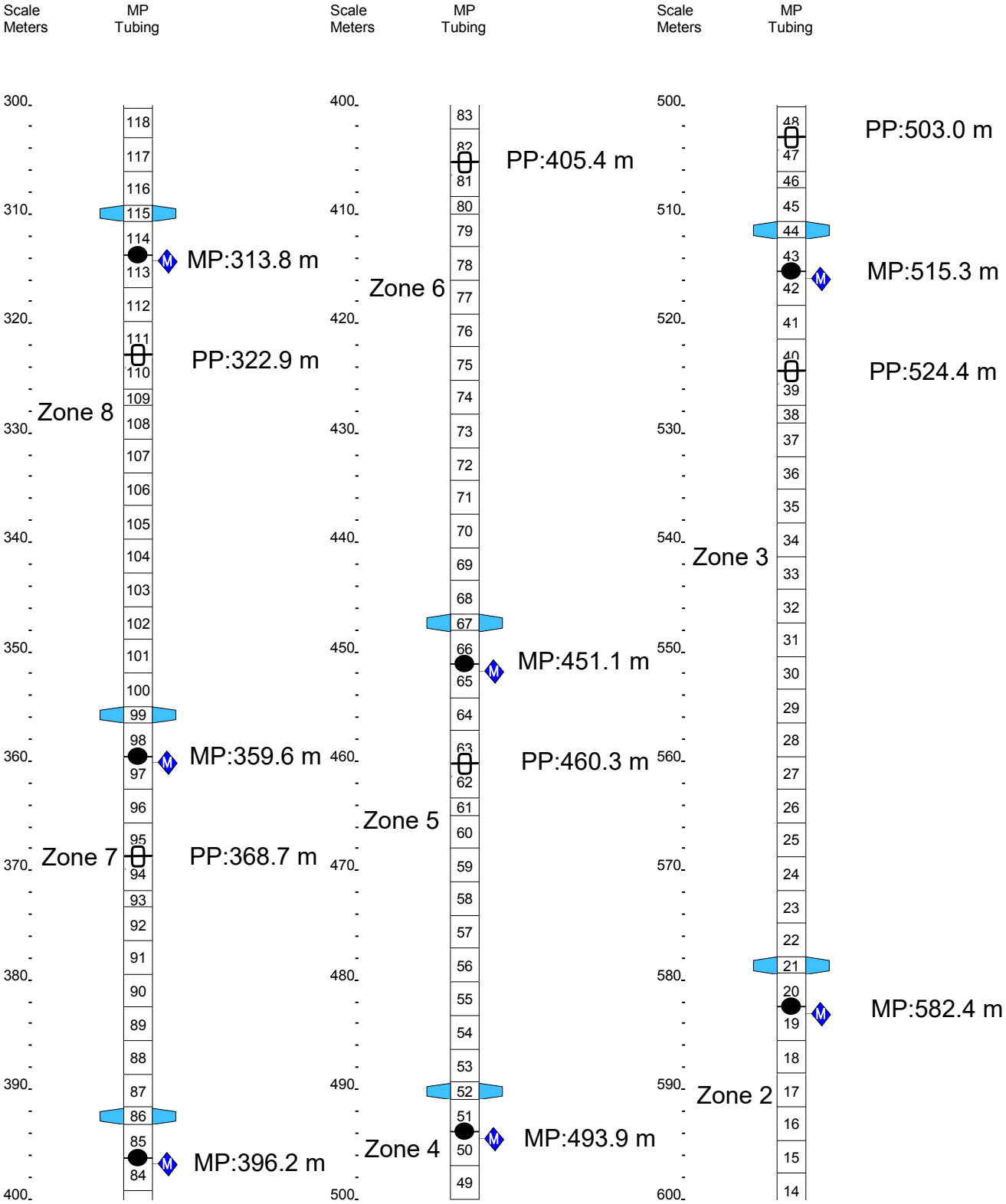
Summary Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



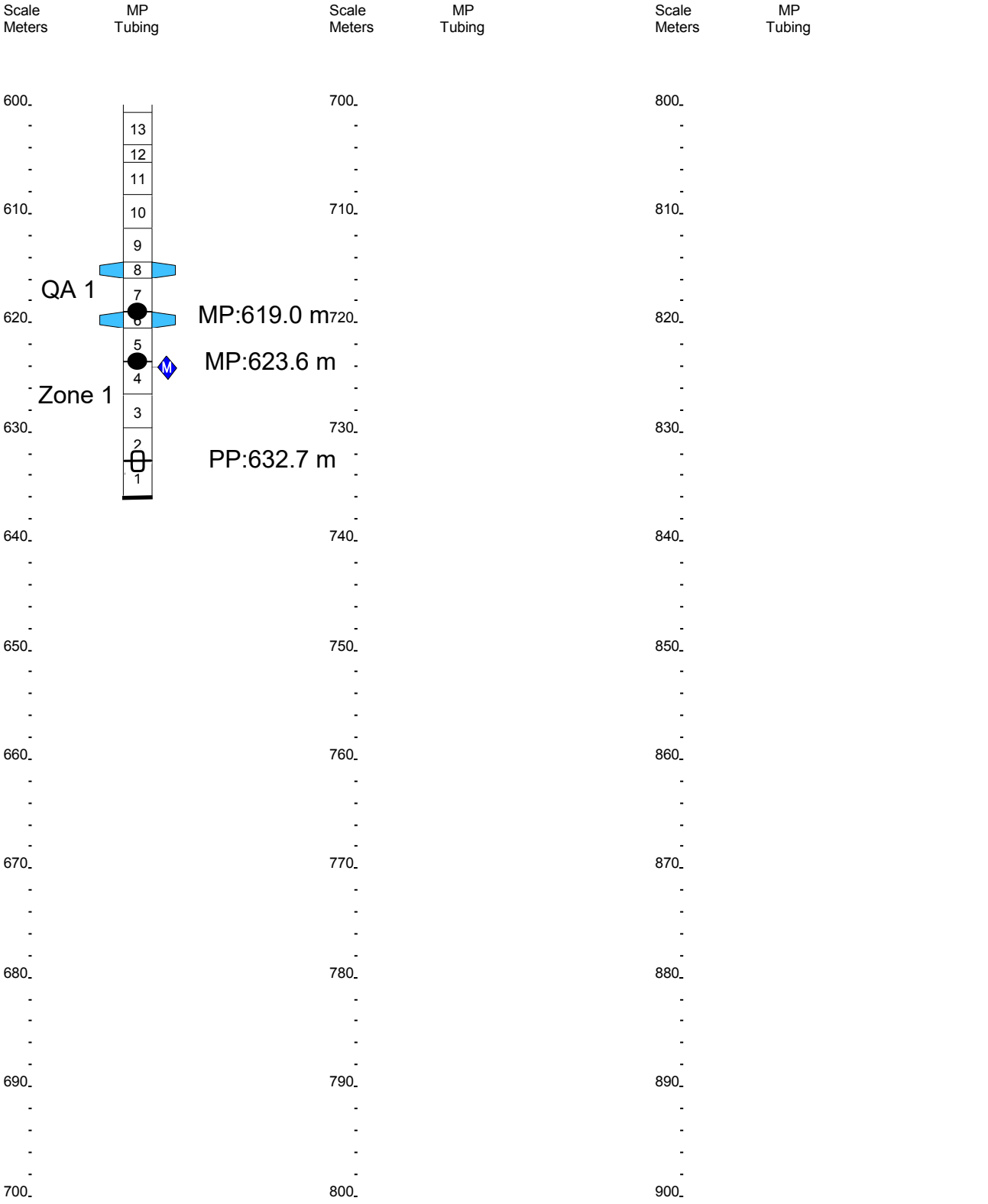
Summary Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



Summary Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



Westbay Piezometric Pressures/Levels

Field Data and Calculation Sheet

Well No.: GAR-18-013
Datum: G.L
Elev. G.S.: n/a
Height of Westbay above G.S.: n/a
Elev. top of Westbay Casing: n/a
Reference Elevation: n/a
Borehole angle: Vertical

Probe Type: Sampler
Serial No.: EMS 2563
Probe Range: 2000PSI
Westbay Casing Type: MP38
Sampler Valve Position: closed

Date: Sept 8/18
Client: Hexagon
Job No.: WR 985
Location: Rock 1
Weather: Overcast
Operator: TK/ML

Note: "Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

P_{atm} 13.74 psi

Ambient Reading (P_{atm}) (pressure, temperature, time)

		Finish:
Start: Pressure	13.74	13.92
Temp	18.74	8.73
Time	6:18	9:12 am

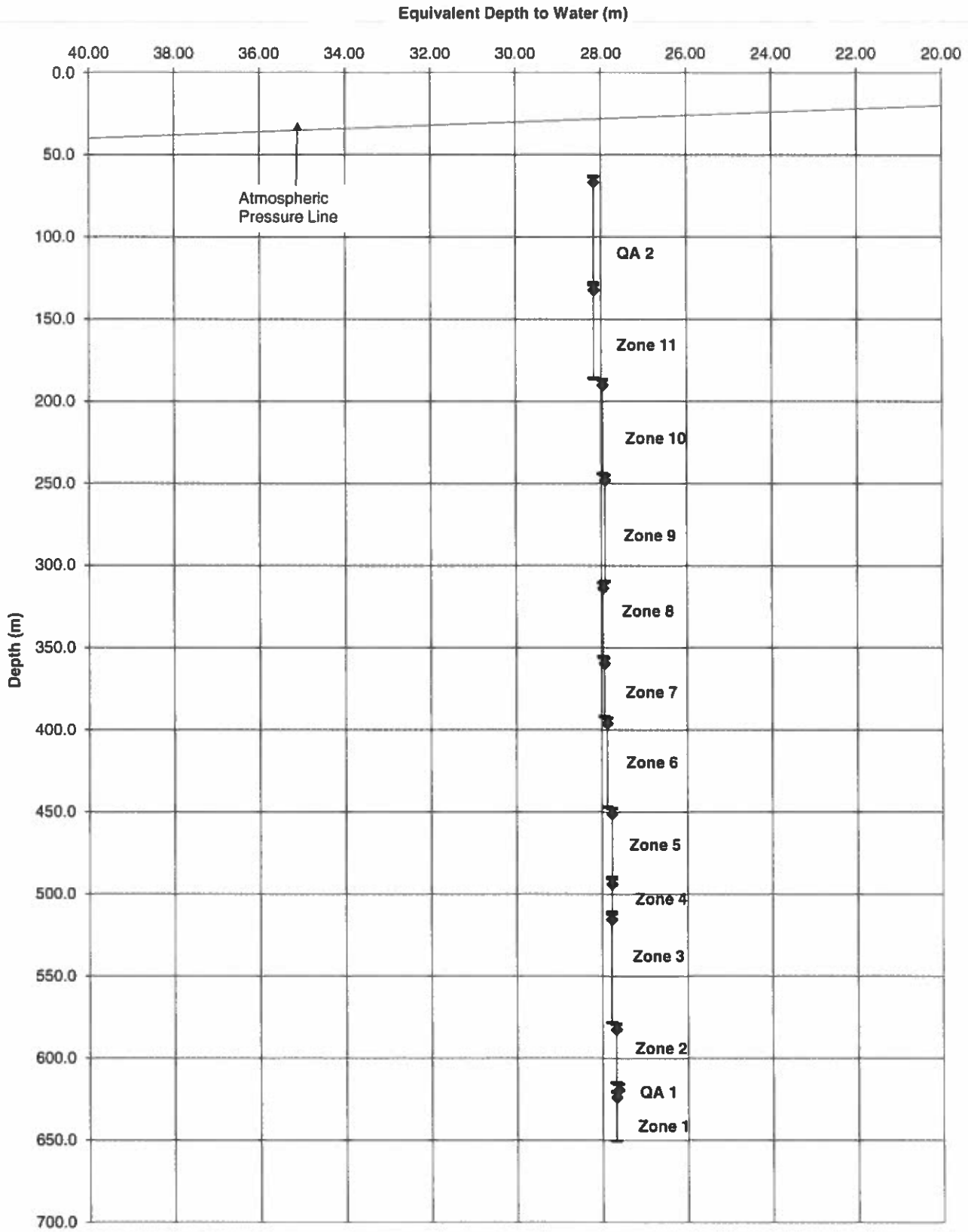
ZONE	Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1)	Outside Casing (P2)	Time H:M:S	Probe Temp. (°C)	Inside Casing (P1)	Pressure Head Outside Port (m) H = (P2-Patm)/w	Piez. Level Outside Port (m) Dz = Dp - H	Comments: H	Comments: Dz	Comments: other
1	1	623.6	625.9	–	722.38	861.14	7:54	13.93	722.41	~~610.3~~	13.3	595.9	27.7	Δ 2.3 m
QA1	2	619.0	621.3	–	715.93	854.67	7:58	13.93	715.93	591.4	27.6			
2	3	582.4	585.2	–	663.59	802.54	8:10	13.74	663.60	554.7	27.7			
3	4	515.3	518.7	–	567.48	706.98	8:17	13.46	567.45	487.5	27.8			
4	5	493.9	497.3	–	536.79	676.57	8:21	13.20	536.81	466.1	27.8			
5	6	451.1	455.0	–	475.65	615.71	8:25	12.74	475.63	423.3	27.8			
6	7	396.2	400.5	–	396.94	537.49	8:32	11.97	396.99	368.3	27.9			
7	8	359.6	364.0	–	344.45	485.36	8:37	11.44	344.47	331.7	27.9			
8	9	313.8	318.7	–	278.89	420.19	8:42	10.91	~~285.8~~	285.8	28.0	(9)29793		
9	10	248.2	253.6	–	185.19	326.98	8:48	10.13	185.19	220.3	27.9			
10	11	190.2	196.1	–	102.14	244.43	8:53	9.49	102.13	162.2	28.0			
11	12	132.3	138.4	–	19.08	161.81	8:57	8.99	19.11	104.1	28.2			
QA2	13	66.7	73.1	–	13.98	68.53	9:04	8.56	14.02	38.5	28.2			

Notes: w = 0.4335 psi/ft (1.422psi/m) of H_2O Dz = piezometric level in zone Patm = atmospheric pressure H = pressure head of water in zone Dp = true depth of measurement port

CMD 25-H12.1-Ref11 - Page 0379

Piezometric Profile
Monitoring Well:GAR-18-013

Profile Date:September 8,2018
Comments:Pre-Inflaton Profile



Client:Nexgen
Site:ROOK 1
Datum:Ground Level

Figure 3

Plote By: TK Date: Sept 24/18
Checked By: JL Date: Sept 25/18
Westbay Project: WB 985

Westbay Piezometric Pressures/Levels

Field Data and Calculation Sheet

Well No.: GAR-18-013
Datum: G.L.
Elev. G.S.: n/a
Height of Westbay above G.S.: n/a
Elev. top of Westbay Casing: n/a
Reference Elevation: n/a
Borehole angle: 90°

Probe Type: Sampler
Serial No.: EMS 2563
Probe Range: 2000psi
Westbay Casing Type: MP38
Sampler Valve Position: closed

Date: Sept 10/18
Client: Hansen
Job No.: VB985
Location: Rock
Weather: Sun.
Operator: TK.

Note: "Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

P_{atm} ~~13.98~~ 13.92 psi

Ambient Reading (P_{atm}) (pressure, temperature, time)

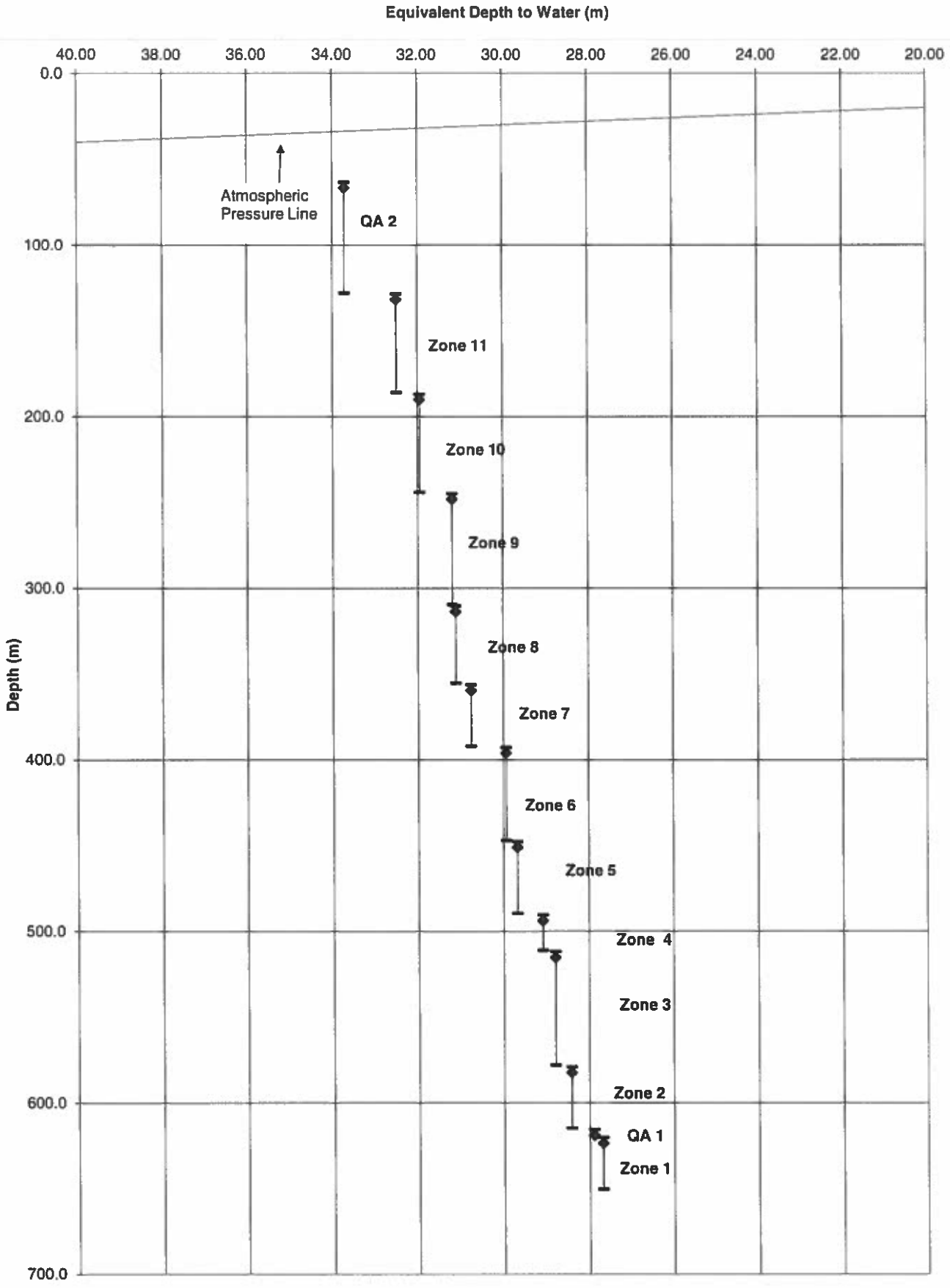
Start: Pressure	~~13.98~~ 13.92	Finish: 13.92
Temp	17.02	17.72
Time	1:45pm	4:40

Zone	Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1)	Outside Casing (P2)	Time H:M:S	Probe Temp. (°C)	Inside Casing (P1)	Pressure Head Outside Port (m) H = (P2-Patm)/w	Piez. Level Outside Port (m) Dz = Dp - H	Comments
1	1	623.6			825.31	861.12	2:51	13.97	825.35	595.92	27.7	
QA1	2	619			818.71	854.20	2:58	13.98	818.73	591.11	27.8	
2	3	582.4			766.34	801.48	3:09	13.79	766.31	553.98	28.4	
3	4	515.3			670.16	705.54	3:16	13.40	670.20	486.51	28.7	
4	5	493.9			639.77	674.69	3:22	13.04	639.74	464.81	29.1	
5	6	451.1			578.93	612.98	3:37	12.15	579.0	421.42	29.6	
6	7	396.2			500.68	534.55	3:50	11.37	500.69	366.26	29.9	
7	8	359.6			448.28	481.33	3:55	11.07	448.3	328.8	30.8	
8	9	313.8			382.79	415.7	4:01	10.58	382.8	282.68	31.1	
9	10	248.2			289.69	322.31	4:06	10.89	289.1	217.0	31.2	
10	11	190.2			206.15	238.75	4:12	9.22	206.2	158.25	31.9	
11	12	132.3			123.35	155.65	4:19	8.44	123.41	99.81	32.5	
QA2	13	66.7			30.0	60.63	4:35	7.67	30.0	32.98	33.7	

Notes: w = 0.4335 psi/ft (1.422psi/m) of H_2O Dz = piezometric level in zone Patm = atmospheric pressure H = pressure head of water in zone Dp = true depth of measurement port

Piezometric Profile
Monitoring Well:GAR-18-013

Profile Date:September 10,2018
Comments:Post-Inflation Profile



Client:Nexgen
Site:ROOK 1
Datum:Ground Level

Figure 4

Plot By: TL Date: Sept 24 / 18
Checked By: DL Date: 20181228/18
Westbay Project:WB985

Westbay Completion Log

Company: SRK/NexGen
Well: GAR-18-013
Site: ROOK 1
Project: Groundwater Characterization Study

Job No: WB985
Author: DL/TK

Well Information

Reference Datum: Ground Level
Elevation of Datum: 0.00 m.
MP Casing Top: 0.00 m.
MP Casing Length: 635.89 m.

Borehole Depth: ~~650.00~~ 650.4 m.
Borehole Inclination: Vertical
Borehole Diameter: 98.00 mm

Well Description:
Plastic MP38 System
Other References:

File Information

File Name: GAR-F1.WWD
Report Date: Fri Sep 07 08:32:03 2018

File Date: Aug 17 08:26:19 2018

Comments

- Depth to water = 27 m from G.L
- No Filter sock on MP
- Guide Tube depth: 570 m

Log Information

Borehole condition confirmed.	(method) Geophysical Logging	Date: Sept 3 / 2018
MP well design & preparation.	By: TK	Date: Sept 7 / 2018
MP well design checked.	By: TK/SRK / NXE	Date: Sept 7/2018
MP well and borehole approved to install.	By: Claudia Pich	Date: Sept 7/2018

Legend

(Qty) MP Components
(Library - WD Library 04/29/15)

(2) 703210 - 2" PVC Casing - 1.0 M

(1) 703205 - 2" PVC Casing - 0.5M

(16) 703229 - 2" PVC Casing - 2.9 M

(181) 020110 - MP38 Casing 1 (10F/3M)

(13) 0238 - MP38 Packer - 74mm (5F/1.5M)

(11) 020105 - MP38 Casing 2 (5F/1.5M)

(1) 0203 - MP38 End Cap

(19) 0000 - 2" PVC Joint for Illustration

(1) 027500C1 - 2" PVC Flush Joint Adaptor

(182) 0202 - MP38 Regular Coupling

(13) 0205 - MP38 Measurement Port

(9) 0206 - MP38 Hydraulic Pumping Port

(11) 0216 - Magnetic Location Collar

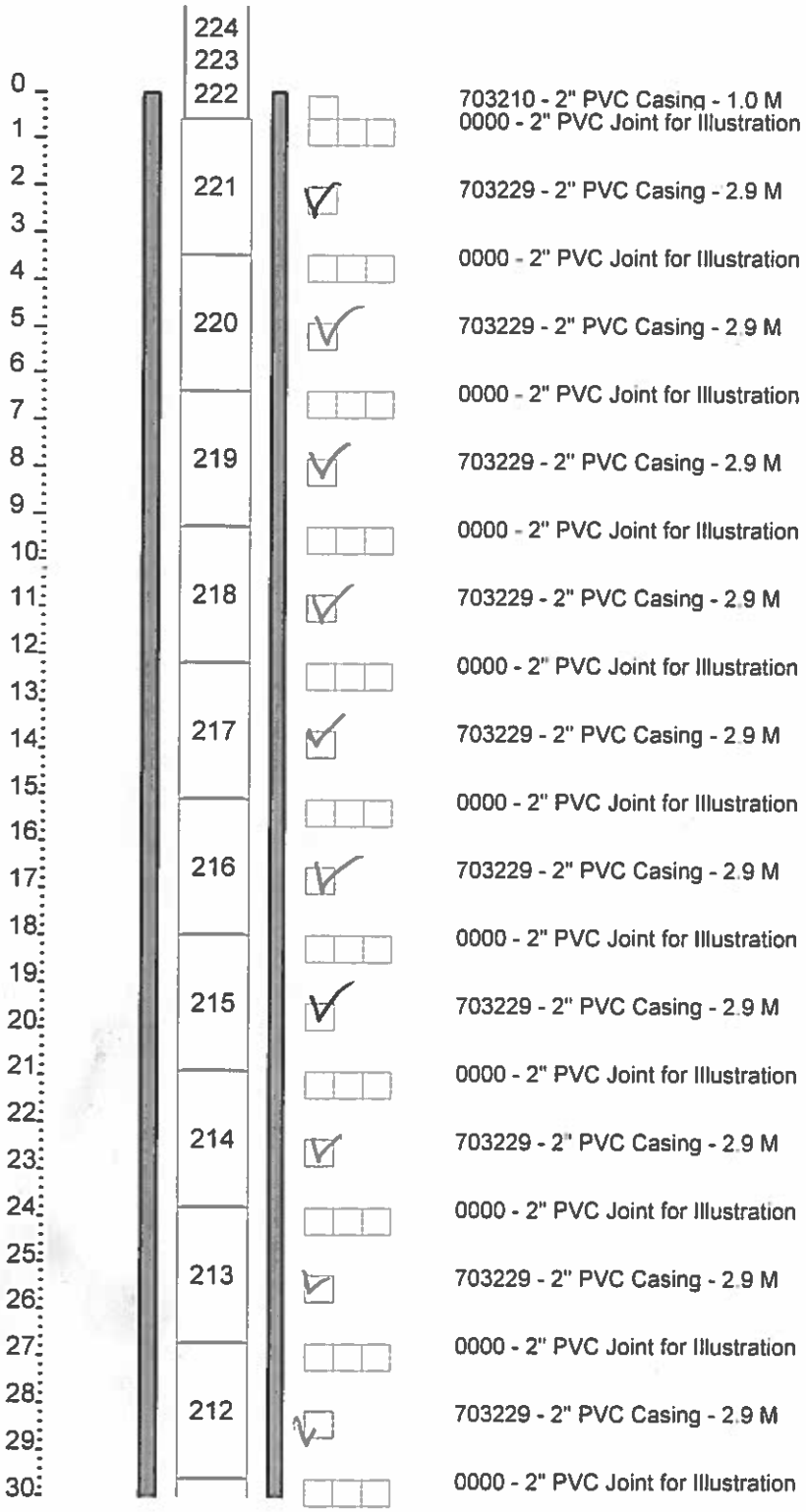
Geology

Backfill/Casing

Mild Steel

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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Fri Sep 07 08:36:03 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
30				
31	211	☑	703229 - 2" PVC Casing - 2.9 M	
32				
33			0000 - 2" PVC Joint for Illustration	
34	210	☑	703229 - 2" PVC Casing - 2.9 M	
35				
36			0000 - 2" PVC Joint for Illustration	
37	209	☑	703229 - 2" PVC Casing - 2.9 M	
38				
39			0000 - 2" PVC Joint for Illustration	
40	208	☑	703229 - 2" PVC Casing - 2.9 M	
41				
42			0000 - 2" PVC Joint for Illustration	
43	207	☑	703229 - 2" PVC Casing - 2.9 M	
44				
45			0000 - 2" PVC Joint for Illustration	
46	206	☑	703229 - 2" PVC Casing - 2.9 M	
47		☑	027500C1 - 2" PVC Flush Joint Adaptor	
48		N/A		
49	205	☑	020110 - MP38 Casing 1 (10F/3M)	
50				
51				
52	204	☑	020110 - MP38 Casing 1 (10F/3M)	
53				
54				
55	203	☑	020110 - MP38 Casing 1 (10F/3M)	
56				
57				
58	202	☑	020110 - MP38 Casing 1 (10F/3M)	
59				
60				

2.984

3.047

3.046

3.046

4:25 resume with 2"

2:22 finish lowed to 20m

Hydraulic Integrity Test

3:44 83.63 m Top of WB

3:54 83.63 m "

4:04 83.63 m "

4:14 83.63 m "

WB to water right.
Sept 8/18 TL

Add water 1 gallon

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
60				
61 3.047	201	☑	020110 - MP38 Casing 1 (10F/3M)	
62		☑☑☑		
63 1.522	200	☑	0238 - MP38 Packer - 74mm (5F/1.5M)	19663 165/140
64		☑☑☑		
65				
66 3.046	199	☑	020110 - MP38 Casing 1 (10F/3M)	
67		☑☑	0205 - MP38 Measurement Port	9397
68 3.048	198	☑	020110 - MP38 Casing 1 (10F/3M)	
69				
70		☑☑☑		
71 1.524	197	☑	020105 - MP38 Casing 2 (5F/1.5M)	
72		☑☑		
73 1.522	196	☑	020105 - MP38 Casing 2 (5F/1.5M)	
74		☑☑☑		
75 3.046	195	☑	020110 - MP38 Casing 1 (10F/3M)	
76		☑☑☑		
77				
78 3.046	194	☑	020110 - MP38 Casing 1 (10F/3M)	
79		☑☑☑		
80				
81 3.047	193	☑	020110 - MP38 Casing 1 (10F/3M)	
82		☑☑☑		
83				
84 3.047	192	☑	020110 - MP38 Casing 1 (10F/3M)	
85		☑☑☑		
86				
87 3.046	191	☑	020110 - MP38 Casing 1 (10F/3M)	
88		☑☑☑		
89				
90 3.046	190	☑	020110 - MP38 Casing 1 (10F/3M)	

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Fri Sep 07 08:36:03 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
93	3.046	189	020110 - MP38 Casing 1 (10F/3M)	
96	3.046	188	020110 - MP38 Casing 1 (10F/3M)	
99	3.046	187	020110 - MP38 Casing 1 (10F/3M)	water 5 gallons
102	3.046	186	020110 - MP38 Casing 1 (10F/3M)	
105	3.045	185	020110 - MP38 Casing 1 (10F/3M)	
108	3.046	184	020110 - MP38 Casing 1 (10F/3M)	
111	3.045	183	020110 - MP38 Casing 1 (10F/3M)	
114	3.045	182	020110 - MP38 Casing 1 (10F/3M)	
117	3.046	181	020110 - MP38 Casing 1 (10F/3M)	

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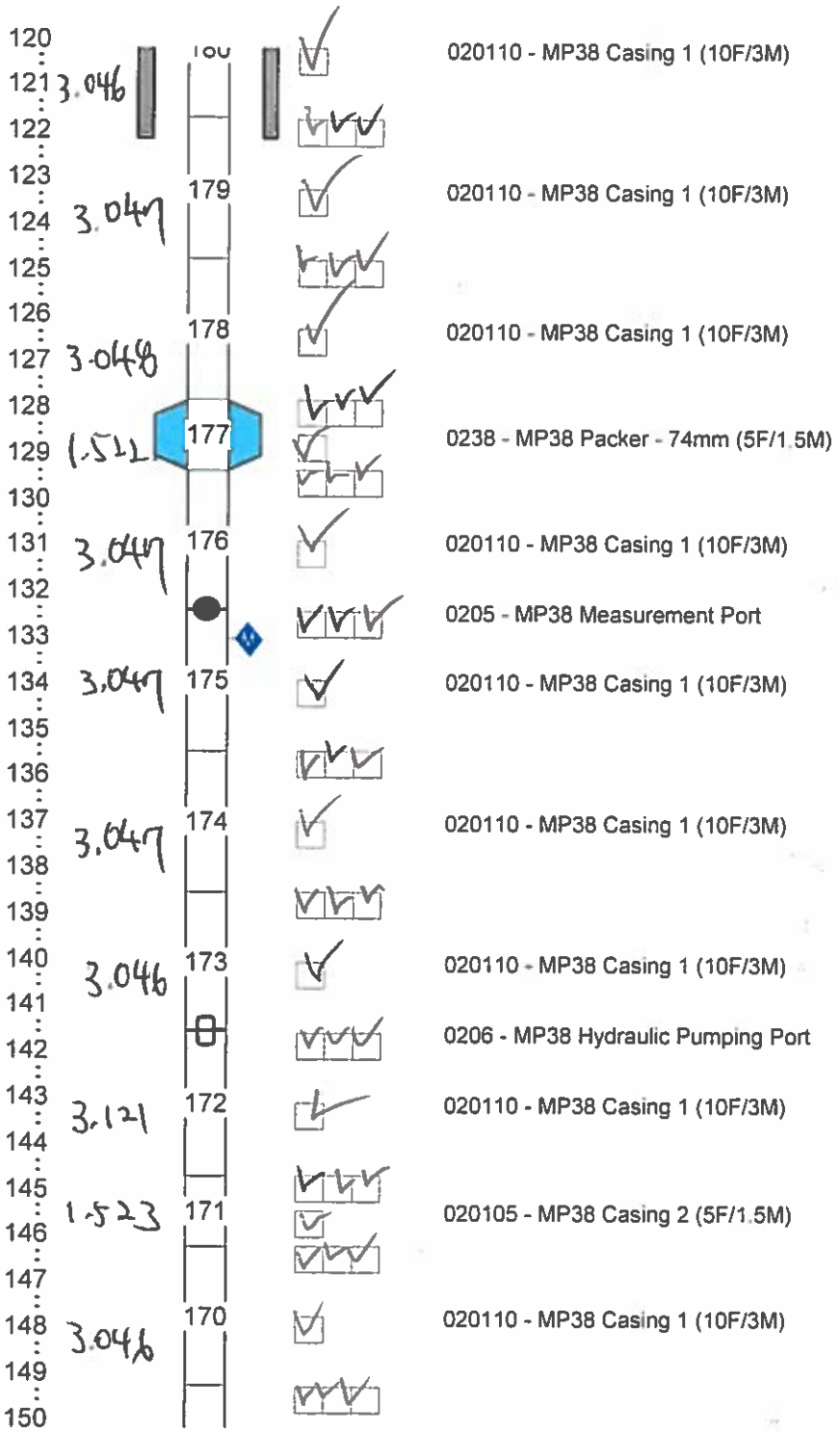
Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



19648 165/145.
Add water : 5 gallons

9393
11:30 am tool leaked.
12:00 resume.

433

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Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
150				
151	169	✓	020110 - MP38 Casing 1 (10F/3M)	
152 3.047		✓✓✓		
153				
154	168	✓	020110 - MP38 Casing 1 (10F/3M)	
155 3.046		✓✓✓		
156				
157	167	✓	020110 - MP38 Casing 1 (10F/3M)	
158 3.046		✓✓✓		
159				
160	166	✓	020110 - MP38 Casing 1 (10F/3M)	
161 3.047		✓✓✓		
162				
163	165	✓	020110 - MP38 Casing 1 (10F/3M)	Add water ~5gallons
164 3.046		✓✓✓		
165				
166	164	✓	020110 - MP38 Casing 1 (10F/3M)	
167 3.046		✓✓✓		
168				
169	163	✓	020110 - MP38 Casing 1 (10F/3M)	
170 3.046		✓✓✓		
171				
172	162	✓	020110 - MP38 Casing 1 (10F/3M)	
173 3.047		✓✓✓		
174				
175	161	✓	020110 - MP38 Casing 1 (10F/3M)	
176 3.046		✓✓✓		
177				
178	160	✓	020110 - MP38 Casing 1 (10F/3M)	
179 3.046		✓✓✓		
180				

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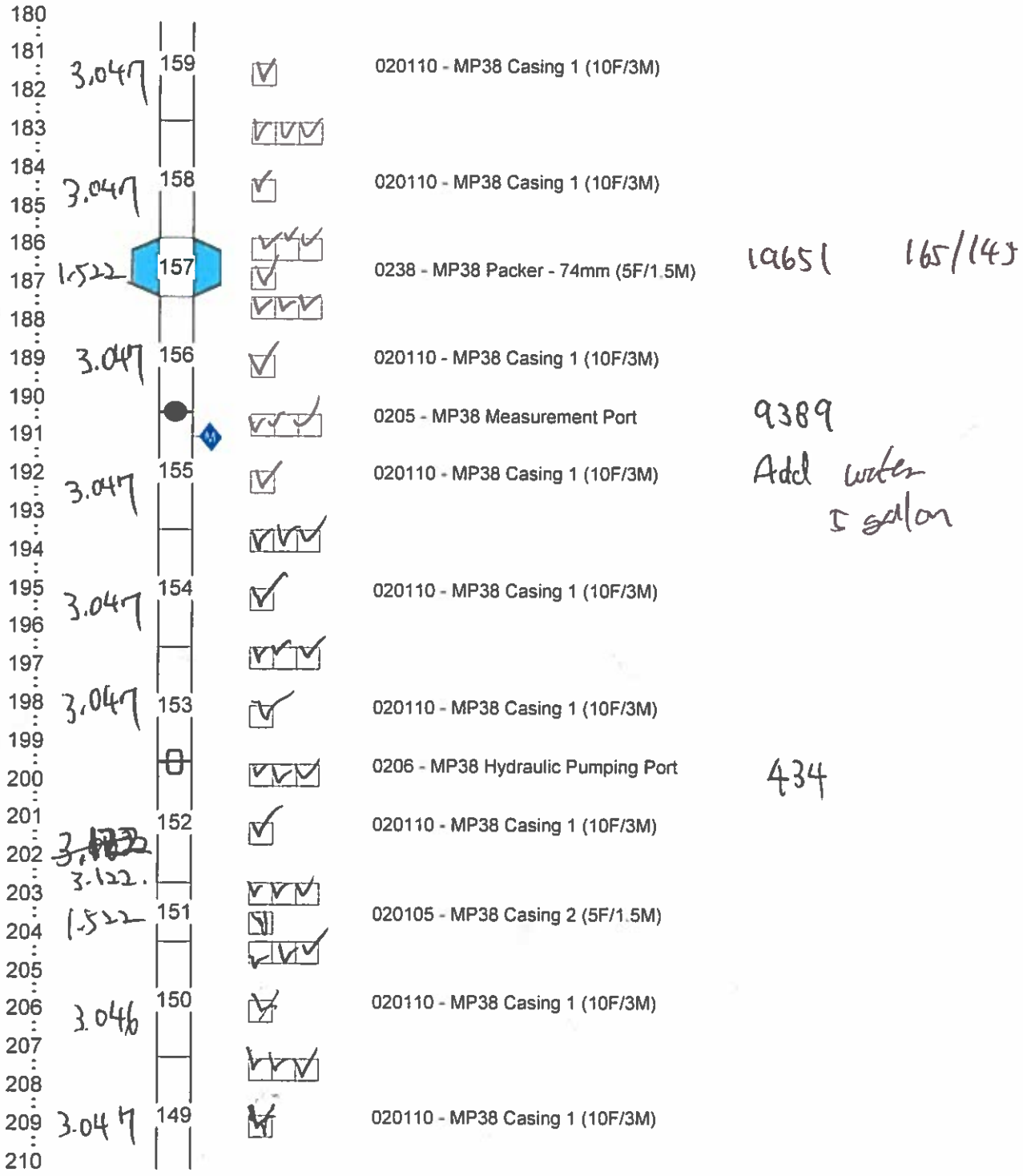
Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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Fri Sep 07 08:36:29 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
210				
211				
212	148		020110 - MP38 Casing 1 (10F/3M)	
213	3.046			changed R.C. (loose connection)
214				
215	147		020110 - MP38 Casing 1 (10F/3M)	
216	3.047			
217				
218	146		020110 - MP38 Casing 1 (10F/3M)	Add water ~5 gallon
219	3.047			
220				
221	145		020110 - MP38 Casing 1 (10F/3M)	
222	3.046			
223				
224	144		020110 - MP38 Casing 1 (10F/3M)	
225	3.046			
226				
227	143		020110 - MP38 Casing 1 (10F/3M)	
228	3.047			
229				
230	142		020110 - MP38 Casing 1 (10F/3M)	
231	3.046			
232				
233	141		020110 - MP38 Casing 1 (10F/3M)	
234	3.046			
235				
236	140		020110 - MP38 Casing 1 (10F/3M)	
237	3.046			
238				
239	139		020110 - MP38 Casing 1 (10F/3M)	Add water 5gallon
240	3.046			40 sec. 5 gallon.

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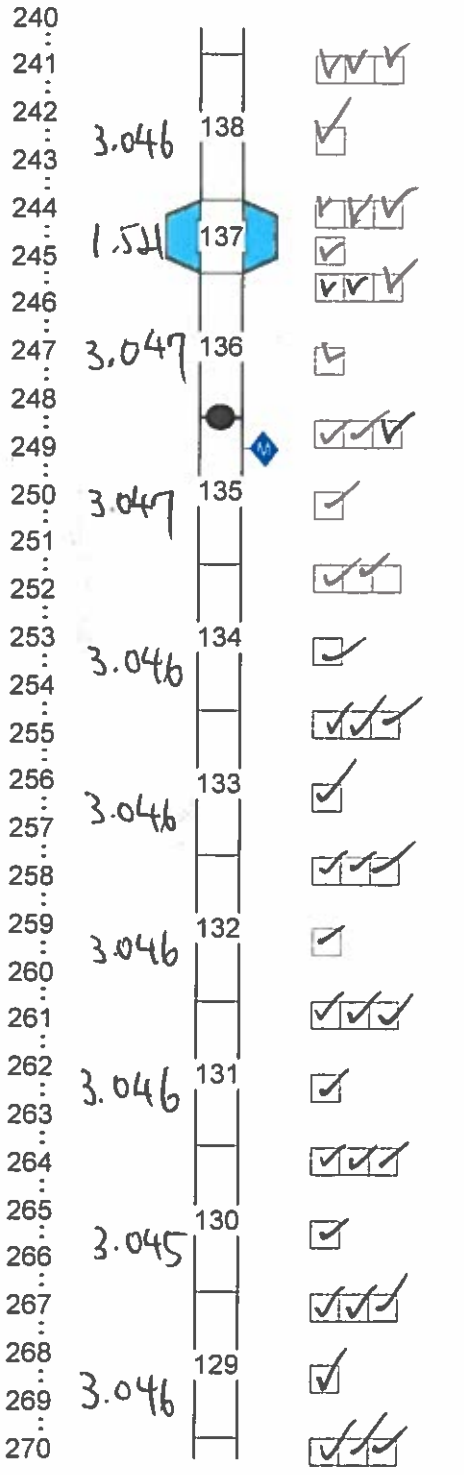
Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



7:30 am Sept 8/18
tool zero pm / 200/200
19656 165/145

6:30 am. finish lowering for night shift.
9392 comp #135 in bore hole

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Fri Sep 07 08:36:29 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
270				
271	3.046 128	☑	020110 - MP38 Casing 1 (10F/3M)	
272				
273		☑☑☑		
274	3.045 127	☑	020110 - MP38 Casing 1 (10F/3M)	
275				
276		☑☑☑		
277	3.046 126	☑	020110 - MP38 Casing 1 (10F/3M)	
278				
279		☑☑☑		
280	3.047 125	☑	020110 - MP38 Casing 1 (10F/3M)	
281				
282		☑☑☑		
283	3.047 124	☑	020110 - MP38 Casing 1 (10F/3M)	
284				
285		☑☑☑	5:19 am	
286	3.046 123	☑	020110 - MP38 Casing 1 (10F/3M)	
287				
288		☑☑☑		
289	3.047 122	☑	020110 - MP38 Casing 1 (10F/3M)	
290				
291		☑☑☑		
292	3.047 121	☑	020110 - MP38 Casing 1 (10F/3M)	
293				
294		☑☑☑		
295	3.046 120	☑	020110 - MP38 Casing 1 (10F/3M)	
296				
297		☑☑☑		
298	3.047 119	☑	020110 - MP38 Casing 1 (10F/3M)	
299				
300				

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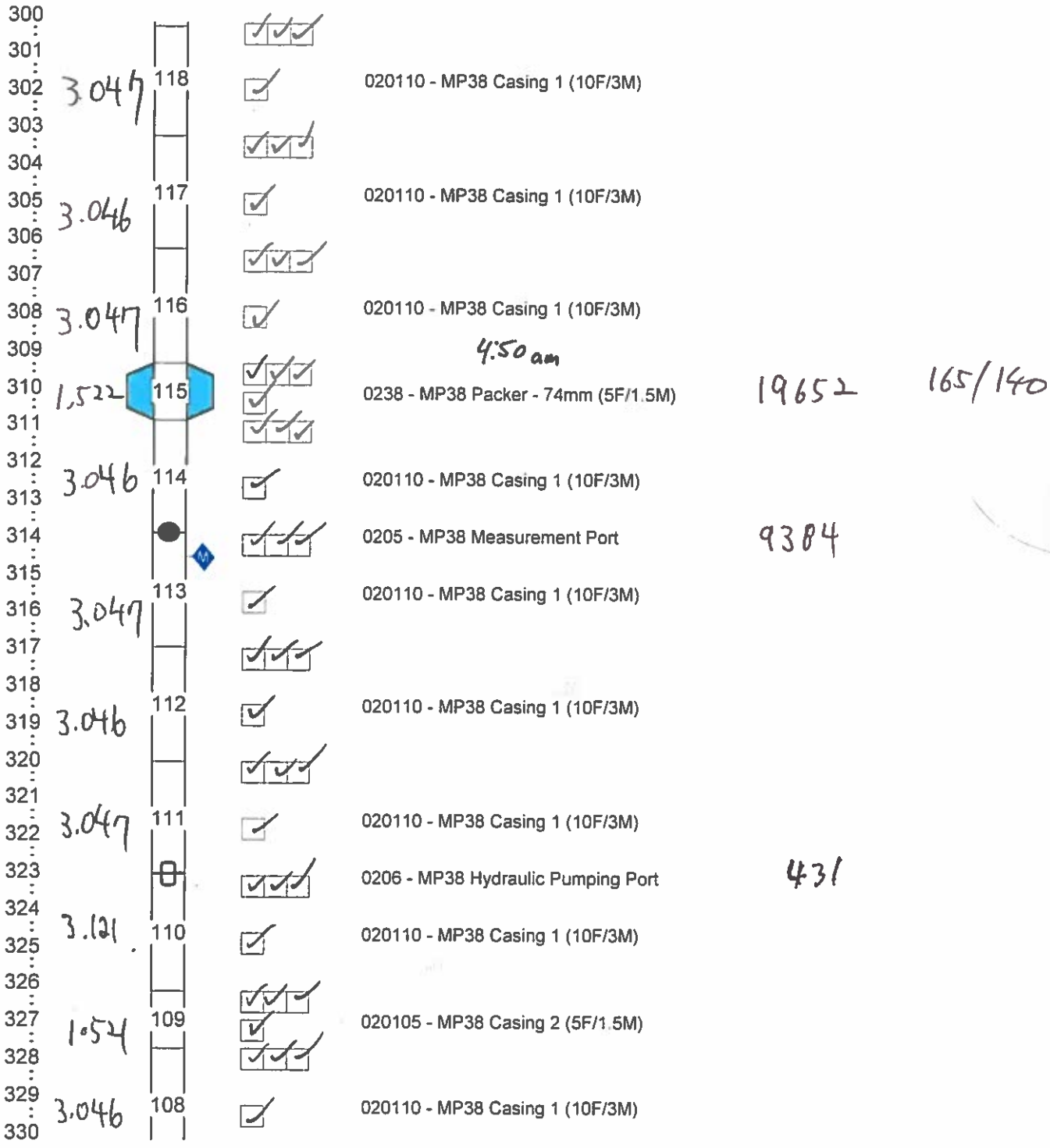
Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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Fri Sep 07 08:36:48 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
330				
331				
332	3.046 107		020110 - MP38 Casing 1 (10F/3M)	
333				
334				
335				
336	3.047 106		020110 - MP38 Casing 1 (10F/3M)	
337			4:08pm	
338				
339	3.046 105		020110 - MP38 Casing 1 (10F/3M)	
340				
341				
342	3.047 104		020110 - MP38 Casing 1 (10F/3M)	
343				
344				
345	3.047 103		020110 - MP38 Casing 1 (10F/3M)	
346				
347				
348	3.047 102		020110 - MP38 Casing 1 (10F/3M)	
349				
350				
351	3.047 101		020110 - MP38 Casing 1 (10F/3M)	
352				
353				
354	3.047 100		020110 - MP38 Casing 1 (10F/3M)	
355				
356	1.522 99		0238 - MP38 Packer - 74mm (5F/1.5M)	19646 160/140
357				
358	3.047 98		020110 - MP38 Casing 1 (10F/3M)	
359				
360			0205 - MP38 Measurement Port	9386

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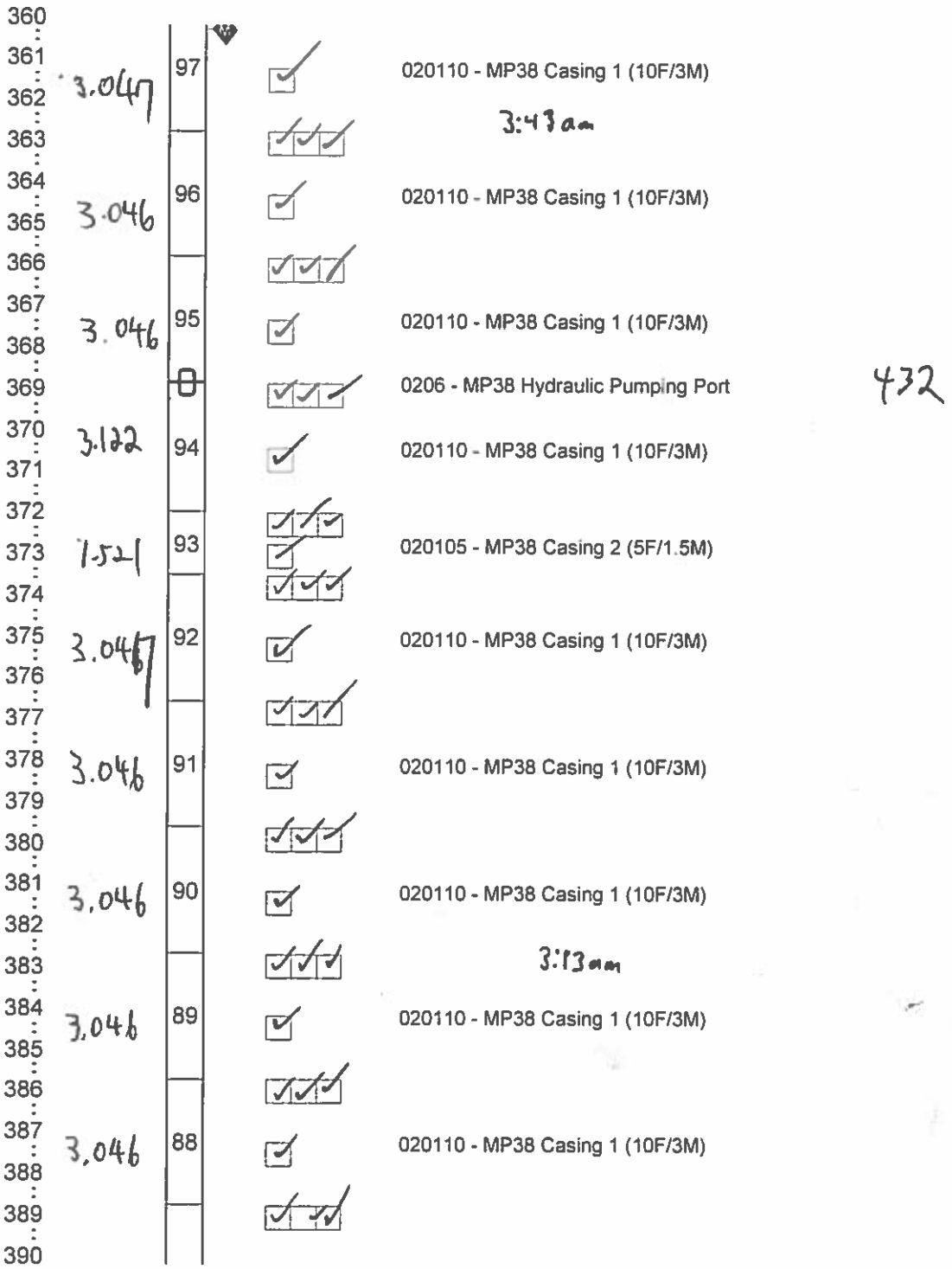
Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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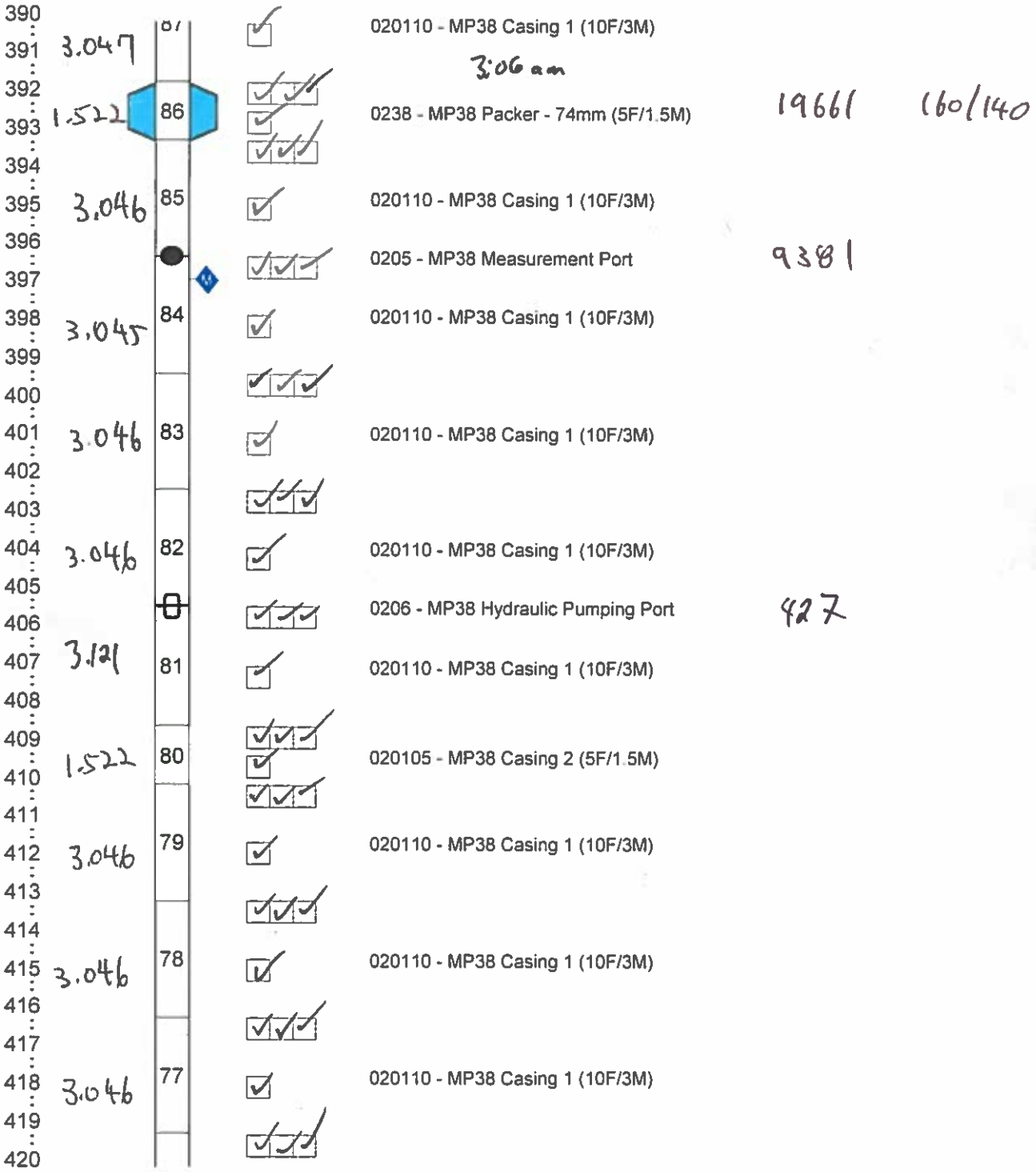
Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
420				
421	76	☑	020110 - MP38 Casing 1 (10F/3M)	
422 3.048		☑☑☑	2:22 pm	
423	75	☑	020110 - MP38 Casing 1 (10F/3M)	
424 3.046		☑☑☑		
425	74	☑	020110 - MP38 Casing 1 (10F/3M)	
426 3.047		☑☑☑		coffee break
427	73	☑	020110 - MP38 Casing 1 (10F/3M)	
428 3.047		☑☑☑		
429	72	☑	020110 - MP38 Casing 1 (10F/3M)	
430 3.046		☑☑☑		
431	71	☑	020110 - MP38 Casing 1 (10F/3M)	
432 3.046		☑☑☑		
433	70	☑	020110 - MP38 Casing 1 (10F/3M)	
434 3.047		☑☑☑		
435	69	☑	020110 - MP38 Casing 1 (10F/3M)	
436 3.047		☑☑☑		
437	68	☑	020110 - MP38 Casing 1 (10F/3M)	
438 3.046		☑☑☑	1:44 am	
439	67	☑	0238 - MP38 Packer - 74mm (5F/1.5M)	19658 160/135
440 1.522		☑☑☑		
441	66	☑	020110 - MP38 Casing 1 (10F/3M)	
442 3.046				
443				
444				
445				
446				
447				
448				
449				
450				

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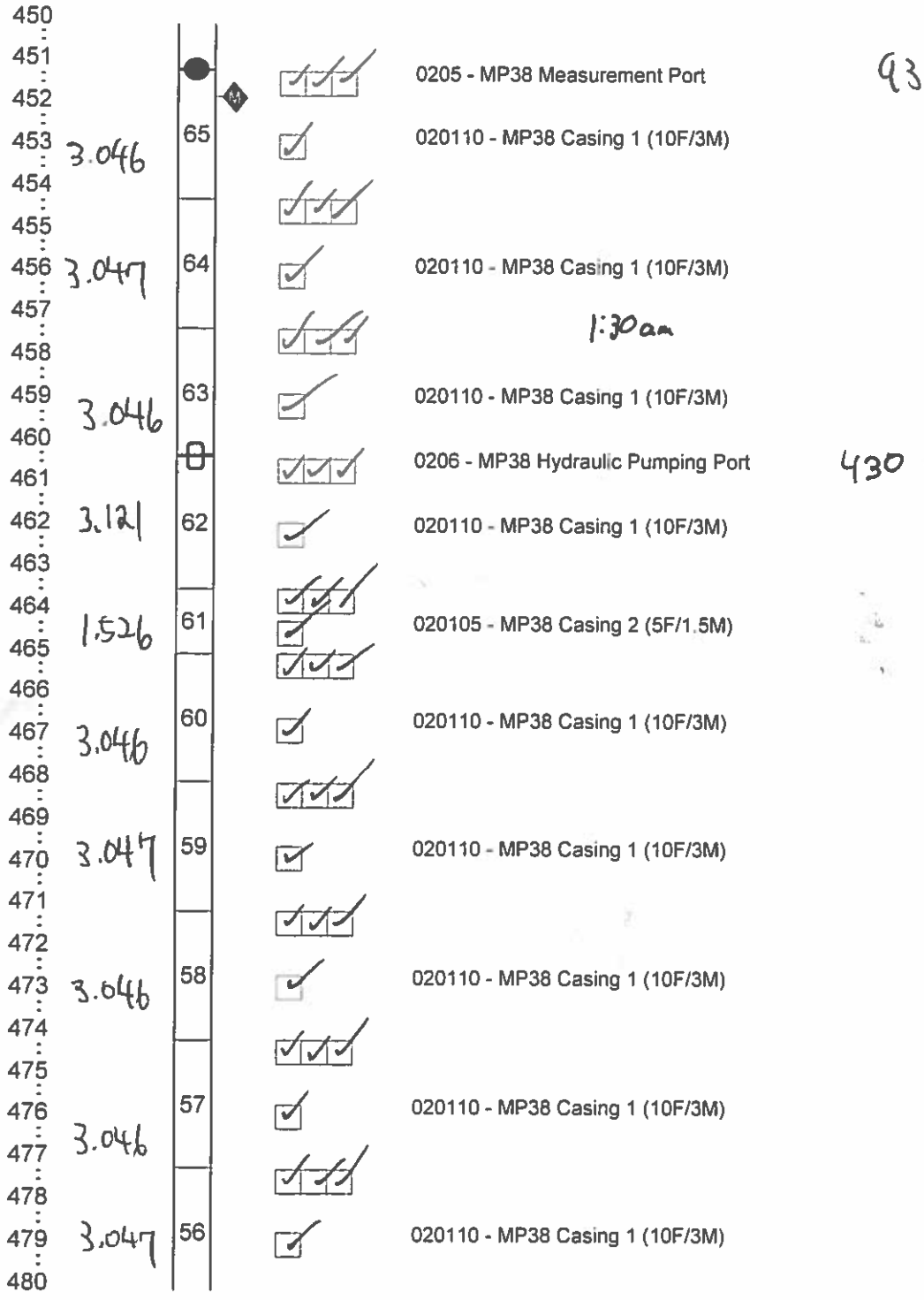
Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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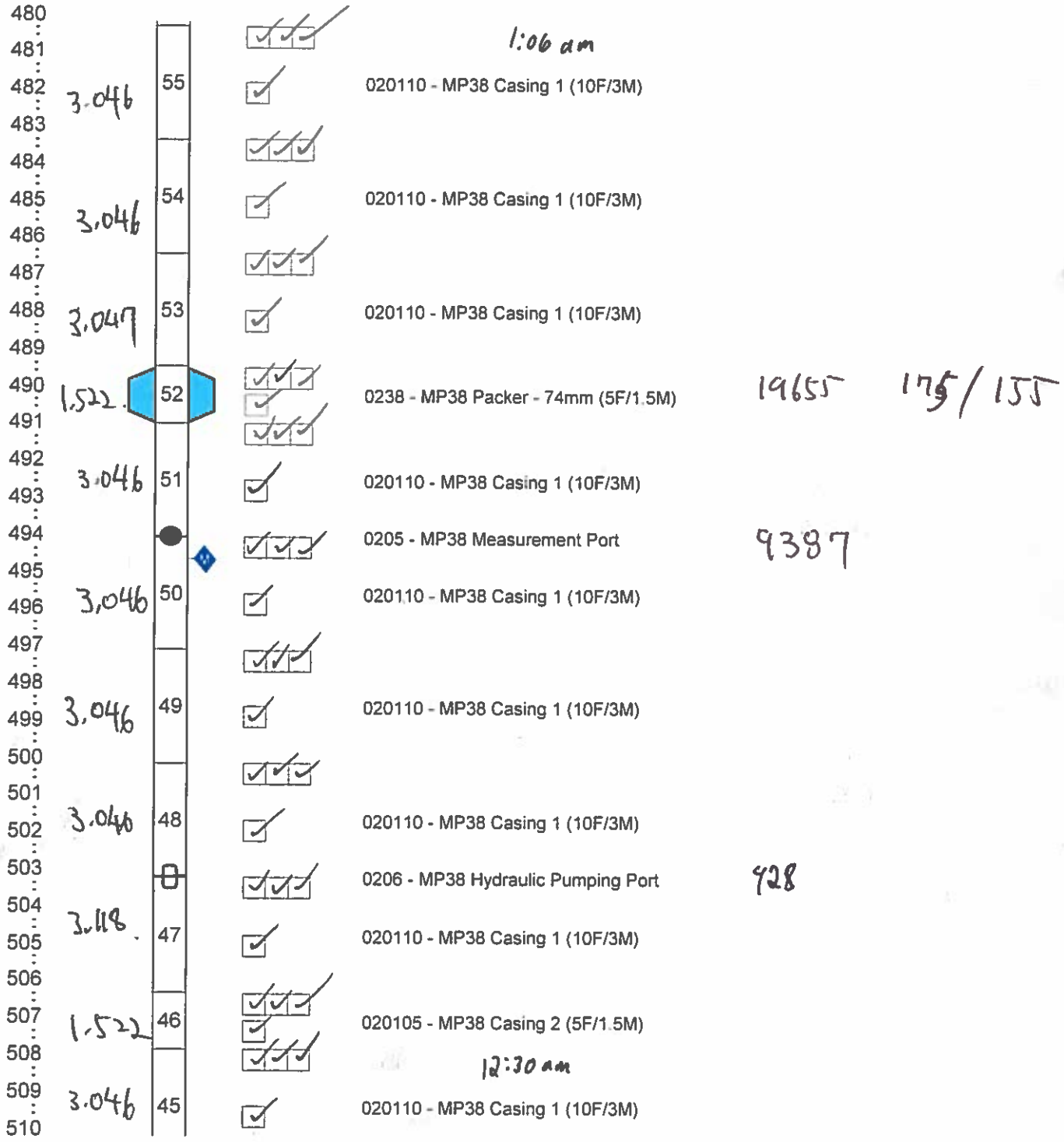
Fri Sep 07 08:37:14 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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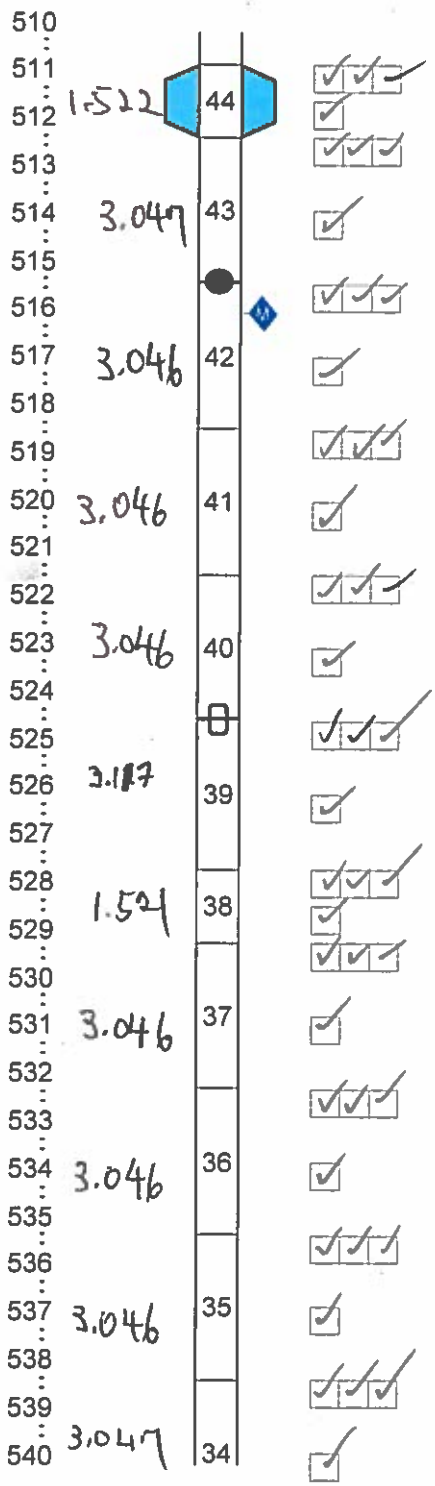
Fri Sep 07 08:37:14 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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Fri Sep 07 08:37:14 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
540				
541				
542		☑☑☑		
543	33	☑	020110 - MP38 Casing 1 (10F/3M)	
544 3.047				
545		☑☑☑		
546 3.046	32	☑	020110 - MP38 Casing 1 (10F/3M)	
547				
548		☑☑☑	11:22 pm	
549	31	☑	020110 - MP38 Casing 1 (10F/3M)	
550 3.047				
551		☑☑☑		
552	30	☑	020110 - MP38 Casing 1 (10F/3M)	
553 3.046				
554		☑☑☑		
555	29	☑	020110 - MP38 Casing 1 (10F/3M)	
556 3.046				
557		☑☑☑		
558	28	☑	020110 - MP38 Casing 1 (10F/3M)	
559 3.047				
560		☑☑☑		
561	27	☑	020110 - MP38 Casing 1 (10F/3M)	
562 3.047				
563		☑☑☑		
564	26	☑	020110 - MP38 Casing 1 (10F/3M)	
565 3.046				
566		☑☑☑		
567	25	☑	020110 - MP38 Casing 1 (10F/3M)	
568 3.046				
569		☑☑☑		
570				

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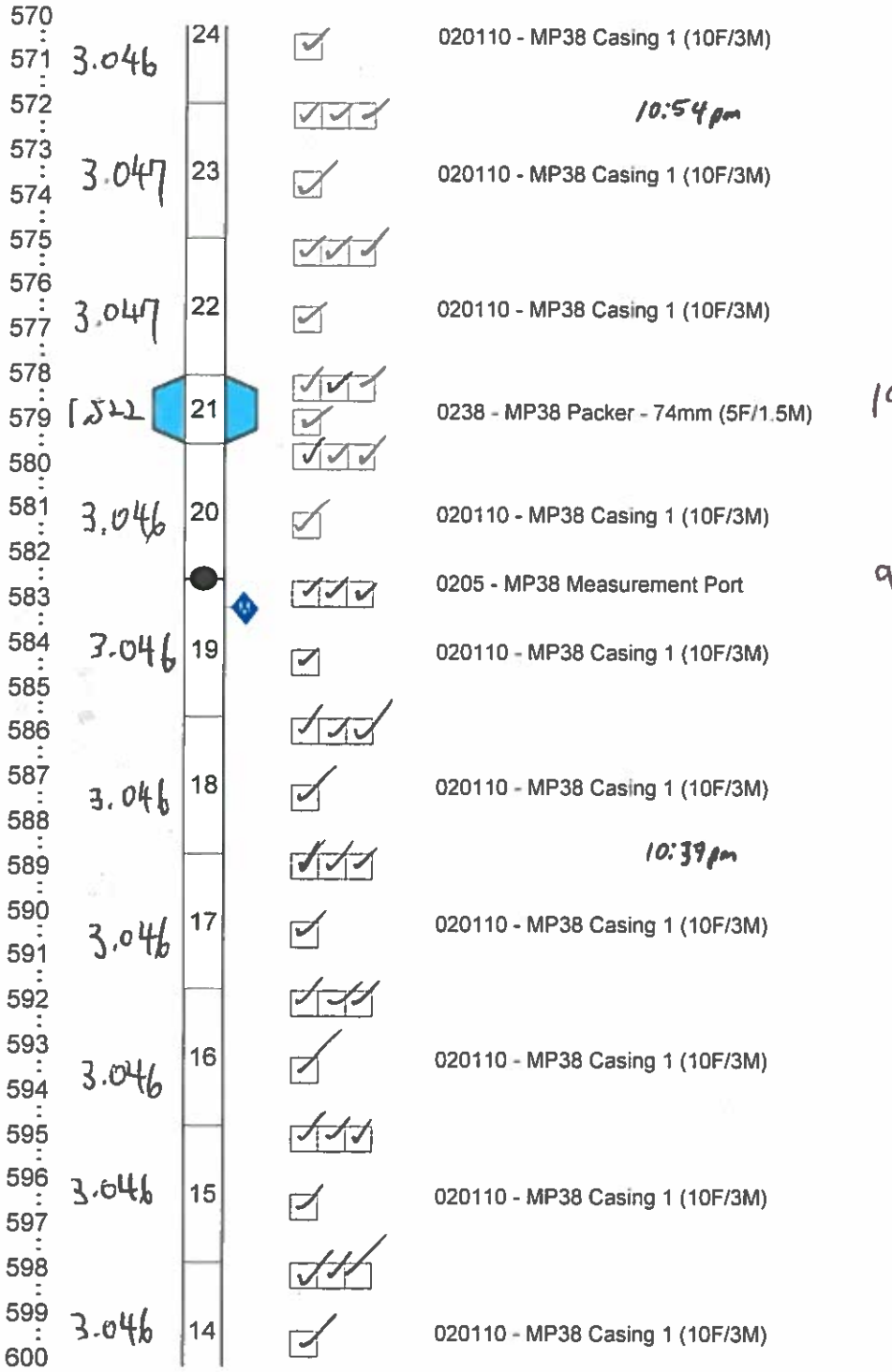
Fri Sep 07 08:37:14 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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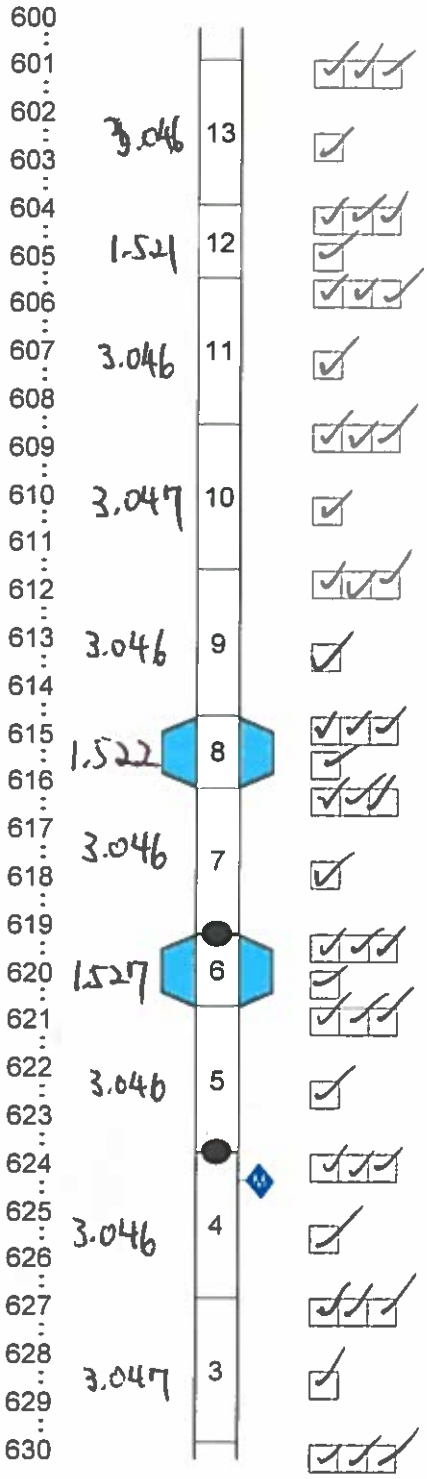
Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013



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Fri Sep 07 08:37:32 2018

Westbay Completion Log
SRK/NexGen

Job No: WB985
Well: GAR-18-013

Scale Meters	Westbay Tubinig	QA Tested OK	MP Tubing Description	Serial Numbers
630				
631				
632	3.046 2	☑	020110 - MP38 Casing 1 (10F/3M)	
633		☑☑☑	0206 - MP38 Hydraulic Pumping Port	391
634	3.123 1	☑	020110 - MP38 Casing 1 (10F/3M)	
635				
636		☑☑☑	0203 - MP38 End Cap	
637				
638			Joint test tool - 210psi	
639			21:30 Start lowering WB casing.	
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(c) Westbay Instruments Inc. 2000

Fri Sep 07 08:37:33 2018

Sheet 1 of 13

Westbay Packer Inflation Record

Project: Nexgen Project No.: 18981 Well No.: GAR 18-013

Location: Rook I, SK Completed by: M Lassard Date Inflated: Sept 9/18

Packer No. 1, comp # 6 SN# 19653 Depth (ft / m): 619 Inflation Tool No.: TIW 3994

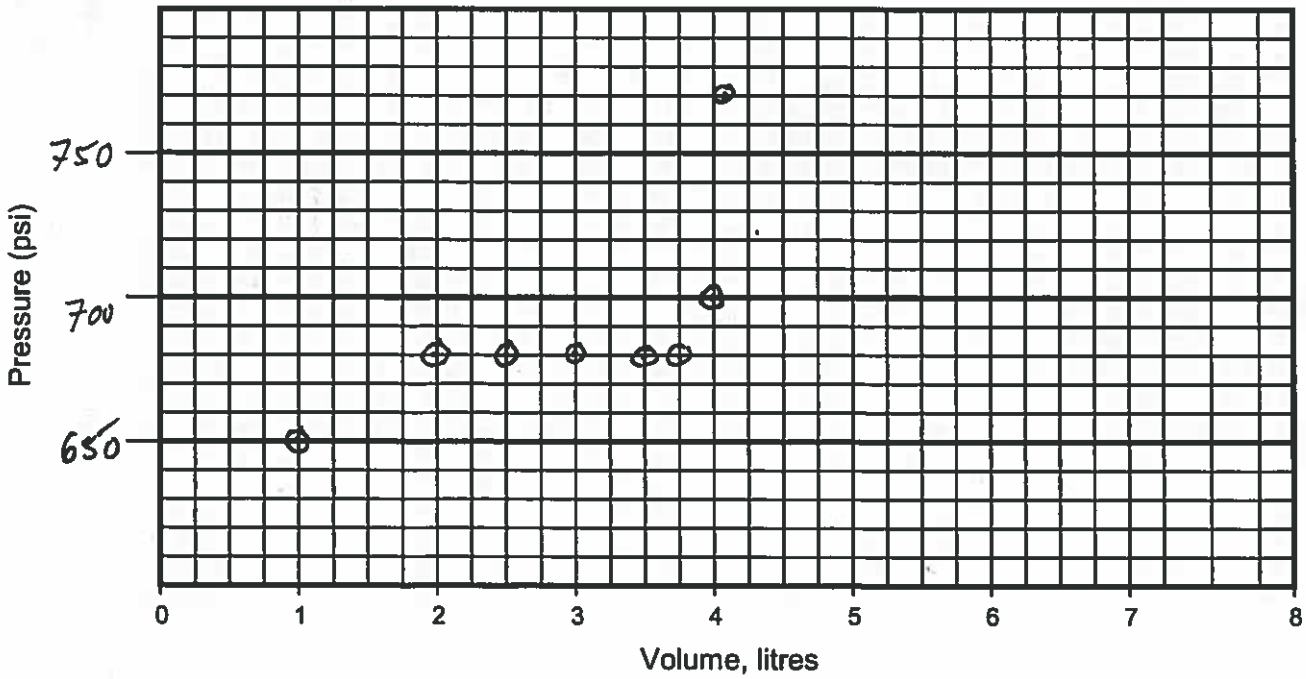
Packer Valve Pressure, P_V: 140 psi Final Line Pressure, P_L: 770 psi Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft / m) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 170 psi

Pressures after 1.5 min

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.15	/	3.5
Pressure, psi	650	680	680	680	680	680	700	770	/	Ø
Volume, litres										
Pressure, psi										



Comments: Packer #1 Time - 2:22 am

Target 700 psi

660 psi - 1 min stable

650 psi - 1½ min

650 psi - 2 min

Sheet 2 of 13

Westbay Packer Inflation Record

Project: Hergen Project No.: WB985 Well No.: GAR-18-013

Location: Rocky, Sk Completed by: ML Date Inflated: Sept 9/18

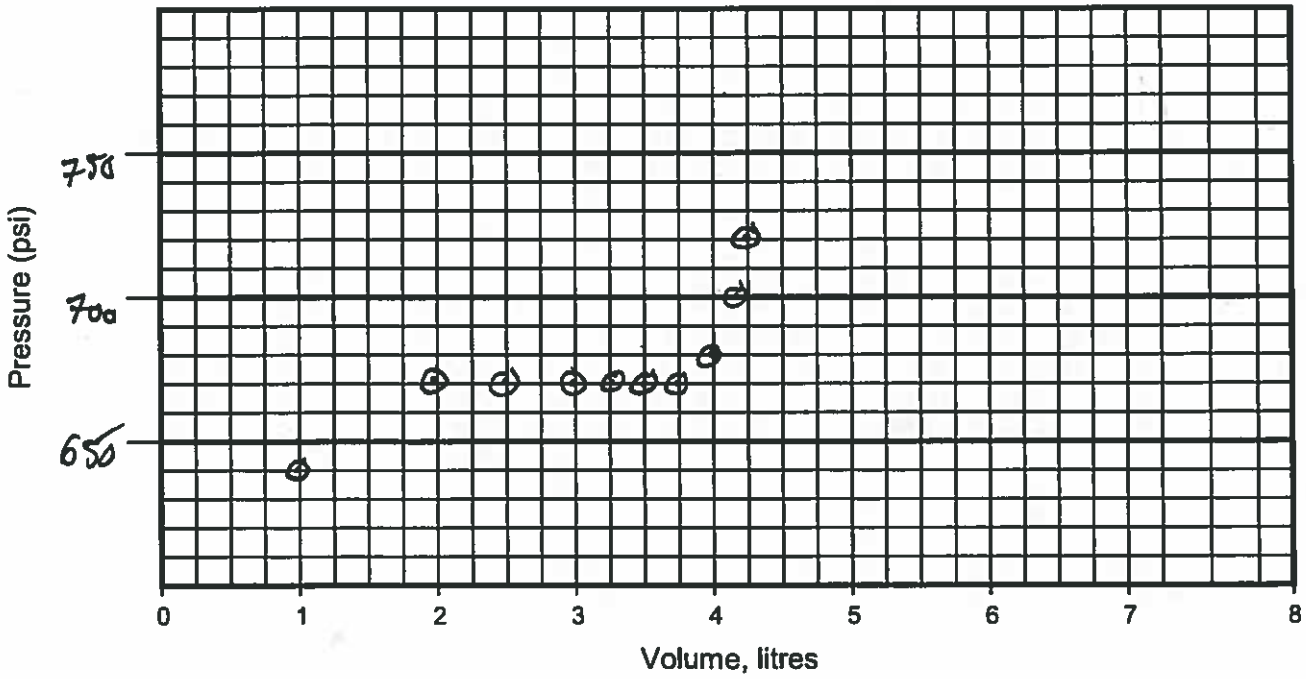
Packer No. 2, comp 8 SN#19657 Depth (ft / m): 614.4 Inflation Tool No.: TLW 3994

Packer Valve Pressure, P_V: 145 psi Final Line Pressure, P_L: 720 psi Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft / m) = 90 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 115 psi

Volume, litres	1.0	2.0	2.5	3.0	3.25	3.5	3.75	4.0	4.15	4.25
Pressure, psi	640	670	670	670	670	670	670	680	700	720
Volume, litres	/	3.6								
Pressure, psi	/	0								



Comments: Packer #2 Time - 3:12 am

Sheet 3 of 13

Westbay Packer Inflation Record

Project: Nexgen Project No.: WB958 Well No.: GAR 18-013

Location: Rook I, Sk Completed by: M.L Date Inflated: Sept 9/18

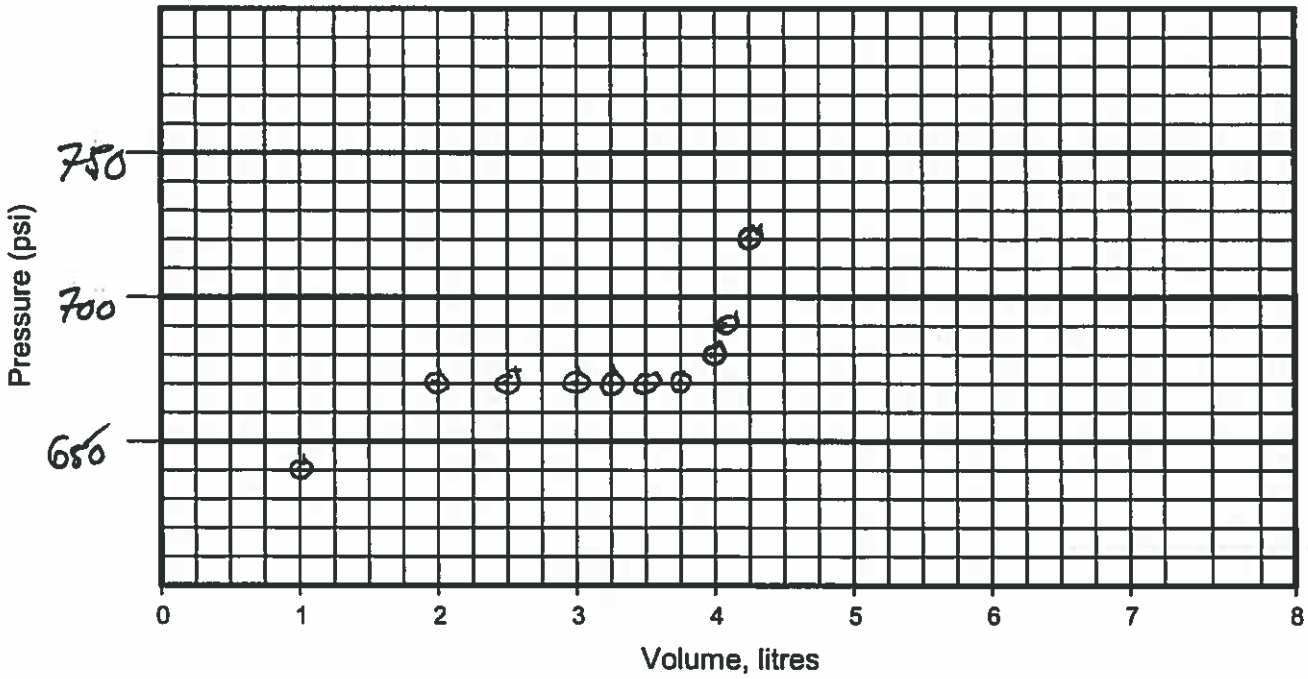
Packer No. 3, comp 21 SN#19654 Depth (ft/m): 577.9 Inflation Tool No.: TW 3994

Packer Valve Pressure, P_V: 140 psi Final Line Pressure, P_L: 720 psi Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft/m) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 120 psi

Volume, litres	1.0	2.0	2.5	3.0	3.25	3.5	3.75	4.0	9.1	4.25
Pressure, psi	640	670	670	670	670	670	670	680	690	720
Volume, litres	✓	3-6								
Pressure, psi	✓	Ø								



Comments: Packer #3 Time - 3:47 am

Sheet 4 of 13

Westbay Packer Inflation Record

Project: Nexgen | Project No.: WB985 | Well No.: GAR 1B - 013

Location: Rookie, Sk | Completed by: TK | Date Inflated: Sept 9/10

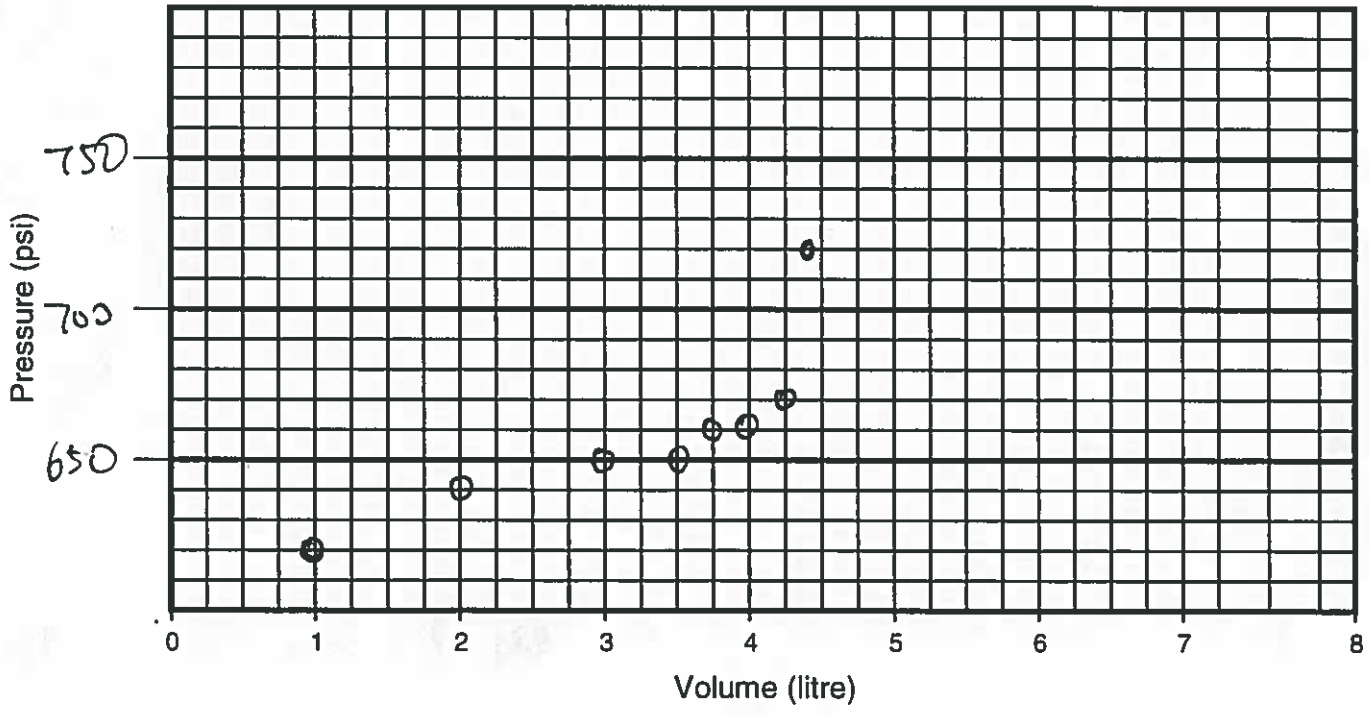
Packer No. 4, comp 44, S/N 19659 | Depth (ft / (m)): 510.7 | Inflation Tool No.: TIW 3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 720 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft (m) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 120 psi

Volume, litres	0.5	1.0	1.5	2.0	2.5	3.0	3.5	3.75	4.0	4.15
Pressure, psi	460	620	610	140	650	650	650	660	660	670
Volume, litres	4.25	4.3	4.45	3.85						
Pressure, psi	670	690	720	ø						



Comments: packer #1 4 | Time - 3:50 pm

Sheet 5 of 13

Westbay Packer Inflation Record

Project: Hergen Project No.: 103795 Well No.: GAR 18-013

Location: Rookl, SK Completed by: TK Date Inflated: Sept 9/18

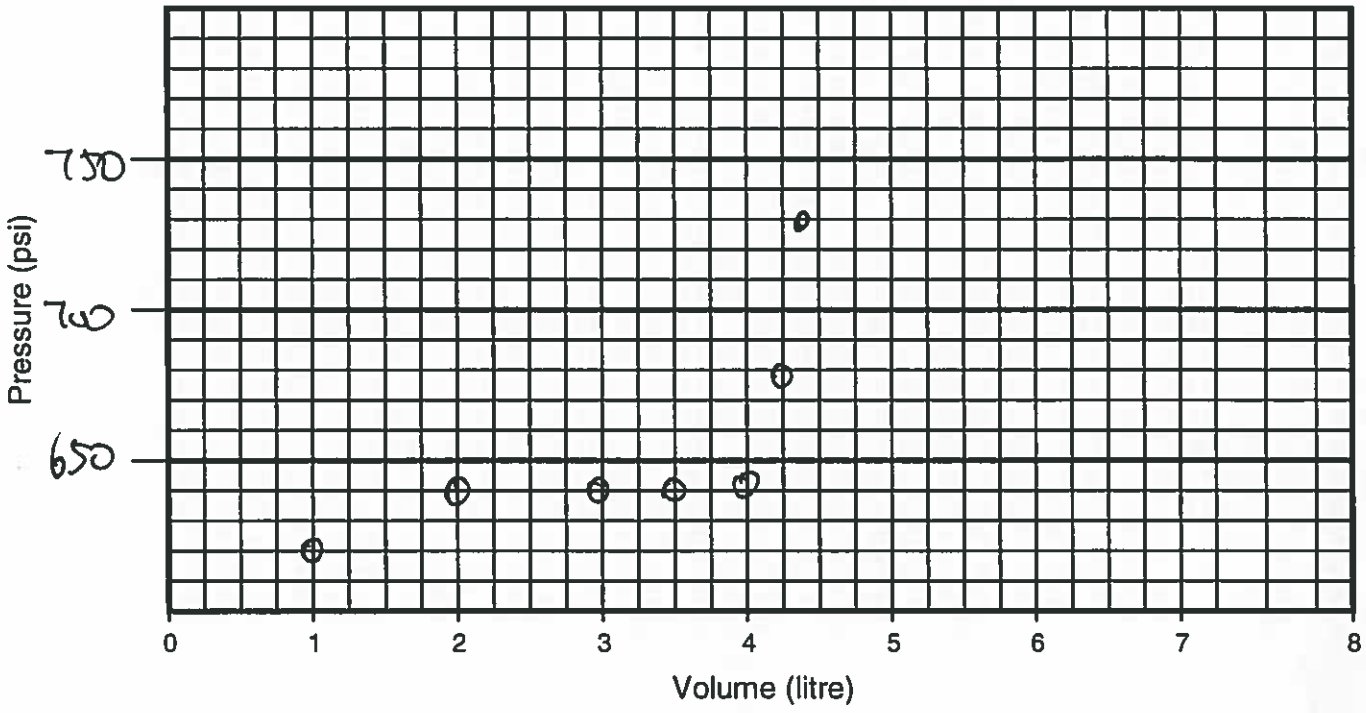
Packer No. #5, comp 52, S/N 19655 Depth (ft (m)): 489.3 Inflation Tool No.: TLW3994

Packer Valve Pressure, P_V: 155 psi Final Line Pressure, P_L: 730 psi Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft (m) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 115 psi

Volume, litres	1.0	1.5	2.0	3.0	3.5	3.75	4.0	4.25	4.3	3.8
Pressure, psi	620	630	640	640	640	640	640	680	730	ø
Volume, litres										
Pressure, psi										



Comments: Packer 5. Time - 4:30 pm

counter : 1635 ft.

Sheet 6 of 13

Westbay Packer Inflation Record

Project: Hexagon | Project No.: 103985 | Well No.: GAR 10-013

Location: ROOK I, SK | Completed by: TK | Date Inflated: Sept 9/18

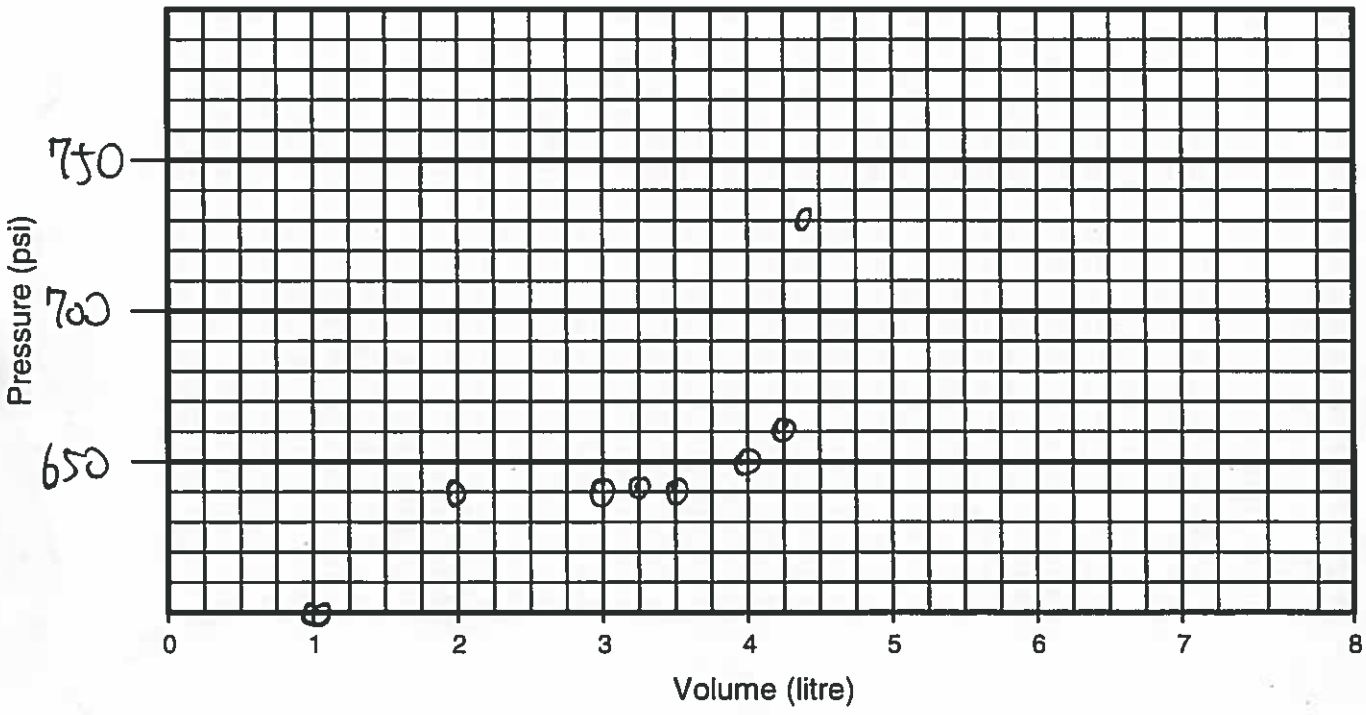
Packer No. #6, comp 67, S/N 19658 | Depth (ft / m): 446.6 | Inflation Tool No.: TW 3994

Packer Valve Pressure, P_V: 135 psi | Final Line Pressure, P_L: 730 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft / m) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 135 psi

Volume, litres	1.0	2.0	3.0	3.25	3.5	3.75	4.0	4.25	4.35	3.85
Pressure, psi	600	640	640	640	640	650	650	660	730	Ø
Volume, litres										
Pressure, psi										



Comments: Packer #6 | Time - 5:35 pm

comm.: 1490 ft.

worked 1 min. for interval.

Sheet 7 of 13

Westbay Packer Inflation Record

Project: Nexgen | Project No.: WB985 | Well No.: GAR 18-013

Location: Rooki, QC | Completed by: TK | Date Inflated: Sept 9/10

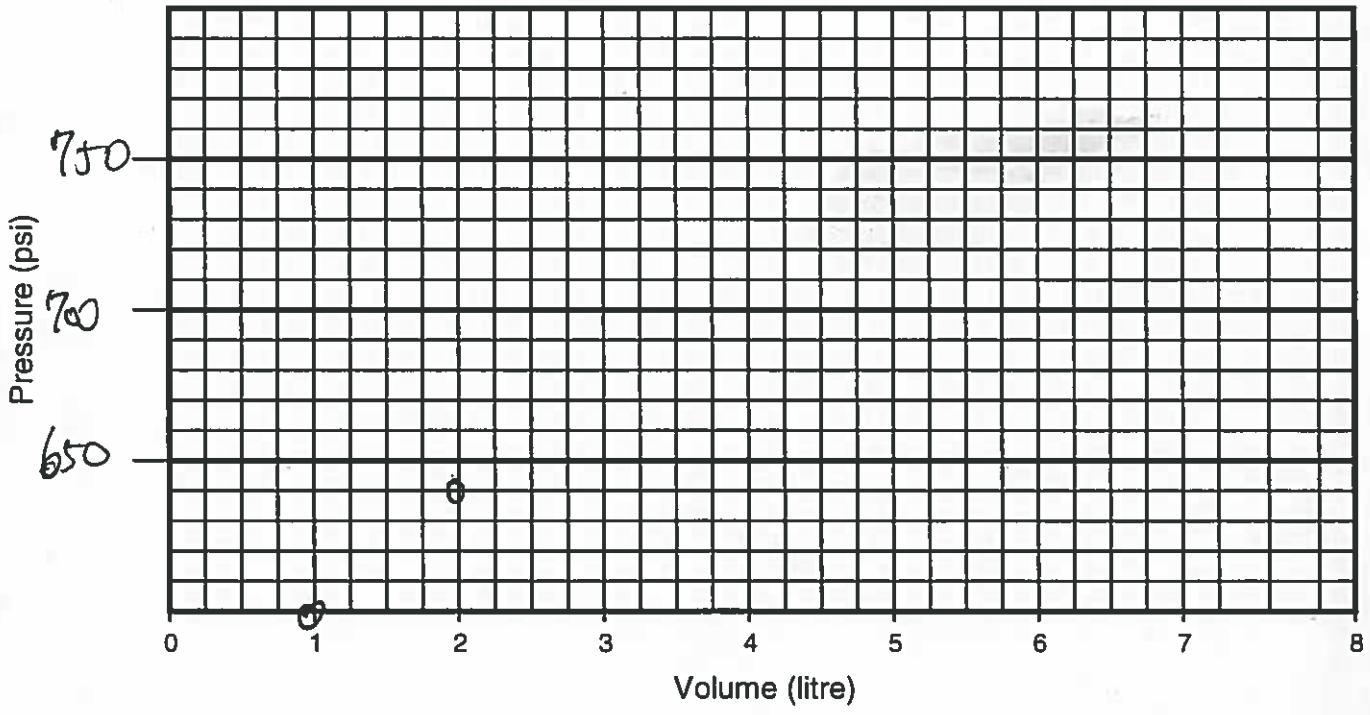
Packer No.: #7, comp86, S/N 19661 | Depth (ft (m)): 391.6 | Inflation Tool No.: TW 3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 720 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft / (m)) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 120 psi

Volume, litres	1.0	2.0	3.0	3.25	3.5	3.75	4.0	4.25	4.50	4.55
Pressure, psi	600	640	640	640	640	640	650	650	700	720
Volume, litres	3.9									
Pressure, psi	0									



Comments: Packer #7 | Time - 6:38 pm

counter: 1304

Sheet 8 of 13

Westbay Packer Inflation Record

Project: Hergan | Project No.: WB985 | Well No.: GAR 18-013

Location: Rook I, Sk | Completed by: ML | Date Inflated: Sept 9/18

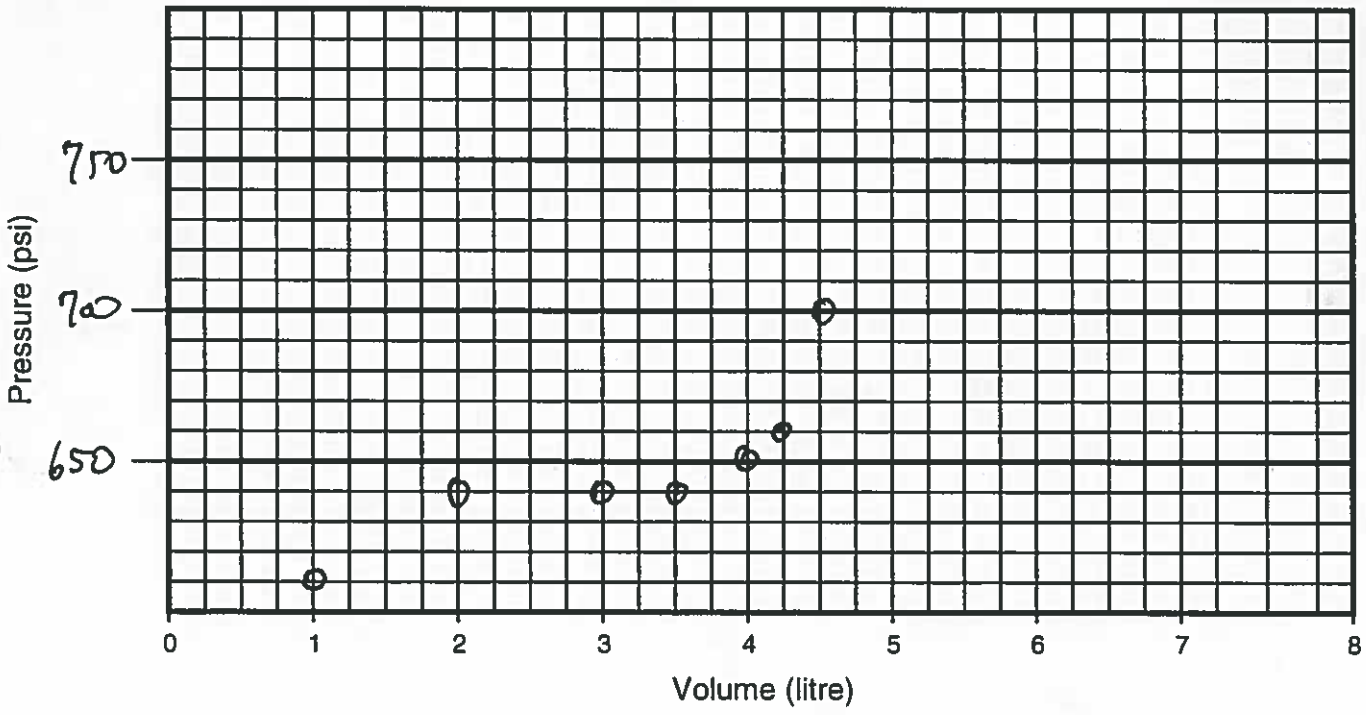
Packer No. 8, comp 99, S/N 19646 | Depth (ft / (m)): 355. | Inflation Tool No.: TW 3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 700 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft / (m)) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 100 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.35	4.5	/
Pressure, psi	610	640	640	640	640	650	660	670	700	/
Volume, litres	4.0									
Pressure, psi	0									



Comments: Packer #8 | Time - 8:12 pm

Sheet 9 of 13

Westbay Packer Inflation Record

Project: Hergen | Project No.: 608985 | Well No.: GAR 18-013

Location: Rookie, s/c | Completed by: ML | Date Inflated: Sept 9/18

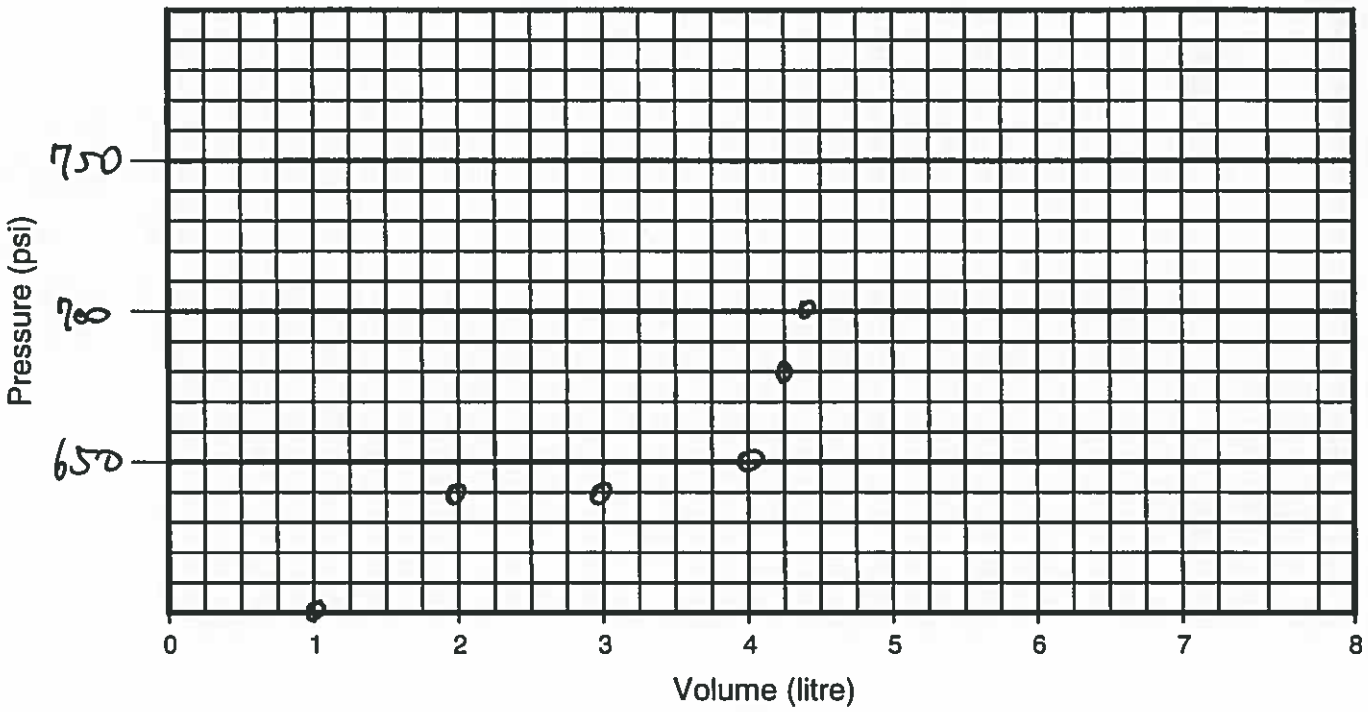
Packer No. 9, comp 115, s/N 19652 | Depth (ft / m): 309.2 | Inflation Tool No.: TW3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 700 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft / m) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 100 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.4	/	3.9
Pressure, psi	600	640	640	640	640	650	680	700	/	ø
Volume, litres										
Pressure, psi										



Comments: Packer #9 | Time - 10:23 pm

Sheet 10 of 13

Westbay Packer Inflation Record

Project: Nexgen Project No.: WB985 Well No.: GWR 18-013

Location: Rooki, SK Completed by: ML Date Inflated: Sept 9/18

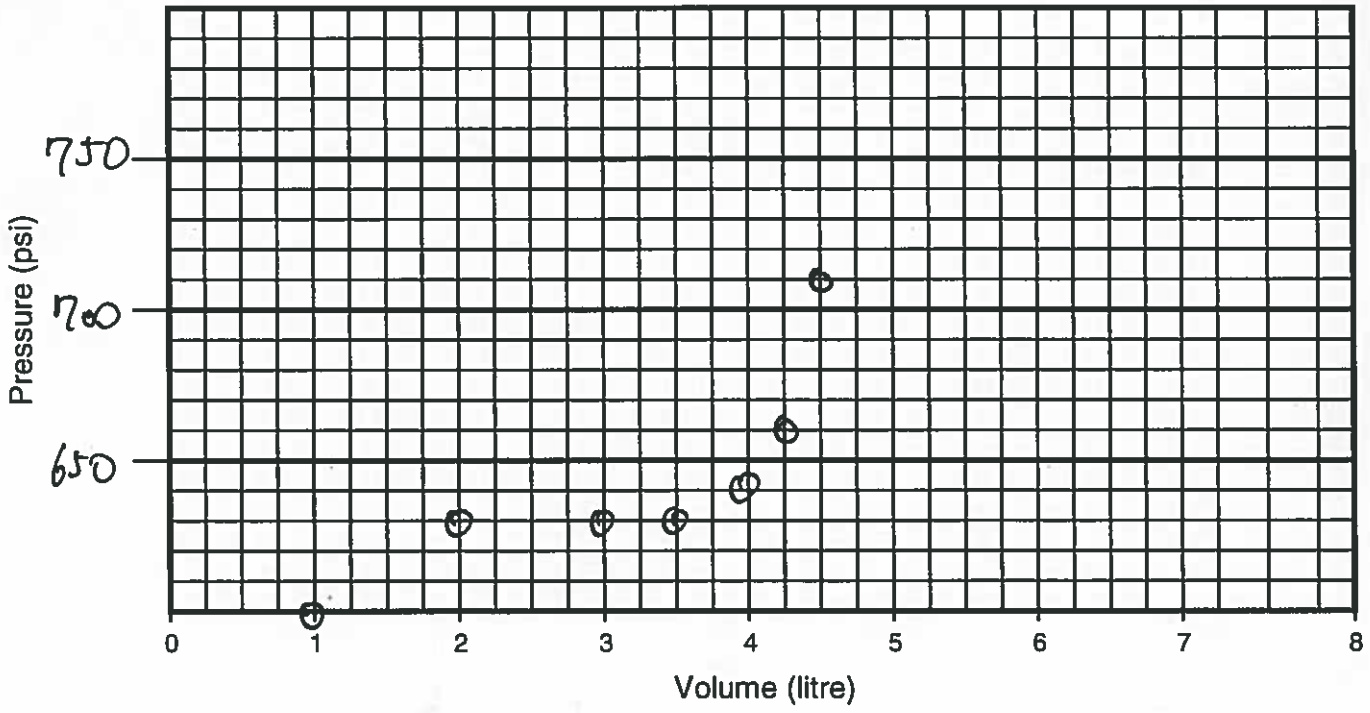
Packer No. 10 comp 137, S/N 19656 Depth (ft / m): 243.7 Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 145 psi Final Line Pressure, P_L: 710 psi Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft / m) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 105 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.15	4.25	4.35	4.5
Pressure, psi	600	630	630	630	630	640	650	660	660	710
Volume, litres	✓	3.8								
Pressure, psi	✓	Ø								



Comments: Packer #10 Time - 11:10 pm

Sheet 11 of 13

Westbay Packer Inflation Record

Project: Nexgen Project No.: 103985 Well No.: GAR 18-013

Location: Rookl, Sk Completed by: ML Date Inflated: Sept 9/18

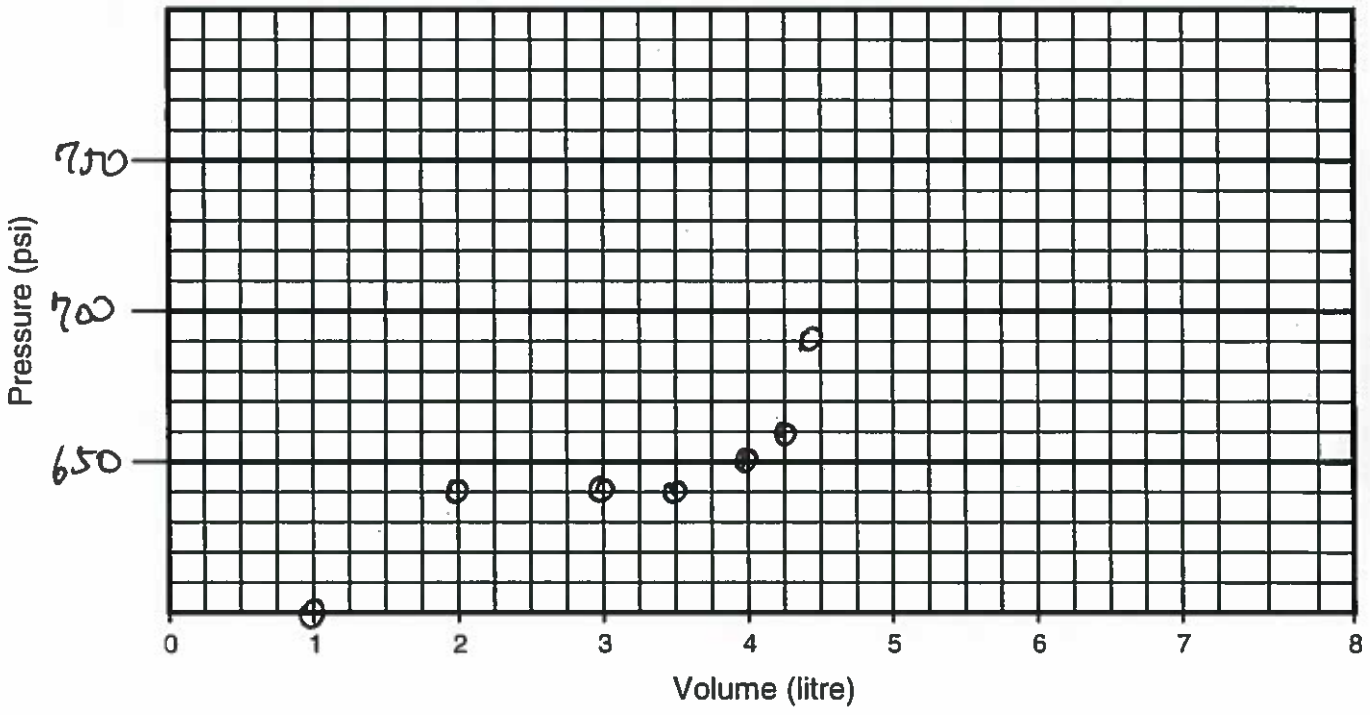
Packer No. 11, comp 157, S/N 1961 Depth (ft / m): 185.7 Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 145 psi Final Line Pressure, P_L: 690 psi Tool Pressure, P_T: 300 psi

Borehole Water Level: 57 (ft / m) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 85 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.35	4.4	/
Pressure, psi	600	640	640	640	640	650	660	680	690	/
Volume, litres	3.8									
Pressure, psi	0									



Comments: Packer #11 Time - 11:51 pm

Sheet 12 of 13

Westbay Packer Inflation Record

Project: Hexgan Project No.: 108985 Well No.: GAR 18-013

Location: Rookl, sk Completed by: TML Date Inflated: Sept 10/18

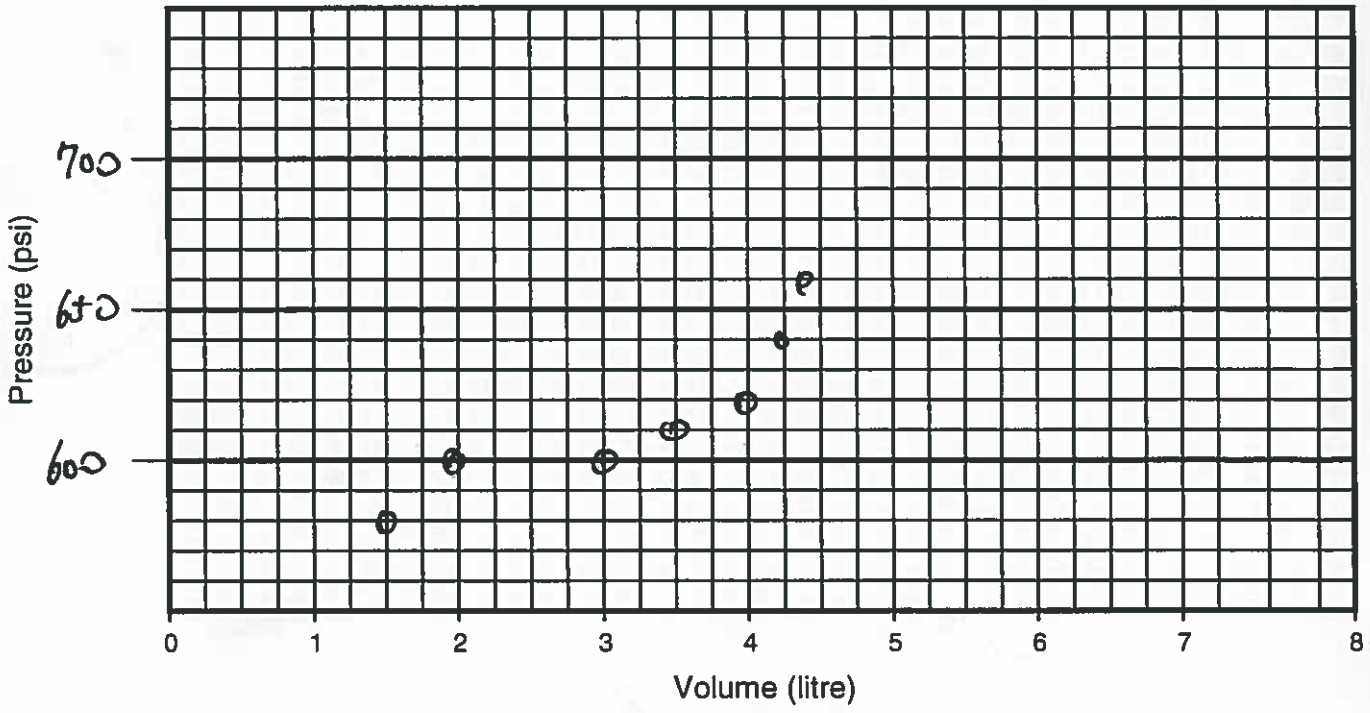
Packer No. 12, Comp 177, S/N 1964B Depth (ft / m): 127.7 Inflation Tool No.: TW 3994

Packer Valve Pressure, P_V: 145 psi Final Line Pressure, P_L: 660 psi Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft / m) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 55 psi

Volume, litres	1.0	1.5	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.3
Pressure, psi	540	580	600	600	600	610	620	~~640~~ 620	640	660
Volume, litres	/	3.8								
Pressure, psi	/	∅								



Comments: Packer #12 Time - 2:05 am

Westbay Packer Inflation Record

Project: Hexgan | Project No.: WB985 | Well No.: GeAR 18-013

Location: Rook I, Sk | Completed by: ML | Date Inflated: Sept 10/18

Packer No. 13, comp 200, S/N 19663 | Depth (ft / (m)): 62.2 | Inflation Tool No.: TW 3994

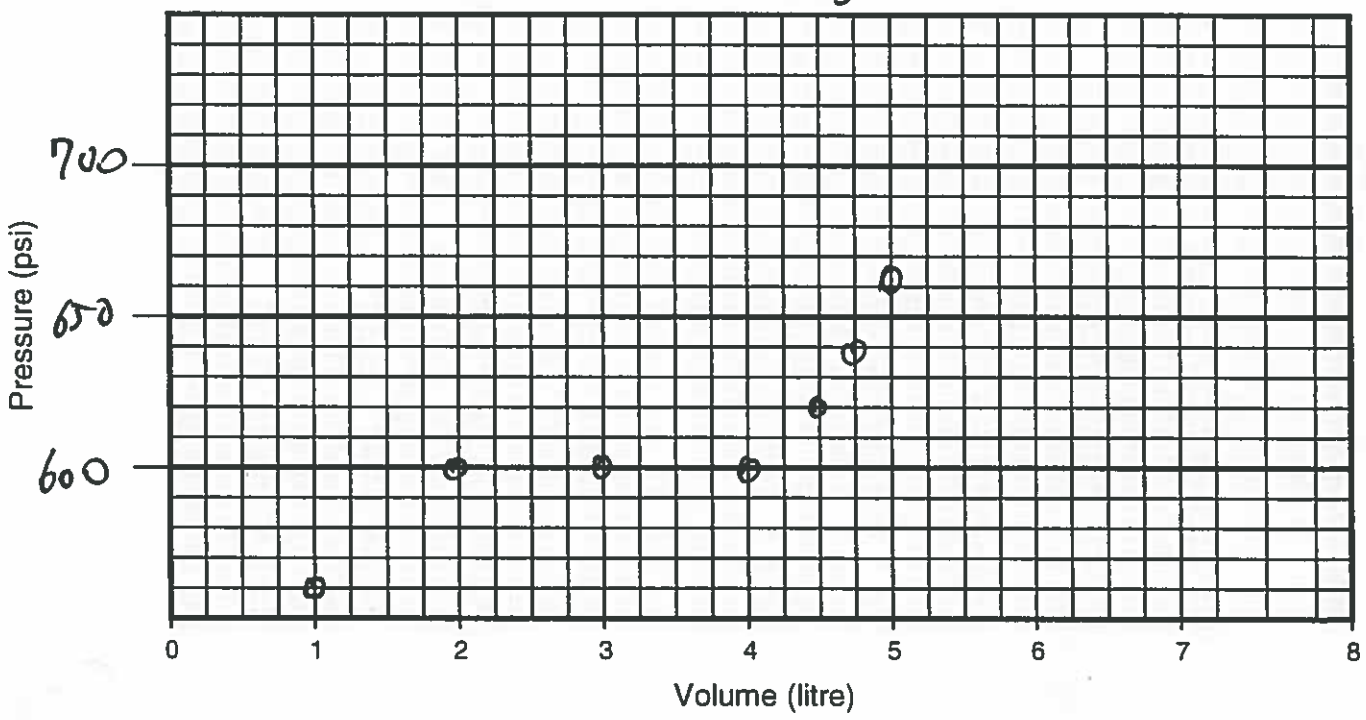
Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 660 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 27 (ft / (m)) = 40 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 60 psi

Volume, litres	1.0	2.0	3.0	3.5	3.75	4.0	4.25	4.5	4.75	5.0
Pressure, psi	560	600	600	600	600	600	600	620	640	660
Volume, litres	/	4.3								
Pressure, psi	/	0								

In 4" surface casing

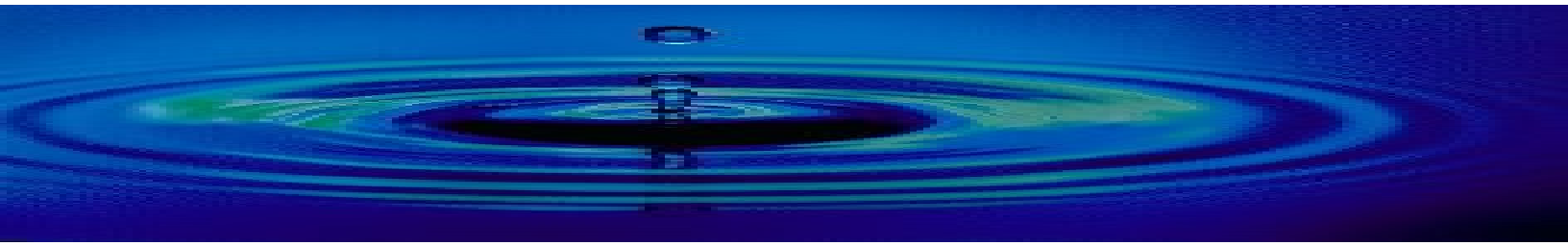


Comments: Packer #13 | Time - 3:11 am

Westbay
Instruments

Completion Report

Well Name: GAR-19-035



January 7, 2020

Completion Report

Well Name: GAR-19-035

Project Number: WB985

Prepared for:

NexGen Energy

Prepared by:

Westbay Instruments
A Division of Nova Metrix Ground Monitoring (Canada) Limited.
8610 Glenlyon Parkway
Unit 134
Burnaby, BC
V5J 0B6

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2. PRE-INSTALLATION ACTIVITIES 1

3. INSTALLATION 1

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3.2 Layout of Westbay System Tubing Components 2
3.3 Lowering of Westbay System Components 2
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3.6 Pre-inflation Profile 4
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Table 1: Summary of Westbay System Installation
Table 2: Summary of Installed Westbay System Components
Table 3: Hydraulic Integrity Test(Westbay MP38 Only)
Table 4: Hydraulic Integrity Test(Westbay with 2 inch PVC Riser)
Table 5: De-Stressing of Westbay System
Table 6: As-Built Packer and Port Summary (Appendix)
Table 7: As-Built Tubing Summary (Appendix)

FIGURES

Figure 1: MOSDAX Transducer Position
Figure 2: Zone Dimensions and Packer Seals
Figure 3: Pre-Inflation Pressure Profile (Appendix)
Figure 4: Post-Inflation Pressure Profile (Appendix)

APPENDIES

APPENDIX: Monitoring Well: GAR-19-035

1. Introduction

This report and the attached Appendix document the technical services carried out by Westbay Instruments (Westbay) under NexGen Energy (NexGen) P.O. # GAR-19-035 dated November 12, 2019. A Westbay System completion was installed in borehole GAR-19-035 at the ROOK 1 site, SK, Canada.

Westbay technical services representatives Mr. Mark Lessard and Mr. Tony Kim were on site for installation of the Westbay System from December 1 to 10, 2019. NexGen representatives Mr. Grant Greenwood and Mr. Keith Shannon were on-site to supervise the installation of the Westbay System.

This report documents the installation tasks and related QA checks.

2. Pre-Installation Activities

The borehole was drilled/cored at a nominal diameter of 98 mm (HQ-size) by wireline coring methods. The borehole was drilled about 70 degrees inclined from horizontal. Water with Purevis drill fluid additive was used as a lubricant during coring. An HWT surface casing (nominal 114.30 mm OD) was driven to 156 meters in the borehole.

Straddle packer tests and drill core analysis were completed by NexGen to determine final desired Westbay monitoring zone depths. After drilling and testing, NexGen performed downhole surveys. A temporary guide tube (HQ rods) was set to 648 m in depth before lowering of the Westbay components.

(Note: all depths are with respect to ground surface. Monitoring well reference elevations were not available at the time of writing).

3. Installation

Westbay Instruments technical services representatives Mr. Lessard and Mr. Kim and representatives of NexGen were on site to install the Westbay System in GAR-19-035 as indicated below in Table 1.

(Note: Monitoring well reference elevation was not available at the time of writing).

Table 1: Summary of Westbay System Installation

Well Name	Field Installation Dates	Total Depth (m)	MP38 Tubing Length (m)	No. Monitoring Zones
GAR-19-035	December 1-9 2019	700	664.6	10

The Westbay System in GAR-19-035 was installed according to the procedure described below.

3.1 Preparation of Westbay System Design

Packer depths for the borehole were provided to Westbay by Mr. Matthew Batty of NexGen. A well design was created based on these depths. The well design was used to prepare a Westbay Completion Log, which specifies the location of the Westbay System components in the well. This log was reviewed and approved

in the field by Mr. Batty via e-mail prior to installation of the Westbay System. The Westbay Completion Log as approved was used as an installation guide in the field. A field copy of the log is in the Appendix.

A measurement port coupling was included in each primary monitoring zone to provide the capability to measure fluid pressures and collect fluid samples. Measurement port couplings were also included in QA zones to provide QA testing capabilities and to permit operation of squeeze relief venting capabilities of the Westbay Model No. 6055 vented inflation tool. Either a Model 0224 Mechanical pumping port (depths less than 330m) or Model 0206 Hydraulic pumping port (depths greater than 330m) coupling was also included in each primary monitoring zone to provide purging and hydraulic conductivity testing capabilities. Mr. Greenwood requested that optional synthetic (PET) filters were not to be installed over the measurement port couplings.

Since the borehole is inclined at 70 degrees from horizontal, an abrasion protector is used to protect the packers and pumping ports from damage during deployment inside the guide tube. The abrasion protectors are clamped to the outside of the Westbay tubing at specified positions. There are 2 abrasion protectors per packer, 1 abrasion protector per pumping port, and 2 abrasion protectors for the bottom section of Westbay tubing. In addition, a special tapered end plug is attached to the bottom of the Westbay tubing.

The completion design includes a 2-inch diameter riser pipe in the upper about 50 meters to accommodate deployment of commercially available submersible pump.

A summary of the installed Westbay System components is shown on Table 2 below and in the Summary Completion Log Legend in the Appendix.

Table 2: Summary of Installed Westbay System Components

Well Name	Packers (0238)	Measurement Ports (0205)	Pumping Ports (0224 & 0206)	Abrasion Protector(025002C2)
GAR-19-035	13	13	10 (4 & 6)	38

3.2 Layout of Westbay System Tubing Components

Prior to the installation, the Westbay System components were set out at the borehole according to the sequence indicated on the Westbay Completion Log. Each tubing length was measured and numbered beginning with the lowermost as an aid to confirming the proper sequence of components. The appropriate Westbay System couplings were attached to each casing section. Magnetic location collars were attached 0.6 meter below the top of the measurement port couplings in the monitoring intervals. Locations of key components are listed in Tables 6 and 7 in the Appendix.

Each component was visually inspected. Serial numbers for each packer, pumping port and measurement port coupling were recorded on the Westbay Completion Log. The component layout was confirmed with the log before the components were lowered into the borehole.

3.3 Lowering of Westbay System Components

Steel HQ drill rods were lowered into the borehole to a depth of 648 meters to provide temporary protection from caving during installation of the Westbay tubing string. The Westbay System components were initially lowered into the borehole by hand, and a hoist rig was used to lower the components later. Each joint was tested with a minimum internal hydraulic pressure of 150-psi for one minute to confirm hydraulic

seals. A record of each successful joint test and the placement of each component are noted by check marks on the Westbay Completion Log. Clean water supplied by Aggressive Drilling was added to the Westbay System when necessary to counter buoyancy effects while components were lowered into the borehole and was used for testing of joint seals during lowering.

3.4 Hydraulic Integrity Testing

After the Westbay System string was lowered into the borehole, the water level inside the Westbay System completion was monitored at a depth different from the open borehole water level for a minimum period of thirty minutes to confirm hydraulic integrity of the completion. The first of two tests was conducted before the 2-inch PVC riser pipe was deployed. The second was done after lowering 2-inch PVC tubing components. The data from the hydraulic integrity tests are shown on the third page of the Westbay Completion Log in the Appendix and in Table 3 and Table 4 below.

Table 3: Hydraulic Integrity Test (Westbay MP38 Only)

Well Name	December 6, 2019	Fluid Levels	
	Time	Inside Tubing	Outside Tubing
GAR-19-035	11:10	79.43 m	12.15 m
	11:20	79.43 m	12.15 m
	11:30	79.425 m	12.15 m
	11:40	79.42 m	12.15 m
	11:50	79.42 m	12.15 m
	12:00	79.42 m	12.15 m

Table 4: Hydraulic Integrity Test (Westbay with 2-inch PVC Riser)

Well Name	December 6, 2019	Fluid Levels	
	Time	Inside Tubing	Outside Tubing
GAR-19-035	13:00	125.485 m	12.15 m
	13:10	125.485 m	12.15 m
	13:20	125.47 m	12.15 m
	13:30	125.47 m	12.15 m
	13:40	125.47 m	12.15 m

3.5 Positioning of Westbay System Completion

After the Westbay System components were lowered into the well, the Westbay System was positioned as illustrated on the Westbay Completion Log. The Westbay System was supported in this position while packer inflation was carried out. The positioning of the Westbay System components is based on the "nominal" lengths of Westbay System components. The positioning calculations do not include allowances for borehole temperature or deviation effects.

The attached figure titled “MOSDAX Transducer Position” provides information to correlate the position of the MOSDAX transducer sensor to the reference position at the top of the measurement port. The attached figure titled “Dimensions of Packer Seals and Monitoring Zones” outlines the calculations used to determine the packer depths and zone length. The Summary Completion Log, which shows the final “as-built” locations of the components in the well, is included in the Appendix.

3.6 Pre-inflation Profile

A pre-inflation pressure profile was carried out at the well prior to inflating the packers to confirm the proper position and operation of measurement ports and magnetic collars. The ports operated properly and were positioned correctly in the well. A plot of the Pre-inflation Piezometric levels in all zones is shown on Figure 3 in the Appendix.

3.7 Inflation of Westbay System Packers

The packer inflation was coordinated with retrieval of the temporary guide tube. The guide tube was initially positioned to at a depth of 648 meters leaving the bottom 3 packers exposed in the open hole section. After the three exposed bottom packers were inflated, the guide tube was placed at a depth of 530 meters leaving one packer exposed in the open hole section. After the one packer was inflated, the guide tube was placed at the depth of 455 meters exposing two packers in the open hole. After the two packers were inflated, all the guide tube was removed, and the rest of packers were inflated. During removal of the guide tube, the weight of the Westbay tubing was supported by the inflated packers.

The Westbay System packers were inflated sequentially beginning at the bottom of the well using clean water provided by Aggressive Drilling. The Westbay Model No. 6055 vented inflation tool was used for packer inflation. All the packers appear to have inflated normally. The data for inflation of each packer are provided on the Westbay Packer Inflation Records included in the Appendix.

3.8 De-Stressing of Westbay System

Westbay’s procedure for de-stressing the Westbay tubing was used to reduce the long-term load on the upper components. In this procedure the initial hanging weight of the Westbay tubing string is applied in increments after selected packers have been inflated. Thus, after all packers have been inflated, most of the weight is distributed among the packers in the completion. A summary of the de-stressing activities is provided in Table 5. The final positions of the Westbay tubing components (ports and packers) are shown on the Summary Completion Log and Table 7 in the Appendix.

Table 5: Summary of De-Stressing Activities

Well Name	Initial Weight	Final Clamp-off Weight	Total Vertical Movement at surface	Beginning of stick-up	End of stick-up
GAR-19-035	400 lbs	50 lbs	0.45 metre	2.92 metre	2.47 metre

4. Fluid Pressure Measurements

After packer inflation was completed, fluid pressures were measured at each measurement port. At that time, the in-situ formation pressures may not have recovered from the pre-installation activities and potential groundwater pressure changes in monitoring zones that may result from packer inflation. This latter effect may be more likely to occur in monitoring zones located in low-permeability geological formations. Longer term monitoring may be required to establish representative fluid pressures.

A plot of the Post-Inflation Piezometric levels in all zones in the well is shown on Figure 4 in the Appendix. The data were examined to confirm proper operation of the measurement ports and as a check on the presence of annulus seals between monitoring zones. The calculation sheets for all pressure profiles of the Westbay System are also enclosed in the Appendix.

5. Westbay Operator Training

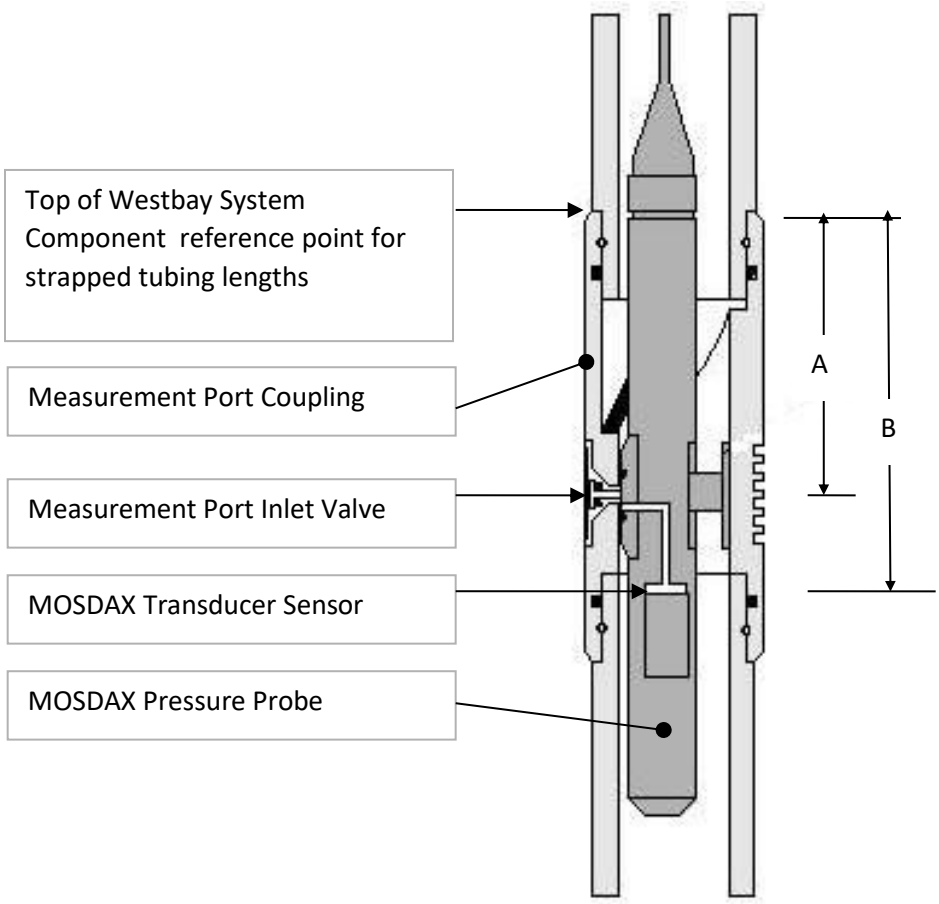
Training was provided to Mr. Keith Shannon of NexGen. The training covered the following areas:

- Operation and maintenance of Model 0612 Open/Close Tool.
- Open and close Mechanical Pumping port.

Figure 1:

MOSDAX Transducer Position

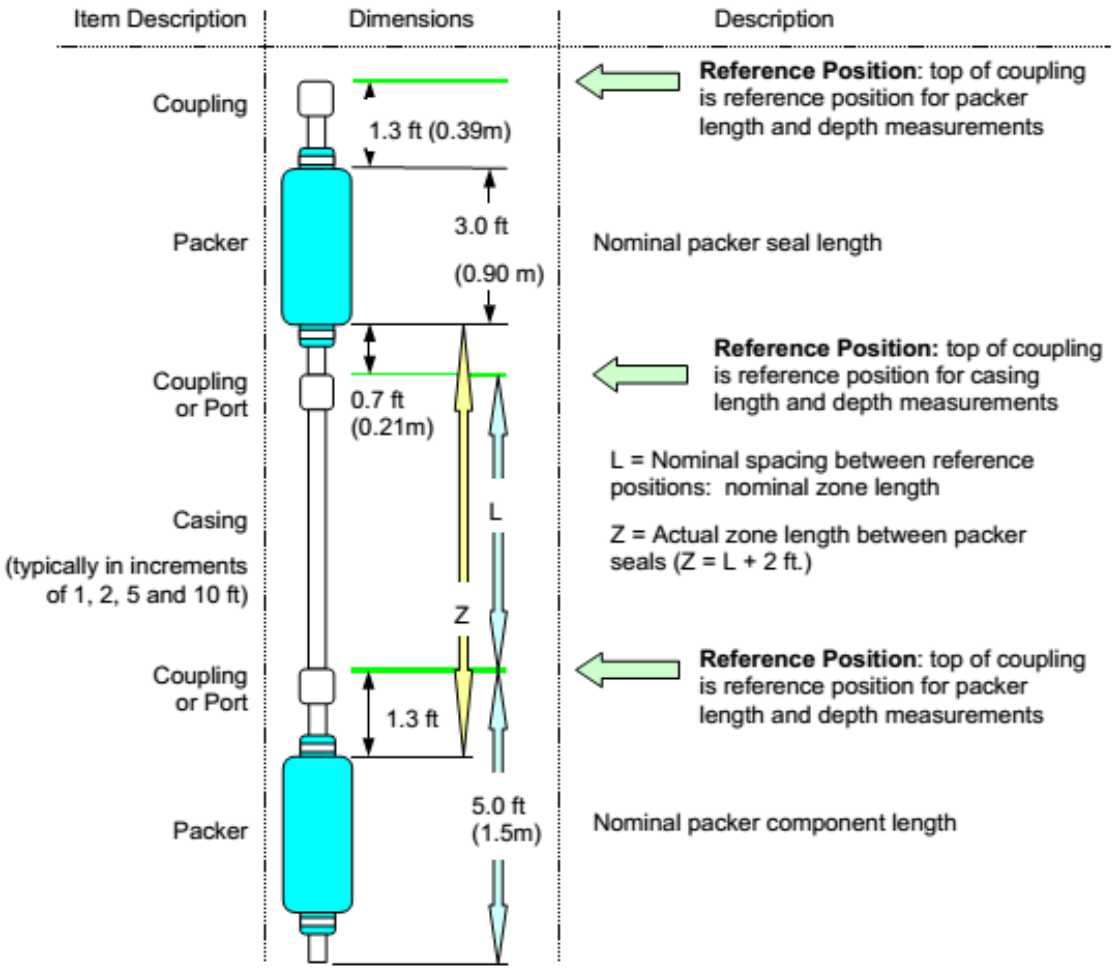
In a Westbay System Measurement Port Coupling



System	Measurement Port	A	B
Plastic MP38	0205	0.37 ft. (114.3 mm)	0.54 ft. (165.1 mm)

Figure 2:

Dimensions of Packer Seals and Monitoring Zones Westbay MP38 System 0238 Packers



Discussion Points:

- The top of a coupling (Regular Coupling, Measurement Port or Pumping Port) is the reference point for describing nominal depths and nominal lengths. Actual positions of packer seals and zone lengths are determined with respect to the appropriate reference positions.
- Packer Position Example: A packer with a nominal depth of 50 ft (15.2m), will have a nominal packer seal position of 51.3 to 54.3 ft. (15.59 to 16.49m)
- Zone Length Example: A zone whose upper packer is at 50 ft (15.2m) and bottom packer is at 70 ft (21.3m) will have a nominal zone length of 15 ft (4.6m) and an actual zone length (between packer seals) of 15.0+1.3+0.7 = 17.0ft. (4.6 + 0.39 + 0.2 = 5.19m)
- Information on the position of Measurement Port Valve and MOSDAX Transducer sensor, used for detailed calculation of piezometric level measurements, are described separately.

APPENDIX: MONITORING WELL: GAR-19-035

Westbay Field QA Summary Form	- 1 page
As-Built Packer and Port Summary (Table 6)	- 1 page
As-Built Tubing Summary (Table 7)	- 4 pages
Summary Completion Log	- 5 pages
Pre-Inflation Piezometric Pressure/ Levels	
Field Data and Calculation Sheet (December 6)	- 1 page
Figure 3, Pre-Inflation Profile	- 1 page
Post- Inflation Piezometric Pressure/Levels	
Field Data and Calculation Sheet (December 8)	- 1 page
Figure 4, Post-Inflation Profile	- 1 page
Westbay Completion Log (field copy)	- 16 pages
Westbay System Packer Inflation Records	- 13 pages

Westbay Field QA Summary Form

Client: NexGen Project: WB 985

Well: GAR-19-03F

			Check ✔	Initials	Date
1	**Client Data and Approvals**				
	1.1	Client design request and Borehole/Well information	✓	TK	Dec 2/19
	1.2	Client approved final design (file name: GAR 19 3F)	✓	TK	Dec 2/19
	1.3	Client decision on filter sleeves for Measurement Ports	✓	TK	Dec 2/19
	1.4	Client approval to install, including well and borehole conditions	✓	TK/MB GG.	Dec 5/19
Comments					
	Hold Point – Design and well information are complete				
2	**Layout of Completion Components**				
	2.1	Installation Log and Confirmation Log printed from approved design (file name: GAR 19 3F)	✓	TK	Dec 4/19
	2.2	Components taken from inventory	✓	TK	Dec 4/19
	2.3	Layout completed according to log, plus copy S/N and packer data)	✓	TK/ML	Dec 4/19
	2.3	Independent confirmation of layout (use Confirmation Log)	✓	TK/ML	Dec 4/19
	2.4	Independent check on laid out length vs design length	✓	TK/ML	Dec 4/19
Comments					
	Hold Point – Layout is good to install				
3	**Lowering of Completion String**				
	3.1	Independent staff for layout rack and installation check list	✓	TK/J	Dec 5/19
	3.2	Components individually verified with approved log (with call-back repeat)	✓	TK/J	Dec 5/19
	3.3	Pressure test tool and apparatus verified	✓	TK/ML	Dec 5-6/19
	3.4	Components pass pressure test	✓	TK/ML	Dec 5-6/19
	3.5	Tensile loads managed within system limits	✓	TK/ML	Dec 5-6/19
	3.6	Depth to water in Westbay tube checked and adjusted	✓	TK/ML	Dec 5-6/19
	3.7	Hydraulic integrity test is passed	✓	TK/ML	Dec 6/19
	3.8	Pre-Inflation profile is completed, analyzed and accepted	✓	TK/ML	Dec 6/19
	3.9	Top of Westbay tubing is positioned according to the approved log	✓	TK/ML	Dec 6/19
Comments					
	Hold Point – Completion is good to inflate packers				
4	**Packer Inflation**				
	4.1	Inflation tool and apparatus verified	✓	TK/ML	Dec 6-7/19
	4.2	Inflation data recorded on forms at time of inflation	✓	TK/ML	Dec 6-7/19
	4.3	Inflation V and P consistent with BH diameter and packer model	✓	TK/ML	Dec 6-7/19
	4.4	De-stressing procedure followed (if required)	✓	TK/ML	Dec 6-7/19
	4.5	All packers inflated normally	✓	TK/ML	Dec 6-7/19
	4.6	Post inflation profile completed, analyzed and accepted	✓	TK/ML	Dec 6-7/19
Comments					
	Hold Point – Packer inflation is complete				
5	**Documentation**				
	5.1	Wellhead completion sketch completed	✓	TK/ML	Dec 8/19
	5.2	Draft completion Log and pressure profile data given to client	✓	TK/ML	Dec 9/19
	5.3	Completion Report data appendix is complete	✓	TK/ML	Jan 5/20
	Installation and Documents Complete				

Signature: [signature] **Date:** Jan 5/20

TABLE 6
As-Built Packer and Port Summary

Port No.	Zone	Measurement Port Depth (m)	Pumping Port Depth (m)	Magnetic Collar Depth (m)	Top of Zone (m)	Bottom of Zone (m)	Comments
1	Zone 1	646.0	656.7	646.6	642.7	700.0	Hydraulic Pumping Port
2	QA 1	641.4			638.2	641.8	
3	QA 2	636.9			633.6	637.3	
4	Zone 2	588.0	598.7	588.6	584.7	632.7	Hydraulic Pumping Port
5	Zone 3	530.0	540.7	530.6	526.8	583.8	Hydraulic Pumping Port
6	Zone 4	472.1	482.7	472.7	468.8	525.9	Hydraulic Pumping Port
7	Zone 5	412.6	423.2	413.2	409.3	467.9	Hydraulic Pumping Port
8	Zone 6	353.1	363.7	353.7	349.8	408.4	Hydraulic Pumping Port
9	Zone 7	301.3	311.9	301.9	298.0	348.9	Mechanical Pumping Port
10	Zone 8	255.6	266.2	256.2	252.3	297.1	Mechanical Pumping Port
11	Zone 9	211.4	222.1	212.0	208.1	251.4	Mechanical Pumping Port
12	Zone 10	167.3	177.9	167.9	164.0	207.2	Mechanical Pumping Port
13	QA 3	94.2		94.8	90.9	163.1	

Note 1: All depth measurement are not corrected for borehole angle.
Note 2: All depth measurements in meters below ground surface along the borehole axis.
Note 3: All depth measurements use 'Nominal' casing lengths.
Note 4: Not corrected for borehole deviation or borehole temperature effects.
Note 5: All Westbay Port depth measurements to upper edge of coupling item.
Note 6: Depths for top and bottom of zone based on packer seal position.

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	Final Depth** (m)
240	703215		0000				-2.56	1.53	1.525	-2.1
239	703205		0000				-1.04	0.61	0.609	-0.6
238	703215		0000				-0.43	1.52	1.525	0.0
237	703229		0000				1.10	3.04	3.043	1.5
236	703229		0000				4.14	3.05	3.053	4.6
235	703229		0000				7.19	3.05	3.049	7.6
234	703229		0000				10.24	3.05	3.048	10.7
233	703229		0000				13.29	3.05	3.048	13.7
232	703229		0000				16.34	3.05	3.053	16.7
231	703229		0000				19.39	3.05	3.048	19.8
230	703229		0000				22.44	3.04	3.036	22.8
229	703229		0000				25.47	3.04	3.043	25.9
228	703229		0000				28.52	3.04	3.036	28.9
227	703229		0000				31.55	3.04	3.043	31.9
226	703229		0000				34.60	3.05	3.046	35.0
225	703229		0000				37.64	3.05	3.049	38.0
224	703229		0000				40.69	3.04	3.041	41.0
223	703229		0000				43.73	3.05	3.049	44.1
222	020110		027500C1				46.78	2.99	2.982	47.1
221	020110		0202				49.77	3.05	3.045	50.1
220	020110		0202				52.81	3.05	3.046	53.1
219	020110		0202				55.86	3.05	3.046	56.2
218	020110		0202				58.91	3.05	3.046	59.2
217	020110		0202				61.96	3.05	3.046	62.3
216	020110		0202				65.01	3.05	3.046	65.3
215	020110		0202				68.05	3.05	3.045	68.3
214	020110		0202				71.10	3.05	3.046	71.4
213	020110		0202				74.15	3.05	3.046	74.4
212	020110		0202				77.20	3.05	3.046	77.5
211	020110		0202				80.24	3.05	3.046	80.5
210	020110		0202				83.29	3.05	3.047	83.5
209	020110		0202				86.34	3.05	3.045	86.6
208	0238	19835	0202				89.39	1.52	1.521	89.6
207	020110		0202				90.91	3.05	3.045	91.1
206	020110		0205	9627	0216	94.8	93.96	3.05	3.046	94.2
205	020105		0202				97.01	1.52	1.521	97.2
204	020110		0202				98.53	3.05	3.046	98.8
203	020110		0202				101.58	3.05	3.046	101.8
202	020110		0202				104.63	3.05	3.045	104.8
201	020110		0202				107.68	3.04	3.046	107.9
200	020110		0202				110.72	3.05	3.046	110.9
199	020110		0202				113.77	3.05	3.045	114.0
198	020110		0202				116.82	3.05	3.046	117.0
197	020110		0202				119.87	3.04	3.046	120.1
196	020110		0202				122.91	3.05	3.046	123.1
195	020110		0202				125.96	3.05	3.046	126.1
194	020110		0202				129.01	3.05	3.046	129.2
193	020110		0202				132.06	3.05	3.046	132.2
192	020110		0202				135.11	3.04	3.046	135.3
191	020110		0202				138.15	3.05	3.047	138.3
190	020110		0202				141.20	3.05	3.047	141.4
189	020110		0202				144.25	3.05	3.047	144.4
188	020110		0202				147.30	3.04	3.047	147.5
187	020110		0202				150.34	3.05	3.046	150.5
186	020110		0202				153.39	3.05	3.046	153.5
185	020110		0202				156.44	3.05	3.046	156.6
184	020110		0202				159.49	3.05	3.045	159.6
183	0238	19834	0202				162.54	1.52	1.521	162.7
182	020110		0202				164.06	3.05	3.045	164.2
181	020110		0205	9626	0216	167.9	167.11	3.05	3.046	167.3
180	020105		0202				170.16	1.52	1.522	170.3
179	020110		0202				171.68	3.05	3.046	171.8

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	Final Depth** (m)
178	020110		0202				174.73	3.05	3.046	174.9
177	020110		0224	9067			177.78	3.04	3.047	177.9
176	020105		0202				180.82	1.53	1.521	181.0
175	020110		0202				182.35	3.05	3.046	182.5
174	020110		0202				185.40	3.04	3.046	185.5
173	020110		0202				188.44	3.05	3.046	188.6
172	020110		0202				191.49	3.05	3.046	191.6
171	020110		0202				194.54	3.05	3.046	194.7
170	020110		0202				197.59	3.04	3.046	197.7
169	020110		0202				200.63	3.05	3.046	200.7
168	020110		0202				203.68	3.05	3.046	203.8
167	0238	19833	0202				206.73	1.52	1.522	206.8
166	020110		0202				208.25	3.05	3.045	208.4
165	020110		0205	9625	0216	212.0	211.30	3.05	3.046	211.4
164	020105		0202				214.35	1.52	1.521	214.5
163	020110		0202				215.87	3.05	3.047	216.0
162	020110		0202				218.92	3.05	3.046	219.0
161	020110		0224	9066			221.97	3.05	3.047	222.1
160	020105		0202				225.02	1.52	1.521	225.1
159	020110		0202				226.54	3.05	3.046	226.6
158	020110		0202				229.59	3.05	3.046	229.7
157	020110		0202				232.64	3.04	3.046	232.7
156	020110		0202				235.68	3.05	3.046	235.8
155	020110		0202				238.73	3.05	3.046	238.8
154	020110		0202				241.78	3.05	3.046	241.9
153	020110		0202				244.83	3.05	3.046	244.9
152	020110		0202				247.88	3.04	3.046	248.0
151	0238	19832	0202				250.92	1.53	1.522	251.0
150	020110		0202				252.45	3.05	3.045	252.5
149	020110		0205	9624	0216	256.2	255.50	3.04	3.046	255.6
148	020105		0202				258.54	1.53	1.521	258.6
147	020110		0202				260.07	3.05	3.046	260.1
146	020110		0202				263.12	3.04	3.045	263.2
145	020110		0224	9065			266.16	3.05	3.047	266.2
144	020105		0202				269.21	1.53	1.522	269.3
143	020110		0202				270.74	3.04	3.046	270.8
142	020110		0202				273.78	3.05	3.047	273.9
141	020110		0202				276.83	3.05	3.046	276.9
140	020110		0202				279.88	3.05	3.047	280.0
139	020110		0202				282.93	3.04	3.047	283.0
138	020110		0202				285.97	3.05	3.047	286.0
137	020110		0202				289.02	3.05	3.046	289.1
136	020105		0202				292.07	1.52	1.522	292.1
135	020110		0202				293.59	3.05	3.045	293.7
134	0238	19831	0202				296.64	1.53	1.522	296.7
133	020110		0202				298.17	3.04	3.045	298.2
132	020110		0205	9623	0216	301.9	301.21	3.05	3.046	301.3
131	020105		0202				304.26	1.53	1.521	304.3
130	020110		0202				305.79	3.04	3.046	305.9
129	020110		0202				308.83	3.05	3.047	308.9
128	020110		0224	9064			311.88	3.05	3.047	311.9
127	020105		0202				314.93	1.52	1.521	315.0
126	020110		0202				316.45	3.05	3.046	316.5
125	020110		0202				319.50	3.05	3.046	319.6
124	020110		0202				322.55	3.05	3.046	322.6
123	020110		0202				325.60	3.04	3.046	325.7
122	020110		0202				328.64	3.05	3.047	328.7
121	020110		0202				331.69	3.05	3.046	331.7
120	020110		0202				334.74	3.05	3.046	334.8
119	020110		0202				337.79	3.05	3.046	337.8

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	Final Depth** (m)
118	020110		0202				340.84	3.04	3.046	340.9
117	020105		0202				343.88	1.53	1.522	343.9
116	020110		0202				345.41	3.05	3.046	345.5
115	0238	19830	0202				348.46	1.52	1.522	348.5
114	020110		0202				349.98	3.05	3.046	350.0
113	020110		0205	9622	0216	353.7	353.03	3.04	3.046	353.1
112	020105		0202				356.07	1.53	1.522	356.1
111	020110		0202				357.60	3.05	3.046	357.6
110	020110		0202				360.65	3.04	3.045	360.7
109	020110		0206	498			363.69	3.13	3.123	363.7
108	020105		0202				366.82	1.52	1.522	366.9
107	020110		0202				368.34	3.05	3.046	368.4
106	020110		0202				371.39	3.05	3.046	371.4
105	020110		0202				374.44	3.05	3.046	374.5
104	020110		0202				377.49	3.04	3.046	377.5
103	020110		0202				380.53	3.05	3.046	380.6
102	020110		0202				383.58	3.05	3.046	383.6
101	020110		0202				386.63	3.05	3.046	386.7
100	020110		0202				389.68	3.05	3.046	389.7
99	020110		0202				392.73	3.04	3.047	392.8
98	020110		0202				395.77	3.05	3.046	395.8
97	020110		0202				398.82	3.05	3.047	398.9
96	020110		0202				401.87	3.05	3.046	401.9
95	020110		0202				404.92	3.04	3.045	405.0
94	0238	19829	0202				407.96	1.53	1.521	408.0
93	020110		0202				409.49	3.05	3.045	409.5
92	020110		0205	9621	0216	413.2	412.54	3.04	3.045	412.6
91	020105		0202				415.58	1.53	1.521	415.6
90	020110		0202				417.11	3.05	3.046	417.1
89	020110		0202				420.16	3.04	3.046	420.2
88	020110		0206	497			423.20	3.13	3.123	423.2
87	020105		0202				426.33	1.52	1.522	426.4
86	020110		0202				427.85	3.05	3.046	427.9
85	020110		0202				430.90	3.05	3.046	430.9
84	020110		0202				433.95	3.05	3.047	434.0
83	020110		0202				437.00	3.04	3.046	437.0
82	020110		0202				440.04	3.05	3.046	440.1
81	020110		0202				443.09	3.05	3.047	443.1
80	020110		0202				446.14	3.05	3.046	446.2
79	020110		0202				449.19	3.04	3.046	449.2
78	020110		0202				452.23	3.05	3.046	452.3
77	020110		0202				455.28	3.05	3.046	455.3
76	020110		0202				458.33	3.05	3.046	458.4
75	020110		0202				461.38	3.05	3.046	461.4
74	020110		0202				464.43	3.04	3.046	464.5
73	0238	19828	0202				467.47	1.53	1.521	467.5
72	020110		0202				469.00	3.05	3.046	469.0
71	020110		0205	9620	0216	472.7	472.05	3.04	3.046	472.1
70	020105		0202				475.09	1.53	1.521	475.1
69	020110		0202				476.62	3.05	3.045	476.6
68	020110		0202				479.67	3.04	3.046	479.7
67	020110		0206	496			482.71	3.13	3.123	482.7
66	020105		0202				485.84	1.52	1.522	485.9
65	020110		0202				487.36	3.05	3.046	487.4
64	020110		0202				490.41	3.05	3.046	490.4
63	020110		0202				493.46	3.04	3.046	493.5
62	020110		0202				496.50	3.05	3.046	496.5
61	020110		0202				499.55	3.05	3.046	499.6
60	020110		0202				502.60	3.05	3.046	502.6
59	020110		0202				505.65	3.05	3.047	505.7
58	020110		0202				508.70	3.04	3.046	508.7
57	020110		0202				511.74	3.05	3.046	511.8

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	Final Depth** (m)
56	020110		0202				514.79	3.05	3.046	514.8
55	020110		0202				517.84	3.05	3.046	517.9
54	020105		0202				520.89	1.52	1.521	520.9
53	020110		0202				522.41	3.05	3.045	522.4
52	0238	19827	0202				525.46	1.52	1.522	525.5
51	020110		0202				526.98	3.05	3.046	527.0
50	020110		0205	9619	0216	530.6	530.03	3.05	3.046	530.0
49	020105		0202				533.08	1.52	1.521	533.1
48	020110		0202				534.60	3.05	3.046	534.6
47	020110		0202				537.65	3.05	3.046	537.7
46	020110		0206	495			540.70	3.12	3.124	540.7
45	020105		0202				543.82	1.53	1.521	543.8
44	020110		0202				545.35	3.04	3.045	545.4
43	020110		0202				548.39	3.05	3.045	548.4
42	020110		0202				551.44	3.05	3.045	551.4
41	020110		0202				554.49	3.05	3.045	554.5
40	020110		0202				557.54	3.05	3.046	557.5
39	020110		0202				560.59	3.04	3.046	560.6
38	020110		0202				563.63	3.05	3.046	563.6
37	020110		0202				566.68	3.05	3.046	566.7
36	020110		0202				569.73	3.05	3.046	569.7
35	020110		0202				572.78	3.05	3.046	572.8
34	020110		0202				575.83	3.04	3.046	575.8
33	020105		0202				578.87	1.53	1.522	578.9
32	020110		0202				580.40	3.04	3.045	580.4
31	0238	19826	0202				583.44	1.53	1.522	583.4
30	020110		0202				584.97	3.05	3.045	585.0
29	020110		0205	9618	0216	588.6	588.02	3.04	3.045	588.0
28	020105		0202				591.06	1.53	1.522	591.1
27	020110		0202				592.59	3.05	3.046	592.6
26	020110		0202				595.64	3.04	3.046	595.6
25	020110		0206	494			598.68	3.13	3.124	598.7
24	020105		0202				601.81	1.52	1.521	601.8
23	020110		0202				603.33	3.05	3.046	603.3
22	020110		0202				606.38	3.05	3.046	606.4
21	020110		0202				609.43	3.05	3.046	609.4
20	020110		0202				612.48	3.04	3.046	612.5
19	020110		0202				615.52	3.05	3.045	615.5
18	020110		0202				618.57	3.05	3.045	618.6
17	020110		0202				621.62	3.05	3.045	621.6
16	020110		0202				624.67	3.04	3.045	624.7
15	020105		0202				627.71	1.53	1.521	627.7
14	020110		0202				629.24	3.05	3.045	629.2
13	0238	19825	0202				632.29	1.52	1.522	632.3
12	020110		0202				633.81	3.05	3.045	633.8
11	0238	19824	0205	9617			636.86	1.52	1.521	636.9
10	020110		0202				638.38	3.05	3.045	638.4
9	0238	19823	0205	9616			641.43	1.52	1.522	641.4
8	020110		0202				642.95	3.05	3.046	643.0
7	020110		0205	9615	0216	646.6	646.00	3.05	3.045	646.0
6	020105		0202				649.05	1.52	1.522	649.1
5	020110		0202				650.57	3.05	3.045	650.6
4	020110		0202				653.62	3.05	3.046	653.6
3	020110		0206	493			656.67	3.12	3.124	656.7
2	020105		0202				659.79	1.53	1.522	659.8
1	020110		0202				661.32	3.05	3.046	661.3
0	020305		0202				664.37			664.4

Depths are with respect to the ground level.

Component #240 was removed after installation.

****The final depth measurements are not corrected for the borehole angle.**

* Component positions are referenced to the top of the subject Westbay System coupling.

Item No.	Component P/N	Component S/N	Coupling P/N	Coupling S/N	Accessory P/N	Mag Collar (m)	Initial Depth (m)	Nominal Length (m)	Measured Length (m)	Final Depth** (m)
* Packer positions are referenced to the top Westbay System coupling on the packer.										
Monitoring zone dimensions are determined as described on the attached “Dimensions of Packer Seals and Monitoring Zones”.										
The position of a MOSDAX Transducer in a Measurement Port is illustrated in the attached “MOSDAX Transducer Position”.										
This information may be used in calculating piezometric levels.										

Summary Completion Log

Company: NexGen
Well: GAR-19-035
Site: ROOK 1
Project: Groundwater Characterization Study

Job No: WB985
Author: TK

Well Information

Reference Datum: Ground Level
Elevation of Datum: 0.00 m.
MP Casing Top: 0.00 m.
MP Casing Length: 664.59 m.

Borehole Depth: 700.00 m.
Borehole Inclination: ~70
Borehole Diameter: 98.00 mm

Well Description:
Plastic MP38 System
Other References:
Add two anchor packers below 630m Dec 2
Email confirmation on Dec 2

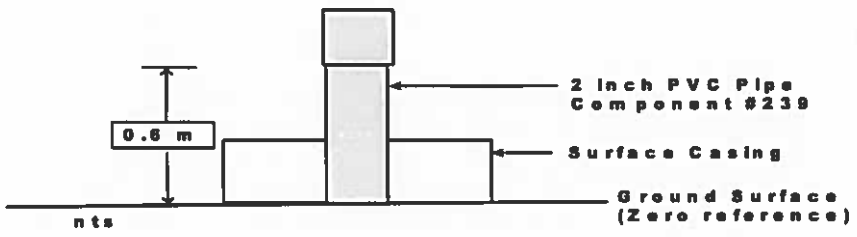
File Information

File Name: GAR193AB.WWD
Report Date: Mon Jan 06 07:34:06 2020

File Date: Jan 06 07:31:09 2020

Sketch of Wellhead Completion

GAR-19-035 Completion Sketch



Legend

(Qty) MP Components

(Library - WD Library 04/29/15)

(2) 703215 - 2" PVC Casing -1.5M

(1) 703205 - 2" PVC Casing - 0.5M

(15) 703229 - 2" PVC Casing - 2.9 M

(183) 020110 - MP38 Casing 1 (10F/3M)

(13) 0238 - MP38 Packer - 74mm (5F/1.5M)

(26) 020105 - MP38 Casing 2 (5F/1.5M)

(1) 020305 - Tapered End Plug

(18) 0000 - 2" PVC Joint for Illustration

(1) 027500C1 - 2" PVC Flush Joint Adaptor

(199) 0202 - MP38 Regular Coupling

(13) 0205 - MP38 Measurement Port

(4) 0224 - MP38 Pumping Port

(6) 0206 - MP38 Hydraulic Pumping Port

(11) 0216 - Magnetic Location Collar

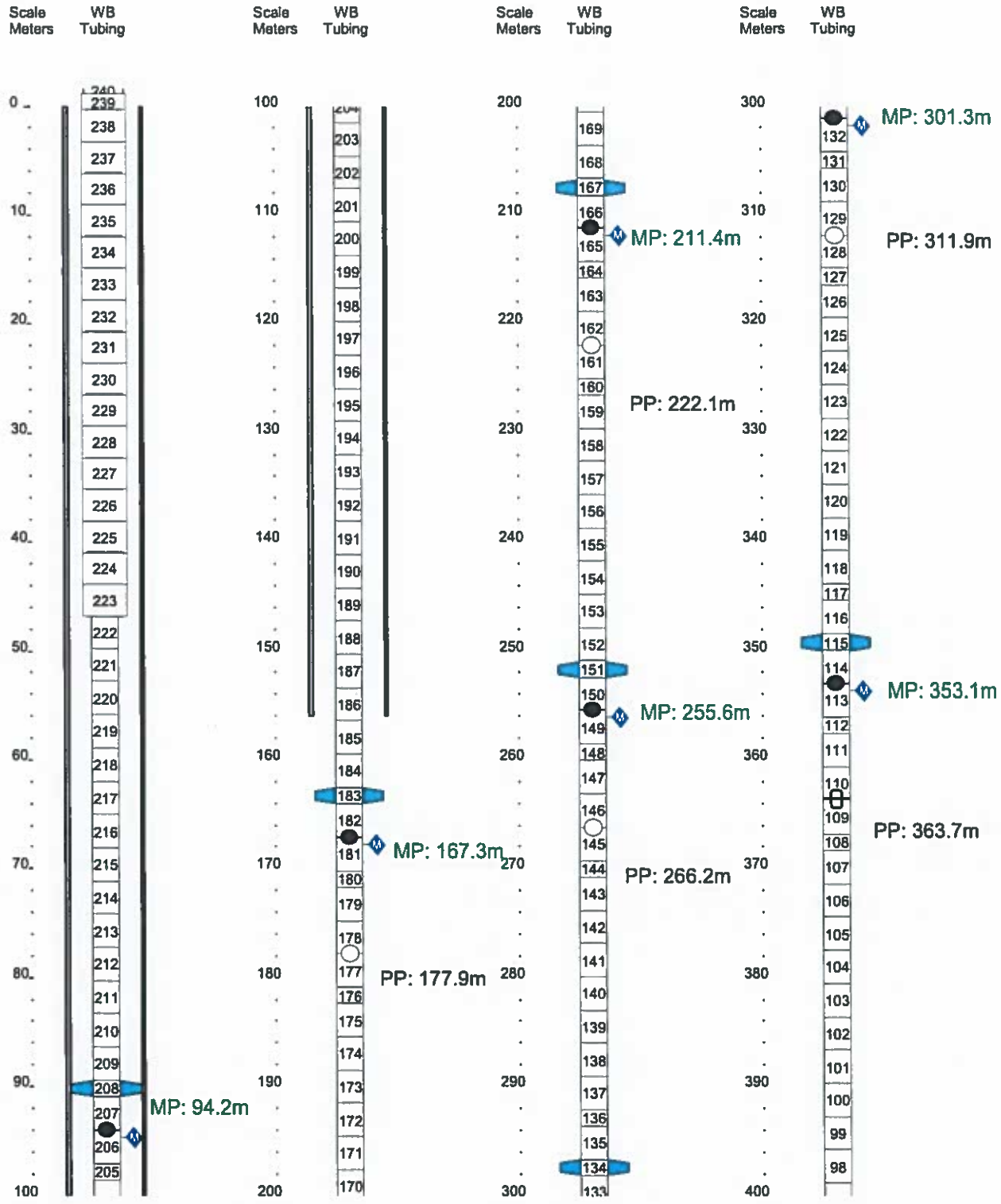
Geology

Backfill/Casing

Mild Steel

Summary Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



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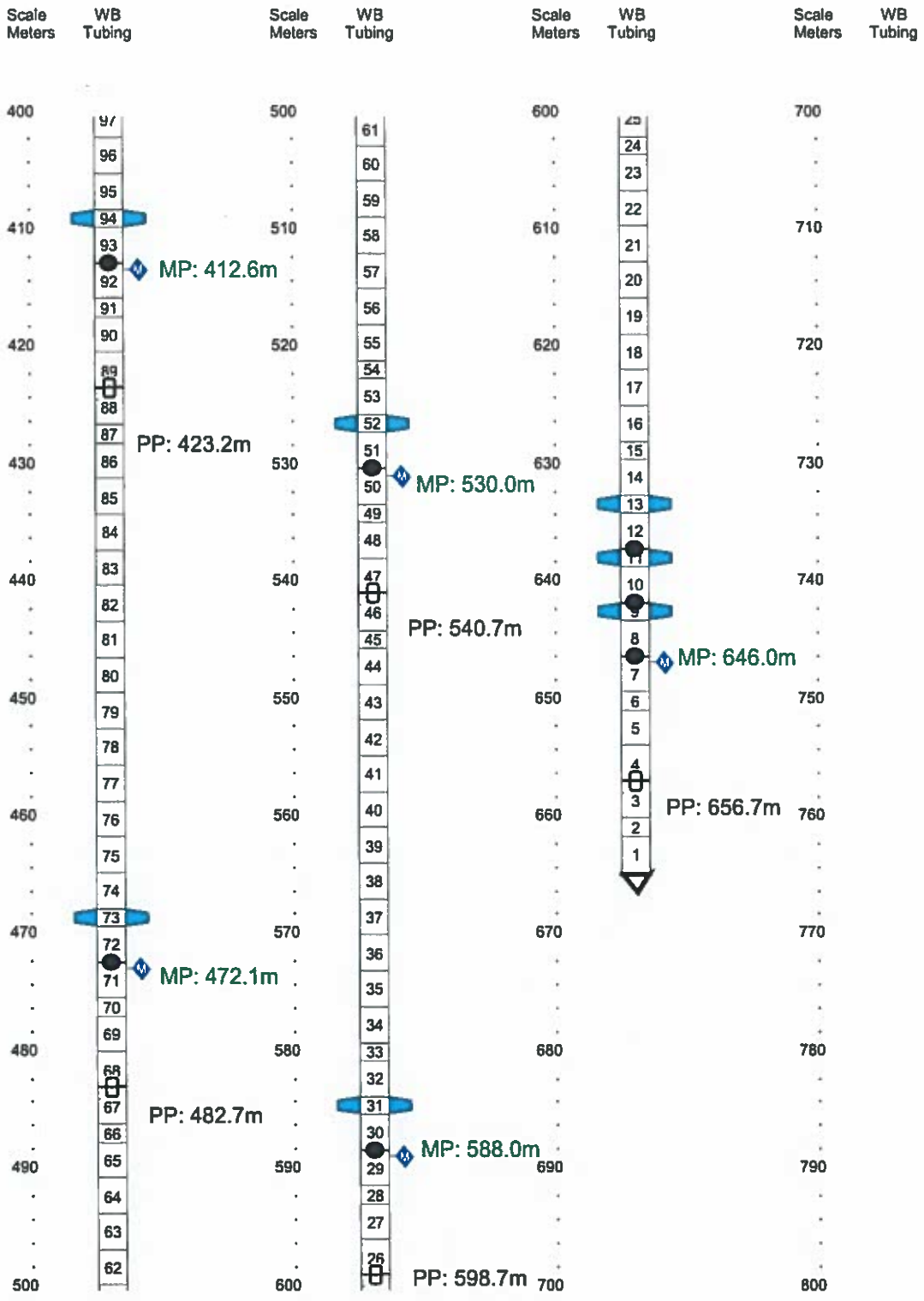
Mon Dec 02 13:45:52 2019

Summary Completion Log
NexGen

Job No: WB985
Well: GAR-19-035 Draft



(c) Westbay Instruments Inc. 2000

Mon Dec 02 13:45:53 2019

Westbay Piezometric Pressures/Levels

Field Data and Calculation Sheet

Well No.: GAR-19-035
Datum: G-L
Elev. G.S.:
Height of Westbay above G.S.:
Elev. top of Westbay Casing:
Reference Elevation:
Borehole angle: 70°

Probe Type: Sampler
Serial No.: EMS 3652
Probe Range: 2000 psi
Westbay Casing Type: MP38 + 2" riser
Sampler Valve Position: close

Date: DEC 6 / 2019
Client: Hexagon
Job No.: WB 905
Location: ROOM 1
Weather: SNOW
Operator: TK

Note: "Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

Ambient Reading (P_{atm}) (pressure, temperature, time)

	Start:	Finish:
Pressure	13.88	13.95
Temp	28.03	8.24
Time	14:41	~~15:45~~ 16:43

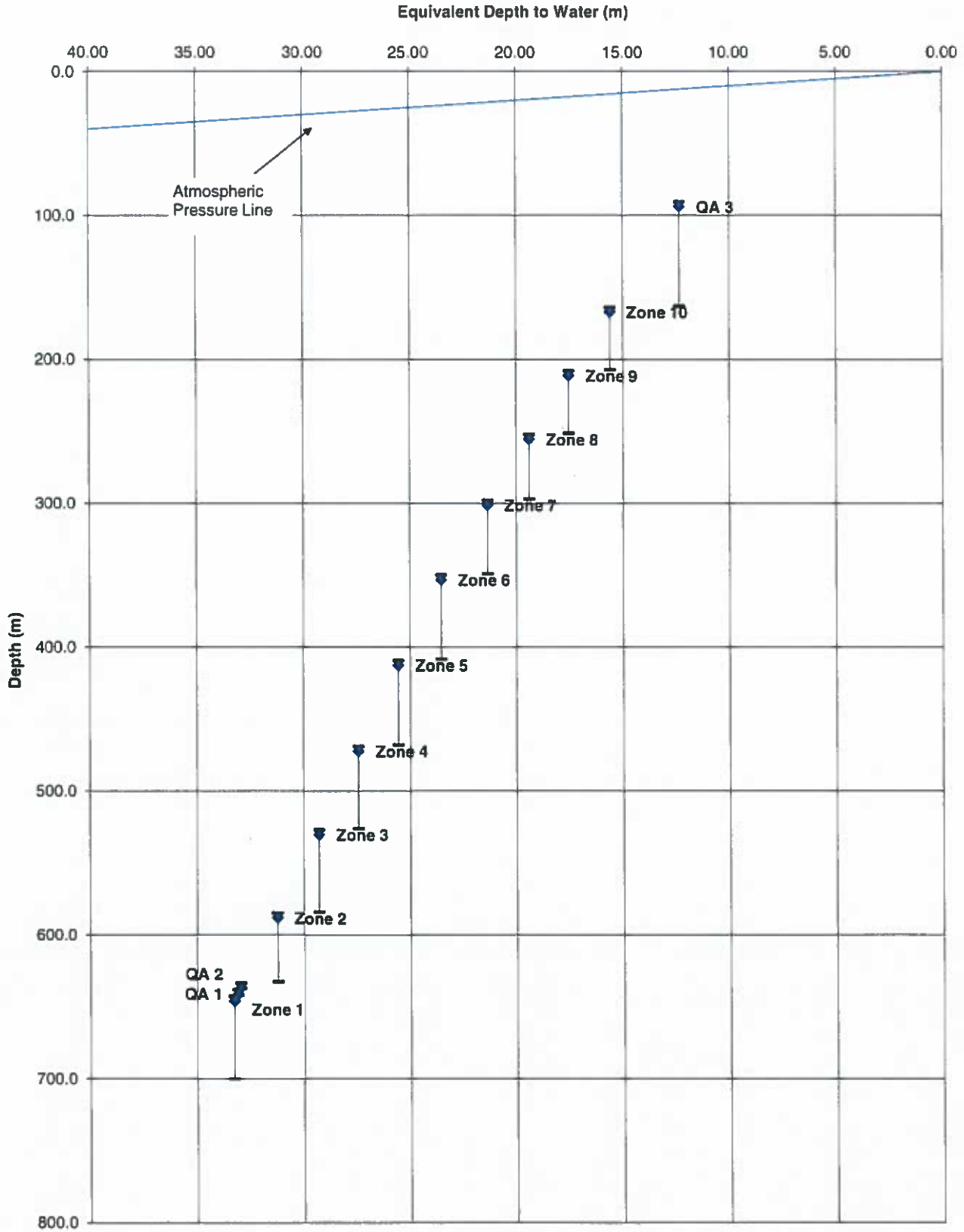
P_{atm} 13.88 psi

Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1)	Outside Casing (P2)	Time H:M:S	Probe Temp. (°C)	Inside Casing (P1)	Pressure Head Outside Port (m) H = (P2-Patm)/w	Piez. Level Outside Port (m) Dz = Dp - H	Comments	
1	646			725.79	885.17	15:23	13.66	725.82	612.72	33.3	Rot 17	Beep 646.6
2	641.43			719.53	878.92	15:28	13.99	719.57	608.32	33.1	Rot 17	
3	636.86			713.29	872.61	15:32	14.00	713.35	603.88	32.9	Rot 17	
4	588.02			646.91	805.59	15:42	13.79	646.92	556.76	31.3	Rot 17	Beep 588.7
5	530.03			567.99	725.94	15:47	13.26	567.97	500.75	29.3	Rot 17	Beep 530.9
6	472.05			488.91	646.13	15:53	12.71	488.94	444.6	27.4	Rot 17	Beep 473.0
7	412.54			409.13	564.17	15:59	12.06	409.64	386.98	25.6	Rot 17	Beep 413.6
8	353.03			326.29	482.42	16:08	10.94	326.32	329.49	23.5	Rot 17	Beep 354.3
9	301.21			255.45	411.84	16:03	10.39	255.47	279.86	21.4	Rot 18 (Reset Home)	Beep 302.8
10	255.50			192.90	349.62	16:16	9.71	192.83	236.1	19.4	Rot 18	Beep 257.0
~~11~~	~~208.~~											Re
11	211.30			132.49	289.41	16:25	9.15	132.49	193.76	17.5	Rot 18	Beep 212.9
12	167.11			72.01	229.32	16:30	8.59	72.11	151.50	15.6	Rot 18	Beep 168.8
13	93.96			14.12	124.44	16:35	8.25	14.11	81.62	12.3	Rot 18	Beep 95.7

Notes: w = 1.422psi / m of H_2O | Dz = piezometric level in zone | Patm = atmospheric pressure | H = pressure head of water in zone | Dp = true depth of measurement port

Piezometric Profile:
Monitoring Well:GAR-19-035

Profile Date:Dec. 6, 2019
Comments:Pre-Inflation Profile



Client:NexGen
Site:ROOK I
Datum:Ground Surface

Figure 3

Plote By: TK Date: Jan 6/20
Checked By: DL Date: Jan 7/20
Westbay Project: WB985

Westbay Piezometric Pressures/Levels

Field Data and Calculation Sheet

Westbay Instruments

Well No.: GAR-19-035
Datum: GL
Elev. G.S.:
Height of Westbay above G.S.:
Elev. top of Westbay Casing:
Reference Elevation:
Borehole angle: 70°

Probe Type: Sampler
Serial No.: EMS 2652
Probe Range: 2000
Westbay Casing Type: MP38 + 2" riser
Sampler Valve Position: closed

Date: Dec 8/19
Client: Nexgen
Job No.: 985
Location: Rook I
Weather: Cold
Operator: ML

Note: "Port position" in angled boreholes refer to position along drillhole. True depth (Dp) needs to be calculated using borehole angle and deviation data to calculate zone piezometric level (Dz).

Ambient Reading (P_{atm}) (pressure, temperature, time)

		Finish:
Start: Pressure	13.99	13.97 psi
Temp	18.85°C	7.67°C
Time	3:40 am	5:14 am

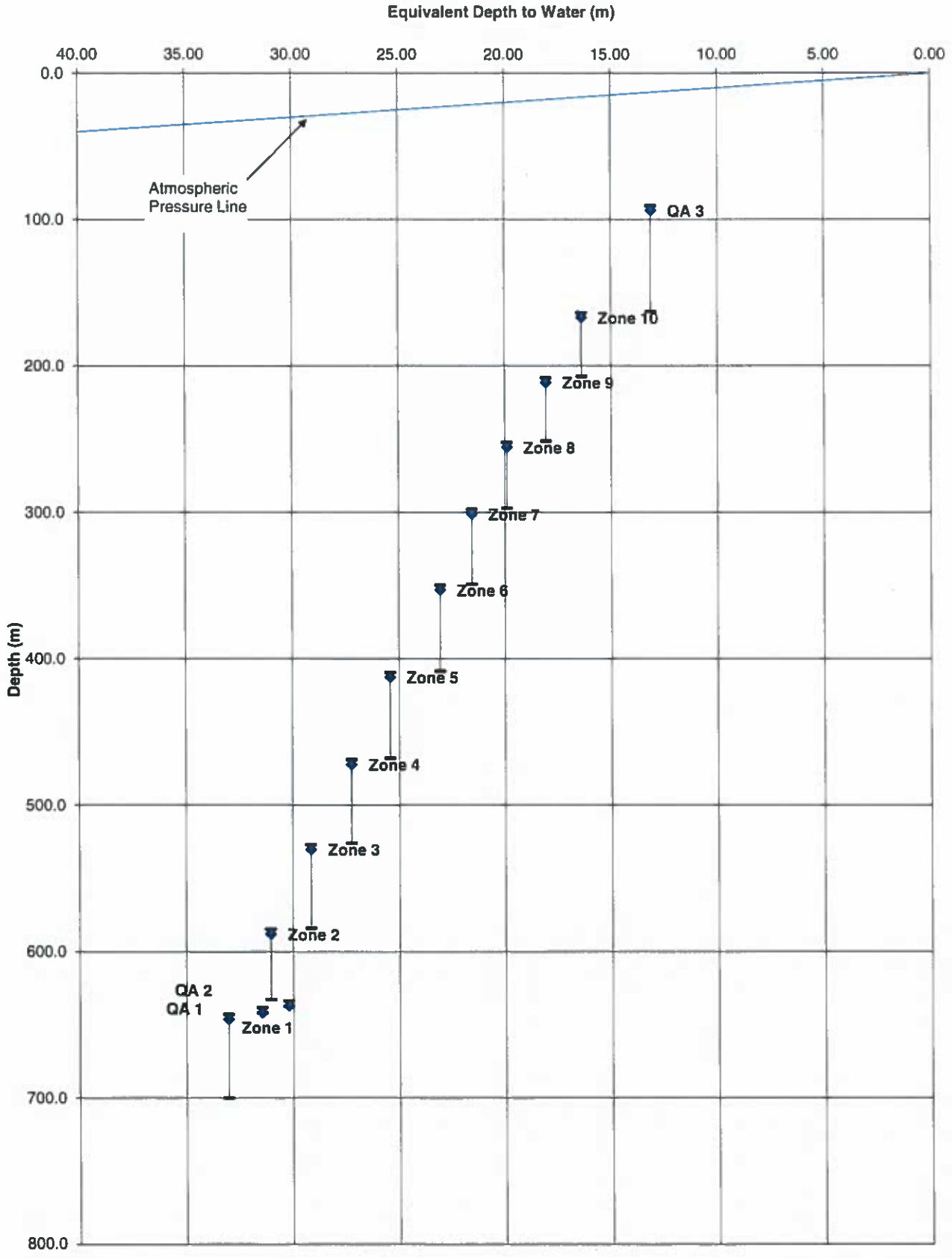
P_{atm} 13.99 psi

Port No.	Port Position From Log (m)	Port Position From Cable (m)	True Port Depth "Dp" (m)	Fluid Pressure Readings: Inside Casing (P1)	Outside Casing (P2)	Time H:M:S	Probe Temp. (°C)	Inside Casing (P1)	Pressure Head Outside Port (m) H = (P2-Patm)/w	Piez. Level Outside Port (m) Dz = Dp - H	ROT	Comments
1	646.00	646.3	–	875.54	885.63	4:08	13:21	875.56	612.97	33.03	17	
2	641.43	641.7	–	869.30	881.37	4:12	13.55	869.28	609.97	31.46	17	S
3	636.86	637.1	–	863.04	876.65	4:15	13:66	863.01	606.65	30.21	17	
4	588.02	588.3	–	795.99	806.01	4:21	13.57	795.97	556.98	31.04	17	
5	530.03	530.6	–	717.10	726.24	9:26	13.14	717.06	500.88	29.15	17	
6	472.05	472.6	–	638.10	646.50	4:32	12.49	638.12	444.80	27.25	17	
7	412.54	413.1	–	556.86	564.47	4:38	11.83	556.86	402.28	25.92	17	H=387.12
8	353.03	353.7	–	475.61	483.20	4:44	11.06	475.58	329.96	23.07	17	
9	301.21	302.1	–	404.86	411.65	4:48	10.50	404.84	279.65	21.56	17	
10	255.50	256.5	–	342.32	349.01	4:53	9.60	342.31	235.60	19.90	17	
11	211.30	212.4	–	281.93	288.76	4:57	9.04	281.95	193.23	18.07	18	
12	167.11	168.5	–	221.75	228.31	5:01	8.47	221.71	150.72	16.39	18	
13	93.96	95.6	–	122.03	128.93	5:06	7.90	122.04	80.83	13.13	18	

Notes: w = 1.422psi / m of H_2O Dz = piezometric level in zone Patm = atmospheric pressure H = pressure head of water in zone Dp = true depth of measurement port

Piezometric Profile:
Monitoring Well:GAR-19-035

Profile Date:Dec. 8,2019
Comments:Post-Inflation Profile



Client:NexGen
Site:ROOK I
Datum:Ground Surface

Figure 4

Plot By: TK Date: Jan 6/20
Checked By: DL Date: Jan 7/20
Westbay Project:WB985

Westbay Completion Log

Company: NexGen
Well: GAR-19-035
Site: ROOK 1
Project: Groundwater Characterization Study

Job No: WB985
Author: TK

Well Information

Reference Datum: G.L.
Elevation of Datum: 0.00 m.
MP Casing Top: 0.00 m.
MP Casing Length: ~~664.41 m.~~ 664.59 m.

