REPORT

Final Audit Report

Manitoba Hydro Bipole III Environmental Audit

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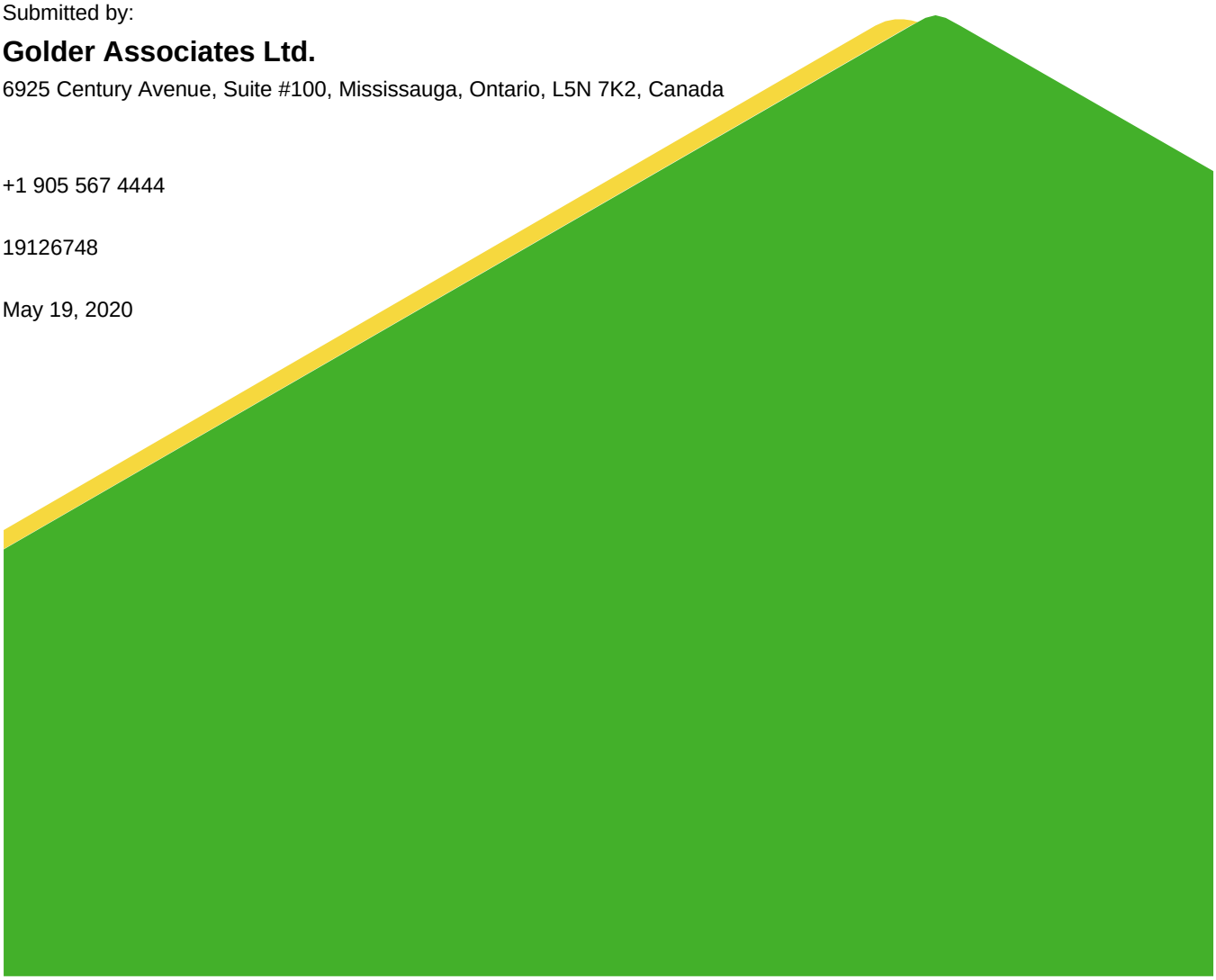

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1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by Manitoba Hydro to complete a third-party independent Environmental Audit (the Audit) with the following general objectives:

- To verify whether commitments Manitoba Hydro provided in its Bipole III Transmission Project (the Project) Environmental Impact Statement (EIS) filed under *Environment Act*, *1988* and supporting information for the construction of the Bipole III Transmission Project were met, and
- To assess the accuracy of the assumptions and predictions in those documents.

This report provides a description of the Audit activities, documents the associated findings, and is intended to be the first of two audits to satisfy condition #63 of Manitoba *Environment Act* License No. 3055 for the Bipole III Transmission Project issued August 14, 2013 (the “License”).

2.0 SITE DESCRIPTION

Approximately 70% of Manitoba’s hydroelectric generating capacity was delivered to southern Manitoba via the Bipole I and Bipole II high voltage direct current transmission line to a common terminus at the Dorsey Converter Station northwest of Winnipeg. In 1996, severe winds caused the failure of 19 Bipole I and II transmission towers and in 2007 the strongest confirmed tornado in Canadian history severely impacted a town 30 km from the Dorsey Converter Station. Due to the risk of a similar event causing a significant interruption of the supply of electricity to southern Manitoba, the Manitoba Hydro Board approved the Bipole III Transmission Project. Bipole III is a 500kV High Voltage direct current (HVdc), 1,384 km transmission line connecting two new converter stations with two new ground electrodes, and a new 230 kilovolts alternating current (kV ac) transmission collector line to connect the new northern converter station to existing converter stations. The Bipole III transmission line went into commercial service on July 4, 2018. The Project consists of the following key components / infrastructure:

- Two converter stations: The two converter stations are required in order to convert electrical energy from alternating current, as generated at northern Manitoba hydroelectric generating stations, into direct current for transmission south, and then back to alternating current for distribution in southern Manitoba. The first, Keewatinohk Converter Station is located northeast of Gillam. The second, Riel Converter Station is located just east of Winnipeg.
- Two ground electrodes: The two converter stations each require a ground electrode to which they are connected by a low voltage feeder line. Electricity requires a complete circuit in order to flow. The ground electrodes serve as an alternative return circuit for the flow of direct current in the HVdc line.
- Northern ac collector lines: New 230 kV ac transmission lines are required to link the Keewatinohk Converter Station to the existing Henday Converter Station and the Long Spruce Switching Station.
- 500 kV HVdc transmission line: The Keewatinohk Converter Station and the Riel Converter Station are linked by the 500 kV HVdc transmission line, approximately 1,384 km in length, centred on a 66 m wide right-of way which follows a westerly route, that is to the west of Lakes Winnipegosis and Manitoba.

3.0 AUDIT OBJECTIVES

The purpose of this first Audit is part of the process for satisfying condition #63 of the *Environment Act* Licence for the Bipole III Transmission Project. Condition #63 requires Manitoba Hydro, upon completion of construction of the Bipole III Project, to undertake a third-party environmental audit to assess whether commitments provided in the EIS and supporting information were met, and to assess the accuracy of the assumptions and predictions in the documents. A second Audit is to be completed in five years to fully satisfy the condition. The Audit reports are to be submitted to the Director of the Environmental Approvals Branch of Manitoba Conservation and Climate (i.e., the License issuer).

4.0 AUDIT SCOPE

4.1 Spatial Extent

The spatial extent of the Audit was consistent with all components (and associated activities) included as part of the project footprint in the Project description from the EIS, and their associated potential environmental effects. This includes: the transmission line itself, connections to the northern ac collector system, converter stations (Keewatinohk and Riel) and associated ground electrodes, new access roads, and fly yards. Not included in the scope are: previously existing access roads, camps (these were permitted by parties other than Manitoba Hydro), components approved and/or constructed under separate *Environment Act* licences (e.g., camp and lagoons at Keewatinohk, drainage, fire suppression, etc. at Riel), and existing lines twinned by Bipole III.

4.2 Temporal Extent

The time frame for activities subject to this Audit began with the date of issuance of the *Environment Act* Licence on August 14, 2013 and ended with the date that coincides with the submission of final monitoring reports from the post-construction field season ending in October 2018 (reports submitted up to January 31, 2019).

