

# Rook I Project

## Environmental Impact Statement

Annex IX: Heritage Resources Impact Assessment and Cover  
Letter



# CanNorth

**Canada North Environmental Services Limited Partnership**  
A First Nation Environmental Services Company

## **TECHNICAL MEMORANDUM**

*Final*

**Date:** September 1<sup>st</sup>, 2021

**To:** Frank Halliday  
NexGen Energy Ltd.

**From:** Alan Korejbo  
Canada North Environmental Services

**Subject:** Heritage Resources Impact Assessment Update: NexGen Energy Ltd. Rook I Project, Patterson Lake

**CanNorth Project No. 3008-20 Rev. 0**

### **Introduction**

The purpose of this memorandum is to provide a summary regarding the Heritage Resources Impact Assessment (HRIA) completed for NexGen Energy Ltd.'s (NexGen) proposed Rook I Project (Project) at Patterson Lake, Saskatchewan, in 2018, as well as follow-up activities since then. In Saskatchewan, heritage resources include Precontact period and Historic period archaeological sites, built heritage sites and structures of historical and/or architectural interest, and paleontological sites. Heritage resources are the property of the Provincial Crown and are protected under *The Heritage Property Act* (GS 1980) (Act). The Act is administered by the Saskatchewan Ministry of Parks, Culture and Sport's (PCS) Heritage Conservation Branch (HCB).

### **Heritage Resources Impact Assessment**

The HCB has identified two primary triggers for determining if an HRIA is required for a project (per section 63 of the Act). An area is considered heritage sensitive based on the presence of known heritage resources and/or the potential for new heritage resources to be discovered. The extent of previous land disturbance and nature and scope of the project are also taken into consideration. Additional screening criteria for northern Saskatchewan (northern parklands and boreal forest) to determine heritage potential include areas that are:

- within 500 m of a Site of a Special Nature (SSN) (per. S. 64 of Act) or other previously recorded site(s), unless the site has been determined to have low interpretive value;
- along dry, upland margins of a major bog or fen;



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- within 250 m of watercourses or lakes;
- within 50 m of historic trails;
- within 250 m of strandlines; and
- on escarpments (defined by two or more contour intervals within 200 m), prominent uplands, and hills/ridges (including eskers) within 500 m of a water source.

The Project area was submitted to the HCB for review during the HRIA permit application process and the HCB determined that portions of the proposed Rook I Project are located in heritage-sensitive terrain and that an HRIA was required (electronic submission on May 26<sup>th</sup>, 2018; HCB File No. 18-1009). To allow NexGen flexibility for future development, a larger Heritage Study Area (HSA) was established than what was required for the Project as understood at the time. Three general areas within the HSA required an HRIA: the northern shore of Patterson Lake (Area 1), a large, level upland area (Area 2), and the southern shore of Patterson Lake (Area 3) (Appendix A).

### Results

Canada North Environmental Services Limited (CanNorth) completed an HRIA for NexGen's Project from June 19<sup>th</sup> to June 22<sup>nd</sup>, 2018, under Archaeological Resource Investigation Permit No. 18-068 issued to Kara Wolfe (CanNorth, archaeologist) (CanNorth 2018).

The Project areas were assessed using a combination of pedestrian reconnaissance and the excavation of 239 subsurface shovel probes (Table 1). No new heritage resources were identified during the HRIA. No further archaeological study was recommended following completion of the investigation. The recommendations of the draft report were accepted by the HCB on October 29<sup>th</sup>, 2018, and a hardcopy and USB driver of the final report were sent to the HCB (Wade Dargin, HCB, archaeologist, pers. comm., October 29<sup>th</sup>, 2018; CanNorth 2018).

| Area   | Hectares (ha) | Geographic Area of the HSA       | Shovel Probes |
|--------|---------------|----------------------------------|---------------|
| Area 1 | 130           | Northern shore of Patterson Lake | 144           |
| Area 2 | 17            | Upland area                      | 75            |
| Area 3 | 33            | Southern shore of Patterson Lake | 20            |

The HRIA survey design was based on Project plans provided to CanNorth and the HCB by NexGen (Appendix B).

## Follow-up Activities after the 2018 HRIA

### *Airstrip*

After completion of the 2018 HRIA, the orientation of the proposed airstrip and site roads (Area 2) were revised (Appendix C). Upon notification of the changes, CanNorth forwarded the revised plans to the HCB to establish if the revisions to the Project's plans warranted further heritage work. The HCB determined that, given the airstrip's distance from the lake (i.e., further than 250 m), and that no new heritage resources were discovered in the area during the HRIA, that they had no concerns or additional heritage requirements regarding the revision to the airstrip (Wade Dargin, HCB, archaeologist, pers. comm., August 29<sup>th</sup> and 30<sup>th</sup>, 2018).

### *Revised Plans in 2021*

Following continued advancement of the Project design, in 2021, NexGen proposed several potential changes as compared to the Project that was surveyed and assessed in 2018 under Permit No. 18-068. Although the areas of highest archaeological potential had been assessed within the Project area during the 2018 HRIA, the updated Project design impacted areas of native boreal forest terrain that were not considered at that time, and NexGen requested a Heritage Resource Review (HRR) of the most recent proposed Project plans to determine if there would be any HRIA requirements.

The updated Project design was submitted to the HCB in an email on February 9<sup>th</sup>, 2021, and then subsequently reviewed by the HCB February 25<sup>th</sup>, 2021 (HCB File No. 21-144, February 25<sup>th</sup>, 2021; Appendix D). The HCB determined that no known archaeological sites are located in direct conflict with the proposed development, and the proposed construction would occur in areas where previous archaeological survey work has been undertaken or in areas judged to have a low heritage potential. The HCB determined that there are no further concerns with the development proceeding as planned.

## Summary and Conclusion

An HRIA was completed for NexGen's Rook I Project at Patterson Lake, Saskatchewan from June 19<sup>th</sup> to June 22<sup>nd</sup>, 2018, under Archaeological Resource Investigation Permit No. 18-068. The Project was assessed using a combination of pedestrian reconnaissance and the excavation of 239 subsurface shovel probes. No new heritage resources were identified during the HRIA, and no further archaeological study was recommended.

Changes to the original potential Project plans in 2021 resulted in the development of certain portions of the potential Project being outside of areas covered during the HRIA. The HCB was informed of the changes and they determined that no additional HRIA requirements were necessary. The revisions to the NexGen Project are in full compliance with HCB requirements (per section 63 of the Act) (GS 1980).

I trust that this memorandum presents the information you require. Should you have any further comments or questions, please contact the undersigned.



Alan Korejbo, M.A.  
**Canada North Environmental**  
Heritage Division Manager / Senior Archaeologist  
Office: (306) 652-4432  
Mobile: (306) 227-8182  
Email: alan.korejbo@cannorth.com

## Literature Cited

Canada North Environmental Services (CanNorth). 2018. NexGen Energy Ltd. Rook I Heritage Resources Impact Assessment Permit No. 18-068. Report on file with the Heritage Conservation Branch, Regina, Saskatchewan.

Government of Saskatchewan (GS). 1980. The Heritage Property Act, being Chapter H-2.2 of the Statutes of Saskatchewan, 1979-80 (effective November 28, 1980) as amended by the Statutes of Saskatchewan, 1980-81, c.76 and 83; 1982-83, c.35; 1983, c.77; 1983-84, c.39 and 49; 1988-89, c.55; 1989-90, c.15 and 54; 1993, c.26; 1996, c.32; 1998, c.P-42.1; 2000, c.L-5.1; 2001, c.20; 2002, c.C-11.1; 2005, c.M-36.1; 2007, c.P-13.2; 2010, c.N-5.2 and c.21; 2013, c.27; 2014, c.E-13.1; and 2018, c.12 and 42. The Queen's Printer. Regina, Saskatchewan. Website: [www.qp.gov.sk.ca/documents/English/Statutes/Statutes/H2-2.pdf](http://www.qp.gov.sk.ca/documents/English/Statutes/Statutes/H2-2.pdf). Accessed June 25th, 2019.



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- APPENDIX C. ROOK I PROJECT – PROPOSED PROJECT INFRASTRUCTURE REV A
- APPENDIX D. HERITAGE RESOURCE REVIEW



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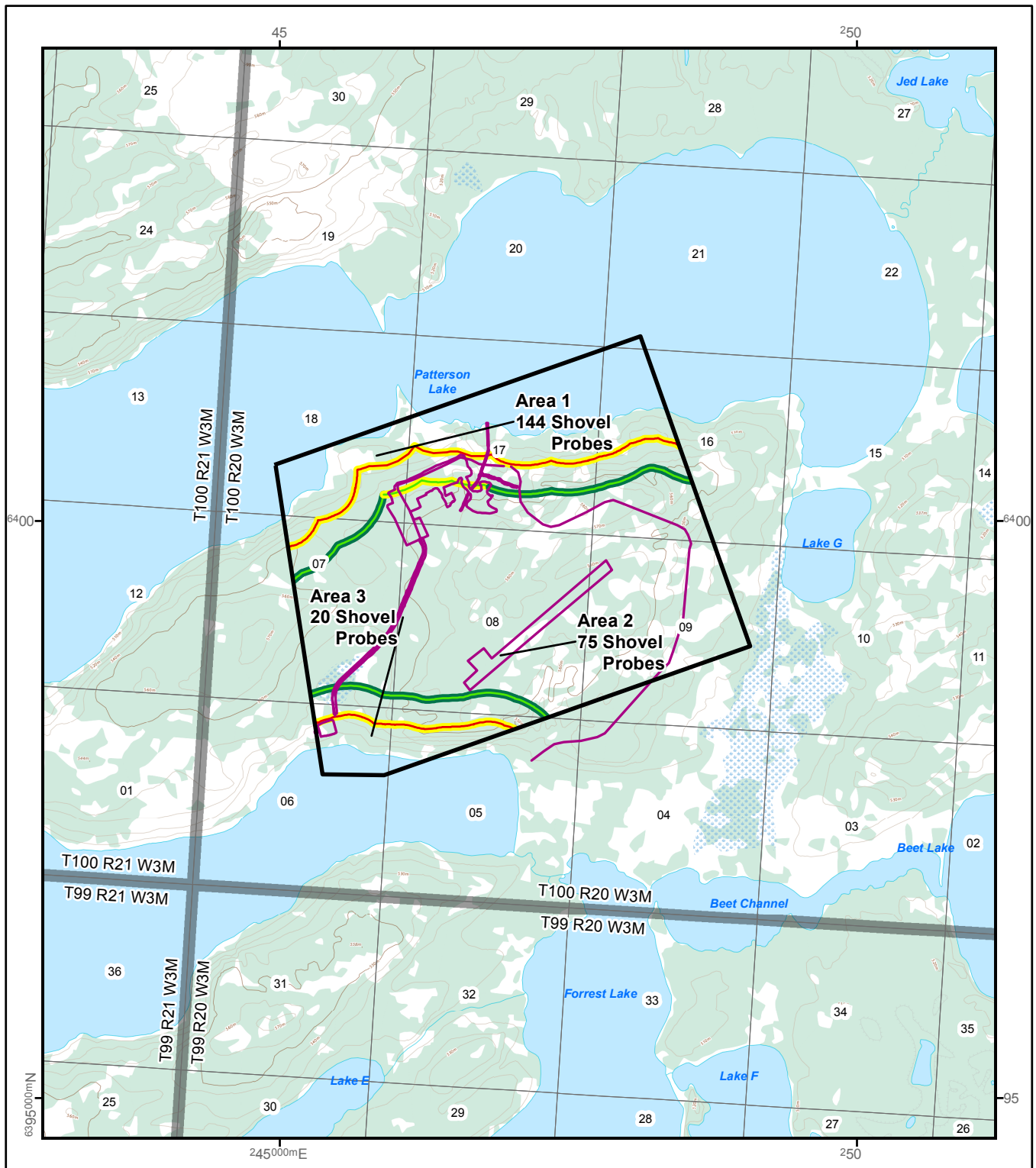
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Map Sources: HCB "Known Heritage Resources", 2017; ISC "SaskGrid TFM", 2017; NRC "Toporama WMS"; SK Ministry of Highways and Infrastructure "SURN14". Refer to text for full details & disclaimer.  
 File: 3008-03 Client: NextGen Energy Ltd.  
 28 / Aug / 2018 Geomatics: CB Reviewed by: AK

