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April 16, 2014

Agatha Garcia-Wright
Ministry of the Environment
2 St. Clair Avenue, Floor 12A
Toronto, ON M4V 1L5

Dear Ms. Garcia-Wright:

Subject: Cochrane Solar Project – Project Design Change
Amendment Application – Renewable Energy Approval # 1290-9A4KSE

As you are aware, Northland Power Solar Abitibi L.P., Northland Power Solar Empire L.P. and Northland Power Solar Martin's Meadows L.P. (hereafter referred to collectively as "Northland Power") has begun construction of the Cochrane Solar Project located in the northern portion of the Town of Cochrane, in the geographical township of Glackmeyer.

The Ministry of the Environment (MOE) issued a Renewable Energy Approval (REA) for the Project (No. 1290-9A4KSE) on August 29, 2013.

Recently, Northland Power has identified a need to make some minor changes to the Project as described in the REA documents, in order to facilitate construction and operation of the Project.

These changes are summarized below:

- Inclusion of 0.08 ha (in a triangular shape) of additional land between the Empire and Martin's Meadows properties to satisfy legal land rights requirements.
- Use of horizontal directional drilling for the connection line between the Empire and Martin's Meadows properties in order to reduce shading on adjacent solar panels. Previously, an overhead line was proposed.
- Additional archaeological studies were completed within the boundaries of the approved Project Location, in order ensure that the locations of all proposed Project components associated with the solar project and associated transmission have been adequately surveyed. These archaeological studies include the following areas:
  - Small areas within the Abitibi and Empire properties.
  - Areas associated with the transmission line and switching station near the intersection of Highway 668 and Concession 8 and 9 in Hunta, ON.

As such, Northland Power would like to submit an application for a Project Design Change (minor) amendment to the REA to take these proposed changes into consideration.

This letter summarizes the proposed changes to the Project, including the rationale for each change, and identifies the amendments to each of the supporting documents prepared for the REA application to incorporate the proposed Project changes. This letter also provides an assessment of the potential for new negative effects not addressed in the initial REA supporting documentation.

1. Proposed Project Changes

The proposed changes are as follows:

- Additional land of 0.08 ha (in a triangular shape) between the Empire and Martin's Meadows properties to satisfy legal land rights requirements.
- Use of horizontal directional drilling to install the connection line between the Empire and Martin's Meadows properties.
- Completion of additional Stage 2 archaeological assessments to ensure that the locations of all proposed Project components associated with the solar project and associated transmission have been adequately surveyed.

Where additional archaeological surveys have been completed, it should be noted that other Project reports, including the natural heritage and water body assessments, considered and studied the use of these areas within the boundaries of the Project Location. A more detailed inspection of the areas studied by the archaeologist led to some uncertainty whether the boundaries in the archaeological surveys fully matched the equipment layout for the Project. Northland Power has proactively completed these additional archaeological surveys to ensure complete coverage from an archaeological study/MTCS perspective.

Table 1.1 provides a description of each proposed change, the rationale for the change, an assessment of potential for altered environmental effects and any additional mitigation or monitoring required.

Table 1.1 Table of Proposed Changes, Rationale for Change, Altered Effects and Additional Mitigation Measures and Monitoring

Change	Change Details	Rationale for Change	Altered Effect	Additional Mitigation Required	Additional Environmental Effects Monitoring
Additional land of 0.08ha between the Empire and Martin's Meadows properties.	Additional land required to satisfy legal land rights requirements.	Legal requirement as land rights cannot be held on a corner to corner basis.	No change in environmental effect.	N/A	N/A
Use of horizontal directional drilling for connection line between the Empire and Martin's Meadows properties.	Punch and bore or high pressure directional drilling are proposed in place of the overhead line.	Discussions with the Engineering Procurement and Construction (EPC) Contractor have indicated that directional drilling is recommended in order to reduce shading on adjacent solar panels.	Overall benefit, due to reduced need for vegetation management and reduce risk of birds colliding with overhead line.	Yes	Yes

Change	Change Details	Rationale for Change	Altered Effect	Additional Mitigation Required	Additional Environmental Effects Monitoring
Completion of additional archaeological studies on the Abitibi and Empire properties, as well as at the western end of the transmission line.	Archaeological surveys completed to ensure Stage 2 studies completed on all Project components.	Optimization of site layouts and review of permitted boundaries identified areas where additional surveys were warranted. The additional archaeological surveys are within the Project boundaries (no new addition of land)	No archaeological sites were identified during these surveys.	None	None

As noted above, there are no additional net negative environmental effects. As a result, the proposed changes are determined to be Project Design Changes (Minor).

2. Summary of Revisions to REA Supporting Documents

This section identifies the amendments to each of the supporting documents submitted with the original REA Application that are required to address the proposed Project changes.

In order to assess the archaeological potential, additional archaeological assessment reports were completed, as listed below:

- Stage 1 and 2 Archaeological Assessment for Northland Power – Empire Solar Site (26.7-kV Transmission Line) Part of Lot 15, Concession 8, and Lots 17 and 18, Concession 7, Township of Glackmeyer, District of Cochrane – dated January 14, 2014
- Stage 1 and 2 Archaeological Assessment for Long Lake Solar Project – Solar Switching Station Part of Lot 1 and 28, Concessions 8 and 9, Town of Calder, District of Cochrane, Ontario – dated September 16, 2013.[1]

These reports are provided under separate cover. Confirmation letters for these reports have been received from the Ontario Ministry of Tourism, Culture and Sport (MTCS). These letters are provided as Attachment A.

In addition to the above, revisions to the following reports are required:

- Construction Plan Report
- Design and Operations Report
- Water Body Assessment Documentation for the Empire Property

[1] This report has also been provided to the MOE in support of an amendment to the Long Lake Solar Project (REA No. 8430-9AEQ6M) as this report covers portions of the transmission lines for both the Long Lake and Cochrane Solar Projects

- Natural Heritage Assessment Documentation
- Consultation Report.

Several studies do not require any revisions, these include the following:

- Decommissioning Plan Report
- Protected Properties Assessment
- Noise Assessment Study
- Project Description Report
- Water Body Assessment Documentation for the Abitibi and Martin's Meadows properties
- Previous Stage 1 and 2 Archaeological Assessments.

The following sections identify the amendments to each of the REA supporting documents as a result of the proposed Project changes. For each amended report, a table is provided identifying the original text, the amended text and the original page and section of the text being amended. The tables provide the text submitted with the original REA application, the application to amend the REA and the most recent revisions in response to the currently proposed Project changes.

2.1 Construction Plan Report

Table 2.1 identifies the amendments to the Construction Plan Report, as a result of the changes discussed in this letter.

Table 2.1 Construction Plan Report Amendments

Page	Section	Original Text	Amended Text
4	2.3.2.5	All feeder lines will be located above ground.	Remove sentence.
14	2.3.2.5	n/a	2.3.2.5.1 – Directional Drilling Horizontal directional drilling is proposed to be used for the interconnection line between the Empire and Martin's Meadows properties. Either punch and bore or high pressure methods will be used. The punch and bore directional drilling methodology involves the excavation of a vertical bell hole on either side of the watercourse (outside of the high water mark with suitable setbacks and erosion and sediment controls), and a surface-based drilling rig to drill a bore hole and install a conduit for installation of cabling. The conduit will be installed a minimum of 1 m below the bed of the watercourse in the valley. High pressure directional drilling involves the excavation of a vertical bell hole on either side of the watercourse (outside of the high water mark with suitable setbacks

Page	Section	Original Text	Amended Text
			and erosion and sediment controls) and a surface-based drilling rig to drill a bore hole and install a conduit for installation of cabling. The installation methodology will use a pressurized boring fluid mixture consisting of potable water, bentonite clay and additives. The system uses this pressurized material to keep the borehole open and remove excavated soil, while excavating and installing conduit.
18	3.3	n/a	3.3.1 – Directional Drilling Surface water could be impacted by directional drilling through the creation of sediment and erosion release during the installation.
24	4.3	n/a	4.3.1 – Directional Drilling In order to ensure directional drilling does not cause a sediment and erosion release the following measures will be implemented: • Installation to a depth of at least 1 m below the watercourse bed to prevent the conduit from becoming exposed due to natural scour of the bed • Bell holes will be installed outside the high water mark of the watercourse. • Installation of sediment and erosion controls including silt fencing on the downstream side of each bell hole excavation. Erosion and sediment controls will be regularly monitored throughout the construction period to ensure continued effectiveness with all necessary repairs made as soon as possible. • In the case of high-pressure drilling, a containment system consisting of a berm, a minimum of 0.30 m high will be installed around the boring equipment, boring fluid mixing system, entry and exit pits and the boring fluid recycling system (if utilized) to contain any accidental spills of boring fluid. • No machinery fording of the watercourse will be required. • Machinery will arrive on site in a clean condition and will be maintained throughout the construction period to ensure that it is free of leaks. • Machinery will be washed, refueled and serviced at designated locations on the Project site away from watercourses and wetlands. • An emergency spill kit will be present on-site at all times. • If dewatering of bell holes is required during installation, the water will be pumped to a heavily vegetated area or sediment bag to prevent sedimentation in the watercourse. • All soil excavated from bell holes and the bore hole will be stockpiled at least 30-m from watercourses

Page	Section	Original Text	Amended Text
			and stabilized appropriately to prevent erosion and sedimentation. • After backfilling of bell holes is complete, all disturbed areas will be revegetated with an appropriate seed mix. • During installation, the watercourse will be visually monitored for signs of turbidity, which could indicate collapse of the boring tunnel. • A response plan will be developed for implementation in the event that an unforeseen sediment release or spill occurs. Sufficient response material and equipment will be maintained on the construction site to contain sediment laden water or other deleterious substances. The response plan will include appropriate notifications. • Erosion and sediment controls will be maintained until the revegetation process is sufficiently complete to prevent erosion.
32	Appendix A	Site Layout	Revised Site Layout (Attachment B of this report)

2.2 Design and Operations Report

Table 2.2 identifies the amendments to the Design and Operations Report, as a result of the changes discussed in this letter.

Table 2.2 Design and Operations Report Amendments

Page	Section	Original Text	Amended Text
11	3.2.2.6	All feeder lines will be located above ground.	Remove sentence.
29	Appendix A	Site Layout	Revised Site Layout (Attachment B of this report).

2.3 Empire Water Body Records Review Report

Table 2.3 identifies the amendments to the Empire Water Body Records Review Report, as a result of the changes discussed in this letter.

Table 2.3 Empire - Water Body Records Review Report Amendments

Page	Section	Original Text	Revised Text
5	Figure 1.1	Figure	Revised Figure 1.1 (Attachment C of this report)

2.4 Empire - Water Body Site Investigation Report

Table 2.4 identifies the amendments to the Empire Water Body Site Investigation Report, as a result of the changes discussed in this letter.

Table 2.4 Water Body Site Investigation Report Amendments

Page	Section	Original Text	Revised Text
5	Figure 1.1	Figure	Revised Figure 1.1 (Attachment D of this report)

2.5 Empire - Water Body Environmental Impact Study Report

Table 2.5 identifies the amendments to the Empire Water Body Environmental Impact Study, as a result of the changes discussed in this letter.

Table 2.5 Empire Water Body Environmental Impact Study Amendments

Page	Section	Original Text	Revised Text
5	Figure 1.1	Figure	Revised Figure 1.1 (Attachment D of this report)
26	4.2.1.5	n/a	The connection line to the adjacent facility will cross the Tributary of Munroe Creek using horizontal directional drilling. Mitigation measures to reduce the potential for sediment and erosion release includes the following: • Installation to a depth of at least 1 m below the watercourse bed to prevent the conduit from becoming exposed due to natural scour of the bed • Bell holes will be installed outside the high water mark of the watercourse. • Installation of sediment and erosion controls including silt fencing on the downstream side of each bell hole excavation. Erosion and sediment controls will be regularly monitored throughout the construction period to ensure continued effectiveness with all necessary repairs made as soon as possible. • In the case of high-pressure drilling, a containment system consisting of a berm, a minimum of 0.30 m high will be installed around the boring equipment, boring fluid mixing system, entry and exit pits and the boring fluid recycling system (if utilized) to contain any accidental spills of boring fluid. • No machinery fording of the watercourse will be required. • Machinery will arrive on site in a clean condition and will be maintained throughout the construction period to ensure that it is free of leaks. • Machinery will be washed, refueled and serviced at designated locations on the Project site away from watercourses and wetlands. • An emergency spill kit will be present on-site at all times. • If dewatering of bell holes is required during installation, the water will be pumped to a heavily vegetated area or sediment bag to prevent sedimentation in the watercourse. • All soil excavated from bell holes and the bore hole will be stockpiled at least 30-m from watercourses and stabilized appropriately to prevent erosion and sedimentation. • After backfilling of bell holes is complete, all disturbed areas will be revegetated with an appropriate seed mix.