4.3 Audit Scope

As previously stated in the Audit objectives, commitments, assumptions, and predictions contained in the EIS and supporting documents, such as the Bipole III Commitment Table, were subject to and fell within the scope of the Audit. This includes commitments, assumptions, and predictions contained in documents provided on the Manitoba Hydro Bipole III webpage and the Public Registry webpage for the project, including addenda filed following submission of the EIS prior to the issuance of the Project *Environment Act* Licence. Available documentation developed prior to and supporting the application for the *Environment Act* Licence formed the basis for the Audit criteria.

Documentation produced by Manitoba Hydro after the issuance of the *Environment Act* Licence describes the planned arrangements for environmental management on the Project and was referred to during the Audit to verify that commitments have been met and to verify the accuracy of assumptions and predictions. This includes documentation available from the aforementioned sources, as well as documentation that is not publicly available that Manitoba Hydro shared with the auditors.

The following items have been deemed by Manitoba Hydro to be outside of the scope of the Audit: details associated with contractual arrangements; primary sources of evidence associated with Indigenous commitments (i.e., interviews with Indigenous communities); and other conditions of the *Environment Act* Licence (with the exception of #63) as compliance with these conditions is otherwise reviewed by the Government of Manitoba.

Commitments, assumptions, and predictions related to site preparation, construction activities, and predicted short-term effects were all within the scope of this Audit. Commitments associated with operation and maintenance activities are to be audited in five years along with assumptions and predictions associated with medium and long-term effects. Note that only those commitments / assumptions / predictions identified as being of medium and high risk (further described below in Section 5 – Identification of Audit Criteria) have been included in the Audit to ensure the Audit sample size was adequate, representative and the Audit objective was met.

The Audit criteria were related to Project commitments, assumptions, and predictions relevant to the following environmental "categories" or aspects / impacts identified by Manitoba Hydro:

- Caribou and Moose,
- Avian,
- Stream Crossings,
- Resource Use – Trapping,
- Traditional Resource Use,
- Forestry and Timber Salvage,
- Biosecurity,
- Access,
- Culture and Heritage,
- Emergency Response and Preparedness, and
- Communication and Notifications.

5.0 IDENTIFICATION OF AUDIT CRITERIA

Audit criteria are the requirements against which audit evidence is compared. For the purposes of this Audit, each of the commitments, assumptions, and predictions contained in the EIS and supporting documentation were defined as potential Audit criteria. For example, the commitment "Spill containment equipment will be put in place in borrow areas for large fuel containing stationary equipment [e.g., crushing equipment]" is considered one Audit criterion. Any of the planned arrangements, developed by Manitoba Hydro in order to action or implement the various Project environmental commitments, were also included as Audit criteria.

A comprehensive list of potential Audit criteria was identified by Golder through an initial review of the Bipole III Commitment Table, which is a table outlining all the mitigation measures that were identified in the EIS for the Project. This was followed by a review of the relevant subsections of Section 8.0 (Effects and Mitigation) and Section 11.0 (Environmental Protection, Follow-up, and Monitoring) of the EIS. Additional commitments were then identified through a review of supporting documents to the EIS (e.g., the Transmission Line Construction Environmental Protection Plan, Integrated Vegetation Management Plan, etc.).

All potential Audit criteria were categorized in accordance with a variety of attributes including:

- Valued Ecosystem Component (VEC) – Criteria identified in the Bipole III Commitment Table and EIS were most often directly linked to environmental sub-components (as presented in the EIS) and associated VECs. Additional criteria identified in the supporting documents were included if they had linkages to a relevant environmental category (as listed in subsection 4.3 – Audit Contents); these were not necessarily linked

directly to a VEC. For example, many of the commitments in the category of Communication and Notification were general in nature, such as, “Manitoba Hydro will contact First Nation and Aboriginal community representatives prior to project start-up”.

- Risk factor – Criteria were assigned a risk factor of low, medium, or high as determined using professional judgement and in consideration of factors such as EIS effects assessment results and stakeholder concerns.
  - High risk criteria are very important Project commitments or environmental management standards that, if not met, would raise significant doubts as to whether the environmental performance would achieve program targets.
  - Medium risk criteria are important Project commitments or environmental management standards that, if not met, would raise concern as to whether the environmental performance would achieve program targets. These criteria are less critical to determining whether overall environmental performance would achieve program targets.
  - Low risk criteria are relevant but low importance Project commitments or environmental management standards that are not expected to significantly influence environmental performance or the ability of Manitoba Hydro to achieve overall program targets.
- Commitment time frame – This reflected whether criteria should be audited in the first audit only, second audit only, or both audits.
- Auditing effort – Criteria were assigned a value of low, medium, or high depending on the relative importance of the criterion, and the level of effort anticipated during the Audit, which included consideration of the amount of evidence that would need to be reviewed and the complexity of analysis required by the auditor.
- Evidence type – The type of evidence required to conduct the Audit was identified. It included either desktop review, interviews, or site visit.

Of the 552 potential Audit criteria, 98 were identified to be of low risk (and therefore not included in the Audit), and of the 455 identified to be of medium or high risk, 398 were identified for this initial Audit with 57 remaining criteria to be audited in five years. An additional 33 criteria were identified to be audited in both the first and second Audits.

6.0 AUDIT METHODOLOGY

The Audit was conducted in general conformance with the Canadian Standards Association document Z773-17 *Environmental Compliance Auditing*. This is consistent with the international standard ISO 19011:2018 *Guidelines for Auditing Management Systems*. These standards require that the auditor (Golder) and Manitoba Hydro agree upon and document the Audit objectives and scope, that the auditor review background information and develop an audit plan, and that the auditor collect evidence, evaluate the evidence, and communicate results (i.e., Audit findings) to Manitoba Hydro in a report. The following sections describe the steps that were taken to conduct the Audit (i.e., collection and evaluation of evidence). The Golder Audit team is described in Section 8.0.

Golder conducted the Audit in accordance with an approved Audit Plan and Protocols. A Lead Auditor guided the process with support from an Audit Secretariat/Liaison, Audit Advisor, and Environmental Assessment Specialist. Discipline specialists were responsible for developing and using a series of Audit Protocols to guide the execution of the Audit with reference to criteria relevant to their disciplines.

Evidence came from a variety of sources including a site visit, interviews, a desktop review of documentation, and through information requests to Manitoba Hydro, as elaborated in Section 6.1 Collection of Evidence. Audit evidence was recorded on Audit Protocol sheets (Appendix A) as it was gathered.

When insufficient evidence was available in support of a commitment, assumption, or prediction, an Audit finding was recorded as either a Major Non-Conformance, Minor Non-Conformance, or Opportunity for Improvement. These terms are further defined below in Section 7.0 Audit Findings which also presents the results of the Audit.

6.1 Collection of Evidence

This section provides a description of each of the evidence-gathering steps used in the Audit, including the site visit (Subsection 6.1.1), interviews (Subsection 6.1.2), and the desktop document review (Subsection 6.1.3) including the information request process.

6.1.1 Site Visit

The site visit included the following activities:

- 2019 10 30 - Orientation and meetings with Manitoba Hydro staff (see section 6.1.2 below for a list).
- 2019 10 31 - Helicopter flight from Riel Converter Station to Keewatinohk Converter Station, including the northern and southern ground electrode sites and associated lines. Tour of the converter station and then flight along the Bipole III transmission line to Thompson, MB.
- 2019 11 01 - Helicopter flight along the Bipole III transmission line from Thompson, MB to Winnipeg, MB.

At the time of the site visit, weather conditions were clear. As the site visit was completed in late fall/early winter, visual assessment of some features was limited due to snow and ice cover.

During the site visit, Audit evidence was gathered in support of audit criteria for the following categories: access, avian, aquatics, caribou, culture/heritage, emergency response, forestry/vegetation, and moose. Manitoba Hydro provided the auditors with tablets containing mapping of Environmentally Sensitive Sites (ESS) and associated mitigation as contained in the Construction Environmental Protection Plan documentation. The tablets provided geo-referenced data of actions and assets with real time GPS tracking such that the auditors knew of their current location and the relevant data.

6.1.2 Interviews

The Audit interviews were conducted by Golder's Audit team. The Bipole III representatives participating in the Audit and the general topics of discussion are listed in **Table 1**. The listed Bipole III personnel are hereinafter collectively referred to as the "Site Representatives".