0 NAD 1983 UTM Zone 13North 2km  
 Original document scale 1:50,000


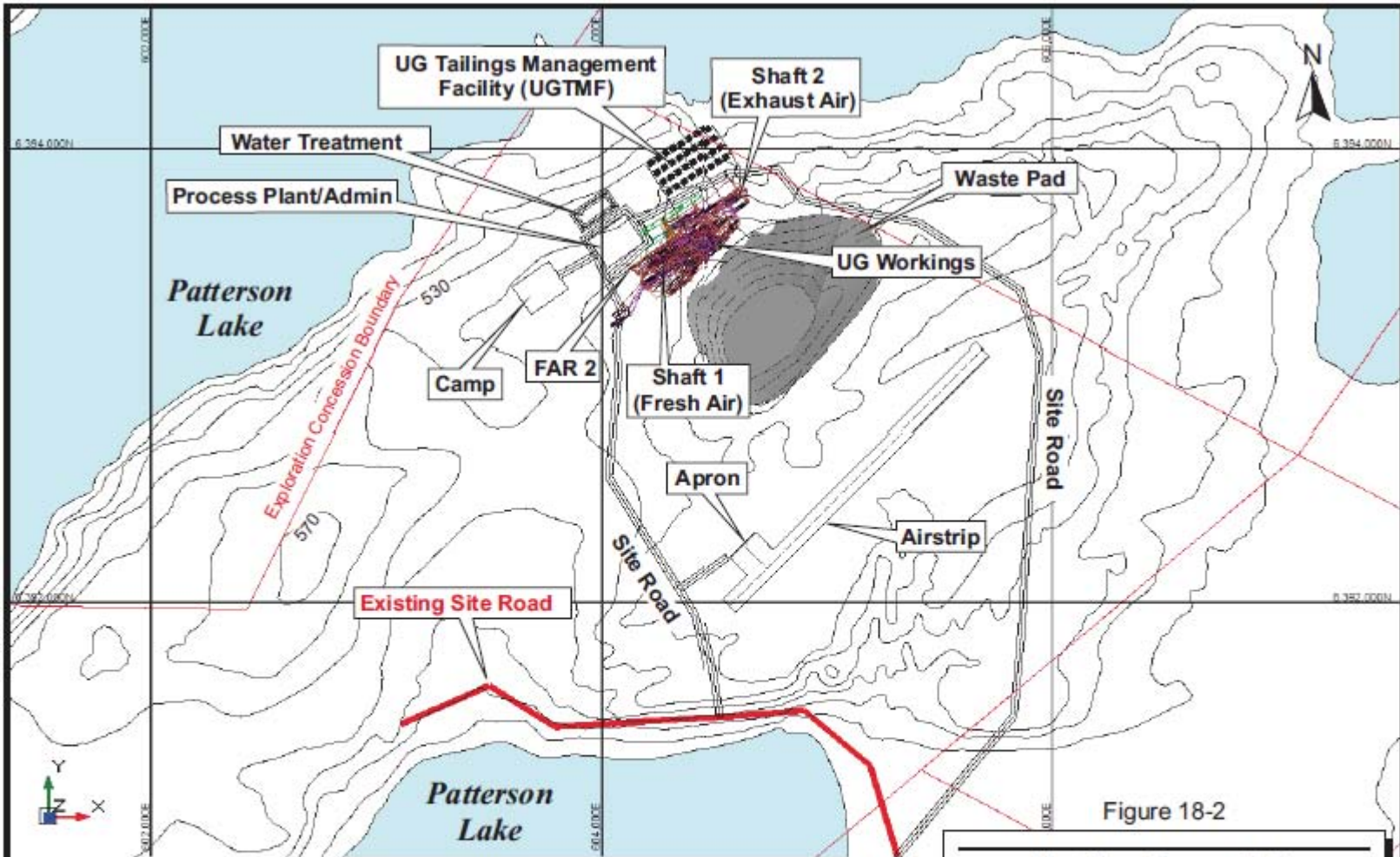
**CanNorth**  Figure: **2**

Figure 2. NexGen Energy Ltd.'s Rook I Operation Phase I Heritage Resources Impact Assessment.



NOTE: Contours at 10 metre intervals.

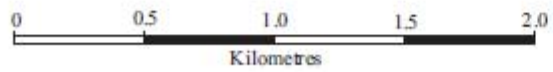


Figure 18-2

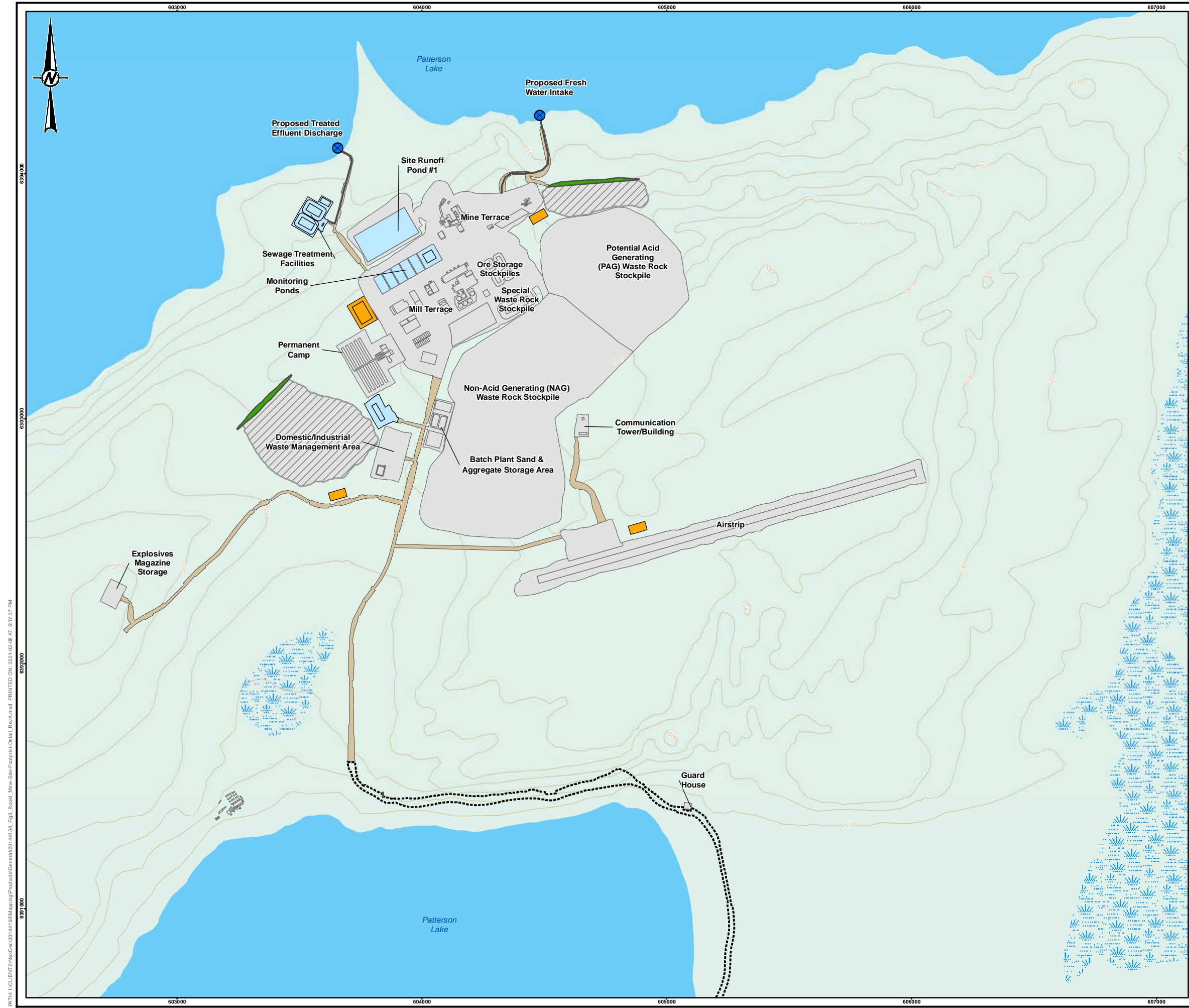
**NexGen Energy Ltd.**

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**Rook I Property**  
*Northern Saskatchewan, Canada*

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**Detailed Site Plan**



- LEGEND**
- ELEVATION CONTOUR (10 m INTERVAL)
  - WATERBODY
  - WATERBODY
  - WETLAND
  - FOREST
  - ⊗ POTENTIAL INTAKE AND DISCHARGE LOCATIONS
  - INTAKE OR DISCHARGE PIPE
- PROPOSED PROJECT INFRASTRUCTURE**
- ⬢ SITE ACCESS ROAD
  - SITE ROAD
  - TOPSOIL AND UNSUITABLE MATERIAL STOCKPILE
  - SITE WATER CONTACT CONTAINMENT BERM
  - ▨ SITE WATER CONTACT CONTAINMENT AREA
  - PROJECT INFRASTRUCTURE