Borehole Depth: 700.00 m.
Borehole Inclination: ~70
Borehole Diameter: 98.00 mm

Well Description:
Plastic MP38 System
Other References:
Add two anchor packers below 630m Dec 2
Email confirmation on Dec 2

File Information

File Name: GAR1935F.WWD
Report Date: Mon Dec 02 00:15:59 2019

File Date: Dec 02 00:14:50 2019

Comments

- No filter sock on MP
- DTW is 12.15 m from 0m
- Guide tube is 624.45 m from 0m

Log Information

Borehole condition confirmed.	(method) Rods	Date: Dec 5 / 2019
MP well design & preparation.	By: TK	Date: Dec 2 / 2019
MP well design checked.	By: MR	Date: Dec 2 / 2019
MP well and borehole approved to install.	By: [signature]	Date: Dec 5 / 2019

Legend

(Qty) MP Components

(Library - WD Library 04/29/15)

(2) 703215 - 2" PVC Casing -1.5M

(1) 703205 - 2" PVC Casing - 0.5M

(15) 703229 - 2" PVC Casing - 2.9 M

(183) 020110 - MP38 Casing 1 (10F/3M)

(13) 0238 - MP38 Packer - 74mm (5F/1.5M)

(26) 020105 - MP38 Casing 2 (5F/1.5M)

(1) 020305 - Tapered End Plug

(18) 0000 - 2" PVC Joint for Illustration

(1) 027500C1 - 2" PVC Flush Joint Adaptor

(199) 0202 - MP38 Regular Coupling

(13) 0205 - MP38 Measurement Port

(4) 0224 - MP38 Pumping Port

(6) 0206 - MP38 Hydraulic Pumping Port

(11) 0216 - Magnetic Location Collar

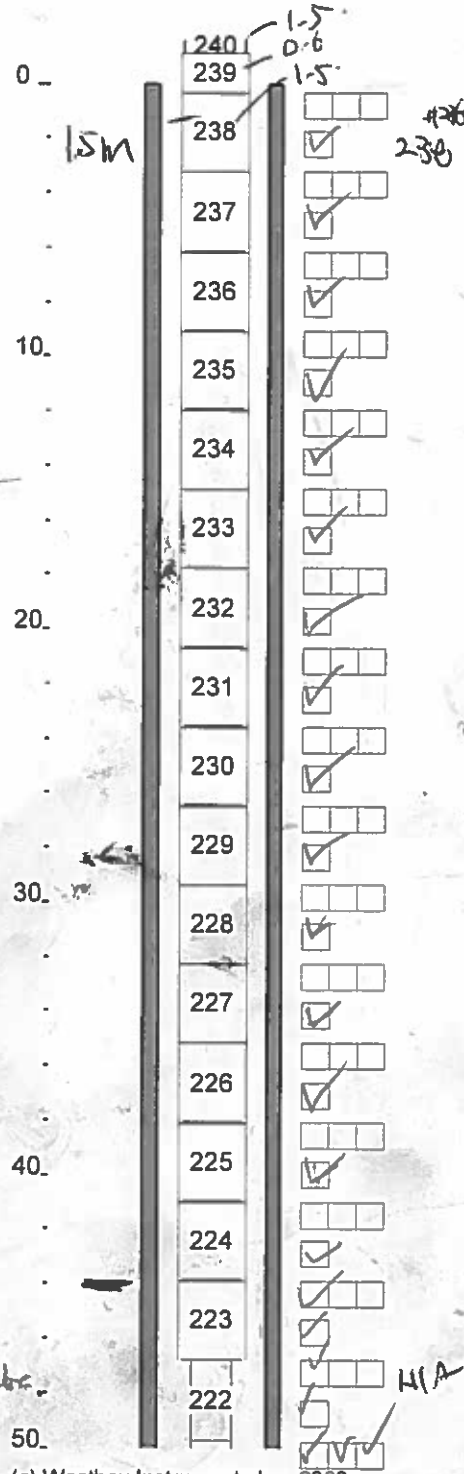
Geology

Backfill/Casing

Mild Steel

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



WB Tubing Description

0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - ~~2.9 M~~
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
0000 - 2" PVC Joint for Illustration
703229 - 2" PVC Casing - 2.9 M
027500C1 - 2" PVC Flush Joint Adaptor
020110 - MP38 Casing 1 (10F/3M)

Serial Numbers

#240 7m set up well
14:12 pm

#238 (1.5m) in well.
12:59 pm finish lower to #238

Hydraulic Integrity test

13:00 125.485
13:10 125.485
13:20 125.47
13:30 125.47
13:40 125.47

WB & 2" pipe are water tight.
TL Dec 6/2019

11:00 am lower to #222

Hydraulic Integrity Test (WB)

11:10 79.43
11:20 79.43
11:30 79.425
11:40 79.42
11:50 79.42
12:00 79.42

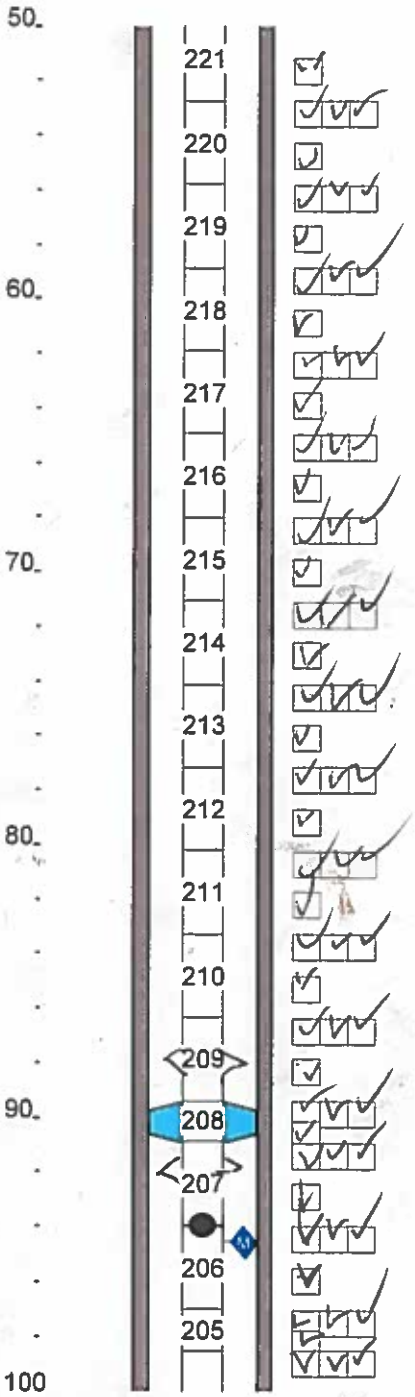
WB is water tight
TL Dec 6/2019

(c) Westbay Instruments Inc. 2000

Mon Dec 02 00:19:59 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



#217 in the well
WA weight 300 lbs
(with friction wt)

P = 19837.

MP = 96m

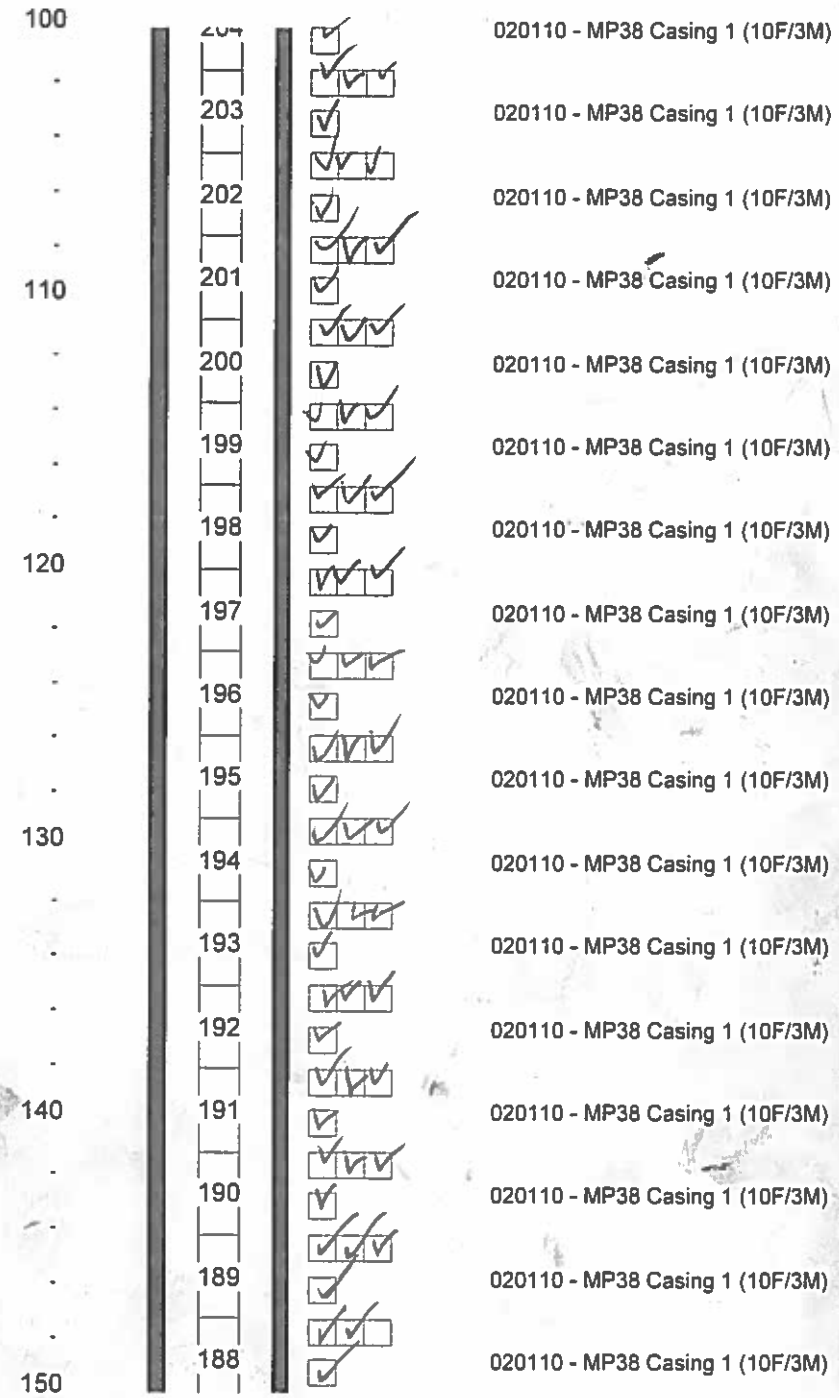
Adding 20 15 gall

(c) Westbay Instruments Inc. 2000

Mon Dec 02 00:19:59 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035

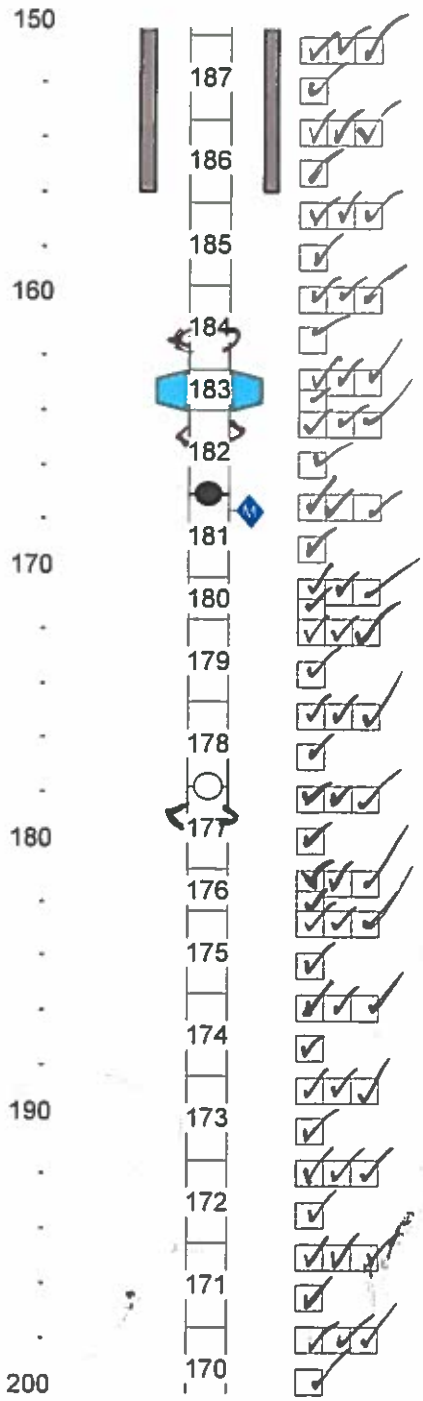


07:16 start #190

06:46 #189 in well
Night shift finished

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



WB Tubing Description

020110 - MP38 Casing 1 (10F/3M)
020110 - MP38 Casing 1 (10F/3M)
020110 - MP38 Casing 1 (10F/3M)
020110 - MP38 Casing 1 (10F/3M)
0238 - MP38 Packer - 74mm (5F/1.5M)
020110 - MP38 Casing 1 (10F/3M)
0205 - MP38 Measurement Port
020110 - MP38 Casing 1 (10F/3M)
020105 - MP38 Casing 2 (5F/1.5M)
020110 - MP38 Casing 1 (10F/3M)
020110 - MP38 Casing 1 (10F/3M)
0224 - MP38 Pumping Port
020110 - MP38 Casing 1 (10F/3M)
020105 - MP38 Casing 2 (5F/1.5M)
020110 - MP38 Casing 1 (10F/3M)
020110 - MP38 Casing 1 (10F/3M)
020110 - MP38 Casing 1 (10F/3M)
020110 - MP38 Casing 1 (10F/3M)
020110 - MP38 Casing 1 (10F/3M)

Serial Numbers

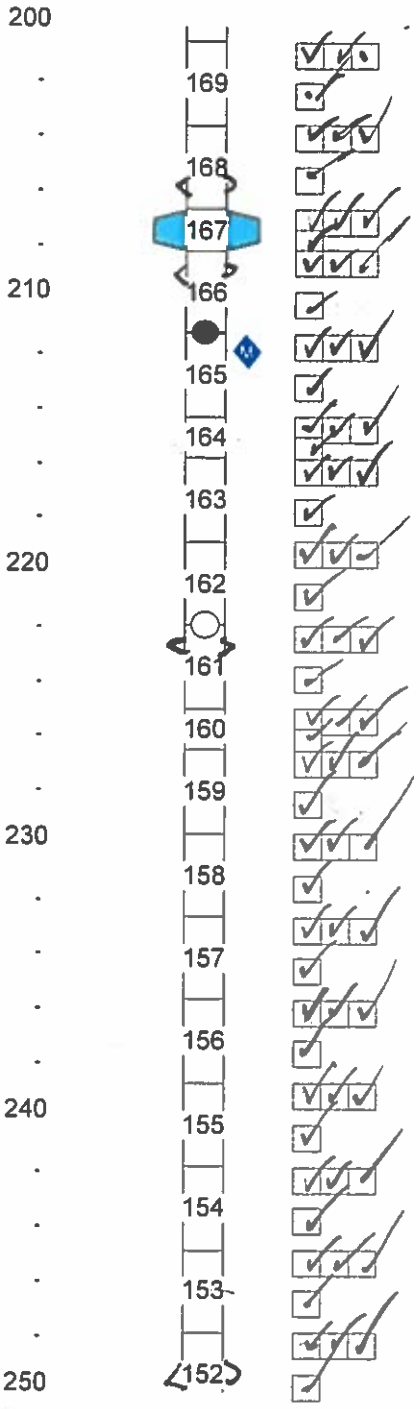
06:34
Adj 22g
P = 19834.
μp = 96%
pp. 9067
05:23

(c) Westbay Instruments Inc. 2000

Mon Dec 02 00:20:00 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



P = 19833

up 9625

05:00

Add 22 gallons

pp = 9066

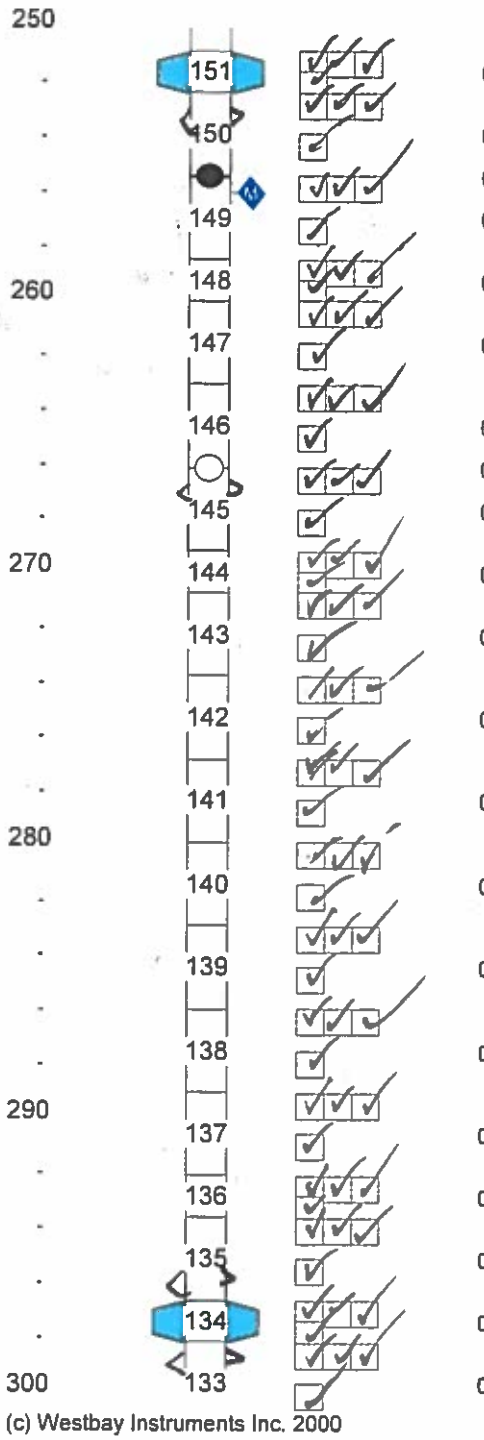
03:22

(c) Westbay Instruments Inc. 2000

Mon Dec 02 00:20:00 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



P= 19832

MP 9624

~~Add~~

PP 9065

Add 22 gallons

P= 19831
02:09

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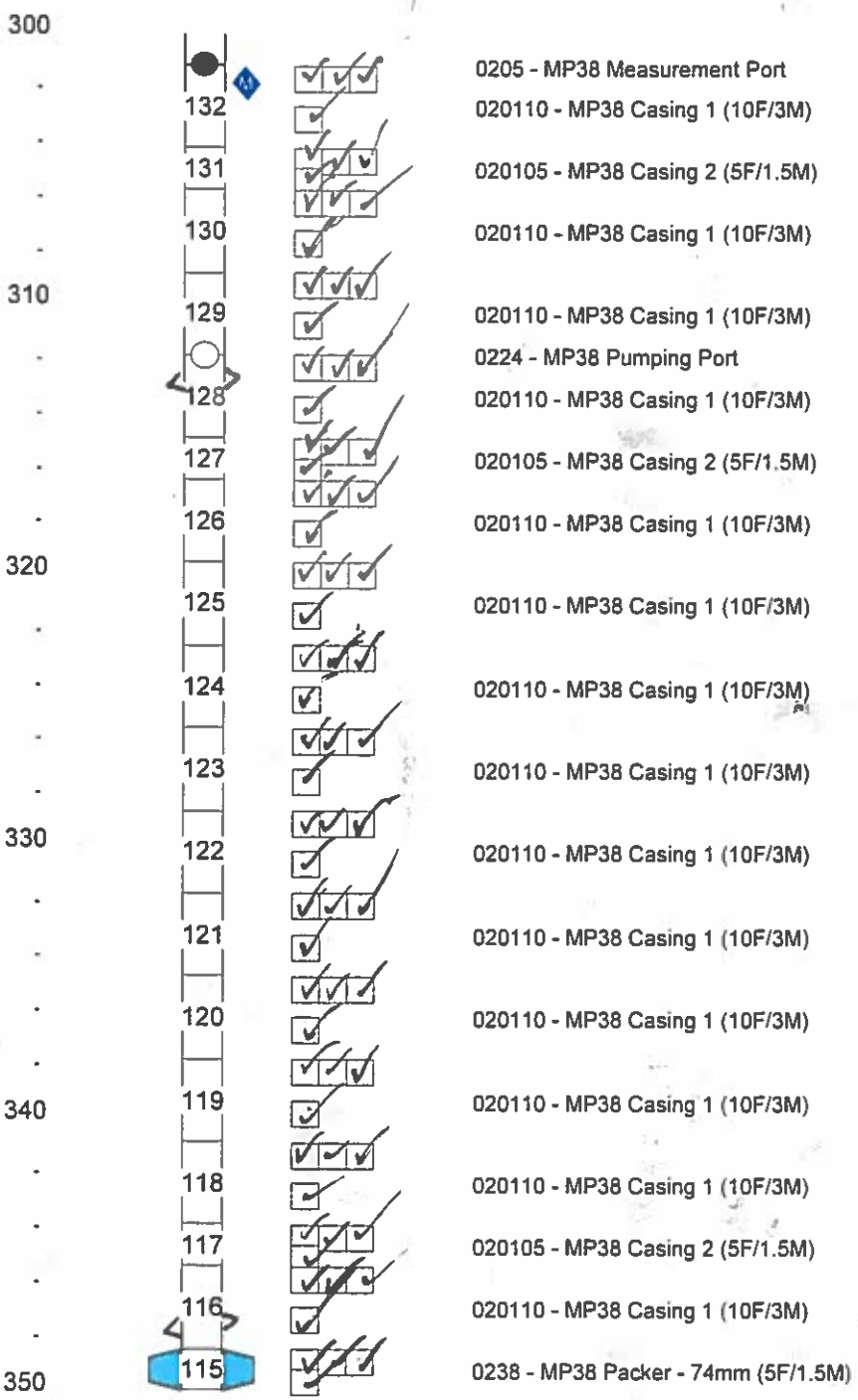
Mon Dec 02 00:20:48 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



HP - 9623

HP 9064

12:52

~~12:20~~ 12:45 cont
23:52 # 116 in well
Switch to rig lowering

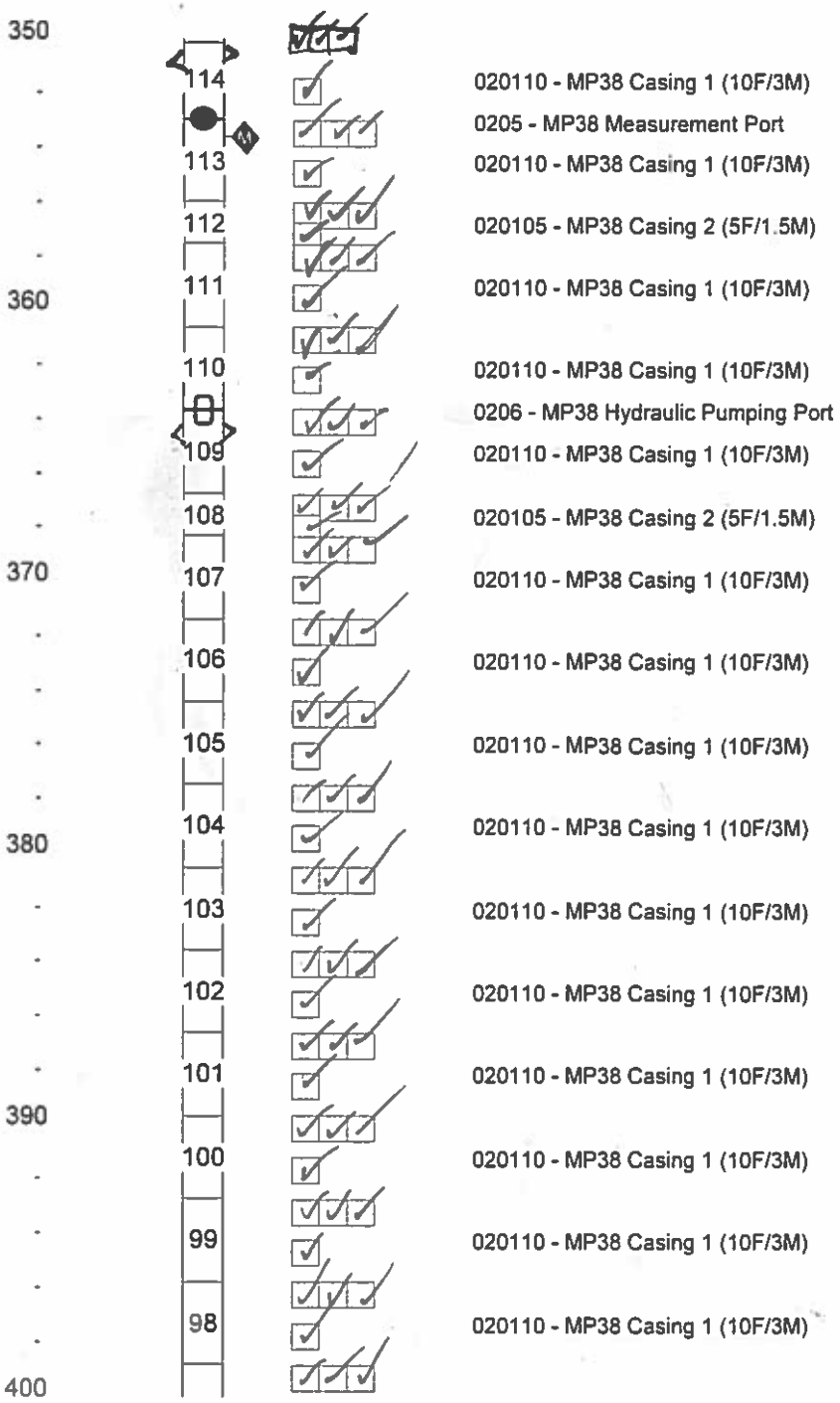
P = 19830

(c) Westbay Instruments Inc. 2000

Mon Dec 02 00:20:48 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



Serial Numbers

P.p water level

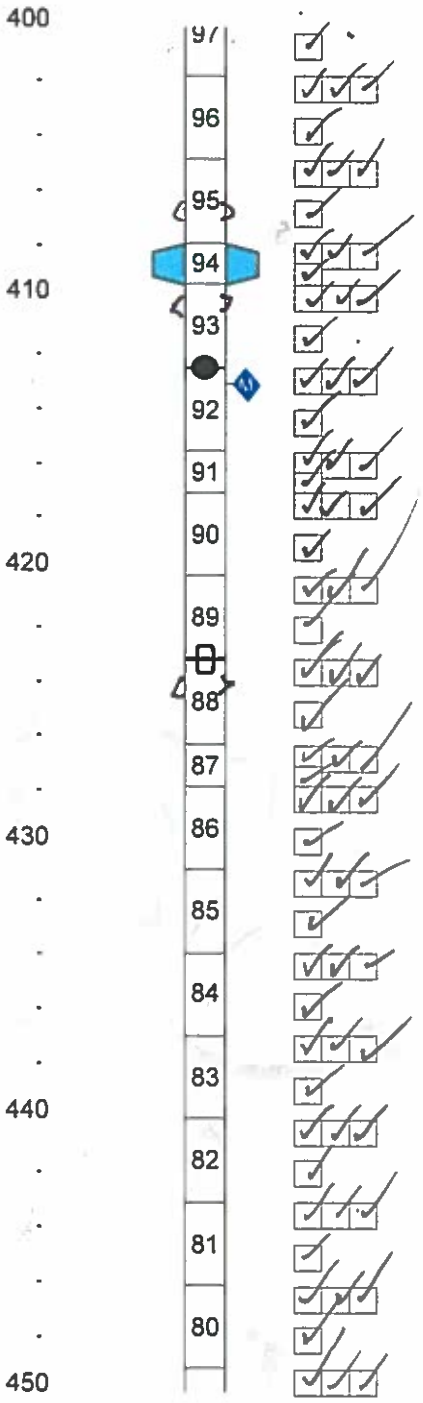
MP = 9622.

PP498
Add 3 gallons
23:23

Add 3 gallons

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



22:24

P = 19829

MP = 9641

Add 3 gallons

PP 497

Add 3 gallons

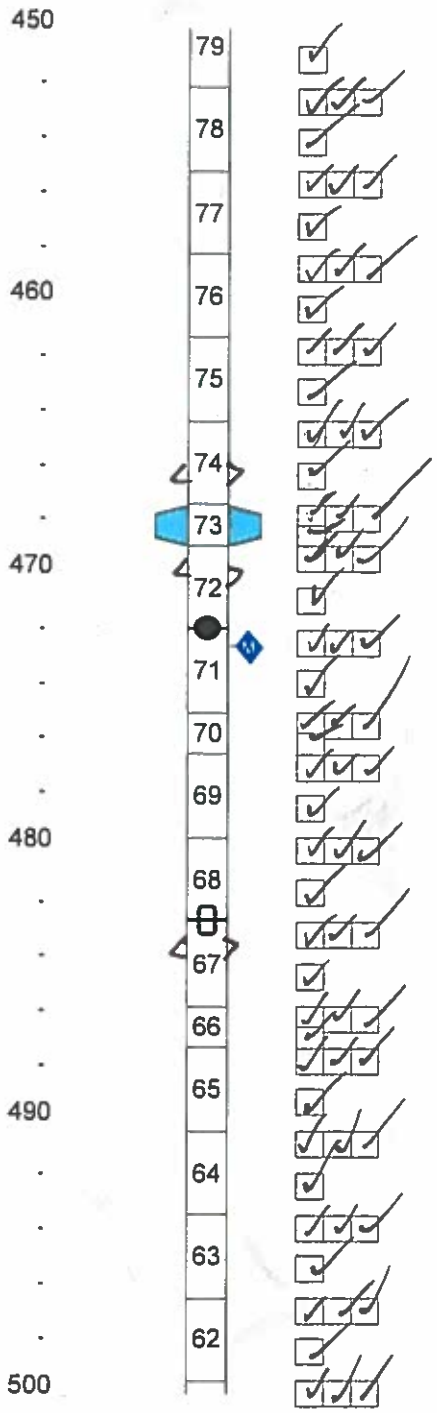
21:34

(c) Westbay Instruments Inc. 2000

Mon Dec 02 00:20:49 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



Add 3 gallons
Add 3gallons

P = 19838

MP 9620

Add 3gallons

PP496

Add 3 gallons

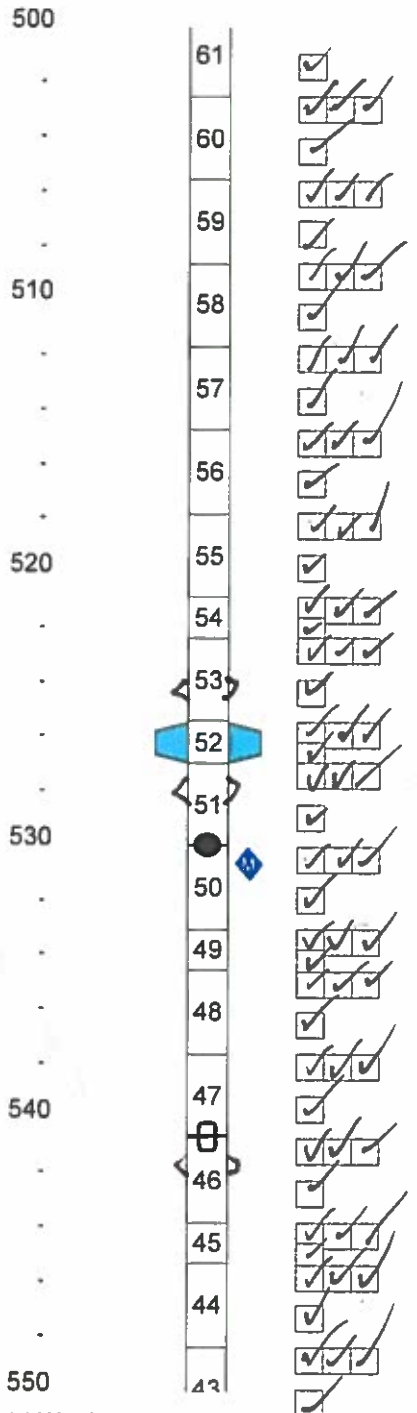
20:24

(c) Westbay Instruments Inc. 2000

Mon Dec 02 00:20:49 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



Add 3 gallons

Add 8 gallons

P = 19827.

HP = ~~6116~~ 9619
TL

Add 3 gallons

PP 495

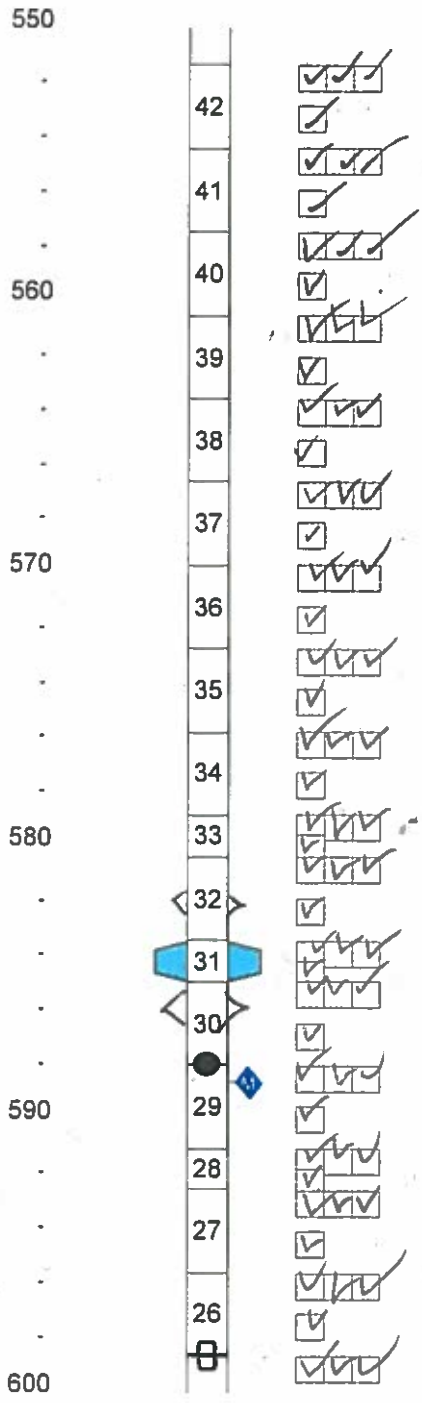
19:30

(c) Westbay Instruments Inc. 2000

Mon Dec 02 00:21:31 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035

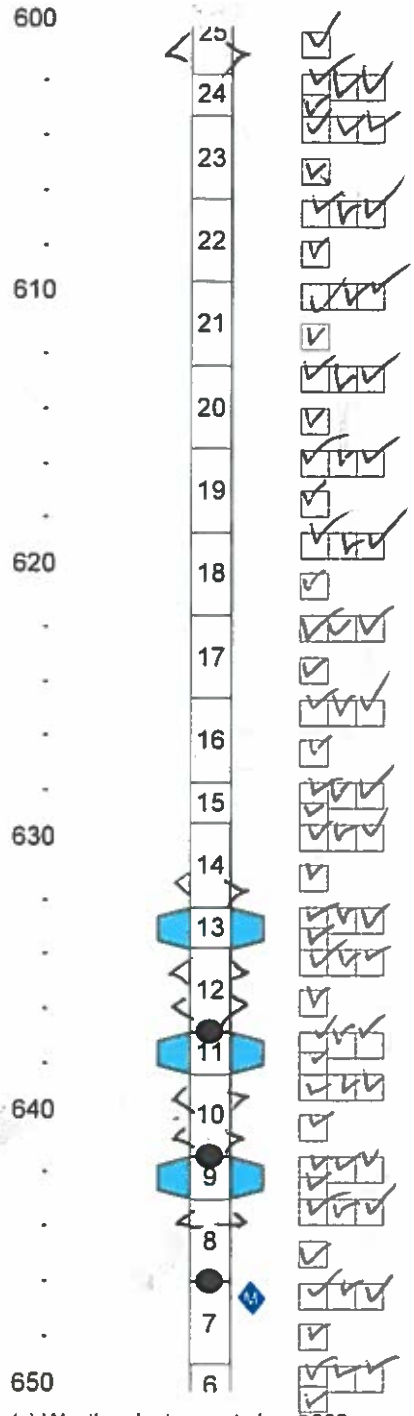


Add 3 gallons
#41 in the well 19:16
#40 in the well 19:58
Add 4 gallons
Add 2.5 gallon
P = 19826
MP = 9618
Add 2.5 gallons
494

(c) Westbay Instruments Inc. 2000
Mon Dec 02 00:21:31 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035



WB Tubing Description	Serial Numbers
020110 - MP38 Casing 1 (10F/3M)	
020105 - MP38 Casing 2 (5F/1.5M)	
020110 - MP38 Casing 1 (10F/3M)	
020110 - MP38 Casing 1 (10F/3M)	
020110 - MP38 Casing 1 (10F/3M)	
020110 - MP38 Casing 1 (10F/3M)	Add 25 gallon
020110 - MP38 Casing 1 (10F/3M)	
020110 - MP38 Casing 1 (10F/3M)	
020110 - MP38 Casing 1 (10F/3M)	
020110 - MP38 Casing 1 (10F/3M)	Add 8 gallon 3
020110 - MP38 Casing 1 (10F/3M)	
020105 - MP38 Casing 2 (5F/1.5M)	~~Add 5 gallon~~.
020110 - MP38 Casing 1 (10F/3M)	
0238 - MP38 Packer - 74mm (5F/1.5M)	P = 19825
020110 - MP38 Casing 1 (10F/3M)	MP = 9617
0205 - MP38 Measurement Port 0238 - MP38 Packer - 74mm (5F/1.5M)	P = 19824
020110 - MP38 Casing 1 (10F/3M)	MP 9616
0205 - MP38 Measurement Port 0238 - MP38 Packer - 74mm (5F/1.5M)	P = 19823
020110 - MP38 Casing 1 (10F/3M)	
0205 - MP38 Measurement Port	MP 9615
020110 - MP38 Casing 1 (10F/3M)	
020105 - MP38 Casing 2 (5F/1.5M)	

(c) Westbay Instruments Inc. 2000

Mon Dec 02 00:21:31 2019

Westbay Completion Log
NexGen

Job No: WB985
Well: GAR-19-035

Scale Meters	WB Tubing	QA Tested OK	WB Tubing Description	Serial Numbers
650				
	5	✓✓✓	020110 - MP38 Casing 1 (10F/3M)	
		✓		
		✓✓✓		
	4	✓	020110 - MP38 Casing 1 (10F/3M)	
		✓✓✓	0206 - MP38 Hydraulic Pumping Port	PP 490
	3	✓	020110 - MP38 Casing 1 (10F/3M)	
660		✓✓✓		
	2	✓	020105 - MP38 Casing 2 (5F/1.5M)	
		✓✓✓		
	1	✓	020110 - MP38 Casing 1 (10F/3M)	
		✓✓✓	0203 - MP38 End Cap	

start lower
15-45

TIW 3994
joint test 250 / 250 / 250

670
680
690
700

Sheet 1 of 13

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: M. Lesrard | Date Inflated: Dec 6/19

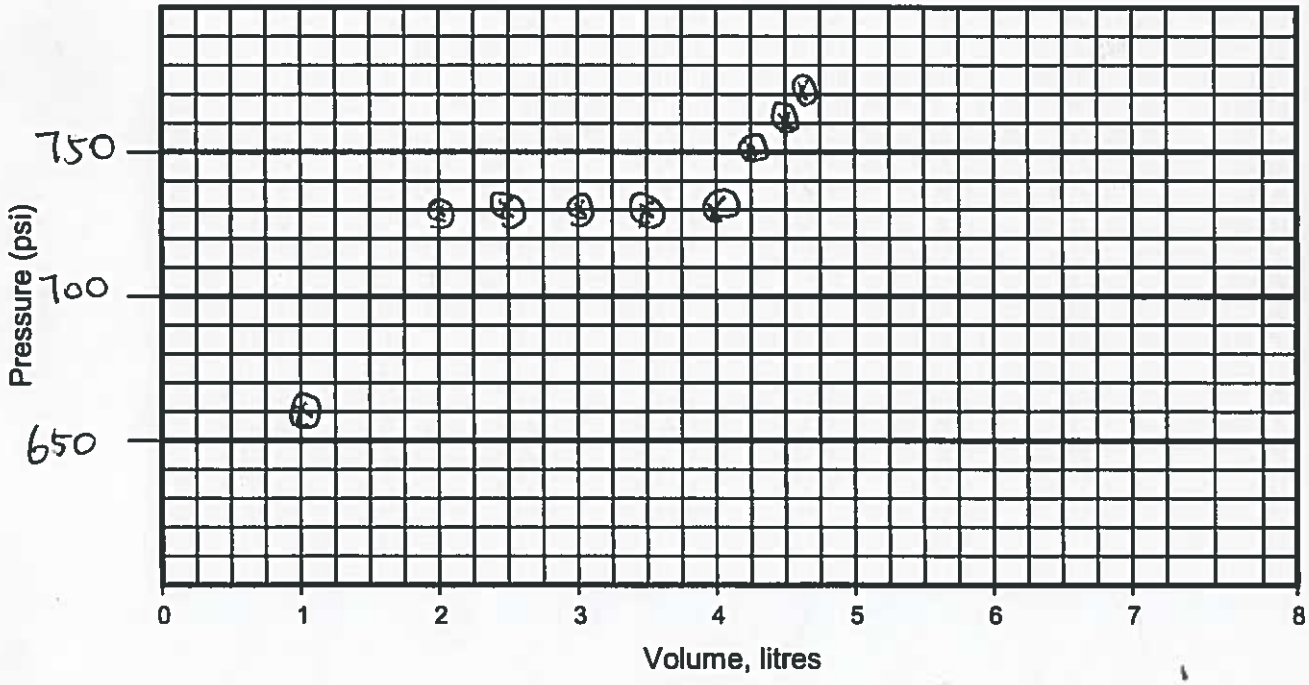
Packer No. 1, comp #9 SN# 189.23 | Depth (ft / m): 641.4 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 770 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 145 psi

Volume, litres	1.0	1.5	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75
Pressure, psi	660	690	730	730	730	730	730	730	730	730
Volume, litres	4.0	4.25	4.35	4.5	4.6	3.6				
Pressure, psi	730	750	750	760	770	Ø				



Comments: Target 725 psi plateau | Time - 22:58

Sheet 2 of 13

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: M. Lessard | Date Inflated: Dec 6/19

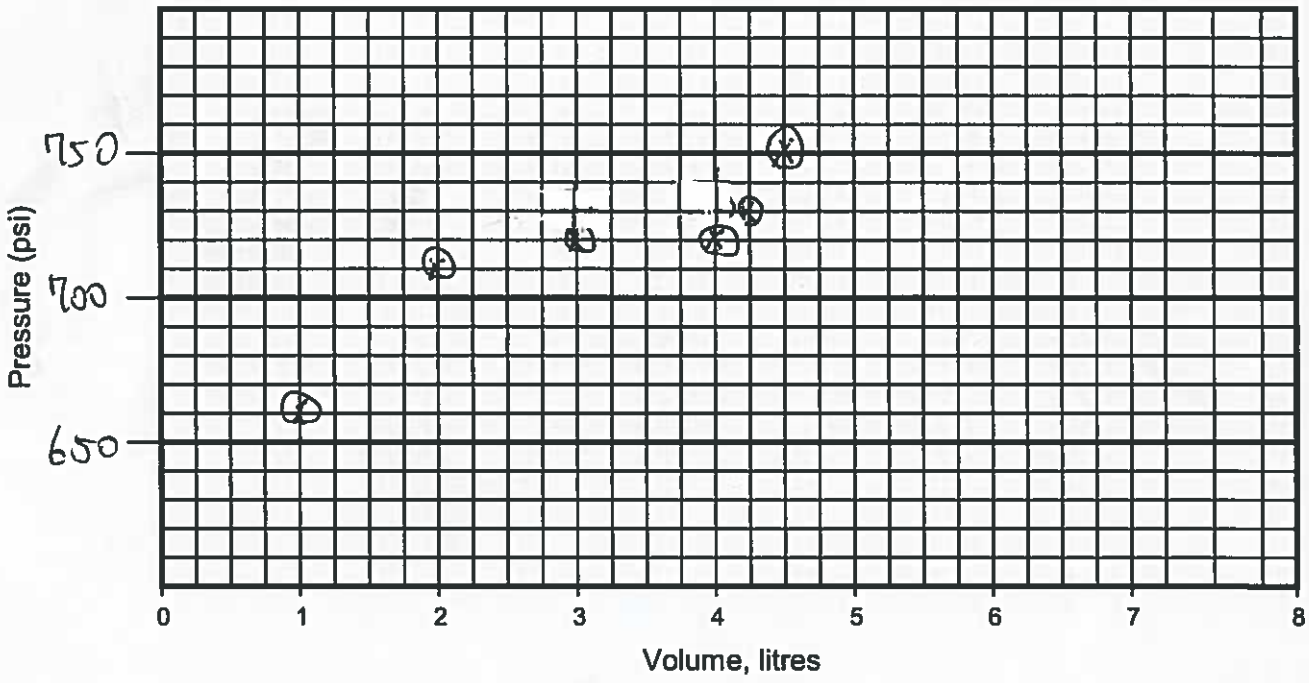
Packer No. 2, comp II SN# 19824 | Depth (ft / m): 636.9 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 750 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 115 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.5	3.5
Pressure, psi	660	710	720	720	720	720	720	730	750	0
Volume, litres										
Pressure, psi										



Comments: Time - 23:36

Drop at 1136 @ 3.5 L

Sheet 3 of 13

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: M. Lessard | Date Inflated: Dec 6/19

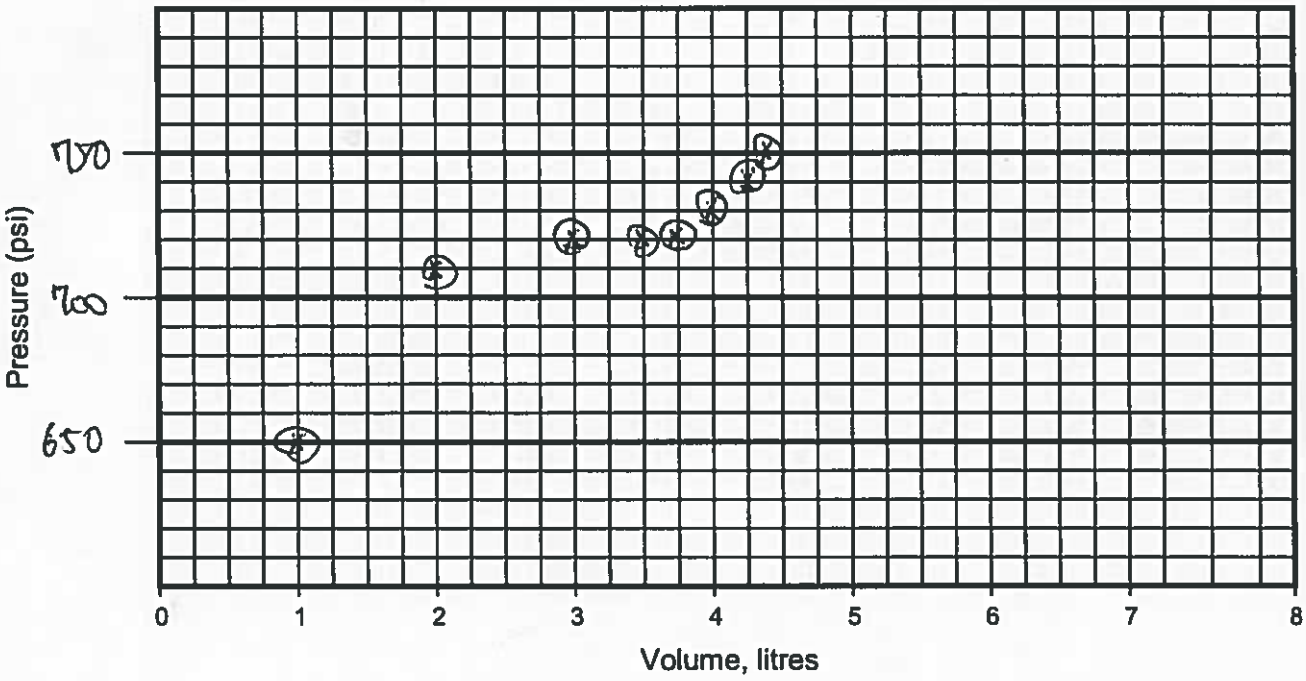
Packer No. 3, comp 13 SN# 19825 | Depth (ft / m): 623 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 750 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 125 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.4	3.5
Pressure, psi	650	710	720	720	720	720	730	740	750	∅
Volume, litres										
Pressure, psi										



Comments: Time - 12:07 Dec 7/19

Sheet 4 of 13

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: A. Lessard | Date Inflated: Dec 7/19

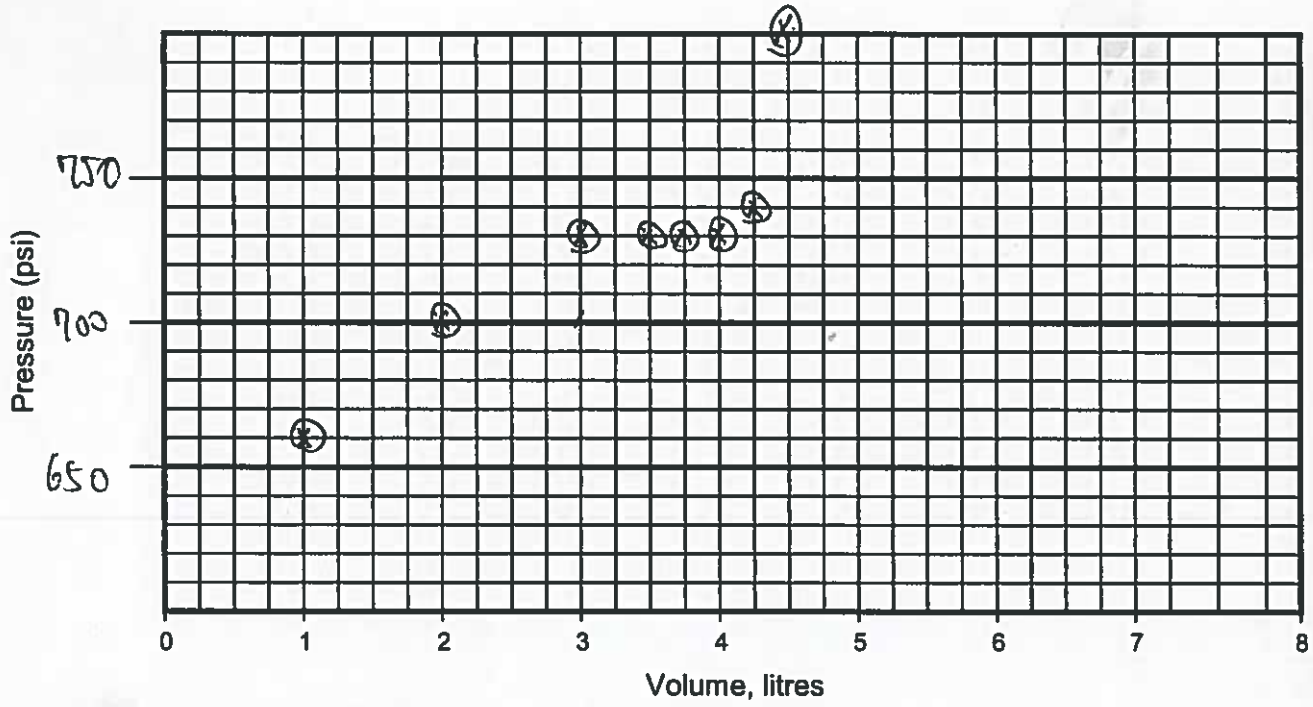
Packer No. 4, comp 31 SN# 18926 | Depth (~~ft~~ m): 583.4 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 145 psi | Final Line Pressure, P_L: 810 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (~~ft~~ m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 180 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.4	3.7
Pressure, psi	660	700	730	730	730	730	730	740	810	/
Volume, litres										
Pressure, psi										



Comments: Time - 5:55

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: TK | Date Inflated: Dec 9 / 2019

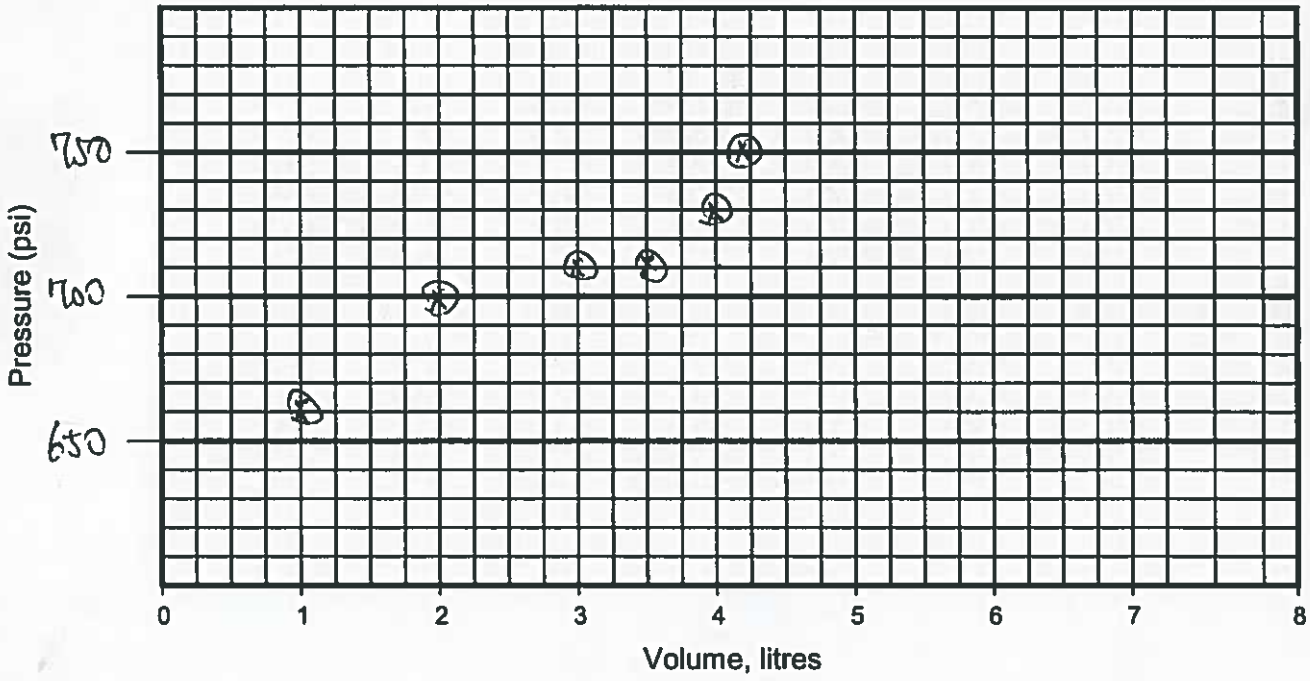
Packer No. 5, comp 52, s/n 19827 | Depth (ft / m) 525.46 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 150 psi | Final Line Pressure, P_L: 750 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 115 psi

Volume, litres	1.0	~~2.0~~ 1.5	2.0	2.5	3.0	3.5	4.0	4.2	3.5	
Pressure, psi	660	700	700	700	710	710	730	750	ø	
Volume, litres										
Pressure, psi										



Comments: Time - 12:04

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: TL | Date Inflated: Dec 7/2019

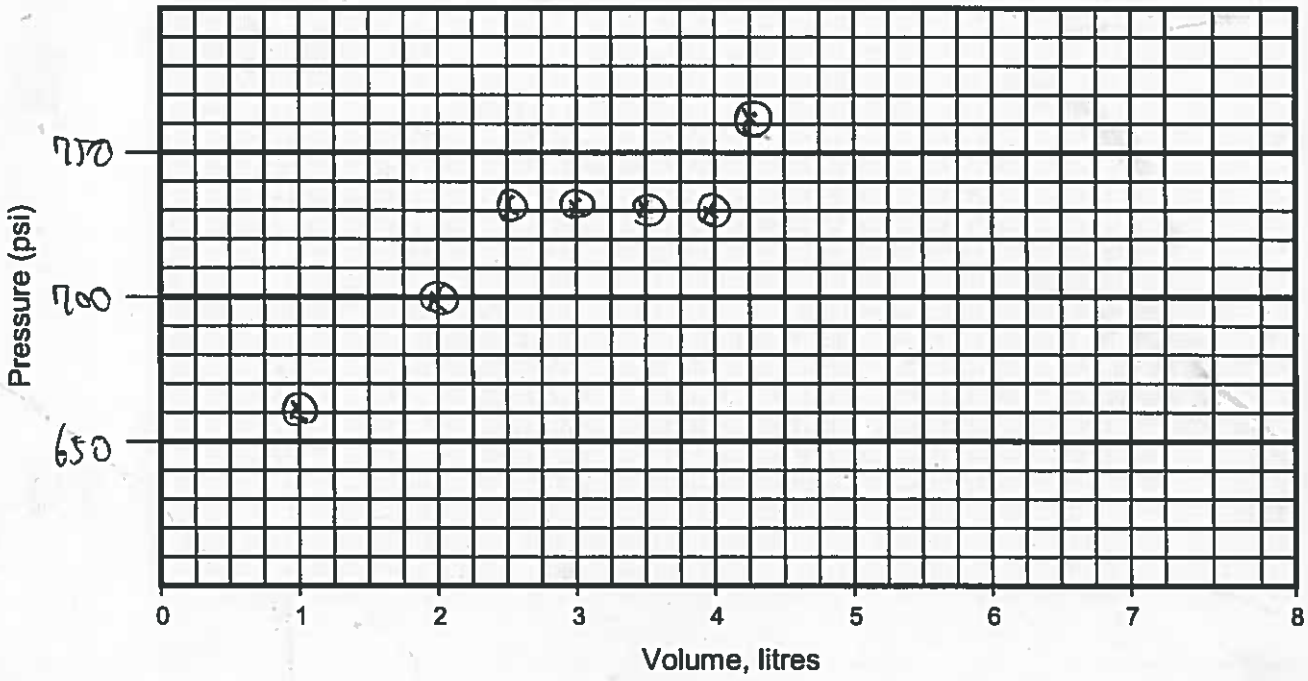
Packer No. 6, comp 73, S/N 19828 | Depth (ft / (m)): 467-47. | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 760 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / (m)) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 135. psi

Volume, litres	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.25	3.5	
Pressure, psi	660	700	700	730	730	730	730	760	Ø	
Volume, litres										
Pressure, psi										



Comments: Time - 12:51

Sheet 7 of 13

Westbay Packer Inflation Record

Project: NexGen Project No.: WB985 Well No.: GAR-19-035

Location: ROOK I, SK Completed by: MLessard Date Inflated: Dec 7/19

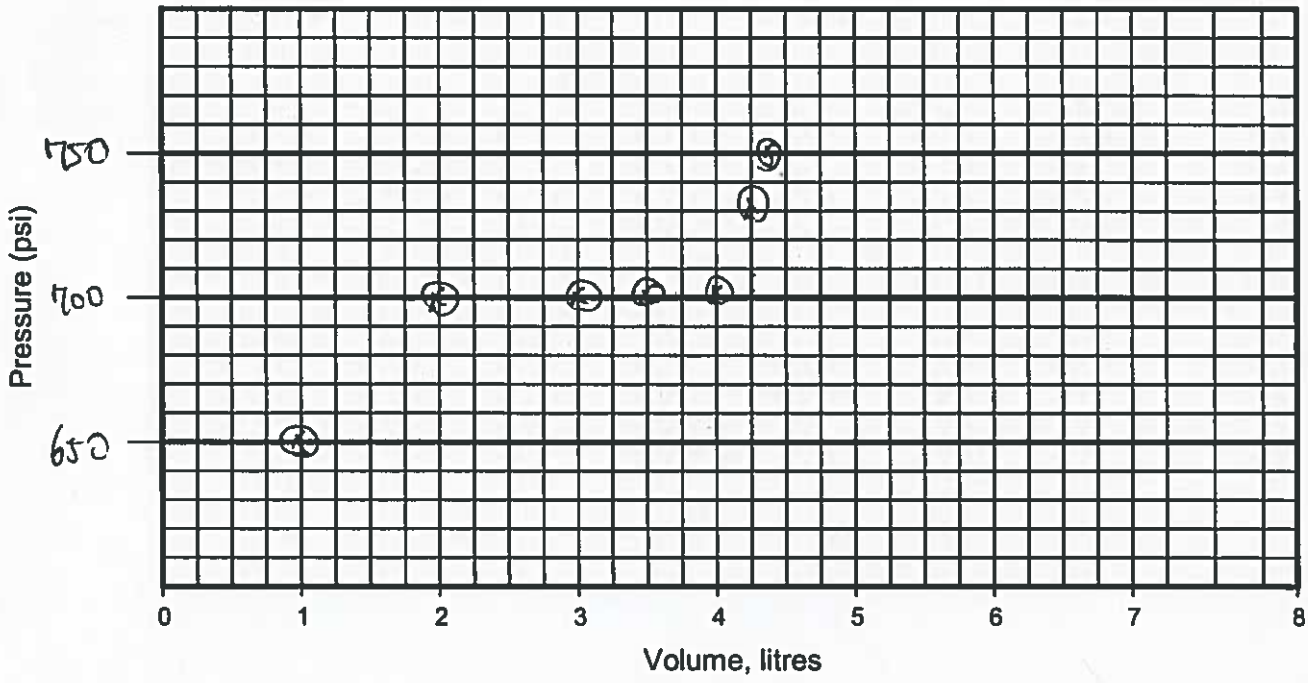
Packer No. 7 comp # 94 SN# 19829 Depth (ft / m): 407.9 Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 145 psi Final Line Pressure, P_L: 750 psi Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 120 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.4	3.7
Pressure, psi	650	700	700	700	700	700	700	730	750	0
Volume, litres										
Pressure, psi										



Comments: Time - 20:21

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: M. Lessard | Date Inflated: Dec 7/18

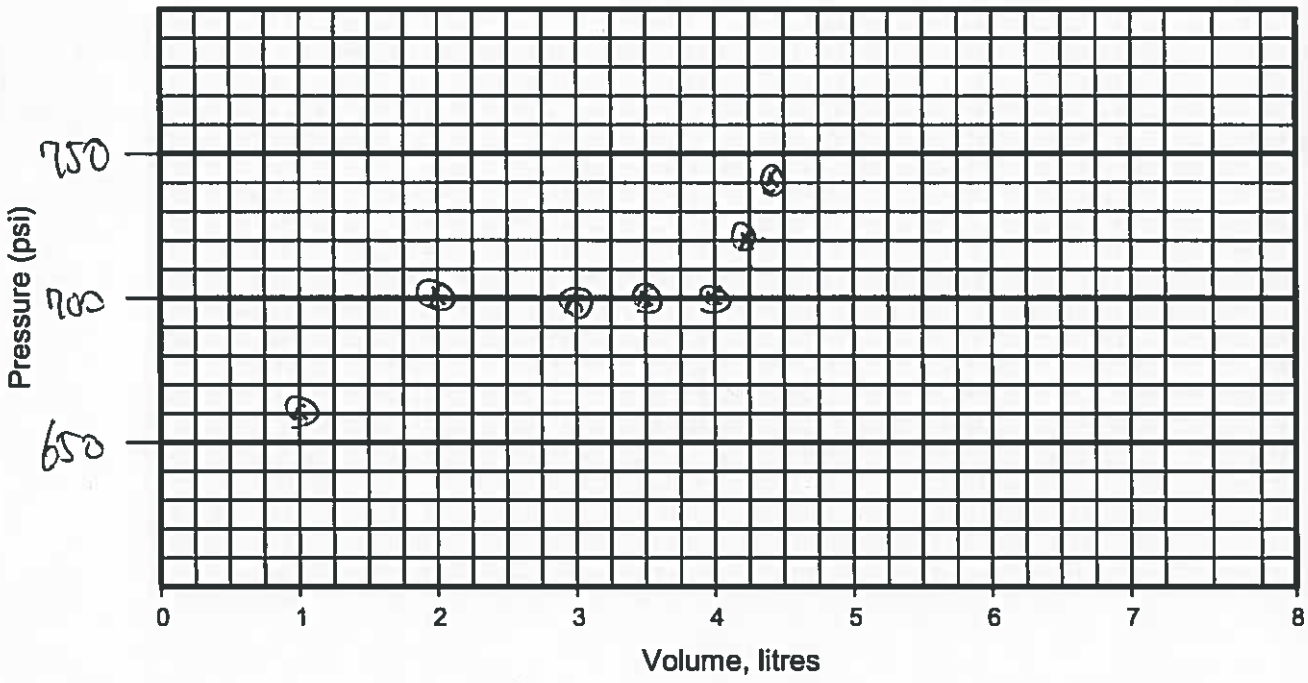
Packer No. 8 comp 115 SN# 19830 | Depth (ft / m): 348.5 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 740 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 115 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.4	3.7
Pressure, psi	660	700	700	700	700	700	700	720	740	ø
Volume, litres										
Pressure, psi										



Comments: Time - 21:07

Sheet 9 of 13

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: M. Lessard | Date Inflated: Dec 7/19

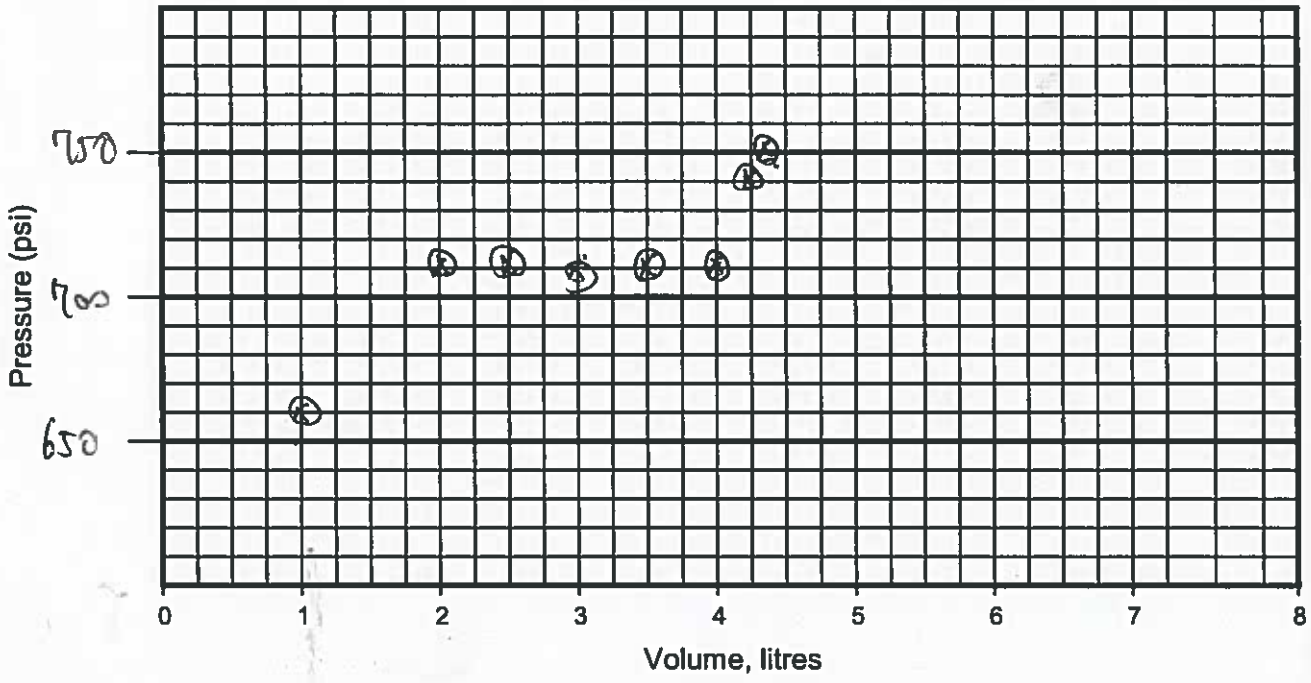
Packer No. 9 comp 134 SN# 19831 | Depth (ft / m): 296.6 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 750 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 125 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.35	3.6
Pressure, psi	660	710	710	710	710	710	710	740	750	ø
Volume, litres										
Pressure, psi										



Comments: Time - 21:50

740 - 1:00

710 - 1:30

Sheet 10 of 13

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: M Lessard | Date Inflated: Dec 7/19

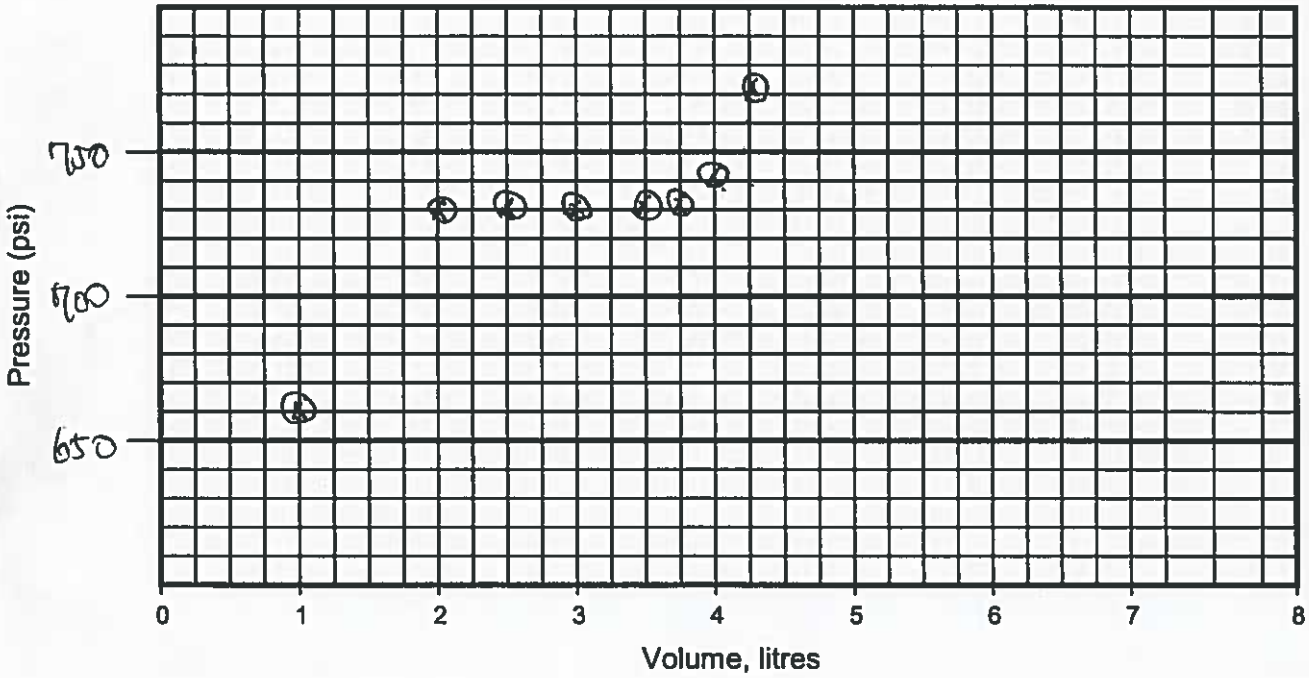
Packer No. 10, comp 151 SN#19832 | Depth (ft / m): 250-9 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 155 psi | Final Line Pressure, P_L: 770 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 50 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 130 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	3.5	
Pressure, psi	660	730	730	730	730	730	740	770	ø	
Volume, litres										
Pressure, psi										



Comments: Time - 22:45

Sheet 11 of 13

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: M. Lessard | Date Inflated: Dec 7/19

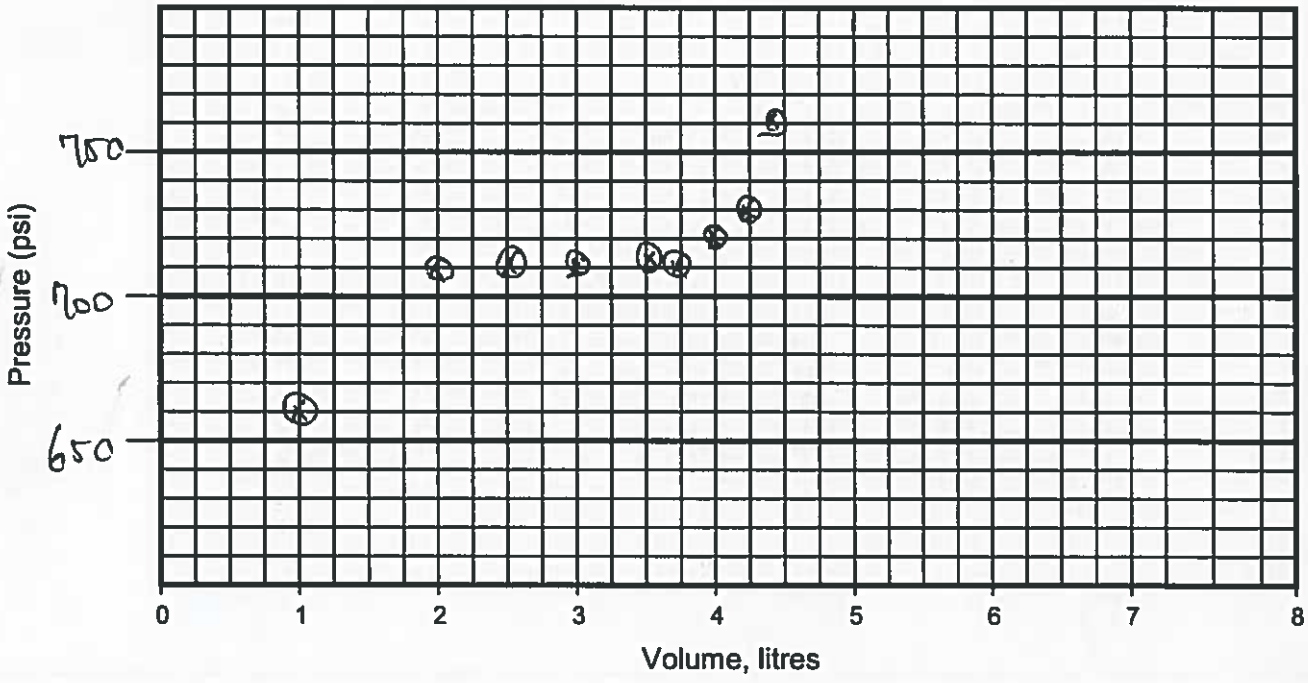
Packer No. 11, comp 167 SN#19833 | Depth (ft / m): 206-7 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 140 psi | Final Line Pressure, P_L: 760 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 60 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 135 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.4	3.7
Pressure, psi	660	710	760	710	710	710	720	730	760	ϕ
Volume, litres										
Pressure, psi										



Comments: Time - 23:35

Sheet 12 of 13

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: M.Lessard | Date Inflated: Dec 7/19

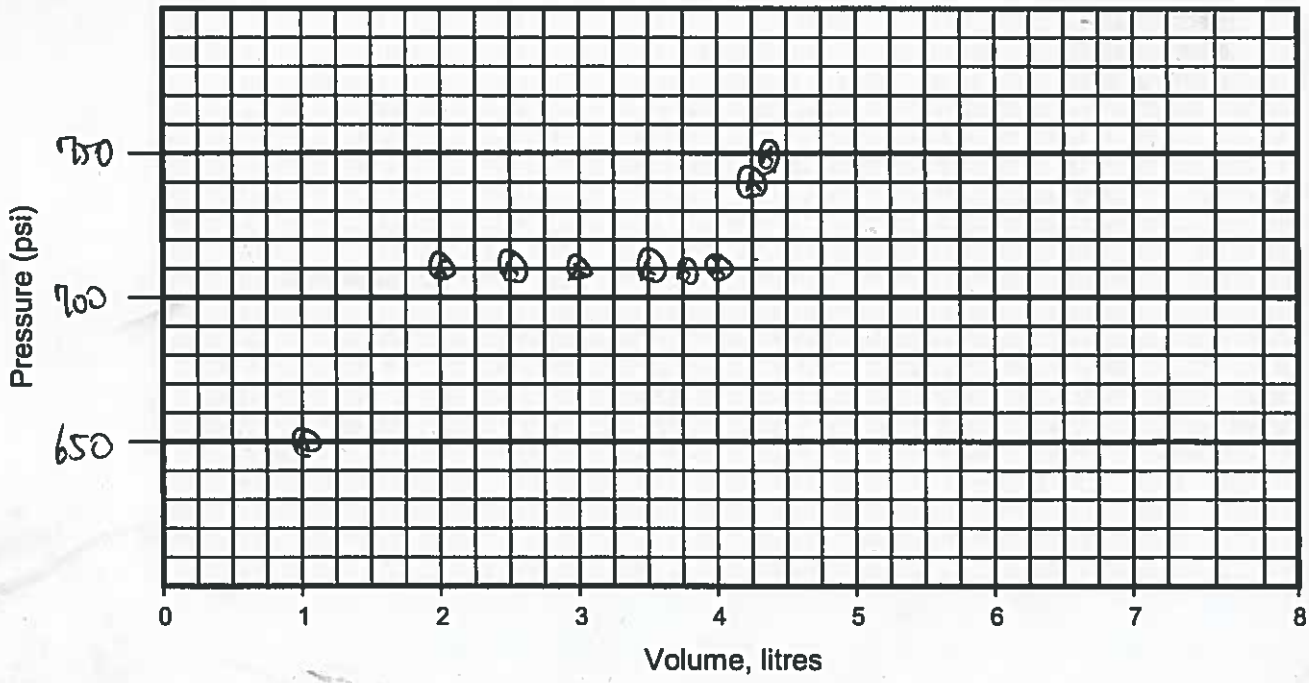
Packer No. 12, comp 183 SN#19834 | Depth (ft / m): 162.5 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 135 psi | Final Line Pressure, P_L: 750 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 130 psi

Volume, litres	1.0	2.0	2.5	3.0	3.5	3.75	4.0	4.25	4.3	3.5
Pressure, psi	650	710	710	710	710	710	710	740	750	ø
Volume, litres										
Pressure, psi										



Comments: Time - 12:14 am

Sheet 13 of 13

Westbay Packer Inflation Record

Project: NexGen | Project No.: WB985 | Well No.: GAR-19-035

Location: ROOK I, SK | Completed by: M. Lessard | Date Inflated: Dec 8/19

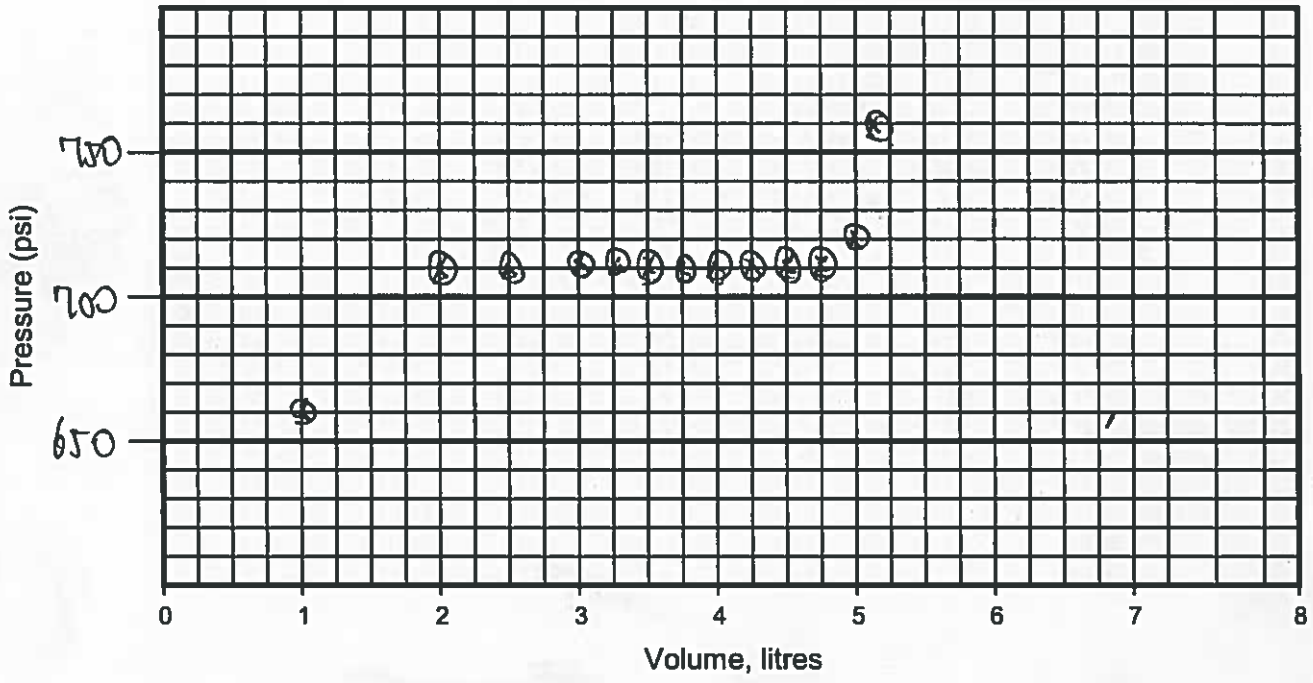
Packer No. 13, comp 208 SN# 19835 | Depth (ft / m): 89.4 | Inflation Tool No.: TIW3994

Packer Valve Pressure, P_V: 135 psi | Final Line Pressure, P_L: 760 psi | Tool Pressure, P_T: 500 psi

Borehole Water Level: 10 (ft / m) = 15 psi (P_W)

Calculated Packer Element Pressure, $P_E = P_L + P_W - P_V - P_T$ = 140 psi

Volume, litres	1.0	2.0	2.5	3.0	3.25	3.5	3.75	4.0	4.25	4.5
Pressure, psi	660	710	710	710	710	710	710	710	710	710
Volume, litres	4.75	5.0	5.2	4.4						
Pressure, psi	710	720	760	Ø						



Comments: In Surface Casing @ 4½ in | Time - 2:26 am

740 @ 1:08

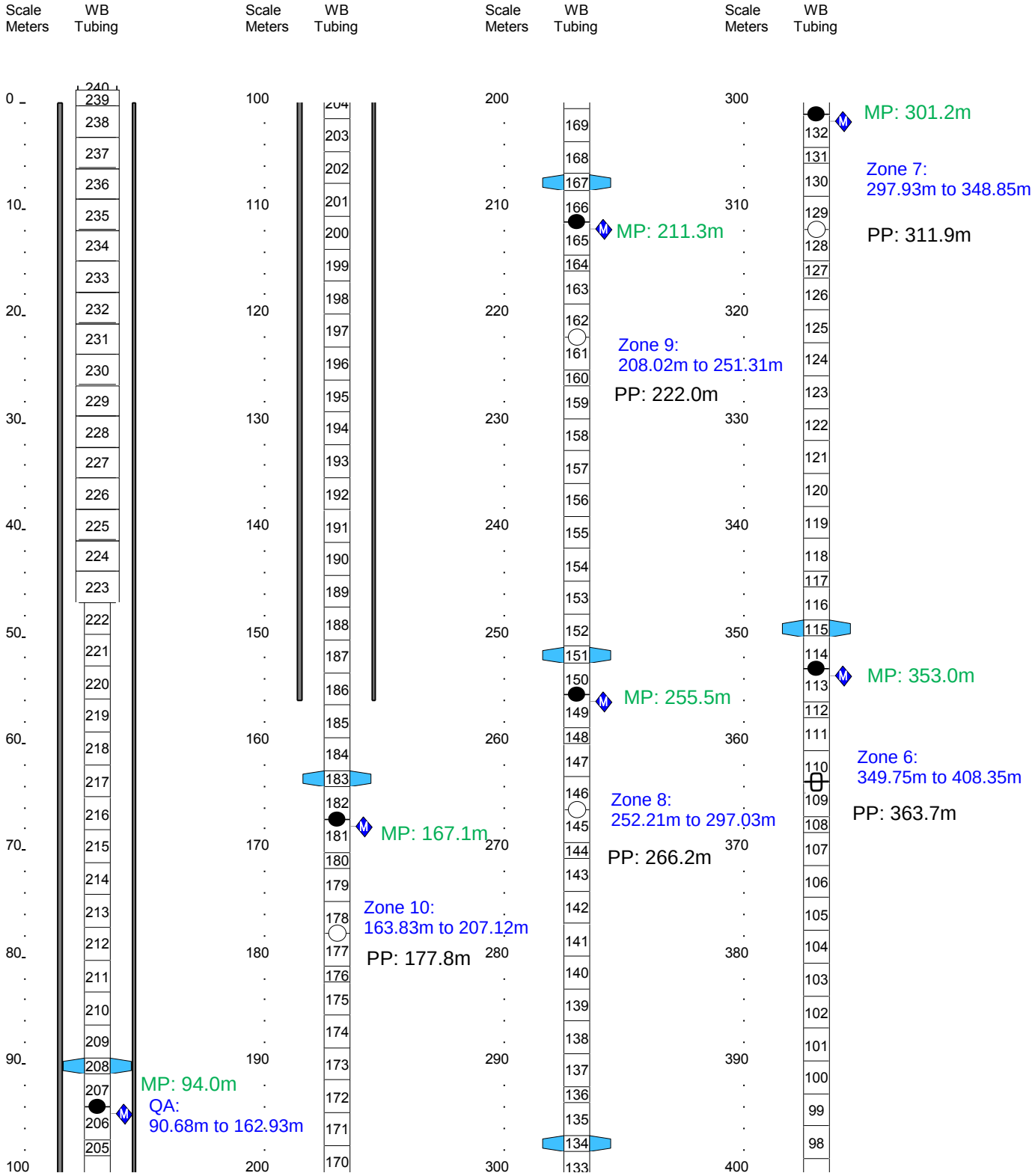
720 @ 1:30

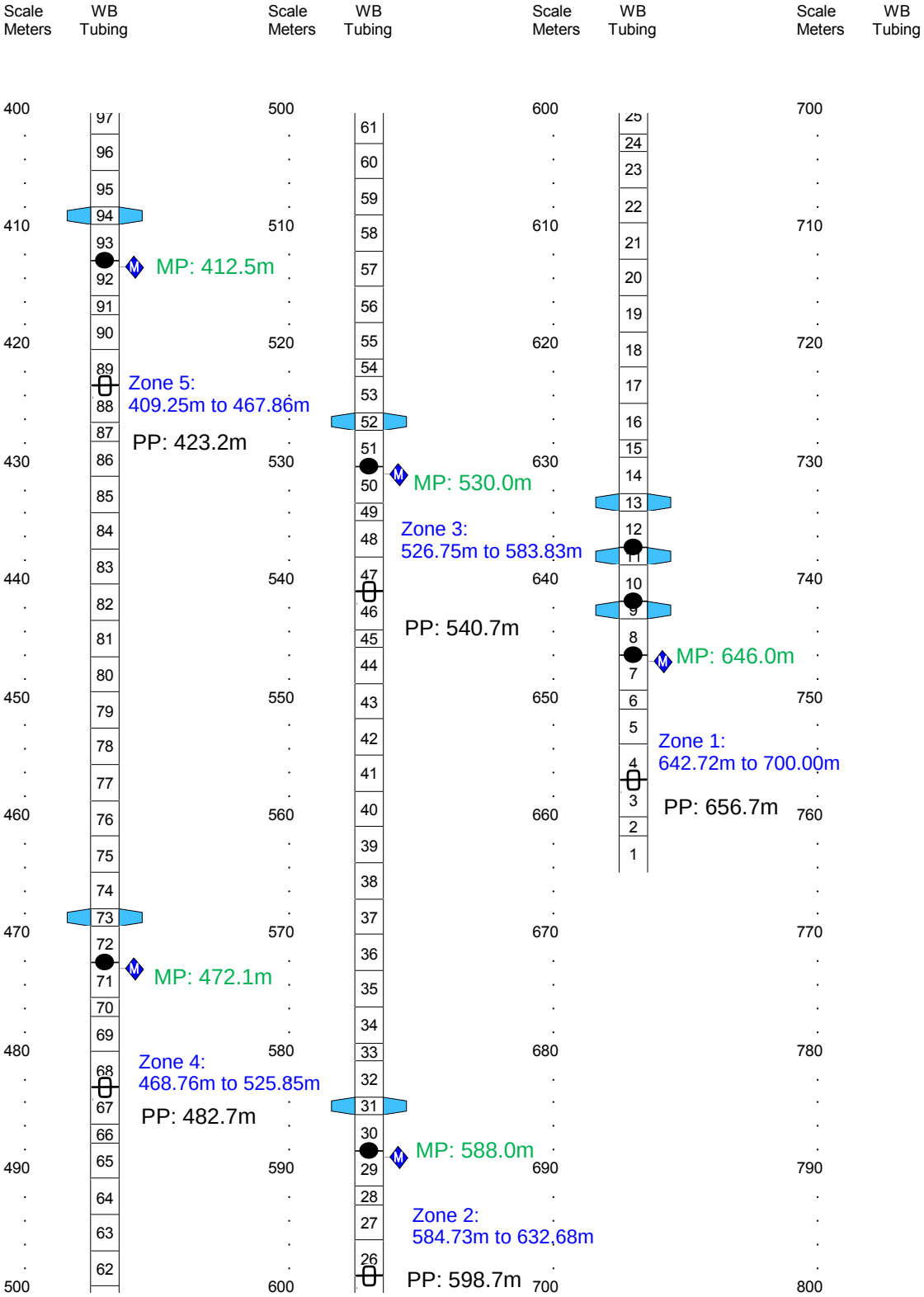
710 @ 1:46

Westbay
Instruments

Summary Completion Log
NexGen

Job No: WB985
Well: GAR-19-035




Scale Meters
WB Tubing
MP: 412.5m
Zone 5:
409.25m to 467.86m
PP: 423.2m
MP: 472.1m
Zone 4:
468.76m to 525.85m
PP: 482.7m
MP: 530.0m
Zone 3:
526.75m to 583.83m
PP: 540.7m
MP: 588.0m
Zone 2:
584.73m to 632.68m
PP: 598.7m
MP: 646.0m
Zone 1:
642.72m to 700.00m
PP: 656.7m

APPENDIX D

Vibrating Wire Piezometer Calibration Sheets

VWP Sensor Numbers

DDH	Collar Easting	Collar Northing	Collar Elevation	Ports	Install Depth Along Hole (m)	Sensor Serial #
GAR-17-001	604469	6393594	548.91	P1	303.4	VW45279
GAR-17-002	604487	6393358	562.96	P1	654.0	VW45278
GAR-17-003	604208	6393636	544.02	P1	275.6	VW45280
GAR-17-004	604208	6393637	544.27	P1	98.5	VW45281
GAR-17-004	604208	6393637	544.27	P1	105.7	VW45282
GAR-19-018	604030	6393777	530.12	P4	159.0	VW55229
GAR-19-018	604030	6393777	530.12	P3	234.5	VW55231
GAR-19-018	604030	6393777	530.12	P2	362.5	VW55233
GAR-19-018	604030	6393777	530.12	P1	544.4	VW55238
GAR-19-019	604460	6394094	507.00	P4	145.8	VW55228
GAR-19-019	604460	6394094	507.00	P3	248.0	VW55232
GAR-19-019	604460	6394094	507.00	P2	352.5	VW55234
GAR-19-019	604460	6394094	507.00	P1	545.4	VW55237
GAR-19-021	604455	6394093	507.39	P1	85.7	VW55224
GAR-19-022	604248	6394140	509.18	P1	131.3	VW55227
GAR-19-022	604248	6394140	509.18	P2	287.2	VW55230
GAR-19-022	604248	6394140	509.18	P3	482.2	VW55999
GAR-19-022	604248	6394140	509.18	P4	575.5	VW55236
GAR-19-023	604499	6393348	563.47	P1	116.0	VW55995
GAR-19-024	604495	6393344	563.16	P1	233.9	VW55996
GAR-19-024	604495	6393344	563.16	P2	301.0	VW55997
GAR-19-024	604495	6393344	563.16	P3	594.3	VW56002
GAR-19-024	604495	6393344	563.16	P4	654.6	VW56006
GAR-19-027	604620	6393349	567.18	P1	155.0	VW55225
GAR-19-027	604620	6393349	567.18	P2	418.0	VW55998
GAR-19-027	604620	6393349	567.18	P3	560.0	VW56000
GAR-19-027	604620	6393349	567.18	P4	675.0	VW56007
GAR-19-032	604300	6393982	528.85	P1	115.0	VW55226
GAR-19-032	604300	6393982	528.85	P2	225.0	VW55235
GAR-19-032	604300	6393982	528.85	P3	568.0	VW56001
GAR-19-033	604098	6393865	527.81	P1	146.7	VW62178
GAR-19-033	604098	6393865	527.81	P2	249.7	VW62179
GAR-19-033	604098	6393865	527.81	P3	550.1	VW56004
GAR-19-034	604294	6393765	537.53	P1	140.0	VW62177
GAR-19-034	604294	6393765	537.53	P2	212.8	VW62231
GAR-19-036	604040	6393968	511.42	P1	71.0	VW62941
GAR-19-036	604040	6393968	511.42	P2	95.0	VW62942

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Calibration Record

Vibrating Wire Piezometer

Customer:		BGC Engineering Inc.
Model:		VW2100-10.0-HD
Serial Number:		**VW45278**
Mfg Number:		1712328
Range:		10.0 MPa
Temperature:		22.1 °C
Barometric Pressure:		996.5 millibars
Work Order Number:		214446
Cable Length:		670 meters
Cable Markings:		28500 m - 29172 m
Cable Colour Code:	Red / Black (Coil)	Green / White (Thermistor)
Cable Type:		EL380004HDL
Thermistor Type:		3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8888	8888	8888	0.023	0.23	-0.03
2.0	8062	8061	8062	1.999	-0.01	0.04
4.0	7233	7233	7233	3.980	-0.20	0.01
6.0	6398	6397	6398	5.979	-0.21	-0.01
8.0	5556	5556	5556	7.991	-0.09	-0.03
10.0	4703	4706	4705	10.027	0.27	0.02
			Max. Error (%):		0.27	0.04

Linear Calibration Factor:	**C.F.=**	**0.0023915 MPa/B unit**
Regression Zero:	**At Calibration =**	**8897.4 B unit**
Temperature Correction Factor:	**Tk =**	**0.001490 MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -1.0808E-08 **B:** -0.0022446 **C:** 20.801

Pressure is calculated with the following equations:
Linear: $P(MPa) = C.F.(Li-Lc) - [Tk(Ti-Tc)] + [0.00010(Bi-Bc)]$
Polynomial: $P(MPa) = A(Lc)^2 + BLc + C + Tk(Tc-Ti) - [0.00010(Bc-Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	23-Aug-17	8896	20.6	1018.4

Li, Lc = initial (at installation) and current readings
Ti, Tc = initial (at installation) and current temperature, in °C
Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: I. Kurchavov IK Date: 23-Aug-17

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

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Calibration Record

Vibrating Wire Piezometer

Customer:		BGC Engineering Inc.
Model:		VW2100-10.0-HD
Serial Number:		**VW45279**
Mfg Number:		1726209
Range:		10.0 MPa
Temperature:		23.6 °C
Barometric Pressure:		995.3 millibars
Work Order Number:		214446
Cable Length:		410 meters
Cable Markings:		17222 m - 17633 m
Cable Colour Code:	Red / Black (Coil)	Green / White (Thermistor)
Cable Type:		EL380004HDL
Thermistor Type:		3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	9017	9018	9018	0.017	0.17	0.03
2.0	8207	8206	8207	1.997	-0.03	0.00
4.0	7394	7394	7394	3.980	-0.20	-0.08
6.0	6571	6571	6571	5.990	-0.10	0.01
8.0	5745	5744	5745	8.008	0.08	0.11
10.0	4926	4924	4925	10.008	0.08	-0.06
				Max. Error (%):	0.20	0.11

Linear Calibration Factor:	**C.F.=**	**0.0024414 MPa/B unit**
Regression Zero:	**At Calibration =**	**9024.4 B unit**
Temperature Correction Factor:	**Tk =**	**0.002496 MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -6.4074E-09 **B:** -0.0023521 **C:** 21.734

Pressure is calculated with the following equations:

Linear: $P(MPa) = C.F.(Li-Lc) - [Tk(Ti-Tc)] + [0.00010(Bi-Bc)]$

Polynomial: $P(MPa) = A(Lc)^2 + BLc + C + Tk(Tc-Ti) - [0.00010(Bc-Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	23-Aug-17	9012	22.2	1018.4

Li, Lc = initial (at installation) and current readings
Ti, Tc = initial (at installation) and current temperature, in °C
Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: I. Kurchavov IK Date: 23-Aug-17

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Calibration Record

Vibrating Wire Piezometer

Customer:		BGC Engineering Inc.
Model:		VW2100-10.0-HD
Serial Number:		**VW45280**
Mfg Number:		1726210
Range:		10.0 MPa
Temperature:		23.6 °C
Barometric Pressure:		995.3 millibars
Work Order Number:		214446
Cable Length:		650 meters
Cable Markings:		16569 m - 17221 m
Cable Colour Code:	Red / Black (Coil)	Green / White (Thermistor)
Cable Type:		EL380004HDL
Thermistor Type:		3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	9052	9053	9053	0.018	0.18	0.03
2.0	8231	8231	8231	1.993	-0.07	-0.04
4.0	7403	7402	7403	3.985	-0.15	-0.02
6.0	6569	6570	6570	5.988	-0.12	0.01
8.0	5730	5733	5732	8.003	0.03	0.07
10.0	4896	4897	4897	10.011	0.11	-0.04
			Max. Error (%):		0.18	0.07

Linear Calibration Factor:	**C.F.=**	**0.0024045 MPa/B unit**
Regression Zero:	**At Calibration =**	**9060.0 B unit**
Temperature Correction Factor:	**Tk =**	**0.002672 MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** **-6.5500E-09** **B:** **-0.0023132** **C:** **21.480**

Pressure is calculated with the following equations:
Linear: $P(MPa) = C.F.(Li-Lc) - [Tk(Ti-Tc)] + [0.00010(Bi-Bc)]$
Polynomial: $P(MPa) = A(Lc)^2 + BLc + C + Tk(Tc-Ti) - [0.00010(Bc-Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	23-Aug-17	9055	22.1	1018.4

Li, Lc = initial (at installation) and current readings
Ti, Tc = initial (at installation) and current temperature, in °C
Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: I. Kurchavov IK Date: 23-Aug-17

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

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Calibration Record

Vibrating Wire Piezometer

Customer:		BGC Engineering Inc.
Model:		VW2100-3.0
Serial Number:		**VW45281**
Mfg Number:		1724986
Range:		3.0 MPa
Temperature:		22.9 °C
Barometric Pressure:		998.9 millibars
Work Order Number:		214446
Cable Length:		115 meters
Cable Markings:		28247 m - 28362 m
Cable Colour Code:	Red / Black (Coil)	Green / White (Thermistor)
Cable Type:		EL380004HDL
Thermistor Type:		3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8748	8749	8749	0.007	0.25	0.00
0.6	8033	8033	8033	0.598	-0.06	-0.01
1.2	7311	7312	7312	1.194	-0.19	0.00
1.8	6585	6585	6585	1.794	-0.19	0.01
2.4	5853	5854	5854	2.398	-0.06	0.00
3.0	5116	5116	5116	3.007	0.24	0.00
				Max. Error (%):	0.25	0.01

Linear Calibration Factor:	**C.F.=**	**0.00082585 MPa/B unit**
Regression Zero:	**At Calibration =**	**8757.5 B unit**
Temperature Correction Factor:	**Tk =**	**0.0005328 MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -4.1911E-09 **B:** -0.00076774 **C:** 7.0375

Pressure is calculated with the following equations:

Linear: $P(MPa) = C.F.(Li-Lc) - [Tk(Ti-Tc)] + [0.00010(Bi-Bc)]$

Polynomial: $P(MPa) = A(Lc)^2 + BLc + C + Tk(Tc-Ti) - [0.00010(Bc-Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	23-Aug-17	8753	22.2	1018.4

Li, Lc = initial (at installation) and current readings
Ti, Tc = initial (at installation) and current temperature, in °C
Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: I. Kurchavov IK Date: 23-Aug-17

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Calibration Record

Vibrating Wire Piezometer

Customer:		BGC Engineering Inc.
Model:		VW2100-3.0
Serial Number:		**VW45282**
Mfg Number:		1725677
Range:		3.0 MPa
Temperature:		23.3 °C
Barometric Pressure:		990.0 millibars
Work Order Number:		214446
Cable Length:		135 meters
Cable Markings:		28364 m - 28499 m
Cable Colour Code:	Red / Black (Coil)	Green / White (Thermistor)
Cable Type:		EL380004HDL
Thermistor Type:		3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8726	8727	8727	0.005	0.17	0.00
0.6	8007	8008	8008	0.599	-0.03	0.00
1.2	7286	7286	7286	1.195	-0.16	-0.03
1.8	6558	6559	6559	1.796	-0.12	0.02
2.4	5829	5829	5829	2.399	-0.02	0.01
3.0	5096	5097	5097	3.005	0.15	-0.01
			Max. Error (%):		0.17	0.03

Linear Calibration Factor:	**C.F.=**	**0.00082634 MPa/B unit**
Regression Zero:	**At Calibration =**	**8732.5 B unit**
Temperature Correction Factor:	**Tk =**	**0.0006963 MPa/°C rise**

Polynomial Gage Factors (MPa) **A:** -2.7849E-09 **B:** -0.00078784 **C:** 7.0873

Pressure is calculated with the following equations:
Linear: $P(MPa) = C.F.(Li-Lc) - [Tk(Ti-Tc)] + [0.00010(Bi-Bc)]$
Polynomial: $P(MPa) = A(Lc)^2 + BLc + C + Tk(Tc-Ti) - [0.00010(Bc-Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	23-Aug-17	8724	22.2	1018.4

Li, Lc = initial (at installation) and current readings
Ti, Tc = initial (at installation) and current temperature, in °C
Bi, Bc = initial (at installation) and current barometric pressure readings, in millibars
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz^2 / 1000 ie: 1700Hz = 2890 B units

Technician: I. Kurchavov Date: 23-Aug-17

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-3.0	
Serial Number:		**VW55224**	
Mfg Number:		P106756	
Range:		3.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		996.4	millibars
Work Order Number:		219552	
Cable Length:		105	meters
Cable Markings:	83542 m	to 83647	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8749	8750	8749	0.006	0.20	0.000	0.00
0.600	7982	7982	7982	0.599	-0.04	0.600	0.00
1.200	7211	7211	7211	1.195	-0.17	1.200	-0.01
1.800	6435	6434	6435	1.795	-0.16	1.800	0.00
2.400	5653	5653	5653	2.399	-0.03	2.400	0.02
3.000	4868	4868	4868	3.006	0.19	3.000	-0.01
			Max. Error (%):		0.20		0.02

Linear Calibration Factor: **CF = 7.7298E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 8.1742E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -2.9795E-09 MPa/(B unit)² **B = -7.3240E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	11-Dec-18	8747	20.3	1013.5

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This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 11-Dec-18

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e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-3.0	
Serial Number:		**VW55225**	
Mfg Number:		P106762	
Range:		3.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1002.4	millibars
Work Order Number:		219552	
Cable Length:		105	meters
Cable Markings:	83649 m	to 83753	m
Cable Colour Code:	Red / Black (Coil)	Green / White (Thermistor)	
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9133	9135	9134	-0.003	-0.10	0.001	0.02
0.600	8390	8390	8390	0.600	0.01	0.599	-0.02
1.200	7648	7648	7648	1.202	0.06	1.199	-0.03
1.800	6907	6907	6907	1.803	0.11	1.800	0.01
2.400	6168	6168	6168	2.402	0.07	2.402	0.05
3.000	5437	5437	5437	2.995	-0.15	2.999	-0.03
			Max. Error (%):		0.15		0.05

Linear Calibration Factor: **CF = 8.1098E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 9.5493E-04 MPa/°C rise**

Polynomial Gage Factors:

A = 1.9757E-09 MPa/(B unit)² **B = -8.3976E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	11-Dec-18	9130	20.4	1013.5

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This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: M. Miftode MM Date: 11-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-3.0	
Serial Number:		**VW55226**	
Mfg Number:		P106791	
Range:		3.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		996.4	millibars
Work Order Number:		219552	
Cable Length:		105	meters
Cable Markings:	919535 m	to 919640	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8276	8277	8277	0.002	0.08	0.001	0.04
0.600	7505	7506	7506	0.598	-0.06	0.598	-0.05
1.200	6729	6730	6730	1.198	-0.08	1.199	-0.05
1.800	5950	5950	5950	1.800	0.00	1.801	0.03
2.400	5171	5171	5171	2.402	0.07	2.402	0.08
3.000	4398	4398	4398	3.000	-0.02	2.998	-0.05
			Max. Error (%):		0.08		0.08

Linear Calibration Factor: **CF = 7.7276E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 7.7662E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -5.2952E-10 MPa/(B unit)² **B = -7.6605E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	17-Dec-18	8273	19.9	1013.2

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 17-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-3.0	
Serial Number:		**VW55227**	
Mfg Number:		P106763	
Range:		3.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1002.4	millibars
Work Order Number:		219552	
Cable Length:		165	meters
Cable Markings:	850389 m	to 850554	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9021	9023	9022	0.004	0.15	0.000	0.00
0.600	8238	8238	8238	0.599	-0.03	0.600	0.00
1.200	7452	7452	7452	1.196	-0.13	1.200	-0.01
1.800	6661	6661	6661	1.796	-0.12	1.800	0.00
2.400	5866	5866	5866	2.400	-0.01	2.401	0.02
3.000	5070	5070	5070	3.004	0.14	3.000	-0.01
			Max. Error (%):		0.15		0.02

Linear Calibration Factor: **CF = 7.5902E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 8.5390E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -2.1410E-09 MPa/(B unit)² **B = -7.2885E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	14-Dec-18	9019	20.6	998.5

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This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: I. Kurchavov IK Date: 14-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-3.0	
Serial Number:			**VW55228**	
Mfg Number:			P106764	
Range:			3.0	MPa
Temperature:			23.0	°C
Barometric Pressure:			996.4	millibars
Work Order Number:			219552	
Cable Length:			165	meters
Cable Markings:	114188 m	to	114354	m
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9102	9105	9103	0.004	0.12	0.000	-0.01
0.600	8358	8359	8359	0.600	0.01	0.601	0.04
1.200	7619	7614	7616	1.196	-0.14	1.199	-0.04
1.800	6865	6867	6866	1.797	-0.10	1.800	0.01
2.400	6115	6116	6115	2.399	-0.03	2.400	0.00
3.000	5360	5361	5360	3.004	0.14	3.000	0.00
			Max. Error (%):		0.14		0.04

Linear Calibration Factor: **CF = 8.0163E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 8.4372E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -2.1817E-09 MPa/(B unit)² **B = -7.7008E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	14-Dec-18	9101	20.6	998.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: I. Kurchavov IK Date: 14-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-3.0	
Serial Number:			**VW55229**	
Mfg Number:			P106768	
Range:			3.0	MPa
Temperature:			23.0	°C
Barometric Pressure:			1002.4	millibars
Work Order Number:			219552	
Cable Length:			165	meters
Cable Markings:	114020 m	to	114186 m	
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9029	9030	9029	0.005	0.15	0.000	0.00
0.600	8261	8261	8261	0.599	-0.03	0.600	0.00
1.200	7490	7490	7490	1.196	-0.13	1.200	0.00
1.800	6715	6715	6715	1.796	-0.12	1.800	0.00
2.400	5936	5936	5936	2.399	-0.04	2.400	0.00
3.000	5154	5154	5154	3.005	0.16	3.000	0.00
			Max. Error (%):		0.16		0.00

Linear Calibration Factor: **CF = 7.7410E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 8.1280E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -2.3274E-09 MPa/(B unit)² **B = -7.4109E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	14-Dec-18	9028	20.7	998.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: I. Kurchavov IK Date: 14-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-5.0-HD	
Serial Number:		**VW55230**	
Mfg Number:		P106661	
Range:		5.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1020.7	millibars
Work Order Number:		219552	
Cable Length:		315	meters
Cable Markings:	113701 m	to 114019	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8859	8861	8860	0.000	0.01	0.002	0.03
1.000	8064	8065	8065	0.998	-0.03	0.998	-0.04
2.000	7267	7268	7267	1.999	-0.01	1.998	-0.03
3.000	6469	6469	6469	3.002	0.04	3.001	0.02
4.000	5671	5672	5671	4.003	0.06	4.003	0.06
5.000	4880	4880	4880	4.997	-0.06	4.998	-0.04
			Max. Error (%):		0.06		0.06

Linear Calibration Factor: **CF = 1.2553E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.3558E-03 MPa/°C rise**

Polynomial Gage Factors:

A = 6.0329E-10 MPa/(B unit)² **B = -1.2636E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	14-Dec-18	8855	20.4	998.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: I. Kurchavov IK Date: 14-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-5.0-HD	
Serial Number:		**VW55231**	
Mfg Number:		P106662	
Range:		5.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1020.7	millibars
Work Order Number:		219552	
Cable Length:		315	meters
Cable Markings:	83193 m	to 83509	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9060	9062	9061	0.004	0.09	0.001	0.03
1.000	8272	8273	8273	0.998	-0.04	0.998	-0.03
2.000	7480	7481	7481	1.996	-0.07	1.999	-0.02
3.000	6686	6687	6686	2.998	-0.05	3.000	0.00
4.000	5889	5889	5889	4.003	0.06	4.003	0.07
5.000	5096	5097	5097	5.001	0.02	4.998	-0.04
			Max. Error (%):		0.09		0.07

Linear Calibration Factor: **CF = 1.2605E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.4149E-03 MPa/°C rise**

Polynomial Gage Factors:

A = -1.4804E-09 **MPa/(B unit)²** **B =** -1.2395E-03 **MPa/B unit** **C =** _____ **MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	14-Dec-18	9061	20.5	998.5

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This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: I. Kurchavov IK Date: 14-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-5.0-HD	
Serial Number:		**VW55232**	
Mfg Number:		P106663	
Range:		5.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		1020.7	millibars
Work Order Number:		219552	
Cable Length:		315	meters
Cable Markings:	113382 m	to 113700	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8777	8779	8778	0.005	0.09	0.001	0.02
1.000	7980	7981	7980	0.998	-0.04	0.999	-0.02
2.000	7179	7179	7179	1.996	-0.08	1.999	-0.02
3.000	6375	6375	6375	2.997	-0.06	3.000	0.00
4.000	5568	5568	5568	4.002	0.05	4.003	0.06
5.000	4765	4766	4765	5.002	0.04	4.998	-0.03
			Max. Error (%):		0.09		0.06

Linear Calibration Factor: **CF = 1.2453E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.2080E-03 MPa/°C rise**

Polynomial Gage Factors:

A = -1.6429E-09 **MPa/(B unit)²** **B =** -1.2231E-03 **MPa/B unit** **C =** _____ **MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial C = - [$A(L_0^2) + B(L_0)$]

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	14-Dec-18	8775	20.4	998.5

Applied Science Technologists and Technicians of British Columbia 26732 JAMES CHU CTech

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: I. Kurchavov IK Date: 14-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-7.5-HD	
Serial Number:		**VW55233**	
Mfg Number:		P103269	
Range:		7.5	MPa
Temperature:		23.0	°C
Barometric Pressure:		1021.3	millibars
Work Order Number:		219552	
Cable Length:		465	meters
Cable Markings:	82723 m	to 83191	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9132	9136	9134	0.009	0.12	0.002	0.03
1.500	8319	8318	8319	1.497	-0.04	1.498	-0.02
3.000	7502	7500	7501	2.990	-0.14	2.995	-0.06
4.500	6675	6673	6674	4.498	-0.02	4.504	0.05
6.000	5851	5851	5851	6.001	0.01	6.002	0.03
7.500	5027	5027	5027	7.505	0.06	7.498	-0.03
			Max. Error (%):		0.14		0.06

Linear Calibration Factor: **CF = 1.8251E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 5.0190E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -3.1486E-09 **MPa/(B unit)²** **B =** -1.7805E-03 **MPa/B unit** **C =** _____ **MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	14-Dec-18	9128	20.4	998.5

Applied Science Technologists and Technicians of British Columbia 28732 JAMES CHU CTech

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: I. Kurchavov IK Date: 14-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.
Model:			VW2100-7.5-HD
Serial Number:			**VW55234**
Mfg Number:			P103295
Range:			7.5 MPa
Temperature:			23.0 °C
Barometric Pressure:			1021.3 millibars
Work Order Number:			219552
Cable Length:			465 meters
Cable Markings:	82053 m	to	82521 m
Cable Colour Code:	Red / Black (Coil)		Green / White (Thermistor)
Cable Type:			EL380004
Thermistor Type:			3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8693	8692	8693	0.003	0.04	0.004	0.05
1.500	7887	7883	7885	1.494	-0.08	1.494	-0.08
3.000	7070	7069	7070	2.999	-0.01	2.999	-0.02
4.500	6256	6254	6255	4.503	0.05	4.503	0.04
6.000	5443	5441	5442	6.004	0.06	6.004	0.05
7.500	4634	4634	4634	7.496	-0.05	7.497	-0.04
			Max. Error (%):		0.08		0.08

Linear Calibration Factor: **CF = 1.8461E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 3.9692E-04 MPa/°C rise**

Polynomial Gage Factors:

A = 4.0660E-10 MPa/(B unit)² **B = -1.8515E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	14-Dec-18	8702	20.3	998.5

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This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: I. Kurchavov IK Date: 14-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-7.5-HD	
Serial Number:		**VW55235**	
Mfg Number:		P106601	
Range:		7.5	MPa
Temperature:		23.0	°C
Barometric Pressure:		1018.8	millibars
Work Order Number:		219552	
Cable Length:		465	meters
Cable Markings:	81584 m	to 82052	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004HDL	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8779	8783	8781	0.002	0.03	0.002	0.03
1.500	7958	7958	7958	1.496	-0.05	1.496	-0.05
3.000	7128	7129	7129	3.000	0.00	3.000	0.00
4.500	6301	6302	6302	4.501	0.01	4.501	0.01
6.000	5474	5475	5474	6.002	0.03	6.002	0.03
7.500	4650	4650	4650	7.498	-0.02	7.498	-0.02
			Max. Error (%):		0.05		0.05

Linear Calibration Factor: **CF = 1.8145E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.2248E-04 MPa/°C rise**

Polynomial Gage Factors:

A = 2.9568E-11 MPa/(B unit)² **B = -1.8149E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	18-Dec-18	8776	20.0	1001.4

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 18-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.
Model:			VW2100-7.5-HD
Serial Number:			**VW55236**
Mfg Number:			P106610
Range:			7.5 MPa
Temperature:			23.0 °C
Barometric Pressure:			1018.8 millibars
Work Order Number:			219552
Cable Length:			615 meters
Cable Markings:	80342 m	to	80962 m
Cable Colour Code:	Red / Black (Coil)		Green / White (Thermistor)
Cable Type:			EL380004HDL
Thermistor Type:			3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8940	8942	8941	0.000	0.00	0.004	0.06
1.500	8138	8139	8139	1.495	-0.06	1.495	-0.07
3.000	7332	7333	7333	2.998	-0.03	2.994	-0.08
4.500	6521	6522	6522	4.509	0.12	4.506	0.08
6.000	5718	5719	5719	6.006	0.09	6.006	0.07
7.500	4922	4922	4922	7.491	-0.12	7.495	-0.06
			Max. Error (%):		0.12		0.08

Linear Calibration Factor: **CF = 1.8640E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 4.0077E-04 MPa/°C rise**

Polynomial Gage Factors:

A = 2.1151E-09 MPa/(B unit)² **B = -1.8934E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	18-Dec-18	8940	19.9	1001.4

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This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 18-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-7.5-HD	
Serial Number:		**VW55237**	
Mfg Number:		P106613	
Range:		7.5	MPa
Temperature:		23.0	°C
Barometric Pressure:		1018.8	millibars
Work Order Number:		219552	
Cable Length:		615	meters
Cable Markings:	80963 m	to 81583	m
Cable Colour Code:	Red / Black (Coil)	Green / White (Thermistor)	
Cable Type:		EL380004HDL	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8924	8925	8924	0.008	0.11	-0.001	-0.02
1.500	8094	8095	8095	1.502	0.03	1.504	0.05
3.000	7268	7269	7269	2.989	-0.14	2.997	-0.04
4.500	6434	6435	6435	4.491	-0.12	4.499	-0.01
6.000	5597	5597	5597	6.000	0.00	6.002	0.03
7.500	4758	4759	4759	7.509	0.12	7.499	-0.01
			Max. Error (%):		0.14		0.05

Linear Calibration Factor: **CF = 1.8005E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 8.0574E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -4.2076E-09 MPa/(B unit)² **B = -1.7430E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	18-Dec-18	8923	19.9	1001.4

Applied Science Technologists and Technicians of British Columbia 26732 JAMES CHU CTech

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 18-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-7.5-HD	
Serial Number:		**VW55238**	
Mfg Number:		P106618	
Range:		7.5	MPa
Temperature:		23.0	°C
Barometric Pressure:		1018.8	millibars
Work Order Number:		219552	
Cable Length:		615	meters
Cable Markings:	79721 m	to 80340	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004HDL	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8954	8956	8955	0.012	0.15	0.001	0.01
1.500	8143	8145	8144	1.498	-0.02	1.500	0.01
3.000	7331	7332	7332	2.987	-0.18	2.995	-0.07
4.500	6510	6511	6510	4.493	-0.10	4.501	0.01
6.000	5685	5686	5686	6.003	0.04	6.005	0.07
7.500	4865	4865	4865	7.507	0.10	7.497	-0.04
			Max. Error (%):		0.18		0.07

Linear Calibration Factor: **CF = 1.8328E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.9061E-03 MPa/°C rise**

Polynomial Gage Factors:

A = -4.7206E-09 MPa/(B unit)² **B = -1.7676E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	18-Dec-18	8951	19.9	1001.4

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 18-Dec-18

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-3.0	
Serial Number:			**VW55995**	
Mfg Number:			P108103	
Range:			3.0	MPa
Temperature:			23.0	°C
Barometric Pressure:			1009.3	millibars
Work Order Number:			219952	
Cable Length:			150	meters
Cable Markings:	639034 m	to	639185	m
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9000	9004	9002	0.004	0.14	0.000	0.01
0.600	8250	8251	8251	0.599	-0.03	0.600	0.00
1.200	7497	7497	7497	1.196	-0.13	1.199	-0.02
1.800	6738	6739	6738	1.797	-0.10	1.800	0.01
2.400	5977	5978	5977	2.400	-0.01	2.401	0.02
3.000	5215	5215	5215	3.004	0.12	3.000	-0.01
			Max. Error (%):		0.14		0.02

Linear Calibration Factor: **CF = 7.9194E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 5.1278E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -2.0684E-09 MPa/(B unit)² **B = -7.6254E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	8995	20.2	1022.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-3.0	
Serial Number:			**VW55996**	
Mfg Number:			P108104	
Range:			3.0	MPa
Temperature:			23.0	°C
Barometric Pressure:			1009.3	millibars
Work Order Number:			219952	
Cable Length:			244	meters
Cable Markings:	638787 m	to	639033	m
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8938	8941	8939	-0.002	-0.07	0.001	0.03
0.600	8202	8203	8202	0.600	-0.01	0.599	-0.03
1.200	7466	7466	7466	1.201	0.03	1.199	-0.05
1.800	6728	6729	6728	1.803	0.11	1.801	0.03
2.400	5994	5995	5995	2.402	0.08	2.402	0.06
3.000	5268	5268	5268	2.996	-0.14	2.999	-0.04
			Max. Error (%):		0.14		0.06

Linear Calibration Factor: **CF = 8.1650E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 6.0217E-04 MPa/°C rise**

Polynomial Gage Factors:

A = 1.6421E-09 MPa/(B unit)² **B = -8.3983E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	8938	20.2	1022.0

rst JAN 23 2019 DATE NAME

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-3.0	
Serial Number:			**VW55997**	
Mfg Number:			P108105	
Range:			3.0	MPa
Temperature:			23.0	°C
Barometric Pressure:			1009.3	millibars
Work Order Number:			219952	
Cable Length:			306	meters
Cable Markings:	638478 m	to	638786	m
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9067	9070	9069	0.006	0.21	0.000	0.00
0.600	8311	8312	8312	0.599	-0.03	0.600	0.01
1.200	7550	7551	7551	1.195	-0.17	1.200	0.00
1.800	6784	6785	6785	1.795	-0.18	1.800	-0.01
2.400	6012	6013	6013	2.399	-0.04	2.400	0.01
3.000	5237	5237	5237	3.006	0.21	3.000	0.00
			Max. Error (%):		0.21		0.01

Linear Calibration Factor: **CF = 7.8290E-04 MPa/B unit**
Temperature Correction Factor: **Tk = 4.9910E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -3.2718E-09 MPa/(B unit)² **B = -7.3609E-04 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
D units = $Hz^2/1000$ ie: 1700 Hz = 2090 D units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	9061	20.2	1022.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-5.0-HD	
Serial Number:		**VW55998**	
Mfg Number:		P107644	
Range:		5.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		993.1	millibars
Work Order Number:		219952	
Cable Length:		425	meters
Cable Markings:	638048 m	to 638477	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8571	8572	8571	0.010	0.19	0.002	0.05
1.000	7768	7769	7768	0.995	-0.10	0.997	-0.07
2.000	6955	6956	6956	1.992	-0.15	1.998	-0.03
3.000	6138	6138	6138	2.996	-0.08	3.002	0.04
4.000	5318	5319	5318	4.002	0.03	4.003	0.06
5.000	4500	4501	4501	5.005	0.10	4.998	-0.04
			Max. Error (%):		0.19		0.07

Linear Calibration Factor: **CF = 1.2272E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.1996E-03 MPa/°C rise**

Polynomial Gage Factors:

A = -3.3395E-09 MPa/(B unit)² **B = -1.1835E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie. 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	8570	19.6	1022.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-5.0-HD	
Serial Number:			**VW55999**	
Mfg Number:			P107641	
Range:			5.0	MPa
Temperature:			23.0	°C
Barometric Pressure:			993.1	millibars
Work Order Number:			219952	
Cable Length:			568	meters
Cable Markings:	637474 m	to	638047	m
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8521	8523	8522	-0.008	-0.17	0.003	0.06
1.000	7774	7775	7774	0.998	-0.04	0.996	-0.08
2.000	7024	7025	7025	2.007	0.13	1.998	-0.04
3.000	6278	6279	6278	3.011	0.22	3.002	0.04
4.000	5539	5539	5539	4.006	0.12	4.004	0.08
5.000	4810	4811	4811	4.986	-0.28	4.997	-0.06
			Max. Error (%):		0.28		0.08

Linear Calibration Factor: **CF = 1.3456E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 7.9727E-04 MPa/°C rise**

Polynomial Gage Factors:

A = 6.0214E-09 MPa/(B unit)² **B = -1.4259E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie. 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	8521	19.7	1022.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-5.0-HD	
Serial Number:			**VW56000**	
Mfg Number:			P107640	
Range:			5.0	MPa
Temperature:			23.0	°C
Barometric Pressure:			993.1	millibars
Work Order Number:			219952	
Cable Length:			573	meters
Cable Markings:	636895 m	to	637472	m
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9103	9105	9104	0.011	0.22	0.000	0.00
1.000	8295	8296	8295	0.998	-0.05	1.000	-0.01
2.000	7480	7481	7480	1.992	-0.16	2.001	0.01
3.000	6660	6660	6660	2.993	-0.15	3.001	0.03
4.000	5838	5839	5839	3.995	-0.11	3.997	-0.06
5.000	5004	5005	5005	5.012	0.24	5.001	0.02
			Max. Error (%):		0.24		0.06

Linear Calibration Factor: **CF = 1.2201E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.1286E-03 MPa/°C rise**

Polynomial Gage Factors:

A = -4.9084E-09 **MPa/(B unit)²** **B =** -1.1508E-03 **MPa/B unit** **C =** _____ **MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_o - L) - Tk(T_o - T) + (S_o - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_o - T) + (S_o - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_o^2) + B(L_o)]$

L_o, L = initial (installation) and current readings, in B units
T_o, T = initial (installation) and current temperature, in °C
S_o, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2890 D units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	9100	19.8	1022.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-5.0-HD	
Serial Number:			**VW56001**	
Mfg Number:			P107642	
Range:			5.0	MPa
Temperature:			23.0	°C
Barometric Pressure:			993.1	millibars
Work Order Number:			219952	
Cable Length:			576	meters
Cable Markings:	636213 m	to	636792	m
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8873	8874	8874	0.010	0.20	0.002	0.03
1.000	8090	8091	8090	0.996	-0.08	0.998	-0.05
2.000	7299	7300	7299	1.992	-0.16	1.999	-0.03
3.000	6503	6503	6503	2.995	-0.11	3.001	0.03
4.000	5704	5704	5704	4.001	0.01	4.002	0.05
5.000	4904	4905	4905	5.007	0.13	4.998	-0.03
			Max. Error (%):		0.20		0.05

Linear Calibration Factor: **CF = 1.2589E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 8.4346E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -3.9726E-09 MPa/(B unit)² **B = -1.2042E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	8869	20.0	1022.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-5.0-HD	
Serial Number:		**VW56002**	
Mfg Number:		P107643	
Range:		5.0	MPa
Temperature:		23.0	°C
Barometric Pressure:		993.1	millibars
Work Order Number:		219952	
Cable Length:		642	meters
Cable Markings:	746781 m	to 747427	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8823	8825	8824	0.013	0.25	0.001	0.02
1.000	8005	8006	8005	0.997	-0.07	0.999	-0.02
2.000	7178	7179	7179	1.989	-0.21	1.999	-0.02
3.000	6344	6345	6344	2.992	-0.16	3.001	0.03
4.000	5507	5507	5507	3.998	-0.04	4.001	0.01
5.000	4664	4665	4664	5.011	0.22	4.999	-0.01
			Max. Error (%):		0.25		0.03

Linear Calibration Factor: **CF = 1.2016E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 2.7035E-05 MPa/°C rise**

Polynomial Gage Factors:

A = -5.0882E-09 MPa/(B unit)² **B = -1.1329E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	8819	20.0	1022.0

rst JAN 23 2019 DATE NAME

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-5.0-HD	
Serial Number:			**VW56003**	
Mfg Number:			P107645	
Range:			5.0	MPa
Temperature:			23.0	°C
Barometric Pressure:			993.1	millibars
Work Order Number:			219952	
Cable Length:			647	meters
Cable Markings:	745477 m	to	746128	m
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9019	9021	9020	0.006	0.12	0.002	0.05
1.000	8211	8212	8211	0.996	-0.08	0.997	-0.07
2.000	7394	7395	7395	1.995	-0.10	1.998	-0.04
3.000	6574	6574	6574	2.999	-0.02	3.002	0.04
4.000	5754	5754	5754	4.003	0.06	4.004	0.07
5.000	4938	4938	4938	5.001	0.02	4.997	-0.05
			Max. Error (%):		0.12		0.07

Linear Calibration Factor: **CF = 1.2236E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.1533E-03 MPa/°C rise**

Polynomial Gage Factors:

A = -1.6278E-09 MPa/(B unit)² **B = -1.2009E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	9020	19.9	1022.0

rst JAN 23 2019 DATE NAME

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos BA Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-7.5-HD	
Serial Number:		**VW56004**	
Mfg Number:		P108151	
Range:		7.5	MPa
Temperature:		23.0	°C
Barometric Pressure:		1016.8	millibars
Work Order Number:		219952	
Cable Length:		647	meters
Cable Markings:	746129 m	to 746780	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9117	9120	9118	0.005	0.07	0.002	0.03
1.500	8300	8301	8300	1.495	-0.07	1.495	-0.06
3.000	7474	7475	7475	2.999	-0.01	3.002	0.02
4.500	6651	6652	6652	4.498	-0.02	4.501	0.01
6.000	5827	5828	5827	6.001	0.01	6.001	0.02
7.500	5003	5004	5003	7.502	0.02	7.499	-0.01
			Max. Error (%):		0.07		0.06

Linear Calibration Factor: **CF = 1.8218E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.4392E-03 MPa/°C rise**

Polynomial Gage Factors:

A = -1.2598E-09 MPa/(B unit)² **B = -1.8040E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	9116	19.8	1022.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:		Nexgen Energy Ltd.	
Model:		VW2100-7.5-HD	
Serial Number:		**VW56005**	
Mfg Number:		P108152	
Range:		7.5	MPa
Temperature:		23.0	°C
Barometric Pressure:		1016.8	millibars
Work Order Number:		219952	
Cable Length:		648	meters
Cable Markings:	744824 m	to 745476	m
Cable Colour Code:	Red / Black (Coil)	Green / White	(Thermistor)
Cable Type:		EL380004	
Thermistor Type:		3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8957	8959	8958	0.004	0.05	0.002	0.02
1.500	8148	8150	8149	1.495	-0.06	1.496	-0.06
3.000	7331	7332	7332	3.001	0.02	3.003	0.04
4.500	6519	6520	6520	4.498	-0.03	4.499	-0.01
6.000	5704	5704	5704	6.001	0.01	6.001	0.02
7.500	4889	4891	4890	7.501	0.01	7.499	-0.01
			Max. Error (%):		0.06		0.06

Linear Calibration Factor: **CF = 1.8427E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.1195E-03 MPa/°C rise**

Polynomial Gage Factors:

A = -8.5473E-10 MPa/(B unit)² **B = -1.8309E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	8953	19.9	1022.0

rst JAN 23 2019 DATE NAME

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos BA Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-7.5-HD	
Serial Number:			**VW56006**	
Mfg Number:			P108155	
Range:			7.5	MPa
Temperature:			23.0	°C
Barometric Pressure:			1016.8	millibars
Work Order Number:			219952	
Cable Length:			686	meters
Cable Markings:	744134 m	to	744823	m
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	9050	9052	9051	-0.005	-0.07	0.004	0.05
1.500	8249	8249	8249	1.495	-0.07	1.493	-0.09
3.000	7440	7441	7441	3.007	0.10	3.000	0.00
4.500	6638	6638	6638	4.509	0.12	4.502	0.02
6.000	5837	5838	5837	6.006	0.08	6.004	0.06
7.500	5045	5045	5045	7.488	-0.16	7.497	-0.04
			Max. Error (%):		0.16		0.09

Linear Calibration Factor: **CF = 1.8705E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 1.1737E-03 MPa/°C rise**

Polynomial Gage Factors:

A = 4.2027E-09 MPa/(B unit)² **B = -1.9297E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = Hz²/1000 ie: 1700 Hz = 2090 D units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	9048	19.9	1022.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos BA Date: 23-Jan-19

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Calibration Record

Vibrating Wire Piezometer

Customer:			Nexgen Energy Ltd.	
Model:			VW2100-7.5-HD	
Serial Number:			**VW56007**	
Mfg Number:			P108164	
Range:			7.5	MPa
Temperature:			23.0	°C
Barometric Pressure:			1016.8	millibars
Work Order Number:			219952	
Cable Length:			686	meters
Cable Markings:	743443 m	to	744132 m	
Cable Colour Code:	Red / Black (Coil)		Green / White	(Thermistor)
Cable Type:			EL380004	
Thermistor Type:			3	kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Calculated Polynomial (MPa)	Polynomial Error (% FS)
0.000	8713	8714	8714	0.008	0.11	-0.001	-0.01
1.500	7901	7901	7901	1.502	0.02	1.504	0.05
3.000	7092	7092	7092	2.989	-0.14	2.996	-0.05
4.500	6275	6275	6275	4.492	-0.11	4.499	-0.01
6.000	5454	5454	5454	6.001	0.02	6.003	0.04
7.500	4635	4635	4635	7.508	0.10	7.499	-0.02
			Max. Error (%):		0.14		0.05

Linear Calibration Factor: **CF = 1.8387E-03 MPa/B unit**
Temperature Correction Factor: **Tk = 2.5742E-04 MPa/°C rise**

Polynomial Gage Factors:

A = -4.0549E-09 MPa/(B unit)² **B = -1.7846E-03 MPa/B unit** **C = _____ MPa**

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

Users must establish site zero readings for calculation purposes
Polynomial $C = -[A(L_0^2) + B(L_0)]$

L_0, L = initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S = initial (installation) and current barometric pressure readings, in MPa
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts
B units = $Hz^2/1000$ ie. 1700 Hz – 2890 B units

	Date (dd/mm/yy)	VW Reading (B units)	Temperature (°C)	Baro (mbar)
Shipped Zero Readings:	23-Jan-19	8708	19.8	1022.0

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: B. Amos Date: 23-Jan-19

Monitor with Confidence

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Calibration Record

Vibrating Wire Piezometer

Customer:	NEXGEN ENERGY LTD.
Sales Order:	222574
Model:	VW2100-3.0
Serial Number:	VW62177
Mfg Number:	P115251
Range:	3.0 MPa
Temperature:	23.0 °C
Barometric Pressure:	1031.5 millibars
Cable Length:	150 meters
Cable Marking:	79348 m to 79497 m
Cable Type:	EL380004
Cable Colour Code:	Red/Black (Coil) Green/White (Thermistor)
Thermistor Type:	3K

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (%FS)	Calculated Polynomial (MPa)	Polynomial Error (%FS)
0.000	8659	8662	8660	-0.000	-0.01	0.001	0.03
0.600	7865	7866	7866	0.599	-0.02	0.599	-0.03
1.200	7071	7071	7071	1.200	-0.01	1.199	-0.04
1.800	6274	6274	6274	1.801	0.04	1.800	0.01
2.400	5478	5478	5478	2.402	0.07	2.402	0.07
3.000	4689	4690	4689	2.998	-0.08	2.999	-0.04
Max Error (%)					0.08	---	0.07

Linear Calibration Factor: **CF = 7.5504e-04 MPa/B unit**
Temperature Correction Factor: **Tk =7.7014e-04 MPa/°C rise**

Polynomial Gauge Factor:
A = 5.1189e-10 MPa/(B unit)² **B = -7.6188e-04 MPa/B unit** **C = calculate (see below) MPa**

Users must establish site zero readings for calculation purposes
Polynomial C = -[A(L_0^2) + B(L_0)]

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

L_0, L =initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S =initial (installation) and current barometric pressure readings, in MPa
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

Shipped Zero Readings:	Date	VW Reading (B Units)	Temperature (°C)	Baro (mbar)
	28 Oct 2019	8668	19.4	1023.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: Kailah Toews Date: 14/11/2019

Approved: Ora Nygren Date: 14/11/2019

Monitor with Confidence

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Calibration Record

Vibrating Wire Piezometer

Customer:	NEXGEN ENERGY LTD.
Sales Order:	222574
Model:	VW2100-3.0
Serial Number:	VW62178
Mfg Number:	P115272
Range:	3.0 MPa
Temperature:	23.0 °C
Barometric Pressure:	1031.5 millibars
Cable Length:	160 meters
Cable Marking:	79600 m to 79759 m
Cable Type:	EL380004
Cable Colour Code:	Red/Black (Coil) Green/White (Thermistor)
Thermistor Type:	3K

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (%FS)	Calculated Polynomial (MPa)	Polynomial Error (%FS)
0.000	8775	8776	8775	-0.002	-0.05	0.001	0.05
0.600	7977	7978	7977	0.599	-0.04	0.598	-0.06
1.200	7176	7177	7176	1.201	0.03	1.198	-0.05
1.800	6375	6376	6375	1.803	0.11	1.801	0.03
2.400	5577	5578	5578	2.403	0.11	2.403	0.08
3.000	4790	4791	4790	2.995	-0.16	2.998	-0.06
Max Error (%)					0.16	---	0.08

Linear Calibration Factor: **CF = 7.5201e-04 MPa/B unit**
Temperature Correction Factor: **Tk =5.8469e-04 MPa/°C rise**

Polynomial Gauge Factor:
A = 1.4294e-09 MPa/(B unit)² **B = -7.7140e-04 MPa/B unit** **C = calculate (see below) MPa**

Users must establish site zero readings for calculation purposes
Polynomial C = -[A(L_0^2) + B(L_0)]

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

L_0, L =initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S =initial (installation) and current barometric pressure readings, in MPa
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

Shipped Zero Readings:	Date	VW Reading (B Units)	Temperature (°C)	Baro (mbar)
	28 Oct 2019	8782	19.5	1023.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: Kailah Toews Date: 14/11/2019

Approved: Ora Nygren Date: 14/11/2019

Calibration Record

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Vibrating Wire Piezometer

Customer:	NEXGEN ENERGY LTD.
Sales Order:	222574
Model:	VW2100-3.0
Serial Number:	VW62179
Mfg Number:	P115264
Range:	3.0 MPa
Temperature:	23.0 °C
Barometric Pressure:	1031.5 millibars
Cable Length:	340 meters
Cable Marking:	79761 m to 80102 m
Cable Type:	EL380004
Cable Colour Code:	Red/Black (Coil) Green/White (Thermistor)
Thermistor Type:	3K

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (%FS)	Calculated Polynomial (MPa)	Polynomial Error (%FS)
0.000	8955	8957	8956	0.005	0.16	0.000	0.01
0.600	8140	8141	8141	0.599	-0.04	0.600	-0.01
1.200	7321	7321	7321	1.196	-0.13	1.200	-0.02
1.800	6496	6497	6497	1.797	-0.11	1.800	0.01
2.400	5668	5669	5669	2.400	-0.00	2.401	0.03
3.000	4840	4840	4840	3.004	0.13	2.999	-0.02
Max Error (%)					0.16	---	0.03

Linear Calibration Factor: **CF = 7.2866e-04 MPa/B unit**
Temperature Correction Factor: **Tk =9.0445e-04 MPa/°C rise**

Polynomial Gauge Factor:
A = -1.9085e-09 MPa/(B unit)² **B = -7.0233e-04 MPa/B unit** **C = calculate (see below) MPa**

Users must establish site zero readings for calculation purposes
Polynomial C = -[A(L_0^2) + B(L_0)]

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

L_0, L =initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S =initial (installation) and current barometric pressure readings, in MPa
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

Shipped Zero Readings:	Date	VW Reading (B Units)	Temperature (°C)	Baro (mbar)
	28 Oct 2019	8951	19.3	1023.5

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: Kailah Toews Date: 14/11/2019

Approved: Ora Nygren Date: 14/11/2019

Calibration Record

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Vibrating Wire Piezometer

Customer:	NEXGEN ENERGY LTD.
Sales Order:	222574
Model:	VW2100-5.0-HD
Serial Number:	VW62231
Mfg Number:	P115726
Range:	5.0 MPa
Temperature:	23.0 °C
Barometric Pressure:	1020.5 millibars
Cable Length:	450 meters
Cable Marking:	727311 m to 727762 m
Cable Type:	EL380004
Cable Colour Code:	Red/Black (Coil) Green/White (Thermistor)
Thermistor Type:	3K

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (%FS)	Calculated Polynomial (MPa)	Polynomial Error (%FS)
0.000	8716	8717	8716	0.009	0.18	0.000	0.01
1.000	7910	7910	7910	0.997	-0.06	0.998	-0.03
2.000	7096	7097	7097	1.994	-0.12	2.000	0.01
3.000	6280	6281	6281	2.994	-0.13	3.000	0.00
4.000	5461	5461	5461	3.998	-0.04	4.000	-0.01
5.000	4636	4637	4637	5.008	0.17	5.000	-0.00
Max Error (%)					0.18	---	0.03

Linear Calibration Factor: **CF = 1.2254e-03 MPa/B unit**
Temperature Correction Factor: **Tk =9.7111e-04 MPa/°C rise**

Polynomial Gauge Factor:
A = -3.7978e-09 MPa/(B unit)² **B = -1.1747e-03 MPa/B unit** **C = calculate (see below) MPa**

Users must establish site zero readings for calculation purposes
Polynomial C = -[A(L_0^2) + B(L_0)]

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

L_0, L =initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S =initial (installation) and current barometric pressure readings, in MPa
B units = $Hz^2/1000$ ie: 1700 Hz = 2890 B units

Shipped Zero Readings:	Date	VW Reading (B Units)	Temperature (°C)	Baro (mbar)
	29 Oct 2019	8726	19.0	1032.1

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: Kailah Toews Date: 14/11/2019

Approved: Ora Nygren Date: 14/11/2019

Calibration Record

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Vibrating Wire Piezometer

Customer:	NEXGEN ENERGY LTD.
Sales Order:	222817
Model:	VW2100-3.0
Serial Number:	VW62941
Mfg Number:	P115557
Range:	3.0 MPa
Temperature:	23.0 °C
Barometric Pressure:	1021.6 millibars
Cable Length:	100 meters
Cable Marking:	393119 m to 393219 m
Cable Type:	EL380004
Cable Colour Code:	Red/Black (Coil) Green/White (Thermistor)
Thermistor Type:	3K

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (%FS)	Calculated Polynomial (MPa)	Polynomial Error (%FS)
0.000	8767	8768	8768	0.003	0.10	0.001	0.02
0.600	7984	7985	7984	0.599	-0.03	0.599	-0.02
1.200	7198	7198	7198	1.197	-0.09	1.199	-0.02
1.800	6408	6409	6408	1.798	-0.06	1.800	0.01
2.400	5617	5617	5617	2.401	0.02	2.401	0.04
3.000	4827	4827	4827	3.002	0.06	2.999	-0.02
Max Error (%)					0.10	---	0.04

Linear Calibration Factor: **CF = 7.6102e-04 MPa/B unit**
Temperature Correction Factor: **Tk =7.6102e-05 MPa/°C rise**

Polynomial Gauge Factor:
A = -1.1742e-09 MPa/(B unit)² **B = -7.4505e-04 MPa/B unit** **C = calculate (see below) MPa**

Users must establish site zero readings for calculation purposes
Polynomial C = -[A(L_0^2) + B(L_0)]

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

L_0, L =initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S =initial (installation) and current barometric pressure readings, in MPa
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

Shipped Zero Readings:	Date	VW Reading (B Units)	Temperature (°C)	Baro (mbar)
	12 Nov 2019	8774	19.8	1017.8

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: Kailah Toews Date: 14/11/2019

Approved: Ora Nygren Date: 14/11/2019

Calibration Record

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e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

Vibrating Wire Piezometer

Customer:	NEXGEN ENERGY LTD.
Sales Order:	222817
Model:	VW2100-3.0
Serial Number:	VW62942
Mfg Number:	P115558
Range:	3.0 MPa
Temperature:	23.0 °C
Barometric Pressure:	1021.6 millibars
Cable Length:	150 meters
Cable Marking:	392966 m to 393117 m
Cable Type:	EL380004
Cable Colour Code:	Red/Black (Coil) Green/White (Thermistor)
Thermistor Type:	3K

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (%FS)	Calculated Polynomial (MPa)	Polynomial Error (%FS)
0.000	9307	9309	9308	0.003	0.10	0.000	0.01
0.600	8562	8562	8562	0.599	-0.03	0.600	-0.01
1.200	7813	7813	7813	1.197	-0.09	1.199	-0.02
1.800	7061	7061	7061	1.798	-0.07	1.800	0.00
2.400	6307	6307	6307	2.400	0.01	2.401	0.03
3.000	5554	5554	5554	3.002	0.07	2.999	-0.02
Max Error (%)					0.10	---	0.03

Linear Calibration Factor: **CF = 7.9892e-04 MPa/B unit**
Temperature Correction Factor: **Tk =3.4354e-04 MPa/°C rise**

Polynomial Gauge Factor:
A = -1.4633e-09 MPa/(B unit)² **B = -7.7718e-04 MPa/B unit** **C = calculate (see below) MPa**

Users must establish site zero readings for calculation purposes
Polynomial C = -[A(L_0^2) + B(L_0)]

Pressure is calculated with the following equations:
Linear: $P = CF(L_0 - L) - Tk(T_0 - T) + (S_0 - S)$
Polynomial: $P = A(L^2) + B(L) + C - Tk(T_0 - T) + (S_0 - S)$

L_0, L =initial (installation) and current readings, in B units
T_0, T = initial (installation) and current temperature, in °C
S_0, S =initial (installation) and current barometric pressure readings, in MPa
B units = Hz²/1000 ie: 1700 Hz = 2890 B units

Shipped Zero Readings:	Date	VW Reading (B Units)	Temperature (°C)	Baro (mbar)
	12 Nov 2019	9321	19.8	1017.8

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1

Technician: Kailah Toews Date: 14/11/2019

Approved: Ora Nygren Date: 14/11/2019

APPENDIX E

Well Hydrographs

LEGEND

Boreholes

- DH-BGC
- Overburden
- VibratingWire
- Westbay

NOTES

1. WELL 2018_MW-001 WAS FROZEN AND HAS NO OBSERVED DATA

CLIENT

NexGen Energy Ltd.

CONSULTANT

wsp

YYYY-MM-DD	2020-02-19
PREPARED	SK
DESIGN	SK
REVIEW	NB
APPROVED	MT

PROJECT

ROOK I PROJECT

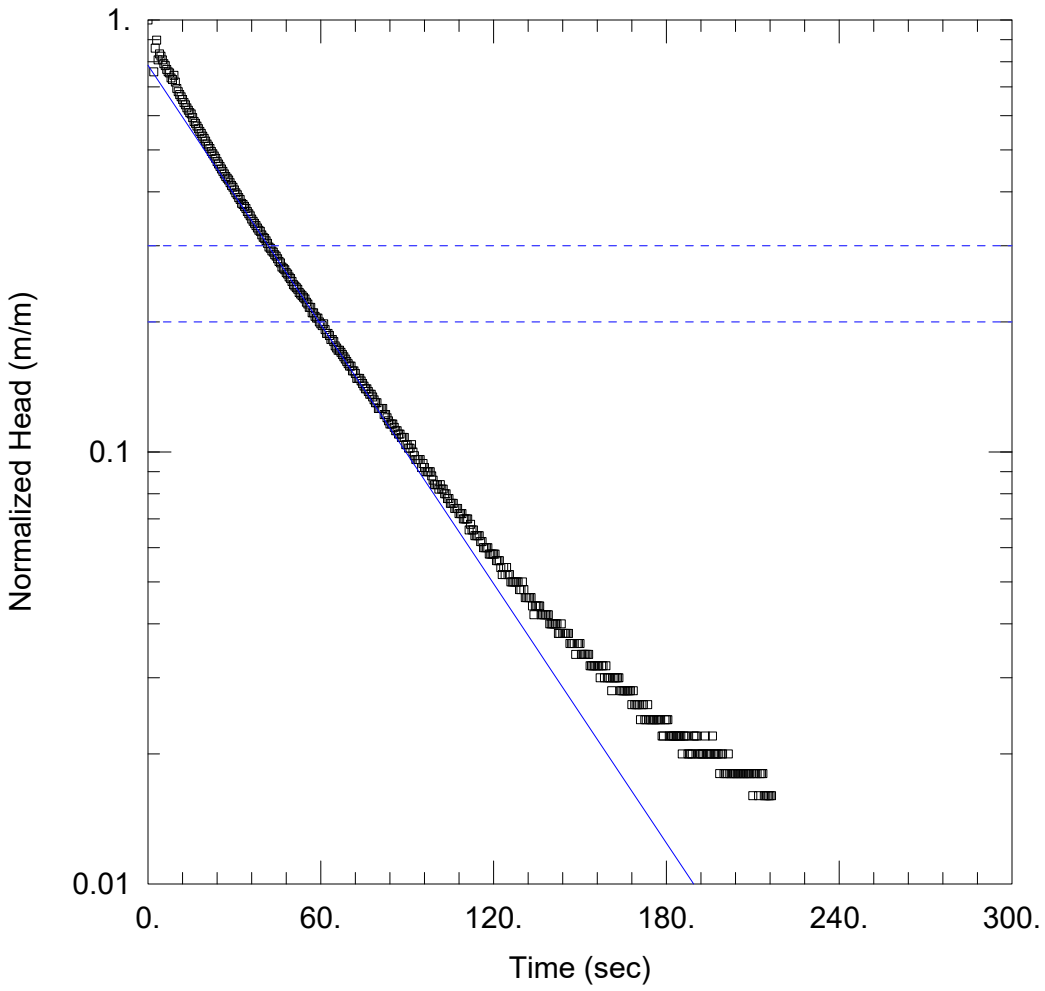
TITLE

MONITORING WELL HYDROGRAPHS

PROJECT NO. 20144150 | Rev. 0 | FIGURE E-1

APPENDIX F

Standpipe Piezometer Hydraulic Test Results



TEST 1 - FALLING HEAD

Data Set: N:\...\DH-BGC17-01 Test 1.aqt
Date: 11/29/17 Time: 17:40:03

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-01
Test Date: Sep 17, 2017

AQUIFER DATA

Saturated Thickness: 25.12 m Anisotropy Ratio (Kz/Kr): 1.

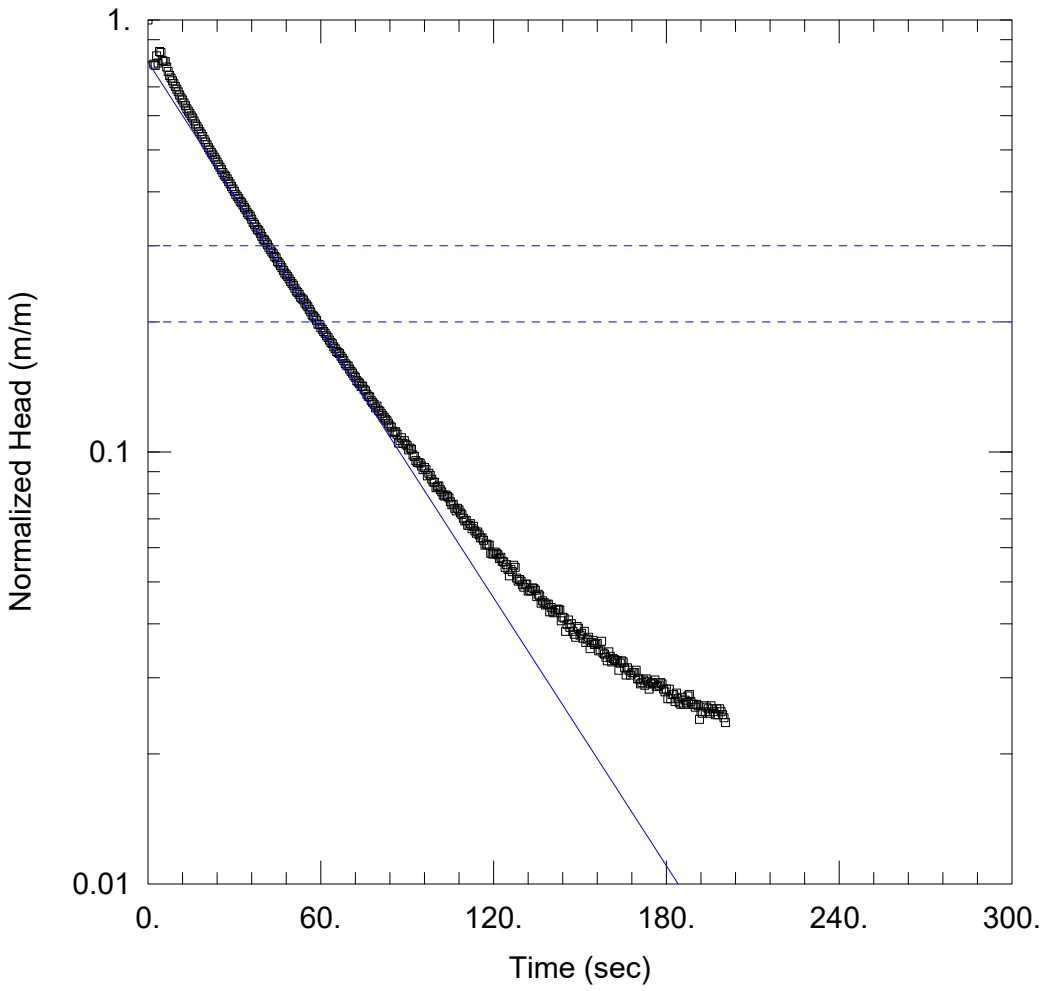
WELL DATA (DH-BGC17-01)

Initial Displacement: 0.5 m
Total Well Penetration Depth: 19.34 m
Casing Radius: 0.026 m
Static Water Column Height: 19.39 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 8.181E-6 m/sec
y0 = 0.3927 m



TEST 2 - RISING HEAD

Data Set: N:\...\DH-BGC17-01 Test 2.aqt
Date: 11/27/17 Time: 15:35:56

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-01
Test Date: Sep 17, 2017

AQUIFER DATA

Saturated Thickness: 25.12 m Anisotropy Ratio (Kz/Kr): 1.

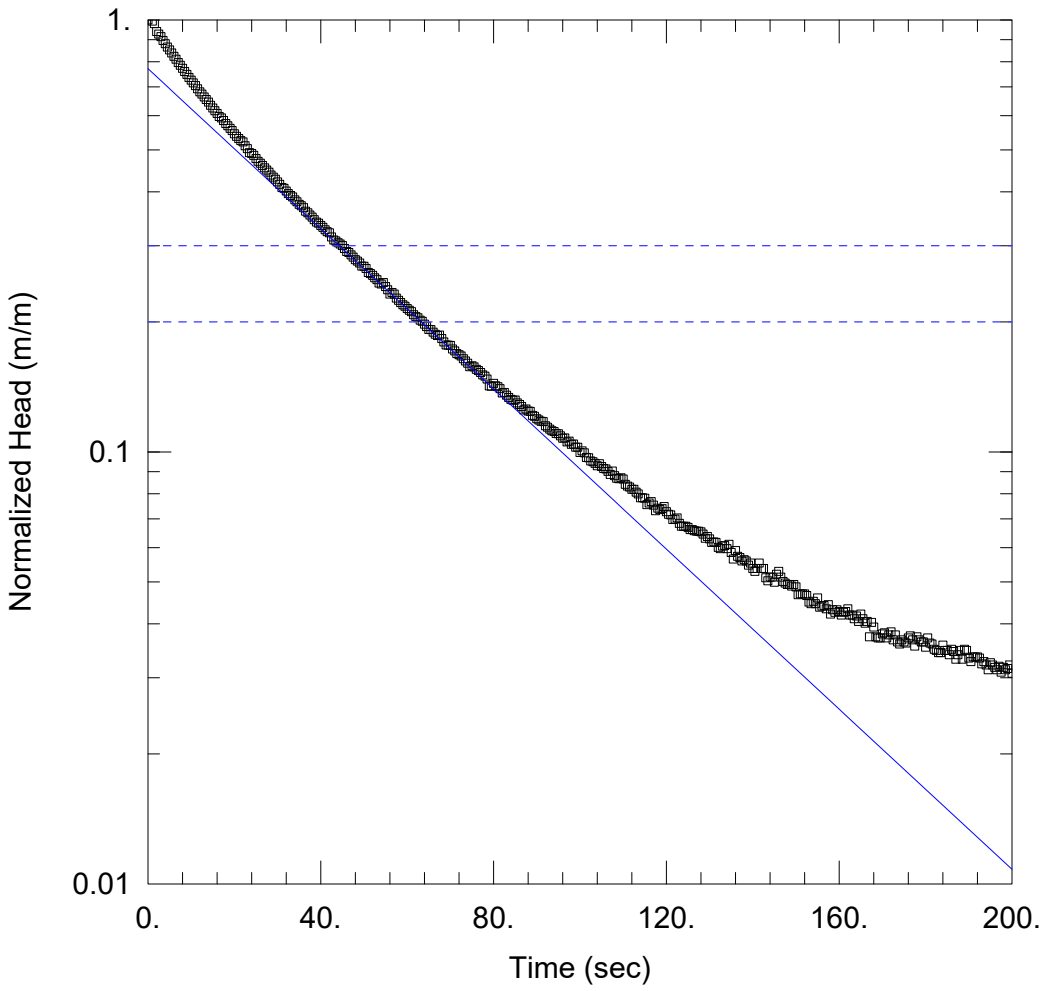
WELL DATA (DH-BGC17-01)

Initial Displacement: 0.5 m
Total Well Penetration Depth: 19.34 m
Casing Radius: 0.026 m
Static Water Column Height: 19.39 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 8.453E-6 m/sec
y0 = 0.3994 m



TEST 3 - FALLING HEAD

Data Set: N:\...\DH-BGC17-01 Test 3.aqt
Date: 11/27/17 Time: 15:18:38

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-01
Test Date: Sep 17, 2017

AQUIFER DATA

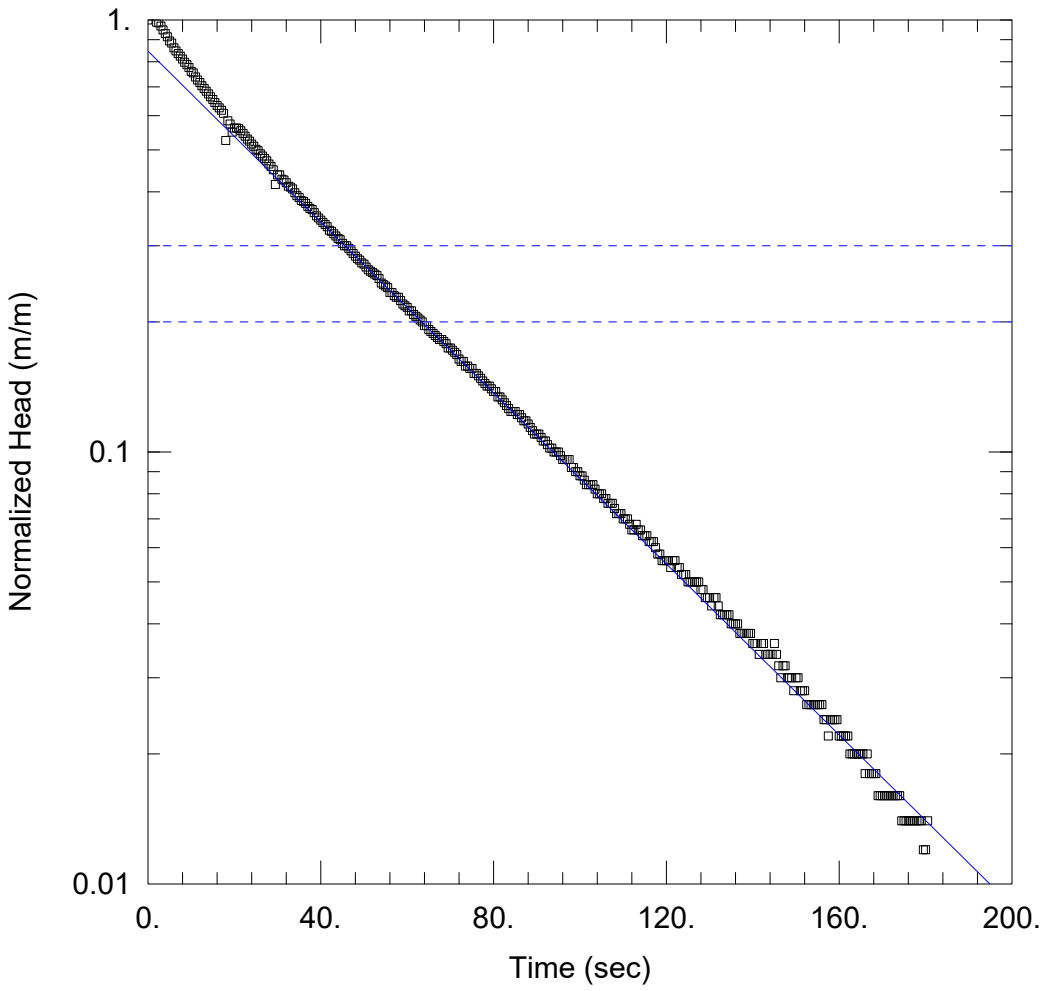
Saturated Thickness: 25.12 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (DH-BGC17-01)

Initial Displacement: 0.5 m
Total Well Penetration Depth: 19.34 m
Casing Radius: 0.026 m
Static Water Column Height: 19.39 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.579E-6 m/sec
y0 = 0.3855 m



TEST 4 - RISING HEAD

Data Set: N:\...\DH-BGC17-01 Test 4.aqt
Date: 11/29/17 Time: 13:54:10

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-01
Test Date: Sep 17, 2017

AQUIFER DATA

Saturated Thickness: 25.12 m Anisotropy Ratio (Kz/Kr): 1.

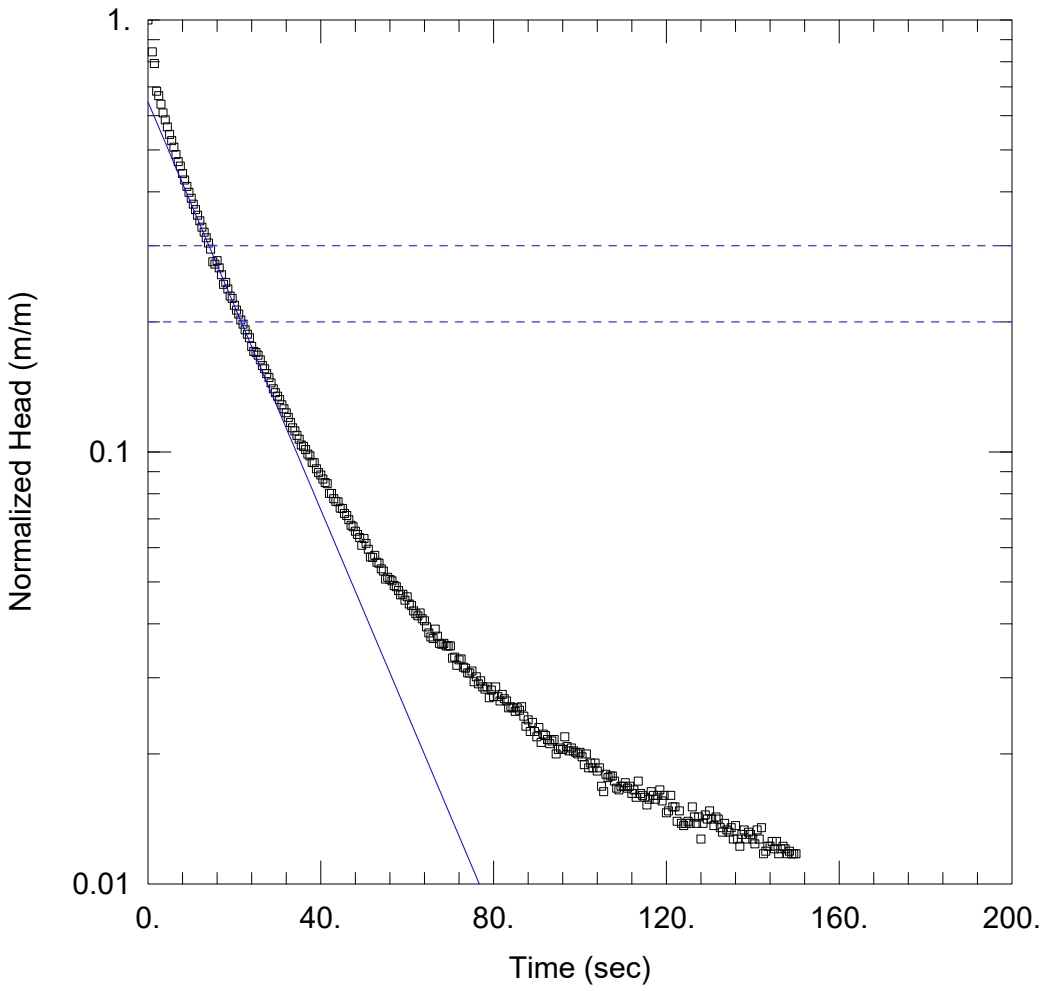
WELL DATA (DH-BGC17-01)

Initial Displacement: 0.5 m
Total Well Penetration Depth: 19.34 m
Casing Radius: 0.026 m
Static Water Column Height: 19.39 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 8.093E-6 m/sec
y0 = 0.4235 m



TEST 1 - FALLING HEAD

Data Set: N:\...\DH-BGC17-02 Test 1.aqt
Date: 11/27/17 Time: 15:59:53

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-02
Test Date: Sep 13, 2017

AQUIFER DATA

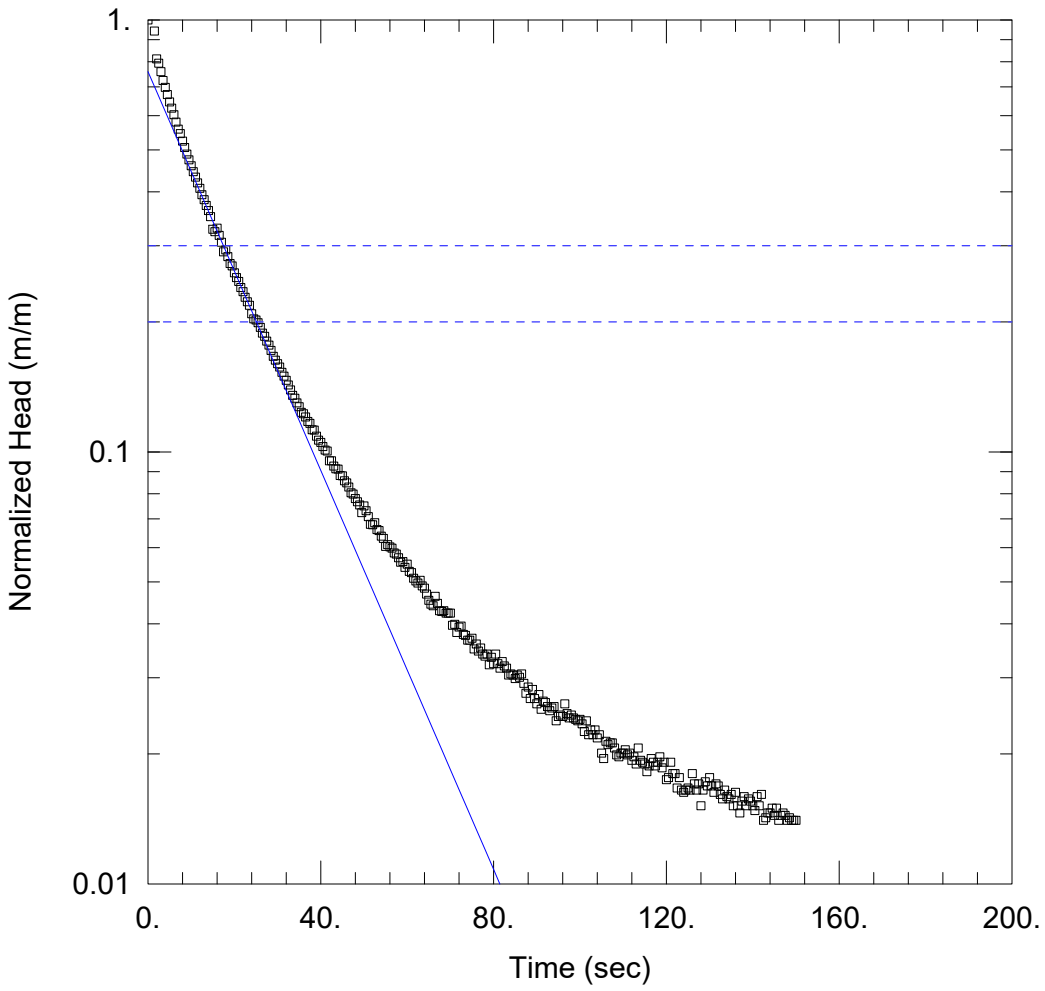
Saturated Thickness: 10.69 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (DH-BGC17-02)

Initial Displacement: 0.63 m
Total Well Penetration Depth: 9.49 m
Casing Radius: 0.026 m
Static Water Column Height: 9.49 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.863E-5 m/sec
y0 = 0.4071 m



TEST 2 - RISING HEAD

Data Set: N:\...\DH-BGC17-02 Test 2.aqt
Date: 11/27/17 Time: 16:12:30

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-02
Test Date: Sep 13, 2017

AQUIFER DATA

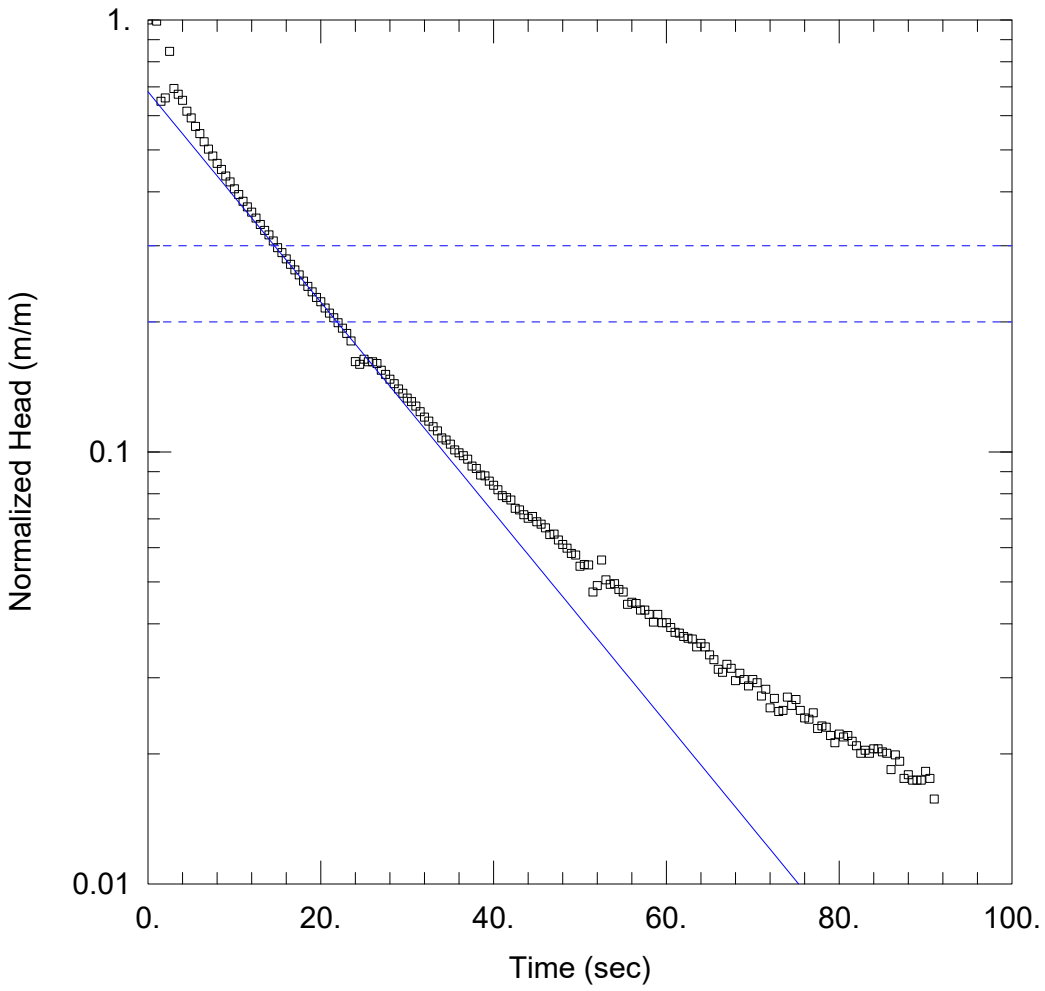
Saturated Thickness: 10.69 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (DH-BGC17-02)

Initial Displacement: 0.53 m
Total Well Penetration Depth: 9.49 m
Casing Radius: 0.026 m
Static Water Column Height: 9.49 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.821E-5 m/sec
y0 = 0.4024 m



TEST 3 - RISING HEAD

Data Set: N:\...\DH-BGC17-02 Test 3.aqt
Date: 11/27/17 Time: 16:15:29

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-02
Test Date: Sep 13, 2017

AQUIFER DATA

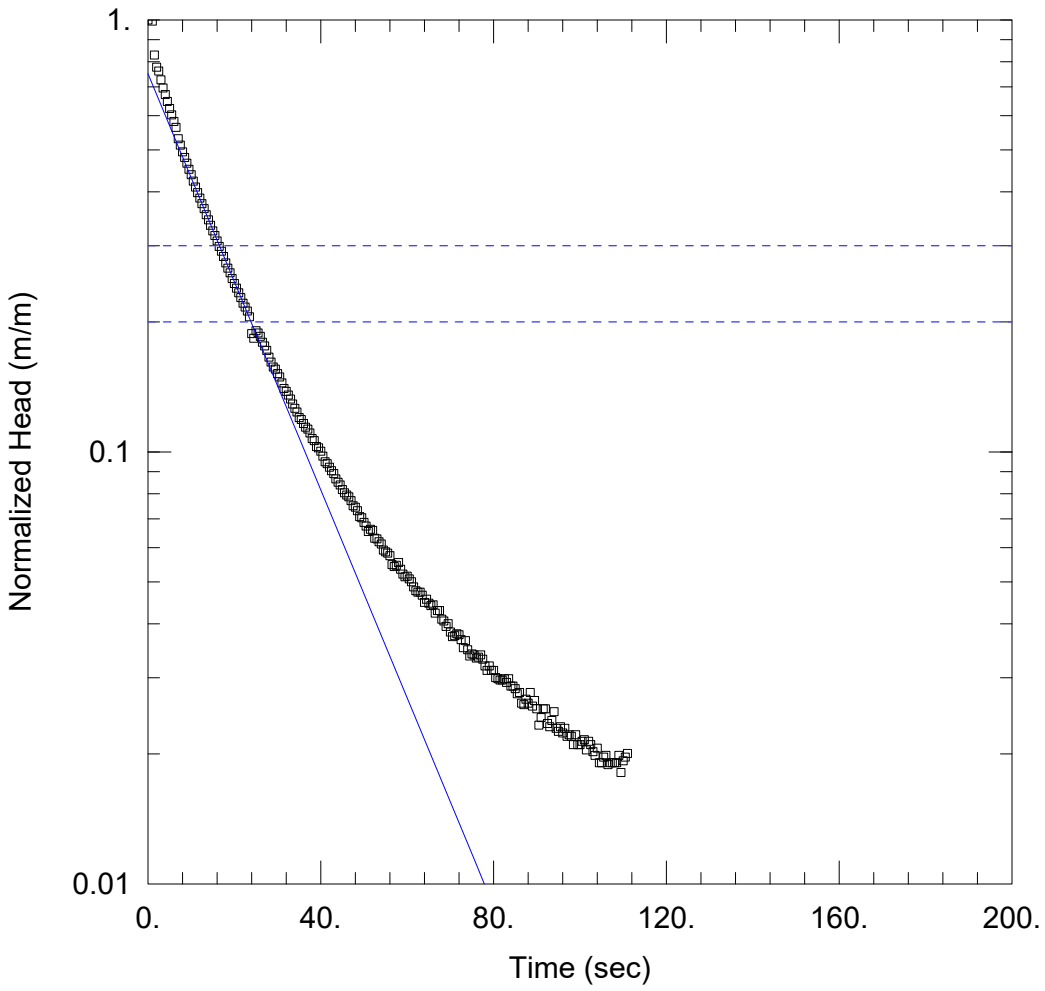
Saturated Thickness: 10.69 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (DH-BGC17-02)

Initial Displacement: 0.6 m
Total Well Penetration Depth: 9.49 m
Casing Radius: 0.026 m
Static Water Column Height: 9.49 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.922E-5 m/sec
y0 = 0.4092 m



TEST 4 - RISING HEAD

Data Set: N:\...\DH-BGC17-02 Test 4.aqt
Date: 11/27/17 Time: 16:18:23

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-02
Test Date: Sep 13, 2017

AQUIFER DATA

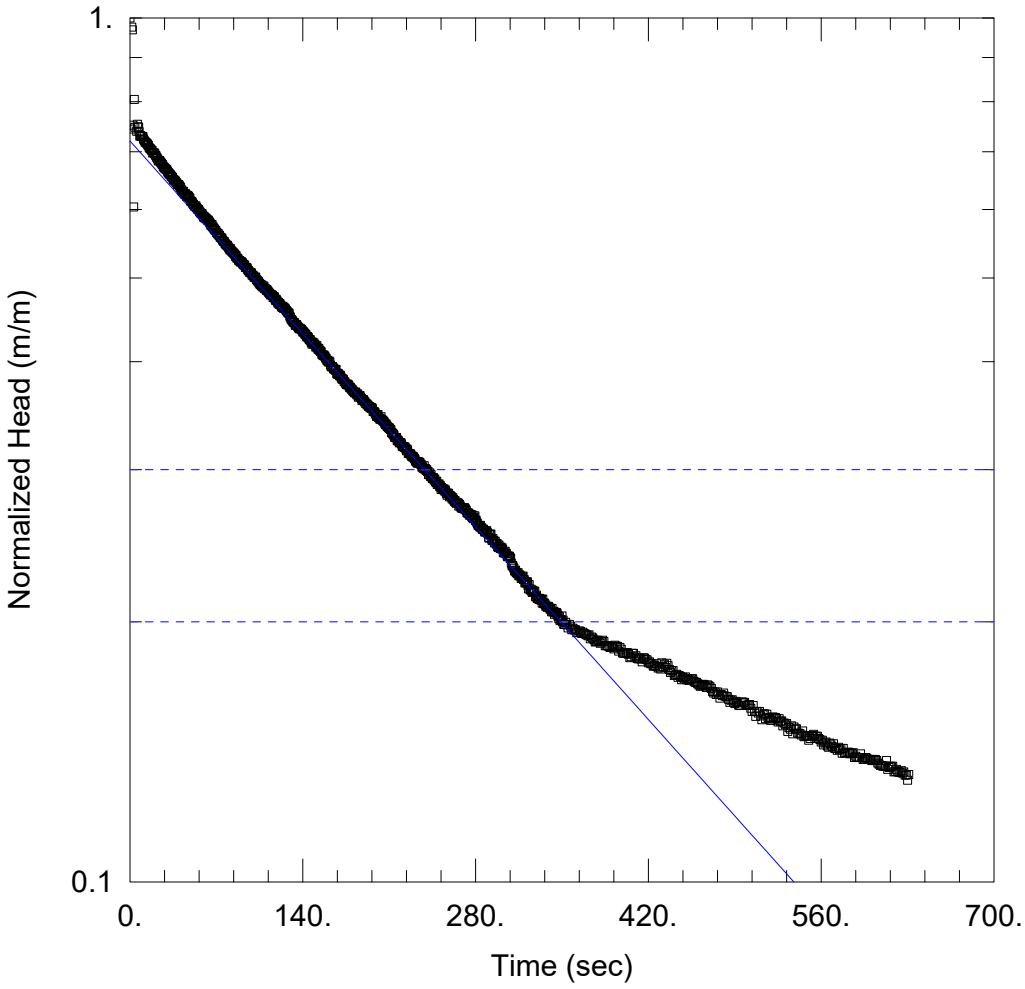
Saturated Thickness: 10.69 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (DH-BGC17-02)

Initial Displacement: 0.52 m
Total Well Penetration Depth: 9.49 m
Casing Radius: 0.026 m
Static Water Column Height: 9.49 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.9E-5 m/sec
y0 = 0.3902 m



TEST 1 - FALLING HEAD

Data Set: N:\...\DH-BGC17-03 Test 1.aqt
Date: 11/27/17 Time: 19:47:19

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-03
Test Date: Sep 18, 2017

AQUIFER DATA

Saturated Thickness: 4.6 m Anisotropy Ratio (Kz/Kr): 1.

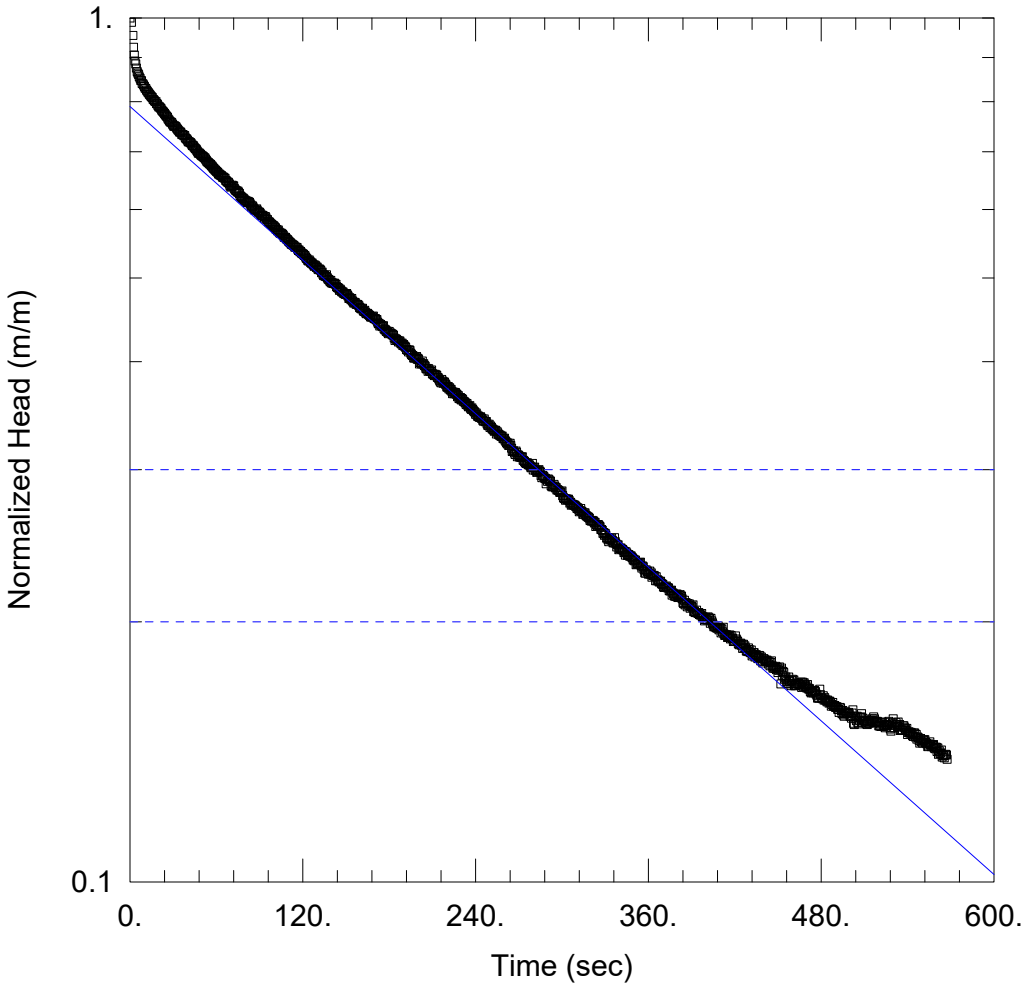
WELL DATA (DH-BGC17-03)

Initial Displacement: 0.44 m
Total Well Penetration Depth: 4.827 m
Casing Radius: 0.026 m
Static Water Column Height: 4.827 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 1.281E-6 m/sec
y0 = 0.3169 m



TEST 2 - RISING HEAD

Data Set: N:\...\DH-BGC17-03 Test 2.aqt
Date: 11/27/17 Time: 20:04:39

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-03
Test Date: Sep 18, 2017

AQUIFER DATA

Saturated Thickness: 4.6 m Anisotropy Ratio (Kz/Kr): 1.