Page	Section	Original Text	Revised Text
			• During installation, the watercourse will be visually monitored for signs of turbidity, which could indicate collapse of the boring tunnel. • A response plan will be developed for implementation in the event that an unforeseen sediment release or spill occurs. Sufficient response material and equipment will be maintained on the construction site to contain sediment laden water or other deleterious substances. The response plan will include appropriate notifications. • Erosion and sediment controls will be maintained until the revegetation process is sufficiently complete to prevent erosion.
40	Appendix A	Site Layout	Revised Site Layout (Attachment B of this report).

2.6 Natural Heritage Assessment Documentation

Correspondence was provided to the MNR with respect to the proposed changes and potential impacts on the Natural Heritage Assessment and Environmental Impact Study documentation. A copy of this correspondence is attached (Attachment E). A response from the MNR has not been received to date, however once a response is received this will be provided to MOE as supplemental information relating to this application.

2.7 Archaeological Assessment Reports

Additional archaeological assessments have been completed for this Project, as identified in Section 2.0. These reports concluded that no archaeological resources were discovered during the surveys and no additional surveys are required. These reports are provided under separate covers, along with the acceptance letters provided by the MTCS to date (Attachment A).

2.8 Consultation Report

In order to ensure that the public, Aboriginal communities, and the Town of Cochrane are aware of the proposed changes, we are preparing to notify these stakeholders via letter of the proposed change to the Project. Copies of the letters as well as information on the corresponding newspaper publications will be provided to the MOE once available.

Once you have had an opportunity to review the information contained herein, if you have any questions relating to the proposed amendment, please do not hesitate to contact me at 905-374-0701, Ext. 5280.

Yours truly,

Sean Male
SM:srg

Attachments

cc: J. Mulvale, Northland Power
R. Miller, Northland Power
D. Durocher, Ministry of the Environment, South Porcupine

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Niagara Falls, Ontario, Canada L2E 7J7
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Attachment A
MTCS Acceptance Letters

Safety ● Quality ● Sustainability ● Innovation

Ministry of Tourism, Culture and Sport

Culture Programs Unit
Programs and Services Branch
Culture Division
401 Bay Street, Suite 1700
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Email: Paige.Campbell@ontario.ca

Ministère du Tourisme, de la Culture et du Sport

Unité des programmes culturels
Direction des programmes et des services
Division de culture
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Email: Paige.Campbell@ontario.ca

Ontario

Dec 10, 2013

T. Keith Powers (P052)
The Archaeologists Inc. - Toronto
790 Exceller Newmarket ON L3X 1P6

RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 1 and 2 Archaeological Assessment for Long Lake Solar Project – Solar Switching Station Part of Lot 1 &28, Concessions 8 &9, Town of Calder, District of Cochrane, Ontario", Dated Sep 16, 2013, Filed with MTCS Toronto Office on Nov 21, 2013, MTCS Project Information Form Number P052-453-2013, OPA Reference Number FIT-FE8GSGA

Dear Mr, Powers:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18. [1] This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 Standards and Guidelines for Consultant Archaeologists set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.[2]

The report documents the assessment of the study area as depicted in Map 3 of the above titled report and recommends the following:

The report recommends that no further archaeological assessment of the subject property is required.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 Standards and Guidelines for Consultant Archaeologists and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Paige, Campbell
Archaeology Review Officer

cc. Archaeology Licensing Officer
Rob Miller,Northland Power

[1]This letter constitutes the Ministry of Tourism, Culture and Sport's written comments where required pursuant to section 22 of O. Reg. 359/09, as

amended (Renewable Energy Approvals under the Environmental Protection Act), regarding the archaeological assessment undertaken for the above-captioned project. Depending on the study area and scope of work of the archaeological assessment as detailed in the report, further archaeological assessment reports may be required to complete the archaeological assessment for the project under O. Reg. 359/09. In that event Ministry comments pursuant to section 22 of O. Reg. 359/09 will be required for any such additional reports.

[2]In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.

Ministry of Tourism, Culture and Sport

Culture Programs Unit
Programs and Services Branch
Culture Division
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel.: (807) 475-1628
Email: Paige.Campbell@ontario.ca

Ministère du Tourisme, de la Culture et du Sport

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Direction des programmes et des services
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401, rue Bay, bureau 1700
Toronto ON M7A 0A7
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Ontario

Jan 31, 2014

T. Keith Powers (P052)
The Archaeologists Inc. - Toronto
790 Exceller Newmarket ON L3X 1P6

RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 1 and 2 Archaeological Assessment for Northland Power – Empire Solar Site (27.6 kV Transmission Line) Part of Lots 15, Concession 8, and Lots 17 and 18, Concession 7 Township of Glackmeyer, District of Cochrane", Dated Jan 14, 2014, Filed with MTCS Toronto Office on Jan 17, 2014, MTCS Project Information Form Number P052-466-2013, OPA Reference Number FIT-FQJ0FUC

Dear Mr, Powers:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18. [1] This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 Standards and Guidelines for Consultant Archaeologists set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.[2]

The report documents the assessment of the study area as depicted in Maps 2 to 6 of the above titled report and recommends the following:

The report recommends that no further archaeological
assessment of the subject property is required.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 Standards and Guidelines for Consultant Archaeologists and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Paige, Campbell
Archaeology Review Officer

cc. Archaeology Licensing Officer
Rob Miller,Northland Power Inc.

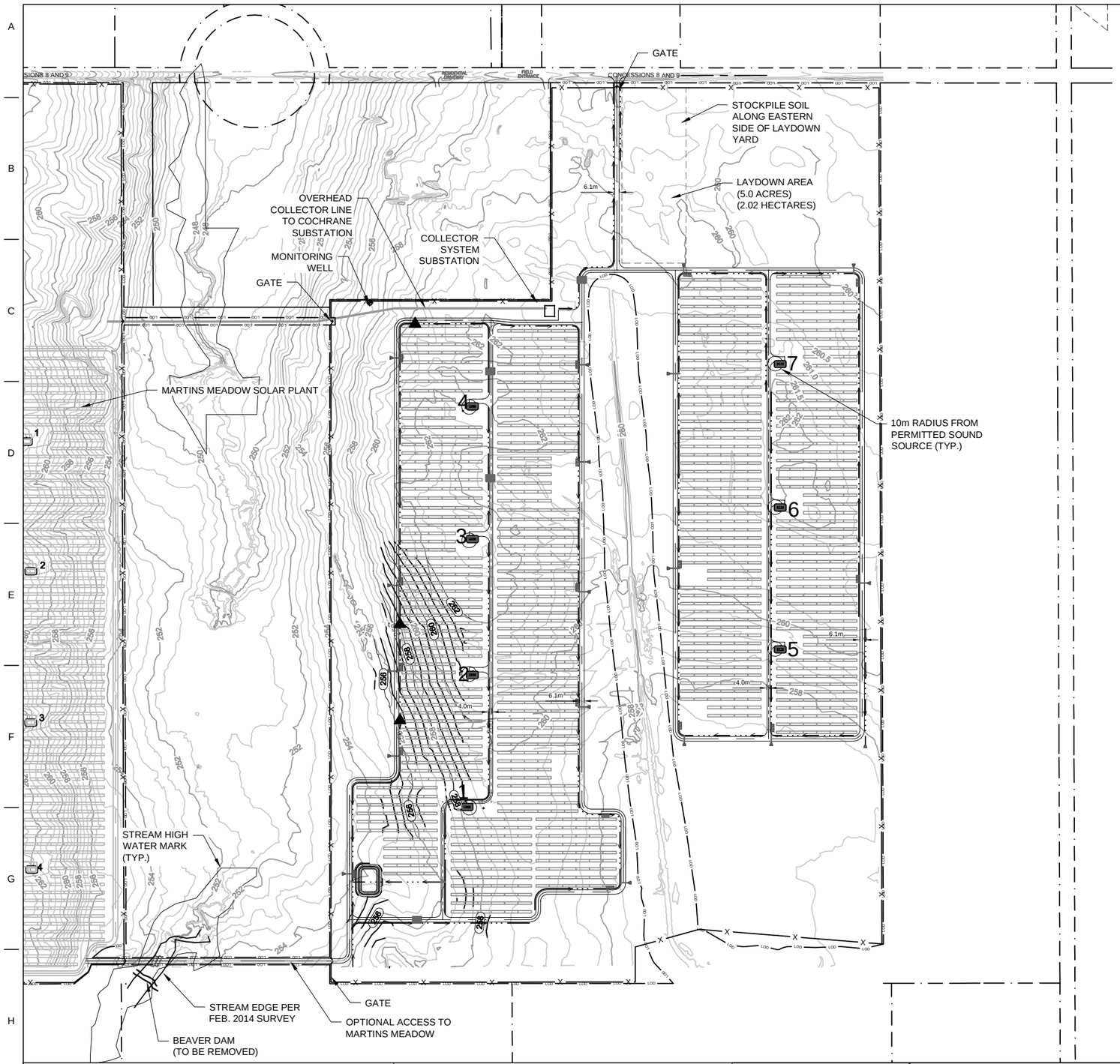
[1]This letter constitutes the Ministry of Tourism, Culture and Sport's written comments where required pursuant to section 22 of O. Reg. 359/09, as amended (Renewable Energy Approvals under the Environmental Protection Act), regarding the archaeological assessment undertaken for the above-captioned project. Depending on the study area and scope of work of the archaeological assessment as detailed in the report, further archaeological assessment reports may be required to complete the archaeological assessment for the project under O. Reg. 359/09. In that event Ministry comments pursuant to section 22 of O. Reg. 359/09 will be required for any such additional reports.

[2]In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.

Agatha Garcia-Wright
Ministry of the Environment
April 16, 2014

Attachment B
Revised Site Layouts

Safety ● Quality ● Sustainability ● Innovation



AS-BUILT MONITORING WELL UTM COORDINATES

	X (m E)	Y (m N)
AB	501685.8	5443340.0

LEGEND

- PROPOSED ACCESS ROAD
- PROPERTY BOUNDARY
- REA BOUNDARY (LIMIT OF DISTURBANCE)
- PROPOSED FENCE
- 3 — INVERTER AND TRANSFORMER (MVPP)
- CONSTRUCTION LAYDOWN AREA
- EXISTING 2m CONTOUR
- EXISTING 0.5m CONTOUR
- PROPOSED 2m CONTOUR
- PROPOSED 0.5m CONTOUR
- PROPOSED SWALE
- PROPOSED CULVERT
- MONITORING WELL
- PROPOSED OUTLET PROTECTION
- PROPOSED ROCK CROSSING

REA PERMITTED MVPP CENTROID UTM COORDINATES / ACTUAL MVPP CENTROID UTM COORDINATES TO BE CONSTRUCTED / DIFFERENCE

SOURCE_ID	X (m E)	Y (m N)	MVPP	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-1	501819.2	5442662.7	1	501816.2	5442663.5	3.0	-0.8	3.1
NS-2	501819.2	5442841.9	2	501823.4	5442840.7	-4.2	1.2	4.3
NS-3	501819.2	5443021.1	3	501823.4	5443022.9	-4.2	-1.8	4.5
NS-4	501819.2	5443200.3	4	501823.5	5443201.0	-4.3	-0.7	4.3
NS-5	502229.5	5442875.5	5	502236.2	5442874.8	-6.7	0.7	6.7
NS-6	502229.5	5443065.9	6	502236.2	5443065.2	-6.7	0.7	6.7
NS-7	502229.5	5443256.3	7	502236.2	5443257.6	-6.7	-1.3	6.8

COORDINATES ARE FOR CENTER POINT OF EACH MVPP PLATFORM

ACTUAL MVPP TRANSFORMER CENTROID UTM COORDINATES TO BE CONSTRUCTED / ACTUAL MVPP INVERTER CENTROID UTM COORDINATES TO BE CONSTRUCTED

	X (m E)	Y (m N)	X (m E)	Y (m N)
1	501820.0	5442662.8	501814.6	5442663.5
2	501827.2	5442840.1	501821.7	5442840.7
3	501827.2	5443022.2	501821.7	5443022.9
4	501827.3	5443200.3	501821.8	5443201.0
5	502232.4	5442875.5	502237.8	5442874.8
6	502232.4	5443065.9	502237.8	5443065.2
7	502232.4	5443258.3	502237.8	5443257.6

PRELIMINARY DRAWING NOT FOR CONSTRUCTION 2014-4-16

STAMP/SEAL:

CONFIDENTIAL

REVISIONS

REV	YYYY-MM-DD	DESCRIPTION	DRWN	CHKD
PR-0	2014-03-07	30% REVIEW	TAF	MAE
FR-0	2014-04-01	90% FINAL REVIEW	TAF	ME
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

Issued For REA Amendment

0 60 120 180 240 300 N

SCALE IN METERS

Scale: AS SHOWN

Drawn by: T.FIEBRANZ
Checked by: M.EBERHARDT
Approved by: -
Date: 2014-04-01

NORTHLAND POWER

WHITE H.B. White Canada Corporation an OMEA company

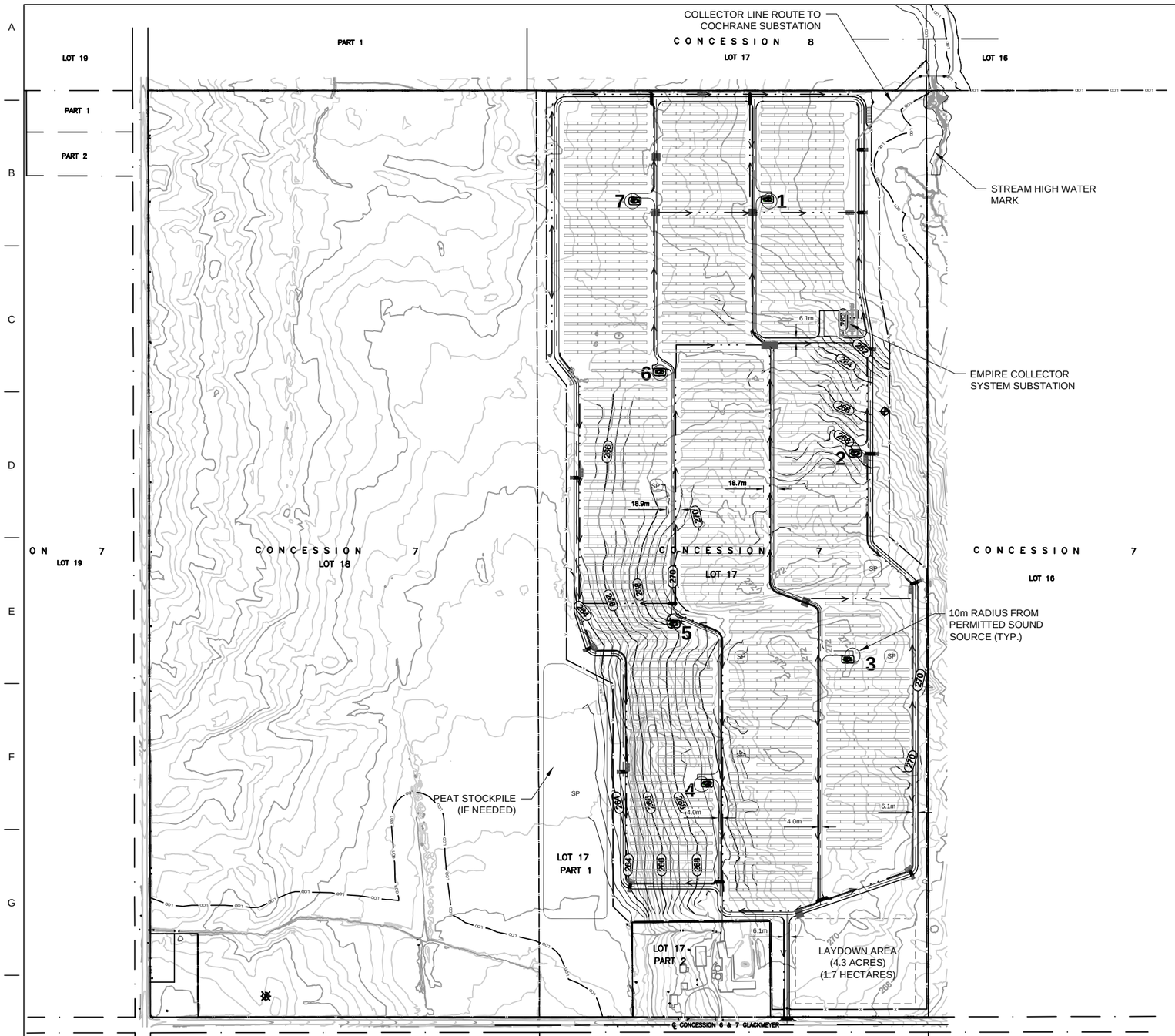
Title:
Abitibi
SOLAR PLANT CIVIL CONSTRUCTION DRAWINGS

CIVIL SITE AND GRADING PLAN

Northland Power
Cochrane and Long Lake Solar Project

Internal Project / Drawing Number: 40066-001
Sheet 01 of 01
Drawing Number: AB-SF-CI-D101
Rev. FR-0

FORMAT D



MONITORING WELL AS-BUILT UTM COORDINATES		
	X (m E)	Y (m N)
EM	500797.0	5442006.5
EM	499988.6	5441243.1

NOTE:
1. MONITORING WELLS TO BE PROTECTED AND SURROUNDING SOIL SHALL NOT BE DISTURBED.
2. SEE SHEET D501 FOR CULVERT AND SWALE SIZING AND SLOPES.

LEGEND

- PROPOSED ACCESS ROAD
- PROPERTY BOUNDARY
- REA BOUNDARY (LIMIT OF DISTURBANCE)
- PROPOSED FENCE
- INVERTER AND TRANSFORMER MVPP
- CONSTRUCTION LAYDOWN AREA
- EXISTING 2m CONTOUR
- EXISTING 0.5m CONTOUR
- PROPOSED 2m CONTOUR
- PROPOSED 0.5m CONTOUR
- PROPOSED SWALE
- PROPOSED CULVERT
- MONITORING WELL
- PROPOSED OUTLET PROTECTION
- PROPOSED ROCK CROSSING

REA PERMITTED MVPP CENTROID UTM COORDINATES			ACTUAL MVPP CENTROID UTM COORDINATES TO BE CONSTRUCTED			DIFFERENCE		
SOURCE_ID	X (m E)	Y (m N)	MVPP	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-18	500646.4	5442281.3	1	500643.8	5442283.4	2.6	-2.1	3.3
NS-14	500755.0	5441956.5	2	500758.5	5441952.1	-3.5	4.4	5.6
NS-12	500755.0	5441687.7	3	500748.9	5441683.0	6.1	4.7	7.7
NS-11	500557.9	5441519.7	4	500565.3	5441521.3	-7.4	-1.6	7.5
NS-13	500521.7	5441732.5	5	500521.6	5441729.3	0.1	3.2	3.2
NS-16	500503.6	5442057.3	6	500503.2	5442058.1	0.4	-0.8	0.9
NS-17	500467.4	5442281.3	7	500470.8	5442281.4	-3.4	-0.1	3.4

COORDINATES ARE FOR CENTER POINT OF EACH MVPP PLATFORM

ACTUAL MVPP TRANSFORMER CENTROID UTM COORDINATES TO BE CONSTRUCTED			ACTUAL MVPP INVERTER CENTROID UTM COORDINATES TO BE CONSTRUCTED	
	X (m E)	Y (m N)	X (m E)	Y (m N)
1	500640.0	5442284.0	500645.5	5442283.4
2	500762.3	5441951.5	500756.8	5441952.1
3	500752.7	5441682.3	500747.2	5441683.0
4	500561.5	5441521.9	500566.9	5441521.3
5	500525.5	5441728.7	500520.0	5441729.3
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7	500474.6	5442280.8	500469.1	5442281.4

PRELIMINARY DRAWING NOT FOR CONSTRUCTION 2014-4-16

STAMP/SEAL:

CONFIDENTIAL

REVISIONS				
REV	YYYY-MM-DD	DESCRIPTION	DRWN	CHKD
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PR-1	2013-12-31	30% ALTERNATE LAYOUT	TAF	ME
PR-2	2014-01-06	UPDATED BORDER SCALE	TAF	ME
FR-0	2014-01-23	90% REVIEW	TAF	ME
FR-1	2014-03-03	90% REVIEW	TAF	MAE
CD-0	2014-03-03	ISSUED FOR CONSTRUCTION	TAF	MAE

Issued For REA Amendment

0 60 120 180 240 300 N
SCALE IN METERS

Scale: AS SHOWN

Drawn by: T.FIEBRANZ
Checked by: M.EBERHARDT
Approved by: P.RINGLER
Date: 2014-03-03

NORTHLAND POWER

WHITE
H.B. White Canada Corporation
an OMEA company

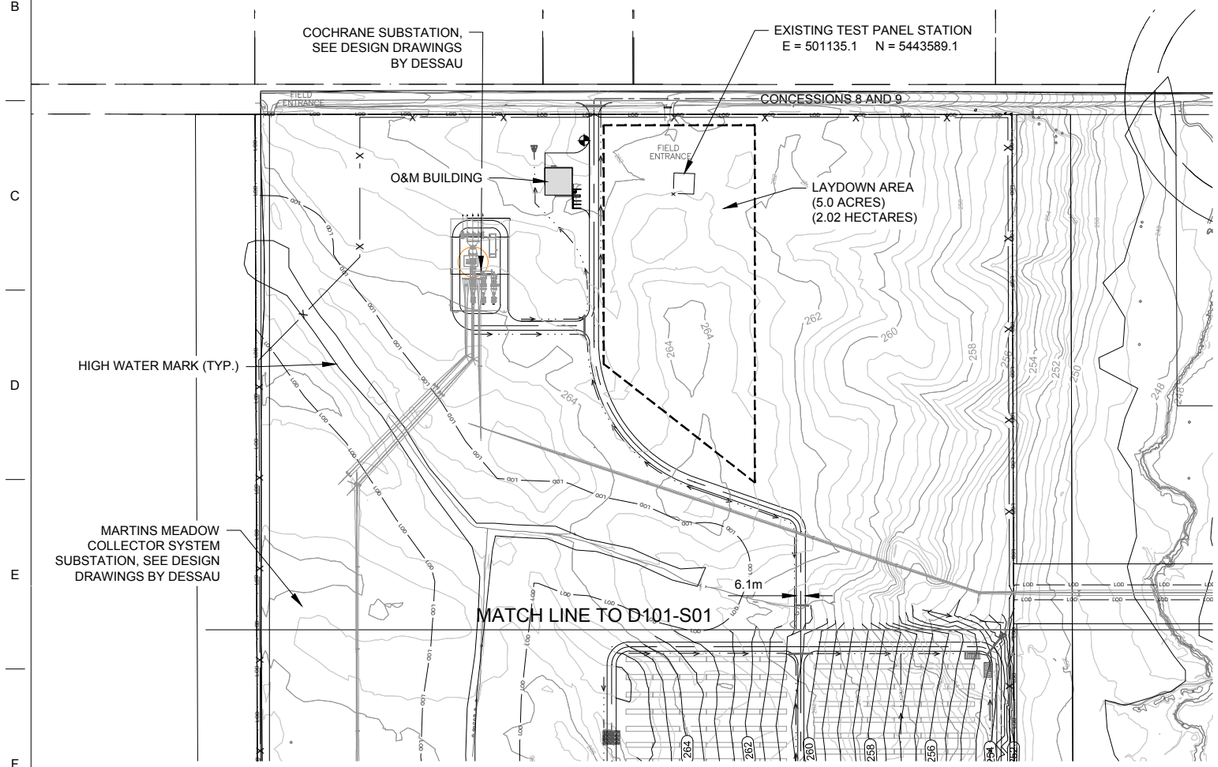
Title:
Empire
SOLAR PLANT CIVIL CONSTRUCTION DRAWINGS

CIVIL SITE AND GRADING PLAN

Northland Power
Cochrane and Long Lake Solar Project

Internal Project / Drawing Number: 40066-002
Sheet 01 of 01
Drawing Number: EM-SF-CI-D101
Rev. CD-0

FORMAT D



LEGEND

- PROPOSED ACCESS ROAD
- PROPERTY BOUNDARY
- REA BOUNDARY (LIMIT OF DISTURBANCE)
- PROPOSED FENCE
- 3 — INVERTER AND TRANSFORMER MVPP
- CONSTRUCTION LAYDOWN AREA
- EXISTING 2m CONTOUR
- EXISTING 0.5m CONTOUR
- PROPOSED 2m CONTOUR
- PROPOSED 0.5m CONTOUR
- PROPOSED SWALE
- PROPOSED CULVERT
- MONITORING WELL
- PROPOSED OUTLET PROTECTION
- PROPOSED ROCK CROSSING