**REFERENCE(S)**

1. PROJECT FEATURES OBTAINED FROM NEXGEN, JANUARY 20, 2021.
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.

PROJECTION: UTM ZONE 12 DATUM: NAD 83

|   |   |                |           |       |           |        |               |                |        |     |               |  |  |       |     |  |  |        |     |  |  |
|---|---|----------------|-----------|-------|-----------|--------|---------------|----------------|--------|-----|---------------|--|--|-------|-----|--|--|--------|-----|--|--|
|   | <p><b>ROOK I PROJECT</b></p>  |                |           |       |           |        |               |                |        |     |               |  |  |       |     |  |  |        |     |  |  |
| <p><b>Proposed Project Infrastructure</b></p> |   |                |           |       |           |        |               |                |        |     |               |  |  |       |     |  |  |        |     |  |  |
|   | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>PROJECT</td> <td>20144150</td> <td>PHASE</td> <td>3314 - 06</td> </tr> <tr> <td>DESIGN</td> <td>MM 2020-12-23</td> <td>SCALE AS SHOWN</td> <td>REV. A</td> </tr> <tr> <td>GIS</td> <td>NO 2021-02-08</td> <td></td> <td></td> </tr> <tr> <td>CHECK</td> <td>XXX</td> <td></td> <td></td> </tr> <tr> <td>REVIEW</td> <td>XXX</td> <td></td> <td></td> </tr> </table> | PROJECT        | 20144150  | PHASE | 3314 - 06 | DESIGN | MM 2020-12-23 | SCALE AS SHOWN | REV. A | GIS | NO 2021-02-08 |  |  | CHECK | XXX |  |  | REVIEW | XXX |  |  |
| PROJECT                                       | 20144150  | PHASE          | 3314 - 06 |       |           |        |               |                |        |     |               |  |  |       |     |  |  |        |     |  |  |
| DESIGN  | MM 2020-12-23   | SCALE AS SHOWN | REV. A    |       |           |        |               |                |        |     |               |  |  |       |     |  |  |        |     |  |  |
| GIS   | NO 2021-02-08   |                |           |       |           |        |               |                |        |     |               |  |  |       |     |  |  |        |     |  |  |
| CHECK   | XXX   |                |           |       |           |        |               |                |        |     |               |  |  |       |     |  |  |        |     |  |  |
| REVIEW  | XXX   |                |           |       |           |        |               |                |        |     |               |  |  |       |     |  |  |        |     |  |  |
| <p><b>FIGURE: 3</b></p>                       |   |                |           |       |           |        |               |                |        |     |               |  |  |       |     |  |  |        |     |  |  |

PATH: I:\CLIENTS\NexGen\33144150\Maping\Products\General\33144150\_Fig3\_RookI\_Mine\_Site\_Footprint\_Detail\_RevA.mxd PRINTED ON: 2021-02-09 AT: 5:17:37 PM

February 25, 2021

Our file: 21-144

Alan Korejbo  
Canada North Environmental Services  
*Agent For: NexGen Energy Ltd.*  
211 Wheeler Street  
SASKATOON SK S7P 0A4

Dear Alan Korejbo:

**RE: NexGen Energy Ltd., Rook I Mine Site, Patterson Lake – Updated Project Footprint  
HERITAGE RESOURCE REVIEW**

Thank you for referring this project for heritage resource review.

In determining the need for, and scope of, Heritage Resource Impact Assessment (HRIA) pursuant to s.63 of *The Heritage Property Act*, the following factors were considered: the presence of previously recorded heritage sites, the area's overall heritage resource potential, the extent of previous land disturbance, and the scope of new proposed land development.

No known archaeological sites are located in direct conflict with the proposed development. Construction will occur in areas where previous archaeological survey work has been undertaken or in areas judged to have a low heritage potential. Therefore, our office has no further concerns with the development proceeding as planned.

If you have any questions regarding these heritage regulatory requirements, please feel free to contact me. Thank you again for referring this proposed development and for your cooperation in protecting the province's cultural heritage.

Sincerely,



Wade Dargin  
Archaeologist





Government  
— of —  
Saskatchewan

Heritage Conservation Branch  
2<sup>nd</sup> Floor, 3211 Albert Street  
Regina, Canada S4S 5W6

Phone: 306-787-5774  
Tom.Richards@gov.sk.ca

November 26, 2018

Our File: 18-1009

Ms. Kara Wolfe  
CanNorth  
*Agent For: NexGen Energy Ltd.*  
211 Wheeler Street  
SASKATOON SK S7P 0A4

Dear Ms. Wolfe:

**RE: NexGen – Rook I Project  
RESULTS LETTER**

Please be advised we received (October 31, 2018) your final report on the heritage resource impact assessment (HRIA) for this project completed under Investigation Permit #18-068.

No new or previously recorded heritage sites were observed in the course of pedestrian survey and subsurface testing of the developments, despite the high potential of the area. As all HRIA regulatory requirements have now been satisfactorily completed, this office has no concern with this project proceeding as planned.

On behalf of the Heritage Conservation Branch, please convey our appreciation to NexGen for having commissioned this investigation, and for their continuing assistance and support in preserving Saskatchewan's archaeological heritage.

Sincerely,

A handwritten signature in black ink, appearing to read "Wade Dargatzis". The signature is fluid and cursive, with a long, sweeping tail that extends downwards and to the right.

70R7  
Dr. Thomas Richards  
Senior Archaeologist



# CanNorth

**Canada North Environmental Services Limited Partnership**

*A First Nation Environmental Services Company*

**NexGen Energy Ltd.  
Rook I  
Heritage Resources Impact Assessment  
Permit No. 18-068**

*Final Report*

HCB File No. 18-1009

Prepared by:

Canada North Environmental Services  
Saskatoon, Saskatchewan

Prepared for:  
NexGen Energy Ltd.  
Vancouver, British Columbia

*Project No. 3008-1*

October 2018



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**PROJECT CREDITS**

Project Manager.....Alan Korejbo, M.A.  
Permit Holder.....Kara Wolfe, M.A.  
Field Assistant.....Julie Mushynsky, Ph.D.  
Report Author.....Kara Wolfe, M.A.  
Report Maps.....Chad Coziahr, B.A.

**EXECUTIVE SUMMARY**

*A Heritage Resources Impact Assessment (HRIA) was completed for NexGen Energy Ltd.'s (NexGen) Rook I project. Canada North Environmental Services (CanNorth) submitted the project to the Heritage Conservation Branch (HCB) on behalf of NexGen. The HCB determined that portions of the Rook I project are located within heritage sensitive terrain. The HCB agreed that, since the project was located near the shore of Patterson Lake, there was moderate to high potential of heritage resources, and an HRIA was required (HCB File No. 18-1009).*

*Canada North Environmental Services (CanNorth) completed the field assessment from June 19<sup>th</sup> to June 22<sup>nd</sup>, 2018, under Archaeological Resource Investigation Permit No. 18-068 issued to Kara Wolfe (CanNorth, archaeologist). The Heritage Study Area (HSA) is composed of three areas: the northern shore of Patterson Lake (Area 1), a large, level upland area (Area 2), and the southern shore of Patterson Lake (Area 3). The project areas were assessed using a combination of pedestrian reconnaissance and the excavation of 239 subsurface shovel probes. No heritage resources were identified.*

*It is recommended that NexGen be provided with regulatory approval as per Section 63 of The Heritage Property Act (GS 1980) for their proposed Rook I project should the project proceed as planned. This report fulfills the permitting requirements necessary for the completion of this HRIA.*

## 1.0 INTRODUCTION

A Heritage Resources Impact Assessment (HRIA) was completed for NexGen Energy Ltd.'s proposed Rook I project. Canada North Environmental Services (CanNorth) completed the field assessment from June 19<sup>th</sup>, 2018, to June 22<sup>nd</sup>, 2018 under Archaeological Resource Investigation Permit No. 18-068 issued to Kara Wolfe (CanNorth, archaeologist).

The following sections discuss the results of the HRIA. A description of the project is included in Section 2, while Section 3 discusses previous archaeology. Methodology is discussed in Section 4, fieldwork results are presented in Section 5, and recommendations are discussed in Section 6. Shovel probe locations are documented in Appendix A, and survey plans are provided in Appendix B.

### 1.1 Heritage Conservation Branch Screening Criteria

In Saskatchewan, heritage resources include Precontact Period and Historic Period archaeological sites, built heritage sites and structures of historical and/or architectural interest, and paleontological sites. Heritage resources are the property of the Provincial Crown and are protected under *The Heritage Property Act* (GS 1980).

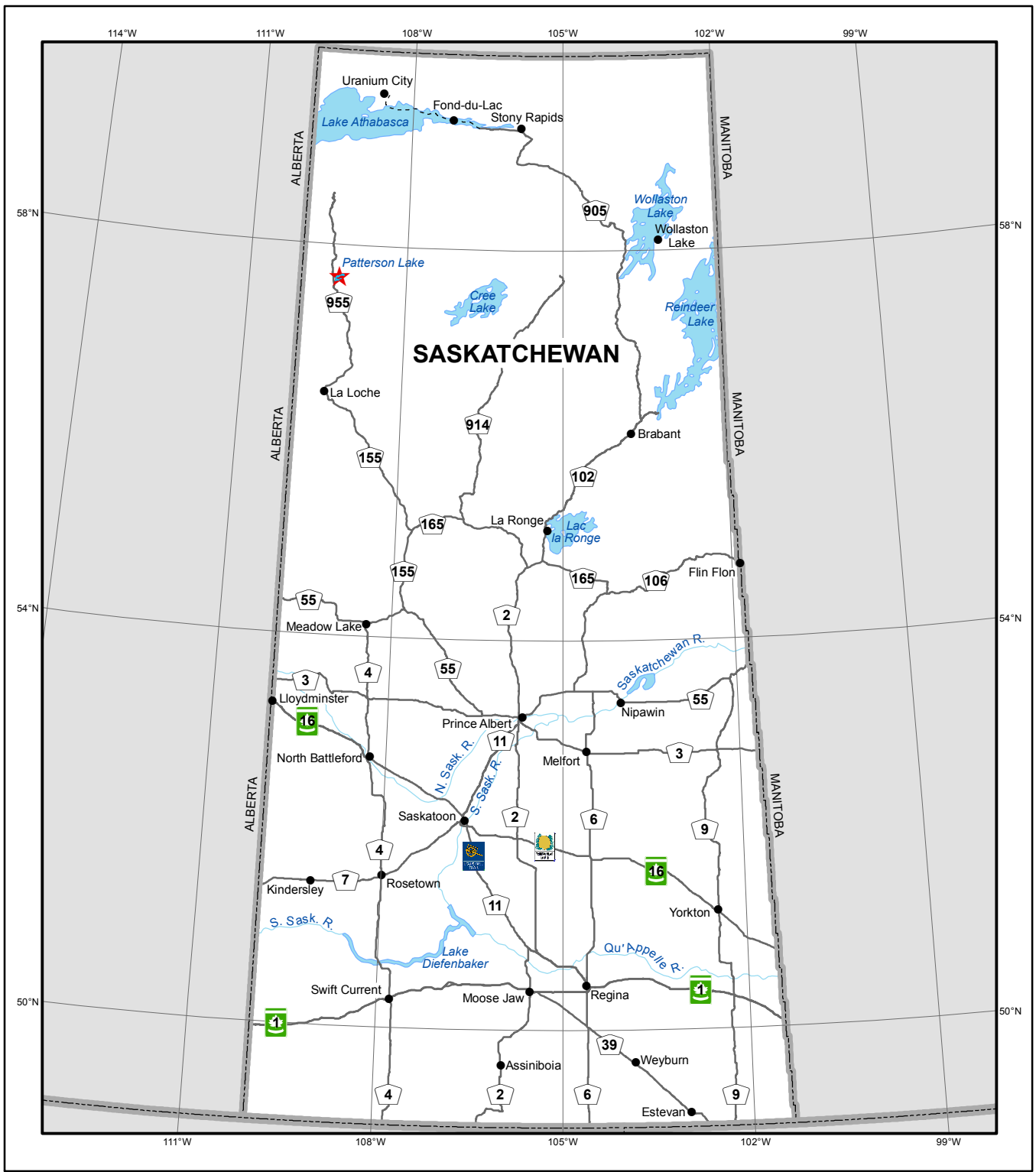
The Heritage Conservation Branch (HCB) has identified two primary triggers for determining if an HRIA is required for a project (per section 63 of *The Heritage Property Act*) (GS 1980). An area is considered heritage sensitive based on the presence of known heritage resources and the potential for new heritage resources to be discovered. The extent of previous land disturbance and nature and scope of the project are also taken into consideration. Additional screening criteria for northern Saskatchewan (northern parklands and boreal forest) to determine heritage potential, include:

- within 500 m of a Site of a Special Nature (SSN) (per. S. 64 of *The Heritage Property Act*), or other previously recorded site(s), unless the site has been determined to have low interpretive value;
- along dry, upland margins of a major bog or fen;
- within 250 m of watercourses or lakes;
- within 50 m of historic trails;
- within 250 m of strandlines; and

- on escarpments (defined by two or more contour intervals within 200 m), prominent uplands, and hills/ridges (including eskers) within 500 m of a water source.

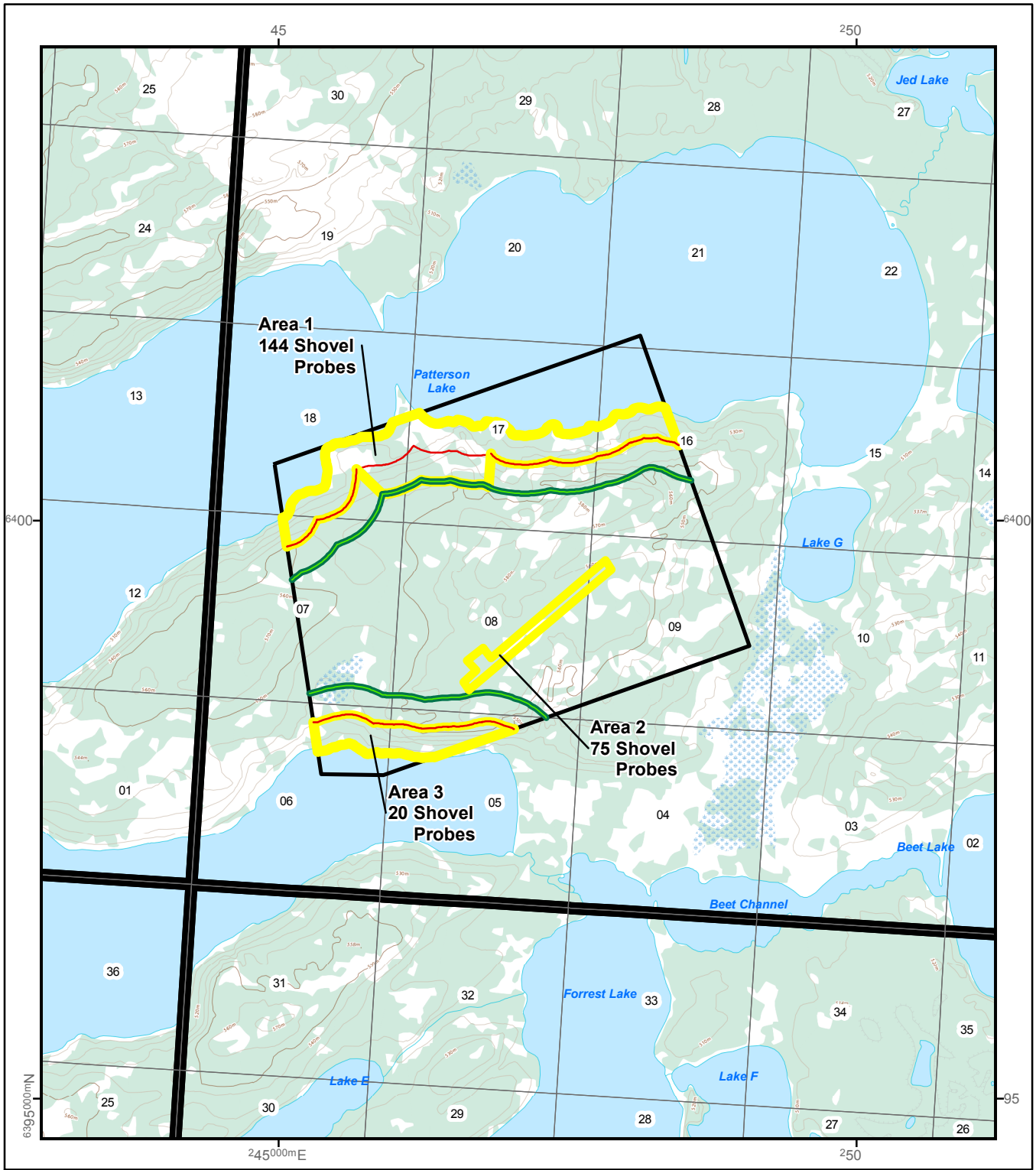
CanNorth submitted the project area to the HCB on behalf of NexGen (Figure 1; Figure 2; Appendix B). It was determined that portions of the Rook I project are located in heritage sensitive terrain and that an HRIA was required (HCB File No. 18-1009). In order to allow NexGen flexibility for future development, a larger Heritage Study Area (HSA) was established. Three general areas within the HSA required an HRIA and are summarized in the table below.







| <b>NexGen Rook I project.</b> |                      |                                   |
|-------------------------------|----------------------|-----------------------------------|
| <b>Area</b>                   | <b>Hectares (ha)</b> | <b>Geographic Area of the HSA</b> |
| Area 1                        | 130                  | Northern shore of Patterson Lake  |
| Area 2                        | 17                   | Upland area                       |
| Area 3                        | 33                   | Southern shore of Patterson Lake  |



|                    |                     |   |
|--------------------|---------------------|---|
| ★ Project Location | Waterbody           | Map Sources: ISC, used with permission, NAUSA; NRC 1:10M; SURN14.<br>Refer to text for full details & disclaimer. |
| ● Cities           | Canada/US Border    | File: 3008- Client: NextGen Energy Ltd.   |
| Highway            | Provincial Boundary | 21 / Aug / 2018 Geomatics: CB Reviewed by: AK   |
| Ice Road           |                     | 0 NAD 1983 UTM Zone 13North 300 km  |
|                    |                     | Original Scale 1:6,600,000  |
|                    |                     | Figure: <b>1</b>  |

Figure 1. Project location.



|   |                       |   |                     |
|---|-----------------------|---|---------------------|
|  | 250m Buffer Waterbody |  | Heritage Study Area |
|  | 500m Buffer Waterbody |  | Section Grid        |
|  | Assessed Area         |  | Township Grid       |

Map Sources: HCB "Known Heritage Resources", 2017; ISC "SaskGrid TFM", 2017; NRC "Toporama WMS"; SK Ministry of Highways and Infrastructure "SURN14". Refer to text for full details & disclaimer.  
 File: 3008- Client: NextGen Energy Ltd.  
 26 / Oct / 2018 Geomatics: CB Reviewed by: AK  
 0 NAD 1983 UTM Zone 13North 2km  
 Original document scale 1:50,000


**CanNorth**  Figure: **2**

Figure 2. NexGen Energy Ltd.'s Rook I Operation Heritage Resources Impact Assessment.

## **2.0 PROJECT DESCRIPTION**

### **2.1 Project Area and Local Environment**

The Rook I project is located in northwest Saskatchewan in an area known as the Athabasca Basin. Geographically, the project area is located in the Firebag Hills Landscape Area of the Mid-Boreal Plain Ecoregion (Acton et al. 1998). Patterson Lake is located approximately 1.7 km east of Highway No. 955. There are no communities located in the vicinity of the project. The village of La Loche, Saskatchewan is located 155 km south of the project along Highway 955.

The nearest communities to the project area include the Hamlet of Descharme Lake, Saskatchewan, located approximately 60 km north, and the Village of La Loche, Saskatchewan, approximately 130 km north (Figure 1).

The general landscape consists of rolling upland morainic plain influenced by the Wisconsinian Glaciation Period resulting in the formation of the Cree Lake Moraine (Acton et al. 1998). The Cree Lake Moraine is located west of the Patterson Lake South Project. Dominant glacial features, including end moraines, eskers, kames, and knob and kettle terrain, provide evidence of the latest retreat of the Keewatin Sector of the Laurentide Ice Sheet approximately 10,000 years ago (Dyke 2004). The area west of the Cree Lake Moraine would have been deglaciated by approximately 10,000 years before present (B.P.), and areas east of the moraine would have been deglaciated shortly after, providing a baseline of between 9,000 and 10,000 B.P. for the earliest human habitation of the area (Dyke 2004).

The HSA includes three areas: Area 1 along the north side of Patterson Lake, Area 2 on the highlands, and Area 3 along the southern shore of Patterson Lake. Areas within 250 m of Patterson Lake within the HSA were surveyed along with high potential, level areas. In total, approximately 180 ha of terrain were assessed (Figure 2).

### **2.2 Potential Impacts to Heritage Resources**

Heritage resources are considered a non-renewable resource. Context is important to the archaeologist for proper recording and interpretation. The proposed Rook I project has the potential to negatively impact heritage resources if present within the potential footprint of a future development. Heavy equipment can impact heritage resources in a

variety of ways. Surface features may be crushed and/or displaced by the weight of machinery, while buried cultural materials (e.g., artifacts and features) may be impacted during the development of the Rook I project, if present.