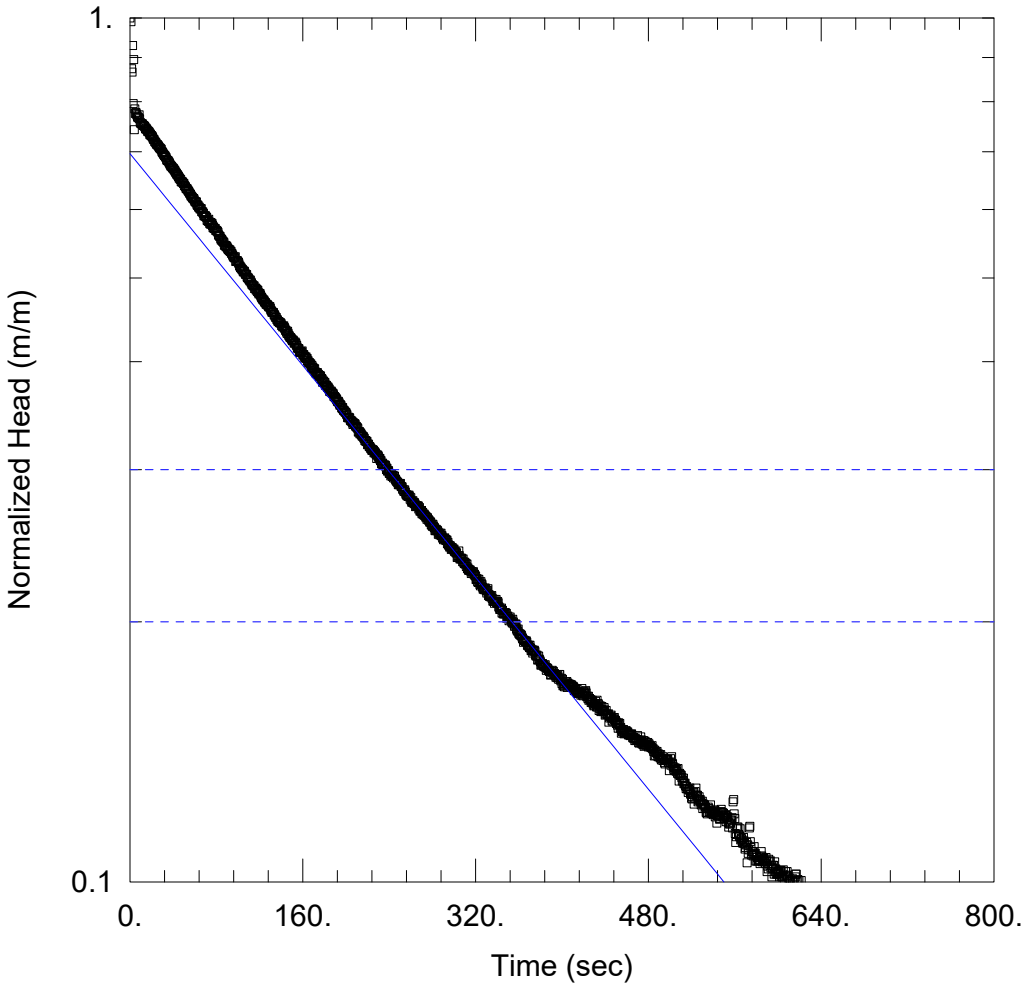
WELL DATA (DH-BGC17-03)

Initial Displacement: 0.38 m
Total Well Penetration Depth: 4.827 m
Casing Radius: 0.026 m
Static Water Column Height: 4.827 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 1.19E-6 m/sec
y0 = 0.3002 m



TEST 3 - FALLING HEAD

Data Set: N:\...\DH-BGC17-03 Test 3.aqt
Date: 11/27/17 Time: 20:10:16

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-03
Test Date: Sep 18, 2017

AQUIFER DATA

Saturated Thickness: 4.6 m Anisotropy Ratio (Kz/Kr): 1.

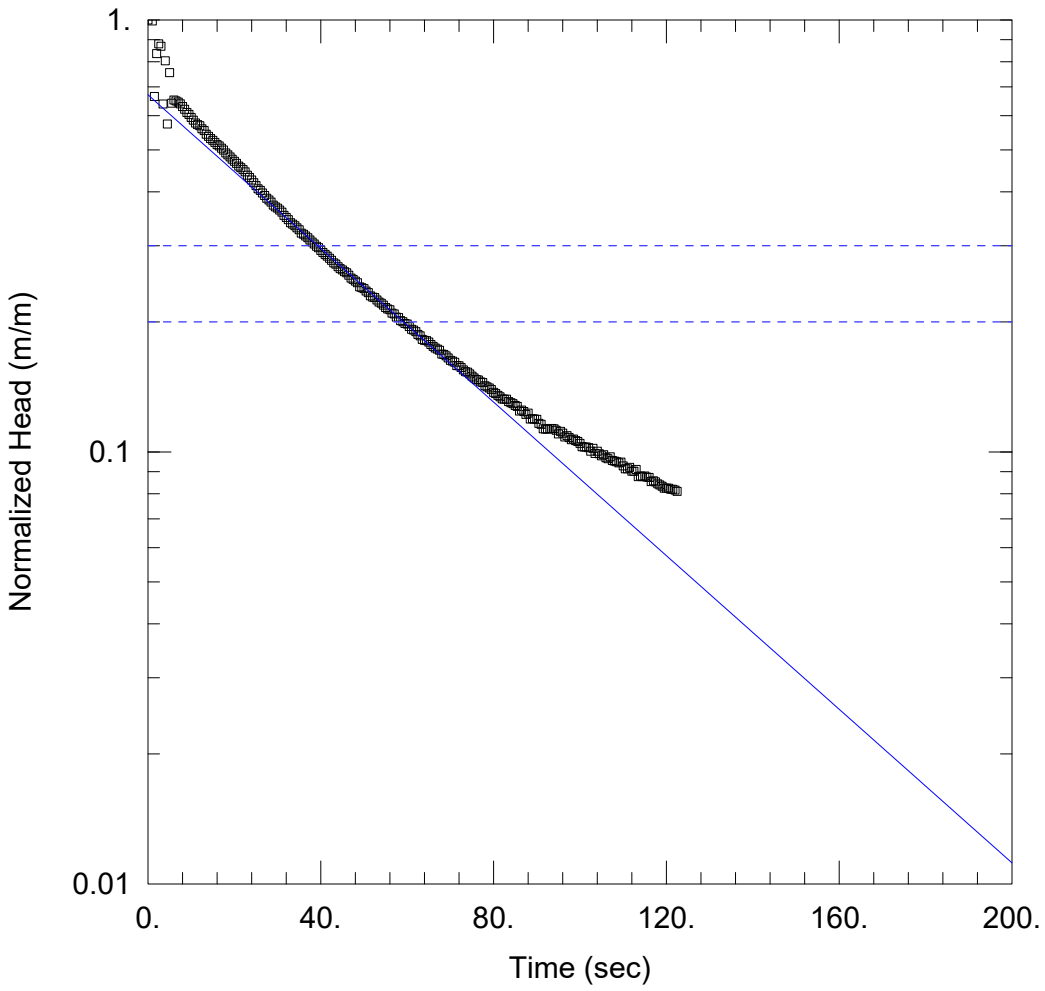
WELL DATA (DH-BGC17-03)

Initial Displacement: 0.41 m
Total Well Penetration Depth: 4.827 m
Casing Radius: 0.026 m
Static Water Column Height: 4.827 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 1.231E-6 m/sec
y0 = 0.2856 m



TEST 1 - FALLING HEAD

Data Set: N:\...\DH-BGC17-04 Test 1.aqt
Date: 11/27/17 Time: 20:56:40

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-04
Test Date: Sep 16, 2017

AQUIFER DATA

Saturated Thickness: 5.64 m Anisotropy Ratio (Kz/Kr): 1.

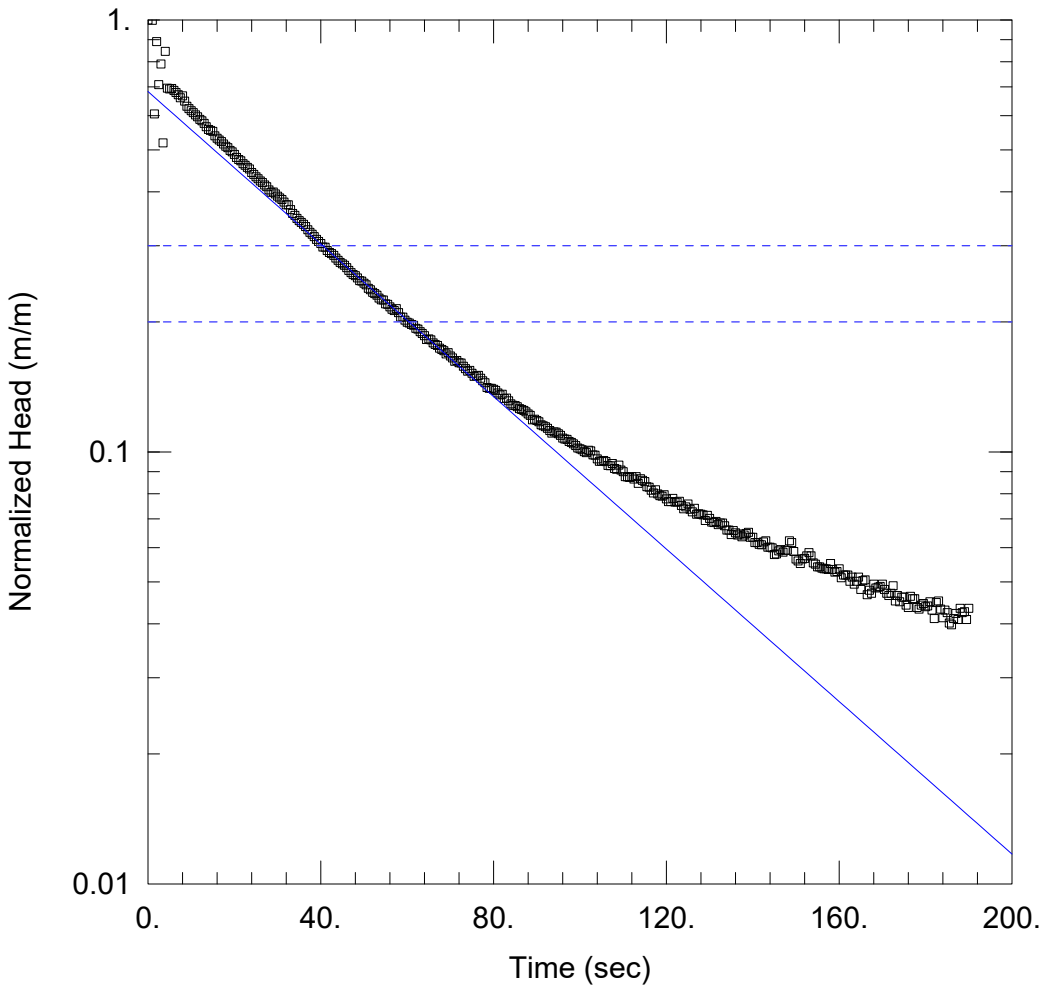
WELL DATA (DH-BGC17-04)

Initial Displacement: 0.58 m
Total Well Penetration Depth: 4.94 m
Casing Radius: 0.026 m
Static Water Column Height: 4.94 m
Screen Length: 3. m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 6.437E-6 m/sec
y0 = 0.3891 m



TEST 3 - FALLING HEAD

Data Set: N:\...\DH-BGC17-04 Test 3.aqt
Date: 11/27/17 Time: 21:03:32

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-04
Test Date: Sep 16, 2017

AQUIFER DATA

Saturated Thickness: 5.64 m Anisotropy Ratio (Kz/Kr): 1.

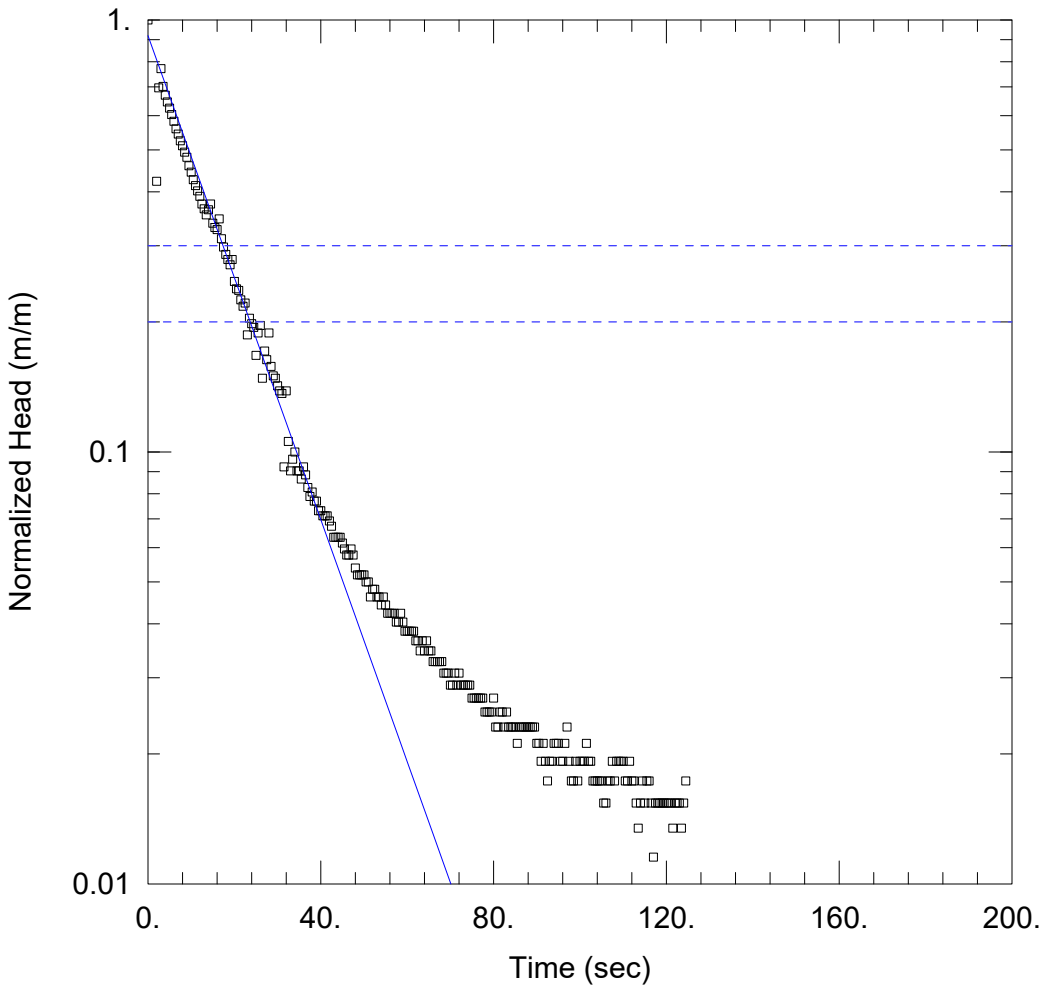
WELL DATA (DH-BGC17-04)

Initial Displacement: 0.52 m Static Water Column Height: 4.94 m
Total Well Penetration Depth: 4.94 m Screen Length: 3. m
Casing Radius: 0.026 m Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 6.389E-6 m/sec y0 = 0.3549 m



TEST 1 - FALLING HEAD

Data Set: N:\...\DH-BGC17-05 Test 1_B&R.aqt
Date: 11/29/17 Time: 14:13:05

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-05
Test Date: Sep 19, 2017

AQUIFER DATA

Saturated Thickness: 2.6 m Anisotropy Ratio (Kz/Kr): 0.01

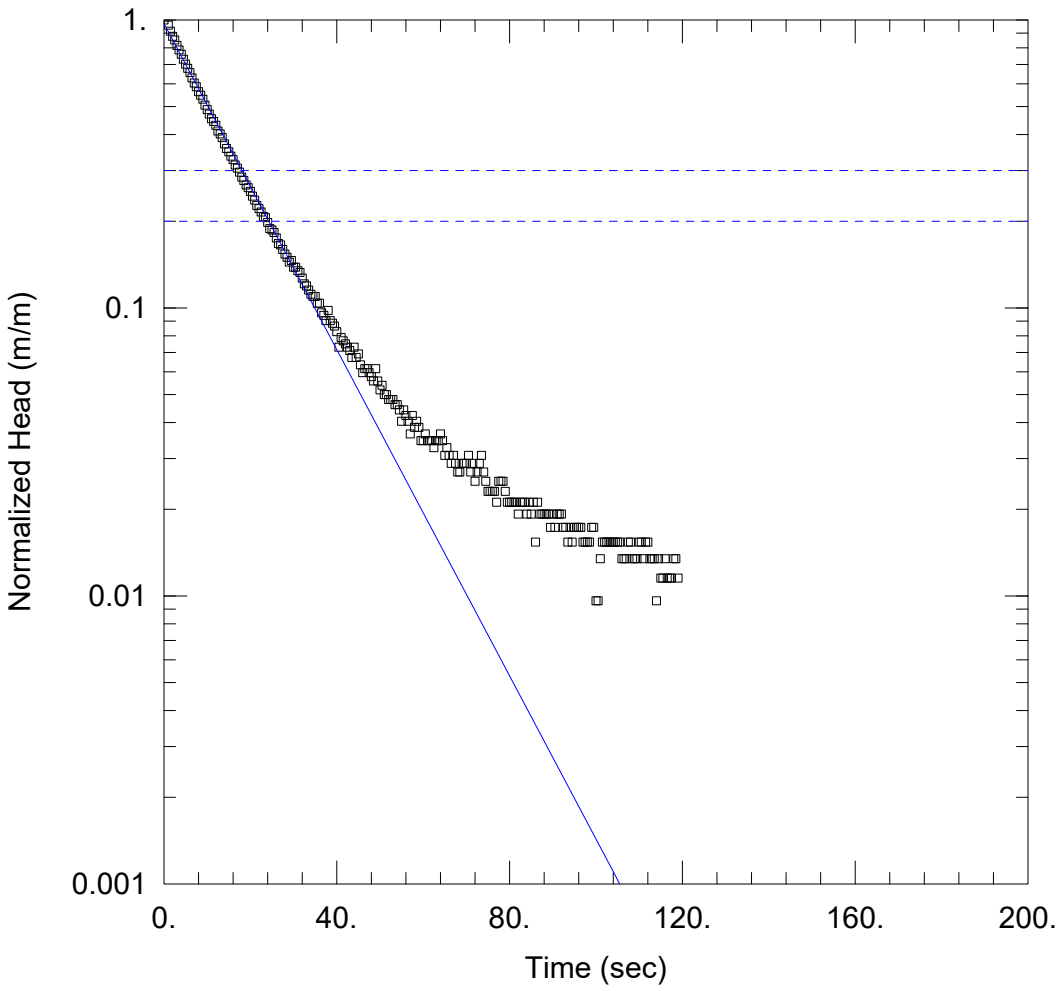
WELL DATA (DH-BGC17-05)

Initial Displacement: 0.52 m Static Water Column Height: 37.17 m
Total Well Penetration Depth: 37.17 m Screen Length: 1.8 m
Casing Radius: 0.026 m Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 7.488E-5 m/sec y0 = 0.4782 m



TEST 2 - RISING HEAD

Data Set: N:\...\DH-BGC17-05 Test 2_B&R.aqt
Date: 11/29/17 Time: 14:16:53

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-05
Test Date: Sep 19, 2017

AQUIFER DATA

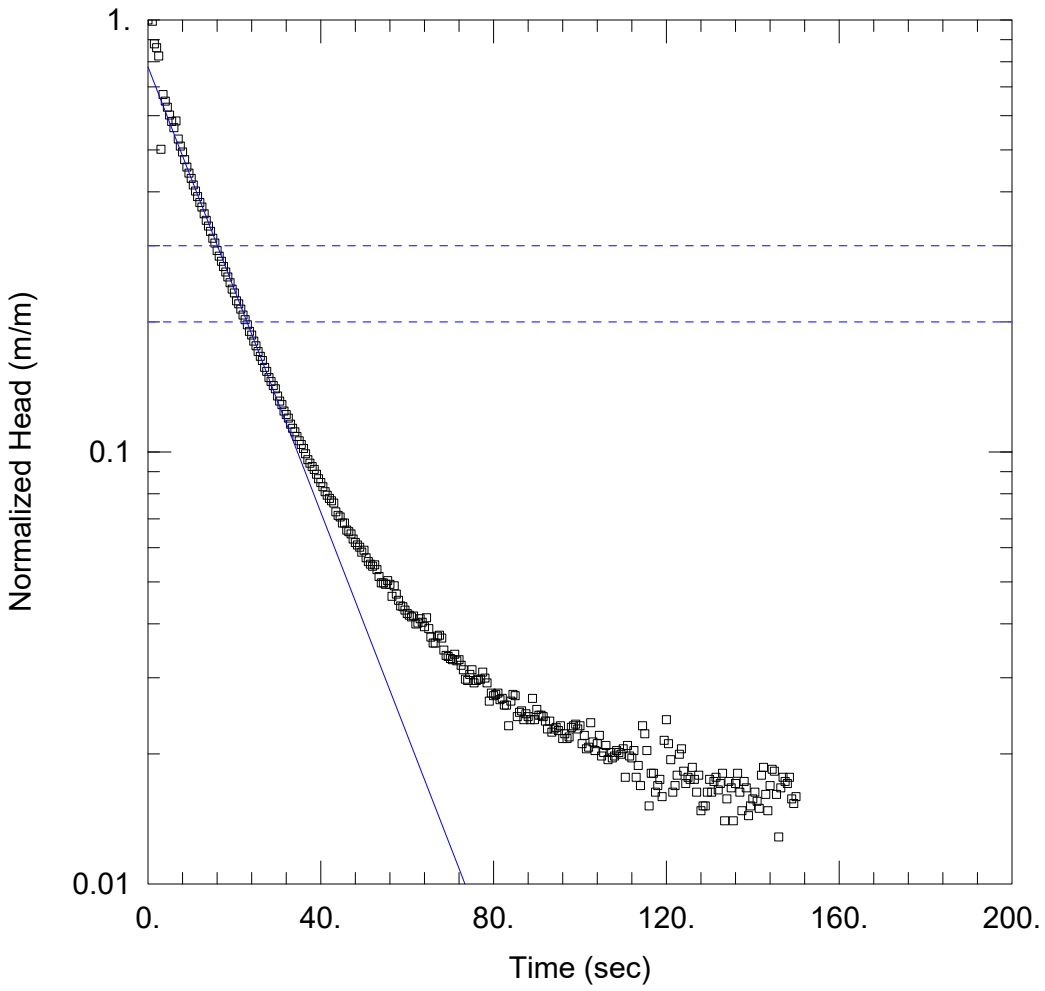
Saturated Thickness: 2.6 m
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA (DH-BGC17-05)

Initial Displacement: 0.52 m
Total Well Penetration Depth: 37.17 m
Casing Radius: 0.026 m
Static Water Column Height: 37.17 m
Screen Length: 1.8 m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 7.572E-5 m/sec
y0 = 0.5055 m



TEST 3 - FALLING HEAD

Data Set: N:\...\DH-BGC17-05 Test 3_B&R.aqt
Date: 11/27/17 Time: 21:19:18

PROJECT INFORMATION

Company: BGC Engineering
Client: NexGen Energy
Project: 1762-001
Location: Rook 1 Site
Test Well: DH-BGC17-05
Test Date: Sep 19, 2017

AQUIFER DATA

Saturated Thickness: 2.6 m Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA (DH-BGC17-05)

Initial Displacement: 0.52 m
Total Well Penetration Depth: 37.17 m
Casing Radius: 0.026 m
Static Water Column Height: 37.17 m
Screen Length: 1.8 m
Well Radius: 0.0762 m

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 6.892E-5 m/sec
y0 = 0.4048 m

APPENDIX G

Packer Test Results

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 549
Trend: 327 **Plunge:** 70
Personnel: JD/JN/TR **Date:** 28-Aug-17

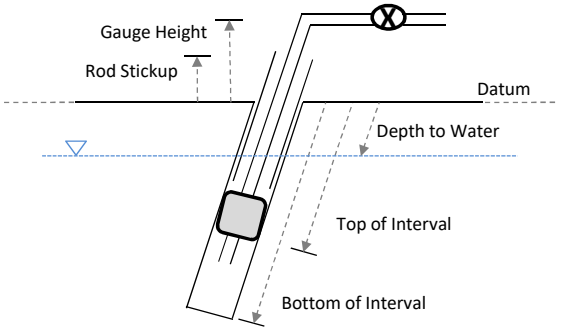
Start Flushing: N/A
End Flushing: N/A
Start Packer Testing: N/A
End Packer Testing: N/A

Hole ID: GAR-17-001
Design Test Interval: 103-115
Test #: 1
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 1.93m m
Depth to Water: 0.00 m
Depth to Top of Interval: 108.65 m
Depth to Bottom of Interval: 116.40 m
Height of Gauge: 1.18 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 400 psi
Cleaning (Vol./Time/Until Clean): 30 mins
Depth to water estimate from shear pin 79.2 m



Pressure Inte 30 1

Minutes	Pressure	Volume	Δ Volume
0	30.0	495.90	--
1	30.0	496.70	0.80
2	30.0	497.50	0.80
3	30.0	498.30	0.80
4	30.0	499.00	0.70
5	30.0	499.70	0.70
6	30.0	500.50	0.80
7	30.0	501.20	0.70
8	30.0	501.90	0.70
9	30.0	502.60	0.70
10	30.0	503.20	0.60
Stable Avg:	30.0		0.73

Pressure Inte 45 2

Minutes	Pressure	Volume	Δ Volume
0	45.0	503.60	--
1	45.0	504.30	0.70
2	45.0	505.10	0.80
3	45.0	505.90	0.80
4	45.0	506.60	0.70
5	45.0	507.40	0.80
6	46.0	508.30	0.90
7	46.0	509.00	0.70
8	46.0	509.80	0.80
9	46.0	510.50	0.70
10	46.0	511.20	0.70
	45.5		0.76

Pressure Inte 60 3

Minutes	Pressure	Volume	Δ Volume
0	60.0	512.70	--
1	60.0	513.70	1.00
2	60.0	514.90	1.20
3	60.0	516.00	1.10
4	60.0	517.10	1.10
5	60.0	518.30	1.20
6	60.0	519.40	1.10
7	60.0	520.60	1.20
8	60.0	521.70	1.10
9	60.0	522.80	1.10
10	60.0	523.90	1.10
Stable Avg:	60.0		1.12

Pressure Int 45 4

Minutes	Pressure	Volume	Δ Volume
0	45.0	524.50	--
1	45.0	525.40	0.90
2	45.0	526.30	0.90
3	45.0	527.10	0.80
4	45.0	528.10	1.00
5	45.0	528.90	0.80
6	45.0	529.80	0.90
7	46.0	530.80	1.00
8	46.0	531.70	0.90
9	46.0	532.60	0.90
10	45.0	533.50	0.90
Stable Avg:	45.3		0.90

Pressure Int 30 5

Minutes	Pressure	Volume	Δ Volume
0	32.0	534.10	--
1	32.0	534.90	0.80
2	32.0	535.60	0.70
3	32.0	536.30	0.70
4	30.0	537.10	0.80
5	30.0	537.80	0.70
6	30.0	538.50	0.70
7	30.0	539.20	0.70
8	30.0	539.90	0.70
9	30.0	540.60	0.70
10	30.0	541.30	0.70
Stable Avg:	30.7		0.72

Pressure Interval

Minutes	Pressure	Volume	Δ Volume
0			-
1			0.00
2			0.00
3			0.00
4			0.00
5			0.00
6			0.00
7			0.00
8			0.00
9			0.00
10			0.00
Stable Avg:			N/A

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Bentonite used during drilling of the tested interval. Flushed hole for 30 mins prior to test but some bentonite coating probably remained.

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-001

Project: Snowbird PFS **Test #:** 1

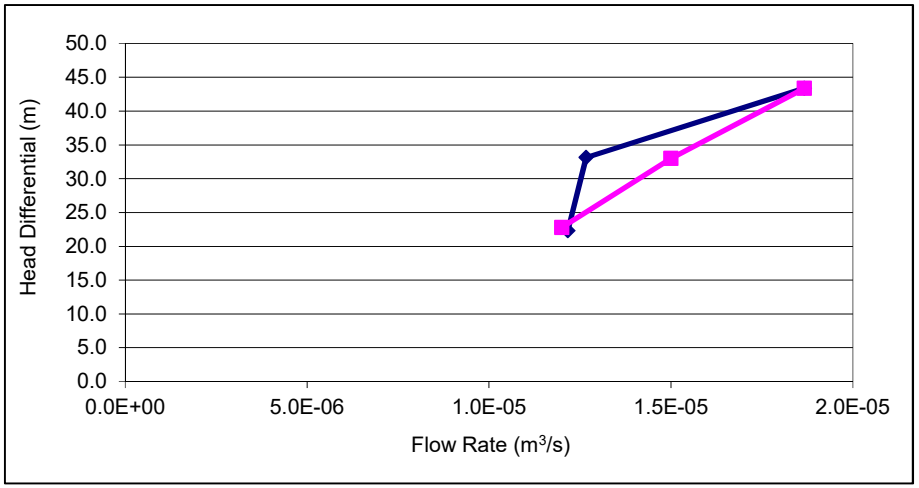
Project #: 1762-001 **From (m):** 108.65 **To (m):** 116.40

Calculation Input Parameters:

L: Length of Test Interval (m)	7.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	112.53	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	1.18	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	0.00	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
30.0	1.2E-05	21.1	22.3	6.0E-08	X
45.5	1.3E-05	32.0	33.1	4.2E-08	X
60.0	1.9E-05	42.2	43.4	4.7E-08	X
45.3	1.5E-05	31.8	33.0	5.0E-08	X
30.7	1.2E-05	21.6	22.8	5.8E-08	X
			Geo Mean	**5.1.E-08**	



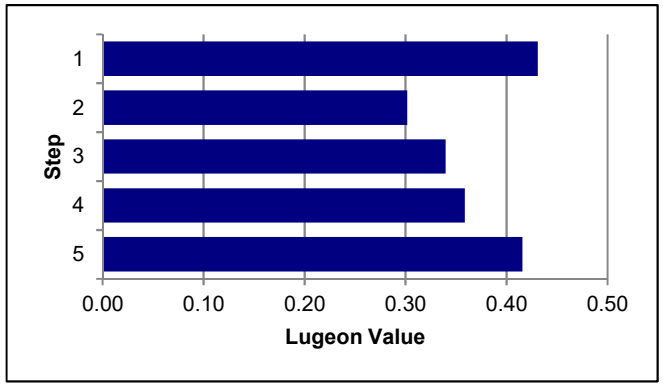
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	2.2	0.19	0.09	0.43	X
2	3.2	0.20	0.10	0.30	X
3	4.3	0.30	0.14	0.34	X
4	3.2	0.24	0.12	0.36	X
5	2.2	0.19	0.09	0.42	X
6	N/A	N/A	N/A		
			Geo Mean	**0.37**	
			Max L	**0.43**	

Lugeon Estimate Check:

K (from packer test): 5.1E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.51



BGC ENGINEERING INC

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 549

Trend: 327 **Plunge:** 70

Personnel: JD/JN/TR **Date:** 28-Aug-17

Start Flushing: N/A
End Flushing: N/A
Start Packer Testing: N/A
End Packer Testing: N/A

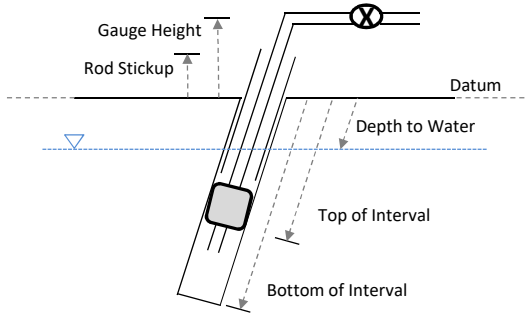
Hole ID: GAR-17-001

Design Test Interval: none
Test #: 2
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 1.93m m
Depth to Water: 43.00 m
Depth to Top of Interval: 198.65 m
Depth to Bottom of Interval: 209.40 m
Height of Gauge: 1.20 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 350 psi
Cleaning (Vol./Time/Until Clean): 30 mins
Depth to water estimate from shear pin 118.8 m



Pressure Inte 130 1

Minutes	Pressure	Volume	Δ Volume
0	130.0	852.00	--
1	130.0	860.00	8.00
2	138.0	868.00	8.00
3	138.0	876.00	8.00
4	140.0	883.80	7.80
5	140.0	891.70	7.90
6	140.0	899.50	7.80
7	140.0	907.50	8.00
8	140.0	915.20	7.70
9	140.0	923.10	7.90
10	140.0	930.90	7.80
Stable Avg:	137.8		7.8900

Pressure Int 180 4

Minutes	Pressure	Volume	Δ Volume
0	180.0	152.50	--
1	185.0	161.40	8.90
2	185.0	170.10	8.70
3	188.0	179.00	8.90
4	180.0	187.80	8.80
5	185.0	196.60	8.80
6	170.0	205.00	8.40
7	175.0	213.40	8.40
8	182.0	221.90	8.50
9	185.0	230.50	8.60
10	180.0	238.90	8.40
Stable Avg:	181.4		8.64

Pressure Inte 180 2

Minutes	Pressure	Volume	Δ Volume
0	175.0	941.00	--
1	175.0	950.30	9.30
2	175.0	959.20	8.90
3	180.0	968.70	9.50
4	185.0	977.50	8.80
5	175.0	986.70	9.20
6	185.0	995.50	8.80
7	180.0	1004.50	9.00
8	185.0	1013.40	8.90
9	180.0	1021.90	8.50
10	185.0	1031.00	9.10
	180.0		9.00

Pressure Int 130 5

Minutes	Pressure	Volume	Δ Volume
0	132.0	244.30	--
1	130.0	251.20	6.90
2	130.0	258.00	6.80
3	133.0	264.90	6.90
4	130.0	271.60	6.70
5	135.0	278.50	6.90
6	135.0	285.40	6.90
7	135.0	292.10	6.70
8	135.0	299.00	6.90
9	135.0	305.70	6.70
10	135.0	312.60	6.90
Stable Avg:	133.2		6.83

Pressure Inte 220 3

Minutes	Pressure	Volume	Δ Volume
0	210.0	41.00	--
1	220.0	52.00	11.00
2	210.0	62.80	10.80
3	215.0	73.50	10.70
4	210.0	83.80	10.30
5	213.0	94.00	10.20
6	215.0	104.20	10.20
7	220.0	114.60	10.40
8	220.0	125.00	10.40
9	220.0	135.50	10.50
10	225.0	146.20	10.70
Stable Avg:	216.2		10.52

Pressure Interval _____

Minutes	Pressure	Volume	Δ Volume
0			-
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:			N/A

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments:

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-001

Project: Snowbird PFS **Test #:** 2

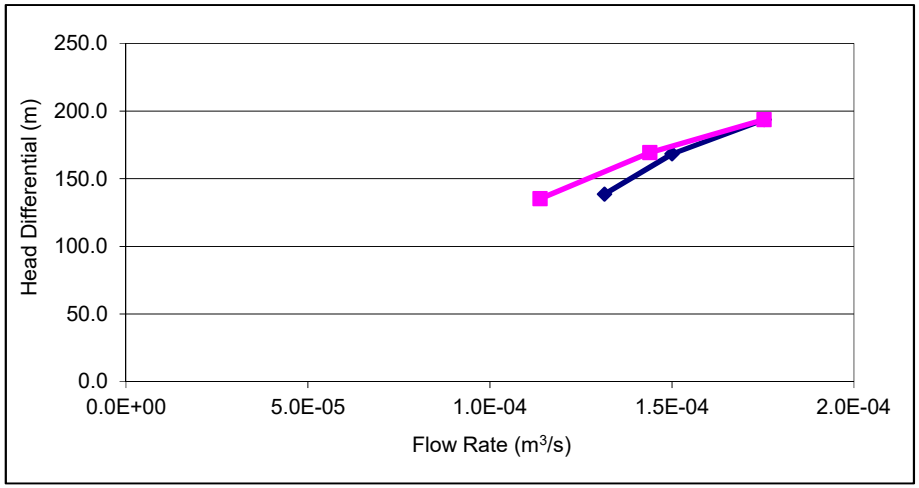
Project #: 1762-001 **From (m):** 198.65 **To (m):** 209.40

Calculation Input Parameters:

L: Length of Test Interval (m)	10.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	204.03	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	1.20	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	43.00	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
137.8	1.3E-04	96.9	138.5	7.9E-08	X
180.0	1.5E-04	126.6	168.2	7.5E-08	X
216.2	1.8E-04	152.0	193.6	7.6E-08	X
181.4	1.4E-04	127.5	169.1	7.1E-08	X
133.2	1.1E-04	93.6	135.2	7.0E-08	X
			Geo Mean	**7.4.E-08**	



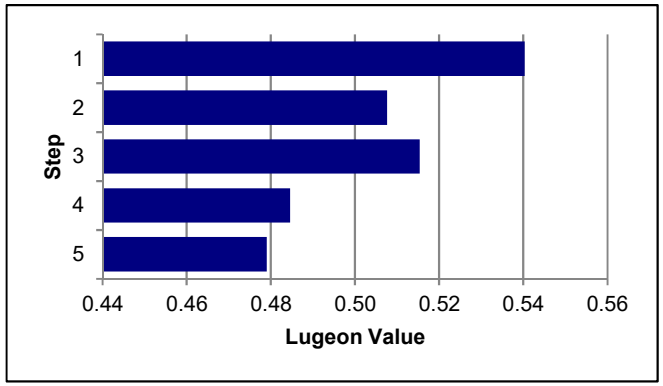
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	13.6	2.08	0.73	0.54	X
2	16.5	2.38	0.84	0.51	X
3	19.0	2.78	0.98	0.52	X
4	16.6	2.28	0.80	0.48	X
5	13.3	1.80	0.64	0.48	X
6	N/A	N/A	N/A		
			Geo Mean	**0.50**	
			Max L	**0.54**	

Lugeon Estimate Check:

K (from packer test): 7.4E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.74



BGC ENGINEERING INC

Packer Test - Data Form

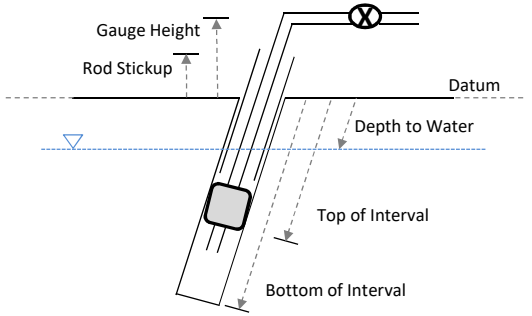
BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client:	NexGen
Project:	Snowbird
Project #:	1762001
Measurement Units	
Volume:	l
Pressure:	psi
	m

Collar El.:	549		
Trend:	327	**Plunge:**	70
Personnel:	AB	**Date:**	30-Aug-17
Start Flushing:	9:00		
End Flushing:		9:30	
Start Packer Testing:	10:10		
End Packer Testing:		11:20	

Hole ID: GAR-17-001

Design Test Interval:	none		
Test #:	3		
Packer Setup:	☑ Single	☐ Double	
Measurements Taken from Collar (Ground):			
Rod Stickup Height:	1.95	m	
Depth to Water:		12.93	m
Depth to Top of Interval:	258.65	m	
Depth to Bottom of Interval:		272.40	m
Height of Gauge:	2.37	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	350	psi	
Cleaning (Vol./Time/Until Clean):		30 mins	
Depth to water estimate from shear pin		118.8	m



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	atm	cm drop in 1 m	--
1	100.0	46.70	0.00
2	100.0	46.70	0.00
3	100.0	46.80	0.10
4	100.0	46.80	0.00
5	200.0	47.20	0.40
6	200.0	47.20	0.00
7	200.0	47.30	0.10
8	300.0	47.60	0.30
9	300.0	47.60	0.00
10	300.0	47.60	0.00
Stable Avg:	190.0		0.09

Pressure Inte 100 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	51.00	--
1	100.0	53.20	2.20
2	100.0	55.20	2.00
3	100.0	57.30	2.10
4	100.0	59.40	2.10
5	100.0	61.40	2.00
6	100.0	63.40	2.00
7	100.0	65.40	2.00
8	100.0	67.40	2.00
9	100.0	69.40	2.00
10	100.0	71.30	1.90
	100.0		2.03

Pressure Inte 150 2

Minutes	Pressure	Volume	Δ Volume
0	150.0	73.50	--
1	150.0	76.40	2.90
2	150.0	79.50	3.10
3	150.0	82.60	3.10
4	150.0	85.60	3.00
5	150.0	88.70	3.10
6	150.0	91.70	3.00
7	150.0	94.70	3.00
8	150.0	97.60	2.90
9	150.0	100.50	2.90
10	150.0	103.60	3.10
Stable Avg:	150.0		3.01

Pressure Int 200 3

Minutes	Pressure	Volume	Δ Volume
0	200.0	6.00	--
1	200.0	10.10	4.10
2	200.0	14.00	3.90
3	200.0	17.70	3.70
4	200.0	21.40	3.70
5	200.0	25.20	3.80
6	200.0	28.90	3.70
7	200.0	32.60	3.70
8	200.0	36.20	3.60
9	200.0	39.90	3.70
10	200.0	43.50	3.60
Stable Avg:	200.0		3.75

Pressure Int 150 4

Minutes	Pressure	Volume	Δ Volume
0	150.0	45.50	--
1	150.0	48.20	2.70
2	150.0	50.90	2.70
3	150.0	53.70	2.80
4	150.0	56.30	2.60
5	150.0	59.00	2.70
6	150.0	61.70	2.70
7	150.0	64.40	2.70
8	150.0	67.20	2.80
9	150.0	69.90	2.70
10	150.0	72.70	2.80
Stable Avg:	150.0		2.72

Pressure Int 100 5

Minutes	Pressure	Volume	Δ Volume
0	100.0	75.80	-
1	100.0	77.90	2.10
2	100.0	80.00	2.10
3	100.0	82.00	2.00
4	100.0	84.10	2.10
5	100.0	86.10	2.00
6	100.0	88.20	2.10
7	100.0	90.20	2.00
8	100.0	92.30	2.10
9	100.0	94.40	2.10
10	100.0	96.40	2.00
Stable Avg:	100.0		2.06

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments:

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-001

Project: Snowbird PFS **Test #:** 3

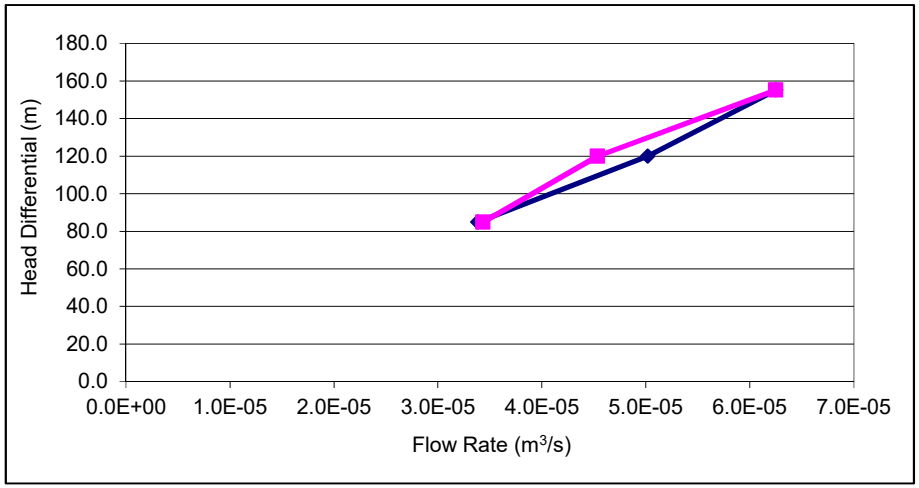
Project #: 1762-001 **From (m):** 258.65 **To (m):** 272.40

Calculation Input Parameters:

L: Length of Test Interval (m)	13.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	265.53	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	2.37	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	12.93	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
190.0	1.5E-06	133.6	148.1	6.9E-10	Leak Test
100.0	3.4E-05	70.3	84.8	2.7E-08	X
150.0	5.0E-05	105.5	120.0	2.9E-08	X
200.0	6.3E-05	140.6	155.1	2.7E-08	X
150.0	4.5E-05	105.5	120.0	2.6E-08	X
100.0	3.4E-05	70.3	84.8	2.8E-08	X
			Geo Mean	**2.7.E-08**	



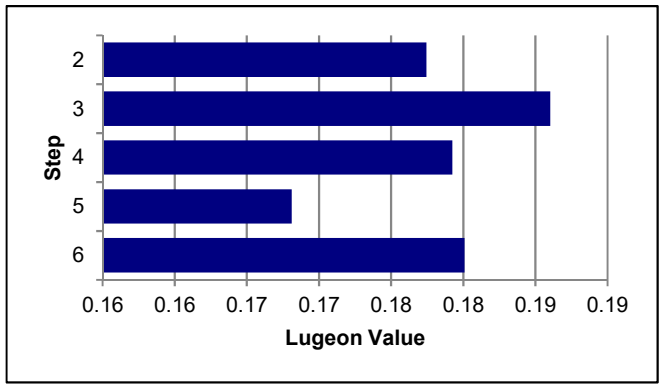
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	14.5	0.02	0.01	0.00	Leak Test
2	8.3	0.54	0.15	0.18	X
3	11.8	0.80	0.22	0.19	X
4	15.2	0.99	0.27	0.18	X
5	11.8	0.72	0.20	0.17	X
6	8.3	0.54	0.15	0.18	X
			Geo Mean	**0.18**	
			Max L	**0.19**	

Lugeon Estimate Check:

K (from packer test): 2.7E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.27



BGC ENGINEERING INC

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

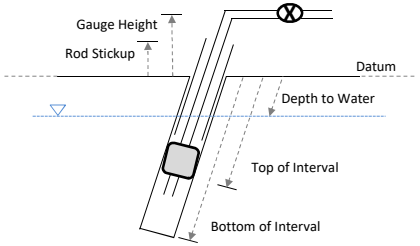
Client: NexGen
Project: Snowbird
Project #: 1762001
Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 549
Trend: 327 **Plunge:** 70
Personnel: AB/DG **Date:** 31-Aug-17
Start Flushing: 4:40AM
End Flushing: 5:40AM
Start Packer Testing: N/A
End Packer Testing: N/A

Hole ID: GAR-17-001
Design Test Interval: none
Test #: 4
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height: 2.00 m
Depth to Water: 0.70 m
Depth to Top of Interval: 279.65 m
Depth to Bottom of Interval: 293.40 m
Height of Gauge: 2.37 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 370 psi
Cleaning (Vol./Time/Until Clean): 60 mins
Depth to water estimate from shear pin 102.9 m



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	atm		
1	100.0	2532.00	
2	100.0	2532.70	0.70
3	100.0	2532.90	0.20
4	100.0	2532.90	0.00
5	200.0	2533.30	0.40
6	200.0	2533.30	0.00
7	200.0	2533.40	0.10
8	300.0	2533.60	0.20
9	300.0	2533.60	0.00
10	300.0	2533.70	0.10
Stable Avg:	190.0		0.19

Pressure Inte 100 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	536.40	-
1	100.0	537.10	0.70
2	100.0	537.80	0.70
3	100.0	538.50	0.70
4	100.0	539.20	0.70
5	100.0	539.80	0.60
6	100.0	540.40	0.60
7	100.0	541.10	0.70
8	100.0	541.80	0.70
9	100.0	542.40	0.60
10	100.0	543.10	0.70
	100.0		0.67

Pressure Inte 150 2

Minutes	Pressure	Volume	Δ Volume
0	150.0	44.20	-
1	150.0	45.00	0.80
2	150.0	45.90	0.90
3	150.0	46.80	0.90
4	150.0	47.70	0.90
5	150.0	48.60	0.90
6	150.0	49.40	0.80
7	150.0	50.30	0.90
8	150.0	51.20	0.90
9	150.0	52.10	0.90
10	150.0	52.90	0.80
Stable Avg:	150.0		0.87

Pressure Inte 200 3

Minutes	Pressure	Volume	Δ Volume
0	200.0	54.10	-
1	200.0	55.20	1.10
2	200.0	56.30	1.10
3	200.0	57.40	1.10
4	200.0	58.50	1.10
5	200.0	59.70	1.20
6	200.0	60.80	1.10
7	200.0	62.00	1.20
8	200.0	63.10	1.10
9	200.0	64.30	1.20
10	200.0	65.50	1.20
Stable Avg:	200.0		1.14

Pressure Inte 250 4

Minutes	Pressure	Volume	Δ Volume
0	250.0	65.80	-
1	250.0	68.30	2.50
2	250.0	69.70	1.40
3	250.0	71.20	1.50
4	250.0	72.80	1.60
5	250.0	74.40	1.60
6	250.0	76.00	1.60
7	250.0	77.70	1.70
8	250.0	79.20	1.50
9	250.0	80.90	1.70
10	250.0	82.50	1.60
Stable Avg:	250.0		1.67

Pressure Inte 200 5

Minutes	Pressure	Volume	Δ Volume
0	200.0	83.70	-
1	200.0	85.00	1.30
2	200.0	86.30	1.30
3	200.0	87.60	1.30
4	200.0	88.90	1.30
5	200.0	90.20	1.30
6	200.0	91.50	1.30
7	200.0	92.80	1.30
8	200.0	94.10	1.30
9	200.0	95.40	1.30
10	200.0	96.60	1.20
Stable Avg:	200.0		1.29

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Ran 7 pressure intervals - see page below

Hole ID: GAR-17-001
Test #: 4

Pressure Inte 150 6

Minutes	Pressure	Volume	Δ Volume
0	150.0	97.35	-
1	150.0	98.15	0.80
2	150.0	99.00	0.85
3	150.0	99.90	0.90
4	150.0	100.80	0.90
5	150.0	101.70	0.90
6	150.0	102.60	0.90
7	150.0	103.50	0.90
8	150.0	104.40	0.90
9	150.0	105.30	0.90
10	150.0	106.30	1.00
Stable Avg:	150.0		0.90

Pressure Inte 100 7

Minutes	Pressure	Volume	Δ Volume
0	100.0	6.9	-
1	100.0	7.5	0.60
2	100.0	8.2	0.70
3	100.0	8.9	0.70
4	105.0	9.6	0.70
5	105.0	10.2	0.60
6	105.0	10.9	0.70
7	105.0	11.5	0.60
8	110.0	12.2	0.70
9	110.0	12.8	0.60
10	110.0	13.5	0.70
Stable Avg:	104.5		0.66

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-001

Project: Snowbird PFS **Test #:** 4

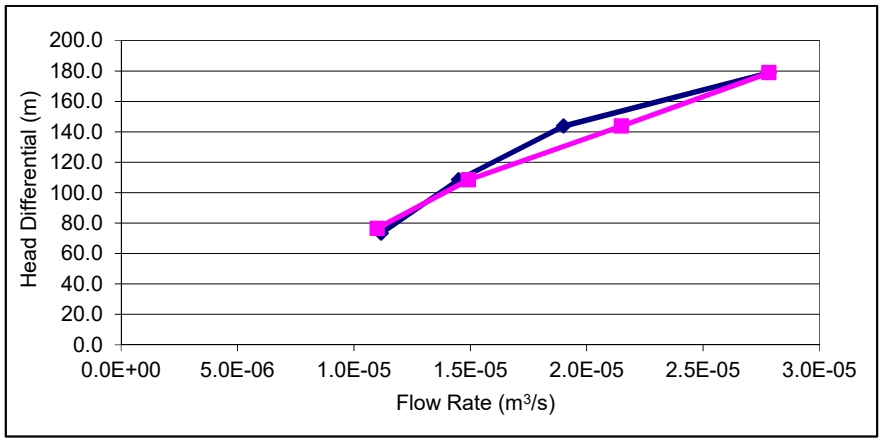
Project #: 1762-001 **From (m):** 279.65 **To (m):** 293.40

Calculation Input Parameters:

L: Length of Test Interval (m)	13.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	286.53	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	2.37	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	0.70	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.2	3.1E-06	0.1	3.2	6.8E-08	Leak Test
100.0	1.1E-05	70.3	73.3	1.0E-08	X
150.0	1.5E-05	105.5	108.5	9.1E-09	X
200.0	1.9E-05	140.6	143.7	9.0E-09	X
250.0	2.8E-05	175.8	178.8	1.1E-08	X
200.0	2.2E-05	140.6	143.7	1.0E-08	X
150.0	1.5E-05	105.5	108.5	9.4E-09	X
104.5	1.1E-05	73.5	76.5	9.8E-09	X
			Geo Mean	**9.8.E-09**	



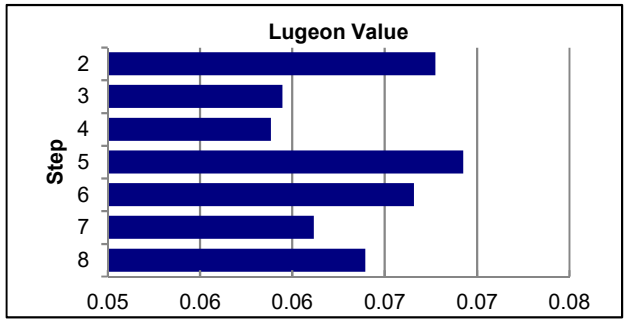
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	0.3	0.05	0.01	0.44	Leak Test
2	7.2	0.18	0.05	0.07	X
3	10.6	0.23	0.06	0.06	X
4	14.1	0.30	0.08	0.06	X
5	17.5	0.44	0.12	0.07	X
6	14.1	0.34	0.09	0.07	X
7	10.6	0.24	0.07	0.06	X
8	7.5	0.17	0.05	0.06	X
			Geo Mean	**0.06**	
			Max L	**0.07**	

Lugeon Estimate Check:

K (from packer test): 9.8E-07 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.10



BGC ENGINEERING INC

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

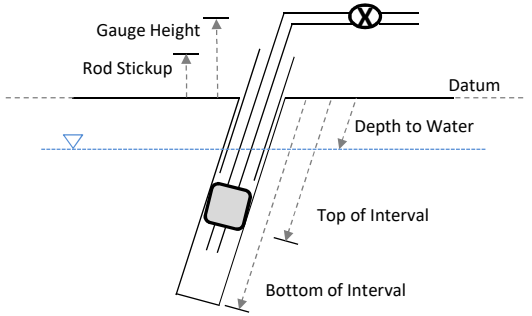
Client: NexGen
Project: Snowbird
Project #: 1762001
Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 549
Trend: 327 **Plunge:** 70
Personnel: JD/JN/TR **Date:** 31-Aug-17
Start Flushing: 12:00
End Flushing: 12:30
Start Packer Testing: 12:30
End Packer Testing: N/A

Hole ID: GAR-17-001
Design Test Interval: 295-304m
Test #: 5
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height: 3.79 m
Depth to Water: 1.86 m
Depth to Top of Interval: 299.40 m
Depth to Bottom of Interval: 308.40 m
Height of Gauge: 1.18 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 320 psi
Cleaning (Vol./Time/Until Clean): 30 mins
Depth to water estimate from shear pin 142.5 m



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	100.0	3663.65	
1	120.0	3663.75	0.10
2	120.0	3663.75	0.00
3	100.0	3663.80	0.05
4	200.0	3664.10	0.30
5	190.0	3664.25	0.15
6	200.0	3664.32	0.07
7	200.0	3664.40	0.08
8	300.0	3664.90	0.50
9	shear at 320psi		
10			
Stable Avg:			0.16

Pressure Inte 120 1

Minutes	Pressure	Volume	Δ Volume
0	120.0	673.00	
1	120.0	677.50	4.50
2	120.0	682.10	4.60
3	125.0	686.70	4.60
4	120.0	691.20	4.50
5	120.0	695.90	4.70
6	125.0	700.50	4.60
7	125.0	705.20	4.70
8	125.0	709.90	4.70
9			0.00
10	120.0	719.50	9.60
	122.0		4.65

Pressure Inte 160 2

Minutes	Pressure	Volume	Δ Volume
0	160.0	726.00	
1	160.0	732.90	6.90
2	160.0	740.00	7.10
3	170.0	747.20	7.20
4	170.0	754.40	7.20
5	160.0	762.00	7.60
6	165.0	769.50	7.50
7	165.0	777.10	7.60
8	170.0	785.00	7.90
9	170.0	792.30	7.30
10	160.0	799.60	7.30
Stable Avg:	164.5		7.36

Pressure Int 200 3

Minutes	Pressure	Volume	Δ Volume
0	200.0	806.00	
1	200.0	816.20	10.20
2	205.0	826.40	10.20
3	205.0	837.30	10.90
4	205.0	848.40	11.10
5	215.0	859.50	11.10
6	200.0	870.30	10.80
7	200.0	881.50	11.20
8	205.0	892.20	10.70
9	210.0	902.80	10.60
10	200.0	913.80	11.00
Stable Avg:	204.1		10.78

Pressure Int 160 4

Minutes	Pressure	Volume	Δ Volume
0	160.0	919.00	
1	160.0	927.90	8.90
2	160.0	936.60	8.70
3	160.0	945.00	8.40
4	165.0	953.70	8.70
5	175.0	962.80	9.10
6	160.0	970.80	8.00
7	160.0	979.00	8.20
8	160.0	987.10	8.10
9	165.0	995.50	8.40
10	165.0	1004.00	8.50
Stable Avg:	162.7		8.50

Pressure Int 120 5

Minutes	Pressure	Volume	Δ Volume
0	120.0	10.00	-
1	120.0	16.30	6.30
2	120.0	22.50	6.20
3	120.0	28.70	6.20
4	120.0	34.90	6.20
5	120.0	41.00	6.10
6	125.0	47.30	6.30
7	125.0	53.50	6.20
8	120.0	59.80	6.30
9	120.0	66.00	6.20
10	120.0	72.50	6.50
Stable Avg:	120.9		6.25

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Bentonite used during drilling of the tested interval. Flushed hole for 30 mins prior to test but some bentonite coating probably remained.

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-001

Project: Snowbird PFS **Test #:** 5

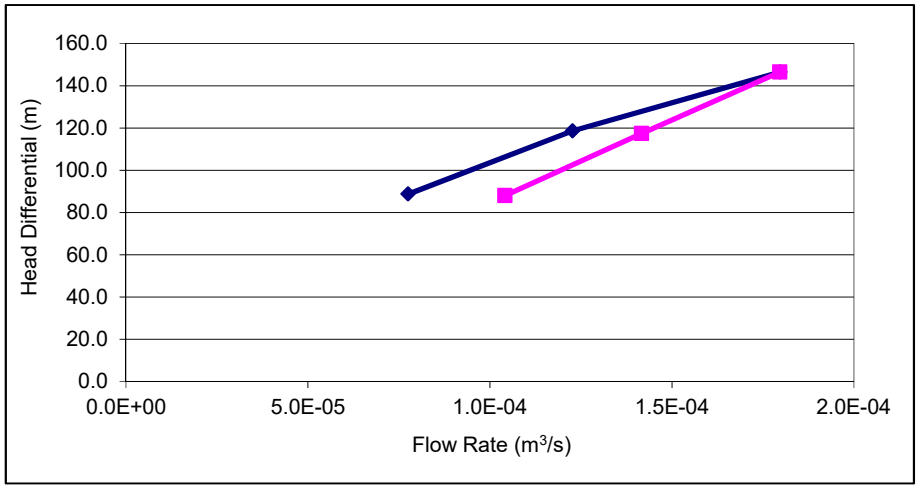
Project #: 1762-001 **From (m):** 299.40 **To (m):** 308.40

Calculation Input Parameters:

L: Length of Test Interval (m)	9.00	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	303.90	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	1.18	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	1.86	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	2.6E-06	0.0	2.9	8.6E-08	Leak Test
122.0	7.8E-05	85.8	88.7	8.4E-08	X
164.5	1.2E-04	115.7	118.6	1.0E-07	X
204.1	1.8E-04	143.5	146.4	1.2E-07	X
162.7	1.4E-04	114.4	117.3	1.2E-07	X
120.9	1.0E-04	85.0	87.9	1.1E-07	X
			Geo Mean	**1.1.E-07**	



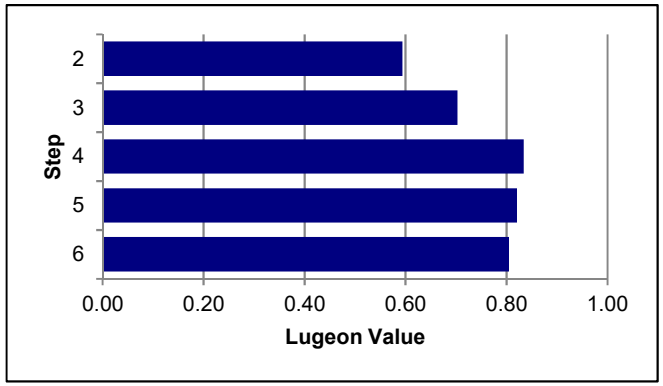
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	0.3	0.04	0.02	0.60	Leak Test
2	8.7	1.23	0.52	0.59	X
3	11.6	1.94	0.82	0.70	X
4	14.4	2.85	1.20	0.83	X
5	11.5	2.25	0.94	0.82	X
6	8.6	1.65	0.69	0.81	X
			Geo Mean	**0.75**	
			Max L	**0.83**	

Lugeon Estimate Check:

K (from packer test): 1.1E-05 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 1.06



Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client:	NexGen
Project:	Snowbird
Project #:	1762001
Measurement Units	
Volume:	l
Pressure:	psi
	m

Collar El.:	549			
Trend:	327	**Plunge:**	70	
Personnel:	TR/JD	**Date:**	1-Sep-17	
Start Flushing:			10:20	
End Flushing:			11:08	
Start Packer Testing:			N/A	
End Packer Testing:			N/A	

Hole ID: GAR-17-001

Design Test Interval:	none		
Test #:	6		
Packer Setup:	☑ Single	☐ Double	
Measurements Taken from Collar (Ground):			
Rod Stickup Height:	3.25	m	
Depth to Water:		7.59	m
Depth to Top of Interval:	383.40	m	
Depth to Bottom of Interval:		395.40	m
Height of Gauge:	1.18	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	380	psi	
Cleaning (Vol./Time/Until Clean):		50	mins
Depth to water estimate from shear pin		95.0	m

Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	100.0		--
1	100.0		0.00
2	100.0	81.70	81.70
3	100.0	81.80	0.10
4	200.0	82.35	0.55
5	200.0	82.55	0.20
6	200.0	82.70	0.15
7	200.0	82.80	0.10
8	300.0	83.30	0.50
9	300.0	83.60	0.30
10	300.0	83.70	0.10
Stable Avg:	190.9		8.37

Pressure Interval 1

Minutes	Pressure	Volume	Δ Volume
0	30.0	125.10	--
1	30.0	134.20	9.10
2	30.0	143.50	9.30
3	33.0	152.30	8.80
4	35.0	161.30	9.00
5	30.0	170.20	8.90
6	32.0	178.70	8.50
7	30.0	187.10	8.40
8	30.0	195.40	8.30
9	30.0	203.80	8.40
10	30.0	212.10	8.30
	30.9		8.70

Pressure Interval 2

Minutes	Pressure	Volume	Δ Volume
0	45.0	219.40	-
1	45.0	229.80	10.40
2	50.0	239.60	9.80
3	45.0	249.20	9.60
4	45.0	258.60	9.40
5	45.0	267.80	9.20
6	45.0	277.00	9.20
7	45.0	286.10	9.10
8	45.0	295.10	9.00
9	45.0	304.10	9.00
10	45.0	313.10	9.00
Stable Avg:	45.5		9.37

Pressure Interval 3

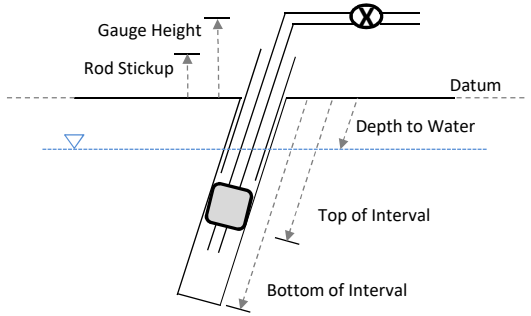
Minutes	Pressure	Volume	Δ Volume
0	60.0	321.30	--
1	60.0	332.30	11.00
2	60.0	342.80	10.50
3	60.0	353.40	10.60
4	65.0	363.00	9.60
5	60.0	374.40	11.40
6	60.0	384.60	10.20
7	60.0	394.70	10.10
8	65.0	404.90	10.20
9	60.0	415.00	10.10
10	60.0	424.90	9.90
Stable Avg:	60.9		10.36

Pressure Interval 4

Minutes	Pressure	Volume	Δ Volume
0	45.0	429.90	--
1	45.0	438.10	8.20
2	45.0	446.50	8.40
3	45.0	454.90	8.40
4	45.0	463.40	8.50
5	45.0	471.90	8.50
6	45.0	480.40	8.50
7	45.0	489.00	8.60
8	45.0	497.40	8.40
9	45.0	506.00	8.60
10	45.0	514.50	8.50
Stable Avg:	45.0		8.46

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0	30.0	521.10	-
1	30.0	527.90	6.80
2	35.0	534.90	7.00
3	30.0	541.80	6.90
4	30.0	548.70	6.90
5	30.0	555.70	7.00
6	30.0	562.80	7.10
7	30.0	569.90	7.10
8	30.0	576.90	7.00
9	30.0	584.90	8.00
10	30.0	591.00	6.10
Stable Avg:	30.5		6.99



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Driller noted decrease in returns from 383.4 m to 389.4 m; this was the basis for testing this interval.

The 300 psi gauge used for this test reads 10-20 psi lower than the 1000 psi gauge.

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-001

Project: Snowbird PFS **Test #:** 6

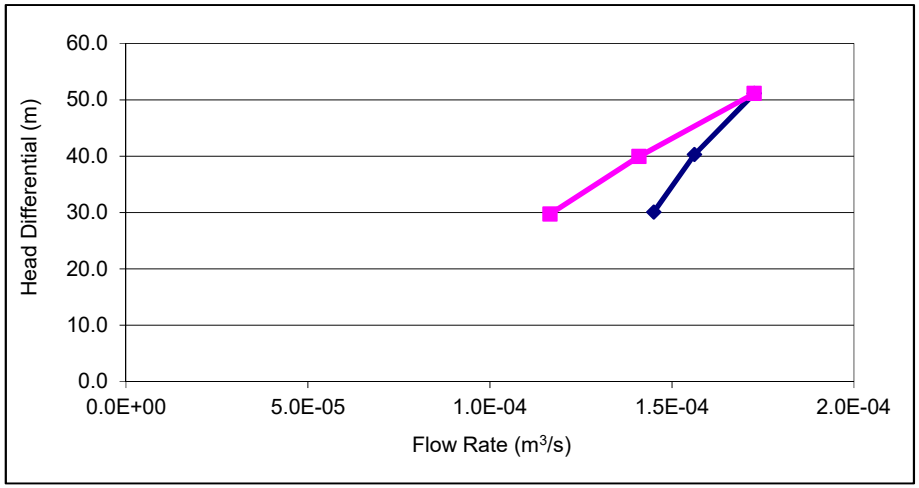
Project #: 1762-001 **From (m):** 383.40 **To (m):** 395.40

Calculation Input Parameters:

L: Length of Test Interval (m)	12.00	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	389.40	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	1.18	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	7.59	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
190.9	1.4E-04	134.2	142.5	7.5E-08	Leak Test
30.9	1.5E-04	21.7	30.0	3.7E-07	X
45.5	1.6E-04	32.0	40.3	3.0E-07	X
60.9	1.7E-04	42.8	51.1	2.6E-07	X
45.0	1.4E-04	31.6	40.0	2.7E-07	X
30.5	1.2E-04	21.4	29.7	3.0E-07	X
			Geo Mean	**3.0.E-07**	



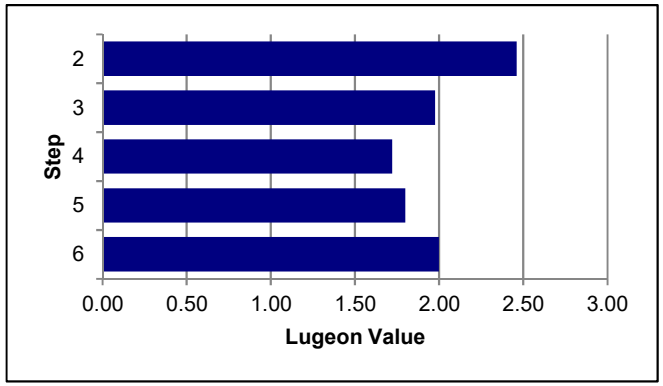
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	14.0	2.21	0.70	0.50	Leak Test
2	2.9	2.30	0.73	2.46	X
3	3.9	2.48	0.78	1.98	X
4	5.0	2.74	0.86	1.72	X
5	3.9	2.24	0.71	1.80	X
6	2.9	1.85	0.58	2.00	X
			Geo Mean	**1.98**	
			Max L	**2.46**	

Lugeon Estimate Check:

K (from packer test): 3.0E-05 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 2.96



BGC ENGINEERING INC

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 549

Trend: 327 **Plunge:** 70

Personnel: MD/AB **Date:** Sep 1/17

Start Flushing: 10:00 pm
End Flushing: 10:30 pm
Start Packer Testing: 10:55 pm
End Packer Testing: 12:10 am

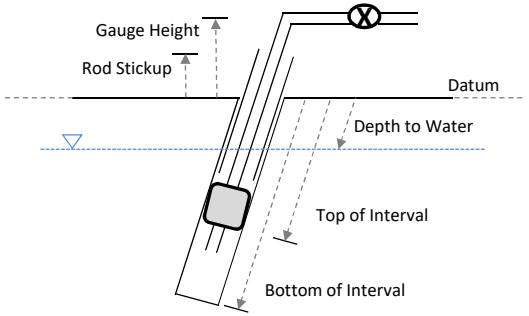
Hole ID: GAR-17-001

Design Test Interval: 396 - 518
Test #: 7
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 3.25 m
Depth to Water: 29.60 m
Depth to Top of Interval: 416.40 m
Depth to Bottom of Interval: 428.40 m
Height of Gauge: 3.60 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 380 psi
Cleaning (Vol./Time/Until Clean): 30 mins



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0			--
1	100.0	3607.10	
2	100.0	3608.00	0.90
3	100.0	3608.20	0.20
4	100.0	3608.30	0.10
5	200.0	3609.00	0.70
6	200.0	3609.10	0.10
7	200.0	3609.30	0.20
8	300.0	3610.10	0.80
9	30.0	3610.40	0.30
10	300.0	3610.60	0.20
Stable Avg:	163.0		0.39

Pressure Inte 100 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	3612.80	--
1	100.0	3613.50	0.70
2	100.0	3614.10	0.60
3	100.0	3614.80	0.70
4	100.0	3615.50	0.70
5	100.0	3616.10	0.60
6	100.0	3616.80	0.70
7	100.0	3617.40	0.60
8	100.0	3618.00	0.60
9	100.0	3618.60	0.60
10	100.0	3619.30	0.70
	100.0		0.65

Pressure Inte 150 2

Minutes	Pressure	Volume	Δ Volume
0	150.0	3620.60	-
1	150.0	3621.50	0.90
2	150.0	3622.20	0.70
3	150.0	3623.00	0.80
4	150.0	3623.80	0.80
5	150.0	3624.70	0.90
6	150.0	3625.60	0.90
7	150.0	3626.40	0.80
8	150.0	3627.30	0.90
9	150.0	3628.10	0.80
10	150.0	3628.90	0.80
Stable Avg:	150.0		0.83

Pressure Int 200 3

Minutes	Pressure	Volume	Δ Volume
0	200.0	3629.90	--
1	200.0	3631.00	1.10
2	200.0	3632.10	1.10
3	200.0	3633.20	1.10
4	200.0	3634.30	1.10
5	200.0	3635.40	1.10
6	200.0	3636.50	1.10
7	200.0	3637.70	1.20
8	200.0	3639.00	1.30
9	200.0	3640.00	1.00
10	200.0	3641.20	1.20
Stable Avg:	200.0		1.13

Pressure Int 150 4

Minutes	Pressure	Volume	Δ Volume
0	150.0	3641.50	--
1	150.0	3642.40	0.90
2	150.0	3643.30	0.90
3	150.0	3644.20	0.90
4	150.0	3645.10	0.90
5	150.0	3646.00	0.90
6	150.0	3646.90	0.90
7	150.0	3647.80	0.90
8	150.0	3648.80	1.00
9	150.0	3649.70	0.90
10	150.0	3650.60	0.90
Stable Avg:	150.0		0.91

Pressure Int 100 5

Minutes	Pressure	Volume	Δ Volume
0	100.0	3650.90	-
1	100.0	3651.50	0.60
2	100.0	3652.20	0.70
3	100.0	3652.80	0.60
4	100.0	3653.50	0.70
5	100.0	3654.10	0.60
6	100.0	3654.70	0.60
7	100.0	3655.30	0.60
8	100.0	3656.00	0.70
9	100.0	3656.60	0.60
10	100.0	3657.30	0.70
Stable Avg:	100.0		0.64

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Rate of drop in drill rods measured as 1.5 cm over 1 min after packer was seated down hole.

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-001

Project: Snowbird PFS **Test #:** 7

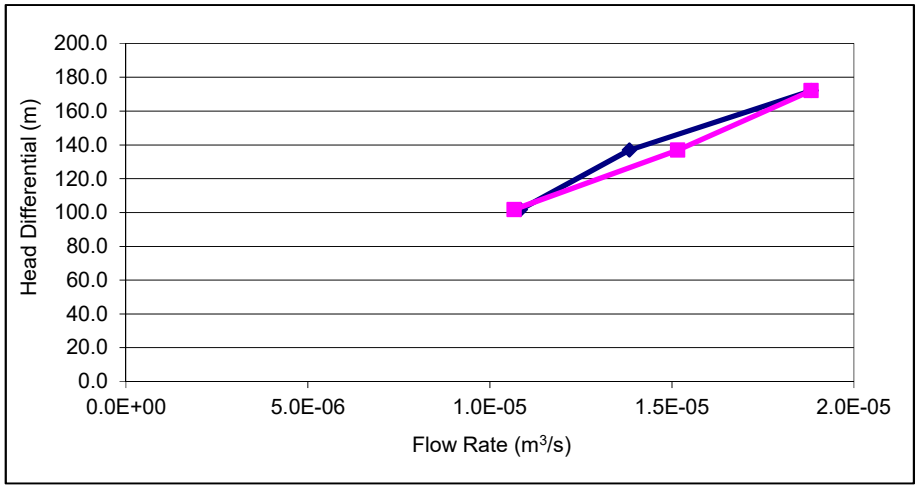
Project #: 1762-001 **From (m):** 416.40 **To (m):** 428.40

Calculation Input Parameters:

L: Length of Test Interval (m)	12.00	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	422.40	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	3.60	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	29.60	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
163.0	6.5E-06	114.6	146.0	3.4E-09	Leak Test
100.0	1.1E-05	70.3	101.7	8.1E-09	X
150.0	1.4E-05	105.5	136.9	7.7E-09	X
200.0	1.9E-05	140.6	172.0	8.4E-09	X
150.0	1.5E-05	105.5	136.9	8.5E-09	X
100.0	1.1E-05	70.3	101.7	8.0E-09	X
			Geo Mean	**8.1.E-09**	



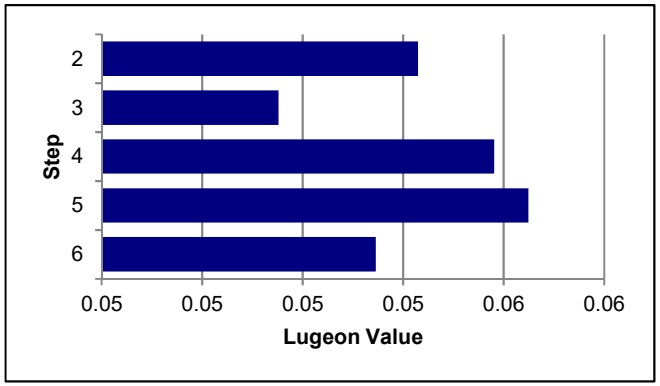
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	14.3	0.10	0.03	0.02	Leak Test
2	10.0	0.17	0.05	0.05	X
3	13.4	0.22	0.07	0.05	X
4	16.9	0.30	0.09	0.06	X
5	13.4	0.24	0.08	0.06	X
6	10.0	0.17	0.05	0.05	X
			Geo Mean	**0.05**	
			Max L	**0.06**	

Lugeon Estimate Check:

K (from packer test): 8.1E-07 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.08



BGC ENGINEERING INC

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 549

Trend: 327 **Plunge:** 70

Personnel: JD/JN/TR **Date:** Sept-02-2017

Start Flushing: N/A
End Flushing: N/A
Start Packer Testing: N/A
End Packer Testing: N/A

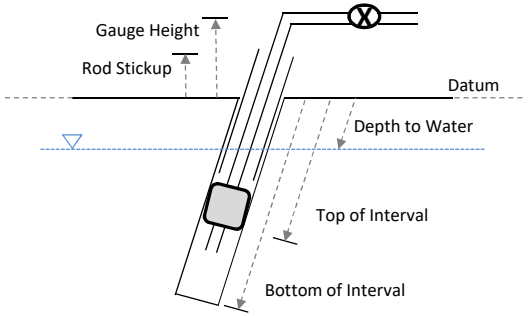
Hole ID: GAR-17-001

Design Test Interval: 396 - 518
Test #: 8
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 1.98 m
Depth to Water: m
Depth to Top of Interval: 450.65 m
Depth to Bottom of Interval: 464.40 m
Height of Gauge: 1.45 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: N/A psi
Cleaning (Vol./Time/Until Clean): 50 mins



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	100.0	661.20	--
1		661.25	
2		661.75	
3		661.15	
4	200.0	661.95	
5			
6		662.05	
7		661.90	
8		662.20	
9	300.0	662.55	
10		662.55	

Stable Avg:

Pressure Inte 110 1

Minutes	Pressure	Volume	Δ Volume
0	110.0	662.10	--
1		662.10	
2		662.10	
3			
4			
5			
6			
7			
8			
9			
10			

Pressure Interval _____ 2

Minutes	Pressure	Volume	Δ Volume
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Avg:

Pressure Interval _____ 3

Minutes	Pressure	Volume	Δ Volume
0			--
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Avg:

Pressure Interval _____ 4

Minutes	Pressure	Volume	Δ Volume
0			--
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Avg:

Pressure Interval _____ 5

Minutes	Pressure	Volume	Δ Volume
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Avg:

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	2	-
1	2.5	0.500
2	3.5	1.000
4	5	0.750
6	7	1.000
8	9	1.000
10	10.5	0.750
15	15	0.900
20	20	1.000
25	23	0.600
30	28	1.000
40	37	0.900
50	45	0.800
60	53	0.800

Additional Comments: Constant rate pressure test unsuccessful. Falling head test completed.

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Falling Head Test

Client:	NexGen
Project:	Snowbird PFS
Project Number:	1762-001
Borehole Number:	GAR-17-001 Test 8
Date of Test:	Sept-02-2017
Top of Test Interval (m):	450.7
Bottom of Test Interval (m):	464.4
Conducted by:	JD/JN/TR

Static Water Depth from TOC:	9.93	m
Piezometer Radius (r):	0.038	m
Drill Hole Radius (R):	0.038	m
Test Interval (L):	13.8	m
T_0 (from graph below):	1125	minutes

K = 4.58E-09 m/s

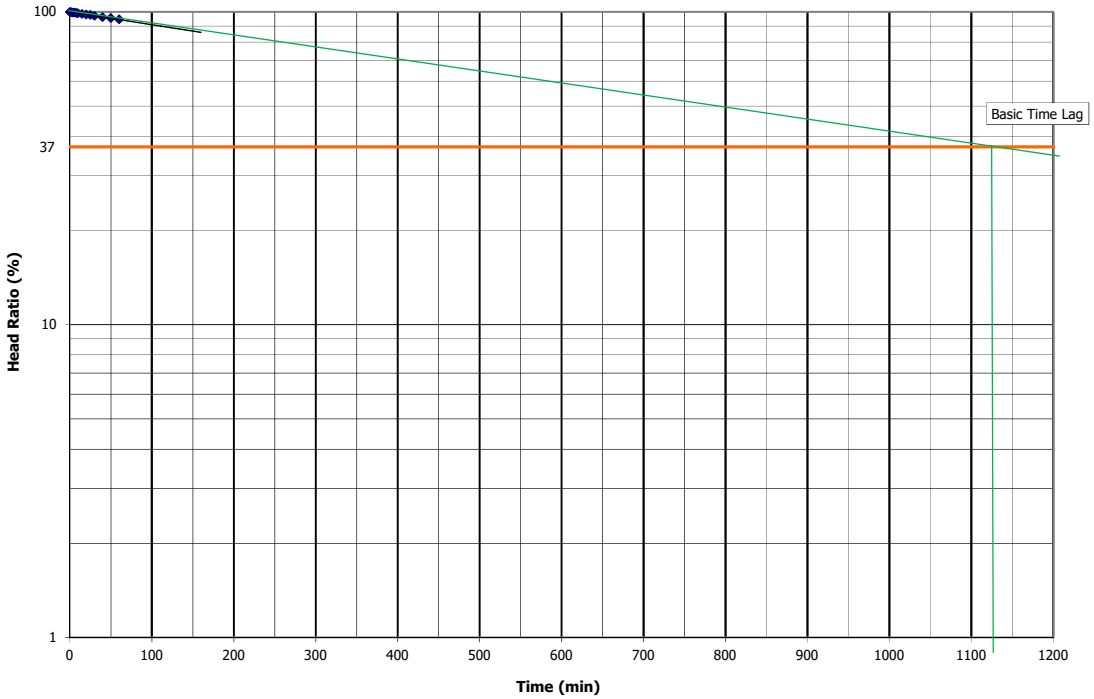
$$K = \frac{r^2 \ln(L/R)}{2L\,T_0} \qquad \text{Head Ratio} = \frac{\text{Static Water Level - Water Level}}{\text{Static Water Level}}$$

Time		Depth to Water			Head
(min:sec)	(min)	(cm)	(m)	Head (m)	Ratio (%)
	0.00	2	0.02	9.91	99.80
	1.00	3	0.03	9.91	99.75
	2.00	4	0.04	9.90	99.65
	4.0	5	0.05	9.88	99.50
	6.0	7	0.07	9.86	99.30
	8.0	9	0.09	9.84	99.09
	10.0	11	0.11	9.83	98.94
	15.0	15	0.15	9.78	98.49
	20.0	20	0.20	9.73	97.99
	25	23	0.23	9.70	97.68
	30	28	0.28	9.65	97.18
	40	37	0.37	9.56	96.27
	50	45	0.45	9.48	95.47
	60	53	0.53	9.40	94.66

Weather:

Notes:

The Datum is chosen as the static water elevation



Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001
Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 549
Trend: 327 **Plunge:** 70
Personnel: TR **Date:** 4-Sep-17
Start Flushing: 15:55
End Flushing: 16:40
Start Packer Testing: 5:00
End Packer Testing:

Hole ID: GAR-17-001
Design Test Interval: none
Test #: 9
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height: 2.16 m
Depth to Water: 8.71 m
Depth to Top of Interval: 582.65 m
Depth to Bottom of Interval: 597.10 m
Height of Gauge: 1.45 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 370 psi
Cleaning (Vol./Time/Until Clean): 45

Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	100.0	662.90	--
1	100.0	664.30	1.40
2	100.0	664.60	0.30
3	100.0	664.65	0.05
4	200.0	665.40	0.75
5	200.0	665.45	0.05
6	200.0	665.45	0.00
7	200.0	665.50	0.05
8	300.0	666.25	0.75
9	300.0	666.30	0.05
10	300.0	666.30	0.00
Stable Avg:	190.9		0.34

Pressure Inte 110 1

Minutes	Pressure	Volume	Δ Volume
0	125.0	665.20	--
1	125.0	666.40	1.20
2	125.0	666.90	0.50
3	125.0	667.50	0.60
4	125.0	668.30	0.80
5	125.0	669.10	0.80
6	125.0	670.40	1.30
7	125.0	672.00	1.60
8	125.0	673.70	1.70
9	125.0	675.50	1.80
10	125.0	676.70	1.20
	125.0		1.15

Pressure Interval 2

Minutes	Pressure	Volume	Δ Volume
0	190.0	679.50	-
1	190.0	680.30	0.80
2	190.0	681.05	0.75
3	190.0	681.90	0.85
4	190.0	682.70	0.80
5	190.0	683.50	0.80
6	190.0	684.40	0.90
7	190.0	685.70	1.30
8	190.0	687.90	2.20
9	190.0	690.20	2.30
10	190.0	692.50	2.30
Stable Avg:	190.0		1.30

Pressure Interval 3

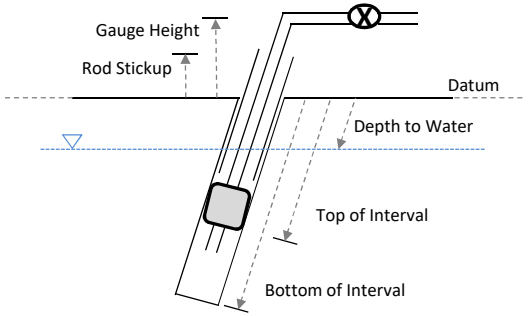
Minutes	Pressure	Volume	Δ Volume
0	250.0	695.80	--
1	250.0	699.10	3.30
2	250.0	702.10	3.00
3	250.0	705.00	2.90
4	250.0	707.90	2.90
5	250.0	710.70	2.80
6	250.0	713.30	2.60
7	250.0	716.00	2.70
8	250.0	718.80	2.80
9	250.0	721.30	2.50
10	250.0	723.60	2.30
Stable Avg:	250.0		2.78

Pressure Interval 4

Minutes	Pressure	Volume	Δ Volume
0	190.0	727.20	--
1		730.40	3.20
2			
3			
4			
5			
6			
7			
8			
9			
10			
Stable Avg:	190.0		3.2000

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Stable Avg:			N/A



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments:

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-001

Project: Snowbird PFS **Test #:** 9

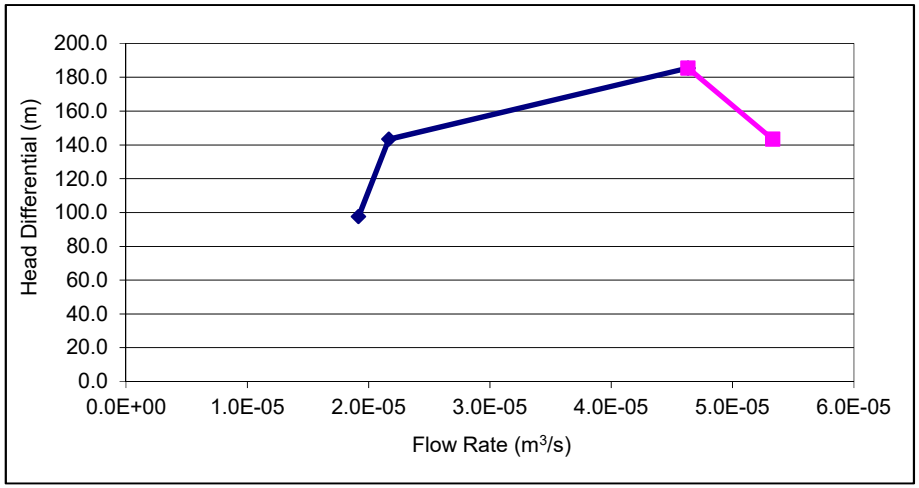
Project #: 1762-001 **From (m):** 582.65 **To (m):** 597.10

Calculation Input Parameters:

L: Length of Test Interval (m)	14.45	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	589.88	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	1.45	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	8.71	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
190.9	5.7E-06	134.2	143.9	2.6E-09	Leak Test
125.0	1.9E-05	87.9	97.5	1.3E-08	X
190.0	2.2E-05	133.6	143.2	9.9E-09	X
250.0	4.6E-05	175.8	185.4	1.6E-08	X
190.0	5.3E-05	133.6	143.2	2.4E-08	Incomplete
0.0					
			Geo Mean	**1.3.E-08**	



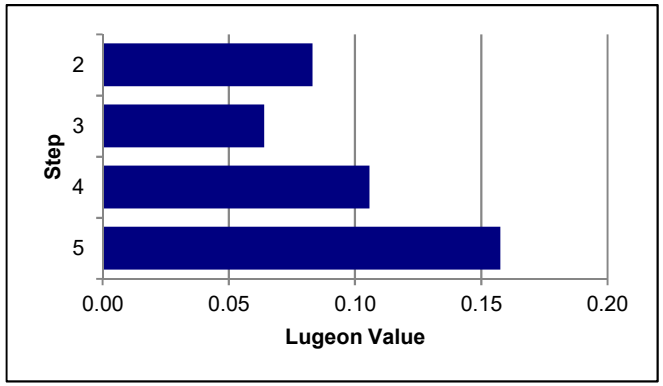
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	14.1	0.09	0.02	0.02	Leak Test
2	9.6	0.30	0.08	0.08	X
3	14.0	0.34	0.09	0.06	X
4	18.2	0.73	0.19	0.11	X
5	14.0	0.85	0.22	0.16	incomplete
6				#DIV/0!	
			Geo Mean	**0.08**	
			Max L	**0.11**	

Lugeon Estimate Check:

K (from packer test): 1.3E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.13



Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

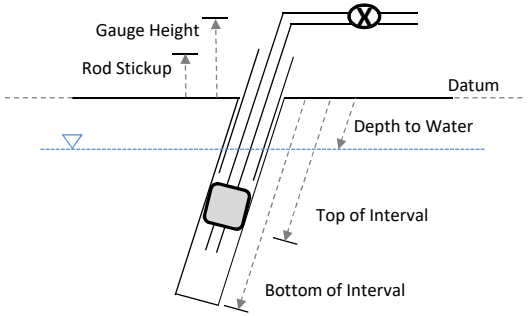
Client: NexGen
Project: Snowbird
Project #: 1762001
Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 549
Trend: 327 **Plunge:** 70
Personnel: AB/MB/DG **Date:** 4-Sep-17
Start Flushing: N/A
End Flushing: N/A
Start Packer Testing: N/A
End Packer Testing: N/A

Hole ID: GAR-17-001
Design Test Interval: none
Test #: 10
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height: 2.17 m
Depth to Water: 7.74 m
Depth to Top of Interval: 582.65 m
Depth to Bottom of Interval: 597.10 m
Height of Gauge: m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 370 psi
Cleaning (Vol./Time/Until Clean): 45



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	atm	0.00	--
1	100.0	4442.20	4442.20
2	100.0	4442.20	0.00
3	100.0	4442.20	0.00
4	200.0	4442.90	0.70
5	200.0	4442.90	0.00
6	200.0	4443.00	0.10
7	300.0	4443.60	0.60
8	300.0	4443.70	0.10
9	300.0	4443.70	0.00
10			-4443.70
Stable Avg:	200.0		0.00

Pressure Inte 110 1

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
	#DIV/0!		N/A

Pressure Interval _____ 2

Minutes	Pressure	Volume	Δ Volume
0			-
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval _____ 3

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval _____ 4

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			
3			
4			
5			
6			
7			
8			
9			
10			
Stable Avg:	#DIV/0!		N/A

Pressure Interval _____ 5

Minutes	Pressure	Volume	Δ Volume
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Stable Avg:			N/A

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0	0.000
2	0.5	0.500
4	1	0.250
6	2	0.500
8	2.5	0.250
10	3	0.250
15	4.5	0.300
20	6	0.300
25	8	0.400
30	9	0.200
40	10	0.100
50	12	0.200
60	14.5	0.250

Additional Comments:

Constant test unsuccessful - Falling head test conpleted

Packer Test - Data Form

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Falling Head Test

Client:	NexGen
Project:	Snowbird PFS
Project Number:	1762-001
Borehole Number:	GAR-17-001 Test 10
Date of Test:	4-Sep-17
Top of Test Interval (m):	582.7
Bottom of Test Interval (m):	597.1
Conducted by:	AB/MB/DG

Static Water Depth from TOC:	7.74	m
Piezometer Radius (r):	0.038	m
Drill Hole Radius (R):	0.038	m
Test Interval (L):	14.5	m
T_0 (from graph below):	3300	minutes

K = 1.50E-09 m/s

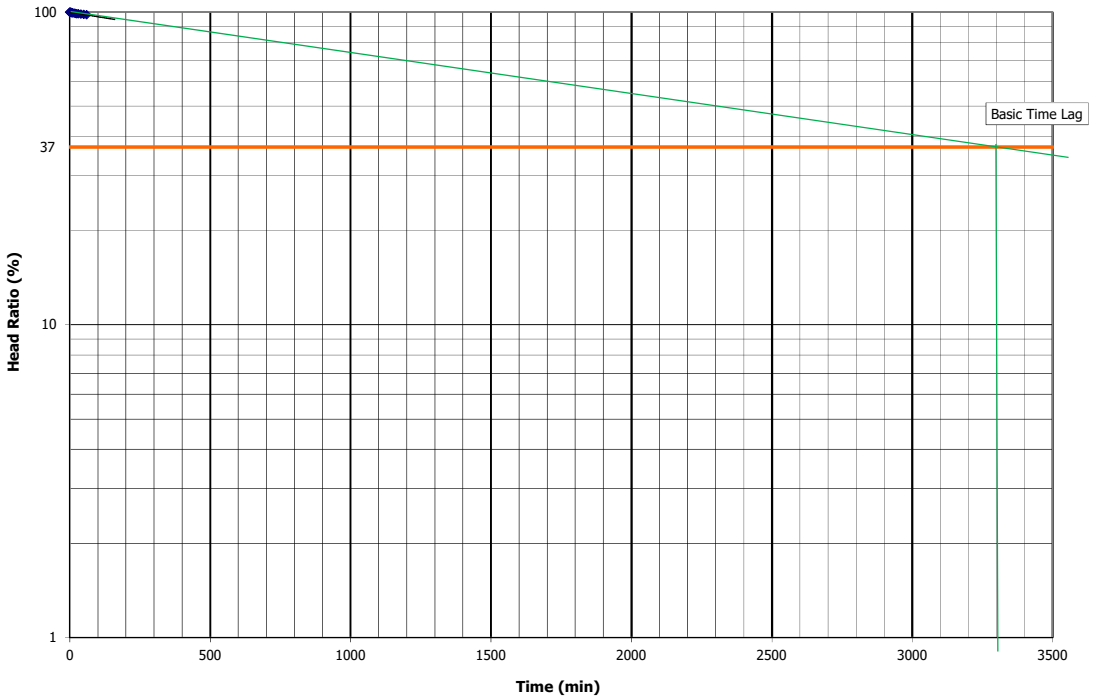
$$K = \frac{r^2 \ln(L/R)}{2L\,T_0} \qquad \text{Head Ratio} = \frac{\text{Static Water Level - Water Level}}{\text{Static Water Level}}$$

Time		Depth to Water			Head
(min:sec)	(min)	(cm)	(m)	Head (m)	Ratio (%)
	0.00	0.0	0.00	7.74	100.00
	1.00	0.0	0.00	7.74	100.00
	2.00	0.5	0.01	7.74	99.94
	4.0	1.0	0.01	7.73	99.87
	6.0	2.0	0.02	7.72	99.74
	8.0	2.5	0.03	7.72	99.68
	10.0	3.0	0.03	7.71	99.61
	15.0	4.5	0.05	7.70	99.42
	20.0	6.0	0.06	7.68	99.22
	25	8.0	0.08	7.66	98.97
	30	9.0	0.09	7.65	98.84
	40	10.0	0.10	7.64	98.71
	50	12.0	0.12	7.62	98.45
	60	14.5	0.15	7.60	98.13

Weather:

Notes:

The Datum is chosen as the static water elevation



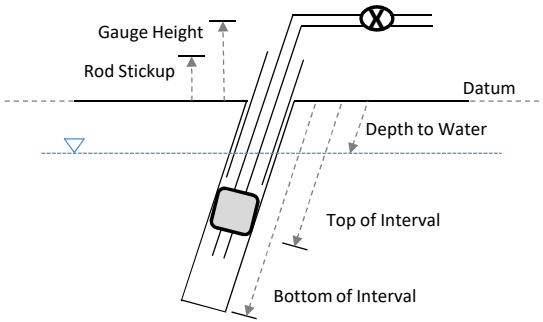
BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001
Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 563
Trend: 330 **Plunge:** 70
Personnel: TR/AB **Date:** 9-Sep-17
Start Flushing: 12:25 pm
End Flushing: 12:45
Start Packer Testing: N/A
End Packer Testing: N/A

Hole ID: GAR-17-002
Design Test Interval: N/A
Test #: 1
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.93m	m
Depth to Water:	0.00	m
Depth to Top of Interval:	109.35	m
Depth to Bottom of Interval:	115.40	m
Height of Gauge:	N/A	m
Drill Rod ID:	60	mm
Borehole Outside Diameter:	76.0	mm
Packer Inflation Pressure:	N/A	psi
Cleaning (Vol./Time/Until Clean):	20 min	



Pressure Inte 30 1

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000

Stable Avg: #DIV/0! N/A

Pressure Inte 45 2

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000

#DIV/0! N/A

Pressure Inte 60 3

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000

Stable Avg: #DIV/0! N/A

Pressure Inte 45 4

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000

Stable Avg: #DIV/0! N/A

Pressure Inte 30 5

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000

Stable Avg: #DIV/0! N/A

Pressure Interval _____

Minutes	Pressure	Volume	Δ Volume
0			-
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000

Stable Avg: N/A

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Flushed for 20 mins, still some remnant bentonite in return. Did not want to flush more to preserve bentonite caking in walls. Packer stuck in hole from 1:15 pm to 1:25 pm.
Blew up packer.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001
Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 563
Trend: 330 **Plunge:** 70
Personnel: D.Glembiski **Date:** 10-Sep-17

Start Flushing: 3:09 am
End Flushing: 3:49
Start Packer Testing: 5:32 am
End Packer Testing: 6:50 am

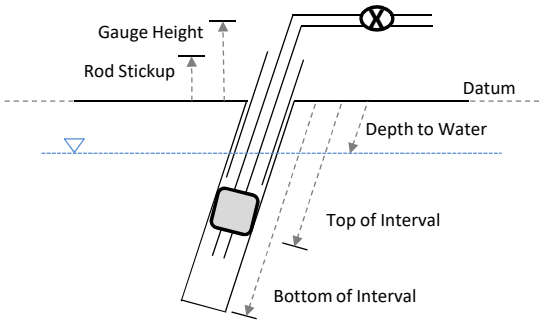
Hole ID: GAR-17-002

Design Test Interval: 123-148 m
Test #: 2
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height:	2.90	m	
Depth to Water:		10.39	m
Depth to Top of Interval:	134.25	m	
Depth to Bottom of Interval:		144.80	m
Height of Gauge:	3.29	m	

Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	350	psi	
Cleaning (Vol./Time/Until Clean):		30	



Rod Leakage Test

Minutes	Pressure	Volume	Δ Volume
0	0.0	4505.7	--
1	100.0	4506.0	0.3
2	100.0	4506.1	0.1
3	100.0	4506.1	0.0
4	200.0	4507.4	1.3
5	200.0	4507.7	0.3
6	200.0	4507.7	0.0
7	300.0	4507.9	0.2
8			
9			
10			
Stable Avg:	150.0		0.3

Pressure Inte 115 1

Minutes	Pressure	Volume	Δ Volume
0	115.0	4509.0	--
1	115.0	4509.5	0.5
2	115.0	4510.0	0.5
3	115.0	4510.4	0.4
4	115.0	4510.9	0.5
5	115.0	4511.3	0.4
6	115.0	4511.7	0.4
7	115.0	4512.1	0.4
8	115.0	4512.4	0.3
9	115.0	4512.7	0.3
10	115.0	4513.0	0.3
	115.0		0.4

Pressure Inte 150 2

Minutes	Pressure	Volume	Δ Volume
0	150.0	4518.5	--
1	150.0	4519.7	1.2
2	150.0	4520.3	0.6
3	150.0	4521.0	0.7
4	150.0	4521.7	0.7
5	150.0	4522.5	0.8
6	150.0	4523.1	0.6
7	150.0	4524.1	1.0
8	150.0	4524.9	0.8
9	150.0	4525.8	0.9
10	150.0	4526.7	0.9
Stable Avg:	150.0		0.8

Pressure Inte 200 3

Minutes	Pressure	Volume	Δ Volume
0	200.0	4529.8	--
1	200.0	4531.6	1.8
2	200.0	4532.3	0.7
3	200.0	4533.9	1.6
4	200.0	4535.5	1.6
5	200.0	4537.0	1.5
6	200.0	4538.1	1.1
7	200.0	4539.7	1.6
8	200.0	4541.1	1.4
9	200.0	4542.7	1.6
10	200.0	4544.1	1.4
Stable Avg:	200.0		1.4

Pressure Inte 150 4

Minutes	Pressure	Volume	Δ Volume
0	150.0	4545.0	--
1	150.0	4546.1	1.1
2	150.0	4547.3	1.2
3	150.0	4548.4	1.1
4	150.0	4549.5	1.1
5	150.0	4550.4	0.9
6	150.0	4551.2	0.8
7	150.0	4552.1	0.9
8	150.0	4552.9	0.8
9	150.0	4553.9	1.0
10	150.0	4554.8	0.9
Stable Avg:	150.0		1.0

Pressure Inte 115 5

Minutes	Pressure	Volume	Δ Volume
0	115.0	4555.1	-
1	115.0	4555.7	0.6
2	115.0	4556.3	0.6
3	115.0	4557.0	0.7
4	115.0	4557.7	0.7
5	115.0	4558.4	0.7
6	115.0	4559.0	0.6
7	115.0	4559.6	0.6
8	115.0	4560.2	0.6
9	115.0	4560.8	0.6
10	115.0	4561.4	0.6
Stable Avg:	115.0		0.6

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Pressure spiked to 350 psi during rod leak test at 7 min 31 seconds, causing pin to shear.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-002

Project: Snowbird PFS **Test #:** 2

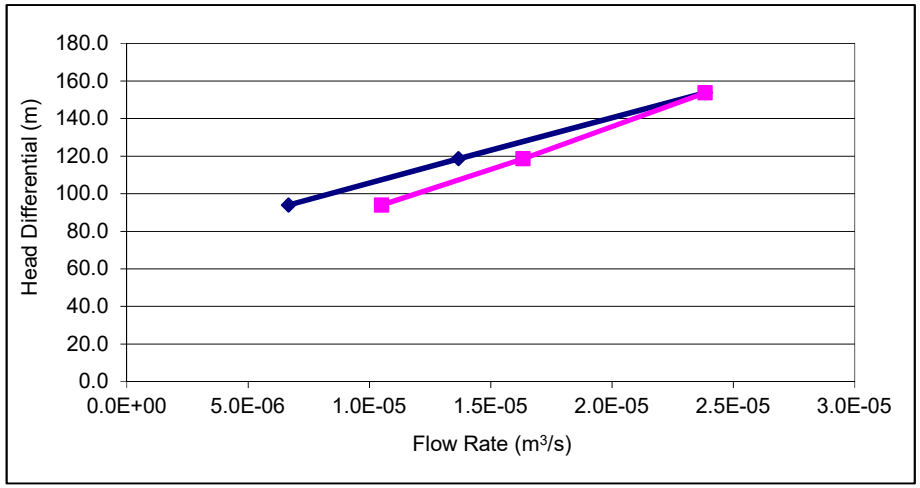
Project #: 1762-001 **From (m):** 134.25 **To (m):** 144.80

Calculation Input Parameters:

L: Length of Test Interval (m)	10.55	Borehole Diameter (m):	0.760	Comments:
Test Interval Midpoint (m Depth):	139.53	r: Borehole Radius (m):	0.38	
Gauge Height (m Above Ground):	3.29	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	10.39	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
150.0	5.2E-06	105.5	118.5	2.2E-09	Leak Test
115.0	6.7E-06	80.9	93.9	3.6E-09	X
150.0	1.4E-05	105.5	118.5	5.8E-09	X
200.0	2.4E-05	140.6	153.7	7.8E-09	X
150.0	1.6E-05	105.5	118.5	6.9E-09	X
115.0	1.0E-05	80.9	93.9	5.6E-09	X
			Geo Mean	**5.7.E-09**	



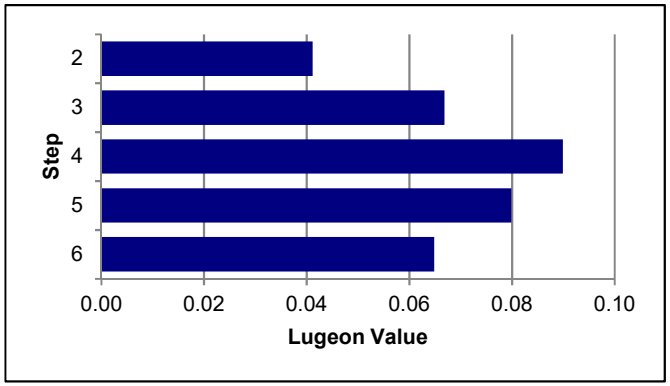
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	11.6	0.08	0.03	0.03	Leak Test
2	9.2	0.11	0.04	0.04	X
3	11.6	0.22	0.08	0.07	X
4	15.1	0.38	0.14	0.09	X
5	11.6	0.26	0.09	0.08	X
6	9.2	0.17	0.06	0.06	X
			Geo Mean	**0.07**	
			Max L	**0.09**	

Lugeon Estimate Check:

K (from packer test): 5.7E-07 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.06



BGC ENGINEERING INC.
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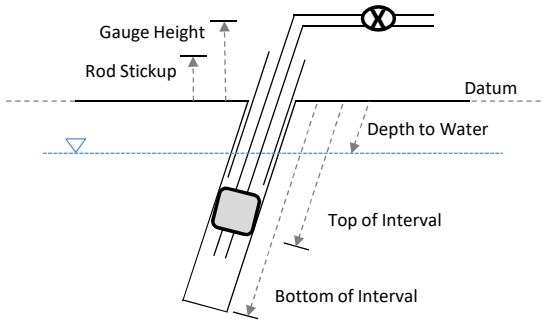
Client:	NexGen	**Collar El.:**	563	**Hole ID:**	GAR-17-002
Project:	Snowbird	**Trend:**	330	**Plunge:**	70
Project #:	1762001	**Personnel:**	TR	**Date:**	10-Sep-17
Measurement Units		**Start Flushing:**	3:45 pm		
Volume:	l	**End Flushing:**	4:00 pm		
Pressure:	psi	**Start Packer Testing:**	4:05 pm		
	m	**End Packer Testing:**	5:00 pm		

Design Test Interval:	165-236		
Test #:	3		
Packer Setup:	☑ Single	☐ Double	

Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.90	m	
Depth to Water:		N/A	m
Depth to Top of Interval:	171.75	m	
Depth to Bottom of Interval:		176.50	m
Height of Gauge:	N/A	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	320	psi	
Cleaning (Vol./Time/Until Clean):		15	
Depth to water estimate from shear pin		142.5	m



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	100.0	600.8	--
1	100.0	601.1	0.0
2	100.0	601.2	0.0
3	100.0	601.2	0.1
4	200.0	601.5	0.3
5	200.0	601.5	0.0
6	200.0	601.5	0.0
7	200.0	601.5	0.0
8	300.0	601.8	0.3
9	300.0	601.8	0.0
10	300.0	601.8	0.0
Stable Avg:	190.9		0.1

Pressure Inte 75 1

Minutes	Pressure	Volume	Δ Volume
0	75.0	607.9000	--
1	75.0	612.9000	5.0000
2			
3			
4			
5			
6			
7			
8			
9			
10			
	75.0		5.0000

Pressure Interval 2

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval 3

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval 4

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0			-
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Surface test okay, packer test failed.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client:	NexGen	**Collar El.:**	563	**Hole ID:**	**GAR-17-002**
Project:	Snowbird	**Trend:**	330	**Plunge:**	70
Project #:	1762001	**Personnel:**	TR	**Date:**	10-Sep-17
Measurement Units		**Start Flushing:**	N/A		
Volume:	l	**End Flushing:**		N/A	
Pressure:	psi	**Start Packer Testing:**	5:10	pm	
	m	**End Packer Testing:**		6:20 pm	

Design Test Interval:	165-236		
Test #:	4		
Packer Setup:	☑ Single	☐ Double	
Measurements Taken from Collar (Ground):			
Rod Stickup Height:	1.90 m		
Depth to Water:		52.50 m	
Depth to Top of Interval:	171.75 m		
Depth to Bottom of Interval:		176.50 m	
Height of Gauge:	2.27 m		
Drill Rod ID:	60 mm		
Borehole Outside Diameter:		76.0 mm	
Packer Inflation Pressure:	310 psi		
Cleaning (Vol./Time/Until Clean):		20	

Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	100.0	927.55	-
1	100.0	927.55	0.0000
2	100.0	927.50	-0.0500
3	100.0	927.50	0.0000
4	200.0	927.75	0.2500
5	200.0	927.75	0.0000
6	200.0	927.85	0.1000
7	200.0	927.75	-0.1000
8	310.0		
9			
10			
Stable Avg:			0.0286

Pressure Inte 10 1

Minutes	Pressure	Volume	Δ Volume
0	10.0	123.0	-
1	10.0	176.0	53.0
2	10.0	223.0	47.0
3	10.0	273.0	50.0
4	10.0	321.0	48.0
5	10.0	373.0	52.0
6	10.0	423.0	50.0
7	10.0	473.0	50.0
8	10.0	523.0	50.0
9	10.0	574.0	51.0
10	10.0	625.0	51.0
	10.0		50.2

Pressure Inte 15 2

Minutes	Pressure	Volume	Δ Volume
0	15.0	681.0	-
1	15.0	740.0	59.0
2	18.0	795.0	55.0
3	15.0	850.0	55.0
4	15.0	904.0	54.0
5	15.0	958.0	54.0
6	15.0	1012.0	54.0
7	15.0	1066.0	54.0
8	15.0	1121.0	55.0
9	15.0	1175.0	54.0
10	15.0	1230.0	55.0
Stable Avg:	15.3		54.9

Pressure Int 20 3

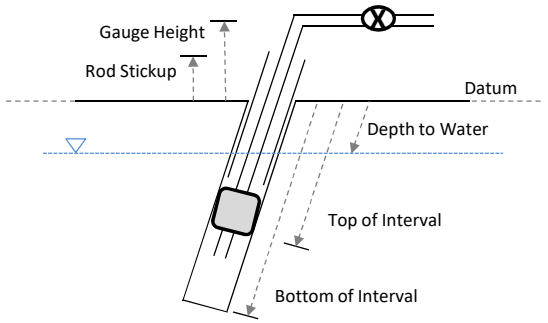
Minutes	Pressure	Volume	Δ Volume
0	20.0	266.0	-
1	20.0	329.0	63.0
2	20.0	396.0	67.0
3	20.0	448.0	52.0
4	20.0	502.0	54.0
5	20.0	555.0	53.0
6	20.0	607.0	52.0
7	20.0	661.0	54.0
8	20.0	714.0	53.0
9	20.0	767.0	53.0
10	20.0	820.0	53.0
Stable Avg:	20.0		55.4

Pressure Int 15 4

Minutes	Pressure	Volume	Δ Volume
0	15.0	848.0	-
1	15.0	897.0	49.0
2	15.0	944.0	47.0
3	15.0	991.0	47.0
4	15.0	1040.0	49.0
5	15.0	1088.0	48.0
6	15.0	1135.0	47.0
7	15.0	1181.0	46.0
8	15.0	1228.0	47.0
9	15.0	1274.0	46.0
10	15.0	1321.0	47.0
Stable Avg:	15.0		47.3

Pressure Int 10 5

Minutes	Pressure	Volume	Δ Volume
0	10.0	346.0	-
1	10.0	389.0	43.0
2	10.0	431.0	42.0
3	10.0	474.0	43.0
4	10.0	516.0	42.0
5	10.0	558.0	42.0
6	10.0	600.0	42.0
7	10.0	642.0	42.0
8	10.0	684.0	42.0
9	10.0	725.0	41.0
10	10.0	768.0	43.0
Stable Avg:	10.0		42.2



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Addition test, driller observed drop in return at ~173 m. Second attempt at this test. First test was probably valid.

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Client: NexGen **Hole ID:** GAR-17-001

Project: Snowbird PFS **Test #:** 4

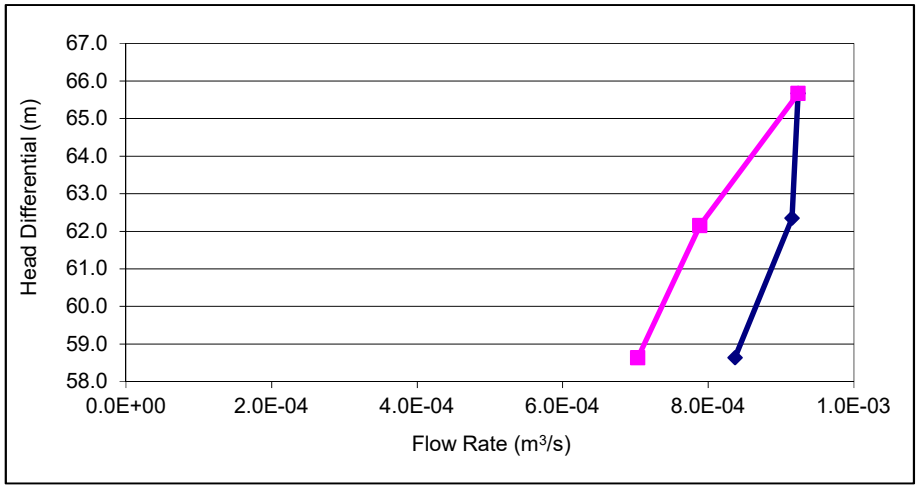
Project #: 1762-001 **From (m):** 171.75 **To (m):** 176.50

Calculation Input Parameters:

L: Length of Test Interval (m)	4.75	Borehole Diameter (m):	0.760	Comments:
Test Interval Midpoint (m Depth):	174.13	r: Borehole Radius (m):	0.38	
Gauge Height (m Above Ground):	2.27	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	52.50	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	4.8E-07	0.0	51.6	7.8E-10	Leak Test
10.0	8.4E-04	7.0	58.6	1.2E-06	X
15.3	9.2E-04	10.7	62.3	1.2E-06	X
20.0	9.2E-04	14.1	65.7	1.2E-06	X
15.0	7.9E-04	10.5	62.2	1.1E-06	X
10.0	7.0E-04	7.0	58.6	1.0E-06	X
			Geo Mean	**1.1.E-06**	



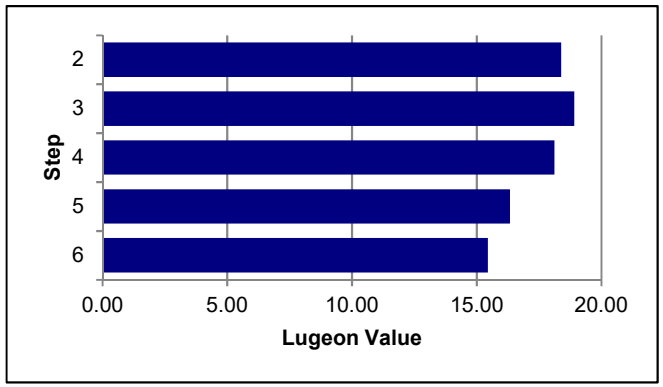
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	5.1	0.01	0.01	0.01	Leak Test
2	5.8	13.26	10.57	18.38	X
3	6.1	14.50	11.56	18.90	X
4	6.4	14.64	11.66	18.11	X
5	6.1	12.50	9.96	16.34	X
6	5.8	11.15	8.88	15.45	X
			Geo Mean	**17.39**	
			Max L	**18.90**	

Lugeon Estimate Check:

K (from packer test): 1.1E-04 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 11.42



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Client:	NexGen	**Collar El.:**	563	**Hole ID:**	GAR-17-002
Project:	Snowbird	**Trend:**	330	**Plunge:**	70
Project #:	1762001	**Personnel:**	DG	**Date:**	12-Sep-17
Measurement Units		**Start Flushing:**	1:57 am		
Volume:	l	**End Flushing:**	2:30 am		
Pressure:	psi	**Start Packer Testing:**	2:56 am		
	m	**End Packer Testing:**	3:10 am		

Design Test Interval:	none		
Test #:	5		
Packer Setup:	☑ Single	☐ Double	
Measurements Taken from Collar (Ground):			
Rod Stickup Height:	1.90 m		
Depth to Water:		44.05 m	
Depth to Top of Interval:	282.75 m		
Depth to Bottom of Interval:		295.00 m	
Height of Gauge:	2.34 m		
Drill Rod ID:	60 mm		
Borehole Outside Diameter:		76.0 mm	
Packer Inflation Pressure:	350 psi		
Cleaning (Vol./Time/Until Clean):		37	

Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	ATM	7814.4	--
1	100.0	7818.2	3.8
2	100.0	7818.2	0.0
3	100.0	7818.2	0.0
4	100.0	7818.2	0.0
5	200.0	7818.5	0.3
6	200.0	7818.5	0.0
7	200.0	7818.5	0.0
8	300.0	7818.9	0.4
9	300.0	7818.9	0.0
10	300.0	7818.9	0.0
Stable Avg:			0.5

Pressure Interval 1

Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
	#DIV/0!		N/A

Pressure Interval 2

Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval 3

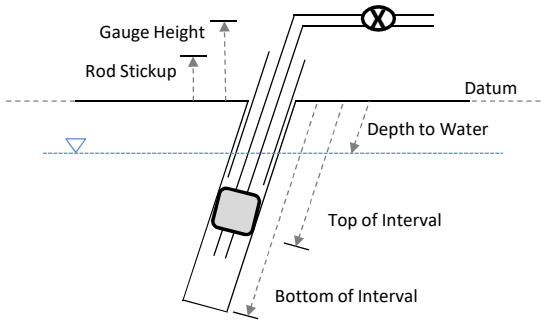
Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval 4

Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0			-
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Pin sheared at 350 psi, Psi immediately dropped to zero. Bladder stayed inflated. Pulled packer to do a surface test.

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Client:	NexGen
Project:	Snowbird
Project #:	1762001
Measurement Units	
Volume:	l
Pressure:	psi
	m

Collar El.: 563

Trend: 330 **Plunge:** 70

Personnel: DG **Date:** 12-Sep-17

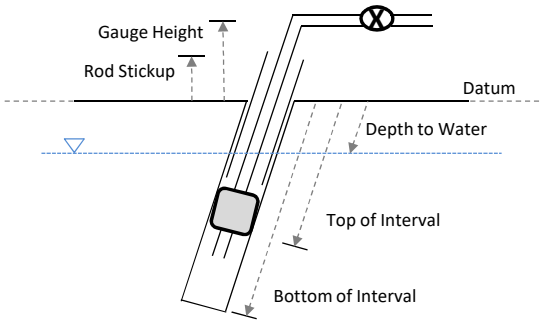
Start Flushing: 1:57 AM
End Flushing: 2:30 AM
Start Packer Testing: 4:35 AM
End Packer Testing: 5:30 AM

Hole ID: GAR-17-002

Design Test Interval: 295-304
Test #: 6
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.90	m	
Depth to Water:			44.05 m
Depth to Top of Interval:	282.75	m	
Depth to Bottom of Interval:			295.00 m
Height of Gauge:	2.34	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:			76.0 mm
Packer Inflation Pressure:	350	psi	
Cleaning (Vol./Time/Until Clean):			N/A mins



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	ATM	7994.4	--
1	100.0	7994.4	0.0
2	100.0	7994.4	0.0
3	100.0	7994.4	0.0
4	100.0	7994.4	0.0
5	200.0	7994.8	0.4
6	200.0	7994.9	0.1
7	200.0	7994.9	0.0
8	300.0	7995.1	0.2
9	300.0	7995.1	0.0
10	300.0	7995.1	0.0
Stable Avg:			0.1

Pressure Inte 2 1

Minutes	Pressure	Volume	Δ Volume
0	2.0	8020.0	--
1	2.0	8073.0	53.0
2	2.0	8128.0	55.0
3	2.0	8181.0	53.0
4	2.0	8234.0	53.0
5	5.0	8282.0	48.0
6	5.0	8340.0	58.0
7	5.0	8390.0	50.0
8	5.0	8437.0	47.0
9	5.0	8483.0	46.0
10	5.0	8528.0	45.0
	3.6		50.8

Pressure Inte 10 2

Minutes	Pressure	Volume	Δ Volume
0	10.0	8572.0	-
1	10.0	8620.0	48.0
2	10.0	8667.0	47.0
3	10.0	8713.0	46.0
4	10.0	8758.0	45.0
5	10.0	8804.0	46.0
6	10.0	8848.0	44.0
7	10.0	8892.0	44.0
8	10.0	8935.0	43.0
9	10.0	8977.0	42.0
10	10.0	9017.0	40.0
Stable Avg:	10.0		44.5

Pressure Inte 15 3

Minutes	Pressure	Volume	Δ Volume
0	15.0	9059.0	--
1	15.0	9106.0	47.0
2	15.0	9151.0	45.0
3	15.0	9194.0	43.0
4	15.0	9239.0	45.0
5	15.0	9283.0	44.0
6	15.0	9328.0	45.0
7	15.0	9371.0	43.0
8	15.0	9416.0	45.0
9	15.0	9460.0	44.0
10	15.0	9505.0	45.0
Stable Avg:	15.0		44.6

Pressure Inte 10 4

Minutes	Pressure	Volume	Δ Volume
0	10.0	9543.0	--
1	10.0	9580.0	37.0
2	10.0	9617.0	37.0
3	10.0	9655.0	38.0
4	10.0	9694.0	39.0
5	10.0	9732.0	38.0
6	10.0	9770.0	38.0
7	10.0	9808.0	38.0
8	10.0	9847.0	39.0
9	10.0	9886.0	39.0
10	10.0	9924.0	38.0
Stable Avg:	10.0		38.1

Pressure Inte 5 5

Minutes	Pressure	Volume	Δ Volume
0	5.0	9964.0	-
1	5.0	9996.0	32.0
2	5.0	10029.0	33.0
3	5.0	10062.0	33.0
4	5.0	10095.0	33.0
5	5.0	10128.0	33.0
6	5.0	10161.0	33.0
7	5.0	10194.0	33.0
8	5.0	10227.0	33.0
9	5.0	10260.0	33.0
10	5.0	10294.0	34.0
Stable Avg:	5.0		33.0

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Could not achieve more than 15 psi after pin sheared.

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Client: NexGen **Hole ID:** GAR-17-002

Project: Snowbird PFS **Test #:** 6

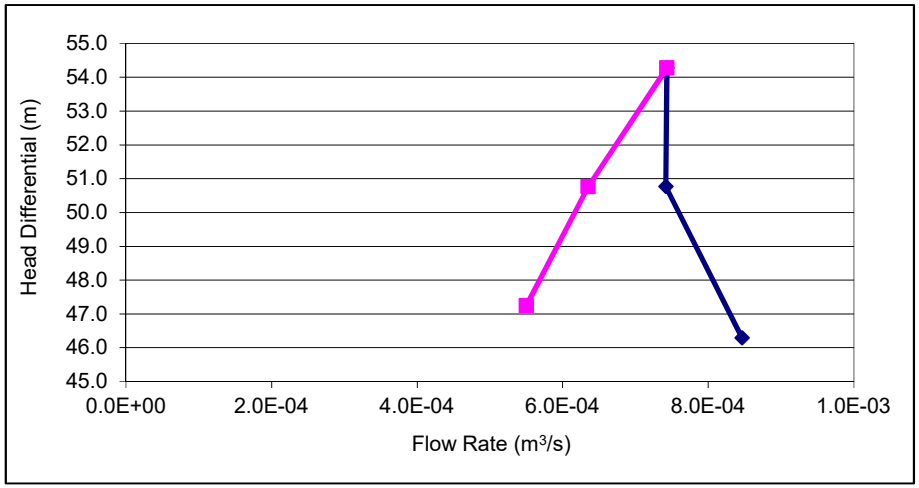
Project #: 1762-001 **From (m):** 282.75 **To (m):** 295.00

Calculation Input Parameters:

L: Length of Test Interval (m)	12.25	Borehole Diameter (m):	0.760	Comments:
Test Interval Midpoint (m Depth):	288.88	r: Borehole Radius (m):	0.38	
Gauge Height (m Above Ground):	2.34	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	44.05	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	1.2E-06	0.0	43.7	1.2E-09	Leak Test
3.6	8.5E-04	2.6	46.3	8.3E-07	
10.0	7.4E-04	7.0	50.8	6.6E-07	
15.0	7.4E-04	10.5	54.3	6.2E-07	
10.0	6.4E-04	7.0	50.8	5.6E-07	
5.0	5.5E-04	3.5	47.2	5.3E-07	X
			Geo Mean	**5.3.E-07**	



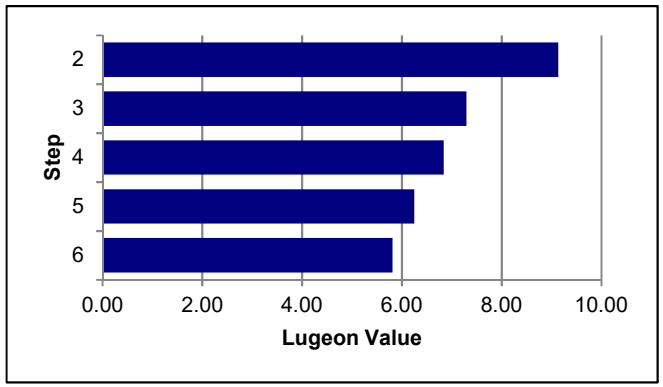
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	4.3	0.02	0.01	0.01	Leak Test
2	4.5	13.42	4.15	9.14	X
3	5.0	11.76	3.63	7.30	X
4	5.3	11.78	3.64	6.84	X
5	5.0	10.07	3.11	6.25	X
6	4.6	8.72	2.69	5.81	X
			Geo Mean	**5.81**	
			Max L	**9.14**	

Lugeon Estimate Check:

K (from packer test): 5.3E-05 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 5.25



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Client:	NexGen	**Collar El.:**	563	**Hole ID:**	GAR-17-002
Project:	Snowbird	**Trend:**	330	**Plunge:**	70
Project #:	1762001	**Personnel:**	TR	**Date:**	12-Sep-17
Measurement Units		**Start Flushing:**	5:15 pm		
Volume:	l	**End Flushing:**	5:35 pm		
Pressure:	psi	**Start Packer Testing:**	5:55 pm		
	m	**End Packer Testing:**	7:20 pm		

Design Test Interval:	none		
Test #:	7		
Packer Setup:	☑ Single	☐ Double	
Measurements Taken from Collar (Ground):			
Rod Stickup Height:	1.90 m		
Depth to Water:		54.05 m	
Depth to Top of Interval:	327.75 m		
Depth to Bottom of Interval:		341.50 m	
Height of Gauge:	2.38 m		
Drill Rod ID:	60 mm		
Borehole Outside Diameter:		76.0 mm	
Packer Inflation Pressure:	370 psi		
Cleaning (Vol./Time/Until Clean):		20 mins	

Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	atm	224.60	--
1	100.0	324.60	
2	100.0	324.65	0.05
3	100.0	324.65	0.00
4	200.0	325.10	0.45
5	200.0	325.15	0.05
6	200.0	325.15	0.00
7	200.0	325.15	0.00
8	300.0	325.60	0.45
9	300.0	325.60	0.00
10	300.0	325.60	0.00
Stable Avg:			0.11

Pressure Inte 75 1

Minutes	Pressure	Volume	Δ Volume
0	75.0	325.50	--
1	75.0	325.85	0.35
2	75.0	326.10	0.25
3	75.0	326.40	0.30
4	75.0	326.65	0.25
5	75.0	326.90	0.25
6	75.0	327.15	0.25
7			
8			
9			
10			
	75.0		0.2750

Pressure Inte 150 2

Minutes	Pressure	Volume	Δ Volume
0			-
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:			N/A

Pressure Inte 200 3

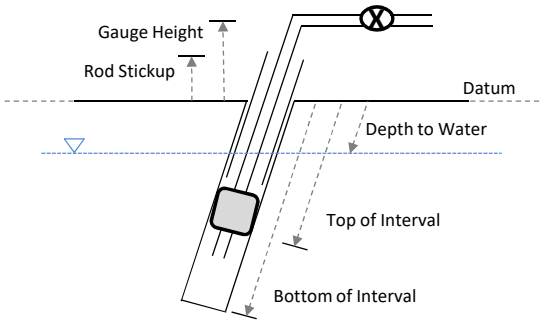
Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:			N/A

Pressure Inte 150 4

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:			N/A

Pressure Inte 100 5

Minutes	Pressure	Volume	Δ Volume
0			-
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:			N/A



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0.12	-
1	0.18	0.060
2	0.22	0.040
4	0.32	0.050
6	0.38	0.030
8	0.48	0.050
10	0.56	0.040
15	0.77	0.042
20	0.98	0.042
25	1.18	0.040
30	1.38	0.040
40	1.76	0.038
50	2.13	0.037
60	2.49	0.036

Additional Comments: Did not intersect FZ- 04. Tested this interval to allow enough room to Devico before 470 m. Stopped using mud in last 2 runs. Pin sheared at 370 psi.

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Falling Head Test

Client:	NexGen
Project:	Snowbird PFS
Project Number:	1762-001
Borehole Number:	GAR-17-002 Test 7
Date of Test:	12-Sep-17
Top of Test Interval (m):	327.8
Bottom of Test Interval (m):	341.5
Conducted by:	TR

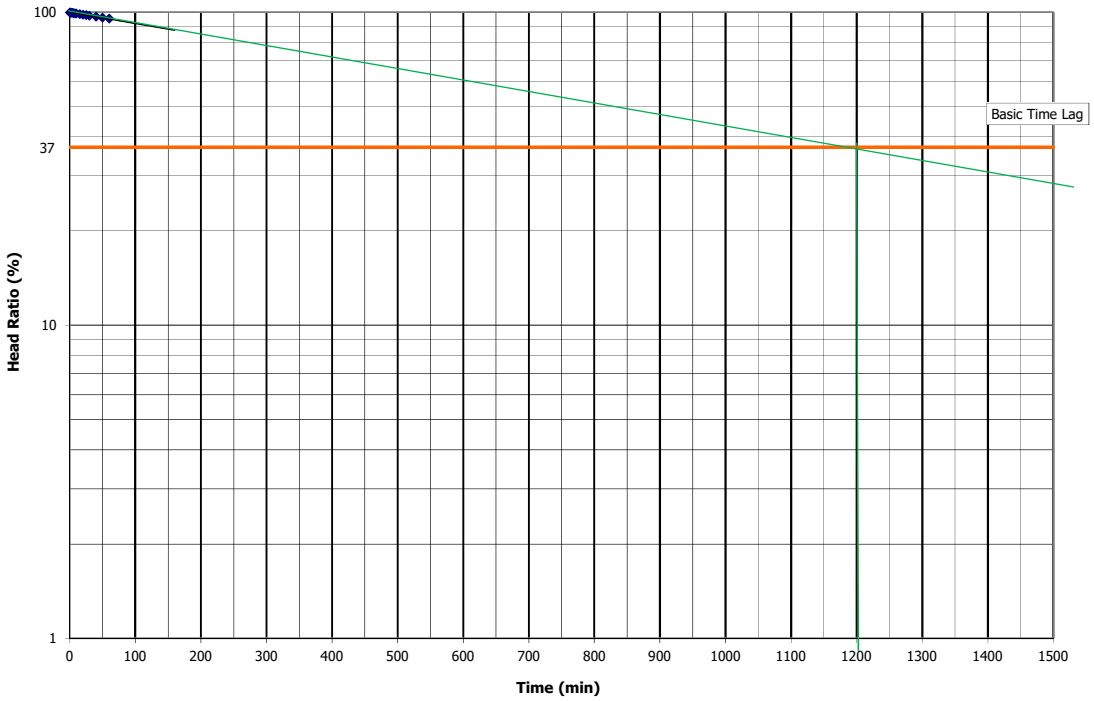
Static Water Depth from TOC:	54.05	m
Piezometer Radius (r):	0.038	m
Drill Hole Radius (R):	0.038	m
Test Interval (L):	13.8	m
T_0 (from graph below):	1200	minutes

K = 4.30E-09 m/s

$$K = \frac{r^2 \ln(L/R)}{2L\,T_0} \qquad \text{Head Ratio} = \frac{\text{Static Water Level - Water Level}}{\text{Static Water Level}}$$

The Datum is chosen as the static water elevation

Time		Depth to Water			Head
(min:sec)	(min)	(cm)	(m)	Head (m)	Ratio (%)
	0.00	12	0.12	53.93	99.78
	1.00	18	0.18	53.87	99.67
	2.00	22	0.22	53.83	99.59
	4.0	32	0.32	53.73	99.41
	6.0	38	0.38	53.67	99.30
	8.0	48	0.48	53.57	99.11
	10.0	56	0.56	53.49	98.96
	15.0	77	0.77	53.28	98.58
	20.0	98	0.98	53.07	98.19
	25	118	1.18	52.87	97.82
	30	138	1.38	52.67	97.45
	40	176	1.76	52.29	96.74
	50	213	2.13	51.92	96.06
	60	249	2.49	51.56	95.39



Weather:

Notes:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001
Measurement Units
Volume: l
Pressure: psi
m

Collar El.: 563

Trend: 330 **Plunge:** 70

Personnel: JN **Date:** 14-Sep-17

Start Flushing: N/A
End Flushing: N/A
Start Packer Testing: N/A
End Packer Testing: N/A

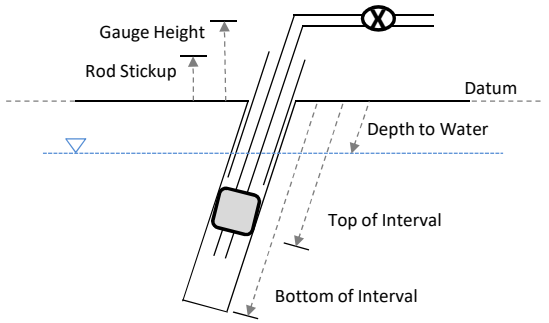
Hole ID: GAR-17-002

Design Test Interval: N/A
Test #: 8
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 1.90 m
Depth to Water: 61.25
Depth to Top of Interval: 435.75 m
Depth to Bottom of Interval: 446.50
Height of Gauge: N/A m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0
Packer Inflation Pressure: 390 psi
Cleaning (Vol./Time/Until Clean): 20



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	100.0	330.0000	--
1	100.0	330.1000	0.1000
2	100.0	330.1000	0.0000
3	100.0	330.1000	0.0000
4	200.0	330.6000	0.5000
5	200.0	330.6000	0.0000
6	200.0	330.6500	0.0500
7	200.0	330.7000	0.0500
8	300.0	331.2000	0.5000
9	300.0	331.1000	-0.1000
10	300.0	331.2000	0.1000

Stable Avg: 0.1200

Pressure Interval _____ 1

Minutes	Pressure	Volume	Δ Volume
0	110.0	662.1000	--
1		662.1000	
2		662.1000	
3			
4			
5			
6			
7			
8			
9			
10			

Stable Avg:

Pressure Interval _____ 2

Minutes	Pressure	Volume	Δ Volume
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Avg:

Pressure Interval _____ 3

Minutes	Pressure	Volume	Δ Volume
0			--
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Avg:

Pressure Interval _____ 4

Minutes	Pressure	Volume	Δ Volume
0			--
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Avg:

Pressure Interval _____ 5

Minutes	Pressure	Volume	Δ Volume
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Avg:

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0.5	-
1	0.5	0.000
2	0.5	0.000
4	1	0.250
6	1	0.000
8	1.5	0.250
10	2	0.250
15	2.5	0.100
20	4	0.300
25	4	0.000
30	4.5	0.100
40	5.5	0.100
50	7	0.150
60	7.5	0.050

Additional Comments: Packer is seated in high competent intrusive rock. Test was to be completed before devico. Pin sheared at 390.0 psi. water was entering unit at 230 psi, it was then decided to switch to a falling head test.

BGC ENGINEERING INC.
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Falling Head Test

Client:	NexGen
Project:	Snowbird PFS
Project Number:	1762-002
Borehole Number:	GAR-17-002 Test 8
Date of Test:	14-Sep-17
Top of Test Interval (m):	435.8
Bottom of Test Interval (m):	446.5
Conducted by:	JN

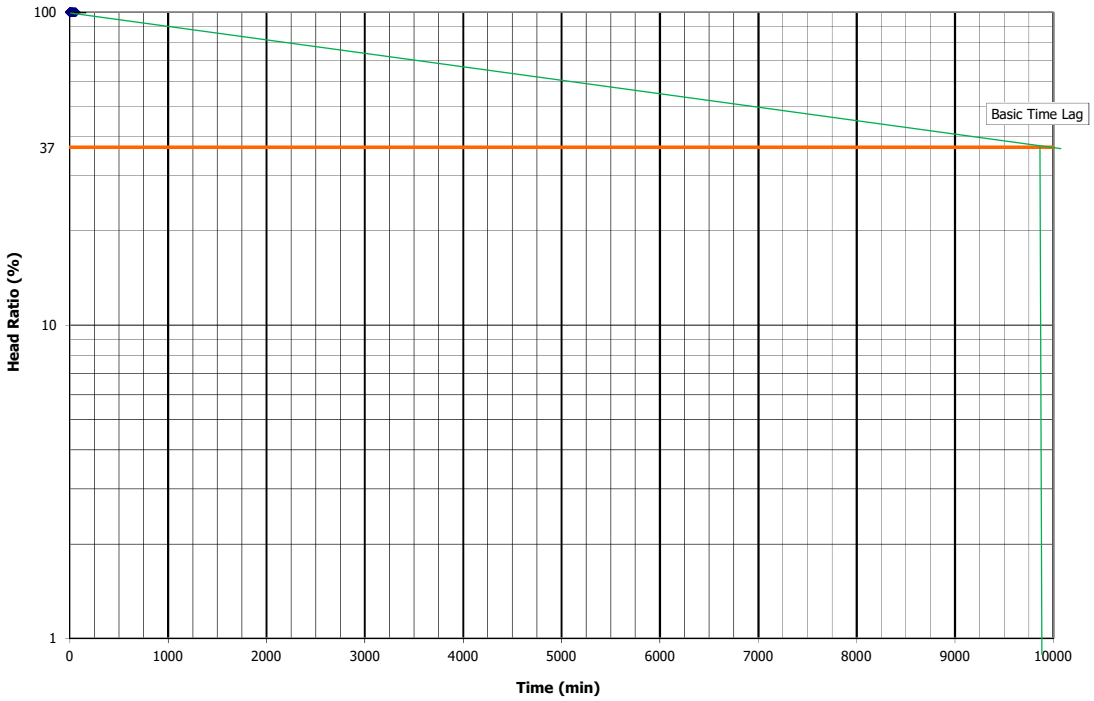
Static Water Depth from TOC:	61.25	m
Piezometer Radius (r):	0.038	m
Drill Hole Radius (R):	0.038	m
Test Interval (L):	10.8	m
T_0 (from graph below):	9900	minutes

K = 6.38E-10 m/s

$$K = \frac{r^2 \ln(L/R)}{2L\,T_0} \qquad \text{Head Ratio} = \frac{\text{Static Water Level - Water Level}}{\text{Static Water Level}}$$

The Datum is chosen as the static water elevation

Time		Depth to Water			Head
(min:sec)	(min)	(cm)	(m)	Head (m)	Ratio (%)
	0.00	0.5	0.01	61.25	99.99
	1.00	0.5	0.01	61.25	99.99
	2.00	0.5	0.01	61.25	99.99
	4.0	1.0	0.01	61.24	99.98
	6.0	1.0	0.01	61.24	99.98
	8.0	1.5	0.02	61.24	99.98
	10.0	2.0	0.02	61.23	99.97
	15.0	2.5	0.03	61.23	99.96
	20.0	4.0	0.04	61.21	99.93
	25	4.0	0.04	61.21	99.93
	30	4.5	0.05	61.21	99.93
	40	5.5	0.06	61.20	99.91
	50	7.0	0.07	61.18	99.89
	60	7.5	0.08	61.18	99.88



Weather:

Notes: Difficult to tell trendline and where it crosses 37%. Likely greater than 9900 minutes.

BGC ENGINEERING INC.
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Client:	NexGen
Project:	Snowbird
Project #:	1762001
Measurement Units	
Volume:	l
Pressure:	psi
	m

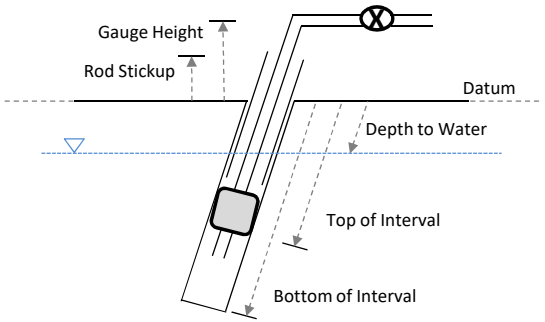
Collar El.:	563		
Trend:	330	**Plunge:**	70
Personnel:	MB	**Date:**	09/17/2017
Start Flushing:	0:15		
End Flushing:			0:45
Start Packer Testing:	1:00		
End Packer Testing:			2:30

Hole ID: GAR-17-002

Design Test Interval: 599.5-614.5 m
Test #: 9
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.90	m	
Depth to Water:			54.02 m
Depth to Top of Interval:	600.75	m	
Depth to Bottom of Interval:			614.50 m
Height of Gauge:	2.38	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:			76.0 mm
Packer Inflation Pressure:	320	psi	
Cleaning (Vol./Time/Until Clean):			30 minutes



Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	ATM	0 cm loss	--
1	100.0	10332.80	
2	100.0	10332.90	0.10
3	100.0	10332.90	0.00
4	100.0	10332.90	0.00
5	150.0	10333.30	0.40
6	150.0	10333.30	0.00
7	150.0	10333.30	0.00
8	200.0	10333.50	0.20
9	200.0	10333.60	0.10
10	200.0	10333.60	0.00
Stable Avg:			0.09

Pressure Interval 1

Minutes	Pressure	Volume	Δ Volume
0	75.0	10334.20	--
1	75.0	10334.20	0.00
2	75.0	10334.30	0.10
3	75.0	10334.30	0.00
4	75.0	10334.30	0.00
5			
6			
7			
8			
9			
10			
	75.0		0.02

Pressure Interval 2

Minutes	Pressure	Volume	Δ Volume
0	100.0	10334.50	-
1	100.0	10334.60	0.10
2	100.0	10334.60	0.00
3	100.0	10334.60	0.00
4	100.0	10334.70	0.10
5			
6			
7			
8			
9			
10			
Stable Avg:	100.0		0.05

Pressure Interval 3

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.00
2			0.00
3			0.00
4			0.00
5			0.00
6			0.00
7			0.00
8			0.00
9			0.00
10			0.00
Stable Avg:	#DIV/0!		N/A

Pressure Interval 4

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.00
2			
3			
4			
5			
6			
7			
8			
9			
10			
Stable Avg:	#DIV/0!		N/A

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Stable Avg:			N/A

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0	0.000
2	0.3	0.300
4	0.5	0.100
6	1.4	0.450
8	1.9	0.250
10	3.1	0.600
15	4.8	0.340
20	6.4	0.320
25	8.6	0.440
30	10.5	0.380
40	15	0.450
50	18.8	0.380
60	24.5	0.570

Additional Comments: Pin sheared at 320 psi. Constant head test was taking less than 0.5 L/min of water at both 75 and 100 psi -- switched to falling head test.

BGC ENGINEERING INC.
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Falling Head Test

Client:	NexGen
Project:	Snowbird PFS
Project Number:	1762-002
Borehole Number:	GAR-17-002 Test 9
Date of Test:	09/17/2017
Top of Test Interval (m):	600.8
Bottom of Test Interval (m):	614.5
Conducted by:	MB

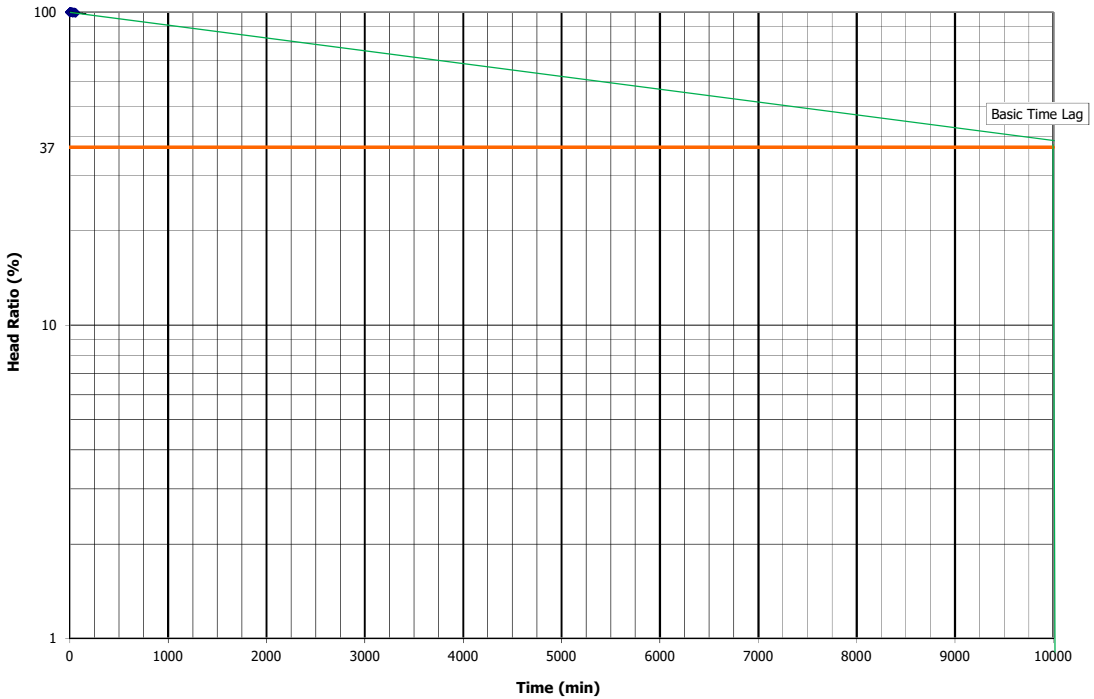
Static Water Depth from TOC:	54.02	m
Piezometer Radius (r):	0.038	m
Drill Hole Radius (R):	0.038	m
Test Interval (L):	13.8	m
T_0 (from graph below):	10000	minutes

K = 5.16E-10 m/s

$$K = \frac{r^2 \ln(L/R)}{2L\,T_0} \qquad \text{Head Ratio} = \frac{\text{Static Water Level - Water Level}}{\text{Static Water Level}}$$

The Datum is chosen as the static water elevation

Time		Depth to Water			Head
(min:sec)	(min)	(cm)	(m)	Head (m)	Ratio (%)
	0.00	0.0	0.00	54.02	100.00
	1.00	0.0	0.00	54.02	100.00
	2.00	0.3	0.00	54.02	99.99
	4.0	0.5	0.01	54.02	99.99
	6.0	1.4	0.01	54.01	99.97
	8.0	1.9	0.02	54.00	99.96
	10.0	3.1	0.03	53.99	99.94
	15.0	4.8	0.05	53.97	99.91
	20.0	6.4	0.06	53.96	99.88
	25	8.6	0.09	53.93	99.84
	30	10.5	0.11	53.92	99.81
	40	15.0	0.15	53.87	99.72
	50	18.8	0.19	53.83	99.65
	60	24.5	0.25	53.78	99.55



Weather:

Notes: Difficult to tell trendline and where it crosses 37%. Likely greater than 10000 minutes.

BGC ENGINEERING INC.
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Client:	NexGen
Project:	Snowbird
Project #:	1762001
Measurement Units	
Volume:	l
Pressure:	psi
	m

Collar El.:	563		
Trend:	330	**Plunge:**	70
Personnel:	JN	**Date:**	17-Sep-17
Start Flushing:	31 MIN		
End Flushing:			N/A
Start Packer Testing:	N/A		
End Packer Testing:			N/A

Hole ID: GAR-17-002

Design Test Interval:	630.75-644.5		
Test #:	10		
Packer Setup:	☑ Single	☐ Double	
Measurements Taken from Collar (Ground):			
Rod Stickup Height:	1.90	m	
Depth to Water:		58.00	m
Depth to Top of Interval:	630.75	m	
Depth to Bottom of Interval:		644.50	m
Height of Gauge:	N/A	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	380	psi	
Cleaning (Vol./Time/Until Clean):		30	

Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	100.0	338.7500	--
1		338.8000	0.0500
2		338.8000	0.0000
3		338.8100	0.0100
4	200.0	339.7000	0.8900
5		339.7100	0.0100
6		339.7500	0.0400
7		339.8000	0.0500
8	295.0	340.3500	0.5500
9	300.0	340.3700	0.0200
10		340.4100	0.0400
Stable Avg:			0.1660

Pressure Interval 1

Minutes	Pressure	Volume	Δ Volume
0	220.0	341.3000	--
1	220.0	341.5500	0.2500
2	220.0	341.7500	0.2000
3			-341.7500
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
	220.0		-34.1300

Pressure Interval 2

Minutes	Pressure	Volume	Δ Volume
0			-
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval 3

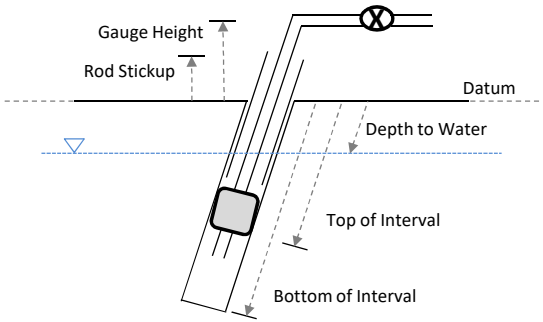
Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	#DIV/0!		N/A

Pressure Interval 4

Minutes	Pressure	Volume	Δ Volume
0			--
1			0.0000
2			
3			
4			
5			
6			
7			
8			
9			
10			
Stable Avg:	#DIV/0!		N/A

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Stable Avg:			N/A



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	1	1.000
2	1.5	0.500
4	5	1.750
6	8	1.500
8	12	2.000
10	15	1.500
15	25.5	2.100
20	37	2.300
25	48	2.200
30	58	2.000
40	78	2.000
50	98	2.000
60	118	2.000

Additional Comments: pin sheared at 380 psi. Rock took no water at 120 psi. moved to 220 psi where rock took 0.20-0.25. switched to falling head

BGC ENGINEERING INC.
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Falling Head Test

Client:	NexGen
Project:	Snowbird PFS
Project Number:	1762-001
Borehole Number:	GAR-17-002 Test 10
Date of Test:	17-Sep-17
Top of Test Interval (m):	630.8
Bottom of Test Interval (m):	644.5
Conducted by:	JN

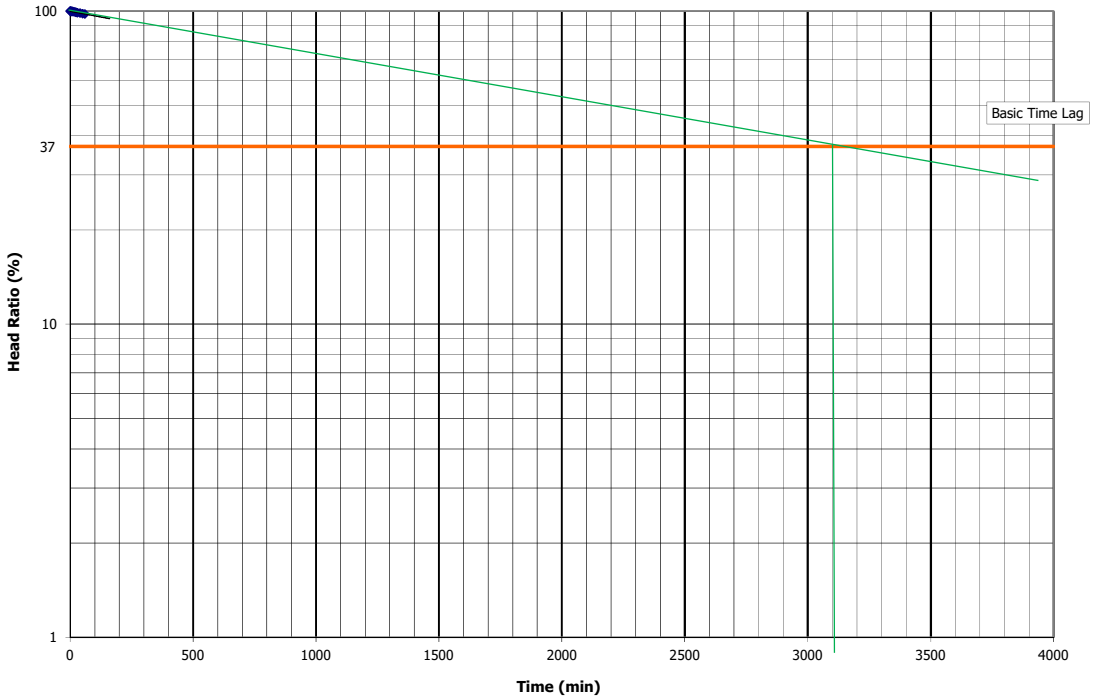
Static Water Depth from TOC:	58.00	m
Piezometer Radius (r):	0.038	m
Drill Hole Radius (R):	0.038	m
Test Interval (L):	13.8	m
T_0 (from graph below):	3100	minutes

K = 1.66E-09 m/s

$$K = \frac{r^2 \ln(L/R)}{2L\,T_0} \qquad \text{Head Ratio} = \frac{\text{Static Water Level - Water Level}}{\text{Static Water Level}}$$

The Datum is chosen as the static water elevation

Time		Depth to Water			Head
(min:sec)	(min)	(cm)	(m)	Head (m)	Ratio (%)
	0.00	0.0	0.00	58.00	100.00
	1.00	1.0	0.01	57.99	99.98
	2.00	1.5	0.02	57.99	99.97
	4.0	5.0	0.05	57.95	99.91
	6.0	8.0	0.08	57.92	99.86
	8.0	12.0	0.12	57.88	99.79
	10.0	15.0	0.15	57.85	99.74
	15.0	25.5	0.26	57.75	99.56
	20.0	37.0	0.37	57.63	99.36
	25	48.0	0.48	57.52	99.17
	30	58.0	0.58	57.42	99.00
	40	78.0	0.78	57.22	98.66
	50	98.0	0.98	57.02	98.31
	60	118.0	1.18	56.82	97.97



Weather:

Notes:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client:	NexGen
Project:	Snowbird
Project #:	1762001
Measurement Units	
Volume:	l
Pressure:	psi
	m

Collar El.:	563		
Trend:	330	**Plunge:**	70
Personnel:	MB	**Date:**	09/17/2017
Start Flushing:		18:15	
End Flushing:			18:45
Start Packer Testing:		19:30	
End Packer Testing:			20:45

Hole ID: GAR-17-002

Design Test Interval:			
Test #:	11		
Packer Setup:	☑ Single	☐ Double	
Measurements Taken from Collar (Ground):			
Rod Stickup Height:	1.90	m	
Depth to Water:		53.68	m
Depth to Top of Interval:	645.75	m	
Depth to Bottom of Interval:		659.50	m
Height of Gauge:	2.32	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	380	psi	
Cleaning (Vol./Time/Until Clean):			

Pressure Inte Rod Leak Test

Minutes	Pressure	Volume	Δ Volume
0	ATM	10345.7	--
1	100.0	10345.7	0.0
2	100.0	10345.7	0.0
3	100.0	10345.8	0.1
4	150.0	10346.2	0.4
5	150.0	10346.2	0.0
6	150.0	10346.2	0.0
7	200.0	10346.6	0.4
8	200.0	10346.6	0.0
9	200.0	10346.6	0.0
10	200.0	10346.7	0.1
Stable Avg:			0.1

Pressure Inte 100 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	10348.5	--
1	100.0	10349.0	0.5
2	100.0	10349.9	0.9
3	100.0	10350.9	1.0
4	100.0	10351.9	1.0
5	100.0	10353.0	1.1
6	100.0	10354.0	1.0
7	100.0	10355.0	1.0
8	100.0	10355.9	0.9
9	100.0	10356.6	0.7
10	100.0	10357.3	0.7
	100.0		0.9

Pressure Inte 150 2

Minutes	Pressure	Volume	Δ Volume
0	150.0	10359.0	-
1	150.0	10359.9	0.9
2	150.0	10360.9	1.0
3	150.0	10361.8	0.9
4	150.0	10362.3	0.5
5	150.0	10363.1	0.8
6	150.0	10364.0	0.9
7	150.0	10364.8	0.8
8	150.0	10365.7	0.9
9	150.0	10366.3	0.6
10	150.0	10367.1	0.8
Stable Avg:	150.0		0.8

Pressure Inte 200 3

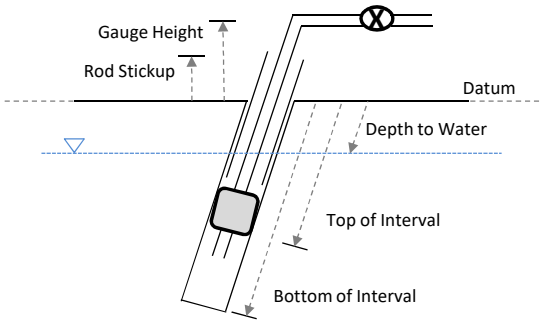
Minutes	Pressure	Volume	Δ Volume
0	200.0	10367.9	--
1	200.0	10369.1	1.2
2	200.0	10370.2	1.1
3	200.0	10372.4	2.2
4	200.0	10373.3	0.9
5	200.0	10374.4	1.1
6	200.0	10375.7	1.3
7	200.0	10376.5	0.8
8	200.0	10377.4	0.9
9	200.0	10378.4	1.0
10	200.0	10378.4	0.0
Stable Avg:	200.0		1.1

Pressure Inte 150 4

Minutes	Pressure	Volume	Δ Volume
0	150.0	10378.4	--
1	150.0	10379.2	0.8
2	150.0	10379.9	0.7
3	150.0	10380.6	0.7
4	150.0	10381.4	0.8
5	150.0	10382.2	0.8
6	150.0	10383.0	0.8
7	150.0	10383.8	0.8
8	150.0	10384.6	0.8
9	150.0	10385.3	0.7
10	150.0	10386.0	0.7
Stable Avg:	150.0		0.8

Pressure Inte 100 5

Minutes	Pressure	Volume	Δ Volume
0	100.0	10386.0	--
1	100.0	10386.6	0.6
2	100.0	10387.2	0.6
3	100.0	10387.8	0.6
4	100.0	10388.4	0.6
5	100.0	10389.0	0.6
6	100.0	10389.6	0.6
7	100.0	10390.2	0.6
8	100.0	10390.8	0.6
9	100.0	10391.4	0.6
10	100.0	10392.0	0.6
Stable Avg:	100.0		0.6



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		0.000
2		0.000
4		0.000
6		0.000
8		0.000
10		0.000
15		0.000
20		0.000
25		0.000
30		0.000
40		0.000
50		0.000
60		0.000

Additional Comments: Pin sheared at 380 psi.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-002

Project: Snowbird PFS **Test #:** 11

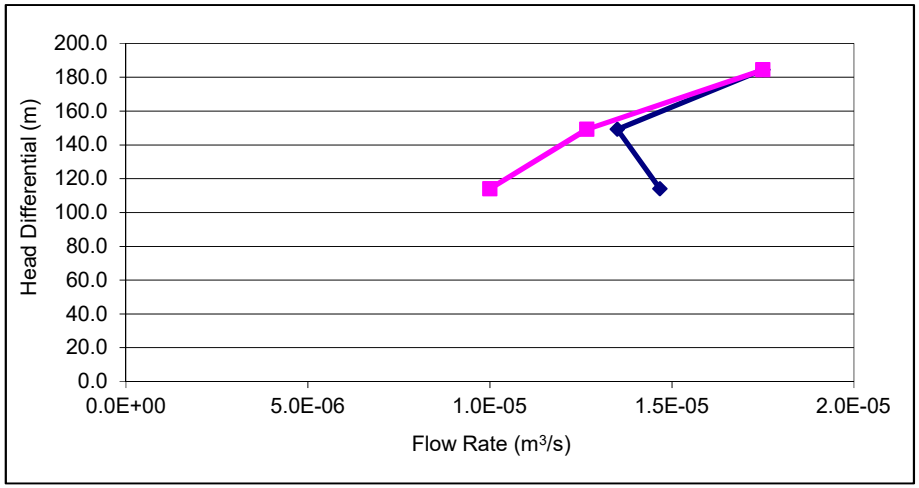
Project #: 1762-001 **From (m):** 645.75 **To (m):** 659.50

Calculation Input Parameters:

L: Length of Test Interval (m)	13.75	Borehole Diameter (m):	0.760	Comments:
Test Interval Midpoint (m Depth):	652.63	r: Borehole Radius (m):	0.38	
Gauge Height (m Above Ground):	2.34	A: Angle From Horizontal (deg):	70	
Depth to Water Table (m Depth):	44.05	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	1.7E-06	0.0	43.7	1.6E-09	Leak Test
100.0	1.5E-05	70.3	114.0	5.3E-09	
150.0	1.4E-05	105.5	149.2	3.8E-09	X
200.0	1.8E-05	140.6	184.4	3.9E-09	X
150.0	1.3E-05	105.5	149.2	3.5E-09	X
100.0	1.0E-05	70.3	114.0	3.6E-09	X
			Geo Mean	**3.7.E-09**	



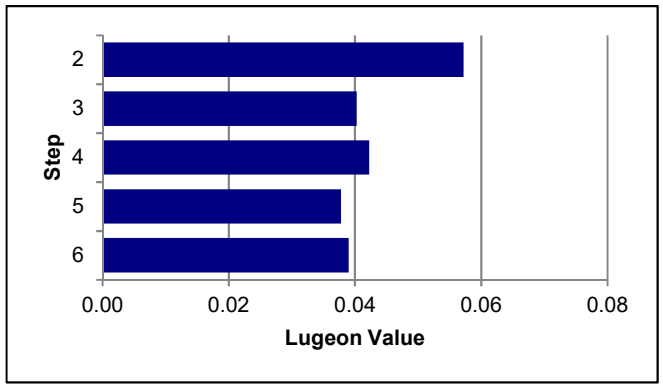
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	4.3	0.03	0.01	0.02	Leak Test
2	11.2	0.23	0.06	0.06	
3	14.6	0.21	0.06	0.04	X
4	18.1	0.28	0.08	0.04	X
5	14.6	0.20	0.06	0.04	X
6	11.2	0.16	0.04	0.04	X
			Geo Mean	**0.04**	
			Max L	**0.06**	

Lugeon Estimate Check:

K (from packer test): 3.7E-07 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.04



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Client:	NEXGEN
Project:	SNOWBIRD
Project #:	1762001
Measurement Units	
Volume:	L
Pressure:	psi
Length:	m

Collar El.:	544		
Trend:	147	**Plunge:**	80
Personnel:	JN	**Date:**	SEPT 27,2017
Start Flushing:	N/A		
End Flushing:			N/A
Start Packer Testing:	N/A		
End Packer Testing:			N/A

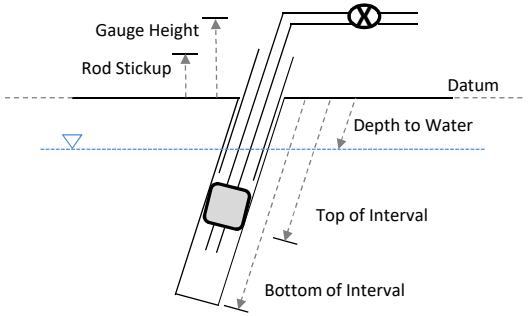
Hole ID: **GAR-17-003**

Design Test Interval:	92-102		
Test #:	1		
Packer Setup:	☑ Single	☐ Double	

Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.90	m	
Depth to Water:		46.00	m
Depth to Top of Interval:	96.75	m	
Depth to Bottom of Interval:		102.80	m
Height of Gauge:	1.40	m	

Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	350	psi	
Cleaning (Vol./Time/Until Clean):		30MIN	



Pressure Interval _____ROD LEAKAGE

Minutes	Pressure	Volume	Δ Volume
0	100.0	92.75	--
1	100.0	92.78	0.03
2	100.0	92.79	0.01
3	100.0	92.79	0.00
4	200.0	93.02	0.23
5	200.0	93.05	0.03
6	200.0	93.07	0.02
7	200.0	93.05	-0.02
8	300.0	93.15	0.10
9	300.0	93.15	0.00
10	300.0	93.15	0.00
Stable Avg:			0.04

Pressure Int 60 3

Minutes	Pressure	Volume	Δ Volume
0	60.0	1769.00	--
1	60.0	1812.00	43.00
2	60.0	1855.00	43.00
3	60.0	1898.00	43.00
4	60.0	1941.00	43.00
5	60.0	1984.00	43.00
6	60.0	2027.00	43.00
7	60.0	2070.00	43.00
8	60.0	2113.00	43.00
9	60.0	2156.00	43.00
10	60.0	2199.00	43.00
Stable Avg:	60.0		43.00

Pressure Inte 30 1

Minutes	Pressure	Volume	Δ Volume
0	30.0	1160.00	--
1	30.0	1186.00	26.00
2	30.0	1212.00	26.00
3	30.0	1236.00	24.00
4	30.0	1262.00	26.00
5	30.0	1287.00	25.00
6	30.0	1313.00	26.00
7	30.0	1339.00	26.00
8	30.0	1365.00	26.00
9	30.0	1390.00	25.00
10	30.0	1416.00	26.00
	30.0		25.60

Pressure Int 45 4

Minutes	Pressure	Volume	Δ Volume
0	45.0	2212.00	--
1	45.0	2246.00	34.00
2	45.0	2280.00	34.00
3	45.0	2314.00	34.00
4	45.0	2348.00	34.00
5	45.0	2382.00	34.00
6	45.0	2416.00	34.00
7	45.0	2448.00	32.00
8	45.0	2481.00	33.00
9	45.0	2514.00	33.00
10	45.0	2546.00	32.00
Stable Avg:	45.0		33.40

Pressure Inte 45 2

Minutes	Pressure	Volume	Δ Volume
0	45.0	1433.00	--
1	45.0	1464.00	31.00
2	45.0	1495.00	31.00
3	45.0	1525.00	30.00
4	45.0	1556.00	31.00
5	45.0	1587.00	31.00
6	45.0	1618.00	31.00
7	45.0	1649.00	31.00
8	45.0	1681.00	32.00
9	45.0	1712.00	31.00
10	45.0	1745.00	33.00
Stable Avg:	45.0		31.20

Pressure Int 30 5

Minutes	Pressure	Volume	Δ Volume
0	30.0	2556.00	-
1	30.0	2583.00	27.00
2	30.0	2611.00	28.00
3	30.0	2639.00	28.00
4	30.0	2667.00	28.00
5	30.0	2695.00	28.00
6	30.0	2723.00	28.00
7	30.0	2751.00	28.00
8	30.0	2779.00	28.00
9	30.0	2807.00	28.00
10	30.0	2835.00	28.00
Stable Avg:	30.0		27.90

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments: Tested to highest achieveable PSI at end of test. Ony able to get to 65psi. Shear pin broke at 350psi

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-003

Project: Snowbird PFS **Test #:** 1

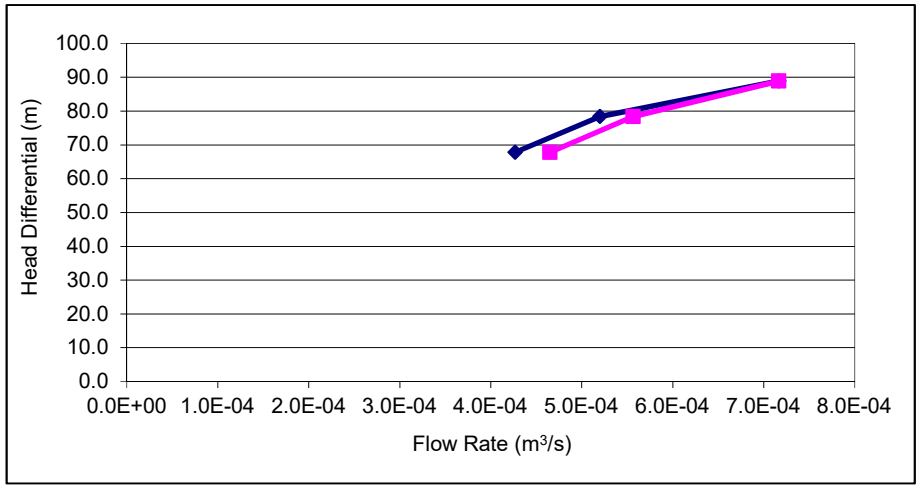
Project #: 1762-001 **From (m):** 96.75 **To (m):** 102.80

Calculation Input Parameters:

L: Length of Test Interval (m)	6.05	Borehole Diameter (m):	0.08	Comments:
Test Interval Midpoint (m Depth):	99.78	**r**: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	1.40	**A**: Angle From Horizontal (deg):	80	
Depth to Water Table (m Depth):	46.00	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	6.7E-07	0.0	46.7	1.9E-09	Leak Test
30.0	4.3E-04	21.1	67.8	8.4E-07	X
45.0	5.2E-04	31.6	78.3	8.9E-07	X
60.0	7.2E-04	42.2	88.9	1.1E-06	X
45.0	5.6E-04	31.6	78.3	9.5E-07	X
30.0	4.7E-04	21.1	67.8	9.1E-07	X
			Geo Mean	**9.3.E-07**	



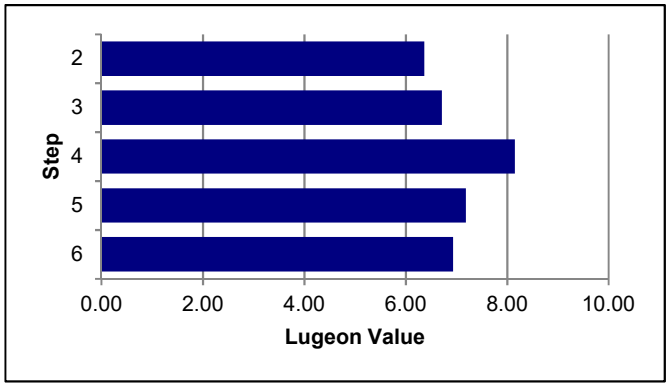
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	4.6	0.01	0.01	0.01	Leak Test
2	6.6	6.76	4.23	6.36	X
3	7.7	8.24	5.16	6.71	X
4	8.7	11.36	7.11	8.15	X
5	7.7	8.82	5.52	7.19	X
6	6.6	7.37	4.61	6.94	X
			Geo Mean	**7.05**	
			Max L	**8.15**	

Lugeon Estimate Check:

K (from packer test): 9.3E-05 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 9.29



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: m^3
Pressure: psi
Length: m

Collar El.: 544
Trend: 147 **Plunge:** 80
Personnel: M Berry **Date:** 09/27/2017

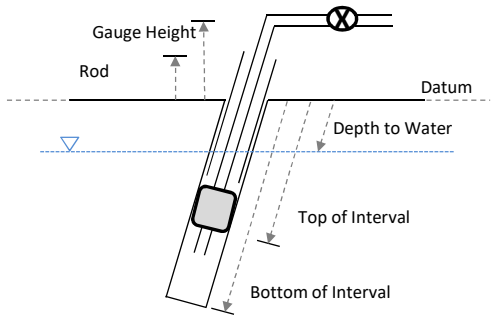
Start Flushing: 22:30
End Flushing: 23:15
Start Packer Testing: 23:30
End Packer Testing: 1:00

Hole ID: GAR-17-003

Design Test Interval: 102-127
Test #: 2
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height: 1.70 m
Depth to Water: 37.30 m
Depth to Top of Interval: 103.25 m
Depth to Bottom of Interval: 118.10 m
Height of Gauge: 2.06 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 350 psi
Cleaning (Vol./Time/Until Clean): 0:45



Rod Leakage Test

Minutes	Pressure	Volume	Δ Volume
0	100.0	12885.30	--
1	100.0	12885.30	0.00
2	100.0	12885.30	0.00
3	100.0	12885.30	0.00
4	150.0	12885.40	0.10
5	150.0	12885.40	0.00
6	150.0	12885.40	0.00
7	200.0	12885.50	0.10
8	200.0	12885.50	0.00
9	200.0	12885.50	0.00
10	200.0	12885.50	0.00
Stable Avg:			0.02

Pressure Interval ___30___ 1

Minutes	Pressure	Volume	Δ Volume
0	30.0	12890.00	--
1	30.0	12899.00	9.00
2	30.0	12907.10	8.10
3	30.0	12914.70	7.60
4	30.0	12922.10	7.40
5	30.0	12929.70	7.60
6	30.0	12936.70	7.00
7	30.0	12944.10	7.40
8	30.0	12951.40	7.30
9	30.0	12958.60	7.20
10	30.0	12965.90	7.30
Stable Avg:	30.0		7.59

Pressure Interval ____45__ 2

Minutes	Pressure	Volume	Δ Volume
0	45.0	12971.70	--
1	45.0	12980.70	9.00
2	45.0	12989.90	9.20
3	45.0	12999.10	9.20
4	45.0	13008.10	9.00
5	45.0	13017.20	9.10
6	45.0	13026.20	9.00
7	45.0	13035.60	9.40
8	45.0	13044.50	8.90
9	45.0	13053.60	9.10
10	45.0	13062.70	9.10
Stable Avg:	45.0		9.10

Pressure Interval ___60___ 3

Minutes	Pressure	Volume	Δ Volume
0	60.0	13068.00	--
1	60.0	13080.70	12.70
2	60.0	13094.00	13.30
3	60.0	13108.40	14.40
4	60.0	13123.30	14.90
5	60.0	13138.60	15.30
6	60.0	13154.00	15.40
7	60.0	13169.50	15.50
8	60.0	13185.00	15.50
9	60.0	13200.50	15.50
10	60.0	13215.60	15.10
Stable Avg:	60.0		14.76

Pressure Interval ___45__ 4

Minutes	Pressure	Volume	Δ Volume
0	45.0	13226.00	--
1	45.0	13239.80	13.80
2	45.0	13251.90	12.10
3	45.0	13264.40	12.50
4	45.0	13277.30	12.90
5	45.0	13290.30	13.00
6	45.0	13302.50	12.20
7	45.0	13315.00	12.50
8	45.0	13327.60	12.60
9	45.0	13339.80	12.20
10	45.0	13351.80	12.00
Stable Avg:	45.0		12.58

Pressure Interval ____30__ 5

Minutes	Pressure	Volume	Δ Volume
0	30.0	13356.00	-
1	30.0	13366.90	10.90
2	30.0	13377.80	10.90
3	30.0	13388.80	11.00
4	30.0	13399.90	11.10
5	30.0	13410.70	10.80
6	30.0	13421.50	10.80
7	30.0	13432.30	10.80
8	30.0	13443.00	10.70
9	30.0	13453.70	10.70
10	30.0	13464.40	10.70
Stable Avg:	30.0		10.84

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments: Pin sheared at 350 psi

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-003

Project: Snowbird PFS **Test #:** 2

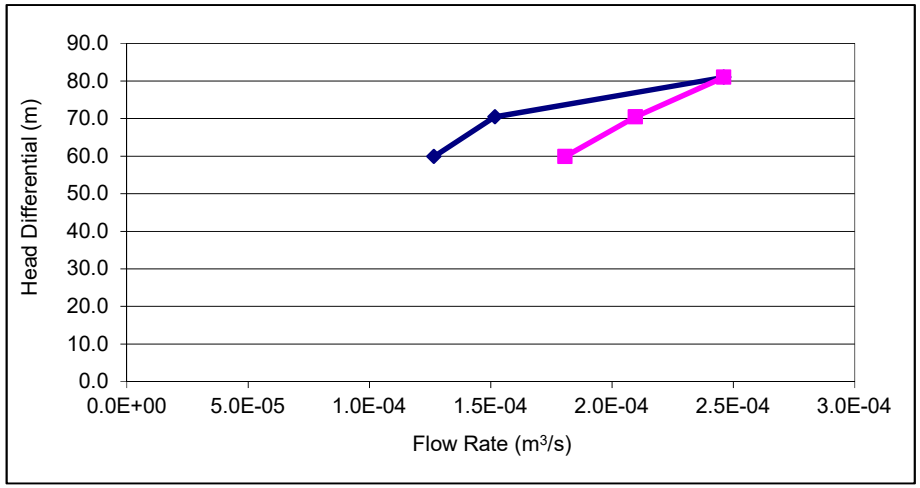
Project #: 1762-001 **From (m):** 103.25 **To (m):** 118.10

Calculation Input Parameters:

L: Length of Test Interval (m)	14.85	Borehole Diameter (m):	0.08	Comments:
Test Interval Midpoint (m Depth):	110.68	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	2.06	A: Angle From Horizontal (deg):	80	
Depth to Water Table (m Depth):	37.30	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	3.3E-07	0.0	38.8	5.5E-10	Leak Test
30.0	1.3E-04	21.1	59.9	1.4E-07	X
45.0	1.5E-04	31.6	70.4	1.4E-07	X
60.0	2.5E-04	42.2	81.0	1.9E-07	X
45.0	2.1E-04	31.6	70.4	1.9E-07	X
30.0	1.8E-04	21.1	59.9	1.9E-07	X
			Geo Mean	**1.7.E-07**	



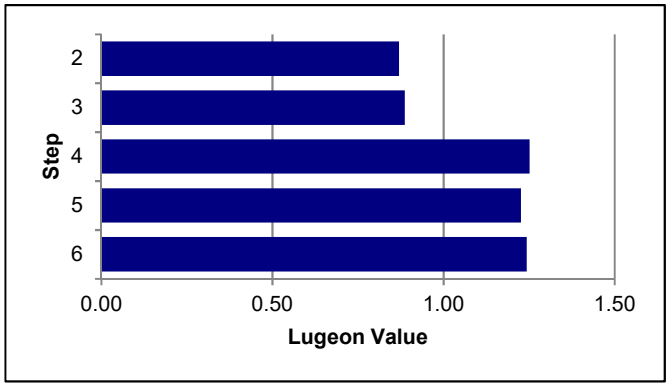
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	3.8	0.01	0.00	0.00	Leak Test
2	5.9	2.01	0.51	0.87	X
3	6.9	2.40	0.61	0.89	X
4	7.9	3.90	0.99	1.25	X
5	6.9	3.32	0.85	1.23	X
6	5.9	2.86	0.73	1.24	X
			Geo Mean	**1.08**	
			Max L	**1.25**	

Lugeon Estimate Check:

K (from packer test): 1.7E-05 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 1.68



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Collar El.: 544

Hole ID: GAR-17-003

Trend: 147 **Plunge:** 80

Design Test Interval: 267-302

Client: Nexgen
Project: Snowbird
Project #: 1762001
Test #: 3

Personnel: DG **Date:** 30-Sep-17

Packer Setup: ☑ Single ☐ Double

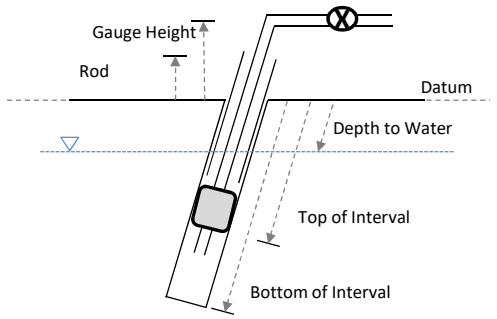
Measurement Units
Volume: m^3
Pressure: psi
Length: m

Start Flushing: 12:30 pm
End Flushing: 12:57 pm
Start Packer Testing: 1:01 pm
End Packer Testing: 2:22 pm

Measurements Taken from Collar (Ground):

Rod Stickup Height: 2.60 m
Depth to Water: 3.87 m
Depth to Top of Interval: 287.70 m
Depth to Bottom of Interval: 305.70 m
Height of Gauge: 1.30 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 380 psi
Cleaning (Vol./Time/Until Clean): 27 mins



Pressure Interval ____ Rod leak test

Minutes	Pressure	Volume	Δ Volume
0	atm	483.50	--
1	100.0	483.50	0.00
2	100.0	483.60	0.10
3	100.0	483.60	0.00
4	100.0	483.60	0.00
5	200.0	484.00	0.40
6	200.0	484.00	0.00
7	200.0	484.00	0.00
8	300.0	484.40	0.40
9	300.0	484.40	0.00
10	300.0	484.40	0.00
Stable Avg:			0.09

Pressure Inte 175 1

Minutes	Pressure	Volume	Δ Volume
0	175.0	496.70	--
1	175.0	498.10	1.40
2	175.0	499.50	1.40
3	175.0	500.89	1.39
4	175.0	501.90	1.01
5	175.0	503.00	1.10
6	175.0	504.10	1.10
7	175.0	505.20	1.10
8	175.0	506.30	1.10
9	175.0	507.40	1.10
10	175.0	508.50	1.10
Stable Avg:	175.0		1.18

Pressure Inte 200 2

Minutes	Pressure	Volume	Δ Volume
0	200.0	510.50	--
1	200.0	511.50	1.00
2	200.0	512.80	1.30
3	200.0	514.00	1.20
4	200.0	515.20	1.20
5	200.0	516.40	1.20
6	200.0	517.60	1.20
7	200.0	518.70	1.10
8	200.0	519.70	1.00
9	200.0	520.70	1.00
10	200.0	521.60	0.90
Stable Avg:	200.0		1.11

Pressure Int 250 3

Minutes	Pressure	Volume	Δ Volume
0	250.0	524.30	--
1	250.0	525.60	1.30
2	250.0	526.90	1.30
3	250.0	528.20	1.30
4	250.0	529.50	1.30
5	250.0	530.70	1.20
6	250.0	531.80	1.10
7	250.0	532.80	1.00
8	250.0	534.00	1.20
9	250.0	535.10	1.10
10	250.0	536.10	1.00
Stable Avg:	250.0		1.18

Pressure Int 200 4

Minutes	Pressure	Volume	Δ Volume
0	200.0	536.50	--
1	200.0	537.40	0.90
2	200.0	538.30	0.90
3	200.0	539.30	1.00
4	200.0	540.20	0.90
5	200.0	541.10	0.90
6	200.0	542.10	1.00
7	200.0	543.00	0.90
8	200.0	543.80	0.80
9	200.0	544.80	1.00
10	200.0	545.70	0.90
Stable Avg:	200.0		0.92

Pressure Int 175 5

Minutes	Pressure	Volume	Δ Volume
0	175.0	546.40	-
1	175.0	547.10	0.70
2	175.0	547.90	0.80
3	175.0	548.70	0.80
4	175.0	549.50	0.80
5	175.0	550.20	0.70
6	175.0	551.10	0.90
7	175.0	551.80	0.70
8	175.0	552.60	0.80
9	175.0	553.30	0.70
10	175.0	554.10	0.80
Stable Avg:	175.0		0.77

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments: Pressure would sporadically spike and drop ~15 psi throughout test. Depth to water 10 mins after test (with packer inflated) 1.94 m above ground.