Table 1: Manitoba Hydro interview participants and general interview topics

Representative	General Topics of Discussion
Mr. James Matthewson, Bipole III - Senior Environmental Assessment Officer	- The organizational structure of Manitoba Hydro and the environmental division responsible for the Bipole III Transmission Project - A brief history of the Project. - An overview of the Environmental Assessment and licencing processes.
Mr. Evan Rodgers, Bipole III - GIS Technician	- The GIS system and web-based application including attributes associated with each Environmental Sensitive Site.
Mr. Jonathan Wiens, Bipole III - Environmental Specialist	- The overall monitoring process including the location of documentation for the Biophysical Monitoring Plan, Biophysical Monitoring Annual Reports and Biophysical Monitoring Data Management (e.g., Specialist Reports, Field Work Schedule, Online Map Viewer).
Mr. Kris Watts, Bipole III - Environmental Protection Officer	- A review of the Environmental Permit and Information Management System used to manage tasks and store project information related to the Environmental Protection Plans. - A review of how to read the Mapping Books, which include the locations, features, activities, and mitigation required at Environmentally Sensitive Sites.
Ms. Lindsay Thompson, Bipole III - Environmental Specialist, (Indigenous / Public Engagement)	- The stakeholder and Indigenous engagement process.
Ms. Ann Melnichuk – Environmental Specialist	- Activities related to the converter stations.

6.1.3 Documentation Reviewed

During the Audit, Golder discipline specialists reviewed publicly available documentation from both the Manitoba Hydro Bipole III website and the Manitoba Conservation and Climate public registry. Following an initial review, one round of information requests was submitted to Manitoba Hydro to gather further documentation related to commitments, assumptions, or predictions for which insufficient evidence had been found. A shared SharePoint site was set up by Golder to which Manitoba Hydro deposited additional documentation, in some cases not publicly available, in support of commitments, assumptions, and predictions.

Table 2: Documents reviewed during the audit

Publicly Available – Bipole III Website

• Environmental Protection Plan, Version Final – 1.0
• Culture and Heritage Resources Protection Plan, Version Final – 1.0, October 2013
• Integrated Vegetation Management Plan, Version Final – 1.0, 06/04/2019
• Construction Environmental Protection Plans
  • Riel Converter Station and Ground Electrode, Version Final, 02/07/2019
  • AC Collector Lines, Construction Power Line and Station, Version Final – 4.02, 07/02/2017
  • Keewatinohk Converter Station and Ground Electrode, Version Final – 1.01, 14/02/2014
  • Transmission Line, Version Final 4.01, 31/10/2016
• Construction Access Management Brochure
• Access Management Plans
  • Construction Keewatinoow Converter Station, 9/9/2013
  • Construction Transmission Line Access, Version Final 2.04, 11/13/2015
• Bipole III Transmission Project 2016/17 Annual Harvest Plan
• Biophysical Monitoring Plan, Version Final 1.2, 10.14.2015
• Avian Monitoring Report – 2018, 2017
• Watercourse Crossings Post-Construction Monitoring Report – 2018, 2017, 2016
• Mammals Monitoring Program Technical Report Parts 1, 2 & 3 – 2018, 2017, 2016
• Terrestrial Ecosystems and Vegetation Environmental Monitoring – 2018, 2017, 2016
• Soil Productivity Monitoring for Agricultural Lands 2018, 2017, 2016 (Part 1 and 2)
• 2015 Biophysical Monitoring and Mitigation Report. March 2017 (revised)
• 2014 Biophysical Monitoring and Mitigation Report. March 2015.
• Socio-economic Monitoring Plan For Construction, June 2014
• Socio-economic Monitoring Report – 2017, 2016, 2015, 2014

Publicly Available – Manitoba Conservation and Climate Public Registry
• Oct. 24, 2013 – Letter and Communication Engagement Summaries for: Fox Lake Cree Nation, Ilford Community, Manitoba Metis Federation (MMF), Tataskweyak Cree Nation (TCN), War Lake First Nation; and York Factory First Nation. • July 24, 2014 – Letter and Updated Engagement Summaries • September 18, 2014 – Updated Engagement Summary for Manitoba Metis Federation • February 5, 2015 – Letter and Updated Engagement Summaries • May 6, 2015 – Letter and Updated Engagement Summaries • January 11, 2016. Revised Moose and Woodland Caribou Sensitive Range Delineation and Mitigation Plan

Shared by Manitoba Hydro

- Bipole III – Transmission Line Construction Reports May 1-Nov.1 2016, and May 3-May 17, 2017
- Communication of active work areas, slash pilings and burning, between Sigfusson Northern Ltd, Outland Camps Inc., Fox Lake/Sodexco.
- Manitoba Hydro. 2015a. General Correspondence re: Bipole III Converter Stations – Improper Storage of Hazardous Waste. Email Communication to PCL Canada Win. March 18, 2015.
- Manitoba Hydro. 2015b. General Correspondence re: Bipole III Converter Stations – Storage of Hazardous Materials. Email Communication to Sigfusson Northern Ltd. February 11, 2015.
- Rokstad Power. 2017a. HS & E Investigation Report: Jet B Fuel Release at 5033 LZ.
- Rokstad Power. 2017b. General Correspondence re: Jet B Fuel Release at 5033 LZ. Email Communication to Manitoba Hydro. September 15, 2017.
- Manitoba Hydro. 2014a. Hazardous Material Incident Report: KCS Site Under D10T Dozer. January 1, 2014.
- Iron North. 2014. Daily Field Inspection Report: March 15, 2014. Re: Diesel Fuel Release.
- Manitoba Hydro. 2016a. Transmission Line and Civil Construction Contractor Environmental Pre-job Orientation. November 22, 2016.
- Manitoba Hydro and Rokstad Environmental. No Date. Bipole III Transmission Project – Sections N1, N4 and C1/C2. Rokstad Power Environmental Orientation, V.0.4. PowerPoint presentation.
- Manitoba Hydro. No Date. Bipole III – Employee Sign-off Orientation tracking document. Excel worksheet.
- Manitoba Hydro. 2016b. Transmission Construction & Line Maintenance Division Contractor Pre-Job Orientation: The Pas to Laugruth. November 22, 2016.
- Rokstad Power. 2017c. Emergency Response Plan: Manitoba Bipole C1 & C2, Rev. 1.2. January 17, 2017.
- Rokstad Power. 2017d. Emergency Response Plan: Manitoba Bipole C1 & C2, Rev. 2.0. December 6, 2017.
- Rokstad Power. 2017e. Emergency Response Plan: Manitoba Bipole C1 & C2, Rev. 2.0. December 17, 2017.
- Manitoba Hydro. 2018a. Keewatinohk Converter Station: Keeyask and Converter Station Projects Spill Response Plan. Nov. 16, 2018.
- Forbes Bros. Powerline Construction Ltd. No Date. AC Collector Lines Emergency Response Plan, Rev 2.0.
- Manitoba Hydro. No Date. Bipole III Transmission Project: Socio-economic Monitoring Program for Construction: For the Period to September 2014.
- Manitoba Hydro. No Date. Bipole III Transmission Project: Socio-economic Monitoring Program for Construction: For the Period to September 2015.
- Manitoba Hydro. No Date. Bipole III Transmission Project: Socio-economic Monitoring Program for Construction: October 2015-September 2016.
- Manitoba Hydro. No Date. Bipole III Transmission Project: Socio-economic Monitoring Program for Construction: October 2016-September 2017.
- Manitoba Hydro. 2018b. Email Communication. Re: Bipole III Transmission Project – Licence Clauses #31. Email to Manitoba Sustainable Development. February 2, 2018.