By completing an HRIA prior to any significant development, it allows for any heritage resources identified in the project area to be successfully mitigated. This is achieved by either avoidance of the resource or through further archaeological research if avoiding the archaeological site is not feasible. Further archaeological research can include an intensive shovel testing program, archaeological excavation, and the recording of surface features (e.g., hearth, stone cairn, cellar depression) in detail. If a Site of Special Nature (SSN) (e.g., burial, pictograph, petroglyph) is discovered in the project area, avoidance may be the only option, as SSN are offered explicit protection under Section 64 of *The Heritage Property Act* (GS 1980).

### 3.0 PREVIOUS ARCHAEOLOGICAL RESEARCH

The HCB's archaeological site database was consulted to determine the type and number of known sites recorded near the proposed project. In addition, the extent of previous archaeological work in the area was reviewed.

#### 3.1 Known Heritage Resources

In total, four archaeological sites have been recorded within the boundaries of NTS Map Sheet 74 F-11 (Figure 3). These sites have been identified as artifact scatters (n=2), artifact finds (n=1), and single feature (n=1). Three of the sites have been dated to the Precontact Period. A diagnostic projectile point was identified at HjOi-2. A Taltheilei projectile point was identified in a tree throw. The Taltheilei culture dates to 2,600 B.P. to historic times and is typically divided into the Early Period (2,600 to 2,100 B.P), Middle Period (2,100 to 1,500 B.P.), and Late Period (1,200 to Historic Period) (Gordon 1996; Meyer 1999).

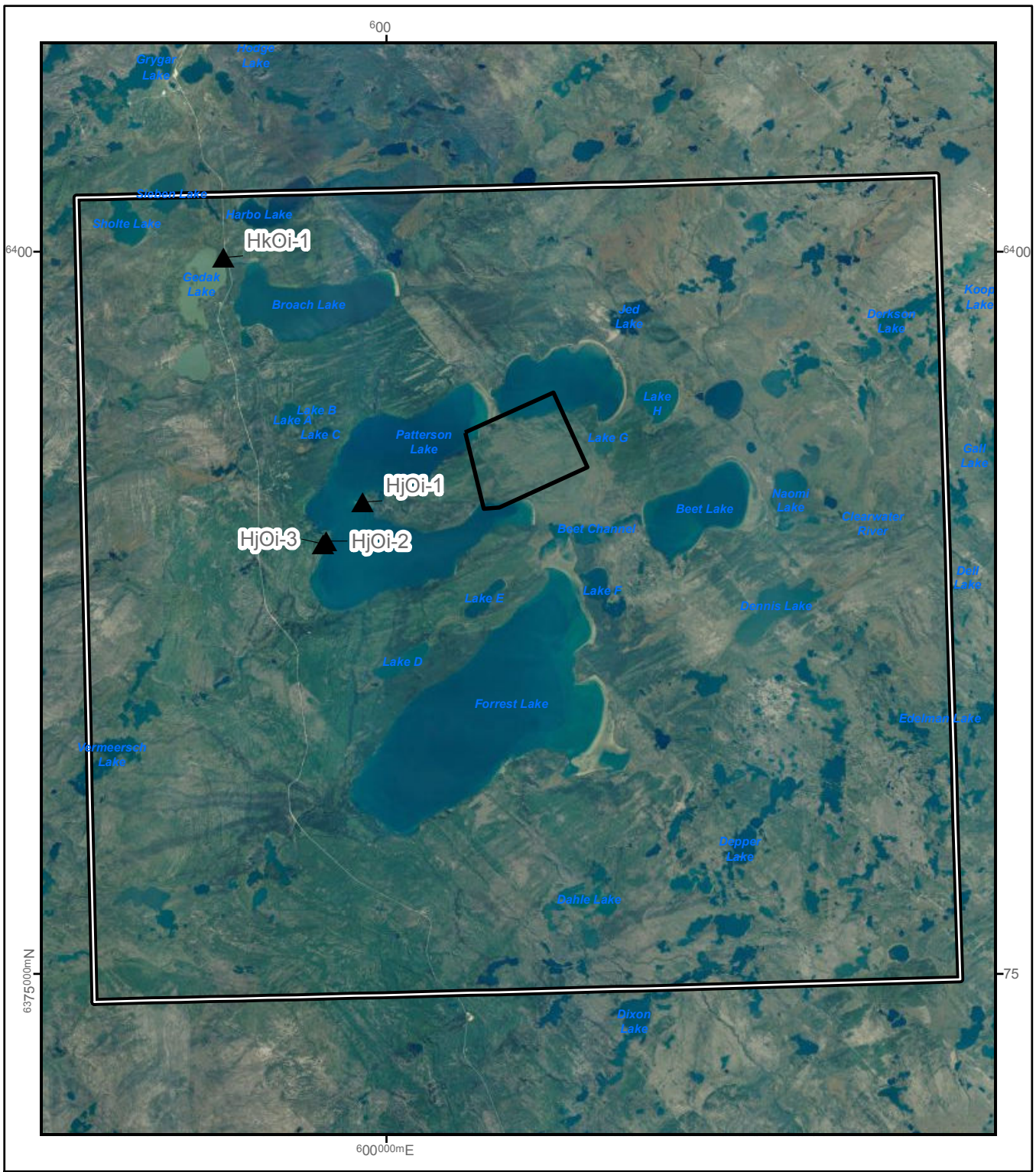
| <b>Known archaeological sites located within NTS Map Sheet 74 F-11.</b> |                  |                             |                   |
|---|------------------|-----------------------------|-------------------|
| <b>Borden No.</b>   | <b>Site Type</b> | <b>Cultural Affiliation</b> | <b>Permit No.</b> |
| HjOi-1  | Artifact Scatter | Unknown Precontact          | 13-117            |
| HjOi-2  | Artifact Scatter | Taltheilei                  | 13-117            |
| HjOi-3  | Single Feature   | Unknown Precontact          | 13-117            |
| HkOi-1  | Artifact Find    | Unknown Precontact          | 79-000            |

Archaeological site HjOi-1 is located approximately 4 km west of the project area. An artifact scatter was identified on an exposed cut bank leading down to the shore of Patterson Lake. No artifacts were identified subsurface. A single tool, a broken biface, made from Beaver River Sandstone was identified.

#### 3.2 Previous Archaeological Work

A post-impact HRIA for the NexGen Rook I project was completed under Archaeological Resource Investigation Permit No. 15-148, by Bison Historical Services Ltd. This HRIA focussed on areas that had been impacted during the 2013, 2014, and 2015 exploration programs. Previous activities included drill locations, access roads, storage areas, a camp, a core analysis area, a boat dock, and a helicopter landing pad. As directed by the HCB,

areas with previous disturbances within 250 m of specific water bodies were subject to a post impact pedestrian survey (HCB File Nos.: 13-593, 13-2056, 14-3085, and 15-713). Additionally, subsurface testing was conducted in areas thought to have potential for buried archaeological resources. No heritage sites were identified during the survey.



- ▲ Known Heritage Site
- Heritage Study Area
- ▭ NTS Map Sheet 74 F-11

Map Sources: HCB "Known Heritage Resources", 2017; ISC "SaskGrid TFM", 2017; SGIC "FlySask"; SK Ministry of Highways and Infrastructure "SURN14". Refer to text for full details & disclaimer.  
 File: 3008-R04 Client: NextGen Energy Ltd.  
 30 / Oct / 2018 Geomatics: CB Reviewed by: AK

0 NAD 1983 UTM Zone 12North 10km  
 Original document scale 1:200,000


**CanNorth**  Figure: **3**

Figure 3. Known heritage sites on NTS map sheet 74 F-11.

## **4.0 METHODOLOGY**

### **4.1 Baseline Field Assessment**

The goal of the baseline field assessment is to help to determine the nature of archaeological sites, the types of landforms in which sites are located, and the characteristics of artifacts that may be found within the baseline study area (Heizer and Graham 1968; Meyer 1983; McManamon 1984; Renfrew and Bahn 2004). Given the large size of the baseline study area and limited resources for archaeological investigations, baseline field assessment uses extensive survey methods that will produce a large-scale perspective of the study area as opposed to intensive or fine-grained data of specific locations or sites (Meyer 1984; Renfrew and Bahn 2004). Baseline field assessment is especially important in areas where little previous archaeological investigations have been conducted, such as the northern boreal forest region of Saskatchewan. Baseline field assessment should be considered a preliminary investigation within the given baseline study area. Specific areas and known archaeological sites within the project area may require further investigations.

In general, many areas in the northern boreal forest area of Saskatchewan are inaccessible because much of it is covered by wetlands, rivers, and lakes as well as a lack of roads and trails. In order to gain access to areas of high archaeological potential within the baseline study area, the usage of watercraft and all-terrain vehicles is often required. The inaccessibility of some areas may, unfortunately, result in biases within the results, as only areas that can be more easily accessed are assessed (Korejbo 2011). Given the challenges of archaeological investigation in the northern boreal forest area of Saskatchewan, this bias is seen as acceptable in the course of initial baseline investigation.

The most popular and effective method used in baseline field assessment consists of a combination of pedestrian reconnaissance and the excavation of shovel probes (Ruppé 1966; Burke and Smith 2004; TPCS 2008). Pedestrian reconnaissance focusses on the identification of surface features (e.g., stone circles, stone cairns, cellar depressions) and subsurface exposures (e.g., rodent exposures, blowouts, trails, cutbanks) in areas considered to have high heritage potential (e.g., level landforms along rivers and lakes, valley crests). Areas of high potential can generally be detected during a pre-field assessment of the proposed project area utilizing topographic maps, satellite imagery, and aerial photography; however, satellite imagery and aerial photographs can be ambiguous,

and microtopographical features that may be considered areas of high heritage potential are not always visible on topographical maps, leading to the necessity of assessing heritage potential during field assessment.

Although surface visibility for heritage resources may be high in some project areas, artifacts and features may still be concealed by subsurface deposits (Schiffer et al. 1978). For this reason, it is necessary to compliment pedestrian reconnaissance with the excavation of shovel probes within the project area. This is especially vital in areas with poor surface visibility, such as those covered by thick vegetation (e.g., trees, shrubs, tall grasses) (Lovis 1976; Chartkoff 1978; Korejbo 2011). Shovel probes, measuring approximately 40 cm by 40 cm, are judgementsly excavated in the project area with the goal of discovering buried artifacts and features (e.g., hearth) that may not be detected during pedestrian reconnaissance. In general, the likelihood of discovering a small site is improved when the frequency of shovel probes is increased (McManamon 1984).

If a site is discovered, the precise location, size, boundaries, function, and significance of the site are determined through the excavation of shovel tests and pedestrian reconnaissance (Fladmark 1978; Burke and Smith 2004). The site's geographical location (UTM coordinates) is based off of a central location (preferably from a known feature) at the site and is recorded by using a hand-held Global Positioning Satellite (GPS) unit. Shovel tests, measuring 50 cm by 50 cm, are systematically excavated throughout the site to determine the extent of the site. All excavated soils are screened through a one quarter-inch (6 mm) wire mesh, increasing the recovery rate of artifacts. Generally, more artifacts can be discovered during sub-surface shovel testing than during surface reconnaissance (Meyer 1983).