BGC ENGINEERING INC.
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Client: NexGen **Hole ID:** GAR-17-003

Project: Snowbird PFS **Test #:** 3

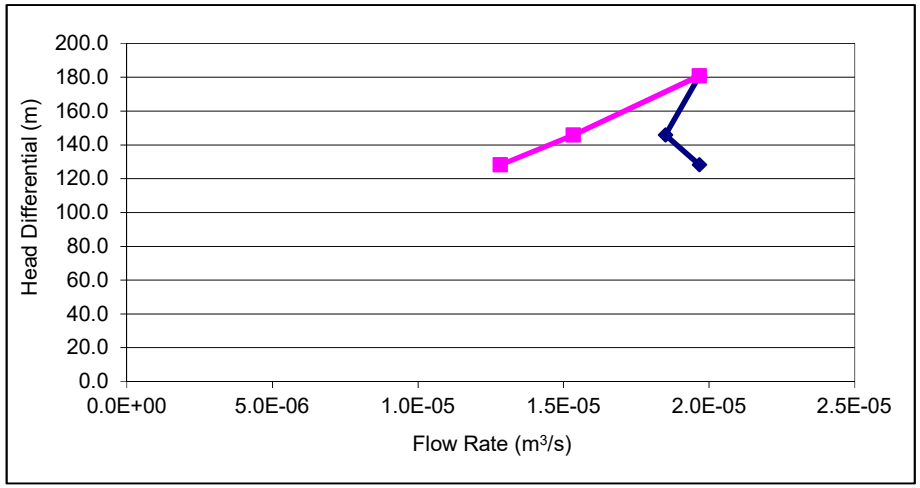
Project #: 1762-001 **From (m):** 287.70 **To (m):** 305.70

Calculation Input Parameters:

L: Length of Test Interval (m)	18.00	Borehole Diameter (m):	0.08	Comments:
Test Interval Midpoint (m Depth):	296.70	**r**: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	1.30	**A**: Angle From Horizontal (deg):	80	
Depth to Water Table (m Depth):	3.87	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	1.5E-06	0.0	5.1	1.6E-08	Leak Test
175.0	2.0E-05	123.0	128.2	8.4E-09	
200.0	1.9E-05	140.6	145.7	6.9E-09	
250.0	2.0E-05	175.8	180.9	5.9E-09	X
200.0	1.5E-05	140.6	145.7	5.7E-09	X
175.0	1.3E-05	123.0	128.2	5.5E-09	X
			Geo Mean	**5.7.E-09**	



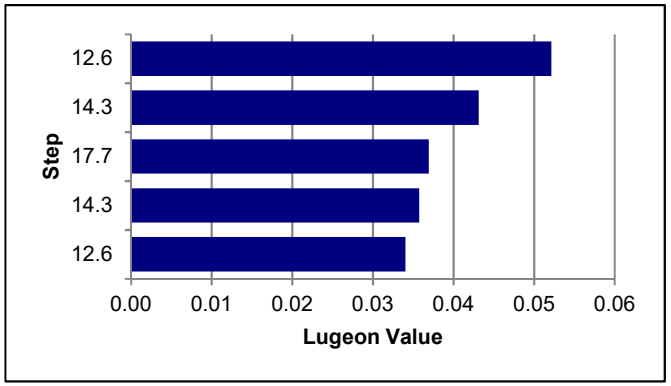
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	0.5	0.02	0.00	0.10	Leak Test
2	12.6	0.31	0.07	0.05	
3	14.3	0.29	0.06	0.04	
4	17.7	0.31	0.07	0.04	X
5	14.3	0.24	0.05	0.04	X
6	12.6	0.20	0.04	0.03	X
			Geo Mean	**0.04**	
			Max L	**0.10**	

Lugeon Estimate Check:

K (from packer test): 5.7E-07 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.06



BGC ENGINEERING INC.
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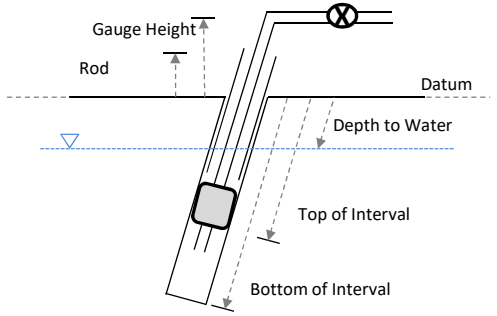
Client:	Nexgen	**Collar El.:**	544	**Hole ID:**	GAR-17-003
Project:	Snowbird	**Trend:**	147	**Plunge:**	80
Project #:	1762001	**Personnel:**	TR	**Date:**	1-Oct-17
Measurement Units		**Start Flushing:**	3:40 am	**Design Test Interval:**	none
Volume:	m^3	**End Flushing:**	4:25 am	**Test #:**	4
Pressure:	psi	**Start Packer Testing:**	4:35 am	**Packer Setup:**	☑ Single ☐ Double
Length:	m	**End Packer Testing:**	5:50 am	**Measurements Taken from Collar (Ground):**	

Rod Stickup Height:	1.78 m		
Depth to Water:		44.53	m
Depth to Top of Interval:	348.95 m		
Depth to Bottom of Interval:		356.70	m
Height of Gauge:	2.20 m		
Drill Rod ID:	60 mm		
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	370 psi		
Cleaning (Vol./Time/Until Clean):		45	min



Pressure Interval ____ Rod leak test

Minutes	Pressure	Volume	Δ Volume
0	100.0	559.50	--
1	100.0	559.90	0.40
2	100.0	560.05	0.15
3	100.0	560.10	0.05
4	200.0	560.75	0.65
5	200.0	560.85	0.10
6	200.0	560.90	0.05
7	200.0	560.95	0.05
8	300.0	561.30	0.35
9	300.0	561.30	0.00
10	300.0	561.40	0.10
Stable Avg:			0.19

Pressure Int 60 3

Minutes	Pressure	Volume	Δ Volume
0	60.0	762.80	--
1	60.0	770.60	7.80
2	60.0	778.50	7.90
3	60.0	786.30	7.80
4	60.0	794.00	7.70
5	60.0	801.90	7.90
6	60.0	809.50	7.60
7	60.0	817.10	7.60
8	60.0	824.70	7.60
9	60.0	832.30	7.60
10	60.0	839.70	7.40
Stable Avg:	60.0		7.69

Pressure Inte 30 1

Minutes	Pressure	Volume	Δ Volume
0	30.0	626.40	--
1	30.0	632.40	6.00
2	30.0	638.50	6.10
3	30.0	645.00	6.50
4	30.0	650.60	5.60
5	30.0	656.70	6.10
6	30.0	662.70	6.00
7	30.0	668.80	6.10
8	30.0	674.70	5.90
9	30.0	680.70	6.00
10	30.0	686.60	5.90
Stable Avg:	30.0		6.02

Pressure Int 45 4

Minutes	Pressure	Volume	Δ Volume
0	45.0	842.10	--
1	45.0	848.60	6.50
2	45.0	855.00	6.40
3	45.0	861.50	6.50
4	45.0	868.00	6.50
5	45.0	874.30	6.30
6	45.0	880.70	6.40
7	45.0	886.90	6.20
8	45.0	893.20	6.30
9	45.0	899.00	5.80
10	45.0	906.10	7.10
Stable Avg:	45.0		6.40

Pressure Inte 45 2

Minutes	Pressure	Volume	Δ Volume
0	45.0	689.90	--
1	45.0	697.00	7.10
2	45.0	704.20	7.20
3	45.0	711.20	7.00
4	45.0	718.40	7.20
5	45.0	725.50	7.10
6	45.0	732.60	7.10
7	45.0	739.30	6.70
8	45.0	745.90	6.60
9	45.0	752.60	6.70
10	45.0	759.40	6.80
Stable Avg:	45.0		6.95

Pressure Int 30 5

Minutes	Pressure	Volume	Δ Volume
0	30.0	908.50	-
1	30.0	914.00	5.50
2	30.0	919.40	5.40
3	30.0	924.80	5.40
4	30.0	930.20	5.40
5	30.0	935.80	5.60
6	30.0	941.10	5.30
7	30.0	946.50	5.40
8	30.0	951.90	5.40
9	30.0	957.40	5.50
10	30.0	962.80	5.40
Stable Avg:	30.0		5.43

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments: Driller reported a reduction in return between 350.7 - 353.7 m

BGC ENGINEERING INC.
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Client: NexGen **Hole ID:** GAR-17-003

Project: Snowbird PFS **Test #:** 4

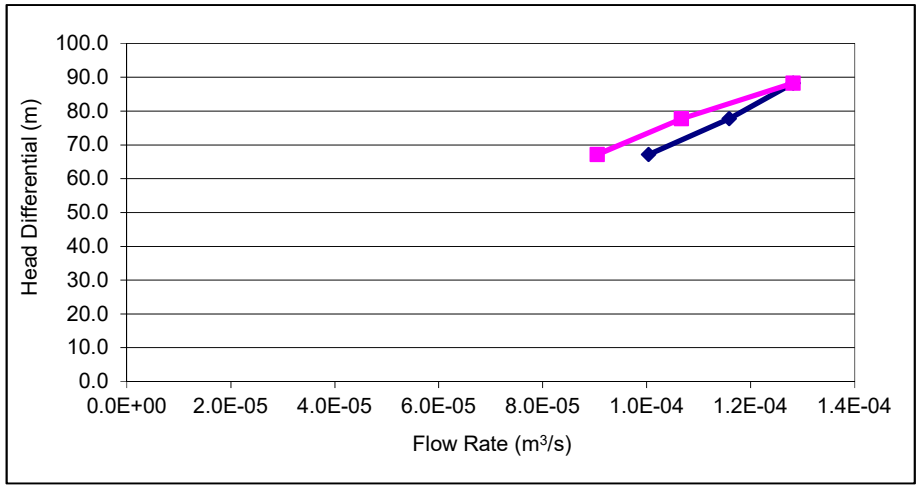
Project #: 1762-001 **From (m):** 348.95 **To (m):** 356.70

Calculation Input Parameters:

L: Length of Test Interval (m)	7.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	352.83	**r**: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	2.20	**A**: Angle From Horizontal (deg):	80	
Depth to Water Table (m Depth):	44.53	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	3.2E-06	0.0	46.1	7.5E-09	Leak Test
30.0	1.0E-04	21.1	67.1	1.6E-07	X
45.0	1.2E-04	31.6	77.7	1.6E-07	X
60.0	1.3E-04	42.2	88.2	1.6E-07	X
45.0	1.1E-04	31.6	77.7	1.5E-07	X
30.0	9.0E-05	21.1	67.1	1.5E-07	X
			Geo Mean	**1.6.E-07**	



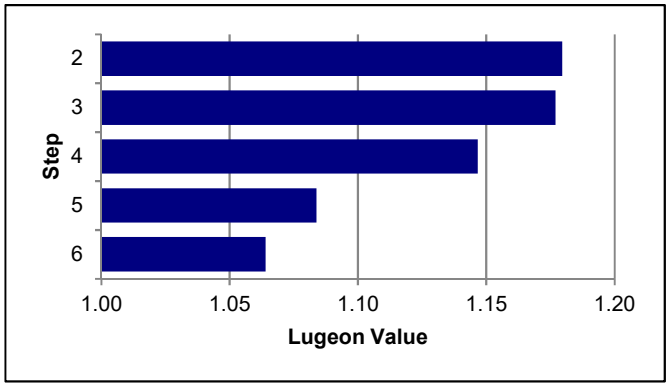
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	4.5	0.05	0.02	0.05	Leak Test
2	6.6	1.59	0.78	1.18	X
3	7.6	1.84	0.90	1.18	X
4	8.7	2.03	0.99	1.15	X
5	7.6	1.69	0.83	1.08	X
6	6.6	1.43	0.70	1.06	X
			Geo Mean	**1.13**	
			Max L	**1.18**	

Lugeon Estimate Check:

K (from packer test): 1.6E-05 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 1.56



BGC ENGINEERING INC.
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Client: Nexgen
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: m^3
Pressure: psi
Length: m

Collar El.: 544
Trend: 147 **Plunge:** 80
Personnel: TR **Date:** 02-Oct-2017 NS

Start Flushing: 9:25 PM
End Flushing: 9:58 PM
Start Packer Testing: 10:18 PM
End Packer Testing: 11:32 PM

Hole ID: GAR-17-003
Design Test Interval: none
Test #: 5
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.78 m		
Depth to Water:		40.66 m	(taken 10 min after removing deflated packer)
Depth to Top of Interval:	462.95 m		
Depth to Bottom of Interval:		476.70 m	
Height of Gauge:	2.18 m		

Drill Rod ID:	60 mm		
Borehole Outside Diameter:		76.0 mm	
Packer Inflation Pressure:	370 psi		
Cleaning (Vol./Time/Until Clean):		33 minutes	

Pressure Interval _____ Rod leak test

Minutes	Pressure	Volume	Δ Volume
0	100.0	972.80	--
1	100.0	972.85	0.05
2	100.0	972.85	0.00
3	100.0	972.85	0.00
4	200.0	973.40	0.55
5	200.0	973.50	0.10
6	200.0	973.40	-0.10
7	200.0	973.50	0.10
8	300.0	974.05	0.55
9	300.0	974.10	0.05
10	300.0	973.90	-0.20
Stable Avg:		974.25	0.1100

Pressure Int 250 3

Minutes	Pressure	Volume	Δ Volume
0	250.0	988.20	--
1	250.0	989.00	0.80
2	250.0	990.00	1.00
3	250.0	990.65	0.65
4	250.0	991.70	1.05
5	250.0	992.50	0.80
6	250.0	993.30	0.80
7	250.0	994.15	0.85
8	250.0	995.10	0.95
9	250.0	995.90	0.80
10	250.0	996.70	0.80
Stable Avg:	250.0		0.8500

Pressure Inte 125 1

Minutes	Pressure	Volume	Δ Volume
0	125.0	974.85	--
1	125.0	975.35	0.50
2	125.0	975.85	0.50
3	125.0	976.35	0.50
4	125.0	976.85	0.50
5	125.0	977.35	0.50
6	125.0	977.85	0.50
7	125.0	978.35	0.50
8	125.0	978.80	0.45
9	125.0	979.25	0.45
10	125.0	979.85	0.60
Stable Avg:	125.0		0.5000

Pressure Int 190 4

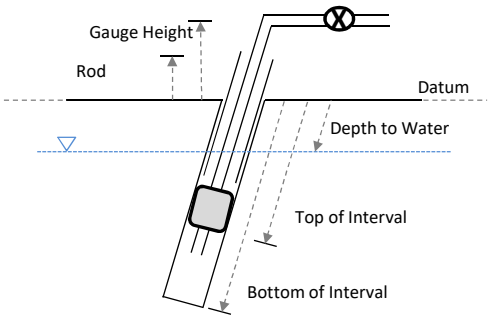
Minutes	Pressure	Volume	Δ Volume
0	190.0	996.75	--
1	200.0	997.50	0.75
2	190.0	998.10	0.60
3	190.0	998.60	0.50
4	190.0	999.30	0.70
5	190.0	999.85	0.55
6	190.0	1000.50	0.65
7	190.0	1001.10	0.60
8	190.0	1001.65	0.55
9	190.0	1002.30	0.65
10	190.0	1002.90	0.60
Stable Avg:	190.9		0.6150

Pressure Interval _____ 2

Minutes	Pressure	Volume	Δ Volume
0	190.0	980.70	--
1	190.0	981.40	0.70
2	190.0	982.10	0.70
3	190.0	982.65	0.55
4	190.0	983.30	0.65
5	220.0	984.05	0.75
6	190.0	984.55	0.50
7	190.0	985.35	0.80
8	190.0	985.85	0.50
9	190.0	986.60	0.75
10	190.0	987.20	0.60
Stable Avg:	192.7		0.6500

Pressure Int 125 5

Minutes	Pressure	Volume	Δ Volume
0	125.0	1002.90	-
1	125.0	1003.35	0.45
2	125.0	1003.85	0.50
3	125.0	1004.30	0.45
4	125.0	1004.75	0.45
5	125.0	1005.30	0.55
6	125.0	1005.75	0.45
7	125.0	1006.20	0.45
8	125.0	1006.70	0.50
9	125.0	1007.10	0.40
10	125.0	1007.65	0.55
Stable Avg:	125.0		0.4750



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments: Test added to measure flow in high strain zone intersected in this interval. Kept pressuring up in 190 psi and 250 psi tests, leading to some irregular flow levels (both during spikes and drops in pressure while trying to readjust to target pressure values). Did not switch to falling head test due to average of flow rates being 0.5 L/min. Flow volumes reduced slightly as test progressed, probably due to swelling clays in structure interval

BGC ENGINEERING INC.
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Client: NexGen **Hole ID:** GAR-17-003

Project: Snowbird PFS **Test #:** 5

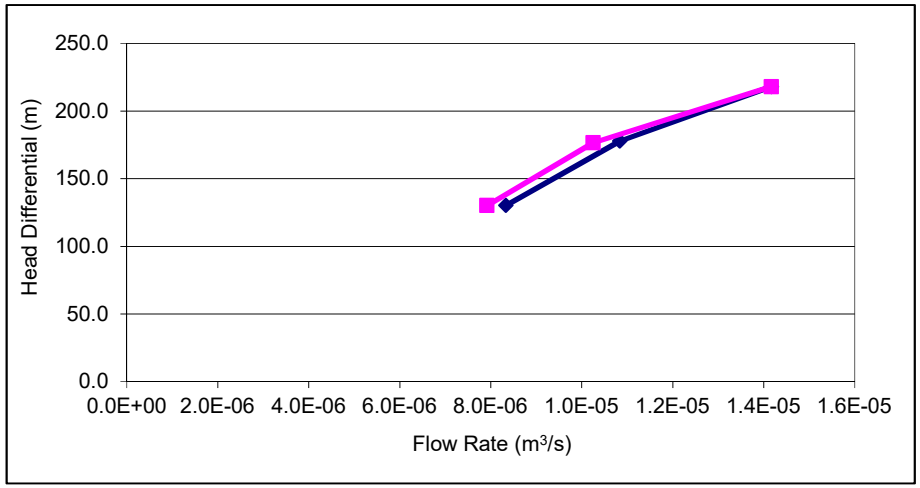
Project #: 1762-001 **From (m):** 462.95 **To (m):** 476.70

Calculation Input Parameters:

L: Length of Test Interval (m)	13.75	Borehole Diameter (m):	0.08	Comments:
Test Interval Midpoint (m Depth):	469.83	**r**: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	2.18	**A**: Angle From Horizontal (deg):	80	
Depth to Water Table (m Depth):	40.66	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	1.8E-06	0.0	42.2	3.0E-09	Leak Test
125.0	8.3E-06	87.9	130.1	4.4E-09	X
192.7	1.1E-05	135.5	177.7	4.2E-09	X
250.0	1.4E-05	175.8	218.0	4.4E-09	X
190.9	1.0E-05	134.2	176.5	4.0E-09	X
125.0	7.9E-06	87.9	130.1	4.1E-09	X
			Geo Mean	**4.2.E-09**	



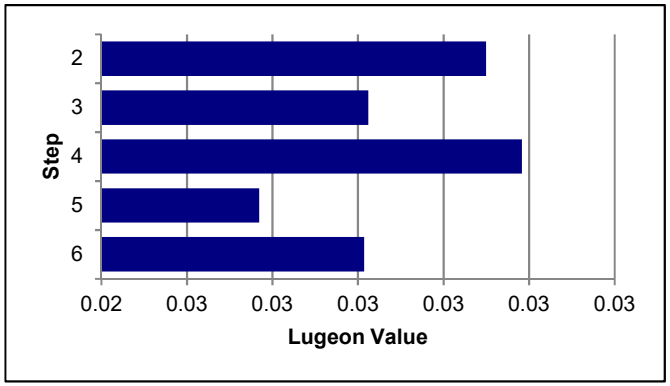
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	4.1	0.03	0.01	0.02	Leak Test
2	12.8	0.13	0.04	0.03	X
3	17.4	0.17	0.05	0.03	X
4	21.4	0.22	0.06	0.03	X
5	17.3	0.16	0.04	0.03	X
6	12.8	0.13	0.03	0.03	X
			Geo Mean	**0.03**	
			Max L	**0.03**	

Lugeon Estimate Check:

K (from packer test): 4.2E-07 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.04



BGC ENGINEERING INC.
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Client:	Nexgen	**Collar El.:**	544	**Hole ID:**	GAR-17-003
Project:	Snowbird	**Trend:**	147	**Plunge:**	80
Project #:	1762001	**Personnel:**	TR	**Date:**	3-Oct-17
Measurement Units		**Start Flushing:**	4:13 am		
Volume:	m^3	**End Flushing:**	5:08 am		
Pressure:	psi	**Start Packer Testing:**	5:19 am		
Length:	m	**End Packer Testing:**	6:30 am		

Design Test Interval: 495-525
Test #: 6
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.78 m		
Depth to Water:		40.63	m
Depth to Top of Interval:	477.20 m		
Depth to Bottom of Interval:		494.70	m
Height of Gauge:	m		
Drill Rod ID:	60 mm		
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	380 psi		
Cleaning (Vol./Time/Until Clean):		54 min	

Pressure Interval — Rod leak test

Minutes	Pressure	Volume	Δ Volume
0	100.0	38.50	--
1	100.0	38.60	0.10
2	100.0	38.60	0.00
3	100.0	38.60	0.00
4	200.0	39.25	-
5	200.0	39.10	backflow
6	200.0	39.20	0.10
7	200.0	39.50	0.00
8	300.0	39.75	-
9	300.0	39.80	0.05
10	300.0	problem with hose, fixed	
Stable Avg:		39.80	0.04

Pressure Int 260 3

Minutes	Pressure	Volume	Δ Volume
0	260.0	83.00	--
1	260.0	85.80	2.80
2	260.0	88.50	2.70
3	260.0	90.90	2.40
4	260.0	93.60	2.70
5	260.0	96.10	2.50
6	260.0	98.70	2.60
7	260.0	101.35	2.65
8	260.0	103.70	2.35
9	260.0	106.30	2.60
10	260.0	108.70	2.40
Stable Avg:	260.0		2.57

Pressure Inte 130 1

Minutes	Pressure	Volume	Δ Volume
0	130.0	42.10	--
1	130.0	43.20	1.10
2	130.0	45.60	2.40
3	130.0	47.20	1.60
4	130.0	48.80	1.60
5	130.0	50.45	1.65
6	130.0	51.95	1.50
7	130.0	53.55	1.60
8	130.0	55.20	1.65
9	130.0	56.75	1.55
10	130.0	58.40	1.65
Stable Avg:	130.0		1.63

Pressure Int 195 4

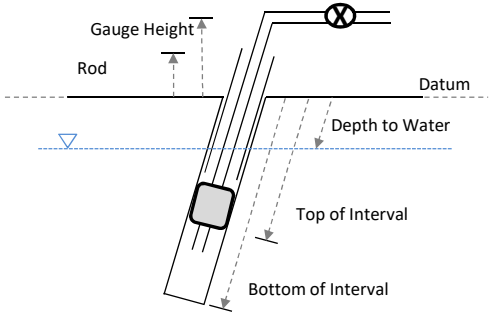
Minutes	Pressure	Volume	Δ Volume
0	195.0	109.15	--
1	195.0	111.20	2.05
2	195.0	113.20	2.00
3	195.0	115.00	1.80
4	195.0	117.00	2.00
5	195.0	118.85	1.85
6	195.0	120.75	1.90
7	195.0	122.60	1.85
8	195.0	124.50	1.90
9	195.0	126.40	1.90
10	195.0	128.20	1.80
Stable Avg:	195.0		1.91

Pressure Inte 195 2

Minutes	Pressure	Volume	Δ Volume
0	195.0	60.20	--
1	195.0	62.20	2.00
2	195.0	64.25	2.05
3	195.0	66.35	2.10
4	195.0	68.35	2.00
5	195.0	70.30	1.95
6	195.0	72.30	2.00
7	195.0	74.20	1.90
8	195.0	76.10	1.90
9	195.0	77.90	1.80
10	195.0	79.80	1.90
Stable Avg:	195.0		1.96

Pressure Int 130 5

Minutes	Pressure	Volume	Δ Volume
0	130.0	128.60	-
1	130.0	130.15	1.55
2	130.0	131.65	1.50
3	130.0	133.15	1.50
4	130.0	134.60	1.45
5	130.0	136.10	1.50
6	130.0	137.60	1.50
7	130.0	139.05	1.45
8	130.0	140.60	1.55
9	130.0	142.05	1.45
10	130.0	143.55	1.50
Stable Avg:	130.0		1.50



IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments: Packer test was performed to test a structure zone in this interval. Structure may be SZ-05, which was expected to be intersected between 495-525m.

BGC ENGINEERING INC.
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Client: NexGen **Hole ID:** GAR-17-003

Project: Snowbird PFS **Test #:** 6

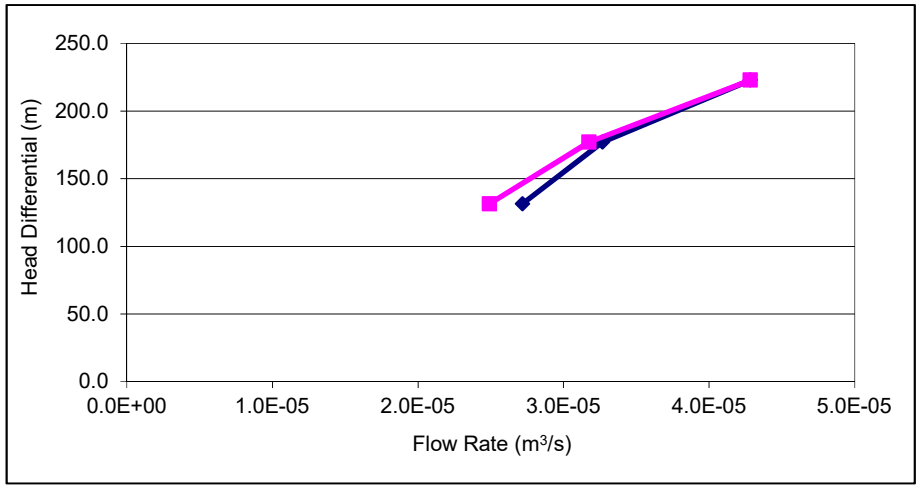
Project #: 1762-001 **From (m):** 477.20 **To (m):** 494.70

Calculation Input Parameters:

L: Length of Test Interval (m)	17.50	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	485.95	**r**: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	0.00	**A**: Angle From Horizontal (deg):	80	
Depth to Water Table (m Depth):	40.63	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	6.9E-07	0.0	40.0	9.7E-10	Leak Test
130.0	2.7E-05	91.4	131.4	1.2E-08	X
195.0	3.3E-05	137.1	177.1	1.0E-08	X
260.0	4.3E-05	182.8	222.8	1.1E-08	X
195.0	3.2E-05	137.1	177.1	1.0E-08	X
130.0	2.5E-05	91.4	131.4	1.1E-08	X
			Geo Mean	**1.1.E-08**	



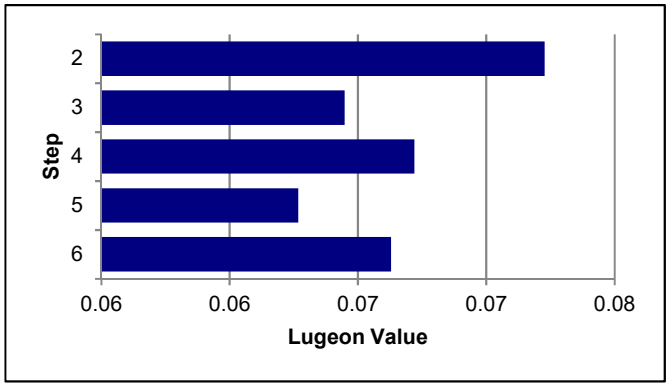
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	3.9	0.01	0.00	0.01	Leak Test
2	12.9	0.43	0.09	0.07	X
3	17.4	0.52	0.11	0.06	X
4	21.9	0.68	0.15	0.07	X
5	17.4	0.50	0.11	0.06	X
6	12.9	0.39	0.09	0.07	X
			Geo Mean	**0.07**	
			Max L	**0.07**	

Lugeon Estimate Check:

K (from packer test): 1.1E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.11



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Client:	Nexgen	**Collar El.:**	544	**Hole ID:**	GAR-17-003
Project:	Snowbird	**Trend:**	147	**Plunge:**	80
Project #:	1762001	**Personnel:**	TR	**Date:**	3-Oct-17
Measurement Units		**Start Flushing:**	6:30 PM		
Volume:	m^3	**End Flushing:**	8:10 PM		
Pressure:	psi	**Start Packer Testing:**	8:30 PM		
Length:	m	**End Packer Testing:**	9:45 PM		

Design Test Interval: 495-525
Test #: 7
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height:	2.48	m	
Depth to Water:		40.63	m
Depth to Top of Interval:	525.25	m	
Depth to Bottom of Interval:		533.70	m
Height of Gauge:	2.86	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	380	psi	
Cleaning (Vol./Time/Until Clean):		30 MIN	

Pressure Interval — Rod leak test

Minutes	Pressure	Volume	Δ Volume
0	100.0	164.70	--
1	100.0	165.20	0.50
2	100.0	165.20	0.00
3	100.0	165.25	0.05
4	200.0	165.25	-
5	200.0	165.90	0.05
6	200.0	165.90	0.00
7	200.0	165.90	0.00
8	300.0	166.40	-
9	300.0	166.40	0.00
10	300.0	166.50	0.10
Stable Avg:		166.5	0.05

Pressure Int 260 3

Minutes	Pressure	Volume	Δ Volume
0	260.0	214.80	--
1	260.0	218.55	3.75
2	260.0	222.30	3.75
3	260.0	226.15	3.85
4	260.0	229.95	3.80
5	260.0	233.80	3.85
6	260.0	237.90	4.10
7	260.0	241.90	4.00
8	260.0	246.00	4.10
9	260.0	250.00	4.00
10	260.0	254.10	4.10
Stable Avg:	260.0		3.93

Pressure Inte 130 1

Minutes	Pressure	Volume	Δ Volume
0	130.0	168.35	--
1	130.0	169.90	1.55
2	130.0	171.50	1.60
3	130.0	173.20	1.70
4	130.0	174.70	1.50
5	130.0	176.30	1.60
6	130.0	177.90	1.60
7	130.0	179.50	1.60
8	130.0	181.20	1.70
9	130.0	182.90	1.70
10	130.0	184.70	1.80
Stable Avg:	130.0		1.64

Pressure Int 195 4

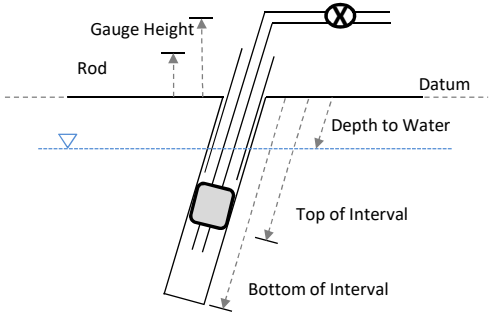
Minutes	Pressure	Volume	Δ Volume
0	195.0	255.40	--
1	195.0	258.40	3.00
2	195.0	261.30	2.90
3	195.0	264.20	2.90
4	195.0	267.15	2.95
5	195.0	270.05	2.90
6	195.0	273.00	2.95
7	195.0	275.95	2.95
8	195.0	278.95	3.00
9	195.0	281.85	2.90
10	195.0	284.80	2.95
Stable Avg:	195.0		2.94

Pressure Inte 195 2

Minutes	Pressure	Volume	Δ Volume
0	195.0	186.05	--
1	195.0	188.70	2.65
2	195.0	191.30	2.60
3	195.0	193.85	2.55
4	195.0	196.50	2.65
5	195.0	199.10	2.60
6	195.0	201.70	2.60
7	195.0	204.50	2.80
8	195.0	207.15	2.65
9	195.0	209.75	2.60
10	195.0	212.30	2.55
Stable Avg:	195.0		2.63

Pressure Int 130 5

Minutes	Pressure	Volume	Δ Volume
0	130.0	285.80	-
1	130.0	288.00	2.20
2	130.0	290.20	2.20
3	130.0	292.40	2.20
4	130.0	294.60	2.20
5	130.0	296.80	2.20
6	130.0	299.00	2.20
7	130.0	301.10	2.10
8	130.0	303.20	2.10
9	130.0	305.40	2.20
10	130.0	307.50	2.10
Stable Avg:	130.0		2.17



IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments: Changed tam valve before test.

BGC ENGINEERING INC.
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Client: NexGen **Hole ID:** GAR-17-003

Project: Snowbird PFS **Test #:** 7

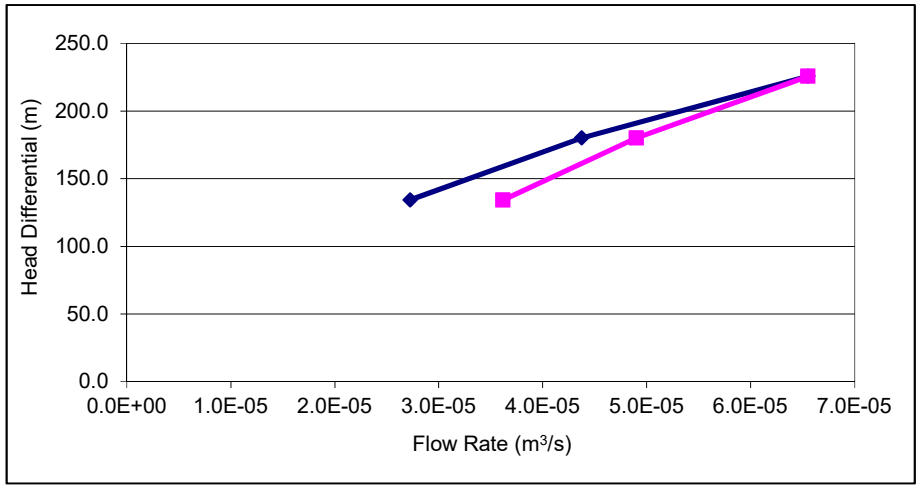
Project #: 1762-001 **From (m):** 525.25 **To (m):** 533.70

Calculation Input Parameters:

L: Length of Test Interval (m)	8.45	Borehole Diameter (m):	0.08	Comments:
Test Interval Midpoint (m Depth):	529.48	**r**: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	2.86	**A**: Angle From Horizontal (deg):	80	
Depth to Water Table (m Depth):	40.63	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	8.3E-07	0.0	42.9	2.0E-09	Leak Test
130.0	2.7E-05	91.4	134.3	2.1E-08	X
195.0	4.4E-05	137.1	180.0	2.5E-08	X
260.0	6.6E-05	182.8	225.7	3.0E-08	X
195.0	4.9E-05	137.1	180.0	2.8E-08	X
130.0	3.6E-05	91.4	134.3	2.7E-08	X
			Geo Mean	**2.6.E-08**	



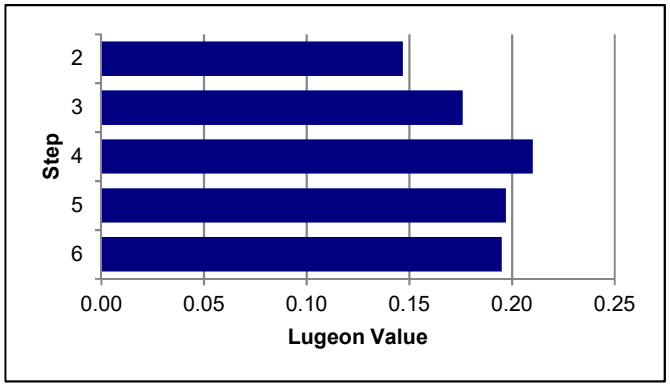
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	4.2	0.01	0.01	0.01	Leak Test
2	13.2	0.43	0.19	0.15	X
3	17.7	0.69	0.31	0.18	X
4	22.1	1.04	0.47	0.21	X
5	17.7	0.78	0.35	0.20	X
6	13.2	0.57	0.26	0.20	X
			Geo Mean	**0.18**	
			Max L	**0.21**	

Lugeon Estimate Check:

K (from packer test): 2.6E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.26



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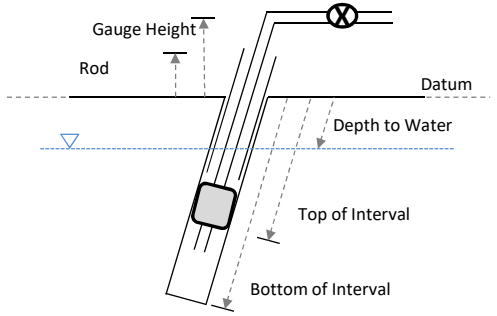
Client:	Nexgen	**Collar El.:**	544	**Hole ID:**	GAR-17-003
Project:	Snowbird	**Trend:**	147	**Plunge:**	80
Project #:	1762001	**Personnel:**	DG	**Date:**	4-Oct-17
Measurement Units		**Start Flushing:**	6:00 am	**Design Test Interval:**	none
Volume:	m^3	**End Flushing:**	6:45 am	**Test #:**	8
Pressure:	psi	**Start Packer Testing:**	7:50 am	**Packer Setup:**	☑ Single ☐ Double
Length:	m	**End Packer Testing:**	8:57 am	**Measurements Taken from Collar (Ground):**	

Rod Stickup Height:	1.70 m		
Depth to Water:		40.63	m
Depth to Top of Interval:	549.95 m		
Depth to Bottom of Interval:		563.70	m
Height of Gauge:	2.14 m		
Drill Rod ID:	60 mm		
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	350 psi		
Cleaning (Vol./Time/Until Clean):		45	mins



Pressure Inte Rod leak test

Minutes	Pressure	Volume	Δ Volume
0	atm	327.00	--
1	100.0	327.10	130.00
2	100.0	327.10	0.00
3	100.0	327.10	0.00
4	100.0	327.10	0.00
5	200.0	327.70	0.60
6	200.0	327.80	0.10
7	200.0	327.80	0.00
8	300.0	328.40	0.60
9	300.0	328.50	0.10
10	300.0	328.50	0.00
Stable Avg:			13.14

Pressure Inte 130 1

Minutes	Pressure	Volume	Δ Volume
0	130.0	340.20	--
1	130.0	341.90	1.70
2	130.0	343.60	1.70
3	130.0	345.40	1.80
4	130.0	347.00	1.60
5	130.0	348.70	1.70
6	130.0	350.30	1.60
7	130.0	352.00	1.70
8	130.0	353.60	1.60
9	130.0	355.20	1.60
10	130.0	356.80	1.60
Stable Avg:	130.0		1.66

Pressure Inte 195 2

Minutes	Pressure	Volume	Δ Volume
0	195.0	359.60	--
1	195.0	362.00	2.40
2	195.0	364.30	2.30
3	195.0	366.60	2.30
4	195.0	369.10	2.50
5	195.0	371.50	2.40
6	195.0	373.90	2.40
7	195.0	376.40	2.50
8	195.0	378.80	2.40
9	195.0	381.30	2.50
10	195.0	383.80	2.50
Stable Avg:	195.0		2.42

Pressure Int 260 3

Minutes	Pressure	Volume	Δ Volume
0	260.0	386.70	--
1	260.0	390.10	3.40
2	260.0	393.30	3.20
3	260.0	396.50	3.20
4	260.0	399.80	3.30
5	260.0	403.10	3.30
6	260.0	406.40	3.30
7	260.0	409.60	3.20
8	260.0	413.00	3.40
9	260.0	416.15	3.15
10	260.0	419.60	3.45
Stable Avg:	260.0		3.29

Pressure Int 195 4

Minutes	Pressure	Volume	Δ Volume
0	195.0	420.60	--
1	195.0	423.20	2.60
2	195.0	426.10	2.90
3	195.0	428.35	2.25
4	195.0	430.85	2.50
5	195.0	433.30	2.45
6	195.0	435.80	2.50
7	195.0	438.25	2.45
8	195.0	440.75	2.50
9	195.0	443.25	2.50
10	195.0	445.65	2.40
Stable Avg:	195.0		2.51

Pressure Int 130 5

Minutes	Pressure	Volume	Δ Volume
0	130.0	446.20	-
1	130.0	448.00	1.80
2	130.0	449.85	1.85
3	130.0	451.70	1.85
4	130.0	453.55	1.85
5	130.0	455.40	1.85
6	130.0	457.25	1.85
7	130.0	459.10	1.85
8	130.0	460.90	1.80
9	130.0	462.75	1.85
10	130.0	464.55	1.80
Stable Avg:	130.0		1.84

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments:

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Client: NexGen **Hole ID:** GAR-17-003

Project: Snowbird PFS **Test #:** 8

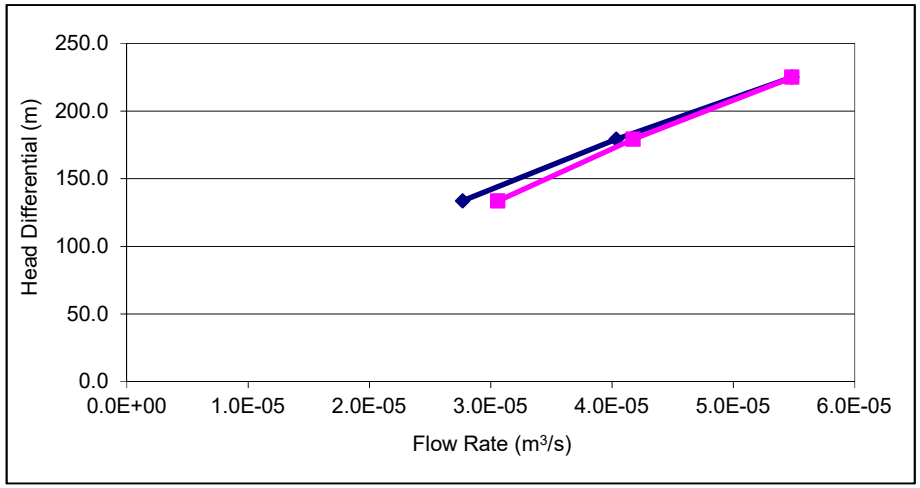
Project #: 1762-001 **From (m):** 549.95 **To (m):** 563.70

Calculation Input Parameters:

L: Length of Test Interval (m)	13.75	Borehole Diameter (m):	0.08	Comments:
Test Interval Midpoint (m Depth):	556.83	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	2.14	A: Angle From Horizontal (deg):	80	
Depth to Water Table (m Depth):	40.63	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	2.2E-04	0.0	42.2	3.5E-07	Leak Test
130.0	2.8E-05	91.4	133.6	1.4E-08	X
195.0	4.0E-05	137.1	179.3	1.5E-08	X
260.0	5.5E-05	182.8	225.0	1.7E-08	X
195.0	4.2E-05	137.1	179.3	1.6E-08	X
130.0	3.1E-05	91.4	133.6	1.6E-08	X
			Geo Mean	**1.5.E-08**	



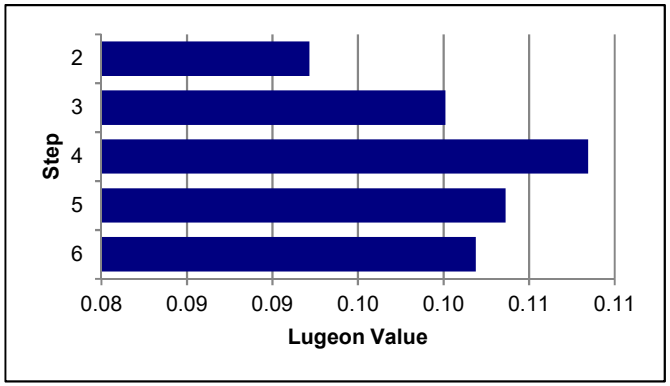
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	4.1	3.47	0.96	2.31	Leak Test
2	13.1	0.44	0.12	0.09	X
3	17.6	0.64	0.18	0.10	X
4	22.1	0.87	0.24	0.11	X
5	17.6	0.66	0.18	0.10	X
6	13.1	0.48	0.13	0.10	X
			Geo Mean	**0.10**	
			Max L	**2.31**	

Lugeon Estimate Check:

K (from packer test): 1.5E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.15



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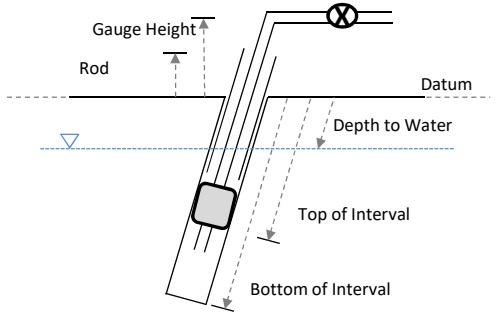
Client:	Nexgen	**Collar El.:**	544	**Hole ID:**	GAR-17-003
Project:	Snowbird	**Trend:**	147	**Plunge:**	80
Project #:	1762001	**Personnel:**	D. Glembiski	**Date:**	6-Oct-17
Measurement Units		**Start Flushing:**	1:30 pm		
Volume:	m^3	**End Flushing:**	2:50 pm		
Pressure:	psi	**Start Packer Testing:**	3:04 pm		
Length:	m	**End Packer Testing:**	4:35 pm		

Design Test Interval: 680-700
Test #: 9
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.70 m		
Depth to Water:		39.47	m
Depth to Top of Interval:	681.95 m		
Depth to Bottom of Interval:		701.70	m
Height of Gauge:	2.24 m		
Drill Rod ID:	60 mm		
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	400 psi		
Cleaning (Vol./Time/Until Clean):		80	mins



Pressure Inte Rod leak test

Minutes	Pressure	Volume	Δ Volume
0	atm	469.60	--
1	100.0	469.60	0.00
2	100.0	469.60	0.00
3	100.0	469.60	0.00
4	200.0	470.50	0.90
5	200.0	470.50	0.00
6	200.0	470.50	0.00
7	200.0	470.50	0.00
8	300.0	471.20	0.70
9	300.0	471.30	0.10
10	300.0	471.30	0.00
Stable Avg:			0.17

Pressure Int 260 3

Minutes	Pressure	Volume	Δ Volume
0	260.0	547.30	--
1	260.0	551.00	3.70
2	260.0	554.50	3.50
3	260.0	558.20	3.70
4	260.0	561.70	3.50
5	260.0	565.05	3.35
6	260.0	568.55	3.50
7	260.0	572.15	3.60
8	260.0	575.70	3.55
9	260.0	579.10	3.40
10	260.0	582.50	3.40
Stable Avg:	260.0		3.52

Pressure Inte 130 1

Minutes	Pressure	Volume	Δ Volume
0	130.0	487.80	--
1	130.0	490.00	2.20
2	130.0	492.30	2.30
3	130.0	494.60	2.30
4	130.0	496.60	2.00
5	130.0	498.75	2.15
6	130.0	500.90	2.15
7	130.0	503.05	2.15
8	130.0	505.20	2.15
9	130.0	507.30	2.10
10	130.0	509.40	2.10
Stable Avg:	130.0		2.16

Pressure Int 195 4

Minutes	Pressure	Volume	Δ Volume
0	195.0	584.00	--
1	195.0	586.70	2.70
2	195.0	589.40	2.70
3	195.0	592.15	2.75
4	195.0	594.90	2.75
5	195.0	597.60	2.70
6	195.0	600.35	2.75
7	195.0	603.05	2.70
8	195.0	605.80	2.75
9	195.0	608.60	2.80
10	195.0	611.40	2.80
Stable Avg:	195.0		2.74

Pressure Inte 195 2

Minutes	Pressure	Volume	Δ Volume
0	195.0	515.20	--
1	195.0	518.20	3.00
2	195.0	521.05	2.85
3	195.0	523.90	2.85
4	195.0	526.70	2.80
5	195.0	529.60	2.90
6	195.0	532.40	2.80
7	195.0	535.20	2.80
8	195.0	537.95	2.75
9	195.0	540.70	2.75
10	195.0	543.45	2.75
Stable Avg:	195.0		2.83

Pressure Int 130 5

Minutes	Pressure	Volume	Δ Volume
0	130.0	612.20	-
1	130.0	614.10	1.90
2	130.0	616.10	2.00
3	130.0	618.15	2.05
4	130.0	620.20	2.05
5	130.0	622.25	2.05
6	130.0	624.35	2.10
7	130.0	626.20	1.85
8	130.0	628.15	1.95
9	130.0	630.10	1.95
10	130.0	632.10	2.00
Stable Avg:	130.0		1.99

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments: Depth to water after packer was deflated and removed from hole: 39.42 m.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-003

Project: Snowbird PFS **Test #:** 9

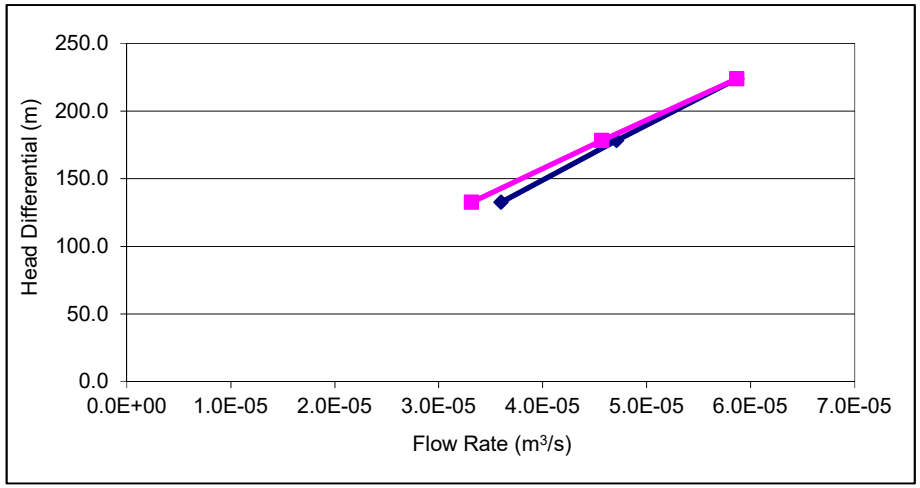
Project #: 1762-001 **From (m):** 681.95 **To (m):** 701.70

Calculation Input Parameters:

L: Length of Test Interval (m)	19.75	Borehole Diameter (m):	0.08	Comments:
Test Interval Midpoint (m Depth):	691.83	r: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	2.24	A: Angle From Horizontal (deg):	80	
Depth to Water Table (m Depth):	39.47	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	2.8E-06	0.0	41.1	3.5E-09	Leak Test
130.0	3.6E-05	91.4	132.5	1.4E-08	X
195.0	4.7E-05	137.1	178.2	1.3E-08	X
260.0	5.9E-05	182.8	223.9	1.3E-08	X
195.0	4.6E-05	137.1	178.2	1.3E-08	X
130.0	3.3E-05	91.4	132.5	1.3E-08	X
			Geo Mean	**1.3.E-08**	



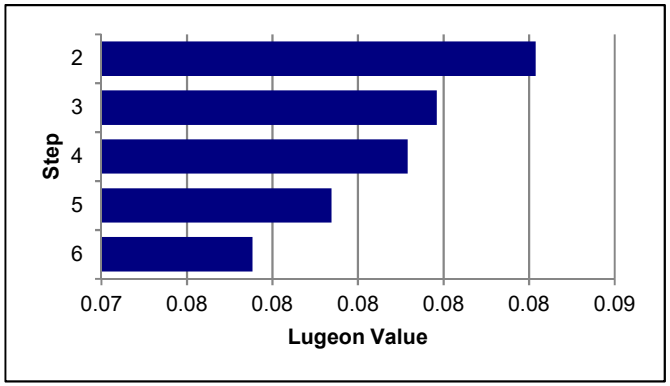
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	4.0	0.04	0.01	0.02	Leak Test
2	13.0	0.57	0.11	0.08	X
3	17.5	0.75	0.14	0.08	X
4	22.0	0.93	0.18	0.08	X
5	17.5	0.72	0.14	0.08	X
6	13.0	0.53	0.10	0.08	X
			Geo Mean	**0.08**	
			Max L	**0.08**	

Lugeon Estimate Check:

K (from packer test): 1.3E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.13



BGC ENGINEERING INC.
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Client:	NEXGEN	**Collar El.:**	540	**Hole ID:**	**GAR-17-005**
Project:	SNOWBIRD	**Trend:**	80	**Plunge:**	-70
Project #:	1762001	**Personnel:**	J Noll	**Date:**	12-Oct-17
Measurement Units		**Start Flushing:**	N/A		
Volume:	L	**End Flushing:**		N/A	
Pressure:	psi	**Start Packer Testing:**	N/A		
Length:	m	**End Packer Testing:**		N/A	

Design Test Interval: 92-102
Test #: 1
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.95	m	
Depth to Water:		5.93	m
Depth to Top of Interval:	97.95	m	
Depth to Bottom of Interval:		102.50	m
Height of Gauge:	1.53	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	350	psi	
Cleaning (Vol./Time/Until Clean):		N/A	min

Pressure Inte TEST

Minutes	Pressure	Volume	Δ Volume
0	105.0	647.20	--
1	100.0	647.21	0.01
2	100.0	647.25	0.04
3	100.0	647.25	0.00
4	200.0	647.45	0.20
5	200.0	647.45	0.00
6	200.0	647.45	0.00
7	200.0	647.45	0.00
8	300.0	647.55	0.10
9	300.0	647.60	0.05
10	300.0	647.60	0.00
Stable Avg:			0.04

Pressure Inte 50 1

Minutes	Pressure	Volume	Δ Volume
0	50.0	667.60	--
1	50.0	669.40	1.80
2	50.0	671.90	2.50
3	50.0	672.10	0.20
4	50.0	673.30	1.20
5	50.0	674.45	1.15
6	50.0	675.60	1.15
7	50.0	676.75	1.15
8	50.0	677.90	1.15
9	50.0	678.95	1.05
10	50.0	680.00	1.05
	50.0		1.24

Pressure Inte 75 2

Minutes	Pressure	Volume	Δ Volume
0	75.0	681.20	--
1	75.0	685.00	3.80
2	80.0	689.40	4.40
3	75.0	694.00	4.60
4	75.0	698.50	4.50
5	75.0	702.80	4.30
6	75.0	707.00	4.20
7	75.0	711.50	4.50
8	75.0	716.60	5.10
9	75.0	721.90	5.30
10	75.0	727.40	5.50
Stable Avg:	75.5		4.62

Pressure Inte 100 3

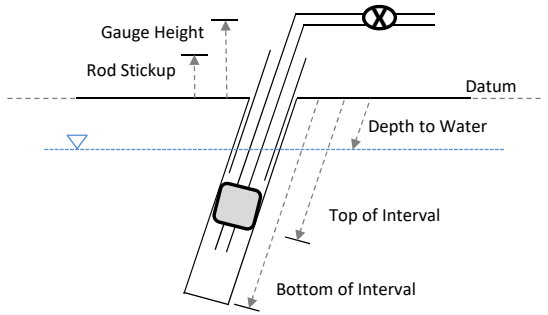
Minutes	Pressure	Volume	Δ Volume
0	100.0	741.00	--
1	100.0	758.00	17.00
2	110.0	777.00	19.00
3	105.0	793.00	16.00
4	100.0	808.00	15.00
5	100.0	823.50	15.50
6	100.0	839.50	16.00
7	100.0	856.00	16.50
8	100.0	872.00	16.00
9	110.0	890.50	18.50
10	100.0	910.00	19.50
Stable Avg:	102.3		16.90

Pressure Inte 75 4

Minutes	Pressure	Volume	Δ Volume
0	75.0	917.00	--
1	75.0	932.50	15.50
2	75.0	946.50	14.00
3	75.0	959.00	12.50
4	75.0	971.50	12.50
5	70.0	983.00	11.50
6	75.0	994.50	11.50
7	75.0	1005.00	10.50
8	75.0	1016.50	11.50
9	75.0	1031.00	14.50
10	75.0	1046.00	15.00
Stable Avg:	74.5		12.90

Pressure Inte 50 5

Minutes	Pressure	Volume	Δ Volume
0	50.0	1068.00	-
1	50.0	1084.50	16.50
2	50.0	1100.00	15.50
3	50.0	1114.00	14.00
4	50.0	1128.50	14.50
5	50.0	1142.50	14.00
6	50.0	1155.50	13.00
7	50.0	1168.00	12.50
8	50.0	1181.00	13.00
9	50.0	1194.50	13.50
10	50.0	1207.00	12.50
Stable Avg:	50.0		13.90



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

Additional Comments:
Packer seated well and there was no water coming up casing for the duration of the test. Drill pump had two 3 second intervals where pressure dropped completely and then surged back up, each time it did this the formation seemed to take more water afterwards. Happened between the rod leak test and between pressure 75 and 50 on the way down (happened when lowering pressure). Shear pin broke at 350psi

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-005

Project: Snowbird PFS **Test #:** 1

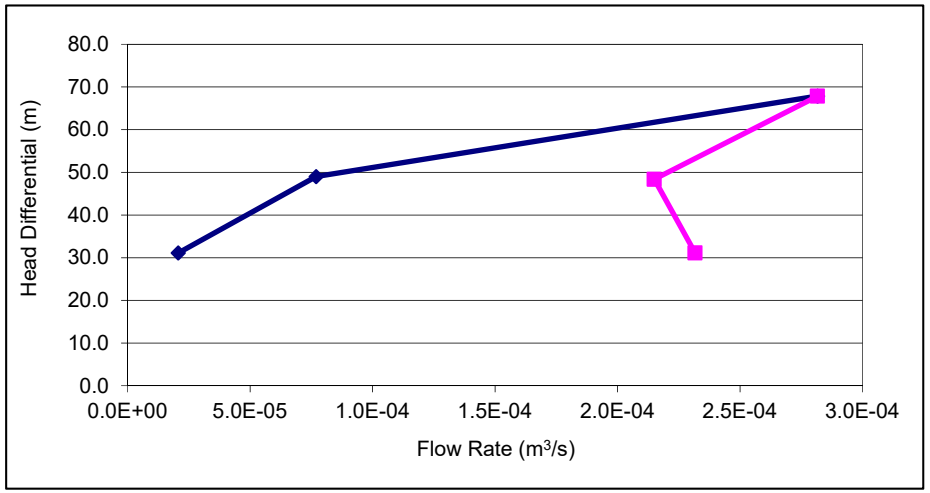
Project #: 1762-001 **From (m):** 97.95 **To (m):** 102.50

Calculation Input Parameters:

L: Length of Test Interval (m)	4.55	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	100.23	**r**: Borehole Radius (m):	0.038	Test profile shows scour/washout. Use only first 2 values for K calculation.
Gauge Height (m Above Ground):	1.53	**A**: Angle From Horizontal (deg):	-70	
Depth to Water Table (m Depth):	5.93	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
0.0	6.7E-07	0.0	-4.0	-2.8E-08	Leak Test
50.0	2.1E-05	35.2	31.1	1.1E-07	x
75.5	7.7E-05	53.1	49.0	2.6E-07	x
102.3	2.8E-04	71.9	67.9	6.9E-07	
74.5	2.2E-04	52.4	48.4	7.4E-07	
50.0	2.3E-04	35.2	31.1	1.2E-06	
			Geo Mean	**1.7.E-07**	



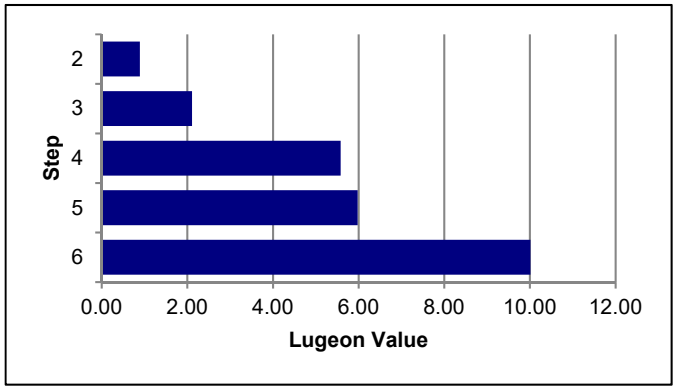
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	-0.4	0.01	0.01	-0.22	Leak Test
2	3.1	0.33	0.27	0.89	x
3	4.8	1.22	1.02	2.11	x
4	6.7	4.46	3.71	5.58	
5	4.7	3.41	2.84	5.98	
6	3.1	3.67	3.05	10.01	
			Geo Mean	**1.37**	
			Max L	**10.01**	

Lugeon Estimate Check:

K (from packer test): 1.7E-05 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 1.71



BGC ENGINEERING INC.
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Client: Nexgen Energy
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: L
Pressure: psi
Length: m

Collar El.: 540
Trend: 80 **Plunge:** -70
Personnel: M Berry **Date:** 12-Oct-17

Start Flushing: 21:20
End Flushing: 22:00
Start Packer Testing: 22:00
End Packer Testing: 23:20

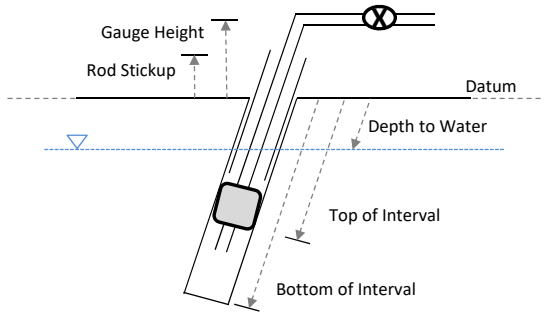
Hole ID: GAR-17-005

Design Test Interval: 74-92
Test #: 2
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 1.95 m
Depth to Water: 5.93 m
Depth to Top of Interval: 99.25 m
Depth to Bottom of Interval: 110.00 m
Height of Gauge: 1.53 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 370 psi
Cleaning (Vol./Time/Until Clean): 40 min



Pressure Interval TEST

Minutes	Pressure	Volume	Δ Volume
0	100.0	346.00	
1	100.0	347.00	1.00
2	100.0	347.10	0.10
3	100.0	347.20	0.10
4	100.0	347.20	0.00
5	150.0	347.30	0.10
6	150.0	347.30	0.00
7	150.0	347.30	0.00
8	200.0	347.40	0.10
9	200.0	347.40	0.00
10	200.0	347.40	0.00
Stable Avg:	145.0		0.14

Pressure Interval 1

Minutes	Pressure	Volume	Δ Volume
0	50.0	352.00	
1	50.0	357.30	5.30
2	50.0	361.30	4.00
3	50.0	364.60	3.30
4	50.0	367.70	3.10
5	50.0	370.70	3.00
6	50.0	373.40	2.70
7	50.0	376.00	2.60
8	50.0	378.70	2.70
9	50.0	381.40	2.70
10	50.0	383.90	2.50
Stable Avg:	50.0		3.19

Pressure Interval 2

Minutes	Pressure	Volume	Δ Volume
0	75.0	386.60	
1	75.0	393.50	6.90
2	75.0	400.80	7.30
3	75.0	408.20	7.40
4	75.0	416.10	7.90
5	75.0	424.10	8.00
6	75.0	432.10	8.00
7	75.0	440.00	7.90
8	75.0	448.00	8.00
9	75.0	456.00	8.00
10	75.0	464.20	8.20
Stable Avg:	75.0		7.76

Pressure Interval 3

Minutes	Pressure	Volume	Δ Volume
0	100.0	473.00	
1	100.0	495.60	22.60
2	110.0	520.20	24.60
3	100.0	546.50	26.30
4	100.0	572.80	26.30
5	100.0	599.60	26.80
6	100.0	626.40	26.80
7	100.0	653.40	27.00
8	100.0	674.50	21.10
9	110.0	699.00	24.50
10	100.0	729.20	30.20
Stable Avg:	102.0		25.62

Pressure Interval 4

Minutes	Pressure	Volume	Δ Volume
0	75.0	744.10	
1	75.0	763.70	19.60
2	75.0	781.00	17.30
3	75.0	798.00	17.00
4	75.0	814.80	16.80
5	75.0	831.40	16.60
6	75.0	847.70	16.30
7	75.0	864.00	16.30
8	75.0	880.70	16.70
9	75.0	897.60	16.90
10	75.0	915.20	17.60
Stable Avg:	75.0		17.11

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0	50.0	921.10	
1	50.0	933.80	12.70
2	50.0	945.80	12.00
3	50.0	956.80	11.00
4	50.0	967.60	10.80
5	50.0	978.00	10.40
6	50.0	988.20	10.20
7	50.0	998.00	9.80
8	50.0	1007.70	9.70
9	50.0	1017.30	9.60
10	50.0	1026.90	9.60
Stable Avg:	50.0		10.58

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0	0.000
2	0	0.000
4	0	0.000
6	0	0.000
8	0	0.000
10	0	0.000
15	0	0.000
20	0	0.000
25	0	0.000
30	0	0.000
40	0	0.000
50	0	0.000
60	0	0.000

Additional Comments: Hole flushed with heavy bentonite for 15 minutes then with fresh water until clear. Pin sheared at 370 psi. Loss of water pressure during the 8th minute of the 100 psi test interval due to not enough water in the reserve barrel (approx 15-20 seconds)

BGC ENGINEERING INC.
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Client: NexGen **Hole ID:** GAR-17-005

Project: Snowbird PFS **Test #:** 2

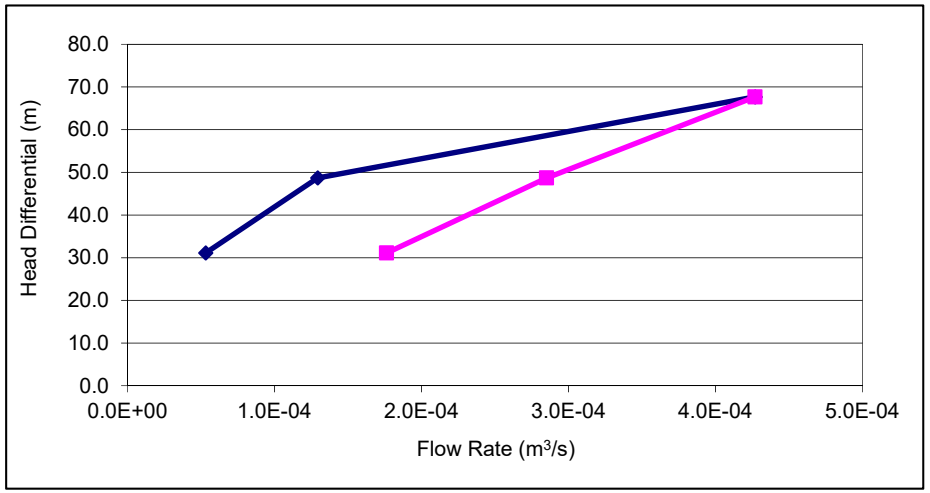
Project #: 1762-001 **From (m):** 99.25 **To (m):** 110.00

Calculation Input Parameters:

L: Length of Test Interval (m)	10.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	104.63	**r**: Borehole Radius (m):	0.038	Test shows slight scour/washout. Use first 2 values for K calculation.
Gauge Height (m Above Ground):	1.53	**A**: Angle From Horizontal (deg):	-70	
Depth to Water Table (m Depth):	5.93	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
145.0	2.3E-06	102.0	97.9	2.0E-09	Leak Test
50.0	5.3E-05	35.2	31.1	1.4E-07	x
75.0	1.3E-04	52.7	48.7	2.2E-07	x
102.0	4.3E-04	71.7	67.7	5.3E-07	
75.0	2.9E-04	52.7	48.7	4.9E-07	
50.0	1.8E-04	35.2	31.1	4.7E-07	
			Geo Mean	**1.8.E-07**	



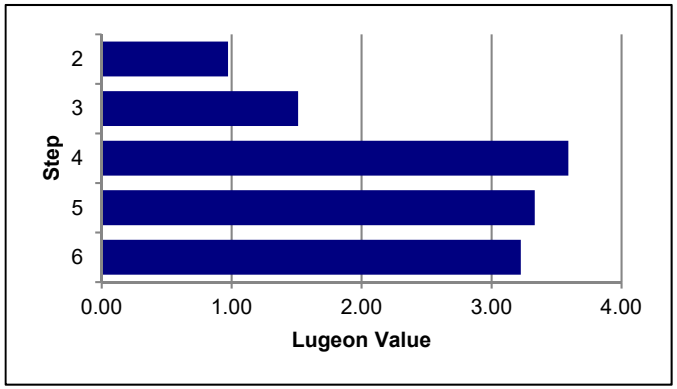
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	9.6	0.04	0.01	0.01	Leak Test
2	3.1	0.84	0.30	0.97	x
3	4.8	2.05	0.72	1.51	x
4	6.6	6.77	2.38	3.59	
5	4.8	4.52	1.59	3.33	
6	3.1	2.80	0.98	3.23	
			Geo Mean	**1.21**	
			Max L	**3.59**	

Lugeon Estimate Check:

K (from packer test): 1.8E-05 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 1.78



BGC ENGINEERING INC.
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Client: Nexgen Energy
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: L
Pressure: psi
Length: m

Collar El.: 540
Trend: 80 **Plunge:** -70
Personnel: jn **Date:** 10/04/2017

Start Flushing: 0:00
End Flushing: 0:00
Start Packer Testing: 0:00
End Packer Testing: 0:00

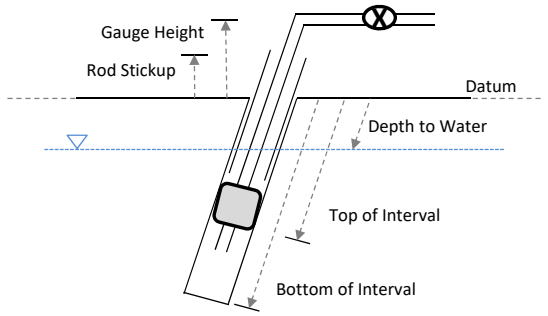
Hole ID: GAR-17-005

Design Test Interval: 145-165
Test #: 3
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 1.95 m
Depth to Water: 0.00 m
Depth to Top of Interval: 159.65 m
Depth to Bottom of Interval: 173.40 m
Height of Gauge: 1.53 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 410 psi
Cleaning (Vol./Time/Until Clean): 30min



Pressure Interval TEST

Minutes	Pressure	Volume	Δ Volume
0	100.0	39.8900	
1	100.0	39.9000	0.0100
2	100.0	39.9000	0.0000
3	100.0	39.9000	0.0000
4	200.0	40.1200	0.2200
5	200.0	40.1200	0.0000
6	200.0	40.1200	0.0000
7	200.0	40.1000	-0.0200
8	300.0	40.2500	0.1500
9	300.0	40.2500	0.0000
10	300.0	40.2500	0.0000
Stable Avg:	200.0		0.0360

Pressure Interval 1

Minutes	Pressure	Volume	Δ Volume
0	140.0	44.0000	
1	140.0	44.9000	0.9000
2	140.0	45.9000	1.0000
3	140.0	46.9000	1.0000
4	150.0	48.0000	1.1000
5	150.0	49.1500	1.1500
6	150.0	50.2500	1.1000
7	140.0	51.3000	1.0500
8	140.0	52.3500	1.0500
9	140.0	53.4000	1.0500
10	156.0	54.5000	1.1000
	144.6		1.0500

Pressure Interval 2

Minutes	Pressure	Volume	Δ Volume
0	200.0	55.7000	
1	210.0	57.0000	1.5000
2	200.0	58.2000	1.2000
3	200.0	59.4000	1.2000
4	200.0	60.7000	1.3000
5	200.0	62.1000	1.4000
6	210.0	63.5500	1.4500
7	200.0	64.8000	1.2500
8	200.0	66.0000	1.2000
9	200.0	67.3000	1.3000
10	205.0	68.6000	1.3000
Stable Avg:	202.5		1.3100

Pressure Interval 3

Minutes	Pressure	Volume	Δ Volume
0	270.0	71.0000	
1	270.0	72.2000	1.2000
2	300.0	74.3000	1.5000
3	250.0	75.3000	1.1000
4	300.0	76.7000	1.4000
5	270.0	78.1000	1.4000
6	260.0	79.6000	1.5000
7	270.0	81.2000	1.6000
8	205.0	82.8000	1.6000
9	250.0	84.8500	2.0500
10	270.0	86.3000	1.6500
Stable Avg:	264.5		1.5000

Pressure Interval 4

Minutes	Pressure	Volume	Δ Volume
0	200.0	85.6000	
1	200.0	87.0000	1.4000
2	205.0	88.4000	1.4000
3	200.0	89.7000	1.3000
4	200.0	91.0000	1.3000
5	200.0	92.3000	1.3000
6	205.0	93.7000	1.4000
7	205.0	95.1000	1.4000
8	200.0	96.3500	1.0000
9	210.0	97.8000	1.4500
10	200.0	99.1000	1.3000
Stable Avg:	202.5		1.3250

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0	140.0	99.2000	
1	140.0	99.9500	0.7500
2	140.0	100.7000	0.7500
3	140.0	101.4500	0.7500
4	140.0	102.2000	0.7500
5	140.0	103.0000	0.8000
6	140.0	103.7000	0.7000
7	150.0	104.6000	0.9000
8	140.0	105.3500	0.7500
9	140.0	106.1500	0.8000
10	140.0	106.9500	0.8000
Stable Avg:	141.0		0.7750

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0	0.000
2	0	0.000
4	0	0.000
6	0	0.000
8	0	0.000
10	0	0.000
15	0	0.000
20	0	0.000
25	0	0.000
30	0	0.000
40	0	0.000
50	0	0.000
60	0	0.000

Additional Comments: flow meter was having issues, it was difficult to hold at a specific pressure, especaillly when exceeding 200psi. Should be taken apart and cleaned.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-005

Project: Snowbird PFS **Test #:** 3

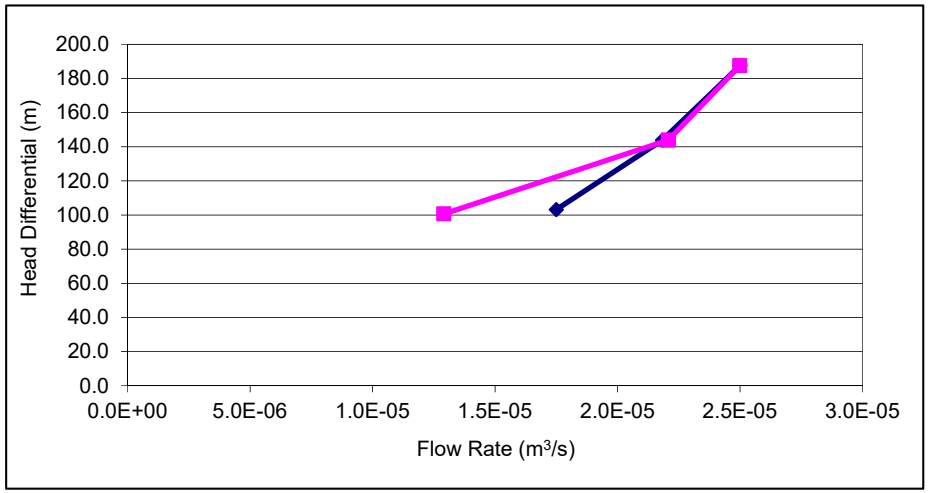
Project #: 1762-001 **From (m):** 159.65 **To (m):** 173.40

Calculation Input Parameters:

L: Length of Test Interval (m)	13.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	166.53	**r**: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	1.53	**A**: Angle From Horizontal (deg):	-70	
Depth to Water Table (m Depth):	0.00	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
200.0	6.0E-07	140.6	142.2	2.9E-10	Leak Test
144.6	1.8E-05	101.7	103.2	1.2E-08	X
202.5	2.2E-05	142.4	143.9	1.0E-08	X
264.5	2.5E-05	186.0	187.5	9.1E-09	X
202.5	2.2E-05	142.4	143.9	1.0E-08	X
141.0	1.3E-05	99.1	100.7	8.7E-09	X
			Geo Mean	**1.0.E-08**	



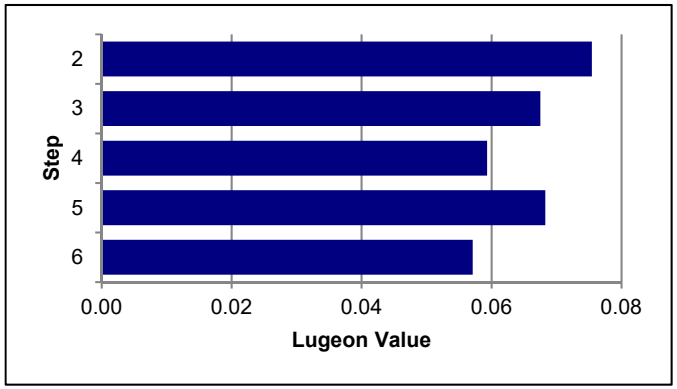
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	13.9	0.01	0.00	0.00	Leak Test
2	10.1	0.28	0.08	0.08	X
3	14.1	0.35	0.10	0.07	X
4	18.4	0.40	0.11	0.06	X
5	14.1	0.35	0.10	0.07	X
6	9.9	0.20	0.06	0.06	X
			Geo Mean	**0.07**	
			Max L	**0.08**	

Lugeon Estimate Check:

K (from packer test): 1.0E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.10



BGC ENGINEERING INC.
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Client: Nexgen Energy
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: L
Pressure: psi
Length: m

Collar El.: 540
Trend: 80 **Plunge:** -70
Personnel: JN **Date:** 17-Oct-17

Start Flushing: N/A
End Flushing: N/A
Start Packer Testing: N/A
End Packer Testing: N/A

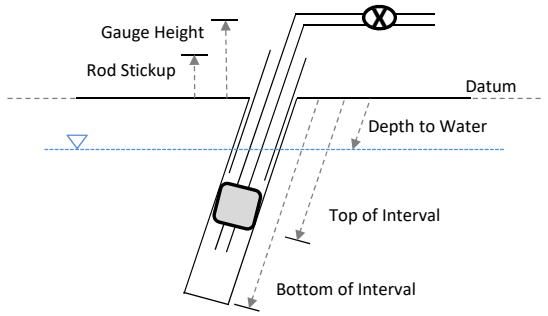
Hole ID: GAR-17-005

Design Test Interval: 385-523
Test #: 4
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 2.65 m
Depth to Water: 33.45 m
Depth to Top of Interval: 392.95 m
Depth to Bottom of Interval: 404.50 m
Height of Gauge: 1.53 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 450 psi
Cleaning (Vol./Time/Until Clean): 35min



Pressure Inte test 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	109.4500	
1	100.0	109.4500	0.0000
2	100.0	109.4600	0.0100
3	100.0	109.5000	0.0400
4	210.0	110.0600	0.5600
5	200.0	110.0000	-0.0600
6	220.0	110.1500	0.1500
7	220.0	110.2500	0.1000
8	290.0	110.5700	0.3200
9	290.0	110.5500	-0.0200
10	300.0	110.6000	0.0500
Stable Avg:	203.0		0.1150

Pressure Inte 150 2

Minutes	Pressure	Volume	Δ Volume
0	150.0	120.0000	
1	160.0	122.9000	2.9000
2	150.0	125.5500	2.6500
3	160.0	128.3000	2.7500
4	160.0	131.3000	3.0000
5	150.0	134.1000	2.8000
6	160.0	137.4000	3.3000
7	160.0	140.8000	3.4000
8	160.0	144.3000	3.5000
9	160.0	147.8500	3.5500
10	160.0	151.4000	3.5500
	158.0		3.1400

Pressure Inte 225 3

Minutes	Pressure	Volume	Δ Volume
0	225.0	153.0000	
1	225.0	158.6000	5.6000
2	210.0	164.0000	5.4000
3	225.0	169.9000	5.9000
4	225.0	175.6000	5.7000
5	225.0	181.3000	5.7000
6	235.0	187.2000	5.9000
7	225.0	193.0000	5.8000
8	225.0	198.9000	5.9000
9	225.0	204.9000	6.0000
10	225.0	210.8000	5.9000
Stable Avg:	224.5		5.7800

Pressure Inte 300 4

Minutes	Pressure	Volume	Δ Volume
0	300.0	211.0000	
1	300.0	218.0000	7.0000
2	300.0	225.0000	7.0000
3	295.0	231.6000	6.6000
4	300.0	238.5000	6.9000
5	300.0	245.4000	6.9000
6	300.0	252.4000	7.0000
7	290.0	259.3000	6.9000
8	300.0	265.9000	6.6000
9	300.0	272.5000	6.6000
10	300.0	279.3000	6.8000
Stable Avg:	298.5		6.8300

Pressure Inte 225 5

Minutes	Pressure	Volume	Δ Volume
0	225.0	populate	
1	225.0	283.4000	#VALUE!
2	225.0	289.0000	5.6000
3	225.0	294.6000	5.6000
4	225.0	300.1000	5.5000
5	235.0	305.8000	5.7000
6	225.0	311.6000	5.8000
7	225.0	317.1000	5.5000
8	240.0	322.7000	5.6000
9	225.0	328.3000	5.6000
10	225.0	334.1000	5.8000
Stable Avg:	227.5		5.6333

Pressure Inte 150 6

Minutes	Pressure	Volume	Δ Volume
0	150.0	335.0000	
1	150.0	340.8000	5.8000
2	150.0	346.6500	5.8500
3	150.0	352.4000	5.7500
4	160.0	358.1000	5.7000
5	155.0	364.0000	5.9000
6	155.0	369.8000	5.8000
7	155.0	375.7000	5.9000
8	150.0	381.5000	5.8000
9	150.0	387.7000	6.2000
10	145.0	393.7000	6.0000
Stable Avg:	152.0		5.8700

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0	0.000
2	0	0.000
4	0	0.000
6	0	0.000
8	0	0.000
10	0	0.000
15	0	0.000
20	0	0.000
25	0	0.000
30	0	0.000
40	0	0.000
50	0	0.000
60	0	0.000

Additional Comments: driller lost return at ~396m. Not sure what happened in last interval, caseing wasn't showing water, pump wasn't jacking to hard, must have washed rock away.

BGC ENGINEERING INC.
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Client: NexGen **Hole ID:** GAR-17-005

Project: Snowbird PFS **Test #:** 4

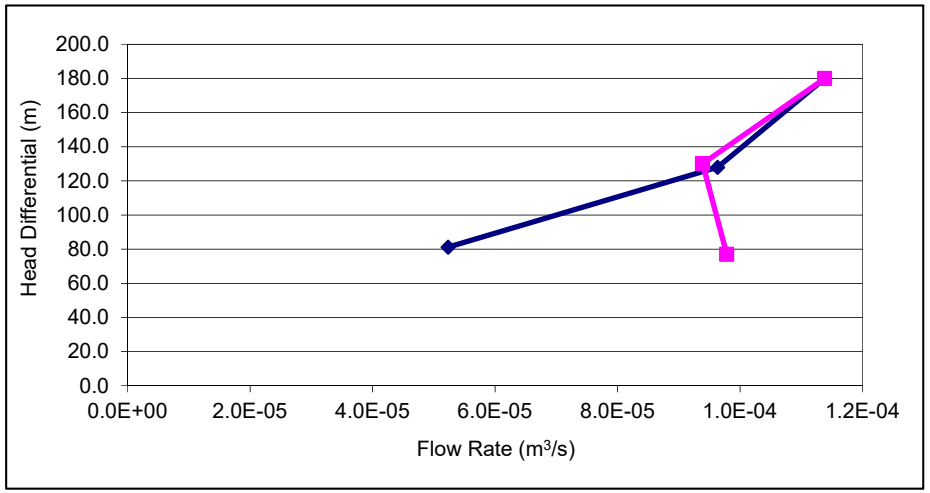
Project #: 1762-001 **From (m):** 392.95 **To (m):** 404.50

Calculation Input Parameters:

L: Length of Test Interval (m)	11.55	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	398.73	**r**: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	1.53	**A**: Angle From Horizontal (deg):	-70	Washout on last stage. Not included in geo mean.
Depth to Water Table (m Depth):	33.45	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
203.0	1.9E-06	142.7	112.8	1.3E-09	Leak Test
158.0	5.2E-05	111.1	81.2	5.1E-08	X
224.5	9.6E-05	157.8	127.9	5.9E-08	X
298.5	1.1E-04	209.9	180.0	5.0E-08	X
227.5	9.4E-05	160.0	130.1	5.7E-08	X
152.0	9.8E-05	106.9	77.0	1.0E-07	
			Geo Mean	**5.4.E-08**	



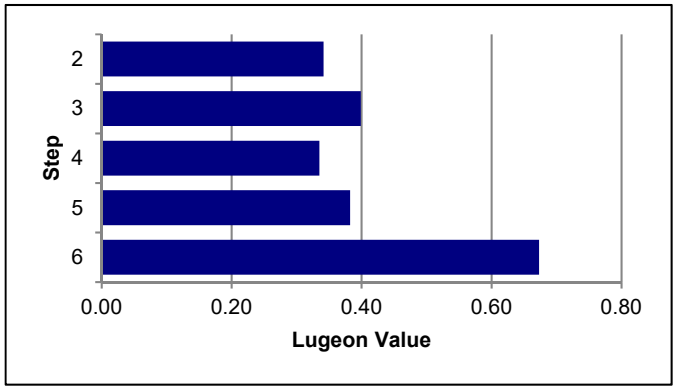
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	11.1	0.03	0.01	0.01	Leak Test
2	8.0	0.83	0.27	0.34	X
3	12.5	1.53	0.50	0.40	X
4	17.6	1.80	0.59	0.34	X
5	12.8	1.49	0.49	0.38	X
6	7.5	1.55	0.51	0.67	
			Geo Mean	**0.36**	
			Max L	**0.67**	

Lugeon Estimate Check:

K (from packer test): 5.4E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.54



BGC ENGINEERING INC.
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Client:	Nexgen Energy
Project:	Snowbird
Project #:	176001
Measurement Units	
Volume:	L
Pressure:	psi
Length:	m

Collar El.:	540		
Trend:	80	**Plunge:**	-70
Personnel:	M Berry	**Date:**	17-Oct-17
Start Flushing:	23:30		
End Flushing:			0:00
Start Packer Testing:	0:15		
End Packer Testing:			1:30

Hole ID: **GAR-17-005**

Design Test Interval:	385-523		
Test #:	5		
Packer Setup:	☑ Single	☐ Double	
Measurements Taken from Collar (Ground):			
Rod Stickup Height:	1.95	m	
Depth to Water:			30.00 m
Depth to Top of Interval:	426.65	m	
Depth to Bottom of Interval:			434.40 m
Height of Gauge:	2.43	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:			76.0 mm
Packer Inflation Pressure:	450	psi	
Cleaning (Vol./Time/Until Clean):			30 min

Rod leak test 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	422.2000	
1	100.0	422.2000	0.0000
2	100.0	422.2000	0.0000
3	100.0	422.2000	0.0000
4	100.0	422.2000	0.0000
5	200.0	422.7000	0.5000
6	200.0	422.7000	0.0000
7	200.0	422.7000	0.0000
8	250.0	423.0000	0.3000
9	250.0	423.0000	0.0000
10	250.0	423.0000	0.0000
Stable Avg:	175.0		0.0800

Pressure Interval ___50___ 2

Minutes	Pressure	Volume	Δ Volume
0	50.0	513.0000	
1	50.0	532.8000	19.8000
2	50.0	552.0000	19.2000
3	50.0	571.8000	19.8000
4	50.0	590.4000	18.6000
5	50.0	608.9000	18.5000
6	50.0	627.0000	18.1000
7	50.0	644.9000	17.9000
8	50.0	663.0000	18.1000
9	50.0	680.8000	17.8000
10	50.0	698.8000	18.0000
	50.0		18.5800

Pressure Interval ___75___ 3

Minutes	Pressure	Volume	Δ Volume
0	75.0	713.0000	
1	75.0	735.3000	22.3000
2	75.0	757.2000	21.9000
3	75.0	780.0000	22.8000
4	75.0	801.6000	21.6000
5	75.0	822.7000	21.1000
6	75.0	843.5000	20.8000
7	75.0	863.9000	20.4000
8	75.0	884.0000	20.1000
9	75.0	904.0000	20.0000
10	75.0	924.0000	20.0000
Stable Avg:	75.0		21.1000

Pressure Interval ___100___ 4

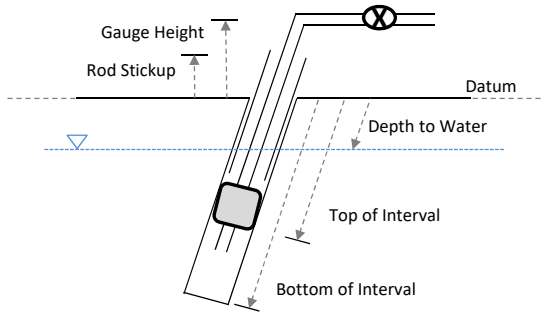
Minutes	Pressure	Volume	Δ Volume
0	100.0	940.0000	
1	100.0	965.9000	25.9000
2	100.0	990.6000	24.7000
3	100.0	1016.0000	25.4000
4	100.0	1040.8000	24.8000
5	100.0	1066.4000	25.6000
6	100.0	1091.5000	25.1000
7	100.0	1117.0000	25.5000
8	100.0	1141.6000	24.6000
9	100.0	1164.5000	22.9000
10	100.0	1187.6000	23.1000
Stable Avg:	100.0		24.7600

Pressure Interval ___75___ 5

Minutes	Pressure	Volume	Δ Volume
0	75.0	1195.0000	
1	75.0	1212.3000	17.3000
2	75.0	1230.7000	18.4000
3	75.0	1248.9000	18.2000
4	75.0	1267.4000	18.5000
5	75.0	1285.9000	18.5000
6	75.0	1304.0000	18.1000
7	75.0	1322.3000	18.3000
8	75.0	1340.7000	18.4000
9	75.0	1358.9000	18.2000
10	75.0	1376.8000	17.9000
Stable Avg:	75.0		18.1800

Pressure Interval ___50___ 6

Minutes	Pressure	Volume	Δ Volume
0	50.0	1382.0000	
1	50.0	1394.4000	12.4000
2	50.0	1407.1000	12.7000
3	50.0	1419.8000	12.7000
4	50.0	1432.5000	12.7000
5	50.0	1445.3000	12.8000
6	50.0	1458.2000	12.9000
7	50.0	1471.0000	12.8000
8	50.0	1484.0000	13.0000
9	50.0	1496.9000	12.9000
10	50.0	1509.9000	13.0000
Stable Avg:	50.0		12.7900



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0	0.000
2	0	0.000
4	0	0.000
6	0	0.000
8	0	0.000
10	0	0.000
15	0	0.000
20	0	0.000
25	0	0.000
30	0	0.000
40	0	0.000
50	0	0.000
60	0	0.000

Additional Commnets: Pin sheared at 450 psi

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-005

Project: Snowbird PFS **Test #:** 5

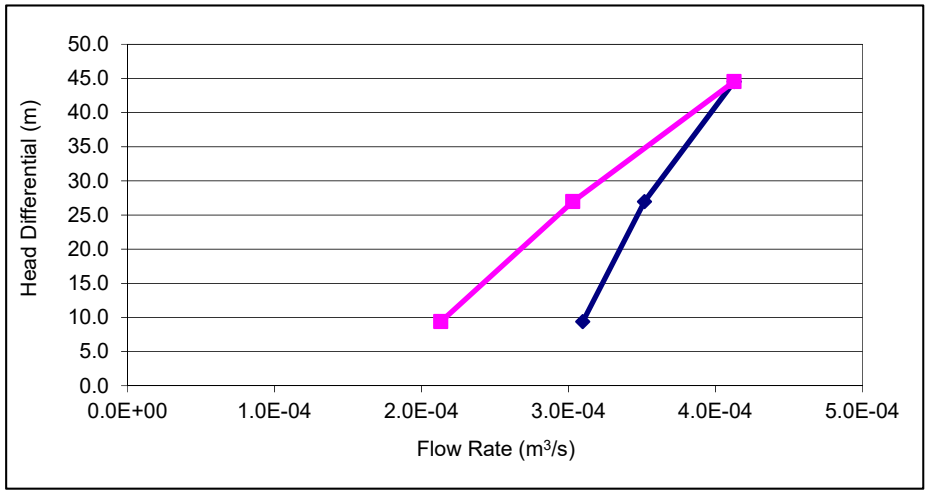
Project #: 1762-001 **From (m):** 426.65 **To (m):** 434.40

Calculation Input Parameters:

L: Length of Test Interval (m)	7.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	430.53	**r**: Borehole Radius (m):	0.038	
Gauge Height (m Above Ground):	2.43	**A**: Angle From Horizontal (deg):	-70	
Depth to Water Table (m Depth):	30.00	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
175.0	1.3E-06	123.0	97.3	1.5E-09	Leak Test
50.0	3.1E-04	35.2	9.4	3.6E-06	X
75.0	3.5E-04	52.7	27.0	1.4E-06	X
100.0	4.1E-04	70.3	44.6	1.0E-06	X
75.0	3.0E-04	52.7	27.0	1.2E-06	X
50.0	2.1E-04	35.2	9.4	2.5E-06	X
			Geo Mean	**1.7.E-06**	



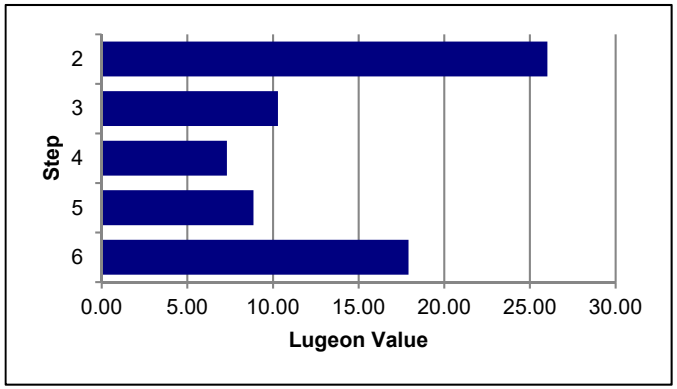
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	9.5	0.02	0.01	0.01	Leak Test
2	0.9	4.91	2.40	26.02	X
3	2.6	5.57	2.72	10.29	X
4	4.4	6.54	3.19	7.31	X
5	2.6	4.80	2.35	8.87	X
6	0.9	3.38	1.65	17.91	X
			Geo Mean	**12.55**	
			Max L	**26.02**	

Lugeon Estimate Check:

K (from packer test): 1.7E-04 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 17.36



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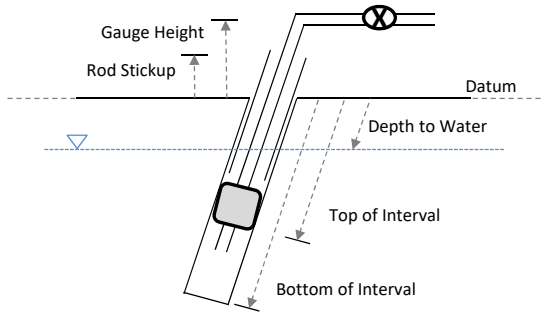
Client:	Nexgen	**Collar El.:**	540	**Hole ID:**	**GAR-17-005**
Project:	Snowbird	**Trend:**	80	**Plunge:**	-70
Project #:	1762001	**Personnel:**	M Berry	**Date:**	18-Oct-17
Measurement Units		**Start Flushing:**	22:00		
Volume:	L	**End Flushing:**		22:30	
Pressure:	psi	**Start Packer Testing:**	22:40		
Length:	m	**End Packer Testing:**		0:00	

Design Test Interval: 385-523
Test #: 6
Packer Setup: ☑ Single ☐ Double
Measurements Taken from Collar (Ground):

Rod Stickup Height:	1.95	m	
Depth to Water:		34.71	m
Depth to Top of Interval:	483.65	m	
Depth to Bottom of Interval:		491.40	m
Height of Gauge:	2.43	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	450	psi	
Cleaning (Vol./Time/Until Clean):		30 min	



Pressure Interval 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	519.5000	
1	100.0	519.5000	0.0000
2	100.0	519.5000	0.0000
3	100.0	519.5000	0.0000
4	200.0	520.1000	0.6000
5	200.0	520.1000	0.0000
6	200.0	520.2000	0.1000
7	300.0	520.7000	0.5000
8	300.0	520.7000	0.0000
9	300.0	520.7000	0.0000
10	300.0	520.8000	0.1000
Stable Avg:	210.0		0.1300

Pressure Interval 100 2

Minutes	Pressure	Volume	Δ Volume
0		520.3000	
1		520.7000	0.4000
2		521.2000	0.5000
3		521.7000	0.5000
4		522.4000	0.7000
5		523.0000	0.6000
6		523.7000	0.7000
7		524.2000	0.5000
8		524.9000	0.7000
9		525.5000	0.6000
10		526.0000	0.5000
	N/A		0.5700

Pressure Interval 150 3

Minutes	Pressure	Volume	Δ Volume
0		526.8000	
1		527.4000	0.6000
2			-527.4000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	N/A		-52.6800

Pressure Interval 4

Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	N/A		N/A

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	N/A		N/A

Pressure Interval

Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	N/A		N/A

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0.075	0.075
2	0.18	0.105
4	0.21	0.015
6	0.46	0.125
8	0.63	0.085
10	0.78	0.075
15	1.17	0.078
20	1.6	0.086
25	1.93	0.066
30	2.32	0.078
40	3.05	0.073
50	3.8	0.075
60	4.53	0.073

Additional Comments: Pin sheared at 450 psi. Interval was losing 0.5L/min of water at lowest interval and that number remaind unchanged in the 75% interval, switched to falling head test

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Falling Head Test

Client:	NexGen
Project:	Snowbird PFS
Project Number:	1762-005
Borehole Number:	GAR-17-005 Test 6
Date of Test:	18-Oct-17
Top of Test Interval (m):	483.7
Bottom of Test Interval (m):	491.4
Conducted by:	M Berry

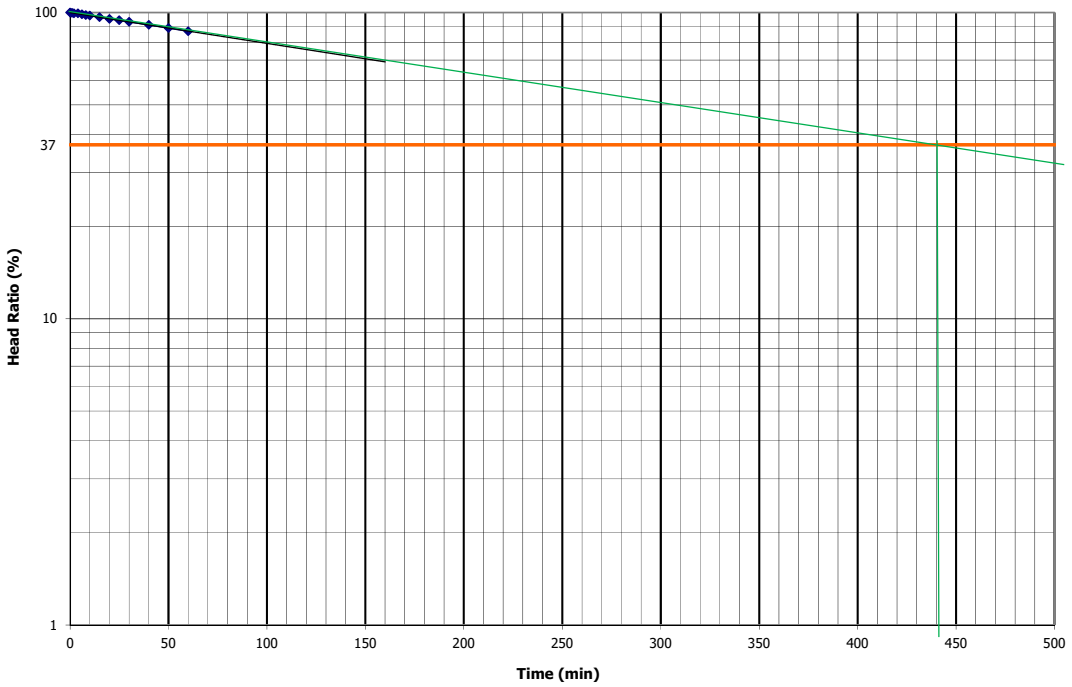
Static Water Depth from TOC:	34.71	m
Piezometer Radius (r):	0.038	m
Drill Hole Radius (R):	0.038	m
Test Interval (L):	7.8	m
T_0 (from graph below):	440	minutes

K = 1.88E-08 m/s

$$K = \frac{r^2 \ln(L/R)}{2L\,T_0} \qquad \text{Head Ratio} = \frac{\text{Static Water Level - Water Level}}{\text{Static Water Level}}$$

The Datum is chosen as the static water elevation

Time		Depth to Water			Head
(min:sec)	(min)	(cm)	(m)	Head (m)	Ratio (%)
	0.00	0	0.00	34.71	100.00
	1.00	8	0.08	34.64	99.78
	2.00	18	0.18	34.53	99.48
	4.0	21	0.21	34.50	99.39
	6.0	46	0.46	34.25	98.67
	8.0	63	0.63	34.08	98.18
	10.0	78	0.78	33.93	97.75
	15.0	117	1.17	33.54	96.63
	20.0	160	1.60	33.11	95.39
	25	193	1.93	32.78	94.44
	30	232	2.32	32.39	93.32
	40	305	3.05	31.66	91.21
	50	380	3.80	30.91	89.05
	60	453	4.53	30.18	86.95



Weather:

Notes:

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Client: Nexgen
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: L
Pressure: psi
Length: m

Collar El.: 540
Trend: 80 **Plunge:** 90
Personnel: JN **Date:** 21-Oct-17

Start Flushing: N/A
End Flushing: N/A
Start Packer Testing: N/A
End Packer Testing: N/A

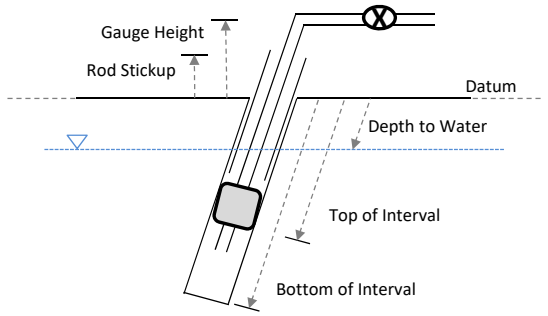
Hole ID: GAR-17-005

Design Test Interval: 529-741
Test #: 7
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 1.95 m
Depth to Water: 24.00 m
Depth to Top of Interval: 645.65 m
Depth to Bottom of Interval: 656.40 m
Height of Gauge: 2.43 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 490 psi
Cleaning (Vol./Time/Until Clean): 30min



Pressure Inte test 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	531.3200	
1	100.0	531.4100	0.0900
2	100.0	51.4500	-479.9600
3	100.0	531.4500	480.0000
4	200.0	532.2500	0.8000
5	200.0	532.3000	0.0500
6	200.0	532.4000	0.1000
7	200.0	532.4700	0.0700
8	300.0	533.1500	0.6800
9	300.0	533.2500	0.1000
10	300.0	533.2600	0.0100
Stable Avg:	200.0		0.1940

Pressure Inte 150 2

Minutes	Pressure	Volume	Δ Volume
0	150.0	536.3000	
1	150.0	536.8000	0.5000
2	150.0	537.3000	0.5000
3	150.0	537.8000	0.5000
4	150.0	538.3000	0.5000
5	150.0	538.8000	0.5000
6	150.0	539.3000	0.5000
7	150.0	539.8000	0.5000
8	150.0	540.3000	0.5000
9	150.0	540.8000	0.5000
10	150.0	541.3000	0.5000
	150.0		0.5000

Pressure Inte 225 3

Minutes	Pressure	Volume	Δ Volume
0	225.0	542.2000	
1	225.0	544.8000	2.6000
2	225.0	547.3000	2.5000
3	225.0	549.8000	2.5000
4	225.0	552.2000	2.4000
5	225.0	554.8000	2.6000
6	225.0	557.3000	2.5000
7	225.0	559.8000	2.5000
8	225.0	562.1000	2.3000
9	225.0	564.8000	2.7000
10	225.0	567.2000	2.4000
Stable Avg:	225.0		2.5000

Pressure Inte 300 4

Minutes	Pressure	Volume	Δ Volume
0	300.0	569.8000	
1	290.0	572.6000	2.8000
2	300.0	576.3000	3.7000
3	300.0	579.6000	3.3000
4	300.0	583.1000	3.5000
5	300.0	586.6000	3.5000
6	300.0	590.2000	3.6000
7	300.0	593.6000	3.4000
8	300.0	597.1000	3.5000
9	300.0	600.6000	3.5000
10	300.0	604.0000	3.4000
Stable Avg:	299.0		3.4200

Pressure Inte 225 5

Minutes	Pressure	Volume	Δ Volume
0	225.0	602.6000	
1	225.0	605.7000	3.1000
2	225.0	608.9000	3.2000
3	225.0	612.0000	3.1000
4	225.0	615.1000	3.1000
5	225.0	618.2000	3.1000
6	225.0	621.3000	3.1000
7	225.0	624.5000	3.2000
8	225.0	627.6000	3.1000
9	225.0	630.7000	3.1000
10	225.0	633.7000	3.0000
Stable Avg:	225.0		3.1100

Pressure Inte 150 6

Minutes	Pressure	Volume	Δ Volume
0	150.0	639.2000	
1	150.0	641.4000	2.2000
2	150.0	643.5500	2.1500
3	150.0	645.7500	2.2000
4	150.0	647.9000	2.1500
5	150.0	650.1000	2.2000
6	150.0	652.2500	2.1500
7	150.0	654.4000	2.1500
8	150.0	656.6500	2.2500
9	150.0	658.7500	2.1000
10	150.0	661.0000	2.2500
Stable Avg:	150.0		2.1800

IF NO MEASUREABLE FLOW IN CH TEST --->
FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0	0.000
2	0	0.000
4	0	0.000
6	0	0.000
8	0	0.000
10	0	0.000
15	0	0.000
20	0	0.000
25	0	0.000
30	0	0.000
40	0	0.000
50	0	0.000
60	0	0.000

Additional Comments: Water level was 24m and still dropping.

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Client: NexGen **Hole ID:** GAR-17-005

Project: Snowbird PFS **Test #:** 7

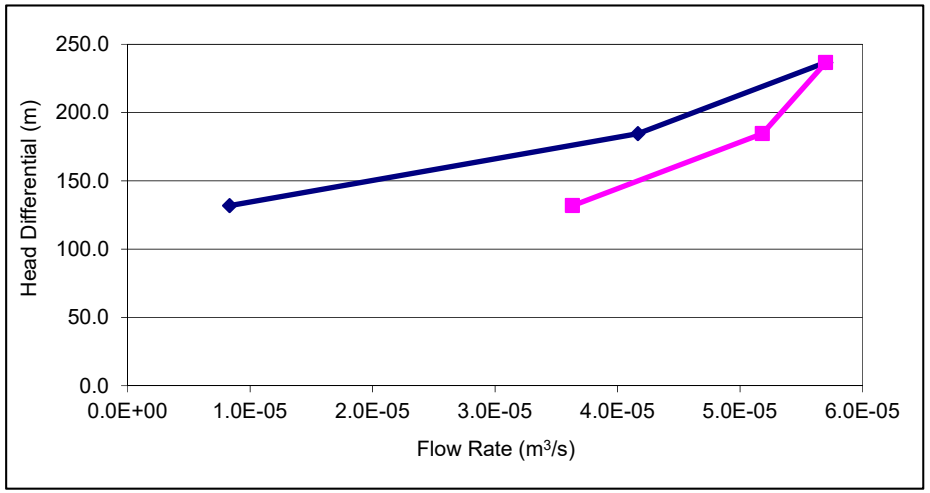
Project #: 1762-001 **From (m):** 645.65 **To (m):** 656.40

Calculation Input Parameters:

L: Length of Test Interval (m)	10.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	651.03	**r**: Borehole Radius (m):	0.038	Washout after test 1. Pressure may be too high. Use first step for K analysis.
Gauge Height (m Above Ground):	2.43	**A**: Angle From Horizontal (deg):	90	
Depth to Water Table (m Depth):	24.00	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
200.0	3.2E-06	140.6	167.1	1.6E-09	Leak Test
150.0	8.3E-06	105.5	131.9	5.3E-09	X
225.0	4.2E-05	158.2	184.6	1.9E-08	
299.0	5.7E-05	210.2	236.7	2.0E-08	
225.0	5.2E-05	158.2	184.6	2.3E-08	
150.0	3.6E-05	105.5	131.9	2.3E-08	
			Geo Mean	**5.3.E-09**	



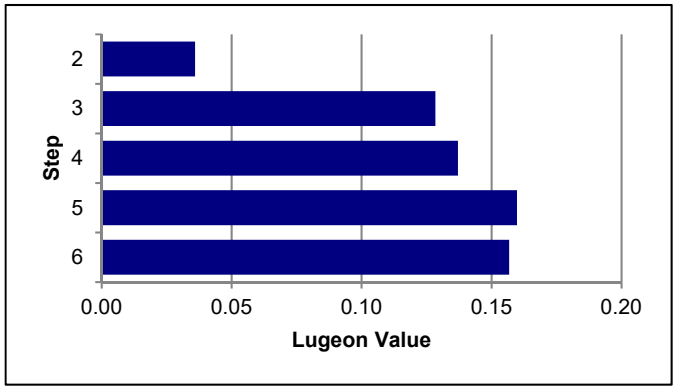
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	16.4	0.05	0.02	0.01	Leak Test
2	12.9	0.13	0.05	0.04	X
3	18.1	0.66	0.23	0.13	
4	23.2	0.90	0.32	0.14	
5	18.1	0.82	0.29	0.16	
6	12.9	0.58	0.20	0.16	
			Geo Mean	**0.04**	
			Max L	**0.16**	

Lugeon Estimate Check:

K (from packer test): 5.3E-07 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.05



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Client:	NexGen	**Collar El.:**	540	**Hole ID:**	**GAR-17-005**
Project:	Snowbird	**Trend:**	80	**Plunge:**	-70
Project #:	1762001	**Personnel:**	M Berry	**Date:**	22-Oct-17
Measurement Units		**Start Flushing:**	1:00		
Volume:	L	**End Flushing:**		1:40	
Pressure:	psi	**Start Packer Testing:**	2:00		
Length:	m	**End Packer Testing:**		5:30	

Design Test Interval:	529-741		
Test #:	8		
Packer Setup:	☑ Single	☐ Double	
Measurements Taken from Collar (Ground):			
Rod Stickup Height:	1.95	m	
Depth to Water:		33.41	m
Depth to Top of Interval:	672.65	m	
Depth to Bottom of Interval:		686.40	m
Height of Gauge:	2.43	m	
Drill Rod ID:	60	mm	
Borehole Outside Diameter:		76.0	mm
Packer Inflation Pressure:	400	psi	
Cleaning (Vol./Time/Until Clean):		40 min	

Pressure Interval 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	819.9000	
1	100.0	820.2000	0.3000
2	100.0	820.3000	0.1000
3	100.0	820.4000	0.1000
4	100.0	820.5000	0.1000
5	200.0	821.4000	0.9000
6	200.0	821.5000	0.1000
7	200.0	821.5000	0.0000
8	300.0	822.3000	0.8000
9	300.0	822.3000	0.0000
10	300.0	822.3000	0.0000
Stable Avg:	190.0		0.2400

Pressure Interval 100 2

Minutes	Pressure	Volume	Δ Volume
0		821.5000	
1		821.9000	0.4000
2		822.3000	0.4000
3		822.6000	0.3000
4		823.0000	0.4000
5		823.3000	0.3000
6		823.6000	0.3000
7		824.0000	0.4000
8		824.2000	0.2000
9		824.5000	0.3000
10		824.8000	0.3000
	N/A		0.3300

Pressure Interval 150 3

Minutes	Pressure	Volume	Δ Volume
0		825.3000	
1		825.7000	0.4000
2		826.2000	0.5000
3		826.6000	0.4000
4		826.6000	0.0000
5		826.6000	0.0000
6		826.6000	0.0000
7		826.6000	0.0000
8		826.6000	0.0000
9		826.6000	0.0000
10		826.6000	0.0000
Stable Avg:	N/A		0.1300

Pressure Interval 4

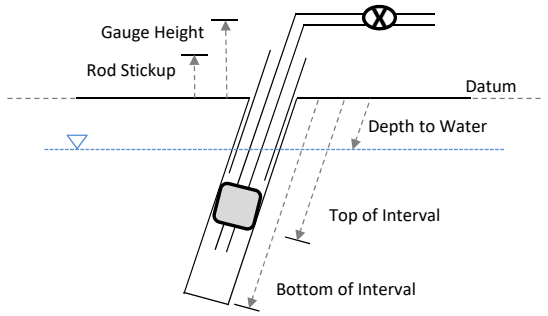
Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	N/A		N/A

Pressure Interval 5

Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	N/A		N/A

Pressure Interval

Minutes	Pressure	Volume	Δ Volume
0			
1			0.0000
2			0.0000
3			0.0000
4			0.0000
5			0.0000
6			0.0000
7			0.0000
8			0.0000
9			0.0000
10			0.0000
Stable Avg:	N/A		N/A



IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0.03	0.030
2	0.05	0.020
4	0.12	0.035
6	0.18	0.030
8	0.25	0.035
10	0.3	0.025
15	0.45	0.030
20	0.58	0.026
25	0.73	0.030
30	0.85	0.024
40	1.13	0.028
50	1.39	0.026
60	1.61	0.022

Additional Comments: first test was switched to a falling head test after the first interval (150 psi) and the seating began to fail once the swivel was disconnected.

Removed packer from hole, checked all connections and replaced the tam seal. Second test was succesful and was switched to a falling head test with none of the previous problems

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Falling Head Test

Client:	NexGen
Project:	Snowbird PFS
Project Number:	1762-005
Borehole Number:	GAR-17-005 Test 8
Date of Test:	22-Oct-17
Top of Test Interval (m):	672.7
Bottom of Test Interval (m):	686.4
Conducted by:	M Berry
Hole Plunge (degrees):	70

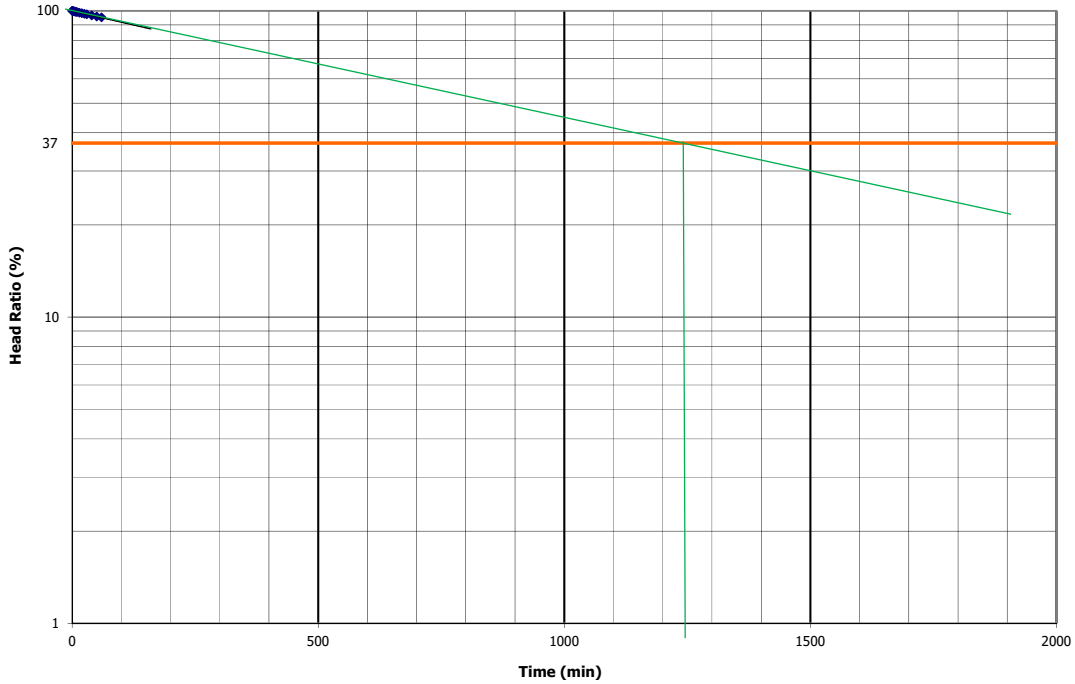
Static Water Depth from TOC:	33.41	m
Piezometer Radius (r):	0.038	m
Drill Hole Radius (R):	0.038	m
Test Interval (L):	13.8	m
T_0 (from graph below):	1250	minutes

K = 4.12E-09 m/s

$$K = \frac{r^2 \ln(L/R)}{2L\,T_0} \qquad \text{Head Ratio} = \frac{\text{Static Water Level - Water Level}}{\text{Static Water Level}}$$

The Datum is chosen as the static water elevation

Time		Depth to Water			Head
(min:sec)	(min)	(cm)	(m)	Head (m)	Ratio (%)
	0.00	0	0.00	33.41	100.00
	1.00	3	0.03	33.38	99.91
	2.00	5	0.05	33.36	99.85
	4.0	12	0.12	33.29	99.64
	6.0	18	0.18	33.23	99.46
	8.0	25	0.25	33.16	99.25
	10.0	30	0.30	33.11	99.10
	15.0	45	0.45	32.96	98.65
	20.0	58	0.58	32.83	98.26
	25	73	0.73	32.68	97.82
	30	85	0.85	32.56	97.46
	40	113	1.13	32.28	96.62
	50	139	1.39	32.02	95.84
	60	161	1.61	31.80	95.18



Weather:

Notes:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen
Project: Snowbird
Project #: 1762001

Measurement Units
Volume: L
Pressure: psi
Length: m

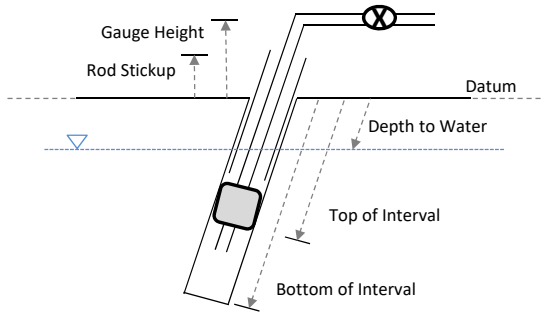
Collar El.: 540
Trend: 80 **Plunge:** -70
Personnel: MB/JN **Date:** 23-Oct-17
Start Flushing: 0:00
End Flushing: 5:30
Start Packer Testing: N/A
End Packer Testing: N/A

Hole ID: GAR-17-005
Design Test Interval: 741-750
Test #: 9
Packer Setup: ☑ Single ☐ Double

Measurements Taken from Collar (Ground):

Rod Stickup Height: 1.95 m
Depth to Water: 31.40 m
Depth to Top of Interval: 738.65 m
Depth to Bottom of Interval: 752.40 m
Height of Gauge: 2.43 m

Drill Rod ID: 60 mm
Borehole Outside Diameter: 76.0 mm
Packer Inflation Pressure: 450 psi
Cleaning (Vol./Time/Until Clean):



Pressure Interval 1

Minutes	Pressure	Volume	Δ Volume
0	100.0	850.5000	
1	100.0	850.6000	0.1000
2	100.0	850.6000	0.0000
3	100.0	850.6000	0.0000
4	200.0	850.6000	0.0000
5	200.0	851.7000	1.1000
6	200.0	851.7000	0.0000
7	200.0	851.7000	0.0000
8	300.0	852.5000	0.8000
9	300.0	852.6000	0.1000
10	300.0	852.6000	0.0000
Stable Avg:	200.0		0.2100

Pressure Inte 100 2

Minutes	Pressure	Volume	Δ Volume
0		852.1000	
1		853.1000	1.0000
2		853.9000	0.8000
3		854.5000	0.6000
4		855.2000	0.7000
5		855.9000	0.7000
6		856.5000	0.6000
7		857.1000	0.6000
8		857.7000	0.6000
9		858.3000	0.6000
10		859.0000	0.7000
	N/A		0.6900

Pressure Inte 150 3

Minutes	Pressure	Volume	Δ Volume
0		859.7000	
1		860.6000	0.9000
2		861.2000	0.6000
3		862.1000	0.9000
4		863.0000	0.9000
5		863.8000	0.8000
6		864.5000	0.7000
7		865.3000	0.8000
8		866.0000	0.7000
9		866.7000	0.7000
10		867.4000	0.7000
Stable Avg:	N/A		0.7700

Pressure Int 200 4

Minutes	Pressure	Volume	Δ Volume
0		869.0000	
1		869.9000	0.9000
2		870.8000	0.9000
3		871.7500	0.9500
4		872.7500	1.0000
5		873.7500	1.0000
6		874.7500	1.0000
7		875.7500	1.0000
8		876.7000	0.9500
9		877.7000	1.0000
10		878.7000	1.0000
Stable Avg:	N/A		0.9700

Pressure Int 150 5

Minutes	Pressure	Volume	Δ Volume
0		877.7000	
1		878.5000	0.8000
2		879.3000	0.8000
3		880.0500	0.7500
4		880.8000	0.7500
5		881.5500	0.7500
6		882.3000	0.7500
7		883.0500	0.7500
8		883.7500	0.7000
9		884.5000	0.7500
10		885.2000	0.7000
Stable Avg:	N/A		0.7500

Pressure Int 100

Minutes	Pressure	Volume	Δ Volume
0		884.4500	
1		885.0500	0.6000
2		885.6000	0.5500
3		886.2000	0.6000
4		886.7500	0.5500
5		887.3500	0.6000
6		887.9500	0.6000
7		888.4500	0.5000
8		889.0500	0.6000
9		889.6000	0.5500
10		890.2000	0.6000
Stable Avg:	N/A		0.5750

IF NO MEASUREABLE FLOW IN CH TEST ---> FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O	Δ Depth/Min
0	0	-
1	0	0.000
2	0	0.000
4	0	0.000
6	0	0.000
8	0	0.000
10	0	0.000
15	0	0.000
20	0	0.000
25	0	0.000
30	0	0.000
40	0	0.000
50	0	0.000
60	0	0.000

Additional Comments:

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: NexGen **Hole ID:** GAR-17-005

Project: Snowbird PFS **Test #:** 9

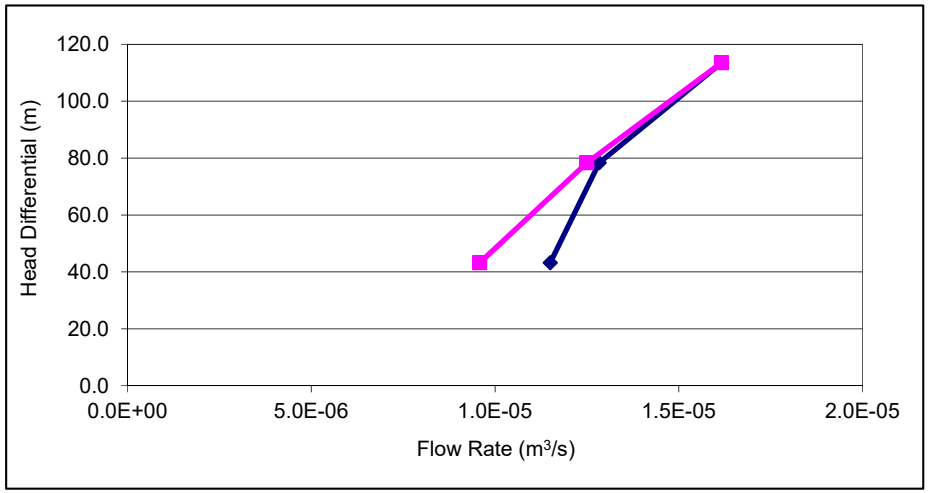
Project #: 1762-001 **From (m):** 738.65 **To (m):** 752.40

Calculation Input Parameters:

L: Length of Test Interval (m)	13.75	Borehole Diameter (m):	0.076	Comments:
Test Interval Midpoint (m Depth):	745.53	**r**: Borehole Radius (m):	0.038	Pressure not recorded for intervals so used design pressure.
Gauge Height (m Above Ground):	2.43	**A**: Angle From Horizontal (deg):	-70	
Depth to Water Table (m Depth):	31.40	Other:		

Hydraulic Conductivity:

Pressure (psi)	Q: Flowrate (m^3/s):	Pressure (m)	dH: Head Differential (m)	K: Hydraulic Conductivity (m/s)	Included in GeoMean
200.0	3.5E-06	140.6	113.5	2.1E-09	Leak Test
100.0	1.2E-05	70.3	43.2	1.8E-08	X
150.0	1.3E-05	105.5	78.4	1.1E-08	X
200.0	1.6E-05	140.6	113.5	9.7E-09	X
150.0	1.3E-05	105.5	78.4	1.1E-08	X
100.0	9.6E-06	70.3	43.2	1.5E-08	X
			Geo Mean	**1.3.E-08**	



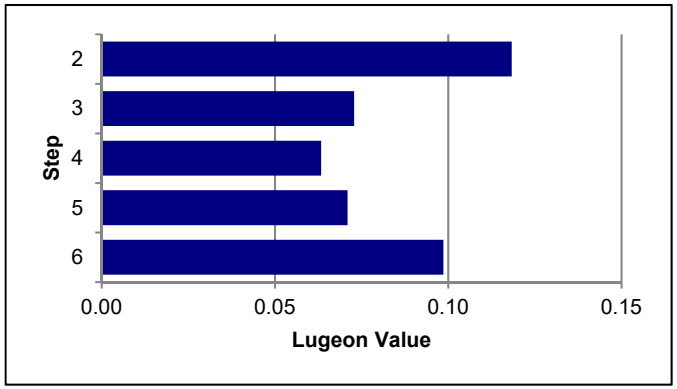
Lugeon Units Calculation:

Step	Differential Pressure (BARS)	Flow (GPM)	Water Take (L/m/min)	Lugeon Value	Included in GeoMean
1	11.1	0.06	0.02	0.01	Leak Test
2	4.2	0.18	0.05	0.12	X
3	7.7	0.20	0.06	0.07	X
4	11.1	0.26	0.07	0.06	X
5	7.7	0.20	0.05	0.07	X
6	4.2	0.15	0.04	0.10	X
			Geo Mean	**0.08**	
			Max L	**0.12**	

Lugeon Estimate Check:

K (from packer test): 1.3E-06 cm/s

Notes: 1 lugeon ≅ 1e-5 cm/s *Lugeons (from K):* 0.13



HoleID	Test Number	From (m)	To (m)	Transducer data (y/n)	Review	K (m/s)					Test Quality/Comments
						Thiem Injection (Surface Measurement)	Thiem Injection (Downhole Measurement)	Theis Recovery (Downhole Measurement)	Hvorslev Method	Best-Estimate (use in report)	
GAR-18-010	1	107.24	116.44	y	2018-07-24	1.7E-08	1.4E-08	2.8E-08		1.4E-08	Good.
GAR-18-010	2	125.64	134.44	y	2018-07-24	1.2E-08	1.2E-08	6.3E-08		1.2E-08	Good.
GAR-18-010	3	134.44	154.44	y	2018-07-24	1.8E-08	5.8E-08	5.7E-11		5.8E-08	Good.
GAR-18-010	4	153.7	200.4	y	2018-07-25	2.2E-09	2.2E-09	3.6E-09		2.2E-09	Moderate
GAR-18-010	5	198.7	210.3	y	2018-07-25	8.0E-10	6.7E-10	1.3E-09		6.7E-10	Moderate. Leakage rate higher than injection. Leakage set to zero.
GAR-18-010	6	210.7	225.4	y	2018-07-25	2.1E-08	1.7E-08	1.8E-07		1.7E-08	Good.
GAR-18-010	7	225.7	239.4	y	2018-07-25	6.5E-10	5.3E-10	2.7E-09		5.3E-10	Moderate. Leakage rate above injection. Leakage set to zero.
GAR-18-010	8	240.74	290.44	y	2018-08-01	3.6E-11	7.7E-11	2.1E-09		<1.0E-10	Moderate. Leakage rate above injection.
GAR-18-010	9	290.44	314.44	y	2018-08-01	6.7E-10	6.7E-10	9.5E-09		6.7E-10	Moderate. Leakage rate above injection. Leakage set to zero.
GAR-18-010	10	314.44	368.44	y	2018-08-02	3.4E-11	3.4E-11	7.2E-08		<1.0E-10	Moderate. Leakage rate higher than injection
GAR-18-010	11	368.44	419.44	y	2018-08-03	5.1E-10	5.3E-10	3.5E-11		5.3E-10	Moderate. Low K
GAR-18-010	12	419.44	470.44	y	2018-08-03	3.4E-11	4.0E-11	1.0E-11		<1.0E-10	Moderate. Leakage rate higher than injection
GAR-18-010	13	470.44	520.79	y	2018-08-03	3.5E-11	5.5E-11	1.7E-11		<1.0E-10	Moderate. Leakage rate higher than injection, leakage set to zero.
GAR-18-010	14	519.74	554.44	y	2018-08-03	3.6E-09	3.3E-09	3.5E-10		3.4E-09	Good.
GAR-18-010	15	554.44	563.44	y	2018-08-03	1.4E-08	1.3E-08	6.8E-08		1.3E-08	Good.
GAR-18-010	16	563.44	593.44	y	2018-08-07	6.6E-08	7.0E-08			7.0E-08	Good.
GAR-18-010	17	590.44	593.44	y	2018-08-08	6.8E-07	6.7E-07			6.7E-07	Good.
GAR-18-010	18	593.44	626.44	y	2018-08-08	4.3E-11	4.4E-11	4.3E-11		<1.0E-10	Moderate. Leakage rate higher than injection.
GAR-18-010	19	626.44	650.44	y	2018-08-08	6.4E-11	7.0E-11	2.2E-10		<1.0E-10	Moderate. Leakage rate higher than injection.
GAR-18-013	1	117.6	134.3	y	2018-08-20	3.1E-10	2.4E-10	8.8E-11		2.4E-10	Moderate. Leakage rate close to injection.
GAR-18-013	2	135.6	152.3	y	2018-08-20	1.9E-09	1.6E-09	5.7E-10		1.6E-09	Good.
GAR-18-013	3	152.3	203.3	y	2018-08-21	1.2E-09	9.9E-10	1.9E-10		9.9E-10	Good
GAR-18-013	4	203.3	254.4	y	2018-08-21	1.1E-10	1.4E-10	2.2E-11		1.4E-10	Moderate. Leakage rate higher than injection, leakage set to zero.
GAR-18-013	5	254.4	284.4	y	2018-08-21	8.9E-09	7.0E-09			7.0E-09	Good
GAR-18-013	6	284.4	308.4	y	2018-08-21	4.2E-09	3.3E-09			3.3E-09	Good
GAR-18-013	7	308.4	332.4	y	2018-08-27	9.3E-09	6.8E-09	2.5E-10		6.8E-09	Moderate. Test didn't fully stabilize.
GAR-18-013	8	332.4	377.4	y	2018-08-27	7.3E-10	6.3E-10	8.8E-11		6.3E-10	Good
GAR-18-013	9	377.4	410.4	y	2018-08-27	2.4E-10	3.0E-10	2.6E-11		3.0E-10	Moderate. Leakage rate higher than injection, leakage set to zero.
GAR-18-013	10	410.4	431.4	y	2018-08-27	8.5E-11	2.7E-10	3.0E-09		<1.0E-10	Moderate. Leakage rate higher than injection, leakage set to zero.
GAR-18-013	11	431.4	464.4	y	2018-08-27	7.0E-11	7.0E-11	1.1E-11		<1.0E-10	Moderate. Leakage rate close to injection
GAR-18-013	12	464.4	485.4	y	2018-08-27	3.9E-10	3.0E-10	5.4E-11		3.0E-10	Good
GAR-18-013	13	485.4	539.4	y	2018-09-04	9.3E-10	8.0E-10	8.1E-11		8.0E-10	Good
GAR-18-013	14	539.4	572.4	y	2018-09-04	1.1E-10	3.0E-10	4.2E-11		<1.0E-10	Moderate. Leakage rate higher than injection, leakage set to zero.
GAR-18-013	15	572.4	623.4	y	2018-09-04	1.6E-10	1.4E-10	2.6E-11		1.4E-10	Moderate. Leakage rate close to injection
GAR-18-013	16	623.4	650.4	y	2018-09-04	1.7E-07	1.6E-07	2.2E-07		2.3E-07	Good.
GAR-18-015	1	122.5	143.5	y	2018-12-04	1.6E-07	1.8E-07			1.8E-07	Good
GAR-18-015	2	143.5	194.5	y	2018-12-04	7.5E-09	9.1E-09			9.1E-09	Good
GAR-18-015	3	194.5	245.5	y	2018-12-04	1.1E-10	1.4E-10			1.4E-10	Leakage rate close to injection.
GAR-18-015	4	245.5	296.5	y	2018-12-04	1.1E-10	1.7E-10			1.7E-09	Moderate. Leakage rate close to injection.
GAR-18-015	5	296.5	347.5	y	2018-12-04	1.1E-10	1.6E-10			1.6E-10	Leakage rate over injection rate. Leakage set to zero.
GAR-18-015	6	347.5	398.5	y	2018-12-04	1.8E-10	2.3E-10			2.3E-10	Leakage rate over injection rate. Leakage set to zero.
GAR-18-015	7	398.5	449.5	y	2018-12-04	1.1E-09	1.4E-09			1.4E-09	Good.
GAR-18-015	8	449.5	500.5	y	2018-12-04	5.8E-11	7.5E-11			<1.0E-10	Good. Leakage rate close to injection.
GAR-18-015	9	500.5	551.5	y	2018-12-04	2.5E-11	4.9E-11			<1.0E-10	Leakage rate over injection rate. Leakage set to zero.
GAR-18-015	10	551.5	602.5	y	2018-12-04	6.6E-11	1.1E-10			1.1E-10	Leakage rate over injection rate. Leakage set to zero.
GAR-18-015	11	602.5	653.5	y	2018-12-04	1.4E-10	3.2E-10			3.2E-10	Good. Leakage rate close to injection.
GAR-18-015	12	653.5	701.5	y	2018-12-04	1.1E-09	1.2E-09			1.2E-09	Good.

GAR-18-010

PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-010	From Depth	m	107.2	
Test Number	1	To Depth		116.4	
Location	Rook I Arrow	Drilled Depth		107.2	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing		6393736.1	

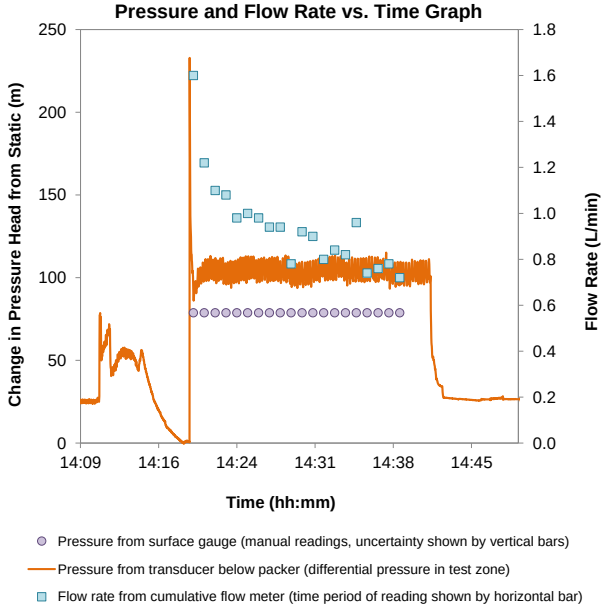
Date & Time (d-mmm-yy hh:mm)

Start	-	15/7/2018 2:19:34 PM
End	-	15/7/2018 2:45:00 PM
Supervisor	-	TS (SRK)
Water Table	m	8.0
Dip	°	90.0

Test Comments

Test purpose & type	
Drilling comments	Pump isn't very stable at high pressures. Changes in pressure caused totalizer to go backwards.
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Couldn't measure WL after or before test. Waited 25mins and water in rods was still above ground surface. Valid test.

Pressure and Flow Rate vs. Time Graph



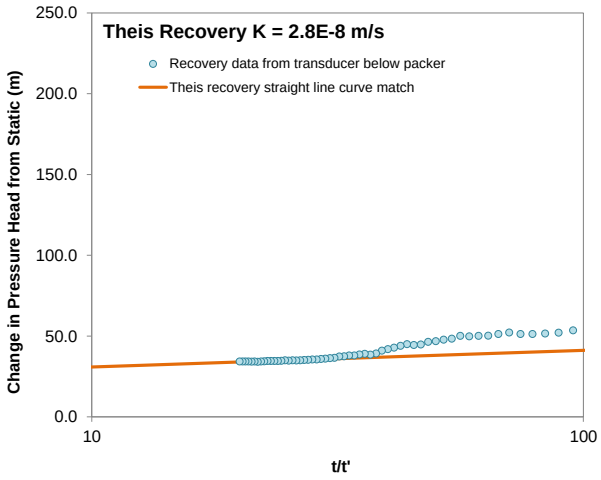
Flow Rate Measurements

Start Time of Manual Measurements			7/15/18 14:19		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/15/2018 14:19	0.0	420.0		100	
7/15/2018 14:20	1.0	421.6	1.60	100	78.82
7/15/2018 14:21	2.0	422.8	1.22	100	78.82
7/15/2018 14:22	3.0	423.9	1.10	100	78.82
7/15/2018 14:23	4.0	425.0	1.08	100	78.82
7/15/2018 14:24	5.0	426.0	0.98	100	78.82
7/15/2018 14:25	6.0	427.0	1.00	100	78.82
7/15/2018 14:26	7.0	428.0	0.98	100	78.82
7/15/2018 14:27	8.0	428.9	0.94	100	78.82
7/15/2018 14:28	9.0	429.8	0.94	100	78.82
7/15/2018 14:29	10.0	430.6	0.78	100	78.82
7/15/2018 14:30	11.0	431.5	0.92	100	78.82
7/15/2018 14:31	12.0	432.4	0.90	100	78.82
7/15/2018 14:32	13.0	433.2	0.80	100	78.82
7/15/2018 14:33	14.0	434.1	0.84	100	78.82
7/15/2018 14:34	15.0	434.9	0.82	100	78.82
7/15/2018 14:35	16.0	435.9	0.96	100	78.82
7/15/2018 14:36	17.0	436.6	0.74	100	78.82
7/15/2018 14:37	18.0	437.4	0.76	100	78.82
7/15/2018 14:38	19.0	438.1	0.78	100	78.82
7/15/2018 14:39	20.0	438.9	0.72	100	78.82

Summary of Test Results

Hydrojacking Pressure		psi	139.4
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	95.0
Flow Rate	Test	L/min	0.94
	Leak		0.07
Hydraulic Conductivity	Surface	m/s	**1.7E-8**
	Downhole		**1.4E-8**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth	m	125.6	
Test Number	2	To Depth		134.4	
Location	Rook I Arrow	Drilled Depth		134.4	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing		6393736.1	

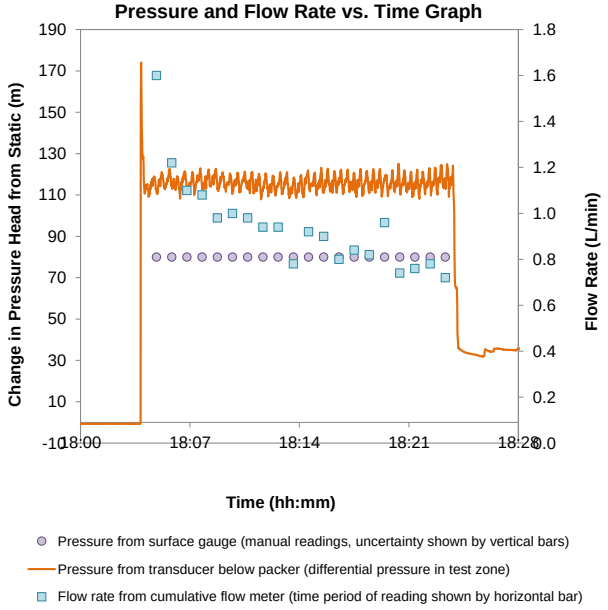
Date & Time (d-mmm-yy hh:mm)

Start	-	16/7/2018 6:04:00 PM
End	-	16/7/2018 8:05:00 PM
Supervior	-	TS (SRK)
Water Table	m	9.2
Dip	°	90.0

Test Comments

Test purpose & type	Tested area of lost circulation
Drilling comments	Time at 0 mins for pressure interval of 100 psi start of packer test
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Couldn't measure WL after or before test. Waited 25mins and water in rods was still above ground surface. Valid test.

Pressure and Flow Rate vs. Time Graph



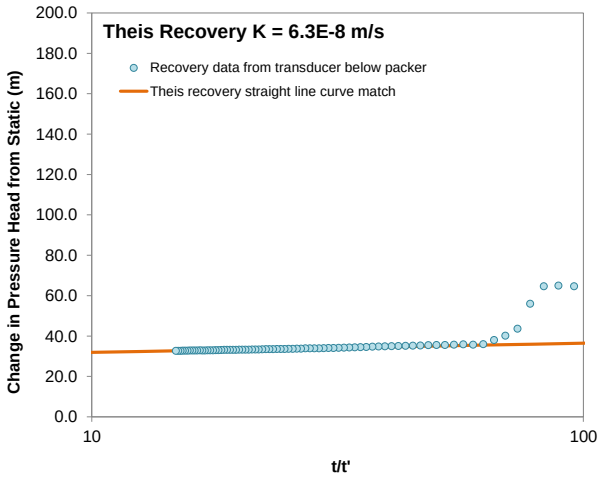
Flow Rate Measurements

Start Time of Manual Measurements			7/16/18 18:04		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/16/2018 18:04	0.0	420.0		100	
7/16/2018 18:05	1.0	421.6	1.60	100	80.02
7/16/2018 18:06	2.0	422.8	1.22	100	80.02
7/16/2018 18:07	3.0	423.9	1.10	100	80.02
7/16/2018 18:08	4.0	425.0	1.08	100	80.02
7/16/2018 18:09	5.0	426.0	0.98	100	80.02
7/16/2018 18:10	6.0	427.0	1.00	100	80.02
7/16/2018 18:11	7.0	428.0	0.98	100	80.02
7/16/2018 18:12	8.0	428.9	0.94	100	80.02
7/16/2018 18:13	9.0	429.8	0.94	100	80.02
7/16/2018 18:14	10.0	430.6	0.78	100	80.02
7/16/2018 18:15	11.0	431.5	0.92	100	80.02
7/16/2018 18:16	12.0	432.4	0.90	100	80.02
7/16/2018 18:17	13.0	433.2	0.80	100	80.02
7/16/2018 18:18	14.0	434.1	0.84	100	80.02
7/16/2018 18:19	15.0	434.9	0.82	100	80.02
7/16/2018 18:20	16.0	435.9	0.96	100	80.02
7/16/2018 18:21	17.0	436.6	0.74	100	80.02
7/16/2018 18:22	18.0	437.4	0.76	100	80.02
7/16/2018 18:23	19.0	438.1	0.78	100	80.02
7/16/2018 18:24	20.0	438.9	0.72	100	80.02

Summary of Test Results

Hydrojacking Pressure		psi	178.6
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	110.0
Flow Rate	Test	L/min	0.95
	Leak		0.13
Hydraulic Conductivity	Surface	m/s	**1.6E-8**
	Downhole		**1.2E-8**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-010	From Depth	m	134.4
		To Depth		152.4
Test Number	3	Drilled Depth		152.4
Location	Rook I Arrow	Easting	m	604133.1
Project Number	2CN034.000	Northing		6393736.1

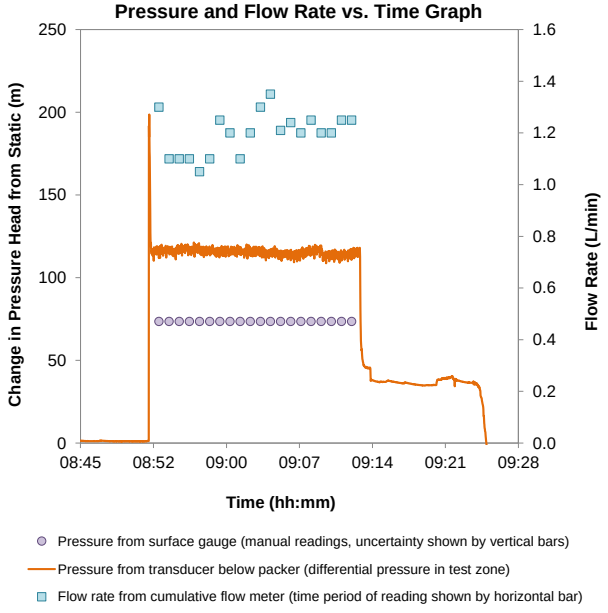
Date & Time (d-mmm-yy hh:mm)

Start	-	17/7/2018 7:30:00 AM
End	-	17/7/2018 9:12:00 AM
Supervisor	-	TS (SRK)
Water Table	m	2.7
Dip	°	90.0

Test Comments

Test purpose & type	Tested area of lost circulation
Drilling comments	Time at 0 mins for pressure interval of 100 psi start of packer test
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Couldn't measure WL after or before test. Waited 25mins and water in rods was still above ground surface. Valid test.

Pressure and Flow Rate vs. Time Graph



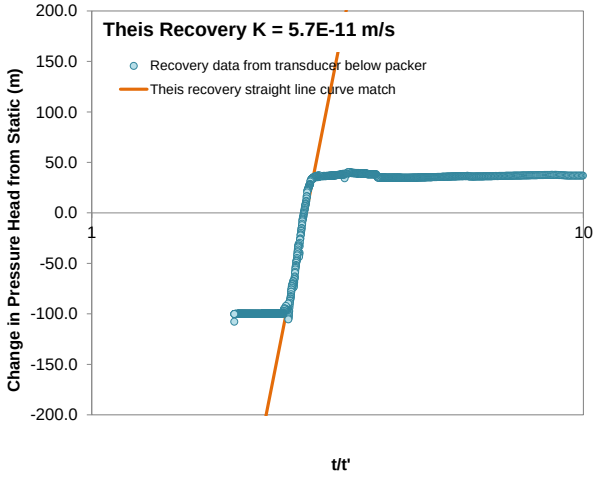
Flow Rate Measurements

Start Time of Manual Measurements			7/17/18 8:52		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/17/2018 8:52	0.0	520.8		100	
7/17/2018 8:53	1.0	522.1	1.30	100	73.52
7/17/2018 8:54	2.0	523.2	1.10	100	73.52
7/17/2018 8:55	3.0	524.3	1.10	100	73.52
7/17/2018 8:56	4.0	525.4	1.10	100	73.52
7/17/2018 8:57	5.0	526.5	1.05	100	73.52
7/17/2018 8:58	6.0	527.6	1.10	100	73.52
7/17/2018 8:59	7.0	528.8	1.25	100	73.52
7/17/2018 9:00	8.0	530.0	1.20	100	73.52
7/17/2018 9:01	9.0	531.1	1.10	100	73.52
7/17/2018 9:02	10.0	532.3	1.20	100	73.52
7/17/2018 9:03	11.0	533.6	1.30	100	73.52
7/17/2018 9:04	12.0	535.0	1.35	100	73.52
7/17/2018 9:05	13.0	536.2	1.21	100	73.52
7/17/2018 9:06	14.0	537.4	1.24	100	73.52
7/17/2018 9:07	15.0	538.6	1.20	100	73.52
7/17/2018 9:08	16.0	539.9	1.25	100	73.52
7/17/2018 9:09	17.0	541.1	1.20	100	73.52
7/17/2018 9:10	18.0	542.3	1.20	100	73.52
7/17/2018 9:11	19.0	543.5	1.25	100	73.52
7/17/2018 9:12	20.0	544.8	1.25	100	73.52

Summary of Test Results

Hydrojacking Pressure		psi	191.1
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	112.0
Flow Rate	Test	L/min	0.95
	Leak		0.13
Hydraulic Conductivity	Surface	m/s	**8.8E-9**
	Downhole		**5.8E-9**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth		153.7
		To Depth	m	200.4
Test Number	4--2	Drilled Depth		200.4
Location	Rook I Arrow	Easting	m	604133.1
Project Number	2CN034.000	Northing		6393736.1

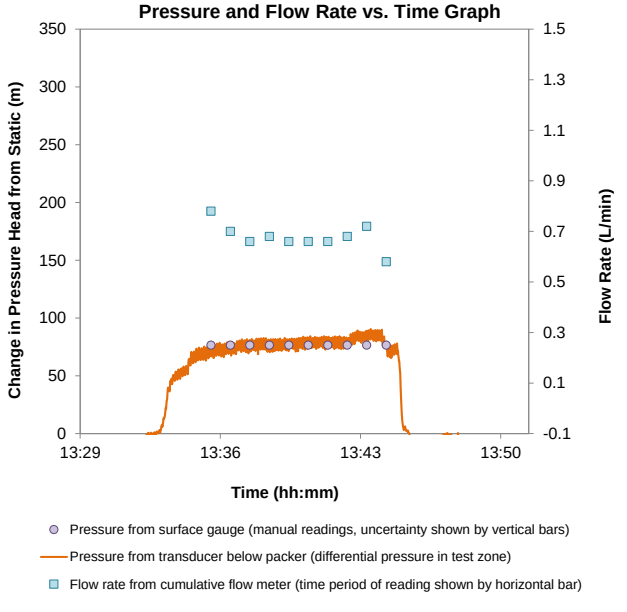
Date & Time (d-mmm-yy hh:mm)

Start	-	19/7/2018 1:35:00 PM
End	-	19/7/2018 8:05:00 PM
Supervisor	-	TS (SRK)
Water Table	m	5.8
Dip	°	90.0

Test Comments

Test purpose & type	
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Reseated packer in same place as test 4. Started FHT at 12:30pm. WL measuresd at 2:15 (20 min wait after pulling packer). Time at 0 mins for pressure interal of 100psi (start of tacker test) 1:36pm. PHT: stick up 1.7m. Ran 10 min packer injection test after FHT to double check the bag had not deflated. Moderate test - no clear sign of shearing pin on plot.

Pressure and Flow Rate vs. Time Graph



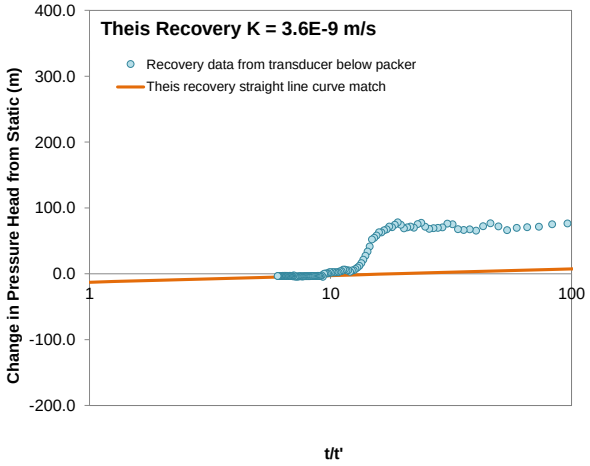
Flow Rate Measurements

Start Time of Manual Measurements			7/19/18 13:35		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/19/2018 13:35	0.0	67.0		100	
7/19/2018 13:36	1.0	67.8	0.78	100	76.58
7/19/2018 13:37	2.0	68.5	0.70	100	76.58
7/19/2018 13:38	3.0	69.1	0.66	100	76.58
7/19/2018 13:39	4.0	69.8	0.68	100	76.58
7/19/2018 13:40	5.0	70.5	0.66	100	76.58
7/19/2018 13:41	6.0	71.1	0.66	100	76.58
7/19/2018 13:42	7.0	71.8	0.66	100	76.58
7/19/2018 13:43	8.0	72.5	0.68	100	76.58
7/19/2018 13:44	9.0	73.2	0.72	100	76.58
7/19/2018 13:45	10.0	73.8	0.58	100	76.58

Summary of Test Results

Hydrojacking Pressure		psi	218.6
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	76.0
Flow Rate	Test	L/min	0.68
	Leak		0.13
Hydraulic Conductivity	Surface	m/s	**2.2E-9**
	Downhole		**2.2E-9**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth	m	198.7	
Test Number	5	To Depth		210.3	
Location	Rook I Arrow	Drilled Depth		210.3	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing		6393736.1	

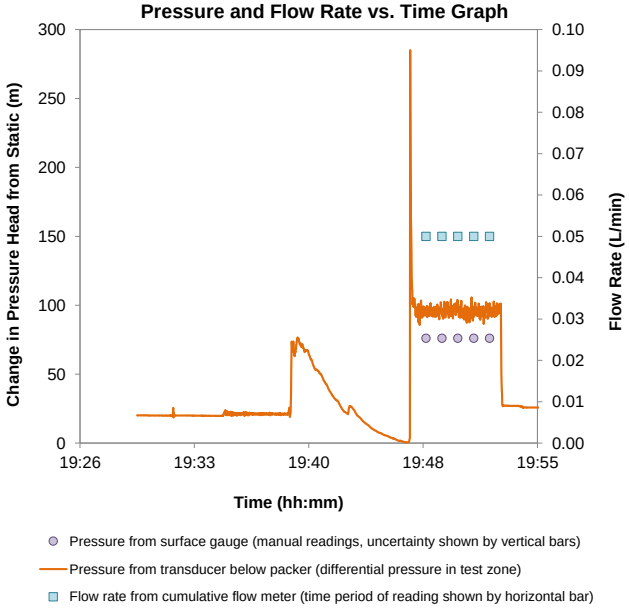
Date & Time (d-mmm-yy hh:mm)

Start	-	19/7/2018 7:47:11 PM
End	-	19/7/2018 8:05:00 PM
Supervior	-	JN (NG)
Water Table	m	5.2
Dip	°	90.0

Test Comments

Test purpose & type	
Drilling comments	
Testing fluid comments	Hole was taking very little water.
Geology, hydrogeology & rock mass	
Test quality	Moderate. Low k. Flow leak rate greater than leak rate. Switched to falling head at 7:54. Valid test.

Pressure and Flow Rate vs. Time Graph



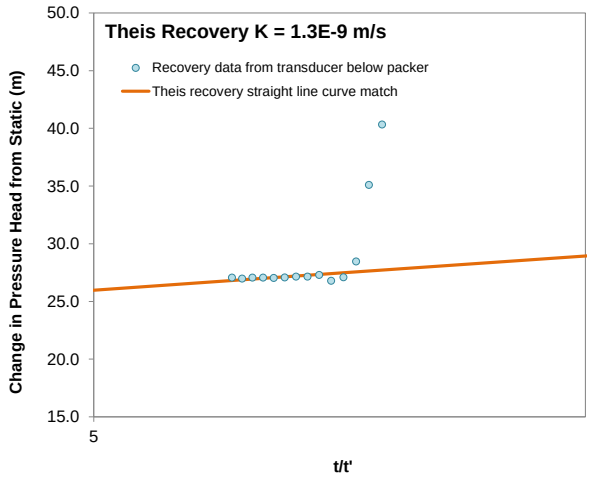
Flow Rate Measurements

Start Time of Manual Measurements			7/19/18 19:47		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/19/2018 19:47	0.0	499.3		100	
7/19/2018 19:48	1.0	499.4	0.05	100	76.02
7/19/2018 19:49	2.0	499.4	0.05	100	76.02
7/19/2018 19:50	3.0	499.5	0.05	100	76.02
7/19/2018 19:51	4.0	499.5	0.05	100	76.02
7/19/2018 19:52	5.0	499.6	0.05	100	76.02

Summary of Test Results

Hydrojacking Pressure		psi	282.5
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	91.0
Flow Rate	Test	L/min	0.05
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	**8.0E-10**
	Downhole		**6.7E-10**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth	m	210.7	
Test Number	6	To Depth	m	225.4	
Location	Rook I Arrow	Drilled Depth	m	225.4	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing	m	6393736.1	

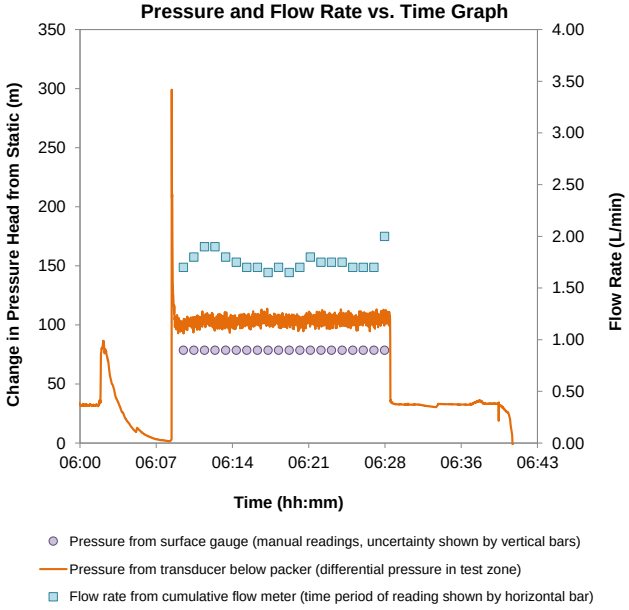
Date & Time (d-mmm-yy hh:mm)

Start	-	20/7/2018 6:08:45 AM
End	-	20/7/2018 8:05:00 PM
Supervisor	-	JN (NG)
Water Table	m	7.7
Dip	°	90.0

Test Comments

Test purpose & type	
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Valid test. WL measure 30 mins after.

Pressure and Flow Rate vs. Time Graph



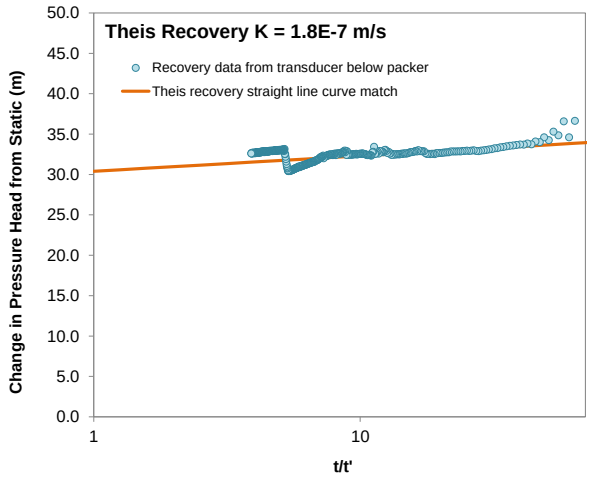
Flow Rate Measurements

Start Time of Manual Measurements			7/20/18 6:08		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/20/2018 6:08	0.0	504.5		100	
7/20/2018 6:09	1.0	506.2	1.70	100	78.54
7/20/2018 6:10	2.0	508.0	1.80	100	78.54
7/20/2018 6:11	3.0	509.9	1.90	100	78.54
7/20/2018 6:12	4.0	511.8	1.90	100	78.54
7/20/2018 6:13	5.0	513.6	1.80	100	78.54
7/20/2018 6:14	6.0	515.4	1.75	100	78.54
7/20/2018 6:15	7.0	517.1	1.70	100	78.54
7/20/2018 6:16	8.0	518.8	1.70	100	78.54
7/20/2018 6:17	9.0	520.4	1.65	100	78.54
7/20/2018 6:18	10.0	522.1	1.70	100	78.54
7/20/2018 6:19	11.0	523.8	1.65	100	78.54
7/20/2018 6:20	12.0	525.5	1.70	100	78.54
7/20/2018 6:21	13.0	527.3	1.80	100	78.54
7/20/2018 6:22	14.0	529.0	1.75	100	78.54
7/20/2018 6:23	15.0	530.8	1.75	100	78.54
7/20/2018 6:24	16.0	532.5	1.75	100	78.54
7/20/2018 6:25	17.0	534.2	1.70	100	78.54
7/20/2018 6:26	18.0	535.9	1.70	100	78.54
7/20/2018 6:27	19.0	537.6	1.70	100	78.54
7/20/2018 6:28	20.0	539.6	2.00	100	78.54

Summary of Test Results

Hydrojacking Pressure		psi	299.6
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	98.0
Flow Rate	Test	L/min	1.76
	Leak		0.05
Hydraulic Conductivity	Surface	m/s	**2.1E-8**
	Downhole		**1.7E-8**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth	m	225.7	
Test Number	7	To Depth	m	239.4	
Location	Rook I Arrow	Drilled Depth	m	239.4	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing	m	6393736.1	

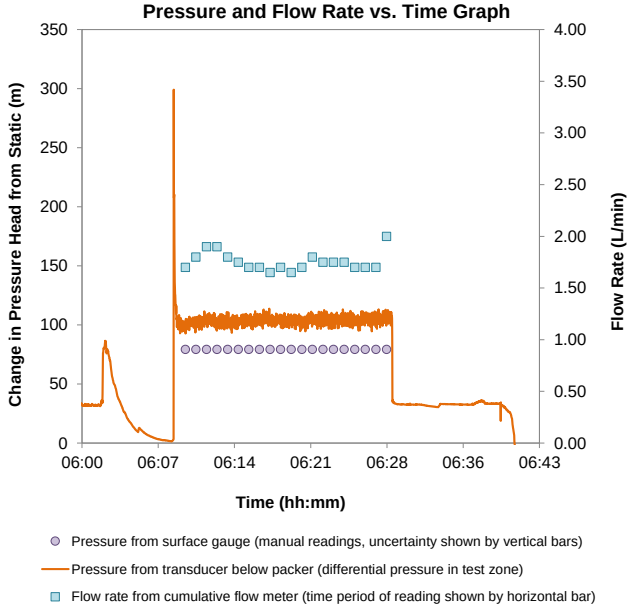
Date & Time (d-mmm-yy hh:mm)

Start	-	20/7/2018 6:08:45 AM
End	-	20/7/2018 7:08:45 AM
Supervisor	-	TS (SRK)
Water Table	m	8.5
Dip	°	90.0

Test Comments

Test purpose & type	Test for structure.
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	FHT test started at 3:11pm. WL measure 20 mins after pulling packer=8.52m. Low flow, leakage rate close to injection rate, set to zero. Valid test.

Pressure and Flow Rate vs. Time Graph



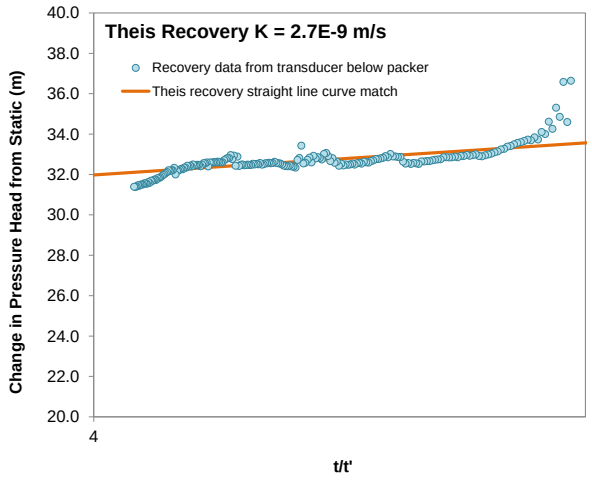
Flow Rate Measurements

Start Time of Manual Measurements			7/20/18 6:08		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/20/2018 6:08	0.0	504.5		100	
7/20/2018 6:09	1.0	506.2	1.70	100	79.34
7/20/2018 6:10	2.0	508.0	1.80	100	79.34
7/20/2018 6:11	3.0	509.9	1.90	100	79.34
7/20/2018 6:12	4.0	511.8	1.90	100	79.34
7/20/2018 6:13	5.0	513.6	1.80	100	79.34
7/20/2018 6:14	6.0	515.4	1.75	100	79.34
7/20/2018 6:15	7.0	517.1	1.70	100	79.34
7/20/2018 6:16	8.0	518.8	1.70	100	79.34
7/20/2018 6:17	9.0	520.4	1.65	100	79.34
7/20/2018 6:18	10.0	522.1	1.70	100	79.34
7/20/2018 6:19	11.0	523.8	1.65	100	79.34
7/20/2018 6:20	12.0	525.5	1.70	100	79.34
7/20/2018 6:21	13.0	527.3	1.80	100	79.34
7/20/2018 6:22	14.0	529.0	1.75	100	79.34
7/20/2018 6:23	15.0	530.8	1.75	100	79.34
7/20/2018 6:24	16.0	532.5	1.75	100	79.34
7/20/2018 6:25	17.0	534.2	1.70	100	79.34
7/20/2018 6:26	18.0	535.9	1.70	100	79.34
7/20/2018 6:27	19.0	537.6	1.70	100	79.34
7/20/2018 6:28	20.0	539.6	2.00	100	79.34

Summary of Test Results

Hydrojacking Pressure		psi	320.9
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	97.3
Flow Rate	Test	L/min	0.05
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	**6.5E-10**
	Downhole		**5.3E-10**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth	m	240.7
		To Depth		290.4
Test Number	8	Drilled Depth		290.4
Location	Rook I Arrow	Easting	m	604133.1
Project Number	2CN034.000	Northing		6393736.1

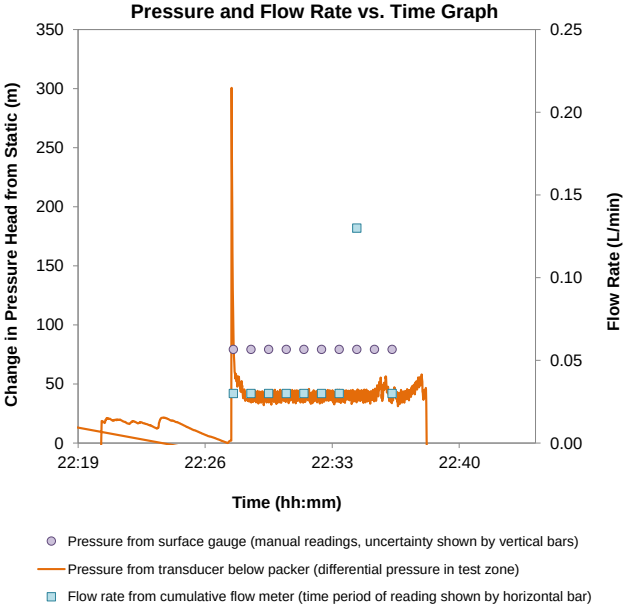
Date & Time (d-mmm-yy hh:mm)

Start	-	21/7/2018 10:27:00 AM
End	-	21/7/2018 11:40:00 AM
Supervisor	-	TS (SRK)
Water Table	m	8.5
Dip	°	90.0

Test Comments

Test purpose & type	Test for structure
Drilling comments	Negative flow rate due to lowering pressure
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Moderate. FHT test started at 3:11pm. WL measure 20 mins after pulling packer=8.52m. Leakage rate greater than injection rate. Valid test, results uncertain due to flow meter limitations (accurate to >0.5L).

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

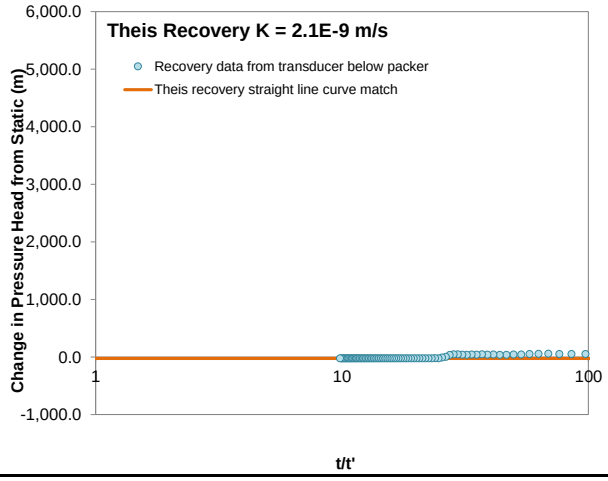
Start Time of Manual Measurements			7/21/18 22:27		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/21/2018 22:27	0.0	129.6		100	
7/21/2018 22:28	1.0	129.6	0.03	100	79.34
7/21/2018 22:29	2.0	129.7	0.03	100	79.34
7/21/2018 22:30	3.0	129.7	0.03	100	79.34
7/21/2018 22:31	4.0	129.7	0.03	100	79.34
7/21/2018 22:32	5.0	129.8	0.03	100	79.34
7/21/2018 22:33	6.0	129.8	0.03	100	79.34
7/21/2018 22:34	7.0	129.8	0.03	100	79.34
7/21/2018 22:35	8.0	130.0	0.13	100	79.34
7/21/2018 22:36	9.0	129.9	-0.05	100	79.34
7/21/2018 22:37	10.0	129.9	0.03	100	79.34

Summary of Test Results

Hydrojacking Pressure		psi	342.3
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	37.0
Flow Rate	Test	L/min	0.03
	Leak		0.02
Hydraulic Conductivity	Surface	m/s	**3.6E-11**
	Downhole		**7.7E-11**

Note: Results presented as <1E-10 m/s due to uncertainty with flow meter.

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth	m	290.4	
Test Number	9	To Depth	m	314.4	
Location	Rook I Arrow	Drilled Depth	m	314.4	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing	m	6393736.1	

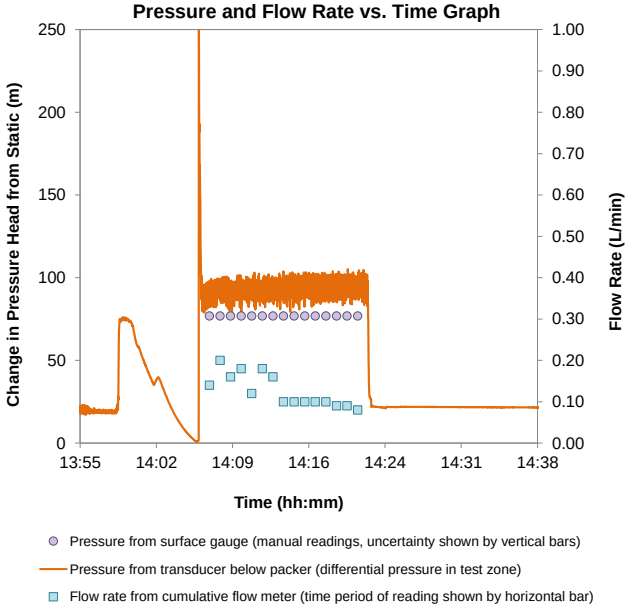
Date & Time (d-mmm-yy hh:mm)

Start	-	22/7/2018 2:06:00 PM
End	-	22/7/2018 2:21:00 PM
Supervior	-	TS (SRK)
Water Table	m	6.0
Dip	°	90.0

Test Comments

Test purpose & type	
Drilling comments	Driller notes possible loss of return.
Testing fluid comments	Water level measure 20 mins after packer was pulled
Geology, hydrogeology & rock mass	Strongly foliated rock, breaks easily
Test quality	FHT Started at 2:26pm. Stickup for FHT was 3.0 m. Valid test.

Pressure and Flow Rate vs. Time Graph



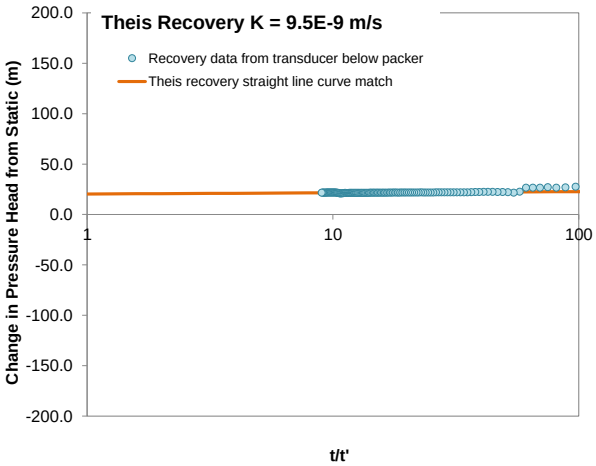
Flow Rate Measurements

Start Time of Manual Measurements			7/22/18 14:06		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/22/2018 14:06	0.0	135.4		100	
7/22/2018 14:07	1.0	135.6	0.14	100	76.82
7/22/2018 14:08	2.0	135.8	0.20	100	76.82
7/22/2018 14:09	3.0	135.9	0.16	100	76.82
7/22/2018 14:10	4.0	136.1	0.18	100	76.82
7/22/2018 14:11	5.0	136.2	0.12	100	76.82
7/22/2018 14:12	6.0	136.4	0.18	100	76.82
7/22/2018 14:13	7.0	136.6	0.16	100	76.82
7/22/2018 14:14	8.0	136.7	0.10	100	76.82
7/22/2018 14:15	9.0	136.8	0.10	100	76.82
7/22/2018 14:16	10.0	136.9	0.10	100	76.82
7/22/2018 14:17	11.0	137.0	0.10	100	76.82
7/22/2018 14:18	12.0	137.1	0.10	100	76.82
7/22/2018 14:19	13.0	137.2	0.09	100	76.82
7/22/2018 14:20	14.0	137.3	0.09	100	76.82
7/22/2018 14:21	15.0	137.3	0.08	100	76.82

Summary of Test Results

Hydrojacking Pressure		psi	412.9
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	76.8
Flow Rate	Test	L/min	0.13
	Leak		0.04
Hydraulic Conductivity	Surface	m/s	6.7E-10
	Downhole		6.7E-10

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-010	From Depth	m	314.4	
Test Number	10	To Depth		368.4	
Location	Rook I Arrow	Drilled Depth		368.4	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing		6393736.1	

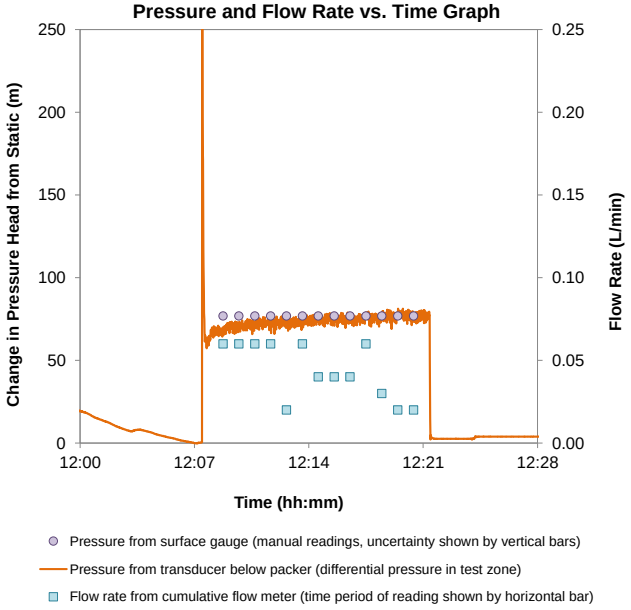
Date & Time (d-mmm-yy hh:mm)

Start	-	26/7/2018 12:08:00 PM
End	-	26/7/2018 12:15:00 PM
Supervior	-	TS (SRK)
Water Table	m	6.0
Dip	°	90.0

Test Comments

Test purpose & type	50 m interval
Drilling comments	Interval is 54 m due to devico cut
Testing fluid comments	WL measure 20m after pulling packer
Geology, hydrogeology & rock mass	
Test quality	Valid test. FHT started at 12:26. Leakage higher than injection rate.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

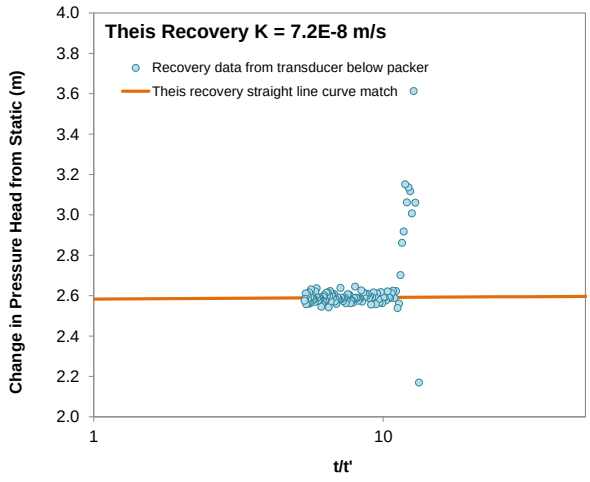
Start Time of Manual Measurements			7/26/18 12:08		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/26/2018 12:08	0.0	141.9		100	
7/26/2018 12:09	1.0	141.9	0.06	100	76.82
7/26/2018 12:10	2.0	142.0	0.06	100	76.82
7/26/2018 12:11	3.0	142.1	0.06	100	76.82
7/26/2018 12:12	4.0	142.1	0.06	100	76.82
7/26/2018 12:13	5.0	142.1	0.02	100	76.82
7/26/2018 12:14	6.0	142.2	0.06	100	76.82
7/26/2018 12:15	7.0	142.2	0.04	100	76.82
7/26/2018 12:16	8.0	142.3	0.04	100	76.82
7/26/2018 12:17	9.0	142.3	0.04	100	76.82
7/26/2018 12:18	10.0	142.4	0.06	100	76.82
7/26/2018 12:19	11.0	142.4	0.03	100	76.82
7/26/2018 12:20	12.0	142.4	0.02	100	76.82
7/26/2018 12:21	13.0	142.5	0.02	100	76.82

Summary of Test Results

Hydrojacking Pressure		psi	447.1
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	76.8
Flow Rate	Test	L/min	0.04
	Leak		0.03
Hydraulic Conductivity	Surface	m/s	**3.4E-11**
	Downhole		**3.4E-11**

Note: Results presented as <1E-10 m/s due to uncertainty with flow meter.

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-010	From Depth	m	368.4
		To Depth		419.4
Test Number	11	Drilled Depth		419.4
Location	Rook I Arrow	Easting	m	604133.1
Project Number	2CN034.000	Northing		6393736.1

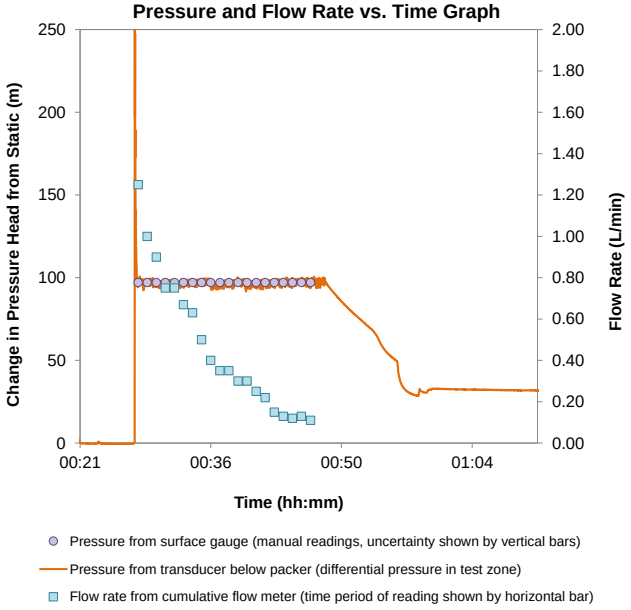
Date & Time (d-mmm-yy hh:mm)

Start	-	28/7/2018 12:27:00 AM
End	-	28/7/2018 1:27:00 AM
Supervisor	-	TS (SRK)
Water Table	m	26.3
Dip	°	90.0

Test Comments

Test purpose & type	50 m interval
Drilling comments	
Testing fluid comments	H20 depth from start of shift used. Water was not stable after test
Geology, hydrogeology & rock mass	
Test quality	Constand head saw a constant reduction of flow rate over the coarse of the test. Valid test.

Pressure and Flow Rate vs. Time Graph



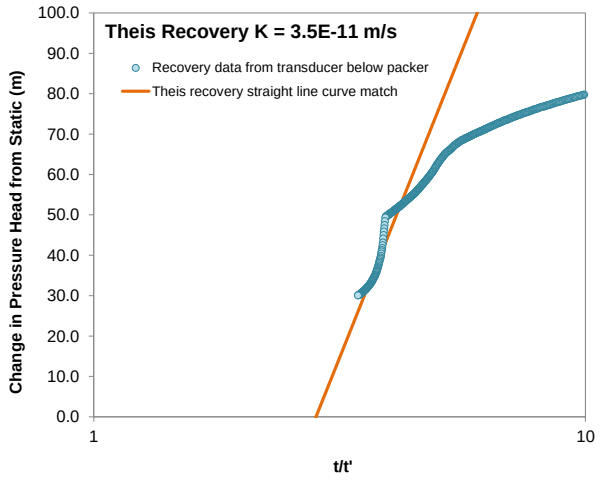
Flow Rate Measurements

Start Time of Manual Measurements			7/28/18 0:27		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/28/2018 0:27	0.0	153.0		100	
7/28/2018 0:28	1.0	154.3	1.25	100	97.12
7/28/2018 0:29	2.0	155.3	1.00	100	97.12
7/28/2018 0:30	3.0	156.2	0.90	100	97.12
7/28/2018 0:31	4.0	156.9	0.75	100	97.12
7/28/2018 0:32	5.0	157.7	0.75	100	97.12
7/28/2018 0:33	6.0	158.3	0.67	100	97.12
7/28/2018 0:34	7.0	159.0	0.63	100	97.12
7/28/2018 0:35	8.0	159.5	0.50	100	97.12
7/28/2018 0:36	9.0	159.9	0.40	100	97.12
7/28/2018 0:37	10.0	160.2	0.35	100	97.12
7/28/2018 0:38	11.0	160.6	0.35	100	97.12
7/28/2018 0:39	12.0	160.9	0.30	100	97.12
7/28/2018 0:40	13.0	161.2	0.30	100	97.12
7/28/2018 0:41	14.0	161.4	0.25	100	97.12
7/28/2018 0:42	15.0	161.6	0.22	100	97.12
7/28/2018 0:43	16.0	161.8	0.15	100	97.12
7/28/2018 0:44	17.0	161.9	0.13	100	97.12
7/28/2018 0:45	18.0	162.0	0.12	100	97.12
7/28/2018 0:46	19.0	162.2	0.13	100	97.12
7/28/2018 0:47	20.0	162.3	0.11	100	97.12

Summary of Test Results

Hydrojacking Pressure		psi	523.9
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	94.5
Flow Rate	Test	L/min	0.46
	Leak		0.28
Hydraulic Conductivity	Surface	m/s	**5.1E-10**
	Downhole		**5.3E-10**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-010	From Depth		419.4
		To Depth	m	470.4
Test Number	12	Drilled Depth		470.4
Location	Rook I Arrow	Easting	m	604133.1
Project Number	2CN034.000	Northing		6393736.1

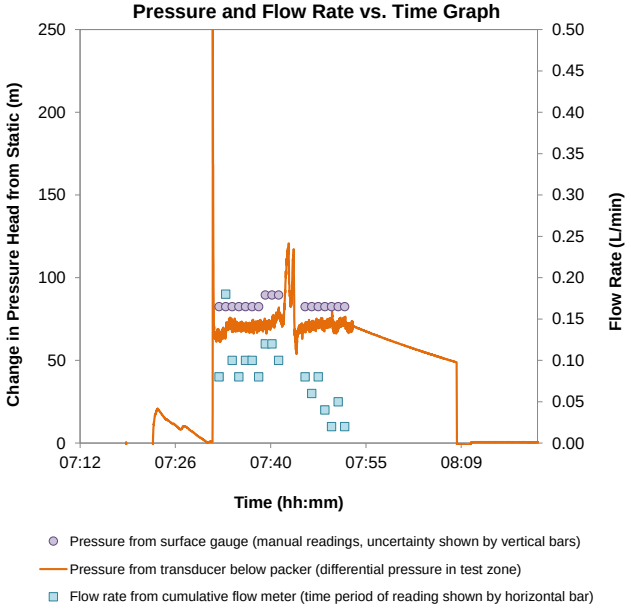
Date & Time (d-mmm-yy hh:mm)

Start	-	29/7/2018 7:32:00 AM
End	-	29/7/2018 12:15:00 AM
Supervisor	-	TS (SRK)
Water Table	m	11.7
Dip	°	90.0

Test Comments

Test purpose & type	50 m interval
Drilling comments	
Testing fluid comments	WL measure 20 mins after pulling packer. Discharge bypass line = 12ft
Geology, hydrogeology & rock mass	
Test quality	Moderate. Pump failed after washing, thus time dely. Pressure kept creeping up during rod leak test and had to be adjusted. Pressurizing issure b/w 10-13 mins--> went to 150psi very quicly and had to restabilize to 100psi. FHT started at 8:11am.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

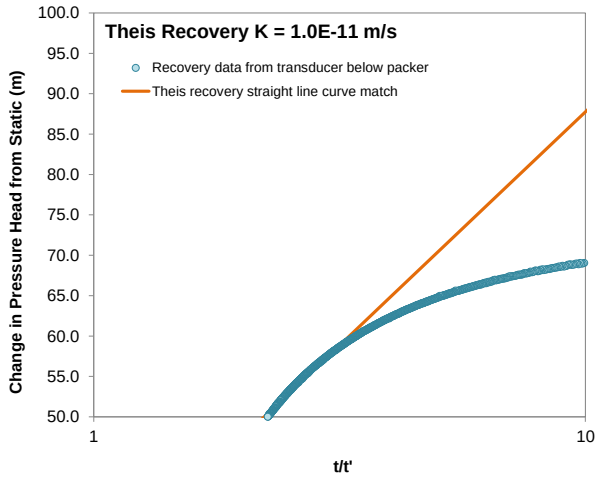
Start Time of Manual Measurements			7/29/18 7:32		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/29/2018 7:32	0.0	168.3		100	
7/29/2018 7:33	1.0	168.4	0.08	100	82.52
7/29/2018 7:34	2.0	168.5	0.18	100	82.52
7/29/2018 7:35	3.0	168.6	0.10	100	82.52
7/29/2018 7:36	4.0	168.7	0.08	100	82.52
7/29/2018 7:37	5.0	168.8	0.10	100	82.52
7/29/2018 7:38	6.0	168.9	0.10	100	82.52
7/29/2018 7:39	7.0	169.0	0.08	100	82.52
7/29/2018 7:40	8.0	169.1	0.12	110	89.56
7/29/2018 7:41	9.0	169.2	0.12	110	89.56
7/29/2018 7:42	10.0	169.3	0.10	110	89.56
7/29/2018 7:43	11.0		#N/A		#N/A
7/29/2018 7:44	12.0		#N/A		#N/A
7/29/2018 7:45	13.0	169.5	#N/A	100	#N/A
7/29/2018 7:46	14.0	169.6	0.08	100	82.52
7/29/2018 7:47	15.0	169.7	0.06	100	82.52
7/29/2018 7:48	16.0	169.7	0.08	100	82.52
7/29/2018 7:49	17.0	169.8	0.04	100	82.52
7/29/2018 7:50	18.0	169.8	0.02	100	82.52
7/29/2018 7:51	19.0	169.9	0.05	100	82.52
7/29/2018 7:52	20.0	169.9	0.02	100	82.52

Summary of Test Results

Hydrojacking Pressure		psi	596.4
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	69.0
Flow Rate	Test	L/min	0.11
	Leak		0.10
Hydraulic Conductivity	Surface	m/s	**3.4E-11**
	Downhole		**4.0E-11**

Note: Results presented as <1E-10 m/s due to flow meter uncertainty.