- Manitoba Hydro. 2015c. Email Communication. Re: Bipole III Transmission Project –Access Management. Email to Manitoba Sustainable Development. November 24, 2015.
- InterGroup Consultants Ltd. 2016a. Bipole III Transmission Project Heritage Resource Impact Monitoring Studies 2016 Heritage Permit Report. Submitted to Manitoba Hydro. December 31, 2016.
- InterGroup Consultants Ltd. 2016b. Bipole III Transmission Project Heritage Resource Impact Monitoring Studies 2015 Heritage Permit Report. Submitted to Manitoba Hydro. January 6, 2016.
- InterGroup Consultants Ltd. 2017a. Bipole III Transmission Project Heritage Resource Impact Monitoring Studies Keewatinohk Converter Station, Heritage Permit A02-17. Submitted to Manitoba Hydro. December 31, 2017.
- InterGroup Consultants Ltd. 2017b. Bipole III Transmission Project Heritage Resource Impact Monitoring Studies, Sections S1 & S2 Red & Assiniboine Rivers, Heritage Permit A66-16. Submitted to Manitoba Hydro. December 31, 2017.
- InterGroup Consultants Ltd. 2018a. Bipole III Transmission Project Heritage Resource Impact Monitoring Studies, Heritage Permit A86-18. Submitted to Manitoba Hydro. December 2018.
- InterGroup Consultants Ltd. 2018b. Bipole III Transmission Project Heritage Resource Impact Monitoring Studies, Heritage Permit A73-18. Submitted to Manitoba Hydro. November 2018.
- Wood. 2019a. Mammals Monitoring Program Technical Report Year 4 (2017/18), Part 1. March 28, 2019.
- Wood. 2019b. Mammals Monitoring Program Technical Report Year 4 (2017/18), Part 2. March 28, 2019.
- Wood. 2019c. Mammals Monitoring Program Technical Report Year 4 (2017/18), Part 3. March 28, 2019.
- Manitoba Hydro. 2017a. Equipment Cleaning Record Transmission Line Construction: March 26, 2017.
- Tri-Core. 2017. Pre-Job Safety Inspection: February 8, 2017.
- Manitoba Hydro. No Date. Agricultural Biosecurity Checklist and Cleaning Record Transmission Line Construction.
- Tri-Core. 2017. Email Correspondence, Nav-Can Reroute – Cleaning Record July 24, 2017. Email to Manitoba Hydro, July 31, 2017.
- AMEC. No Date. 2017 Cleaning Records.
- Manitoba Hydro. 2018. Keewatinohk On-Boarding Handbook for Project Staff, v 7.0. April 2018.
- Manitoba Hydro. 2017b. Bipole III Transmission Project: Transmission Line Construction Sections Construction Environmental Protection Plan, v. 5.01. November 27, 2017.
- Rokstad Power. 2017f. Manitoba Hydro Bipole III Transmission Line Construction – Package 5, Section C1 & C2, Environmental Management Plan. Submitted to Manitoba Hydro, February 13, 2017.
- Manitoba Hydro. No Date. Bipole III Nest Tracking Sheet, July 7, 2017.
- Manitoba Hydro. 2018a. T-Line Daily Inspection Reports, 04-01-2018.
- Manitoba Hydro. 2016c. Email Correspondence Re: Manitoba Hydro and Peregrine Falcons. Email Correspondence to Robert Wheeldon. August 25, 2016.
- Manitoba Hydro. 2018b. T-Line Daily Inspection Reports, 29-03-2018 and 17-03-2018. Received Dec. 11, 2019.
- Sigfusson Northern. 2015. Bipole III Project Water Management Pond Erosion & Sediment Control Plan.
- Manitoba Hydro. 2016d. Transmission Line Construction Sections Construction Environmental Protection Plan.

- Pers. comm. Manitoba Hydro, Draft Audit Findings with Comments. Received January 8. 2020.
- Manitoba Hydro. 2017c. Environmental Improvement Order: February 21, 2017.
- Manitoba Hydro. 2015d. General Correspondence, Keewatinohk Construction Camp Lagoon: Summary of Discharge. Email Correspondence to Department of Conservation and Water Stewardship. November 4, 2015.
- Environmental Compliance and Enforcement Branch. 2018. General Correspondence, Re: Keewatinohk Construction Camp Lagoon: Response of Discharge. Email Correspondence to Manitoba Hydro. September 14, 2018.
- Manitoba Hydro. 2015e. Keewatinohk Fieldwork Activities Report for January 24, 2015 – January 30, 2015. January 23, 2015.
- Manitoba Hydro. 2014b. Bipole III Transmission Project Communication and Reporting Plan. 17 p.
- Manitoba Hydro. 2019. Keewatinohk Converter Station Site Closure Plan. Submitted to Transmission Planning & Design Division, Licencing & Environmental Assessment. August 2019.
- Manitoba Hydro. 2018c. Internal Correspondence, Email Titled Re: Environmental Deficiency Lists – Work Release/Hand off to commissioning.
- Rokstad Power. 2017g. N1- Annual Environmental Report, v. 1.0. April 2017.
- Manitoba Hydro. 2016e. T-Line Daily Inspection Reports, 28-03-2016.
- AMEC. 2017. Manitoba Hydro Bipole III Transmission Line Project – Section N3: Daily Environmental Monitoring Report. April 1, 2017.
- Rokstad Power. 2018. Environmental Construction Work Plan. January 27, 2018.
- Manitoba Hydro. 2017d. Environmental Stop Work Order: April 7, 2017.
- Manitoba Hydro. 2020a. Email Correspondence, Re: Aboriginal Awareness Training Proof of Attendance. January 6, 2020. Email to Licencing and Environmental Assessment.
- Manitoba Hydro. 2015f. Hydrogram: Keewatinohk Lodge Celebrates Grand Opening. October 13, 2015.
- Blume, M. 2017. Dakota Tipi and MB Hydro Hold Ceremony for Bipole 3 Project. June 20, 2017.
- Manitoba Hydro. 2014c. Email titled Bipole III Transmission Project – Environmental Protection Program Meeting. April 22, 2014. Email to Sapotaweyak Cree Nation.
- Manitoba Hydro. Various Dates. Zip folder containing N1 cleaning records.
- Manitoba Hydro. 2020b. Email Correspondence: Examples of MH Addressing First Nation and Metis Concerns Raised During Construction – Communication Protocol #131. Email to Golder received from Jennifer Barnes, Manitoba Hydro, January 15, 2020.
- Manitoba Hydro. 2020c. Email Correspondence: Fwd: Pen Island reports. Email to Vicki Trim, Conservation and Water Stewardship from Manitoba Hydro.
- Trim, V. 2015. A Collaborative Project between Conservation and Water Stewardship, Manitoba Hydro and Fox Lake, Split Lake and York Factory Resource Management Boards. Prepared for Conservation and Water Stewardship, Manitoba Hydro and Fox Lake, Split Lake and York Factory Resource Management Boards. 27 p.
- Memo from Trevor Barker to James Matthewson on Jan. 7, 2020 re: Waterway Clean-up Bipole III.

6.2 Auditing of Commitments

A total of 351 Audit Criteria represented commitments (as opposed to assumptions or predictions as described in subsection 6.3 below). Evidence collected, was compared against the Audit Protocol questions for each Audit Criteria commitment. Audit observations and findings were documented by the audit team. Both evidence and professional judgement play a role in the development of Audit findings. Evidence was required to be sufficient and of such a nature that Audit findings would be reproducible with different audit teams.

The Audit of the implementation of commitments made in the EIS and supporting documentation was limited to verification of whether or not commitments had been met. Auditors generally found evidence to be readily available in support of most commitments in the EIS and its supporting documents.

6.3 Auditing of Assumptions and Predictions

There were 20 Audit Criteria that were identified to be assumptions and predictions drawn from the EIS and supporting documents including language presented in: the articulation of the predicted environmental effects; the predicted residual effects after mitigation was applied; and/or the subsequent significance determinations.

For example, some environmental effects were predicted based on an assumption that the Project's environment will respond to a specific Project activity in the same way that a similar environment has been shown to respond on a similar project elsewhere (e.g., "Some level of sensory disturbance is expected but is anticipated to be minimal based on a preliminary assessment of individual caribou movement and range use from Bipole III and Wuskwatim monitoring" (Bipole III Environmental Impact Statement, 2011. p.8-97). In this case, to validate the assumption that sensory disturbance would occur and be minimal, evidence was considered to confirm both how the level of sensory disturbance was being monitored, and the reported findings of the monitoring. In the event the monitoring approach or findings did not validate this assumption, a Non-Conformance or Opportunity for Improvement would be identified.