All tools (e.g., projectile points, scrapers, bifaces) discovered on the surface and all cultural material (e.g., artifacts, faunal remains, fire-cracked rock) identified during shovel testing are collected and taken to the CanNorth archaeology lab in Saskatoon, Saskatchewan, where they are catalogued and analyzed in detail. Commonly, artifacts found on the surface and not identified as a formal tool during pedestrian reconnaissance (e.g., lithic debitage) are recorded and left in-situ. Immoveable cultural features (e.g., historic building, stone circles, stone cairns, cellar depressions) that are identified in conflict with the project may be tested, photographed, and mapped in detail. Artifacts and features observed or collected during field assessment assist in the interpretation of the site. Some local site interpretations may include the age, cultural affiliation, and function.

On a more regional scale, a compilation of site data throughout a region or regions may enable interpretations such as trade routes, migration patterns, seasonal rounds, and interaction spheres.

## 5.0 FIELDWORK RESULTS

An HRIA for NexGen's proposed Rook I project was completed from June 19<sup>th</sup>, 2018, to June 22<sup>nd</sup>, 2018, under Archaeological Resource Investigation Permit No. 18-068. Detailed survey plans and handheld GPS units easily defined the project area. The survey results are described below.

### 5.1 Area 1

Area 1 is located at the northern portion of the study area along Patterson Lake and covers approximately 130 ha (Figures 2 and 4). In general, the terrain in this area consisted of low-lying, boggy terrain interspersed with small ridges of well-drained terrain that sloped downward towards the lake (north). Vegetation in the low-lying areas was characterized by sphagnum moss (*Sphagnum* sp.), Labrador tea (*Rhododendron* sp.) and black spruce (*Picea mariana*) (Photo 1; Figure 4). Dry, well-drained areas were characterized by regenerating jack pine (*Pinus banksiana*) and reindeer lichen (*Cladonia rangiferina*) (Photo 2 and Photo 3; Figure 4). Recent forest fire activities have removed much of the understory that is usually present in Boreal Forest environments.



Photo 1. View north from PK04 of low-lying boggy terrain (June 19<sup>th</sup>, 2018)



Photo 2. View west from shovel probe K031 of well-drained, level terrain in Area 1 (June 19<sup>th</sup>, 2018).



Photo 3. View north from shovel probe K019 along well-drained lake rampart along Patterson Lake (June 19<sup>th</sup>, 2018).

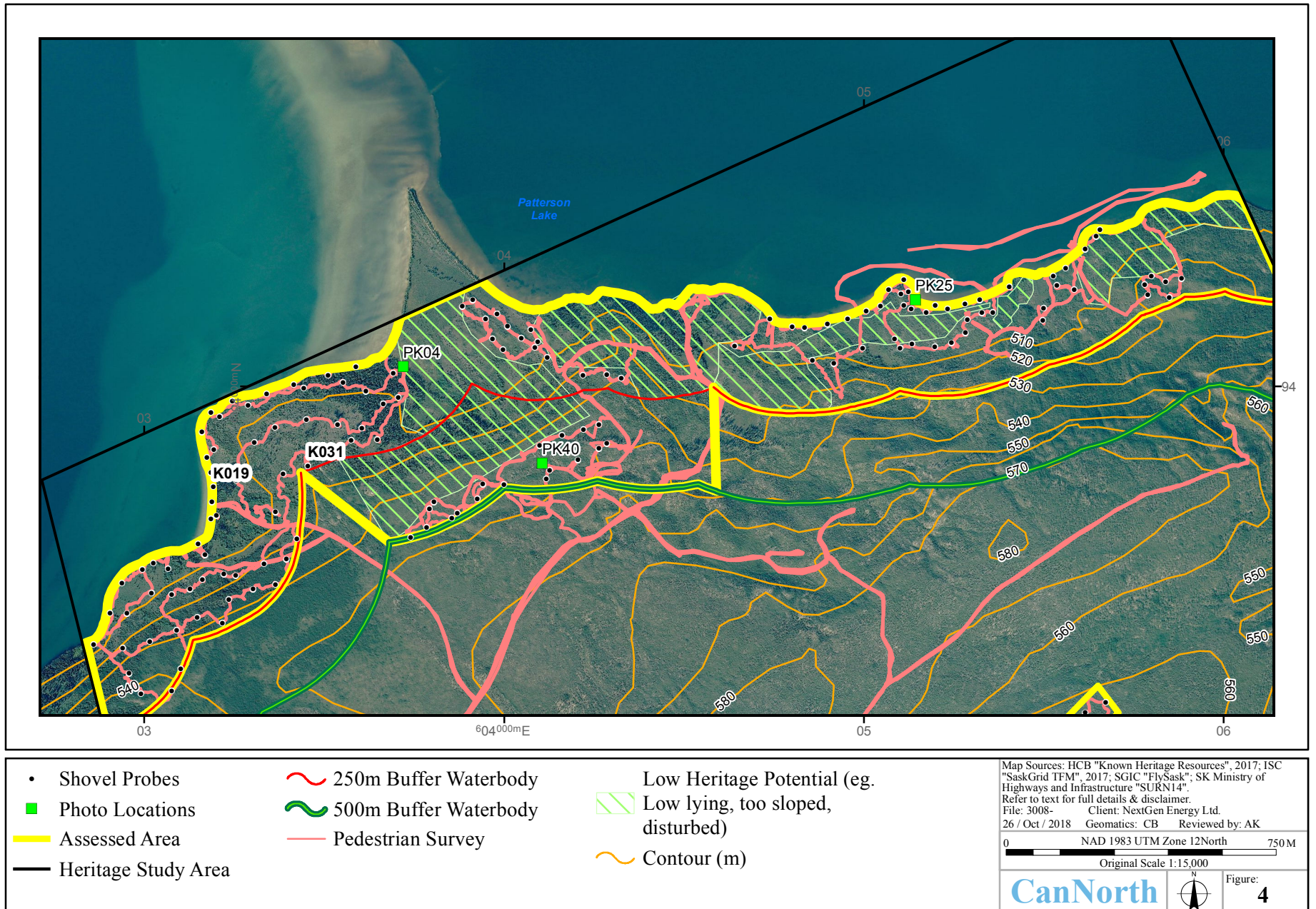


Figure 4. NexGen Energy Ltd.'s Rook I Operation Area 1 Heritage Resources Impact Assessment detail.

Portions of Area 1 identified as having high heritage potential were assessed to determine if any heritage resources were in conflict with the project (Figure 2). In total, approximately 130 ha were assessed utilizing a combination of pedestrian reconnaissance, watercraft reconnaissance, post-impact inspections of disturbed areas, and the excavation of 144 shovel probes (Appendix A, Table 1). Testing focussed on areas within 250 m of Patterson Lake and areas of potential disturbance within 500 m from the Patterson Lake shoreline (Figure 4).

Shovel probes were judgmentally excavated in areas considered to have the greatest heritage potential (i.e., well-drained and level areas suitable for a camp site or activity area). Shovel probe stratigraphy was consistent across the area and consisted of a sand matrix as typified by shovel probe K031 (Photo 4; Figure 4):

- 0 cm to 4 cm organic duff;
- 4 cm to 14/30 cm tan sand; and
- 14/30 cm to 50 cm orange sand.



Photo 4. Stratigraphy of shovel probe K031 (July 19<sup>th</sup>, 2018).

Large portions of the project area were impacted by previous exploration infrastructure, including trails, pump stations, a helicopter pad, wood waste storage, and drill areas. It appeared that levelling activities had occurred and that fill might have been brought in to build up trails through low-lying areas. Many of the areas that contained drilling equipment were located on higher, well-drained areas (Photo 5; Figure 4).



Photo 5. View southwest from PK40 of a high heritage potential area subject to disturbance from drilling and trail developments (June 22<sup>nd</sup>, 2018).

Surface visibility was good to excellent throughout the project area. Surface surveys were conducted along the beach and cut banks (Photo 6; Figure 4). No surface features or cultural materials were discovered in conflict with Area 1.



Photo 6. View east from PK25 of the beach along Patterson Lake in Area 1 (June 21<sup>st</sup>, 2018).

## 5.2 Area 2

Area 2 consists of approximately 17 ha and is located on a high, well-drained area in the central region of land that separates different segments of Patterson Lake. The Patterson Lake shoreline is approximately 550 m south and approximately 1,000 m north of this area. The area was fairly level with gently undulating terrain located at the northern and southern edges (Photo 7; Figure 5). Vegetation in the area consisted of regenerating jack pine and reindeer lichen. Recent forest fire activities have removed much of the understory that is usually present in Boreal Forest environments.