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-010	From Depth	m	470.4
		To Depth		520.8
Test Number	13 - 2	Drilled Depth		520.8
Location	Rook I Arrow	Easting	m	604133.1
Project Number	2CN034.000	Northing		6393736.1

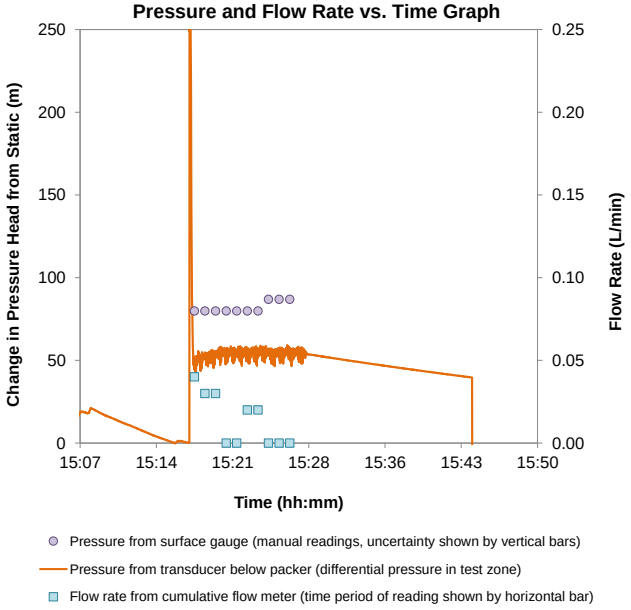
Date & Time (d-mmm-yy hh:mm)

Start	-	30/7/2018 3:17:00 PM
End	-	30/7/2018 6:15:00 PM
Supervior	-	TS (SRK)
Water Table	m	9.1
Dip	°	90.0

Test Comments

Test purpose & type	50 m interval
Drilling comments	
Testing fluid comments	WL measured 20 mins after pulling packer
Geology, hydrogeology & rock mass	
Test quality	Test 13-2 as first test failed. Landed packer by pumping down at <100psi. FHT started at 3:46pm. Moderate. Leakage rate higher than injection. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

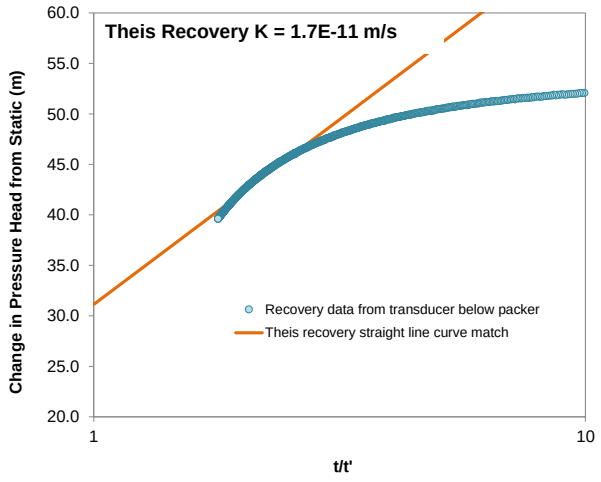
Start Time of Manual Measurements			7/30/18 15:17		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
7/30/2018 15:17	0.0	205.9		100	
7/30/2018 15:18	1.0	206.0	0.04	100	79.91
7/30/2018 15:19	2.0	206.0	0.03	100	79.91
7/30/2018 15:20	3.0	206.0	0.03	100	79.91
7/30/2018 15:21	4.0	206.0	0.00	100	79.91
7/30/2018 15:22	5.0	206.0	0.00	100	79.91
7/30/2018 15:23	6.0	206.1	0.02	100	79.91
7/30/2018 15:24	7.0	206.1	0.02	100	79.91
7/30/2018 15:25	8.0	206.1	0.00	110	86.95
7/30/2018 15:26	9.0	206.1	0.00	110	86.95
7/30/2018 15:27	10.0	206.1	0.00	110	86.95

Summary of Test Results

Hydrojacking Pressure		psi	669.0
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	51.1
Flow Rate	Test	L/min	0.01
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	3.5E-11
	Downhole		5.5E-11

Note: Results presented as <1E-10 m/s due to flow meter uncertainty.

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-010	From Depth		519.7
		To Depth	m	554.4
Test Number	14	Drilled Depth		554.4
Location	Rook I Arrow	Easting	m	604133.1
Project Number	2CN034.000	Northing		6393736.1

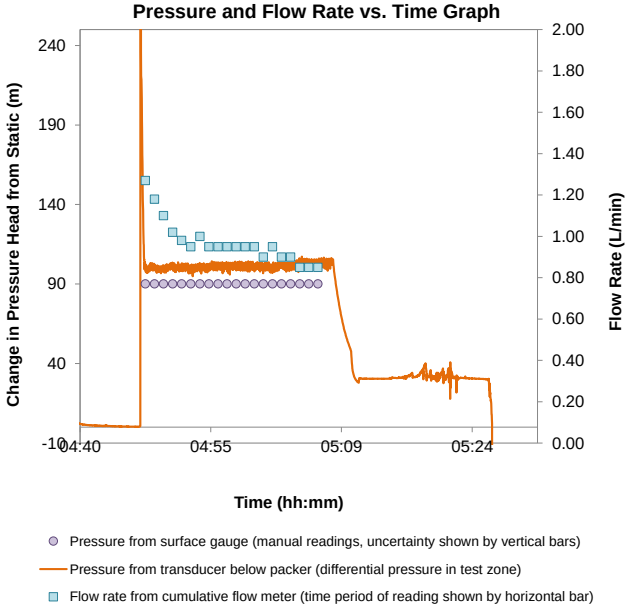
Date & Time (d-mmm-yy hh:mm)

Start	-	01/08/18 04:47
End	-	01/08/18 05:47
Supervisor	-	JN (SRK)
Water Table	m	19.3
Dip	°	90.0

Test Comments

Test purpose & type	Mineralized Structure zone
Drilling comments	
Testing fluid comments	WL measured 40 min after packer was removed
Geology, hydrogeology & rock mass	
Test quality	Stand-by from 2:30-4:00. waiting for transducer. Valid test.

Pressure and Flow Rate vs. Time Graph



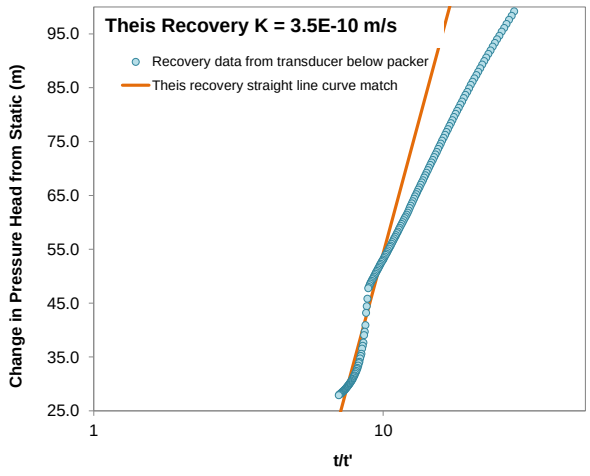
Flow Rate Measurements

Start Time of Manual Measurements			8/1/18 4:47		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/1/2018 4:47	0.0	240.2		100	
8/1/2018 4:48	1.0	241.5	1.27	100	90.12
8/1/2018 4:49	2.0	242.7	1.18	100	90.12
8/1/2018 4:50	3.0	243.8	1.10	100	90.12
8/1/2018 4:51	4.0	244.8	1.02	100	90.12
8/1/2018 4:52	5.0	245.8	0.98	100	90.12
8/1/2018 4:53	6.0	246.7	0.95	100	90.12
8/1/2018 4:54	7.0	247.7	1.00	100	90.12
8/1/2018 4:55	8.0	248.7	0.95	100	90.12
8/1/2018 4:56	9.0	249.6	0.95	100	90.12
8/1/2018 4:57	10.0	250.6	0.95	100	90.12
8/1/2018 4:58	11.0	251.5	0.95	100	90.12
8/1/2018 4:59	12.0	252.5	0.95	100	90.12
8/1/2018 5:00	13.0	253.4	0.95	100	90.12
8/1/2018 5:01	14.0	254.3	0.90	100	90.12
8/1/2018 5:02	15.0	255.3	0.95	100	90.12
8/1/2018 5:03	16.0	256.2	0.90	100	90.12
8/1/2018 5:04	17.0	257.1	0.90	100	90.12
8/1/2018 5:05	18.0	257.9	0.85	100	90.12
8/1/2018 5:06	19.0	258.8	0.85	100	90.12
8/1/2018 5:07	20.0	259.6	0.85	100	90.12

Summary of Test Results

Hydrojacking Pressure		psi	739.0
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	98.6
Flow Rate	Test	L/min	0.85
	Leak		0.05
Hydraulic Conductivity	Surface	m/s	**3.6E-9**
	Downhole		**3.3E-9**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-010	From Depth	m	554.4
		To Depth		563.4
Test Number	15	Drilled Depth		563.4
Location	Rook I Arrow	Easting	m	604133.1
Project Number	2CN034.000	Northing		6393736.1

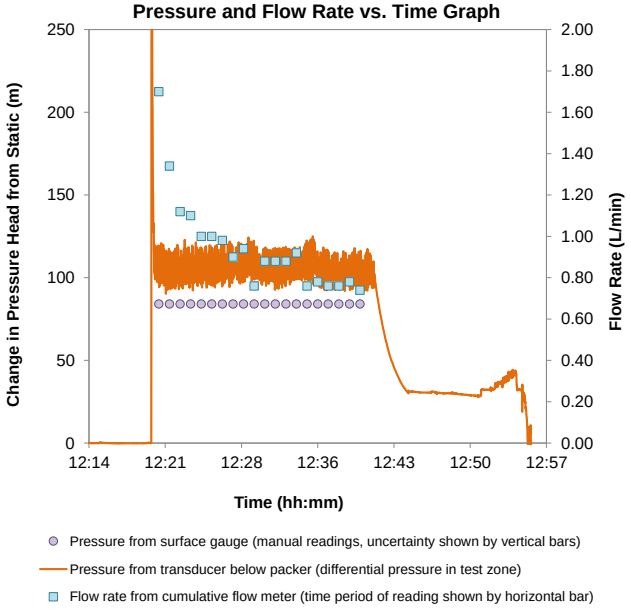
Date & Time (d-mmm-yy hh:mm)

Start	-	01/08/18 12:20
End	-	01/08/18 13:20
Supervisor	-	JN (NG)
Water Table	m	13.3
Dip	°	90.0

Test Comments

Test purpose & type	Area of interest/structure
Drilling comments	
Testing fluid comments	WL measured 40 min after packer was removed
Geology, hydrogeology & rock mass	
Test quality	Valid test.

Pressure and Flow Rate vs. Time Graph



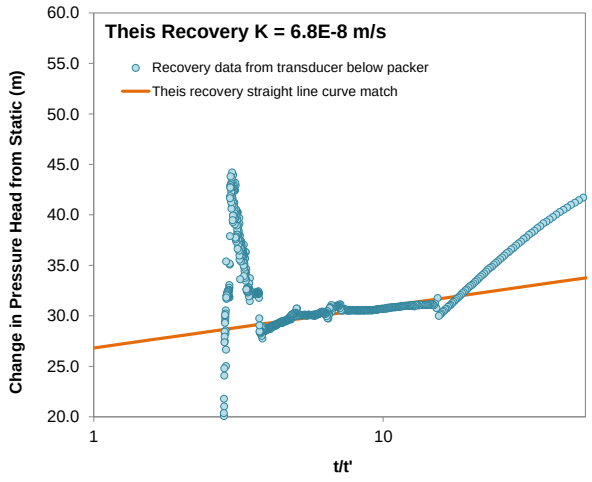
Flow Rate Measurements

Start Time of Manual Measurements			8/1/18 12:20		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/1/2018 12:20	0.0	275.8		100	
8/1/2018 12:21	1.0	277.5	1.70	100	84.12
8/1/2018 12:22	2.0	278.8	1.34	100	84.12
8/1/2018 12:23	3.0	280.0	1.12	100	84.12
8/1/2018 12:24	4.0	281.1	1.10	100	84.12
8/1/2018 12:25	5.0	282.1	1.00	100	84.12
8/1/2018 12:26	6.0	283.1	1.00	100	84.12
8/1/2018 12:27	7.0	284.0	0.98	100	84.12
8/1/2018 12:28	8.0	284.9	0.90	100	84.12
8/1/2018 12:29	9.0	285.9	0.94	100	84.12
8/1/2018 12:30	10.0	286.6	0.76	100	84.12
8/1/2018 12:31	11.0	287.5	0.88	100	84.12
8/1/2018 12:32	12.0	288.4	0.88	100	84.12
8/1/2018 12:33	13.0	289.3	0.88	100	84.12
8/1/2018 12:34	14.0	290.2	0.92	100	84.12
8/1/2018 12:35	15.0	291.0	0.76	100	84.12
8/1/2018 12:36	16.0	291.7	0.78	100	84.12
8/1/2018 12:37	17.0	292.5	0.76	100	84.12
8/1/2018 12:38	18.0	293.3	0.76	100	84.12
8/1/2018 12:39	19.0	294.0	0.78	100	84.12
8/1/2018 12:40	20.0	294.8	0.74	100	84.12

Summary of Test Results

Hydrojacking Pressure		psi	788.4
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	110
Downhole Pressure		m	98.6
Flow Rate	Test	L/min	0.95
	Leak		0.13
Hydraulic Conductivity	Surface	m/s	**1.4E-8**
	Downhole		**1.3E-8**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-010	From Depth		563.4
		To Depth	m	593.4
Test Number	16	Drilled Depth		593.4
Location	Rook I Arrow	Easting	m	604133.1
Project Number	2CN034.000	Northing		6393736.1

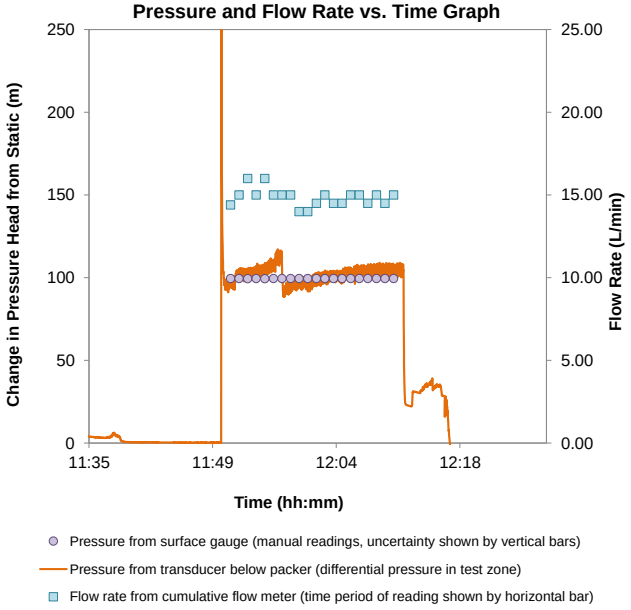
Date & Time (d-mmm-yy hh:mm)

Start	-	02/08/18 11:51
End	-	02/08/18 12:30
Supervisor	-	MB (NG|
Water Table	m	29.1
Dip	°	90.0

Test Comments

Test purpose & type	Loss of circulation during the 590.44-594.4 run
Drilling comments	
Testing fluid comments	Water depth tested at 12:50pm
Geology, hydrogeology & rock mass	
Test quality	Pressure shut-in tests done at 12:12pm. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			8/2/18 11:51		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/2/2018 11:51	0.0	311.6		100	
8/2/2018 11:52	1.0	326.0	14.40	100	99.53
8/2/2018 11:53	2.0	341.0	15.00	100	99.50
8/2/2018 11:54	3.0	357.0	16.00	100	99.44
8/2/2018 11:55	4.0	372.0	15.00	100	99.50
8/2/2018 11:56	5.0	388.0	16.00	100	99.44
8/2/2018 11:57	6.0	403.0	15.00	100	99.50
8/2/2018 11:58	7.0	418.0	15.00	100	99.50
8/2/2018 11:59	8.0	433.0	15.00	100	99.50
8/2/2018 12:00	9.0	447.0	14.00	100	99.55
8/2/2018 12:01	10.0	461.0	14.00	100	99.55
8/2/2018 12:02	11.0	475.5	14.50	100	99.53
8/2/2018 12:03	12.0	490.5	15.00	100	99.50
8/2/2018 12:04	13.0	505.0	14.50	100	99.53
8/2/2018 12:05	14.0	519.5	14.50	100	99.53
8/2/2018 12:06	15.0	534.5	15.00	100	99.50
8/2/2018 12:07	16.0	549.5	15.00	100	99.50
8/2/2018 12:08	17.0	564.0	14.50	100	99.53
8/2/2018 12:09	18.0	579.0	15.00	100	99.50
8/2/2018 12:10	19.0	593.5	14.50	100	99.53
8/2/2018 12:11	20.0	608.5	15.00	100	99.50

Summary of Test Results

Hydrojacking Pressure		psi	801.2
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	108
Downhole Pressure		m	100.0
Flow Rate	Test	L/min	14.85
	Leak		0.06
Hydraulic Conductivity	Surface	m/s	**6.6E-8**
	Downhole		**7.0E-8**

PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth	m	590.4	
Test Number	17	To Depth		593.4	
Location	Rook I Arrow	Drilled Depth		593.4	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing		6393736.1	

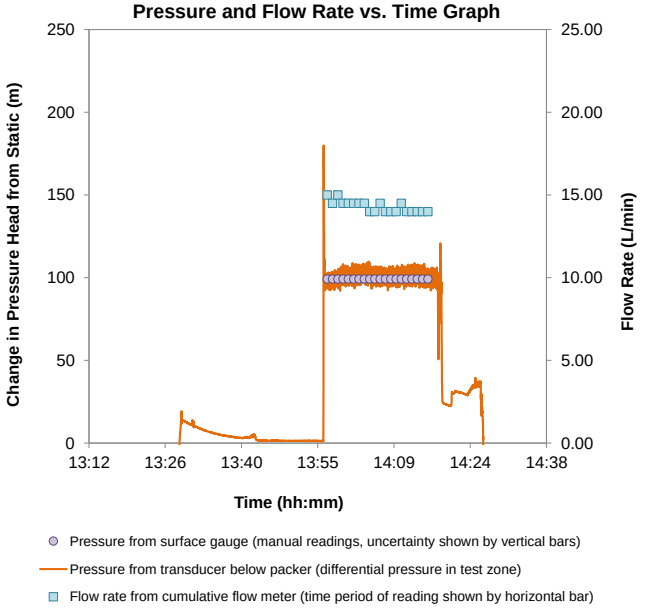
Date & Time (d-mmm-yy hh:mm)

Start	-	02/08/18 13:56
End	-	02/08/18 14:50
Supervisor	-	MB (SRK)
Water Table	m	28.8
Dip	°	90.0

Test Comments

Test purpose & type	Isolate for druzy quartz which caused loss of circulation
Drilling comments	
Testing fluid comments	Water depth tested at 2:40pm
Geology, hydrogeology & rock mass	
Test quality	Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			8/2/18 13:56		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/2/2018 13:56	0.0	641.0		100	
8/2/2018 13:57	1.0	656.0	15.00	100	99.18
8/2/2018 13:58	2.0	670.5	14.50	100	99.21
8/2/2018 13:59	3.0	685.5	15.00	100	99.18
8/2/2018 14:00	4.0	700.0	14.50	100	99.21
8/2/2018 14:01	5.0	714.5	14.50	100	99.21
8/2/2018 14:02	6.0	729.0	14.50	100	99.21
8/2/2018 14:03	7.0	743.5	14.50	100	99.21
8/2/2018 14:04	8.0	758.0	14.50	100	99.21
8/2/2018 14:05	9.0	772.0	14.00	100	99.23
8/2/2018 14:06	10.0	786.0	14.00	100	99.23
8/2/2018 14:07	11.0	800.5	14.50	100	99.21
8/2/2018 14:08	12.0	814.5	14.00	100	99.23
8/2/2018 14:09	13.0	828.5	14.00	100	99.23
8/2/2018 14:10	14.0	842.5	14.00	100	99.23
8/2/2018 14:11	15.0	857.0	14.50	100	99.21
8/2/2018 14:12	16.0	871.0	14.00	100	99.23
8/2/2018 14:13	17.0	885.0	14.00	100	99.23
8/2/2018 14:14	18.0	899.0	14.00	100	99.23
8/2/2018 14:15	19.0	913.0	14.00	100	99.23
8/2/2018 14:16	20.0	927.0	14.00	100	99.23

Summary of Test Results

Hydrojacking Pressure		psi	839.6
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	100.0
Flow Rate	Test	L/min	14.30
	Leak		0.05
Hydraulic Conductivity	Surface	m/s	**6.8E-7**
	Downhole		**6.7E-7**

PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth	m	593.4	
Test Number	18	To Depth		626.4	
Location	Rook I Arrow	Drilled Depth		626.4	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing		6393736.1	

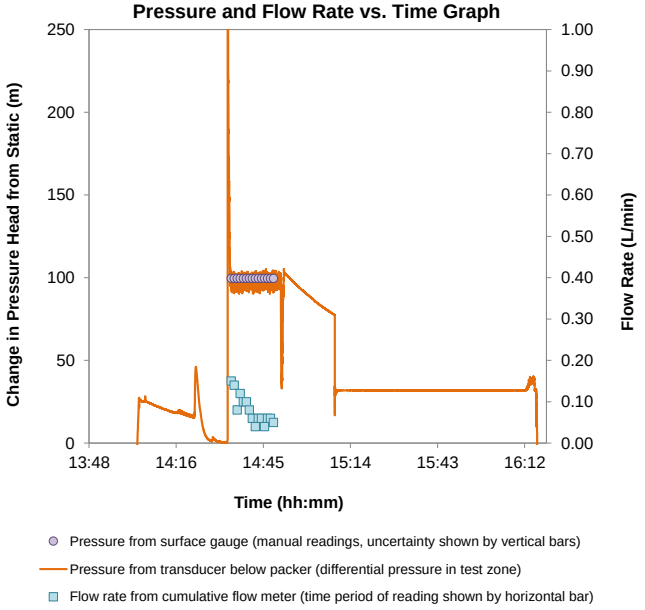
Date & Time (d-mmm-yy hh:mm)

Start	-	03/08/18 14:34
End	-	03/08/18 16:34
Supervisor	-	MB (SRK)
Water Table	m	28.8
Dip	°	90.0

Test Comments

Test purpose & type	Test interval before end of hole (split in two since >50m)
Drilling comments	
Testing fluid comments	Water depth tested at 4:45pm
Geology, hydrogeology & rock mass	
Test quality	Valid test. Pressure accidentaly lowered for 30 secs before shut in test (raised back up to 100 before doing shut-in test). Leakage rate close to injection rate.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

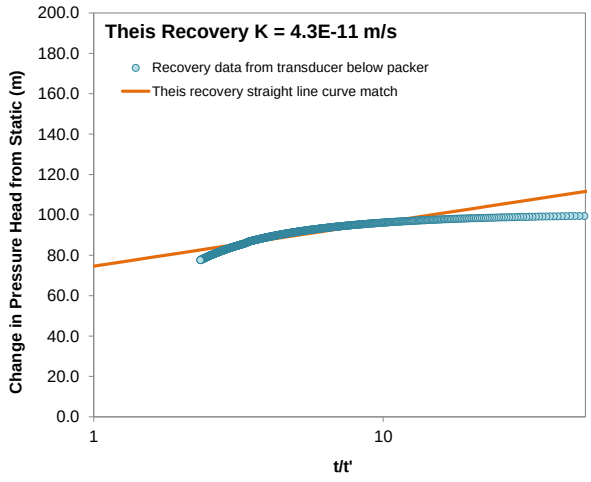
Start Time of Manual Measurements			8/3/18 14:34		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/3/2018 14:34	0.0	969.7		100	
8/3/2018 14:35	1.0	969.8	0.15	100	99.60
8/3/2018 14:36	2.0	969.9	0.14	100	99.60
8/3/2018 14:37	3.0	970.0	0.08	100	99.60
8/3/2018 14:38	4.0	970.1	0.12	100	99.60
8/3/2018 14:39	5.0	970.2	0.10	100	99.60
8/3/2018 14:40	6.0	970.3	0.10	100	99.60
8/3/2018 14:41	7.0	970.4	0.08	100	99.60
8/3/2018 14:42	8.0	970.5	0.06	100	99.60
8/3/2018 14:43	9.0	970.5	0.04	100	99.60
8/3/2018 14:44	10.0	970.6	0.06	100	99.60
8/3/2018 14:45	11.0	970.6	0.06	100	99.60
8/3/2018 14:46	12.0	970.7	0.04	100	99.60
8/3/2018 14:47	13.0	970.7	0.06	100	99.60
8/3/2018 14:48	14.0	970.8	0.06	100	99.60
8/3/2018 14:49	15.0	970.9	0.05	100	99.60

Summary of Test Results

Hydrojacking Pressure		psi	843.9
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	98.0
Flow Rate	Test	L/min	0.08
	Leak		0.07
Hydraulic Conductivity	Surface	m/s	**4.3E-11**
	Downhole		**4.4E-11**

Note: Results presented as <1E-10 m/s due to flow meter uncertainty.

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-010	From Depth	m	626.4	
Test Number	19	To Depth	m	650.4	
Location	Rook I Arrow	Drilled Depth	m	650.4	
Project Number	2CN034.000	Easting	m	604133.1	
		Northing	m	6393736.1	

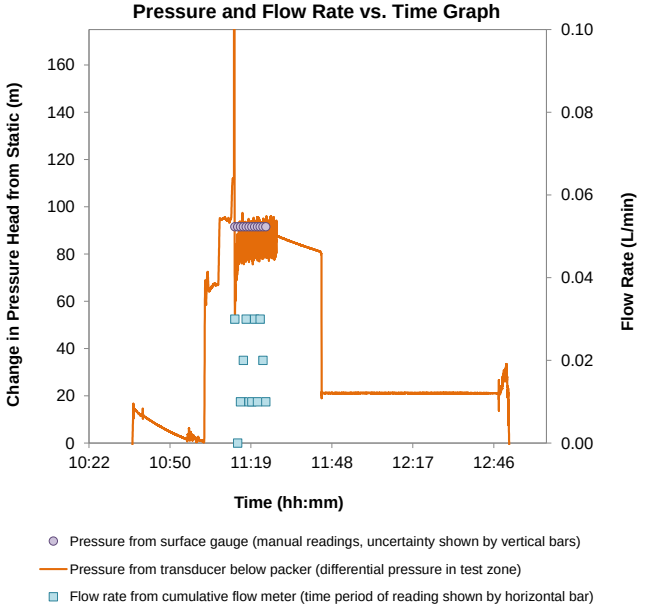
Date & Time (d-mmm-yy hh:mm)

Start	-	04/08/18 11:13
End	-	04/08/18 12:13
Supervior	-	MB (SRK)
Water Table	m	20.8
Dip	°	90.0

Test Comments

Test purpose & type	Test of last interval EOH
Drilling comments	
Testing fluid comments	Water depth measured at 1:20pm
Geology, hydrogeology & rock mass	
Test quality	Falling head test, first 10 mins hard to measure (below 1cm change). Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

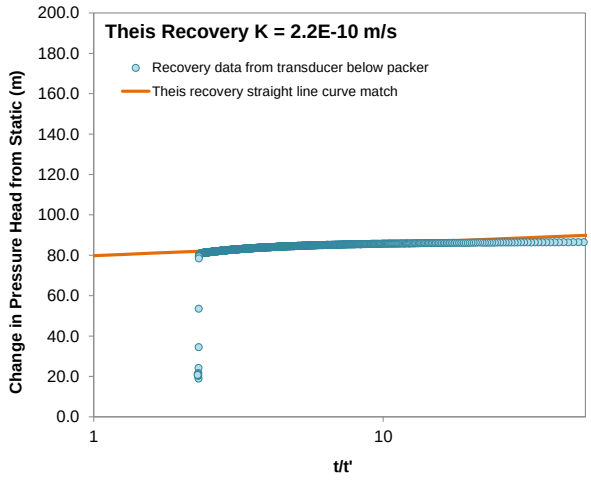
Start Time of Manual Measurements			8/4/18 11:13		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/4/2018 11:13	0.0	977.5		100	
8/4/2018 11:14	1.0	977.5	0.03	100	91.57
8/4/2018 11:15	2.0	977.5	0.00	100	91.57
8/4/2018 11:16	3.0	977.5	0.01	100	91.57
8/4/2018 11:17	4.0	977.5	0.02	100	91.57
8/4/2018 11:18	5.0	977.6	0.03	100	91.57
8/4/2018 11:19	6.0	977.6	0.01	100	91.57
8/4/2018 11:20	7.0	977.6	0.01	100	91.57
8/4/2018 11:21	8.0	977.6	0.03	100	91.57
8/4/2018 11:22	9.0	977.6	0.01	100	91.57
8/4/2018 11:23	10.0	977.6	0.03	100	91.57
8/4/2018 11:24	11.0	977.7	0.02	100	91.57
8/4/2018 11:25	12.0	977.7	0.01	100	91.57

Summary of Test Results

Hydrojacking Pressure		psi	890.8
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	84.4
Flow Rate	Test	L/min	0.02
	Leak		0.01
Hydraulic Conductivity	Surface	m/s	6.4E-11
	Downhole		7.0E-11

Note: Results presented as <1E-10 m/s due to flow meter uncertainty.

Recovery Curve Analysis



GAR-18-013

PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	117.6	
Test Number	1	To Depth		134.3	
Location	Rook I Arrow	Drilled Depth		134.3	
Project Number	2CN034.000	Easting	m	604408.7	
		Northing		6393876.0	

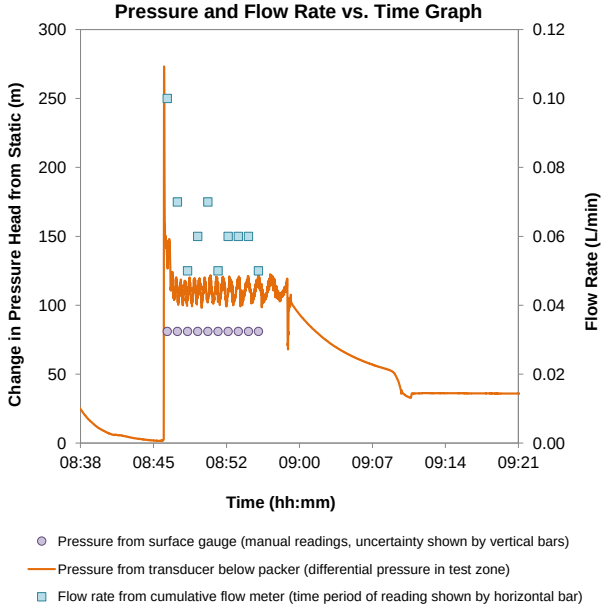
Date & Time (d-mmm-yy hh:mm)

Start	-	12/08/18 08:04
End	-	12/08/18 09:20
Supervisor	-	MB
Water Table	m	10.2
Dip	°	90.0

Test Comments

Test purpose & type	Test the paleoweathered unit below unconformity
Drilling comments	Driller started turning down pressure before shut in test, corrected to 100psi before proceeding
Testing fluid comments	Water level measured at 10:37
Geology, hydrogeology & rock mass	
Test quality	Valid. Shut in pressure test had a bit of an unusual drop at 11 min. Leakage rate close to injection rate.

Pressure and Flow Rate vs. Time Graph



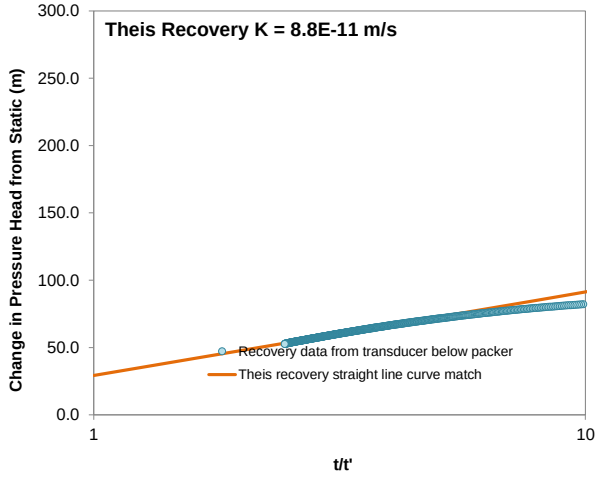
Flow Rate Measurements

Start Time of Manual Measurements			8/12/18 8:45		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/12/2018 8:45	0.0	1002.7		100	
8/12/2018 8:46	1.0	1002.8	0.10	100	80.98
8/12/2018 8:47	2.0	1002.9	0.07	100	80.98
8/12/2018 8:48	3.0	1002.9	0.05	100	80.98
8/12/2018 8:49	4.0	1003.0	0.06	100	80.98
8/12/2018 8:50	5.0	1003.1	0.07	100	80.98
8/12/2018 8:51	6.0	1003.1	0.05	100	80.98
8/12/2018 8:52	7.0	1003.2	0.06	100	80.98
8/12/2018 8:53	8.0	1003.2	0.06	100	80.98
8/12/2018 8:54	9.0	1003.3	0.06	100	80.98
8/12/2018 8:55	10.0	1003.3	0.05	100	80.98

Summary of Test Results

Hydrojacking Pressure		psi	167.2
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	106.0
Flow Rate	Test	L/min	0.06
	Leak		0.03
Hydraulic Conductivity	Surface	m/s	**3.1E-10**
	Downhole		**2.4E-10**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	135.6
		To Depth		152.3
Test Number	2	Drilled Depth		152.3
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

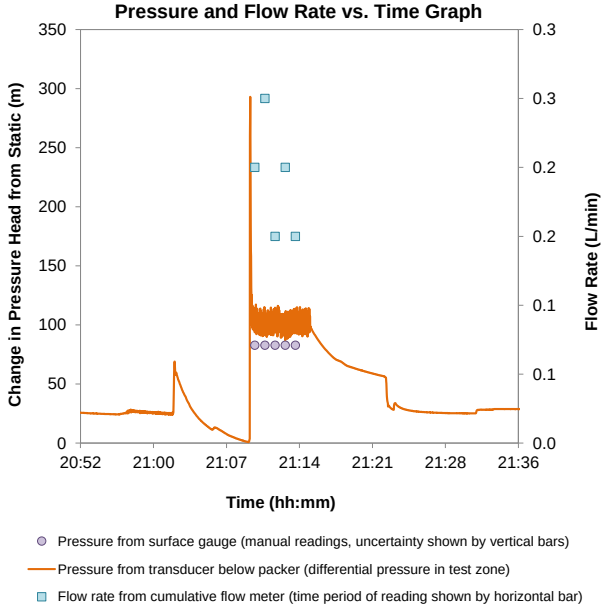
Date & Time (d-mmm-yy hh:mm)

Start	-	12/08/18 20:09
End	-	12/08/18 12:09
Supervisor	-	MB (NG)
Water Table	m	12.0
Dip	°	90.0

Test Comments

Test purpose & type	Shear Zone.
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Valid test.

Pressure and Flow Rate vs. Time Graph



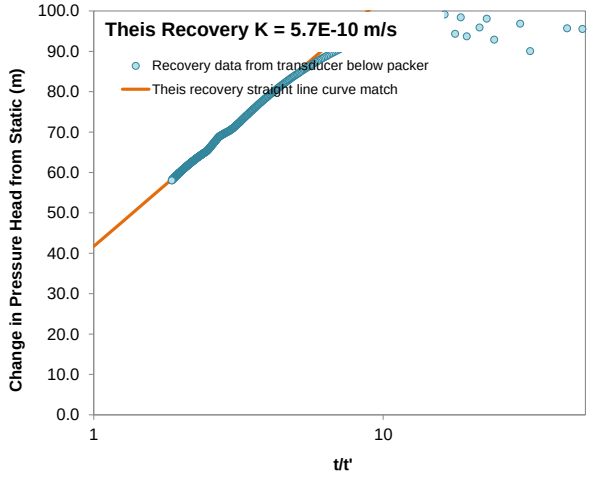
Flow Rate Measurements

Start Time of Manual Measurements			8/12/18 21:09		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/12/2018 21:09	0.0	14.3		100	
8/12/2018 21:10	1.0	14.5	0.20	100	82.82
8/12/2018 21:11	2.0	14.7	0.25	100	82.82
8/12/2018 21:12	3.0	14.9	0.15	100	82.82
8/12/2018 21:13	4.0	15.1	0.20	100	82.82
8/12/2018 21:14	5.0	15.2	0.15	100	82.82

Summary of Test Results

Hydrojacking Pressure		psi	192.8
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	98.0
Flow Rate	Test	L/min	0.19
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	**1.9E-9**
	Downhole		**1.6E-9**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	152.3
		To Depth		203.3
Test Number	3	Drilled Depth		203.3
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

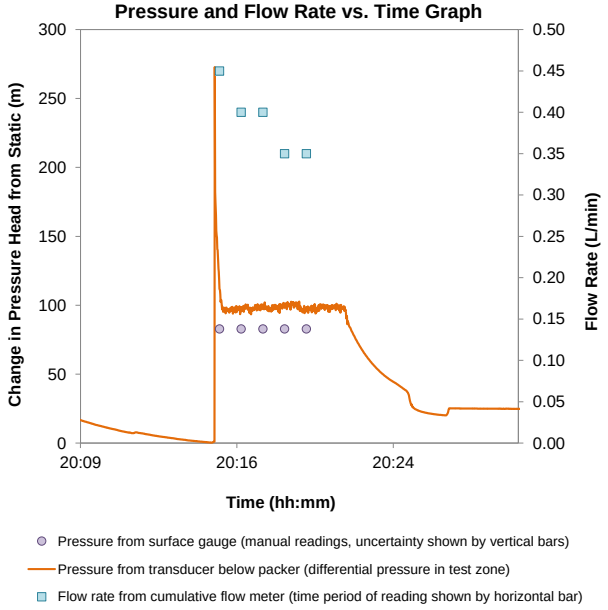
Date & Time (d-mmm-yy hh:mm)

Start	-	13/08/2018 8:14:00 PM
End	-	13/08/2018 9:38:00 PM
Supervior	-	MB (NG)
Water Table	m	12.0
Dip	°	90.0

Test Comments

Test purpose & type	51m interval test.
Drilling comments	Cut rod down to head (1.3m) for FH test.
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Valid test.

Pressure and Flow Rate vs. Time Graph



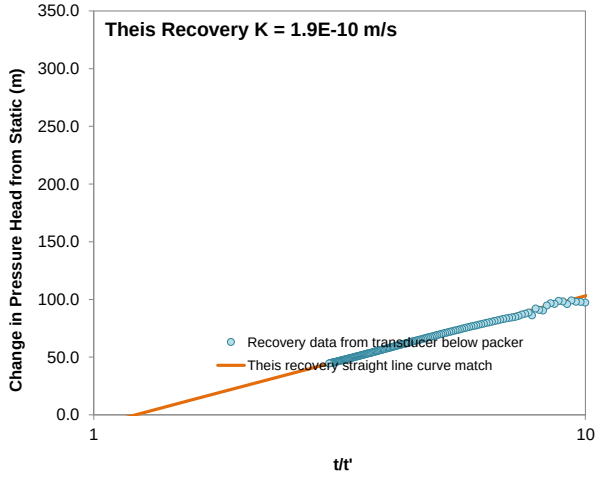
Flow Rate Measurements

Start Time of Manual Measurements			8/13/18 20:15		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/13/2018 20:15	0.0	25.8		100	
8/13/2018 20:16	1.0	26.3	0.45	100	82.82
8/13/2018 20:17	2.0	26.7	0.40	100	82.82
8/13/2018 20:18	3.0	27.1	0.40	100	82.82
8/13/2018 20:19	4.0	27.4	0.35	100	82.82
8/13/2018 20:20	5.0	27.8	0.35	100	82.82

Summary of Test Results

Hydrojacking Pressure		psi	216.6
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	98.0
Flow Rate	Test	L/min	0.38
	Leak		0.03
Hydraulic Conductivity	Surface	m/s	1.2E-9
	Downhole		9.9E-10

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	203.3
		To Depth		254.4
Test Number	4	Drilled Depth		254.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

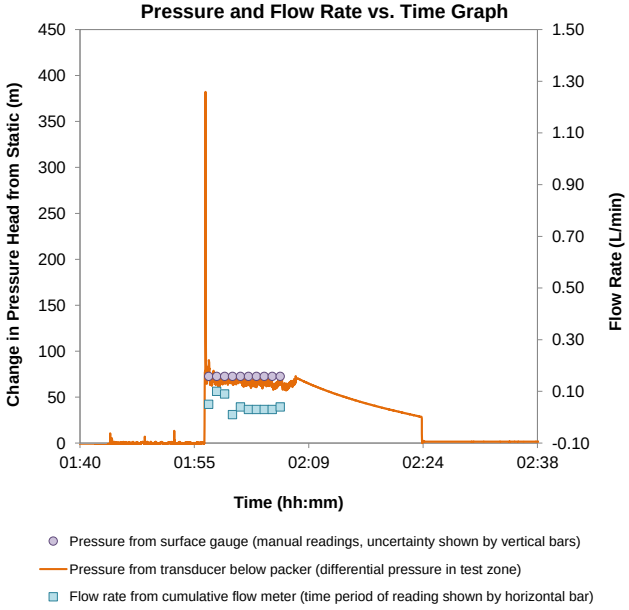
Date & Time (d-mmm-yy hh:mm)

Start	-	18/08/2018 1:55:00 AM
End	-	18/08/2018 2:05:00 AM
Supervior	-	JN (NG)
Water Table	m	1.8
Dip	°	90.0

Test Comments

Test purpose & type	50 m interval.
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Valid test. Leakage rate higher than injection rate.

Pressure and Flow Rate vs. Time Graph



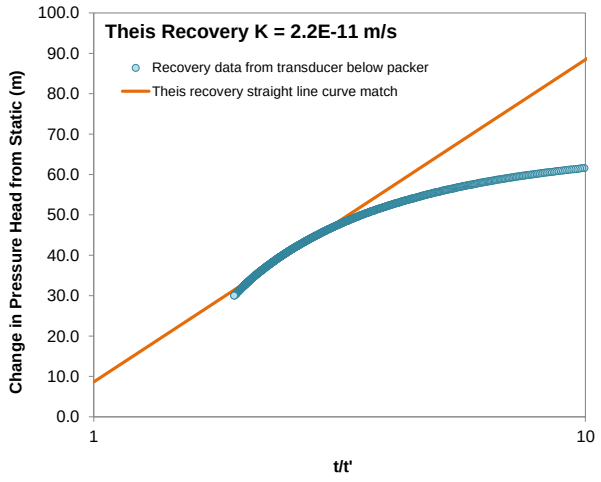
Flow Rate Measurements

Start Time of Manual Measurements			8/18/18 1:56		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/18/2018 1:56	0.0	38.4		100	
8/18/2018 1:57	1.0	38.4	0.05	100	72.57
8/18/2018 1:58	2.0	38.5	0.10	100	72.57
8/18/2018 1:59	3.0	38.6	0.09	100	72.57
8/18/2018 2:00	4.0	38.6	0.01	100	72.57
8/18/2018 2:01	5.0	38.6	0.04	100	72.57
8/18/2018 2:02	6.0	38.7	0.03	100	72.57
8/18/2018 2:03	7.0	38.7	0.03	100	72.57
8/18/2018 2:04	8.0	38.7	0.03	100	72.57
8/18/2018 2:05	9.0	38.8	0.03	100	72.57
8/18/2018 2:06	10.0	38.8	0.04	100	72.57

Summary of Test Results

Hydrojacking Pressure		psi	289.1
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	61.0
Flow Rate	Test	L/min	0.03
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	1.1E-10
	Downhole		1.4E-10

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	254.4	
Test Number	5	To Depth		284.4	
Location	Rook I Arrow	Drilled Depth		284.4	
Project Number	2CN034.000	Easting	m	604408.7	
		Northing		6393876.0	

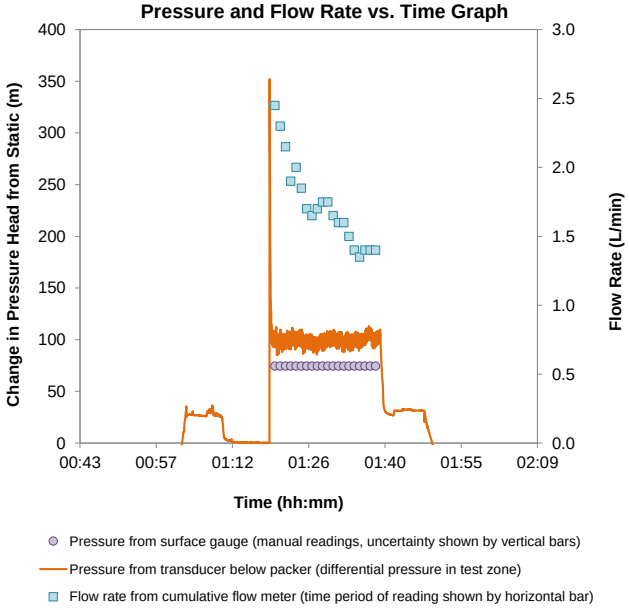
Date & Time (d-mmm-yy hh:mm)

Start	-	19/08/2018 1:19:00 AM
End	-	19/08/2018 1:39:00 AM
Supervisor	-	JN (NG)
Water Table	m	3.8
Dip	°	90.0

Test Comments

Test purpose & type	Shear zone/structure
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			8/19/18 1:19		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/19/2018 1:19	0.0	48.0		100	
8/19/2018 1:20	1.0	50.5	2.45	100	74.56
8/19/2018 1:21	2.0	52.8	2.30	100	74.56
8/19/2018 1:22	3.0	54.9	2.15	100	74.57
8/19/2018 1:23	4.0	56.8	1.90	100	74.57
8/19/2018 1:24	5.0	58.8	2.00	100	74.57
8/19/2018 1:25	6.0	60.7	1.85	100	74.57
8/19/2018 1:26	7.0	62.4	1.70	100	74.57
8/19/2018 1:27	8.0	64.0	1.65	100	74.57
8/19/2018 1:28	9.0	65.7	1.70	100	74.57
8/19/2018 1:29	10.0	67.5	1.75	100	74.57
8/19/2018 1:30	11.0	69.2	1.75	100	74.57
8/19/2018 1:31	12.0	70.9	1.65	100	74.57
8/19/2018 1:32	13.0	72.5	1.60	100	74.57
8/19/2018 1:33	14.0	74.1	1.60	100	74.57
8/19/2018 1:34	15.0	75.6	1.50	100	74.57
8/19/2018 1:35	16.0	77.0	1.40	100	74.57
8/19/2018 1:36	17.0	78.3	1.35	100	74.57
8/19/2018 1:37	18.0	79.7	1.40	100	74.57
8/19/2018 1:38	19.0	81.1	1.40	100	74.57
8/19/2018 1:39	20.0	82.5	1.40	100	74.57

Summary of Test Results

Hydrojacking Pressure		psi	361.7
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	95.0
Flow Rate	Test	L/min	1.70
	Leak		0.30
Hydraulic Conductivity	Surface	m/s	**8.9E-9**
	Downhole		**7.0E-9**

PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	284.4
		To Depth		308.4
Test Number	6	Drilled Depth		308.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

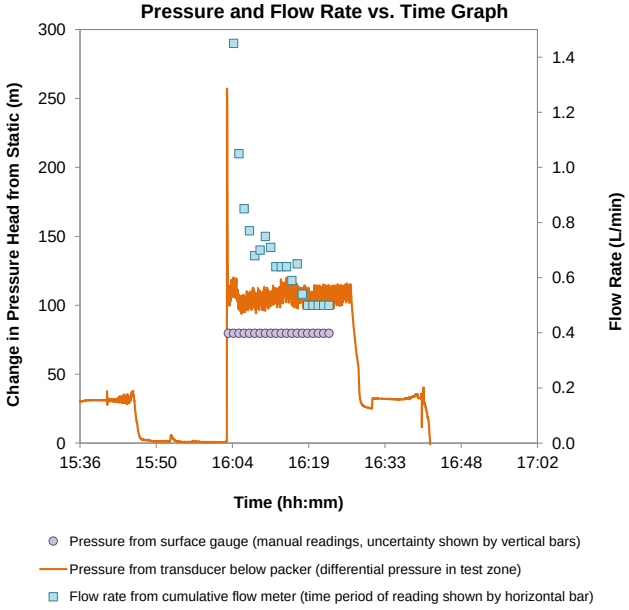
Date & Time (d-mmm-yy hh:mm)

Start	-	18/08/2018 1:55:00 AM
End	-	18/08/2018 2:05:00 AM
Supervisor	-	MB (NG)
Water Table	m	8.9
Dip	°	90.0

Test Comments

Test purpose & type	50m interval.
Drilling comments	
Testing fluid comments	Water level test done at 5:08
Geology, hydrogeology & rock mass	
Test quality	Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			8/19/18 16:03		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/19/2018 16:03	0.0	1096.2		100	
8/19/2018 16:04	1.0	1097.8	1.60	100	79.70
8/19/2018 16:05	2.0	1099.3	1.45	100	79.70
8/19/2018 16:06	3.0	1100.3	1.05	100	79.70
8/19/2018 16:07	4.0	1101.2	0.85	100	79.70
8/19/2018 16:08	5.0	1101.9	0.77	100	79.70
8/19/2018 16:09	6.0	1102.6	0.68	100	79.70
8/19/2018 16:10	7.0	1103.3	0.70	100	79.70
8/19/2018 16:11	8.0	1104.1	0.75	100	79.70
8/19/2018 16:12	9.0	1104.8	0.71	100	79.70
8/19/2018 16:13	10.0	1105.4	0.64	100	79.70
8/19/2018 16:14	11.0	1106.0	0.64	100	79.70
8/19/2018 16:15	12.0	1106.7	0.64	100	79.70
8/19/2018 16:16	13.0	1107.3	0.59	100	79.70
8/19/2018 16:17	14.0	1107.9	0.65	100	79.70
8/19/2018 16:18	15.0	1108.5	0.54	100	79.70
8/19/2018 16:19	16.0	1109.0	0.50	100	79.70
8/19/2018 16:20	17.0	1109.5	0.50	100	79.70
8/19/2018 16:21	18.0	1110.0	0.50	100	79.70
8/19/2018 16:22	19.0	1110.5	0.50	100	79.70
8/19/2018 16:23	20.0	1111.0	0.50	100	79.70

Summary of Test Results

Hydrojacking Pressure		psi	404.4
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	101.0
Flow Rate	Test	L/min	0.60
	Leak		0.03
Hydraulic Conductivity	Surface	m/s	**4.2E-9**
	Downhole		**3.3E-9**

PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	308.4
		To Depth		332.4
Test Number	7	Drilled Depth		332.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

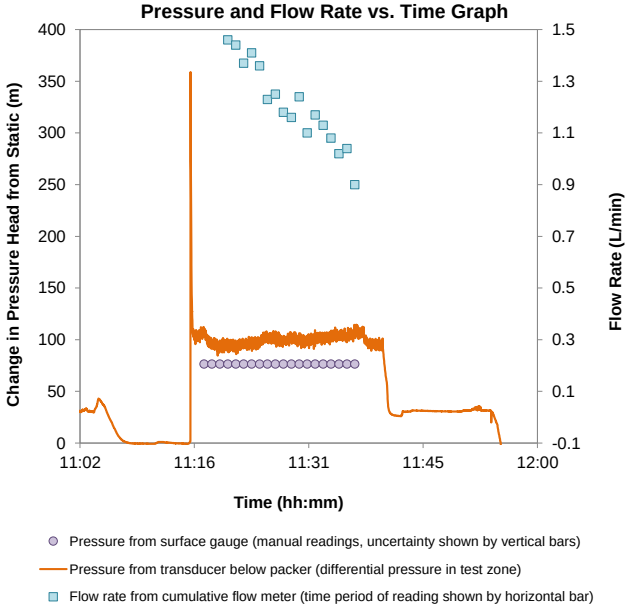
Date & Time (d-mmm-yy hh:mm)

Start	-	20/08/2018 11:18:00 AM
End	-	20/08/2018 12:00:00 PM
Supervisor	-	JN (NG)
Water Table	m	5.7
Dip	°	90.0

Test Comments

Test purpose & type	Sheared structure and faulted zone.
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	Fault structure with gouge and rubble zones
Test quality	WL Test done at 12:15 pm (a bit too early). Pressure test never fully stabilized, slight decrease over 20 mins. Valid test.

Pressure and Flow Rate vs. Time Graph



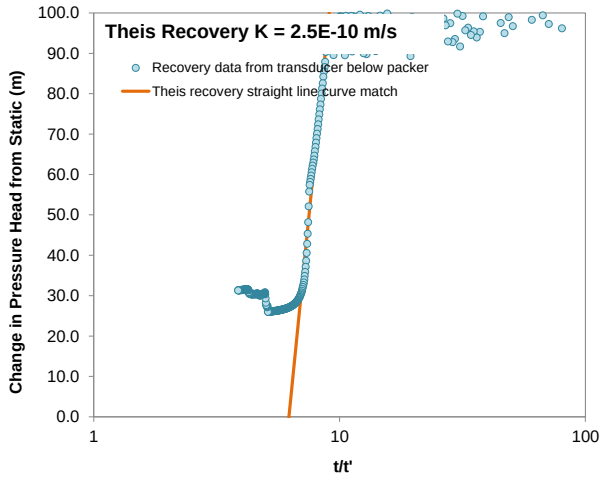
Flow Rate Measurements

Start Time of Manual Measurements			8/20/18 11:17		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/20/2018 11:17	0.0	1123.0		100	
8/20/2018 11:18	1.0	1124.7	1.68	100	76.47
8/20/2018 11:19	2.0	1126.3	1.62	100	76.47
8/20/2018 11:20	3.0	1127.9	1.58	100	76.47
8/20/2018 11:21	4.0	1129.3	1.46	100	76.47
8/20/2018 11:22	5.0	1130.8	1.44	100	76.47
8/20/2018 11:23	6.0	1132.2	1.37	100	76.47
8/20/2018 11:24	7.0	1133.6	1.41	100	76.47
8/20/2018 11:25	8.0	1134.9	1.36	100	76.47
8/20/2018 11:26	9.0	1136.2	1.23	100	76.47
8/20/2018 11:27	10.0	1137.4	1.25	100	76.47
8/20/2018 11:28	11.0	1138.6	1.18	100	76.47
8/20/2018 11:29	12.0	1139.7	1.16	100	76.47
8/20/2018 11:30	13.0	1141.0	1.24	100	76.47
8/20/2018 11:31	14.0	1142.1	1.10	100	76.47
8/20/2018 11:32	15.0	1143.3	1.17	100	76.47
8/20/2018 11:33	16.0	1144.4	1.13	100	76.47
8/20/2018 11:34	17.0	1145.5	1.08	100	76.47
8/20/2018 11:35	18.0	1146.5	1.02	100	76.47
8/20/2018 11:36	19.0	1147.5	1.04	100	76.47
8/20/2018 11:37	20.0	1148.4	0.90	100	76.47

Summary of Test Results

Hydrojacking Pressure		psi	438.5
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	104.0
Flow Rate	Test	L/min	1.27
	Leak		0.07
Hydraulic Conductivity	Surface	m/s	**9.3E-9**
	Downhole		**6.8E-9**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	332.4	
Test Number	8	To Depth		377.4	
Location	Rook I Arrow	Drilled Depth		377.4	
Project Number	2CN034.000	Easting	m	604408.7	
		Northing		6393876.0	

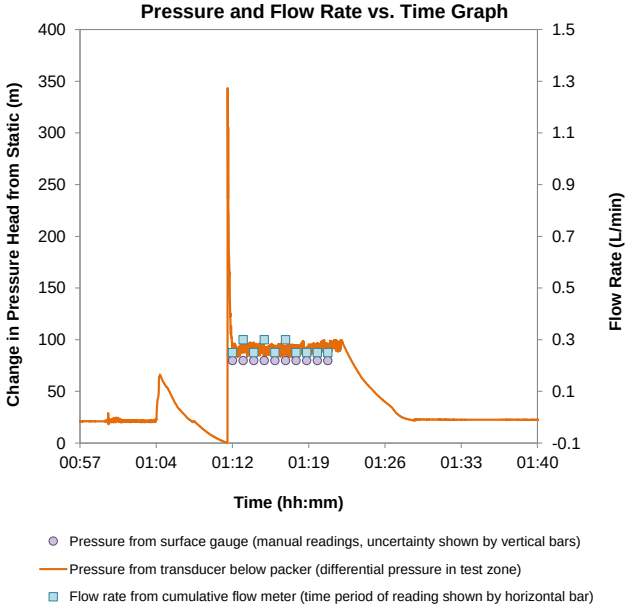
Date & Time (d-mmm-yy hh:mm)

Start	-	23/08/2018 1:11:00 AM
End	-	23/08/2018 1:21:00 AM
Supervisor	-	JN (NG)
Water Table	m	9.1
Dip	°	90.0

Test Comments

Test purpose & type	Test shear zone & Qz Breccias
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Valid test.

Pressure and Flow Rate vs. Time Graph



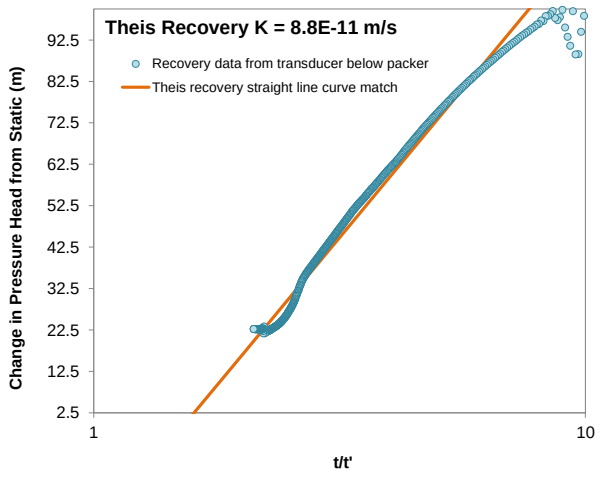
Flow Rate Measurements

Start Time of Manual Measurements			8/23/18 1:11		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/23/2018 1:11	0.0	157.8		100	
8/23/2018 1:12	1.0	158.1	0.25	100	79.87
8/23/2018 1:13	2.0	158.4	0.30	100	79.87
8/23/2018 1:14	3.0	158.6	0.25	100	79.87
8/23/2018 1:15	4.0	158.9	0.30	100	79.87
8/23/2018 1:16	5.0	159.2	0.25	100	79.87
8/23/2018 1:17	6.0	159.5	0.30	100	79.87
8/23/2018 1:18	7.0	159.7	0.25	100	79.87
8/23/2018 1:19	8.0	160.0	0.25	100	79.87
8/23/2018 1:20	9.0	160.2	0.25	100	79.87
8/23/2018 1:21	10.0	160.5	0.25	100	79.87

Summary of Test Results

Hydrojacking Pressure		psi	472.7
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	92.0
Flow Rate	Test	L/min	0.27
	Leak		0.08
Hydraulic Conductivity	Surface	m/s	**7.3E-10**
	Downhole		**6.3E-10**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	377.4
Test Number	9	To Depth		410.4
Location	Rook I Arrow	Drilled Depth		410.4
Project Number	2CN034.000	Easting	m	604408.7
		Northing		6393876.0

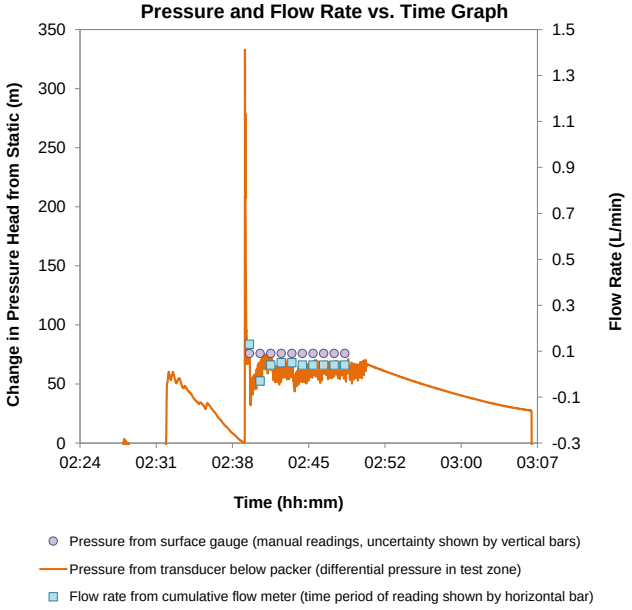
Date & Time (d-mmm-yy hh:mm)

Start	-	24/08/2018 2:39:00 AM
End	-	24/08/2018 2:49:00 AM
Supervisor	-	JN (NG)
Water Table	m	5.1
Dip	°	90.0

Test Comments

Test purpose & type	To isolate structure zone.
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Valid test. Leakage rate higher than injection rate.

Pressure and Flow Rate vs. Time Graph



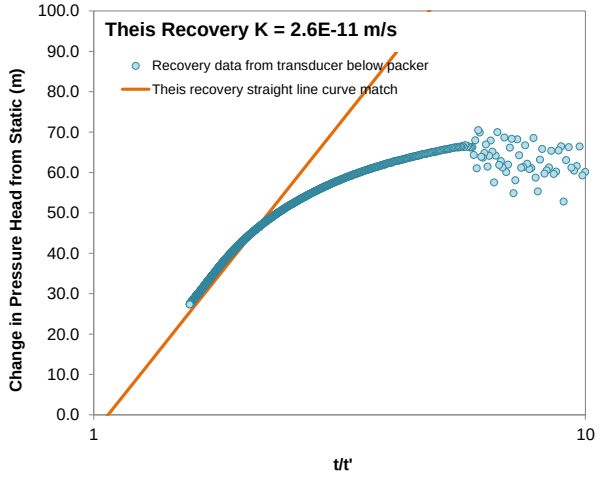
Flow Rate Measurements

Start Time of Manual Measurements			8/24/18 2:39		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/24/2018 2:39	0.0	166.0		100	
8/24/2018 2:40	1.0	166.1	0.13	100	75.87
8/24/2018 2:41	2.0	166.1	-0.03	100	75.87
8/24/2018 2:42	3.0	166.1	0.04	100	75.87
8/24/2018 2:43	4.0	166.1	0.05	100	75.87
8/24/2018 2:44	5.0	166.2	0.05	100	75.87
8/24/2018 2:45	6.0	166.2	0.04	100	75.87
8/24/2018 2:46	7.0	166.3	0.04	100	75.87
8/24/2018 2:47	8.0	166.3	0.04	100	75.87
8/24/2018 2:48	9.0	166.4	0.04	100	75.87
8/24/2018 2:49	10.0	166.4	0.04	100	75.87

Summary of Test Results

Hydrojacking Pressure		psi	536.7
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	62.0
Flow Rate	Test	L/min	0.04
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	2.4E-10
	Downhole		3.0E-10

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	410.4
		To Depth		431.4
Test Number	10	Drilled Depth		431.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

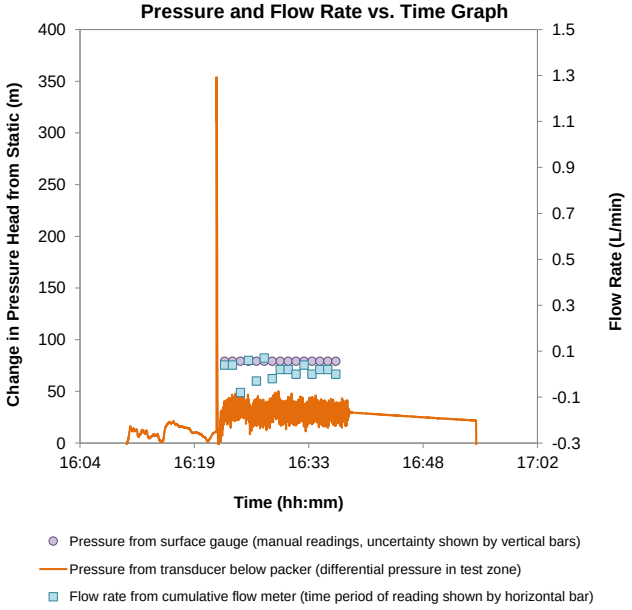
Date & Time (d-mmm-yy hh:mm)

Start	-	24/08/2018 4:22:00 PM
End	-	24/08/2018 4:37:00 PM
Supervisor	-	JN (NG)
Water Table	m	8.3
Dip	°	90.0

Test Comments

Test purpose & type	Test fractured rock interval.
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	Fractured.
Test quality	Pressure was 'jumpy' by +/- 20 psi during rod leak test and +/- during injection test. Pressure had to regularly be adjusted. FHT Test started at 4:55 pm. WL measured 20 mins after pulling packer. Low flow. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

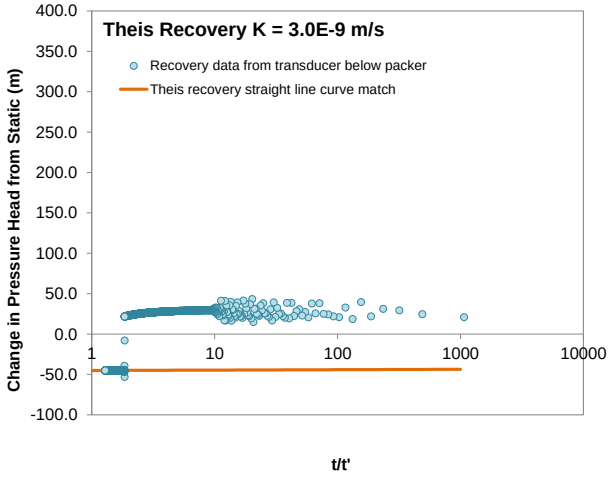
Start Time of Manual Measurements			8/24/18 16:22		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/24/2018 16:22	0.0	171.9		100	
8/24/2018 16:23	1.0	171.9	0.04	100	79.14
8/24/2018 16:24	2.0	172.0	0.04	100	79.14
8/24/2018 16:25	3.0	171.9	-0.08	100	79.14
8/24/2018 16:26	4.0	172.0	0.06	100	79.14
8/24/2018 16:27	5.0	171.9	-0.03	100	79.14
8/24/2018 16:28	6.0	172.0	0.07	100	79.14
8/24/2018 16:29	7.0	172.0	-0.02	100	79.14
8/24/2018 16:30	8.0	172.0	0.02	100	79.14
8/24/2018 16:31	9.0	172.0	0.02	100	79.14
8/24/2018 16:32	10.0	172.0	0.00	100	79.14
8/24/2018 16:33	11.0	172.1	0.04	100	79.14
8/24/2018 16:34	12.0	172.1	0.00	100	79.14
8/24/2018 16:35	13.0	172.1	0.02	100	79.14
8/24/2018 16:36	14.0	172.1	0.02	100	79.14
8/24/2018 16:37	15.0	172.1	0.00	100	79.14

Summary of Test Results

Hydrojacking Pressure		psi	583.6
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	25.0
Flow Rate	Test	L/min	0.01
	Leak		
Hydraulic Conductivity	Surface	m/s	8.5E-11
	Downhole		2.7E-10

Note: Results presented as <1E-10 m/s due to flow meter uncertainty.

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	431.4
		To Depth		464.4
Test Number	11	Drilled Depth		464.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

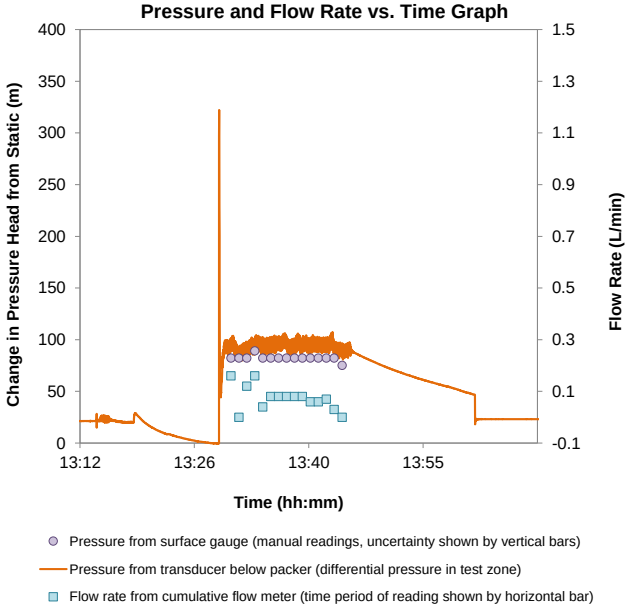
Date & Time (d-mmm-yy hh:mm)

Start	-	25/08/2018 1:30:00 PM
End	-	25/08/2018 1:45:00 PM
Supervior	-	JN (NG)
Water Table	m	11.4
Dip	°	90.0

Test Comments

Test purpose & type	Shear Zone
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Trouble maintaining consistent pressure during rod leak test. Pump parts were replaced prior to this test. FHT started at 2:01 pm. WL was measured 20 mins after pulling packer. First test failed due to bladder deflating near end of injection test, likely due to sand. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

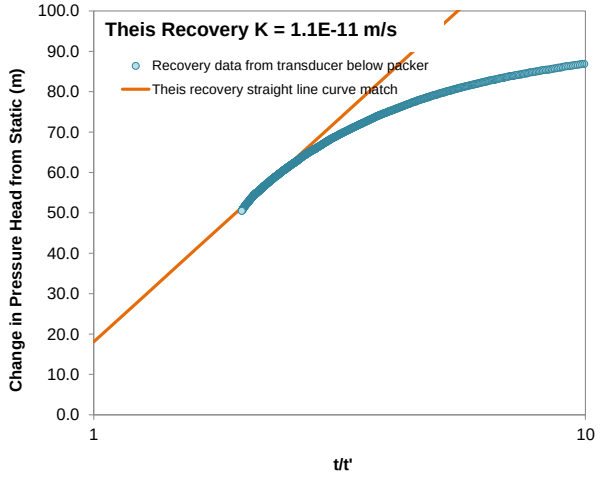
Start Time of Manual Measurements			8/25/18 13:30		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/25/2018 13:30	0.0	193.3		100	
8/25/2018 13:31	1.0	193.5	0.16	100	82.22
8/25/2018 13:32	2.0	193.5	0.00	100	82.22
8/25/2018 13:33	3.0	193.6	0.12	100	82.22
8/25/2018 13:34	4.0	193.8	0.16	110	89.26
8/25/2018 13:35	5.0	193.8	0.04	100	82.22
8/25/2018 13:36	6.0	193.9	0.08	100	82.22
8/25/2018 13:37	7.0	194.0	0.08	100	82.22
8/25/2018 13:38	8.0	194.1	0.08	100	82.22
8/25/2018 13:39	9.0	194.1	0.08	100	82.22
8/25/2018 13:40	10.0	194.2	0.08	100	82.22
8/25/2018 13:41	11.0	194.3	0.06	100	82.22
8/25/2018 13:42	12.0	194.3	0.06	100	82.22
8/25/2018 13:43	13.0	194.4	0.07	100	82.22
8/25/2018 13:44	14.0	194.4	0.03	100	82.22
8/25/2018 13:45	15.0	194.4	0.00	90	75.19

Summary of Test Results

Hydrojacking Pressure		psi	613.4
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	82.2
Flow Rate	Test	L/min	0.07
	Leak		0.06
Hydraulic Conductivity	Surface	m/s	**7.0E-11**
	Downhole		**7.0E-11**

Note: Results presented as <1E-10 m/s due to flow meter uncertainty.

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-013	From Depth	m	464.4
		To Depth		485.4
Test Number	12	Drilled Depth		485.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

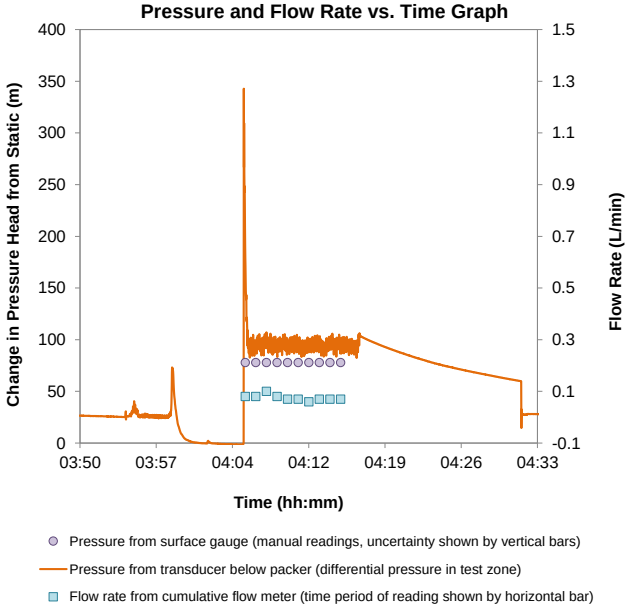
Date & Time (d-mmm-yy hh:mm)

Start	-	26/08/2018 4:05:00 AM
End	-	26/08/2018 4:15:00 AM
Supervisor	-	JN (NG)
Water Table	m	7.1
Dip	°	90.0

Test Comments

Test purpose & type	Isolate structure zone.
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Valid test

Pressure and Flow Rate vs. Time Graph



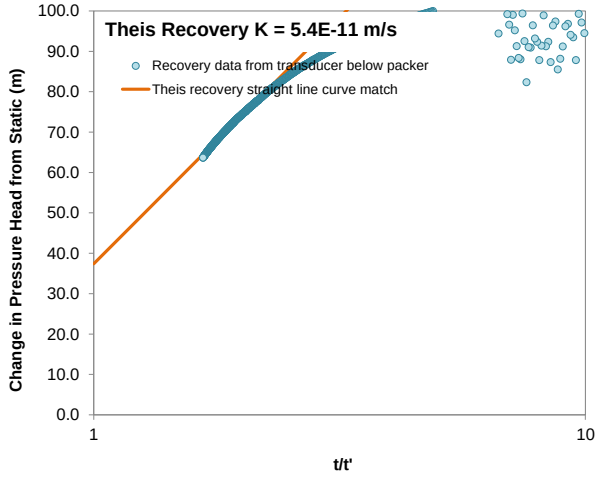
Flow Rate Measurements

Start Time of Manual Measurements			8/26/18 4:05		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/26/2018 4:05	0.0	202.2		100	
8/26/2018 4:06	1.0	202.2	0.08	100	77.87
8/26/2018 4:07	2.0	202.3	0.08	100	77.87
8/26/2018 4:08	3.0	202.4	0.10	100	77.87
8/26/2018 4:09	4.0	202.5	0.08	100	77.87
8/26/2018 4:10	5.0	202.6	0.07	100	77.87
8/26/2018 4:11	6.0	202.6	0.07	100	77.87
8/26/2018 4:12	7.0	202.7	0.06	100	77.87
8/26/2018 4:13	8.0	202.8	0.07	100	77.87
8/26/2018 4:14	9.0	202.8	0.07	100	77.87
8/26/2018 4:15	10.0	202.9	0.07	100	77.87

Summary of Test Results

Hydrojacking Pressure		psi	660.4
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	100.0
Flow Rate	Test	L/min	0.08
	Leak		0.03
Hydraulic Conductivity	Surface	m/s	**3.9E-10**
	Downhole		**3.0E-10**

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	485.4
		To Depth		539.4
Test Number	13	Drilled Depth		539.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

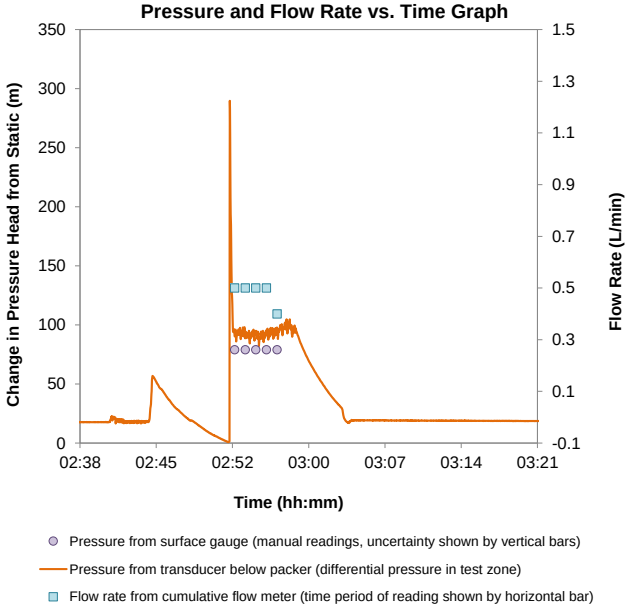
Date & Time (d-mmm-yy hh:mm)

Start	-	31/08/2018 2:52:00 AM
End	-	31/08/2018 4:30:00 AM
Supervisor	-	JN (NG)
Water Table	m	8.2
Dip	°	90.0

Test Comments

Test purpose & type	50m interval
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	Chlorite altered intrusive through AQ Devico Cut
Test quality	Perfect, 5 min constant head plus 1 hour falling head

Pressure and Flow Rate vs. Time Graph



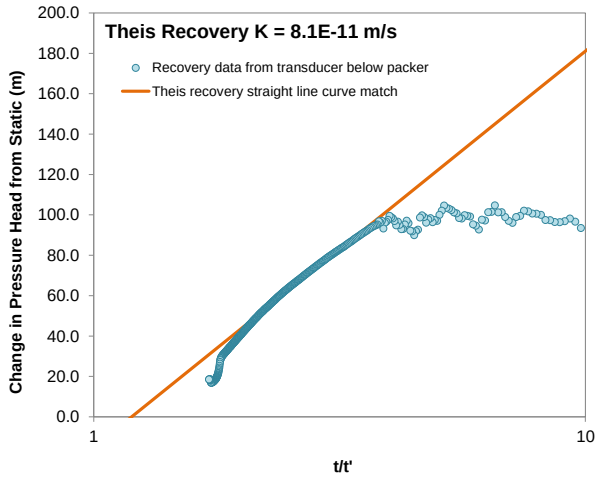
Flow Rate Measurements

Start Time of Manual Measurements			8/31/18 2:52		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/31/2018 2:52	0.0	209.2		100	
8/31/2018 2:53	1.0	209.7	0.50	100	78.98
8/31/2018 2:54	2.0	210.2	0.50	100	78.98
8/31/2018 2:55	3.0	210.7	0.50	100	78.98
8/31/2018 2:56	4.0	211.2	0.50	100	78.98
8/31/2018 2:57	5.0	211.6	0.40	100	78.98

Summary of Test Results

Hydrojacking Pressure		psi	690.2
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	92.0
Flow Rate	Test	L/min	0.48
	Leak		0.20
Hydraulic Conductivity	Surface	m/s	9.3E-10
	Downhole		8.0E-10

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	539.4
		To Depth		572.4
Test Number	14	Drilled Depth		572.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

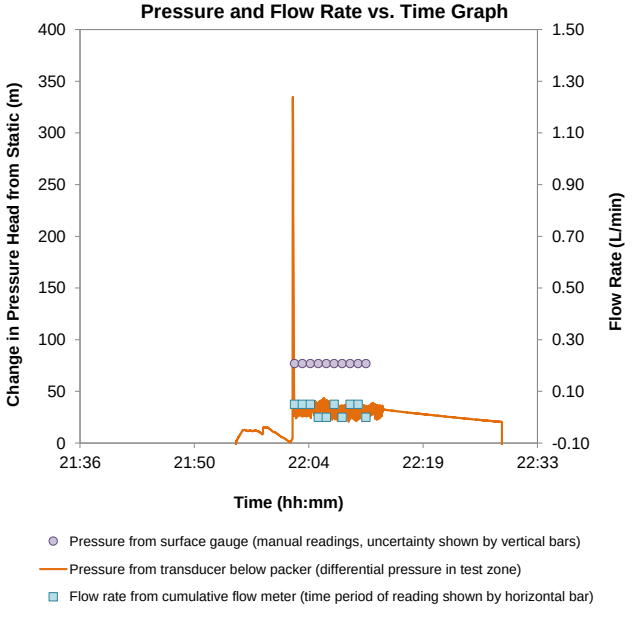
Date & Time (d-mmm-yy hh:mm)

Start	-	31/08/2018 10:02:00 PM
End	-	31/08/2018 11:29:00 PM
Supervisor	-	JN (NG)
Water Table	m	6.2
Dip	°	90.0

Test Comments

Test purpose & type	Testing Rubble Zone + faulting w/ clay gouge fill
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	Moderately Chlorite altered + foliated intrusive w/ quartz
Test quality	Valid test. Leakage rate higher than injection rate.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

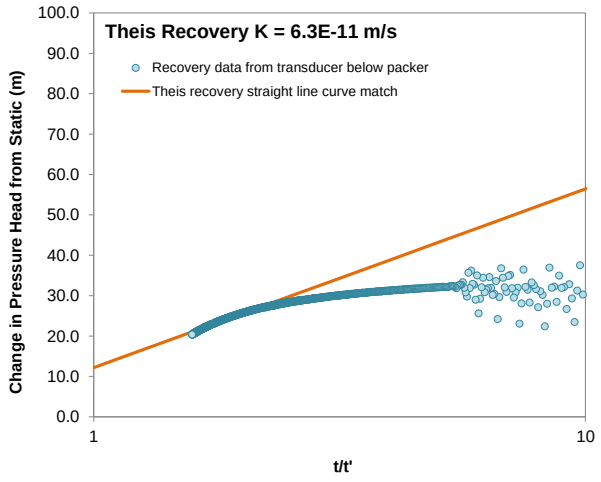
Start Time of Manual Measurements			8/31/18 22:02		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
8/31/2018 22:02	0.0	220.8		100	
8/31/2018 22:03	1.0	220.8	0.05	100	76.98
8/31/2018 22:04	2.0	220.9	0.05	100	76.98
8/31/2018 22:05	3.0	220.9	0.05	100	76.98
8/31/2018 22:06	4.0	220.9	0.00	100	76.98
8/31/2018 22:07	5.0	220.9	0.00	100	76.98
8/31/2018 22:08	6.0	221.0	0.05	100	76.98
8/31/2018 22:09	7.0	221.0	0.00	100	76.98
8/31/2018 22:10	8.0	221.0	0.05	100	76.98
8/31/2018 22:11	9.0	221.1	0.05	100	76.98
8/31/2018 22:12	10.0	221.1	0.00	100	76.98

Summary of Test Results

Hydrojacking Pressure		psi	767.0
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	29.0
Flow Rate	Test	L/min	0.03
	Leak		
Hydraulic Conductivity	Surface	m/s	1.7E-10
	Downhole		4.4E-10

Note: Results presented as <1E-10 m/s due to flow meter uncertainty.

Recovery Curve Analysis



PACKER TEST (Version 2.05)

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Location Description

Drillhole ID	GAR-10-013	From Depth	m	572.4
		To Depth		623.4
Test Number	15	Drilled Depth		623.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

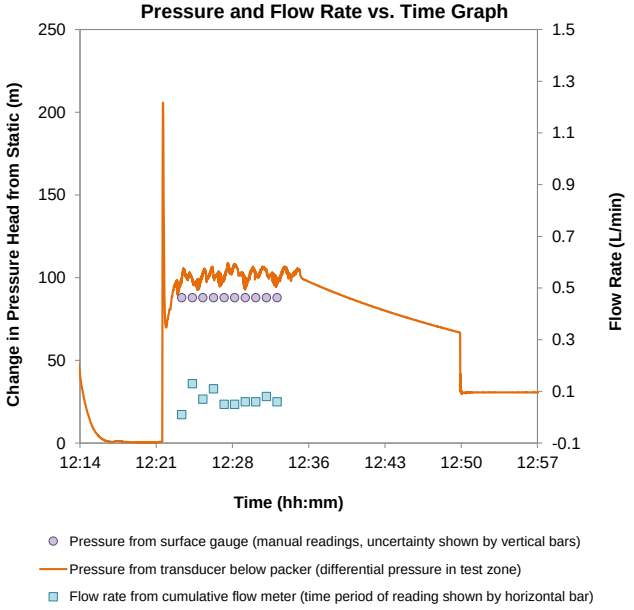
Date & Time (d-mmm-yy hh:mm)

Start	-	02/09/18 12:23
End	-	02/09/18 12:33
Supervisor	-	JN (NG)
Water Table	m	17.2
Dip	°	90.0

Test Comments

Test purpose & type	50 m interval
Drilling comments	No water loss
Testing fluid comments	
Geology, hydrogeology & rock mass	Highly foliated, multiple sub-metre quartz veins, clay lined fractures
Test quality	Valid test. Leakage rate close to injection rate.

Pressure and Flow Rate vs. Time Graph



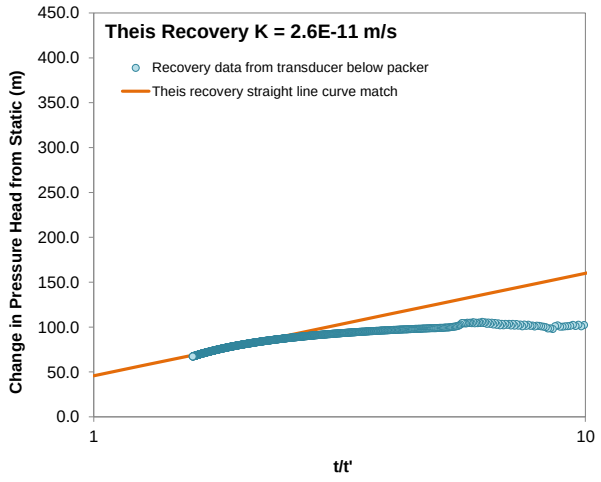
Flow Rate Measurements

Start Time of Manual Measurements			9/2/18 12:23		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/2/2018 12:23	0.0	227.1		100	
9/2/2018 12:24	1.0	227.1	0.01	100	87.98
9/2/2018 12:25	2.0	227.3	0.13	100	87.98
9/2/2018 12:26	3.0	227.3	0.07	100	87.98
9/2/2018 12:27	4.0	227.4	0.11	100	87.98
9/2/2018 12:28	5.0	227.5	0.05	100	87.98
9/2/2018 12:29	6.0	227.5	0.05	100	87.98
9/2/2018 12:30	7.0	227.6	0.06	100	87.98
9/2/2018 12:31	8.0	227.7	0.06	100	87.98
9/2/2018 12:32	9.0	227.7	0.08	100	87.98
9/2/2018 12:33	10.0	227.8	0.06	100	87.98

Summary of Test Results

Hydrojacking Pressure		psi	813.9
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	97.0
Flow Rate	Test	L/min	0.06
	Leak		0.01
Hydraulic Conductivity	Surface	m/s	1.6E-10
	Downhole		1.4E-10

Recovery Curve Analysis



PACKER TEST (Version 2.05)

srk consulting

Location Description

Drillhole ID	GAR-10-013	From Depth		623.4
		To Depth	m	650.4
Test Number	16	Drilled Depth		650.4
Location	Rook I Arrow	Easting	m	604408.7
Project Number	2CN034.000	Northing		6393876.0

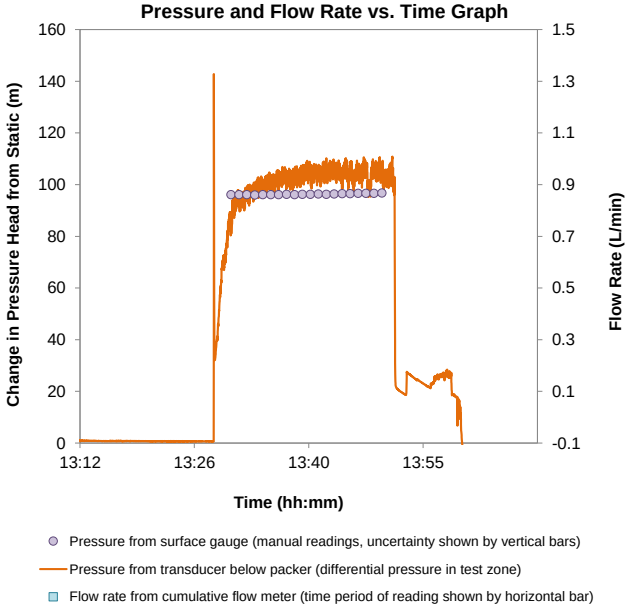
Date & Time (d-mmm-yy hh:mm)

Start	-	03/09/18 13:30
End	-	03/09/18 13:50
Supervisor	-	JN (NG)
Water Table	m	27.8
Dip	°	90.0

Test Comments

Test purpose & type	EOH interval.
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Valid test

Pressure and Flow Rate vs. Time Graph



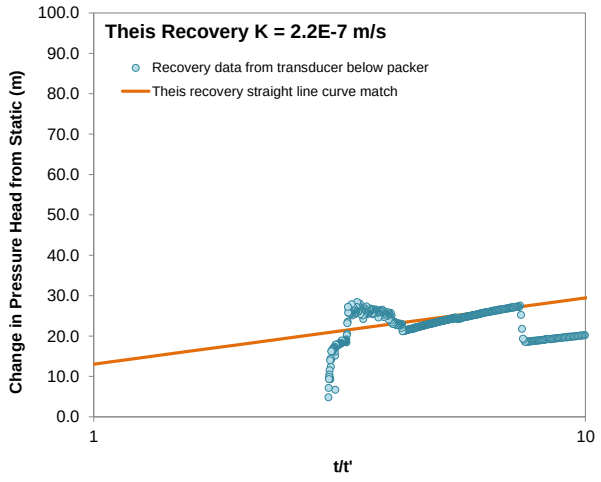
Flow Rate Measurements

Start Time of Manual Measurements			9/3/18 13:30		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/3/2018 13:30	0.0	213.0		100	
9/3/2018 13:31	1.0	249.0	36.00	100	96.16
9/3/2018 13:32	2.0	285.0	36.00	100	96.16
9/3/2018 13:33	3.0	321.0	36.00	100	96.16
9/3/2018 13:34	4.0	358.0	37.00	100	96.02
9/3/2018 13:35	5.0	394.0	36.00	100	96.16
9/3/2018 13:36	6.0	430.0	36.00	100	96.16
9/3/2018 13:37	7.0	466.0	36.00	100	96.16
9/3/2018 13:38	8.0	501.0	35.00	100	96.29
9/3/2018 13:39	9.0	537.0	36.00	100	96.16
9/3/2018 13:40	10.0	572.0	35.00	100	96.29
9/3/2018 13:41	11.0	607.0	35.00	100	96.29
9/3/2018 13:42	12.0	641.0	34.00	100	96.42
9/3/2018 13:43	13.0	676.0	35.00	100	96.29
9/3/2018 13:44	14.0	710.0	34.00	100	96.42
9/3/2018 13:45	15.0	743.0	33.00	100	96.55
9/3/2018 13:46	16.0	776.0	33.00	100	96.55
9/3/2018 13:47	17.0	808.0	32.00	100	96.67
9/3/2018 13:48	18.0	840.0	32.00	100	96.67
9/3/2018 13:49	19.0	872.0	32.00	100	96.67
9/3/2018 13:50	20.0	903.0	31.00	100	96.79

Summary of Test Results

Hydrojacking Pressure		psi	886.5
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	103.0
Flow Rate	Test	L/min	32.00
	Leak		0.10
Hydraulic Conductivity	Surface	m/s	**1.7E-7**
	Downhole		**1.6E-7**

Recovery Curve Analysis



GAR-18-015

PACKER TEST (Version 2.10)

srk consulting

Location Description

Drillhole ID	GAR-18-015	From Depth	m	122.5
		To Depth		143.5
Test Number	1	Drilled Depth		143.5
Location	Rook I Arrow	Easting	m	604088.1
Project Number	2CN034.000	Northing		6393803.6

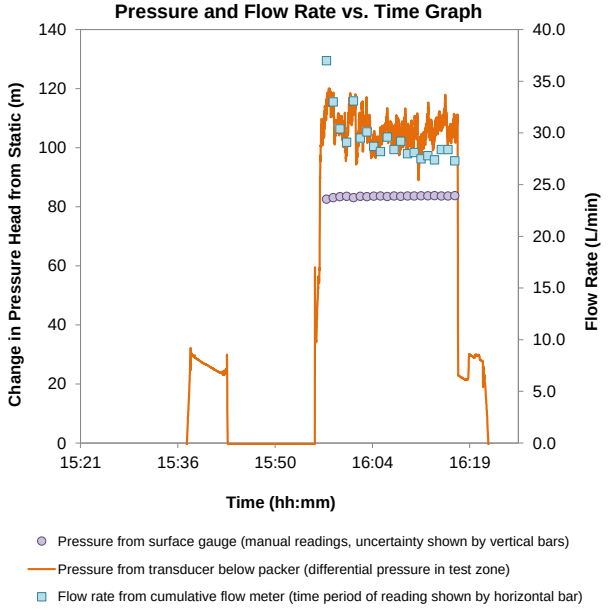
Date & Time (d-mmm-yy hh:mm)

Start	-	13/9/2018 3:55:00 PM
End	-	13/9/2018 4:15:00 PM
Supervisor	-	BL (SRK)
Water Table	m	14.4
Dip	°	90.0

Test Comments

Test purpose & type	Paleoweathered Zone under UNC
Drilling comments	Tool travel time 1:57min.
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	First test failed after shear pin broke. Leakage out of casing. Trouble-shooting with parts. Second test a success. Water depth measured approx 20 min after packer test. Shear pin broke at ~440psi. Start time of manual measurements assumed to be start time of test. Valid.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/13/18 15:57		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/13/2018 15:57	0.0	942.9		100	
9/13/2018 15:58	1.0	979.9	37.00	100	82.59
9/13/2018 15:59	2.0	1012.9	33.00	100	83.12
9/13/2018 16:00	3.0	1043.3	30.40	100	83.43
9/13/2018 16:01	4.0	1072.4	29.10	100	83.57
9/13/2018 16:02	5.0	1105.5	33.10	100	83.10
9/13/2018 16:03	6.0	1135.0	29.50	100	83.53
9/13/2018 16:04	7.0	1165.1	30.10	100	83.46
9/13/2018 16:05	8.0	1193.8	28.70	100	83.62
9/13/2018 16:06	9.0	1222.0	28.20	100	83.67
9/13/2018 16:07	10.0	1251.6	29.60	100	83.52
9/13/2018 16:08	11.0	1280.0	28.40	100	83.65
9/13/2018 16:09	12.0	1309.2	29.20	100	83.56
9/13/2018 16:10	13.0	1337.2	28.00	100	83.69
9/13/2018 16:11	14.0	1365.3	28.10	100	83.68
9/13/2018 16:12	15.0	1392.8	27.50	100	83.75
9/13/2018 16:13	16.0	1420.6	27.80	100	83.71
9/13/2018 16:14	17.0	1448.0	27.40	100	83.76
9/13/2018 16:15	18.0	1476.4	28.40	100	83.65
9/13/2018 16:16	19.0	1504.8	28.40	100	83.65
9/13/2018 16:17	20.0	1532.1	27.30	100	83.77

Summary of Test Results

Hydrojacking Pressure		psi	174.2
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	105.0
Flow Rate	Test	L/min	27.80
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	**1.6E-7**
	Downhole		**1.8E-7**

PACKER TEST (Version 2.10)

srk consulting

Location Description

Drillhole ID	GAR-18-015	From Depth	m	143.5	
Test Number	2	To Depth		194.5	
Location	Rook I Arrow	Drilled Depth		194.5	
Project Number	2CN034.000	Easting	m	604088.1	
		Northing		6393803.6	

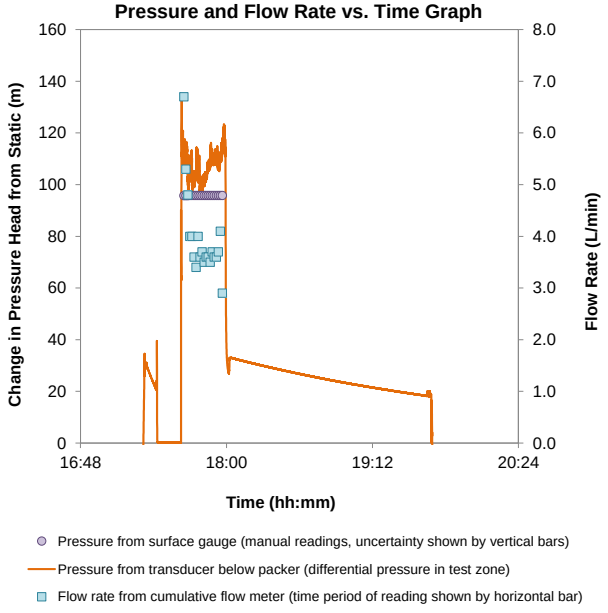
Date & Time (d-mmm-yy hh:mm)

Start	-	14/09/2018 5:30:00 PM
End	-	14/09/2018 5:55:00 PM
Supervior	-	BL (SRK)
Water Table	m	25.0
Dip	°	90.0

Test Comments

Test purpose & type	51m interval
Drilling comments	Tool travel time: 2.5 minutes
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Shear pin broke at 450 psi. Start time of manual measurements assumed to be start time of test. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/14/18 17:38		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/14/2018 17:38	0.0	326.7		100	
9/14/2018 17:39	1.0	333.4	6.70	100	95.74
9/14/2018 17:40	2.0	338.7	5.30	100	95.77
9/14/2018 17:41	3.0	343.5	4.80	100	95.78
9/14/2018 17:42	4.0	347.5	4.00	100	95.79
9/14/2018 17:43	5.0	351.5	4.00	100	95.79
9/14/2018 17:44	6.0	355.1	3.60	100	95.80
9/14/2018 17:45	7.0	358.5	3.40	100	95.80
9/14/2018 17:46	8.0	362.5	4.00	100	95.79
9/14/2018 17:47	9.0	366.1	3.60	100	95.80
9/14/2018 17:48	10.0	369.8	3.70	100	95.80
9/14/2018 17:49	11.0	373.3	3.50	100	95.80
9/14/2018 17:50	12.0	376.9	3.60	100	95.80
9/14/2018 17:51	13.0	380.5	3.60	100	95.80
9/14/2018 17:52	14.0	384.0	3.50	100	95.80
9/14/2018 17:53	15.0	387.7	3.70	100	95.80
9/14/2018 17:54	16.0	391.3	3.60	100	95.80
9/14/2018 17:55	17.0	394.9	3.60	100	95.80
9/14/2018 17:56	18.0	398.6	3.70	100	95.80
9/14/2018 17:57	19.0	402.7	4.10	100	95.79
9/14/2018 17:58	20.0	405.6	2.90	100	95.81

Summary of Test Results

Hydrojacking Pressure		psi	204.1
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	112.5
Flow Rate	Test	L/min	3.70
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	**7.5E-9**
	Downhole		**9.1E-9**

PACKER TEST (Version 2.10)

srk consulting

Location Description

Drillhole ID	GAR-18-015	From Depth	m	194.5
Test Number	3	To Depth	m	245.5
Location	Rook I Arrow	Drilled Depth	m	245.5
Project Number	2CN034.000	Easting	m	604088.1
		Northing	m	6393803.6

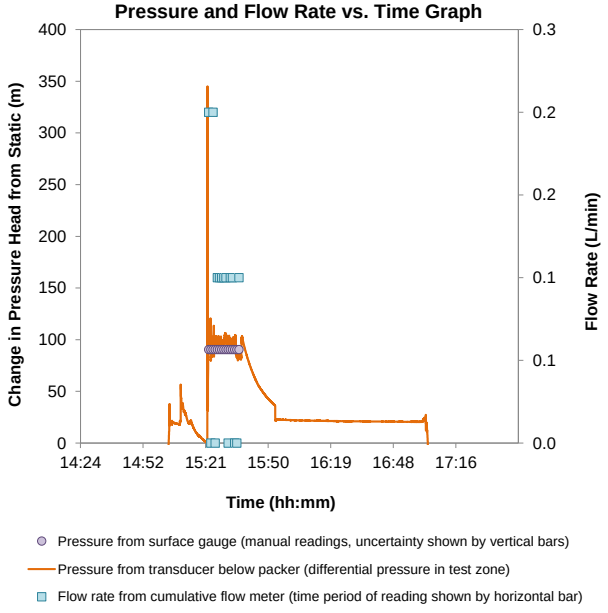
Date & Time (d-mmm-yy hh:mm)

Start	-	15/9/2018 3:20:00 PM
End	-	15/9/2018 3:35:00 PM
Supervior	-	BL (SRK)
Water Table	m	19.6
Dip	°	90.0

Test Comments

Test purpose & type	51m interval
Drilling comments	Tool travel time: 3.5 minutes.
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Flow rate very low, assumed a minimum of 0.5 L/min as only confident down to this rate. Water level measured 25 minutes after test. Start time of manual measurements assumed to be start time of test. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/15/18 15:22		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/15/2018 15:22	0.0	544.1		100	
9/15/2018 15:23	1.0	544.3	0.20	100	90.39
9/15/2018 15:24	2.0	544.3	0.00	100	90.39
9/15/2018 15:25	3.0	544.5	0.20	100	90.39
9/15/2018 15:26	4.0	544.5	0.00	100	90.39
9/15/2018 15:27	5.0	544.6	0.10	100	90.39
9/15/2018 15:28	6.0	544.7	0.10	100	90.39
9/15/2018 15:29	7.0	544.8	0.10	100	90.39
9/15/2018 15:30	8.0	544.9	0.10	100	90.39
9/15/2018 15:31	9.0	545.0	0.10	100	90.39
9/15/2018 15:32	10.0	545.0	0.00	100	90.39
9/15/2018 15:33	11.0	545.1	0.10	100	90.39
9/15/2018 15:34	12.0	545.2	0.10	100	90.39
9/15/2018 15:35	13.0	545.2	0.00	100	90.39
9/15/2018 15:36	14.0	545.2	0.00	100	90.39
9/15/2018 15:37	15.0	545.3	0.10	100	90.39

Summary of Test Results

Hydrojacking Pressure		psi	276.6
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	98.0
Flow Rate	Test	L/min	0.10
	Leak		0.05
Hydraulic Conductivity	Surface	m/s	**1.1E-10**
	Downhole		**1.4E-10**

PACKER TEST (Version 2.10)

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Location Description

Drillhole ID	GAR-18-015	From Depth	m	245.5	
Test Number	4	To Depth		296.5	
Location	Rook I Arrow	Drilled Depth		296.5	
Project Number	2CN034.000	Easting	m	604088.1	
		Northing		6393803.6	

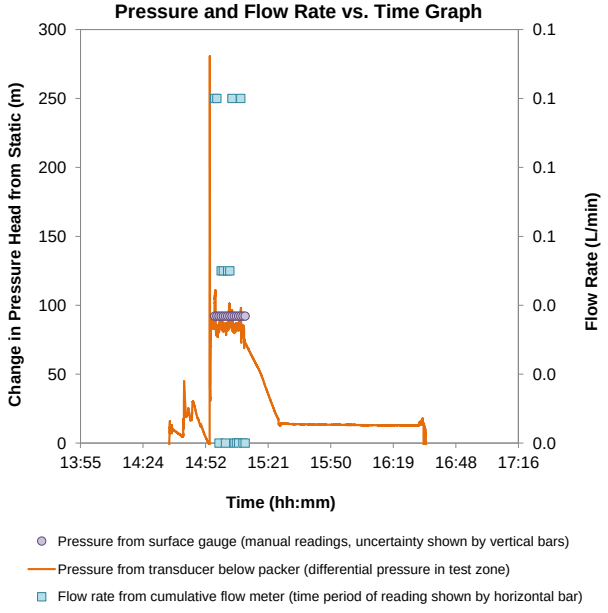
Date & Time (d-mmm-yy hh:mm)

Start	-	17/9/2018 2:54:00 PM
End	-	17/9/2018 3:10:00 PM
Supervisor	-	BL (SRK)
Water Table	m	21.4
Dip	°	90.0

Test Comments

Test purpose & type	51 m interval.
Drilling comments	Tool travel time: 4.5 min
Testing fluid comments	
Geology, hydrogeology & rock mass	Intrusive rock
Test quality	Shear pin broke at 450 psi. Flow rate very low. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/17/18 14:56		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/17/2018 14:56	0.0	552.2		100	
9/17/2018 14:57	1.0	552.3	0.10	100	92.17
9/17/2018 14:58	2.0	552.4	0.10	100	92.17
9/17/2018 14:59	3.0	552.4	0.00	100	92.17
9/17/2018 15:00	4.0	552.5	0.05	100	92.17
9/17/2018 15:01	5.0	552.5	0.05	100	92.17
9/17/2018 15:02	6.0	552.5	0.00	100	92.17
9/17/2018 15:03	7.0	552.6	0.05	100	92.17
9/17/2018 15:04	8.0	552.6	0.05	100	92.17
9/17/2018 15:05	9.0	552.7	0.10	100	92.17
9/17/2018 15:06	10.0	552.7	0.00	100	92.17
9/17/2018 15:07	11.0	552.7	0.00	100	92.17
9/17/2018 15:08	12.0	552.7	0.00	100	92.17
9/17/2018 15:09	13.0	552.8	0.10	100	92.17
9/17/2018 15:10	14.0	552.8	0.00	100	92.17
9/17/2018 15:11	15.0	552.8	0.00	100	92.17

Summary of Test Results

Hydrojacking Pressure		psi	349.1
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	82.0
Flow Rate	Test	L/min	0.05
	Leak		
Hydraulic Conductivity	Surface	m/s	**1.1E-10**
	Downhole		**1.7E-10**

PACKER TEST (Version 2.10)

srk consulting

Location Description

Drillhole ID	GAR-18-015	From Depth	m	296.5
		To Depth		347.5
Test Number	5	Drilled Depth		347.5
Location	Rook I Arrow	Easting	m	604088.1
Project Number	2CN034.000	Northing		6393803.6

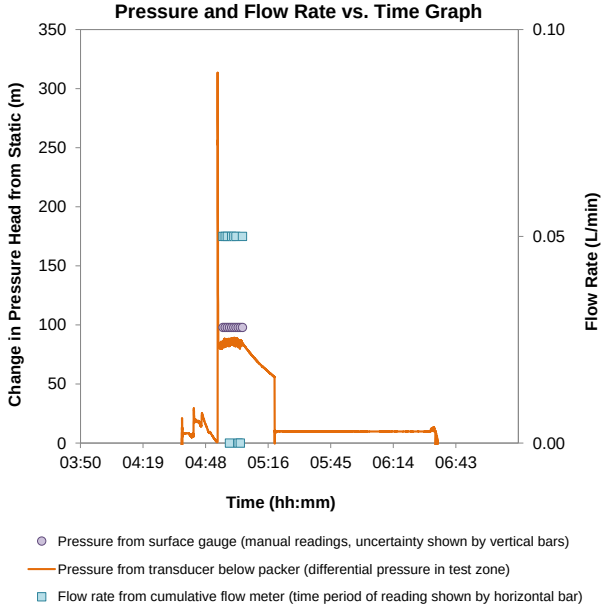
Date & Time (d-mmm-yy hh:mm)

Start	-	19/9/2018 4:40:00 AM
End	-	19/9/2018 6:25:00 AM
Supervisor	-	M Berry (NG)
Water Table	m	27.1
Dip	°	90.0

Test Comments

Test purpose & type	51 m interval
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	Intrusive rock
Test quality	Pin sheared at 430 psi. Flow rate very low, leakage rate same as injection rate.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/19/18 4:55		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/19/2018 4:55	0.0	559.0		100	
9/19/2018 4:56	1.0	559.0	0.05	100	97.96
9/19/2018 4:57	2.0	559.1	0.05	100	97.96
9/19/2018 4:58	3.0	559.1	0.05	100	97.96
9/19/2018 4:59	4.0	559.1	0.00	100	97.96
9/19/2018 5:00	5.0	559.2	0.05	100	97.96
9/19/2018 5:01	6.0	559.2	0.05	100	97.96
9/19/2018 5:02	7.0	559.3	0.05	100	97.96
9/19/2018 5:03	8.0	559.3	0.00	100	97.96
9/19/2018 5:04	9.0	559.3	0.00	100	97.96
9/19/2018 5:05	10.0	559.3	0.05	100	97.96

Summary of Test Results

Hydrojacking Pressure		psi	421.6
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	85.0
Flow Rate	Test	L/min	0.05
	Leak		
Hydraulic Conductivity	Surface	m/s	**1.0E-10**
	Downhole		**1.6E-10**

PACKER TEST (Version 2.10)

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Location Description

Drillhole ID	GAR-18-015	From Depth	m	347.5	
Test Number	6	To Depth		398.5	
Location	Rook I Arrow	Drilled Depth		398.5	
Project Number	2CN034.000	Easting	m	604088.1	
		Northing		6393803.6	

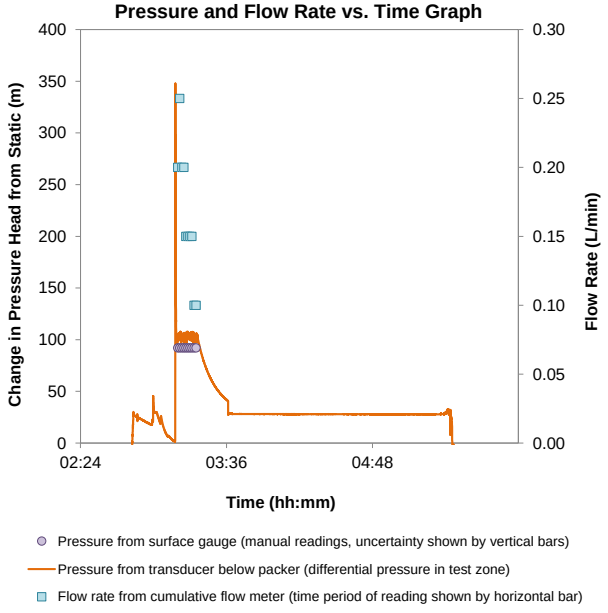
Date & Time (d-mmm-yy hh:mm)

Start	-	21/09/2018 2:57:00 AM
End	-	21/09/2018 5:00:00 AM
Supervisor	-	M Berry (NG)
Water Table	m	21.3
Dip	°	90.0

Test Comments

Test purpose & type	51m interval
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Pin sheared at 430 psi. Start time of manual measurements assumed to be start time of test. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/21/18 3:11		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/21/2018 3:11	0.0	565.2		100	
9/21/2018 3:12	1.0	565.4	0.20	100	92.12
9/21/2018 3:13	2.0	565.6	0.25	100	92.12
9/21/2018 3:14	3.0	565.8	0.20	100	92.12
9/21/2018 3:15	4.0	566.0	0.20	100	92.12
9/21/2018 3:16	5.0	566.2	0.15	100	92.12
9/21/2018 3:17	6.0	566.3	0.15	100	92.12
9/21/2018 3:18	7.0	566.5	0.15	100	92.12
9/21/2018 3:19	8.0	566.6	0.15	100	92.12
9/21/2018 3:20	9.0	566.7	0.10	100	92.12
9/21/2018 3:21	10.0	566.8	0.10	100	92.12

Summary of Test Results

Hydrojacking Pressure		psi	494.1
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	102.0
Flow Rate	Test	L/min	0.13
	Leak		0.05
Hydraulic Conductivity	Surface	m/s	**1.8E-10**
	Downhole		**2.3E-10**

PACKER TEST (Version 2.10)

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Location Description

Drillhole ID	GAR-18-015	From Depth	m	398.5
		To Depth		449.5
Test Number	7	Drilled Depth		449.5
Location	Rook I Arrow	Easting	m	604088.1
Project Number	2CN034.000	Northing		6393803.6

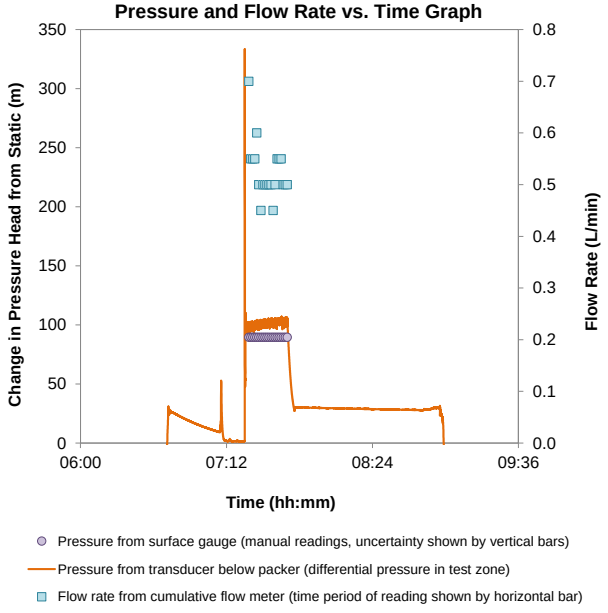
Date & Time (d-mmm-yy hh:mm)

Start	-	22/09/2018 7:00:00 AM
End	-	22/09/2018 8:50:00 AM
Supervisor	-	BL (SRK)
Water Table	m	18.8
Dip	°	90.0

Test Comments

Test purpose & type	51 m interval
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Shear pin broke at 450 psi. Water level measured 20 min after packer, still dropping. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/22/18 7:22		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/22/2018 7:22	0.0	573.2		100	
9/22/2018 7:23	1.0	573.9	0.70	100	89.59
9/22/2018 7:24	2.0	574.5	0.55	100	89.59
9/22/2018 7:25	3.0	575.0	0.55	100	89.59
9/22/2018 7:26	4.0	575.6	0.55	100	89.59
9/22/2018 7:27	5.0	576.2	0.60	100	89.59
9/22/2018 7:28	6.0	576.7	0.50	100	89.59
9/22/2018 7:29	7.0	577.1	0.45	100	89.59
9/22/2018 7:30	8.0	577.6	0.50	100	89.59
9/22/2018 7:31	9.0	578.1	0.50	100	89.59
9/22/2018 7:32	10.0	578.6	0.50	100	89.59
9/22/2018 7:33	11.0	579.1	0.50	100	89.59
9/22/2018 7:34	12.0	579.6	0.50	100	89.59
9/22/2018 7:35	13.0	580.1	0.45	100	89.59
9/22/2018 7:36	14.0	580.6	0.50	100	89.59
9/22/2018 7:37	15.0	581.1	0.55	100	89.59
9/22/2018 7:38	16.0	581.7	0.55	100	89.59
9/22/2018 7:39	17.0	582.2	0.55	100	89.59
9/22/2018 7:40	18.0	582.7	0.50	100	89.59
9/22/2018 7:41	19.0	583.2	0.50	100	89.59
9/22/2018 7:42	20.0	583.7	0.50	100	89.59

Summary of Test Results

Hydrojacking Pressure		psi	566.7
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	100.0
Flow Rate	Test	L/min	0.50
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	**1.1E-9**
	Downhole		**1.4E-9**

PACKER TEST (Version 2.10)

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Location Description

Drillhole ID	GAR-18-015	From Depth	m	449.5
		To Depth		500.5
Test Number	8	Drilled Depth		500.5
Location	Rook I Arrow	Easting	m	604088.1
Project Number	2CN034.000	Northing		6393803.6

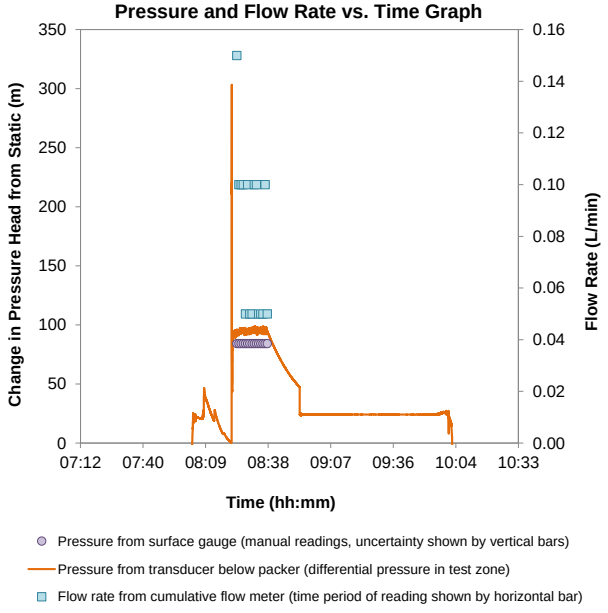
Date & Time (d-mmm-yy hh:mm)

Start	-	23/09/2018 8:05:00 AM
End	-	23/09/2018 10:00:00 AM
Supevisor	-	BL (SRK)
Water Table	m	13.4
Dip	°	90.0

Test Comments

Test purpose & type	51 m interval
Drilling comments	Tool travel time: 8.5 minutes
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Shear pin at 430 psi. Water level measured 15 minutes after packer retieval, was still dropping. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/23/18 8:23		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/23/2018 8:23	0.0	590.7		100	
9/23/2018 8:24	1.0	590.8	0.15	100	84.25
9/23/2018 8:25	2.0	590.9	0.10	100	84.25
9/23/2018 8:26	3.0	591.0	0.10	100	84.25
9/23/2018 8:27	4.0	591.1	0.10	100	84.25
9/23/2018 8:28	5.0	591.2	0.05	100	84.25
9/23/2018 8:29	6.0	591.3	0.10	100	84.25
9/23/2018 8:30	7.0	591.3	0.05	100	84.25
9/23/2018 8:31	8.0	591.4	0.05	100	84.25
9/23/2018 8:32	9.0	591.5	0.10	100	84.25
9/23/2018 8:33	10.0	591.6	0.10	100	84.25
9/23/2018 8:34	11.0	591.6	0.05	100	84.25
9/23/2018 8:35	12.0	591.7	0.05	100	84.25
9/23/2018 8:36	13.0	591.7	0.05	100	84.25
9/23/2018 8:37	14.0	591.8	0.10	100	84.25
9/23/2018 8:38	15.0	591.9	0.05	100	84.25

Summary of Test Results

Hydrojacking Pressure		psi	639.2
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	93.0
Flow Rate	Test	L/min	0.08
	Leak		0.05
Hydraulic Conductivity	Surface	m/s	5.8E-11
	Downhole		7.5E-11

Note: Results presented as <1E-10 m/s due to flow meter uncertainty.

PACKER TEST (Version 2.10)

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Location Description

Drillhole ID	GAR-18-015	From Depth	m	500.5	
Test Number	9	To Depth		551.5	
Location	Rook I Arrow	Drilled Depth		551.5	
Project Number	2CN034.000	Easting	m	604088.1	
		Northing		6393803.6	

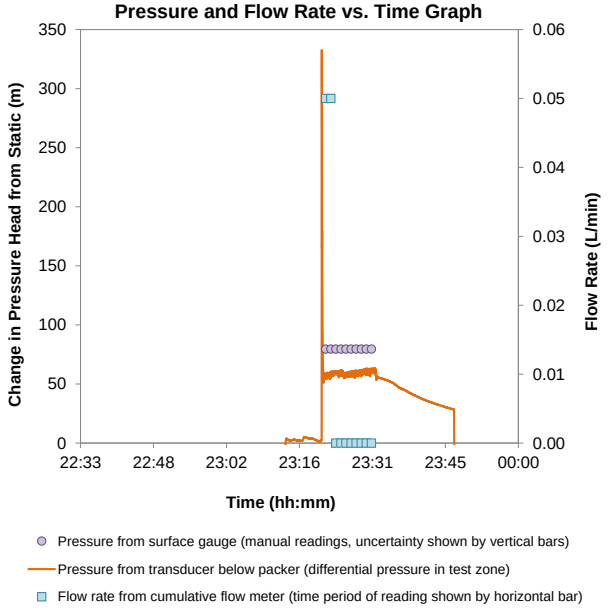
Date & Time (d-mmm-yy hh:mm)

Start	-	25/09/2018 11:08:00 PM
End	-	25/09/2018 12:50:00 AM
Supervisor	-	M Berry (NG)
Water Table	m	8.8
Dip	°	90.0

Test Comments

Test purpose & type	51 m interval
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Pin sheared at 500 psi. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/25/18 23:21		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/25/2018 23:21	0.0	596.5		100	
9/25/2018 23:22	1.0	596.6	0.05	100	79.62
9/25/2018 23:23	2.0	596.6	0.05	100	79.62
9/25/2018 23:24	3.0	596.6	0.00	100	79.62
9/25/2018 23:25	4.0	596.6	0.00	100	79.62
9/25/2018 23:26	5.0	596.6	0.00	100	79.62
9/25/2018 23:27	6.0	596.6	0.00	100	79.62
9/25/2018 23:28	7.0	596.6	0.00	100	79.62
9/25/2018 23:29	8.0	596.6	0.00	100	79.62
9/25/2018 23:30	9.0	596.6	0.00	100	79.62
9/25/2018 23:31	10.0	596.6	0.00	100	79.62

Summary of Test Results

Hydrojacking Pressure		psi	711.7
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	57.0
Flow Rate	Test	L/min	0.01
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	**2.5E-11**
	Downhole		**4.9E-11**

Note: Results presented as <1E-10 m/s due to flow meter uncertainty.

PACKER TEST (Version 2.10)

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Location Description

Drillhole ID	GAR-18-015	From Depth	m	551.5
Test Number	10	To Depth		602.5
Location	Rook I Arrow	Drilled Depth		602.5
Project Number	2CN034.000	Easting	m	604088.1
		Northing		6393803.6

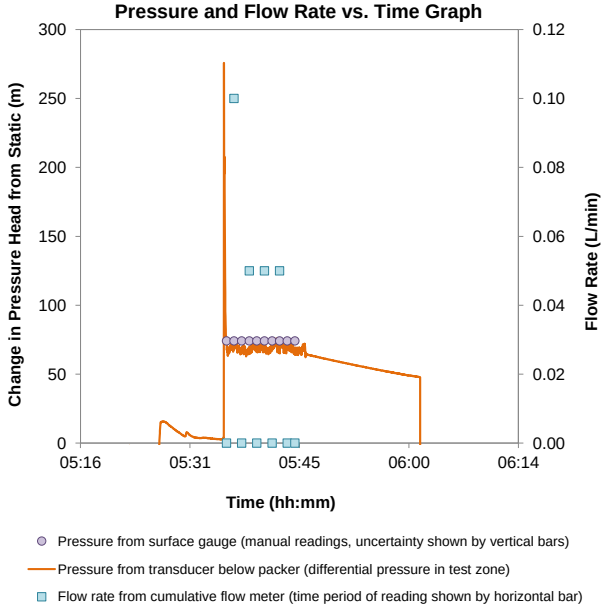
Date & Time (d-mmm-yy hh:mm)

Start	-	27/09/2018 5:22:00 AM
End	-	27/09/2018 5:46:00 AM
Supervior	-	MB/TS(SRK)
Water Table	m	3.3
Dip	°	90.0

Test Comments

Test purpose & type	51 m interval
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	FHT started at 6:02am. Measured to cm accuracy until 50 mins. WL measured at (20 mins after pulling packer.) Still dropping. Valid test. Leakage rate higher than injection rate.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/27/18 5:35		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/27/2018 5:35	0.0	624.2		100	
9/27/2018 5:36	1.0	624.2	0.00	100	74.08
9/27/2018 5:37	2.0	624.3	0.10	100	74.08
9/27/2018 5:38	3.0	624.3	0.00	100	74.08
9/27/2018 5:39	4.0	624.4	0.05	100	74.08
9/27/2018 5:40	5.0	624.4	0.00	100	74.08
9/27/2018 5:41	6.0	624.4	0.05	100	74.08
9/27/2018 5:42	7.0	624.4	0.00	100	74.08
9/27/2018 5:43	8.0	624.5	0.05	100	74.08
9/27/2018 5:44	9.0	624.5	0.00	100	74.08
9/27/2018 5:45	10.0	624.5	0.00	100	74.08

Summary of Test Results

Hydrojacking Pressure		psi	784.2
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	64.0
Flow Rate	Test	L/min	0.03
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	**6.6E-11**
	Downhole		**1.1E-10**

PACKER TEST (Version 2.10)

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Location Description

Drillhole ID	GAR-18-015	From Depth	m	602.5	
Test Number	11	To Depth		653.5	
Location	Rook I Arrow	Drilled Depth		653.5	
Project Number	2CN034.000	Easting	m	604088.1	
		Northing		6393803.6	

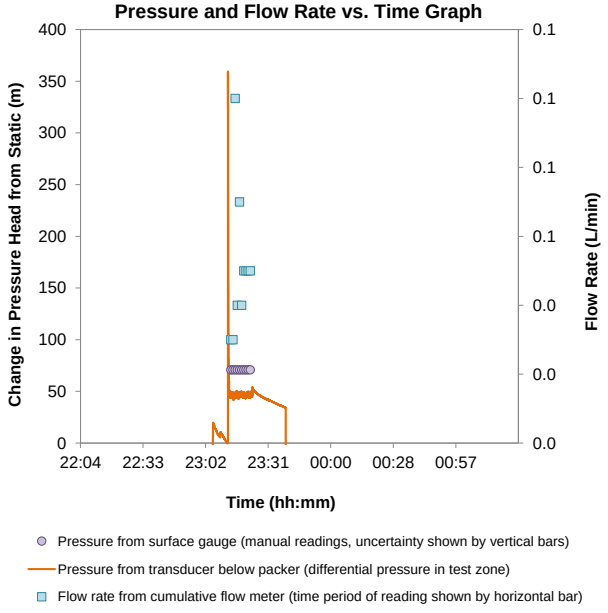
Date & Time (d-mmm-yy hh:mm)

Start	-	28/09/2018 11:13:00 PM
End	-	28/09/2018 11:23:00 PM
Supervisor	-	JN (NG)
Water Table	m	0.0
Dip	°	90.0

Test Comments

Test purpose & type	51m Interval
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	SI@11:23, FH@11:38. Water level 30 min after test was at ground level. Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/28/18 23:13		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/28/2018 23:13	0.0	629.4		100	
9/28/2018 23:14	1.0	629.4	0.03	100	70.82
9/28/2018 23:15	2.0	629.5	0.03	100	70.82
9/28/2018 23:16	3.0	629.6	0.10	100	70.82
9/28/2018 23:17	4.0	629.6	0.04	100	70.82
9/28/2018 23:18	5.0	629.7	0.07	100	70.82
9/28/2018 23:19	6.0	629.7	0.04	100	70.82
9/28/2018 23:20	7.0	629.8	0.05	100	70.82
9/28/2018 23:21	8.0	629.8	0.05	100	70.82
9/28/2018 23:22	9.0	629.9	0.05	100	70.82
9/28/2018 23:23	10.0	629.9	0.05	100	70.82

Summary of Test Results

Hydrojacking Pressure		psi	856.7
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	44.0
Flow Rate	Test	L/min	0.05
	Leak		0.00
Hydraulic Conductivity	Surface	m/s	**1.4E-10**
	Downhole		**3.2E-10**

PACKER TEST (Version 2.10)

srk consulting

Location Description

Drillhole ID	GAR-18-015	From Depth	m	653.5	
Test Number	12	To Depth		701.5	
Location	Rook I Arrow	Drilled Depth		701.5	
Project Number	2CN034.000	Easting	m	604088.1	
		Northing		6393803.6	

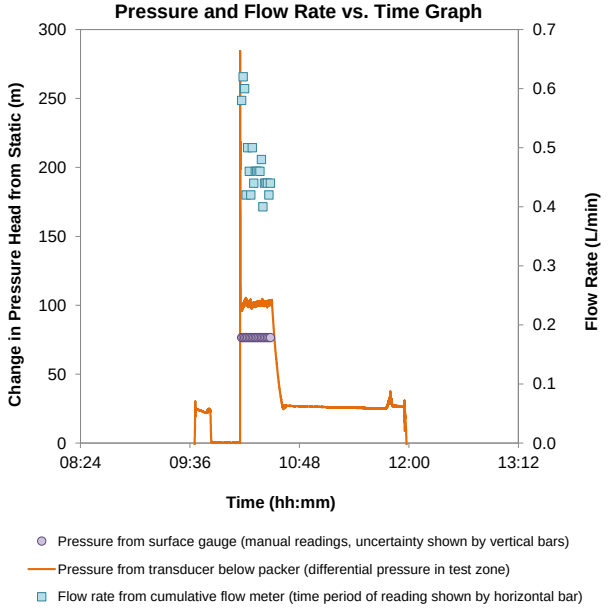
Date & Time (d-mmm-yy hh:mm)

Start	-	30/09/2018 10:08:00 AM
End	-	30/09/2018 10:28:00 AM
Supervior	-	TS (SRK)
Water Table	m	5.7
Dip	°	90.0

Test Comments

Test purpose & type	51m interval
Drilling comments	
Testing fluid comments	
Geology, hydrogeology & rock mass	
Test quality	Pump not stable @ 300 psi for rod leak test. SI test - psi = 0 @ 6.55 mins. FHT start @ 10:38am. WL measured 20 mins after pulling packer (@ 12:30). Valid test.

Pressure and Flow Rate vs. Time Graph



Flow Rate Measurements

Start Time of Manual Measurements			9/30/18 10:09		
Date/Time	Delta Time	Cum. Flow	Flow Rate	Pressure	
	min	L	L/min	psi	m
9/30/2018 10:09	0.0	637.1		100	
9/30/2018 10:10	1.0	637.7	0.58	100	76.52
9/30/2018 10:11	2.0	638.3	0.62	100	76.52
9/30/2018 10:12	3.0	638.9	0.60	100	76.52
9/30/2018 10:13	4.0	639.3	0.42	100	76.52
9/30/2018 10:14	5.0	639.8	0.50	100	76.52
9/30/2018 10:15	6.0	640.3	0.46	100	76.52
9/30/2018 10:16	7.0	640.7	0.42	100	76.52
9/30/2018 10:17	8.0	641.2	0.50	100	76.52
9/30/2018 10:18	9.0	641.6	0.44	100	76.52
9/30/2018 10:19	10.0	642.1	0.46	100	76.52
9/30/2018 10:20	11.0	642.6	0.46	100	76.52
9/30/2018 10:21	12.0	643.0	0.46	100	76.52
9/30/2018 10:22	13.0	643.5	0.46	100	76.52
9/30/2018 10:23	14.0	644.0	0.48	100	76.52
9/30/2018 10:24	15.0	644.4	0.40	100	76.52
9/30/2018 10:25	16.0	644.8	0.44	100	76.52
9/30/2018 10:26	17.0	645.2	0.44	100	76.52
9/30/2018 10:27	18.0	645.7	0.44	100	76.52
9/30/2018 10:28	19.0	646.1	0.42	100	76.52
9/30/2018 10:29	20.0	646.5	0.44	100	76.52

Summary of Test Results

Hydrojacking Pressure		psi	929.3
Rod Size		-	HQ
Marsh Funnel Time		s	26.0
Surface Pressure		psi	100
Downhole Pressure		m	101.8
Flow Rate	Test	L/min	0.43
	Leak		0.02
Hydraulic Conductivity	Surface	m/s	**1.1E-9**
	Downhole		**1.2E-9**

APPENDIX H

Groundwater Laboratory Analysis Results

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Customer Information

First Name:	Tom
Last Name:	Kotzer
Initial:	0
Address (Line 1):	SRK Consulting
Address (Line 2):	Suite 205
Address (Line 3):	2100 Airport Dr.
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7L 6M6
Country:	Canada
Email:	tkotzer@srk.com
Phone Number:	306-955-4778
Submission Date:	21-12-2018
Project Title:	wt-od-L - Groundwater Monitoring
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	Michael Royle

Invoice Information

PO # or Account Code:	1CN034.001
First Name:	Michael
Last Name:	Royle
Initial:	MR
Address (Line 1):	SRK Consulting
Address (Line 2):	22nd Floor
Address (Line 3):	1066 West Hastings Street
City:	Vancouver
State or Province:	British Columbia
Postal Code:	V6E 3X2
Country:	Canada
Email:	mroyle@srk.com
Phone Number:	604-235-8513

Completed: 2019-jan-24

Cost: 11 x $25 = $275 (pre-filtered)

Work done by: lab
Amount of water in vials: 1.0mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 5 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Optional Project Comment:	500mL bottle, combined Stable Isotopes and Tritium Sample.
	Split 500mL between Tritium and Stable Isotopes as necessary.
	0
	All samples have prefix of "2018_MW_"

QCD = quality control duplicate (No charge)

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	Hatch Lab ID
W40836	007A_Shallow	-149.1	-19.9	-10.8		Combined with Tritiu	B1819-501-001
W40837	007B_Deep	-142.6	-15.1	-6.1	worst NBS	Combined with Tritiu	B1819-501-002
W40838	008A_Shallow	-124.8	-9.9	-1.9	NBS+BBS	Combined with Tritiu	B1819-501-003
W40839	008B_Deep	-133.1	-14.9	-7.2	NBS	Combined with Tritiu	B1819-501-004
W40840	008B_Deep_FD	-133.4	-14.7	-7.0	NBS	Combined with Tritiu	B1819-501-005
W40841	009A_Shallow	-146.8	-18.4	-9.5		Combined with Tritiu	B1819-501-006
W40842	009B_Deep	-147.7	-18.3	-9.4		Combined with Tritiu	B1819-501-007
W40843	003_Shallow	-147.5	-18.4	-9.4		Combined with Tritiu	B1819-501-008
W40844	003_Shallow_FD	-147.9	-18.4	-9.5		Combined with Tritiu	B1819-501-009
W40845	006A_Shallow	-136.3	-16.1	-8.7		Combined with Tritiu	B1819-501-010
W40846	006B_Deep	-150.0	-19.4	-10.2		Combined with Tritiu	B1819-501-011
W40847	**006B_Deep QCD**	**-150.8**	**-19.5**	**-10.1**		**0**	**B1819-501-012**

Blind Standard: W-24

delta 18O = -8.2, n = 2, st.dev. = 0.3 Expected value: -7.9
delta 17O = -4.3, n = 2, st.dev. = 0.1 Expected value: -4.2
delta 2H = -51.9, n = 2, st.dev. = 2.0 Expected value: -51.6

Use contaminant identified data with caution. Better to do this type of water on the gasbench although not obvious from pH and salinity data.

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely manner.

Completed: 2019-may-02
Cost: (5 x $25) + (2 x $30) = $185

Work done by: lab (Wendy)
Amount of water in vials: 1.0mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Paulin
Last Name:	Gjergji
Initial:	0
Address (Line 1):	NexGen Energy
Address (Line 2):	212-4014 Arthur Rose Ave
Address (Line 3):	2100 Airport Dr.
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7P0C9
Country:	Canada
Email:	Pgjergji@nxe-energy.ca
Phone Number:	2047974489
Submission Date:	20-02-2019
Project Title:	wt-od-L - Groundwater Monitoring
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Tara
Last Name:	Richardson
Initial:	TR
Address (Line 1):	NexGen Energy
Address (Line 2):	Suite 200, 475-2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	3069542275

Optional Project Comment:	500mL bottle, combined Stable Isotopes and Tritium Sample.
	Split 500mL between Tritium and Stable Isotopes as necessary.
	0
	All samples prefaced by "2018_MW_"

QCD = quality control duplicate (No charge)

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	Hatch Lab ID
W-41687	002A_Shallow	-145.7	-18.1	-10.2		60	B1819-637-001
W-41688	002B_Deep	-147.3	-18.9	-10.6		57; precipitates?	B1819-637-002
W-41689	004A_Shallow	-152.3	-19.5	-10.9		45	B1819-637-003
W-41690	004B_Deep	-146.7	-18.2	-10.2		133	B1819-637-004
W-41691	010A_Shallow	-146.8	-18.2	-10.3		100; NOT FILTERED. Precipitate?	B1819-637-005
W-41692	010B_Deep	-159.0	-20.3	-11.3		154	B1819-637-006
W-41693	**010B_Deep QCD**	**-159.0**	**-20.3**	**-11.3**			**B1819-637-007**
W-41694	010B_Deep_FD	-158.8	-20.3	-11.0		154	B1819-637-008

Blind Standard: W-29

delta 18O =	-13.2, n = 5, st.dev. = 0.1	Expected value: -13.1
delta 17O =	-7.7, n = 5, st.dev. = 0.07	Expected value: -7.7
delta 2H =	-86.8, n = 5, st.dev. = 0.2	Expected value: -86.3

NB: One sample was not pre-filtered and contained a lot of brownish material. One sample looked like it had continued to precipitate if it was pre-filtered (iron?)

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely manner.

Completed: 2019-may-23
Cost: (12 x $25) + (7 x $5 filtration) = $335

Work done by: lab (Wendy)
Amount of water in vials: 1.0mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Paulin
Last Name:	Gjergji
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	475 2nd Ave South
Address (Line 3):	200
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K 1P4
Country:	Canada
Email:	Pgjergji@nxe-energy.ca; tkotzer@srk.com
Phone Number:	12047974489
Submission Date:	21-03-2019
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook 1 - EA
First Name:	Tara
Last Name:	Richardson
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	475 2nd Ave South
Address (Line 3):	200
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	13069542275

Optional Project Comment:	One 500 mL sample bottle per zone to be sampled for both Isotope analysis and then sent to Hatch lab for Tritium analysis. Please transfer liquid require into another bottle. We are willing to accept the liquid transfer costs. **QCD = quality control duplicate (No charge)** NB: all samples prefixed with "GAR-18-013_" - shortened sample ID's for import.

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	Hatch Lab ID
W-41783	Z12_FD	-127.4	-14.8	-8.1		Fresh Water/ No Hydrocarbons	B1819-707-001
W-41784	Z11	-131.6	-15.4	-8.6		Fresh Water/ No Hydrocarbons	B1819-707-002
W-41785	**Z11 QCD**	**-131.6**	**-15.3**	**-8.6**		**Fresh Water/ No Hydrocarbons**	**B1819-707-003**
W-41786	Z10	-128.3	-14.8	-8.4		Fresh Water/ No Hydrocarbons	B1819-707-004
W-41787	Z9	-133.8	-15.8	-8.9		Fresh Water/ No Hydrocarbons	B1819-707-005
W-41788	Z8	-131.4	-15.4	-8.8		Fresh Water/ No Hydrocarbons	B1819-707-006
W-41789	Z7	-128.5	-14.9	-8.5		Fresh Water/ No Hydrocarbons	B1819-707-007
W-41790	Z6	-126.5	-14.6	-8.3		Fresh Water/ No Hydrocarbons	B1819-707-008
W-41791	Z4	-139.1	-16.7	-9.4		Fresh Water/ No Hydrocarbons	B1819-707-009
W-41792	Z3	-129.3	-15.3	-8.1		Fresh Water/ No Hydrocarbons	B1819-707-010
W-41793	Z2	-126.6	-14.7	-8.0		Fresh Water/ No Hydrocarbons	B1819-707-011
W-41794	Z1	-143.7	-17.7	-9.6		Fresh Water/ No Hydrocarbons	B1819-707-012
W-41795	GAR-18-013_FB	-143.1	-17.8	-9.9		DI Water Field Blank	B1819-707-013

Blind Standard: W-29

delta 18O = -13.3, n = 3, st.dev. = 0.2 Expected value: -13.1
delta 17O = -7.5, n = 3, st.dev. = 0.2 Expected value: -7.7
delta 2H = -88.4, n = 3, st.dev. = 1.4 Expected value: -86.3

NB: The samples marked in orange showed a rusty (iron?) precipitate in the bottles. Waters had to be filtered before analysis.

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed.
Please have a look at your data in a timely manner.

Completed: 2019-may-02
Cost: (5 x 25) + (1 x $30) = $155

Work done by: lab (Wendy)
Amount of water in vials: 1.0mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging"
for more information.

Customer Information

First Name:	Paulin
Last Name:	Gjergji
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	475 2nd Ave South
Address (Line 3):	200
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K 1P4
Country:	Canada
Email:	Pgjergji@nxe-energy.ca; tkotzer@srk.com
Phone Number:	12047974489
Submission Date:	11-04-2019
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook 1 - EA
First Name:	Tara
Last Name:	Richardson
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	475 2nd Ave South
Address (Line 3):	200
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	13069542275

Optional Project Comment:	One 500 mL sample bottle per zone to be sampled for both Isotope analysis and then sent to Hatch lab for Tritium analysis. Please transfer liquid require into another bottle. We are willing to accept the liquid transfer costs. QCD = quality control duplicate (No charge) Fresh water, no hydrocarbons unless otherwise identified.

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	Hatch Lab ID
W-41796	DH-BGC17-01	-157.3	-20.1	-11.1			B1819-740-001
W-41797	DH-BGC17-02	-148.9	-19.3	-10.6			B1819-740-002
W-41798	**DH-BGC17-02 QCD**	**-150.0**	**-19.4**	**-10.7**			**B1819-740-003**
W-41799	DH-BGC17-03	-152.7	-19.5	-10.9			B1819-740-004
W-41800	DH-BGC17-05	-157.6	-20.1	-11.2			B1819-740-005
W-41801	DH-BGC17-06_FD	-157.3	-20.0	-11.2		Some (iron?) precipitate in bottle	B1819-740-006
W-41802	DH-BGC17-07_FB	-139.5	-17.2	-9.7		DI Water Field Blank	B1819-740-007

Blind Standard: W-29

delta 18O = -13.2, n = 5, st.dev. = 0.1 Expected value: -13.1
delta 17O = -7.7, n = 5, st.dev. = 0.07 Expected value: -7.7
delta 2H = -86.8, n = 5, st.dev. = 0.2 Expected value: -86.3

NB: one sample required filtration since contained brown precipitate.

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Customer Information

First Name:	Claudia
Last Name:	Piché
Initial:	0
Address (Line 1):	NexGen Energy
Address (Line 2):	212-4014 Arthur Rose Ave
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7P0C9
Country:	Canada
Email:	cpiche@nxe-energy.ca
Phone Number:	3063718372
Submission Date:	24-05-2019
Project Title:	wt-od-gb - Q2 Groundwater Monitoring
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	7
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Jeri-Lynn
Last Name:	Walton
Initial:	0
Address (Line 1):	NexGen Energy
Address (Line 2):	Suite 200, 475-2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	3069542275

Completed: 2019-sep-06
Cost: 21 x $45 = $945

Work done by: lab (Wendy & Kerry)
Temperature of equilibration: Room (~22.0°C)
Amount of water used: 0.6mL
Saline H2O equilibrated: 2H = 24hrs 18O = 5 days
Fresh H2O equilibrated: 2H = 1.5hrs 18O = 18hrs

See tab below for Methodology.

Optional Project Comment:	500mL bottle, combined Stable Isotopes and Tritium Sample.
	Split 500mL between Tritium and Stable Isotopes as necessary.
	0
	Send data to Grant Greenwood ggreenwood@nxe-energy.ca, & cc Claudia, sharriman@nxe-energy.ca

QCD = dup = quality control duplicate

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 2H Comment	Delta 18O (VSMOW)	Delta 18O Comment	Comment	Hatch Lab ID
W-41927	2018_Sonic002A_Shallow	-148.8	0	-19.0	0	Has not been filtered.	B1920-030-001
W-41928	2018_Sonic002B_Deep	-148.6	0	-18.8	0	0	B1920-030-002
W-41929	2018_Sonic004A_Shallow	-154.2	0	-19.5	0	0	B1920-030-003
W-41930	2018_Sonic004B_Deep	-153.4	0	-19.5	0	0	B1920-030-004
W-41931	**2018_Sonic004B_Deep QCD**	**-153.5**	**0**	**-19.5**	**0**	**0**	**B1920-030-005**
W-41932	2018_Sonic006A_Shallow	-148.3	0	-18.9	0	0	B1920-030-006
W-41933	2018_Sonic006B_Deep	-148.8	0	-18.8	0	Has not been filtered.	B1920-030-007
W-41934	2018_Sonic007A_Shallow	-150.3	0	-19.3	0	0	B1920-030-008
W-41935	2018_Sonic007B_Deep	-156.1	0	-20.0	0	0	B1920-030-009
W-41936	2018_Sonic008A_Shallow	-149.0	0	-19.3	0	0	B1920-030-010
W-41937	2018_Sonic008B_Deep	-148.5	0	-18.5	0	0	B1920-030-011
W-41938	2018_Sonic009A_Shallow	-147.7	0	-18.7	0	0	B1920-030-012
W-41939	2018_Sonic009B_Deep	-147.8	0	-18.7	0	0	B1920-030-013
W-41940	2018_Sonic010A_Shallow	-150.5	0	-19.0	0	0	B1920-030-014
W-41941	2018_Sonic010B_Deep	-159.7	0	-20.3	0	0	B1920-030-015
W-41942	DH-BGC17-01	-160.4	0	-20.4	0	0	B1920-030-016
W-41943	DH-BGC17-02	-149.8	0	-19.0	0	0	B1920-030-017
W-41944	**DH-BGC17-02 QCD**	**-150.2**	**0**	**-19.0**	**0**	**0**	**B1920-030-018**
W-41945	DH-BGC17-03	-152.8	0	-19.4	0	0	B1920-030-019
W-41946	DH-BGC17-05	-156.3	0	-20.0	0	0	B1920-030-020
W-41947	2018_Sonic002B_Deep_DUPL	-148.0	0	-18.9	0	0	B1920-030-021
W-41948	2018_Sonic007B_DUPL	-157.4	0	-20.0	0	0	B1920-030-022
W-41949	DH-BGC17-01_DUPL	-161.4	0	-20.4	0	0	B1920-030-023

Blind Standard: W-20

delta 18O = -7.2, n=4, st.dev.=0.05 Expected value to date: -7.3
delta 2H = -55.8, n=4, st.dev.=1.2 Expected value to date: -55.2

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a

Customer Information

First Name:	Claudia
Last Name:	Piché
Initial:	0
Address (Line 1):	NexGen Energy
Address (Line 2):	212-4014 Arthur Rose Ave
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7P0C9
Country:	Canada
Email:	cpiche@nxe-energy.ca
Phone Number:	0
Submission Date:	03-06-2019
Project Title:	wt-od-sal - Groundwater Monitoring
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	7
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Jeri-Lynn
Last Name:	Walton
Initial:	0
Address (Line 1):	NexGen Energy
Address (Line 2):	Suite 200, 475-2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	3069542275

Completed: 2019-sep-06
Cost: 12 x $45 = $540

Work done by: lab (Wendy & Kerry)
Temperature of equilibration: Room (~22.0°C)
Amount of water used: 0.6 mL
Saline H2O equilibrated: 2H = 24hrs 18O = 5 days
Fresh H2O equilibrated: 2H = 1.5hrs 18O = 18hrs

See tab below for Methodology.

QCD = dup = quality control duplicate

Optional Project Comment:	500mL bottle, combined Stable Isotopes and Tritium Sample. Split 500mL between Tritium and Stable Isotopes as necessary. Send data to Grant Greenwood ggreenwood@nxe-energy.ca, & cc Claudia, sharriman@nxe-energy.ca Field Filtered, samples to be split between isotopes and tritium

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 2H Comment	Delta 18O (VSMOW)	Delta 18O Comment	Comment	Hatch Lab ID
W-41955	GAR-18-013_Z1	-141.1	0	-17.6	0	0	B1920-044-001
W-41956	GAR-18-013_Z2	-123.3	0	-14.3	0	0	B1920-044-002
W-41957	GAR-18-013_Z3	-128.3	0		electronic spike	0	B1920-044-003
	repeat			-14.9	repeat		
W-41958	GAR-18-013_Z4	-136.7	0	-16.9	0	0	B1920-044-004
W-41959	**GAR-18-013_Z4 QCD**	**-136.1**	**0**	**-16.7**	**0**	**0**	**B1920-044-005**
W-41960	GAR-18-013_Z5	-125.5	0	-14.5	0	0	B1920-044-006
W-41961	GAR-18-013_Z6	-126.5	0	-14.4	0	0	B1920-044-007
W-41962	GAR-18-013_Z7	-127.6	0	-14.8	0	0	B1920-044-008
W-41963	GAR-18-013_Z8	-130.9	0	-15.3	0	0	B1920-044-009
W-41964	GAR-18-013_Z9	-132.1	0	-15.7	0	0	B1920-044-010
W-41965	GAR-18-013_Z10	-126.1	0	-14.6	0	0	B1920-044-011
W-41966	GAR-18-013_Z11	-130.9	0	-15.4	0	0	B1920-044-012
W-41967	GAR-18-013_Duplicate	-129.7	0	-15.3	0	0	B1920-044-013

Blind Standard: W-20

delta 18O = -7.2, n=4, st.dev.=0.05 Expected value to date: -7.3
delta 2H = -55.8, n=4, st.dev.=1.2 Expected value to date: -55.2

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Completed: 2019-sep-03
Cost: 19 x $25 = $475

Work done by: lab (Wendy)
Amount of water in vials: 1.0mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	4014 Arthur Rose Ave
Address (Line 3):	212
City:	Saskatoon
State or Province:	SK
Postal Code:	S7P0C9
Country:	Canada
Email:	kshannon@nxe-energy.ca
Phone Number:	13063718372
Submission Date:	27-08-2019
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	0
First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	4014 Arthur Rose Ave
Address (Line 3):	212
City:	Saskatoon
State or Province:	SK
Postal Code:	S7P0C9
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	13069542275

Optional Project Comment:	Fresh groundwater samples, all been filtered through a .45 micron high turbidity filter.
	I wouldn't expect there to be any hydrocarbon contamination.
	0
	0

QCD = quality control duplicate (No charge)

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	VeizerSIL ID
W-42144	DH_2018-MW-001A	-156.6	-20.5	-11.5			B1920-168-001
W-42145	DH_2018-MW-001B	-151.6	-19.9	-11.2		rusty colour	B1920-168-002
W-42146	DH_2018-MW-002B	-148.9	-19.3	-10.9			B1920-168-003
W-42147	**DH_2018-MW-002B QCD**	**-149.1**	**-19.0**	**-10.8**			**B1920-168-004**
W-42148	DH_2018-MW-003	-141.7	-17.8	-10.1		rusty colour	B1920-168-005
W-42149	DH_2018-MW-004A	-156.3	-19.9	-11.2			B1920-168-006
W-42150	DH_2018-MW-006A	-148.5	-18.8	-10.5			B1920-168-007
W-42151	DH_2018-MW-006B	-151.0	-18.9	-10.5			B1920-168-008
W-42152	DH_2018-MW-007A	-158.9	-20.0	-11.0			B1920-168-009
W-42153	DH_2018-MW-007B	-152.2	-19.2	-11.2			B1920-168-010
W-42154	DH_2018-MW-008A	-150.6	-19.0	-10.9			B1920-168-011
W-42155	DH_2018-MW-008B	-154.4	-19.2	-10.5	NBS	Seemed to run ok.	B1920-168-012
W-42156	DH_2018-MW-009A	-149.8	-19.3	-10.6			B1920-168-013
W-42157	DH_2018-MW-010A	-157.8	-20.6	-11.3			B1920-168-014
W-42158	**DH_2018-MW-010A QCD**	**-157.2**	**-20.8**	**-11.3**			**B1920-168-015**
W-42159	DH_BGC17-01	-161.4	-21.5	-11.7			B1920-168-016
W-42160	DH_BGC17-02	-151.6	-20.3	-11.2			B1920-168-017
W-42161	DH_BGC17-03	-153.6	-19.6	-10.6			B1920-168-018
W-42162	DH_DUP1	-158.6	-20.5	-11.2			B1920-168-019
W-42163	DH_DUP2	-142.2	-17.8	-9.9		rusty colour	B1920-168-020
W-42164	DH_FBLANK1	-144.2	-18.2	-10.2			B1920-168-021

Blind Standard: W-29

delta 18O = -13.2, n = 4, st.dev. = 0.4 Expected value: -13.1
delta 17O = -7.8, n = 4, st.dev. = 0.3 Expected value: -7.7
delta 2H = -87.7, n = 4, st.dev. = 1.0 Expected value: -86.3

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Completed: 2019-oct-03

Cost: 3 x $25 = $75 (pre-filtered)

Work done by: lab (Wendy)
Amount of water in vials: 0.2mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4-5 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	kshannon@nxe-energy.ca
Phone Number:	1-778-588-5145
Submission Date:	04-09-2019
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	1-306-954-2275

Optional Project Comment:	D/H and 18P/16O analysis All samples are freshwater and filtered at 0.45 micron Conductivity and PPM values before filtration, no expected hydrocarbon contamination If necessary, please use gasbench analysis

QCD = quality control duplicate (No charge)

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	VeizerSIL ID
W-42208	DH_2018-MW-010B	-160.4	-20.7	-11.6			B1920-178-001
W-42209	DH_GAR-18-013_Z8	-133.0	-15.7	-8.9			B1920-178-002
W-42210	DH_GAR-18-013_Z9	-134.8	-15.9	-9.1			B1920-178-003
W-42211	**DH_GAR-18-013_Z9 QCD**	**-134.2**	**-16.1**	**-8.9**			**B1920-178-004**

Blind Standard: W-29

delta 18O =	-13.4, n = 5, st.dev. = 0.1	Expected value: -13.1
delta 17O =	-7.8, n = 5, st.dev. = 0.2	Expected value: -7.7
delta 2H =	-87.4, n = 5, st.dev. = 0.7	Expected value: -86.3

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Completed: 2019-oct-03

Cost: (14 x $25) + (4 x $5)re-filtering = $370

Work done by: lab (Wendy)
Amount of water in vials: 0.2mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4-5 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	kshannon@nxe-energy.ca
Phone Number:	1-778-588-5145
Submission Date:	20-09-2019
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	1-306-954-2275

Optional Project Comment:	D/H and 18P/16O analysis
	All samples are freshwater and filtered at 0.45 micron
	Conductivity and PPM values before filtration, no expected hydrocarbon contamination
	If necessary, please use gasbench analysis

QCD = quality control duplicate (No charge)

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	VeizerSIL ID
W-42226	DH_GAR-18-013_Z1	-147.2	-18.4	-10.3		0	B1920-200-001
W-42227	DH_GAR-18-013_Z2	-125.1	-14.5	-8.3		0	B1920-200-002
W-42228	DH_GAR-18-013_Z3	-129.0	-14.8	-8.4		0	B1920-200-003
W-42229	DH_GAR-18-013_Z4	-139.9	-17.0	-9.5		0	B1920-200-004
W-42230	DH_GAR-18-013_Z5	-128.0	-15.0	-8.5		0	B1920-200-005
W-42231	**DH_GAR-18-013_Z5 QCD**	**-127.1**	**-14.9**	**-8.4**		**0**	**B1920-200-006**
W-42232	DH_GAR-18-013_Z6	-126.9	-14.7	-8.4		0	B1920-200-007
W-42233	DH_GAR-18-013_Z7	-129.3	-15.1	-8.6		0	B1920-200-008
W-42234	DH_GAR-18-013_Z10	-127.8	-15.2	-8.6		0	B1920-200-009
W-42235	DH_GAR-18-013_Z11	-133.8	-16.0	-8.9		0	B1920-200-010
W-42236	DH_GAR-18-013_FDUP	-134.6	-16.1	-9.0		0	B1920-200-011
W-42237	DH_GAR-18-013_FB1	-141.5	-17.8	-9.9		0	B1920-200-012
W-42238	DH_BGC-17-05	-158.2	-20.2	-11.3		0	B1920-200-013
W-42239	DH_2018-MW-04B	-153.1	-19.4	-10.9		0	B1920-200-014
W-42240	DH_DUP3	-158.6	-20.2	-11.3		0	B1920-200-015

Blind Standard: W-29

delta 18O =	-13.4, n = 5, st.dev. = 0.1	Expected value: -13.1
delta 17O =	-7.8, n = 5, st.dev. = 0.2	Expected value: -7.7
delta 2H =	-87.4, n = 5, st.dev. = 0.7	Expected value: -86.3

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Completed: 2019-oct-21
Cost: 2 x $25 = $50

Work done by: lab (Wendy)
Amount of water in vials: 0.2mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4-5 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	kshannon@nxe-energy.ca
Phone Number:	1-778-588-5145
Submission Date:	02-10-2019
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	1-306-954-2275

Optional Project Comment:	D/H and 18P/16O analysis All samples are freshwater and filtered at 0.45 micron Conductivity and PPM values before filtration, no (QCD = quality control duplicate (No charge) If necessary, please use gasbench analysis

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	VeizerSIL ID
W-42654	DH_2018-MW-002A	-150.7	-19.5	-10.8		0	B1920-222-001
W-42655	**DH_2018-MW-002A QCD**	**-150.8**	**-19.4**	**-10.6**		**0**	**B1920-222-002**
W-42656	DH_2018-MW-009B	-149.7	-19.3	-10.4		0	B1920-222-003

Blind Standard: W-29

delta 18O =	-13.2, n = 5, st.dev. = 0.2	Expected value: -13.1
delta 17O =	-7.8, n = 5, st.dev. = 0.1	Expected value: -7.7
delta 2H =	-88.4, n = 5, st.dev. = 1.5	Expected value: -86.3

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Completed: 2019-dec-13

Cost: 12 x $25 = $300

Work done by: lab (Wendy)
Amount of water in vials: 0.2mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4-5 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	kshannon@nxe-energy.ca
Phone Number:	1-778-588-5145
Submission Date:	26-11-2019
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	1-306-954-2275

Optional Project Comment:	D/H and 18P/16O analysis All samples are freshwater and filtered at 0.45 micron Conductivity and PPM values before filtration, no (**QCD = quality control duplicate (No charge)** If necessary, please use gasbench analysis

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	VeizerSIL ID
W-43004	DH_GAR-18-013_Z1	-151.3	-19.6	-11.6		0	B1920-364-001
W-43005	DH_GAR-18-013_Z2	-126.9	-15.6	-6.9		0	B1920-364-002
W-43006	DH_GAR-18-013_Z3	-133.0	-16.1	-8.7		0	B1920-364-003
W-43007	DH_GAR-18-013_Z4	-141.4	-17.2	-9.7		0	B1920-364-004
W-43008	DH_GAR-18-013_Z5	-127.1	-15.7	-7.6		0	B1920-364-005
W-43009	DH_GAR-18-013_Z6	-129.2	-15.1	-8.9		0	B1920-364-006
W-43010	**DH_GAR-18-013_Z6 QCD**	**-129.8**	**-14.9**	**-9.1**		**0**	**B1920-364-007**
W-43011	DH_GAR-18-013_Z7	-130.4	-14.7	-9.2		0	B1920-364-008
W-43012	DH_GAR-18-013_Z8	-133.4	-14.9	-9.4		0	B1920-364-009
W-43013	DH_GAR-18-013_Z9	-135.6	-16.1	-9.7		0	B1920-364-010
W-43014	DH_GAR-18-013_Z10	-130.7	-15.2	-9.1		0	B1920-364-011
W-43015	DH_GAR-18-013_Z11	-136.1	-16.2	-9.2		0	B1920-364-012
W-43016	DH_GAR-18-013_FDUP	-132.8	-16.0	-8.4		0	B1920-364-013

Blind Standard: W-29

delta 18O = -13.4, n = 5, st.dev. = 0.8	Expected value: -13.1
delta 17O = -7.8, n = 5, st.dev. = 0.9	Expected value: -7.7
delta 2H = -88.3, n = 5, st.dev. = 1.7	Expected value: -86.3

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Completed: 2019-dec-13

Cost: 1 x $25 = $25 (goes with B1920-364)

Work done by: lab (Wendy)
Amount of water in vials: 0.2mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4-5 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	kshannon@nxe-energy.ca
Phone Number:	1-778-588-5145
Submission Date:	03-12-2019
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	1-306-954-2275

Optional Project Comment:	D/H and 18P/16O analysis (1 sample extra from job B1920-364) All samples are freshwater and filtered at 0.45 micron Conductivity and PPM values before filtration, no (QCD = quality control duplicate (No charge) If necessary, please use gasbench analysis

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	VeizerSIL ID
W-43346	DH_GAR-18-013_FB1	-143.7	-19.1	-9.2		0	B1920-390-001

Blind Standard: W-29

delta 18O =	-13.4, n = 5, st.dev. = 0.8	Expected value: -13.1
delta 17O =	-7.8, n = 5, st.dev. = 0.9	Expected value: -7.7
delta 2H =	-88.3, n = 5, st.dev. = 1.7	Expected value: -86.3

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Completed: Feb 20th, 2020

Cost: 7 samples x 30$ = 210$

Work done by: Paul and Wendy
Amount of water in vials: 0.2mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4-5 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K 1P4
Country:	Canada
Email:	kshannon@nxe-energy.ca
Phone Number:	1(306)808-2487
Submission Date:	28-01-2020
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	13069542275

Optional Project Comment:	D/H and 18O/16O analysis. All samples are freshwater and filtered at 0.45 micron.
	Conductivity values before filtration.
	No expected hydrocarbon contamination. **QCD = quality control duplicate (No charge)**
	Please send results to: kshannon@nxe-energy.ca and labresults@nxe-energy.ca

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	VeizerSIL ID
	DH_2018-MW-006A	-148.7	-19.1	-10.6		0	B1920-470-001
	DH_2018-MW-006B	-153.3	-20.1	-11.1		0	B1920-470-002
	DH_2018-MW-007A	-160.4	-20.8	-11.6		0	B1920-470-003
	DH_2018-MW-007B	-155.0	-20.1	-11.3		0	B1920-470-004
	DH_2018-MW-009A	-141.3	-16.2	-9.1		0	B1920-470-005
	DH_2018-MW-009B	-151.5	-19.8	-11.0		0	B1920-470-006
	DH_2019-MW-016	-156.5	-19.9	-11.0		0	B1920-470-007
	DH_2019-MW-016 QCD	-158.8	-20.5	-11.5		0	B1920-470-008

Blind Standard: W-29

delta 18O = -13.16,	n = 5,	st.dev. = 0. 075 Expected value: -13.1
delta 17O = -7.9,	n = 5,	st.dev. = 0.17 Expected value: -7.7
delta 2H = -88.02,	n = 3 ,	st.dev. = 1.51 Expected value: -86.3

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Completed: Feb 27th, 2020

Cost: 3 samples x 30$ = 90$

Work done by: Wendy and Paul
Amount of water in vials: 0.2mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4-5 ignored

See Methodology tab below for details.

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K 1P4
Country:	Canada
Email:	kshannon@nxe-energy.ca
Phone Number:	1(306)808-2487
Submission Date:	11-02-2020
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	SK
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	13069542275

Optional Project Comment:	D/H and 18O/16O analysis. All samples are freshwater and filtered at 0.45 micron.
	Conductivity values before filtration.
	No expected hydrocarbon contamination. **QCD = quality control duplicate (No charge)**
	Please send results to: kshannon@nxe-energy.ca and labresults@nxe-energy.ca

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	VeizerSIL ID
W-43639	DH_BGC-17-01	-162.0	-21.1	-11.5	none	0	B1920-506-001
W-43640	DH_BGC-17-01 QCD	-161.6	-20.9	-11.5	none	0	B1920-506-002
W-43641	DH_BGC-17-05	-158.3	-20.9	-11.5	none	0	B1920-506-003
W-43642	DH_DUP1	-161.5	-20.9	-11.6	none	0	B1920-506-004

Blind Standard: W-29

delta 18O =	-13.31, n = 3, st.dev. = 0.19	Expected value: -13.1
delta 17O =	-8.05, n = 4 , st.dev. = 0.16	Expected value: -7.7
delta 2H =	86.08, n = 5, st.dev. = 0.51	Expected value: -86.3

Laboratoire d'isotopes stables Ján Veizer (anciennement G.G. Hatch)
Ján Veizer Stable Isotope Laboratory (formerly G.G. Hatch)

Reminder: samples are retained for 6 months, then destroyed. Please have a look at your data in a timely

Completed: 2020-mar-21

Cost: 13 x $25 = $325 (pre-filtered)

Work done by: lab (Wendy)
Amount of water in vials: 0.2mL
Amount of water used per injection: 900uL
Number of injections per vial: 10, first 4-5 ignored

See Methodology tab below for details.

QCD = quality control duplicate (No charge)

BBS = Broad Band Spectrum
NBS = Narrow Band Spectrum
See tab below labelled "Contaminant Flagging" for more information.