Where an assumption or prediction was related to the determination of significance, consideration of the EIS method for determining significance was required. This included considering the implementation of identified mitigation measures since the prediction of residual effects assumes that the identified mitigation has been applied as described and has been successful. For example, "Because of the development of the Heritage Protection measures in the Environmental Protection Plans, the effects on heritage resources during construction of the Bipole III line are expected to be negative, small in magnitude, Project Site/Footprint in geographic extent, short-term in duration, and therefore not significant" (Bipole III Environmental Impact Statement, 2011. p.8-353). In such a situation the following evidence was considered: that specific mitigation measures were identified within a plan; that mitigation measures were implemented; that implementation was monitored, and that the outcomes of any cultural heritage finds were documented. For this specific example, Heritage Protection measures were identified in the Environmental Protection Plans and monitoring reports were shared to demonstrate monitoring compliance. One instance was recorded where protocols to stop work were followed when a cultural use site was encountered during construction. Documentation of how the situation was resolved with the users in advance of work resuming was shared as evidence. Monitoring reports documented that no other cultural heritage resources were encountered during construction. Accordingly, these findings were considered against the factors (e.g., direction, magnitude, duration, extent) used in the initial assessment of effects to compare the evaluation of significance of Project effects.

As defined in the EIS Section 4.2.10, significance of environmental effects was determined following the matrices presented in **Figure 1**, which is based on assumptions of the scale of each effect using a combination of three factors (i.e., magnitude, geographic extent, and duration). As noted above, for this initial Audit the Audit team considered the assumptions/predictions made in the determination of significance for those categories within the Audit scope that had residual effects predicted for the short term. Those assumptions/predictions related to effects identified to be of medium (throughout construction and operation, i.e., from five to 50 years) or long term duration (greater than 50 years) were deemed to be best audited during the second Audit as not enough time has passed to assess them adequately.

To evaluate if actual environmental effects being considered for identified criteria were bounded by the assessments within the EIS, the findings of monitoring evidence were compared against the definitions of magnitude and geographic extent provided in the EIS Section 4.2.10. It is noted that the application of professional judgement was required for these evaluations given the generic definitions characterizing the extent and magnitude of effects and the thresholds of acceptable change.

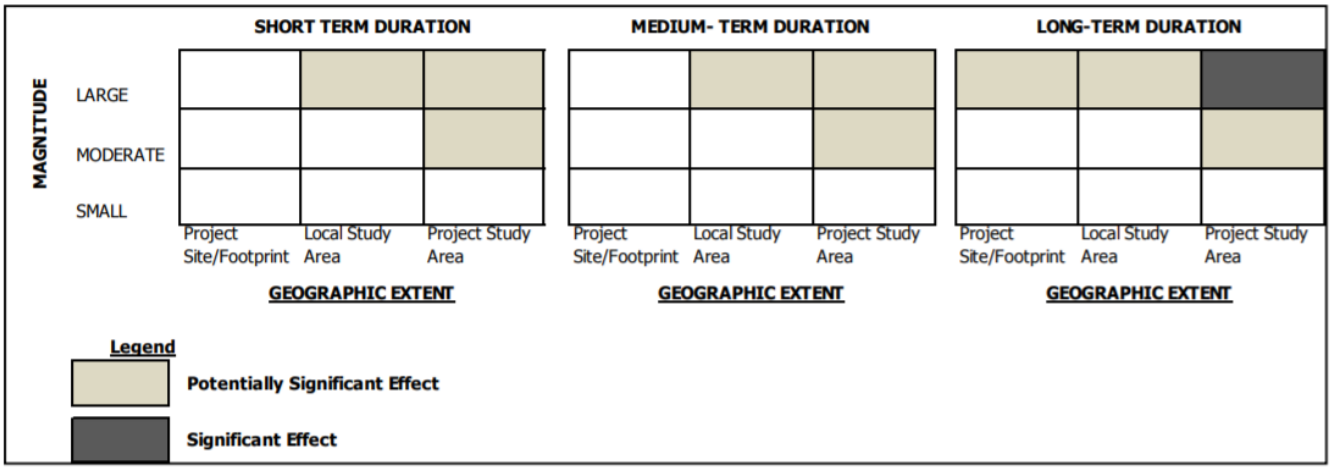


Figure 1: Factors contributing to determinations of significance of residual environmental effects (EIS Figure 4.2-2)

7.0 AUDIT FINDINGS

The Audit findings are organized into tables in accordance with the following categories to clearly identify the nature of the findings. Note that a definition is provided for major non-conformance although none were identified.

- Non-Conformance – Major: A major non-conformance is one that raises significant doubts as to whether the program performance will achieve program environmental targets. Non-compliance or non-conformance to applicable regulatory or contractual requirements with the potential to result in a significant impact on the environment, or result in regulatory intervention, would be classified as a major non-conformance. The establishment of controls and practices for this element is considered critical for compliance with applicable regulatory or contractual requirements, as well as effective environmental management. High priority should be placed on the correction or further development and implementation of mitigation measures for major non-conformance findings.

- Non-Conformance – Minor: A minor ranking may include either regulatory non-compliances or non-conformances with planned arrangements that are administrative in nature and/or are unlikely to result in a significant impact on the environment or result in regulatory intervention. Medium priority should be placed on the corrective actions for minor non-conformance findings.
- Opportunity for Improvement (OFI): OFIs are not deviations from a regulation or permit provision. Rather, these observations identify areas that may pose risk issues if not addressed or are suggestions to improve operational effectiveness and efficiencies. These findings are raised where there is no relevant or applicable regulatory requirement, where there is an accepted industry best management practice that should be considered, or where observations suggest that compliance status may change due to changing rules or circumstances. Low priority (relative to the other categories of finding) is appropriate to the correction or further development and implementation of this element. The adoption of an OFI is not considered critical for effective environmental management.

The tables below provide details of identified minor non-conformances and opportunities for improvement. As noted, no major non-conformances were identified during the Audit. Each table entry includes the Audit criterion in question (commitment, assumption, and/or prediction), the auditor's observations, and the finding itself. While most of the non-conformances are associated with commitments, there are two associated with assumptions and predictions regarding environmental effects and their significance; these are related to stream crossings (water quality and fish habitat VECs) and access. Since the accuracy of these assumptions and predictions are reliant to a degree on successful mitigation (i.e., meeting commitments), they should be considered in conjunction with related non-conformances that are commitment-based.

7.1 Non-Conformances – Major

No major non-conformances were identified.

7.2 Non-Conformances - Minor

Finding Reference	Commitment/ Assumption/ Prediction	Summary of Observations	Findings
Avian			
Bipole III Commitment Table Page 30	Clearing of trees with roost cavities will be limited to daylight hours, and preferably in fall, to minimize disruption of resident woodpeckers and retain shelter and nesting sites.	The majority of clearing was completed during the daylight hours, but in December and January during shortened daylight hours, some clearing was carried out in the dark. Surveys were not conducted to identify trees with roost cavities.	No surveys were conducted to identify woodpecker roost cavities, and some clearing was carried out in the dark which could result in negative effects (i.e., destruction) to undetected roost cavities.
Forestry			
Bipole III Commitment Table Page 63	Where practical, all merchantable timber will be salvaged.	Evidence from the site visit included several piles of merchantable timber on the ROW totalling approximately 100 m^3. These piles were limited to within a 100 km stretch south from Thompson, MB.	There was evidence of merchantable timber left behind on the ROW. If removal was not practical, documentation should have been available as to why.

Finding Reference	Commitment/ Assumption/ Prediction	Summary of Observations	Findings
Bipole III Commitment Table Page 64	Cleared woody debris will be disposed of to prevent infestations of sawyer beetles.	Evidence from the site visit included piles of woody debris left behind on the ROW and in riparian buffers (approximately 80 m^3). These were limited to within a 100 km stretch south from Thompson, MB as with the merchantable timber referenced above). Chapter 8 of the EIS describes planned activities associated with clearing of vegetation as including: cutting, piling, and burning of slash (p. 8-27). There is a risk of sawyer beetle infestation associated with leaving piles of woody debris (p. 8-260). Note that other instances were observed of woody debris having been left behind in other areas of the ROW, but these were retained as prescribed for stream protection (total of approximately 100 m^3) and/or moose line of sight mitigation (total of approximately 200 m^3).	Piles of woody debris were left behind on the ROW, including in riparian buffers. This could increase the risk of sawyer beetle infestation.