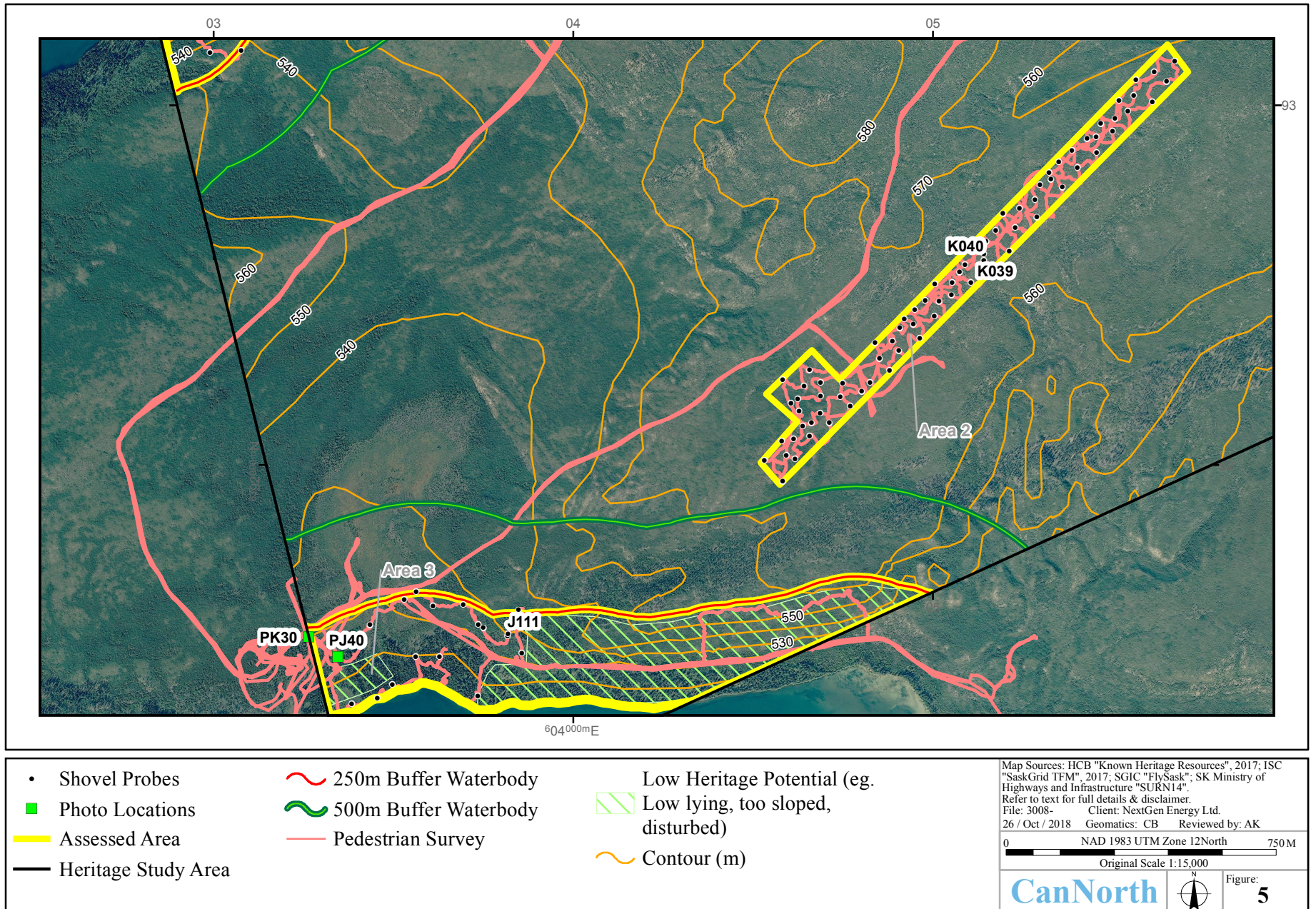


Figure 5. NexGen Energy Ltd.'s Rook I Operation Area 2 and 3 Heritage Resources Impact Assessment detail.



Photo 7. View south from shovel probe K039 of terrain in Area 2 (June 20<sup>th</sup>, 2018).

Shovel probes were judgmentally excavated in areas considered to have the greatest heritage potential (i.e., well-drained and level areas suitable for a camp site or activity area). In total, 75 shovel probes were excavated in Area 2. Shovel probe stratigraphy was consistent across the area and comprised a sand matrix as typified by shovel probe K040 (Photo 8; Figure 5):

- 0 cm to 15 cm tan sand; and
- 15 cm to 50 cm orange sand with some cobbles at the bottom.

Surface visibility was good to excellent throughout the project area. No surface features or cultural materials were identified in conflict with Area 2.



Photo 8. Stratigraphy of shovel probe K040 (June 20<sup>th</sup>, 2018).

### 5.3 Area 3

An HRIA for Area 3 consists of approximately 33 ha along the Patterson Lake shoreline. In general, the terrain in Area 3 consisted of low-lying, boggy terrain or well-drained terrain that sloped steeply down to Patterson Lake with very few level, well-drained areas (Photo 9; Figure 5). Vegetation observed in the area consisted of sphagnum moss, Labrador tea, black spruce, jack pine, and reindeer lichen.



Photo 9. View east from PJ 40 of low-lying, boggy terrain in Area 3 (June 22<sup>nd</sup>, 2018).



Photo 10. View north from shovel probe J111 along a small drumlin in Area 3 (June 22<sup>nd</sup>, 2018).

Area 3 was assessed using a combination of pedestrian reconnaissance, post-impact survey, and the excavation of 20 shovel probes. Shovel probes were judgmentally excavated in areas considered to have the greatest heritage potential (i.e., well-drained and level areas suitable for a camp site or activity area). In general, the terrain in Area 3 would be categorized as moderate to poor heritage potential. The highest heritage potential in Area 3 consisted of a small drumlin feature (Photo 10; Figure 5). Shovel probe stratigraphy along the drumlins consisted of a sand matrix and is summarized below:

- 0 cm to 5 cm tan sand; and
- 5 cm to 15 cm tan sand with large cobbles.

Large portions of Area 3 had been cleared, and post-impact surveys were conducted in these areas (Photo 11; Figure 5). Surface visibility was moderate throughout the project area. No surface features or cultural materials were identified in conflict with Area 3.



Photo 11. View east from PK30 of the proposed camp area that has been disturbed by clearing activities (June 22<sup>nd</sup>, 2018).

## 6.0 SUMMARY AND RECOMMENDATIONS

An HRIA was completed for NexGen’s proposed Rook I project under Archaeological Resource Investigation Permit No. 18-068 from June 19<sup>th</sup>, 2018, to June 22<sup>nd</sup>, 2018. Heritage sensitive portions of the project were assessed using a combination of pedestrian and boat-based reconnaissance, post-impact assessment, and the excavation of 239 shovel probes. No new sites were identified in conflict with the project. The results of the HRIA are summarized by quarter-section in the table below.

| <b>NexGen Energy Ltd.</b>  |                           |                      |                                       |
|--|---------------------------|----------------------|---------------------------------------|
| <b>Heritage Resources Impact Assessment results (Permit No. 18-068).</b> |                           |                      |                                       |
| <b>Project</b>   | <b>Area Assessed (ha)</b> | <b>Shovel Probes</b> | <b>Recommendation</b>                 |
| Area 1   | 130                       | 144                  | No new heritage resources identified. |
|  |                           |                      | No further concerns.                  |
| Area 2   | 17                        | 75                   | No new heritage resources identified. |
|  |                           |                      | No further concerns.                  |
| Area 3   | 33                        | 20                   | No new heritage resources identified. |
|  |                           |                      | No further concerns.                  |
| <b>Total:</b>  | <b>180</b>                | <b>239</b>           |                                       |

It is recommended that NexGen Energy Ltd. be provided with regulatory approval as per Section 63 of *The Heritage Property Act* for their proposed Rook I project to should the project proceed as planned. In the event that human remains are discovered, please contact the local RCMP detachment and the HCB (306-787-2817).

## 7.0 CLOSURE

If you have any questions or require additional information regarding this HRIA, please contact the undersigned.

Sincerely,



Kara Wolfe, M.A.

Archaeologist

**Canada North Environmental  
Services**



Alan Korejbo, M.A.

Heritage Division Manager

**Canada North Environmental  
Services**

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SHOVEL PROBES

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## APPENDIX A, TABLE 1

Geographical location of shovel probes in  
NexGen Energy Ltd.'s Rook I – Area 1.

| Shovel Probe | Zone (NAD 83) | UTM Easting | UTM Northing |
|--------------|---------------|-------------|--------------|
| J001         | 12V           | 603185      | 6393631      |
| J002         | 12V           | 603169      | 6393532      |
| J003         | 12V           | 603025      | 6393508      |
| J004         | 12V           | 602938      | 6393454      |
| J005         | 12V           | 602905      | 6393370      |
| J006         | 12V           | 602940      | 6393273      |
| J007         | 12V           | 603015      | 6393290      |
| J008         | 12V           | 603090      | 6393322      |
| J009         | 12V           | 603076      | 6393421      |
| J010         | 12V           | 603127      | 6393437      |
| J011         | 12V           | 603161      | 6393463      |
| J012         | 12V           | 603221      | 6393478      |
| J013         | 12V           | 603254      | 6393474      |
| J014         | 12V           | 603332      | 6393507      |
| J015         | 12V           | 603188      | 6393679      |
| J016         | 12V           | 603185      | 6393760      |
| J017         | 12V           | 603192      | 6393825      |
| J018         | 12V           | 603209      | 6393916      |
| J019         | 12V           | 603288      | 6393947      |
| J020         | 12V           | 603443      | 6393995      |
| J021         | 12V           | 603552      | 6394010      |
| J022         | 12V           | 603615      | 6393986      |
| J023         | 12V           | 603692      | 6394037      |
| J024         | 12V           | 603705      | 6393969      |
| J025         | 12V           | 603664      | 6393952      |
| J026         | 12V           | 603604      | 6393883      |
| J027         | 12V           | 603537      | 6393893      |
| J028         | 12V           | 603451      | 6393908      |
| J029         | 12V           | 603363      | 6393886      |
| J030         | 12V           | 603306      | 6393843      |
| J031         | 12V           | 603255      | 6393739      |
| J076         | 12V           | 605780      | 6394284      |
| J077         | 12V           | 605799      | 6394306      |
| J078         | 12V           | 605838      | 6394291      |
| J079         | 12V           | 605614      | 6394382      |
| J080         | 12V           | 605526      | 6394307      |
| J081         | 12V           | 605499      | 6394218      |
| J082         | 12V           | 605585      | 6394269      |
| J083         | 12V           | 605358      | 6394206      |
| J084         | 12V           | 605328      | 6394205      |

## APPENDIX A, TABLE 1

Geographical location of shovel probes in  
NexGen Energy Ltd.'s Rook I – Area 1.

| Shovel Probe | Zone (NAD 83) | UTM Easting | UTM Northing |
|--------------|---------------|-------------|--------------|
| J085         | 12V           | 605287      | 6394186      |
| J086         | 12V           | 605282      | 6394149      |
| J087         | 12V           | 605243      | 6394121      |
| J088         | 12V           | 605197      | 6394110      |
| J089         | 12V           | 605134      | 6394118      |
| J090         | 12V           | 605100      | 6394108      |
| J091         | 12V           | 605086      | 6394133      |
| J092         | 12V           | 605110      | 6394225      |
| J093         | 12V           | 605069      | 6394270      |
| J094         | 12V           | 604996      | 6394105      |
| J095         | 12V           | 604916      | 6394064      |
| J096         | 12V           | 604856      | 6394072      |
| J097         | 12V           | 604641      | 6394112      |
| J098         | 12V           | 604120      | 6394080      |
| J099         | 12V           | 604085      | 6394108      |
| J100         | 12V           | 604047      | 6394134      |
| J101         | 12V           | 603980      | 6394200      |
| J102         | 12V           | 603884      | 6394222      |
| J103         | 12V           | 603996      | 6394101      |
| J118         | 12V           | 603940      | 6393728      |
| J119         | 12V           | 603925      | 6393687      |
| J120         | 12V           | 603854      | 6393635      |
| J121         | 12V           | 603792      | 6393659      |
| J122         | 12V           | 603740      | 6393582      |
| J123         | 12V           | 604127      | 6393767      |
| J124         | 12V           | 604263      | 6393828      |
| J125         | 12V           | 604220      | 6393880      |
| J126         | 12V           | 604099      | 6393835      |
| J127         | 12V           | 605199      | 6394226      |
| J128         | 12V           | 604326      | 6394023      |
| J130         | 12V           | 602858      | 6393282      |
| K001         | 12V           | 603201      | 6393641      |
| K002         | 12V           | 603150      | 6393562      |
| K003         | 12V           | 603065      | 6393493      |
| K004         | 12V           | 602994      | 6393491      |
| K005         | 12V           | 603020      | 6393426      |
| K006         | 12V           | 602952      | 6393369      |
| K007         | 12V           | 602958      | 6393202      |
| K008         | 12V           | 602990      | 6393146      |
| K009         | 12V           | 603076      | 6393152      |