Customer Information

First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	kshannon@nxe-energy.ca
Phone Number:	1-306-808-2491
Submission Date:	12-03-2020
Project Title:	wt-od-L - Rook I
Isotope Ratios Req:	2H and 18O
Numeric Media Code:	1
Supervisor:	0

Invoice Information

PO # or Account Code:	Rook I - Groundwater Sampling
First Name:	Keith
Last Name:	Shannon
Initial:	0
Address (Line 1):	NexGen Energy Ltd.
Address (Line 2):	Suite 200, 475 2nd Ave S
Address (Line 3):	0
City:	Saskatoon
State or Province:	Saskatchewan
Postal Code:	S7K 1P4
Country:	Canada
Email:	AP@nxe-energy.ca
Phone Number:	1-306-954-2275

Optional Project Comment:	D/H and 18P/16O analysis. All samples are freshwater and filtered at 0.45 micron
	Please send results to: kshannon@nxe-energy.ca and labresults@nxe-energy.ca
	Conductivity and PPM values before filtration, no expected hydrocarbon contamination
	NB: all samples have prefix "DH_GAR-18-013_"

OurLabID	Sample ID	Delta 2H (VSMOW)	Delta 18O (VSMOW)	Delta 17O (VSMOW)	Contaminant Flag	Comments	VeizerSIL ID
W-44001	Z1_Q1	-152.1	-19.0	-10.6		0	B1920-576-001
W-44002	Z2_Q1	-127.9	-14.7	-8.4		0	B1920-576-002
W-44003	Z3_Q1	-133.2	-15.9	-9.1		0	B1920-576-003
W-44004	Z4_Q1	-140.3	-17.4	-8.6		0	B1920-576-004
W-44005	Z5_Q1	-129.3	-15.5	-8.3		0	B1920-576-005
W-44006	Z6_Q1	-128.5	-14.7	-8.2		0	B1920-576-006
W-44007	Z7_Q1	-129.3	-14.9	-8.5		0	B1920-576-007
W-44008	**Z7_Q1 QCD**	**-129.2**	**-14.9**	**-8.5**		**0**	**B1920-576-008**
W-44009	Z8_Q1	-131.2	-15.2	-8.8		0	B1920-576-009
W-44010	Z9_Q1	-133.7	-15.7	-9.0		0	B1920-576-010
W-44011	Z10_Q1	-128.2	-14.8	-8.7		0	B1920-576-011
W-44012	Z11_Q1	-133.1	-15.9	-9.1		0	B1920-576-012
W-44013	DUP_Q1	-135.5	-16.3	-9.3		0	B1920-576-013
W-44014	FB_Q1	-142.1	-17.5	-9.8		0	B1920-576-014

Blind Standard: W-29

delta 18O = -13.2,	n = 5,	st.dev. = 0.10	Expected value: -13.1
delta 17O = -7.8,	n = 5,	st.dev. = 0.2	Expected value: -7.7
delta 2H = -87.1,	n = 5,	st.dev. = 1.4	Expected value: -86.3

A. E. Lalonde AMS Laboratory

Tritium Laboratory

University of Ottawa, Advanced Research Complex
25 Templeton St
Ottawa ON K1N 6N5 Canada

mwilk@uottawa.ca
Telephone: 613-562-5800 ext. 6183
Web :www.ams.uottawa.ca

Tritium Analysis Report

Date: April 02, 2019

Samples submitted by:
Claudia Piche (PI Keith Shannon)
NexGen Energy Ltd.
212-4014 Arthur Rose Ave.
Saskatoon, SK
S7P0C9
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1603	DH-BCG17-01	2.6	0.7
UOT-1604	DH-BCG17-02	5.8	0.8
UOT-1605	DH-BCG17-03	7.0	0.8
UOT-1606	DH-BCG17-04	5.5	0.8
UOT-1607	DH-BCG17-05	<0.8	
UOT-1608	DH-BCG17-Dup	<0.8	

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	**Error**		
Density	0.998	0.002	g/ml	20ºC
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

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Tritium Analysis Report

Date: August 06, 2019

Samples submitted by:
Claudia Piche (PI Jeri-Lynn Walton)
NexGen Energy Ltd.
475 - 2nd Ave South
Saskatoon, SK
S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1805	2018_Sonic002A_Shallow	7.2	0.8
UOT-1806	2018_Sonic002B_Deep	6.1	0.7
UOT-1807	2018_Sonic004A_Shallow	10.7	0.9
UOT-1808	2018_Sonic004B_Deep	7.8	0.8
UOT-1809	2018_Sonic006A_Shallow	6.1	0.7
UOT-1810	2018_Sonic006B_Deep	8.9	0.8
UOT-1811	2018_Sonic007A_Shallow	13.6	1.0
UOT-1812	2018_Sonic007B_Deep	<0.8	
UOT-1813	2018_Sonic008A_Shallow	7.0	0.8
UOT-1814	2018_Sonic008B_Deep	3.3	0.7
UOT-1815	2018_Sonic009A_Shallow	6.0	0.8
UOT-1816	2018_Sonic009B_Deep	5.9	0.7
UOT-1817	2018_Sonic010A_Shallow	1.8	0.6
UOT-1818	2018_Sonic010B_Deep	<0.8	
UOT-1819	DH-BGC17-01	3.2	0.7
UOT-1820	DH-BGC17-02	6.8	0.8
UOT-1821	DH-BGC17-03	7.3	0.8
UOT-1822	DH-BGC17-05	<0.8	
UOT-1823	2018_Sonic002B_Deep_DUPL	6.7	0.8
UOT-1824	2018_Sonic007B_DUPL	<0.8	
UOT-1825	DH-BGC17-01_DUPL	3.1	0.7

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	**Error**		
Density	0.998	0.002	g/ml	20ºC
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

Tritium Laboratory

University of Ottawa, Advanced Research Complex
25 Templeton St
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mwilk@uottawa.ca
Telephone: 613-562-5800 ext. 6183
Web :www.ams.uottawa.ca

Tritium Analysis Report

Date: April 09, 2019

Samples submitted by:
Henry Reis (PI Tom Kotzer)
NexGen Energy Ltd.
212-4014 Arthur Rose Ave.
Saskatoon, SK
S7P0C9
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1592	2018_MW_007A_Shallow	15.1	1.0
UOT-1593	2018_MW_007B_Deep	2.7	0.6
UOT-1594	2018_MW_008A_Shallow	7.7	0.8
UOT-1595	2018_MW_008B_Deep	7.0	0.8
UOT-1596	2018_MW_008B_Deep_FD	6.4	0.7
UOT-1597	2018_MW_009A_Shallow	6.8	0.8
UOT-1598	2018_MW_009B_Deep	7.4	0.8
UOT-1599	2018_MW_003_Shallow	9.3	0.8
UOT-1600	2018_MW_003_Shallow_FD	9.4	0.8
UOT-1601	2018_MW_006A_Shallow	8.4	0.8
UOT-1602	2018_MW_006B_Deep	8.0	0.8

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	**Error**		
Density	0.998	0.002	g/ml	20ºC
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

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Tritium Analysis Report

Date: August 12, 2019

Samples submitted by:
Claudia Piche (PI Chasen Rozdilsky)
NexGen Energy Ltd.
212-4014 Arthur Rose Ave.
Saskatoon, SK
S7P 0C9
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1834	GAR-18-013_Z1	4.2	0.7
UOT-1835	GAR-18-013_Z2	7.4	0.8
UOT-1836	GAR-18-013_Z3	7.4	0.8
UOT-1837	GAR-18-013_Z4	5.4	0.8
UOT-1838	GAR-18-013_Z5	8.2	0.9
UOT-1839	GAR-18-013_Z6	8.5	0.9
UOT-1840	GAR-18-013_Z7	8.3	0.9
UOT-1841	GAR-18-013_Z8	6.8	0.8
UOT-1842	GAR-18-013_Z9	6.4	0.8
UOT-1843	GAR-18-013_Z10	7.9	0.9
UOT-1844	GAR-18-013_Z11	7.2	0.8
UOT-1845	GAR-18-013_Duplicate	7.9	0.9

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	**Error**		
Density	0.998	0.002	g/ml	20ºC
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

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Tritium Analysis Report

Date: December 05, 2019

Samples submitted by:
Keith Shannon
NexGen Energy Ltd.
Suite 200, 475 2nd Ave s
Saskatoon, SK
S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1921	DH_2018-MW-001A	1.5	0.7
UOT-1922	DH_2018-MW-001B	6.9	0.9
UOT-1923	DH_2018-MW-002B	5.8	0.8
UOT-1924	DH_2018-MW-003	10.9	1.0
UOT-1925	DH_2018-MW-004A	7.4	0.9
UOT-1926	DH_2018-MW-006A	7.2	0.9
UOT-1927	DH_2018-MW-006B	9.6	1.0
UOT-1928	DH_2018-MW-007A	<0.8	
UOT-1929	DH_2018-MW-007B	14.3	1.1
UOT-1930	DH_2018-MW-008A	7.3	0.9
UOT-1931	DH_2018-MW-008B	2.2	0.7
UOT-1932	DH_2018-MW-009A	7.1	0.9
UOT-1933	DH_2018-MW-010A	0.9	0.7
UOT-1934	DH-BGC17-01	3.3	0.8
UOT-1935	DH-BGC17-02	6.8	0.9
UOT-1936	DH-BGC17-03	8.5	1.0
UOT-1937	DH_DUP1	1.4	0.5
UOT-1938	DH-DUP2	11.8	1.1
UOT-1939	DH_FBLANK1	8.8	1.0

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	**Error**		
Density	0.998	0.002	g/ml	20ºC
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

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Tritium Analysis Report

Date: December 13, 2019

Samples submitted by:
Keith Shannon
NexGen Energy Ltd.
Suite 200, 475 2nd Ave s
Saskatoon, SK
S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1978	DH_2018-MW-010B	<0.8	
UOT-1979	DH_GAR-18-013_Z8	7.5	0.9
UOT-1980	DH_GAR-18-013_Z9	6.7	0.9

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	Error		
Density	0.998	0.002	g/ml	20°C
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

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Tritium Analysis Report

Date: July 06, 2020

Samples submitted by:
Keith Shannon
NexGen Energy Ltd.
Suite 200, 475 2nd Ave s
Saskatoon, SK
S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-2140	DH-BGC17-01	2.2	0.6
UOT-2141	DH-BGC17-05	<0.8	
UOT-2142	DH-Dup1	2.3	0.7

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	Error		
Density	0.998	0.002	g/ml	20°C
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

Tritium Laboratory

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Telephone: 613-562-5800 ext. 6183
Web :www.ams.uottawa.ca

Tritium Analysis Report

Date: June 10, 2020

Samples submitted by:
Keith Shannon
NexGen Energy Ltd.
Suite 200, 475 2nd Ave s
Saskatoon, SK
S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-2117	DH_2018-MW-06A	6.4	0.8
UOT-2118	DH_2018-MW-06B	8.2	0.9
UOT-2119	DH_2018-MW-07A	<0.8	
UOT-2120	DH_2018-MW-07B	13.9	1.0
UOT-2121	DH_2018-MW-09A	7.3	0.9
UOT-2122	DH_2018-MW-09B	5.9	0.8
UOT-2123	DH_2019-MW-016	3.5	0.7

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	**Error**		
Density	0.998	0.002	g/ml	20^{o}C
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

Tritium Laboratory

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Tritium Analysis Report

Date: January 16 2020

Samples submitted by:
Keith Shannon
NexGen Energy Ltd.
Suite 200, 475 2nd Ave s
Saskatoon, SK
S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1981	DH_GAR-18-013_Z1	2.5	0.7
UOT-1982	DH_GAR-18-013_Z2	8.4	0.9
UOT-1983	DH_GAR-18-013_Z3	7.0	0.9
UOT-1984	DH_GAR-18-013_Z4	5.8	0.9
UOT-1985	DH_GAR-18-013_Z5	8.5	0.8
UOT-1986	DH_GAR-18-013_Z6	8.5	0.8
UOT-1987	DH_GAR-18-013_Z7	8.2	0.9
UOT-1988	DH_GAR-18-013_Z10	8.2	0.8
UOT-1989	DH_GAR-18-013_Z11	8.0	0.8
UOT-1990	DH_GAR-18-013_FDUP	7.9	0.8
UOT-1991	DH_BGC-17-05	<0.8	
UOT-1992	DH_2018-MW-04B	11.0	0.9
UOT-1993	DH_DUP3	<0.8	
UOT-1994	DH-GAR-18-013_FBI	8.8	0.8

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by

electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	**Error**		
Density	0.998	0.002	g/ml	20ºC
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

Tritium Laboratory

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Tritium Analysis Report

Date: January 16 2020

Samples submitted by:
Keith Shannon
NexGen Energy Ltd.
Suite 200, 475 2nd Ave s
Saskatoon, SK
S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-2046	DH_2018-MW-002A	7.4	0.8
UOT-2047	DH_2018-MW-009B	6.2	0.7

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	Error		
Density	0.998	0.002	g/ml	20°C
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

CASH Clients (Saskatoon)
ATTN: GRANT GREENWOOD
NEXGEN ENERGY LTD
212-4014 ARTHUR ROSE AVE
SASKATOON SK S7P 0C0

Date Received: 12-OCT-17
Report Date: 20-OCT-17 14:05 (MT)
Version: FINAL

Client Phone: 306-717-4543

Certificate of Analysis

Lab Work Order #: L2006353

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 15-605124
Legal Site Desc:

Jori Johanson, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-1 DH-BGC17-01							
Sampled By: CLIENT							
Matrix: WATER							
Alkalinity Species by Titration							
Alkalinity Species by Titration							
Alkalinity, Bicarbonate (as CaCO3)	33.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Total (as CaCO3)	33.0		1.0	mg/L		18-OCT-17	R3859348
Anions by Ion Chromatography							
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-OCT-17	R3854923
Chloride in Water by IC							
Chloride (Cl)	1.83		0.50	mg/L		15-OCT-17	R3854923
Fluoride in Water by IC							
Fluoride (F)	0.130		0.020	mg/L		15-OCT-17	R3854923
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		15-OCT-17	R3854923
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		15-OCT-17	R3854923
Sulfate in Water by IC							
Sulfate (SO4)	28.2		0.30	mg/L		15-OCT-17	R3854923
Dissolved Metals in Water + Hg (BC MDG)							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	0.000118		0.000020	mg/L	16-OCT-17	18-OCT-17	R3860032
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-OCT-17	17-OCT-17	R3858099
Dissolved Mercury Filtration Location	FIELD					17-OCT-17	R3857652
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Aluminum (Al)-Dissolved	0.782		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Antimony (Sb)-Dissolved	0.00011		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Arsenic (As)-Dissolved	0.00109		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Barium (Ba)-Dissolved	0.0256		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Boron (B)-Dissolved	0.015		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cadmium (Cd)-Dissolved	0.0000157		0.0000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Calcium (Ca)-Dissolved	8.20		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Chromium (Cr)-Dissolved	0.00109		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cobalt (Co)-Dissolved	0.00085		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Copper (Cu)-Dissolved	0.00269		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032
Iron (Fe)-Dissolved	1.10		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Lead (Pb)-Dissolved	0.00119		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Lithium (Li)-Dissolved	0.0035		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Magnesium (Mg)-Dissolved	1.73		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Manganese (Mn)-Dissolved	0.113		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Molybdenum (Mo)-Dissolved	0.00243		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Nickel (Ni)-Dissolved	0.00137		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Phosphorus (P)-Dissolved	0.099		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Potassium (K)-Dissolved	1.17		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Selenium (Se)-Dissolved	0.000107		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silicon (Si)-Dissolved	15.5		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Sodium (Na)-Dissolved	15.0		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Strontium (Sr)-Dissolved	0.0497		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-1 DH-BGC17-01							
Sampled By: CLIENT							
Matrix: WATER							
Dissolved Metals in Water by CRC ICPMS							
Sulfur (S)-Dissolved	8.29		0.50	mg/L	16-OCT-17	18-OCT-17	R3860032
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Titanium (Ti)-Dissolved	0.0429		0.00030	mg/L	16-OCT-17	18-OCT-17	R3860032
Uranium (U)-Dissolved	0.000381		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Vanadium (V)-Dissolved	0.00396		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Zinc (Zn)-Dissolved	0.0031		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Zirconium (Zr)-Dissolved	0.00183		0.00030	mg/L	16-OCT-17	18-OCT-17	R3860032
Hardness							
Hardness (as CaCO3)	27.6		0.50	mg/L		19-OCT-17	
Total Metals in Water + Hg (BC MDG)							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.000210		0.000020	mg/L		18-OCT-17	R3860032
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L		16-OCT-17	R3856309
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	2.66		0.0030	mg/L		18-OCT-17	R3860032
Antimony (Sb)-Total	0.00018		0.00010	mg/L		18-OCT-17	R3860032
Arsenic (As)-Total	0.00148		0.00010	mg/L		18-OCT-17	R3860032
Barium (Ba)-Total	0.0506		0.000050	mg/L		18-OCT-17	R3860032
Bismuth (Bi)-Total	0.000064		0.000050	mg/L		18-OCT-17	R3860032
Boron (B)-Total	0.022		0.010	mg/L		18-OCT-17	R3860032
Cadmium (Cd)-Total	0.0000195		0.0000050	mg/L		18-OCT-17	R3860032
Calcium (Ca)-Total	8.51		0.050	mg/L		18-OCT-17	R3860032
Chromium (Cr)-Total	0.00358		0.00010	mg/L		18-OCT-17	R3860032
Cobalt (Co)-Total	0.00120		0.00010	mg/L		18-OCT-17	R3860032
Copper (Cu)-Total	0.00466		0.00050	mg/L		18-OCT-17	R3860032
Iron (Fe)-Total	1.94		0.010	mg/L		18-OCT-17	R3860032
Lead (Pb)-Total	0.00293		0.000050	mg/L		18-OCT-17	R3860032
Lithium (Li)-Total	0.0051		0.0010	mg/L		18-OCT-17	R3860032
Magnesium (Mg)-Total	2.06		0.10	mg/L		18-OCT-17	R3860032
Manganese (Mn)-Total	0.123		0.00010	mg/L		18-OCT-17	R3860032
Molybdenum (Mo)-Total	0.00395		0.000050	mg/L		18-OCT-17	R3860032
Nickel (Ni)-Total	0.00229		0.00050	mg/L		18-OCT-17	R3860032
Phosphorus (P)-Total	0.133		0.050	mg/L		18-OCT-17	R3860032
Potassium (K)-Total	2.00		0.10	mg/L		18-OCT-17	R3860032
Selenium (Se)-Total	0.000173		0.000050	mg/L		18-OCT-17	R3860032
Silicon (Si)-Total	20.9		0.10	mg/L		18-OCT-17	R3860032
Silver (Ag)-Total	0.000040		0.000010	mg/L		18-OCT-17	R3860032
Sodium (Na)-Total	16.8		0.050	mg/L		18-OCT-17	R3860032
Strontium (Sr)-Total	0.0744		0.00020	mg/L		18-OCT-17	R3860032
Sulfur (S)-Total	9.22		0.50	mg/L		18-OCT-17	R3860032
Thallium (Tl)-Total	0.000029		0.000010	mg/L		18-OCT-17	R3860032
Tin (Sn)-Total	0.00020		0.00010	mg/L		18-OCT-17	R3860032
Titanium (Ti)-Total	0.116		0.00030	mg/L		18-OCT-17	R3860032
Uranium (U)-Total	0.000603		0.000010	mg/L		18-OCT-17	R3860032
Vanadium (V)-Total	0.00678		0.00050	mg/L		18-OCT-17	R3860032
Zinc (Zn)-Total	0.0051		0.0030	mg/L		18-OCT-17	R3860032
Zirconium (Zr)-Total	0.00640		0.00030	mg/L		18-OCT-17	R3860032
Miscellaneous Parameters							
Total Dissolved Solids	193		13	mg/L		18-OCT-17	R3860263

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-1 DH-BGC17-01							
Sampled By: CLIENT							
Matrix: WATER							
Total Suspended Solids	36.4		3.0	mg/L		16-OCT-17	R3857580
Turbidity	172		0.10	NTU		14-OCT-17	R3854686
L2006353-2 DH-BGC17-02							
Sampled By: CLIENT							
Matrix: WATER							
Alkalinity Species by Titration							
Alkalinity Species by Titration							
Alkalinity, Bicarbonate (as CaCO3)	18.4		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Total (as CaCO3)	18.4		1.0	mg/L		18-OCT-17	R3859348
Anions by Ion Chromatography							
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-OCT-17	R3854923
Chloride in Water by IC							
Chloride (Cl)	<0.50		0.50	mg/L		15-OCT-17	R3854923
Fluoride in Water by IC							
Fluoride (F)	0.036		0.020	mg/L		15-OCT-17	R3854923
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0540		0.0050	mg/L		15-OCT-17	R3854923
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		15-OCT-17	R3854923
Sulfate in Water by IC							
Sulfate (SO4)	4.91		0.30	mg/L		15-OCT-17	R3854923
Dissolved Metals in Water + Hg (BC MDG)							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	0.000061		0.000020	mg/L	16-OCT-17	18-OCT-17	R3860032
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	17-OCT-17	17-OCT-17	R3858099
Dissolved Mercury Filtration Location	FIELD					17-OCT-17	R3857652
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Aluminum (Al)-Dissolved	0.483		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Antimony (Sb)-Dissolved	<0.00010		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Arsenic (As)-Dissolved	0.00031		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Barium (Ba)-Dissolved	0.0181		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Boron (B)-Dissolved	<0.010		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cadmium (Cd)-Dissolved	0.0000223		0.0000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Calcium (Ca)-Dissolved	4.56		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Chromium (Cr)-Dissolved	0.00072		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cobalt (Co)-Dissolved	0.00270		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Copper (Cu)-Dissolved	0.00180		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032
Iron (Fe)-Dissolved	1.04		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Lead (Pb)-Dissolved	0.000653		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Lithium (Li)-Dissolved	0.0014		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Magnesium (Mg)-Dissolved	0.79		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Manganese (Mn)-Dissolved	0.0948		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Molybdenum (Mo)-Dissolved	0.000600		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Nickel (Ni)-Dissolved	0.00215		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-2 DH-BGC17-02							
Sampled By: CLIENT							
Matrix: WATER							
Dissolved Metals in Water by CRC ICPMS							
Potassium (K)-Dissolved	0.62		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Selenium (Se)-Dissolved	0.000099		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silicon (Si)-Dissolved	7.51		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Sodium (Na)-Dissolved	3.61		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Strontium (Sr)-Dissolved	0.0269		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032
Sulfur (S)-Dissolved	1.62		0.50	mg/L	16-OCT-17	18-OCT-17	R3860032
Thallium (Tl)-Dissolved	0.000011		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Titanium (Ti)-Dissolved	<0.0039	DLM	0.0039	mg/L	16-OCT-17	18-OCT-17	R3860032
Uranium (U)-Dissolved	0.000176		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Vanadium (V)-Dissolved	0.00133		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Zinc (Zn)-Dissolved	0.0027		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Zirconium (Zr)-Dissolved	<0.00030		0.00030	mg/L	16-OCT-17	18-OCT-17	R3860032
Hardness							
Hardness (as CaCO3)	14.6		0.50	mg/L		19-OCT-17	
Total Metals in Water + Hg (BC MDG)							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.000159		0.000020	mg/L		18-OCT-17	R3860032
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L		16-OCT-17	R3856309
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	3.47		0.0030	mg/L		18-OCT-17	R3860032
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		18-OCT-17	R3860032
Arsenic (As)-Total	0.00073		0.00010	mg/L		18-OCT-17	R3860032
Barium (Ba)-Total	0.0434		0.000050	mg/L		18-OCT-17	R3860032
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		18-OCT-17	R3860032
Boron (B)-Total	0.010		0.010	mg/L		18-OCT-17	R3860032
Cadmium (Cd)-Total	0.0000278		0.0000050	mg/L		18-OCT-17	R3860032
Calcium (Ca)-Total	4.83		0.050	mg/L		18-OCT-17	R3860032
Chromium (Cr)-Total	0.00389		0.00010	mg/L		18-OCT-17	R3860032
Cobalt (Co)-Total	0.00328		0.00010	mg/L		18-OCT-17	R3860032
Copper (Cu)-Total	0.00819		0.00050	mg/L		18-OCT-17	R3860032
Iron (Fe)-Total	3.24		0.010	mg/L		18-OCT-17	R3860032
Lead (Pb)-Total	0.00203		0.000050	mg/L		18-OCT-17	R3860032
Lithium (Li)-Total	0.0034		0.0010	mg/L		18-OCT-17	R3860032
Magnesium (Mg)-Total	1.08		0.10	mg/L		18-OCT-17	R3860032
Manganese (Mn)-Total	0.107		0.00010	mg/L		18-OCT-17	R3860032
Molybdenum (Mo)-Total	0.00111		0.000050	mg/L		18-OCT-17	R3860032
Nickel (Ni)-Total	0.00390		0.00050	mg/L		18-OCT-17	R3860032
Phosphorus (P)-Total	0.080		0.050	mg/L		18-OCT-17	R3860032
Potassium (K)-Total	1.57		0.10	mg/L		18-OCT-17	R3860032
Selenium (Se)-Total	0.000111		0.000050	mg/L		18-OCT-17	R3860032
Silicon (Si)-Total	13.1		0.10	mg/L		18-OCT-17	R3860032
Silver (Ag)-Total	0.000017		0.000010	mg/L		18-OCT-17	R3860032
Sodium (Na)-Total	3.85		0.050	mg/L		18-OCT-17	R3860032
Strontium (Sr)-Total	0.0429		0.00020	mg/L		18-OCT-17	R3860032
Sulfur (S)-Total	1.67		0.50	mg/L		18-OCT-17	R3860032
Thallium (Tl)-Total	0.000041		0.000010	mg/L		18-OCT-17	R3860032
Tin (Sn)-Total	0.00015		0.00010	mg/L		18-OCT-17	R3860032
Titanium (Ti)-Total	0.0613		0.00030	mg/L		18-OCT-17	R3860032
Uranium (U)-Total	0.000261		0.000010	mg/L		18-OCT-17	R3860032

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-2 DH-BGC17-02							
Sampled By: CLIENT							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Vanadium (V)-Total	0.00501		0.00050	mg/L		18-OCT-17	R3860032
Zinc (Zn)-Total	0.0065		0.0030	mg/L		18-OCT-17	R3860032
Zirconium (Zr)-Total	0.00128		0.00030	mg/L		18-OCT-17	R3860032
Miscellaneous Parameters							
Total Dissolved Solids	537		10	mg/L		18-OCT-17	R3860263
Total Suspended Solids	237		3.0	mg/L		16-OCT-17	R3857580
Turbidity	1990		0.10	NTU		14-OCT-17	R3854686
L2006353-3 DH-BGC17-03							
Sampled By: CLIENT							
Matrix: WATER							
Alkalinity Species by Titration							
Alkalinity Species by Titration							
Alkalinity, Bicarbonate (as CaCO3)	41.2		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Total (as CaCO3)	41.2		1.0	mg/L		18-OCT-17	R3859348
Anions by Ion Chromatography							
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-OCT-17	R3854923
Chloride in Water by IC							
Chloride (Cl)	0.81		0.50	mg/L		15-OCT-17	R3854923
Fluoride in Water by IC							
Fluoride (F)	0.143		0.020	mg/L		15-OCT-17	R3854923
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0943		0.0050	mg/L		15-OCT-17	R3854923
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0037		0.0010	mg/L		15-OCT-17	R3854923
Sulfate in Water by IC							
Sulfate (SO4)	16.9		0.30	mg/L		15-OCT-17	R3854923
Dissolved Metals in Water + Hg (BC MDG)							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	0.000306		0.000020	mg/L	16-OCT-17	18-OCT-17	R3860032
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050	DLM	0.000050	mg/L	17-OCT-17	17-OCT-17	R3858099
Dissolved Mercury Filtration Location	FIELD					17-OCT-17	R3857652
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Aluminum (Al)-Dissolved	0.537		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Antimony (Sb)-Dissolved	0.00025		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Arsenic (As)-Dissolved	0.00220		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Barium (Ba)-Dissolved	0.0221		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Boron (B)-Dissolved	0.015		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cadmium (Cd)-Dissolved	0.0000411		0.0000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Calcium (Ca)-Dissolved	5.55		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Chromium (Cr)-Dissolved	0.00101		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cobalt (Co)-Dissolved	0.00066		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Copper (Cu)-Dissolved	0.00340		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032
Iron (Fe)-Dissolved	0.917		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Lead (Pb)-Dissolved	0.00247		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-3 DH-BGC17-03							
Sampled By: CLIENT							
Matrix: WATER							
Dissolved Metals in Water by CRC ICPMS							
Lithium (Li)-Dissolved	0.0026		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Magnesium (Mg)-Dissolved	0.70		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Manganese (Mn)-Dissolved	0.0252		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Molybdenum (Mo)-Dissolved	0.00444		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Nickel (Ni)-Dissolved	0.00134		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Phosphorus (P)-Dissolved	0.153		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Potassium (K)-Dissolved	0.70		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Selenium (Se)-Dissolved	0.000301		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silicon (Si)-Dissolved	7.55		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Sodium (Na)-Dissolved	24.4		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Strontium (Sr)-Dissolved	0.0409		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032
Sulfur (S)-Dissolved	5.91		0.50	mg/L	16-OCT-17	18-OCT-17	R3860032
Thallium (Tl)-Dissolved	0.000020		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Titanium (Ti)-Dissolved	0.00315		0.00030	mg/L	16-OCT-17	18-OCT-17	R3860032
Uranium (U)-Dissolved	0.00145		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Vanadium (V)-Dissolved	0.00399		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Zinc (Zn)-Dissolved	0.0035		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Zirconium (Zr)-Dissolved	0.00067		0.00030	mg/L	16-OCT-17	18-OCT-17	R3860032
Hardness							
Hardness (as CaCO3)	16.7		0.50	mg/L		19-OCT-17	
Total Metals in Water + Hg (BC MDG)							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.000419		0.000020	mg/L		18-OCT-17	R3860032
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L		16-OCT-17	R3856309
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	4.88		0.0030	mg/L		18-OCT-17	R3860032
Antimony (Sb)-Total	0.00032		0.00010	mg/L		18-OCT-17	R3860032
Arsenic (As)-Total	0.00315		0.00010	mg/L		18-OCT-17	R3860032
Barium (Ba)-Total	0.0474		0.000050	mg/L		18-OCT-17	R3860032
Bismuth (Bi)-Total	0.000103		0.000050	mg/L		18-OCT-17	R3860032
Boron (B)-Total	0.020		0.010	mg/L		18-OCT-17	R3860032
Cadmium (Cd)-Total	0.0000519		0.0000050	mg/L		18-OCT-17	R3860032
Calcium (Ca)-Total	5.92		0.050	mg/L		18-OCT-17	R3860032
Chromium (Cr)-Total	0.00441		0.00010	mg/L		18-OCT-17	R3860032
Cobalt (Co)-Total	0.00112		0.00010	mg/L		18-OCT-17	R3860032
Copper (Cu)-Total	0.00489		0.00050	mg/L		18-OCT-17	R3860032
Iron (Fe)-Total	3.57		0.010	mg/L		18-OCT-17	R3860032
Lead (Pb)-Total	0.00393		0.000050	mg/L		18-OCT-17	R3860032
Lithium (Li)-Total	0.0042		0.0010	mg/L		18-OCT-17	R3860032
Magnesium (Mg)-Total	1.19		0.10	mg/L		18-OCT-17	R3860032
Manganese (Mn)-Total	0.0336		0.00010	mg/L		18-OCT-17	R3860032
Molybdenum (Mo)-Total	0.00673		0.000050	mg/L		18-OCT-17	R3860032
Nickel (Ni)-Total	0.00289		0.00050	mg/L		18-OCT-17	R3860032
Phosphorus (P)-Total	0.200		0.050	mg/L		18-OCT-17	R3860032
Potassium (K)-Total	1.51		0.10	mg/L		18-OCT-17	R3860032
Selenium (Se)-Total	0.000368		0.000050	mg/L		18-OCT-17	R3860032
Silicon (Si)-Total	16.5		0.10	mg/L		18-OCT-17	R3860032
Silver (Ag)-Total	0.000030		0.000010	mg/L		18-OCT-17	R3860032
Sodium (Na)-Total	24.9		0.050	mg/L		18-OCT-17	R3860032

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-3 DH-BGC17-03							
Sampled By: CLIENT							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Strontium (Sr)-Total	0.0548		0.00020	mg/L		18-OCT-17	R3860032
Sulfur (S)-Total	6.18		0.50	mg/L		18-OCT-17	R3860032
Thallium (Tl)-Total	0.000051		0.000010	mg/L		18-OCT-17	R3860032
Tin (Sn)-Total	0.00073		0.00010	mg/L		18-OCT-17	R3860032
Titanium (Ti)-Total	0.0370		0.00030	mg/L		18-OCT-17	R3860032
Uranium (U)-Total	0.00173		0.000010	mg/L		18-OCT-17	R3860032
Vanadium (V)-Total	0.00825		0.00050	mg/L		18-OCT-17	R3860032
Zinc (Zn)-Total	0.0087		0.0030	mg/L		18-OCT-17	R3860032
Zirconium (Zr)-Total	0.00093		0.00030	mg/L		18-OCT-17	R3860032
Miscellaneous Parameters							
Ammonia, Total (as N)	0.0133		0.0050	mg/L		16-OCT-17	R3857416
COD	31		20	mg/L		18-OCT-17	R3858998
Dissolved Organic Carbon	3.13	HTP	0.50	mg/L		18-OCT-17	R3859231
Total Dissolved Solids	307		13	mg/L		18-OCT-17	R3860263
Phosphorus (P)-Total	0.146		0.020	mg/L		15-OCT-17	R3854911
Total Suspended Solids	398		3.0	mg/L		16-OCT-17	R3857580
Total Organic Carbon	2.25		0.50	mg/L		14-OCT-17	R3854838
Turbidity	441		0.10	NTU		14-OCT-17	R3854686
L2006353-4 DH-BGC17-05							
Sampled By: CLIENT							
Matrix: WATER							
Alkalinity Species by Titration							
Alkalinity Species by Titration							
Alkalinity, Bicarbonate (as CaCO3)	54.9		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Total (as CaCO3)	54.9		1.0	mg/L		18-OCT-17	R3859348
Anions by Ion Chromatography							
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-OCT-17	R3854923
Chloride in Water by IC							
Chloride (Cl)	1.47		0.50	mg/L		15-OCT-17	R3854923
Fluoride in Water by IC							
Fluoride (F)	0.194		0.020	mg/L		15-OCT-17	R3854923
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	<0.0050		0.0050	mg/L		15-OCT-17	R3854923
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	<0.0010		0.0010	mg/L		15-OCT-17	R3854923
Sulfate in Water by IC							
Sulfate (SO4)	32.2		0.30	mg/L		15-OCT-17	R3854923
Dissolved Metals in Water + Hg (BC MDG)							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	0.000213		0.000020	mg/L	16-OCT-17	18-OCT-17	R3860032
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050	DLM	0.000050	mg/L	17-OCT-17	17-OCT-17	R3858099
Dissolved Mercury Filtration Location	FIELD					17-OCT-17	R3857652
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Aluminum (Al)-Dissolved	0.649		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Antimony (Sb)-Dissolved	0.00021		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-4 DH-BGC17-05							
Sampled By: CLIENT							
Matrix: WATER							
Dissolved Metals in Water by CRC ICPMS							
Arsenic (As)-Dissolved	0.00155		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Barium (Ba)-Dissolved	0.0246		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Boron (B)-Dissolved	0.049		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cadmium (Cd)-Dissolved	0.0000234		0.0000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Calcium (Ca)-Dissolved	12.5		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Chromium (Cr)-Dissolved	0.00296		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cobalt (Co)-Dissolved	0.00114		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Copper (Cu)-Dissolved	0.00182		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032
Iron (Fe)-Dissolved	4.29		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Lead (Pb)-Dissolved	0.00140		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Lithium (Li)-Dissolved	0.0186		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Magnesium (Mg)-Dissolved	4.23		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Manganese (Mn)-Dissolved	0.200		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Molybdenum (Mo)-Dissolved	0.00111		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Nickel (Ni)-Dissolved	0.00254		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Phosphorus (P)-Dissolved	0.252		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Potassium (K)-Dissolved	1.47		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Selenium (Se)-Dissolved	0.000086		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silicon (Si)-Dissolved	9.59		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Sodium (Na)-Dissolved	17.4		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Strontium (Sr)-Dissolved	0.149		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032
Sulfur (S)-Dissolved	10.2		0.50	mg/L	16-OCT-17	18-OCT-17	R3860032
Thallium (Tl)-Dissolved	0.000015		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Titanium (Ti)-Dissolved	0.00765		0.00030	mg/L	16-OCT-17	18-OCT-17	R3860032
Uranium (U)-Dissolved	0.000410		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Vanadium (V)-Dissolved	0.00416		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Zinc (Zn)-Dissolved	0.0085		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Zirconium (Zr)-Dissolved	0.00098		0.00030	mg/L	16-OCT-17	18-OCT-17	R3860032
Hardness							
Hardness (as CaCO3)	48.6		0.50	mg/L		19-OCT-17	
Total Metals in Water + Hg (BC MDG)							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.000412		0.000020	mg/L		18-OCT-17	R3860032
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L		16-OCT-17	R3856309
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	3.99		0.0030	mg/L		18-OCT-17	R3860032
Antimony (Sb)-Total	0.00027		0.00010	mg/L		18-OCT-17	R3860032
Arsenic (As)-Total	0.00311		0.00010	mg/L		18-OCT-17	R3860032
Barium (Ba)-Total	0.0365		0.000050	mg/L		18-OCT-17	R3860032
Bismuth (Bi)-Total	0.000056		0.000050	mg/L		18-OCT-17	R3860032
Boron (B)-Total	0.055		0.010	mg/L		18-OCT-17	R3860032
Cadmium (Cd)-Total	0.0000267		0.0000050	mg/L		18-OCT-17	R3860032
Calcium (Ca)-Total	12.5		0.050	mg/L		18-OCT-17	R3860032
Chromium (Cr)-Total	0.0106		0.00010	mg/L		18-OCT-17	R3860032
Cobalt (Co)-Total	0.00330		0.00010	mg/L		18-OCT-17	R3860032
Copper (Cu)-Total	0.00574		0.00050	mg/L		18-OCT-17	R3860032
Iron (Fe)-Total	6.58		0.010	mg/L		18-OCT-17	R3860032
Lead (Pb)-Total	0.00267		0.000050	mg/L		18-OCT-17	R3860032

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-4 DH-BGC17-05							
Sampled By: CLIENT							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Lithium (Li)-Total	0.0235		0.0010	mg/L		18-OCT-17	R3860032
Magnesium (Mg)-Total	4.88		0.10	mg/L		18-OCT-17	R3860032
Manganese (Mn)-Total	0.221		0.00010	mg/L		18-OCT-17	R3860032
Molybdenum (Mo)-Total	0.00209		0.000050	mg/L		18-OCT-17	R3860032
Nickel (Ni)-Total	0.00654		0.00050	mg/L		18-OCT-17	R3860032
Phosphorus (P)-Total	0.292		0.050	mg/L		18-OCT-17	R3860032
Potassium (K)-Total	2.56		0.10	mg/L		18-OCT-17	R3860032
Selenium (Se)-Total	0.000120		0.000050	mg/L		18-OCT-17	R3860032
Silicon (Si)-Total	15.2		0.10	mg/L		18-OCT-17	R3860032
Silver (Ag)-Total	0.000029		0.000010	mg/L		18-OCT-17	R3860032
Sodium (Na)-Total	19.3		0.050	mg/L		18-OCT-17	R3860032
Strontium (Sr)-Total	0.155		0.00020	mg/L		18-OCT-17	R3860032
Sulfur (S)-Total	11.7		0.50	mg/L		18-OCT-17	R3860032
Thallium (Tl)-Total	0.000060		0.000010	mg/L		18-OCT-17	R3860032
Tin (Sn)-Total	0.00037		0.00010	mg/L		18-OCT-17	R3860032
Titanium (Ti)-Total	0.0307		0.00030	mg/L		18-OCT-17	R3860032
Uranium (U)-Total	0.000544		0.000010	mg/L		18-OCT-17	R3860032
Vanadium (V)-Total	0.0108		0.00050	mg/L		18-OCT-17	R3860032
Zinc (Zn)-Total	0.0138		0.0030	mg/L		18-OCT-17	R3860032
Zirconium (Zr)-Total	0.00091		0.00030	mg/L		18-OCT-17	R3860032
Miscellaneous Parameters							
Ammonia, Total (as N)	0.107		0.0050	mg/L		16-OCT-17	R3857416
COD	46		20	mg/L		18-OCT-17	R3858998
Dissolved Organic Carbon	2.52	HTP	0.50	mg/L		16-OCT-17	R3857910
Total Dissolved Solids	229		13	mg/L		16-OCT-17	R3858354
Phosphorus (P)-Total	0.278		0.020	mg/L		15-OCT-17	R3854911
Total Suspended Solids	277		3.0	mg/L		16-OCT-17	R3857580
Total Organic Carbon	10.9		0.50	mg/L		14-OCT-17	R3854838
Turbidity	249		0.10	NTU		14-OCT-17	R3854686
L2006353-5 DH-BGC17-999							
Sampled By: CLIENT							
Matrix: WATER							
Alkalinity Species by Titration							
Alkalinity Species by Titration							
Alkalinity, Bicarbonate (as CaCO3)	40.4		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		18-OCT-17	R3859348
Alkalinity, Total (as CaCO3)	40.4		1.0	mg/L		18-OCT-17	R3859348
Anions by Ion Chromatography							
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		15-OCT-17	R3854923
Chloride in Water by IC							
Chloride (Cl)	0.69		0.50	mg/L		15-OCT-17	R3854923
Fluoride in Water by IC							
Fluoride (F)	0.136		0.020	mg/L		15-OCT-17	R3854923
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0921		0.0050	mg/L		15-OCT-17	R3854923
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0048		0.0010	mg/L		15-OCT-17	R3854923
Sulfate in Water by IC							
Sulfate (SO4)	13.6		0.30	mg/L		15-OCT-17	R3854923

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-5 DH-BGC17-999							
Sampled By: CLIENT							
Matrix: WATER							
Dissolved Metals in Water + Hg (BC MDG)							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	0.000312		0.000020	mg/L	16-OCT-17	18-OCT-17	R3860032
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.000050	DLM	0.000050	mg/L	17-OCT-17	17-OCT-17	R3858099
Dissolved Mercury Filtration Location	FIELD					17-OCT-17	R3857652
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					16-OCT-17	R3855480
Aluminum (Al)-Dissolved	0.825		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Antimony (Sb)-Dissolved	0.00026		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Arsenic (As)-Dissolved	0.00226		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Barium (Ba)-Dissolved	0.0230		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Boron (B)-Dissolved	0.015		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cadmium (Cd)-Dissolved	0.0000433		0.0000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Calcium (Ca)-Dissolved	5.56		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Chromium (Cr)-Dissolved	0.00117		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Cobalt (Co)-Dissolved	0.00067		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Copper (Cu)-Dissolved	0.00351		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032
Iron (Fe)-Dissolved	1.00		0.010	mg/L	16-OCT-17	18-OCT-17	R3860032
Lead (Pb)-Dissolved	0.00252		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Lithium (Li)-Dissolved	0.0029		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Magnesium (Mg)-Dissolved	0.73		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Manganese (Mn)-Dissolved	0.0253		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Molybdenum (Mo)-Dissolved	0.00454		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Nickel (Ni)-Dissolved	0.00133		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Phosphorus (P)-Dissolved	0.157		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Potassium (K)-Dissolved	0.73		0.10	mg/L	16-OCT-17	18-OCT-17	R3860032
Selenium (Se)-Dissolved	0.000276		0.000050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silicon (Si)-Dissolved	9.40		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Sodium (Na)-Dissolved	23.9		0.050	mg/L	16-OCT-17	18-OCT-17	R3860032
Strontium (Sr)-Dissolved	0.0411		0.00020	mg/L	16-OCT-17	18-OCT-17	R3860032
Sulfur (S)-Dissolved	6.05		0.50	mg/L	16-OCT-17	18-OCT-17	R3860032
Thallium (Tl)-Dissolved	0.000021		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Tin (Sn)-Dissolved	0.00011		0.00010	mg/L	16-OCT-17	18-OCT-17	R3860032
Titanium (Ti)-Dissolved	<0.0084	DLM	0.0084	mg/L	16-OCT-17	18-OCT-17	R3860032
Uranium (U)-Dissolved	0.00152		0.000010	mg/L	16-OCT-17	18-OCT-17	R3860032
Vanadium (V)-Dissolved	0.00421		0.00050	mg/L	16-OCT-17	18-OCT-17	R3860032
Zinc (Zn)-Dissolved	0.0038		0.0010	mg/L	16-OCT-17	18-OCT-17	R3860032
Zirconium (Zr)-Dissolved	0.00141		0.00030	mg/L	16-OCT-17	18-OCT-17	R3860032
Hardness							
Hardness (as CaCO3)	16.9		0.50	mg/L		19-OCT-17	
Total Metals in Water + Hg (BC MDG)							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.000426		0.000020	mg/L		18-OCT-17	R3860032
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L		16-OCT-17	R3856309
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	5.31		0.0030	mg/L		18-OCT-17	R3860032
Antimony (Sb)-Total	0.00033		0.00010	mg/L		18-OCT-17	R3860032
Arsenic (As)-Total	0.00312		0.00010	mg/L		18-OCT-17	R3860032

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2006353-5 DH-BGC17-999							
Sampled By: CLIENT							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Barium (Ba)-Total	0.0488		0.000050	mg/L		18-OCT-17	R3860032
Bismuth (Bi)-Total	0.000104		0.000050	mg/L		18-OCT-17	R3860032
Boron (B)-Total	0.020		0.010	mg/L		18-OCT-17	R3860032
Cadmium (Cd)-Total	0.0000496		0.0000050	mg/L		18-OCT-17	R3860032
Calcium (Ca)-Total	5.89		0.050	mg/L		18-OCT-17	R3860032
Chromium (Cr)-Total	0.00454		0.00010	mg/L		18-OCT-17	R3860032
Cobalt (Co)-Total	0.00117		0.00010	mg/L		18-OCT-17	R3860032
Copper (Cu)-Total	0.00482		0.00050	mg/L		18-OCT-17	R3860032
Iron (Fe)-Total	3.61		0.010	mg/L		18-OCT-17	R3860032
Lead (Pb)-Total	0.00401		0.000050	mg/L		18-OCT-17	R3860032
Lithium (Li)-Total	0.0043		0.0010	mg/L		18-OCT-17	R3860032
Magnesium (Mg)-Total	1.22		0.10	mg/L		18-OCT-17	R3860032
Manganese (Mn)-Total	0.0343		0.00010	mg/L		18-OCT-17	R3860032
Molybdenum (Mo)-Total	0.00659		0.000050	mg/L		18-OCT-17	R3860032
Nickel (Ni)-Total	0.00289		0.00050	mg/L		18-OCT-17	R3860032
Phosphorus (P)-Total	0.202		0.050	mg/L		18-OCT-17	R3860032
Potassium (K)-Total	1.58		0.10	mg/L		18-OCT-17	R3860032
Selenium (Se)-Total	0.000335		0.000050	mg/L		18-OCT-17	R3860032
Silicon (Si)-Total	17.7		0.10	mg/L		18-OCT-17	R3860032
Silver (Ag)-Total	0.000124		0.000010	mg/L		18-OCT-17	R3860032
Sodium (Na)-Total	24.8		0.050	mg/L		18-OCT-17	R3860032
Strontium (Sr)-Total	0.0554		0.00020	mg/L		18-OCT-17	R3860032
Sulfur (S)-Total	6.31		0.50	mg/L		18-OCT-17	R3860032
Thallium (Tl)-Total	0.000056		0.000010	mg/L		18-OCT-17	R3860032
Tin (Sn)-Total	0.00071		0.00010	mg/L		18-OCT-17	R3860032
Titanium (Ti)-Total	0.0386		0.00030	mg/L		18-OCT-17	R3860032
Uranium (U)-Total	0.00179		0.000010	mg/L		18-OCT-17	R3860032
Vanadium (V)-Total	0.00833		0.00050	mg/L		18-OCT-17	R3860032
Zinc (Zn)-Total	0.0089		0.0030	mg/L		18-OCT-17	R3860032
Zirconium (Zr)-Total	0.00145		0.00030	mg/L		18-OCT-17	R3860032
Miscellaneous Parameters							
Ammonia, Total (as N)	0.0132		0.0050	mg/L		16-OCT-17	R3857416
COD	30		20	mg/L		18-OCT-17	R3858998
Dissolved Organic Carbon	3.45	HTP	0.50	mg/L		18-OCT-17	R3859231
Total Dissolved Solids	277		13	mg/L		18-OCT-17	R3860263
Phosphorus (P)-Total	0.150		0.020	mg/L		15-OCT-17	R3854911
Total Suspended Solids	405		3.0	mg/L		16-OCT-17	R3857580
Total Organic Carbon	2.40		0.50	mg/L		14-OCT-17	R3854838
Turbidity	437		0.10	NTU		14-OCT-17	R3854686

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTP	Sample preparation or preservation hold time was exceeded.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
COD-COL-VA	Water	Chemical Oxygen Demand by Colorimetric	APHA 5220 D. CHEMICAL OXYGEN DEMAND
This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.			
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
F-IC-N-VA	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-VA	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-VA	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.			
SO4-IC-N-VA	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

15-605124

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2006353-COFC

COC Number: 15 - 605124

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	NexGen Energy Ltd.
Contact:	Grant Greenwood
Phone:	306-717-4543
Company address below will appear on the final report	
Street:	212-4014 Arthur Rose Ave.
City/Province:	Saskatoon SK
Postal Code:	S7P 0C9
Invoice To	Same as Report To: YES NO
	Copy of Invoice with Report: YES NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: PDF EXCEL EDD (DIGITAL)

Quality Control (QC) Report with Report: YES NO

Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: EMAIL MAIL FAX

Email 1 or Fax: ggreenwood@nxe-energy.ca

Email 2: mbatty@nxe-energy.ca

Email 3: ktyne@nxe-energy.ca

Invoice Distribution

Select Invoice Distribution: EMAIL MAIL FAX

Email 1 or Fax:

Email 2:

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R]: Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4]; 3 day [P3]; 2 day [P2]

EMERGENCY: 1 Business day [E1]; Same Day, Weekend or Statutory holiday [E0]

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General + TSS - routine	Total Metals (P)	Dissolved Metals (F/P)	Total Mercury (P)	Dissolved Mercury (F/P)	NH3T/Doc/DKN/TDN/TDP (P)	NH3T/Toc/COD/TKN/TNC (P)	Number of Containers
	DH-BGC17-01				X	X	X	X	X			5
	DH-BGC17-02				X	X	X	X	X			5
	DH-BGC17-03				X	X	X	X	X	X	X	7
	DH-BGC17-05				X	X	X	X	X	X	X	7
	DH-BGC17-999				X	X	X	X	X	X	X	7

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human drinking water use? YES NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen; SIF Observations: Yes No

Ice Packs; Ice Cubes; Custody seal intact: Yes No

Cooling Initiated

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
5					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: Oct 12 2017	Time:	Received by:	Date: 12-Oct	Time: 3:45	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

CASH Clients (Saskatoon)
ATTN: GRANT GREENWOOD
NEXGEN - SNOWBIRD
212 - 4014 ARTHUR ROSE AVENUE
SASKATOON SK S7P 0C9

Date Received: 19-OCT-17
Report Date: 31-OCT-17 15:10 (MT)
Version: FINAL

Client Phone: 306-717-4543

Certificate of Analysis

Lab Work Order #: L2010344

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 15-540986
Legal Site Desc:

Jori Johanson, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2010344-1 DH-BGC17-01							
Sampled By: CLIENT on 18-OCT-17 @ 11:20							
Matrix: GW							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.0051		0.0050	mg/L		23-OCT-17	R3863085
COD	61		20	mg/L		25-OCT-17	R3866589
Dissolved Organic Carbon	15.0		0.50	mg/L		24-OCT-17	R3865478
Phosphorus (P)-Total	0.130		0.020	mg/L		23-OCT-17	R3863072
Total Organic Carbon	15.0		0.50	mg/L		22-OCT-17	R3863497
L2010344-2 DH-BGC17-02							
Sampled By: CLIENT on 17-OCT-17 @ 17:00							
Matrix: GW							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.0058		0.0050	mg/L		23-OCT-17	R3863085
COD	128		20	mg/L		25-OCT-17	R3866589
Dissolved Organic Carbon	0.96		0.50	mg/L		24-OCT-17	R3865478
Phosphorus (P)-Total	0.052		0.020	mg/L		23-OCT-17	R3863072
Total Organic Carbon	1.60		0.50	mg/L		22-OCT-17	R3863497
L2010344-3 DH-BGC17-04							
Sampled By: CLIENT on 17-OCT-17 @ 13:30							
Matrix: GW							
Alkalinity Species by Titration							
Alkalinity Species by Titration							
Alkalinity, Bicarbonate (as CaCO3)	52.7		1.0	mg/L		25-OCT-17	R3865955
Alkalinity, Carbonate (as CaCO3)	<1.0		1.0	mg/L		25-OCT-17	R3865955
Alkalinity, Hydroxide (as CaCO3)	<1.0		1.0	mg/L		25-OCT-17	R3865955
Alkalinity, Total (as CaCO3)	52.7		1.0	mg/L		25-OCT-17	R3865955
Anions by Ion Chromatography							
Bromide in Water by IC (Low Level)							
Bromide (Br)	<0.050		0.050	mg/L		23-OCT-17	R3863123
Chloride in Water by IC							
Chloride (Cl)	1.40		0.50	mg/L		23-OCT-17	R3863123
Fluoride in Water by IC							
Fluoride (F)	0.119		0.020	mg/L		23-OCT-17	R3863123
Nitrate in Water by IC (Low Level)							
Nitrate (as N)	0.0442		0.0050	mg/L		23-OCT-17	R3863123
Nitrite in Water by IC (Low Level)							
Nitrite (as N)	0.0013		0.0010	mg/L		23-OCT-17	R3863123
Sulfate in Water by IC							
Sulfate (SO4)	15.0		0.30	mg/L		23-OCT-17	R3863123
Dissolved Metals in Water + Hg (BC MDG)							
Diss. Be (low) in Water by CRC ICPMS							
Beryllium (Be)-Dissolved	0.000209		0.000020	mg/L	27-OCT-17	27-OCT-17	R3868070
Dissolved Metals Filtration Location	FIELD					27-OCT-17	R3867708
Diss. Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	24-OCT-17	25-OCT-17	R3866322
Dissolved Mercury Filtration Location	FIELD					24-OCT-17	R3865158
Dissolved Metals in Water by CRC ICPMS							
Dissolved Metals Filtration Location	FIELD					27-OCT-17	R3867708
Dissolved Metals Filtration Location	FIELD					27-OCT-17	R3868303
Aluminum (Al)-Dissolved	2.23		0.0010	mg/L	27-OCT-17	27-OCT-17	R3868070
Antimony (Sb)-Dissolved	0.00203		0.00010	mg/L	27-OCT-17	27-OCT-17	R3868070
Arsenic (As)-Dissolved	0.00230		0.00010	mg/L	27-OCT-17	27-OCT-17	R3868070
Barium (Ba)-Dissolved	0.0696		0.000050	mg/L	27-OCT-17	27-OCT-17	R3868070

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2010344-3 DH-BGC17-04							
Sampled By: CLIENT on 17-OCT-17 @ 13:30							
Matrix: GW							
Dissolved Metals in Water by CRC ICPMS							
Bismuth (Bi)-Dissolved	<0.000050		0.000050	mg/L	27-OCT-17	27-OCT-17	R3868070
Boron (B)-Dissolved	0.015		0.010	mg/L	27-OCT-17	27-OCT-17	R3868070
Cadmium (Cd)-Dissolved	0.000227		0.0000050	mg/L	27-OCT-17	27-OCT-17	R3868070
Calcium (Ca)-Dissolved	15.5		0.050	mg/L	27-OCT-17	27-OCT-17	R3868070
Chromium (Cr)-Dissolved	0.00783		0.00010	mg/L	27-OCT-17	27-OCT-17	R3868070
Cobalt (Co)-Dissolved	0.00143		0.00010	mg/L	27-OCT-17	27-OCT-17	R3868070
Copper (Cu)-Dissolved	0.0726		0.00020	mg/L	27-OCT-17	27-OCT-17	R3868070
Iron (Fe)-Dissolved	2.76		0.010	mg/L	27-OCT-17	27-OCT-17	R3868070
Lead (Pb)-Dissolved	0.00974		0.000050	mg/L	27-OCT-17	27-OCT-17	R3868070
Lithium (Li)-Dissolved	0.0045		0.0010	mg/L	27-OCT-17	27-OCT-17	R3868070
Magnesium (Mg)-Dissolved	2.15		0.10	mg/L	27-OCT-17	27-OCT-17	R3868070
Manganese (Mn)-Dissolved	0.0811		0.00010	mg/L	27-OCT-17	27-OCT-17	R3868070
Molybdenum (Mo)-Dissolved	0.00222		0.000050	mg/L	27-OCT-17	27-OCT-17	R3868070
Nickel (Ni)-Dissolved	0.00538		0.00050	mg/L	27-OCT-17	27-OCT-17	R3868070
Phosphorus (P)-Dissolved	0.154		0.050	mg/L	27-OCT-17	27-OCT-17	R3868070
Potassium (K)-Dissolved	2.86		0.10	mg/L	27-OCT-17	27-OCT-17	R3868070
Selenium (Se)-Dissolved	0.000258		0.000050	mg/L	27-OCT-17	31-OCT-17	R3870885
Silicon (Si)-Dissolved	15.5		0.050	mg/L	27-OCT-17	27-OCT-17	R3868070
Silver (Ag)-Dissolved	0.000036		0.000010	mg/L	27-OCT-17	31-OCT-17	R3870885
Sodium (Na)-Dissolved	11.2		0.050	mg/L	27-OCT-17	27-OCT-17	R3868070
Strontium (Sr)-Dissolved	0.0606		0.00020	mg/L	27-OCT-17	27-OCT-17	R3868070
Sulfur (S)-Dissolved	5.08		0.50	mg/L	27-OCT-17	27-OCT-17	R3868070
Thallium (Tl)-Dissolved	0.000029		0.000010	mg/L	27-OCT-17	31-OCT-17	R3870885
Tin (Sn)-Dissolved	0.00247		0.00010	mg/L	27-OCT-17	27-OCT-17	R3868070
Titanium (Ti)-Dissolved	0.0741		0.00030	mg/L	27-OCT-17	27-OCT-17	R3868070
Uranium (U)-Dissolved	0.00124		0.000010	mg/L	27-OCT-17	27-OCT-17	R3868070
Vanadium (V)-Dissolved	0.0152		0.00050	mg/L	27-OCT-17	27-OCT-17	R3868070
Zinc (Zn)-Dissolved	0.0770		0.0010	mg/L	27-OCT-17	27-OCT-17	R3868070
Zirconium (Zr)-Dissolved	0.00665	DTMF	0.00030	mg/L	27-OCT-17	27-OCT-17	R3868070
Hardness							
Hardness (as CaCO3)	47.4		0.50	mg/L		31-OCT-17	
Total Metals in Water + Hg (BC MDG)							
Total Be (Low) in Water by CRC ICPMS							
Beryllium (Be)-Total	0.000241		0.000020	mg/L		29-OCT-17	R3869703
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	0.000039		0.000025	mg/L		23-OCT-17	R3863604
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	4.05		0.0030	mg/L		29-OCT-17	R3869703
Antimony (Sb)-Total	0.00225		0.00010	mg/L		29-OCT-17	R3869703
Arsenic (As)-Total	0.00261		0.00010	mg/L		29-OCT-17	R3869703
Barium (Ba)-Total	0.0848		0.000050	mg/L		29-OCT-17	R3869703
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		29-OCT-17	R3869703
Boron (B)-Total	0.012		0.010	mg/L		29-OCT-17	R3869703
Cadmium (Cd)-Total	0.000220		0.0000050	mg/L		29-OCT-17	R3869703
Calcium (Ca)-Total	15.3		0.050	mg/L		29-OCT-17	R3869703
Chromium (Cr)-Total	0.0141		0.00010	mg/L		29-OCT-17	R3869703
Cobalt (Co)-Total	0.00218		0.00010	mg/L		29-OCT-17	R3869703
Copper (Cu)-Total	0.0731		0.00050	mg/L		29-OCT-17	R3869703
Iron (Fe)-Total	4.92		0.010	mg/L		29-OCT-17	R3869703
Lead (Pb)-Total	0.0117		0.000050	mg/L		29-OCT-17	R3869703
Lithium (Li)-Total	0.0049		0.0010	mg/L		29-OCT-17	R3869703
Magnesium (Mg)-Total	2.53		0.10	mg/L		29-OCT-17	R3869703

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2010344-3 DH-BGC17-04							
Sampled By: CLIENT on 17-OCT-17 @ 13:30							
Matrix: GW							
Total Metals in Water by CRC ICPMS							
Manganese (Mn)-Total	0.0872		0.00010	mg/L		29-OCT-17	R3869703
Molybdenum (Mo)-Total	0.00394		0.000050	mg/L		29-OCT-17	R3869703
Nickel (Ni)-Total	0.00682		0.00050	mg/L		29-OCT-17	R3869703
Phosphorus (P)-Total	0.207		0.050	mg/L		29-OCT-17	R3869703
Potassium (K)-Total	3.12		0.10	mg/L		29-OCT-17	R3869703
Selenium (Se)-Total	0.000607		0.000050	mg/L		29-OCT-17	R3869703
Silicon (Si)-Total	15.8		0.10	mg/L		29-OCT-17	R3869703
Silver (Ag)-Total	0.000095		0.000010	mg/L		29-OCT-17	R3869703
Sodium (Na)-Total	11.9		0.050	mg/L		29-OCT-17	R3869703
Strontium (Sr)-Total	0.0607		0.00020	mg/L		29-OCT-17	R3869703
Sulfur (S)-Total	5.30		0.50	mg/L		29-OCT-17	R3869703
Thallium (Tl)-Total	0.000050		0.000010	mg/L		29-OCT-17	R3869703
Tin (Sn)-Total	0.00436		0.00010	mg/L		29-OCT-17	R3869703
Titanium (Ti)-Total	0.0656		0.00030	mg/L		29-OCT-17	R3869703
Uranium (U)-Total	0.00124		0.000010	mg/L		29-OCT-17	R3869703
Vanadium (V)-Total	0.0211		0.00050	mg/L		29-OCT-17	R3869703
Zinc (Zn)-Total	0.0699		0.0030	mg/L		29-OCT-17	R3869703
Zirconium (Zr)-Total	0.00355		0.00030	mg/L		29-OCT-17	R3869703
Miscellaneous Parameters							
Ammonia, Total (as N)	0.0214		0.0050	mg/L		23-OCT-17	R3863085
COD	72		20	mg/L		25-OCT-17	R3866589
Dissolved Organic Carbon	15.1		0.50	mg/L		24-OCT-17	R3865478
Total Dissolved Solids	145		13	mg/L		24-OCT-17	R3866967
Phosphorus (P)-Total	0.184		0.020	mg/L		23-OCT-17	R3863072
Total Suspended Solids	275		3.0	mg/L		24-OCT-17	R3866277
Total Organic Carbon	17.3		0.50	mg/L		22-OCT-17	R3863497
Turbidity	242		0.10	NTU		22-OCT-17	R3862761

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants were likely introduced to dissolved sample during field filtration.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.

CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

COD-COL-VA	Water	Chemical Oxygen Demand by Colorimetric	APHA 5220 D. CHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

F-IC-N-VA	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO2-L-IC-N-VA	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-L-IC-N-VA	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.			
SO4-IC-N-VA	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

15-540986

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2010344-COFC

COC Number: 15 - 540986

Page of

Report To	Contact and company name below will appear on the final report
Company:	NexGen - Snowbird
Contact:	Grant Greenwood
Phone:	306-717-4543
	Company address below will appear on the final report
Street:	212-4014 Arthur Rose Avenue
City/Province:	Saskatoon, SK
Postal Code:	S7P 0C9
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☐ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ggreenwood@nxe-energy.ca

Email 2: mbatty@nxe-energy.ca

Email 3: Ktyne@nxe-energy.ca

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Project Information

ALS Account # / Quote #:

Job #:

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#:

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only):

ALS Contact: Sampler:

.m all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4] ☐ 3 day [P3] ☐ 2 day [P2] ☐

EMERGENCY: 1 Business day [E1] ☐ Same Day, Weekend or Statutory holiday [E0] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	General + TSS-routine (P)	Total Metals (P)	Dissolved Metals (P)	Total Mercury (F/P)	Dissolved Mercury (P)	Nut/DOC/DKN/TDN/TDP (P)	Nut/TOC/COD/TKN/TNeth (P)	Number of Containers
	DH-BGC17-01	18-Oct-17	11:20	GW						X	X	
	DH-BGC17-02	17-Oct-17	17:00	GW						X	X	
	DH-BGC17-04	17-Oct-17	13:30	GW	X	X	X	X	X	X	X	

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			2.0		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: 19 Oct 17	Time:	Received by:	Date: 19 Oct 17	Time: 4:50PM	Received by: ADM	Date: Oct 20/17	Time: 8:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

SASKATCHEWAN RESEARCH COUNCIL

Environmental Analytical Laboratories
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Toll-free: 1-800-240-8808
E: analytical@src.sk.ca

www.src.sk.ca/analytical

Revised

SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting
2200-1066 West Hastings
Vancouver, BC V6E 3X2
Attn: Michael Royle

Date Samples Received: May-23-2019 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

2200-1066 West Hastings
Vancouver, BC V6E 3X2
Attn: Michael Royle

Sample #: **2019026396**
Date Sampled: **May 20, 2019**
Sample Matrix: **WATER**
Description: **05/20/2019 2018_SONIC002A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	10	1
Bicarbonate	mg/L	30	1
Carbonate	mg/L	<1	1
Chloride	mg/L	12	1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.10	0.07
Specific conductivity	uS/cm	57	1
Sum of ions	mg/L	61	1
Total alkalinity	mg/L	25	1
Total hardness	mg/L	21	1
Nitrate	mg/L	0.13	0.04
Fluoride	mg/L	0.04	0.01
Total dissolved solids	mg/L	78	5
Total suspended solids	mg/L	337	6
Lab Section 2			
Calcium	mg/L	6.0	0.1
Magnesium	mg/L	1.4	0.1
Potassium	mg/L	2.2	0.1
Sodium	mg/L	4.5	0.1
Sulfate	mg/L	4.9	0.2
Aluminum, dissolved	mg/L	0.18	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.4	0.1
Barium, dissolved	mg/L	0.022	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0030	0.0001
Copper, dissolved	mg/L	0.0014	0.0002

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Date Sampled: **May 20, 2019**
Sample Matrix: **WATER**
Description: **05/20/2019 2018_SONIC002A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Iron, dissolved	mg/L	0.12	0.0005
Lead, dissolved	mg/L	0.0002	0.0001
Manganese, dissolved	mg/L	0.25	0.0005
Molybdenum, dissolved	mg/L	0.0010	0.0001
Nickel, dissolved	mg/L	0.0025	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.035	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.018	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	0.0004	0.0001
Zinc, dissolved	mg/L	0.0071	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.08	0.08
Polonium-210, dissolved	Bq/L	<0.02	0.02
Radium-226, dissolved	Bq/L	0.03	0.02
Thorium-230, dissolved	Bq/L	<0.04	0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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Sample #: **2019026397**
Date Sampled: **May 19, 2019**
Sample Matrix: **WATER**
Description: **05/19/2019 2018_SONIC002B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	13	1
Bicarbonate	mg/L	60	1
Carbonate	mg/L	<1	1
Chloride	mg/L	0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.45	0.07
Specific conductivity	uS/cm	96	1
Sum of ions	mg/L	83	1
Total alkalinity	mg/L	49	1
Total hardness	mg/L	44	1
Nitrate	mg/L	0.21	0.04
Fluoride	mg/L	0.06	0.01
Total dissolved solids	mg/L	68	5
Total suspended solids	mg/L	472	8
Lab Section 2			
Calcium	mg/L	15	0.1
Magnesium	mg/L	1.6	0.1
Potassium	mg/L	0.9	0.1
Sodium	mg/L	2.8	0.1
Sulfate	mg/L	2.7	0.2
Aluminum, dissolved	mg/L	0.086	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.4	0.1
Barium, dissolved	mg/L	0.020	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0004	0.0001
Copper, dissolved	mg/L	0.0003	0.0002
Iron, dissolved	mg/L	0.022	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.045	0.0005
Molybdenum, dissolved	mg/L	0.0017	0.0001

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Sample Matrix: **WATER**
Description: **05/19/2019 2018_SONIC002B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0016	0.0001
Selenium, dissolved	mg/L	0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.038	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0027	0.0002
Uranium, dissolved	ug/L	0.5	0.1
Vanadium, dissolved	mg/L	0.0006	0.0001
Zinc, dissolved	mg/L	0.0025	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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Sample #: **2019026398**
Date Sampled: **May 19, 2019**
Sample Matrix: **WATER**
Description: **05/19/2019 2018_SONIC004A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	4	1
Bicarbonate	mg/L	34	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.38	0.07
Specific conductivity	uS/cm	52	1
Sum of ions	mg/L	50	1
Total alkalinity	mg/L	28	1
Total hardness	mg/L	28	1
Nitrate	mg/L	0.09	0.04
Fluoride	mg/L	0.05	0.01
Total dissolved solids	mg/L	48	5
Total suspended solids	mg/L	319	2
Lab Section 2			
Calcium	mg/L	9.1	0.1
Magnesium	mg/L	1.2	0.1
Potassium	mg/L	0.8	0.1
Sodium	mg/L	1.9	0.1
Sulfate	mg/L	2.8	0.2
Aluminum, dissolved	mg/L	0.0047	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.6	0.1
Barium, dissolved	mg/L	0.011	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0001	0.0001
Copper, dissolved	mg/L	0.0020	0.0002
Iron, dissolved	mg/L	0.052	0.0005
Lead, dissolved	mg/L	0.0001	0.0001
Manganese, dissolved	mg/L	0.033	0.0005
Molybdenum, dissolved	mg/L	0.0023	0.0001

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Date Sampled: **May 19, 2019**
Sample Matrix: **WATER**
Description: **05/19/2019 2018_SONIC004A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0004	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.028	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	<0.0002	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	0.0004	0.0001
Zinc, dissolved	mg/L	0.0069	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	0.007	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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Jul 25, 2019

SRK Consulting

Sample #: **2019026399**
Date Sampled: **May 19, 2019**
Sample Matrix: **WATER**
Description: **05/19/2019 2018_SONIC004B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	2	1
Bicarbonate	mg/L	88	1
Carbonate	mg/L	<1	1
Chloride	mg/L	14	1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.96	0.07
Specific conductivity	uS/cm	146	1
Sum of ions	mg/L	145	1
Total alkalinity	mg/L	72	1
Total hardness	mg/L	31	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.38	0.01
Total dissolved solids	mg/L	102	5
Total suspended solids	mg/L	1300	20
Lab Section 2			
Calcium	mg/L	9.5	0.1
Magnesium	mg/L	1.8	0.1
Potassium	mg/L	1.7	0.1
Sodium	mg/L	23	0.1
Sulfate	mg/L	7.4	0.2
Aluminum, dissolved	mg/L	0.14	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	1.2	0.1
Barium, dissolved	mg/L	0.021	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.03	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0003	0.0001
Copper, dissolved	mg/L	0.0011	0.0002
Iron, dissolved	mg/L	0.66	0.0005
Lead, dissolved	mg/L	0.0002	0.0001
Manganese, dissolved	mg/L	0.14	0.0005
Molybdenum, dissolved	mg/L	0.010	0.0001

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Date Sampled: **May 19, 2019**
Sample Matrix: **WATER**
Description: **05/19/2019 2018_SONIC004B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0005	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.049	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0057	0.0002
Uranium, dissolved	ug/L	0.2	0.1
Vanadium, dissolved	mg/L	0.0004	0.0001
Zinc, dissolved	mg/L	0.019	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.04	0.04
Polonium-210, dissolved	Bq/L	<0.01	0.01
Radium-226, dissolved	Bq/L	<0.01	0.01
Thorium-230, dissolved	Bq/L	<0.02	0.02

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The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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Jul 25, 2019

SRK Consulting

Sample #: **2019026400**
Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 2018_SONIC006A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	2	1
Bicarbonate	mg/L	37	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.81	0.07
Specific conductivity	uS/cm	54	1
Sum of ions	mg/L	48	1
Total alkalinity	mg/L	30	1
Total hardness	mg/L	10	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.17	0.01
Total dissolved solids	mg/L	37	5
Total suspended solids	mg/L	399	8
Lab Section 2			
Calcium	mg/L	3.4	0.1
Magnesium	mg/L	0.5	0.1
Potassium	mg/L	0.7	0.1
Sodium	mg/L	5.0	0.1
Sulfate	mg/L	1.6	0.2
Aluminum, dissolved	mg/L	0.011	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.9	0.1
Barium, dissolved	mg/L	0.0058	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	0.0005	0.0002
Iron, dissolved	mg/L	0.0094	0.0005
Lead, dissolved	mg/L	0.0001	0.0001
Manganese, dissolved	mg/L	0.024	0.0005
Molybdenum, dissolved	mg/L	0.010	0.0001

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Sample #: **2019026400**
Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 2018_SONIC006A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0002	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.026	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	<0.0002	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	0.0004	0.0001
Zinc, dissolved	mg/L	0.0032	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	0.01	0.005
Radium-226, dissolved	Bq/L	0.007	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

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Jul 25, 2019

SRK Consulting

Sample #: **2019026401**
Date Sampled: **May 21, 2019**
Sample Matrix: **WATER**
Description: **05/21/2019 2018_SONIC006B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	1	1
Bicarbonate	mg/L	63	1
Carbonate	mg/L	<1	1
Chloride	mg/L	0.3	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.95	0.07
Specific conductivity	uS/cm	91	1
Sum of ions	mg/L	94	1
Total alkalinity	mg/L	52	1
Total hardness	mg/L	19	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.16	0.01
Total dissolved solids	mg/L	1250	5
Total suspended solids	mg/L	4320	30
Lab Section 2			
Calcium	mg/L	4.2	0.1
Magnesium	mg/L	2.1	0.1
Potassium	mg/L	3.8	0.1
Sodium	mg/L	18	0.1
Sulfate	mg/L	2.4	0.2
Aluminum, dissolved	mg/L	0.033	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	1.7	0.1
Barium, dissolved	mg/L	0.0044	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.01	0.01
Cadmium, dissolved	mg/L	0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0004	0.0001
Copper, dissolved	mg/L	0.0029	0.0002
Iron, dissolved	mg/L	0.035	0.0005
Lead, dissolved	mg/L	0.0003	0.0001
Manganese, dissolved	mg/L	0.019	0.0005
Molybdenum, dissolved	mg/L	0.013	0.0001

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Revised

SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026401**
Date Sampled: **May 21, 2019**
Sample Matrix: **WATER**
Description: **05/21/2019 2018_SONIC006B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0006	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.025	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0015	0.0002
Uranium, dissolved	ug/L	1.4	0.1
Vanadium, dissolved	mg/L	0.0012	0.0001
Zinc, dissolved	mg/L	0.018	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	0.04	0.005
Radium-226, dissolved	Bq/L	0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026402**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC007A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	4	1
Bicarbonate	mg/L	43	1
Carbonate	mg/L	<1	1
Chloride	mg/L	0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.61	0.07
Specific conductivity	uS/cm	53	1
Sum of ions	mg/L	54	1
Total alkalinity	mg/L	35	1
Total hardness	mg/L	20	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.06	0.01
Total dissolved solids	mg/L	47	5
Total suspended solids	mg/L	428	6
Lab Section 2			
Calcium	mg/L	6.3	0.1
Magnesium	mg/L	1.1	0.1
Potassium	mg/L	0.6	0.1
Sodium	mg/L	2.4	0.1
Sulfate	mg/L	0.8	0.2
Aluminum, dissolved	mg/L	0.016	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	2.2	0.1
Barium, dissolved	mg/L	0.014	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0007	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.72	0.0005
Lead, dissolved	mg/L	0.0001	0.0001
Manganese, dissolved	mg/L	0.42	0.0005
Molybdenum, dissolved	mg/L	0.0018	0.0001

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026402**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC007A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0005	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.026	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0003	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0022	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026403**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC007B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	4	1
Bicarbonate	mg/L	39	1
Carbonate	mg/L	<1	1
Chloride	mg/L	0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.69	0.07
Specific conductivity	uS/cm	44	1
Sum of ions	mg/L	53	1
Total alkalinity	mg/L	32	1
Total hardness	mg/L	22	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.08	0.01
Total dissolved solids	mg/L	134	5
Total suspended solids	mg/L	123	5
Lab Section 2			
Calcium	mg/L	6.2	0.1
Magnesium	mg/L	1.5	0.1
Potassium	mg/L	0.9	0.1
Sodium	mg/L	4.8	0.1
Sulfate	mg/L	0.3	0.2
Aluminum, dissolved	mg/L	0.017	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.3	0.1
Barium, dissolved	mg/L	0.014	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.41	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.12	0.0005
Molybdenum, dissolved	mg/L	0.0025	0.0001

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Jul 25, 2019

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Sample #: **2019026403**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC007B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	<0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.037	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0005	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0010	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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Jul 25, 2019

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Sample #: **2019026404**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC008A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	5	1
Bicarbonate	mg/L	15	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<1	1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.02	0.07
Specific conductivity	uS/cm	15	1
Sum of ions	mg/L	21	1
Total alkalinity	mg/L	12	1
Total hardness	mg/L	10	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.01	0.01
Total dissolved solids	mg/L	2060	5
Total suspended solids	mg/L	5700	40
Lab Section 2			
Calcium	mg/L	3.0	0.1
Magnesium	mg/L	0.5	0.1
Potassium	mg/L	0.8	0.1
Sodium	mg/L	1.0	0.1
Sulfate	mg/L	1.0	0.2
Aluminum, dissolved	mg/L	0.020	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	<0.1	0.1
Barium, dissolved	mg/L	0.0048	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0011	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.81	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.24	0.0005
Molybdenum, dissolved	mg/L	0.0022	0.0001

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026404**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC008A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0011	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.019	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0005	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0020	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Revised result for Chloride. 07/19/2019 KG

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026405**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC008B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	2	1
Bicarbonate	mg/L	34	1
Carbonate	mg/L	<1	1
Chloride	mg/L	0.7	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.64	0.07
Specific conductivity	uS/cm	62	1
Sum of ions	mg/L	46	1
Total alkalinity	mg/L	28	1
Total hardness	mg/L	14	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.15	0.01
Total dissolved solids	mg/L	100	5
Total suspended solids	mg/L	33	1
Lab Section 2			
Calcium	mg/L	4.1	0.1
Magnesium	mg/L	0.8	0.1
Potassium	mg/L	0.7	0.1
Sodium	mg/L	5.5	0.1
Sulfate	mg/L	0.3	0.2
Aluminum, dissolved	mg/L	0.022	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.2	0.1
Barium, dissolved	mg/L	0.0064	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.02	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0001	0.0001
Copper, dissolved	mg/L	0.0003	0.0002
Iron, dissolved	mg/L	0.22	0.0005
Lead, dissolved	mg/L	0.0001	0.0001
Manganese, dissolved	mg/L	0.090	0.0005
Molybdenum, dissolved	mg/L	0.0085	0.0001

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Jul 25, 2019

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Sample #: **2019026405**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC008B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	<0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.026	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0039	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0026	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026406**
Date Sampled: **May 16, 2019**
Sample Matrix: **WATER**
Description: **05/16/2019 2018_SONIC009A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	4	1
Bicarbonate	mg/L	43	1
Carbonate	mg/L	<1	1
Chloride	mg/L	12	1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.36	0.07
Specific conductivity	uS/cm	84	1
Sum of ions	mg/L	74	1
Total alkalinity	mg/L	35	1
Total hardness	mg/L	26	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.04	0.01
Total dissolved solids	mg/L	226	5
Total suspended solids	mg/L	272	8
Lab Section 2			
Calcium	mg/L	8.6	0.1
Magnesium	mg/L	1.2	0.1
Potassium	mg/L	0.9	0.1
Sodium	mg/L	4.3	0.1
Sulfate	mg/L	4.0	0.2
Aluminum, dissolved	mg/L	0.0091	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.5	0.1
Barium, dissolved	mg/L	0.016	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0021	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.59	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.29	0.0005
Molybdenum, dissolved	mg/L	0.0044	0.0001

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SRC Group # 2019-6337

Jul 25, 2019

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Sample #: **2019026406**
Date Sampled: **May 16, 2019**
Sample Matrix: **WATER**
Description: **05/16/2019 2018_SONIC009A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0010	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.036	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0002	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	0.0002	0.0001
Zinc, dissolved	mg/L	0.0016	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	0.01	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026407**
Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 2018_SONIC009B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	4	1
Bicarbonate	mg/L	60	1
Carbonate	mg/L	<1	1
Chloride	mg/L	10	1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.63	0.07
Specific conductivity	uS/cm	109	1
Sum of ions	mg/L	96	1
Total alkalinity	mg/L	49	1
Total hardness	mg/L	44	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.07	0.01
Total dissolved solids	mg/L	300	5
Total suspended solids	mg/L	375	8
Lab Section 2			
Calcium	mg/L	14	0.1
Magnesium	mg/L	2.2	0.1
Potassium	mg/L	1.6	0.1
Sodium	mg/L	4.2	0.1
Sulfate	mg/L	4.2	0.2
Aluminum, dissolved	mg/L	0.044	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.5	0.1
Barium, dissolved	mg/L	0.021	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.01	0.01
Cadmium, dissolved	mg/L	0.00002	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0008	0.0001
Copper, dissolved	mg/L	0.0045	0.0002
Iron, dissolved	mg/L	0.046	0.0005
Lead, dissolved	mg/L	0.0002	0.0001
Manganese, dissolved	mg/L	0.16	0.0005
Molybdenum, dissolved	mg/L	0.0027	0.0001

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Revised

SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026407**
Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 2018_SONIC009B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0009	0.0001
Selenium, dissolved	mg/L	0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.058	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	0.0003	0.0001
Titanium, dissolved	mg/L	0.0014	0.0002
Uranium, dissolved	ug/L	0.2	0.1
Vanadium, dissolved	mg/L	0.0005	0.0001
Zinc, dissolved	mg/L	0.0093	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	0.006	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026408**
Date Sampled: **May 20, 2019**
Sample Matrix: **WATER**
Description: **05/20/2019 2018_SONIC010A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	<1	1
Bicarbonate	mg/L	67	1
Carbonate	mg/L	<1	1
Chloride	mg/L	0.5	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	8.13	0.07
Specific conductivity	uS/cm	105	1
Sum of ions	mg/L	112	1
Total alkalinity	mg/L	55	1
Total hardness	mg/L	25	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.25	0.01
Total dissolved solids	mg/L	164	5
Total suspended solids	mg/L	93	4
Lab Section 2			
Calcium	mg/L	6.6	0.1
Magnesium	mg/L	2.0	0.1
Potassium	mg/L	2.3	0.1
Sodium	mg/L	26	0.1
Sulfate	mg/L	7.4	0.2
Aluminum, dissolved	mg/L	0.036	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	1.0	0.1
Barium, dissolved	mg/L	0.015	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.10	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	0.0008	0.0002
Iron, dissolved	mg/L	0.017	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.020	0.0005
Molybdenum, dissolved	mg/L	0.0048	0.0001

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SRC Group # 2019-6337

Jul 25, 2019

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Sample #: **2019026408**
Date Sampled: **May 20, 2019**
Sample Matrix: **WATER**
Description: **05/20/2019 2018_SONIC010A_SHALLOW**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.096	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0010	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0045	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

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The temperature of the cooler was 17.1 °C upon receipt.

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SRC Group # 2019-6337

Jul 25, 2019

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Sample #: **2019026409**
Date Sampled: **May 21, 2019**
Sample Matrix: **WATER**
Description: **05/21/2019 2018_SONIC010B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	<1	1
Bicarbonate	mg/L	<1	1
Carbonate	mg/L	20	1
Chloride	mg/L	7.7	0.1
Hydroxide	mg/L	4	1
P. alkalinity	mg/L	30	1
pH	pH units	10.26	0.07
Specific conductivity	uS/cm	134	1
Sum of ions	mg/L	67	1
Total alkalinity	mg/L	47	1
Total hardness	mg/L	32	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.14	0.01
Total dissolved solids	mg/L	132	5
Total suspended solids	mg/L	10	1
Lab Section 2			
Calcium	mg/L	12	0.1
Magnesium	mg/L	0.4	0.1
Potassium	mg/L	7.9	0.1
Sodium	mg/L	11	0.1
Sulfate	mg/L	4.2	0.2
Aluminum, dissolved	mg/L	0.049	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	1.8	0.1
Barium, dissolved	mg/L	0.052	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.09	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.0047	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.0046	0.0005
Molybdenum, dissolved	mg/L	0.0023	0.0001

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Description: **05/21/2019 2018_SONIC010B_DEEP**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	<0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.29	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	<0.0002	0.0002
Uranium, dissolved	ug/L	0.5	0.1
Vanadium, dissolved	mg/L	0.0011	0.0001
Zinc, dissolved	mg/L	0.0036	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	0.03	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

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Jul 25, 2019

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Sample #: **2019026410**
Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 DH_BGC17_01**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	2	1
Bicarbonate	mg/L	32	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.58	0.07
Specific conductivity	uS/cm	37	1
Sum of ions	mg/L	44	1
Total alkalinity	mg/L	26	1
Total hardness	mg/L	19	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.04	0.01
Total dissolved solids	mg/L	80	5
Total suspended solids	mg/L	9	1
Lab Section 2			
Calcium	mg/L	6.0	0.1
Magnesium	mg/L	1.1	0.1
Potassium	mg/L	0.7	0.1
Sodium	mg/L	3.4	0.1
Sulfate	mg/L	0.5	0.2
Aluminum, dissolved	mg/L	0.052	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.6	0.1
Barium, dissolved	mg/L	0.011	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.24	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.072	0.0005
Molybdenum, dissolved	mg/L	0.0017	0.0001

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Jul 25, 2019

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Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 DH_BGC17_01**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	<0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.036	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0006	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0037	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

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Sample #: **2019026411**
Date Sampled: **May 19, 2019**
Sample Matrix: **WATER**
Description: **05/19/2019 DH_BGC17_02**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	7	1
Bicarbonate	mg/L	10	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.08	0.07
Specific conductivity	uS/cm	30	1
Sum of ions	mg/L	17	1
Total alkalinity	mg/L	8	1
Total hardness	mg/L	10	1
Nitrate	mg/L	0.09	0.04
Fluoride	mg/L	0.03	0.01
Total dissolved solids	mg/L	123	5
Total suspended solids	mg/L	134	2
Lab Section 2			
Calcium	mg/L	2.8	0.1
Magnesium	mg/L	0.8	0.1
Potassium	mg/L	0.5	0.1
Sodium	mg/L	1.6	0.1
Sulfate	mg/L	1.6	0.2
Aluminum, dissolved	mg/L	0.0057	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	<0.1	0.1
Barium, dissolved	mg/L	0.0043	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0008	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.0027	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.0067	0.0005
Molybdenum, dissolved	mg/L	<0.0001	0.0001

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Sample #: **2019026411**
Date Sampled: **May 19, 2019**
Sample Matrix: **WATER**
Description: **05/19/2019 DH_BGC17_02**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0003	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.018	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	<0.0002	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	0.0002	0.0001
Zinc, dissolved	mg/L	0.0020	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026412**
Date Sampled: **May 20, 2019**
Sample Matrix: **WATER**
Description: **05/20/2019 DH_BGC17_03**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	5	1
Bicarbonate	mg/L	34	1
Carbonate	mg/L	<1	1
Chloride	mg/L	0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.45	0.07
Specific conductivity	uS/cm	43	1
Sum of ions	mg/L	47	1
Total alkalinity	mg/L	28	1
Total hardness	mg/L	20	1
Nitrate	mg/L	0.30	0.04
Fluoride	mg/L	0.04	0.01
Total dissolved solids	mg/L	60	5
Total suspended solids	mg/L	145	1
Lab Section 2			
Calcium	mg/L	6.6	0.1
Magnesium	mg/L	0.9	0.1
Potassium	mg/L	0.7	0.1
Sodium	mg/L	2.2	0.1
Sulfate	mg/L	1.9	0.2
Aluminum, dissolved	mg/L	0.0039	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.5	0.1
Barium, dissolved	mg/L	0.0086	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0005	0.0001
Copper, dissolved	mg/L	0.0010	0.0002
Iron, dissolved	mg/L	0.026	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.015	0.0005
Molybdenum, dissolved	mg/L	0.0008	0.0001

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Sample #: **2019026412**
Date Sampled: **May 20, 2019**
Sample Matrix: **WATER**
Description: **05/20/2019 DH_BGC17_03**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0005	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.030	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	<0.0002	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	0.0005	0.0001
Zinc, dissolved	mg/L	0.0067	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026413**
Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 DH_BGC17_05**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	1	1
Bicarbonate	mg/L	57	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.87	0.07
Specific conductivity	uS/cm	78	1
Sum of ions	mg/L	77	1
Total alkalinity	mg/L	47	1
Total hardness	mg/L	39	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.10	0.01
Total dissolved solids	mg/L	67	5
Total suspended solids	mg/L	3	1
Lab Section 2			
Calcium	mg/L	9.9	0.1
Magnesium	mg/L	3.4	0.1
Potassium	mg/L	1.2	0.1
Sodium	mg/L	4.1	0.1
Sulfate	mg/L	1.1	0.2
Aluminum, dissolved	mg/L	0.0020	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	<0.1	0.1
Barium, dissolved	mg/L	0.020	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.05	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.54	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.10	0.0005
Molybdenum, dissolved	mg/L	0.0006	0.0001

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Revised

SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026413**
Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 DH_BGC17_05**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	<0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.12	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	<0.0002	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0031	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026414**
Date Sampled: **May 19, 2019**
Sample Matrix: **WATER**
Description: **05/19/2019 2018_SONIC002B_DEEP_DUPL**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	7	1
Bicarbonate	mg/L	61	1
Carbonate	mg/L	<1	1
Chloride	mg/L	0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.40	0.07
Specific conductivity	uS/cm	92	1
Sum of ions	mg/L	83	1
Total alkalinity	mg/L	50	1
Total hardness	mg/L	41	1
Nitrate	mg/L	0.06	0.04
Fluoride	mg/L	0.05	0.01
Total dissolved solids	mg/L	71	5
Total suspended solids	mg/L	517	8
Lab Section 2			
Calcium	mg/L	14	0.1
Magnesium	mg/L	1.5	0.1
Potassium	mg/L	0.8	0.1
Sodium	mg/L	2.6	0.1
Sulfate	mg/L	2.6	0.2
Aluminum, dissolved	mg/L	0.088	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.4	0.1
Barium, dissolved	mg/L	0.020	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	0.0004	0.0001
Copper, dissolved	mg/L	0.0004	0.0002
Iron, dissolved	mg/L	0.026	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.045	0.0005
Molybdenum, dissolved	mg/L	0.0017	0.0001

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026414**
Date Sampled: **May 19, 2019**
Sample Matrix: **WATER**
Description: **05/19/2019 2018_SONIC002B_DEEP_DUPL**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	0.0016	0.0001
Selenium, dissolved	mg/L	0.0002	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.038	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0021	0.0002
Uranium, dissolved	ug/L	0.5	0.1
Vanadium, dissolved	mg/L	0.0006	0.0001
Zinc, dissolved	mg/L	0.0036	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Revised result for Total dissolved solids. 07/23/2019 AH

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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Revised

SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026415**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC007B_DUPL**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	<1	1
Bicarbonate	mg/L	43	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.67	0.07
Specific conductivity	uS/cm	56	1
Sum of ions	mg/L	56	1
Total alkalinity	mg/L	35	1
Total hardness	mg/L	20	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.08	0.01
Total dissolved solids	mg/L	140	5
Total suspended solids	mg/L	131	5
Lab Section 2			
Calcium	mg/L	5.8	0.1
Magnesium	mg/L	1.4	0.1
Potassium	mg/L	0.8	0.1
Sodium	mg/L	4.7	0.1
Sulfate	mg/L	0.2	0.2
Aluminum, dissolved	mg/L	0.0027	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.3	0.1
Barium, dissolved	mg/L	0.014	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.29	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.12	0.0005
Molybdenum, dissolved	mg/L	0.0028	0.0001

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Revised

SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026415**
Date Sampled: **May 17, 2019**
Sample Matrix: **WATER**
Description: **05/17/2019 2018_SONIC007B_DUPL**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	<0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.037	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	<0.0002	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0014	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026416**
Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 DH_BGC17_01_DUPL**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	5	1
Bicarbonate	mg/L	37	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	7.72	0.07
Specific conductivity	uS/cm	53	1
Sum of ions	mg/L	48	1
Total alkalinity	mg/L	30	1
Total hardness	mg/L	19	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	0.06	0.01
Total dissolved solids	mg/L	79	5
Total suspended solids	mg/L	11	1
Lab Section 2			
Calcium	mg/L	5.9	0.1
Magnesium	mg/L	1.0	0.1
Potassium	mg/L	0.6	0.1
Sodium	mg/L	3.1	0.1
Sulfate	mg/L	0.5	0.2
Aluminum, dissolved	mg/L	0.062	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.6	0.1
Barium, dissolved	mg/L	0.011	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	0.24	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	0.072	0.0005
Molybdenum, dissolved	mg/L	0.0017	0.0001

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Revised

SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026416**
Date Sampled: **May 18, 2019**
Sample Matrix: **WATER**
Description: **05/18/2019 DH_BGC17_01_DUPL**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	<0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	0.036	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0007	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0038	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Revised result for Total alkalinity. 07/19/2019 KG

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026417**
Date Sampled: **May 21, 2019**
Sample Matrix: **WATER**
Description: **05/21/2019 FIELD BLANK P-42**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	2	1
Bicarbonate	mg/L	1	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	5.67	0.07
Specific conductivity	uS/cm	<1	1
Sum of ions	mg/L	1	1
Total alkalinity	mg/L	1	1
Total hardness	mg/L	<1	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	<0.01	0.01
Total dissolved solids	mg/L	<5	5
Total suspended solids	mg/L	<1	1
Lab Section 2			
Calcium	mg/L	<0.1	0.1
Magnesium	mg/L	<0.1	0.1
Potassium	mg/L	<0.1	0.1
Sodium	mg/L	<0.1	0.1
Sulfate	mg/L	<0.2	0.2
Aluminum, dissolved	mg/L	0.0008	0.0005
Antimony, dissolved	mg/L	<0.0002	0.0002
Arsenic, dissolved	ug/L	<0.1	0.1
Barium, dissolved	mg/L	<0.0005	0.0005
Beryllium, dissolved	mg/L	<0.0001	0.0001
Boron, dissolved	mg/L	<0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	<0.0002	0.0002
Iron, dissolved	mg/L	<0.0005	0.0005
Lead, dissolved	mg/L	<0.0001	0.0001
Manganese, dissolved	mg/L	<0.0005	0.0005
Molybdenum, dissolved	mg/L	<0.0001	0.0001

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026417**
Date Sampled: **May 21, 2019**
Sample Matrix: **WATER**
Description: **05/21/2019 FIELD BLANK P-42**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel, dissolved	mg/L	<0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	0.00005
Strontium, dissolved	mg/L	<0.0005	0.0005
Thallium, dissolved	mg/L	<0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	<0.0002	0.0002
Uranium, dissolved	ug/L	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	0.0001
Zinc, dissolved	mg/L	0.0056	0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	0.02
Polonium-210, dissolved	Bq/L	<0.005	0.005
Radium-226, dissolved	Bq/L	0.006	0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026418**
Date Sampled:
Sample Matrix: **WATER**
Description: **TRIP BLANK P-42**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 1			
Acidity	mg/L	2	1
Bicarbonate	mg/L	1	1
Carbonate	mg/L	<1	1
Chloride	mg/L	<0.1	0.1
Hydroxide	mg/L	<1	1
P. alkalinity	mg/L	<1	1
pH	pH units	5.57	0.07
Specific conductivity	uS/cm	<1	1
Sum of ions	mg/L	1	1
Total alkalinity	mg/L	1	1
Total hardness	mg/L	<1	1
Nitrate	mg/L	<0.04	0.04
Fluoride	mg/L	<0.01	0.01
Total dissolved solids	mg/L	<5	5
Total suspended solids	mg/L	<1	1
Lab Section 2			
Calcium	mg/L	<0.1	0.1
Magnesium	mg/L	<0.1	0.1
Potassium	mg/L	<0.1	0.1
Sodium	mg/L	<0.1	0.1
Sulfate	mg/L	<0.2	0.2
Aluminum	mg/L	0.0019	0.0005
Antimony	mg/L	<0.0002	0.0002
Arsenic	ug/L	<0.1	0.1
Barium	mg/L	<0.0005	0.0005
Beryllium	mg/L	<0.0001	0.0001
Boron	mg/L	<0.01	0.01
Cadmium	mg/L	<0.00001	0.00001
Chromium	mg/L	<0.0005	0.0005
Cobalt	mg/L	<0.0001	0.0001
Copper	mg/L	<0.0002	0.0002
Iron	mg/L	<0.0005	0.0005
Lead	mg/L	<0.0001	0.0001
Manganese	mg/L	<0.0005	0.0005
Molybdenum	mg/L	<0.0001	0.0001

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SRC Group # 2019-6337

Jul 25, 2019

SRK Consulting

Sample #: **2019026418**
Date Sampled:
Sample Matrix: **WATER**
Description: **TRIP BLANK P-42**

Client PO #:
Date Received: **May 23, 2019**

Analyte	Units	Result	DL
Lab Section 2			
Nickel	mg/L	<0.0001	0.0001
Selenium	mg/L	<0.0001	0.0001
Silver	mg/L	<0.00005	0.00005
Strontium	mg/L	<0.0005	0.0005
Thallium	mg/L	<0.0002	0.0002
Tin	mg/L	<0.0001	0.0001
Titanium	mg/L	<0.0002	0.0002
Uranium	ug/L	<0.1	0.1
Vanadium	mg/L	<0.0001	0.0001
Zinc	mg/L	0.0006	0.0005
Lab Section 4			
Lead-210	Bq/L	<0.02	0.02
Polonium-210	Bq/L	<0.005	0.005
Radium-226	Bq/L	<0.005	0.005
Thorium-230	Bq/L	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 17.1 °C upon receipt.

Many of the samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

A. E. Lalonde AMS Laboratory

Tritium and Noble Gas Laboratory

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Tritium Analysis Report

Date: June 12, 2019

Samples submitted by:
Paulin Gjergij
Nexgen Energy Ltd
Suite 200, 475 2nd Ave S
Saskatoon, SK, S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1711	GAR-18-013_Z12_FD	8.3	0.9
UOT-1712	GAR-18-013_Z11	7.4	0.9
UOT-1713	GAR-18-013_Z10	8.0	0.9
UOT-1714	GAR-18-013_Z9	7.9	0.9
UOT-1715	GAR-18-013_Z8	8.0	0.9
UOT-1716	GAR-18-013_Z7	8.3	0.9
UOT-1717	GAR-18-013_Z6	8.7	0.9
UOT-1718	GAR-18-013_Z4	5.1	0.8
UOT-1719	GAR-18-013_Z3	7.7	0.8
UOT-1720	GAR-18-013_Z2	9.8	1.0
UOT-1721	GAR-18-013_Z1	4.0	0.8
UOT-1722	GAR-19-013_FB	8.6	0.9

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

	Value	**Error**		
Density	0.998	0.002	g/ml	20^{o}C
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

A. E. Lalonde AMS Laboratory

Tritium and Noble Gas Laboratory

University of Ottawa, Advanced Research Complex
25 Templeton St
Ottawa ON K1N 6N5 Canada

mwilk@uottawa.ca | alapp@uottawa.ca
Telephone: 613-562-5800 ext. 6183 | 8682
Web :www.ams.uottawa.ca

Tritium Analysis Report

Date: June 12, 2019

Samples submitted by:
Paulin Gjergij
Nexgen Energy Ltd
Suite 200, 475 2nd Ave S
Saskatoon, SK, S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1760	DH-BGC17-01	5.0	0.8
UOT-1761	DH-BGC17-02	6.4	0.7
UOT-1762	DH-BGC17-03	7.5	0.8
UOT-1763	DH-BGC17-05	<0.8	
UOT-1764	DH-BGC17-06_FD	5.0	0.7
UOT-1765	DH-BGC17-07_FB	8.0	0.8

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

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Web :www.ams.uottawa.ca

Tritium Analysis Report

Date: April 26, 2019

Samples submitted by:
Paulin Gjergij
Nexgen Energy Ltd
Suite 200, 475 2nd Ave S
Saskatoon, SK, S7K 1P4
Canada

Tritium Analysis Results: Enriched Water Samples

UofO Number	Submitter's Sample I.D.	^{3}H (TU)	± 1σ (TU)
UOT-1701	2018_MW_002A_Shallow	8.1	0.8
UOT-1702	2018_MW_002B_Deep	6.7	0.8
UOT-1703	2018_MW_004A_Shallow	12.2	1.0
UOT-1704	2018_MW_004B_Deep	8.9	0.9
UOT-1705	2018_MW_010A_Shallow	3.9	0.7
UOT-1706	2018_MW_010B_Deep	0.8	0.6
UOT-1707	2018_MW_010B_Deep_FD	0.9	0.6

Remarks: TU is Tritium Units where 1TU =0.11919Bq/L

QA Program

The standard used in the calibration of our results for Quantulus 1220 is certified standard SRM 4926E activity 0.0028 mCi hydrogen-3 water from National Institute of Standards and Technology. Table below provides the detailed information on the standard. 250 ml of water sample was first enriched by electrolysis 15 times, before being mixed with 10 ml of Ultima Gold Scintillation cocktail. Samples are counted for 90-minute intervals of six cycles.

Standard Reference Material 4926E Hydrogen-3 Radioactivity Standard

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Density	0.998	0.002	g/ml	20ºC
Reference time	03/09/1998 12:00			
Mass activity	5.038		kBq/g	
Half life of tritium	4500	8	days	

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-3649

May 01, 2018

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Apr-05-2018 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-3649

May 01, 2018

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Apr-05-2018 Client P.O.:

11615	**04/02/2018 15:33 DH-BGC17-01 *WATER***
11616	**04/01/2018 14:12 DH-BGC17-02 *WATER***
11617	**04/01/2018 11:45 DH-BGC17-03 *WATER***

Analyte	Units	11615	11616	11617
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	39	17	37
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1	<0.1	0.2
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.67	7.02	7.52
Specific conductivity	uS/cm	53	25	56
Sum of ions	mg/L	54	25	54
Total alkalinity	mg/L	32	14	30
Total hardness	mg/L	20	11	14
Nitrate	mg/L	0.06	<0.04	0.40
Nitrate, dissolved	mg/L	0.09	0.31	0.52
Total Kjeldahl nitrogen	mg/L	0.25	0.18	0.24
Total Kjeldahl nitrogen, dissolved	mg/L	<0.05	<0.05	<0.05
Total nitrogen	mg/L	0.26	0.18	0.33
Total nitrogen, dissolved	mg/L	<0.05	<0.05	0.09
Chemical oxygen demand	mg/L	38	230	15
Mercury	ng/L	<1	3	6
Mercury, dissolved	ng/L	<1	<1	<1
Organic carbon	mg/L	1.9	0.3	0.5
Organic carbon, dissolved	mg/L	2.2	0.3	0.5
Fluoride	mg/L	0.12	0.03	0.09
Total dissolved solids	mg/L	120	84	85
Lab Section 2 (ICP)				
Calcium	mg/L	6.1	3.1	4.4
Magnesium	mg/L	1.2	0.7	0.7
Potassium	mg/L	1.2	0.6	0.7
Sodium	mg/L	5.4	1.9	6.9
Sulfate	mg/L	0.8	1.4	3.2
Aluminum	mg/L	3.6	7.3	3.3
Aluminum, dissolved	mg/L	0.0068	0.0079	0.044

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SRC Group # 2018-3649

May 01, 2018

Nexgen Energy Ltd.

11615 04/02/2018 15:33 DH-BGC17-01 *WATER*
11616 04/01/2018 14:12 DH-BGC17-02 *WATER*
11617 04/01/2018 11:45 DH-BGC17-03 *WATER*

Analyte	Units	11615	11616	11617
Lab Section 2 (ICP)				
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	1.3	1.4	1.3
Arsenic, dissolved	ug/L	0.6	<0.1	0.6
Barium	mg/L	0.046	0.067	0.032
Barium, dissolved	mg/L	0.0086	0.0042	0.0052
Beryllium	mg/L	0.0002	0.0003	0.0002
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.02	0.01	0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00002	0.00006	0.00003
Cadmium, dissolved	mg/L	<0.00001	0.00001	0.00001
Chromium	mg/L	0.0048	0.0099	0.0042
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	0.0014	0.0061	0.0013
Cobalt, dissolved	mg/L	<0.0001	0.0016	0.0003
Copper	mg/L	0.004	0.006	0.003
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0002
Iron	mg/L	2.6	7.6	2.8
Iron, dissolved	mg/L	0.12	0.0084	0.055
Lead	mg/L	0.0022	0.0037	0.0020
Lead, dissolved	mg/L	<0.0001	<0.0001	0.0002
Manganese	mg/L	0.11	0.15	0.033
Manganese, dissolved	mg/L	0.077	0.025	0.010
Molybdenum	mg/L	0.0039	0.0002	0.0042
Molybdenum, dissolved	mg/L	0.0035	0.0001	0.0035
Nickel	mg/L	0.0028	0.0062	0.0023
Nickel, dissolved	mg/L	<0.0001	0.0006	0.0003
Selenium	mg/L	0.0001	0.0001	0.0001
Selenium, dissolved	mg/L	0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.057	0.051	0.045
Strontium, dissolved	mg/L	0.032	0.016	0.029
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0002	0.0002	0.0012

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SRC Group # 2018-3649

May 01, 2018

Nexgen Energy Ltd.

11615 04/02/2018 15:33 DH-BGC17-01 *WATER*
11616 04/01/2018 14:12 DH-BGC17-02 *WATER*
11617 04/01/2018 11:45 DH-BGC17-03 *WATER*

Analyte	Units	11615	11616	11617
Lab Section 2 (ICP)				
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.088	0.15	0.079
Titanium, dissolved	mg/L	0.0003	<0.0002	0.0013
Uranium	ug/L	0.4	0.5	0.7
Uranium, dissolved	ug/L	<0.1	<0.1	0.2
Vanadium	mg/L	0.0070	0.011	0.0056
Vanadium, dissolved	mg/L	0.0001	0.0002	0.0009
Zinc	mg/L	0.006	0.011	<0.005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	0.005	0.007	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 11616
This sample was reanalyzed for Nitrate and Nitrate, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 24 hours for Organic carbon, dissolved.

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SRC Group # 2018-3649

May 01, 2018

Nexgen Energy Ltd.

11618 04/02/2018 11:56 DH-BGC17-04 *WATER*
11619 04/03/2018 16:50 DH-BGC17-05 *WATER*
11620 04/01/2018 DH-BGC17-998 *WATER*

Analyte	Units	11618	11619	11620
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	41	68	39
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1	0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.68	8.08	7.69
Specific conductivity	uS/cm	62	102	53
Sum of ions	mg/L	60	92	52
Total alkalinity	mg/L	34	56	32
Total hardness	mg/L	25	32	18
Nitrate	mg/L	<0.04	<0.04	0.06
Nitrate, dissolved	mg/L	0.29	0.09	0.08
Total Kjeldahl nitrogen	mg/L	0.46	0.21	0.16
Total Kjeldahl nitrogen, dissolved	mg/L	<0.05	0.09	<0.05
Total nitrogen	mg/L	0.46	0.21	0.17
Total nitrogen, dissolved	mg/L	<0.05	0.09	<0.05
Chemical oxygen demand	mg/L	47	24	47
Mercury	ng/L	12	5	<1
Mercury, dissolved	ng/L	<1	<1	<1
Organic carbon	mg/L	0.6	1.0	2.0
Organic carbon, dissolved	mg/L	0.7	1.3	2.2
Fluoride	mg/L	0.06	0.16	0.12
Total dissolved solids	mg/L	110	93	128
Lab Section 2 (ICP)				
Calcium	mg/L	8.0	8.4	5.5
Magnesium	mg/L	1.3	2.8	1.1
Potassium	mg/L	1.8	1.3	1.1
Sodium	mg/L	4.5	9.6	4.7
Sulfate	mg/L	2.8	1.5	0.7
Aluminum	mg/L	9.7	2.3	3.4
Aluminum, dissolved	mg/L	0.029	0.0050	0.022
Antimony	mg/L	0.0003	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	3.8	1.2	1.4
Arsenic, dissolved	ug/L	0.9	0.2	0.6
Barium	mg/L	0.089	0.025	0.044

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SRC Group # 2018-3649

May 01, 2018

Nexgen Energy Ltd.

11618 04/02/2018 11:56 DH-BGC17-04 *WATER*
11619 04/03/2018 16:50 DH-BGC17-05 *WATER*
11620 04/01/2018 DH-BGC17-998 *WATER*

Analyte	Units	11618	11619	11620
Lab Section 2 (ICP)				
Barium, dissolved	mg/L	0.010	0.012	0.0089
Beryllium	mg/L	0.0005	0.0002	0.0002
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.01	0.06	0.02
Boron, dissolved	mg/L	<0.01	0.05	0.01
Cadmium	mg/L	0.00015	0.00001	0.00001
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium	mg/L	0.025	0.0048	0.0046
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	0.0040	0.0014	0.0013
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	0.016	0.002	0.004
Copper, dissolved	mg/L	0.0004	<0.0002	<0.0002
Iron	mg/L	9.8	2.6	2.5
Iron, dissolved	mg/L	0.042	0.018	0.13
Lead	mg/L	0.0072	0.0009	0.0021
Lead, dissolved	mg/L	0.0002	<0.0001	<0.0001
Manganese	mg/L	0.10	0.12	0.11
Manganese, dissolved	mg/L	0.016	0.055	0.077
Molybdenum	mg/L	0.0015	0.0019	0.0038
Molybdenum, dissolved	mg/L	0.0006	0.0015	0.0035
Nickel	mg/L	0.011	0.0026	0.0028
Nickel, dissolved	mg/L	0.0004	<0.0001	0.0001
Selenium	mg/L	0.0008	<0.0001	<0.0001
Selenium, dissolved	mg/L	0.0002	0.0001	0.0001
Silver	mg/L	0.00007	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.075	0.11	0.056
Strontium, dissolved	mg/L	0.030	0.091	0.032
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0012	0.0002	0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.35	0.035	0.086
Titanium, dissolved	mg/L	0.0010	<0.0002	0.0012
Uranium	ug/L	1.8	0.2	0.4
Uranium, dissolved	ug/L	0.2	<0.1	<0.1

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SRC Group # 2018-3649

May 01, 2018

Nexgen Energy Ltd.

11618 04/02/2018 11:56 DH-BGC17-04 *WATER*
11619 04/03/2018 16:50 DH-BGC17-05 *WATER*
11620 04/01/2018 DH-BGC17-998 *WATER*

Analyte	Units	11618	11619	11620
Lab Section 2 (ICP)				
Vanadium	mg/L	0.042	0.0049	0.0066
Vanadium, dissolved	mg/L	0.0070	<0.0001	0.0001
Zinc	mg/L	0.029	0.006	0.006
Zinc, dissolved	mg/L	0.0009	<0.0005	<0.0005
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.005	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 11618
This sample was reanalyzed for Nitrate and Nitrate, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

Time between sampling and receipt in lab exceeds the recommended 24 hours for Organic carbon, dissolved.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-6107

Jun 12, 2018

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: May-28-2018 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-6107

Jun 12, 2018

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: May-28-2018 Client P.O.:

19510 05/24/2018 DH-BGC17-01: GROUNDWATER WELL *WATER*
19511 05/24/2018 DH-BGC17-02 *WATER*
19512 05/25/2018 DH-BGC17-03 *WATER*

Analyte	Units	19510	19511	19512
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	39	16	35
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1	0.2	0.3
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.81	7.29	7.75
Specific conductivity	uS/cm	52	25	60
Sum of ions	mg/L	53	24	54
Total alkalinity	mg/L	32	13	29
Total hardness	mg/L	19	10	20
Nitrate	mg/L	<0.04	0.24	0.63
Nitrate, dissolved	mg/L	<0.04	0.27	0.68
Total Kjeldahl nitrogen	mg/L	0.14	<0.05	0.08
Total Kjeldahl nitrogen, dissolved	mg/L	<0.05	<0.05	<0.05
Total nitrogen	mg/L	0.14	0.05	0.22
Total nitrogen, dissolved	mg/L	<0.05	0.06	0.15
Chemical oxygen demand	mg/L	26	<10	<10
Mercury	ng/L	7	8	10
Mercury, dissolved	ng/L	2	2	3
Organic carbon	mg/L	1.8	0.3	0.6
Organic carbon, dissolved	mg/L	1.8	0.3	0.5
Fluoride	mg/L	0.10	0.03	0.07
Total dissolved solids	mg/L	99	62	86
Lab Section 2 (ICP)				
Calcium	mg/L	5.7	2.9	6.6
Magnesium	mg/L	1.2	0.7	0.9
Potassium	mg/L	1.2	0.4	0.7
Sodium	mg/L	4.8	1.7	5.4
Sulfate	mg/L	0.8	1.8	4.7
Aluminum	mg/L	3.8	2.9	4.0
Aluminum, dissolved	mg/L	0.015	0.0080	0.087

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SRC Group # 2018-6107

Jun 12, 2018

Nexgen Energy Ltd.

19510 05/24/2018 DH-BGC17-01: GROUNDWATER WELL *WATER*
19511 05/24/2018 DH-BGC17-02 *WATER*
19512 05/25/2018 DH-BGC17-03 *WATER*

Analyte	Units	19510	19511	19512
Lab Section 2 (ICP)				
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	1.4	0.4	1.6
Arsenic, dissolved	ug/L	0.7	<0.1	0.6
Barium	mg/L	0.038	0.029	0.049
Barium, dissolved	mg/L	0.0097	0.0050	0.0089
Beryllium	mg/L	0.0002	0.0001	0.0003
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.02	0.02	0.02
Boron, dissolved	mg/L	0.01	<0.01	<0.01
Cadmium	mg/L	0.00002	0.00004	0.00007
Cadmium, dissolved	mg/L	<0.00001	0.00001	0.00001
Chromium	mg/L	0.0036	0.0035	0.0056
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	0.0007	0.0027	0.0014
Cobalt, dissolved	mg/L	<0.0001	0.0018	0.0004
Copper	mg/L	0.002	0.003	0.005
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0006
Iron	mg/L	1.7	2.0	3.3
Iron, dissolved	mg/L	0.22	0.0031	0.12
Lead	mg/L	0.0022	0.0015	0.0032
Lead, dissolved	mg/L	<0.0001	<0.0001	0.0003
Manganese	mg/L	0.093	0.050	0.048
Manganese, dissolved	mg/L	0.078	0.021	0.014
Molybdenum	mg/L	0.0032	0.0002	0.0025
Molybdenum, dissolved	mg/L	0.0033	0.0001	0.0018
Nickel	mg/L	0.0016	0.0023	0.0032
Nickel, dissolved	mg/L	<0.0001	0.0005	0.0004
Selenium	mg/L	0.0002	<0.0001	0.0002
Selenium, dissolved	mg/L	0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.064	0.034	0.062
Strontium, dissolved	mg/L	0.034	0.018	0.038
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0002	0.0001	0.0004

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-6107

Jun 12, 2018

Nexgen Energy Ltd.

19510 05/24/2018 DH-BGC17-01: GROUNDWATER WELL *WATER*
19511 05/24/2018 DH-BGC17-02 *WATER*
19512 05/25/2018 DH-BGC17-03 *WATER*

Analyte	Units	19510	19511	19512
Lab Section 2 (ICP)				
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.19	0.095	0.098
Titanium, dissolved	mg/L	0.0006	<0.0002	0.0018
Uranium	ug/L	0.3	0.2	0.9
Uranium, dissolved	ug/L	<0.1	<0.1	0.2
Vanadium	mg/L	0.0057	0.0038	0.0062
Vanadium, dissolved	mg/L	<0.0001	0.0002	0.0008
Zinc	mg/L	<0.005	0.028	0.036
Zinc, dissolved	mg/L	<0.0005	<0.0005	0.0007
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.005	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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SRC Group # 2018-6107

Jun 12, 2018

Nexgen Energy Ltd.

19513 05/25/2018 DH-BGC17-04 *WATER*
19514 05/24/2018 DH-BGC17-05 *WATER*
19515 05/24/2018 DH-BGC17-097 *WATER*

Analyte	Units	19513	19514	19515
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	40	70	45
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.2	0.1	0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.83	8.10	7.73
Specific conductivity	uS/cm	58	108	52
Sum of ions	mg/L	56	93	59
Total alkalinity	mg/L	33	57	37
Total hardness	mg/L	23	34	19
Nitrate	mg/L	0.24	<0.04	0.06
Nitrate, dissolved	mg/L	0.26	<0.04	0.40
Total Kjeldahl nitrogen	mg/L	0.10	0.14	0.13
Total Kjeldahl nitrogen, dissolved	mg/L	0.11	<0.05	<0.05
Total nitrogen	mg/L	0.15	0.14	0.14
Total nitrogen, dissolved	mg/L	0.17	<0.05	0.09
Chemical oxygen demand	mg/L	<10	15	18
Mercury	ng/L	10	6	5
Mercury, dissolved	ng/L	3	2	4
Organic carbon	mg/L	0.4	0.9	1.7
Organic carbon, dissolved	mg/L	0.5	0.9	1.8
Fluoride	mg/L	0.04	0.14	0.10
Total dissolved solids	mg/L	76	88	107
Lab Section 2 (ICP)				
Calcium	mg/L	7.6	8.7	5.8
Magnesium	mg/L	1.0	2.9	1.2
Potassium	mg/L	1.1	1.4	1.3
Sodium	mg/L	3.6	8.3	4.8
Sulfate	mg/L	2.1	1.4	0.8
Aluminum	mg/L	3.1	5.1	3.6
Aluminum, dissolved	mg/L	0.017	0.018	0.024
Antimony	mg/L	0.0003	<0.0002	0.0010
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	1.6	1.0	1.4
Arsenic, dissolved	ug/L	0.6	0.2	0.7
Barium	mg/L	0.042	0.028	0.036

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SRC Group # 2018-6107

Jun 12, 2018

Nexgen Energy Ltd.

19513 05/25/2018 DH-BGC17-04 *WATER*
19514 05/24/2018 DH-BGC17-05 *WATER*
19515 05/24/2018 DH-BGC17-097 *WATER*

Analyte	Units	19513	19514	19515
Lab Section 2 (ICP)				
Barium, dissolved	mg/L	0.012	0.014	0.0097
Beryllium	mg/L	0.0002	0.0002	0.0002
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	0.01	0.05	0.01
Boron, dissolved	mg/L	<0.01	0.05	0.01
Cadmium	mg/L	0.00007	0.00001	0.00004
Cadmium, dissolved	mg/L	0.00001	<0.00001	<0.00001
Chromium	mg/L	0.0078	0.0055	0.0035
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	0.0012	0.0009	0.0007
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper	mg/L	0.006	0.003	0.002
Copper, dissolved	mg/L	0.0002	<0.0002	<0.0002
Iron	mg/L	2.9	2.1	1.7
Iron, dissolved	mg/L	0.012	0.16	0.22
Lead	mg/L	0.0024	0.0010	0.0020
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.044	0.11	0.093
Manganese, dissolved	mg/L	0.014	0.082	0.079
Molybdenum	mg/L	0.0006	0.0014	0.0030
Molybdenum, dissolved	mg/L	0.0003	0.0013	0.0033
Nickel	mg/L	0.0037	0.0020	0.0026
Nickel, dissolved	mg/L	0.0003	<0.0001	<0.0001
Selenium	mg/L	0.0003	<0.0001	0.0002
Selenium, dissolved	mg/L	0.0002	0.0001	0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.050	0.12	0.061
Strontium, dissolved	mg/L	0.031	0.10	0.035
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0007	0.0003	0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.12	0.16	0.17
Titanium, dissolved	mg/L	0.0004	0.0004	0.0008
Uranium	ug/L	0.5	0.2	0.3
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1

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SRC Group # 2018-6107

Jun 12, 2018

Nexgen Energy Ltd.

19513 05/25/2018 DH-BGC17-04 *WATER*
19514 05/24/2018 DH-BGC17-05 *WATER*
19515 05/24/2018 DH-BGC17-097 *WATER*

Analyte	Units	19513	19514	19515
Lab Section 2 (ICP)				
Vanadium	mg/L	0.016	0.0068	0.0054
Vanadium, dissolved	mg/L	0.0059	<0.0001	<0.0001
Zinc	mg/L	0.038	<0.005	<0.005
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.005	0.007	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 19515
This sample was reanalyzed for Nitrate and Nitrate, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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SRC Group # 2018-12775

Nov 05, 2018

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Oct-11-2018 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-12775

Nov 05, 2018

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Oct-11-2018 Client P.O.:

41699 10/10/2018 15:00 DH-BGC17-03 *WATER*
41700 10/09/2018 14:00 DH-BGC17-04 *WATER*
41701 10/09/2018 10:00 DH-BGC17-096 *WATER*

Analyte	Units	41699	41700	41701
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	41	32	39
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.8	0.1	0.2
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.46	7.39	7.70
Specific conductivity	uS/cm	72	49	55
Sum of ions	mg/L	61	45	54
Total alkalinity	mg/L	34	26	32
Total hardness	mg/L	27	20	22
Nitrate	mg/L	0.50	0.26	0.25
Nitrate, dissolved	mg/L	0.53	0.25	0.25
Total Kjeldahl nitrogen	mg/L	0.46	0.11	0.07
Total Kjeldahl nitrogen, dissolved	mg/L	0.74	<0.05	<0.05
Total nitrogen	mg/L	0.57	0.17	0.13
Total nitrogen, dissolved	mg/L	0.86	0.06	0.06
Chemical oxygen demand	mg/L	11	<10	<10
Mercury	ng/L	2	7	11
Mercury, dissolved	ng/L	<1	3	<1
Organic carbon	mg/L	1.5	0.4	0.4
Organic carbon, dissolved	mg/L	3.3	0.4	0.4
Fluoride	mg/L	0.06	0.03	0.03
Total dissolved solids	mg/L	72	63	78
Lab Section 2 (ICP)				
Calcium	mg/L	8.9	6.6	7.4
Magnesium	mg/L	1.1	0.9	1.0
Potassium	mg/L	1.4	0.9	1.2
Sodium	mg/L	4.2	2.6	3.2
Sulfate	mg/L	3.1	1.6	1.7
Aluminum	mg/L	0.18	0.20	0.33
Aluminum, dissolved	mg/L	0.046	0.0028	0.0038

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SRC Group # 2018-12775

Nov 05, 2018

Nexgen Energy Ltd.

41699 10/10/2018 15:00 DH-BGC17-03 *WATER*
41700 10/09/2018 14:00 DH-BGC17-04 *WATER*
41701 10/09/2018 10:00 DH-BGC17-096 *WATER*

Analyte	Units	41699	41700	41701
Lab Section 2 (ICP)				
Antimony	mg/L	0.0014	<0.0002	0.0006
Antimony, dissolved	mg/L	0.0006	<0.0002	<0.0002
Arsenic	ug/L	1.0	0.6	0.8
Arsenic, dissolved	ug/L	0.5	0.4	0.3
Barium	mg/L	0.064	0.020	0.035
Barium, dissolved	mg/L	0.036	0.014	0.014
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	<0.01
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium	mg/L	0.00010	0.00001	0.00006
Cadmium, dissolved	mg/L	0.00005	<0.00001	<0.00001
Chromium	mg/L	0.0027	0.0026	0.012
Chromium, dissolved	mg/L	0.0008	<0.0005	<0.0005
Cobalt	mg/L	0.0023	0.0002	0.0016
Cobalt, dissolved	mg/L	0.0014	0.0001	0.0004
Copper	mg/L	0.018	0.0080	0.031
Copper, dissolved	mg/L	0.0066	0.0004	0.0005
Iron	mg/L	0.57	0.53	1.56
Iron, dissolved	mg/L	0.12	0.018	0.052
Lead	mg/L	0.0082	0.0010	0.0026
Lead, dissolved	mg/L	0.0025	<0.0001	<0.0001
Manganese	mg/L	0.029	0.022	0.047
Manganese, dissolved	mg/L	0.017	0.020	0.026
Molybdenum	mg/L	0.0025	0.0003	0.0043
Molybdenum, dissolved	mg/L	0.0022	0.0004	0.0024
Nickel	mg/L	0.0069	0.0016	0.037
Nickel, dissolved	mg/L	0.0020	0.0012	0.0084
Selenium	mg/L	<0.0001	0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001	0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.047	0.031	0.037
Strontium, dissolved	mg/L	0.044	0.031	0.029
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0014	<0.0001	0.0005

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SRC Group # 2018-12775

Nov 05, 2018

Nexgen Energy Ltd.

41699 10/10/2018 15:00 DH-BGC17-03 *WATER*
41700 10/09/2018 14:00 DH-BGC17-04 *WATER*
41701 10/09/2018 10:00 DH-BGC17-096 *WATER*

Analyte	Units	41699	41700	41701
Lab Section 2 (ICP)				
Tin, dissolved	mg/L	0.0004	<0.0001	<0.0001
Titanium	mg/L	0.0032	0.0047	0.0074
Titanium, dissolved	mg/L	0.0010	<0.0002	<0.0002
Uranium	ug/L	0.4	0.1	0.3
Uranium, dissolved	ug/L	0.2	<0.1	<0.1
Vanadium	mg/L	0.0010	0.0074	0.0073
Vanadium, dissolved	mg/L	0.0005	0.0050	0.0035
Zinc	mg/L	0.039	0.020	0.056
Zinc, dissolved	mg/L	0.016	0.013	0.019
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.05	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.01	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.005	0.007	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 41699
This sample was reanalyzed for Organic carbon and Organic carbon, dissolved. Reanalysis confirms original results are within the expected measurement uncertainty.

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SRC Group # 2018-13143

Nov 07, 2018

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Oct-18-2018 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-13143

Nov 07, 2018

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Oct-18-2018 Client P.O.:

43125 10/13/2018 DH-BGC17-01: GROUND WATER WELL *WATER*
43126 10/14/2018 DH-BGC17-02 *WATER*
43127 10/13/2018 DH-BGC17-05 *WATER*

Analyte	Units	43125	43126	43127
Lab Section 1 (Inorganics)				
Bicarbonate	mg/L	37	24	66
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	<0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.85	7.22	8.11
Specific conductivity	uS/cm	47	26	98
Sum of ions	mg/L	50	32	87
Total alkalinity	mg/L	30	20	54
Total hardness	mg/L	21	10	36
Nitrate	mg/L	<0.04	0.26	<0.04
Mercury	ng/L	<1	1	<1
Mercury, dissolved	ng/L	<1	<1	<1
Organic carbon	mg/L	1.3	0.3	0.9
Organic carbon, dissolved	mg/L	1.3	0.3	0.9
Fluoride	mg/L	0.06	0.03	0.12
Total dissolved solids	mg/L	91	61	76
Lab Section 2 (ICP)				
Calcium	mg/L	6.0	2.9	9.4
Magnesium	mg/L	1.4	0.8	3.2
Potassium	mg/L	1.1	0.6	1.3
Sodium	mg/L	3.7	1.7	6.1
Sulfate	mg/L	1.2	1.7	1.3
Aluminum	mg/L	1.5	2.0	0.62
Aluminum, dissolved	mg/L	0.0034	0.0062	0.0030
Antimony	mg/L	<0.0002	<0.0002	<0.0002
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic	ug/L	0.9	0.3	0.4
Arsenic, dissolved	ug/L	0.7	<0.1	0.1
Barium	mg/L	0.025	0.022	0.022
Barium, dissolved	mg/L	0.011	0.0044	0.018

SASKATCHEWAN RESEARCH COUNCIL
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SRC Group # 2018-13143

Nov 07, 2018

Nexgen Energy Ltd.

43125 10/13/2018 DH-BGC17-01: GROUND WATER WELL *WATER*
43126 10/14/2018 DH-BGC17-02 *WATER*
43127 10/13/2018 DH-BGC17-05 *WATER*

Analyte	Units	43125	43126	43127
Lab Section 2 (ICP)				
Beryllium	mg/L	<0.0001	<0.0001	<0.0001
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01	0.06
Boron, dissolved	mg/L	<0.01	<0.01	0.04
Cadmium	mg/L	<0.00001	0.00002	<0.00001
Cadmium, dissolved	mg/L	<0.00001	0.00001	<0.00001
Chromium	mg/L	0.0017	0.0026	0.0011
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt	mg/L	0.0005	0.0018	<0.0001
Cobalt, dissolved	mg/L	<0.0001	0.0010	<0.0001
Copper	mg/L	0.001	0.002	<0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron	mg/L	1.2	1.6	0.77
Iron, dissolved	mg/L	0.21	0.0024	0.29
Lead	mg/L	0.0007	0.0008	0.0001
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Manganese	mg/L	0.086	0.032	0.10
Manganese, dissolved	mg/L	0.077	0.011	0.095
Molybdenum	mg/L	0.0023	<0.0001	0.0010
Molybdenum, dissolved	mg/L	0.0018	<0.0001	0.0008
Nickel	mg/L	0.0010	0.0020	0.0006
Nickel, dissolved	mg/L	<0.0001	0.0003	<0.0001
Selenium	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005	<0.00005
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium	mg/L	0.044	0.026	0.12
Strontium, dissolved	mg/L	0.035	0.018	0.11
Thallium	mg/L	<0.0002	<0.0002	<0.0002
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin	mg/L	0.0002	<0.0001	<0.0001
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium	mg/L	0.039	0.049	0.015
Titanium, dissolved	mg/L	<0.0002	0.0003	0.0002
Uranium	ug/L	0.2	<0.1	<0.1
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium	mg/L	0.0027	0.0029	0.0012

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SRC Group # 2018-13143

Nov 07, 2018

Nexgen Energy Ltd.

43125 10/13/2018 DH-BGC17-01: GROUND WATER WELL *WATER*
43126 10/14/2018 DH-BGC17-02 *WATER*
43127 10/13/2018 DH-BGC17-05 *WATER*

Analyte	Units	43125	43126	43127
Lab Section 2 (ICP)				
Vanadium, dissolved	mg/L	<0.0001	0.0002	<0.0001
Zinc	mg/L	<0.005	0.0014	0.0006
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	0.006	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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SRC Group # 2018-13892

Nov 09, 2018

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Nov-05-2018 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

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* Routine methods follow recognized procedures from sources such as
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    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

Environmental Analytical Laboratories
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SRC Group # 2018-13892

Nov 09, 2018

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Nov-05-2018 Client P.O.:

46090	**10/31/2018 14:24 ZONE 1A *WATER***
46091	**11/01/2018 10:44 ZONE 2A *WATER***
46092	**11/01/2018 12:07 ZONE 3A *WATER***

Analyte	Units	46090	46091	46092
Lab Section 4 (Radiochemistry)				
Radon-222	Bq/L	20	<6	<6
Radon-222 in gas	Bq/L	Not Reported	Not Reported	Not Reported

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Not Reported - Due to the small amount of gas in each cylinder, we were unable to accurately measure the volume and provide a result. Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2018-13892

Nov 09, 2018

Nexgen Energy Ltd.

46093 11/01/2018 14:40 ZONE 4A *WATER*

Analyte	Units	46093
Lab Section 4 (Radiochemistry)		
Radon-222	Bq/L	6
Radon-222 in gas	Bq/L	Not Reported

Not Reported - Due to the small amount of gas in each cylinder, we were unable to accurately measure the volume and provide a result. Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2018-13892

Nov 09, 2018

Nexgen Energy Ltd.

46094	**10/31/2018 14:24 ZONE 1B *OIL***
46095	**11/01/2018 10:44 ZONE 2B *OIL***
46096	**11/01/2018 12:07 ZONE 3B *OIL***

Analyte	Units	46094	46095	46096
Lab Section 4 (Radiochemistry)				
Radon-222	Bq/L	<7	<6	<6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Not Reported - Due to the small amount of gas in each cylinder, we were unable to accurately measure the volume and provide a result. Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2018-13892

Nov 09, 2018

Nexgen Energy Ltd.

46097	**11/01/2018 14:40 ZONE 4B *OIL***
46098	**10/31/2018 14:24 ZONE 1B *WATER***
46099	**11/01/2018 10:44 ZONE 2B *WATER***

Analyte	Units	46097	46098	46099
Lab Section 4 (Radiochemistry)				
Radon-222	Bq/L	6	20	<6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Not Reported - Due to the small amount of gas in each cylinder, we were unable to accurately measure the volume and provide a result. Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2018-13892

Nov 09, 2018

Nexgen Energy Ltd.

46100 11/01/2018 12:07 ZONE 3B *WATER*
46101 11/01/2018 14:40 ZONE 4B *WATER*

Analyte	Units	46100	46101
Lab Section 4 (Radiochemistry)			
Radon-222	Bq/L	<6	6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Not Reported - Due to the small amount of gas in each cylinder, we were unable to accurately measure the volume and provide a result. Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2018-14189

Nov 14, 2018

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Nov-09-2018 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

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    * Environment Canada
    * US EPA
    * CANMET

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* Additional information is available upon request.

This is a final report.

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SRC Group # 2018-14189

Nov 14, 2018

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Nov-09-2018 Client P.O.:

47210	**11/04/2018 10:46**	**GAR-18-013_ZN5_RN**	***WATER***
47211	**11/04/2018 12:00**	**GAR-18-013_ZN6_RN**	***WATER***
47212	**11/04/2018 13:12**	**GAR-18-013_ZN7_RN**	***WATER***

Analyte	Units	47210	47211	47212
Lab Section 4 (Radiochemistry)				
Radon-222	Bq/L	Not Reported	<6	<6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Not Reported - Cylinder was empty upon arrival.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2018-14237

Nov 16, 2018

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Nov-13-2018 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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SRC Group # 2018-14237

Nov 16, 2018

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Nov-13-2018 Client P.O.:

47375	**11/09/2018 11:29 GAR-18-013-ZN8_RN *WATER***
47376	**11/09/2018 12:38 GAR-18-013-ZN9_RN *WATER***
47377	**11/09/2018 13:20 GAR-18-013-ZN10_RN *WATER***

Analyte	Units	47375	47376	47377
Lab Section 4 (Radiochemistry)				
Radon-222	Bq/L	<6	<6	<6

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Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2018-14237

Nov 16, 2018

Nexgen Energy Ltd.

47378 11/09/2018 14:38 GAR-18-013-ZN11_RN *WATER*
47379 11/09/2018 13:59 GAR-18-013-DUP_RN *WATER*

Analyte	Units	47378	47379
Lab Section 4 (Radiochemistry)			
Radon-222	Bq/L	<6	<6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2018-15029

Dec 14, 2018

SRK Consulting
205-2100 Airport Drive
Saskatoon, SK S7L 6M6
Attn: Tom Kotzer

Date Samples Received: Nov-30-2018 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

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    * Environment Canada
    * US EPA
    * CANMET

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This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-15029

Dec 14, 2018

SRK Consulting

205-2100 Airport Drive
Saskatoon, SK S7L 6M6
Attn: Tom Kotzer

Date Samples Received: Nov-30-2018 Client P.O.:

50338 11/28/2018 2018_MW_006A_SHALLOW *WATER*
50339 11/27/2018 2018_MW_006B_DEEP *WATER*

Analyte	Units	50338	50339
Lab Section 1 (Inorganics)			
Acidity	mg/L	<1	<1
Bicarbonate	mg/L	44	70
Carbonate	mg/L	<1	<1
Chloride	mg/L	11	34
Hydroxide	mg/L	<1	<1
P. alkalinity	mg/L	<1	<1
pH	pH units	7.90	8.06
Specific conductivity	uS/cm	76	112
Sum of ions	mg/L	84	148
Total alkalinity	mg/L	36	57
Total hardness	mg/L	20	26
Nitrate	mg/L	<0.04	0.08
Fluoride	mg/L	0.11	0.16
Total dissolved solids	mg/L	718	3410
Total suspended solids	mg/L	445	3120
Lab Section 2 (ICP)			
Calcium	mg/L	5.0	5.8
Magnesium	mg/L	1.9	2.9
Potassium	mg/L	2.8	2.9
Sodium	mg/L	12	23
Sulfate	mg/L	7.3	9.0
Aluminum, dissolved	mg/L	0.096	0.18
Antimony, dissolved	mg/L	0.0012	0.0009
Arsenic, dissolved	ug/L	0.8	1.4
Barium, dissolved	mg/L	0.0069	0.0078
Beryllium, dissolved	mg/L	<0.0001	<0.0001
Boron, dissolved	mg/L	0.01	0.02
Cadmium, dissolved	mg/L	0.00001	0.00004
Chromium, dissolved	mg/L	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0001
Copper, dissolved	mg/L	0.0008	0.0009

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SRC Group # 2018-15029

Dec 14, 2018

SRK Consulting

50338 11/28/2018 2018_MW_006A_SHALLOW *WATER*
50339 11/27/2018 2018_MW_006B_DEEP *WATER*

Analyte	Units	50338	50339
Lab Section 2 (ICP)			
Iron, dissolved	mg/L	0.048	0.12
Lead, dissolved	mg/L	<0.0001	0.0002
Manganese, dissolved	mg/L	0.028	0.025
Molybdenum, dissolved	mg/L	0.011	0.0059
Nickel, dissolved	mg/L	0.0004	0.0005
Selenium, dissolved	mg/L	0.0002	0.0004
Silver, dissolved	mg/L	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.039	0.028
Thallium, dissolved	mg/L	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0030	0.0036
Uranium, dissolved	ug/L	0.4	1.3
Vanadium, dissolved	mg/L	0.0009	0.0029
Zinc, dissolved	mg/L	0.0033	0.0028
Lab Section 4 (Radiochemistry)			
Lead-210, dissolved	Bq/L	<0.02	<0.04
Polonium-210, dissolved	Bq/L	0.005	0.02
Radium-226, dissolved	Bq/L	0.01	0.03
Thorium-230, dissolved	Bq/L	<0.01	<0.02

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 50338
The sample for radionuclides was acidified in the lab. Due to the time lapse from sampling to acidification, we can not guarantee that the results accurately reflect the concentration at the time of sampling.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-15358

Dec 21, 2018

SRK Consulting
205-2100 Airport Drive
Saskatoon, SK S7L 6M6
Attn: Tom Kotzer

Date Samples Received: Dec-07-2018 Client P.O.: 1CN034.004

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

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    * Environment Canada
    * US EPA
    * CANMET

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SRC Group # 2018-15358

Dec 21, 2018

SRK Consulting

205-2100 Airport Drive
Saskatoon, SK S7L 6M6
Attn: Tom Kotzer

Date Samples Received: Dec-07-2018 Client P.O.: 1CN034.004

51628	**2018_MW_007A_SHALLOW *WATER***
51629	**2018_MW_007B_DEEP *WATER***
51630	**2018_MW_008A_SHALLOW *WATER***

Analyte	Units	51628	51629	51630
Lab Section 1 (Inorganics)				
Acidity	mg/L	6	3	7
Bicarbonate	mg/L	41	60	39
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	23	32	20
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.45	7.90	7.32
Specific conductivity	uS/cm	56	93	62
Sum of ions	mg/L	84	126	76
Total alkalinity	mg/L	34	49	32
Total hardness	mg/L	32	35	23
Nitrate	mg/L	<0.04	0.04	0.04
Fluoride	mg/L	0.05	0.15	0.09
Total dissolved solids	mg/L	1740	597	1550
Total suspended solids	mg/L	6250	889	6720
Lab Section 2 (ICP)				
Calcium	mg/L	7.9	8.2	6.9
Magnesium	mg/L	3.0	3.5	1.5
Potassium	mg/L	3.6	2.8	1.4
Sodium	mg/L	3.0	13	4.4
Sulfate	mg/L	2.6	6.2	2.7
Aluminum, dissolved	mg/L	0.043	0.028	0.062
Antimony, dissolved	mg/L	0.0011	<0.0002	0.0003
Arsenic, dissolved	ug/L	0.3	1.0	0.2
Barium, dissolved	mg/L	0.016	0.014	0.0087
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	0.01	0.02
Cadmium, dissolved	mg/L	0.00002	0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0014	<0.0001	0.0009
Copper, dissolved	mg/L	0.0008	0.0009	0.0009

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-15358

Dec 21, 2018

SRK Consulting

51628 2018_MW_007A_SHALLOW *WATER*
51629 2018_MW_007B_DEEP *WATER*
51630 2018_MW_008A_SHALLOW *WATER*

Analyte	Units	51628	51629	51630
Lab Section 2 (ICP)				
Iron, dissolved	mg/L	0.014	0.040	0.13
Lead, dissolved	mg/L	<0.0001	0.0002	<0.0001
Manganese, dissolved	mg/L	0.74	0.038	0.21
Molybdenum, dissolved	mg/L	0.0024	0.0069	0.0043
Nickel, dissolved	mg/L	0.0009	0.0002	0.0009
Selenium, dissolved	mg/L	<0.0001	0.0002	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.041	0.042	0.044
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0015	0.0020	0.0013
Uranium, dissolved	ug/L	<0.1	0.2	<0.1
Vanadium, dissolved	mg/L	<0.0001	0.0010	<0.0001
Zinc, dissolved	mg/L	0.0038	0.0042	0.0041
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.005	0.008	<0.005
Thorium-230, dissolved	Bq/L	<0.01	0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 51628
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

Note for Sample # 51629
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

Note for Sample # 51630
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2018-15358

Dec 21, 2018

SRK Consulting

51631 2018_MW_008B_DEEP *WATER*
51632 2018_MW_008B_DEEP_FD *WATER*
51633 2018_MW_009A_SHALLOW *WATER*

Analyte	Units	51631	51632	51633
Lab Section 1 (Inorganics)				
Acidity	mg/L	7	6	12
Bicarbonate	mg/L	38	33	39
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	1.7	1.7	Not Requested
Hydroxide	mg/L	<1	<1	<1
Chloride	mg/L	Not Requested	Not Requested	10
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.38	7.39	7.38
Specific conductivity	uS/cm	61	62	82
Sum of ions	mg/L	59	54	72
Total alkalinity	mg/L	31	27	32
Total hardness	mg/L	19	20	31
Nitrate	mg/L	<0.04	0.05	<0.04
Fluoride	mg/L	0.11	0.11	0.04
Total dissolved solids	mg/L	137	149	108
Total suspended solids	mg/L	35	34	136
Lab Section 2 (ICP)				
Calcium	mg/L	5.3	5.4	9.4
Magnesium	mg/L	1.5	1.6	1.9
Potassium	mg/L	1.3	1.5	1.5
Sodium	mg/L	6.0	6.1	4.6
Sulfate	mg/L	5.1	5.1	5.4
Aluminum, dissolved	mg/L	0.023	0.016	0.14
Antimony, dissolved	mg/L	0.0011	<0.0002	0.0002
Arsenic, dissolved	ug/L	0.2	0.2	0.3
Barium, dissolved	mg/L	0.012	0.012	0.018
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	0.01	0.01	<0.01
Cadmium, dissolved	mg/L	0.00001	<0.00001	0.00002
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0056	0.0044	0.0028
Copper, dissolved	mg/L	0.0007	0.0008	0.0007
Iron, dissolved	mg/L	0.093	0.042	0.31
Lead, dissolved	mg/L	<0.0001	<0.0001	0.0002
Manganese, dissolved	mg/L	0.24	0.23	0.32
Molybdenum, dissolved	mg/L	0.0031	0.0031	0.0040
Nickel, dissolved	mg/L	0.0004	0.0003	0.0014

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SRC Group # 2018-15358

Dec 21, 2018

SRK Consulting

51631 2018_MW_008B_DEEP *WATER*
51632 2018_MW_008B_DEEP_FD *WATER*
51633 2018_MW_009A_SHALLOW *WATER*

Analyte	Units	51631	51632	51633
Lab Section 2 (ICP)				
Selenium, dissolved	mg/L	0.0001	0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.038	0.038	0.054
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0008	0.0052	0.0040
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	0.0004
Zinc, dissolved	mg/L	0.0064	0.0042	0.0052
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	0.005	0.005	0.009
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 51631
This sample was reanalyzed for Lab Section 2 (ICP). Reanalysis confirms original results are within the expected measurement uncertainty.

Note for Sample # 51632
This sample was reanalyzed for Lab Section 2 (ICP). Reanalysis confirms original results are within the expected measurement uncertainty.

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SRC Group # 2018-15358

Dec 21, 2018

SRK Consulting

51634 2018_MW_009B_DEEP *WATER*

Analyte	Units	51634
Lab Section 1 (Inorganics)		
Acidity	mg/L	12
Bicarbonate	mg/L	90
Carbonate	mg/L	<1
Chloride	mg/L	26
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	7.70
Specific conductivity	uS/cm	162
Sum of ions	mg/L	159
Total alkalinity	mg/L	74
Total hardness	mg/L	65
Nitrate	mg/L	0.12
Fluoride	mg/L	0.11
Total dissolved solids	mg/L	582
Total suspended solids	mg/L	1750
Lab Section 2 (ICP)		
Calcium	mg/L	20
Magnesium	mg/L	3.7
Potassium	mg/L	5.5
Sodium	mg/L	6.5
Sulfate	mg/L	7.6
Aluminum, dissolved	mg/L	0.013
Antimony, dissolved	mg/L	0.0012
Arsenic, dissolved	ug/L	0.5
Barium, dissolved	mg/L	0.028
Beryllium, dissolved	mg/L	<0.0001
Boron, dissolved	mg/L	0.01
Cadmium, dissolved	mg/L	0.00001
Chromium, dissolved	mg/L	<0.0005
Cobalt, dissolved	mg/L	0.0009
Copper, dissolved	mg/L	0.0024
Iron, dissolved	mg/L	0.016
Lead, dissolved	mg/L	<0.0001
Manganese, dissolved	mg/L	0.14
Molybdenum, dissolved	mg/L	0.0040
Nickel, dissolved	mg/L	0.0021

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SRC Group # 2018-15358

Dec 21, 2018

SRK Consulting

51634 2018_MW_009B_DEEP *WATER*

Analyte	Units	51634
Lab Section 2 (ICP)		
Selenium, dissolved	mg/L	0.0003
Silver, dissolved	mg/L	<0.00005
Strontium, dissolved	mg/L	0.085
Thallium, dissolved	mg/L	<0.0002
Tin, dissolved	mg/L	0.0002
Titanium, dissolved	mg/L	<0.0002
Uranium, dissolved	ug/L	0.5
Vanadium, dissolved	mg/L	0.0003
Zinc, dissolved	mg/L	0.0065
Lab Section 4 (Radiochemistry)		
Lead-210, dissolved	Bq/L	<0.04
Polonium-210, dissolved	Bq/L	<0.01
Radium-226, dissolved	Bq/L	0.02
Thorium-230, dissolved	Bq/L	<0.02

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 51634
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2018-15459

Jan 04, 2019

SRK Consulting
205-2100 Airport Drive
Saskatoon, SK S7L 6M6
Attn: Tom Kotzer

Date Samples Received: Dec-11-2018 Client P.O.: 1CN034.004

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

Environmental Analytical Laboratories
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SRC Group # 2018-15459

Jan 04, 2019

SRK Consulting

205-2100 Airport Drive
Saskatoon, SK S7L 6M6
Attn: Tom Kotzer

Date Samples Received: Dec-11-2018 Client P.O.: 1CN034.004

52184 12/09/2018 2018_MW_003_SHALLOW *WATER*
52185 12/09/2018 2018_MW_003_SHALLOW_FD *WATER*
52186 12/09/2018 2018_MW_003_SHALLOW_FB *WATER*

Analyte	Units	52184	52185	52186
Lab Section 1 (Inorganics)				
Acidity	mg/L	45	44	3
Bicarbonate	mg/L	17	17	1
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	1.9	1.9	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.32	6.36	5.05
Specific conductivity	uS/cm	59	58	<1
Sum of ions	mg/L	40	40	1
Total alkalinity	mg/L	14	14	1
Total hardness	mg/L	16	17	<1
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.04	0.04	<0.01
Total dissolved solids	mg/L	244	243	<5
Total suspended solids	mg/L	897	812	<1
Lab Section 2 (ICP)				
Calcium	mg/L	4.8	4.8	<0.1
Magnesium	mg/L	1.1	1.2	<0.1
Potassium	mg/L	0.8	0.8	<0.1
Sodium	mg/L	7.0	7.0	<0.1
Sulfate	mg/L	7.7	7.7	0.2
Aluminum, dissolved	mg/L	0.53	0.54	0.0008
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.7	0.6	<0.1
Barium, dissolved	mg/L	0.017	0.017	<0.0005
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	0.00002	0.00001	<0.00001
Chromium, dissolved	mg/L	0.0006	0.0006	<0.0005
Cobalt, dissolved	mg/L	0.0010	0.0011	<0.0001
Copper, dissolved	mg/L	0.0005	0.0004	<0.0002

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SRC Group # 2018-15459

Jan 04, 2019

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52184 12/09/2018 2018_MW_003_SHALLOW *WATER*
52185 12/09/2018 2018_MW_003_SHALLOW_FD *WATER*
52186 12/09/2018 2018_MW_003_SHALLOW_FB *WATER*

Analyte	Units	52184	52185	52186
Lab Section 2 (ICP)				
Iron, dissolved	mg/L	1.92	1.93	0.0006
Lead, dissolved	mg/L	0.0005	0.0006	<0.0001
Manganese, dissolved	mg/L	0.11	0.11	<0.0005
Molybdenum, dissolved	mg/L	0.0007	0.0006	<0.0001
Nickel, dissolved	mg/L	0.0076	0.0077	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.033	0.032	<0.0005
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0064	0.0073	<0.0002
Uranium, dissolved	ug/L	0.1	0.1	<0.1
Vanadium, dissolved	mg/L	0.0026	0.0026	<0.0001
Zinc, dissolved	mg/L	0.010	0.011	0.0018
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.04	<0.04	<0.02
Polonium-210, dissolved	Bq/L	<0.01	<0.01	<0.005
Radium-226, dissolved	Bq/L	0.01	0.02	0.005
Thorium-230, dissolved	Bq/L	<0.02	<0.02	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 52184
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

Note for Sample # 52185
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2018-15459

Jan 04, 2019

SRK Consulting

52187 2018_MW_003_TRIP BLANK *WATER*

Analyte	Units	52187
Lab Section 1 (Inorganics)		
Acidity	mg/L	2
Bicarbonate	mg/L	2
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.47
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	2
Total alkalinity	mg/L	2
Total hardness	mg/L	<1
Nitrate	mg/L	<0.04
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0015
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001

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SRC Group # 2018-15459

Jan 04, 2019

SRK Consulting

52187 2018_MW_003_TRIP BLANK *WATER*

Analyte	Units	52187
Lab Section 2 (ICP)		
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	0.0020
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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SRC Group # 2018-15739

Jan 08, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Dec-18-2018 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-15739

Jan 08, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Dec-18-2018 Client P.O.:

53106	**12/12/2018 12:25**	**DH-BGC17-01 *WATER***
53107	**12/15/2018 10:30**	**DH-BGC17-02 *WATER***
53108	**12/15/2018 13:00**	**DH-BGC17-03 *WATER***

Analyte	Units	53106	53107	53108
Lab Section 1 (Inorganics)				
Acidity	mg/L	2	7	3
Bicarbonate	mg/L	35	29	30
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	<0.1	0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.45	7.15	7.32
Specific conductivity	uS/cm	44	25	50
Sum of ions	mg/L	47	36	45
Total alkalinity	mg/L	29	24	25
Total hardness	mg/L	19	10	22
Nitrate	mg/L	<0.04	0.20	0.54
Fluoride	mg/L	0.07	0.03	0.05
Total dissolved solids	mg/L	79	44	57
Total suspended solids	mg/L	16	20	35
Lab Section 2 (ICP)				
Calcium	mg/L	5.8	3.0	7.1
Magnesium	mg/L	1.2	0.7	1.0
Potassium	mg/L	0.9	0.6	1.0
Sodium	mg/L	3.8	1.7	3.2
Sulfate	mg/L	0.6	1.4	2.4
Aluminum, dissolved	mg/L	0.0049	0.013	0.0014
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.7	<0.1	0.4
Barium, dissolved	mg/L	0.012	0.0047	0.0080
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0008	0.0005
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0004

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2018-15739

Jan 08, 2019

Nexgen Energy Ltd.

53106 12/12/2018 12:25 DH-BGC17-01 *WATER*
53107 12/15/2018 10:30 DH-BGC17-02 *WATER*
53108 12/15/2018 13:00 DH-BGC17-03 *WATER*

Analyte	Units	53106	53107	53108
Lab Section 2 (ICP)				
Iron, dissolved	mg/L	0.24	0.012	0.0038
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Manganese, dissolved	mg/L	0.077	0.0082	0.0078
Molybdenum, dissolved	mg/L	0.0019	0.0001	0.0013
Nickel, dissolved	mg/L	0.0004	0.0008	0.0008
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.034	0.019	0.033
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0002	0.0003	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	0.0002	0.0005
Zinc, dissolved	mg/L	0.0027	0.0026	0.0042
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	0.008	<0.005	0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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SRC Group # 2018-15739

Jan 08, 2019

Nexgen Energy Ltd.

53109 12/12/2018 12:30 DH-BGC17-04 *WATER*
53110 12/15/2018 13:30 DH-BGC17-05 *WATER*
53111 12/15/2018 13:30 DH-BGC17-DUP *WATER*

Analyte	Units	53109	53110	53111
Lab Section 1 (Inorganics)				
Acidity	mg/L	3	3	4
Bicarbonate	mg/L	40	66	67
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1	<0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.35	7.76	7.76
Specific conductivity	uS/cm	54	98	97
Sum of ions	mg/L	54	87	87
Total alkalinity	mg/L	33	54	55
Total hardness	mg/L	22	38	38
Nitrate	mg/L	0.32	<0.04	<0.04
Fluoride	mg/L	0.04	0.11	0.11
Total dissolved solids	mg/L	56	66	68
Total suspended solids	mg/L	140	3	<1
Lab Section 2 (ICP)				
Calcium	mg/L	7.4	10	10
Magnesium	mg/L	1.0	3.2	3.3
Potassium	mg/L	0.9	1.2	1.1
Sodium	mg/L	2.5	5.5	4.3
Sulfate	mg/L	1.7	1.1	1.1
Aluminum, dissolved	mg/L	0.0055	0.0014	0.0016
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.4	<0.1	0.1
Barium, dissolved	mg/L	0.014	0.019	0.019
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	0.04	0.05
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	0.0003	<0.0002	<0.0002
Iron, dissolved	mg/L	0.0049	0.46	0.46
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Manganese, dissolved	mg/L	0.016	0.10	0.10
Molybdenum, dissolved	mg/L	0.0002	0.0006	0.0009
Nickel, dissolved	mg/L	0.0006	0.0001	<0.0001

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Nexgen Energy Ltd.

53109 12/12/2018 12:30 DH-BGC17-04 *WATER*
53110 12/15/2018 13:30 DH-BGC17-05 *WATER*
53111 12/15/2018 13:30 DH-BGC17-DUP *WATER*

Analyte	Units	53109	53110	53111
Lab Section 2 (ICP)				
Selenium, dissolved	mg/L	0.0002	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.033	0.12	0.12
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	0.0055	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.0012	0.0018	0.0022
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.005	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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SRC Group # 2019-1407

Feb 15, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Feb-04-2019 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 and 7 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-1407

Feb 15, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Feb-04-2019 Client P.O.:

5609	**01/29/2019 2018_MW_010A_SHALLOW *WATER***
5610	**01/28/2019 2018_MW_010B_DEEP *WATER***
5611	**01/28/2019 2018_MW_010B_DEEP_FD *WATER***

Analyte	Units	5609	5610	5611
Lab Section 1 (Inorganics)				
Acidity	mg/L	<1	<1	<1
Bicarbonate	mg/L	87	1	<1
Carbonate	mg/L	5	61	62
Chloride	mg/L	0.8	8.7	8.7
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	4	51	52
pH	pH units	8.65	10.05	10.15
Specific conductivity	uS/cm	168	231	233
Sum of ions	mg/L	149	129	129
Total alkalinity	mg/L	79	103	104
Total hardness	mg/L	26	60	60
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.27	0.16	0.15
Total dissolved solids	mg/L	414	160	156
Total suspended solids	mg/L	423	54	52
Lab Section 2 (ICP)				
Calcium	mg/L	4.9	20	20
Magnesium	mg/L	3.3	2.6	2.6
Potassium	mg/L	4.1	11	11
Sodium	mg/L	35	19	19
Sulfate	mg/L	8.8	5.9	5.8
Aluminum, dissolved	mg/L	0.039	0.020	0.016
Antimony, dissolved	mg/L	0.0005	0.0002	0.0002
Arsenic, dissolved	ug/L	3.3	2.6	2.7
Barium, dissolved	mg/L	0.0084	0.049	0.052
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	0.08	0.09	0.09
Cadmium, dissolved	mg/L	0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	0.0005	<0.0002	0.0008

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Feb 15, 2019

Nexgen Energy Ltd.

5609 01/29/2019 2018_MW_010A_SHALLOW *WATER*
5610 01/28/2019 2018_MW_010B_DEEP *WATER*
5611 01/28/2019 2018_MW_010B_DEEP_FD *WATER*

Analyte	Units	5609	5610	5611
Lab Section 2 (ICP)				
Iron, dissolved	mg/L	0.020	0.012	0.0080
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Manganese, dissolved	mg/L	0.0053	0.0096	0.0096
Molybdenum, dissolved	mg/L	0.0058	0.0071	0.0073
Nickel, dissolved	mg/L	0.0003	<0.0001	0.0001
Selenium, dissolved	mg/L	0.0003	0.0002	0.0002
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.025	0.27	0.27
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0010	0.0005	<0.0002
Uranium, dissolved	ug/L	0.2	0.6	0.6
Vanadium, dissolved	mg/L	0.0008	0.0014	0.0013
Zinc, dissolved	mg/L	0.0045	0.0021	0.0038
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.005	0.03	0.04
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 5609
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

The temperature of the cooler was 8.6 °C upon receipt.

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SRC Group # 2019-1407

Feb 15, 2019

Nexgen Energy Ltd.

5612 01/30/2019 2018_MW_002A_SHALLOW *WATER*
5613 01/30/2019 2018_MW_002B_DEEP *WATER*
5614 01/29/2019 2018_MW_004A_SHALLOW *WATER*

Analyte	Units	5612	5613	5614
Lab Section 1 (Inorganics)				
Acidity	mg/L	20	10	2
Bicarbonate	mg/L	37	66	51
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	111	13	64
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.00	7.60	7.75
Specific conductivity	uS/cm	52	100	82
Sum of ions	mg/L	168	104	142
Total alkalinity	mg/L	30	54	42
Total hardness	mg/L	24	48	34
Nitrate	mg/L	<0.04	0.08	<0.04
Fluoride	mg/L	0.06	0.06	0.14
Total dissolved solids	mg/L	1190	354	311
Total suspended solids	mg/L	6460	306	29600
Lab Section 2 (ICP)				
Calcium	mg/L	5.5	15	9.8
Magnesium	mg/L	2.6	2.6	2.3
Potassium	mg/L	4.6	1.9	2.9
Sodium	mg/L	6.2	3.7	7.9
Sulfate	mg/L	1.4	2.3	4.3
Aluminum, dissolved	mg/L	0.017	0.15	0.020
Antimony, dissolved	mg/L	0.0003	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.6	0.6	0.9
Barium, dissolved	mg/L	0.021	0.024	0.015
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0035	0.0012	0.0004
Copper, dissolved	mg/L	0.0005	0.0022	0.0010
Iron, dissolved	mg/L	0.17	0.21	0.073
Lead, dissolved	mg/L	<0.0001	0.0008	<0.0001
Manganese, dissolved	mg/L	0.25	0.11	0.070
Molybdenum, dissolved	mg/L	0.0067	0.0019	0.012
Nickel, dissolved	mg/L	0.0065	0.0035	0.0009

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SRC Group # 2019-1407

Feb 15, 2019

Nexgen Energy Ltd.

5612 01/30/2019 2018_MW_002A_SHALLOW *WATER*
5613 01/30/2019 2018_MW_002B_DEEP *WATER*
5614 01/29/2019 2018_MW_004A_SHALLOW *WATER*

Analyte	Units	5612	5613	5614
Lab Section 2 (ICP)				
Selenium, dissolved	mg/L	<0.0001	0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.048	0.058	0.040
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0002	0.0023	0.0023
Uranium, dissolved	ug/L	<0.1	0.4	0.1
Vanadium, dissolved	mg/L	0.0001	0.0012	0.0003
Zinc, dissolved	mg/L	0.023	0.0059	0.0035
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.04	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.01	<0.005	<0.005
Radium-226, dissolved	Bq/L	0.02	0.005	0.005
Thorium-230, dissolved	Bq/L	<0.02	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 5612
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

Note for Sample # 5613
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

Note for Sample # 5614
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

The temperature of the cooler was 8.6 °C upon receipt.

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SRC Group # 2019-1407

Feb 15, 2019

Nexgen Energy Ltd.

5615 01/28/2019 2018_MW_004B_DEEP *WATER*

Analyte	Units	5615
Lab Section 1 (Inorganics)		
Acidity	mg/L	5
Bicarbonate	mg/L	135
Carbonate	mg/L	<1
Chloride	mg/L	35
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	8.03
Specific conductivity	uS/cm	242
Sum of ions	mg/L	255
Total alkalinity	mg/L	111
Total hardness	mg/L	58
Nitrate	mg/L	<0.04
Fluoride	mg/L	0.47
Total dissolved solids	mg/L	914
Total suspended solids	mg/L	682
Lab Section 2 (ICP)		
Calcium	mg/L	15
Magnesium	mg/L	5.0
Potassium	mg/L	4.6
Sodium	mg/L	42
Sulfate	mg/L	18
Aluminum, dissolved	mg/L	0.0037
Antimony, dissolved	mg/L	0.0002
Arsenic, dissolved	ug/L	1.1
Barium, dissolved	mg/L	0.027
Beryllium, dissolved	mg/L	<0.0001
Boron, dissolved	mg/L	0.05
Cadmium, dissolved	mg/L	<0.00001
Chromium, dissolved	mg/L	<0.0005
Cobalt, dissolved	mg/L	<0.0001
Copper, dissolved	mg/L	0.0008
Iron, dissolved	mg/L	0.32
Lead, dissolved	mg/L	<0.0001
Manganese, dissolved	mg/L	0.12
Molybdenum, dissolved	mg/L	0.022
Nickel, dissolved	mg/L	0.0004

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SRC Group # 2019-1407

Feb 15, 2019

Nexgen Energy Ltd.

5615 01/28/2019 2018_MW_004B_DEEP *WATER*

Analyte	Units	5615
Lab Section 2 (ICP)		
Selenium, dissolved	mg/L	0.0002
Silver, dissolved	mg/L	<0.00005
Strontium, dissolved	mg/L	0.059
Thallium, dissolved	mg/L	<0.0002
Tin, dissolved	mg/L	<0.0001
Titanium, dissolved	mg/L	<0.0002
Uranium, dissolved	ug/L	0.2
Vanadium, dissolved	mg/L	<0.0001
Zinc, dissolved	mg/L	0.0043
Lab Section 4 (Radiochemistry)		
Lead-210, dissolved	Bq/L	<0.02
Polonium-210, dissolved	Bq/L	<0.005
Radium-226, dissolved	Bq/L	<0.005
Thorium-230, dissolved	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 5615
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

The temperature of the cooler was 8.6 °C upon receipt.

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Nexgen Energy Ltd.

5616 01/30/2019 2018_MW_002B_DEEP_FB *WATER*
5617 02/02/2019 2019_Q1_GW-TRIP BLANK *WATER*

Analyte	Units	5616	5617
Lab Section 1 (Inorganics)			
Acidity	mg/L	3	2
Bicarbonate	mg/L	<1	<1
Carbonate	mg/L	<1	<1
Chloride	mg/L	<0.1	<0.1
Hydroxide	mg/L	<1	<1
P. alkalinity	mg/L	<1	<1
pH	pH units	5.33	5.28
Specific conductivity	uS/cm	<1	<1
Sum of ions	mg/L	<1	<1
Total alkalinity	mg/L	<1	<1
Total hardness	mg/L	<1	<1
Nitrate	mg/L	<0.04	<0.04
Fluoride	mg/L	<0.01	<0.01
Total dissolved solids	mg/L	<5	<5
Total suspended solids	mg/L	<1	<1
Lab Section 2 (ICP)			
Calcium	mg/L	<0.1	<0.1
Magnesium	mg/L	<0.1	<0.1
Potassium	mg/L	<0.1	<0.1
Sodium	mg/L	<0.1	<0.1
Sulfate	mg/L	<0.2	<0.2
Aluminum	mg/L	0.0008	0.0010
Antimony	mg/L	<0.0002	<0.0002
Arsenic	ug/L	<0.1	<0.1
Barium	mg/L	<0.0005	<0.0005
Beryllium	mg/L	<0.0001	<0.0001
Boron	mg/L	<0.01	<0.01
Cadmium	mg/L	<0.00001	<0.00001
Chromium	mg/L	<0.0005	<0.0005
Cobalt	mg/L	<0.0001	<0.0001
Copper	mg/L	<0.0002	<0.0002
Iron	mg/L	<0.0005	<0.0005
Lead	mg/L	<0.0001	<0.0001
Manganese	mg/L	<0.0005	<0.0005
Molybdenum	mg/L	<0.0001	<0.0001
Nickel	mg/L	<0.0001	<0.0001

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SRC Group # 2019-1407

Feb 15, 2019

Nexgen Energy Ltd.

5616 01/30/2019 2018_MW_002B_DEEP_FB *WATER*
5617 02/02/2019 2019_Q1_GW-TRIP BLANK *WATER*

Analyte	Units	5616	5617
Lab Section 2 (ICP)			
Selenium	mg/L	<0.0001	<0.0001
Silver	mg/L	<0.00005	<0.00005
Strontium	mg/L	<0.0005	<0.0005
Thallium	mg/L	<0.0002	<0.0002
Tin	mg/L	0.0002	<0.0001
Titanium	mg/L	<0.0002	<0.0002
Uranium	ug/L	<0.1	<0.1
Vanadium	mg/L	<0.0001	<0.0001
Zinc	mg/L	0.0021	<0.0005
Lab Section 4 (Radiochemistry)			
Lead-210	Bq/L	<0.02	<0.02
Polonium-210	Bq/L	<0.005	<0.005
Radium-226	Bq/L	<0.005	<0.005
Thorium-230	Bq/L	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 8.6 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

Environmental Analytical Laboratories
143-111 Research Drive, Saskatoon, SK Canada S7N 3R2

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Toll-free: 1-800-240-8808
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SRC Group # 2019-2671

Apr 01, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Mar-08-2019 Client P.O.: Rook 1 Westbay

---

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 and 7 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2019-2671

Apr 01, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Mar-08-2019 Client P.O.: Rook 1 Westbay

11035	**03/04/2019 GAR-18-013_Z1 *WATER***
11036	**03/06/2019 GAR-18-013_Z2 *WATER***
11037	**03/06/2019 GAR-18-013_Z3 *WATER***

Analyte	Units	11035	11036	11037
Lab Section 1 (Inorganics)				
Acidity	mg/L	37	7	11
Bicarbonate	mg/L	40	17	<1
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	7320	69	549
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	5.99	6.31	4.80
Specific conductivity	uS/cm	17600	228	1880
Sum of ions	mg/L	11000	129	878
Total alkalinity	mg/L	33	14	<1
Total hardness	mg/L	6970	66	516
Nitrate	mg/L	1.5	0.13	0.61
Fluoride	mg/L	0.24	0.07	0.13
Total dissolved solids	mg/L	12100	186	1110
Total suspended solids	mg/L	28	6	4
Lab Section 2 (ICP)				
Calcium	mg/L	2320	21	169
Magnesium	mg/L	288	3.3	23
Potassium	mg/L	53	4.1	9.9
Sodium	mg/L	1030	14	126
Sulfate	mg/L	2.7	0.9	0.7
Aluminum, dissolved	mg/L	0.005	0.012	0.012
Antimony, dissolved	mg/L	<0.002	0.0002	<0.0002
Arsenic, dissolved	ug/L	7	3.4	2.3
Barium, dissolved	mg/L	2.1	0.47	0.97
Beryllium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Boron, dissolved	mg/L	1.7	0.10	0.34
Cadmium, dissolved	mg/L	0.0002	0.00005	0.00009
Chromium, dissolved	mg/L	<0.005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.018	0.0019	0.0028
Copper, dissolved	mg/L	<0.002	0.0027	0.0013

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11035	**03/04/2019 GAR-18-013_Z1 *WATER***
11036	**03/06/2019 GAR-18-013_Z2 *WATER***
11037	**03/06/2019 GAR-18-013_Z3 *WATER***

Analyte	Units	11035	11036	11037
Lab Section 2 (ICP)				
Iron, dissolved	mg/L	15.6	3.55	4.96
Lead, dissolved	mg/L	0.020	0.0041	0.0073
Manganese, dissolved	mg/L	1.2	0.070	0.18
Molybdenum, dissolved	mg/L	0.068	0.0096	0.020
Nickel, dissolved	mg/L	0.076	0.0048	0.0055
Selenium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.0005	<0.00005	<0.00005
Strontium, dissolved	mg/L	63	0.61	4.08
Thallium, dissolved	mg/L	<0.002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.001	0.0002	0.0002
Titanium, dissolved	mg/L	<0.002	0.0002	0.0002
Uranium, dissolved	ug/L	<1	<0.1	<0.1
Vanadium, dissolved	mg/L	0.002	0.0005	0.0002
Zinc, dissolved	mg/L	0.36	0.056	0.082
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	0.3	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	6.2	0.08	0.14
Thorium-230, dissolved	Bq/L	0.07	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 11035
Lab Section 2 (ICP) detection limits increased due to sample matrix.
This sample was reanalyzed for Radium 226. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 15.9 °C upon receipt.

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SRC Group # 2019-2671

Apr 01, 2019

Nexgen Energy Ltd.

11038 03/06/2019 GAR-18-013_Z4 *WATER*
11039 03/01/2019 GAR-18-013_Z11 *WATER*

Analyte	Units	11038	11039
Lab Section 1 (Inorganics)			
Acidity	mg/L	12	38
Bicarbonate	mg/L	17	46
Carbonate	mg/L	<1	<1
Chloride	mg/L	2240	30
Hydroxide	mg/L	<1	<1
P. alkalinity	mg/L	<1	<1
pH	pH units	6.18	6.99
Specific conductivity	uS/cm	6870	176
Sum of ions	mg/L	3560	114
Total alkalinity	mg/L	14	38
Total hardness	mg/L	2160	26
Nitrate	mg/L	<0.04	<0.04
Fluoride	mg/L	0.24	0.10
Total dissolved solids	mg/L	4110	125
Total suspended solids	mg/L	9	2
Lab Section 2 (ICP)			
Calcium	mg/L	701	5.8
Magnesium	mg/L	99	2.7
Potassium	mg/L	23	7.0
Sodium	mg/L	481	22
Sulfate	mg/L	1.0	1.0
Aluminum, dissolved	mg/L	<0.005	0.012
Antimony, dissolved	mg/L	<0.002	<0.0002
Arsenic, dissolved	ug/L	4	0.4
Barium, dissolved	mg/L	3.1	0.31
Beryllium, dissolved	mg/L	<0.001	<0.0001
Boron, dissolved	mg/L	1.2	0.13
Cadmium, dissolved	mg/L	<0.0001	0.00029
Chromium, dissolved	mg/L	<0.005	<0.0005
Cobalt, dissolved	mg/L	0.014	0.0010
Copper, dissolved	mg/L	<0.002	0.0032
Iron, dissolved	mg/L	3.6	0.45
Lead, dissolved	mg/L	0.001	0.0055
Manganese, dissolved	mg/L	0.37	0.011
Molybdenum, dissolved	mg/L	0.028	0.016
Nickel, dissolved	mg/L	0.016	0.0044

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SRC Group # 2019-2671

Apr 01, 2019

Nexgen Energy Ltd.

11038 03/06/2019 GAR-18-013_Z4 *WATER*
11039 03/01/2019 GAR-18-013_Z11 *WATER*

Analyte	Units	11038	11039
Lab Section 2 (ICP)			
Selenium, dissolved	mg/L	<0.001	<0.0001
Silver, dissolved	mg/L	<0.0005	<0.00005
Strontium, dissolved	mg/L	16.8	0.17
Thallium, dissolved	mg/L	<0.002	<0.0002
Tin, dissolved	mg/L	0.001	0.0003
Titanium, dissolved	mg/L	<0.002	0.0002
Uranium, dissolved	ug/L	<1	<0.1
Vanadium, dissolved	mg/L	<0.001	0.0005
Zinc, dissolved	mg/L	0.084	0.071
Lab Section 4 (Radiochemistry)			
Lead-210, dissolved	Bq/L	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.59	<0.02
Thorium-230, dissolved	Bq/L	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 11038
Lab Section 2 (ICP) detection limits increased due to sample matrix.

The temperature of the cooler was 15.9 °C upon receipt.

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SRC Group # 2019-2672

Mar 13, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Mar-08-2019 Client P.O.: Rook 1 Westbay

---

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
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Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
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    * CANMET

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This is a final report.

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SRC Group # 2019-2672

Mar 13, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Mar-08-2019 Client P.O.: Rook 1 Westbay

11040	**03/04/2019 16:16 GAR-18-013-Z1 *WATER***
11041	**03/06/2019 22:15 GAR-18-013-Z2 *WATER***
11042	**03/06/2019 16:44 GAR-18-013-Z3 *WATER***

Analyte	Units	11040	11041	11042
Lab Section 4 (Radiochemistry)				
Radon-222	Bq/L	20	<3	<3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.9 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2019-2672

Mar 13, 2019

Nexgen Energy Ltd.

11043 03/06/2019 20:13 GAR-18-013-Z4 *WATER*
11044 03/01/2019 15:59 GAR-18-013-Z11 *WATER*

Analyte	Units	11043	11044
Lab Section 4 (Radiochemistry)			
Radon-222	Bq/L	5	<8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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SRC Group # 2019-2714

Mar 13, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Mar-11-2019 Client P.O.:

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Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

---

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SRC Group # 2019-2714

Mar 13, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Mar-11-2019 Client P.O.:

11202	**03/07/2019 17:10**	**GAR-18-013_Z6 *WATER***
11203	**03/08/2019 17:01**	**GAR-18-013_Z7 *WATER***
11204	**03/08/2019 19:48**	**GAR-18-013_Z8 *WATER***

Analyte	Units	11202	11203	11204
Lab Section 4 (Radiochemistry)				
Radon-222	Bq/L	<5	<4	<4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 16.3 °C upon receipt.

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SRC Group # 2019-2714

Mar 13, 2019

Nexgen Energy Ltd.

11205	**03/09/2019 19:42 GAR-18-013_Z9 *WATER***
11206	**03/09/2019 20:43 GAR-18-013_Z10 *WATER***
11207	**03/09/2019 20:43 GAR-18-013_Z12_FD *WATER***

Analyte	Units	11205	11206	11207
Lab Section 4 (Radiochemistry)				
Radon-222	Bq/L	<3	<3	3

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 16.3 °C upon receipt.

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SRC Group # 2019-2722

Mar 28, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Mar-11-2019 Client P.O.:

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Mar 28, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
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Attn: Shawn Harriman

Date Samples Received: Mar-11-2019 Client P.O.:

11318	**03/07/2019 GAR-18-013_Z6 *WATER***
11319	**03/08/2019 GAR-18-013_Z7 *WATER***
11320	**03/08/2019 GAR-18-013_Z8 *WATER***

Analyte	Units	11318	11319	11320
Lab Section 1 (Inorganics)				
Acidity	mg/L	5	6	9
Bicarbonate	mg/L	32	29	35
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	75	212	326
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.59	6.60	6.68
Specific conductivity	uS/cm	328	714	1090
Sum of ions	mg/L	171	363	544
Total alkalinity	mg/L	26	24	29
Total hardness	mg/L	50	144	224
Nitrate	mg/L	0.14	0.34	0.17
Fluoride	mg/L	0.13	0.10	0.14
Total dissolved solids	mg/L	249	458	661
Total suspended solids	mg/L	8	11	5
Lab Section 2 (ICP)				
Calcium	mg/L	15	44	65
Magnesium	mg/L	3.2	8.4	15
Potassium	mg/L	6.8	7.5	9.6
Sodium	mg/L	37	61	93
Sulfate	mg/L	1.6	0.6	0.6
Aluminum, dissolved	mg/L	0.034	0.021	0.0015
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	1.7	1.2	2.9
Barium, dissolved	mg/L	1.58	1.91	2.04
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	0.20	0.23	0.29
Cadmium, dissolved	mg/L	0.00003	0.00002	0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0041	0.0010	0.0023
Copper, dissolved	mg/L	0.0028	0.0010	0.0011

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Mar 28, 2019

Nexgen Energy Ltd.

11318 03/07/2019 GAR-18-013_Z6 *WATER*
11319 03/08/2019 GAR-18-013_Z7 *WATER*
11320 03/08/2019 GAR-18-013_Z8 *WATER*

Analyte	Units	11318	11319	11320
Lab Section 2 (ICP)				
Iron, dissolved	mg/L	1.48	2.30	2.30
Lead, dissolved	mg/L	0.025	0.0066	0.0004
Manganese, dissolved	mg/L	0.053	0.092	0.080
Molybdenum, dissolved	mg/L	0.012	0.0087	0.041
Nickel, dissolved	mg/L	0.0051	0.0024	0.0079
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.40	1.10	1.70
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.0002	0.0001	0.0002
Titanium, dissolved	mg/L	0.0005	0.0003	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	0.0003	0.0002	0.0001
Zinc, dissolved	mg/L	0.085	0.034	0.039
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.04	0.12	0.13
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 10.4 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL
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SRC Group # 2019-2722

Mar 28, 2019

Nexgen Energy Ltd.

11321 03/09/2019 GAR-18-013_Z9 *WATER*
11322 03/09/2019 GAR-18-013_Z10 *WATER*
11323 03/09/2019 GAR-18-013_Z12_FD *WATER*

Analyte	Units	11321	11322	11323
Lab Section 1 (Inorganics)				
Acidity	mg/L	10	15	18
Bicarbonate	mg/L	40	39	38
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	330	29	29
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.80	6.89	6.72
Specific conductivity	uS/cm	1120	168	166
Sum of ions	mg/L	555	101	100
Total alkalinity	mg/L	33	32	31
Total hardness	mg/L	228	18	18
Nitrate	mg/L	0.11	0.12	0.14
Fluoride	mg/L	0.15	0.11	0.11
Total dissolved solids	mg/L	673	131	132
Total suspended solids	mg/L	9	1	1
Lab Section 2 (ICP)				
Calcium	mg/L	65	4.2	4.2
Magnesium	mg/L	16	1.9	1.9
Potassium	mg/L	8.7	5.9	5.8
Sodium	mg/L	95	20	20
Sulfate	mg/L	0.6	1.2	1.1
Aluminum, dissolved	mg/L	0.0010	0.021	0.019
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.4	0.5	0.4
Barium, dissolved	mg/L	1.79	0.35	0.35
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	0.33	0.11	0.11
Cadmium, dissolved	mg/L	0.00002	0.00006	0.00006
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0002	0.0004	0.0004
Copper, dissolved	mg/L	0.0003	0.0013	0.0012
Iron, dissolved	mg/L	2.69	0.38	0.36
Lead, dissolved	mg/L	0.0002	0.0046	0.0045
Manganese, dissolved	mg/L	0.093	0.0081	0.0081
Molybdenum, dissolved	mg/L	0.055	0.015	0.015
Nickel, dissolved	mg/L	0.0014	0.0030	0.0030

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SRC Group # 2019-2722

Mar 28, 2019

Nexgen Energy Ltd.

11321 03/09/2019 GAR-18-013_Z9 *WATER*
11322 03/09/2019 GAR-18-013_Z10 *WATER*
11323 03/09/2019 GAR-18-013_Z12_FD *WATER*

Analyte	Units	11321	11322	11323
Lab Section 2 (ICP)				
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	1.72	0.14	0.14
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.0002	0.0001	0.0002
Titanium, dissolved	mg/L	<0.0002	0.0003	0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	0.0002	0.0002
Zinc, dissolved	mg/L	0.025	0.028	0.027
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.08	<0.02	0.04
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 10.4 °C upon receipt.

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SRC Group # 2019-2722

Mar 28, 2019

Nexgen Energy Ltd.

11324 03/09/2019 GAR-18-013_FB *WATER*

Analyte	Units	11324
Lab Section 1 (Inorganics)		
Acidity	mg/L	1
Bicarbonate	mg/L	1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.23
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1
Total alkalinity	mg/L	1
Total hardness	mg/L	<1
Nitrate	mg/L	0.10
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum, dissolved	mg/L	0.0010
Antimony, dissolved	mg/L	<0.0002
Arsenic, dissolved	ug/L	<0.1
Barium, dissolved	mg/L	0.0007
Beryllium, dissolved	mg/L	<0.0001
Boron, dissolved	mg/L	<0.01
Cadmium, dissolved	mg/L	0.00007
Chromium, dissolved	mg/L	<0.0005
Cobalt, dissolved	mg/L	<0.0001
Copper, dissolved	mg/L	0.0003
Iron, dissolved	mg/L	0.0014
Lead, dissolved	mg/L	<0.0001
Manganese, dissolved	mg/L	<0.0005
Molybdenum, dissolved	mg/L	<0.0001
Nickel, dissolved	mg/L	0.0002

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SRC Group # 2019-2722

Mar 28, 2019

Nexgen Energy Ltd.

11324 03/09/2019 GAR-18-013_FB *WATER*

Analyte	Units	11324
Lab Section 2 (ICP)		
Selenium, dissolved	mg/L	<0.0001
Silver, dissolved	mg/L	<0.00005
Strontium, dissolved	mg/L	0.0006
Thallium, dissolved	mg/L	<0.0002
Tin, dissolved	mg/L	<0.0001
Titanium, dissolved	mg/L	<0.0002
Uranium, dissolved	ug/L	<0.1
Vanadium, dissolved	mg/L	<0.0001
Zinc, dissolved	mg/L	0.014

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 11324
This sample was reanalyzed for Nitrate. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 10.4 °C upon receipt.

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SRC Group # 2019-2722

Mar 28, 2019

Nexgen Energy Ltd.

11325 03/09/2019 TRIP BLANK *WATER*

Analyte	Units	11325
Lab Section 1 (Inorganics)		
Acidity	mg/L	1
Bicarbonate	mg/L	2
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.57
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	2
Total alkalinity	mg/L	2
Total hardness	mg/L	<1
Nitrate	mg/L	0.14
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	0.0008
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001

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SRC Group # 2019-2722

Mar 28, 2019

Nexgen Energy Ltd.

11325 03/09/2019 TRIP BLANK *WATER*

Analyte	Units	11325
Lab Section 2 (ICP)		
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 11325
This sample was reanalyzed for Nitrate. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 10.4 °C upon receipt.

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SRC Group # 2019-2722

Mar 28, 2019

Nexgen Energy Ltd.

11326 03/07/2019 GAR-18-013_Z6 EQUIPMENT RINSE BLANK *WATER*
11327 03/08/2019 GAR-18-013_Z7 EQUIPMENT RINSE BLANK *WATER*
11328 03/08/2019 GAR-18-013_Z8 EQUIPMENT RINSE BLANK *WATER*

Analyte	Units	11326	11327	11328
Lab Section 1 (Inorganics)				
Total hardness	mg/L	<1	<1	<1
Lab Section 2 (ICP)				
Calcium	mg/L	<0.1	<0.1	<0.1
Magnesium	mg/L	<0.1	<0.1	<0.1
Potassium	mg/L	<0.1	<0.1	<0.1
Sodium	mg/L	<0.1	<0.1	<0.1
Sulfate	mg/L	<0.2	<0.2	<0.2
Aluminum, dissolved	mg/L	0.0006	<0.0005	0.0005
Antimony, dissolved	mg/L	<0.0002	<0.0002	0.0002
Arsenic, dissolved	ug/L	<0.1	<0.1	<0.1
Barium, dissolved	mg/L	0.0008	<0.0005	0.0012
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0004
Iron, dissolved	mg/L	<0.0005	0.0005	<0.0005
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Manganese, dissolved	mg/L	0.0008	<0.0005	<0.0005
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.0057	0.0058	0.0056

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 10.4 °C upon receipt.

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SRC Group # 2019-4219

Apr 25, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Apr-11-2019 Client P.O.: Rook I - EA

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 and 7 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2019-4219

Apr 25, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Apr-11-2019 Client P.O.: Rook I - EA

17079 04/06/2019 DH-BGC17-01 *WATER*
17080 04/06/2019 DH-BGC17-02 *WATER*
17081 04/09/2019 DH-BGC17-03 *WATER*

Analyte	Units	17079	17080	17081
Lab Section 1 (Inorganics)				
Acidity	mg/L	2	7	2
Bicarbonate	mg/L	41	20	37
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1	0.3	Not Requested
Hydroxide	mg/L	<1	<1	<1
Chloride	mg/L	Not Requested	Not Requested	27
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.81	7.14	7.64
Specific conductivity	uS/cm	51	26	56
Sum of ions	mg/L	55	28	82
Total alkalinity	mg/L	34	16	30
Total hardness	mg/L	17	11	28
Nitrate	mg/L	0.06	0.11	0.16
Fluoride	mg/L	0.12	0.03	0.05
Total dissolved solids	mg/L	89	48	211
Total suspended solids	mg/L	71	62	2100
Lab Section 2 (ICP)				
Calcium	mg/L	4.8	3.4	8.8
Magnesium	mg/L	1.2	0.6	1.6
Potassium	mg/L	1.0	0.5	1.8
Sodium	mg/L	6.1	1.8	3.1
Sulfate	mg/L	0.4	1.6	2.2
Aluminum, dissolved	mg/L	0.087	0.011	0.0052
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.2	<0.1	0.5
Barium, dissolved	mg/L	0.011	0.0087	0.010
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0002	0.0004
Copper, dissolved	mg/L	0.0006	0.0016	<0.0002

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SRC Group # 2019-4219

Apr 25, 2019

Nexgen Energy Ltd.

17079 04/06/2019 DH-BGC17-01 *WATER*
17080 04/06/2019 DH-BGC17-02 *WATER*
17081 04/09/2019 DH-BGC17-03 *WATER*

Analyte	Units	17079	17080	17081
Lab Section 2 (ICP)				
Iron, dissolved	mg/L	0.074	0.0075	0.0068
Lead, dissolved	mg/L	0.0002	0.0004	<0.0001
Manganese, dissolved	mg/L	0.055	0.0032	0.013
Molybdenum, dissolved	mg/L	0.0045	0.0001	0.0013
Nickel, dissolved	mg/L	0.0001	0.0003	0.0004
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.049	0.019	0.038
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.0002	0.0003	<0.0001
Titanium, dissolved	mg/L	0.0016	0.0003	0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	0.1
Vanadium, dissolved	mg/L	0.0003	0.0002	0.0005
Zinc, dissolved	mg/L	0.0012	0.0088	<0.0005
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.04	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.01	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.01	0.006	0.009
Thorium-230, dissolved	Bq/L	<0.02	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17081
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

The temperature of the cooler was 4.9 °C upon receipt.

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SRC Group # 2019-4219

Apr 25, 2019

Nexgen Energy Ltd.

17082 04/07/2019 DH-BGC17-05 *WATER*
17083 04/06/2019 DH-BGC17-06_FD *WATER*
17084 04/09/2019 DH-BGC17-07_FB *WATER*

Analyte	Units	17082	17083	17084
Lab Section 1 (Inorganics)				
Acidity	mg/L	2	1	2
Bicarbonate	mg/L	66	37	1
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.98	7.84	5.64
Specific conductivity	uS/cm	98	50	<1
Sum of ions	mg/L	88	51	1
Total alkalinity	mg/L	54	30	1
Total hardness	mg/L	41	17	<1
Nitrate	mg/L	<0.4	0.05	<0.04
Fluoride	mg/L	0.14	0.11	<0.01
Total dissolved solids	mg/L	84	88	<5
Total suspended solids	mg/L	5	67	1
Lab Section 2 (ICP)				
Calcium	mg/L	11	4.8	<0.1
Magnesium	mg/L	3.4	1.2	<0.1
Potassium	mg/L	1.2	1.0	<0.1
Sodium	mg/L	5.5	6.2	<0.1
Sulfate	mg/L	1.0	0.4	<0.2
Aluminum, dissolved	mg/L	0.0022	0.13	0.0006
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.2	0.2	<0.1
Barium, dissolved	mg/L	0.023	0.011	<0.0005
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	0.04	0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	<0.0002	0.0007	<0.0002
Iron, dissolved	mg/L	0.19	0.080	<0.0005
Lead, dissolved	mg/L	<0.0001	0.0003	<0.0001
Manganese, dissolved	mg/L	0.10	0.055	<0.0005
Molybdenum, dissolved	mg/L	0.0009	0.0045	<0.0001
Nickel, dissolved	mg/L	<0.0001	0.0002	<0.0001

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SRC Group # 2019-4219

Apr 25, 2019

Nexgen Energy Ltd.

17082 04/07/2019 DH-BGC17-05 *WATER*
17083 04/06/2019 DH-BGC17-06_FD *WATER*
17084 04/09/2019 DH-BGC17-07_FB *WATER*

Analyte	Units	17082	17083	17084
Lab Section 2 (ICP)				
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.11	0.049	<0.0005
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	0.0002	<0.0001
Titanium, dissolved	mg/L	0.0003	0.0017	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	0.0003	<0.0001
Zinc, dissolved	mg/L	<0.0005	0.0012	<0.0005
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.02	<0.04	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.01	<0.005
Radium-226, dissolved	Bq/L	<0.005	<0.01	0.009
Thorium-230, dissolved	Bq/L	<0.01	<0.02	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 17082
Detection limit increased to 0.4 mg/L for Nitrates due to sample matrix interference.

The temperature of the cooler was 4.9 °C upon receipt.

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SRC Group # 2019-4219

Apr 25, 2019

Nexgen Energy Ltd.

17085 TRIP BLANKS *WATER*

Analyte	Units	17085
Lab Section 1 (Inorganics)		
Acidity	mg/L	2
Bicarbonate	mg/L	<1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.44
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	<1
Total alkalinity	mg/L	<1
Total hardness	mg/L	<1
Nitrate	mg/L	<0.04
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	0.2
Aluminum	mg/L	<0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001

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SRC Group # 2019-4219

Apr 25, 2019

Nexgen Energy Ltd.

17085 TRIP BLANKS *WATER*

Analyte	Units	17085
Lab Section 2 (ICP)		
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 4.9 °C upon receipt.

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Jun-05-2019 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Sections 1 and 2 have been authorized by Keith Gipman, Supervisor
Results from Lab Section 3 and 7 have been authorized by Pat Moser, Supervisor
Results from Lab Sections 4 and 5 have been authorized by Vicky Snook, Supervisor
Results from Lab Section 6 have been authorized by Marion McConnell, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

This is a final report.

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Jun-05-2019 Client P.O.:

30210	**05/28/2019 GAR_18-013 - WESTBAY ZONE 1 *WATER***
30211	**05/29/2019 GAR_18-013 - WESTBAY ZONE 2 *WATER***
30212	**05/30/2019 GAR_18-013 - WESTBAY ZONE 3 *WATER***

Analyte	Units	30210	30211	30212
Lab Section 1 (Inorganics)				
Acidity	mg/L	25	4	33
Bicarbonate	mg/L	44	27	26
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	9990	91	791
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.58	6.87	6.56
Specific conductivity	uS/cm	22400	371	2400
Sum of ions	mg/L	14700	185	1250
Total alkalinity	mg/L	36	22	21
Total hardness	mg/L	8940	107	701
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.28	0.07	0.15
Total dissolved solids	mg/L	15700	298	1740
Total suspended solids	mg/L	24	11	14
Lab Section 2 (ICP)				
Calcium	mg/L	3000	35	230
Magnesium	mg/L	354	4.8	31
Potassium	mg/L	48	4.3	12
Sodium	mg/L	1300	22	161
Sulfate	mg/L	3.7	0.9	0.7
Aluminum, dissolved	mg/L	3.5	0.061	0.014
Antimony, dissolved	mg/L	<0.002	0.0002	<0.0002
Arsenic, dissolved	ug/L	5	3.1	2.8
Barium, dissolved	mg/L	1.1	0.53	1.06
Beryllium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Boron, dissolved	mg/L	1.8	0.08	0.36
Cadmium, dissolved	mg/L	0.0004	0.00004	0.00003
Chromium, dissolved	mg/L	<0.005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.011	0.0018	0.0037
Copper, dissolved	mg/L	0.003	0.0026	0.0004

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30210	**05/28/2019 GAR_18-013 - WESTBAY ZONE 1 *WATER***
30211	**05/29/2019 GAR_18-013 - WESTBAY ZONE 2 *WATER***
30212	**05/30/2019 GAR_18-013 - WESTBAY ZONE 3 *WATER***

Analyte	Units	30210	30211	30212
Lab Section 2 (ICP)				
Iron, dissolved	mg/L	7.8	3.59	4.70
Lead, dissolved	mg/L	0.004	0.0053	0.0025
Manganese, dissolved	mg/L	1.2	0.078	0.20
Molybdenum, dissolved	mg/L	0.064	0.0090	0.025
Nickel, dissolved	mg/L	0.074	0.0038	0.0095
Selenium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.0005	<0.00005	<0.00005
Strontium, dissolved	mg/L	66	0.88	5.4
Thallium, dissolved	mg/L	<0.002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.001	0.0003	0.0003
Titanium, dissolved	mg/L	<0.002	0.0003	0.0002
Uranium, dissolved	ug/L	<1	<0.1	<0.1
Vanadium, dissolved	mg/L	0.001	0.0002	<0.0001
Zinc, dissolved	mg/L	0.49	0.076	0.96
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	0.1	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	9.6	0.14	0.21
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 30210
This sample was reanalyzed for Radium 226. Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 18.4 °C upon receipt.

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30213 05/28/2019 GAR_18-013 - WESTBAY ZONE 4 *WATER*
30214 05/31/2019 GAR_18-013 - WESTBAY ZONE 5 *WATER*
30215 05/29/2019 GAR_18-013 - WESTBAY ZONE 6 *WATER*

Analyte	Units	30213	30214	30215
Lab Section 1 (Inorganics)				
Acidity	mg/L	5	5	5
Bicarbonate	mg/L	32	39	46
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	2680	195	77
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.72	7.02	7.21
Specific conductivity	uS/cm	6890	580	345
Sum of ions	mg/L	4020	348	196
Total alkalinity	mg/L	26	32	38
Total hardness	mg/L	2150	119	57
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.27	0.15	0.16
Total dissolved solids	mg/L	4690	411	228
Total suspended solids	mg/L	8	11	5
Lab Section 2 (ICP)				
Calcium	mg/L	705	37	17
Magnesium	mg/L	96	6.6	3.5
Potassium	mg/L	22	8.7	6.4
Sodium	mg/L	488	60	45
Sulfate	mg/L	1.0	1.2	1.3
Aluminum, dissolved	mg/L	0.044	0.045	0.070
Antimony, dissolved	mg/L	<0.002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	2	2.1	1.5
Barium, dissolved	mg/L	2.9	2.04	1.48
Beryllium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Boron, dissolved	mg/L	1.2	0.20	0.22
Cadmium, dissolved	mg/L	<0.0001	0.00004	0.00003
Chromium, dissolved	mg/L	<0.005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.014	0.0039	0.0036
Copper, dissolved	mg/L	<0.002	0.0036	0.0025
Iron, dissolved	mg/L	1.0	2.00	1.17
Lead, dissolved	mg/L	0.003	0.033	0.024
Manganese, dissolved	mg/L	0.38	0.091	0.050
Molybdenum, dissolved	mg/L	0.025	0.014	0.014
Nickel, dissolved	mg/L	0.016	0.0062	0.0044

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30213 05/28/2019 GAR_18-013 - WESTBAY ZONE 4 *WATER*
30214 05/31/2019 GAR_18-013 - WESTBAY ZONE 5 *WATER*
30215 05/29/2019 GAR_18-013 - WESTBAY ZONE 6 *WATER*

Analyte	Units	30213	30214	30215
Lab Section 2 (ICP)				
Selenium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.0005	<0.00005	<0.00005
Strontium, dissolved	mg/L	16.4	0.78	0.44
Thallium, dissolved	mg/L	<0.002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.001	0.0005	0.0003
Titanium, dissolved	mg/L	<0.002	0.0007	0.0007
Uranium, dissolved	ug/L	<1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.001	0.0002	0.0002
Zinc, dissolved	mg/L	0.19	0.23	0.13
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	0.02
Radium-226, dissolved	Bq/L	0.35	0.14	0.09
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 18.4 °C upon receipt.

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30216	**05/30/2019 GAR_18-013 - WESTBAY ZONE 7 *WATER***
30217	**05/30/2019 GAR_18-013 - WESTBAY ZONE 8 *WATER***
30218	**05/29/2019 GAR_18-013 - WESTBAY ZONE 9 *WATER***

Analyte	Units	30216	30217	30218
Lab Section 1 (Inorganics)				
Acidity	mg/L	4	44	32
Bicarbonate	mg/L	32	44	44
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	245	381	388
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.08	7.17	7.29
Specific conductivity	uS/cm	709	1120	1120
Sum of ions	mg/L	408	628	634
Total alkalinity	mg/L	26	36	36
Total hardness	mg/L	153	245	244
Nitrate	mg/L	0.05	<0.04	<0.04
Fluoride	mg/L	0.12	0.15	0.17
Total dissolved solids	mg/L	498	758	753
Total suspended solids	mg/L	9	4	5
Lab Section 2 (ICP)				
Calcium	mg/L	47	72	70
Magnesium	mg/L	8.8	16	17
Potassium	mg/L	7.6	9.9	9.4
Sodium	mg/L	67	105	105
Sulfate	mg/L	0.5	0.6	0.4
Aluminum, dissolved	mg/L	0.016	0.010	0.0061
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	1.0	2.0	0.3
Barium, dissolved	mg/L	1.76	2.27	1.82
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	0.21	0.30	0.31
Cadmium, dissolved	mg/L	0.00003	0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0007	0.0020	0.0001
Copper, dissolved	mg/L	0.0006	0.0003	0.0002
Iron, dissolved	mg/L	2.17	2.00	2.42
Lead, dissolved	mg/L	0.0032	0.0003	<0.0001
Manganese, dissolved	mg/L	0.090	0.085	0.097
Molybdenum, dissolved	mg/L	0.0095	0.043	0.055
Nickel, dissolved	mg/L	0.0025	0.0030	0.0012

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30216 05/30/2019 GAR_18-013 - WESTBAY ZONE 7 *WATER*
30217 05/30/2019 GAR_18-013 - WESTBAY ZONE 8 *WATER*
30218 05/29/2019 GAR_18-013 - WESTBAY ZONE 9 *WATER*

Analyte	Units	30216	30217	30218
Lab Section 2 (ICP)				
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	1.14	1.85	1.75
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.0002	0.0003	0.0003
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0003
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.089	0.11	0.056
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.10	0.20	0.06
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 18.4 °C upon receipt.

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Jun 28, 2019

Nexgen Energy Ltd.

30219 05/30/2019 GAR_18-013 - WESTBAY ZONE 10 *WATER*
30220 05/31/2019 GAR_18-013 - WESTBAY ZONE 11 *WATER*
30221 05/31/2019 GAR_18-013 - WESTBAY DUPLICATE *WATER*

Analyte	Units	30219	30220	30221
Lab Section 1 (Inorganics)				
Acidity	mg/L	6	5	5
Bicarbonate	mg/L	45	54	54
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	31	32	32
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.52	7.59	7.59
Specific conductivity	uS/cm	169	182	182
Sum of ions	mg/L	113	126	127
Total alkalinity	mg/L	37	44	44
Total hardness	mg/L	20	30	30
Nitrate	mg/L	0.05	<0.04	<0.4
Fluoride	mg/L	0.13	0.12	0.12
Total dissolved solids	mg/L	89	108	120
Total suspended solids	mg/L	4	5	5
Lab Section 2 (ICP)				
Calcium	mg/L	4.8	7.1	7.1
Magnesium	mg/L	2.0	3.0	3.0
Potassium	mg/L	5.2	6.4	6.4
Sodium	mg/L	24	23	23
Sulfate	mg/L	0.8	1.0	1.0
Aluminum, dissolved	mg/L	0.033	0.016	0.015
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.4	0.3	0.2
Barium, dissolved	mg/L	0.28	0.28	0.28
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	0.11	0.10	0.10
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0003	0.0007	0.0007
Copper, dissolved	mg/L	0.0007	0.0007	0.0007
Iron, dissolved	mg/L	0.22	0.37	0.36
Lead, dissolved	mg/L	0.0033	0.0032	0.0032
Manganese, dissolved	mg/L	0.0073	0.0088	0.0093
Molybdenum, dissolved	mg/L	0.015	0.018	0.018
Nickel, dissolved	mg/L	0.0021	0.0022	0.0023

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30219 05/30/2019 GAR_18-013 - WESTBAY ZONE 10 *WATER*
30220 05/31/2019 GAR_18-013 - WESTBAY ZONE 11 *WATER*
30221 05/31/2019 GAR_18-013 - WESTBAY DUPLICATE *WATER*

Analyte	Units	30219	30220	30221
Lab Section 2 (ICP)				
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.15	0.20	0.20
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.0002	0.0002	0.0002
Titanium, dissolved	mg/L	0.0004	<0.0002	0.0003
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	0.0003	0.0002	0.0002
Zinc, dissolved	mg/L	0.034	0.029	0.029
Lab Section 4 (Radiochemistry)				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.05	0.03	0.05
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 30221
Detection limit increased to 0.4 mg/L for Nitrate due to sample matrix interference.

The temperature of the cooler was 18.4 °C upon receipt.

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30222 05/29/2019 GAR_18-013 - FIELD BLANK - FB *WATER*

Analyte	Units	30222
Lab Section 1 (Inorganics)		
Acidity	mg/L	1
Bicarbonate	mg/L	1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.78
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1
Total alkalinity	mg/L	1
Total hardness	mg/L	<1
Nitrate	mg/L	<0.04
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	8
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum, dissolved	mg/L	0.0006
Antimony, dissolved	mg/L	<0.0002
Arsenic, dissolved	ug/L	<0.1
Barium, dissolved	mg/L	<0.0005
Beryllium, dissolved	mg/L	<0.0001
Boron, dissolved	mg/L	<0.01
Cadmium, dissolved	mg/L	<0.00001
Chromium, dissolved	mg/L	<0.0005
Cobalt, dissolved	mg/L	<0.0001
Copper, dissolved	mg/L	<0.0002
Iron, dissolved	mg/L	0.0010
Lead, dissolved	mg/L	<0.0001
Manganese, dissolved	mg/L	<0.0005
Molybdenum, dissolved	mg/L	<0.0001
Nickel, dissolved	mg/L	<0.0001

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30222 05/29/2019 GAR_18-013 - FIELD BLANK - FB *WATER*

Analyte	Units	30222
Lab Section 2 (ICP)		
Selenium, dissolved	mg/L	<0.0001
Silver, dissolved	mg/L	<0.00005
Strontium, dissolved	mg/L	<0.0005
Thallium, dissolved	mg/L	<0.0002
Tin, dissolved	mg/L	<0.0001
Titanium, dissolved	mg/L	<0.0002
Uranium, dissolved	ug/L	<0.1
Vanadium, dissolved	mg/L	<0.0001
Zinc, dissolved	mg/L	0.0028
Lab Section 4 (Radiochemistry)		
Lead-210, dissolved	Bq/L	<0.08
Polonium-210, dissolved	Bq/L	<0.02
Radium-226, dissolved	Bq/L	0.03
Thorium-230, dissolved	Bq/L	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 30222
This sample was reanalyzed for Lab Section 2 (ICP). Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 18.4 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL
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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30223 04/06/2019 TRIP BLANK *WATER*

Analyte	Units	30223
Lab Section 1 (Inorganics)		
Acidity	mg/L	1
Bicarbonate	mg/L	1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.60
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1
Total alkalinity	mg/L	1
Total hardness	mg/L	<1
Nitrate	mg/L	<0.04
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2 (ICP)		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	<0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Manganese	mg/L	<0.0005
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30223 04/06/2019 TRIP BLANK *WATER*

Analyte	Units	30223
Lab Section 2 (ICP)		
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Lab Section 4 (Radiochemistry)		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 18.4 °C upon receipt.