7.3 Opportunities for Improvement

Finding Reference (Protocol ID#)	Commitment/ Assumption/ Prediction	Summary of Observations	Opportunity for Improvement
Access			
Transmission Line Construction Access Management Plan Page 29	Access management monitoring will be undertaken and complement other biophysical and socio-economic monitoring conducted during the construction phase of the Project. Access related issues will be summarized by Environmental Inspectors and the Construction Supervisor in their respective monthly reports.	The monitoring of access is directly related to mitigation measures associated with a number of categories of VECs including: Birds and Habitat, Mammals and Habitat, Resource Use, Terrestrial Ecosystems and Vegetation, and Designated Protected Areas and Protected Area Initiative (PAI). Additionally, a variety of access-related concerns were documented in the EIS in relation to values and potential effects including: increased access to sensitive areas identified by Aboriginal communities, the potential for introduction of non-native species, the risk of increased human-caused fires, potential increased mortality of wildlife species due to overharvesting via increased access (trapping, hunting, poaching), and potential sensory disturbance to wildlife due to increased and ongoing access. Lastly, the Clean Environment Commission Report (2013) re-iterates much of the above in addition to stating that, “It is understood that these access routes for construction are intended to be temporary, but there is danger that once they are cleared it will be difficult to keep people from using them” (p. 50-51). Manitoba Hydro has been monitoring access at a variety of locations for a variety of purposes, using a variety of methods which makes it difficult to compare results over time. In addition, no specific detail was encountered documenting access issues and responses; only very general commentary is provided in summary reports.	Improvements could be made to the access monitoring program by developing a more rigorous and purpose-driven design where the methods and locations of monitoring (sampling approaches) are more clearly linked to each of the potential effects of access identified in the EIS. The proposed general mitigation of access-related concerns was to consider means to limit access through access management planning, including decommissioning of access trails (where they were no longer required for operations or maintenance). Given that the Manitoba Government agreed to not require decommissioning activities associated with the project’s access trails, comprehensive monitoring is important to confirm use and, if needed allow action to reduce negative effects if identified. In addition, to augment results of monitoring, more detailed documentation could be compiled to specific access-related issues and responses as they arise.

Finding Reference (Protocol ID#)	Commitment/ Assumption/ Prediction	Summary of Observations	Opportunity for Improvement
Aquatics			
Bipole III Commitment Table Page 15	Contractors will provide sufficient erosion control materials on-site (such as sediment fencing, stakes, and geotextile fabric) to facilitate timely response to erosion and sedimentation issues that arise during construction activities	Several instances of non-conformance relating to erosion sediment control were identified in 2016, 2017, and 2018.	Measures to avoid slumping and erosion of erodible banks should be implemented during construction to avoid post-construction slumping and sedimentation of the watercourses. Bare ground was identified at one watercourse crossing (N1-Aqua-131) in 2018, located on a watercourse that is considered important fish habitat. To address the finding, additional erosion and sediment control measures were suggested at the crossing to protect the watercourse from bank erosion. However, no follow-up inspection of the crossing was recommended in the 2018 Transmission Line Watercourse Crossings Post-Construction Monitoring report. There remains an opportunity to revisit the crossing and provide additional erosion and sediment control measures to address the potential for erosion at this crossing.

Finding Reference (Protocol ID#)	Commitment/ Assumption/ Prediction	Summary of Observations	Opportunity for Improvement
Keewatinoow Converter Station Facilities and Infrastructure and Ground Electrode Construction Environmental Protection Plan Page 6-3	Operational Statements (OS) developed by Fisheries and Oceans Canada will be applied to modify construction of overhead lines, temporary stream crossings, ice bridges and snow fills, and dry open cut stream crossings (Appendix E). In addition to Fisheries and Oceans Canada OS requirements, Contractors will implement setbacks and buffers as indicated on Site-specific information the Map Sheets Section 7.0.	Department of Fisheries and Ocean OS outlined in the Environmental Protection Plan and Aquatic Technical Report were carried out as evidenced in annual monitoring reports. There were adequate setbacks and buffers implemented at most of the watercourse crossing sites during construction with the exception of nine sites assessed in 2014 (four where right of way width was minimized to 310 m for the AC Collector and Construction Power lines making it impossible to maintain the full riparian buffer of 30 m, five where exposed soil was identified within the buffer zone), three sites assessed in the 2015 monitoring program (where exposed soils were identified along the banks or within the buffer zone), and multiple crossings in 2016, 2017, and 2018 (where exposed soils required additional erosion and sediment control). However, exposed soils at only a handful of the over 300 watercourse crossing sites is relatively low.	There were several instances documented in monitoring reports where setbacks and buffer zones were shown to have evidence of exposed soils. This could be as a result of not clearly marking limits and sensitive areas prior to vegetation removal, or it could be as a result of lack of adequate training or oversight.
AC Collector Lines, Ground Electrode Line, Construction Power Line and Station CEPP Page 92	No logs or woody debris are to be left within the water body or on the banks or shoreline where they can wash back into the water body.	A couple of instances were observed on the site visit where it appeared there was woody debris on the shoreline of water bodies. Auditors were told that in these areas, the slope was likely such that removal could result in greater effects than leaving them in place. This explanation was deemed to be reasonable.	Documentation of rationale for not applying mitigation measures in certain circumstances is desirable. This helps to reinforce the accuracy of predictions made in the EIS given that predictions of effects are based on assumptions that all mitigation will be applied.

Finding Reference (Protocol ID#)	Commitment/ Assumption/ Prediction	Summary of Observations	Opportunity for Improvement
Bipole III Environmental Impact Statement. Chapter 8: Effects Assessment and Mitigation Page 8-60	Potential negative residual effects are associated with most Project components, but none are significant as presented in Table 8.2-5 (of the EIS).	The residual effects of infill (converter station only), loss of riparian vegetation, stream bank alteration, increase in TSS during construction at the HVdc transmission line, ac collector lines, construction access trails, converter station, borrow areas, material placement areas and northern ground electrode and lines, were deemed to be negative but not significant, at the majority of watercourse crossings spanned by the Project. Instances of non-conformance related to mitigation commitments have been predominantly addressed following post-construction monitoring annual reports. However, in-stream slash/woody debris continues to restrict flow and fish habitat at three stream crossings (i.e., N1-Aqua-135, N1-Aqua-161, and N1-Aqua-167), as identified through post-construction monitoring in 2018. In addition, the temporary crossing (consisting of wood slash and debris) at one stream crossing (i.e., N1-Aqua-169) had not been removed from the watercourse since its construction in 2015. Although the watercourse at this location is not identified to contain important fish habitat, the in-stream debris may negatively restrict flow and fish passage. Most areas disturbed as a result of construction, including channel bed and banks, have been restored as reported in the 2018 annual monitoring report. Inadequate erosion and sediment control measures identified through post-construction monitoring have been addressed. However, one stream crossing (N1-Aqua-131) remains vulnerable to erosion with sparse riparian revegetation growth along the banks of the water crossing. The watercourse at this stream crossing contains important fish habitat and additional erosion and control measures are recommended to prevent loss and degradation of fish habitat.	In-stream slash/woody debris continued to restrict flow and fish habitat at three stream crossings (i.e., N1-Aqua-135, N1-Aqua-161, and N1-Aqua-167). In addition, the temporary crossing (consisting of wood slash and debris) at one stream crossing (i.e., N1-Aqua-169) had not been removed from the watercourse since its construction in 2015. Although the watercourse at this location is not indicated to contain important fish habitat, the in-stream debris could negatively restrict flow and fish passage. One stream crossing (N1-Aqua-131) remains vulnerable to erosion with sparse riparian revegetation growth along the banks of the water crossing. Based on this evidence these Project-related effects on water quality and fish habitat are evaluated to continue to not represent a significant effect in the short-term; however, they do present an opportunity to reduce the likelihood of potential effects during operations and maintenance.