AS BUILT MONITORING WELL UTM COORDINATES

	X (m E)	Y (m N)
MM	501068.2	5443617.8

COORDINATES ARE FOR CENTER POINT OF EACH MVPP PLATFORM

REA PERMITTED MVPP CENTROID UTM COORDINATES			ACTUAL MVPP CENTROID UTM COORDINATES TO BE CONSTRUCTED			DIFFERENCE		
SOURCE_ID	X (m E)	Y (m N)	MVPP	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-19	501216.5	5443158.2	1	501225.3	5443153.7	-8.8	4.4	9.8
NS-20	501234.6	5442979.0	2	501231.3	5442979.9	3.3	-0.9	3.4
NS-21	501234.6	5442777.4	3	501231.1	5442776.6	3.5	0.7	3.5
NS-22	501234.6	5442575.8	4	501232.6	5442579.6	2.0	-3.8	4.3
NS-23	500983.2	5442553.4	5	500988.3	5442550.1	-5.2	3.3	6.1
NS-24	500983.2	5442755.0	6	500988.4	5442757.5	-5.2	-2.5	5.7
NS-25	500983.2	5442956.6	7	500988.0	5442952.7	-4.8	3.9	6.2
SUB STATION								
SOURCE_ID	X (m E)	Y (m N)	POINT	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-26	500993.6	5443536.3	9	500993.6	5443536.3	0.0	0.0	0.0

ACTUAL MVPP TRANSFORMER CENTROID UTM COORDINATES TO BE CONSTRUCTED			ACTUAL MVPP INVERTER CENTROID UTM COORDINATES TO BE CONSTRUCTED	
	X (m E)	Y (m N)	X (m E)	Y (m N)
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2	501227.5	5442980.5	501233.0	5442979.9
3	501227.3	5442777.3	501232.8	5442776.6
4	501228.7	5442580.2	501234.2	5442579.6
5	500992.1	5442549.5	500986.6	5442550.1
6	500992.2	5442756.8	500986.7	5442757.5
7	500991.8	5442952.1	500986.3	5442952.7

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION
2014-3-21

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REVISIONS

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FR-0	2014-03-20	90% FINAL REVIEW	TAF	ME
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-	-	-	-	-
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0 40 80 120 160 200
SCALE IN METERS

Scale: AS SHOWN

Drawn by: T.FIEBRANZ
Checked by: M.EBERHARDT
Approved by: -
Date: 2014-03-21

NORTHLAND POWER
WHITE an IEA company

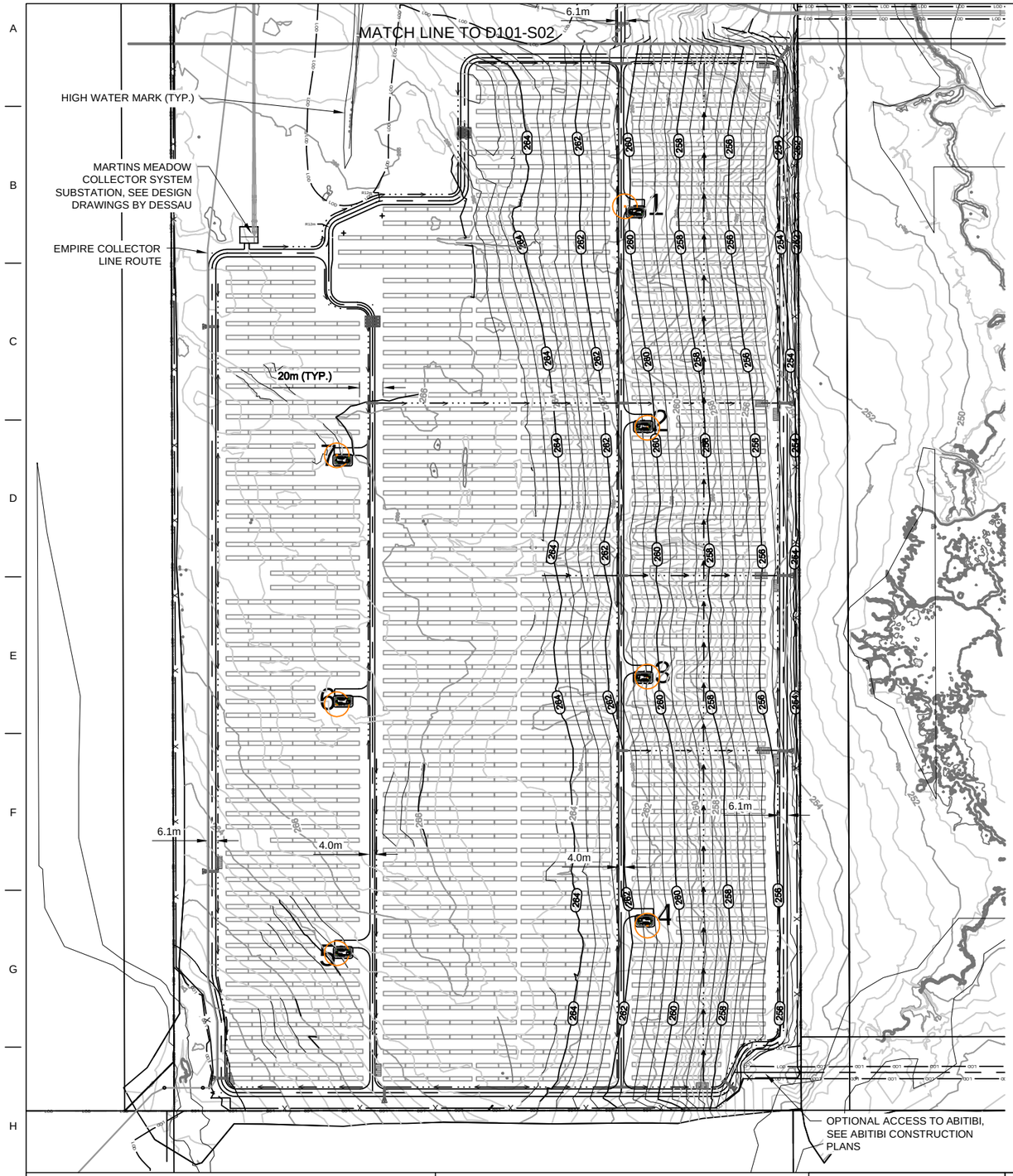
Title:
Martins Meadow
SOLAR PLANT CIVIL CONSTRUCTION DRAWINGS

CIVIL SITE AND GRADING PLAN

Northland Power
Cochrane and Long Lake Solar Project

Internal Project / Drawing Number: 40066-004
Sheet 02 of 02
Drawing Number: MM-SF-CI-D101-S02
Rev. FR-0

FORMAT D



LEGEND

- PROPOSED ACCESS ROAD
- PROPERTY BOUNDARY
- REA BOUNDARY (LIMIT OF DISTURBANCE)
- PROPOSED FENCE
- 3 INVERTER AND TRANSFORMER MVPP
- CONSTRUCTION LAYDOWN AREA
- EXISTING 2m CONTOUR
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- PROPOSED SWALE
- PROPOSED CULVERT
- MONITORING WELL
- PROPOSED OUTLET PROTECTION
- PROPOSED ROCK CROSSING

AS BUILT MONITORING WELL UTM COORDINATES

	X (m E)	Y (m N)
MM	501068.2	5443617.8

COORDINATES ARE FOR CENTER POINT OF EACH MVPP PLATFORM

REA PERMITTED MVPP CENTROID UTM COORDINATES			ACTUAL MVPP CENTROID UTM COORDINATES TO BE CONSTRUCTED			DIFFERENCE		
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NS-21	501234.6	5442777.4	3	501231.1	5442776.6	3.5	0.7	3.5
NS-22	501234.6	5442575.8	4	501232.6	5442579.6	2.0	-3.8	4.3
NS-23	500983.2	5442553.4	5	500988.3	5442550.1	-5.2	3.3	6.1
NS-24	500983.2	5442755.0	6	500988.4	5442757.5	-5.2	-2.5	5.7
NS-25	500983.2	5442956.6	7	500988.0	5442952.7	-4.8	3.9	6.2
SUB STATION								
SOURCE_ID	X (m E)	Y (m N)	POINT	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-26	500993.6	5443536.3	9	500993.6	5443536.3	0.0	0.0	0.0

ACTUAL MVPP TRANSFORMER CENTROID UTM COORDINATES TO BE CONSTRUCTED			ACTUAL MVPP INVERTER CENTROID UTM COORDINATES TO BE CONSTRUCTED	
	X (m E)	Y (m N)	X (m E)	Y (m N)
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4	501228.7	5442580.2	501234.2	5442579.6
5	500992.1	5442549.5	500986.6	5442550.1
6	500992.2	5442756.8	500986.7	5442757.5
7	500991.8	5442952.1	500986.3	5442952.7

PRELIMINARY DRAWING NOT FOR CONSTRUCTION 2014-4-16

STAMP/SEAL:

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REVISIONS				
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FR-0	2014-03-20	90% FINAL REVIEW	TAF	ME
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Issued For REA Amendment

0 40 80 120 160 200
SCALE IN METERS

Scale: AS SHOWN

Drawn by: T.FIEBRANZ
Checked by: M.EBERHARDT
Approved by: -
Date: 2014-03-21

NORTHLAND POWER

WHITE H.A. White Consultants Corporation an IEA company

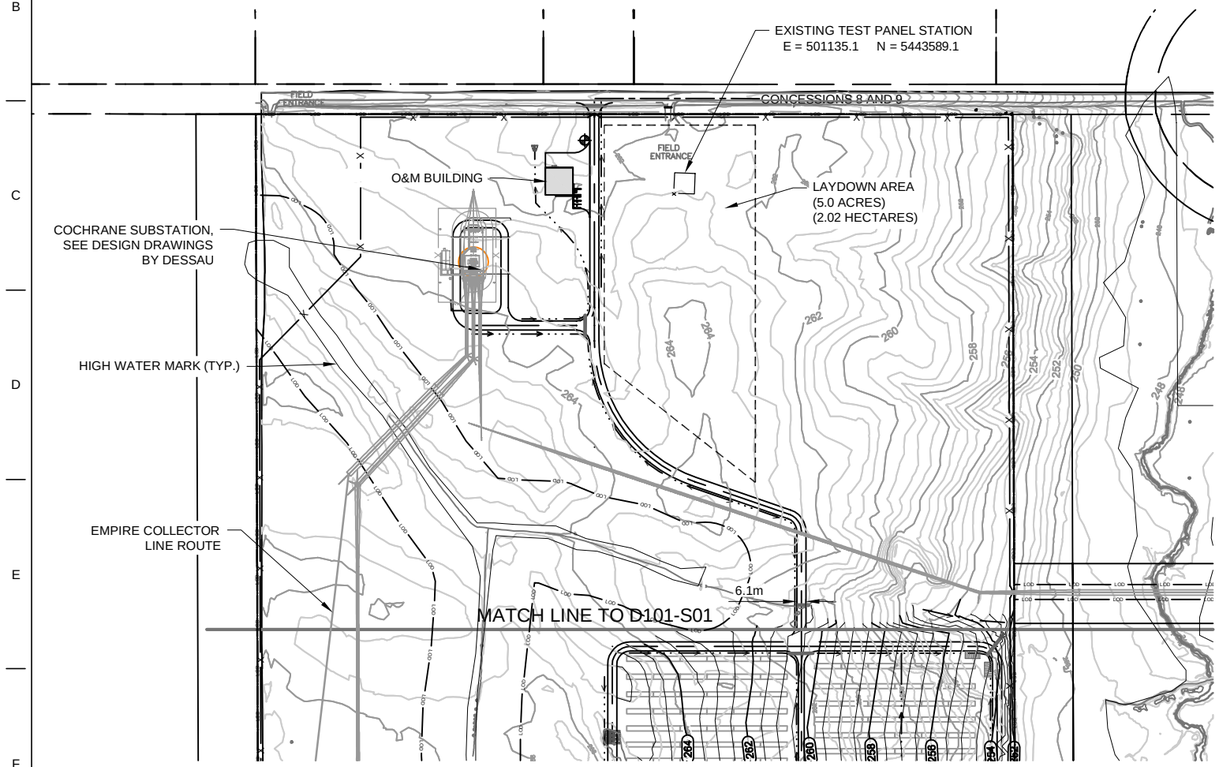
Title:
Martins Meadow
SOLAR PLANT CIVIL CONSTRUCTION DRAWINGS

CIVIL SITE AND GRADING PLAN

Northland Power
Cochrane and Long Lake Solar Project

Internal Project / Drawing Number:	Sheet
40066-004	01 of 02
Drawing Number:	Rev.
MM-SF-CI-D101-S01	FR-0