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

30224	**RINSE BLANK GAR_18-013 - Z1 - RB *WATER***
30225	**RINSE BLANK GAR_18-013 - Z6 - RB *WATER***
30226	**RINSE BLANK GAR_18-013 - Z8 - RB *WATER***

Analyte	Units	30224	30225	30226
Lab Section 1 (Inorganics)				
Total hardness	mg/L	<1	<1	<1
Lab Section 2 (ICP)				
Calcium, dissolved	mg/L	<0.1	Not Requested	Not Requested
Magnesium, dissolved	mg/L	<0.1	Not Requested	Not Requested
Potassium, dissolved	mg/L	<0.1	Not Requested	Not Requested
Sodium, dissolved	mg/L	0.5	Not Requested	Not Requested
Sulfate, dissolved	mg/L	<0.2	Not Requested	Not Requested
Calcium	mg/L	Not Requested	<0.1	<0.1
Magnesium	mg/L	Not Requested	<0.1	<0.1
Potassium	mg/L	Not Requested	<0.1	<0.1
Sodium	mg/L	Not Requested	0.1	0.1
Sulfate	mg/L	Not Requested	<0.2	<0.2
Aluminum, dissolved	mg/L	0.0010	<0.0005	<0.0005
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	<0.1	<0.1	<0.1
Barium, dissolved	mg/L	0.0036	0.0019	0.0016
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	0.0002	<0.0002	<0.0002
Iron, dissolved	mg/L	0.0013	0.0007	0.0007
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Manganese, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	0.0001	0.0001	0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.0018	<0.0005	<0.0005
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.0048	0.0070	0.0051

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SRC Group # 2019-7348

Jun 28, 2019

Nexgen Energy Ltd.

The temperature of the cooler was 18.4 °C upon receipt.

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Aug-26-2019 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Aug-26-2019 Client P.O.:

48533	**08/18/2019 18:10 DH_BGC17-01 *WATER***
48534	**08/19/2019 12:10 DH_BGC17-02 *WATER***
48535	**08/19/2019 14:40 DH_BGC17-03 *WATER***

Analyte	Units	48533	48534	48535
Lab Section 1				
Acidity	mg/L	3	5	5
Bicarbonate	mg/L	35	20	32
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	<0.1	0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.65	7.01	7.39
Specific conductivity	uS/cm	49	23	40
Sum of ions	mg/L	47	27	43
Total alkalinity	mg/L	29	16	26
Total hardness	mg/L	20	9	17
Nitrate	mg/L	<0.04	0.23	0.65
Fluoride	mg/L	0.05	0.02	0.03
Total dissolved solids	mg/L	71	52	43
Total suspended solids	mg/L	2	17	19
Lab Section 2				
Calcium	mg/L	6.3	2.6	5.6
Magnesium	mg/L	1.1	0.7	0.8
Potassium	mg/L	0.7	0.5	0.6
Sodium	mg/L	3.3	1.6	1.9
Sulfate	mg/L	0.5	1.4	1.5
Aluminum, dissolved	mg/L	0.0052	0.0078	0.0050
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.5	<0.1	0.3
Barium, dissolved	mg/L	0.012	0.0049	0.0071
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	0.00003	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0007	0.0005

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Sep 20, 2019

Nexgen Energy Ltd.

48533 08/18/2019 18:10 DH_BGC17-01 *WATER*
48534 08/19/2019 12:10 DH_BGC17-02 *WATER*
48535 08/19/2019 14:40 DH_BGC17-03 *WATER*

Analyte	Units	48533	48534	48535
Lab Section 2				
Copper, dissolved	mg/L	<0.0002	0.0015	0.0002
Iron, dissolved	mg/L	0.22	0.0063	0.020
Lead, dissolved	mg/L	0.0002	0.0001	<0.0001
Lithium, dissolved	ug/L	2.4	0.9	1.7
Manganese, dissolved	mg/L	0.073	0.0055	0.016
Molybdenum, dissolved	mg/L	0.0015	0.0001	0.0007
Nickel, dissolved	mg/L	0.0001	0.0005	0.0005
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.036	0.019	0.026
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0002	0.0002	0.0003
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	0.0002	0.0006
Zinc, dissolved	mg/L	0.0011	0.017	0.0018
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.005	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48536 08/21/2019 14:15 DH_2018-MW-001A *WATER*
48537 08/21/2019 12:25 DH_2018-MW-001B *WATER*
48538 08/24/2019 13:05 DH_2018-MW-002B *WATER*

Analyte	Units	48536	48537	48538
Lab Section 1				
Acidity	mg/L	<1	29	5
Bicarbonate	mg/L	71	37	73
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.2	0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.92	6.72	7.74
Specific conductivity	uS/cm	103	46	112
Sum of ions	mg/L	98	49	100
Total alkalinity	mg/L	58	30	60
Total hardness	mg/L	54	24	54
Nitrate	mg/L	<0.04	<0.04	0.22
Fluoride	mg/L	0.10	0.02	0.04
Total dissolved solids	mg/L	126	87	132
Total suspended solids	mg/L	776	576	73
Lab Section 2				
Calcium	mg/L	16	7.6	18
Magnesium	mg/L	3.4	1.2	2.1
Potassium	mg/L	2.9	0.8	1.6
Sodium	mg/L	2.5	1.5	2.6
Sulfate	mg/L	1.7	0.7	2.6
Aluminum, dissolved	mg/L	0.0030	0.26	0.041
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.8	0.2	0.4
Barium, dissolved	mg/L	0.011	0.012	0.024
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	0.04	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0001	0.0002	0.0002
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0003
Iron, dissolved	mg/L	0.12	1.72	0.011
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	12	1.7	2.1
Manganese, dissolved	mg/L	0.073	0.084	0.035

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48536 08/21/2019 14:15 DH_2018-MW-001A *WATER*
48537 08/21/2019 12:25 DH_2018-MW-001B *WATER*
48538 08/24/2019 13:05 DH_2018-MW-002B *WATER*

Analyte	Units	48536	48537	48538
Lab Section 2				
Molybdenum, dissolved	mg/L	0.0009	0.0001	0.0014
Nickel, dissolved	mg/L	0.0003	0.0013	0.0011
Selenium, dissolved	mg/L	<0.0001	<0.0001	0.0002
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.067	0.025	0.036
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	0.0049	0.0010
Uranium, dissolved	ug/L	0.1	<0.1	0.6
Vanadium, dissolved	mg/L	0.0006	0.0010	0.0005
Zinc, dissolved	mg/L	<0.0005	0.0006	0.0007
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	0.02	<0.005
Radium-226, dissolved	Bq/L	<0.005	<0.005	0.006
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.4 °C upon receipt.

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Sep 20, 2019

Nexgen Energy Ltd.

48539 08/24/2019 14:50 DH_2018-MW-003 *WATER*
48540 08/23/2019 13:20 DH_2018-MW-004A *WATER*
48541 08/22/2019 17:30 DH_2018-MW-006A *WATER*

Analyte	Units	48539	48540	48541
Lab Section 1				
Acidity	mg/L	26	2	1
Bicarbonate	mg/L	11	67	30
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	1.0	0.1	<0.1
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.47	7.84	7.61
Specific conductivity	uS/cm	48	106	33
Sum of ions	mg/L	33	96	41
Total alkalinity	mg/L	9	55	25
Total hardness	mg/L	18	32	14
Nitrate	mg/L	<0.04	<0.04	0.04
Fluoride	mg/L	0.02	0.21	0.07
Total dissolved solids	mg/L	80	102	102
Total suspended solids	mg/L	141	32	108
Lab Section 2				
Calcium	mg/L	5.9	10	4.3
Magnesium	mg/L	0.9	1.7	0.8
Potassium	mg/L	0.9	1.2	1.1
Sodium	mg/L	4.4	11	3.2
Sulfate	mg/L	8.5	4.5	1.5
Aluminum, dissolved	mg/L	0.51	0.024	0.0073
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.5	0.6	0.8
Barium, dissolved	mg/L	0.016	0.016	0.0060
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	0.02	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	0.0006	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0010	<0.0001	<0.0001
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron, dissolved	mg/L	2.52	0.26	0.0035
Lead, dissolved	mg/L	0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	2.1	5.5	1.5
Manganese, dissolved	mg/L	0.073	0.11	0.014

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48539 08/24/2019 14:50 DH_2018-MW-003 *WATER*
48540 08/23/2019 13:20 DH_2018-MW-004A *WATER*
48541 08/22/2019 17:30 DH_2018-MW-006A *WATER*

Analyte	Units	48539	48540	48541
Lab Section 2				
Molybdenum, dissolved	mg/L	0.0002	0.0050	0.0060
Nickel, dissolved	mg/L	0.0021	0.0002	0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.019	0.047	0.024
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0050	0.0013	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	0.0012	<0.0001	0.0008
Zinc, dissolved	mg/L	0.0026	0.0008	<0.0005
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	0.006	0.01	<0.005
Radium-226, dissolved	Bq/L	<0.005	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 48541
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part2540C.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48542 08/22/2019 15:50 DH_2018-MW-006B *WATER*
48543 08/20/2019 16:20 DH_2018-MW-007A *WATER*
48544 08/20/2019 17:25 DH_2018-MW-007B *WATER*

Analyte	Units	48542	48543	48544
Lab Section 1				
Acidity	mg/L	5	3	4
Bicarbonate	mg/L	66	41	32
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	11	Not Requested	11
Hydroxide	mg/L	<1	<1	<1
Chloride	mg/L	Not Requested	<0.1	Not Requested
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.66	7.65	7.38
Specific conductivity	uS/cm	85	57	45
Sum of ions	mg/L	107	55	54
Total alkalinity	mg/L	54	34	26
Total hardness	mg/L	25	23	19
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.07	0.07	0.06
Total dissolved solids	mg/L	9350	88	136
Total suspended solids	mg/L	3290	12	362
Lab Section 2				
Calcium	mg/L	5.7	6.6	5.9
Magnesium	mg/L	2.6	1.7	1.1
Potassium	mg/L	3.3	1.1	0.9
Sodium	mg/L	16	4.5	2.6
Sulfate	mg/L	2.1	0.2	0.9
Aluminum, dissolved	mg/L	0.0038	0.0044	0.017
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	1.0	0.2	1.8
Barium, dissolved	mg/L	0.0032	0.015	0.015
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0002	<0.0001	0.0006
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron, dissolved	mg/L	0.0089	0.54	0.76
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	2.0	7.0	3.9
Manganese, dissolved	mg/L	0.014	0.14	0.34

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48542 08/22/2019 15:50 DH_2018-MW-006B *WATER*
48543 08/20/2019 16:20 DH_2018-MW-007A *WATER*
48544 08/20/2019 17:25 DH_2018-MW-007B *WATER*

Analyte	Units	48542	48543	48544
Lab Section 2				
Molybdenum, dissolved	mg/L	0.0060	0.0015	0.0010
Nickel, dissolved	mg/L	0.0004	<0.0001	0.0003
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.023	0.039	0.023
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0003	0.0003	0.0006
Uranium, dissolved	ug/L	0.6	<0.1	<0.1
Vanadium, dissolved	mg/L	0.0018	<0.0001	<0.0001
Zinc, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.08	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.02	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.02	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.04	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 48542
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part2540C.

Note for Sample # 48544
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part2540C.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48545 08/20/2019 11:10 DH_2018-MW-008A *WATER*
48546 08/20/2019 13:40 DH_2018-MW-008B *WATER*
48547 08/22/2019 10:40 DH_2018-MW-009A *WATER*

Analyte	Units	48545	48546	48547
Lab Section 1				
Acidity	mg/L	6	1	6
Bicarbonate	mg/L	18	30	30
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	<0.1	0.4	4.3
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.06	7.41	7.28
Specific conductivity	uS/cm	21	52	64
Sum of ions	mg/L	25	44	53
Total alkalinity	mg/L	15	25	25
Total hardness	mg/L	10	17	25
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.01	0.12	0.03
Total dissolved solids	mg/L	505	71	74
Total suspended solids	mg/L	2880	7	22
Lab Section 2				
Calcium	mg/L	3.2	5.2	8.1
Magnesium	mg/L	0.5	1.0	1.1
Potassium	mg/L	0.9	1.1	1.1
Sodium	mg/L	1.0	5.8	3.6
Sulfate	mg/L	1.4	0.4	4.5
Aluminum, dissolved	mg/L	0.019	0.0021	0.0039
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	<0.1	0.2	0.3
Barium, dissolved	mg/L	0.0038	0.0064	0.014
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0013	<0.0001	0.0013
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron, dissolved	mg/L	0.35	0.11	0.43
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	1.2	6.2	2.2
Manganese, dissolved	mg/L	0.20	0.085	0.14

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48545 08/20/2019 11:10 DH_2018-MW-008A *WATER*
48546 08/20/2019 13:40 DH_2018-MW-008B *WATER*
48547 08/22/2019 10:40 DH_2018-MW-009A *WATER*

Analyte	Units	48545	48546	48547
Lab Section 2				
Molybdenum, dissolved	mg/L	0.0016	0.010	0.0022
Nickel, dissolved	mg/L	0.0016	<0.0001	0.0008
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.016	0.026	0.029
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	0.0002
Zinc, dissolved	mg/L	0.0012	<0.0005	0.0006
Lab Section 4				
Lead-210, dissolved	Bq/L	0.03	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	0.007	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 48545
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part2540C.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48548 08/25/2019 17:00 DH_2018-MW-010A *WATER*
48549 08/21/2019 14:25 DH_DUP1 *WATER*
48550 08/24/2019 14:50 DH-DUP2 *WATER*

Analyte	Units	48548	48549	48550
Lab Section 1				
Acidity	mg/L	<1	2	28
Bicarbonate	mg/L	83	71	13
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1	<0.1	0.9
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	8.27	7.91	6.56
Specific conductivity	uS/cm	125	103	51
Sum of ions	mg/L	116	97	34
Total alkalinity	mg/L	68	58	11
Total hardness	mg/L	32	54	19
Nitrate	mg/L	0.10	<0.04	<0.04
Fluoride	mg/L	0.18	0.09	0.02
Total dissolved solids	mg/L	128	111	77
Total suspended solids	mg/L	38	518	168
Lab Section 2				
Calcium	mg/L	8.4	16	6.1
Magnesium	mg/L	2.7	3.4	0.9
Potassium	mg/L	2.3	2.7	0.8
Sodium	mg/L	17	2.5	4.2
Sulfate	mg/L	2.0	1.5	8.5
Aluminum, dissolved	mg/L	0.12	0.0031	0.49
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.7	0.7	0.5
Barium, dissolved	mg/L	0.015	0.011	0.016
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	0.07	0.04	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	0.0006
Cobalt, dissolved	mg/L	<0.0001	<0.0001	0.0011
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron, dissolved	mg/L	0.070	0.10	2.52
Lead, dissolved	mg/L	0.0002	<0.0001	<0.0001
Lithium, dissolved	ug/L	17	12	2.2
Manganese, dissolved	mg/L	0.026	0.076	0.076

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48548 08/25/2019 17:00 DH_2018-MW-010A *WATER*
48549 08/21/2019 14:25 DH_DUP1 *WATER*
48550 08/24/2019 14:50 DH-DUP2 *WATER*

Analyte	Units	48548	48549	48550
Lab Section 2				
Molybdenum, dissolved	mg/L	0.0017	0.0008	0.0002
Nickel, dissolved	mg/L	0.0001	0.0003	0.0020
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.099	0.067	0.019
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0046	<0.0002	0.0051
Uranium, dissolved	ug/L	<0.1	0.2	<0.1
Vanadium, dissolved	mg/L	0.0002	0.0006	0.0011
Zinc, dissolved	mg/L	0.0010	<0.0005	0.0024
Lab Section 4				
Lead-210, dissolved	Bq/L	0.03	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	0.008
Radium-226, dissolved	Bq/L	0.005	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48551 08/25/2019 17:00 DH_FBLANK1 *WATER*

Analyte	Units	48551
Lab Section 1		
Acidity	mg/L	3
Bicarbonate	mg/L	2
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.66
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	2
Total alkalinity	mg/L	2
Total hardness	mg/L	<1
Nitrate	mg/L	<0.04
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	6
Total suspended solids	mg/L	<1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum, dissolved	mg/L	<0.0005
Antimony, dissolved	mg/L	<0.0002
Arsenic, dissolved	ug/L	<0.1
Barium, dissolved	mg/L	<0.0005
Beryllium, dissolved	mg/L	<0.0001
Bismuth, dissolved	mg/L	<0.0002
Boron, dissolved	mg/L	<0.01
Cadmium, dissolved	mg/L	<0.00001
Chromium, dissolved	mg/L	<0.0005
Cobalt, dissolved	mg/L	<0.0001
Copper, dissolved	mg/L	<0.0002
Iron, dissolved	mg/L	<0.0005
Lead, dissolved	mg/L	<0.0001
Lithium, dissolved	ug/L	<0.1
Manganese, dissolved	mg/L	<0.0005

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Sep 20, 2019

Nexgen Energy Ltd.

48551 08/25/2019 17:00 DH_FBLANK1 *WATER*

Analyte	Units	48551
Lab Section 2		
Molybdenum, dissolved	mg/L	<0.0001
Nickel, dissolved	mg/L	<0.0001
Selenium, dissolved	mg/L	<0.0001
Silver, dissolved	mg/L	<0.00005
Strontium, dissolved	mg/L	<0.0005
Thallium, dissolved	mg/L	<0.0002
Tin, dissolved	mg/L	<0.0001
Titanium, dissolved	mg/L	<0.0002
Uranium, dissolved	ug/L	<0.1
Vanadium, dissolved	mg/L	<0.0001
Zinc, dissolved	mg/L	<0.0005
Lab Section 4		
Lead-210, dissolved	Bq/L	<0.02
Polonium-210, dissolved	Bq/L	<0.005
Radium-226, dissolved	Bq/L	<0.005
Thorium-230, dissolved	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2019-12097

Sep 20, 2019

Nexgen Energy Ltd.

48552 08/25/2019 17:00 DH_TBLANK1 *WATER*

Analyte	Units	48552
Lab Section 1		
Acidity	mg/L	<1
Bicarbonate	mg/L	1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.54
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1
Total alkalinity	mg/L	1
Total hardness	mg/L	<1
Nitrate	mg/L	<0.04
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	6
Total suspended solids	mg/L	<1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	<0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005

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Sep 20, 2019

Nexgen Energy Ltd.

48552 08/25/2019 17:00 DH_TBLANK1 *WATER*

Analyte	Units	48552
Lab Section 2		
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.4 °C upon receipt.

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SRC Group # 2019-12924

Sep 30, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Sep-10-2019 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-12924

Sep 30, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Sep-10-2019 Client P.O.:

51312 08/27/2019 13:00 DH_2018-MW-010B *WATER*
51313 08/30/2019 14:17 DH-GAR-18-013_Z8 *WATER*
51314 09/01/2019 12:20 DH-GAR-18-013_Z9 *WATER*

Analyte	Units	51312	51313	51314
Lab Section 1				
Acidity	mg/L	<1	8	7
Bicarbonate	mg/L	1	48	43
Carbonate	mg/L	59	<1	<1
Chloride	mg/L	7.8	Not Requested	Not Requested
Hydroxide	mg/L	<1	<1	<1
Chloride	mg/L	Not Requested	296	295
P. alkalinity	mg/L	49	<1	<1
pH	pH units	10.14	7.29	7.18
Specific conductivity	uS/cm	197	1170	1140
Sum of ions	mg/L	119	560	542
Total alkalinity	mg/L	99	39	35
Total hardness	mg/L	82	259	246
Nitrate	mg/L	0.06	0.80	0.04
Fluoride	mg/L	0.12	0.14	0.15
Total dissolved solids	mg/L	150	910	893
Total suspended solids	mg/L	<1	4	10
Lab Section 2				
Calcium	mg/L	30	76	69
Magnesium	mg/L	1.8	17	18
Potassium	mg/L	6.0	10	9.8
Sodium	mg/L	8.5	112	107
Sulfate	mg/L	4.9	0.6	0.3
Aluminum, dissolved	mg/L	0.030	0.0028	0.0052
Antimony, dissolved	mg/L	0.0004	<0.0002	<0.0002
Arsenic, dissolved	ug/L	1.5	1.8	0.4
Barium, dissolved	mg/L	0.051	2.36	1.77
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	0.09	0.34	0.35
Cadmium, dissolved	mg/L	<0.00001	0.00057	0.00013
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0018	0.0002

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SRC Group # 2019-12924

Sep 30, 2019

Nexgen Energy Ltd.

51312 08/27/2019 13:00 DH_2018-MW-010B *WATER*
51313 08/30/2019 14:17 DH-GAR-18-013_Z8 *WATER*
51314 09/01/2019 12:20 DH-GAR-18-013_Z9 *WATER*

Analyte	Units	51312	51313	51314
Lab Section 2				
Copper, dissolved	mg/L	<0.0002	0.0019	0.0004
Iron, dissolved	mg/L	0.012	1.64	3.24
Lead, dissolved	mg/L	<0.0001	0.0005	<0.0001
Lithium, dissolved	ug/L	14	28	28
Manganese, dissolved	mg/L	0.0075	0.088	0.10
Molybdenum, dissolved	mg/L	0.0014	0.046	0.058
Nickel, dissolved	mg/L	<0.0001	0.0075	0.0059
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.26	1.99	1.81
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	0.0003	0.0003
Titanium, dissolved	mg/L	<0.0002	0.0002	0.0003
Uranium, dissolved	ug/L	0.4	<0.1	<0.1
Vanadium, dissolved	mg/L	0.0006	<0.0001	<0.0001
Zinc, dissolved	mg/L	<0.0005	0.17	0.064
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.02	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.005	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.02	0.22	0.02
Thorium-230, dissolved	Bq/L	<0.01	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 7.1 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Sep-24-2019 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

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* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Sep-24-2019 Client P.O.:

54682	**09/16/2019 13:30 DH_GAR-18-013 - Z1 *WATER***
54683	**09/15/2019 15:30 DH_GAR-18-013 - Z2 *WATER***
54684	**09/18/2019 13:50 DH_GAR-18-013 - Z3 *WATER***

Analyte	Units	54682	54683	54684
Lab Section 1				
Acidity	mg/L	23	7	13
Bicarbonate	mg/L	39	27	26
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	9040	174	733
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.61	7.09	6.59
Specific conductivity	uS/cm	25600	544	2620
Sum of ions	mg/L	14500	311	1220
Total alkalinity	mg/L	32	22	21
Total hardness	mg/L	10400	186	744
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.29	0.08	0.15
Total dissolved solids	mg/L	21500	456	2280
Total suspended solids	mg/L	29	20	20
Lab Section 2				
Calcium	mg/L	3500	61	244
Magnesium	mg/L	420	8.2	33
Potassium	mg/L	45	4.6	11
Sodium	mg/L	1500	35	171
Sulfate	mg/L	2.8	0.8	0.6
Aluminum, dissolved	mg/L	<0.005	0.012	0.011
Antimony, dissolved	mg/L	<0.002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	15	3.0	2.8
Barium, dissolved	mg/L	1.0	0.61	1.08
Beryllium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.002	<0.0002	<0.0002
Boron, dissolved	mg/L	2.2	0.11	0.42
Cadmium, dissolved	mg/L	0.0006	0.00036	0.00017
Chromium, dissolved	mg/L	<0.005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.007	0.0022	0.0037

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54682 09/16/2019 13:30 DH_GAR-18-013 - Z1 *WATER*
54683 09/15/2019 15:30 DH_GAR-18-013 - Z2 *WATER*
54684 09/18/2019 13:50 DH_GAR-18-013 - Z3 *WATER*

Analyte	Units	54682	54683	54684
Lab Section 2				
Copper, dissolved	mg/L	<0.002	0.0032	0.0013
Iron, dissolved	mg/L	10.5	3.87	6.1
Lead, dissolved	mg/L	0.003	0.0071	0.0076
Lithium, dissolved	ug/L	230	7.5	33
Manganese, dissolved	mg/L	1.4	0.092	0.22
Molybdenum, dissolved	mg/L	0.067	0.010	0.027
Nickel, dissolved	mg/L	0.046	0.010	0.0097
Selenium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.0005	<0.00005	<0.00005
Strontium, dissolved	mg/L	77	1.14	5.6
Thallium, dissolved	mg/L	<0.002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.002	0.0015	0.0004
Titanium, dissolved	mg/L	<0.002	0.0003	0.0003
Uranium, dissolved	ug/L	<1	<0.1	<0.1
Vanadium, dissolved	mg/L	0.002	0.0002	<0.0001
Zinc, dissolved	mg/L	0.16	0.12	1.02
Lab Section 4				
Lead-210, dissolved	Bq/L	0.2	0.1	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	13	0.17	0.16
Thorium-230, dissolved	Bq/L	0.14	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 54682
Lab Section 2 (ICP) detection limits increased due to sample matrix.

The temperature of the cooler was 15.7 °C upon receipt.

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54685 09/19/2019 13:25 DH_GAR-18-013 - Z4 *WATER*
54686 09/18/2019 16:25 DH_GAR-18-013 - Z5 *WATER*
54687 09/19/2019 17:00 DH_GAR-18-013 - Z6 *WATER*

Analyte	Units	54685	54686	54687
Lab Section 1				
Acidity	mg/L	11	5	4
Bicarbonate	mg/L	32	43	46
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	2090	155	97
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.83	7.16	7.29
Specific conductivity	uS/cm	7160	609	393
Sum of ions	mg/L	3450	314	223
Total alkalinity	mg/L	26	35	38
Total hardness	mg/L	2150	122	60
Nitrate	mg/L	<0.04	0.04	0.05
Fluoride	mg/L	0.28	0.16	0.19
Total dissolved solids	mg/L	5660	438	256
Total suspended solids	mg/L	12	16	12
Lab Section 2				
Calcium	mg/L	704	38	18
Magnesium	mg/L	96	6.7	3.6
Potassium	mg/L	21	8.2	6.0
Sodium	mg/L	504	62	51
Sulfate	mg/L	1.0	1.3	1.4
Aluminum, dissolved	mg/L	<0.005	0.033	0.032
Antimony, dissolved	mg/L	<0.002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	4	2.2	1.5
Barium, dissolved	mg/L	2.7	2.05	1.42
Beryllium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.002	<0.0002	<0.0002
Boron, dissolved	mg/L	1.4	0.26	0.28
Cadmium, dissolved	mg/L	0.0002	0.00007	0.00004
Chromium, dissolved	mg/L	<0.005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.014	0.0040	0.0035
Copper, dissolved	mg/L	<0.002	0.0039	0.0028
Iron, dissolved	mg/L	3.5	2.15	1.15
Lead, dissolved	mg/L	<0.001	0.031	0.026
Lithium, dissolved	ug/L	95	15	14
Manganese, dissolved	mg/L	0.39	0.098	0.048

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54685 09/19/2019 13:25 DH_GAR-18-013 - Z4 *WATER*
54686 09/18/2019 16:25 DH_GAR-18-013 - Z5 *WATER*
54687 09/19/2019 17:00 DH_GAR-18-013 - Z6 *WATER*

Analyte	Units	54685	54686	54687
Lab Section 2				
Molybdenum, dissolved	mg/L	0.031	0.016	0.016
Nickel, dissolved	mg/L	0.016	0.0077	0.0069
Selenium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.0005	<0.00005	<0.00005
Strontium, dissolved	mg/L	15.8	0.84	0.45
Thallium, dissolved	mg/L	<0.002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.002	0.0005	0.0003
Titanium, dissolved	mg/L	<0.002	0.0008	0.0006
Uranium, dissolved	ug/L	<1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.001	0.0002	0.0002
Zinc, dissolved	mg/L	0.24	0.38	0.17
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.54	0.11	0.05
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 54685
Lab Section 2 (ICP) detection limits increased due to sample matrix.

The temperature of the cooler was 15.7 °C upon receipt.

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54688 09/16/2019 17:00 DH_GAR-18-013 - Z7 *WATER*
54689 09/19/2019 19:30 DH_GAR-18-013 - Z10 *WATER*
54690 09/17/2019 15:50 DH_GAR-18-013 - Z11 *WATER*

Analyte	Units	54688	54689	54690
Lab Section 1				
Acidity	mg/L	6	23	6
Bicarbonate	mg/L	29	48	55
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	195	27	28
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.02	7.60	7.60
Specific conductivity	uS/cm	750	183	201
Sum of ions	mg/L	358	113	125
Total alkalinity	mg/L	24	39	45
Total hardness	mg/L	157	21	33
Nitrate	mg/L	0.06	<0.04	0.04
Fluoride	mg/L	0.12	0.14	0.13
Total dissolved solids	mg/L	547	108	126
Total suspended solids	mg/L	12	3	3
Lab Section 2				
Calcium	mg/L	48	5.0	7.9
Magnesium	mg/L	9.0	2.1	3.3
Potassium	mg/L	7.4	4.6	5.9
Sodium	mg/L	69	25	24
Sulfate	mg/L	0.8	1.0	1.1
Aluminum, dissolved	mg/L	0.0097	0.010	0.0078
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	1.2	0.4	0.3
Barium, dissolved	mg/L	1.77	0.30	0.30
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	0.25	0.14	0.13
Cadmium, dissolved	mg/L	0.00007	0.00004	0.00003
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0005	0.0002	0.0006
Copper, dissolved	mg/L	0.0018	0.0006	0.0009
Iron, dissolved	mg/L	2.80	0.19	0.52
Lead, dissolved	mg/L	0.0054	0.0026	0.0044
Lithium, dissolved	ug/L	18	8.1	12
Manganese, dissolved	mg/L	0.096	0.0067	0.010

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54688 09/16/2019 17:00 DH_GAR-18-013 - Z7 *WATER*
54689 09/19/2019 19:30 DH_GAR-18-013 - Z10 *WATER*
54690 09/17/2019 15:50 DH_GAR-18-013 - Z11 *WATER*

Analyte	Units	54688	54689	54690
Lab Section 2				
Molybdenum, dissolved	mg/L	0.0098	0.017	0.018
Nickel, dissolved	mg/L	0.0027	0.0020	0.0032
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	1.12	0.16	0.22
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.0002	0.0002	0.0002
Titanium, dissolved	mg/L	0.0002	0.0003	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	0.0002	0.0002
Zinc, dissolved	mg/L	0.10	0.046	0.12
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.11	0.03	<0.02
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.7 °C upon receipt.

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54691 09/17/2019 18:00 DH_GAR-18-013 - FDUP *WATER*
54692 09/21/2019 12:50 DH-2018-MW-004B *WATER*
54693 09/21/2019 15:10 DH_BGC-17-05 *WATER*

Analyte	Units	54691	54692	54693
Lab Section 1				
Acidity	mg/L	5	6	6
Bicarbonate	mg/L	56	49	61
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	29	Not Requested	Not Requested
Hydroxide	mg/L	<1	<1	<1
Chloride	mg/L	Not Requested	0.2	0.2
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.64	7.71	7.88
Specific conductivity	uS/cm	206	76	91
Sum of ions	mg/L	129	68	80
Total alkalinity	mg/L	46	40	50
Total hardness	mg/L	35	33	38
Nitrate	mg/L	<0.04	0.34	0.04
Fluoride	mg/L	0.13	0.06	0.10
Total dissolved solids	mg/L	131	75	67
Total suspended solids	mg/L	3	899	7
Lab Section 2				
Calcium	mg/L	8.3	11	10
Magnesium	mg/L	3.4	1.4	3.3
Potassium	mg/L	6.0	0.9	1.1
Sodium	mg/L	25	2.0	3.5
Sulfate	mg/L	0.9	3.0	1.1
Aluminum, dissolved	mg/L	0.0050	0.010	0.0013
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.3	0.5	<0.1
Barium, dissolved	mg/L	0.28	0.015	0.022
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	0.14	<0.01	0.05
Cadmium, dissolved	mg/L	<0.00001	0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0005	0.0001	<0.0001
Copper, dissolved	mg/L	0.0004	0.0007	<0.0002
Iron, dissolved	mg/L	0.38	0.016	0.58
Lead, dissolved	mg/L	0.0020	<0.0001	<0.0001
Lithium, dissolved	ug/L	12	2.4	17
Manganese, dissolved	mg/L	0.0090	0.016	0.10

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54691 09/17/2019 18:00 DH_GAR-18-013 - FDUP *WATER*
54692 09/21/2019 12:50 DH-2018-MW-004B *WATER*
54693 09/21/2019 15:10 DH_BGC-17-05 *WATER*

Analyte	Units	54691	54692	54693
Lab Section 2				
Molybdenum, dissolved	mg/L	0.020	0.0019	0.0006
Nickel, dissolved	mg/L	0.0020	0.0005	<0.0001
Selenium, dissolved	mg/L	<0.0001	0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.24	0.029	0.12
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.0002	0.0001	<0.0001
Titanium, dissolved	mg/L	0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	0.1	<0.1
Vanadium, dissolved	mg/L	0.0001	0.0004	<0.0001
Zinc, dissolved	mg/L	0.022	0.010	<0.0005
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.08	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.02	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.02	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.04	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.7 °C upon receipt.

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54694 09/21/2019 13:10 DH_DUP3 *WATER*
54695 09/19/2019 18:00 DH_GAR-18-013 - FB1 *WATER*

Analyte	Units	54694	54695
Lab Section 1			
Acidity	mg/L	4	1
Bicarbonate	mg/L	62	1
Carbonate	mg/L	<1	<1
Chloride	mg/L	0.2	0.1
Hydroxide	mg/L	<1	<1
P. alkalinity	mg/L	<1	<1
pH	pH units	7.90	5.94
Specific conductivity	uS/cm	91	<1
Sum of ions	mg/L	81	1
Total alkalinity	mg/L	51	1
Total hardness	mg/L	38	<1
Nitrate	mg/L	0.04	<0.04
Fluoride	mg/L	0.10	<0.01
Total dissolved solids	mg/L	65	<5
Total suspended solids	mg/L	5	1
Lab Section 2			
Calcium	mg/L	10	<0.1
Magnesium	mg/L	3.3	<0.1
Potassium	mg/L	1.1	<0.1
Sodium	mg/L	3.5	0.1
Sulfate	mg/L	1.0	<0.2
Aluminum, dissolved	mg/L	0.0015	0.0010
Antimony, dissolved	mg/L	<0.0002	<0.0002
Arsenic, dissolved	ug/L	<0.1	<0.1
Barium, dissolved	mg/L	0.021	<0.0005
Beryllium, dissolved	mg/L	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002
Boron, dissolved	mg/L	0.05	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001
Copper, dissolved	mg/L	<0.0002	<0.0002
Iron, dissolved	mg/L	0.59	<0.0005
Lead, dissolved	mg/L	<0.0001	<0.0001
Lithium, dissolved	ug/L	17	<0.1
Manganese, dissolved	mg/L	0.099	<0.0005

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54694 09/21/2019 13:10 DH_DUP3 *WATER*
54695 09/19/2019 18:00 DH_GAR-18-013 - FB1 *WATER*

Analyte	Units	54694	54695
Lab Section 2			
Molybdenum, dissolved	mg/L	0.0006	<0.0001
Nickel, dissolved	mg/L	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.12	<0.0005
Thallium, dissolved	mg/L	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001
Zinc, dissolved	mg/L	<0.0005	<0.0005
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.02	<0.08
Polonium-210, dissolved	Bq/L	<0.005	<0.02
Radium-226, dissolved	Bq/L	<0.005	<0.02
Thorium-230, dissolved	Bq/L	<0.01	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.7 °C upon receipt.

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54696 DH_GAR-18-013 - TB1 *WATER*

Analyte	Units	54696
Lab Section 1		
Acidity	mg/L	1
Bicarbonate	mg/L	1
Carbonate	mg/L	<1
Chloride	mg/L	0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.70
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1
Total alkalinity	mg/L	1
Total hardness	mg/L	<1
Nitrate	mg/L	<0.04
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	<0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54696 **DH_GAR-18-013 - TB1 *WATER***

Analyte	Units	54696
Lab Section 2		
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.7 °C upon receipt.

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

54697 09/15/2019 16:00 DH_GAR-18-013 - RB1 *WATER*
54698 09/16/2019 17:30 DH_GAR-18-013 - RB2 *WATER*
54699 09/19/2019 13:45 DH_GAR-18-013 - RB3 *WATER*

Analyte	Units	54697	54698	54699
Lab Section 1				
Total hardness	mg/L	<1	<1	<1
Lab Section 2				
Calcium	mg/L	0.1	<0.1	<0.1
Magnesium	mg/L	<0.1	<0.1	<0.1
Potassium	mg/L	<0.1	<0.1	<0.1
Sodium	mg/L	0.2	0.2	0.2
Sulfate	mg/L	<0.2	<0.2	<0.2
Aluminum, dissolved	mg/L	0.0019	0.0017	0.0022
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	<0.1	<0.1	<0.1
Barium, dissolved	mg/L	0.0055	0.0015	0.0008
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	<0.01	0.01
Cadmium, dissolved	mg/L	0.00002	0.00001	0.00002
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	0.0005	0.0071	0.0034
Iron, dissolved	mg/L	0.0075	0.0066	0.0042
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	<0.1	<0.1	<0.1
Manganese, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Molybdenum, dissolved	mg/L	0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	0.0005	0.0007	0.0016
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.0010	0.0007	0.0011
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.078	0.072	0.045

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 15.7 °C upon receipt.

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SRC Group # 2019-13699

Oct 04, 2019

Nexgen Energy Ltd.

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SRC Group # 2019-14335

Oct 17, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Oct-04-2019 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-14335

Oct 17, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Oct-04-2019 Client P.O.:

57455 09/27/2019 17:40 DH-2018-MW-002A *WATER*
57456 09/27/2019 15:15 DH-2018-MW-009B *WATER*

Analyte	Units	57455	57456
Lab Section 1			
Acidity	mg/L	14	2
Bicarbonate	mg/L	38	70
Carbonate	mg/L	<1	<1
Chloride	mg/L	0.3	3.7
Hydroxide	mg/L	<1	<1
P. alkalinity	mg/L	<1	<1
pH	pH units	7.26	7.89
Specific conductivity	uS/cm	58	122
Sum of ions	mg/L	60	105
Total alkalinity	mg/L	31	57
Total hardness	mg/L	24	55
Nitrate	mg/L	0.04	<0.04
Fluoride	mg/L	0.04	0.08
Total dissolved solids	mg/L	517	104
Total suspended solids	mg/L	178	52
Lab Section 2			
Calcium	mg/L	6.3	18
Magnesium	mg/L	1.9	2.4
Potassium	mg/L	2.8	1.9
Sodium	mg/L	4.4	4.7
Sulfate	mg/L	5.8	4.7
Aluminum, dissolved	mg/L	0.050	0.011
Antimony, dissolved	mg/L	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.3	0.4
Barium, dissolved	mg/L	0.018	0.030
Beryllium, dissolved	mg/L	<0.0001	<0.0001
Boron, dissolved	mg/L	0.01	<0.01
Cadmium, dissolved	mg/L	0.00002	0.00004
Chromium, dissolved	mg/L	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0021	0.0005
Copper, dissolved	mg/L	0.0013	0.0012

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SRC Group # 2019-14335

Oct 17, 2019

Nexgen Energy Ltd.

57455 09/27/2019 17:40 DH-2018-MW-002A *WATER*
57456 09/27/2019 15:15 DH-2018-MW-009B *WATER*

Analyte	Units	57455	57456
Lab Section 2			
Iron, dissolved	mg/L	0.080	0.032
Lead, dissolved	mg/L	0.0002	<0.0001
Manganese, dissolved	mg/L	0.10	0.088
Molybdenum, dissolved	mg/L	0.0008	0.0024
Nickel, dissolved	mg/L	0.0025	0.0012
Selenium, dissolved	mg/L	0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.038	0.069
Thallium, dissolved	mg/L	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	0.0001
Titanium, dissolved	mg/L	0.0017	0.0004
Uranium, dissolved	ug/L	<0.1	0.3
Vanadium, dissolved	mg/L	0.0004	0.0002
Zinc, dissolved	mg/L	0.0074	0.040
Lab Section 4			
Lead-210, dissolved	Bq/L	<0.04	<0.04
Polonium-210, dissolved	Bq/L	<0.01	<0.01
Radium-226, dissolved	Bq/L	0.02	0.01
Thorium-230, dissolved	Bq/L	<0.02	<0.02

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 57455
This sample was reanalyzed for Total dissolved solids. Reanalysis confirms original results are within the expected measurement uncertainty.
Sample contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

The temperature of the cooler was 8.3 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-16983

Dec 04, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Nov-27-2019 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 4 authorized by Vicky Snook, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-16983

Dec 04, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Nov-27-2019 Client P.O.:

69441	**11/18/2019 15:05**	**GAR-18-013_Z1 *WATER***
69442	**11/19/2019 14:25**	**GAR-18-013_Z2 *WATER***
69443	**11/21/2019 14:30**	**GAR-18-013_Z3 *WATER***

Analyte	Units	69441	69442	69443
Lab Section 4				
Radon-222	Bq/L	83	<11	8

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 69441
Holding time for Radon 222 between sampling and receipt in lab exceeds the recommended 8 days.

Note for Sample # 69442
Holding time for Radon 222 between sampling and receipt in lab exceeds the recommended 8 days.

The temperature of the cooler was 20.6 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-16983

Dec 04, 2019

Nexgen Energy Ltd.

69444 11/22/2019 14:20 GAR-18-013_Z4 *WATER*
69445 11/20/2019 13:40 GAR-18-013_Z5 *WATER*
69446 11/25/2019 11:35 GAR-18-013_Z6 *WATER*

Analyte	Units	69444	69445	69446
Lab Section 4				
Radon-222	Bq/L	6	<9	4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 20.6 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2019-16983

Dec 04, 2019

Nexgen Energy Ltd.

69447	**11/22/2019 18:30**	**GAR-18-013_Z7**	***WATER***
69448	**11/20/2019 16:40**	**GAR-18-013_Z8**	***WATER***
69449	**11/25/2019 10:55**	**GAR-18-013_Z9**	***WATER***

Analyte	Units	69447	69448	69449
Lab Section 4				
Radon-222	Bq/L	<6	<9	4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 69448
Holding time for Radon 222 between sampling and receipt in lab exceeds the recommended 8 days.

The temperature of the cooler was 20.6 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2019-16983

Dec 04, 2019

Nexgen Energy Ltd.

69450 11/17/2019 17:29 GAR-18-013_Z10 *WATER*
69451 11/24/2019 16:35 GAR-18-013_Z11 *WATER*
69452 11/25/2019 10:20 GAR-18-013_FIELD DUPLICATE *WATER*

Analyte	Units	69450	69451	69452
Lab Section 4				
Radon-222	Bq/L	<16	<4	<4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 69450
Holding time for Radon 222 between sampling and receipt in lab exceeds the recommended 8 days.

The temperature of the cooler was 20.6 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Nov-27-2019 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Nov-27-2019 Client P.O.:

69415	**11/18/2019 12:25 GAR_18-013 - Z1 *WATER***
69416	**11/19/2019 12:20 GAR_18-013 - Z2 *WATER***
69417	**11/21/2019 11:35 GAR_18-013 - Z3 *WATER***

Analyte	Units	69415	69416	69417
Lab Section 1				
Acidity	mg/L	27	12	28
Bicarbonate	mg/L	34	34	40
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	12400	252	1070
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.16	6.92	6.39
Specific conductivity	uS/cm	27200	799	4090
Sum of ions	mg/L	18100	424	1820
Total alkalinity	mg/L	28	28	33
Total hardness	mg/L	10800	236	1200
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.25	0.08	0.15
Total dissolved solids	mg/L	21400	1060	2570
Total suspended solids	mg/L	14	16	15
Lab Section 2				
Calcium	mg/L	3650	78	395
Magnesium	mg/L	421	10	52
Potassium	mg/L	44	4.8	17
Sodium	mg/L	1580	44	248
Sulfate	mg/L	<0.2	0.8	0.8
Aluminum, dissolved	mg/L	<0.005	0.011	0.017
Antimony, dissolved	mg/L	<0.002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	21	3.6	4.4
Barium, dissolved	mg/L	1.0	0.68	1.48
Beryllium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.002	<0.0002	<0.0002
Boron, dissolved	mg/L	2.1	0.12	0.53
Cadmium, dissolved	mg/L	0.0007	0.00011	0.00027
Chromium, dissolved	mg/L	<0.005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.004	0.0023	0.0066

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.

69415 11/18/2019 12:25 GAR_18-013 - Z1 *WATER*
69416 11/19/2019 12:20 GAR_18-013 - Z2 *WATER*
69417 11/21/2019 11:35 GAR_18-013 - Z3 *WATER*

Analyte	Units	69415	69416	69417
Lab Section 2				
Copper, dissolved	mg/L	0.002	0.0019	0.0032
Iron, dissolved	mg/L	10.9	4.28	6.7
Lead, dissolved	mg/L	0.001	0.0036	0.0085
Lithium, dissolved	ug/L	240	8.8	45
Manganese, dissolved	mg/L	1.5	0.10	0.29
Molybdenum, dissolved	mg/L	0.055	0.0097	0.040
Nickel, dissolved	mg/L	0.038	0.0076	0.018
Selenium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.0005	<0.00005	<0.00005
Strontium, dissolved	mg/L	89	1.78	9.3
Thallium, dissolved	mg/L	<0.002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.001	0.0002	0.0004
Titanium, dissolved	mg/L	<0.002	<0.0002	0.0005
Uranium, dissolved	ug/L	<1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.001	0.0001	<0.0001
Zinc, dissolved	mg/L	0.16	0.076	7.2
Lab Section 4				
Lead-210, dissolved	Bq/L	0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	5.6	0.25	0.38
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 10.3 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.

69418 11/22/2019 11:25 GAR_18-013 - Z4 *WATER*
69419 11/20/2019 11:40 GAR_18-013 - Z5 *WATER*
69420 11/23/2019 11:10 GAR_18-013 - Z6 *WATER*

Analyte	Units	69418	69419	69420
Lab Section 1				
Acidity	mg/L	10	9	4
Bicarbonate	mg/L	32	46	48
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	2530	179	112
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.60	6.78	7.04
Specific conductivity	uS/cm	7010	599	411
Sum of ions	mg/L	3930	342	242
Total alkalinity	mg/L	26	38	39
Total hardness	mg/L	2220	123	63
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.25	0.15	0.17
Total dissolved solids	mg/L	4560	372	270
Total suspended solids	mg/L	10	13	8
Lab Section 2				
Calcium	mg/L	729	38	19
Magnesium	mg/L	98	6.8	3.8
Potassium	mg/L	21	7.8	5.7
Sodium	mg/L	516	64	52
Sulfate	mg/L	1.6	0.9	1.1
Aluminum, dissolved	mg/L	0.014	0.035	0.036
Antimony, dissolved	mg/L	<0.002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	4	2.4	1.6
Barium, dissolved	mg/L	2.6	2.29	1.42
Beryllium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.002	<0.0002	<0.0002
Boron, dissolved	mg/L	1.2	0.24	0.26
Cadmium, dissolved	mg/L	0.0007	0.00011	0.00011
Chromium, dissolved	mg/L	<0.005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.013	0.0038	0.0031
Copper, dissolved	mg/L	0.003	0.0040	0.0032
Iron, dissolved	mg/L	3.4	2.42	1.25
Lead, dissolved	mg/L	0.001	0.032	0.030
Lithium, dissolved	ug/L	91	15	14
Manganese, dissolved	mg/L	0.38	0.10	0.048

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69418 11/22/2019 11:25 GAR_18-013 - Z4 *WATER*
69419 11/20/2019 11:40 GAR_18-013 - Z5 *WATER*
69420 11/23/2019 11:10 GAR_18-013 - Z6 *WATER*

Analyte	Units	69418	69419	69420
Lab Section 2				
Molybdenum, dissolved	mg/L	0.032	0.015	0.015
Nickel, dissolved	mg/L	0.017	0.010	0.0069
Selenium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.0005	<0.00005	<0.00005
Strontium, dissolved	mg/L	17.8	0.95	0.49
Thallium, dissolved	mg/L	<0.002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.001	0.0004	0.0004
Titanium, dissolved	mg/L	<0.002	0.0004	0.0004
Uranium, dissolved	ug/L	<1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.29	0.29	0.14
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.33	0.11	0.06
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.

69421 11/22/2019 17:00 GAR_18-013 - Z7 *WATER*
69422 11/20/2019 15:15 GAR_18-013 - Z8 *WATER*
69423 11/24/2019 10:55 DH_GAR_18-013 - Z9 *WATER*

Analyte	Units	69421	69422	69423
Lab Section 1				
Acidity	mg/L	13	13	11
Bicarbonate	mg/L	30	49	44
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	224	326	355
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	6.53	6.86	6.95
Specific conductivity	uS/cm	746	1180	1170
Sum of ions	mg/L	385	588	604
Total alkalinity	mg/L	25	40	36
Total hardness	mg/L	154	254	246
Nitrate	mg/L	<0.04	0.08	0.07
Fluoride	mg/L	0.11	0.15	0.16
Total dissolved solids	mg/L	439	733	680
Total suspended solids	mg/L	11	7	13
Lab Section 2				
Calcium	mg/L	47	74	69
Magnesium	mg/L	8.9	17	18
Potassium	mg/L	7.1	9.3	9.3
Sodium	mg/L	68	112	108
Sulfate	mg/L	0.4	0.5	0.3
Aluminum, dissolved	mg/L	0.016	0.0031	0.0035
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	1.1	2.6	0.4
Barium, dissolved	mg/L	1.75	2.24	1.76
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	0.22	0.33	0.35
Cadmium, dissolved	mg/L	0.00005	0.00007	0.00007
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0006	0.0015	<0.0001
Copper, dissolved	mg/L	0.0015	0.0009	0.0008
Iron, dissolved	mg/L	3.87	2.85	4.77
Lead, dissolved	mg/L	0.0089	0.0006	0.0008
Lithium, dissolved	ug/L	18	28	28
Manganese, dissolved	mg/L	0.10	0.087	0.10

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69422 11/20/2019 15:15 GAR_18-013 - Z8 *WATER*
69423 11/24/2019 10:55 DH_GAR_18-013 - Z9 *WATER*

Analyte	Units	69421	69422	69423
Lab Section 2				
Molybdenum, dissolved	mg/L	0.0094	0.043	0.056
Nickel, dissolved	mg/L	0.0038	0.0047	0.0028
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	1.18	2.15	2.04
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.0002	0.0002	0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.11	0.086	0.067
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.10	0.15	0.04
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

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Dec 13, 2019

Nexgen Energy Ltd.

69424 11/17/2019 15:20 DH_GAR_18-013 - Z10 *WATER*
69425 11/24/2019 14:00 DH_GAR_18-013 - Z11 *WATER*
69426 11/23/2019 14:30 DH_GAR_18-013 - DUP *WATER*

Analyte	Units	69424	69425	69426
Lab Section 1				
Acidity	mg/L	5	4	7
Bicarbonate	mg/L	50	62	51
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	35	42	36
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.46	7.27	7.41
Specific conductivity	uS/cm	186	234	190
Sum of ions	mg/L	125	151	127
Total alkalinity	mg/L	41	51	42
Total hardness	mg/L	23	42	23
Nitrate	mg/L	0.04	<0.04	0.10
Fluoride	mg/L	0.13	0.11	0.13
Total dissolved solids	mg/L	110	155	125
Total suspended solids	mg/L	4	3	2
Lab Section 2				
Calcium	mg/L	5.3	10	5.5
Magnesium	mg/L	2.3	4.2	2.3
Potassium	mg/L	4.5	6.2	4.6
Sodium	mg/L	27	26	27
Sulfate	mg/L	0.8	0.8	0.9
Aluminum, dissolved	mg/L	0.012	0.0062	0.011
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.4	0.3	0.4
Barium, dissolved	mg/L	0.25	0.35	0.28
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	0.13	0.12	0.14
Cadmium, dissolved	mg/L	0.00025	0.00004	0.00005
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0002	0.0004	0.0002
Copper, dissolved	mg/L	0.0024	0.0011	0.0012
Iron, dissolved	mg/L	0.24	0.85	0.27
Lead, dissolved	mg/L	0.0047	0.0023	0.0030
Lithium, dissolved	ug/L	8.0	12	7.8
Manganese, dissolved	mg/L	0.011	0.013	0.0068

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69424 11/17/2019 15:20 DH_GAR_18-013 - Z10 *WATER*
69425 11/24/2019 14:00 DH_GAR_18-013 - Z11 *WATER*
69426 11/23/2019 14:30 DH_GAR_18-013 - DUP *WATER*

Analyte	Units	69424	69425	69426
Lab Section 2				
Molybdenum, dissolved	mg/L	0.016	0.018	0.016
Nickel, dissolved	mg/L	0.0027	0.0026	0.0024
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.17	0.30	0.17
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	0.0016	0.0002	0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	0.0002	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.068	0.083	0.091
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.08	<0.08	<0.08
Polonium-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Radium-226, dissolved	Bq/L	0.04	0.02	0.03
Thorium-230, dissolved	Bq/L	<0.04	<0.04	<0.04

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.

69427 11/23/2019 17:00 DH_GAR_18-013 - FB1 (SRC SET# I-41) *WATER*

Analyte	Units	69427
Lab Section 1		
Acidity	mg/L	1
Bicarbonate	mg/L	2
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.78
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	2
Total alkalinity	mg/L	2
Total hardness	mg/L	<1
Nitrate	mg/L	0.04
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	6
Total suspended solids	mg/L	<1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	0.1
Sulfate	mg/L	<0.2
Aluminum, dissolved	mg/L	<0.0005
Antimony, dissolved	mg/L	<0.0002
Arsenic, dissolved	ug/L	<0.1
Barium, dissolved	mg/L	<0.0005
Beryllium, dissolved	mg/L	<0.0001
Bismuth, dissolved	mg/L	<0.0002
Boron, dissolved	mg/L	<0.01
Cadmium, dissolved	mg/L	<0.00001
Chromium, dissolved	mg/L	<0.0005
Cobalt, dissolved	mg/L	<0.0001
Copper, dissolved	mg/L	<0.0002
Iron, dissolved	mg/L	<0.0005
Lead, dissolved	mg/L	<0.0001
Lithium, dissolved	ug/L	<0.1
Manganese, dissolved	mg/L	<0.0005

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.

69427 11/23/2019 17:00 DH_GAR_18-013 - FB1 (SRC SET# I-41) *WATER*

Analyte	Units	69427
Lab Section 2		
Molybdenum, dissolved	mg/L	<0.0001
Nickel, dissolved	mg/L	<0.0001
Selenium, dissolved	mg/L	<0.0001
Silver, dissolved	mg/L	<0.00005
Strontium, dissolved	mg/L	<0.0005
Thallium, dissolved	mg/L	<0.0002
Tin, dissolved	mg/L	<0.0001
Titanium, dissolved	mg/L	<0.0002
Uranium, dissolved	ug/L	<0.1
Vanadium, dissolved	mg/L	<0.0001
Zinc, dissolved	mg/L	0.0019
Lab Section 4		
Lead-210, dissolved	Bq/L	<0.05
Polonium-210, dissolved	Bq/L	<0.01
Radium-226, dissolved	Bq/L	<0.01
Thorium-230, dissolved	Bq/L	<0.02

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 69427
This sample was reanalyzed for Lab Section 2 (ICP). Reanalysis confirms original results are within the expected measurement uncertainty.

The temperature of the cooler was 10.3 °C upon receipt.

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.

69428 DH_GAR_18-013 - TB1 (SRC SET# J-41) *WATER*

Analyte	Units	69428
Lab Section 1		
Acidity	mg/L	1
Bicarbonate	mg/L	1
Carbonate	mg/L	<1
Chloride	mg/L	<0.1
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	5.66
Specific conductivity	uS/cm	<1
Sum of ions	mg/L	1
Total alkalinity	mg/L	1
Total hardness	mg/L	<1
Nitrate	mg/L	<0.04
Fluoride	mg/L	<0.01
Total dissolved solids	mg/L	<5
Total suspended solids	mg/L	<1
Lab Section 2		
Calcium	mg/L	<0.1
Magnesium	mg/L	<0.1
Potassium	mg/L	<0.1
Sodium	mg/L	<0.1
Sulfate	mg/L	<0.2
Aluminum	mg/L	<0.0005
Antimony	mg/L	<0.0002
Arsenic	ug/L	<0.1
Barium	mg/L	<0.0005
Beryllium	mg/L	<0.0001
Bismuth	mg/L	<0.0002
Boron	mg/L	<0.01
Cadmium	mg/L	<0.00001
Chromium	mg/L	<0.0005
Cobalt	mg/L	<0.0001
Copper	mg/L	<0.0002
Iron	mg/L	<0.0005
Lead	mg/L	<0.0001
Lithium	ug/L	<0.1
Manganese	mg/L	<0.0005

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.

69428 DH_GAR_18-013 - TB1 (SRC SET# J-41) *WATER*

Analyte	Units	69428
Lab Section 2		
Molybdenum	mg/L	<0.0001
Nickel	mg/L	<0.0001
Selenium	mg/L	<0.0001
Silver	mg/L	<0.00005
Strontium	mg/L	<0.0005
Thallium	mg/L	<0.0002
Tin	mg/L	<0.0001
Titanium	mg/L	<0.0002
Uranium	ug/L	<0.1
Vanadium	mg/L	<0.0001
Zinc	mg/L	<0.0005
Lab Section 4		
Lead-210	Bq/L	<0.02
Polonium-210	Bq/L	<0.005
Radium-226	Bq/L	<0.005
Thorium-230	Bq/L	<0.01

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Dec 13, 2019

Nexgen Energy Ltd.

69429 11/20/2019 11:40 DH_GAR_18-013 - EB1 *WATER*
69430 11/21/2019 11:35 DH_GAR_18-013 - EB2 *WATER*
69431 11/23/2019 11:10 DH_GAR_18-013 - EB3 *WATER*

Analyte	Units	69429	69430	69431
Lab Section 1				
Total hardness	mg/L	<1	<1	<1
Lab Section 2				
Calcium	mg/L	<0.1	<0.1	<0.1
Magnesium	mg/L	<0.1	<0.1	<0.1
Potassium	mg/L	<0.1	<0.1	<0.1
Sodium	mg/L	0.1	<0.1	<0.1
Sulfate	mg/L	<0.2	<0.2	<0.2
Aluminum, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	<0.1	<0.1	<0.1
Barium, dissolved	mg/L	0.0030	0.0010	0.0012
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	0.00003	0.00001	0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Copper, dissolved	mg/L	0.0023	0.0006	0.012
Iron, dissolved	mg/L	0.0025	0.0019	0.0012
Lead, dissolved	mg/L	0.0002	<0.0001	0.0002
Lithium, dissolved	ug/L	<0.1	<0.1	<0.1
Manganese, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Molybdenum, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Nickel, dissolved	mg/L	0.0002	0.0001	0.0005
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.0006	<0.0005	<0.0005
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	0.046	0.018	0.026

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 10.3 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2019-16985

Dec 13, 2019

Nexgen Energy Ltd.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-1179

Feb 13, 2020

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Jan-30-2020 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-1179

Feb 13, 2020

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Jan-30-2020 Client P.O.:

5939	**01/12/2020 12:25 DH_2018-MW-06A *WATER***
5940	**01/12/2020 14:30 DH_2018-MW-06B *WATER***
5941	**01/27/2020 13:30 DH_2018-MW-07A *WATER***

Analyte	Units	5939	5940	5941
Lab Section 1				
Acidity	mg/L	2	3	2
Bicarbonate	mg/L	21	193	40
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1	Not Requested	0.2
Hydroxide	mg/L	<1	<1	<1
Chloride	mg/L	Not Requested	15	Not Requested
P. alkalinity	mg/L	<1	<50	<1
pH	pH units	7.47	7.35	7.54
Specific conductivity	uS/cm	30	77	55
Sum of ions	mg/L	31	230	54
Total alkalinity	mg/L	17	158	33
Total hardness	mg/L	14	18	22
Nitrate	mg/L	0.12	0.10	<0.04
Fluoride	mg/L	0.03	<0.5	0.07
Total dissolved solids	mg/L	85	9260	91
Total suspended solids	mg/L	77	6360	29
Lab Section 2				
Calcium	mg/L	4.4	4.5	6.1
Magnesium	mg/L	0.8	1.7	1.6
Potassium	mg/L	1.2	1.8	1.1
Sodium	mg/L	2.3	12	4.4
Sulfate	mg/L	1.4	1.5	0.2
Aluminum, dissolved	mg/L	0.0065	0.010	0.014
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.7	0.9	0.2
Barium, dissolved	mg/L	0.0060	0.0029	0.017
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	<0.01	0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	0.0002	<0.0001
Copper, dissolved	mg/L	<0.0002	0.0002	<0.0002

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SRC Group # 2020-1179

Feb 13, 2020

Nexgen Energy Ltd.

5939 01/12/2020 12:25 DH_2018-MW-06A *WATER*
5940 01/12/2020 14:30 DH_2018-MW-06B *WATER*
5941 01/27/2020 13:30 DH_2018-MW-07A *WATER*

Analyte	Units	5939	5940	5941
Lab Section 2				
Iron, dissolved	mg/L	0.0049	0.0096	0.80
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Manganese, dissolved	mg/L	0.0072	0.0080	0.14
Molybdenum, dissolved	mg/L	0.0036	0.0045	0.0013
Nickel, dissolved	mg/L	0.0001	0.0005	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.023	0.022	0.039
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	<0.0002	0.0004	0.0009
Uranium, dissolved	ug/L	<0.1	0.9	<0.1
Vanadium, dissolved	mg/L	0.0006	0.0015	<0.0001
Zinc, dissolved	mg/L	<0.0005	0.0007	<0.0005
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.02	<0.04	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.01	<0.005
Radium-226, dissolved	Bq/L	<0.005	<0.01	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.02	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Note for Sample # 5940
Detection limit increased to 50 mg/L for P. alkalinity and Total alkalinity due to sample matrix interference.
Detection limit increased to 0.5 mg/L for Fluoride due to sample matrix interference.

The temperature of the cooler was 8.2 °C upon receipt.

Samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2020-1179

Feb 13, 2020

Nexgen Energy Ltd.

5942 01/16/2020 11:50 DH_2018-MW-07B *WATER*
5943 01/24/2020 13:45 DH_2018-MW-09A *WATER*
5944 01/25/2020 16:40 DH_2018-MW-09B *WATER*

Analyte	Units	5942	5943	5944
Lab Section 1				
Acidity	mg/L	2	10	5
Bicarbonate	mg/L	32	28	48
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.1	3.8	3.7
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.34	7.06	7.52
Specific conductivity	uS/cm	37	54	88
Sum of ions	mg/L	42	48	76
Total alkalinity	mg/L	26	23	39
Total hardness	mg/L	17	22	38
Nitrate	mg/L	0.04	0.12	0.14
Fluoride	mg/L	0.06	0.01	0.02
Total dissolved solids	mg/L	66	79	139
Total suspended solids	mg/L	279	28	139
Lab Section 2				
Calcium	mg/L	5.3	7.0	12
Magnesium	mg/L	0.9	1.0	1.9
Potassium	mg/L	0.7	1.0	2.2
Sodium	mg/L	2.3	2.9	3.8
Sulfate	mg/L	0.8	3.9	3.8
Aluminum, dissolved	mg/L	0.0095	0.0067	0.029
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.9	0.2	0.4
Barium, dissolved	mg/L	0.0085	0.012	0.025
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron, dissolved	mg/L	<0.01	<0.01	<0.01
Cadmium, dissolved	mg/L	<0.00001	0.00001	0.00004
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	0.0003	0.0006	0.0004
Copper, dissolved	mg/L	<0.0002	<0.0002	0.0011
Iron, dissolved	mg/L	0.48	0.098	0.042
Lead, dissolved	mg/L	<0.0001	<0.0001	0.0001
Manganese, dissolved	mg/L	0.14	0.036	0.047
Molybdenum, dissolved	mg/L	0.0007	0.0010	0.0015
Nickel, dissolved	mg/L	0.0001	0.0011	0.0010

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SRC Group # 2020-1179

Feb 13, 2020

Nexgen Energy Ltd.

5942 01/16/2020 11:50 DH_2018-MW-07B *WATER*
5943 01/24/2020 13:45 DH_2018-MW-09A *WATER*
5944 01/25/2020 16:40 DH_2018-MW-09B *WATER*

Analyte	Units	5942	5943	5944
Lab Section 2				
Selenium, dissolved	mg/L	<0.0001	<0.0001	0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.013	0.023	0.045
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	0.0002
Titanium, dissolved	mg/L	<0.0002	<0.0002	0.0010
Uranium, dissolved	ug/L	<0.1	<0.1	0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	0.0006
Zinc, dissolved	mg/L	0.0008	0.0078	0.019
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	0.01	0.006	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 8.2 °C upon receipt.

Samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2020-1179

Feb 13, 2020

Nexgen Energy Ltd.

5945 01/14/2020 15:45 DH_2019-MW-016 *WATER*

Analyte	Units	5945
Lab Section 1		
Acidity	mg/L	5
Bicarbonate	mg/L	54
Carbonate	mg/L	<1
Chloride	mg/L	0.5
Hydroxide	mg/L	<1
P. alkalinity	mg/L	<1
pH	pH units	7.69
Specific conductivity	uS/cm	110
Sum of ions	mg/L	93
Total alkalinity	mg/L	44
Total hardness	mg/L	20
Nitrate	mg/L	<0.04
Fluoride	mg/L	0.11
Total dissolved solids	mg/L	139
Total suspended solids	mg/L	52
Lab Section 2		
Calcium	mg/L	6.0
Magnesium	mg/L	1.3
Potassium	mg/L	1.3
Sodium	mg/L	17
Sulfate	mg/L	13
Aluminum, dissolved	mg/L	0.059
Antimony, dissolved	mg/L	<0.0002
Arsenic, dissolved	ug/L	0.8
Barium, dissolved	mg/L	0.011
Beryllium, dissolved	mg/L	<0.0001
Boron, dissolved	mg/L	0.01
Cadmium, dissolved	mg/L	<0.00001
Chromium, dissolved	mg/L	<0.0005
Cobalt, dissolved	mg/L	0.0002
Copper, dissolved	mg/L	<0.0002
Iron, dissolved	mg/L	0.23
Lead, dissolved	mg/L	0.0001
Manganese, dissolved	mg/L	0.058
Molybdenum, dissolved	mg/L	0.0019
Nickel, dissolved	mg/L	0.0006

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SRC Group # 2020-1179

Feb 13, 2020

Nexgen Energy Ltd.

5945 01/14/2020 15:45 DH_2019-MW-016 *WATER*

Analyte	Units	5945
Lab Section 2		
Selenium, dissolved	mg/L	<0.0001
Silver, dissolved	mg/L	<0.00005
Strontium, dissolved	mg/L	0.047
Thallium, dissolved	mg/L	<0.0002
Tin, dissolved	mg/L	<0.0001
Titanium, dissolved	mg/L	0.0014
Uranium, dissolved	ug/L	<0.1
Vanadium, dissolved	mg/L	0.0002
Zinc, dissolved	mg/L	0.0006
Lab Section 4		
Lead-210, dissolved	Bq/L	<0.02
Polonium-210, dissolved	Bq/L	<0.005
Radium-226, dissolved	Bq/L	<0.005
Thorium-230, dissolved	Bq/L	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 8.2 °C upon receipt.

Samples contained visible solids after filtering, which will contribute to the total dissolved solids result, as per Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WEF, Part 2540C.

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SRC Group # 2020-1179

Feb 13, 2020

Nexgen Energy Ltd.

Analyte Methods

Name	Units	Method
Acidity	mg/L	Chm-318
P. alkalinity	mg/L	Chm-211
Chloride	mg/L	Chm-115
Chloride	mg/L	Chm-133 / Chm-134
Carbonate	mg/L	Chm-211
Fluoride	mg/L	Chm-211
Bicarbonate	mg/L	Chm-211
Nitrate	mg/L	Chm-124
Hydroxide	mg/L	Chm-211
pH	pH units	Chm-211
Total dissolved solids	mg/L	Chm-203
Total suspended solids	mg/L	Chm-206
Specific conductivity	uS/cm	Chm-211
Sum of ions	mg/L	Calculation
Total hardness	mg/L	Calculation
Total alkalinity	mg/L	Chm-211
Silver, dissolved	mg/L	Chm-501 / Chm-522
Aluminum, dissolved	mg/L	Chm-501 / Chm-522
Arsenic, dissolved	ug/L	Chm-501 / Chm-522
Boron, dissolved	mg/L	Chm-501 / Chm-522
Barium, dissolved	mg/L	Chm-501 / Chm-522
Beryllium, dissolved	mg/L	Chm-501 / Chm-522
Calcium	mg/L	Chm-507
Cadmium, dissolved	mg/L	Chm-501 / Chm-522
Cobalt, dissolved	mg/L	Chm-501 / Chm-522
Chromium, dissolved	mg/L	Chm-501 / Chm-522
Copper, dissolved	mg/L	Chm-501 / Chm-522
Iron, dissolved	mg/L	Chm-501 / Chm-522
Potassium	mg/L	Chm-507
Magnesium	mg/L	Chm-507
Manganese, dissolved	mg/L	Chm-501 / Chm-522
Molybdenum, dissolved	mg/L	Chm-501 / Chm-522
Sodium	mg/L	Chm-507
Nickel, dissolved	mg/L	Chm-501 / Chm-522
Lead, dissolved	mg/L	Chm-501 / Chm-522
Antimony, dissolved	mg/L	Chm-501 / Chm-522
Selenium, dissolved	mg/L	Chm-501 / Chm-522
Tin, dissolved	mg/L	Chm-501 / Chm-522

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SRC Group # 2020-1179

Feb 13, 2020

Nexgen Energy Ltd.

Name	Units	Method
Sulfate	mg/L	Chm-507
Strontium, dissolved	mg/L	Chm-501 / Chm-522
Titanium, dissolved	mg/L	Chm-501 / Chm-522
Thallium, dissolved	mg/L	Chm-501 / Chm-522
Uranium, dissolved	ug/L	Chm-501 / Chm-522
Vanadium, dissolved	mg/L	Chm-501 / Chm-522
Zinc, dissolved	mg/L	Chm-501 / Chm-522
Lead-210, dissolved	Bq/L	Rad-101
Polonium-210, dissolved	Bq/L	Rad-103
Radium-226, dissolved	Bq/L	Rad-105
Thorium-230, dissolved	Bq/L	Rad-106

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SRC Group # 2020-1638

Feb 26, 2020

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Feb-11-2020 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 1, Lab Section 2 authorized by Keith Gipman, Supervisor
Results from Lab Section 4 authorized by Vicky Snook, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-1638

Feb 26, 2020

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Feb-11-2020 Client P.O.:

7898 01/31/2020 16:10 DH-BGC17-01 *WATER*
7899 02/04/2020 13:25 DH-BGC17-05 *WATER*
7900 01/31/2020 16:10 DH-DUP1 *WATER*

Analyte	Units	7898	7899	7900
Lab Section 1				
Acidity	mg/L	5	4	5
Bicarbonate	mg/L	38	62	37
Carbonate	mg/L	<1	<1	<1
Chloride	mg/L	0.2	0.2	0.2
Hydroxide	mg/L	<1	<1	<1
P. alkalinity	mg/L	<1	<1	<1
pH	pH units	7.82	7.94	7.71
Specific conductivity	uS/cm	50	92	48
Sum of ions	mg/L	50	81	49
Total alkalinity	mg/L	31	51	30
Total hardness	mg/L	19	39	19
Nitrate	mg/L	<0.04	<0.04	<0.04
Fluoride	mg/L	0.05	0.06	0.03
Total dissolved solids	mg/L	72	67	73
Total suspended solids	mg/L	3	2	2
Lab Section 2				
Calcium	mg/L	5.8	10	5.9
Magnesium	mg/L	1.1	3.4	1.1
Potassium	mg/L	0.7	1.1	0.6
Sodium	mg/L	3.3	3.4	3.3
Sulfate	mg/L	0.6	1.1	0.6
Aluminum, dissolved	mg/L	0.030	0.0008	0.032
Antimony, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Arsenic, dissolved	ug/L	0.5	<0.1	0.5
Barium, dissolved	mg/L	0.013	0.025	0.013
Beryllium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Bismuth, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Boron, dissolved	mg/L	<0.01	0.04	<0.01
Cadmium, dissolved	mg/L	<0.00001	<0.00001	<0.00001
Chromium, dissolved	mg/L	<0.0005	<0.0005	<0.0005
Cobalt, dissolved	mg/L	<0.0001	<0.0001	<0.0001

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SRC Group # 2020-1638

Feb 26, 2020

Nexgen Energy Ltd.

7898 01/31/2020 16:10 DH-BGC17-01 *WATER*
7899 02/04/2020 13:25 DH-BGC17-05 *WATER*
7900 01/31/2020 16:10 DH-DUP1 *WATER*

Analyte	Units	7898	7899	7900
Lab Section 2				
Copper, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Iron, dissolved	mg/L	0.30	0.48	0.30
Lead, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Lithium, dissolved	ug/L	2.6	17	2.4
Manganese, dissolved	mg/L	0.080	0.11	0.080
Molybdenum, dissolved	mg/L	0.0011	0.0005	0.0011
Nickel, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Selenium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Silver, dissolved	mg/L	<0.00005	<0.00005	<0.00005
Strontium, dissolved	mg/L	0.037	0.13	0.037
Thallium, dissolved	mg/L	<0.0002	<0.0002	<0.0002
Tin, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Titanium, dissolved	mg/L	0.0005	<0.0002	0.0005
Uranium, dissolved	ug/L	<0.1	<0.1	<0.1
Vanadium, dissolved	mg/L	<0.0001	<0.0001	<0.0001
Zinc, dissolved	mg/L	<0.0005	<0.0005	0.0005
Lab Section 4				
Lead-210, dissolved	Bq/L	<0.02	<0.02	<0.02
Polonium-210, dissolved	Bq/L	<0.005	<0.005	<0.005
Radium-226, dissolved	Bq/L	<0.005	<0.005	<0.005
Thorium-230, dissolved	Bq/L	<0.01	<0.01	<0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 9.8 °C upon receipt.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-1638

Feb 26, 2020

Nexgen Energy Ltd.

Analyte Methods

Name	Units	Method
Acidity	mg/L	Chm-318
P. alkalinity	mg/L	Chm-211
Chloride	mg/L	Chm-133 / Chm-134
Carbonate	mg/L	Chm-211
Fluoride	mg/L	Chm-211
Bicarbonate	mg/L	Chm-211
Nitrate	mg/L	Chm-124
Hydroxide	mg/L	Chm-211
pH	pH units	Chm-211
Total dissolved solids	mg/L	Chm-203
Total suspended solids	mg/L	Chm-206
Specific conductivity	uS/cm	Chm-211
Sum of ions	mg/L	Calculation
Total hardness	mg/L	Calculation
Total alkalinity	mg/L	Chm-211
Silver, dissolved	mg/L	Chm-501 / Chm-522
Aluminum, dissolved	mg/L	Chm-501 / Chm-522
Arsenic, dissolved	ug/L	Chm-501 / Chm-522
Boron, dissolved	mg/L	Chm-501 / Chm-522
Barium, dissolved	mg/L	Chm-501 / Chm-522
Beryllium, dissolved	mg/L	Chm-501 / Chm-522
Bismuth, dissolved	mg/L	Chm-501 / Chm-522
Calcium	mg/L	Chm-507
Cadmium, dissolved	mg/L	Chm-501 / Chm-522
Cobalt, dissolved	mg/L	Chm-501 / Chm-522
Chromium, dissolved	mg/L	Chm-501 / Chm-522
Copper, dissolved	mg/L	Chm-501 / Chm-522
Iron, dissolved	mg/L	Chm-501 / Chm-522
Potassium	mg/L	Chm-507
Lithium, dissolved	ug/L	Chm-501 / Chm-522
Magnesium	mg/L	Chm-507
Manganese, dissolved	mg/L	Chm-501 / Chm-522
Molybdenum, dissolved	mg/L	Chm-501 / Chm-522
Sodium	mg/L	Chm-507
Nickel, dissolved	mg/L	Chm-501 / Chm-522
Lead, dissolved	mg/L	Chm-501 / Chm-522
Antimony, dissolved	mg/L	Chm-501 / Chm-522
Selenium, dissolved	mg/L	Chm-501 / Chm-522

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SRC Group # 2020-1638

Feb 26, 2020

Nexgen Energy Ltd.

Name	Units	Method
Tin, dissolved	mg/L	Chm-501 / Chm-522
Sulfate	mg/L	Chm-507
Strontium, dissolved	mg/L	Chm-501 / Chm-522
Titanium, dissolved	mg/L	Chm-501 / Chm-522
Thallium, dissolved	mg/L	Chm-501 / Chm-522
Uranium, dissolved	ug/L	Chm-501 / Chm-522
Vanadium, dissolved	mg/L	Chm-501 / Chm-522
Zinc, dissolved	mg/L	Chm-501 / Chm-522
Lead-210, dissolved	Bq/L	Rad-101
Polonium-210, dissolved	Bq/L	Rad-103
Radium-226, dissolved	Bq/L	Rad-105
Thorium-230, dissolved	Bq/L	Rad-106

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SRC Group # 2020-2204

Mar 03, 2020

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Feb-26-2020 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 4 authorized by Vicky Snook, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-2204

Mar 03, 2020

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Shawn Harriman

Date Samples Received: Feb-26-2020 Client P.O.:

9750	**02/23/2020 13:10**	**DH_GAR-18-013_Z1_Q1 *WATER***
9751	**02/23/2020 14:15**	**DH_GAR-18-013_Z2_Q1 *WATER***
9752	**02/23/2020 15:05**	**DH_GAR-18-013_Z3_Q1 *WATER***

Analyte	Units	9750	9751	9752
Lab Section 4				
Radon-222	Bq/L	43	<5	<5

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 20.4 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-2204

Mar 03, 2020

Nexgen Energy Ltd.

9753	**02/23/2020 16:00**	**DH_GAR-18-013_Z4_Q1 *WATER***
9754	**02/23/2020 16:50**	**DH_GAR-18-013_Z5_Q1 *WATER***
9755	**02/24/2020 10:40**	**DH_GAR-18-013_Z6_Q1 *WATER***

Analyte	Units	9753	9754	9755
Lab Section 4				
Radon-222	Bq/L	<5	<5	<4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 20.4 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2020-2204

Mar 03, 2020

Nexgen Energy Ltd.

9756	**02/24/2020 11:25**	**DH_GAR-18-013_Z7_Q1 *WATER***
9757	**02/24/2020 12:10**	**DH_GAR-18-013_Z8_Q1 *WATER***
9758	**02/24/2020 12:45**	**DH_GAR-18-013_Z9_Q1 *WATER***

Analyte	Units	9756	9757	9758
Lab Section 4				
Radon-222	Bq/L	<4	<4	<4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 20.4 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2020-2204

Mar 03, 2020

Nexgen Energy Ltd.

9759 02/24/2020 13:10 DH_GAR-18-013_Z10_Q1 *WATER*
9760 02/24/2020 13:50 DH_GAR-18-013_Z11_Q1 *WATER*
9761 02/24/2020 14:20 DH_GAR-18-013_DUP_Q1 *WATER*

Analyte	Units	9759	9760	9761
Lab Section 4				
Radon-222	Bq/L	<4	<4	<4

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 20.4 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2020-2204

Mar 03, 2020

Nexgen Energy Ltd.

Analyte Methods

Name	Units	Method
Radon-222	Bq/L	Rad-116

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SRC Group # 2020-3146

Mar 24, 2020

Nexgen Energy Ltd.
212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Mar-19-2020 Client P.O.:

All results have been reviewed and approved by a Qualified Person in accordance with the Saskatchewan Environmental Code, Corrective Action Plan Chapter, for the purposes of certifying a laboratory analysis

Results from Lab Section 4 authorized by Vicky Snook, Supervisor

---

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as
    * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
    * Environment Canada
    * US EPA
    * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

* Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

This is a final report.

SASKATCHEWAN RESEARCH COUNCIL

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SRC Group # 2020-3146

Mar 24, 2020

Nexgen Energy Ltd.

212-4014 Arthur Rose
Saskatoon, Sk S7P 0C9
Attn: Keith Shannon

Date Samples Received: Mar-19-2020 Client P.O.:

16207	**03/15/2020 11:10**	**DH_GAR-19-035_Z1_Q1 *WATER***
16208	**03/15/2020 12:25**	**DH_GAR-19-035_Z2_Q1 *WATER***
16209	**03/15/2020 13:20**	**DH_GAR-19-035_Z3_Q1 *WATER***

Analyte	Units	16207	16208	16209
Lab Section 4				
Radon-222	Bq/L	20	20	10

The temperature of the cooler was 13.9 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2020-3146

Mar 24, 2020

Nexgen Energy Ltd.

16210 03/15/2020 14:15 DH_GAR-19-035_Z4_Q1 *WATER*
16211 03/15/2020 15:00 DH_GAR-19-035_Z5_Q1 *WATER*
16212 03/15/2020 15:45 DH_GAR-19-035_Z6_Q1 *WATER*

Analyte	Units	16210	16211	16212
Lab Section 4				
Radon-222	Bq/L	10	10	10

The temperature of the cooler was 13.9 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2020-3146

Mar 24, 2020

Nexgen Energy Ltd.

16213	**03/15/2020 16:20**	**DH_GAR-19-035_Z7_Q1**	***WATER***
16214	**03/15/2020 16:55**	**DH_GAR-19-035_Z8_Q1**	***WATER***
16215	**03/16/2020 11:30**	**DH_GAR-19-035_Z9_Q1**	***WATER***

Analyte	Units	16213	16214	16215
Lab Section 4				
Radon-222	Bq/L	<6	<6	<6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 13.9 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2020-3146

Mar 24, 2020

Nexgen Energy Ltd.

16216 03/16/2020 12:00 DH_GAR-19-035_Z10_Q1 *WATER*
16217 03/16/2020 12:40 DH_GAR-19-035_FDUP_Q1 *WATER*

Analyte	Units	16216	16217
Lab Section 4			
Radon-222	Bq/L	6	<6

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

The temperature of the cooler was 13.9 °C upon receipt.

Radon results are corrected for decay to the time of sample collection.

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SRC Group # 2020-3146

Mar 24, 2020

Nexgen Energy Ltd.

Analyte Methods

Name	Units	Method
Radon-222	Bq/L	Rad-116

APPENDIX I

Detailed Groundwater Chemistry Results

Table 1: Standpipe Piezometer Chemistry Analyses – General Chemistry

Monitoring Well ID	Sample Date (yyyy-mm-dd)	Parameter	Specific Conductivity	pH	Cation -Anion Balance	Sum of Ions	Total Hardness	Hardness (as CaCO3)	Total Suspended Solids (TSS)	Total Dissolved Solids (TDS)	Turbidity	Acidity	Alkalinity Biocarbonate (as CaCO3)	Alkalinity, Carbonate (as CaCO3)	Chemical Oxygen Demand	Hydroxide (OH) (as CaCO3)	P. Alkalinity	Total Alkalinity (as CaCO3)	Salinity	Bromide (Br)	Calcium (Ca)	Chloride (Cl)	Fluoride (F)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Sulfate (SO4)	Nitrate (as N)	Nitrite (as N)	Ammonia, Total (as N)	Phosphorus (P)-Total	Dissolved Organic Carbon	Total Organic Carbon
Unit			uS/cm		%	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	PSU	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
RDL								0.50	3.0	10	0.10		6.10	1.00						0.050	0.50	0.50	0.020	0.10	0.10	0.050	0.30	0.0050	0.0010	0.0050	0.020	0.50	0.50
DH-BGC17-01	2017-10-18		-	-	-	-	-	-	-	-	-	-	-	-	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0051	0.130	15.0	15.0
	2018-04-02		53	7.67	3.0	54.0	20	-	-	120	-	-	39	0.50	38	0.50	0.50	32	-	-	6.1	0.1	0.12	1.2	1.2	5.4	0.8	0.06	-	-	-	2.2	1.9
	2017 Q4		-	-	-	-	-	27.6	36	193	172	-	33	0.50	-	0.50	-	33	-	<0.050	8.51	1.83	0.130	2.06	2.00	16.8	28.2	0.00	0.00	-	0.133	-	-
	2018-05-24		52	7.81	1.5	53	19	-	-	99	-	-	39	0.50	26	0.50	0.50	32	-	-	5.7	0.1	0.10	1.2	1.2	4.8	0.8	0.02	-	-	-	1.8	1.8
	2018-10-13		47	7.85	0.7	50	21	-	-	91	-	-	37	0.50	-	0.50	0.50	30	-	-	6.0	0.05	0.06	1.4	1.1	3.7	1.2	-	-	-	-	1.3	1.3
	2018-12-12		44	7.45	3.0	47	19	-	16	79	-	2	35	0.50	-	0.50	0.50	29	-	-	5.8	0.05	0.07	1.2	0.9	3.8	0.6	0.02	-	-	-	-	-
	2019-04-04		51	7.81	2.6	55	17	-	71	89	-	2	41	0.50	-	0.50	0.50	34	-	-	4.8	0.1	0.12	1.2	1.0	6.1	0.4	0.06	-	-	-	-	-
	2019-05-18		37	7.58	4.7	44	19	-	9	80	-	2	32	0.50	-	0.50	0.50	26	-	-	6.0	0.05	0.04	1.1	0.7	3.4	0.5	0.02	-	-	-	-	-
	2019-08-18		49	7.65	0.2	47	20	-	2	71	-	3	35	0.50	-	0.50	0.50	29	-	-	6.3	0.05	0.05	1.1	0.7	3.3	0.5	0.02	-	-	-	-	-
	2020-01-31		50	7.82	6.9	50	19	-	3	72	-	5	38	0.50	-	0.50	0.50	31	-	-	5.8	0.2	0.05	1.1	0.7	3.3	0.6	0.02	0.02	-	-	-	-
DH-BGC17-02	2017-10-17		-	-	-	-	-	-	-	-	-	-	-	-	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0058	0.052	0.96	1.60
	2017 Q4		-	-	-	-	-	14.6	237	537	1990	-	18	0.50	-	0.50	-	18.4	-	<0.050	4.83	0.25	0.036	1.08	1.57	3.85	4.91	0.0540	0.00	-	0.08	-	-
	2018-04-01		25	7.02	9.5	25	11	-	-	84	-	-	17	0.50	230	0.50	0.50	14	-	-	3.10	0.05	0.03	0.70	0.60	1.90	1.4	0.02	-	-	-	0.30	0.30
	2018-05-24		25	7.29	22.7*	24	10	-	-	62	-	-	16	0.50	0.50	0.50	0.50	13	-	-	2.90	0.2	0.03	0.70	0.40	1.70	1.8	0.24	-	-	-	0.30	0.30
	2018-10-14		26	7.22	11.8*	32	10	-	-	61	-	-	24	0.50	-	0.50	0.50	20	-	-	2.90	0.05	0.03	0.80	0.60	1.70	1.7	0.26	-	-	-	0.30	0.30
	2018-12-15		25	7.15	19.1*	36	10	-	20	44	-	7	29	0.50	-	0.50	0.50	24	-	-	3.00	0.05	0.03	0.70	0.60	1.70	1.4	0.2	-	-	-	-	-
	2019-04-04		26	7.14	1.9	28	11	-	62	48	-	7	20	0.50	-	0.50	0.50	16	-	-	3.40	0.3	0.03	0.60	0.50	1.80	1.6	0.11	-	-	-	-	-
	2019-05-19		30	7.08	25.6*	17	10	-	134	123	-	7	10	0.50	-	0.50	0.50	8	-	-	2.80	0.05	0.03	0.80	0.50	1.60	1.6	0.09	-	-	-	-	-
	2019-08-19		23	7.01	13.9*	27	9	-	17	52	-	5	20	0.50	-	0.50	0.50	16	-	-	2.60	0.05	0.02	0.70	0.50	1.60	1.4	0.23	-	-	-	-	-
DH-BGC17-03	2017 Q4		-	-	-	-	-	16.7	398	307	441	-	41	0.50	31	0.50	-	41.2	-	<0.050	5.92	0.81	0.143	1.19	1.51	24.9	16.9	0.0943	0.0037	0.0133	0.146	3.13	2.25
	2018-04-01		56	7.52	3.6	54	14	-	-	85	-	-	37	0.50	15	0.50	0.50	30	-	-	4.40	0.20	0.090	0.70	0.70	6.9	3.2	0.4000	-	-	-	0.50	0.50
	2018-05-25		60	7.75	0.2	54	20	-	-	86	-	-	35	0.50	0.50	0.50	0.50	29	-	-	6.60	0.3	0.070	0.90	0.70	5.4	4.7	0.63	-	-	-	0.50	0.60
	2018-10-10		72	7.46	18.1*	61	27	-	-	72	-	-	41	0.50	11	0.50	0.50	34	-	-	8.90	0.8	0.06	1.10	1.40	4.2	3.1	0.50	-	-	-	3.30	1.50
	2018-12-15		50	7.32	9.6	45	22	-	35	57	-	3	30	0.50	-	0.50	0.50	25	-	-	7.10	0.1	0.05	1.00	1.00	3.2	2.4	0.54	-	-	-	-	-
	2019-04-09		56	7.64	8.7	82	28	-	2100	211	-	2	37	0.50	-	0.50	0.50	30	-	-	8.80	27.0	0.05	1.60	1.80	3.1	2.2	0.16	-	-	-	-	-
	2019-05-20		43	7.45	3.8	47	20	-	145	60	-	5	34	0.50	-	0.50	0.50	28	-	-	6.60	0.1	0.04	0.90	0.70	2.2	1.9	0.30	-	-	-	-	-
	2019-08-19		40	7.39	11.5*	43	17	-	19	43	-	5	32	0.50	-	0.50	0.50	26	-	-	5.60	0.1	0.03	0.80	0.60	1.9	1.5	0.65	-	-	-	-	-
DH-BGC17-04	2017-10-17		-	-	12.5*	-	-	47.4	275	145	242	-	53	0.50	72	0.50	-	52.7	-	<0.050	15.3	1.40	0.119	2.53	3.12	11.9	15.0	0.0442	0.0013	0.0214	0.184	15.1	17.3
	2018-04-02		62	7.68	3.0	60	25	-	-	110	-	-	41	0.50	47	0.50	0.50	34	-	-	8.0	0.1	0.06	1.30	1.80	4.5	2.8	0.02	-	-	-	0.7	0.6
	2018-05-25		58	7.83	3.0	56	23	-	-	76	-	-	40	0.50	0.50	0.50	0.50	33	-	-	7.6	0.2	0.04	1.00	1.10	3.6	2.1	0.24	-	-	-	0.5	0.4
	2018-10-10		49	7.39	2.3	45	20	-	-	63	-	-	32	0.50	0.50	0.50	0.50	26	-	-	6.6	0.1.	0.03	0.90	0.90	2.6	1.6	0.26	-	-	-	0.4	0.4
	2018-12-12		54	7.35	4.1	54	22	-	140	56	-	3	40	0.50	-	0.50	0.50	33	-	-	7.4	0.1	0.04	1.00	0.90	2.5	1.7	0.32	-	-	-	-	-

Table 1: Standpipe Piezometer Chemistry Analyses – General Chemistry

Monitoring Well ID	Sample Date (yyyy-mm-dd)	Parameter	Specific Conductivity	pH	Cation -Anion Balance	Sum of Ions	Total Hardness	Hardness (as CaCO3)	Total Suspended Solids (TSS)	Total Dissolved Solids (TDS)	Turbidity	Acidity	Alkalinity Biocarbonate (as CaCO3)	Alkalinity, Carbonate (as CaCO3)	Chemical Oxygen Demand	Hydroxide (OH) (as CaCO3)	P. Alkalinity	Total Alkalinity (as CaCO3)	Salinity	Bromide (Br)	Calcium (Ca)	Chloride (Cl)	Fluoride (F)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Sulfate (SO4)	Nitrate (as N)	Nitrite (as N)	Ammonia, Total (as N)	Phosphorus (P)-Total	Dissolved Organic Carbon	Total Organic Carbon
Unit			uS/cm		%	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	PSU	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
RDL								0.50	3.0	10	0.10		6.10	1.00						0.050	0.50	0.50	0.020	0.10	0.10	0.050	0.30	0.0050	0.0010	0.0050	0.020	0.50	0.50
DH-BGC17-05	2017 Q4		-	-	-	-	-	48.6	277	229	249	-	55	0.50	46	0.50	-	54.9	-	<0.050	12.5	1.47	0.194	4.88	2.56	19.3	32.2	0.00	0.00	0.107	0.278	2.52	10.9
	2018-04-03		102	8.08	1.6	92	32	-	-	93	-	-	68	0.50	24	0.50	0.50	56	-	-	8.4	0.1	0.16	2.80	1.30	9.6	1.5	0.02	-	-	-	1.3	1.0
	2018-05-24		108	8.10	4.3	93	34	-	-	88	-	-	70	0.50	15	0.50	0.50	57	-	-	8.7	0.1	0.14	2.90	1.40	8.3	1.4	0.02	-	-	-	0.9	0.9
	2018-12-12		98	7.76	1.6	87	38	-	3	66	-	3	66	0.50	-	0.50	0.50	54	-	-	10.0	0.05	0.11	3.20	1.20	5.5	1.1	0.02	-	-	-	-	-
	2018-10-13		98	8.11	3.1	87	36	-	-	76	-	-	66	0.50	-	0.50	0.50	54	-	-	9.4	0.05	0.12	3.20	1.30	6.1	1.3	0.02	-	-	-	0.9	0.9
	2019-04-07		98	7.98	0.7	88	41	-	5	84	-	2	66	0.50	-	0.50	0.50	54	-	-	11.0	0.05	0.14	3.40	1.20	5.5	1.0	<0.4	-	-	-	-	-
	2019-05-18		78	7.87	2.6	77	39	-	3	67	-	1	57	0.50	-	0.50	0.50	47	-	-	9.9	0.05	0.10	3.40	1.20	4.1	1.1	0.02	-	-	-	-	-
	2019-09-21		-	-	-	-	-	-	7	67	-	6	61	0.50	<0.0005	0.50	0.50	50	-	-	10.0	0.2	0.10	-	7.88	-	1.1	0.0400	-	-	-	-	-
	2020-04-02		92	-	4.5	81	39	-	2	67	-	4	62	0.50	-	0.50	0.50	51	-	-	10.0	0.2	0.06	3.40	1.10	3.4	1.1	0.02	0.02	-	-	-	-
2018-MW-001A	2019-08-21		103	7.92	30.6*	98	54	-	776	126	-	0.50	71	0.50	-	0.50	0.50	58	-	-	16	0.05	0.1	3.4	2.9	2.5	1.7	0.02	-	-	-	-	-
2018-MW-001B	2019-08-21		46	6.72	5.3	49	24	-	576	87	-	29	37	0.50	-	0.50	0.50	30	-	-	7.6	0.2	0.02	1.2	0.8	1.5	0.7	0.02	-	-	-	-	-
2018-MW-002A	2018-01-30		-	-	-	<0.0002	<0.02	-	1190	6460	-	20	37	0.50	-	0.50	0.50	30	-	-	5.5	111	0.06	-	-	-	1.4	0.02	-	-	4.6	-	-
	2019-05-19		57	7.1	12.4*	61	21	-	337	78	-	10	30	0.50	-	0.50	0.50	25	-	-	6	12.00	0.040	1.4	2.2	4.5	4.9	0.13	-	-	-	-	-
	2019-09-27		58	7.26	56.1*	60	24	-	178	517	-	14	38	0.50	-	0.50	0.50	31	-	-	6.3	0.3	0.04	1.9	2.8	4.4	5.8	0.04	-	-	-	-	-
2018-MW-002B	2018-01-30		-	-	-	<0.0002	<0.01	-	354	306	-	10	66	0.50	-	0.50	0.50	54	-	-	15	13	0.06	-	-	-	2.3	0.08	-	-	1.9	-	-
	2019-05-19		96	7.45	2.80	83	44	-	472	68	-	13	60	0.50	-	0.50	0.50	49	-	-	15	0.10	0.060	1.6	0.9	2.8	2.7	0.21	-	-	-	-	-
	2019-08-24		112	7.74	1.77	100	54	-	73	132	-	5	73	0.50	-	0.50	0.50	60	-	-	18	0.10	0.040	2.1	1.6	2.6	2.6	0.22	-	-	-	-	-
2018-MW-003	2018-12-09		-	-	14.18*	<0.0002	<0.02	-	244	897	-	45	17	0.50	-	0.50	0.50	14	-	-	4.8	1.9	0.04	-	-	-	7.7	0.02	-	-	0.8	-	-
	2019-08-24		48	6.47	20.39*	33	18	-	141	80	-	26	11	0.50	-	0.50	0.50	9	-	-	5.9	1.00	0.020	0.9	0.9	4.4	8.5	0.02	-	-	-	-	-
2018-MW-004A	2019-01-29		-	-	-	<0.0002	<0.01	-	311	29600	-	2	51	0.50	-	0.50	0.50	42	-	-	9.8	64	0.14	-	-	-	4.3	0.02	-	-	2.9	-	-
	2019-05-19		52	7.38	7.3	50	28	-	319	48	-	4	34	0.50	-	0.50	0.50	28	-	-	9.1	0.05	0.050	1.2	0.8	1.9	2.8	0.09	-	-	-	-	-
	2019-08-23		106	7.84	23.7*	96	32	-	32	102	-	2	67	0.50	-	0.50	0.50	55	-	-	10	0.10	0.210	1.7	1.2	11	4.5	0.02	-	-	-	-	-
2018-MW-004B	2019-01-28		-	-	-	<0.0002	<0.01	-	914	682	-	5	135	0.50	-	0.50	0.50	111	-	-	15	35	0.47	-	-	-	18	0.02	-	-	4.6	-	-
	2019-05-19		146	7.96	8.2	145	31	-	1300	102	-	2	88	0.50	-	0.50	0.50	72	-	-	9.5	14.00	0.380	1.8	1.7	23	7.4	0.02	-	-	-	-	-
	2019-09-21		<0.00005	-	-	0.029	-	-	899	75	-	6	49	0.50	0.01	0.50	0.50	40	-	-	11	0.20	0.060	-	7.71	-	3.0	0.34	-	-	-	-	-
2018-MW-006A	2018-11-28		76	7.9	-	84	20	-	445	718	-	0.50	44	0.50	-	0.50	0.50	36	-	-	-	-	0.11	-	2.8	12	7.3	0.02	-	-	-	-	-
	2019-05-18		54	7.81	16.6*	48	10	-	399	37	-	2	37	0.50	-	0.50	0.50	30	-	-	3.4	0.05	0.170	0.5	0.7	5	1.6	0.02	-	-	-	-	-
	2019-08-22		33	7.61	5.5	41	14	-	108	102	-	1	30	0.50	-	0.50	0.50	25	-	-	4.3	0.05	0.070	0.8	1.1	3.2	1.5	0.04	-	-	-	-	-
	2020-01-12		30	7.47	8.4	31	14	-	77	85	-	2	21	0.50	-	0.50	0.50	17	-	-	4.4	0.10	0.030	0.8	1.2	2.3	1.4	0.12	-	-	-	-	-

Table 1: Standpipe Piezometer Chemistry Analyses – General Chemistry

Monitoring Well ID	Sample Date (yyyy-mm-dd)	Parameter	Specific Conductivity	pH	Cation -Anion Balance	Sum of Ions	Total Hardness	Hardness (as CaCO3)	Total Suspended Solids (TSS)	Total Dissolved Solids (TDS)	Turbidity	Acidity	Alkalinity Biocarbonate (as CaCO3)	Alkalinity, Carbonate (as CaCO3)	Chemical Oxygen Demand	Hydroxide (OH) (as CaCO3)	P. Alkalinity	Total Alkalinity (as CaCO3)	Salinity	Bromide (Br)	Calcium (Ca)	Chloride (Cl)	Fluoride (F)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Sulfate (SO4)	Nitrate (as N)	Nitrite (as N)	Ammonia, Total (as N)	Phosphorus (P)-Total	Dissolved Organic Carbon	Total Organic Carbon
Unit			uS/cm		%	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	PSU	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
RDL								0.50	3.0	10	0.10		6.10	1.00						0.050	0.50	0.50	0.020	0.10	0.10	0.050	0.30	0.0050	0.0010	0.0050	0.020	0.50	0.50
2018-MW-006B	2018-11-27		112	8.06	-	148	26	-	3120	3410	-	0.50	70	0.50	-	0.50	0.50	57	-	-	-	-	0.16	-	2.9	23	9.0	0.08	-	-	-	-	-
	2018-12-21		-	8.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	124	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-21		91	7.95	8.2	94	19	-	4320	1250	-	1	63	0.50	-	0.50	0.50	52	-	-	4.2	0.30	0.160	2.1	3.8	18	2.4	0.02	-	-	-	-	-
	2019-08-22		85	7.66	4.0	107	25	-	3290	9350	-	5	66	0.50	-	0.50	0.50	54	-	-	5.7	11.00	0.070	2.6	3.3	16	2.1	0.02	-	-	-	-	-
	2020-01-12		77	7.35	56.2*	230	18	-	6360	9260	-	3	193	0.50	-	0.50	<50	158	-	-	4.5	15.00	0.25	1.7	1.8	12	1.5	0.1	-	-	-	-	-
2018-MW-007A	2018-12-21		-	6.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2018		84	3.6	-	<0.01	<0.0001	1740	6250	-	6	41	0.50	0.50	-	0.50	34	-	-	23	-	0.05	0.02	-	-	-	-	-	-	-	2.6	-	-
	2019-05-17		53	7.61	13.4*	54	20	-	428	47	-	4	43	0.50	-	0.50	0.50	35	-	-	6.3	0.10	0.060	1.1	0.6	2.4	0.8	0.02	-	-	-	-	-
	2019-08-20		57	7.65	3.6	55	23	-	12	88	-	3	41	0.50	-	0.50	0.50	34	-	-	6.6	0.05	0.070	1.7	1.1	4.5	0.2	0.02	-	-	-	-	-
	2020-01-27		55	7.54	2.4	54	22	-	29	91	-	2	40	0.50	-	0.50	0.50	33	-	-	6.1	0.20	0.070	1.6	1.1	4.4	0.2	0.02	-	-	-	-	-
2018-MW-007B	2018-12-21		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2018		126	2.8	-	0.01	<0.0001	597	889	-	3	60	0.50	0.50	-	0.50	49	-	-	32	-	0.15	0.04	-	-	-	-	-	-	-	6.2	-	-
	2019-05-17		44	7.69	3.4	53	22	-	123	134	-	4	39	0.50	-	0.50	0.50	32	-	-	6.2	0.10	0.080	1.5	0.9	4.8	0.3	0.02	-	-	-	-	-
	2019-08-20		45	7.38	2.1	54	19	-	362	136	-	4	32	0.50	-	0.50	0.50	26	-	-	5.9	11.00	0.060	1.1	0.9	2.6	0.9	0.02	-	-	-	-	-
	2020-01-16		37	7.34	3.9	42	17	-	279	66	-	2	32	0.50	-	0.50	0.50	26	-	-	5.3	0.10	0.060	0.9	0.7	2.3	0.8	0.04	-	-	-	-	-
2018-MW-008A	2018-12-21		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2018		76	1.4	-	<0.01	<0.0001	1550	6720	-	7	39	0.50	0.50	-	0.50	32	-	-	20	-	0.09	0.04	-	-	-	-	-	-	-	2.7	-	-
	2019-05-17		15	7.02	7.0	21	10	-	5700	2060	-	5	15	0.50	-	0.50	0.50	12	-	-	3	0.50	0.010	0.5	0.8	1	1.0	0.02	-	-	-	-	-
	2019-08-20		21	7.06	1.2	25	10	-	2880	505	-	6	18	0.50	-	0.50	0.50	15	-	-	3.2	0.05	0.010	0.5	0.9	1	1.4	0.02	-	-	-	-	-
2018-MW-008B	2018-12-21		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2018		59	1.3	-	<0.01	<0.0001	137	35	-	7	38	0.50	0.50	-	0.50	31	-	-	1.7	-	0.11	0.02	-	-	-	-	-	-	-	5.1	-	-
	2019-05-17		62	7.64	2.7	46	14	-	100	33	-	2	34	0.50	-	0.50	0.50	28	-	-	4.1	0.70	0.150	0.8	0.7	5.5	0.3	0.02	-	-	-	-	-
	2019-08-20		52	7.41	13.8*	44	17	-	7	71	-	1	30	0.50	-	0.50	0.50	25	-	-	5.2	0.40	0.120	1	1.1	5.8	0.4	0.02	-	-	-	-	-
2018-MW-009A	2018-12-21		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2018		72	1.5	-	<0.01	<0.0001	108	136	-	12	39	0.50	0.50	-	0.50	32	-	-	10	-	0.04	0.02	-	-	-	-	-	-	-	5.4	-	-
	2019-05-16		84	7.36	18.0*	74	26	-	272	226	-	4	43	0.50	-	0.50	0.50	35	-	-	8.6	12.00	0.040	1.2	0.9	4.3	4.0	0.02	-	-	-	-	-
	2019-08-22		64	7.28	1.9	53	25	-	22	74	-	6	30	0.50	-	0.50	0.50	25	-	-	8.1	4.30	0.030	1.1	1.1	3.6	4.5	0.02	-	-	-	-	-
	2020-01-24		54	7.06	1.2	48	22	-	28	79	-	10	28	0.50	-	0.50	0.50	23	-	-	7	3.80	0.010	1	1	2.9	3.9	0.12	-	-	-	-	-

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Monitoring Well ID	Sample Date (yyyy-mm-dd)	Parameter	Specific Conductivity	pH	Cation -Anion Balance	Sum of Ions	Total Hardness	Hardness (as CaCO3)	Total Suspended Solids (TSS)	Total Dissolved Solids (TDS)	Turbidity	Acidity	Alkalinity Biocarbonate (as CaCO3)	Alkalinity, Carbonate (as CaCO3)	Chemical Oxygen Demand	Hydroxide (OH) (as CaCO3)	P. Alkalinity	Total Alkalinity (as CaCO3)	Salinity	Bromide (Br)	Calcium (Ca)	Chloride (Cl)	Fluoride (F)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Sulfate (SO4)	Nitrate (as N)	Nitrite (as N)	Ammonia, Total (as N)	Phosphorus (P)-Total	Dissolved Organic Carbon	Total Organic Carbon
Unit			uS/cm		%	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	PSU	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
RDL								0.50	3.0	10	0.10		6.10	1.00						0.050	0.50	0.50	0.020	0.10	0.10	0.050	0.30	0.0050	0.0010	0.0050	0.020	0.50	0.50
2018-MW-009B	2018-12-21		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	173	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2018		159	5.5	-	<0.02	0.0002	582	1750	-	12	90	0.50	0.50	-	0.50	74	-	-	26	-	0.11	0.12	-	-	-	-	-	-	-	7.6	-	-
	2019-05-18		109	7.63	8.4	96	44	-	375	300	-	4	60	0.50	-	0.50	0.50	49	-	-	14	10.00	0.070	2.2	1.6	4.2	4.2	0.02	-	-	-	-	-
	2019-09-27		122	7.89	1.0	105	55	-	52	104	-	2	70	0.50	-	0.50	0.50	57	-	-	18	3.7	0.08	2.4	1.9	4.7	4.7	0.02	-	-	-	-	-
	2020-01-25		88	7.52	3.0	76	38	-	139	139	-	5	48	0.50	-	0.50	0.50	39	-	-	12	3.70	0.020	1.9	2.2	3.8	3.8	0.14	-	-	-	-	-
2018-MW-010A	2019-01-29		149	4.1	-	<0.01	<0.0001	414	423	-	0.50	87	5	0.50	-	4	79	-	-	0.8	-	0.27	0.02	-	-	-	-	-	-	-	8.8	-	-
	2019-05-20		105	8.13	14.5*	112	25	-	93	164	-	0.50	67	0.50	-	0.50	0.50	55	-	-	6.6	0.50	0.250	2	2.3	26	7.4	0.02	-	-	-	-	-
	2019-08-25		51	6.56	24.4*	34	19	-	38	128	-	0.50	83	0.50	-	0.50	0.50	68	-	-	8.4	0.10	0.180	2.7	2.3	17	2.0	0.1	-	-	-	-	-
2018-MW-010B	2019-01-28		129	11	-	<0.01	<0.0001	160	54	-	0.50	1	61	0.50	-	51	103	-	-	8.7	-	0.16	0.02	-	-	-	-	-	-	-	5.9	-	-
	2019-05-21		134	10.26	45.3*	67	32	-	10	132	-	0.50	0.50	20	-	4	30	47	-	-	12	7.70	0.140	0.4	7.9	11	4.2	0.02	-	-	-	-	-
	2019-08-27		197	10.14	63.1*	119	82	-	0.50	150	-	0.50	1	59	-	0.50	49	99	-	-	30	7.80	0.120	1.8	6	8.5	4.9	0.06	-	-	-	-	-
2019-MW-012A	2019-09-29		4430	12.19	2.6	-	639	-	-	1040	-	-	6.1	45.3	-	312	-	992	-	-	369	0.50	-	12.9	59.5	154	14.6	0.25	<0.050	-	1.57	3.5	3.7
2019-MW-012B	2019-09-29		300	8.18	6.8	-	37.7	-	-	160	-	-	85	<5.0	-	<5.0	-	69.7	-	-	10.2	26.8	-	2.92	0.924	42.8	36.9	0.25	<0.050	-	0.078	2.4	2.4
2019-MW-013	2019-09-29		92.5	7.76	4.7	-	37.8	-	-	46.1	-	-	57	<5.0	-	<5.0	-	46.8	-	-	11.3	0.25	-	2.31	1.00	2.07	1.51	0.25	<0.050	-	0.211	<1.0	<1.0
2019-MW-016	2020-01-14		110	7.69	2.0	93	20	-	52	139	-	5	54	0.50	-	0.50	0.50	44	-	-	6	0.50	0.110	1.3	1.3	17	13.0	0.02	-	-	-	-	-

Notes
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
mg/L - milligrams per litre.
meq/L - milliequivalents per litre.
% - percentage.
RDL - Reportable Detection Limit.
Duplicate and Field Blank data Hidden in rows 190 to 256.
* Indicates sample is outside ±10% and is considered invalid.

Table 2: Standpipe Piezometer Chemistry Analyses - Total Metals

Monitoring Well ID	Sample Date (yyyy-mm-dd)	Parameter	Aluminum (Al)-Total	Antimony (Sb)-Total	Arsenic (As)-Total	Barium (Ba)-Total	Beryllium (Be)-Total	Bismuth (Bi)-Total	Boron (B)-Total	Cadmium (Cd)-Total	Calcium (Ca)-Total	Cesium (Cs)-Total	Chromium (Cr)-Total	Cobalt (Co)-Total	Copper (Cu)-Total	Iron (Fe)-Total	Kjeldahl Nitrogen-Total	Lead (Pb)-Total	Lithium (Li)-Total	Magnesium (Mg)-Total	Manganese (Mn)-Total	Mercury (Hg)-Total	Molybdenum (Mo)-Total	Nickel (Ni)-Total	Nitrogen (N)-Total	Potassium (K)-Total	Radium-226	Rubidium (Rb)-Total	Selenium (Se)-Total	Silicon (Si)-Total	Silver (Ag)-Total	Sodium (Na)-Total	Strontium (Sr)-Total	Sulfur (S)-Total	Tellurium (Te)-Total	Thallium (Tl)-Total	Thorium (Th)-Total	Tin (Sn)-Total	Titanium (Ti)-Total	Tungsten (W)-Total	Uranium (U)-Total	Vanadium (V)-Total	Zinc (Zn)-Total	Zirconium (Zr)-Total
Unit			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	ng/L	mg/L	mg/L	mg/L	mg/L	Bq/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
RDL			0.0030	0.00010	0.00010	0.000050	0.000020	0.000050	0.010	0.0000050	0.050		0.00010	0.00010	0.00050	0.010		0.000050	0.0010	0.10	0.00010	5.000000	0.000050	0.00050		0.10		0.00	0.000050	0.10	0.000010	0.050	0.00020	0.50	0.000200	0.000010	0.00010	0.00010	0.00030	0.00010	0.000010	0.00050	0.0030	0.00030
DH-BGC17-01	2018-04-02		3.6	0.0	0.0013	0.046	0.0002	-	0.02	0.00002	6.1	-	0.00480	0.0014	0.004	2.6	0.25	0.0022	-	1.2	0.11	5.00	0.0039	0.0028	0.26	1.2	-	-	0.0001	-	0.00	5.4	0.057	-	-	<0.0002	-	0.0002	0.088	-	0.0004	0.007	0.006	-
	2017 Q4		2.66	0.00018	0.00148	0.0506	0.000210	0.000064	0.022	0.0000195	8.51	-	0.00358	0.00120	0.00466	1.94	-	0.00293	0.0051	2.06	0.123	2.50	0.00395	0.00229	-	2.00	-	-	0.000173	20.9	0.000040	16.8	0.0744	9.22	-	0.000029	-	0.00020	0.116	-	0.000603	0.00678	0.0051	0.00640
	2018-05-24		3.8	0.0	0.0014	0.038	0.0002	-	0.02	0.00002	5.7	-	0.00360	0.0007	0.002	1.7	0.14	0.0022	-	1.2	0.093	7	0.0032	0.0016	0.14	1.2	-	-	0.0002	-	0.00	4.8	0.064	-	-	<0.0002	-	0.0002	0.19	-	0.0003	0.006	<0.005	-
	2018-10-13		1.5	0.0	0.9000	0.025	0.00	-	<0.01	0.00	6.0	-	0.00170	0.0005	0.001	1.2	-	0.0007	-	1.4	0.086	5.00	0.0023	0.0010	-	1.1	-	-	0.00	-	0.00	3.7	0.044	-	-	<0.0002	-	0.0002	0.04	-	0.2000	0.003	<0.005	-
	2018-12-12		-	-	-	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	0.9	-	-	-	-	-	3.8	-	-	-	-	-	-	-	-	-	-	-	-
	2019-04-04		-	-	-	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	1.0	-	-	-	-	-	6.1	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-18		-	-	-	-	-	-	-	-	6.0	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	0.7	-	-	-	-	-	3.4	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-18		-	-	-	-	-	-	-	-	6.3	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	0.7	-	-	-	-	-	3.3	-	-	-	-	-	-	-	-	-	-	-	-
	2020-01-31		-	-	-	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	0.7	-	-	-	-	-	3.3	-	-	-	-	-	-	-	-	-	-	-	-
DH-BGC17-02	2017 Q4		3.47	0.00	0.00073	0.0434	0.000159	0.00	0.010	0.0000278	4.83	-	0.00389	0.00328	0.00819	3.24	-	0.00203	0.0034	1.08	0.107	2.50	0.00111	0.00390	-	1.57	-	-	0.000111	13.1	0.000017	3.85	0.0429	1.67	-	0.000041	-	0.00015	0.0613	-	0.000261	0.00501	0.0065	0.00128
	2018-04-01		7.30	0.0	0.0014	0.067	0.0003	-	0.01	0.00006	3.10	-	0.0099	0.0061	0.006	7.60	0.18	0.0037	-	0.70	0.15	3.000	0.0002	0.0062	0.18	0.60	-	-	0.0001	-	0.00	1.90	0.051	-	-	<0.0002	-	0.0002	0.15	-	0.0005	0.011	0.011	-
	2018-05-24		2.90	0.0	0.0004	0.029	0.0001	-	0.02	0.00004	2.90	-	0.0035	0.0027	0.003	2.00	<0.05	0.0015	-	0.70	0.050	8.000	0.0002	0.0023	0.05	0.40	-	-	0.00	-	0.00	1.70	0.034	-	-	<0.0002	-	0.0001	0.095	-	0.0002	0.0038	0.028	-
	2018-10-14		2.00	0.0	0.3000	0.022	0.00	-	<0.01	0.00002	2.90	-	0.0026	0.0018	0.002	1.60	-	0.0008	-	0.80	0.032	1.000	0.00	0.0020	-	0.60	-	-	0.00	-	0.00	1.70	0.026	-	-	<0.0002	-	0.00	0.049	-	0.05	0.0029	0.001	-
	2018-12-15		-	-	-	-	-	-	-	-	3.00	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	0.60	-	-	-	-	-	1.70	-	-	-	-	-	-	-	-	-	-	-	-
	2019-04-04		-	-	-	-	-	-	-	-	3.40	-	-	-	-	-	-	-	-	0.60	-	-	-	-	-	0.50	-	-	-	-	-	1.80	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-19		-	-	-	-	-	-	-	-	2.80	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	0.50	-	-	-	-	-	1.60	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-19		-	-	-	-	-	-	-	-	2.60	-	-	-	-	-	-	-	-	0.70	-	-	-	-	-	0.50	-	-	-	-	-	1.60	-	-	-	-	-	-	-	-	-	-	-	-
DH-BGC17-03	2017 Q4		4.88	0.00032	0.00315	0.0474	0.000419	0.000103	0.02	0.0000519	5.92	-	0.00441	0.00112	0.00489	3.57	-	0.00393	0.0042	1.19	0.0336	2.50	0.00673	0.00289	-	1.51	-	-	0.000368	16.5	0.000030	24.9	0.0548	6.18	-	0.000051	-	0.00073	0.0370	-	0.00173	0.00825	0.0087	0.00093
	2018-04-01		3.30	0.0	0.0013	0.0320	0.0002	-	0.01	0.0000300	4.40	-	0.00420	0.0013	0.003	2.8	0.24	0.0020	-	0.70	0.033	6	0.0042	0.0023	0.33	0.70	-	-	0.0001	-	0.00	6.9	0.0450	-	-	<0.0002	-	0.0012	0.079	-	0.0007	0.0056	<0.005	-
	2018-05-25		4.00	0.0	0.0016	0.0490	0.0003	-	0.02	0.00007	6.60	-	0.0056	0.0014	0.005	3.3	<0.08	0.0032	-	0.90	0.048	1.0000	0.0025	0.0032	0.22	0.70	-	-	0.0002	-	0.00	5.4	0.0620	-	-	<0.0002	-	0.0004	0.098	-	0.0009	0.0062	0.036	-
	2018-10-10		0.18	0.0	0.0010	0.0640	0.00	-	<0.01	0.00010	8.90	-	0.0028	0.0023	0.018	0.6	0.46	0.0082	-	1.10	0.029	2.0000	0.0025	0.0069	0.57	1.40	-	-	0.00	-	0.00	4.2	0.0470	-	-	<0.0002	-	0.0014	0.0032	-	0.0004	0.0010	0.039	-
	2018-12-15		-	-	-	-	-	-	-	-	7.10	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	1.00	-	-	-	-	-	3.2	-	-	-	-	-	-	-	-	-	-	-	-
	2019-04-09		-	-	-	-	-	-	-	-	8.80	-	-	-	-	-	-	-	-	1.60	-	-	-	-	-	1.80	-	-	-	-	-	3.1	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-20		-	-	-	-	-	-	-	-	6.60	-	-	-	-	-	-	-	-	0.90	-	-	-	-	-	0.70	-	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-19		-	-	-	-	-	-	-	-	5.60	-	-	-	-	-	-	-	-	0.80	-	-	-	-	-	0.60	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-
DH-BGC17-04	2017-10-17		4.05	0.00225	0.00261	0.0848	0.000241	0.00	0.012	0.00022	15.3	-	0.0141	0.00218	0.0731	4.92	-	0.0117	0.0049	2.53	0.0872	3.900000	0.00394	0.00682	-	3.12	-	-	0.000607	15.8	0.000095	11.9	0.0607	5.30	-	0.000050	-	0.00436	0.0656	-	0.00124	0.0211	0.0699	0.00355
	2018-04-02		9.70	0.0003	0.00380	0.0890	0.0005	-	0.01	0.00015	8.0	-	0.0250	0.0040	0.016	9.80	0.46	0.0072	-	1.30	0.10	1.2000	0.0015	0.011	0.46	1.80	-	-	0.0008	-	0.00007	4.5	0.075	-	-	<0.0002	-	0.0012	0.35	-	0.0018	0.042	0.029	-
	2018-05-25		3.10	0.0003	0.01600	0.0420	0.0002	-	0.01	0.00007	7.6	-	0.0078	0.0012	0.006	2.90	0.10	0.0024	-	1.00	0.04	1.0000	0.0006	0.004	0.15	1.10	-	-	0.0003	-	0.00	3.6	0.050	-	-	<0.0002	-	0.0007	0.12	-	0.0050	0.016	0.038	-
	2018-10-10		0.20	0.0001	0.00060	0.0200	0.00	-	<0.01	0.00001	6.6	-	0.0026	0.0002	0.008	0.53	0.11	0.0010	-	0.90	0.02	7.0000	0.0003	0.002	0.17	0.90	-	-	0.0001	-	0.00	2.6	0.031	-	-	<0.0002	-	0.00	0.0047	-	0.0001	0.007	0.020	-
	2018-12-12		-	-	-	-	-	-	-	-	7.4	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	0.90	-	-	-	-	-	2.5	-	-	-	-	-	-	-	-	-	-	-	-
DH-BGC17-05	2017 Q4		3.99	0.00027	0.00311	0.0365	0.000412	0.000056	0.055	0.0000267	12.5	-	0.0106	0.00330	0.00574	6.58	-	0.00267	0.0235	4.88	0.221	2.50	0.00209	0.00654	-	2.56	-	-	0.000120	15.2	0.000029	19.3	0.155	11.7	-	0.000060	-	0.00037	0.0307	-	0.000544	0.0108	0.0138	0.00091
	2018-04-03		2.30	0.00010	0.0012	0.0250	0.0002	-	0.06	0.00001	8.4	-	0.0048	0.0014	0.002	2.6	0.21	0.0009	-	2.80	0.12	5	0.0019	0.0026	0.21	1.30	-	-	0.00	-	0.00	9.6	0.1	-	-	<0.0002	-	0.0002	0.035	-	0.0002	0.0049	0.006	-
	2018-05-24		5.10	0.00010	0.0010	0.0280	0.0002	-	0.05	0.00001	8.7	-	0.0055	0.0009	0.003	2.1	0.14	0.0010	-	2.90	0.11	6	0.0014	0.0020	0.14	1.40	-	-	0.00	-	0.00	8.3	0.12	-	-	<0.0002	-	0.0003	0.16	-	0.0020	0.0068	<0.005	-
	2018-10-12		-	-	-	-	-	-	-	-	10.0	-	-	-	-	-	-	-	-	3.20	-	-	-	-	-	1.20	-	-	-	-	-	5.5	-	-	-	-	-	-	-	-	-	-	-	-
	2018-10-13		0.62	0.00010	0.4000	0.0220	0.00	-	0.06	0.00	9.4	-	0.0011	0.00	<0.0002	0.8	-	0.0001	-	3.20	0.10	5.00	0.0010	0.0006	-	1.30	-	-	0.00	-	0.00	6.1	0.12	-	-	<0.0002	-	0.00	0.02	-	0.05	0.0012	0.001	-
	2019-04-07		-	-	-	-	-	-	-	-	11.0	-	-	-	-	-	-	-	-	3.40	-	-	-	-	-	1.20	-	-	-	-	-	5.5	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-18		-	-	-	-	-	-	-	-	9.9	-	-	-	-	-	-	-	-	3.40	-	-	-	-	-	1.20	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	-	-	-	-
	2019-09-21		-	-	-	-	-	-	-	-	10.0	-	-	-	-	-	-	-	-	-	3.30	-	-	-	-	7.88	-	-	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-
	2020-04-02		-	-	-	-	-	-	-	-	10.0	-	-	-	-	-	-	-	-	3.40	-	-	-	-	-	1.10	-	-	-	-	-	3.4	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-001A	2019-08-21		-	-	-	-	-	-	-	-	16	-	-	-	-	-	-	-	-	3.4	-	-	-	-	-	2.9	-	-	-	-	-	2.5	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-001B	2019-08-21		-	-	-	-	-	-	-	-	7.6	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	0.8	-	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-002A	2018-01-30		-	-	-	-	-	-	-	-	5.5	-	-	-	-	-	-	-	2.6	-	-	-	-	-	7	-	-	-	-	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-19		-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	1.4	-	-	-	-	-	2.2	-	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	-	-	-
	2019-09-27		-	-	-	-	-	-	-	-	6.3	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	2.8	-	-	-	-	-	4.4	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-002B	2018-01-30		-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	2.6	-	-	-	-	-	7.6	-	-	-	-	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-19		-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	-	1.6	-	-	-	-	-	0.9	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-24		-	-	-	-	-	-	-	-	18	-	-	-	-	-	-	-	-	2.1	-	-	-	-	-	1.6	-	-	-	-	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-

Table 2: Standpipe Piezometer Chemistry Analyses - Total Metals

Monitoring Well ID	Sample Date (yyyy-mm-dd)	Parameter	Aluminum (Al)-Total	Antimony (Sb)-Total	Arsenic (As)-Total	Barium (Ba)-Total	Beryllium (Be)-Total	Bismuth (Bi)-Total	Boron (B)-Total	Cadmium (Cd)-Total	Calcium (Ca)-Total	Cesium (Cs)-Total	Chromium (Cr)-Total	Cobalt (Co)-Total	Copper (Cu)-Total	Iron (Fe)-Total	Kjeldahl Nitrogen-Total	Lead (Pb)-Total	Lithium (Li)-Total	Magnesium (Mg)-Total	Manganese (Mn)-Total	Mercury (Hg)-Total	Molybdenum (Mo)-Total	Nickel (Ni)-Total	Nitrogen (N)-Total	Potassium (K)-Total	Radium-226	Rubidium (Rb)-Total	Selenium (Se)-Total	Silicon (Si)-Total	Silver (Ag)-Total	Sodium (Na)-Total	Strontium (Sr)-Total	Sulfur (S)-Total	Tellurium (Te)-Total	Thallium (Tl)-Total	Thorium (Th)-Total	Tin (Sn)-Total	Titanium (Ti)-Total	Tungsten (W)-Total	Uranium (U)-Total	Vanadium (V)-Total	Zinc (Zn)-Total	Zirconium (Zr)-Total
Unit			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	ng/L	mg/L	mg/L	mg/L	mg/L	Bq/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
RDL			0.0030	0.00010	0.00010	0.000050	0.000020	0.000050	0.010	0.0000050	0.050		0.00010	0.00010	0.00050	0.010		0.000050	0.0010	0.10	0.00010	5.000000	0.000050	0.00050		0.10		0.00	0.000050	0.10	0.000010	0.050	0.00020	0.50	0.000200	0.000010	0.00010	0.00010	0.00030	0.00010	0.000010	0.00050	0.0030	0.00030
2018-MW-003	2018-12-09		-	-	-	-	-	-	-	-	4.8	-	-	-	-	-	-	-	1.1	-	-	-	-	-	6.32	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-24		-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	0.9	-	-	-	-	-	0.9	-	-	-	-	-	4.4	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-004A	2019-01-29		-	-	-	-	-	-	-	-	9.8	-	-	-	-	-	-	-	2.3	-	-	-	-	-	7.75	-	-	-	-	-	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-19		-	-	-	-	-	-	-	-	9.1	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	0.8	-	-	-	-	-	1.9	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-23		-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	1.7	-	-	-	-	-	1.2	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-004B	2019-01-28		-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	5	-	-	-	-	-	8.03	-	-	-	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-19		-	-	-	-	-	-	-	-	9.5	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	1.7	-	-	-	-	-	23	-	-	-	-	-	-	-	-	-	-	-	-
	2019-09-21		-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	1.4	-	-	-	-	7.71	-	-	-	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-006A	2018-11-28		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-18		-	-	-	-	-	-	-	-	3.4	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	0.7	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-22		-	-	-	-	-	-	-	-	4.3	-	-	-	-	-	-	-	-	0.8	-	-	-	-	-	1.1	-	-	-	-	-	3.2	-	-	-	-	-	-	-	-	-	-	-	-
	2020-01-12		-	-	-	-	-	-	-	-	4.4	-	-	-	-	-	-	-	-	0.8	-	-	-	-	-	1.2	-	-	-	-	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-006B	2018-11-27		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-	-	-	-	-	23	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-21		-	-	-	-	-	-	-	-	4.2	-	-	-	-	-	-	-	-	2.1	-	-	-	-	-	3.8	-	-	-	-	-	18	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-22		-	-	-	-	-	-	-	-	5.7	-	-	-	-	-	-	-	-	2.6	-	-	-	-	-	3.3	-	-	-	-	-	16	-	-	-	-	-	-	-	-	-	-	-	-
	2020-01-12		-	-	-	-	-	-	-	-	4.5	-	-	-	-	-	-	-	-	1.7	-	-	-	-	-	1.8	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-007A	2018		-	-	-	-	-	-	-	7.9	-	-	-	-	-	-	-	3	-	-	-	-	-	7.45	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-17		-	-	-	-	-	-	-	-	6.3	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	0.6	-	-	-	-	-	2.4	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-20		-	-	-	-	-	-	-	-	6.6	-	-	-	-	-	-	-	-	1.7	-	-	-	-	-	1.1	-	-	-	-	-	4.5	-	-	-	-	-	-	-	-	-	-	-	-
	2020-01-27		-	-	-	-	-	-	-	-	6.1	-	-	-	-	-	-	-	-	1.6	-	-	-	-	-	1.1	-	-	-	-	-	4.4	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-007B	2018		-	-	-	-	-	-	-	8.2	-	-	-	-	-	-	-	3.5	-	-	-	-	-	7.9	-	-	-	-	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-17		-	-	-	-	-	-	-	-	6.2	-	-	-	-	-	-	-	-	1.5	-	-	-	-	-	0.9	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-20		-	-	-	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	0.9	-	-	-	-	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-
	2020-01-16		-	-	-	-	-	-	-	-	5.3	-	-	-	-	-	-	-	-	0.9	-	-	-	-	-	0.7	-	-	-	-	-	2.3	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-008A	2018		-	-	-	-	-	-	-	6.9	-	-	-	-	-	-	-	1.5	-	-	-	-	-	7.32	-	-	-	-	-	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-17		-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	0.8	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-20		-	-	-	-	-	-	-	-	3.2	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	0.9	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-008B	2018		-	-	-	-	-	-	-	5.3	-	-	-	-	-	-	-	1.5	-	-	-	-	-	7.38	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-17		-	-	-	-	-	-	-	-	4.1	-	-	-	-	-	-	-	-	0.8	-	-	-	-	-	0.7	-	-	-	-	-	5.5	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-20		-	-	-	-	-	-	-	-	5.2	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1.1	-	-	-	-	-	5.8	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-009A	2018		-	-	-	-	-	-	-	9.4	-	-	-	-	-	-	-	1.9	-	-	-	-	-	7.38	-	-	-	-	-	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-16		-	-	-	-	-	-	-	-	8.6	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	0.9	-	-	-	-	-	4.3	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-22		-	-	-	-	-	-	-	-	8.1	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	1.1	-	-	-	-	-	3.6	-	-	-	-	-	-	-	-	-	-	-	-
	2020-01-24		-	-	-	-	-	-	-	-	7	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	2.9	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-009B	2018		-	-	-	-	-	-	-	20	-	-	-	-	-	-	-	3.7	-	-	-	-	-	7.7	-	-	-	-	-	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-18		-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	2.2	-	-	-	-	-	1.6	-	-	-	-	-	4.2	-	-	-	-	-	-	-	-	-	-	-	-
	2019-09-27		-	-	-	-	-	-	-	-	18	-	-	-	-	-	-	-	-	2.4	-	-	-	-	-	1.9	-	-	-	-	-	4.7	-	-	-	-	-	-	-	-	-	-	-	-
	2020-01-25		-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	1.9	-	-	-	-	-	2.2	-	-	-	-	-	3.8	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-010A	2019-01-29		-	-	-	-	-	-	-	4.9	-	-	-	-	-	-	-	3.3	-	-	-	-	-	8.65	-	-	-	-	-	35	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-20		-	-	-	-	-	-	-	-	6.6	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2.3	-	-	-	-	-	26	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-25		-	-	-	-	-	-	-	-	8.4	-	-	-	-	-	-	-	-	2.7	-	-	-	-	-	2.3	-	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-
2018-MW-010B	2019-01-28		-	-	-	-	-	-	-	20	-	-	-	-	-	-	-	2.6	-	-	-	-	-	10.05	-	-	-	-	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-
	2019-05-21		-	-	-	-	-	-	-	-	12	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-	7.9	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-
	2019-08-27		-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	1.8	-	-	-	-	-	6	-	-	-	-	-	8.5	-	-	-	-	-	-	-	-	-	-	-	-
2019-MW-012A	2019-09-29		33.5	0.00065	0.0248	4.40	0.00721	0.00187	0.205	0.000499	369	0.0216	0.0871	0.0144	0.531	30.4	-	0.0884	0.0736	12.9	1.16	21.900000	0.0101	0.0437	-	59.5	-	0.154	0.00242	62.0	0.000790	154	4.64	11.3	0.00	0.00213	0.136	0.00147	0.0943	0.00	0.0390	0.120	0.127	0.0041
2019-MW-012B	2019-09-29		0.345	0.00043	0.00124	0.0371	0.00	0.000073	0.083	0.0000093	10.2	0.000026	0.00020	0.00063	0.00079	0.644	-	0.00119	0.0152	2.92	0.215	2.50	0.00590	0.00059	-	0.924	-	0.00089	0.000239	9.49	0.000035	42.8	0.153	12.0	<0.00020	0.000010	0.00120	0.00030	0.00828	0.00628	0.000421	0.00056	0.0032	0.0118
2019-MW-013	2019-09-29		0.343	0.00	0.00039	0.0226	0.00	0.00	0.024	0.0000056	11.3	0.000148	0.00058	0.00026	0.00	1.08	-	0.000665	0.0159	2.31	0.160	2.50	0.000373	0.00	-	1.00	-	0.00155	0.00	8.90	0.00	2.07	0.0697	<0.50	<0.00020	0.000011	0.00024	0.00	0.0147	0.00	0.000072	0.00100	0.0048	0.00060
2019-MW-016	2020-01-14		-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	1.3	-	-	-	-	-	1.3	-	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-

Table 3: Standpipe Piezometer Chemistry Analyses - Dissolved Metals

Monitoring Well ID	Sample Date (yyyy-mm-dd)	Parameter	Aluminum (Al)-Dissolved	Antimony (Sb)-Dissolved	Arsenic (As)-Dissolved	Barium (Ba)-Dissolved	Beryllium (Be)-Dissolved	Bismuth (Bi)-Dissolved	Boron (B)-Dissolved	Cadmium (Cd)-Dissolved	Cesium (Cs)-Dissolved	Chromium (Cr)-Dissolved	Cobalt (Co)-Dissolved	Copper (Cu)-Dissolved	Iron (Fe)-Dissolved	Lead (Pb)-Dissolved	Lithium (Li)-Dissolved	Magnesium (Mg)-Dissolved	Manganese (Mn)-Dissolved	Mercury (Hg)-Dissolved	Molybdenum (Mo)-Dissolved	Nickel (Ni)-Dissolved	Nitrate -Dissolved	Total Kjeldahl Nitrogen-Dissolved	Nitrogen - Dissolved	Phosphorus (P)-Dissolved	Polonium -210- Dissolved	Potassium (K)-Dissolved	Potassium-210 (K)-Dissolved	Rubidium (Rb)-Dissolved	Radium-226- Dissolved	Selenium (Se)-Dissolved	Silicon (Si)-Dissolved	Silver (Ag)-Dissolved	Sodium (Na)-Dissolved	Strontium (Sr)-Dissolved	Sulfur (S)-Dissolved	Tellurium (Te)-Dissolved	Thallium (Tl)-Dissolved	Thorium-230- Dissolved	Tin (Sn)-Dissolved	Titanium (Ti)-Dissolved	Uranium (U)-Dissolved	Vanadium (V)-Dissolved	Zinc (Zn)-Dissolved	Zirconium (Zr)-Dissolved
Unit			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	ng/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	Bq/L	mg/L	Bq/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
RDL			0.0010	0.00010	0.00010	0.000050	0.000020	0.000050	0.010	0.0000050	0.00001	0.00010	0.00010	0.00020	0.010	0.000050	0.0010	0.10	0.00010	5.0000000	0.000050	0.00050				0.050		0.10		0.00020		0.0000050	0.050	0.0000010	0.050	0.00020	0.50	0.00020	0.0000010		0.00010	0.00030	0.0000010	0.00050	0.0010	0.00030
DH-BGC17-01	2018-04-02		0.0068	0.0	0.6	0.0086	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.12	0.0	-	-	0.077	0.5	0.0035	0.0	0.09	0.03	0.0	-	0.0	-	-	-	0.005	0.0001	-	0.0	-	0.032	-	-	0.0	0.0	0.0	0.0003	0.1	0.0001	0.0	-
	2017 Q4		0.782	0.00011	0.00109	0.0256	0.000118	0.000025	0.015	0.0000157	-	0.00109	0.00085	0.00269	1.10	0.00119	0.0035	1.73	0.113	2.5	0.00243	0.00137	-	-	-	0.099	-	1.17	-	-	-	0.000107	15.5	0.000005	15.0	0.0497	8.29	-	0.000011	-	0.00005	0.0429	0.000381	0.00396	0.0031	0.00183
	2018-05-24		0.015	0.0	0.0007	0.0097	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.22	0.0	-	-	0.078	2.000	0.0033	0.0	0.02	0.03	0.0	-	0.0	-	-	-	0.003	0.0001	-	0.0	-	0.034	-	-	0.0	0.0	0.0	0.0006	0.0	0.0001	0.0	-
	2018-10-13		0.003	0.0	0.7000	0.0110	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.21	0.0	-	-	0.077	0.500	0.0018	0.0	0.02	-	-	-	-	-	-	-	-	0.0001	-	0.0	-	0.035	-	-	0.0	-	0.0	0.0001	0.1	0.0001	0.0	-
	2018-12-12		0.005	0.0	0.7000	0.0120	0.0	-	0.0	0.00001	-	0.0	0.0	0.0	0.24	0.0	-	-	0.077	-	0.0019	0.0004	-	-	-	-	-	-	-	-	-	0.0001	-	0.0	-	0.034	-	-	0.0	-	0.0	0.0002	0.1	0.0001	0.0027	-
	2019-04-04		0.087	0.0	0.2000	0.0110	0.0	-	0.0	0.00001	-	0.0	0.0	0.0006	0.07	0.0002	-	-	0.055	-	0.0045	0.0001	-	-	-	-	-	-	-	-	-	0.0001	-	0.0	-	0.049	-	-	0.0	-	0.0002	0.0016	0.1	0.0003	0.0012	-
	2019-05-18		0.052	0.0001	0.6000	0.0110	0.00005	-	0.01	0.00001	-	0.0	0.0	0.0001	0.24	0.0001	-	-	0.072	-	0.0017	0.0001	-	-	-	-	-	-	-	-	-	0.0001	-	0.000025	-	0.035	-	-	0.0	-	0.00005	0.0006	0.1	0.0001	0.0037	-
	2019-08-18		0.005	0.0001	0.5000	0.0120	0.00005	0.0	0.0	0.00001	-	0.0	0.0	0.0001	0.22	0.0002	0.0	-	0.073	-	0.0015	0.0001	-	-	-	-	-	-	-	-	-	0.0001	-	0.000025	-	0.036	-	-	0.0	-	0.00005	0.0002	0.05	0.00005	0.0011	-
	2020-01-31		0.030	0.0001	0.5000	0.0130	0.00005	0.0	0.0	0.00001	-	0.0	0.0	0.0001	0.30	0.0001	0.0	-	0.080	-	0.0011	0.0001	-	-	-	-	0.0	-	-	-	0.003	0.0001	-	0.000025	-	0.037	-	-	0.0	0.0	0.00005	0.0005	0.05	0.00005	0.0003	-
DH-BGC17-02	2017 Q4		0.483	0.00005	0.00031	0.0181	0.000061	0.000025	0.005	0.0000223	-	0.00072	0.00270	0.00180	1.04	0.000653	0.0014	0.79	0.0948	2.5	0.000600	0.00215	-	-	-	0.025	-	0.62	-	-	-	0.000099	7.51	0.000005	3.61	0.0269	1.62	-	0.000011	-	0.00005	0.002	0.000176	0.00133	0.0027	<0.00030
	2018-04-01		0.01	0.0	0.05	0.0042	0.00	-	0.01	0.00001	-	0.0	0.0016	0.0	0.0084	0.0	-	-	0.025	0.5	0.0001	0.0006	0.31	0.03	0.03	-	0.0	-	-	-	0.007	0.00	-	0.0	0.0	0.016	-	-	0.0	0.0	0.0	0.00	0.1	0.0002	0.0	-
	2018-05-24		0.0080	0.0	0.00	0.0050	0.0	-	0.01	0.00001	-	0.0	0.0018	0.0	0.0031	0.0	-	-	0.021	2.000	0.0001	0.0005	0.27	0.03	0.06	-	0.0	-	-	-	0.003	0.00	-	0.0	0.0	0.018	-	-	0.0	0.0	0.0	0.00	0.0	0.0002	0.0	-
	2018-10-14		0.0062	0.0	0.05	0.0044	0.0	-	0.01	0.00001	-	0.0	0.0010	0.0	0.0024	0.0	-	-	0.011	-	0.0001	0.0003	-	-	-	-	-	-	-	-	-	0.00	-	0.0	-	0.018	-	-	0.0	-	0.0	0.0003	0.1	-	0.0	-
	2018-12-15		0.0130	0.0	0.05	0.0047	0.0	-	0.01	0.00001	-	0.0	0.0008	0.0	0.0120	0.0	-	-	0.008	-	0.0001	0.0008	-	-	-	-	-	-	-	-	-	0.00	-	0.0	-	0.019	-	-	0.0	-	0.0	0.0003	0.1	0.0002	0.0026	-
	2019-04-04		0.0110	0.0	0.05	0.0087	0.0	-	0.01	0.00001	-	0.0	0.0002	0.0016	0.0075	0.0004	-	-	0.003	-	0.0001	0.0003	-	-	-	-	-	-	-	-	-	0.00	-	0.0	-	0.019	-	-	0.0	-	0.0003	0.0003	0.1	0.0002	0.0088	-
	2019-05-19		0.0057	0.0001	0.05	0.0043	0.00005	-	0.01	0.00001	-	0.0	0.0008	0.0001	0.0027	0.0001	-	-	0.0067	-	0.0001	0.0003	-	-	-	-	-	-	-	-	-	0.00	-	0.000025	-	0.038	-	-	0.0	-	0.00005	0.0001	0.1	0.0002	0.0020	-
	2019-08-19		0.0078	0.0001	0.05	0.0049	0.00005	0.00	0.01	0.00003	-	0.0	0.0007	0.0015	0.0063	0.0001	0.00	-	0.0055	-	0.0001	0.0005	-	-	-	-	-	-	-	-	-	0.00	-	0.000025	-	0.019	-	-	0.0	-	0.00005	0.0002	0.1	0.0002	0.0170	-
DH-BGC17-03	2017 Q4		0.537	0.00025	0.00220	0.0221	0.000306	0.000025	0.015	0.0000411	-	0.00101	0.00066	0.00340	0.917	0.00247	0.0026	0.70	0.0252	2.5	0.00444	0.00134	-	-	-	0.153	-	0.70	-	-	-	0.000301	7.55	0.000005	24.4	0.0409	5.91	-	0.000020	-	0.00005	0.00315	0.00145	0.00399	0.0035	0.00067
	2018-04-01		0.044	0.0	0.60	0.0052	0.000050	-	0.005	0.00001	-	0.0	0.00030	0.0002	0.055	0.0002	-	-	0.010	0.5	0.0035	0.0003	0.52	0.02500	0.09	-	0.0	-	-	-	0.00	0.00	-	0.0	-	0.0290	-	-	0.0	0.0	0.0	0.0013	0.2	0.0009	0.0	-
	2018-05-25		0.087	0.0	0.0006	0.0089	0.0	-	0.005	0.00001	-	0.0	0.0004	0.0006	0.12	0.0003	-	-	0.014	3.000	0.0018	0.0004	0.63	0.03	0.15	-	0.0	-	-	-	0.003	0.00	-	0.0	-	0.0380	-	-	0.0	0.0	0.0	0.0018	0.002	0.0008	0.0007	-
	2018-10-10		0.046	0.0	0.0005	0.0360	0.0001	-	0.005	0.00005	-	-	0.0014	0.0066	0.12	0.1200	-	-	0.017	0.500	0.0022	0.0020	0.53	0.74	0.86	-	0.0	-	-	-	0.003	0.00	-	0.0	-	0.0440	-	-	0.0	0.0	-	0.0010	0.000	0.0005	0.0160	-
	2018-12-15		0.001	0.0	0.4000	0.0080	0.0001	-	0.005	0.00001	-	0.0	0.0005	0.0004	0.004	0.0001	-	-	0.008	-	0.0013	0.0008	-	-	-	-	-	-	-	-	-	0.00	-	0.0	-	0.0330	-	-	0.0	-	0.0	0.0001	0.050	0.0005	0.0042	-
	2019-04-09		0.005	0.0	0.5000	0.0100	0.0001	-	0.005	0.00001	-	0.0	0.0004	0.0001	0.007	0.0001	-	-	0.013	-	0.0013	0.0004	-	-	-	-	-	-	-	-	-	0.00	-	0.0	-	0.0380	-	-	0.0	-	0.0	0.0002	0.100	0.0005	0.0003	-
	2019-05-20		0.004	0.0001	0.5000	0.0086	0.00005	-	0.005	0.00001	-	0.0	0.0005	0.0010	0.026	0.0001	-	-	0.015	-	0.0008	0.0005	-	-	-	-	-	-	-	-	-	0.00	-	0.000025	-	0.0280	-	-	0.0	-	0.00005	0.0001	0.050	0.0005	0.0067	-
	2019-08-19		0.005	0.0001	0.3000	0.0071	0.00005	0.0001	0.005	0.00001	-	0.0	0.0005	0.0002	0.020	0.0001	0.0017	-	0.016	-	0.0007	0.0005	-	-	-	-	-	-	-	-	-	0.00	-	0.000025	-	0.0260	-	-	0.0	-	0.00005	0.0003	0.050	0.0006	0.0018	-
DH-BGC17-04	2017-10-17		2.23	0.00203	0.00230	0.0696	0.000209	0.000025	0.015	0.000227	-	0.00783	0.00143	0.0726	2.76	0.00974	0.0045	2.15	0.0811	2.5	0.00222	0.00538	-	-	-	0.154	-	2.86	-	-	-	0.000258	15.5	0.000036	11.2	0.0606	5.08	-	0.000029	-	0.00247	0.0741	0.00124	0.0152	0.0770	0.00665
	2018-04-02		0.029	0.00010	0.0009	0.0100	0.000050	-	0.005	0.000005	-	0.00025	0.00005	0.0004	0.042	0.0002	-	-	0.016	0.5	0.0006	0.0004	0.29	0.02500	0.02500	-	0.0	-	-	-	0.00	0.0002	-	0.000025	-	0.03	-	-	0.000100	0.0	0.00005	0.001	0.00020	0.0070	0.0009	-
	2018-05-25		0.017	0.00010	0.0006	0.0120	0.000050	-	0.005	0.00001	-	0.00025	0.00005	0.0002	0.012	0.0001	-	-	0.014	3.000	0.0003	0.0003	0.26	0.11	0.17	-	0.0	-	-	-	0.00	0.0002	-	0.000025	-	0.03	-	-	0.000100	0.0	0.00005	0.0004	0.00050	0.0059	0.0003	-
	2018-10-10		0.0028	0.00010	0.0004	0.0140	0.0001	-	0.005	0.00001	-	-	0.00010	0.0004	0.010	0.0180	-	-	0.020	3.000	0.0004	0.0012	0.25	0.03	0.06	-	0.0	-	-	-	0.01	0.0001	-	0.000025	-	0.03	-	-	0.000100	0.0	-	0.0001	0.00005	0.0050	0.0130	-
	2018-12-12		0.0055	0.00010	0.4000	0.0140	0.0001	-	0.005	0.00001	-	0.00025	0.00005	0.0003	0.0049	0.0001	-	-	0.016	-	0.0002	0.0006	-	-	-	-	-	-	-	-	-	0.0002	-	0.000025	-	0.03	-	-	0.000100	-	0.00005	0.0001	0.05000	0.0055	0.0012	-
DH-BGC17-05	2017 Q4		0.649	0.00021	0.00155	0.0246	0.000213	0.000025	0.049	0.0000234	-	0.00296	0.00114	0.00182	4.29	0.00140	0.0186	4.23	0.200	2.5	0.00111	0.00254	-	-	-	0.252	-	1.47	-	-	-	0.000086	9.59	0.000005	17.4	0.149	10.2	-	0.000015	-	0.00005	0.00765	0.000410	0.00416	0.0085	0.00098
	2018-04-03		0.005	0.00010	0.0002	0.0120	0.000050	-	0.05	0.000005	-	0.00025	0.00005	0.00010	0.018	0.00005	-	-	0.055	0.5	0.0015	0.00005	0.09	0.09	0.09	-	0.0	-	-	-	0.00	0.0001	-	0.000025	-	0.091	-	-	0.000100	0.0	0.00005	0.00010	0.000050	0.00005	0.0003	-
	2018-05-24		0.018	0.00010	0.0002	0.0140	0.000050	-	0.05	0.000005	-	0.00025	0.00005	0.00010	0.16	0.00005	-	-	0.082	2.000	0.0013	0.00005	0.02	0.03	0.03	-	0.0	-	-	-	0.007	0.0001	-	0.000025	-	0.10	-	-	0.000100	0.0	0.00005	0.0004	0.000500	0.00005	0.0003	-
	2018-10-12		0.001	0.00010	0.0500	0.0190	0.000050	-	0.04	0.000005	-	0.00025	0.00005	0.00010	0.46	0.00005	-	-	0.100	-	0.0006	0.00010	-	-	-	-	-	-	-	-	-	0.0001	-	0.000025	-	0.12	-	-	0.000100	-	0.00005	0.0001	0.050000	0.00005	0.0018	-
	2018-10-13		0.003	0.00010	0.1000	0.0180	0.000050	-	0.04	0.000005	-	0.00025	0.00005	0.00010	0.29	0.00005	-	-	0.095	-	0.0008	0.00005	-	-	-	-	-	-	-	-	-	0.0001	-	0.000025	-	0.11	-	-	0.000100	-	0.00005	0.0002	0.050000	-	0.0003	-
	2019-04-07		0.002	0.00010	0.2000	0.0230	0.000050	-	0.04	0.000005	-	0.00025	0.00005	0.00010	0.19	0.00005	-	-	0.100	-	0.0009	0.00005	-	-	-	-	-	-	-	-	-	0.0001	-	0.000025	-	0.11	-	-	0.000100	-	0.00005	0.0003	0.050000	0.00005	0.0003	-
	2019-05-18		0.002	0.0001	0.0500	0.0200	0.00005	-	0.05	0.000005	-	0.0	0.00005	0.00010	0.54	0.00005	-	-	0.100	-	0.0006	0.00005	-	-	-	-	-	-	-	-	-	0.0001	-	0.000025	-	0.05	-	-	0.0	-	0.00005	0.0001	0.050000	0.00005	0.0031	-
	2019-09-21		-	-	0.0013	0.0001	0.05	0.022	0.00	0.000100	-	0.0	-	0.00025	0.00	0.00010	0.0001	0.01	17.000	-	0.1000	-	0.00	0.00	-	-	-	-	-	-	0.003	-	0.00	0.00005	-	-	91.0	-	0.0	38.0	0.0001	0.0050	0.000050	0.00010	0.0500	<0.0001
	2020-04-02		0.001	0.0001	0.0500	0.0250	0.00005	0.0001	0.04	0.000005	-	0.0	0.00005	0.00010	0.48	0.00005	0.0017	-	0.110	-	0.0005	0.00005	-	-	-	-	0.0	-	-	-	0.003	0.0001	-	0.000025	-	0.13	-	-	0.0	0.0	0.00005	0.0001	0.050000	0.00005	0.0003	-
2018-MW-001A	2019-08-21		0.003	0.0001	0.8	0.011	0.00005	0.0001	0.04	0.000005	-	0.00025	0.0001	0.0001	0.12	0.00005	0.0012	-	0.073	-	0.0009	0.0003	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.067	-	-	0.0001	-	0.00005	0.0001	0.1	0.0006	0.00025	-
2018-MW-001B	2019-08-21		0.26	0.0001	0.2	0.012	0.00005	0.0001	0.005	0.000005	-	0.0005	0.0002	0.0001	1.72	0.00005	0.0017	-	0.084	-	0.0001	0.0013	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.025	-	-	0.0001	-	0.00005	0.0049	0.05	0.001	0.0006	-
2018-MW-002A	2018-01-30		0.0003	0.6	0.021	0.00005	-	0.005	0.000005	-	-	0.0035	0.0005	0.17	0.00005	0.02	-	0.25	-	6.7	0.0065	-	-	-	-	0.005	-	0.02	-	-	0.00005	-	0.000025	52	0.048	0.0168	24	-	0.00005	0.0002	0.05	0.0001	0.023	-	-	-
	2019-05-19		0.18	0.0001	0.4	0.022	0.00005	-	0.005	0.000005	-	0.0	0.003	0.0014	0.12	0.0002	-	-	0.25	-	0.001	0.0025	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.026	-	-	0.0	-	0.00005	0.018	0.05	0.0004	0.0071	-
	2019-09-27		0.05	0.0001	0.3	0.018	0.00005	-	0.01	0.000002	-	0.00025	0.0021	0.0013	0.08	0.0002	-	0.1	-	-	0.0008	0.0025	-	-	-	-	0.005	-	-	-	0.02	0.0001	-	0.000025	-	0.038	-	-	0.0001	-	0.00005	0.0017	0.05	0.0004	0.0074	-
2018-MW-002B	2018-01-30		0.0001	0.6	0.024	0.00005	-	0.005	0.00001	-	-	0.0012	0.0022	0.21	0.0008	0.01	-	0.11	-	1.9	0.0035	-	-	-	-	0.0025	-	0.005	-	-	0.0001	-	0.000025	0.000025	0.058	0.058	48	-	0.00005	0.0023	0.4	0.0012	0.0059	-	-	-
	2019-05-19		0.086	0.0001	0.4	0.02	0.00005	-	0.005	0.000005	-	0.0	0.0004	0.0003	0.022	0.00005	-	-	0.045	-	0.0017	0.0016	-	-	-	-	-	-	-	-	-	0.0001	-	0.000025	-	0.025	-	-	0.0	-	0.00005	0.0027	0.5	0.0006	0.0025	-
	2019-08-24		0.041	0.0001	0.4	0.024	0.00005	0.0001	0.005	0.00001	-	0.0	0.0002	0.0003	0.011	0.00005	0.0021	-	0.035	-	0.0014	0.0011	-	-	-	-	-	-	-	-	-	0.0002	-	0.000025	-	0.036	-	-	0.0	-	0.00005	0.001	0.6	0.0005	0.0007	-
2018-MW-003	2018-12-09		0.0001	0.7	0.017	0.00005	-	0.005	0.00002	-	-	0.001	0.0005	1.92	0.0005	0.02	-	0.11	-	7	0.0076	-	-	-	-	0.005	-	0.01	-	-	0.00005	-	0.000025	0.000025	0.033	0.033	16	-	0.00005	0.0064	0.1	0.0026	0.01	-	-	-
	2019-08-24		0.51	0.0001	0.5	0.016	0.00005	0.0001	0.005	0.000005	-	0.0006	0.001	0.0001	2.52	0.0001	0.0021	-	0.073	-	0.0002	0.0021	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.019	-	-	0.0001	-	0.00005	0.005	0.05	0.0012	0.0026	-
2018-MW-004A	2019-01-29		0.0001	0.9	0.015	0.00005	-	0.005	0.000005	-	-	0.0004	0.001	0.073	0.00005	0.01	-	0.07	-	1.2	0.0009	-	-	-	-	0.0025	-	0.005	-	-	0.00005	-	0.000025	0.000025	0.04	0.059	34	-	0.00005	0.0023	0.1	0.0003	0.0035	-	-	-
	2019-05-19		0.0047	0.0001	0.6	0.011	0.00005	-	0.005	0.000005	-	0.0	0.0001	0.002	0.052	0.0001	-	-	0.033	-	0.0023	0.0004	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.026	-	-	0.0	-	0.00005	0.0001	0.05	0.0004	0.0069	-
	2019-08-23		0.024	0.0001	0.6	0.016	0.00005	0.0001	0.02	0.000005	-	0.0	0.00005	0.0001	0.26	0.00005	0.0055	-	0.11	-	0.005	0.0002	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.047	-	-	0.0	-	0.00005	0.0013	0.05	0.00005	0.0008	-

Table 3: Standpipe Piezometer Chemistry Analyses - Dissolved Metals

Monitoring Well ID	Sample Date (yyyy-mm-dd)	Parameter	Aluminum (Al)-Dissolved	Antimony (Sb)-Dissolved	Arsenic (As)-Dissolved	Barium (Ba)-Dissolved	Beryllium (Be)-Dissolved	Bismuth (Bi)-Dissolved	Boron (B)-Dissolved	Cadmium (Cd)-Dissolved	Cesium (Cs)-Dissolved	Chromium (Cr)-Dissolved	Cobalt (Co)-Dissolved	Copper (Cu)-Dissolved	Iron (Fe)-Dissolved	Lead (Pb)-Dissolved	Lithium (Li)-Dissolved	Magnesium (Mg)-Dissolved	Manganese (Mn)-Dissolved	Mercury (Hg)-Dissolved	Molybdenum (Mo)-Dissolved	Nickel (Ni)-Dissolved	Nitrate -Dissolved	Total Kjeldahl Nitrogen-Dissolved	Nitrogen - Dissolved	Phosphorus (P)-Dissolved	Polonium -210- Dissolved	Potassium (K)-Dissolved	Potassium-210 (K)-Dissolved	Rubidium (Rb)-Dissolved	Radium-226- Dissolved	Selenium (Se)-Dissolved	Silicon (Si)-Dissolved	Silver (Ag)-Dissolved	Sodium (Na)-Dissolved	Strontium (Sr)-Dissolved	Sulfur (S)-Dissolved	Tellurium (Te)-Dissolved	Thallium (Tl)-Dissolved	Thorium-230- Dissolved	Tin (Sn)-Dissolved	Titanium (Ti)-Dissolved	Uranium (U)-Dissolved	Vanadium (V)-Dissolved	Zinc (Zn)-Dissolved	Zirconium (Zr)-Dissolved
Unit			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	ng/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	Bq/L	mg/L	Bq/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Bq/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
RDL			0.0010	0.00010	0.00010	0.000050	0.000020	0.000050	0.010	0.0000050	0.00001	0.00010	0.00010	0.00020	0.010	0.000050	0.0010	0.10	0.00010	5.0000000	0.000050	0.00050				0.050		0.10		0.00020		0.000050	0.050	0.000010	0.050	0.00020	0.50	0.00020	0.000010		0.00010	0.00030	0.000010	0.00050	0.0010	0.00030
2018-MW-004B	2019-01-28		0.0002	1.1	0.027	0.00005	-	0.05	0.000005	-	-	0.00005	0.0008	0.32	0.00005	0.01	-	0.12	-	2.2	0.0004	-	-	-	-	0.0025	-	0.0025	-	-	0.0002	-	0.000025	0.000025	0.059	0.059	58	-	0.00005	0.0001	0.2	0.00005	0.0043	-	-	-
	2019-05-19		0.14	0.0001	1.2	0.021	0.00005	-	0.03	0.000005	-	0.0	0.0003	0.0011	0.66	0.0002	-	-	0.14	-	0.01	0.0005	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.037	-	-	0.0	-	0.00005	0.0057	0.2	0.0004	0.019	-
	2019-09-21		-	-	0.01	0.0001	0.5	0.015	0.00005	0.0001	-	0.0	-	0.00025	0.0001	0.0007	0.00005	0.01	2.4	-	0.016	-	0.0019	0.0005	-	-	-	-	-	-	0.0025	-	0.0025	0.0001	-	-	76	-	0.0	33	0.0001	0.005	0.0001	0.0001	0.1	0.0004
2018-MW-006A	2018-11-28		0.096	0.0012	0.8	0.0069	0.00005	-	0.01	0.00001	-	0.00025	0.00005	0.0008	0.048	0.00005	-	1.9	0.028	-	0.011	0.0004	-	-	-	-	0.005	-	-	-	0.01	0.0002	-	0.000025	-	0.039	-	-	0.0001	0.005	0.00005	0.003	0.4	0.0009	0.0033	-
	2019-05-18		0.011	0.0001	0.9	0.0058	0.00005	-	0.005	0.000005	-	0.0	0.00005	0.0005	0.0094	0.0001	-	-	0.024	-	0.01	0.0002	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.019	-	-	0.0	-	0.00005	0.0001	0.05	0.0004	0.0032	-
	2019-08-22		0.0073	0.0001	0.8	0.006	0.00005	0.0001	0.005	0.000005	-	0.0	0.00005	0.0001	0.0035	0.00005	0.0015	-	0.014	-	0.006	0.0001	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.024	-	-	0.0	-	0.00005	0.0001	0.05	0.0008	0.00025	-
	2020-01-12		0.0065	0.0001	0.7	0.006	0.00005	-	0.005	0.000005	-	0.0	0.00005	0.0001	0.0049	0.00005	-	-	0.0072	-	0.0036	0.0001	-	-	-	-	0.0025	-	-	-	0.0025	0.00005	-	0.000025	-	0.023	-	-	0.0	0.005	0.00005	0.0001	0.05	0.0006	0.00025	-
2018-MW-006B	2018-11-27		0.18	0.0009	1.4	0.0078	0.00005	-	0.02	0.00004	-	0.00025	0.0001	0.0009	0.12	0.0002	-	2.9	0.025	-	0.0059	0.0005	-	-	-	-	0.02	-	-	-	0.03	0.0004	-	0.000025	-	0.028	-	-	0.0001	0.01	0.00005	0.0036	1.3	0.0029	0.0028	-
	2019-05-21		0.033	0.0001	1.7	0.0044	0.00005	-	0.01	0.00001	-	0.0	0.0004	0.0029	0.035	0.0003	-	-	0.019	-	0.013	0.0006	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.026	-	-	0.0	-	0.00005	0.0015	1.4	0.0012	0.018	-
	2019-08-22		0.0038	0.0001	1	0.0032	0.00005	0.0001	0.005	0.000005	-	0.0	0.0002	0.0001	0.0089	0.00005	0.002	-	0.014	-	0.006	0.0004	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.023	-	-	0.0	-	0.00005	0.0003	0.6	0.0018	0.00025	-
	2020-01-12		0.01	0.0001	0.9	0.0029	0.00005	-	0.005	0.000005	-	0.0	0.0002	0.0002	0.0096	0.00005	-	-	0.008	-	0.0045	0.0005	-	-	-	-	0.005	-	-	-	0.005	0.00005	-	0.000025	-	0.022	-	-	0.0	0.01	0.00005	0.0004	0.9	0.0015	0.0007	-
2018-MW-007A	2018		0.3	0.016	0.00005	-	0.005	0.00002	-	0.00025	-	0.0008	0.014	0.00005	0.01	-	0.74	-	0.0024	0.9	-	-	-	-	0.0025	-	0.0025	0.00005	-	-	-	0.000025	56	0.041	-	0.032	0.0001	-	0.0015	0.05	0.00005	0.0038	-	-	-	-
	2019-05-17		0.016	0.0001	2.2	0.014	0.00005	-	0.005	0.000005	-	0.0	0.0007	0.0001	0.72	0.0001	-	-	0.42	-	0.0018	0.0005	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.036	-	-	0.0	-	0.00005	0.0003	0.05	0.00005	0.0022	-
	2019-08-20		0.0044	0.0001	0.2	0.015	0.00005	0.0001	0.01	0.000005	-	0.0	0.00005	0.0001	0.54	0.00005	0.007	-	0.14	-	0.0015	0.00005	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.039	-	-	0.0	-	0.00005	0.0003	0.05	0.00005	0.00025	-
	2020-01-27		0.014	0.0001	0.2	0.017	0.00005	-	0.01	0.000005	-	0.0	0.00005	0.0001	0.8	0.00005	-	-	0.14	-	0.0013	0.00005	-	-	-	-	0.0025	-	-	-	0.0025	0.00005	-	0.000025	-	0.039	-	-	0.0	0.005	0.00005	0.0009	0.05	0.00005	0.00025	-
2018-MW-007B	2018		1	0.014	0.00005	-	0.01	0.00001	-	0.00025	-	0.0009	0.04	0.0002	0.01	-	0.038	-	0.0069	2	-	-	-	-	0.0025	-	0.008	0.0002	-	-	-	0.000025	93	0.042	-	0.035	0.0001	-	0.002	0.2	0.001	0.0042	-	-	-	-
	2019-05-17		0.017	0.0001	0.3	0.014	0.00005	-	0.01	0.000005	-	0.0	0.00005	0.0001	0.41	0.00005	-	-	0.12	-	0.0025	0.00005	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.058	-	-	0.0	-	0.00005	0.0005	0.05	0.00005	0.001	-
	2019-08-20		0.017	0.0001	1.8	0.015	0.00005	0.0001	0.005	0.000005	-	0.0	0.0006	0.0001	0.76	0.00005	0.0039	-	0.34	-	0.001	0.0003	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.023	-	-	0.0	-	0.00005	0.0006	0.05	0.00005	0.00025	-
	2020-01-16		0.0095	0.0001	0.9	0.0085	0.00005	-	0.005	0.000005	-	0.0	0.0003	0.0001	0.48	0.00005	-	-	0.14	-	0.0007	0.0007	-	-	-	-	0.0025	-	-	-	0.01	0.00005	-	0.000025	-	0.013	-	-	0.0	-	0.00005	0.0001	0.05	0.00005	0.0008	-
2018-MW-008A	2018		0.2	0.0087	0.00005	-	0.02	0.00001	-	0.00025	-	0.0009	0.13	0.00005	0.01	-	0.21	-	0.0043	9	-	-	-	-	0.0025	-	0.0025	0.00005	-	-	-	0.000025	62	0.044	-	0.023	0.0001	-	0.0013	0.05	0.00005	0.0041	-	-	-	-
	2019-05-17		0.02	0.0001	0.05	0.0048	0.00005	-	0.005	0.000005	-	0.0	0.0011	0.0001	0.81	0.00005	-	-	0.24	-	0.0022	0.0011	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.096	-	-	0.0	-	0.00005	0.0005	0.05	0.00005	0.002	-
	2019-08-20		0.019	0.0001	0.05	0.0038	0.00005	0.0001	0.005	0.000005	-	0.0	0.0013	0.0001	0.35	0.00005	0.0012	-	0.2	-	0.0016	0.0016	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.016	-	-	0.0	-	0.00005	0.0001	0.05	0.00005	0.0012	-
2018-MW-008B	2018		0.2	0.012	0.00005	-	0.01	0.00001	-	0.00025	-	0.0007	0.093	0.00005	0.01	-	0.24	-	0.0031	0.4	-	-	-	-	0.0025	-	0.005	0.0001	-	-	-	0.000025	61	0.038	-	0.019	0.0001	-	0.0008	0.05	0.00005	0.0064	-	-	-	-
	2019-05-17		0.022	0.0001	0.2	0.0064	0.00005	-	0.02	0.000005	-	0.0	0.0001	0.0003	0.22	0.0001	-	-	0.09	-	0.0085	0.00005	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.29	-	-	0.0	-	0.00005	0.0039	0.05	0.00005	0.0026	-
	2019-08-20		0.0021	0.0001	0.2	0.0064	0.00005	0.0001	0.01	0.000005	-	0.0	0.00005	0.0001	0.11	0.00005	0.00062	-	0.085	-	0.01	0.00005	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.026	-	-	0.0	-	0.00005	0.0001	0.05	0.00005	0.00025	-
2018-MW-009A	2018		0.3	0.018	0.00005	-	0.005	0.00002	-	0.00025	-	0.0007	0.31	0.0002	0.01	-	0.32	-	0.004	1.4	-	-	-	-	0.0025	-	0.009	0.0001	-	-	-	0.000025	82	0.054	-	0.031	0.0001	-	0.004	0.05	0.0004	0.0052	-	-	-	-
	2019-05-16		0.0091	0.0001	0.5	0.016	0.00005	-	0.005	0.00001	-	0.0	0.0021	0.0001	0.59	0.00005	-	-	0.29	-	0.0044	0.001	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.036	-	-	0.0	-	0.00005	0.0002	0.05	0.0002	0.0016	-
	2019-08-22		0.0039	0.0001	0.3	0.014	0.00005	0.0001	0.005	0.000005	-	0.0	0.0013	0.0001	0.43	0.00005	0.00022	-	0.14	-	0.0022	0.0008	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.029	-	-	0.0	-	0.00005	0.0002	0.05	0.0002	0.0006	-
	2020-01-24		0.0067	0.0001	0.2	0.012	0.00005	-	0.005	0.00001	-	0.0	0.0006	0.0001	0.098	0.00005	-	-	0.036	-	0.001	0.0011	-	-	-	-	0.0025	-	-	-	0.006	0.00005	-	0.000025	-	0.023	-	-	0.0	0.005	0.00005	0.0001	0.05	0.00005	0.0078	-
2018-MW-009B	2018		0.5	0.028	0.00005	-	0.01	0.00001	-	0.00025	-	0.0024	0.016	0.00005	0.02	-	0.14	-	0.004	2.1	-	-	-	-	0.005	-	0.02	0.0003	-	-	-	0.000025	162	0.085	-	0.065	0.0001	-	0.0001	0.5	0.0003	0.0065	-	-	-	-
	2019-05-18		0.044	0.0001	0.5	0.021	0.00005	-	0.01	0.00002	-	0.0	0.0008	0.0045	0.046	0.0002	-	-	0.16	-	0.0027	0.0009	-	-	-	-	-	-	-	-	-	0.0001	-	0.000025	-	0.018	-	-	0.0	-	0.0003	0.0014	0.2	0.0005	0.0093	-
	2019-09-27		0.011	0.0001	0.4	0.03	0.00005	-	0.005	0.000004	-	0.00025	0.0005	0.0012	0.032	0.00005	-	0.088	-	-	0.0024	0.0012	-	-	-	-	0.005	-	-	-	0.01	0.0001	-	0.000025	-	0.069	-	-	0.0001	-	0.0001	0.0004	0.3	0.0002	0.04	-
	2020-01-25		0.029	0.0001	0.4	0.025	0.00005	-	0.005	0.00004	-	0.0	0.0004	0.0011	0.042	0.0001	-	-	0.047	-	0.0015	0.001	-	-	-	-	0.0025	-	-	-	0.0025	0.0001	-	0.000025	-	0.045	-	-	0.0	0.005	0.0002	0.001	0.1	0.0006	0.019	-
2018-MW-010A	2019-01-29		3.3	0.0084	0.00005	-	0.08	0.00001	-	0.00025	-	0.0005	0.02	0.00005	0.01	-	0.0053	-	0.0058	0.3	-	-	-	-	0.0025	-	0.0025	0.0003	-	-	-	0.000025	168	0.025	-	0.026	0.0001	-	0.001	0.2	0.0008	0.0045	-	-	-	-
	2019-05-20		0.036	0.0001	1	0.015	0.00005	-	0.1	0.000005	-	0.0	0.00005	0.0008	0.017	0.00005	-	-	0.02	-	0.0048	0.0001	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.03	-	-	0.0	-	0.00005	0.001	0.05	0.00005	0.0045	-
	2019-08-25		0.12	0.0001	0.7	0.015	0.00005	0.0001	0.07	0.000005	-	0.0	0.00005	0.0001	0.07	0.0002	0.0017	-	0.026	-	0.0017	0.0001	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.099	-	-	0.0	-	0.00005	0.0046	0.05	0.0002	0.001	-
2018-MW-010B	2019-01-28		2.6	0.049	0.00005	-	0.09	0.000005	-	0.00025	-	0.0001	0.012	0.00005	0.01	-	0.0096	-	0.0071	5	-	-	-	-	0.0025	-	0.03	0.0002	-	-	-	0.000025	231	0.27	-	0.6	0.0001	-	0.0005	0.6	0.0014	0.0021	-	-	-	-
	2019-05-21		0.049	0.0001	1.8	0.052	0.00005	-	0.09	0.000005	-	0.0	0.00005	0.0001	0.0047	0.00005	-	-	0.0046	-	0.0023	0.00005	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.12	-	-	0.0	-	0.00005	0.0001	0.5	0.0011	0.0036	-
	2019-08-27		0.03	0.0004	1.5	0.051	0.00005	0.0001	0.09	0.000005	-	0.0	0.00005	0.0001	0.012	0.00005	0.0014	-	0.0075	-	0.0014	0.00005	-	-	-	-	-	-	-	-	-	0.00005	-	0.000025	-	0.26	-	-	0.0	-	0.00005	0.0001	0.4	0.0006	0.00025	-
2019-MW-012A	2019-09-29		0.203	0.00025	0.00238	1.86	0.00025	0.00015	0.096	<0.000025	0.000025	0.00025	0.00025	0.0005	0.094	0.00093	0.0127	0.061	0.00785	13.2000000	0.0319	<0.0025	-	-	-	0.12	-	34.2	-	0.0260	-	0.00124	2.76	0.000025	143	0.34	8.7	0.0005	0.000025	0.00025	0.00025	0.0019	0.000075	0.0037	0.0025	0.0005
2019-MW-012B	2019-09-29		0.0080	0.00041	0.00057	0.0378	0.00005	0.000025	0.075	0.0000090	0.000005	0.00005	0.00051	0.0001	0.408	0.000120	0.0171	2.80	0.193	2.5	0.00566	0.00025	-	-	-	0.025	-	0.902	-	0.00076	-	0.000212	8.48	0.000005	40.5	0.143	12.1	0.0001	0.000005	0.00005	0.00005	0.00015	0.000133	0.00025	0.0032	0.0001
2019-MW-013	2019-09-29		<0.0020	0.00005	0.00025	0.0191	0.00005	0.000025	0.023	0.0000025	0.000005	0.00005	0.00005	0.0001	0.894	0.000025	0.0176	2.21	0.156	2.5	0.000421	0.00025	-	-	-	0.188	-	0.858	-	0.00046	-	0.000025	8.56	0.000005	1.93	0.0694	<0.50	0.0001	0.000005	0.00005	0.00005	0.00015	0.000011	0.00025	0.0005	0.0001
2019-MW-016	2020-01-14		0.059	0.0001	0.8	0.011	0.00005	-	0.01	0.000005	-	0.0	0.0002	0.0001	0.23	0.0001	-	-	0.058	-	0.0019	0.0006	-	-	-	-	0.0025	-	-	-	0.0025	0.00005	-	0.000025	-	0.047	-	-	0.0	0.005	0.00005	0.0014	0.05	0.0002	0.0006	-

Notes
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
mg/L - milligrams per litre.
meq/L - milliequivalents per litre.
% - percentage.
RDL - Reportable Detection Limit.
Duplicate and Field Blank data Hidden in rows 190 to 256.
* Indicates sample is outside ±10% and is considered invalid.

Table 4: Standpipe Piezometer Chemistry Analysis – Isotopes and Radionuclides

	Sample Date (yyyy-mm-dd)	Lead-210, total	Polonium-210, total	Radon -222	Radium-226, total	Thorium-230, total	Lead-210, Dissolved	Polonium-210, Dissolved	Radium-226, Dissolved	Thorium-230, Dissolved	Tritium ^3H	Tritium ±1σ
Unit		Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	TU	TU
RDL												
DH-BGC17-01	2018-04-02	-	-	-	-	-	0.0	-	-	-	-	-
	2018-05-24	-	-	-	-	-	0.0	-	-	-	-	-
	2018-10-13	0.01	0.00	-	0.006	0.01	-	-	-	-	-	-
	2018-12-12	0.01	0.00	-	0.008	0.01	-	-	-	-	-	-
	2018 Q4	-	-	-	-	-	-	-	-	-	2.6	0.7
	2019-04-04	-	-	-	-	-	0.02	0.005	0.005	0.01	-	-
	2019-05-18	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	3.2	0.7
	2019-08-18	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	3.3	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	5.0	0.8
	2020-01-31	-	-	-	-	-	0.0	-	-	-	-	-
	2020-04-06	-	-	-	-	-	-	-	-	-	2.2	0.6
DH-BGC17-02	2018-04-01	-	-	-	-	-	0.01	-	-	-	-	-
	2018-05-24	-	-	-	-	-	0.01	-	-	-	-	-
	2018-10-14	0.01	0.00	-	0.00	0.01	-	-	-	-	-	-
	2018-12-15	0.01	0.00	-	0.00	0.01	-	-	-	-	-	-
	2018 Q4	-	-	-	-	-	-	-	-	-	5.8	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	6.4	0.7
	2019-04-04	-	-	-	-	-	0.01	0.0025	0.006	0.005	-	-
	2019-05-19	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	6.8	0.8
	2019-08-19	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	6.8	0.9
DH-BGC17-03	2018-04-01	-	-	-	-	-	0.01	-	-	-	-	-
	2018-05-25	-	-	-	-	-	0.01	-	-	-	-	-
	2018-10-10	-	-	-	-	-	0.0	-	-	-	-	-
	2018-12-15	0.01	0.00	-	0.005	0.01	-	-	-	-	-	-
	2018 Q4	-	-	-	-	-	-	-	-	-	7.0	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	7.5	0.8
	2019-04-09	-	-	-	-	-	0.01	0.0025	0.009	0.005	-	-
	2019-05-20	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	7.3	0.8
	2019-08-19	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	8.5	1.0

Table 4: Standpipe Piezometer Chemistry Analysis – Isotopes and Radionuclides

	Sample Date (yyyy-mm-dd)	Lead-210, total	Polonium-210, total	Radon -222	Radium-226, total	Thorium-230, total	Lead-210, Dissolved	Polonium-210, Dissolved	Radium-226, Dissolved	Thorium-230, Dissolved	Tritium ^3H	Tritium ±1σ
Unit		Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	TU	TU
RDL												
DH-BGC17-04	2018-04-02	-	-	-	-	-	0.01	-	-	-	-	-
	2018-05-25	-	-	-	-	-	0.01	-	-	-	-	-
	2018-10-10	-	-	-	-	-	0.01	-	-	-	-	-
	2018-12-12	0.01	0.00	-	0.00	0.01	-	-	-	-	-	-
	2018 Q4	-	-	-	-	-	-	-	-	-	5.5	0.8
DH-BGC17-05	2018-04-03	-	-	-	-	-	0.01	-	-	-	-	-
	2018-05-24	-	-	-	-	-	0.01	-	-	-	-	-
	2018-10-12	0.01	0.00	-	0.00	0.01	-	-	-	-	-	-
	2018-10-13	0.01	0.00	-	0.00	0.01	-	-	-	-	-	-
	2019-04-07	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-05-18	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-09-21	-	-	-	-	-	0.6	-	-	-	-	-
	2020-01-16	-	-	-	-	-	-	-	-	-	<0.8	<0.8
	2020-01-16	-	-	-	-	-	-	-	-	-	<0.8	<0.8
	2020-04-02	-	-	-	-	-	0.01	-	-	-	-	-
	2020-07-06	-	-	-	-	-	-	-	-	-	<0.8	<0.8
2018-MW-001A	2019-08-21	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	1.5	0.7
2018-MW-001B	2019-08-21	-	-	-	-	-	0.01	0.02	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	6.9	0.9
2018-MW-002A	2019 Q1	-	-	-	-	-	-	-	-	-	8.1	0.8
	2019-05-19	-	-	-	-	-	0.04	0.01	0.03	0.02	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	7.2	0.8
	2019-09-27	-	-	-	-	-	0.02	-	-	-	-	-
	2020-01-16	-	-	-	-	-	-	-	-	-	7.4	0.8
	2020-01-16	-	-	-	-	-	-	-	-	-	7.4	0.8
2018-MW-002B	2019 Q1	-	-	-	-	-	-	-	-	-	6.7	0.8
	2019-05-19	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	6.1	0.7
	2019-08-24	-	-	-	-	-	0.01	0.0025	0.006	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	5.8	0.8
2018-MW-003	2018 Q4	-	-	-	-	-	-	-	-	-	9.3	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	9.3	0.8
	2019-08-24	-	-	-	-	-	0.01	0.006	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	10.9	1.0

Table 4: Standpipe Piezometer Chemistry Analysis – Isotopes and Radionuclides

	Sample Date (yyyy-mm-dd)	Lead-210, total	Polonium-210, total	Radon -222	Radium-226, total	Thorium-230, total	Lead-210, Dissolved	Polonium-210, Dissolved	Radium-226, Dissolved	Thorium-230, Dissolved	Tritium ^3H	Tritium ±1σ
Unit		Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	TU	TU
RDL												
2018-MW-004A	2019 Q1	-	-	-	-	-	-	-	-	-	12.2	1.0
	2019-05-19	-	-	-	-	-	0.01	0.0025	0.007	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	10.7	0.9
	2019-08-23	-	-	-	-	-	0.01	0.01	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	7.4	0.9
2018-MW-004B	2019 Q1	-	-	-	-	-	-	-	-	-	8.9	0.9
	2019-05-19	-	-	-	-	-	0.02	0.005	0.005	0.01	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	7.8	0.8
	2019-09-21	-	-	-	-	-	0.016	-	-	-	-	-
	2020-01-16	-	-	-	-	-	-	-	-	-	11.0	0.9
	2020-01-16	-	-	-	-	-	-	-	-	-	11.0	0.9
2018-MW-006A	2018-11-28	-	-	-	-	-	0.01	-	-	-	-	-
	2018 Q4	-	-	-	-	-	-	-	-	-	8.4	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	8.4	0.8
	2019-05-18	-	-	-	-	-	0.01	0.01	0.007	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	6.1	0.7
	2019-08-22	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	7.2	0.9
	2020-01-12	-	-	-	-	-	0.01	-	-	-	-	-
	2020-06-10	-	-	-	-	-	-	-	-	-	6.4	0.8
2018-MW-006B	2018-11-27	-	-	-	-	-	0.02	-	-	-	-	-
	2018 Q4	-	-	-	-	-	-	-	-	-	8.0	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	8.0	0.8
	2019-05-21	-	-	-	-	-	0.01	0.04	0.005	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	8.9	0.8
	2019-08-22	-	-	-	-	-	0.04	0.01	0.01	0.02	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	9.6	1.0
	2020-01-12	-	-	-	-	-	0.02	-	-	-	-	-
	2020-06-10	-	-	-	-	-	-	-	-	-	8.2	0.9

Table 4: Standpipe Piezometer Chemistry Analysis – Isotopes and Radionuclides

	Sample Date (yyyy-mm-dd)	Lead-210, total	Polonium-210, total	Radon -222	Radium-226, total	Thorium-230, total	Lead-210, Dissolved	Polonium-210, Dissolved	Radium-226, Dissolved	Thorium-230, Dissolved	Tritium ^3H	Tritium ±1σ
Unit		Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	TU	TU
RDL												
2018-MW-007A	2018 Q4	-	-	-	-	-	-	-	-	-	15.1	1.0
	2019 Q1	-	-	-	-	-	-	-	-	-	15.1	1.0
	2019-05-17	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	13.6	1.0
	2019-08-20	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	<0.8	<0.8
	2020-01-27	-	-	-	-	-	0.01	-	-	-	-	-
	2020-06-10	-	-	-	-	-	-	-	-	-	<0.8	<0.8
2018-MW-007B	2018 Q4	-	-	-	-	-	-	-	-	-	2.7	0.6
	2019 Q1	-	-	-	-	-	-	-	-	-	2.7	0.6
	2019-05-17	-	-	-	-	-	0.01	0.0025	0.005	0.005	-	-
	2019-08-20	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	14.3	1.1
	2020-01-16	-	-	-	-	-	0.01	-	-	-	-	-
	2020-06-10	-	-	-	-	-	-	-	-	-	13.9	1.0
2018-MW-008A	2018 Q4	-	-	-	-	-	-	-	-	-	7.7	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	7.7	0.8
	2019-05-17	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	7.0	0.8
	2019-08-20	-	-	-	-	-	0.03	0.0025	0.007	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	7.3	0.9
2018-MW-008B	2018 Q4	-	-	-	-	-	-	-	-	-	7.0	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	7.0	0.8
	2019-05-17	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	3.3	0.7
	2019-08-20	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	2.2	0.7
2018-MW-009A	2018 Q4	-	-	-	-	-	-	-	-	-	6.8	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	6.8	0.8
	2019-05-16	-	-	-	-	-	0.01	0.0025	0.01	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	6.0	0.8
	2019-08-22	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019-08-27	-	-	-	-	-	-	-	-	-	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	7.1	0.9
	2020-01-24	-	-	-	-	-	0.01	-	-	-	-	-
	2020-06-10	-	-	-	-	-	-	-	-	-	7.3	1.0

Table 4: Standpipe Piezometer Chemistry Analysis – Isotopes and Radionuclides

	Sample Date (yyyy-mm-dd)	Lead-210, total	Polonium-210, total	Radon -222	Radium-226, total	Thorium-230, total	Lead-210, Dissolved	Polonium-210, Dissolved	Radium-226, Dissolved	Thorium-230, Dissolved	Tritium ^3H	Tritium ±1σ
Unit		Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	TU	TU
RDL												
2018-MW-009B	2018 Q4	-	-	-	-	-	-	-	-	-	7.4	0.8
	2019 Q1	-	-	-	-	-	-	-	-	-	7.4	0.8
	2019-05-18	-	-	-	-	-	0.01	0.0025	0.006	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	5.9	0.7
	2019-09-27	-	-	-	-	-	0.02	-	-	-	-	-
	2020-01-16	-	-	-	-	-	-	-	-	-	6.2	0.7
	2020-01-16	-	-	-	-	-	-	-	-	-	6.2	0.7
	2020-01-25	-	-	-	-	-	0.01	-	-	-	-	-
	2020-06-10	-	-	-	-	-	-	-	-	-	5.9	0.8
2018-MW-010A	2019 Q1	-	-	-	-	-	-	-	-	-	3.9	0.7
	2019-05-20	-	-	-	-	-	0.01	0.0025	0.0025	0.005	-	-
	2019 Q2	-	-	-	-	-	-	-	-	-	1.8	0.6
	2019-08-25	-	-	-	-	-	0.03	0.0025	0.005	0.005	-	-
	2019-12-05	-	-	-	-	-	-	-	-	-	0.9	0.7
2018-MW-010B	2019 Q1	-	-	-	-	-	-	-	-	-	0.8	0.6
	2019-05-21	-	-	-	-	-	0.01	0.0025	0.03	0.005	-	-
	2019-08-27	0.01	0.00	-	0.02	0.01	-	-	-	-	-	-
	2019-12-13	-	-	-	-	-	-	-	-	-	<0.8	<0.8
2019-MW-016	2020-01-14	-	-	-	-	-	0.01	-	-	-	-	-
	2020-06-10	-	-	-	-	-	-	-	-	-	3.5	0.7

Notes
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
mg/L - milligrams per litre.
meq/L - milliequivalents per litre.
% - percentage.
RDL - Reportable Detection Limit.
Duplicate and Field Blank data Hidden in rows 190 to 256.
* Indicates sample is outside ±10% and is considered invalid.