Finding Reference (Protocol ID#)	Commitment/ Assumption/ Prediction	Summary of Observations	Opportunity for Improvement
Communication			
Bipole III Commitment Table Page 32	The Bipole III ATK process brought to light the valuable knowledge that exists within First Nation, Metis, and other communities. In addition, through this process, as well as the Key Person Interviews and EACP, communities identified concerns and issues important to them regarding the Project. Apart from the other mitigation measures outlined in this section, Manitoba Hydro will continue to liaise with First Nations, the MMF, and other communities to review concerns that arise about the Project and opportunities for cultural preservation occasioned by the Project.	The available reports provide only a very brief and vague summary of general issues raised; there was no evidence of the specific First Nation communities that were liaised with, nor were there indications of when. Several specific email examples with more detail were provided by Manitoba Hydro in response to an Information Request.	Despite several examples of email responses to specific issues raised by Indigenous people and communities, Manitoba Hydro does not have a comprehensive tracking system for communication (e.g., engagement record). Without such a system, auditors could not be confident that Manitoba Hydro has continued to liaise with communities and that all issues have been documented and reviewed. Comprehensive documentation of concerns and tracking of follow-up actions could help to verify the effectiveness of mitigation measures (including ongoing communication with communities) including the relationships between issues raised and the potential effects identified in the Environmental Assessment.

8.0 QUALIFICATIONS OF THE AUDITORS AND PROJECT TEAM

Project Director - James Hartshorn, MSc, MBA, EP(CEA), Principal

James is a Principal, Senior Consultant, and Professional Auditor based in Golder's GTA (Mississauga), Ontario location. He has worked with Golder for 23 years, serving in a variety of administrative and technical roles. Mr. Hartshorn is actively involved in assisting facilities in the development and implementation of environmental and health & safety management systems to assist in the identification, assessment, and control of environmental and health & safety risk. He has been trained as an ISO 14001 Environmental Management Systems Lead Auditor and as an OHSAS 18001 Health & Safety Management Systems Lead Auditor by SGS International Certification Services Canada Inc. James is also registered as an Environmental Professional (Certified Environmental Auditor) with the Canadian Environmental Certifications Approvals Board and is a member of the Auditing Association of Canada. James served on the Canadian Standards Association's Technical Sub-Committee on Environmental Auditing and Related Investigations during the development of the Environmental Auditing standard CSA Z773-03. James is also a member of faculty at the Sheridan College Institute of Innovation and Advanced Learning where he lectures on Management Systems & Auditing.

Mr. Hartshorn has considerable experience in conducting environmental and health & safety audits and due diligence reviews for organizations and assets throughout North and South America, Europe, and Asia in a variety of sectors, including infrastructure, manufacturing, power generation (including nuclear), mining, and oil & gas. With regards to the utility sector, James has experience within the power generation and utilities sectors including audits and due diligence assessments for nuclear and conventional power generating facilities, run-of-the-river, and fossil (coal and oil) facilities and distribution systems. James has worked with clients including Ontario Power Generation, Enersource, Union Gas, Hydro One, Enbridge, Northland Power, TransAlta, and ATCO Power.

He is well known across Golder Associates globally and is a trusted and respected resource within the Performance & Assurance field.

Project Manager - Karen Saunders, MES, R.P.F., Audit Secretariat/Liaison and Discipline Specialist

Karen is a highly motivated professional forester (non-practising) with experience in many facets of natural resource management including stakeholder and Indigenous engagement; land use, aggregate, forest management and water management planning; environmental assessment; socio-economic research; and government permit and process navigation. Karen’s strengths include her ability to focus on a task and swiftly organize and explain difficult processes and concepts. She is an excellent communicator with a passion for the natural world who loves interacting and working with others.

Karen’s environmental auditing experience spans 19 years and includes experience with a variety of auditing frameworks. Karen also has experience with environmental assessments including most recently acting as the Indigenous Engagement lead for Wataynikaneyap’s transmission line environmental assessments and subsequent permitting, including leading the effects assessments for traditional land and resource use and commercial forestry. As a contract lecturer at Lakehead University and Confederation College, she facilitates the sharing of knowledge and experiences of both herself and her network of contacts across Northwestern Ontario as they relate to Indigenous people and natural resources.

Lead Auditor and Discipline Specialist - Carol-Ann Fletcher, PEng, EP(EMSLA), Senior EHS Consultant

Carol-Ann Fletcher is a Senior Environmental, Health and Safety consultant within the GTA Mississauga, Ontario office. She is a registered Professional Engineer in Ontario and a Certified Environmental Management System Lead Auditor, accredited by CECAB. Carol-Ann completed her academic training at the University of Windsor, obtaining a B.A.Sc. (Hons) in Environmental Engineering.

Carol-Ann has 18 years of EHS industry and consulting experience combined. Industry experience includes the responsibility for the management of an EHS Management System certified to both the ISO 14001 and OHSAS 18001 / ISO 45001 standards. Prior to joining Golder, Carol-Ann was a Senior Environmental, Health and Safety Consultant primarily focused on conducting environmental, health and safety audits for various industrial facilities in the manufacturing, power generation and power distribution sectors. Carol-Ann has conducted over 80 Environmental, Health and Safety Management System and Compliance Audits. She also has extensive experience in the development and implementation of EHS programs for addressing areas such as emergency response planning, risk assessment, hazardous waste management, emission monitoring, environmental assessments and managing the development and implementation of ISO 14001 and ISO 45001 standards.

Audit Advisor - Laird Van Damme, MSc., R.P.F.

Laird is an adjunct professor at Lakehead University with over 25 years of third-party auditing experience for forest certification and environmental management systems using several standards (ISO 14001, Forest Stewardship Council, Sustainable Forestry Initiative). In addition, over the last 25 years, Laird has completed forest certification audits on an annual basis under contract to SAI Global and Bureau Veritas including in New Brunswick, Ontario, Saskatchewan, South Carolina, Minnesota, Alabama, and Washington. This has included SFI forest management audits for Spruce Forest Products Limited 2015-2017 in Manitoba and a Domtar SFI Fibre sourcing audit in Manitoba in 2017. Laird has participated as a lead auditor and/or harvesting/silviculture auditor on several Independent Forest Audits each year since 1996. He has ISO 14001 lead auditor training (2000) and has been certified as lead auditor for SFI and ISO 14001 by SAI Global. Laird has also completed a myriad of policy reviews for governments across Canada including an assignment for the Auditor General of Alberta testing the Ministry of Sustainable Resource Development forest management system that is certified to the ISO 9002 standard (in 2012). Laird's additional experience in Manitoba includes: authoring LP Canada's Long Term Sustainable Forestry Management Plan 2003-2006; opening a KBM office in MB doing urban forestry work for Manitoba Hydro until Manitoba Hydro hired the KBM manager in 2008; and facilitating and reporting on landscape design principles and practices for the Manitoba Model Forest and the Forest Practices Committee of the Government of Manitoba.

Environmental Assessment Specialist – Brett Thompson, BES

Brett Thompson is an impact assessment specialist and project manager with 14 years of experience supporting environmental planning for power (nuclear, transmission, and renewable and non-renewable sources) and oil and gas sector projects in Ontario. Brett has managed and contributed to impact assessments through completion for provincial Individual, screening, and several Class environmental assessment processes. She has contributed to impact assessments under the *Canadian Environmental Assessment Act, 2012* (*CEAA 2012,* and previous versions), the *National Energy Board (NEB) Act*, and *Nuclear Safety Control Act (NSCA)*.

Recently, Brett has been the project manager and IA lead for assessment of a 1,500 km transmission line project in Northwestern Ontario, including preparation and review of provincial and federal impact assessment documentation and support for engagement with more than 20 First Nations communities and stakeholders, including regulatory agencies.

Discipline Specialist - Lindsay McColm, MES, HBESc (Bio), Ecologist

Lindsay is an ecologist with nearly 10 years of experience in monitoring and assessment, ecology and landscape use, and government policy of woodland caribou in Ontario. While working for Ontario MNRF, she was heavily involved in Ontario's Integrated Range Assessments (IRAs) for most of the province's caribou ranges. The resulting reports are considered the go-to literature for caribou population and habitat status information within Ontario for industry, government bodies, and NGOs. She has planned numerous caribou aerial surveys and collaring, analysed results, and wrote the associated reports. Lindsay has participated in intergovernmental information and knowledge sharing between the OMNRF and Manitoba Conservation regarding caribou herds along the provincial border. With Golder, Lindsay has successfully navigated species at risk permitting process securing permits related to caribou on behalf of clients with large and complex projects. Lindsay is well-versed in the dynamic relationships between caribou and disturbances (e.g., noise and sensory, habitat removal, wildfire burns), predators, and habitat selection. She is also well-versed in other large ungulates in the boreal forest including moose and deer, as well as their habits, habitat preferences, and the predator-prey dynamics between ungulates and large carnivores.