## APPENDIX A, TABLE 1

Geographical location of shovel probes in  
NexGen Energy Ltd.'s Rook I – Area 1.

| Shovel Probe | Zone (NAD 83) | UTM Easting | UTM Northing |
|--------------|---------------|-------------|--------------|
| K010         | 12V           | 603101      | 6393215      |
| K011         | 12V           | 603146      | 6393358      |
| K012         | 12V           | 603217      | 6393342      |
| K013         | 12V           | 603235      | 6393409      |
| K014         | 12V           | 603302      | 6393437      |
| K015         | 12V           | 603364      | 6393450      |
| K016         | 12V           | 603395      | 6393520      |
| K017         | 12V           | 603424      | 6393576      |
| K018         | 12V           | 603364      | 6393651      |
| K019         | 12V           | 603191      | 6393720      |
| K020         | 12V           | 603173      | 6393802      |
| K021         | 12V           | 603159      | 6393873      |
| K022         | 12V           | 603185      | 6393928      |
| K023         | 12V           | 603245      | 6393959      |
| K024         | 12V           | 603340      | 6393980      |
| K025         | 12V           | 603415      | 6394005      |
| K026         | 12V           | 603510      | 6394031      |
| K027         | 12V           | 603588      | 6394054      |
| K028         | 12V           | 603648      | 6393851      |
| K029         | 12V           | 603575      | 6393850      |
| K030         | 12V           | 603517      | 6393804      |
| K031         | 12V           | 603454      | 6393780      |
| K032         | 12V           | 603386      | 6393758      |
| K063         | 12V           | 605849      | 6394247      |
| K064         | 12V           | 605883      | 6394300      |
| K065         | 12V           | 605656      | 6394436      |
| K066         | 12V           | 605646      | 6394417      |
| K067         | 12V           | 605560      | 6394329      |
| K068         | 12V           | 605496      | 6394183      |
| K069         | 12V           | 605536      | 6394281      |
| K070         | 12V           | 605404      | 6394277      |
| K071         | 12V           | 605322      | 6394240      |
| K072         | 12V           | 605281      | 6394229      |
| K073         | 12V           | 605233      | 6394215      |
| K074         | 12V           | 605173      | 6394206      |
| K075         | 12V           | 605132      | 6394215      |
| K076         | 12V           | 605124      | 6394263      |
| K077         | 12V           | 605103      | 6394256      |
| K078         | 12V           | 605111      | 6394297      |
| K079         | 12V           | 605046      | 6394224      |

## APPENDIX A, TABLE 1

Geographical location of shovel probes in  
NexGen Energy Ltd.'s Rook I – Area 1.

| Shovel Probe | Zone (NAD 83) | UTM Easting | UTM Northing |
|--------------|---------------|-------------|--------------|
| K080         | 12V           | 605006      | 6394210      |
| K081         | 12V           | 604954      | 6394189      |
| K082         | 12V           | 604898      | 6394173      |
| K083         | 12V           | 604835      | 6394163      |
| K084         | 12V           | 604801      | 6394165      |
| K085         | 12V           | 604739      | 6394189      |
| K086         | 12V           | 604285      | 6394034      |
| K087         | 12V           | 604219      | 6394031      |
| K088         | 12V           | 604074      | 6394157      |
| K089         | 12V           | 604093      | 6394123      |
| K090         | 12V           | 604010      | 6394167      |
| K091         | 12V           | 603913      | 6394240      |
| K092         | 12V           | 603948      | 6394187      |
| K093         | 12V           | 603968      | 6394132      |
| K100         | 12V           | 603999      | 6393727      |
| K101         | 12V           | 603869      | 6393648      |
| K102         | 12V           | 603784      | 6393608      |
| K103         | 12V           | 603805      | 6393679      |
| K104         | 12V           | 604117      | 6393743      |
| K105         | 12V           | 604206      | 6393795      |
| K106         | 12V           | 604285      | 6393841      |
| K107         | 12V           | 604264      | 6393894      |
| K108         | 12V           | 604160      | 6393865      |
| K109         | 12V           | 605790      | 6394254      |

## APPENDIX A, TABLE 2

Geographical location of shovel probes in  
NexGen Energy Ltd.'s Rook I – Area 2.

| Shovel Probe | Zone (NAD 83) | UTM Easting | UTM Northing |
|--------------|---------------|-------------|--------------|
| J032         | 12V           | 604851      | 6392296      |
| J033         | 12V           | 604838      | 6392339      |
| J034         | 12V           | 604887      | 6392345      |
| J035         | 12V           | 604907      | 6392382      |
| J036         | 12V           | 604920      | 6392407      |
| J037         | 12V           | 604945      | 6392392      |
| J038         | 12V           | 604949      | 6392433      |
| J039         | 12V           | 604978      | 6392458      |
| J040         | 12V           | 605016      | 6392456      |
| J041         | 12V           | 605005      | 6392503      |
| J042         | 12V           | 605054      | 6392507      |
| J043         | 12V           | 605073      | 6392536      |
| J044         | 12V           | 605088      | 6392557      |
| J045         | 12V           | 605099      | 6392599      |
| J046         | 12V           | 605140      | 6392587      |
| J047         | 12V           | 605147      | 6392621      |
| J048         | 12V           | 605174      | 6392652      |
| J049         | 12V           | 605194      | 6392699      |
| J050         | 12V           | 605240      | 6392715      |
| J051         | 12V           | 605283      | 6392738      |
| J052         | 12V           | 605297      | 6392779      |
| J053         | 12V           | 605328      | 6392794      |
| J054         | 12V           | 605322      | 6392813      |
| J055         | 12V           | 605349      | 6392843      |
| J056         | 12V           | 605385      | 6392874      |
| J057         | 12V           | 605428      | 6392907      |
| J058         | 12V           | 605454      | 6392912      |
| J059         | 12V           | 605466      | 6392949      |
| J060         | 12V           | 605505      | 6392963      |
| J061         | 12V           | 605517      | 6393014      |
| J062         | 12V           | 605557      | 6393028      |
| J063         | 12V           | 605564      | 6393071      |
| J064         | 12V           | 604688      | 6392192      |
| J065         | 12V           | 604623      | 6392183      |
| J066         | 12V           | 604627      | 6392151      |
| J067         | 12V           | 604532      | 6392012      |
| J068         | 12V           | 604591      | 6392026      |
| J069         | 12V           | 604580      | 6392067      |
| J070         | 12V           | 604612      | 6392073      |
| J071         | 12V           | 604637      | 6392109      |

## APPENDIX A, TABLE 2

Geographical location of shovel probes in  
NexGen Energy Ltd.'s Rook I – Area 2.

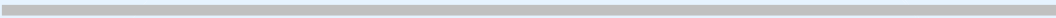
| Shovel Probe | Zone (NAD 83) | UTM Easting | UTM Northing |
|--------------|---------------|-------------|--------------|
| J072         | 12V           | 604662      | 6392117      |
| J073         | 12V           | 604686      | 6392144      |
| J074         | 12V           | 604741      | 6392189      |
| J075         | 12V           | 604748      | 6392227      |
| J129         | 12V           | 604687      | 6392231      |
| K033         | 12V           | 604825      | 6392231      |
| K034         | 12V           | 604878      | 6392263      |
| K035         | 12V           | 604904      | 6392318      |
| K036         | 12V           | 604962      | 6392352      |
| K037         | 12V           | 605003      | 6392414      |
| K038         | 12V           | 605050      | 6392473      |
| K039         | 12V           | 605105      | 6392507      |
| K040         | 12V           | 605140      | 6392569      |
| K041         | 12V           | 605211      | 6392595      |
| K042         | 12V           | 605228      | 6392660      |
| K043         | 12V           | 605287      | 6392689      |
| K044         | 12V           | 605359      | 6392773      |
| K045         | 12V           | 605401      | 6392827      |
| K046         | 12V           | 605454      | 6392869      |
| K047         | 12V           | 605499      | 6392928      |
| K048         | 12V           | 605541      | 6392984      |
| K049         | 12V           | 605609      | 6393010      |
| K050         | 12V           | 605649      | 6393066      |
| K051         | 12V           | 605672      | 6393122      |
| K052         | 12V           | 605614      | 6393093      |
| K053         | 12V           | 604657      | 6392264      |
| K054         | 12V           | 604641      | 6392220      |
| K055         | 12V           | 604582      | 6392238      |
| K056         | 12V           | 604604      | 6392171      |
| K057         | 12V           | 604581      | 6391955      |
| K058         | 12V           | 604615      | 6392017      |
| K059         | 12V           | 604657      | 6392081      |
| K060         | 12V           | 604712      | 6392118      |
| K061         | 12V           | 604769      | 6392164      |
| K062         | 12V           | 604801      | 6392205      |

### APPENDIX A, TABLE 3

Geographical location of shovel probes in  
NexGen Energy Ltd.'s Rook I – Area 3.

| Shovel Probe | Zone (NAD 83) | UTM Easting | UTM Northing |
|--------------|---------------|-------------|--------------|
| J104         | 12V           | 603435      | 6391555      |
| J105         | 12V           | 603530      | 6391626      |
| J106         | 12V           | 603563      | 6391649      |
| J107         | 12V           | 603610      | 6391609      |
| J108         | 12V           | 603694      | 6391613      |
| J109         | 12V           | 603736      | 6391557      |
| J110         | 12V           | 603750      | 6391548      |
| J111         | 12V           | 603817      | 6391525      |
| J112         | 12V           | 603818      | 6391532      |
| J113         | 12V           | 603828      | 6391569      |
| J114         | 12V           | 603834      | 6391570      |
| J115         | 12V           | 603847      | 6391597      |
| J116         | 12V           | 603827      | 6391561      |
| J117         | 12V           | 603856      | 6391476      |
| K094         | 12V           | 603384      | 6391336      |
| K095         | 12V           | 603455      | 6391352      |
| K096         | 12V           | 603497      | 6391390      |
| K097         | 12V           | 603562      | 6391467      |
| K098         | 12V           | 603628      | 6391467      |
| K099         | 12V           | 603735      | 6391359      |

APPENDIX C



SURVEY PLAN



|     |          |                               |     |     |     |     |     |     |     |
|-----|----------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|
| A   | 30/11/18 | ISSUED FOR SQUAD CHECK/REVIEW | JAC | PP  |     |     |     |     |     |
| REV | DDMMYY   | REVISION/ISSUE DESCRIPTION    | DRN | CHK | APP | APP | APP | APP | APP |