Table 5: Westbay Well Chemistry Analyses – General Chemistry

Location	Sample Date (yyyy-mm-dd)	Parameters	pH	Specific conductivity	Sum of Ions	Cation - Anion Balance	Total Hardness	Total Suspended Solids (TSS)	Total Dissolved Solids (TDS)	Acidity	Alkalinity, Bicarbonate (as CaCO3)	Alkalinity, Carbonate (as CaCO3)	Hydroxide (OH)	P. alkalinity	Alkalinity, Total	Salintiy	Chloride (Cl)	Fluoride (Fl)	Nitrate (NO3)	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Sulfate (SO4)
Unit			pH units	uS/cm	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	PSU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
RDL																								
GAR-18-013 ZONE 1	2018-08-11		8.46	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2018-10-25		6.59	6650	4000	4.7	2380	10	4100	21	43	1	0.5	0.5	35	-	2590	0.17	0.04	786	101	62	415	6.4
	2019-03-04		5.99	17600	11000	5.4	6970	28	12100	37	40	1	0.5	0.5	33	-	7320	0.24	1.50	2320	288	53	1030	2.7
	2019-05-28		6.58	22400	14700	8.8	8940	24	15700	25	44	0.5	0.5	0.5	36	-	9990	0.28	0.04	3000	354	48	1300	3.70
	2019-09-06		6.61	25600	14500	3.8	10400	29	21500	23	39	0.5	0.5	0.5	32	-	9040.00	0.29	0.04	3500.00	420.00	45.00	1500.00	2.80
	2019-11-18		6.16	27200	18100	10.0*	10800	14	21400	27	34	0.5	0.5	0.5	28	-	12400.00	0.25	0.04	3650.00	421.00	44.00	1580.00	0.20
	2020-02-25		6.04	27700	17800	7.6	11000	28	18500	27	27	0.5	0.5	0.5	22	-	12000.00	0.19	0.04	3700.00	429.00	43.00	1600.00	1.70
GAR-18-013 ZONE 2	2019-03-06		6.31	228	129	2.2	66	6	186	7	17	1	0.5	0.5	14	-	69	0.07	0.13	21	3.3	4.1	14	0.9
	2019-05-29		6.87	371	185	3.4	107	11	298	4	27	1	0.5	0.5	22	-	91	0.07	0.04	35	4.8	4.3	22	0.9
	2019-09-15		7.09	544.0	311	0.2	186.00	20	456	7	27.0	1	0.5	0.5	22	-	174.00	0.08	0.04	61	8.2	4.6	35	0.80
	2019-11-19		6.92	799.0	424	6.3	236.00	16	1060	12	34.0	1	0.5	0.5	28	-	252.00	0.08	0.04	78	10	4.8	44	0.80
	2020-01-26		7.32	156	86	-	29	9	102	4	26	1	0.5	0.5	21	-	36	0.06	0.11	9.0	1.6	4.2	7.6	1.7
	2020-02-28		6.82	1360.0	526	4.4	305.00	18	673	10	30.0	1	0.5	0.5	25	-	320.00	0.07	0.04	101	13	5.4	56	0.70
GAR-18-013 ZONE 3	2018-08-11		7.3	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2018-10-26		7.29	1630	802	2.2	434	8	945	9	26	1	0.5	0.5	21	-	491	0.12	1.1	141	20	11	110	1.8
	2019-03-06		4.80	1880	878	1.8	516	4	1110	11	1.0	1	0.5	0.5	<1	-	549	0.13	0.61	169	23	9.9	126	0.7
	2019-03-21		6.06	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2019-05-30		6.56	2400	1250	3.0	701	14	1740	33	26	1	0.5	0.5	21	-	791	0.15	0.04	230	31	12	161	0.7
	2019-09-18		6.59	2620.0	1220	4.3	744.00	20	2280	13	26.0	1	0.5	0.5	21	-	733.00	0.15	0.04	244	33	11	171.00	0.60
	2019-11-21		6.39	4090.0	1820	6.9	1200.00	15	2570	28	40.0	1	0.5	0.5	33	-	1070.00	0.15	0.04	395	52	17	248.00	0.80
	2020-03-01		6.01	4020.0	2140	2.7	1240.00	12	2300	27	37.0	1	0.5	0.5	30	-	1360.00	0.10	0.04	412	53	17	258.00	0.70

Table 5: Westbay Well Chemistry Analyses – General Chemistry

Location	Sample Date (yyyy-mm-dd)	Parameters	pH	Specific conductivity	Sum of Ions	Cation - Anion Balance	Total Hardness	Total Suspended Solids (TSS)	Total Dissolved Solids (TDS)	Acidity	Alkalinity, Bicarbonate (as CaCO3)	Alkalinity, Carbonate (as CaCO3)	Hydroxide (OH)	P. alkalinity	Alkalinity, Total	Salintiy	Chloride (Cl)	Fluoride (Fl)	Nitrate (NO3)	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Sulfate (SO4)
Unit			pH units	uS/cm	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	PSU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
RDL																								
GAR-18-013 ZONE 4	2018-08-11		7.09	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2018-10-27		7.08	6820	3770	4.4	2120	11	3750	10	28	1	0.5	0.5	23	-	2450	0.24	0.04	692	97	27	473	1.7
	2019-03-06		6.18	6870	3560	1.0	2160	9	4110	12	17	1	0.5	0.5	14	-	2240	0.24	0.04	701	99	23	481	1.0
	2019-03-21		6.24	-	-	-	-	-	-	-	-	-	-	-	-	>3999	-	-	-	-	-	-	-	-
	2019-05-28		6.72	6890	4020	8.0	2150	8	4690	5	32	1	0.5	0.5	26	-	2680	0.27	0.02	705	96	22	488	1.0
	2019-09-19		6.83	7160.0	3450	4.8	2150.00	12	5660	11	32.0	1	0.5	0.5	26	-	2090.00	0.28	0.02	704.00	96	21	504	1.0
	2019-11-22		6.6	7010.0	3930	82.9*	2220.00	10	4560	10	32.0	1	0.5	0.5	260	-	25630.00	0.25	0.02	729	98	21	516	1.6
	2020-03-02		6.44	6950.0	3780	22.5*	2130.00	10	4100	10	32.0	1	0.5	0.5	26	-	2440.00	0.20	0.02	702.00	93	20	496	0.8
GAR-18-013 ZONE 5	2018-10-28		7.45	436	245	5.6	88	-	275	7	33	1	0.5	0.5	27	-	126	0.10	2.0	27	5.1	10	40	2.1
	2019-05-31		7.02	580	348	8.3	119	11	411	5	39	1	0.5	0.5	32	-	195	0.15	0.02	37	6.6	8.7	60	1.2
	2019-09-18		7.16	609.0	314	2.0	122.00	16	438	5	43.0	1	0.5	0.5	35	-	155.00	0.16	0.04	38	6.7	8.2	62	1.3
	2020-01-20		6.78	599.0	342	2.7	123.00	13	372	9	46.0	1	0.5	0.5	38	-	179.00	0.15	0.02	38	6.8	7.8	64	0.9
	2020-02-29		6.72	661.0	358	1.1	128.00	7	482	12	44.0	1	0.5	0.5	36	-	188.00	0.11	0.02	40.00	7	7.8	70	1.1
GAR-18-013 ZONE 6	2018-08-11		6.87	-	-	-	-	-	-	-	-	-	-	-	-	>3999	-	-	-	-	-	-	-	-
	2018-10-28		7.55	294	166	4.2	48	15	193	4	34	1	0.5	0.5	28	-	73	0.11	0.10	14	3.1	8.6	31	2.0
	2019-03-07		6.59	328	171	4.5	50	8	249	5	32	1	0.5	0.5	26	-	75	0.13	0.14	15	3.2	6.8	37	1.6
	2019-03-21		6.51	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2019-05-29		7.21	345	196	4.0	57	5	228	5	46	1	0.5	0.5	38	-	77	0.16	0.02	17	3.5	6.4	45	1.3
	2019-09-19		7.29	393.0	223	0.3	60.00	12	256	4	46.0	1	0.5	0.5	38	-	97.00	0.19	0.05	18	3.6	6.0	51	1.4
	2019-11-23		7.04	411.0	242	4.1	63.00	8	270	4	48.0	1	0.5	0.5	39	-	112.00	0.17	0.02	19	3.8	5.7	52	1.1
	2020-03-03		6.76	487.0	271	1.3	79.00	5	306	10	40.0	1	0.5	0.5	33	-	136.00	0.12	0.06	24	4.7	6.3	59	0.7
GAR-18-013 ZONE 7	2018-08-11		6.74	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2019-03-08		6.60	714	363	5.5	144	11	458	6	29	1	0.5	0.5	24	-	212	0.10	0.34	44	8.4	7.5	61	0.6
	2019-05-30		7.08	709	408	9.1	153	9	498	4	32	1	0.5	0.5	26	-	245	0.12	0.05	47	8.8	7.6	67	0.5
	2019-09-16		7.02	750.0	358	2.8	157.00	12	547	6	29.0	1	0.5	0.5	24	-	195.00	0.12	0.06	48	9.0	7.4	69	0.8
	2019-10-29		7.41	703	405	-	170	-	409	6	28	1	0.5	0.5	23	-	235	0.10	0.10	52	9.8	9.4	69	2.0
	2019-11-22		6.53	746.0	385	3.7	154.00	11	439	13	30.0	1	0.5	0.5	25	-	224.00	0.11	0.02	47	8.9	7.1	68	0.4
	2020-03-04		6.08	744.0	383	0.4	157.00	13	418	15	28.0	1	0.5	0.5	23	-	220.00	0.07	0.02	48	9	7.2	70	0.4

Table 5: Westbay Well Chemistry Analyses – General Chemistry

Location	Sample Date (yyyy-mm-dd)	Parameters	pH	Specific conductivity	Sum of Ions	Cation - Anion Balance	Total Hardness	Total Suspended Solids (TSS)	Total Dissolved Solids (TDS)	Acidity	Alkalinity, Bicarbonate (as CaCO3)	Alkalinity, Carbonate (as CaCO3)	Hydroxide (OH)	P. alkalinity	Alkalinity, Total	Salintiy	Chloride (Cl)	Fluoride (Fl)	Nitrate (NO3)	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Sulfate (SO4)
Unit			pH units	uS/cm	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	PSU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
RDL																								
GAR-18-013 ZONE 8	2018-10-30		7.50	831	447	0.4	196	6	497	7	35	1	0.5	0.5	29	-	248	0.12	0.78	57	13	10	82	1.5
	2018-11-08		6.6	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2019-03-08		6.68	1090	544	5.0	224	5	661	9	35	1	0.5	0.5	29	-	326	0.14	0.17	65	15	9.6	93	0.6
	2019-03-21		6.33	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2019-05-30		7.17	1120	628	8.5	245	4	758	44	44	1	0.5	0.5	36	-	381	0.15	0.02	72	16	9.9	105	0.6
	2019-08-30		7.29	1170.0	560	5.6	259.00	4	910	8	48.0	1	0.5	0.5	39	-	296.00	0.14	0.80	76	17	10	112	0.6
	2019-11-20		6.86	1180.0	588	1.2	254.00	7	733	13	49.0	1	0.5	0.5	40	-	326.00	0.15	0.08	74	17	9.3	112	0.5
	2020-02-29		6.9	1330.0	689	2.4	288.00	6	727	12	52.0	1	0.5	0.5	43	-	398.00	0.12	0.02	84	19	9.7	126	0.4
GAR-18-013 ZONE 9	2018-08-11		6.9	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2018-10-30		7.60	1080	549	5.2	225	11	570	7	43	1	0.5	0.5	35	-	320	0.16	0.08	64	16	8.6	96	1.7
	2019-03-09		6.80	1120	555	5.3	228	9	673	10	40	1	0.5	0.5	33	-	330	0.15	0.11	65	16	8.7	95	0.6
	2019-03-21		6.45	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2019-05-29		7.29	1120	634	9.5	244	5	753	32	44	1	0.5	0.5	36	-	388	0.17	0.02	70	17	9.4	105	0.4
	2019-09-01		7.18	1140.0	542	4.0	246.00	10	893	7	43.0	1	0.5	0.5	35	-	295.00	0.15	0.04	69	18	9.8	107	0.3
	2019-11-24		6.95	1170.0	604	4.2	246.00	13	680	11	44.0	1	0.5	0.5	36	-	355.00	0.16	0.07	69	18	9.3	108	0.3
	2020-03-04		6.5	1200.0	597	1.1	260.00	16	637	15	39.0	1	0.5	0.5	32	-	343.00	0.10	0.02	73	19	9.5	113	0.3
GAR-18-013 ZONE 10	2018-08-11		6.8	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2018-10-18		7.60	142	93	7.2	16	9	94	5	35	1	0.5	0.5	29	-	26	0.09	0.05	3.9	1.6	8.5	16	1.7
	2019-03-09		6.89	168	101	2.0	18	1	131	15	39	1	0.5	0.5	32	-	29	0.11	0.12	4.2	1.9	5.9	20	1.2
	2019-03-21		6.58	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2019-05-30		7.52	169	113	4.6	20	4	89	6	45	1	0.5	0.5	37	-	31	0.13	0.05	4.8	2.0	5.2	24	0.8
	2019-09-19		7.6	183.0	113	2.0	21.00	3	108	23	48.0	1	0.5	0.5	39	-	27.00	0.14	0.02	5	2.1	4.6	25	1
	2019-11-17		7.46	186.0	125	5.1	23.00	4	110	5	50.0	1	0.5	0.5	41	-	35.00	0.13	0.04	5.3	2.3	4.5	27	0.8
	2020-03-03		7.24	207.0	127	3.2	24.00	3	120	5	48.0	1	0.5	0.5	39	-	38.00	0.10	0.02	5.7	2.4	4.4	28	0.6

Table 5: Westbay Well Chemistry Analyses – General Chemistry

Location	Sample Date (yyyy-mm-dd)	Parameters	pH	Specific conductivity	Sum of Ions	Cation - Anion Balance	Total Hardness	Total Suspended Solids (TSS)	Total Dissolved Solids (TDS)	Acidity	Alkalinity, Bicarbonate (as CaCO3)	Alkalinity, Carbonate (as CaCO3)	Hydroxide (OH)	P. alkalinity	Alkalinity, Total	Salintiy	Chloride (Cl)	Fluoride (Fl)	Nitrate (NO3)	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Sulfate (SO4)
Unit			pH units	uS/cm	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	PSU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
RDL																								
GAR-18-013 ZONE 11	2018-08-11		6.81	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2018-11-02		7.46	176	102	6.3	17	5	108	8	39	1	0.5	0.5	32	-	27	0.09	0.04	4.0	1.7	9.2	18	2.7
	2019-03-01		6.99	176	114	1.1	26	2	125	38	46	1	0.5	0.5	38	-	30	0.10	0.02	5.8	2.7	7.0	22	1.0
	2019-03-21		6.3	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
	2019-05-31		7.59	182	126	4.9	30	5	108	5	54	1	0.5	0.5	44	-	32	0.12	0.02	7.1	3.0	6.4	23	1.0
	2019-09-17		7.6	201.0	125	0.2	33.00	3	126	6	55.0	1	0.5	0.5	45	-	28.00	0.13	0.04	7.9	3.3	5.9	24	1.1
	2019-11-24		7.27	234.0	151	3.9	42.00	3	155	4	62.0	1	0.5	0.5	51	-	42.00	0.11	0.02	10	4.2	6.2	26	0.8
	2020-03-01		6.94	258.0	156	7.3	54.00	4	170	7	58.0	1	0.5	0.5	48	-	44.00	0.08	0.05	13	5.3	6.6	29	0.5
GAR-19-035 ZONE 1	2020-03-09		6.44	37300.0	24900	9.3	15100.00	16	24600	27	18.0	1	0.5	0.5	15	-	17000.00	0.18	2.00	5100	570	33	2200	0.4
GAR-19-035 ZONE 2	2020-03-11		6.54	27700.0	17800	9.5	10600.00	62	17500	54	62.0	1	0.5	0.5	51	-	12100.00	0.12	0.20	3600	399	27	1600	0.9
GAR-19-035 ZONE 3	2020-03-10		6.54	24400.0	15400	10.6*	9020.00	18	15400	51	27.0	1	0.5	0.5	22	-	10600.00	0.19	0.20	3000	373	25	1400	0.8
GAR-19-035 ZONE 4	2020-03-08		6.32	25400.0	16200	11.4*	9480.00	53	16000	51	18.0	1	0.5	0.5	15	-	11200.00	0.14	0.20	3200	365	25	1400	1.9
GAR-19-035 ZONE 5	2020-03-11		6.44	16500.0	9930	7.0	6220.00	65	10300	47	34.0	1	0.5	0.5	28	-	6650.00	0.11	0.20	2100	240	20	884	2.4
GAR-19-035 ZONE 6	2020-03-12		6.67	8190.0	4400	3.7	2780.00	54	5080	33	61.0	1	0.5	0.5	50	-	2840.00	0.16	0.02	915	122	13	442	6.2
GAR-19-035 ZONE 7	2020-03-12		6.89	3360.0	1670	6.4	968.00	67	2110	17	78.0	1	0.5	0.5	64	-	1050.00	0.14	0.02	304	51	8.7	174	1.3
GAR-19-035 ZONE 8	2020-03-08		6.95	2230.0	1150	2.5	690.00	80	1340	17	74.0	1	0.5	0.5	61	-	688.00	0.10	0.02	214	38	8.3	129	1.9
GAR-19-035 ZONE 9	2020-03-14		6.94	2280.0	1150	4.1	656.00	39	1410	16	87.0	1	0.5	0.5	71	-	686.00	0.14	0.02	197	40	7.9	134	1.6
GAR-19-035 ZONE 10	2020-03-09		6.95	3150.0	1680	5.5	979.00	62	1780	17	72.0	1	0.5	0.5	59	-	1060.00	0.10	0.02	292	61	13	183	2.7

Notes
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
mg/L - milligrams per litre.
meq/L - milliequivalents per litre.
% - percentage.
RDL - Reportable Detection Limit.
Duplicate and Field Blank data Hidden in rows 190 to 256.
* Indicates sample is outside ±10% and is considered invalid.

Table 6: Westbay Wells Chemistry Analyses – Dissolved Metals

Location	Sample Date (yyyy-mm-dd)	Parameters	Aluminum (Al) - Dissolved	Antimony (Sb) - Dissolved	Arsenic (Ar) - Dissolved	Barium (Ba) - Dissolved	Beryllium (Be) - Dissolved	Bismith (Bi) - Dissolved	Boron (Bo) - Dissolved	Cadmium (Cd) - Dissolved	Chromium (Cr) - Dissolved	Cobalt (Co) - Dissolved	Copper (Cu) - Dissolved	Iron (Fe) - Dissolved	Lead (Pb) - Dissolved	Lithium (Li) - Dissolved	Manganese (Mn)- Dissolved	Molybdenum (Mo)- Dissolved	Nickel (Ni)-Dissolved	Selenium (Se)- Dissolved	Silver (Ag)-Dissolved	Strontium (Sr)- Dissolved	Thallium (Tl)- Dissolved	Tin (Sn)-Dissolved	Titanium (Ti)- Dissolved	Uranium (U)- Dissolved	Vanadium (V)- Dissolved	Zinc (Zn)-Dissolved
Unit			mg/L	mg/L	ug/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	ug/L	mg/L	mg/L
RDL																													
GAR-18-013 ZONE 1	2018-10-25		0.032	<0.002	8	4.2	<0.001	-	0.7	0.0001	0.00	0.037	0.020	11.1	0.29	-	0.59	0.17	0.12	<0.001	0.00	17.0	<0.002	0.002	<0.002	0.50	0.001	1.5
	2019-03-04		0.005	0.00	7	2.1	0.00	-	1.7	0.0002	0.00	0.018	0.00	15.6	0.020	-	1.2	0.068	0.076	0.00	0.00	63	0.00	0.00	0.00	0.50	0.002	0.36
	2019-05-28		3.5	0.00	5	1.1	0.00	-	1.8	0.0004	0.00	0.011	0.003	7.8	0.004	-	1.2	0.064	0.074	0.00	0.00	66	0.00	0.001	0.00	0.50	0.001	0.49
	2019-09-06		0.00	0.00	15	1	0.00	0.00	2.2	0.0006	0.00	0.007	0.00	10.5	0.003	230	1.4	0.067	0.046	0.00	0.00	77	0.00	0.002	0.00	0.50	0.002	0.16
	2019-11-18		0.00	0.00	21	1	0.00	0.00	2.1	0.0007	0.00	0.004	0.002	10.9	0.001	240	1.5	0.055	0.038	0.00	0.00	89	0.00	0.00	0.00	0.50	0.00	0.16
	2020-02-25		0.009	0.00	18	1	0.00	0.00	2	0.001	0.00	0.003	0.002	10.3	0.002	240	1.6	0.05	0.031	0.00	0.00	98	0.00	0.00	0.00	0.50	0.00	0.16
GAR-18-013 ZONE 2	2019-03-06		0.012	0.0002	3.4	0.47	0.00	-	0.10	0.00005	0.00	0.0019	0.0027	3.55	0.0041	-	0.070	0.0096	0.0048	0.00	<0.00005	0.61	0.00	0.0002	0.0002	0.05	0.0005	0.056
	2019-05-29		0.061	0.0002	3.1	0.53	0.00	-	0.08	0.00004	0.00	0.0018	0.0026	3.59	0.0053	-	0.078	0.0090	0.0038	0.00	<0.00005	0.88	0.00	0.0003	0.0003	0.05	0.0002	0.076
	2019-09-15		0.012	0.00	3	0.61	0.00	0.00	0.11	0.00036	0.00	0.0022	0.0032	3.87	0.0071	7.5	0.092	0.01	0.01	0.00	<0.00005	1.14	0.00	0.0015	0.0003	0.05	0.0002	0.120
	2019-11-19		0.011	0.00	3.6	0.68	0.00	0.00	0.12	0.00011	0.00	0.0023	0.0019	4.28	0.0036	8.8	0.1	0.0097	0.0076	0.00	<0.00005	1.78	0.00	0.0002	0.00	0.05	0.0001	0.076
	2020-01-26		0.019	0.00	3.0	0.22	0.00	-	0.03	0.00025	0.00	0.0023	0.0057	2.00	0.010	-	0.050	0.0065	0.0048	0.00	<0.00005	0.16	0.00	0.0003	0.0004	0.05	0.0003	0.14
	2020-02-28		0.0089	0.00	3.8	0.81	0.00	0.00	0.16	0.00025	0.00	0.0028	0.0025	5.1	0.0068	10	0.13	0.012	0.012	0.00	<0.00005	2.59	0.00	0.0002	0.0004	0.05	0.0002	0.160
GAR-18-013 ZONE 3	2018-10-26		0.016	0.0003	2.7	1.03	0.00	-	0.28	0.00014	0.00	0.0052	0.0020	1.83	0.020	-	0.14	0.017	0.022	0.00	<0.00005	3.37	0.00	0.0002	0.0002	0.05	0.0001	0.16
	2019-03-06		0.012	0.00	2.3	0.97	0.00	-	0.34	0.00009	0.00	0.0028	0.0013	4.96	0.0073	-	0.18	0.020	0.0055	0.00	<0.00005	4.08	0.00	0.0002	0.0002	0.05	0.0002	0.082
	2019-05-30		0.014	0.00	2.8	1.06	0.00	-	0.36	0.00003	0.00	0.0037	0.0004	4.70	0.0025	-	0.20	0.025	0.0095	0.00	<0.00005	5.4	0.00	0.0003	0.0002	0.05	0.00	0.96
	2019-09-18		0.011	0.00	2.8	1.08	0.00	0.00	0.42	0.00017	0.00	0.0037	0.0013	6.1	0.0076	33	0.22	0.027	0.0097	0.00	<0.00005	5.6	0.00	0.0004	0.0003	0.05	0.00	1.02
	2019-11-21		0.017	0.00	4.4	1.48	0.00	0.00	0.53	0.00027	0.00	0.0066	0.0032	6.7	0.0085	45	0.29	0.04	0.018	0.00	<0.00005	9.3	0.00	0.004	0.0005	0.05	0.00	7.2
	2020-03-01		0.018	0.00	4	1.5	0.00	0.00	0.5	0.0002	0.00	0.007	0.00	7.6	0.008	42	0.33	0.044	0.017	0.00	0.00	10	0.00	0.00	0.00	0.50	0.00	6.9
GAR-18-013 ZONE 4	2018-10-27		0.007	<0.002	7	3.3	<0.001	-	1.2	0.0001	0.00	0.015	0.005	1.7	0.035	-	0.33	0.031	0.017	<0.001	0.00	16.4	<0.002	<0.001	<0.002	0.50	<0.001	0.28
	2019-03-06		0.00	0.00	4	3.1	0.00	-	1.2	0.00	0.00	0.014	0.00	3.6	0.001	-	0.37	0.028	0.016	0.00	0.00	16.8	0.00	0.001	0.00	0.50	0.00	0.084
	2019-05-28		0.044	0.00	2	2.9	0.00	-	1.2	0.00	0.00	0.014	0.00	1.0	0.003	-	0.38	0.025	0.016	0.00	0.00	16.4	0.00	0.00	0.00	0.50	0.00	0.19
	2019-09-19		0.00	0.00	4	2.7	0.00	0.00	1.4	0.0002	0.00	0.014	0.00	3.5	0.00	95	0.39	0.031	0.016	0.00	0.00	15.8	0.00	0.002	0.00	0.50	0.00	0.24
	2019-11-22		0.014	0.00	4	2.6	0.00	0.00	1.2	0.0007	0.00	0.013	0.003	3.4	0.001	91	0.38	0.032	0.017	0.00	0.00	17.8	0.00	0.00	0.00	0.50	0.00	0.29
	2020-03-02		0.00	0.00	4	2.5	0.00	0.00	1.3	0.0002	0.00	0.013	0.00	3.8	0.002	89	0.41	0.034	0.018	0.00	0.00	18	0.00	0.00	0.00	0.50	0.00	0.14

Table 6: Westbay Wells Chemistry Analyses – Dissolved Metals

Location	Sample Date (yyyy-mm-dd)	Parameters	Aluminum (Al) - Dissolved	Antimony (Sb) - Dissolved	Arsenic (Ar) - Dissolved	Barium (Ba) - Dissolved	Beryllium (Be) - Dissolved	Bismith (Bi) - Dissolved	Boron (Bo) - Dissolved	Cadmium (Cd) - Dissolved	Chromium (Cr) - Dissolved	Cobalt (Co) - Dissolved	Copper (Cu) - Dissolved	Iron (Fe) - Dissolved	Lead (Pb) - Dissolved	Lithium (Li) - Dissolved	Manganese (Mn)- Dissolved	Molybdenum (Mo)- Dissolved	Nickel (Ni)-Dissolved	Selenium (Se)- Dissolved	Silver (Ag)-Dissolved	Strontium (Sr)- Dissolved	Thallium (Tl)- Dissolved	Tin (Sn)-Dissolved	Titanium (Ti)- Dissolved	Uranium (U)- Dissolved	Vanadium (V)- Dissolved	Zinc (Zn)-Dissolved
Unit			mg/L	mg/L	ug/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	ug/L	mg/L	mg/L
RDL																													
GAR-18-013 ZONE 6	2018-10-28		0.045	0.00	1.7	1.63	0.00	-	0.15	0.00004	0.00	0.0042	0.0026	0.91	0.034	-	0.051	0.011	0.0051	0.00	<0.00005	0.35	0.00	0.0002	0.0005	0.05	0.0002	0.18
	2019-03-07		0.034	0.00	1.7	1.58	0.00	-	0.20	0.00003	0.00	0.0041	0.0028	1.48	0.025	-	0.053	0.012	0.0051	0.00	<0.00005	0.40	0.00	0.0002	0.0005	0.05	0.0003	0.085
	2019-05-29		0.070	0.00	1.5	1.48	0.00	-	0.22	0.00003	0.00	0.0036	0.0025	1.17	0.024	-	0.050	0.014	0.0044	0.00	<0.00005	0.44	0.00	0.0003	0.0007	0.05	0.0002	0.13
	2019-09-19		0.032	0.00	1.5	1.42	0.00	0.00	0.28	0.00004	0.00	0.0035	0.0028	1.15	0.026	14	0.048	0.016	0.0069	0.00	<0.00005	0.45	0.00	0.0003	0.0006	0.05	0.0002	0.17
	2019-11-23		0.036	0.00	1.6	1.42	0.00	0.00	0.26	0.00011	0.00	0.0031	0.0032	1.25	0.03	14	0.048	0.015	0.0069	0.00	<0.00005	0.49	0.00	0.0004	0.0004	0.05	0.00	0.14
	2020-03-03		0.022	0.00	1.5	1.44	0.00	0.00	0.25	0.00007	0.00	0.0029	0.0027	1.37	0.03	13	0.058	0.015	0.008	0.00	<0.00005	0.67	0.00	0.0003	0.0006	0.05	0.0002	0.14
GAR-18-013 ZONE 7	2019-03-08		0.021	0.00	1.2	1.91	0.00	-	0.23	0.00002	0.00	0.0010	0.0010	2.30	0.0066	-	0.092	0.0087	0.0024	0.00	<0.00005	1.10	0.00	0.0001	0.0003	0.05	0.0002	0.034
	2019-05-30		0.016	0.00	1.0	1.76	0.00	-	0.21	0.00003	0.00	0.0007	0.0006	2.17	0.0032	-	0.090	0.0095	0.0025	0.00	<0.00005	1.14	0.00	0.0002	0.00	0.05	0.00	0.089
	2019-09-16		0.0097	0.00	1.2	1.77	0.00	0.00	0.25	0.00007	0.00	0.0005	0.0018	2.8	0.0054	18	0.096	0.0098	0.0027	0.00	<0.00005	1.12	0.00	0.0002	0.0002	0.05	0.00	0.1
	2019-10-29		0.014	0.00	1.2	1.96	0.00	-	0.22	0.00009	0.00	0.0019	0.0010	0.86	0.014	-	0.076	0.0087	0.0029	0.00	<0.00005	1.13	0.00	0.0002	0.0002	0.05	0.00	0.18
	2019-11-22		0.016	0.00	1.1	1.75	0.00	0.00	0.22	0.00005	0.00	0.0006	0.0015	3.87	0.0089	18	0.1	0.0094	0.0038	0.00	<0.00005	1.18	0.00	0.0002	0.00	0.05	0.00	0.11
	2020-03-04		0.014	0.00	1.1	1.75	0.00	0.00	0.2	0.00004	0.00	0.0007	0.0012	5.2	0.012	16	0.11	0.0098	0.0027	0.00	<0.00005	1.28	0.00	0.0002	0.0003	0.05	0.0001	0.1
GAR-18-013 ZONE 8	2018-10-30		0.0022	0.00	3.2	2.17	0.00	-	0.28	0.00003	0.00	0.0033	0.0002	0.79	0.0085	-	0.067	0.044	0.0039	0.0001	<0.00005	1.76	0.00	0.0002	0.00	0.1	0.00	0.19
	2019-03-08		0.0015	0.00	2.9	2.04	0.00	-	0.29	0.00001	0.00	0.0023	0.0011	2.30	0.0004	-	0.080	0.041	0.0079	0.00	<0.00005	1.70	0.00	0.0002	0.00	0.05	0.0001	0.039
	2019-05-30		0.010	0.00	2.0	2.27	0.00	-	0.30	0.00001	0.00	0.0020	0.0003	2.00	0.0003	-	0.085	0.043	0.0030	0.00	<0.00005	1.85	0.00	0.0003	0.00	0.05	0.00	0.11
	2019-08-30		0.0028	0.00	1.8	2.36	0.00	0.00	0.34	0.00057	0.00	0.0018	0.0019	1.64	0.0005	28	0.088	0.046	0.0075	0.00	<0.00005	1.99	0.00	0.0003	0.0002	0.05	0.00	0.17
	2019-11-20		0.0031	0.00	2.6	2.24	0.00	0.00	0.33	0.00007	0.00	0.0015	0.0009	2.85	0.0006	28	0.087	0.043	0.0047	0.00	<0.00005	2.15	0.00	0.0002	0.00	0.05	0.00	0.086
	2020-02-29		0.0035	0.00	2.9	2.3	0.00	0.00	0.32	0.00006	0.00	0.0016	0.0008	3.72	0.0011	26	0.099	0.046	0.0034	0.00	<0.00005	2.3	0.00	0.0002	0.00	0.05	0.00	0.19
GAR-18-013 ZONE 9	2018-10-30		0.0093	0.00	0.8	1.63	0.00	-	0.34	0.00	0.00	0.0012	0.0003	1.86	0.0022	-	0.074	0.054	0.0023	0.0001	<0.00005	1.68	0.00	0.0002	0.0002	0.05	0.00	0.025
	2019-03-09		0.0010	0.00	0.4	1.79	0.00	-	0.33	0.00002	0.00	0.0002	0.0003	2.69	0.0002	-	0.093	0.055	0.0014	0.00	<0.00005	1.72	0.00	0.0002	0.00	0.05	0.00	0.025
	2019-05-29		0.0061	0.00	0.3	1.82	0.00	-	0.31	0.00001	0.00	0.0001	0.0002	2.42	0.00	-	0.097	0.055	0.0012	0.00	<0.00005	1.75	0.00	0.0003	0.0003	0.05	0.00	0.056
	2019-09-01		0.0052	0.00	0.4	1.77	0.00	0.00	0.35	0.00013	0.00	0.0002	0.0004	3.24	0.00	28	0.1	0.058	0.0059	0.00	<0.00005	1.81	0.00	0.0003	0.0003	0.05	0.00	0.064
	2019-11-24		0.0035	0.00	0.4	1.76	0.00	0.00	0.35	0.00007	0.00	0.00	0.0008	4.77	0.0008	28	0.1	0.056	0.0028	0.00	<0.00005	2.04	0.00	0.0002	0.00	0.05	0.00	0.067
	2020-03-04		0.0044	0.00	0.4	1.72	0.00	0.00	0.32	0.00006	0.00	0.0001	0.0006	5.8	0.0017	26	0.1	0.056	0.0012	0.00	<0.00005	2.02	0.00	0.0003	0.0004	0.05	0.00	0.14

Table 6: Westbay Wells Chemistry Analyses – Dissolved Metals

Location	Sample Date (yyyy-mm-dd)	Parameters	Aluminum (Al) - Dissolved	Antimony (Sb) - Dissolved	Arsenic (Ar) - Dissolved	Barium (Ba) - Dissolved	Beryllium (Be) - Dissolved	Bismith (Bi) - Dissolved	Boron (Bo) - Dissolved	Cadmium (Cd) - Dissolved	Chromium (Cr) - Dissolved	Cobalt (Co) - Dissolved	Copper (Cu) - Dissolved	Iron (Fe) - Dissolved	Lead (Pb) - Dissolved	Lithium (Li) - Dissolved	Manganese (Mn)- Dissolved	Molybdenum (Mo)- Dissolved	Nickel (Ni)-Dissolved	Selenium (Se)- Dissolved	Silver (Ag)-Dissolved	Strontium (Sr)- Dissolved	Thallium (Tl)- Dissolved	Tin (Sn)-Dissolved	Titanium (Ti)- Dissolved	Uranium (U)- Dissolved	Vanadium (V)- Dissolved	Zinc (Zn)-Dissolved
Unit			mg/L	mg/L	ug/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	ug/L	mg/L	mg/L
RDL																													
GAR-18-013 ZONE 10	2018-10-18		0.037	0.00	0.4	0.46	0.00	-	0.08	0.00003	0.00	0.0007	0.0017	1.07	0.011	-	0.0099	0.012	0.0031	0.00	<0.00005	0.11	0.00	0.0003	0.0003	0.05	0.0002	0.090
	2019-03-09		0.021	0.00	0.5	0.35	0.00	-	0.11	0.00006	0.00	0.0004	0.0013	0.38	0.0046	-	0.0081	0.015	0.0030	0.00	<0.00005	0.14	0.00	0.0001	0.0003	0.05	0.0002	0.028
	2019-05-30		0.033	0.00	0.4	0.28	0.00	-	0.11	0.00	0.00	0.0003	0.0007	0.22	0.0033	-	0.0073	0.015	0.0021	0.00	<0.00005	0.15	0.00	0.0002	0.0004	0.05	0.0003	0.034
	2019-09-19		0.01	0.00	0.4	0.3	0.00	0.00	0.14	0.00004	0.00	0.0002	0.0006	0.19	0.0026	8.1	0.0067	0.017	0.002	0.00	<0.00005	0.16	0.00	0.0002	0.0003	0.05	0.0002	0.046
	2019-11-17		0.012	0.00	0.4	0.25	0.00	0.00	0.13	0.00025	0.00	0.0002	0.0024	0.24	0.0047	8	0.011	0.016	0.0027	0.00	<0.00005	0.17	0.00	0.0016	0.00	0.05	0.0002	0.068
	2020-03-03		0.0094	0.00	0.3	0.29	0.00	0.00	0.14	0.00002	0.00	0.0002	0.0009	0.26	0.0039	7.5	0.0071	0.018	0.0022	0.00	<0.00005	0.2	0.00	0.0002	0.00	0.05	0.0002	0.046
GAR-18-013 ZONE 11	2018-11-02		0.019	0.00	0.8	0.46	0.00	-	0.10	0.00015	0.00	0.0023	0.0050	0.89	0.016	-	0.028	0.018	0.0084	0.00	<0.00005	0.75	0.00	0.0004	0.0003	0.05	0.0003	0.17
	2019-03-01		0.012	0.00	0.4	0.31	0.00	-	0.13	0.00029	0.00	0.0010	0.0032	0.45	0.0055	-	0.011	0.016	0.0044	0.00	<0.00005	0.17	0.00	0.0003	0.0002	0.05	0.0005	0.071
	2019-05-31		0.016	0.00	0.3	0.28	0.00	-	0.10	0.00	0.00	0.0007	0.0007	0.37	0.0032	-	0.0088	0.018	0.0022	0.00	<0.00005	0.20	0.00	0.0002	0.00	0.05	0.0002	0.029
	2019-09-17		0.0078	0.00	0.3	0.3	0.00	0.00	0.13	0.00003	0.00	0.0006	0.0009	0.52	0.0044	12	0.01	0.018	0.0032	0.00	<0.00005	0.22	0.00	0.0002	0.00	0.05	0.0002	0.12
	2019-11-24		0.0062	0.00	0.3	0.35	0.00	0.00	0.12	0.00004	0.00	0.0004	0.0011	0.85	0.0023	12	0.013	0.018	0.0026	0.00	<0.00005	0.3	0.00	0.0002	0.00	0.05	0.00	0.083
	2020-03-01		0.0033	0.00	0.3	0.4	0.00	0.00	0.13	0.00003	0.00	0.0002	0.0007	1.03	0.0019	12	0.016	0.02	0.0029	0.00	<0.00005	0.4	0.00	0.0001	0.00	0.05	0.0001	0.099
GAR-19-035 ZONE 1	2020-03-09		0.03	<0.02	10	1.1	0.01	<0.02	2	0.00	0.03	0.01	<0.02	7.2	0.01	310	2.5	0.03	0.02	0.01	0.00	138	<0.02	0.01	<0.02	0.50	0.01	0.23
GAR-19-035 ZONE 2	2020-03-11		0.16	<0.02	20	1.4	0.01	<0.02	2	0.00	0.03	0.01	<0.02	18	0.01	240	2.5	0.16	0.03	0.01	0.00	96	<0.02	0.01	<0.02	0.50	0.01	0.39
GAR-19-035 ZONE 3	2020-03-10		0.094	0.00	6	0.96	0.00	0.00	1.5	0.0003	0.00	0.003	0.00	9.7	0.008	240	1.6	0.064	0.011	0.00	0.00	81	0.00	0.00	<0.003	0.50	0.00	0.34
GAR-19-035 ZONE 4	2020-03-08		0.16	0.00	4	1.4	0.00	0.00	1.1	0.0002	0.00	0.004	0.003	16	0.005	220	1.9	0.24	0.021	0.00	0.00	89	0.00	0.00	0.004	0.50	0.00	0.35
GAR-19-035 ZONE 5	2020-03-11		0.4	0.00	3	0.95	0.00	0.00	0.8	0.0001	0.00	0.003	0.003	16.1	0.006	150	1.4	0.21	0.017	0.00	0.00	55	0.00	0.00	0.009	0.50	0.00	0.55
GAR-19-035 ZONE 6	2020-03-12		0.055	0.00	2	0.54	0.00	0.00	0.5	0.00	0.00	0.001	0.00	11.8	0.004	69	0.54	0.12	0.01	0.00	0.00	15.8	0.00	0.00	0.003	0.50	0.00	0.1
GAR-19-035 ZONE 7	2020-03-12		0.19	0.00	1.8	0.35	0.00	0.00	0.27	0.00002	0.00	0.0003	0.0011	12.8	0.0032	42	0.4	0.071	0.0036	0.00	<0.00005	7.06	0.00	0.0002	0.0046	0.1	0.0002	0.081
GAR-19-035 ZONE 8	2020-03-08		0.28	0.00	1.9	0.33	0.00	0.00	0.24	0.00002	0.0006	0.0004	0.0011	13.5	0.0042	36	0.4	0.062	0.0061	0.0002	<0.00005	5.6	0.00	0.0002	0.0066	0.1	0.0005	0.059
GAR-19-035 ZONE 9	2020-03-14		0.059	0.00	1.7	0.32	0.00	0.00	0.27	0.00007	0.00	0.0002	0.0004	12	0.0005	40	0.34	0.05	0.0056	0.00	<0.00005	5.1	0.00	0.00	0.0014	0.05	0.00	0.033
GAR-19-035 ZONE 10	2020-03-09		0.047	0.00	0.9	0.48	0.00	0.00	0.29	0.00002	0.00	0.0007	0.0002	9.4	0.0004	47	0.39	0.047	0.0044	0.0002	<0.00005	7.5	0.00	0.0001	0.0009	0.1	0.0001	0.041

Notes
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
mg/L - milligrams per litre.
meq/L - milliequivalents per litre.
% - percentage.
RDL - Reportable Detection Limit.
Duplicate and Field Blank data Hidden in rows 190 to 256.

Table 7: Westbay Wells Chemistry Analyses – Isotopes and Radionuclides

Location	Sample Date (yyyy-mm-dd)	Parameters	Delta 2H	Delta 18O	Delta 17O	Lead-210, dissolved	Polonium-210, dissolved	Radium-226, dissolved	Thorium-230, dissolved
Unit			VSMOW	VSMOW	VSMOW	Bq/L	Bq/L	Bq/L	Bq/L
RDL									
GAR-18-013 ZONE 1	2018-08-11		-130.512202	-15.250429	-8.170550	-	-	-	-
	2018-10-25		-	-	-	1.7	0.34	1.8	0.02
	2019-03-04		-	-	-	0.3	0.01	6.2	0.07
	2019-03-21		-143.699097	-17.694156	-9.700000	-	-	-	-
	2019-05-28		-	-	-	0.1	0.01	9.6	0.02
	2019-09-06		-	-	-	0.2	0.01	13	0.14
	2019-09-20		-147.181643	-18.390241	-10.269506	-	-	-	-
	2019-11-18		-	-	-	0.08	0.01	5.6	0.02
	2019-11-26		-151.327304	-19.633537	-11.576457	-	-	-	-
	2020-02-12		-152.085160	-18.980549	-10.587493	-	-	-	-
	2020-02-25		-	-	-	0.2	0.02	3.5	0.08
GAR-18-013 ZONE 2	2019-03-06		-	-	-	0.04	0.01	0.08	0.02
	2019-03-21		-126.631262	-14.672032	-7.972456	-	-	-	-
	2019-05-29		-	-	-	0.04	0.01	0.14	0.02
	2019-09-15		-	-	-	0.1	0.01	0.17	0.02
	2019-09-20		-125.096818	-14.543715	-8.261846	-	-	-	-
	2019-11-19		-	-	-	0.04	0.01	0.25	0.02
	2019-11-26		-126.881795	-15.602813	-6.928151	-	-	-	-
	2020-01-26		-	-	-	0.04	0.01	0.02	0.02
	2020-02-28		-	-	-	0.04	0.01	0.27	0.02
	2020-03-12		-127.877191	-14.668258	-8.383363	-	-	-	-

Table 7: Westbay Wells Chemistry Analyses – Isotopes and Radionuclides

Location	Sample Date (yyyy-mm-dd)	Parameters	Delta 2H	Delta 18O	Delta 17O	Lead-210, dissolved	Polonium-210, dissolved	Radium-226, dissolved	Thorium-230, dissolved
Unit			VSMOW	VSMOW	VSMOW	Bq/L	Bq/L	Bq/L	Bq/L
RDL									
GAR-18-013 ZONE 3	2018-08-11		-128.339816	-14.795100	-7.926941	-	-	-	-
	2018-10-26		-	-	-	0.04	0.01	0.17	0.02
	2019-03-06		-	-	-	0.04	0.01	0.14	0.02
	2019-03-21		-129.263976	-15.252126	-8.100711	-	-	-	-
	2019-05-30		-	-	-	0.04	0.01	0.21	0.02
	2019-09-18		-	-	-	0.04	0.01	0.16	0.02
	2019-09-21		-129.048980	-14.849593	-8.442647	-	-	-	-
	2019-11-21		-	-	-	0.04	0.01	0.38	0.02
	2019-11-26		-133.001214	-16.147992	-8.726645	-	-	-	-
	2020-03-01		-	-	-	0.04	0.02	0.27	0.02
	2020-03-12		-133.195069	-15.859632	-9.062618	-	-	-	-
GAR-18-013 ZONE 4	2018-08-11		-138.311135	-17.019603	-9.078209	-	-	-	-
	2018-10-27		-	-	-	0.7	0.08	0.46	0.02
	2019-03-06		-	-	-	0.04	0.01	0.59	0.02
	2019-03-21		-139.075145	-16.700211	-9.429693	-	-	-	-
	2019-05-28		-	-	-	0.04	0.01	0.35	0.02
	2019-09-19		-	-	-	0.04	0.01	0.11	0.02
	2019-09-20		-139.879678	-16.970893	-9.537690	-	-	-	-
	2019-11-22		-	-	-	0.04	0.01	0.33	0.02
	2019-11-26		-141.384433	-17.246197	-9.738463	-	-	-	-
	2020-03-02		-	-	-	0.04	0.01	0.38	0.02
	2020-03-12		-140.273543	-17.381314	-8.572333	-	-	-	-

Table 7: Westbay Wells Chemistry Analyses – Isotopes and Radionuclides

Location	Sample Date (yyyy-mm-dd)	Parameters	Delta 2H	Delta 18O	Delta 17O	Lead-210, dissolved	Polonium-210, dissolved	Radium-226, dissolved	Thorium-230, dissolved
Unit			VSMOW	VSMOW	VSMOW	Bq/L	Bq/L	Bq/L	Bq/L
RDL									
GAR-18-013 ZONE 5	2019-05-31		-	-	-	0.04	0.01	0.14	0.02
	2019-09-18		-	-	-	0.04	0.01	0.11	0.02
	2019-09-20		-127.967373	-15.031312	-8.463120	-	-	-	-
	2019-09-20		-127.100915	-14.898496	-8.421916	-	-	-	-
	2019-11-26		-127.140321	-15.706948	-9.576952	-	-	-	-
	2020-01-20		-	-	-	0.04	0.01	0.11	0.02
	2020-02-29		-	-	-	0.04	0.01	0.13	0.02
	2020-03-12		-129.343662	-15.505174	-8.284795	-	-	-	-
GAR-18-013 ZONE 6	2018-08-11		-126.977401	-15.107000	-8.147201	-	-	-	-
	2018-10-28		-	-	-	0.04	0.01	0.01	0.02
	2019-03-07		-	-	-	0.04	0.01	0.04	0.02
	2019-03-21		-126.454534	-14.551216	-8.316119	-	-	-	-
	2019-05-29		-	-	-	0.04	0.02	0.09	0.02
	2019-09-19		-	-	-	0.04	0.02	0.05	0.02
	2019-09-20		-126.925310	-14.686155	-8.356252	-	-	-	-
	2019-11-23		-	-	-	0.04	0.01	0.06	0.02
	2019-11-26		-129.177387	-15.062984	-8.867620	-	-	-	-
	2019-11-26		-129.822332	-14.938375	-9.079168	-	-	-	-
	2020-03-03		-	-	-	0.04	0.01	0.03	0.02
	2020-03-12		-128.474669	-14.679956	-8.236514	-	-	-	-

Table 7: Westbay Wells Chemistry Analyses – Isotopes and Radionuclides

Location	Sample Date (yyyy-mm-dd)	Parameters	Delta 2H	Delta 18O	Delta 17O	Lead-210, dissolved	Polonium-210, dissolved	Radium-226, dissolved	Thorium-230, dissolved
Unit			VSMOW	VSMOW	VSMOW	Bq/L	Bq/L	Bq/L	Bq/L
RDL									
GAR-18-013 ZONE 7	2018-08-11		-129.065040	-15.327477	-8.258793	-	-	-	-
	2019-03-08		-	-	-	0.04	0.01	0.12	0.02
	2019-03-21		-128.512231	-14.948653	-8.461900	-	-	-	-
	2019-05-30		-	-	-	0.04	0.01	0.10	0.02
	2019-09-16		-	-	-	0.04	0.01	0.11	0.02
	2019-09-20		-129.271664	-15.073428	-8.586723	-	-	-	-
	2019-10-29		-	-	-	0.04	0.01	0.02	0.02
	2019-11-22		-	-	-	0.04	0.01	0.10	0.02
	2019-11-26		-130.442265	-14.693831	-9.079168	-	-	-	-
	2020-03-04		-	-	-	0.2	0.02	0.08	0.02
	2020-03-12		-129.310627	-14.905753	-8.501289	-	-	-	-
	2020-03-12		-129.171324	-14.867796	-8.513514	-	-	-	-
GAR-18-013 ZONE 8	2018-10-30		-	-	-	0.09	0.01	0.12	0.02
	2018-11-08		-131.353631	-15.672634	-8.389290	-	-	-	-
	2019-03-08		-	-	-	0.04	0.01	0.13	0.02
	2019-03-21		-131.406381	-15.370952	-8.779931	-	-	-	-
	2019-04-09		-133.048364	-15.699677	-8.924622	-	-	-	-
	2019-05-30		-	-	-	0.04	0.01	0.20	0.02
	2019-08-30		-	-	-	0.04	0.01	0.22	0.02
	2019-11-20		-	-	-	0.04	0.01	0.15	0.02
	2019-11-26		-133.373461	-14.938700	-9.371583	-	-	-	-
	2020-02-29		-	-	-	0.1	0.01	0.16	0.02
	2020-03-12		-131.166989	-15.210384	-8.814876	-	-	-	-

Table 7: Westbay Wells Chemistry Analyses – Isotopes and Radionuclides

Location	Sample Date (yyyy-mm-dd)	Parameters	Delta 2H	Delta 18O	Delta 17O	Lead-210, dissolved	Polonium-210, dissolved	Radium-226, dissolved	Thorium-230, dissolved
Unit			VSMOW	VSMOW	VSMOW	Bq/L	Bq/L	Bq/L	Bq/L
RDL									
GAR-18-013 ZONE 9	2018-08-11		-134.093717	-15.988894	-8.581205	-	-	-	-
	2018-10-30		-	-	-	0.04	0.01	0.01	0.02
	2019-03-09		-	-	-	0.04	0.01	0.08	0.02
	2019-03-21		-133.841008	-15.783160	-8.870958	-	-	-	-
	2019-04-09		-134.807736	-15.900237	-9.110195	-	-	-	-
	2019-04-09		-134.240231	-16.095561	-8.917500	-	-	-	-
	2019-05-29		-	-	-	0.04	0.01	0.06	0.02
	2019-09-01		-	-	-	0.04	0.01	0.02	0.02
	2019-11-24		-	-	-	0.04	0.01	0.04	0.02
	2019-11-26		-135.593327	-16.052823	-9.721183	-	-	-	-
	2020-03-04		-	-	-	0.04	0.01	0.04	0.02
	2020-03-12		-133.677222	-15.650520	-8.953321	-	-	-	-
GAR-18-013 ZONE 10	2018-08-11		-127.070711	-14.672055	-7.657419	-	-	-	-
	2018-10-18		-	-	-	0.04	0.01	0.01	0.02
	2019-03-09		-	-	-	0.04	0.01	0.01	0.02
	2019-03-21		-128.257886	-14.837920	-8.377504	-	-	-	-
	2019-05-30		-	-	-	0.04	0.01	0.05	0.02
	2019-09-19		-	-	-	0.04	0.01	0.03	0.02
	2019-09-20		-127.754259	-15.180923	-8.551080	-	-	-	-
	2019-11-17		-	-	-	0.04	0.01	0.04	0.02
	2019-11-26		-130.737206	-15.223087	-9.066929	-	-	-	-
	2020-03-03		-	-	-	0.04	0.01	0.01	0.02
	2020-03-12		-128.171714	-14.804043	-8.681374	-	-	-	-

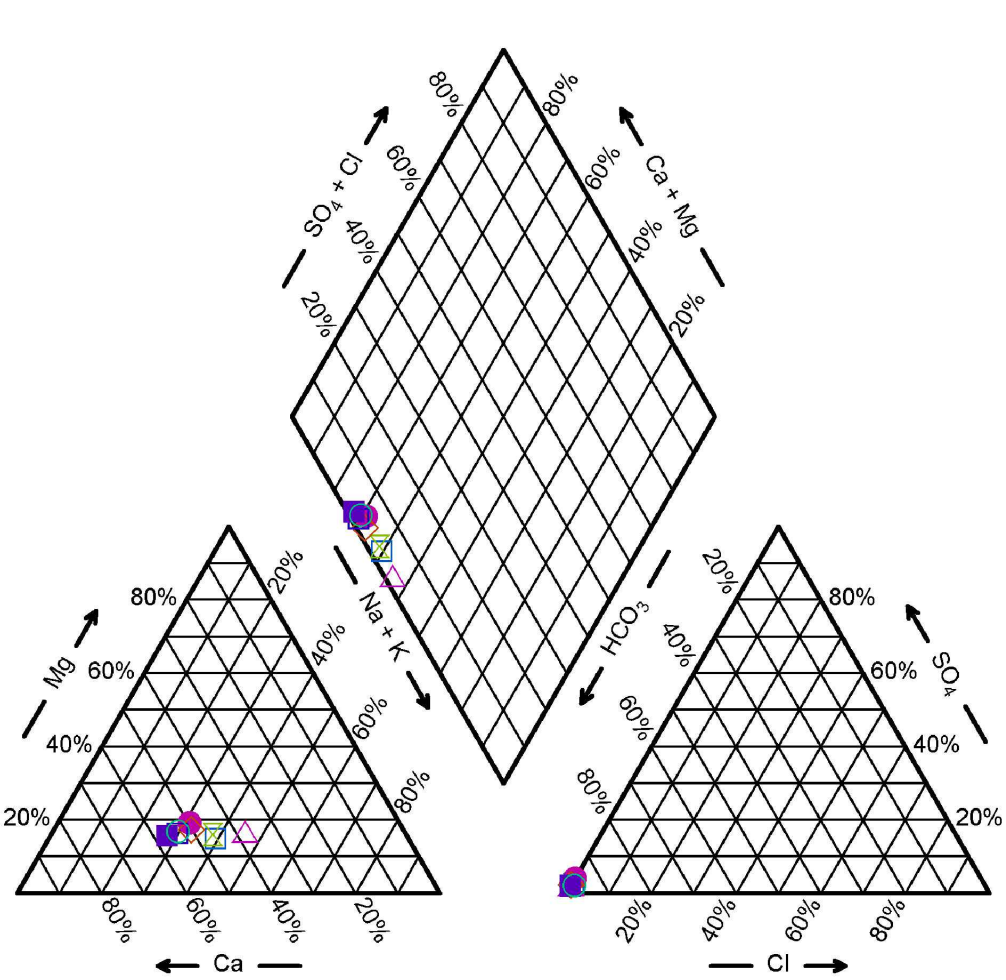
Table 7: Westbay Wells Chemistry Analyses – Isotopes and Radionuclides

Location	Sample Date (yyyy-mm-dd)	Parameters	Delta 2H	Delta 18O	Delta 17O	Lead-210, dissolved	Polonium-210, dissolved	Radium-226, dissolved	Thorium-230, dissolved
Unit			VSMOW	VSMOW	VSMOW	Bq/L	Bq/L	Bq/L	Bq/L
RDL									
GAR-18-013 ZONE 11	2018-08-11		-129.981718	-14.882363	-7.612494	-	-	-	-
	2018-11-02		-	-	-	0.04	0.01	0.04	0.02
	2019-03-01		-	-	-	0.04	0.01	0.01	0.02
	2019-03-21		-131.580273	-15.351478	-8.623510	-	-	-	-
	2019-05-31		-	-	-	0.04	0.01	0.03	0.02
	2019-09-17		-	-	-	0.04	0.01	0.01	0.02
	2019-09-20		-133.845701	-15.990299	-8.931664	-	-	-	-
	2019-11-24		-	-	-	0.04	0.01	0.02	0.02
	2019-11-26		-136.125632	-16.152619	-9.151885	-	-	-	-
	2020-03-01		-	-	-	0.1	0.01	0.01	0.02
	2020-03-12		-133.095292	-15.925482	-9.101735	-	-	-	-
GAR-19-035 ZONE 1	2020-03-09		-	-	-	0.04	0.01	0.71	0.02
GAR-19-035 ZONE 2	2020-03-11		-	-	-	0.04	0.01	0.70	0.02
GAR-19-035 ZONE 3	2020-03-10		-	-	-	0.04	0.01	0.42	0.02
GAR-19-035 ZONE 4	2020-03-08		-	-	-	0.04	0.01	0.72	0.02
GAR-19-035 ZONE 5	2020-03-11		-	-	-	0.04	0.01	0.44	0.02
GAR-19-035 ZONE 6	2020-03-12		-	-	-	0.1	0.01	0.26	0.02
GAR-19-035 ZONE 7	2020-03-12		-	-	-	0.04	0.01	0.17	0.02
GAR-19-035 ZONE 8	2020-03-08		-	-	-	0.04	0.01	.10	0.02
GAR-19-035 ZONE 9	2020-03-14		-	-	-	0.1	0.01	.11	0.02
GAR-19-035 ZONE 10	2020-03-09		-	-	-	0.04	0.01	0.08	0.02

Notes
< Indicates parameter was below laboratory equipment detection limit.
> Indicates parameter detected above equipment analytical range.
- Chemical not analyzed or criteria not defined.
mg/L - milligrams per litre.
meq/L - milliequivalents per litre.
% - percentage.
RDL - Reportable Detection Limit.
Duplicate and Field Blank data Hidden in rows 190 to 256.

APPENDIX J

Groundwater Chemistry Piper Plots



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION DH-BGC17-01 PIPER PLOT

CONSULTANT

wsp

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CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-1

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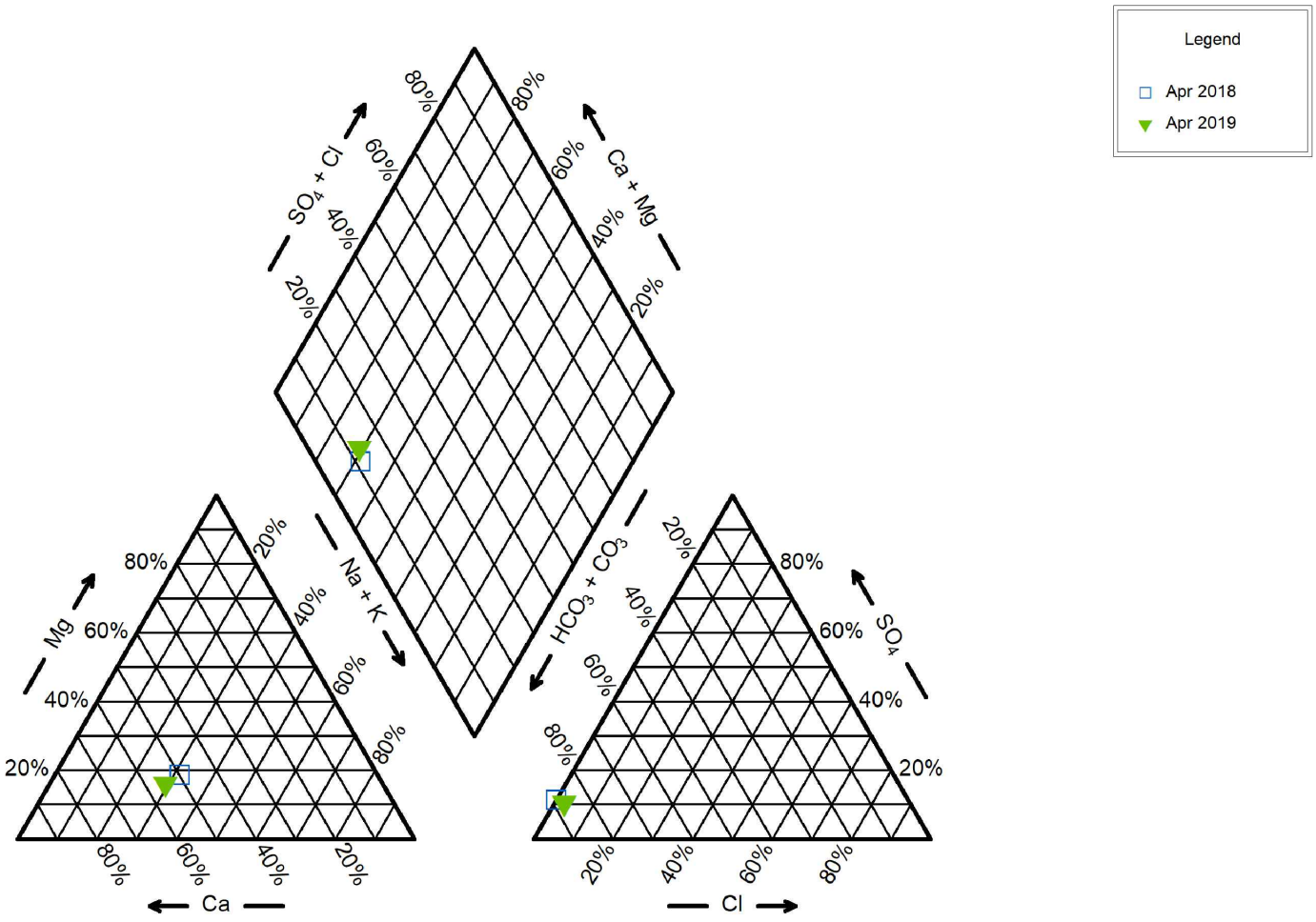

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION DH-BGC17-02 PIPER PLOT

CONSULTANT

wsp

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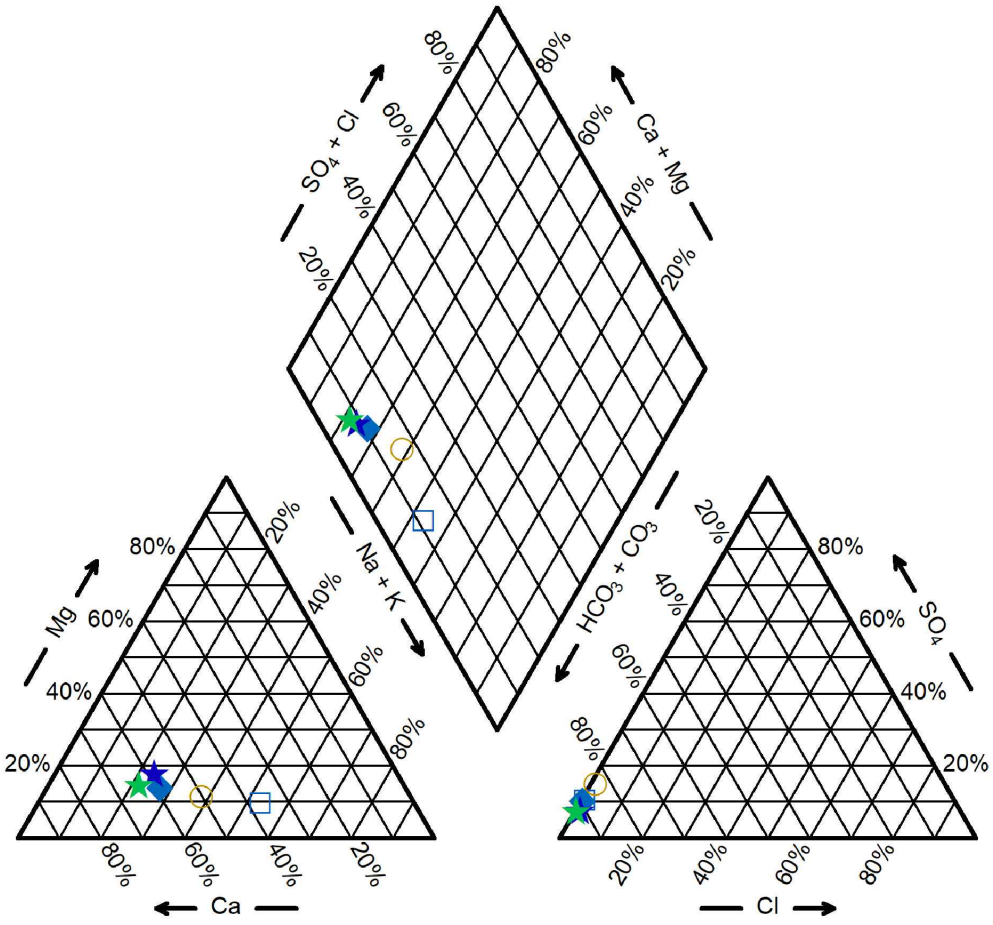
REVIEW	MT	21-03-22			

FIGURE J-2

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION DH-BGC17-03 PIPER PLOT

CONSULTANT

wsp

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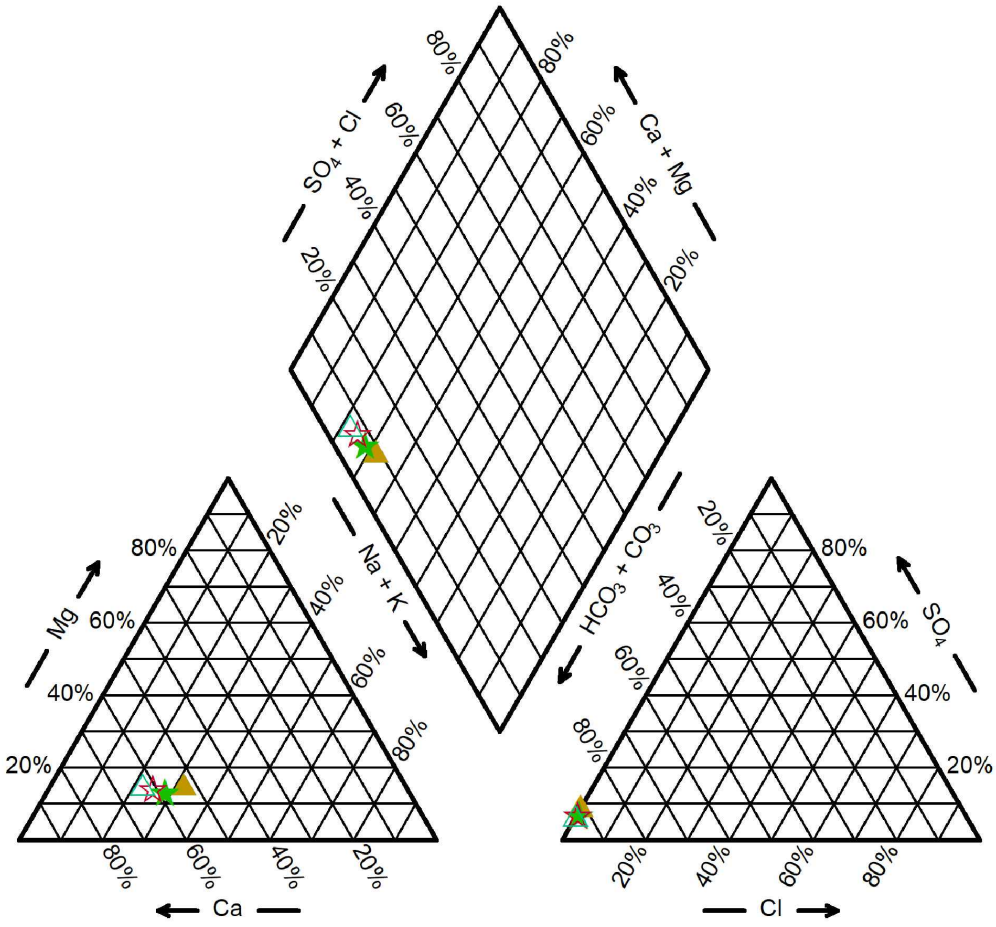
REVIEW	MT	21-03-22			

FIGURE J-3

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION DH-BGC17-04 PIPER PLOT

CONSULTANT

wsp

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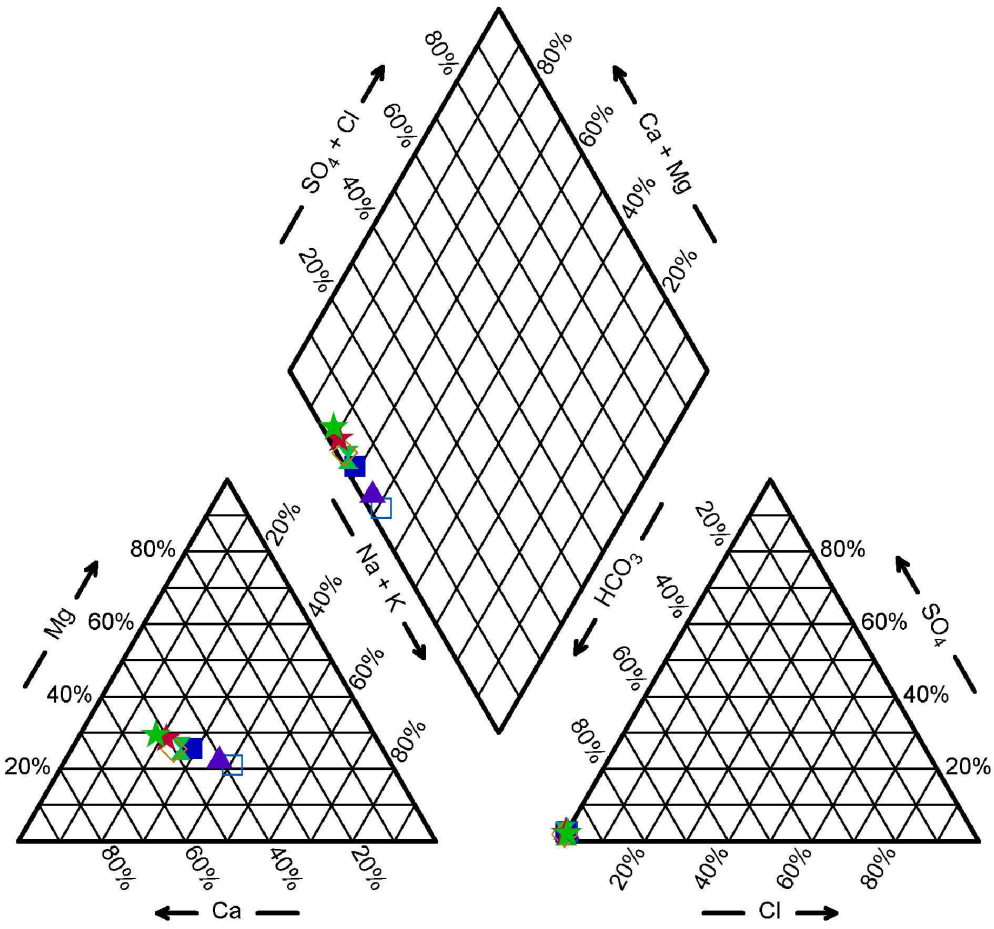
REVIEW	MT	21-03-22			

FIGURE J-4

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION DH-BGC17-05 PIPER PLOT

CONSULTANT

wsp

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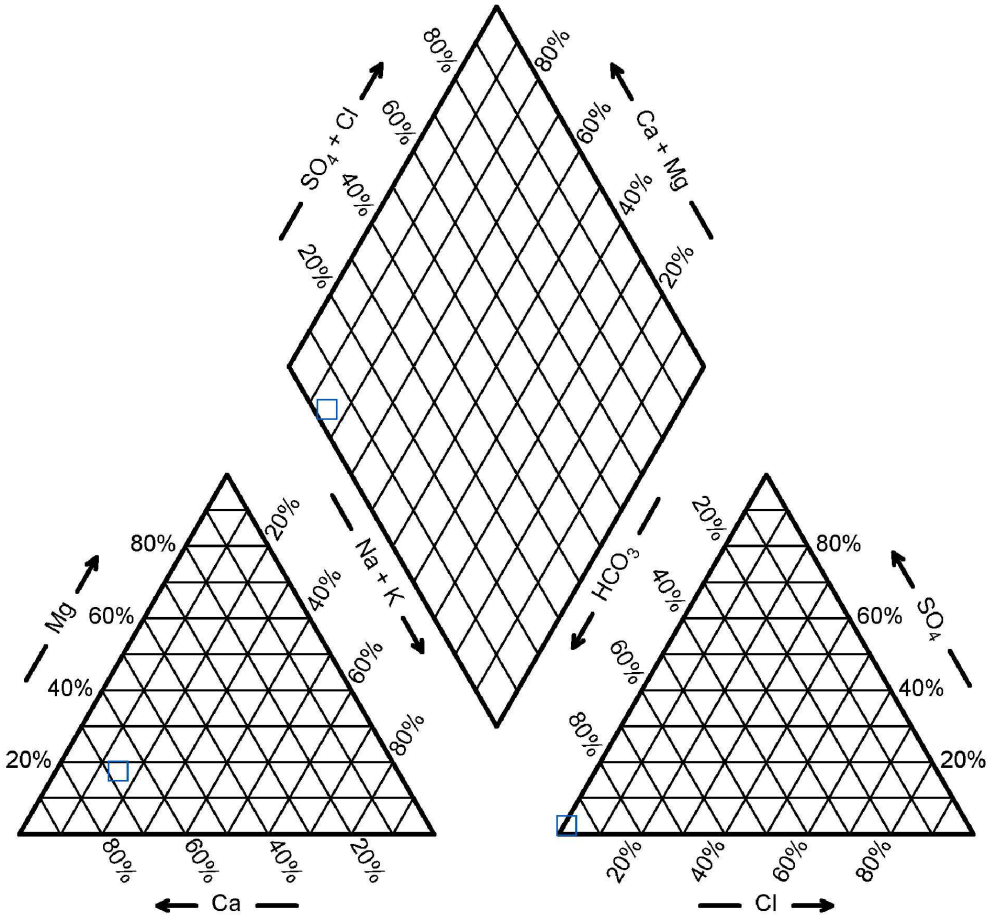
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-5

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-001B PIPER PLOT

CONSULTANT

wsp

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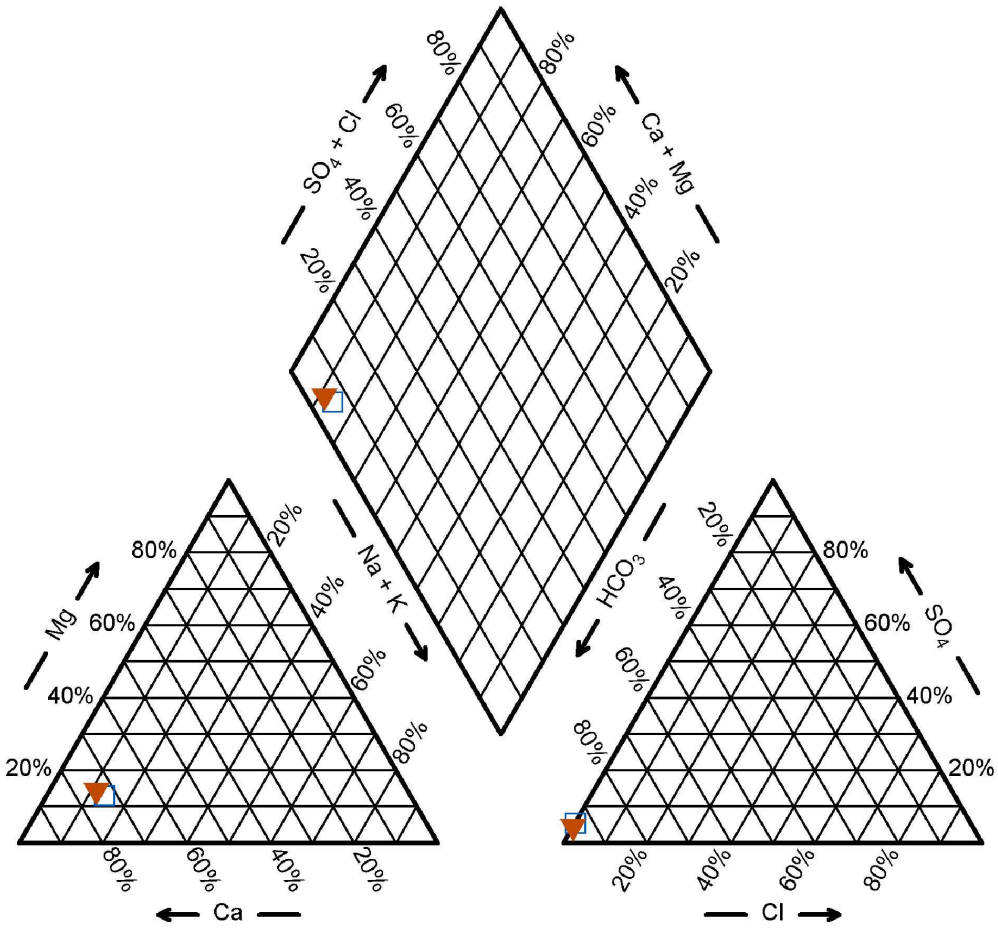
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-6

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-002B PIPER PLOT

CONSULTANT

wsp

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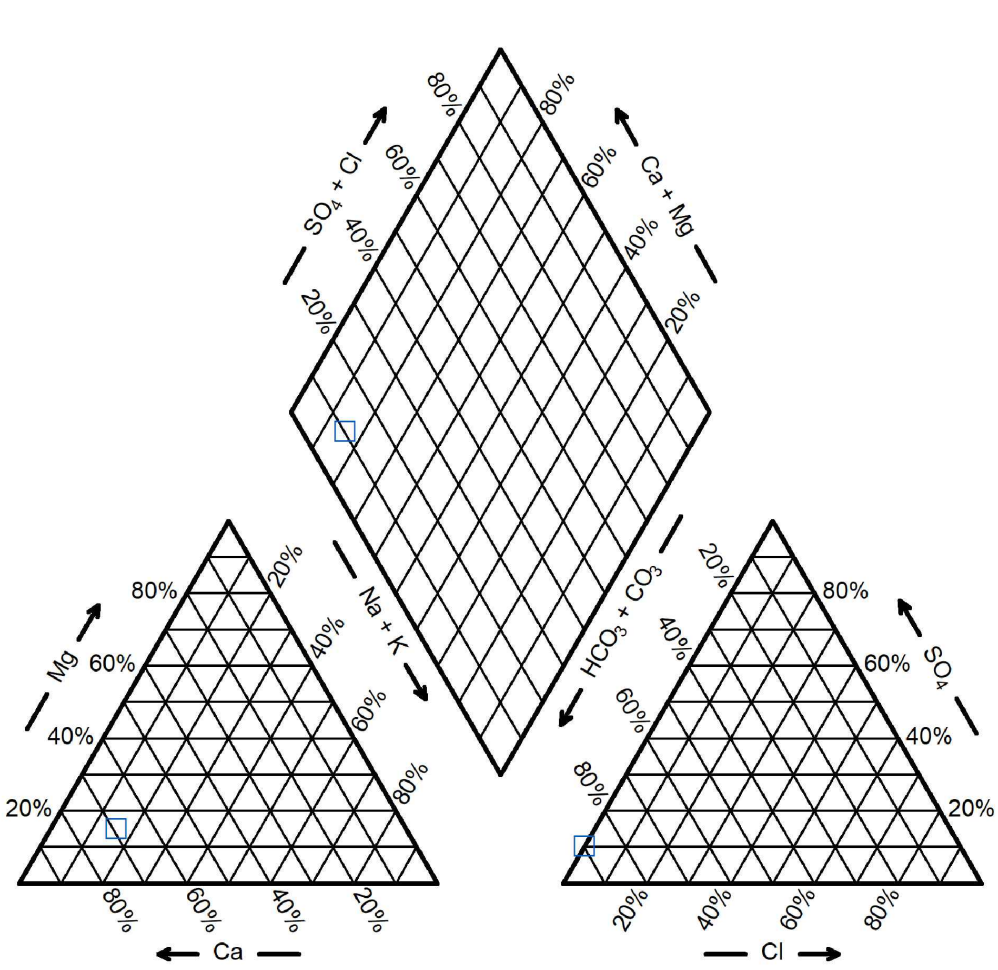
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-7

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-004A PIPER PLOT

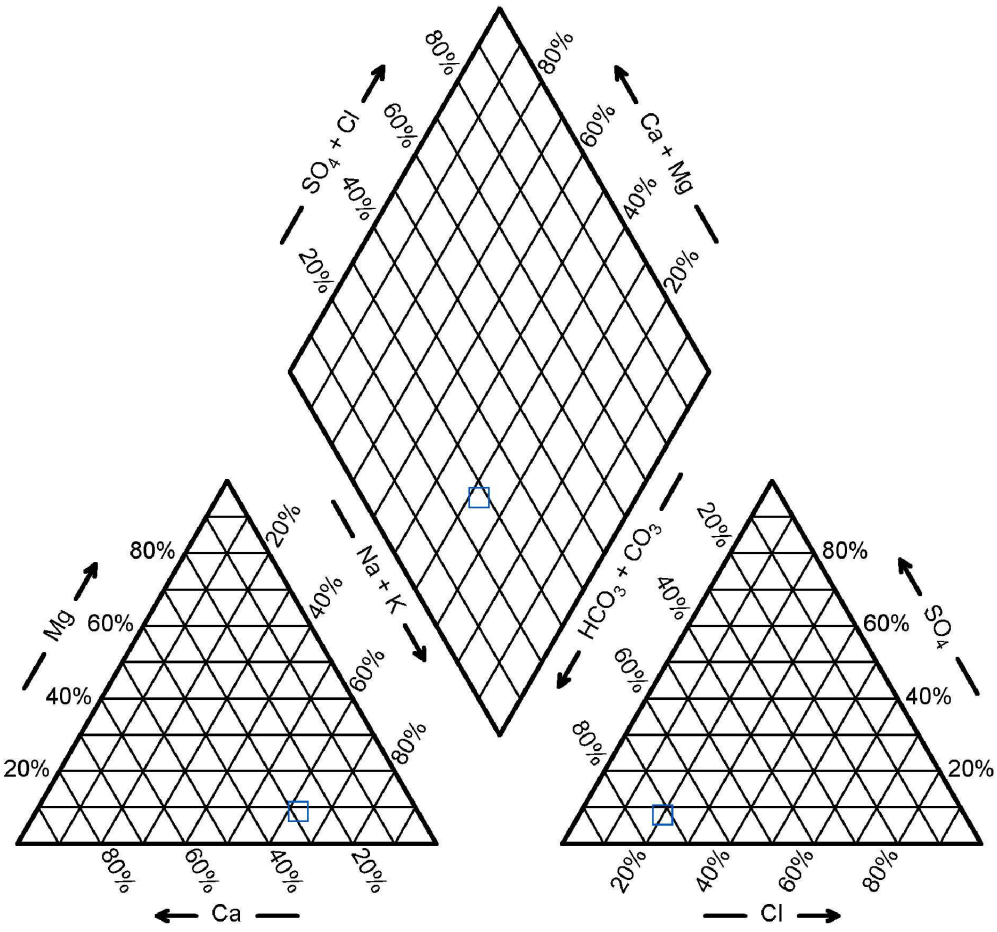
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-8

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-004B PIPER PLOT

CONSULTANT

wsp

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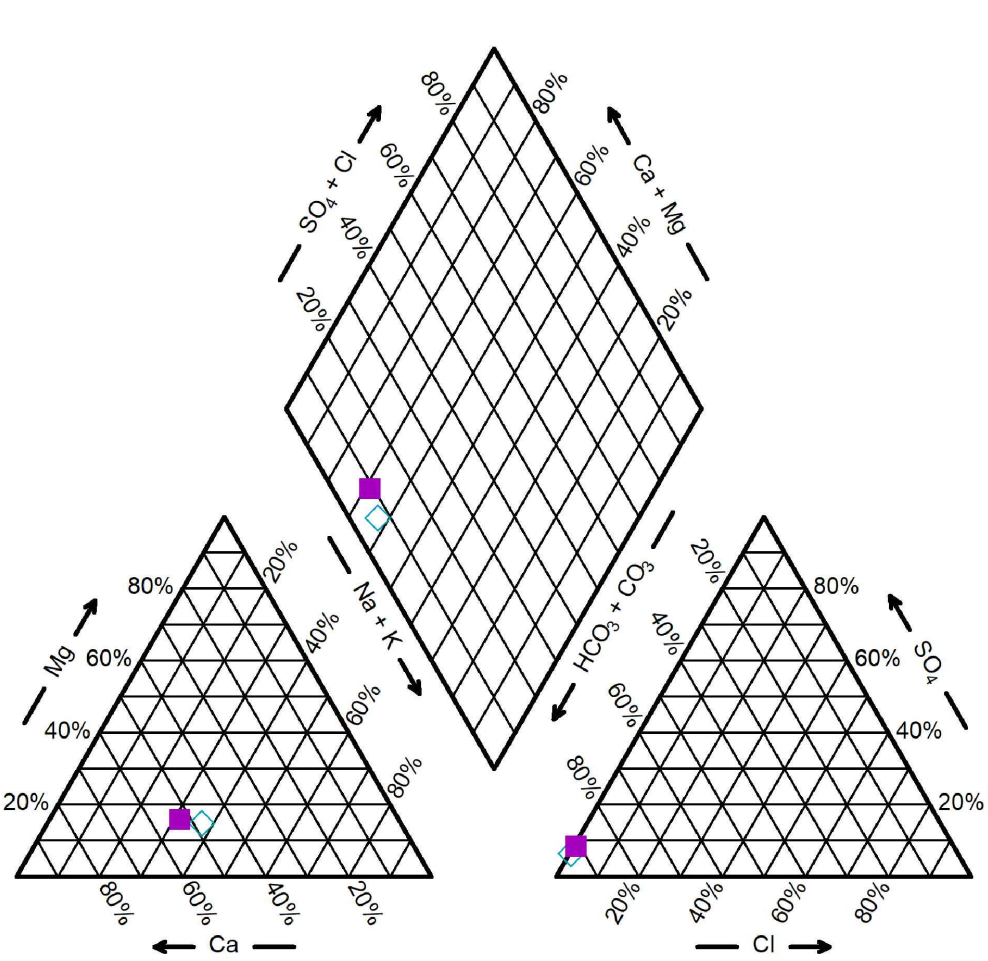
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-9

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-006A PIPER PLOT

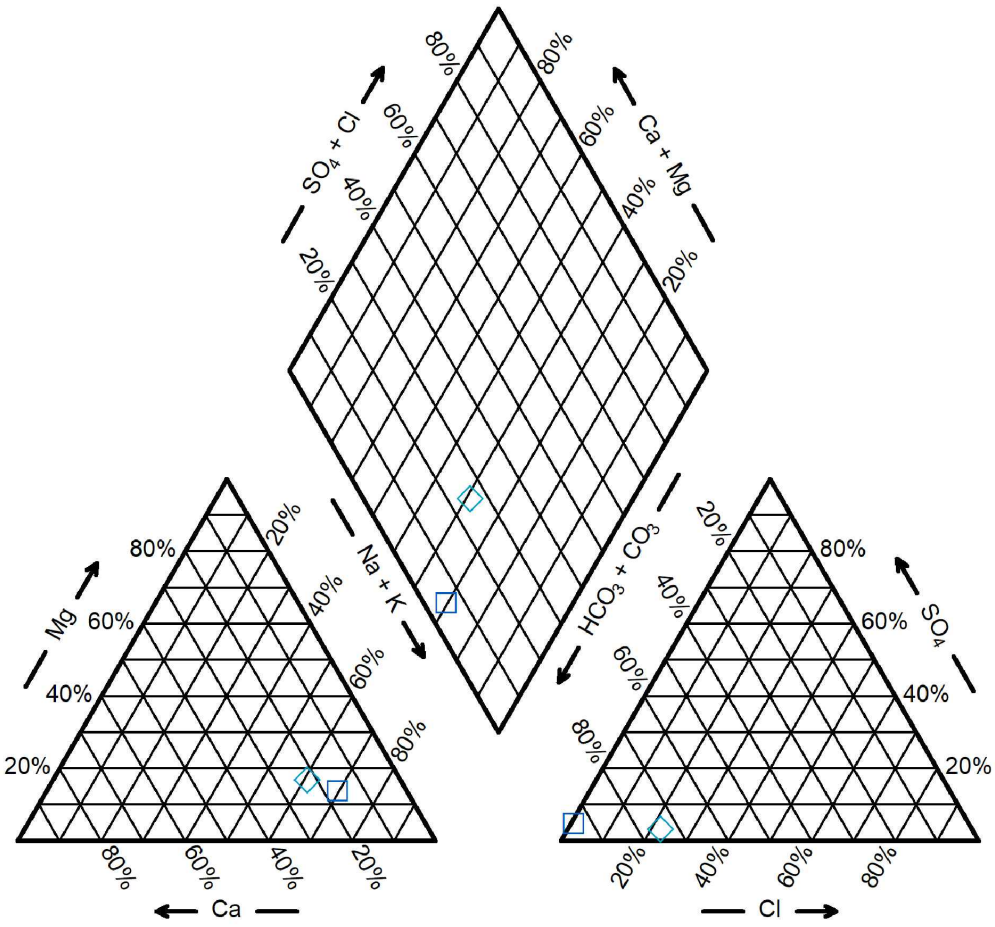
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-10

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-006B PIPER PLOT

CONSULTANT

wsp

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CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-11

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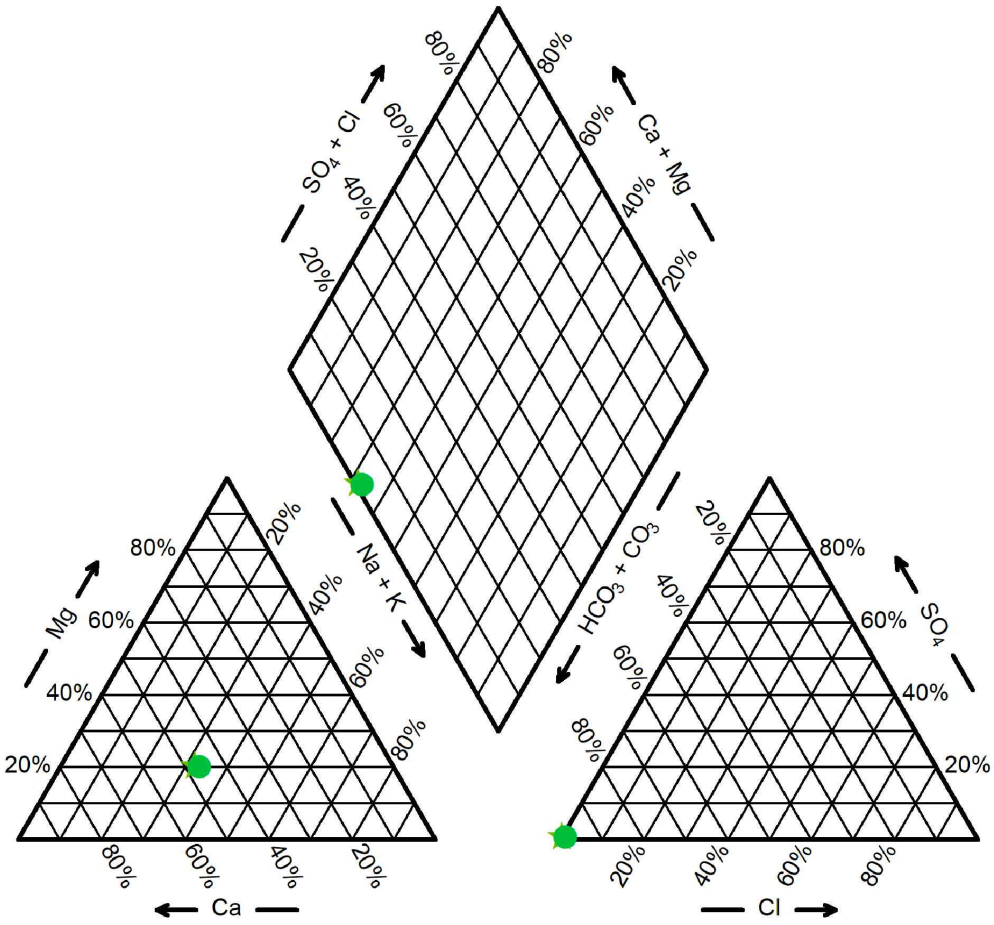


PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-007A PIPER PLOT

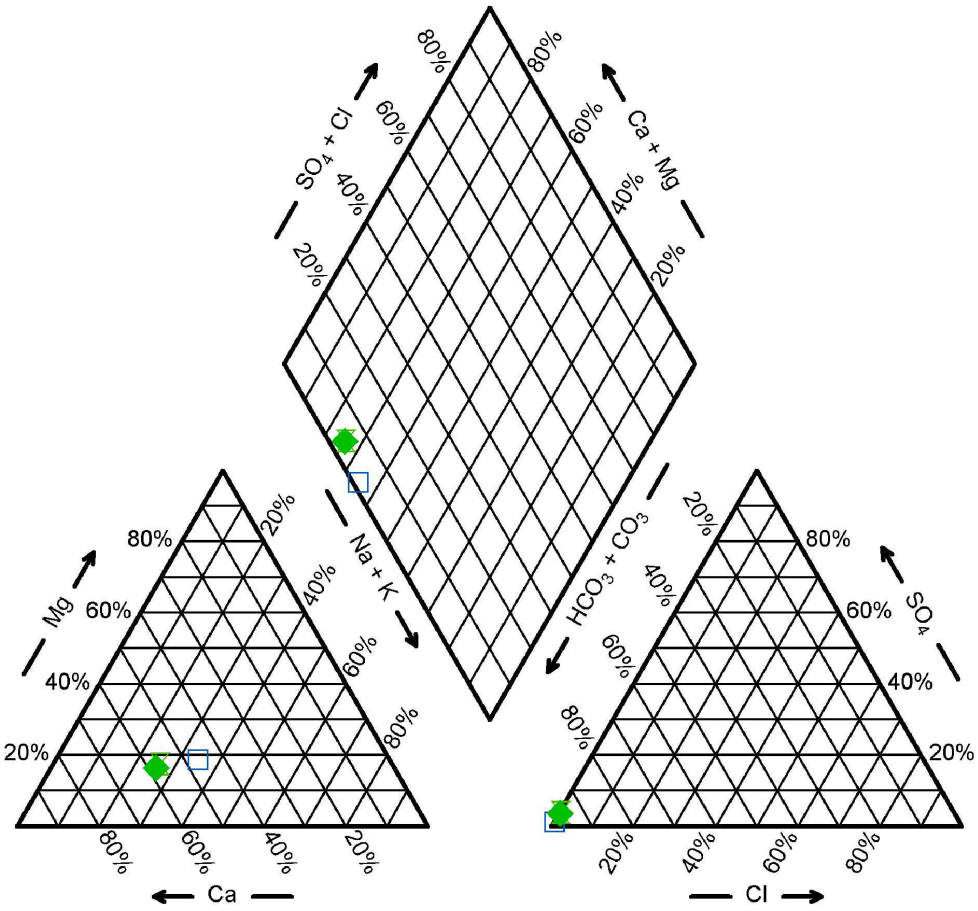
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-12

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-007B PIPER PLOT

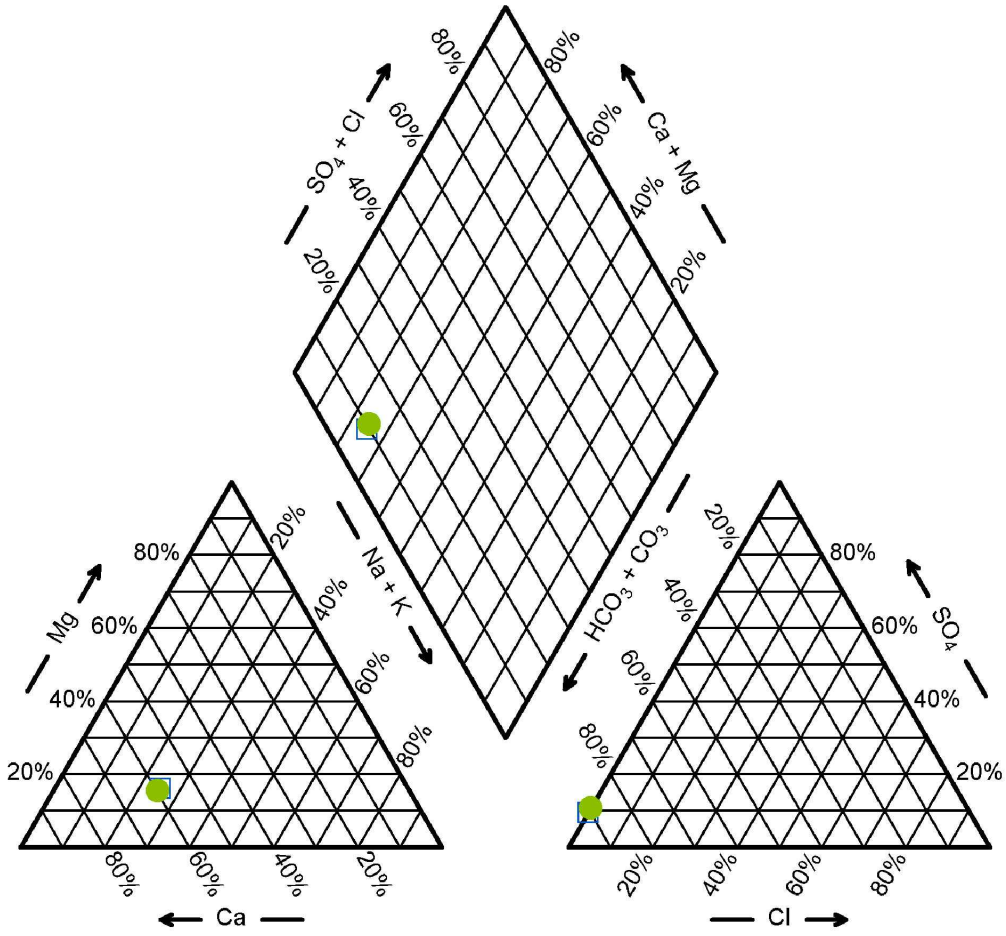
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-13

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-008A PIPER PLOT

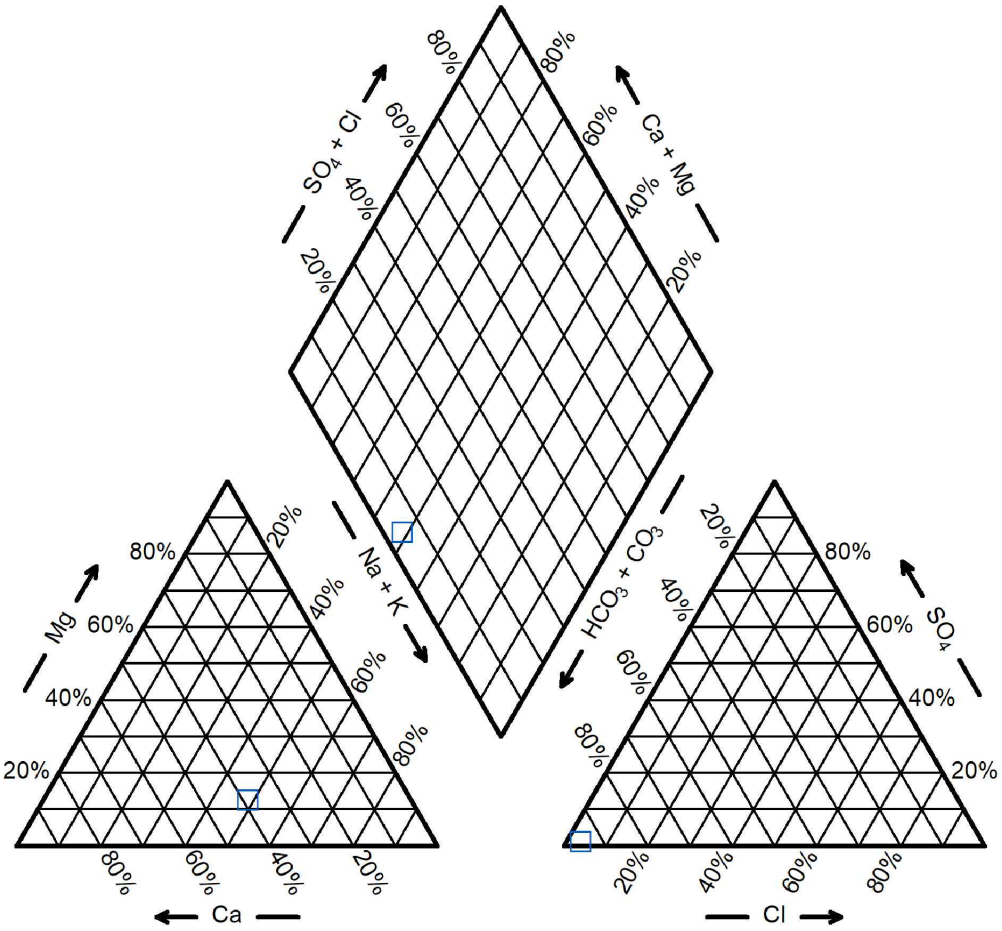
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-14

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-008B PIPER PLOT

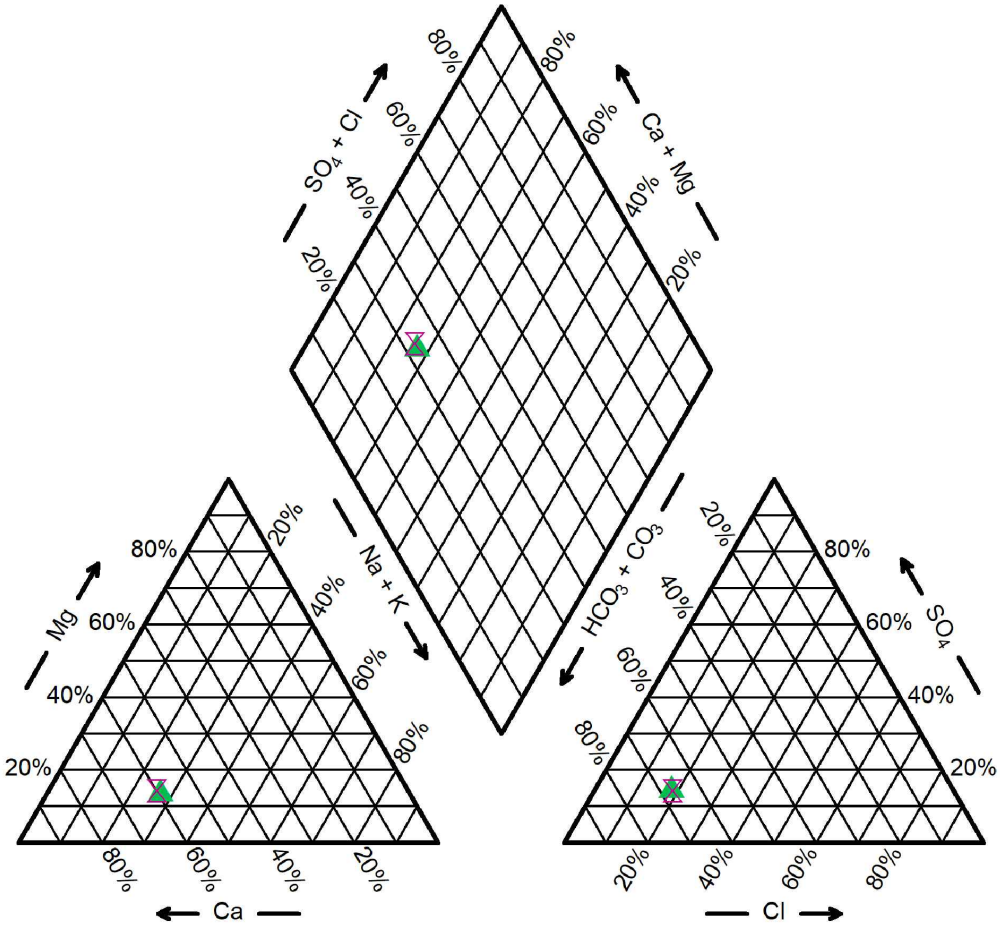
CONSULTANT

wsp

PROJECT		20144150	PHASE	3104
DESIGN	CH	14-06-21	SCALE NTS	REV. 0
CADD	JMC	14-06-21		
CHECK	CH	21-03-22		
REVIEW	MT	21-03-22		

FIGURE J-15

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-009A PIPER PLOT

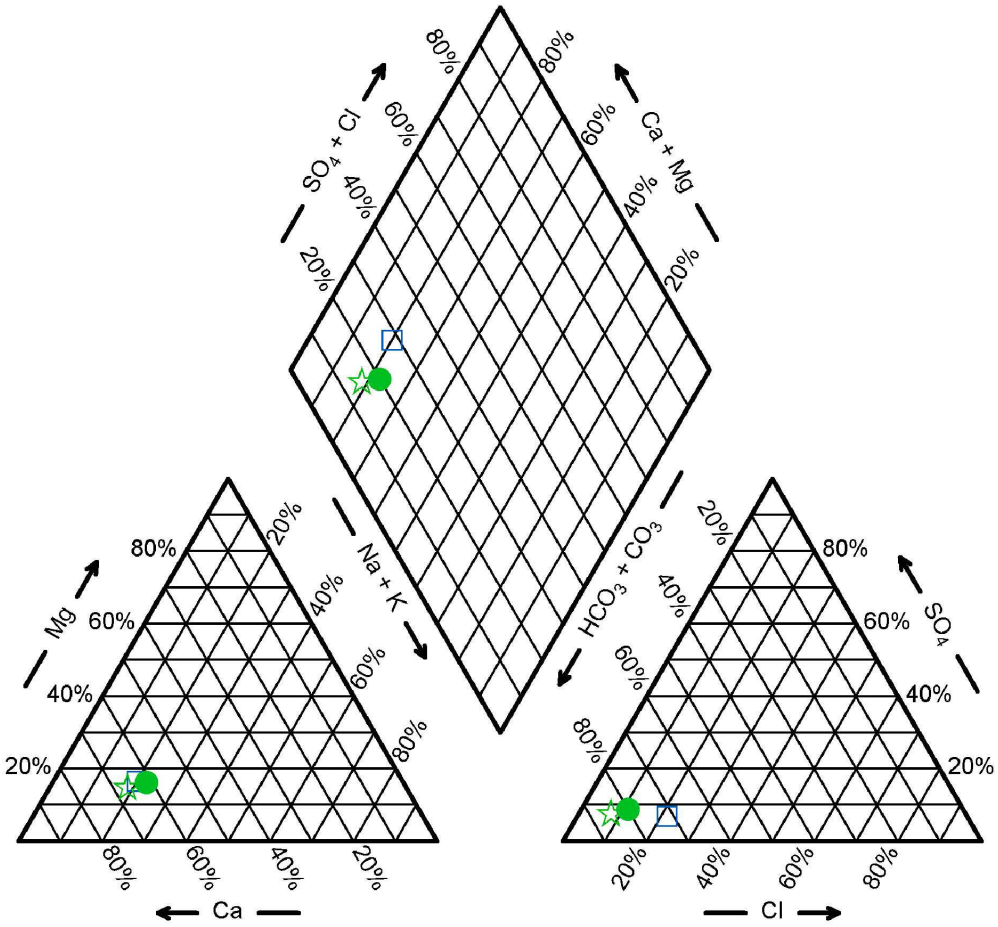
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-16

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-009B PIPER PLOT

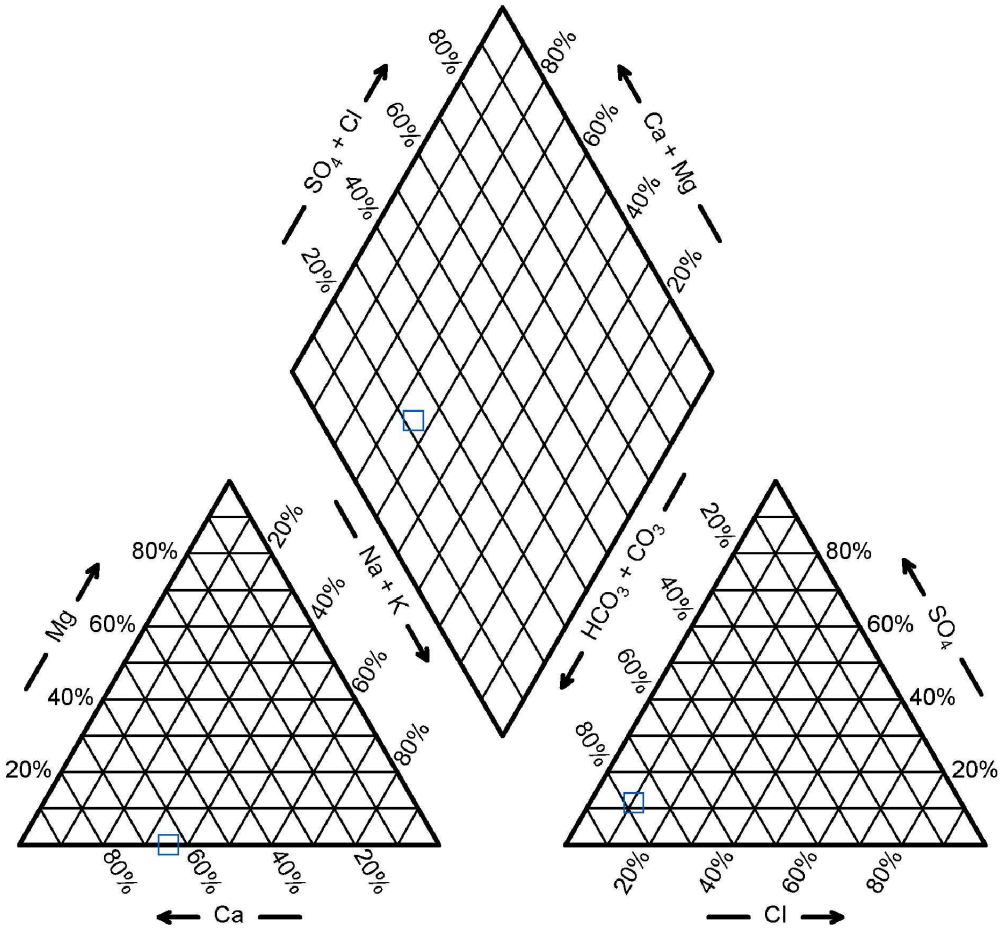
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-17

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-012A PIPER PLOT

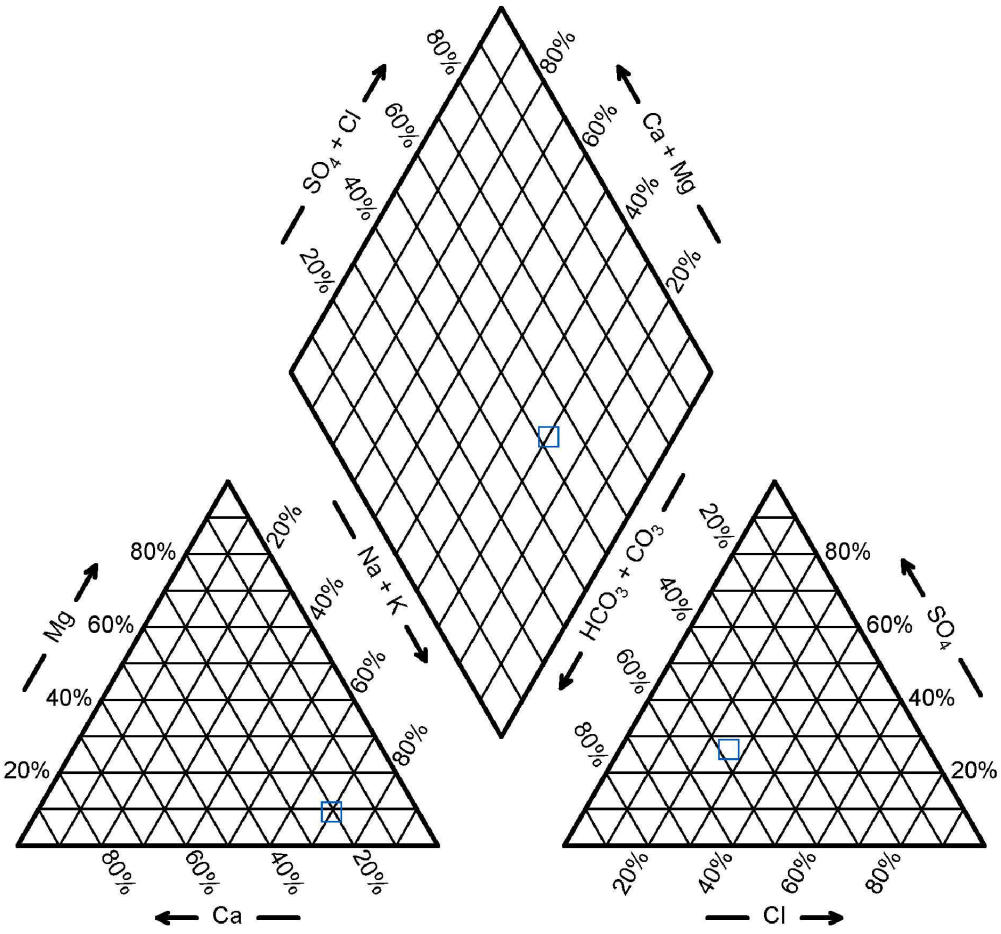
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-18

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-012B PIPER PLOT

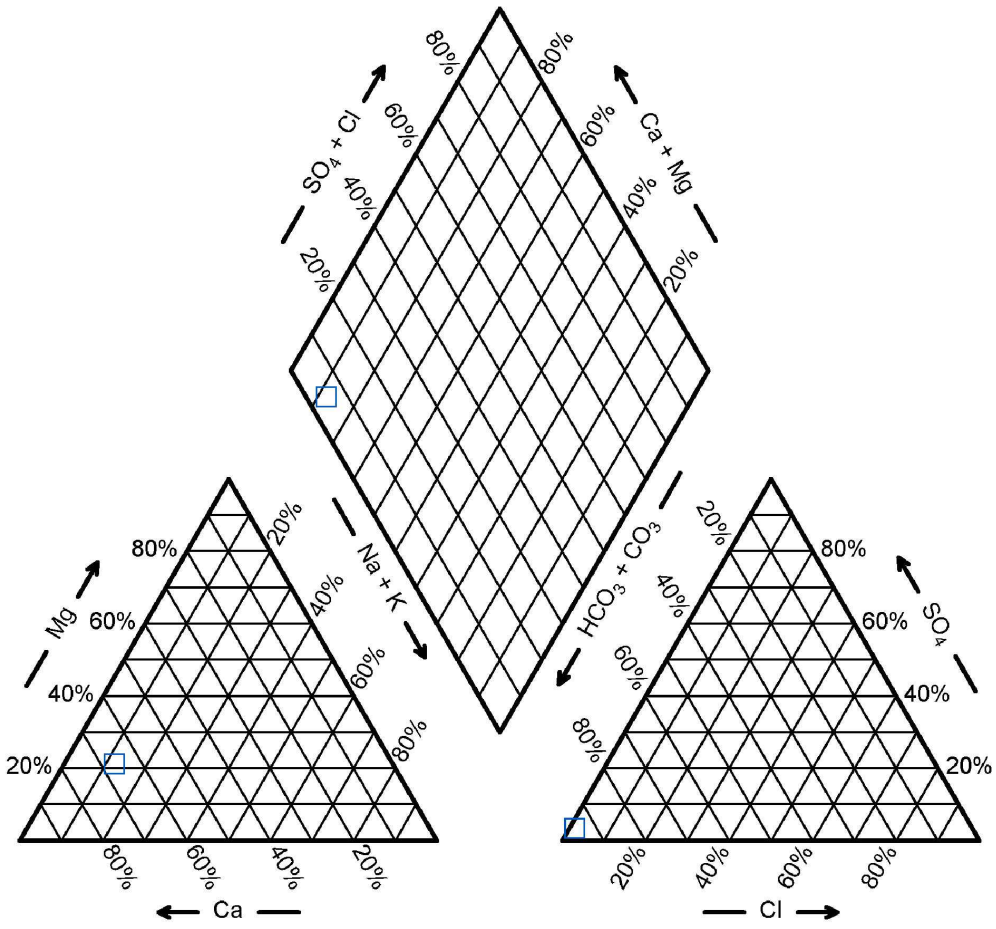
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-19

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-013 PIPER PLOT

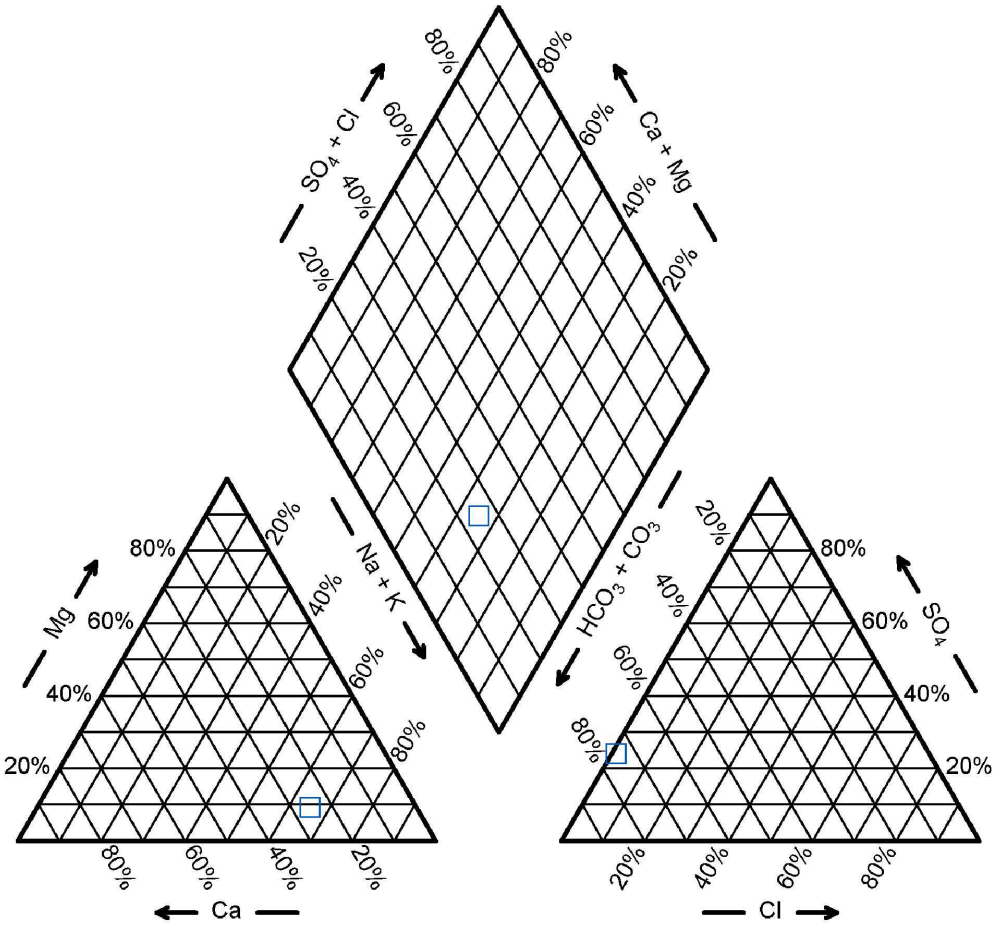
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-20

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

MONITORING WELL LOCATION 2018-MW-016A PIPER PLOT

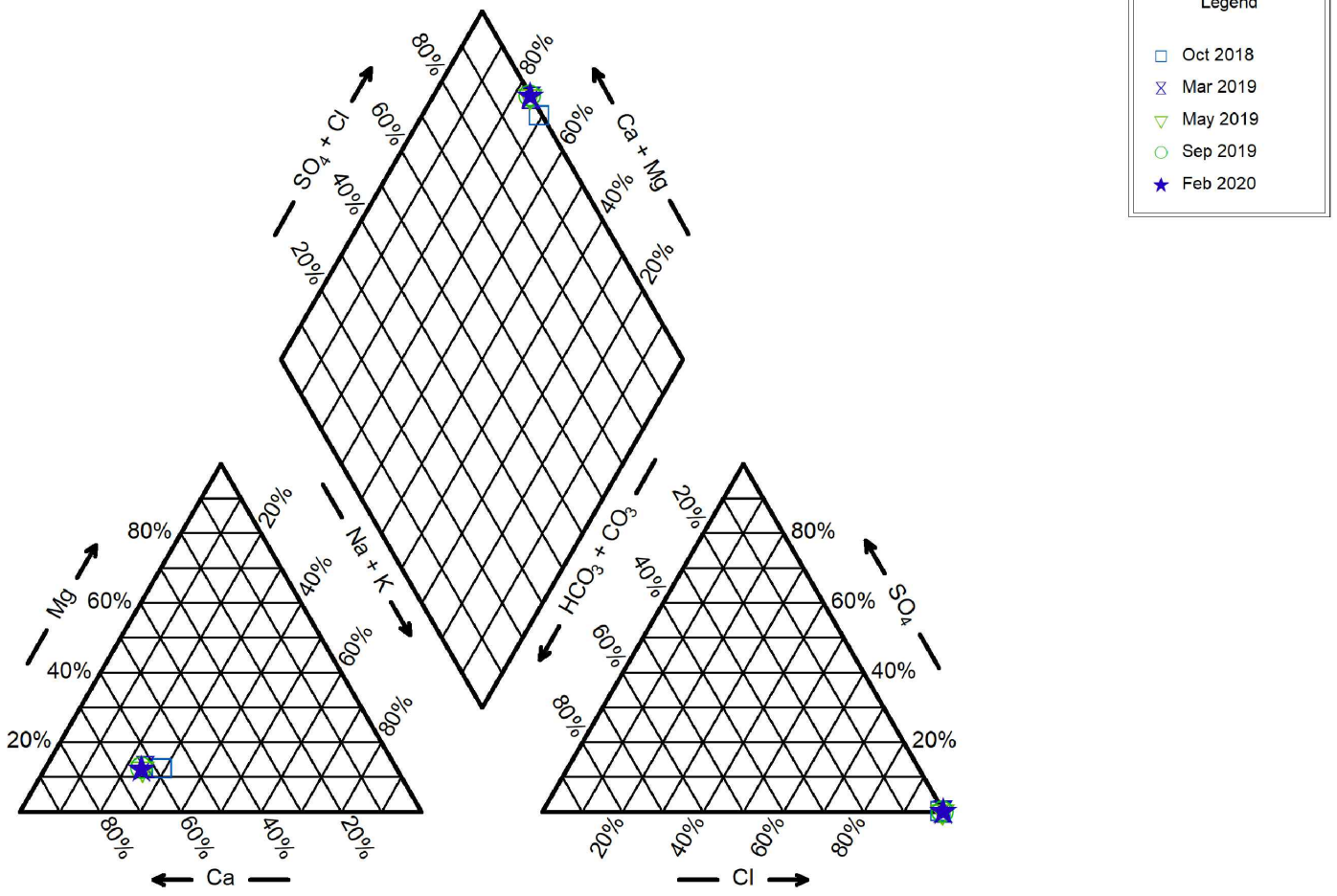
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-21

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 1 PIPER PLOT

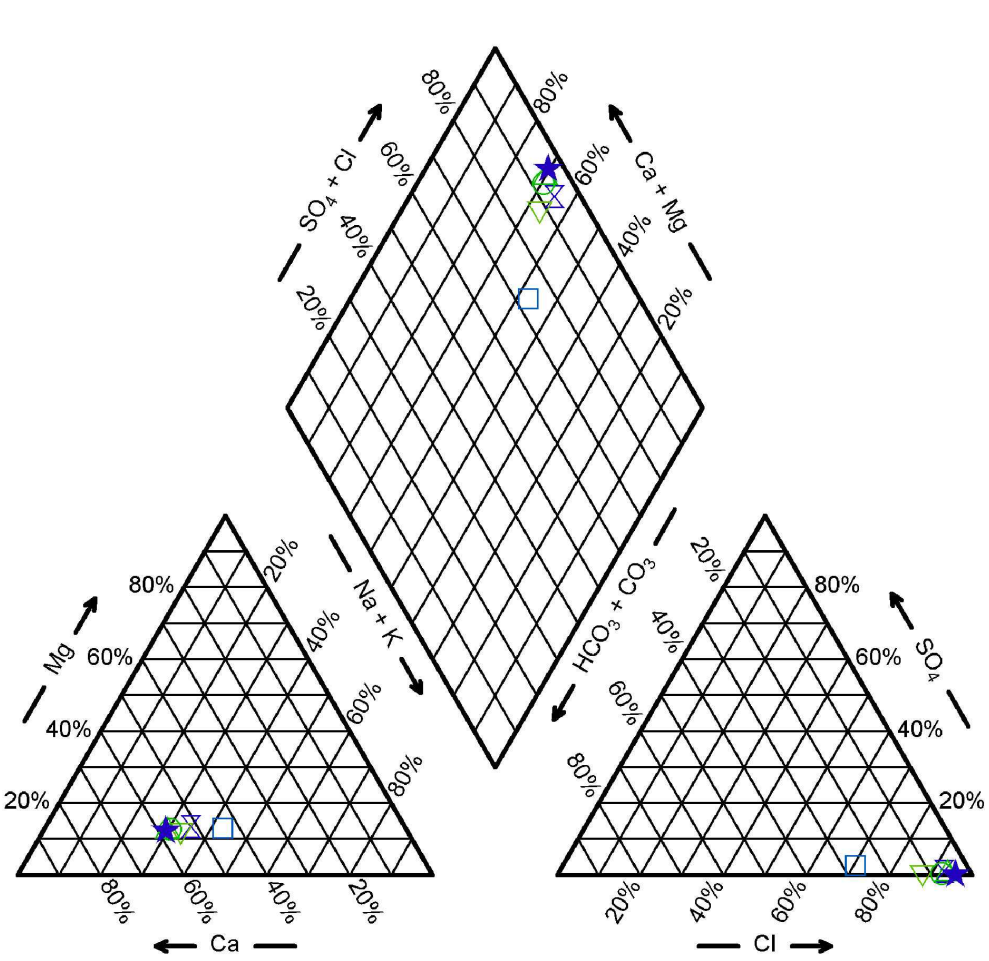
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-22

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 2 PIPER PLOT

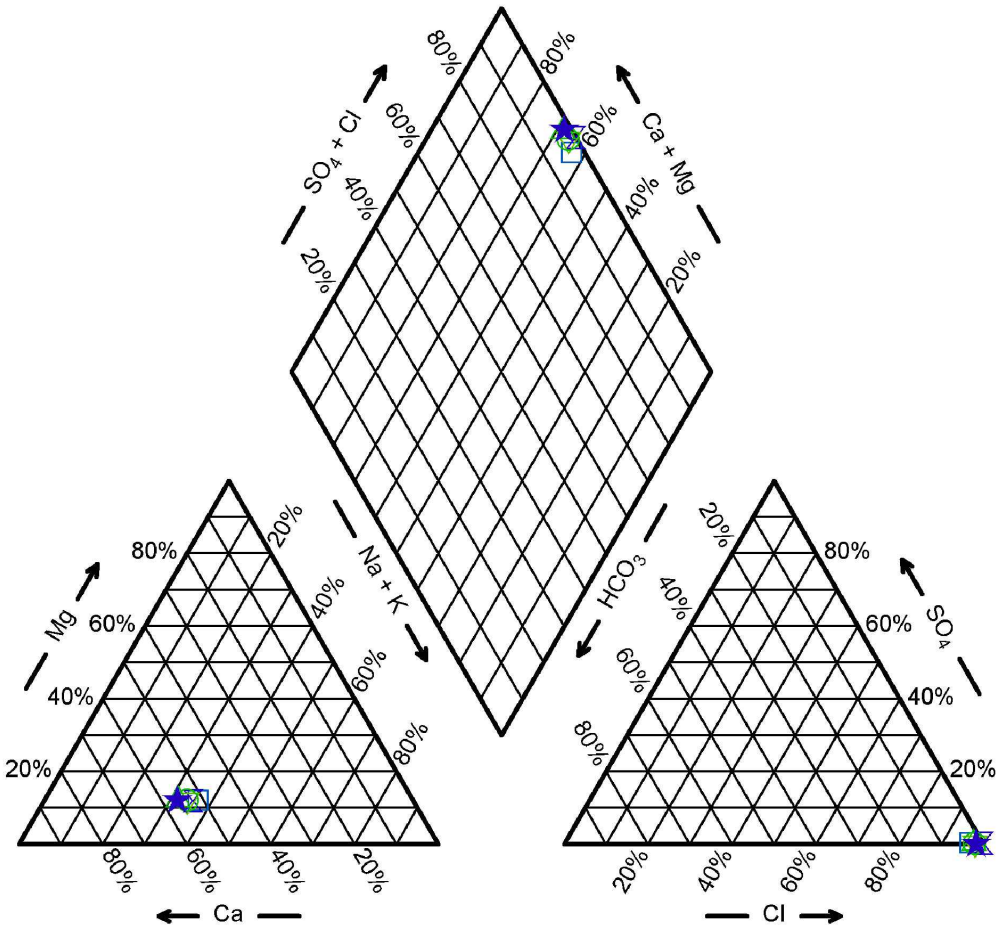
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-23

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM

PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

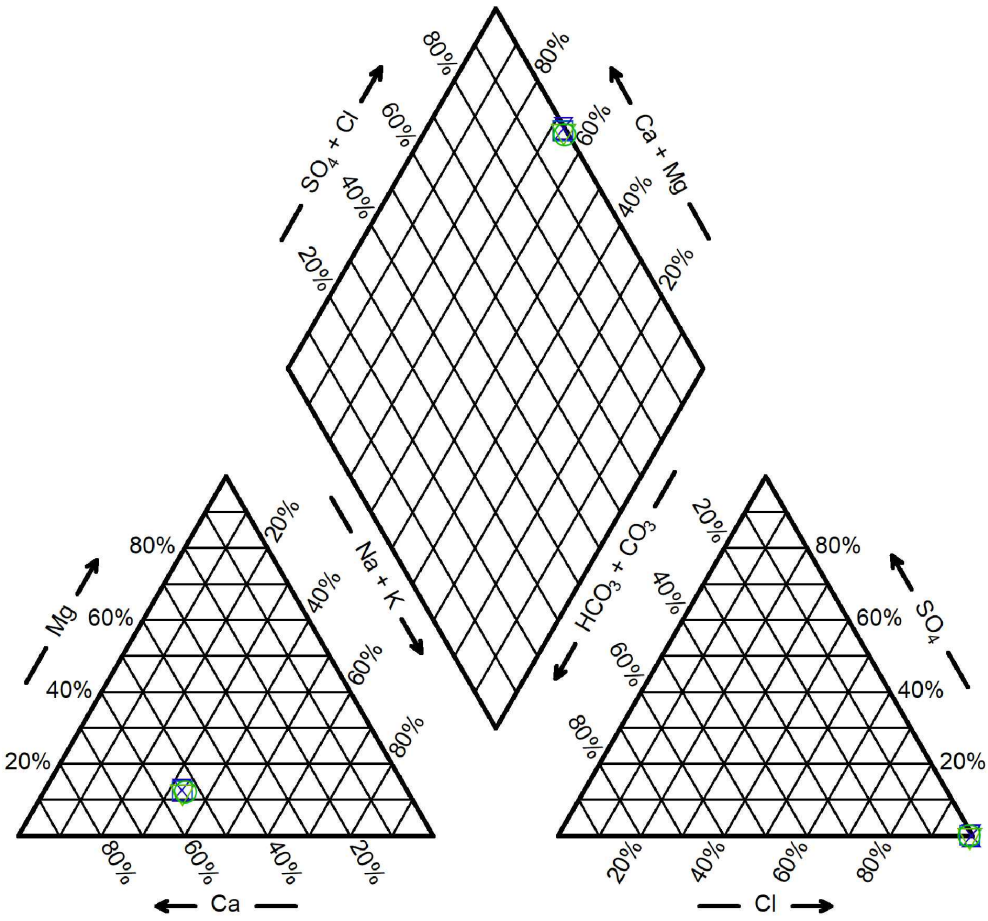
WESTBAY WELL GAR-18-013
ZONE 3 PIPER PLOT

CONSULTANT

wsp

PROJECT		20144150	PHASE	3104
DESIGN	CH	14-06-21	SCALE NTS	REV. 0
CADD	JMC	14-06-21		
CHECK	CH	21-03-22		
REVIEW	MT	21-03-22		

FIGURE J-24



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 4 PIPER PLOT

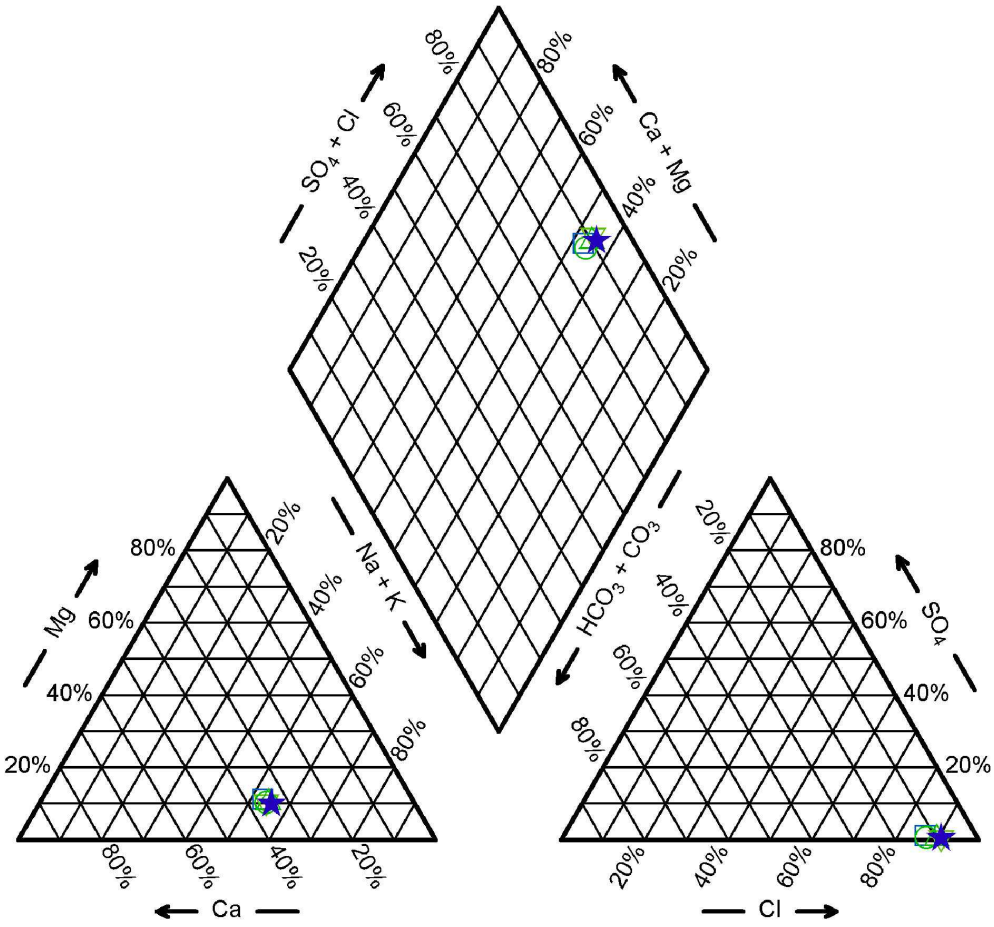
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-25

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 5 PIPER PLOT

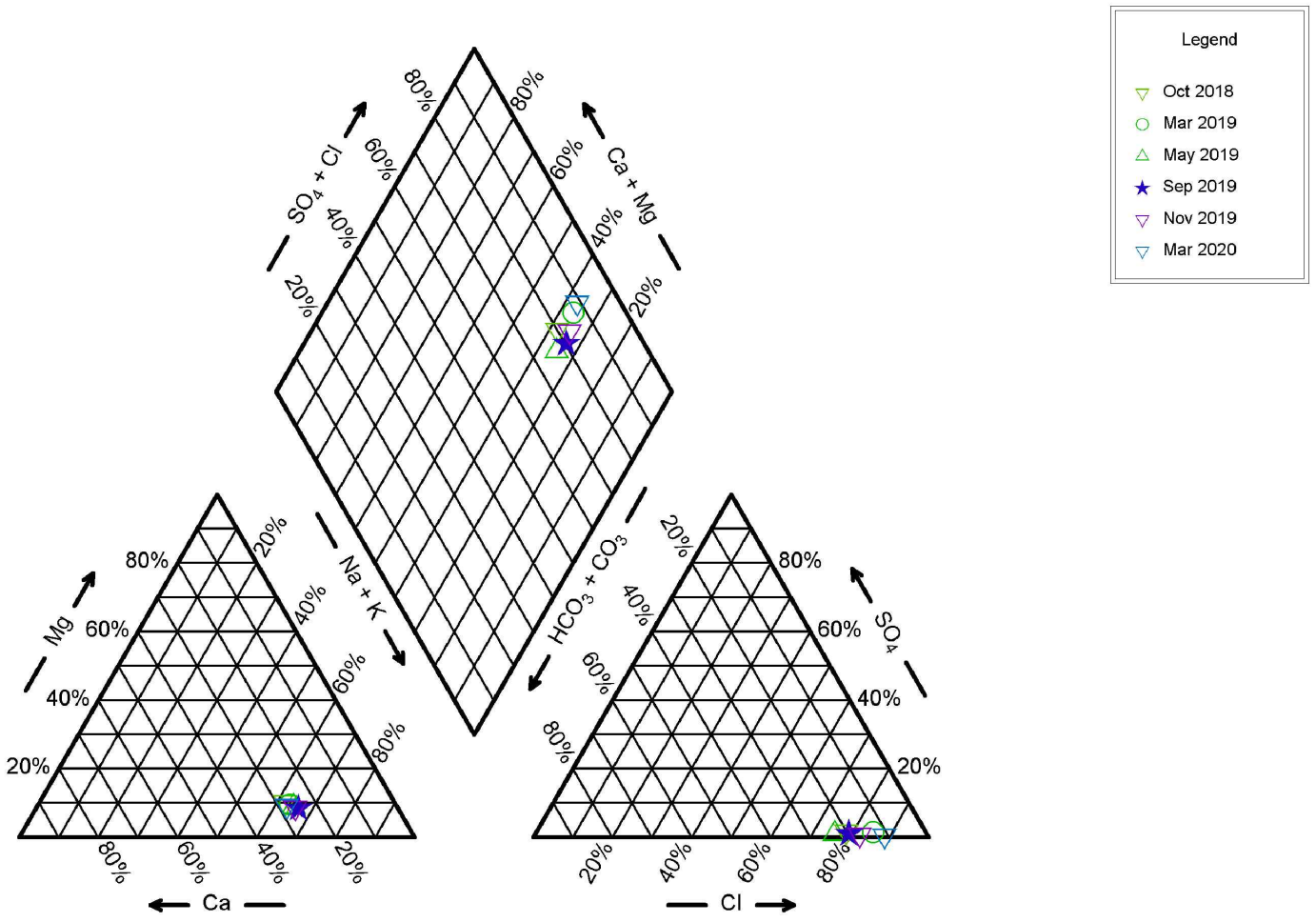
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-26

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 6 PIPER PLOT

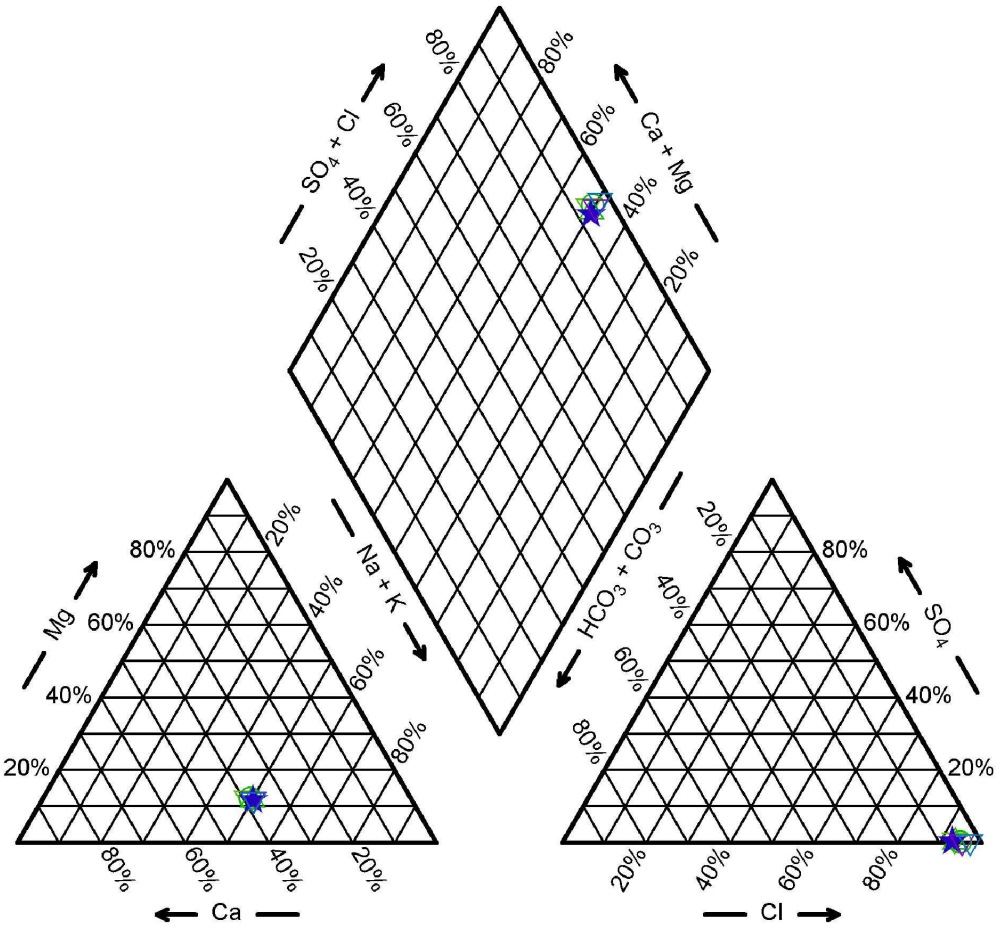
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-27

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 7 PIPER PLOT

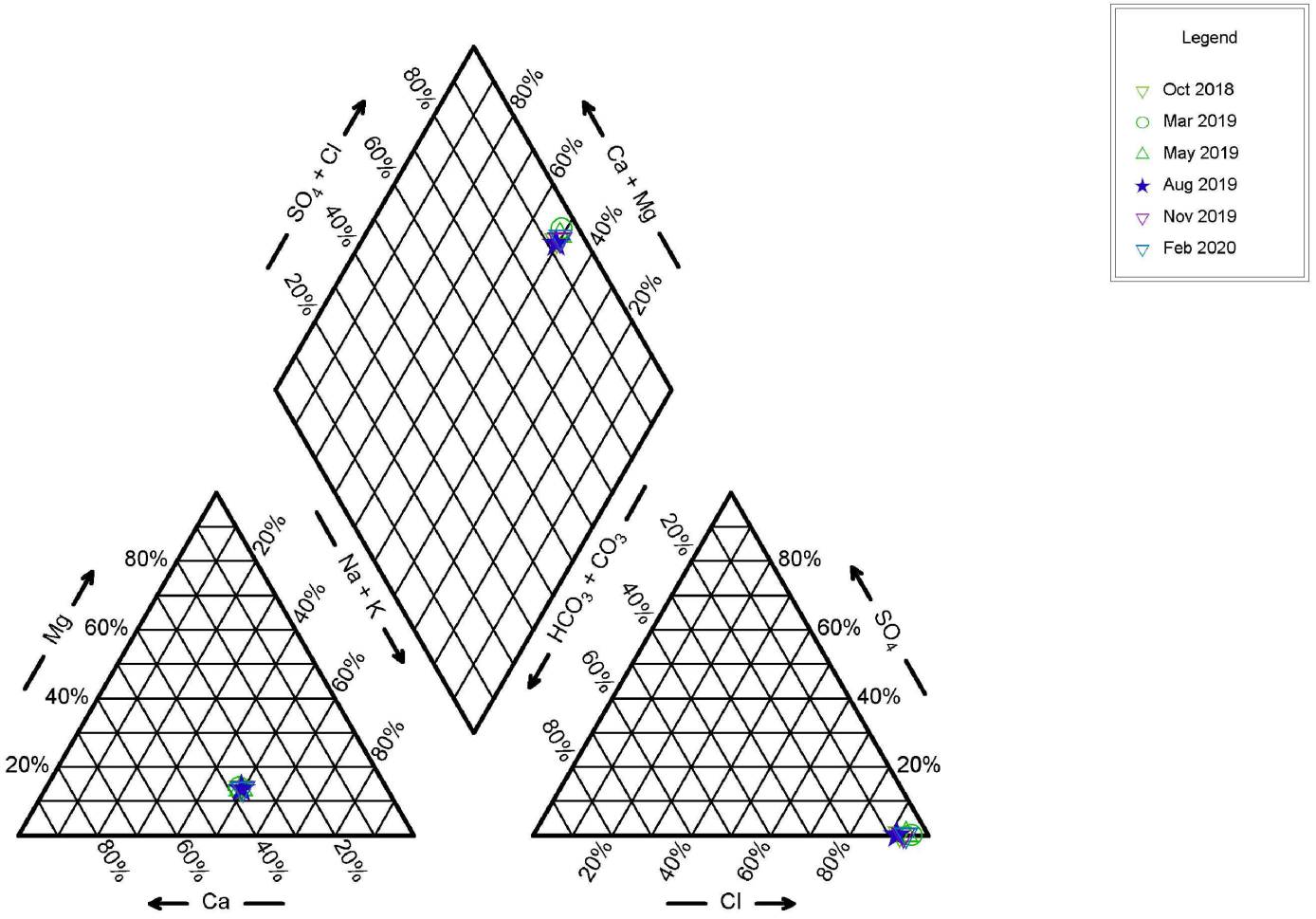
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-28

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 8 PIPER PLOT

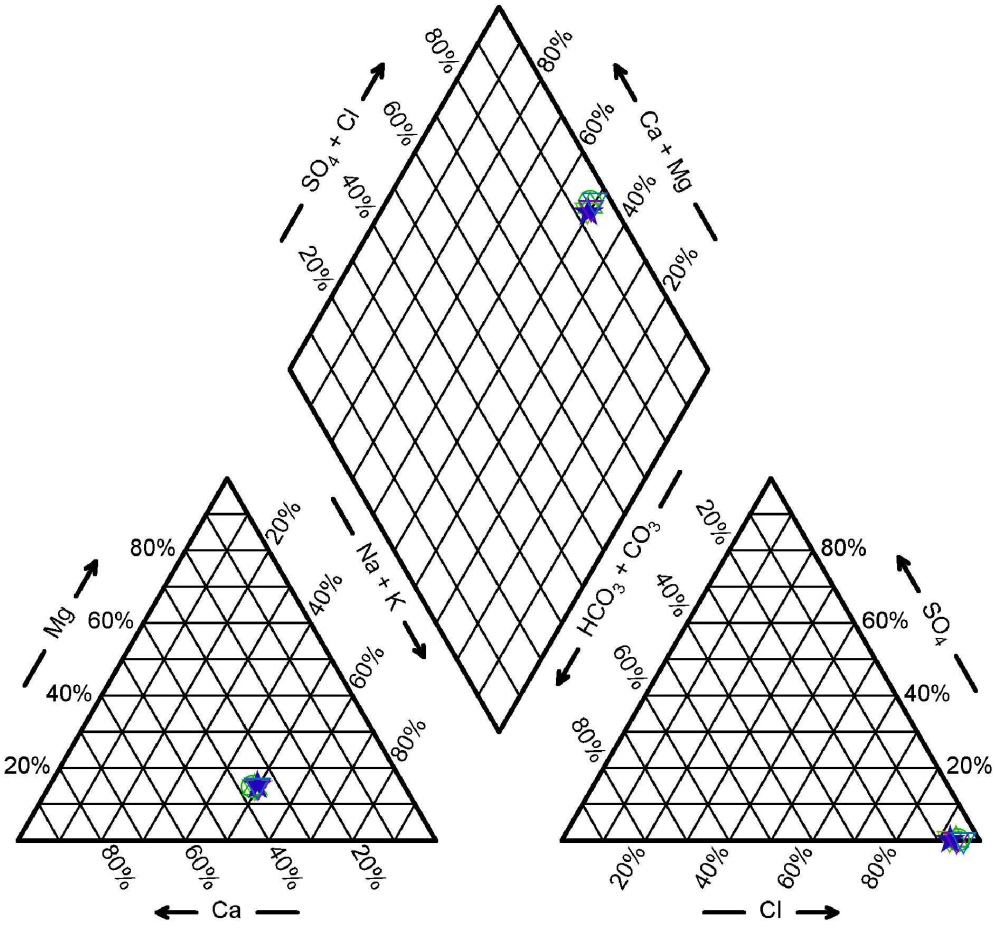
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-29

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 9 PIPER PLOT

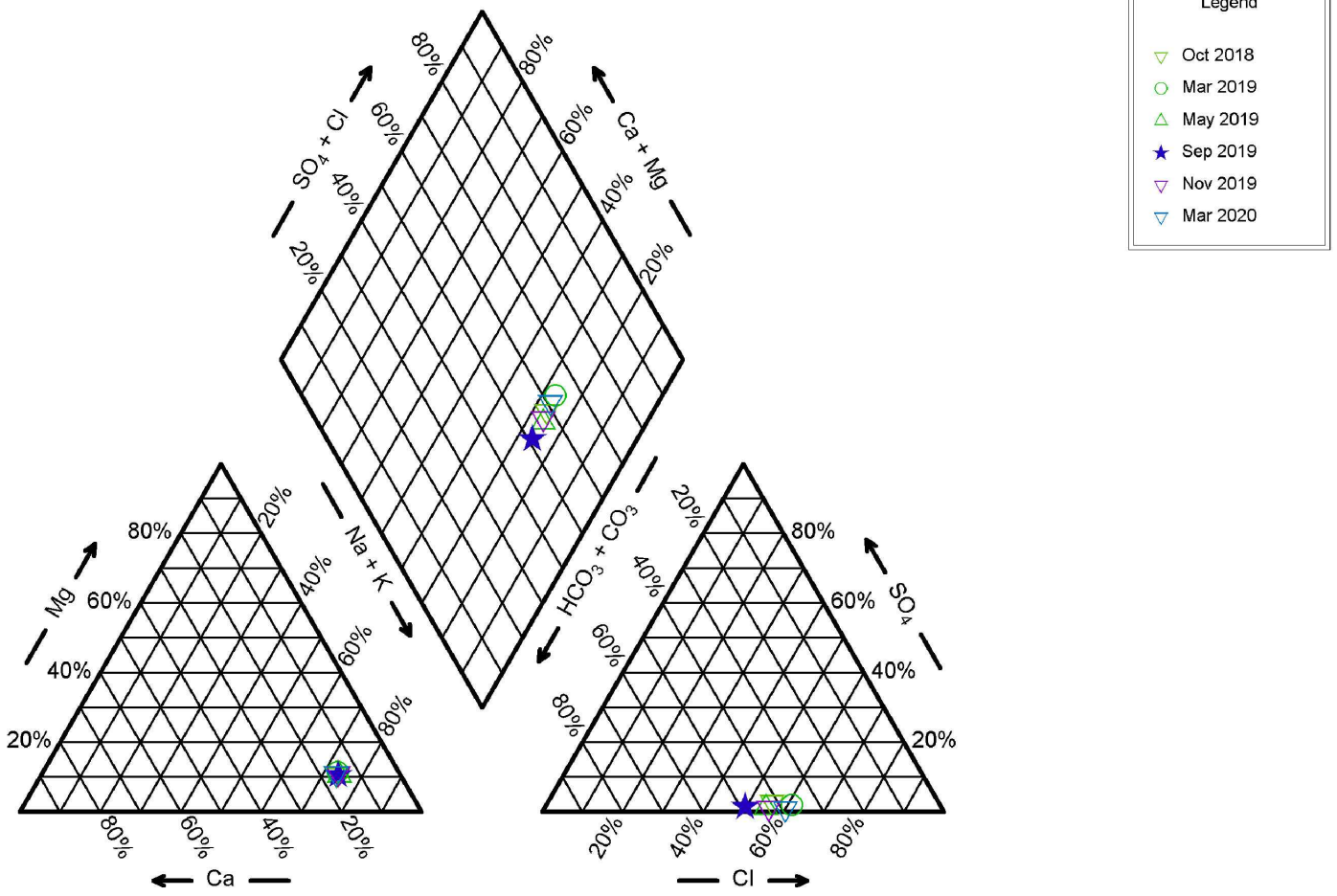
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-30

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 10 PIPER PLOT

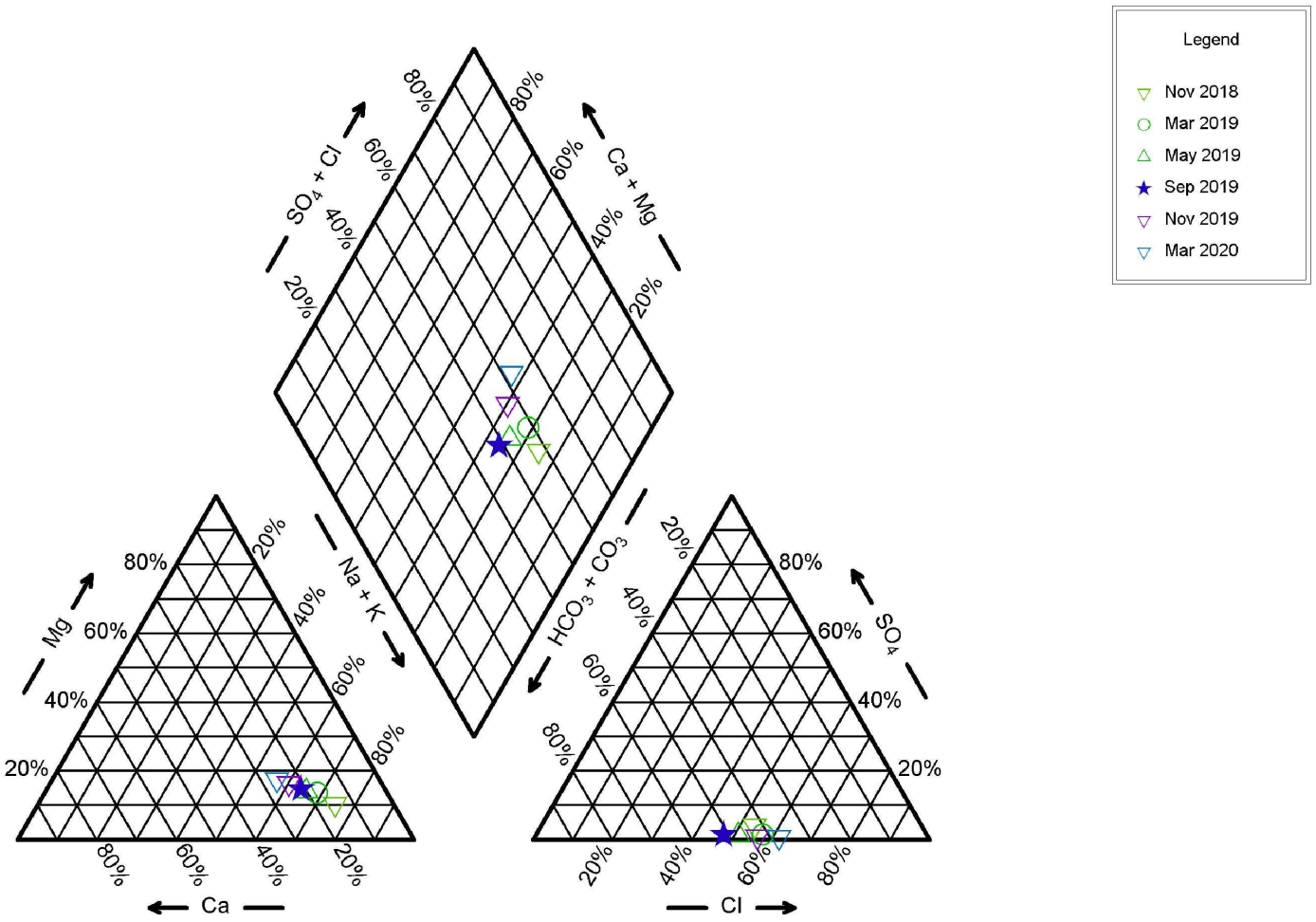
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-31

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-18-013
ZONE 11 PIPER PLOT

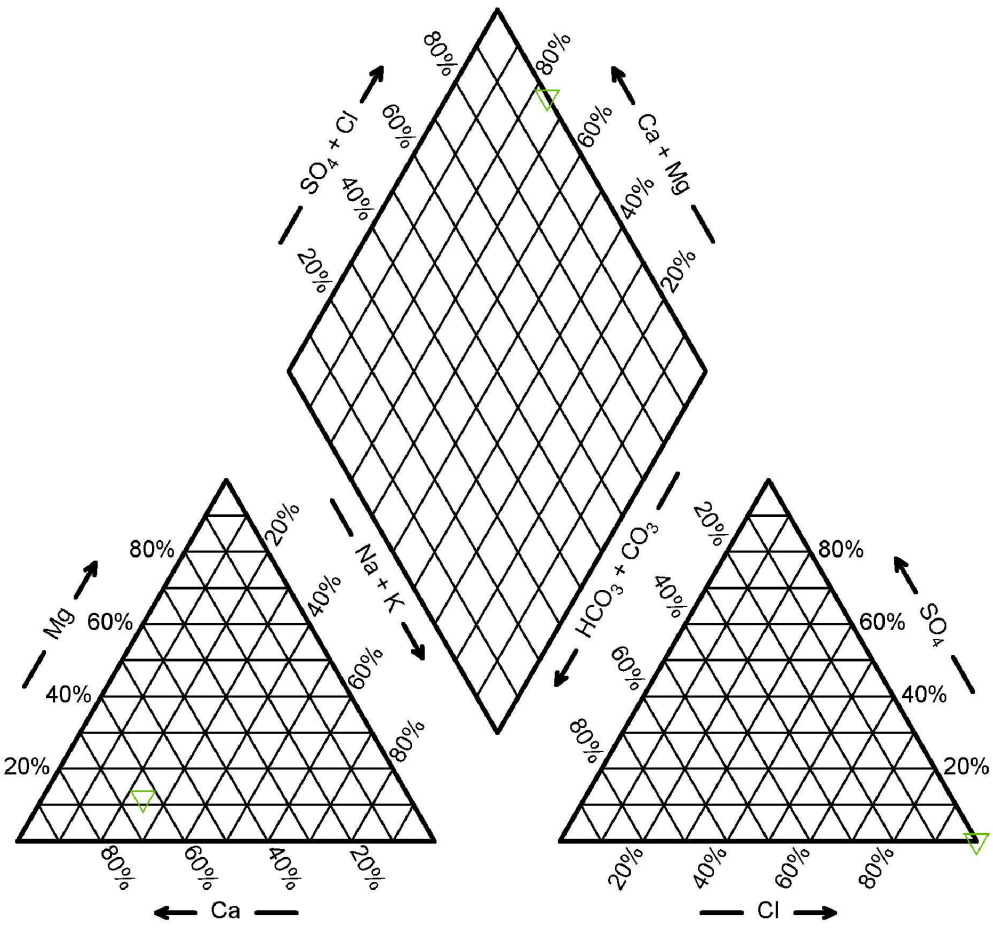
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-32

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-19-035
ZONE 1 PIPER PLOT

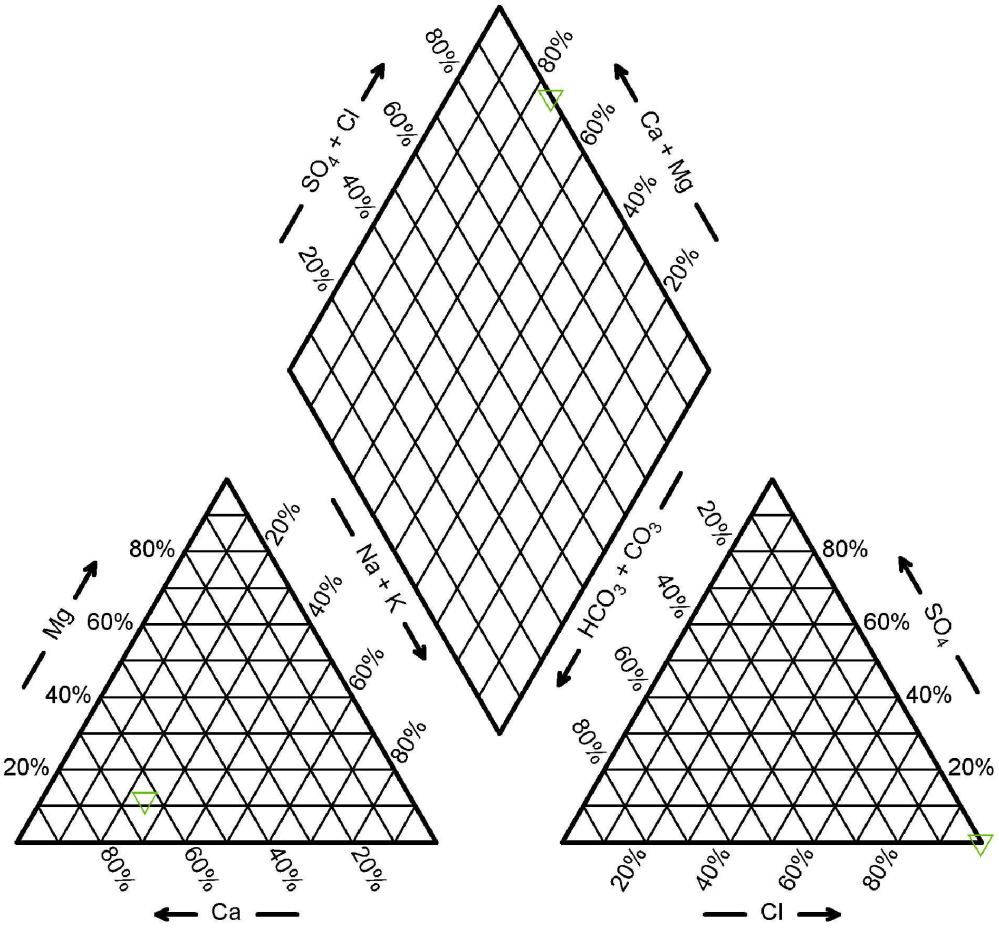
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-33

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-19-035
ZONE 2 PIPER PLOT

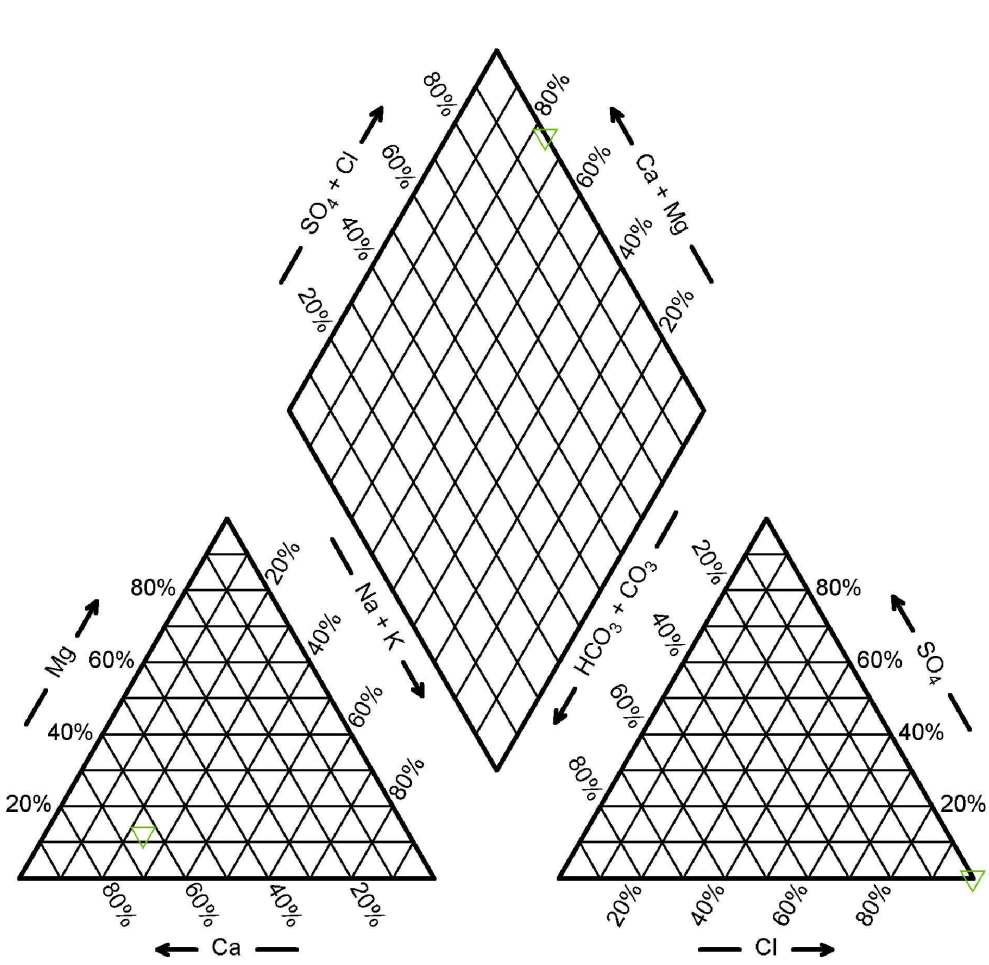
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-34

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-19-035
ZONE 5 PIPER PLOT

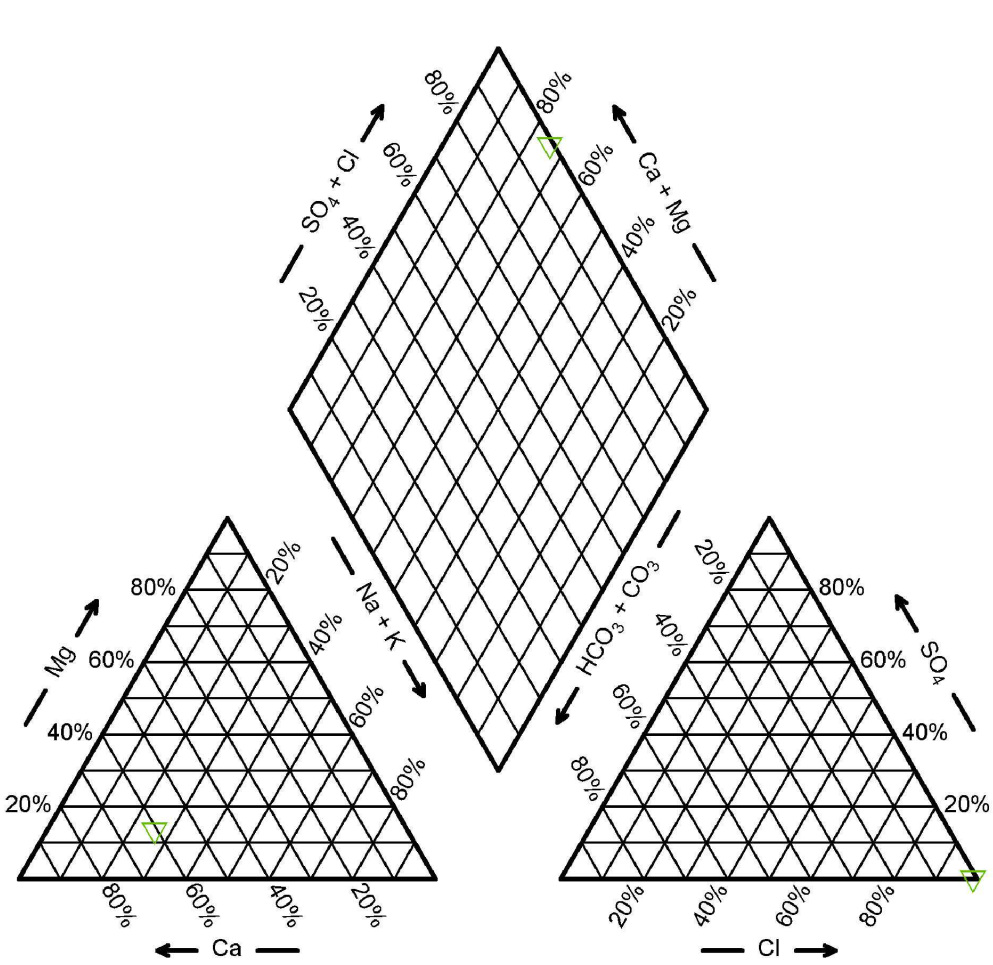
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-35

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-19-035
ZONE 6 PIPER PLOT

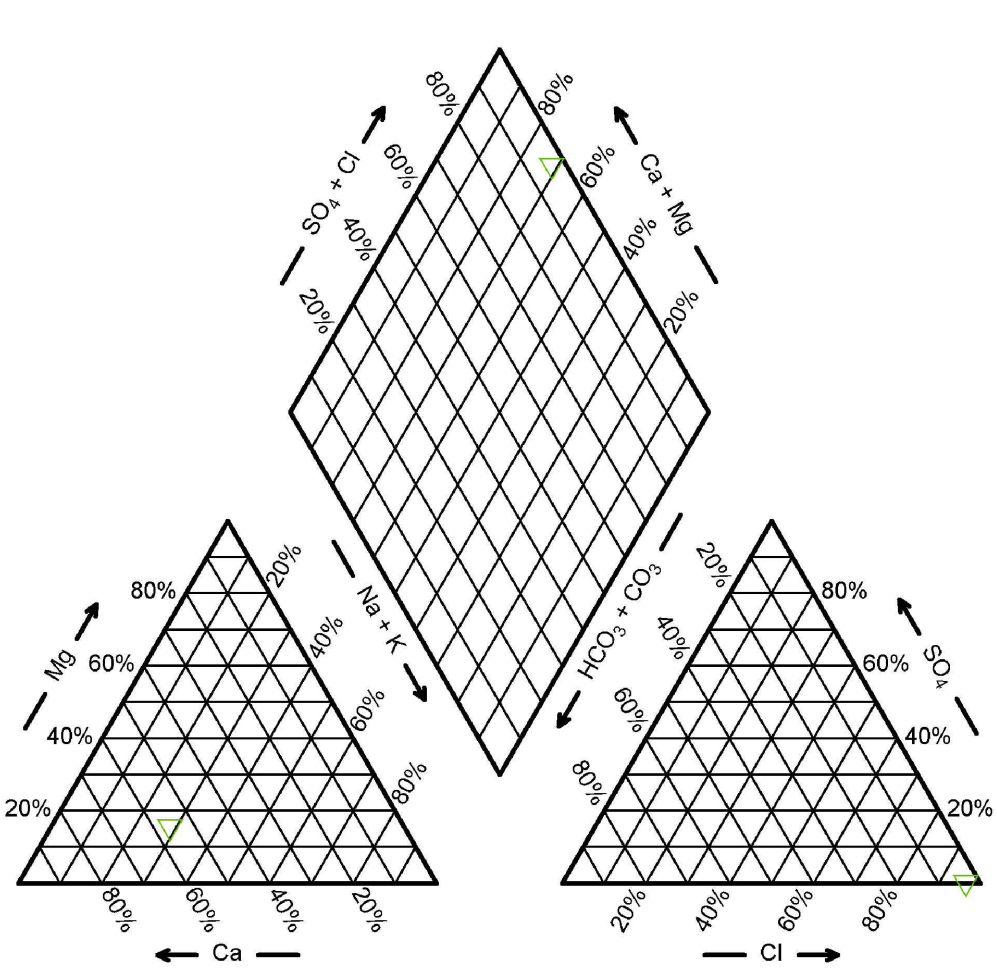
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-36

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-19-035
ZONE 7 PIPER PLOT

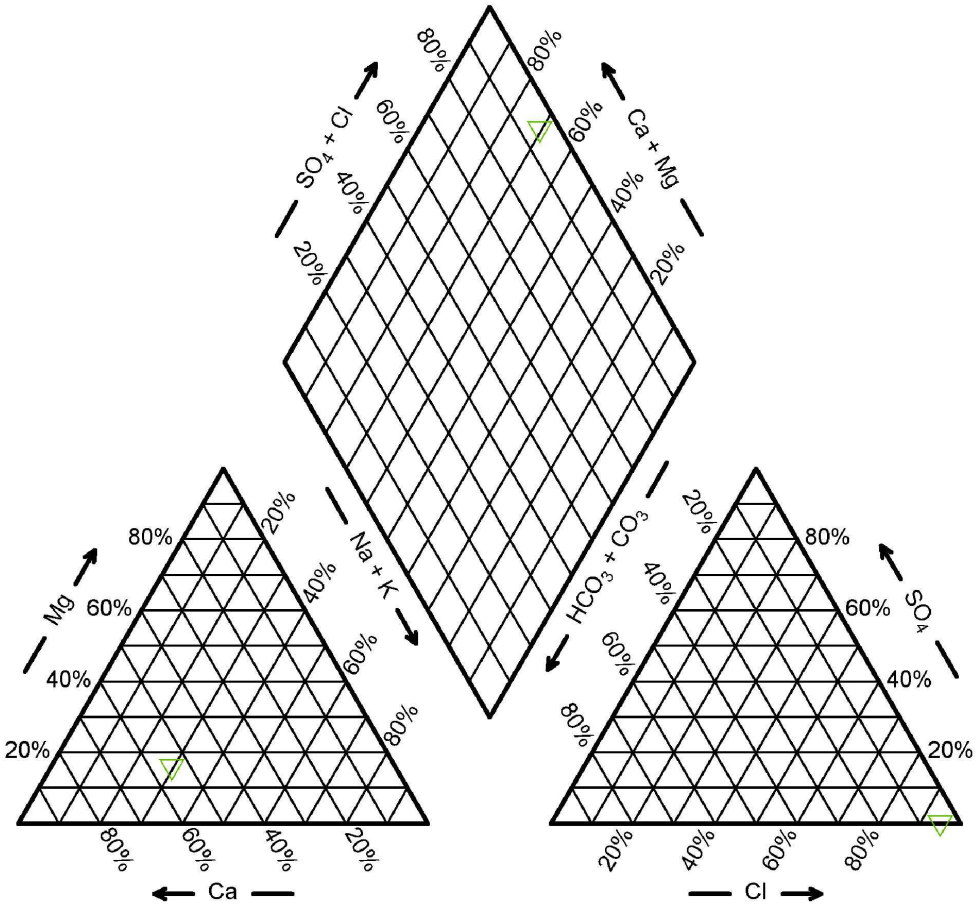
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-37

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-19-035
ZONE 8 PIPER PLOT

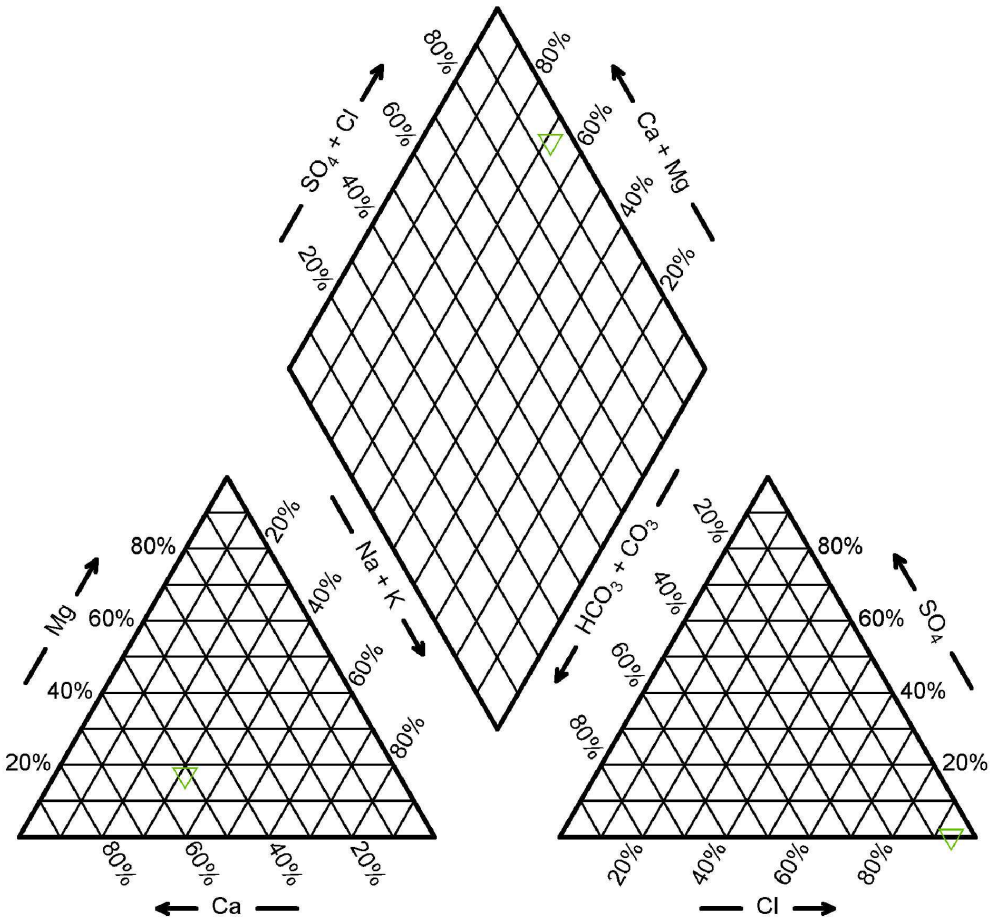
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-38

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-19-035
ZONE 9 PIPER PLOT

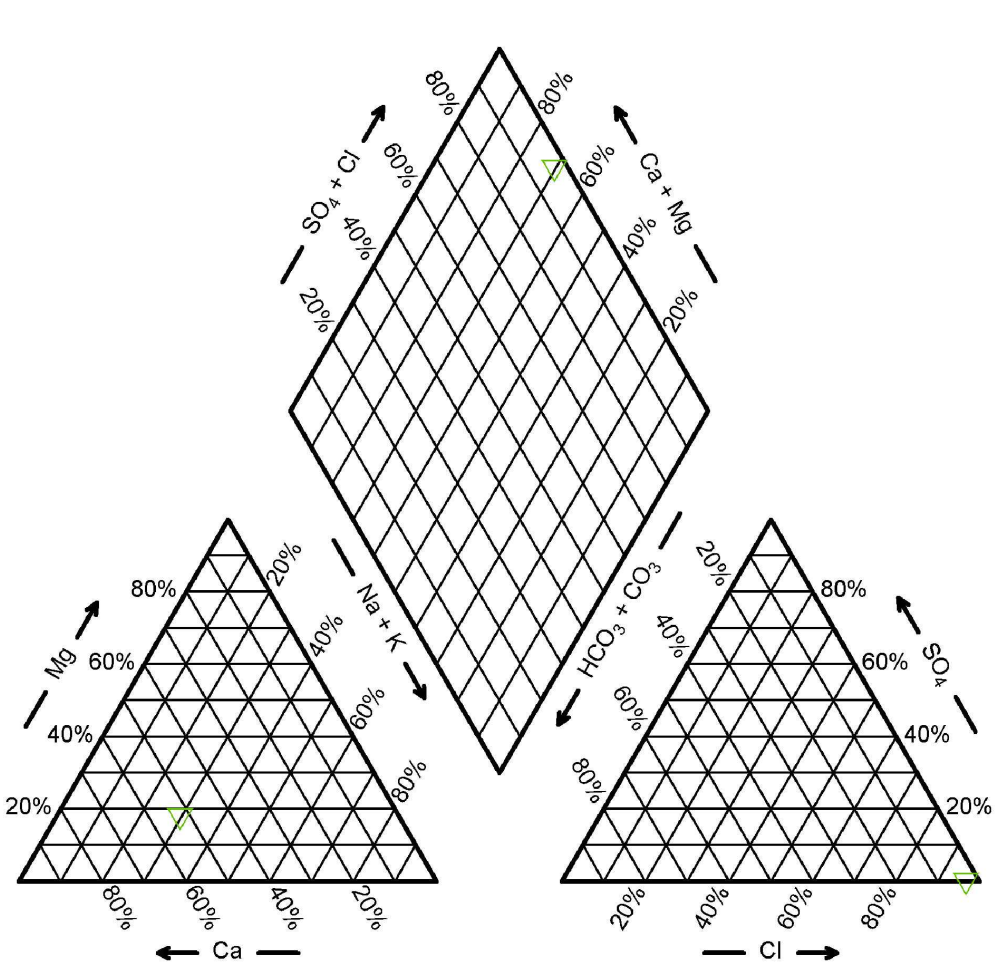
CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-39

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM



PROJECT

NexGen Energy Ltd.

ROOK I PROJECT

TITLE

WESTBAY WELL GAR-19-035
ZONE 10 PIPER PLOT

CONSULTANT

wsp

PROJECT		20144150	PHASE		3104
DESIGN	CH	14-06-21	SCALE	NTS	REV. 0
CADD	JMC	14-06-21			
CHECK	CH	21-03-22			
REVIEW	MT	21-03-22			

FIGURE J-40

G:_Clients\NexGen\Rook1\99_PROJECTS\20144150\3104\02_PRODUCTION\DWG\20144150-3104-Piper Plot Appendix B.dwg 3/21/2022 9:38 AM