Discipline Specialist - Natalie Blekkenhorst, Biologist

Ms. Blekkenhorst is a Junior Biologist with Golder's Thunder Bay office. She has over three years of consulting and research experience, focusing on terrestrial and aquatic biology. She also has two years of experience in natural resource management with the provincial government, working with forestry, aggregate, Crown land, and fish and wildlife legislation to effectively manage resources and ensure client compliance. She has been responsible for assisting and conducting biological component studies for multidisciplinary projects in the transportation, mining, and power sectors. She has also led field crews in carrying out aquatic and terrestrial tissue sampling, benthic invertebrate community sampling, fish habitat assessments, fish inventories, avian species at risk surveying, and bat hibernacula and maternity roost acoustic monitoring to support risk assessment and environmental assessment projects, and federal and provincial species at risk permitting requirements. When not assisting in field programs, she provides support to project managers, writing technical reports, impact assessment reports, and applying for species at risk permits, Fisheries Act authorization permits, and work permits. Natalie has knowledge and experience in the areas of fish and fish habitat, terrestrial species at risk, and small mammal ecology.

Discipline Specialist - Erin Greenaway, BSc, Senior Ecologist

Erin Greenaway, B.Sc. is a Senior Ecologist with Golder in their Thunder Bay office. Erin has over 20 years of experience in the conduct of ecological studies including the design, field data collection, analysis, interpretation, and practical application for projects. Erin's early career experience included various governmental and non-governmental agency positions in which she was exposed to a variety of conservation management situations, including assessment of habitat availability and productivity, the effects of contaminants in sediment and surface water and consideration of intersecting cultural, ecological, economic, and social values. For the past 18 years as an environmental consultant, Erin has been responsible for managing and conducting the biological component studies for multidisciplinary projects in the transportation, power, mining, aggregate and land

development sectors. Erin's project involvement has included elements of impact assessment, development of mitigation/compensation measures and design of compensation/restoration plans in both aquatic and terrestrial environments. Erin has a diverse and extensive range of environmental knowledge and skills including, international, federal, and provincial environmental assessment, impact analysis, stakeholder agreements, regulatory agency approvals, permitting and monitoring. Erin has been responsible for finding the balance among competing objectives of development, design/engineering/economic feasibility, multiple stakeholder concerns and sensitive ecological resources including fish habitat, wetlands, Species at Risk, and significant wildlife habitats. Erin has provided expert testimony at federal joint review panel hearings in Ontario.

Discipline Specialist - Lynnette Dagenais, MSc, PBiol, Terrestrial Ecologist

Ms. Dagenais is a Terrestrial Ecologist in the Edmonton office. Lynnette has 18 years of experience with studying avian ecology with 11 of those years in a consulting role. The majority of her experience includes a technical role on linear development, mining, oil and gas, peat harvesting, hydroelectric, and aggregate projects in Northwest Territories, Nunavut, Alberta, Saskatchewan, Manitoba, and Ontario. Lynnette's key responsibilities include assessing Project-specific and cumulative effects on wildlife species and developing mitigation measures to limit effects on species at risk, including boreal caribou and migratory birds.

Discipline Specialist - Brad Drouin, MA, Senior Archaeologist and Associate

Bradley Drouin is an Associate and Senior Archaeologist working out of Golder's Ottawa Office and has been with the company for 13 years. Since his time at Golder, Brad has worked out of the Ottawa, Edmonton, and London offices; and Melbourne, Australia Office. During this time, Mr. Drouin has acted as Permit holding and Professionally Licensed Archaeologist in Alberta and Ontario as well as Project Archaeologist in Australia. While in Edmonton, Brad worked on a large number of Oil and Gas and Mining Projects throughout Northern Alberta, Northwest Territories and Nunavut. In addition, Brad has completed a number of archaeological assessments in boreal forest and northern parkland environments in Northern Ontario.

More recently, Brad has managed the Stage 1 and Stage 2 archaeology components for the Wataynikaneyap Phase 1 Project as well as the Stage 1, Stage 2, Stage 3, and Stage 4 for the Pikangikum Distribution Line Project.

9.0 LIMITATIONS

This report was prepared for the exclusive use of Manitoba Hydro. It is intended to provide the results of Golder's review of whether commitments Manitoba Hydro provided in their EIS and supporting information were met and to assess the accuracy and predictions in these documents to satisfy condition #63 of Manitoba *Environment Act* Licence No. 3055. It is based on information obtained and interviews conducted during a site reconnaissance visit on October 30 to November 1, 2019 and interviews provided voluntarily by the site personnel, including discussions with project personnel, as described in this report. Golder has relied in good faith on information provided by individuals noted in this report. We assumed that the information provided is factual and accurate. Except where noted, Golder did not undertake independent confirmation of such information. We accept no responsibility for any deficiency, misstatement, or inaccuracy contained in this report as a result of omissions, misinterpretations, or fraudulent acts of persons interviewed or contacted. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third parties.

Should additional parties require reliance on this report, written authorization from Golder will be required. This report, which includes appendices, must be considered in its entirety.

Golder disclaims responsibility for any real or perceived consequential effects related to the ability to obtain financing; the ability to sell assets; any reduction in the asset value or the ability to obtain approvals of any kind and/or any inability to use the assets for any purpose as a result of reporting the information contained in this report. Golder will also not be responsible for any requirements for follow-up actions and costs.

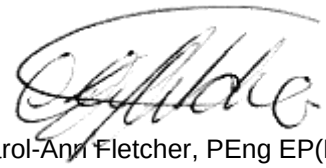
The findings of this report are based exclusively on conditions observed at the time of the site reconnaissance visit, interviews, and/or on information supplied by Manitoba Hydro, as described in this report. The agreed to scope of work is prescribed in the Manitoba Hydro Bipole III Environmental Audit (041460 Contract Documents), approved by Manitoba Hydro on September 19, 2019. By its very nature, the findings of an assessment like this are limited based on the selection of an audit sample and the evaluation of the sample results. As such, it is quite possible that not every issue of non-conformance or potential non-conformance has been identified by this review. Sample selection was based on the auditor's sound and seasoned judgment. No soil, water, liquid, gas, product, building material, or chemical sampling and analytical testing at or in the vicinity of the subject property was conducted as part of this assessment. The scope of Golder’s review is outlined in this report. The review does not constitute a full environmental regulatory compliance audit; only the commitments provided in the EIS and supporting information were evaluated to the extent required by Condition #63 of Manitoba *Environment Act* License No. 3055 for the Project.

10.0 CLOSURE

We trust that the information presented in this report meets your current requirements. Should you have any questions, or concerns, please do not hesitate to contact the undersigned.

Signature Page

Golder Associates Ltd.



Carol-Ann Fletcher, PEng EP(EMSLA)
Lead Auditor

James Hartshorn, MSc., MBA, EP(CEA)
Principal, Senior Reviewer

KS/CDF/JH/wlm

https://golderassociates.sharepoint.com/sites/112387/project files/6 deliverables/audit report/19126748-r-revb-19may2020 mh final audit report.docx

APPENDIX A

Audit Protocol Sheets

Bipole III Transmission Line Environmental Impact Statement Audit					
Document Review					
Client:	Manitoba Hydro	**Project Number:**	19126748	**Date:**	
Lead Auditor:		**Auditor:**		**VEC:**	

Protocol ID	Commitment	C	NC-Maj	NC-Min	OFI	Evidence
		☐	☐	☐	☐	
		☐	☐	☐	☐	

Bipole III Transmission Line Environmental Impact Statement Audit						
Program Details						
Client:	Manitoba Hydro	**Project Number:**				19126748
Lead Auditor:	Carol-Ann Fletcher	**Auditor:**				
Commitment/Assumption/ Prediction		**C**	**NC-Maj**	**NC-Min**	**OFI**	**Evidence and Auditor Comments**
VEC						Documents reviewed: Auditor comments/results:
Commitment/ Assumption/ Prediction						
Source Document						
Page #						

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