FORMAT D



LEGEND

- PROPOSED ACCESS ROAD
- PROPERTY BOUNDARY
- REA BOUNDARY (LIMIT OF DISTURBANCE)
- PROPOSED FENCE
- 3 INVERTER AND TRANSFORMER MVPP
- CONSTRUCTION LAYDOWN AREA
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- PROPOSED ROCK CROSSING

AS BUILT MONITORING WELL UTM COORDINATES		
	X (m E)	Y (m N)
MM	501068.2	5443617.8

COORDINATES ARE FOR CENTER POINT OF EACH MVPP PLATFORM

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NS-21	501234.6	5442777.4	3	501231.1	5442776.6	3.5	0.7	3.5
NS-22	501234.6	5442575.8	4	501232.6	5442579.6	2.0	-3.8	4.3
NS-23	500983.2	5442553.4	5	500988.3	5442550.1	-5.2	3.3	6.1
NS-24	500983.2	5442755.0	6	500988.4	5442757.5	-5.2	-2.5	5.7
NS-25	500983.2	5442956.6	7	500988.0	5442952.7	-4.8	3.9	6.2
SUB STATION								
SOURCE_ID	X (m E)	Y (m N)	POINT	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-26	500993.6	5443536.3	9	500993.6	5443536.3	0.0	0.0	0.0

ACTUAL MVPP TRANSFORMER CENTROID UTM COORDINATES TO BE CONSTRUCTED			ACTUAL MVPP INVERTER CENTROID UTM COORDINATES TO BE CONSTRUCTED	
	X (m E)	Y (m N)	X (m E)	Y (m N)
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4	501228.7	5442580.2	501234.2	5442579.6
5	500992.1	5442549.5	500986.6	5442550.1
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PRELIMINARY DRAWING
NOT FOR CONSTRUCTION
2014-4-16

STAMP/SEAL:

CONFIDENTIAL

REVISIONS				
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FR-0	2014-03-20	90% FINAL REVIEW	TAF	ME
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Issued For REA Amendment

0 40 80 120 160 200
SCALE IN METERS

N

Scale: AS SHOWN

Drawn by: T.FIEBRANZ
Checked by: M.EBERHARDT
Approved by: -
Date: 2014-03-21

NORTHLAND POWER

WHITE
H.B. White Canada Corporation
an IEA company

Title:
Martins Meadow
SOLAR PLANT CIVIL
CONSTRUCTION DRAWINGS

CIVIL SITE AND GRADING PLAN

Northland Power
Cochrane and Long Lake
Solar Project

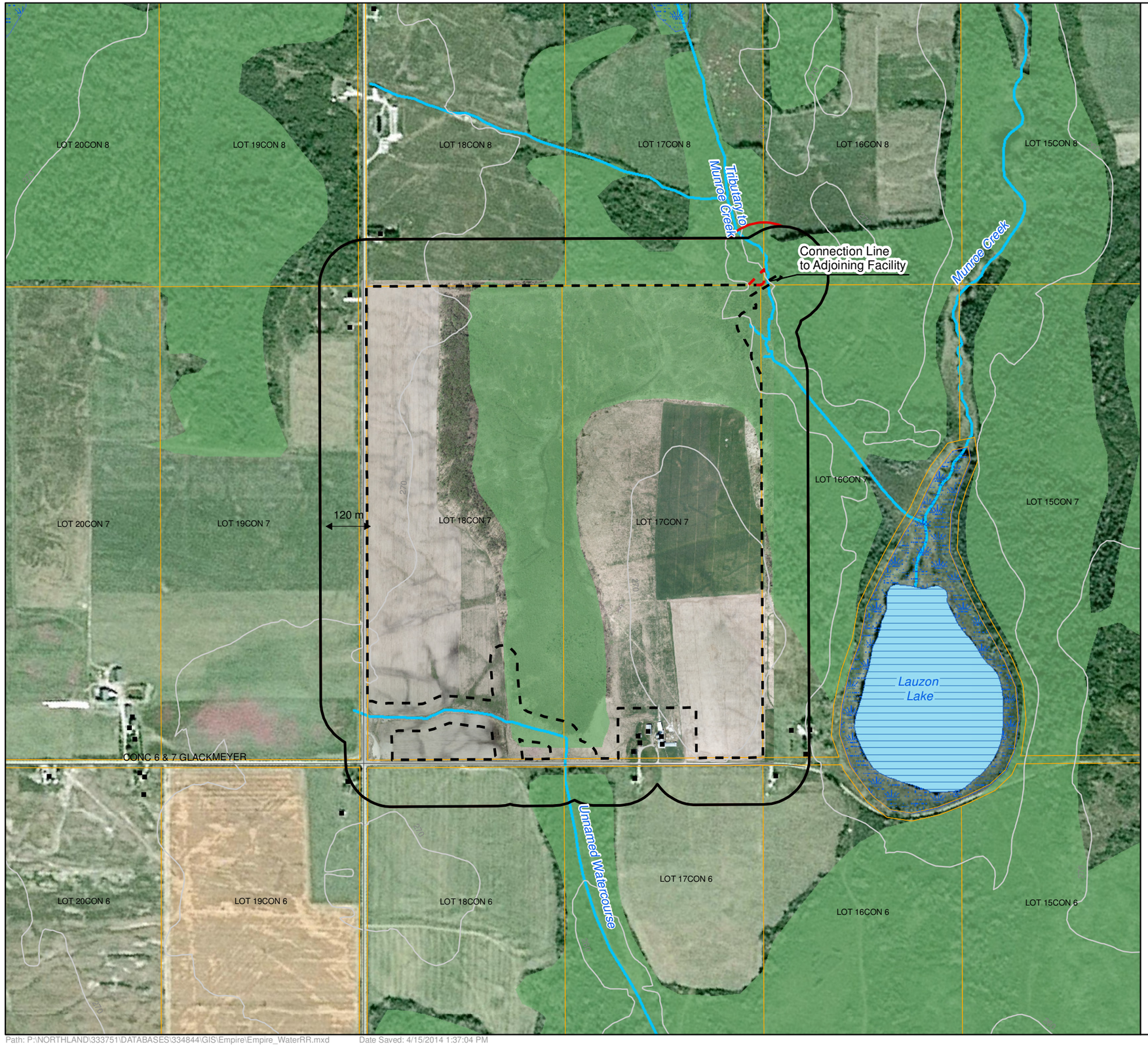
Internal Project / Drawing Number: 40066-004
Sheet 02 of 02
Drawing Number: MM-SF-CI-D101-S02
Rev. FR-0

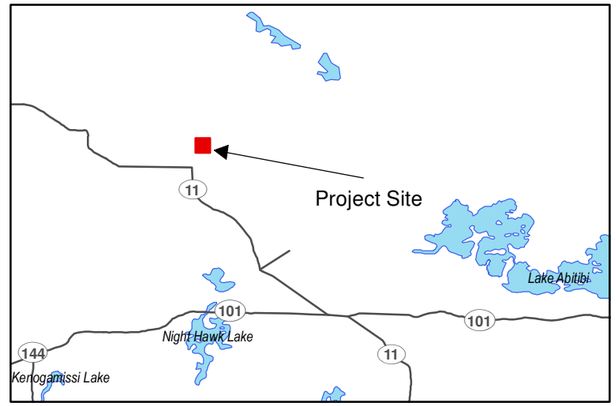
FORMAT D

Agatha Garcia-Wright
Ministry of the Environment
April 16, 2014

Attachment C
Empire Water Body Records Review
Figure

Safety ● Quality ● Sustainability ● Innovation





Legend

- Building
- Railway
- Road
- Topographic Contour (5m interval)
- Watercourse
- Parcel
- Water Body
- Wetland Area
- Wild Rice Stand
- Wooded Area
- Project Location
- 120 m from Project Location
- Additional Project Location
- 120 m from Additional Project Location

Notes:
1. Produced by Hatch underlicense from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2011.
2. Spatial referencing UTM NAD83.

0 45 90 180 270 360 Meters

NORTH

1:10,000

Figure 1.1
Northland Power Inc.
Empire Solar Project
Water Body Features
Solar Panel Project Location

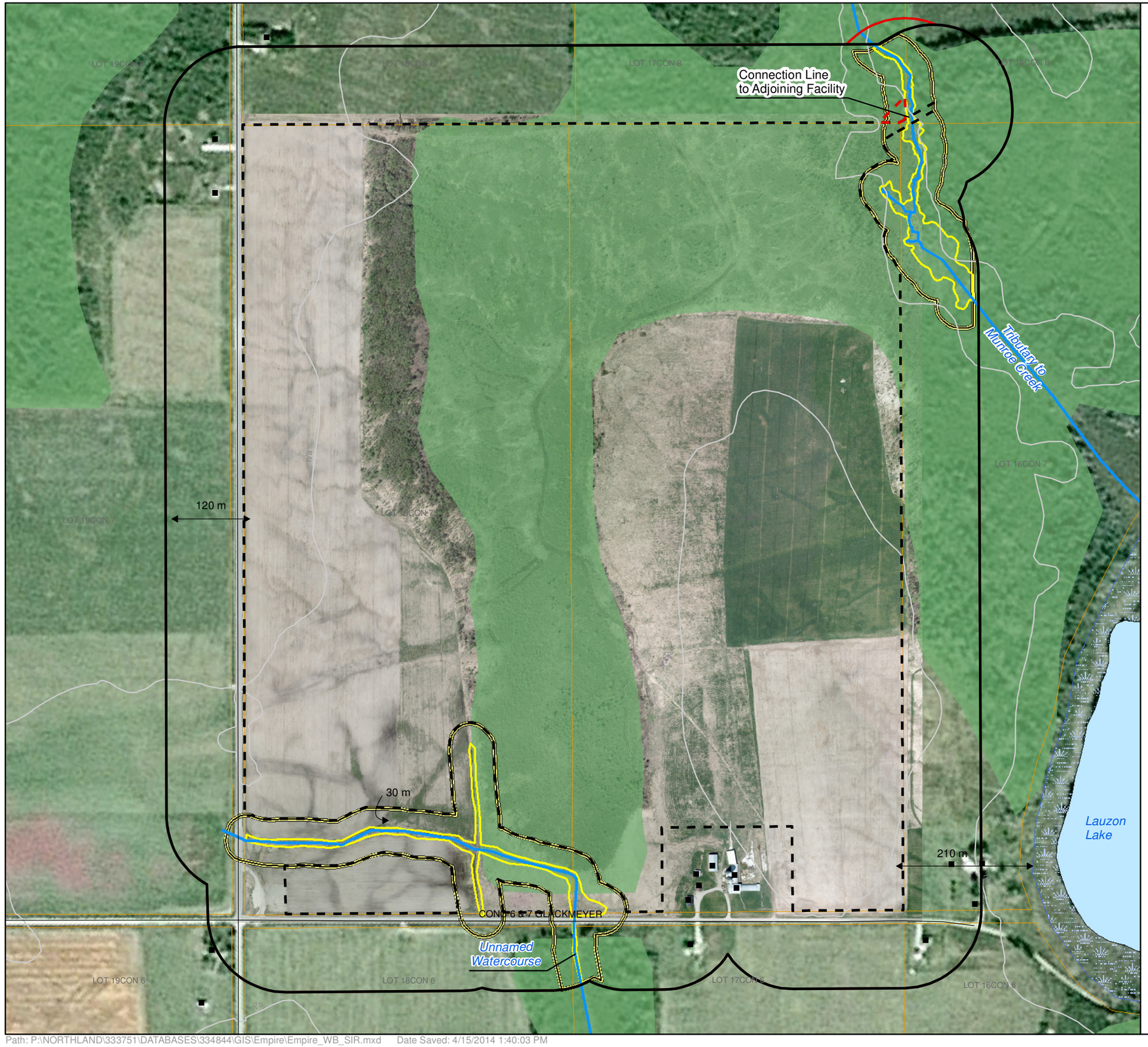
HATCH

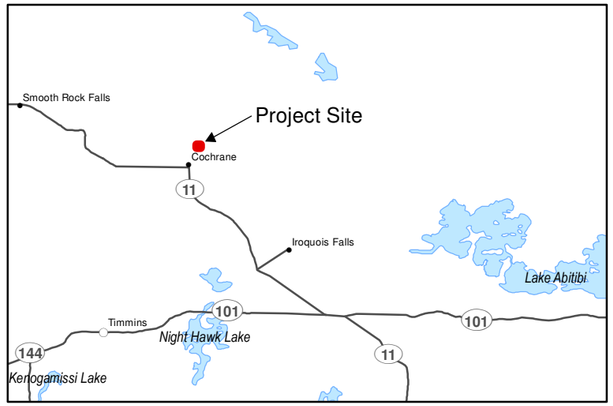
Path: P:\NORTHLAND\333751\DATABASES\334844\GIS\Empire\Empire_WaterRR.mxd Date Saved: 4/15/2014 1:37:04 PM

Agatha Garcia-Wright
Ministry of the Environment
April 16, 2014

Attachment D
Empire Water Body Site Investigation
Figure

Safety ● Quality ● Sustainability ● Innovation





LEGEND

- Building
- Road
- Topographic Contour (5m interval)
- Watercourse
- High Water Mark
- 30 m Setback from High Water Mark
- Parcel
- Waterbody
- Wetland Area
- Wooded Area

Project Components

- Project Location
- 120 m from Project Location
- Additional Project Location
- 120 m from Additional Project Location

Notes:
1. Produced by Hatch under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2011.
2. Spatial referencing UTM NAD 83.
3. Satellite imagery obtained from Google Earth Pro, captured 2003.

0 50 100 200 300 Metres

NORTH

1:6,000

Figure 1.1
Northland Power Inc.
Empire Solar Project
Water Body
Site Investigation Results

HATCH

Path: P:\NORTHLAND\333751\DATABASES\334844\GIS\Empire\Empire_WB_SIR.mxd Date Saved: 4/15/2014 1:40:03 PM

Agatha Garcia-Wright
Ministry of the Environment
April 16, 2014

Appendix E
MNR Correspondence

Safety ● Quality ● Sustainability ● Innovation

Suite 500, 4342 Queen Street
Niagara Falls, Ontario, Canada L2E 7J7
Tel. 905 374 5200 ◆ Fax: 905 374 1157 ◆ www.hatch.ca

April 3, 2014

Jennifer Telford
Ontario Ministry of Natural Resources
2-4 Highway 11 South, P.O. Box 730
Cochrane, ON P0L 1C0

Dear Ms. Telford:

Subject: Northland Power Solar - Cochrane Solar Project

Northland Power Solar Abitibi L.P., Northland Power Solar Empire L.P. and Northland Power Solar Martin's Meadows L.P. (hereafter referred to collectively as "Northland Power") are currently commencing construction of the Cochrane Solar Project located in the northern portion of the Town of Cochrane, in the geographical township of Glackmeyer. The Project received a Renewable Energy Approval (REA) (No. 1290-9A4KSE) from the Ontario Ministry of the Environment (MOE) on August 29, 2013.

Since the time that the REA was received for the Project, Northland Power has identified a need to make some changes to the Project as described in the REA documents in order to facilitate construction and operation of the Project. An application to the MOE for an amendment to the REA is currently in preparation, and in order to support that application we will require either a reconfirmation letter from the MNR, or some other documentation indicating that the proposed changes are consistent with the original confirmation letter for the Project.

In order to support this request, we are providing further information herein with respect to the proposed changes, addressed below in individual sections.

1. Inclusion of Additional Land Between the Empire and Martin's Meadows Properties

1.1 Description of proposed change

An additional 0.08 ha of land (in a triangular shape) has been added to the Project at the corner connecting the Empire and Martin's Meadows properties (as shown in the figure provided in Attachment A) in order to accommodate the installation of the 27.6-kV connection line at this location. Originally it was intended to have the connection line pass directly over the abutting "kitty corners" of the two properties. Upon review of the electrical code, it was determined that connection line must be over land controlled by the proponent and the line cannot cut across two corners, but must have land rights on either side of the wire.

1.2 Assessment of Proposed Impact to Natural Heritage Reports

Though additional lands are required for the Project, the location in question was considered during the site visits associated with the project developments and no new natural features are identified in or within 120 m of this location. Though an additional 0.08 ha of the provincially significant wetland will be lost in association with the proposed development, this will bring the total amount of removal required up to 46.3 ha from the 46.2 ha originally proposed, which is considered to be an insignificant increase in the amount of wetland removal proposed. As a result, no new mitigation measures are proposed with respect to this additional removal, and therefore no material changes to the Natural Heritage reports is considered to be required beyond the provision of updated mapping as shown in the figure provided in Attachment A.

The fences between the Empire and Martin's Meadows properties will not be joined in this area, allowing a contiguous migration path to the north and south for any wildlife. Gates will be placed in the fences where egress points are required for the properties.

2. Directional Drill between Empire and Martin's Meadows

2.1 Description of Proposed Change

Giving consideration to the addition of land described above in Section 1.1, the original Project reports considered that this same connection line between the Empire and Martin's Meadows properties would be installed via an overhead span of an intermittent, unnamed tributary of Munroe Creek located between the two facilities (Note: in some other Project documentation this general area is referred to as WC39). . The Engineering Procurement and Construction (EPC) Contractor for the Project is currently recommending directional drilling beneath the tributary in order to reduce shading of adjacent solar panels. Directional drilling will be completed via either punch and bore, or high pressure methods.

The punch and bore directional drilling methodology involves the excavation of a vertical bell hole on either side of the watercourse (outside of the high water mark with suitable setbacks and erosion and sediment controls), and a surface-based drilling rig to drill a borehole and install a conduit for installation of cabling. The conduit will be installed a minimum of 1 m below the bed of the watercourse in the valley.

High pressure directional drilling involves the excavation of a vertical bell hole on either side of the watercourse (outside of the high water mark with suitable setbacks and erosion and sediment controls) and a surface-based drilling rig to drill a borehole and install a conduit for installation of cabling. The installation methodology will use a pressurized boring fluid mixture consisting of potable water, bentonite clay and additives. The system uses this pressurized material to keep the borehole open and remove excavated soil, while excavating and installing conduit.

2.2 Assessment of Proposed Impact to Natural Heritage Reports

The use of directional drilling beneath the watercourse is considered to represent an overall environmental benefit when compared to overhead span due to (i) the reduced need for vegetation management adjacent to the watercourse, and (ii) the reduced risk of birds colliding with overhead power lines.

The greatest risk to the significant natural heritage features associated with the installation of the connection line by directional drill would be related to the potential for sediment and erosion release during construction. Mitigation to be implemented to prevent negative impacts on the surrounding environment, including the natural heritage features, will include the following:

- Installation to a depth of at least 1 m below the watercourse bed to prevent the conduit from becoming exposed due to natural scour of the bed.
- Bell holes will be installed outside the high water mark of the watercourse..
- Installation of sediment and erosion controls including silt fencing on the downstream side of each bell hole excavation. Erosion and sediment controls will be regularly monitored throughout the construction period to ensure continued effectiveness with all necessary repairs made as soon as possible.
- In the case of high-pressure drilling, a containment system consisting of a berm, a minimum of 0.30 m high will be installed around the boring equipment, boring fluid mixing system, entry and exit pits and the boring fluid recycling system (if utilized) to contain any accidental spills of boring fluid.
- No machinery fording of the watercourse will be required.
- Machinery will arrive on site in a clean condition and will be maintained throughout the construction period to ensure that it is free of leaks.
- Machinery will be washed, refueled and serviced at designated locations on the Project site away from watercourses and wetlands.
- An emergency spill kit will be present on site at all times.
- If dewatering of bell holes is required during installation, the water will be pumped to a heavily vegetated area or sediment bag to prevent sedimentation in the watercourse.
- All soil excavated from bell holes and the borehole will be stockpiled at least 30 m from watercourses and stabilized appropriately to prevent erosion and sedimentation.
- After backfilling of bell holes is complete, all disturbed areas will be revegetated with an appropriate seed mix.
- During installation, the watercourse will be visually monitored for signs of turbidity, which could indicate collapse of the boring tunnel.
- A response plan will be developed for implementation in the event that an unforeseen sediment release or spill occurs. Sufficient response material and equipment will be maintained on the construction site to contain sediment laden water or other deleterious substances. The response plan will include appropriate notifications.
- Erosion and sediment controls will be maintained until the revegetation process is sufficiently complete to prevent erosion.

Following effective implementation of the above mitigation measures, it is anticipated that the use of directional drilling would represent a reduced impact to the surrounding natural environment when compared to installation of an overhead connection line between the Empire and Martin's Meadows properties.

3. Additional Archaeological Surveys

3.1 Description of Proposed Change

Additional archaeological surveys have been completed at the Cochrane Solar Project Site to cover portions of the solar project and transmission line project location not previously assessed for the Project. These reports are available for review if desired.

3.2 Assessment of Proposed Impact to Natural Heritage Reports

Beyond the additional archaeological work associated with the additional 0.08 ha of land discussed in Section 1, all areas under consideration were previously assessed as part of the natural heritage assessment for the Project and therefore there is no revision to the Natural Heritage Reports required.

4. Revised Project Layout

4.1 Description of Proposed Change

The EPC Contractor has determined that in order to optimize the Project design and its constructability, revisions to the Project layout are required. Revised layouts are provided for your consideration in Attachment B.

4.2 Assessment of Proposed Impact to Natural Heritage Reports

There is no potential impact to the Natural Heritage Reports as the Project layouts remain within the originally assessed boundaries of the Project.

5. Conclusion

In conclusion, the changes considered herein do not represent significant modifications to the proposed undertaking, and we therefore request the Ontario Ministry of Natural Resources issue a reconfirmation letter for the Cochrane Solar Project, or some other documentation indicating that the proposed changes remain consistent with the original confirmation letters for the Project (previously confirmed as the Abitibi Solar Project, Empire Solar Project and Martin's Meadows Solar Project).

Should you have any questions or require further documentation, please do not hesitate to contact me at 905-374-0701, Ext. 5280 or smale@hatch.ca

Yours faithfully,

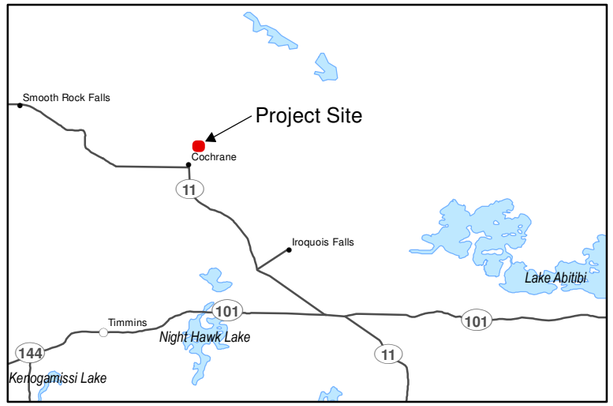
Sean K. Male, M.Sc.
Environmental Coordinator
SKM:sg
Attachments

cc: Rob Miller, Northland Power
Jim Mulvale, Northland Power

Suite 500, 4342 Queen Street
Niagara Falls, Ontario, Canada L2E 7J7
Tel. 905 374 5200 ◆ Fax: 905 374 1157 ◆ www.hatch.ca

Attachment A
Natural Heritage Figure

Safety ● Quality ● Sustainability ● Innovation



LEGEND

- Building
- Road
- Watercourse
- Parcel
- Waterbody
- Provincially Significant Wetland

Project Components

- Project Location
- 120 m from Project Location
- Additional Project Location
- 120 m from Additional Project Location

Notes:
1. Produced by Hatch under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2011.
2. Spatial referencing UTM NAD 83.
3. Satellite imagery obtained from Google Earth Pro, captured 2003.
4. Wetland information provided by NRSI (2011).

0 50 100 200 300 Metres

NORTH

1:6,000

Figure 1.1
Northland Power Inc.

Empire Solar Project
Solar Panel Project Location and Evaluation of Significance

HATCH

Path: P:\NORTHLAND\333751\DATABASES\334844\GIS\Empire\Empire_NH_EOS_revised.mxd Date Saved: 4/3/2014 10:45:52 AM

Suite 500, 4342 Queen Street
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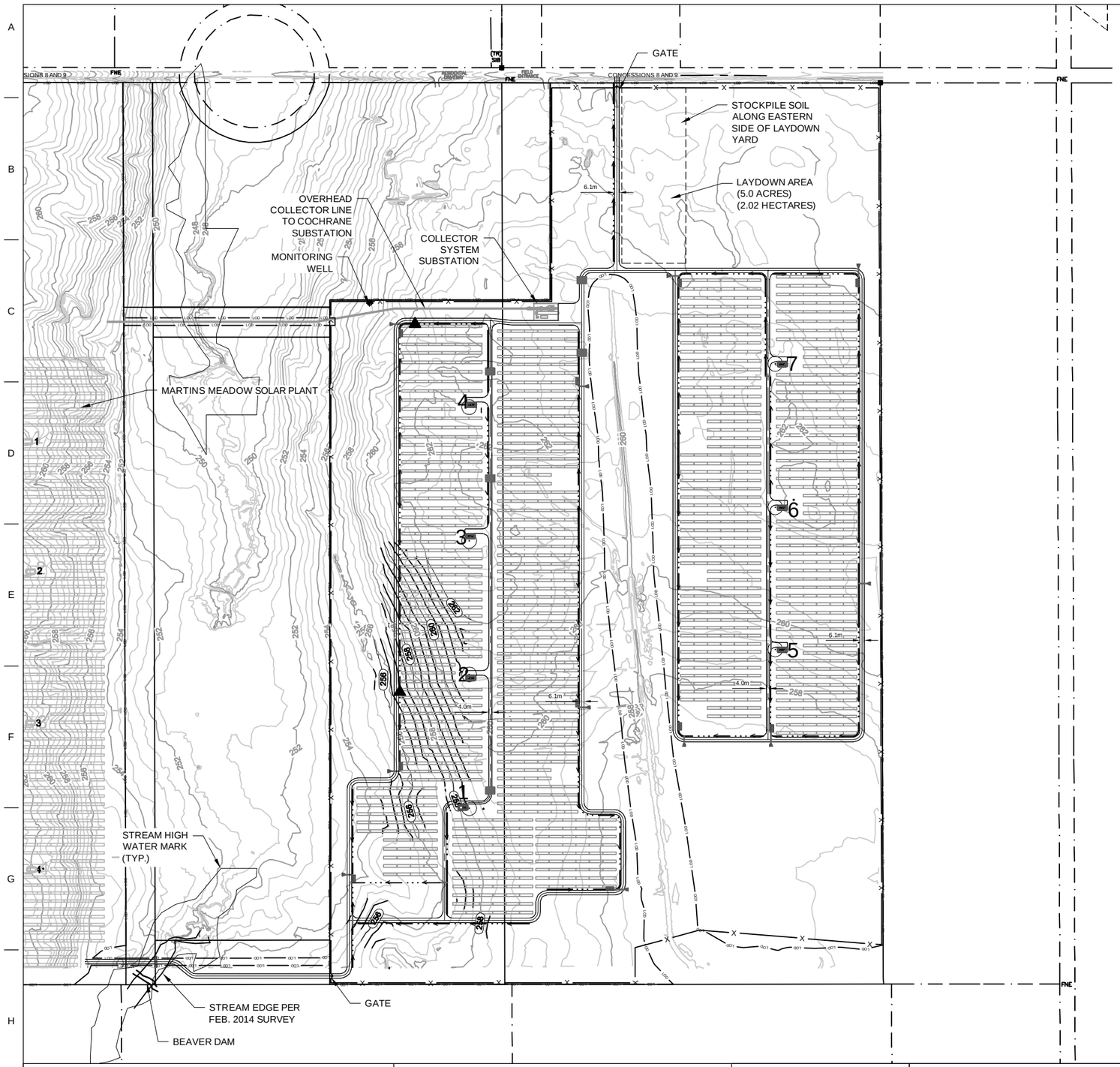
Attachment B
Revised Layouts

Safety ● Quality ● Sustainability ● Innovation



AS-BUILT MONITORING WELL UTM COORDINATES

	X (m E)	Y (m N)
AB	501685.8	5443340.0

LEGEND

- PROPOSED ACCESS ROAD
- PROPERTY BOUNDARY
- REA BOUNDARY (LIMIT OF DISTURBANCE)
- PROPOSED FENCE
- INVERTER AND TRANSFORMER (MVPP)
- CONSTRUCTION LAYDOWN AREA
- EXISTING 2m CONTOUR
- EXISTING 0.5m CONTOUR
- PROPOSED 2m CONTOUR
- PROPOSED 0.5m CONTOUR
- PROPOSED SWALE
- PROPOSED CULVERT
- MONITORING WELL
- PROPOSED OUTLET PROTECTION
- PROPOSED ROCK CROSSING

REA PERMITTED MVPP CENTROID UTM COORDINATES / ACTUAL MVPP CENTROID UTM COORDINATES TO BE CONSTRUCTED / DIFFERENCE

SOURCE_ID	X (m E)	Y (m N)	MVPP	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-1	501819.2	5442662.7	1	501810.8	5442663.5	8.4	-0.8	8.4
NS-2	501819.2	5442841.9	2	501821.4	5442837.2	-2.2	4.7	5.2
NS-3	501819.2	5443021.1	3	501820.3	5443027.0	-1.1	-5.9	6.0
NS-4	501819.2	5443200.3	4	501822.3	5443203.4	-3.1	-3.1	4.4
NS-5	502229.5	5442875.5	5	502239.1	5442874.8	-9.6	0.7	9.6
NS-6	502229.5	5443065.9	6	502239.1	5443065.2	-9.6	0.7	9.6
NS-7	502229.5	5443256.3	7	502239.1	5443257.6	-9.6	-1.3	9.7

COORDINATES ARE FOR CENTER POINT OF EACH MVPP PLATFORM

ACTUAL MVPP TRANSFORMER CENTROID UTM COORDINATES TO BE CONSTRUCTED / ACTUAL MVPP INVERTER CENTROID UTM COORDINATES TO BE CONSTRUCTED

	X (m E)	Y (m N)	X (m E)	Y (m N)
1	501814.6	5442662.8	501809.1	5442663.5
2	501825.2	5442836.5	501819.7	5442837.2
3	501824.1	5443026.4	501818.6	5443027.0
4	501826.1	5443202.8	501820.6	5443203.4
5	502235.3	5442875.5	502240.8	5442874.8
6	502235.3	5443065.9	502240.8	5443065.2
7	502235.3	5443258.3	502240.8	5443257.6

PRELIMINARY DRAWING NOT FOR CONSTRUCTION 2014-3-7

STAMP/SEAL:

CONFIDENTIAL

REVISIONS

REV	YYYY-MM-DD	DESCRIPTION	DRWN	CHKD
PR-0	2014-03-07	30% REVIEW	TAF	MAE
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-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

0 60 120 180 240 300
SCALE IN METERS

Scale: AS SHOWN

Drawn by: T.FIEBRANZ
Checked by: M.EBERHARDT
Approved by: -
Date: 2014-03-07

NORTHLAND POWER

WHITE H.B. White Canada Corporation an IEA company

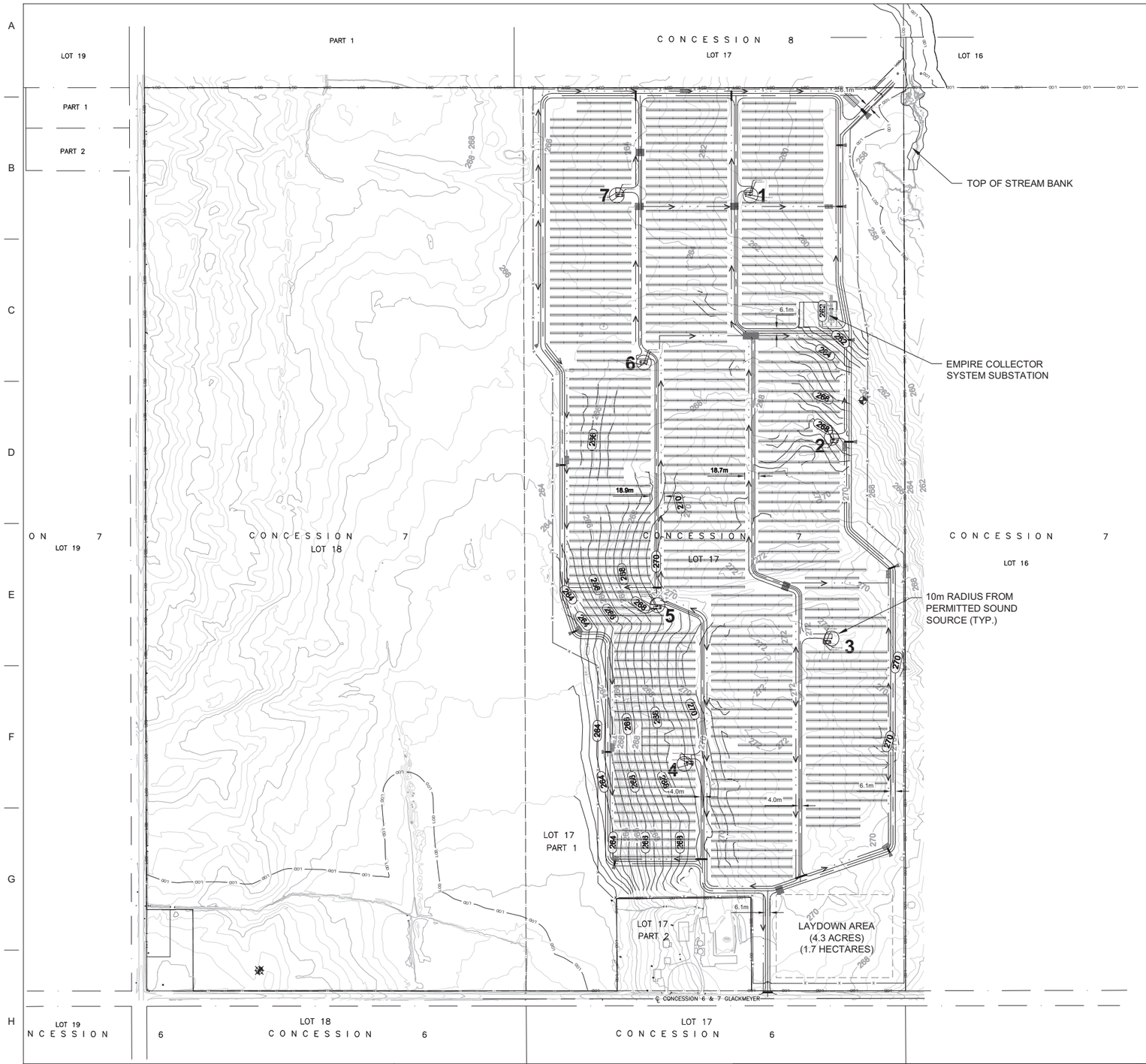
Title:
Abitibi
SOLAR PLANT CIVIL CONSTRUCTION DRAWINGS

CIVIL SITE AND GRADING PLAN

Northland Power
Cochrane and Long Lake Solar Project

Internal Project / Drawing Number: 40066-001
Sheet 01 of 01
Drawing Number: AB-SF-CI-D101
Rev. PR-0

FORMAT D



MONITORING WELL AS-BUILT UTM COORDINATES

	X (m E)	Y (m N)
EM	500797.0	5442006.5
EM	499988.6	5441243.1

NOTE:
1. MONITORING WELLS TO BE PROTECTED AND SURROUNDING SOIL SHALL NOT BE DISTURBED.
2. SEE SHEET D501 FOR CULVERT AND SWALE SIZING AND SLOPES.

LEGEND

- PROPOSED ACCESS ROAD
- PROPERTY BOUNDARY
- REA BOUNDARY (LIMIT OF DISTURBANCE)
- PROPOSED FENCE
- 3 — INVERTER AND TRANSFORMER MVPP
- CONSTRUCTION LAYDOWN AREA
- EXISTING 2m CONTOUR
- EXISTING 0.5m CONTOUR
- PROPOSED 2m CONTOUR
- PROPOSED 0.5m CONTOUR
- PROPOSED SWALE
- PROPOSED CULVERT
- MONITORING WELL
- PROPOSED OUTLET PROTECTION
- PROPOSED ROCK CROSSING

REA PERMITTED MVPP CENTROID UTM COORDINATES / ACTUAL MVPP CENTROID UTM COORDINATES TO BE CONSTRUCTED / DIFFERENCE

SOURCE_ID	X (m E)	Y (m N)	MVPP	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-18	500646.4	5442281.3	1	500643.8	5442283.4	2.6	-2.1	3.3
NS-14	500755.0	5441956.5	2	500758.5	5441952.1	-3.5	4.4	5.6
NS-12	500755.0	5441687.7	3	500748.9	5441683.0	6.1	4.7	7.7
NS-11	500557.9	5441519.7	4	500565.3	5441521.3	-7.4	-1.6	7.5
NS-13	500521.7	5441732.5	5	500521.6	5441729.3	0.1	3.2	3.2
NS-16	500503.6	5442057.3	6	500503.2	5442058.1	0.4	-0.8	0.9
NS-17	500467.4	5442281.3	7	500470.8	5442281.4	-3.4	-0.1	3.4

COORDINATES ARE FOR CENTER POINT OF EACH MVPP PLATFORM

ACTUAL MVPP TRANSFORMER CENTROID UTM COORDINATES TO BE CONSTRUCTED / ACTUAL MVPP INVERTER CENTROID UTM COORDINATES TO BE CONSTRUCTED

	X (m E)	Y (m N)	X (m E)	Y (m N)
1	500640.0	5442284.0	500645.5	5442283.4
2	500762.3	5441951.5	500756.8	5441952.1
3	500752.7	5441682.3	500747.2	5441683.0
4	500561.5	5441521.9	500566.9	5441521.3
5	500525.5	5441728.7	500520.0	5441729.3
6	500499.4	5442058.7	500504.9	5442058.1
7	500474.6	5442280.8	500469.1	5442281.4

REGISTERED PROFESSIONAL ENGINEER G. P. MURAKAMI PROVINCE OF ONTARIO
03/12/2014

Professional Engineers Ontario
Temporary Licensee
Name: Patrick L Ringler
Number: 100206195-01
Limitations: Design and construction of a 40-megawatt solar project for Northland Power Inc., at their plant in Cochrane, Ontario.
Collaborator: Gary Murakami, P.Eng.
Expiry Date: December 31, 2014
Association of Professional Engineers of Ontario
Patrick J. Ringler
3/12/14
STAM

CONFIDENTIAL

REVISIONS				
REV	YYYY-MM-DD	DESCRIPTION	DRWN	CHKD
PR-0	2013-12-23	30% REVIEW	TAF	ME
PR-1	2013-12-31	30% ALTERNATE LAYOUT	TAF	ME
PR-2	2014-01-06	UPDATED BORDER SCALE	TAF	ME
FR-0	2014-01-21	90% REVIEW	TAF	ME
FR-1	2014-03-03	90% REVIEW	TAF	MAE
CD-0	2014-03-03	ISSUED FOR CONSTRUCTION	TAF	MAE

0 60 120 180 240 300
SCALE IN METERS

Scale: AS SHOWN

Drawn by: T.FIEBRANZ
Checked by: M.EBERHARDT
Approved by: P.RINGLER
Date: 2014-03-03

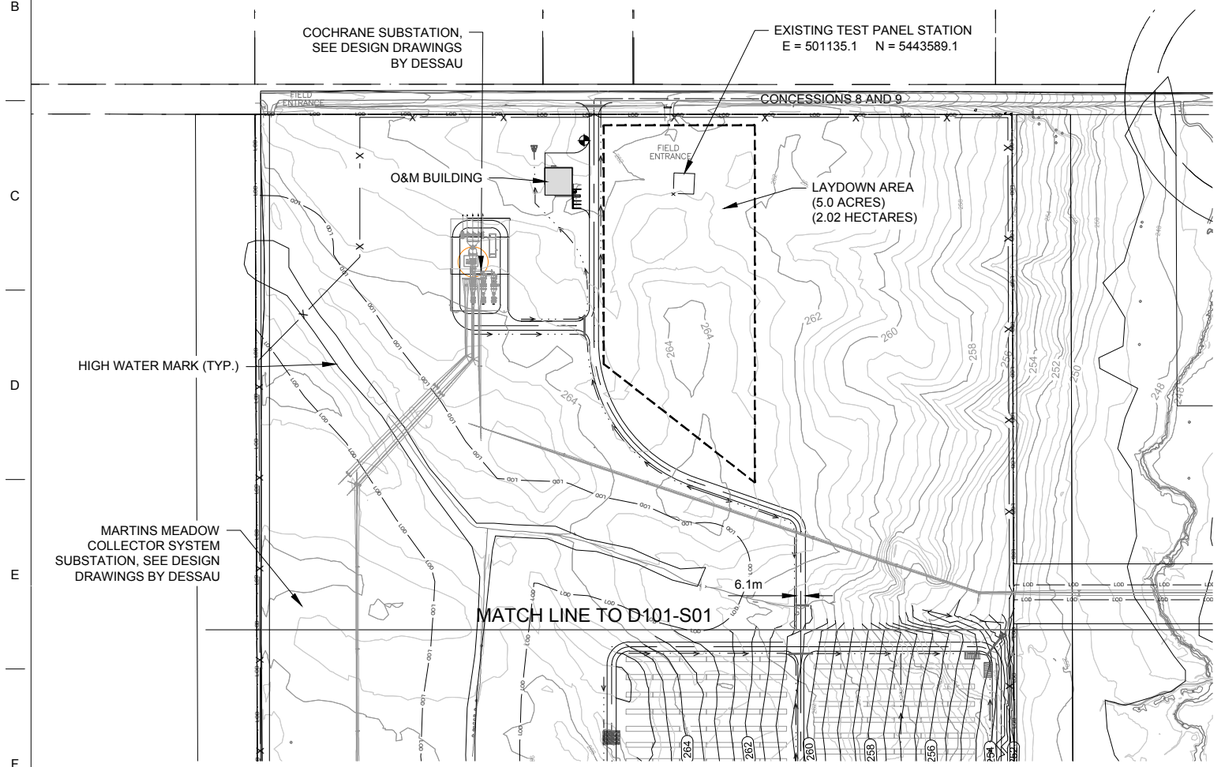
NORTHLAND POWER
WHITE H.B. White Canada Corporation an IEA company

Title:
Empire
SOLAR PLANT CIVIL CONSTRUCTION DRAWINGS
CIVIL SITE AND GRADING PLAN

Northland Power
Cochrane and Long Lake Solar Project

Internal Project / Drawing Number: 40066-002
Sheet 01 of 01
Drawing Number: EM-SF-CI-D101
Rev. CD-0

FORMAT D



LEGEND

- PROPOSED ACCESS ROAD
- PROPERTY BOUNDARY
- REA BOUNDARY (LIMIT OF DISTURBANCE)
- PROPOSED FENCE
- 3 — INVERTER AND TRANSFORMER MVPP
- CONSTRUCTION LAYDOWN AREA
- EXISTING 2m CONTOUR
- EXISTING 0.5m CONTOUR
- PROPOSED 2m CONTOUR
- PROPOSED 0.5m CONTOUR
- PROPOSED SWALE
- PROPOSED CULVERT
- MONITORING WELL
- PROPOSED OUTLET PROTECTION
- PROPOSED ROCK CROSSING

AS BUILT MONITORING WELL UTM COORDINATES

	X (m E)	Y (m N)
MM	501068.2	5443617.8

COORDINATES ARE FOR CENTER POINT OF EACH MVPP PLATFORM

REA PERMITTED MVPP CENTROID UTM COORDINATES			ACTUAL MVPP CENTROID UTM COORDINATES TO BE CONSTRUCTED			DIFFERENCE		
SOURCE_ID	X (m E)	Y (m N)	MVPP	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-19	501216.5	5443158.2	1	501225.3	5443153.7	-8.8	4.4	9.8
NS-20	501234.6	5442979.0	2	501231.3	5442979.9	3.3	-0.9	3.4
NS-21	501234.6	5442777.4	3	501231.1	5442776.6	3.5	0.7	3.5
NS-22	501234.6	5442575.8	4	501232.6	5442579.6	2.0	-3.8	4.3
NS-23	500983.2	5442553.4	5	500988.3	5442550.1	-5.2	3.3	6.1
NS-24	500983.2	5442755.0	6	500988.4	5442757.5	-5.2	-2.5	5.7
NS-25	500983.2	5442956.6	7	500988.0	5442952.7	-4.8	3.9	6.2
SUB STATION								
SOURCE_ID	X (m E)	Y (m N)	POINT	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-26	500993.6	5443536.3	9	500993.6	5443536.3	0.0	0.0	0.0

ACTUAL MVPP TRANSFORMER CENTROID UTM COORDINATES TO BE CONSTRUCTED			ACTUAL MVPP INVERTER CENTROID UTM COORDINATES TO BE CONSTRUCTED	
	X (m E)	Y (m N)	X (m E)	Y (m N)
1	501221.5	5443154.4	501227.0	5443153.7
2	501227.5	5442980.5	501233.0	5442979.9
3	501227.3	5442777.3	501232.8	5442776.6
4	501228.7	5442580.2	501234.2	5442579.6
5	500992.1	5442549.5	500986.6	5442550.1
6	500992.2	5442756.8	500986.7	5442757.5
7	500991.8	5442952.1	500986.3	5442952.7

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION
2014-3-21

STAMP/SEAL:

CONFIDENTIAL

REVISIONS

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FR-0	2014-03-20	90% FINAL REVIEW	TAF	ME
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-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

0 40 80 120 160 200
SCALE IN METERS

Scale: AS SHOWN

Drawn by: T.FIEBRANZ
Checked by: M.EBERHARDT
Approved by: -
Date: 2014-03-21

NORTHLAND POWER
WHITE an IEA company

Title:
Martins Meadow
SOLAR PLANT CIVIL CONSTRUCTION DRAWINGS

CIVIL SITE AND GRADING PLAN

Northland Power
Cochrane and Long Lake Solar Project

Internal Project / Drawing Number: 40066-004
Sheet 02 of 02
Drawing Number: MM-SF-CI-D101-S02
Rev. FR-0

FORMAT D

AS BUILT MONITORING WELL UTM COORDINATES		
	X (m E)	Y (m N)
MM	501068.2	5443617.8

LEGEND

- PROPOSED ACCESS ROAD
- PROPERTY BOUNDARY
- REA BOUNDARY (LIMIT OF DISTURBANCE)
- PROPOSED FENCE
- INVERTER AND TRANSFORMER MVPP
- CONSTRUCTION LAYDOWN AREA
- EXISTING 2m CONTOUR
- EXISTING 0.5m CONTOUR
- PROPOSED 2m CONTOUR
- PROPOSED 0.5m CONTOUR
- PROPOSED SWALE
- PROPOSED CULVERT
- MONITORING WELL
- PROPOSED OUTLET PROTECTION
- PROPOSED ROCK CROSSING

COORDINATES ARE FOR CENTER POINT OF EACH MVPP PLATFORM

REA PERMITTED MVPP CENTROID UTM COORDINATES			ACTUAL MVPP CENTROID UTM COORDINATES TO BE CONSTRUCTED			DIFFERENCE		
SOURCE_ID	X (m E)	Y (m N)	MVPP	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-19	501216.5	5443158.2	1	501225.3	5443153.7	-8.8	4.4	9.8
NS-20	501234.6	5442979.0	2	501231.3	5442979.9	3.3	-0.9	3.4
NS-21	501234.6	5442777.4	3	501231.1	5442776.6	3.5	0.7	3.5
NS-22	501234.6	5442575.8	4	501232.6	5442579.6	2.0	-3.8	4.3
NS-23	500983.2	5442553.4	5	500988.3	5442550.1	-5.2	3.3	6.1
NS-24	500983.2	5442755.0	6	500988.4	5442757.5	-5.2	-2.5	5.7
NS-25	500983.2	5442956.6	7	500988.0	5442952.7	-4.8	3.9	6.2
SUB STATION								
SOURCE_ID	X (m E)	Y (m N)	POINT	X (m E)	Y (m N)	X (m E)	Y (m N)	TOTAL (m)
NS-26	500993.6	5443536.3	9	500993.6	5443536.3	0.0	0.0	0.0

ACTUAL MVPP TRANSFORMER CENTROID UTM COORDINATES TO BE CONSTRUCTED			ACTUAL MVPP INVERTER CENTROID UTM COORDINATES TO BE CONSTRUCTED	
	X (m E)	Y (m N)	X (m E)	Y (m N)
1	501221.5	5443154.4	501227.0	5443153.7
2	501227.5	5442980.5	501233.0	5442979.9
3	501227.3	5442777.3	501232.8	5442776.6
4	501228.7	5442580.2	501234.2	5442579.6
5	500992.1	5442549.5	500986.6	5442550.1
6	500992.2	5442756.8	500986.7	5442757.5
7	500991.8	5442952.1	500986.3	5442952.7

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION
2014-3-21

STAMP/SEAL:

CONFIDENTIAL

REVISIONS				
REV	YYYY-MM-DD	DESCRIPTION	DRWN	CHKD
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FR-0	2014-03-20	90% FINAL REVIEW	TAF	ME
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

0 40 80 120 160 200
SCALE IN METERS

Scale: AS SHOWN

Drawn by: T.FIEBRANZ
Checked by: M.EBERHARDT
Approved by: -
Date: 2014-03-21

NORTHLAND POWER
WHITE an IEA company

Title: Martins Meadow
SOLAR PLANT CIVIL CONSTRUCTION DRAWINGS

CIVIL SITE AND GRADING PLAN

Northland Power
Cochrane and Long Lake Solar Project

Internal Project / Drawing Number: 40066-004
Sheet 01 of 02
Drawing Number: MM-SF-CI-D101-S01
Rev. FR-0

FORMAT D