



Great Plains Generating Station

Project Description

Submitted Under the *Canadian Environmental Assessment Act, 2012*

SUBMITTED TO:

Canadian Environmental Assessment Agency

SUBMITTED BY

ATCO Power Canada Ltd.

February 2016

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1.0 General Information and Contact(s)

This Project Description has been prepared in accordance with the *Prescribed Information for the Description of a Designated Project Regulations* (SOR/2012-148) and the *Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act, 2012* (the Guide).

This Project Description has been organized to follow the topic headings as described in the Guide. Major headings and numbering in this document are the same as those provided in the Guide. Content requested by the Guide is shown in text boxes, in blue.

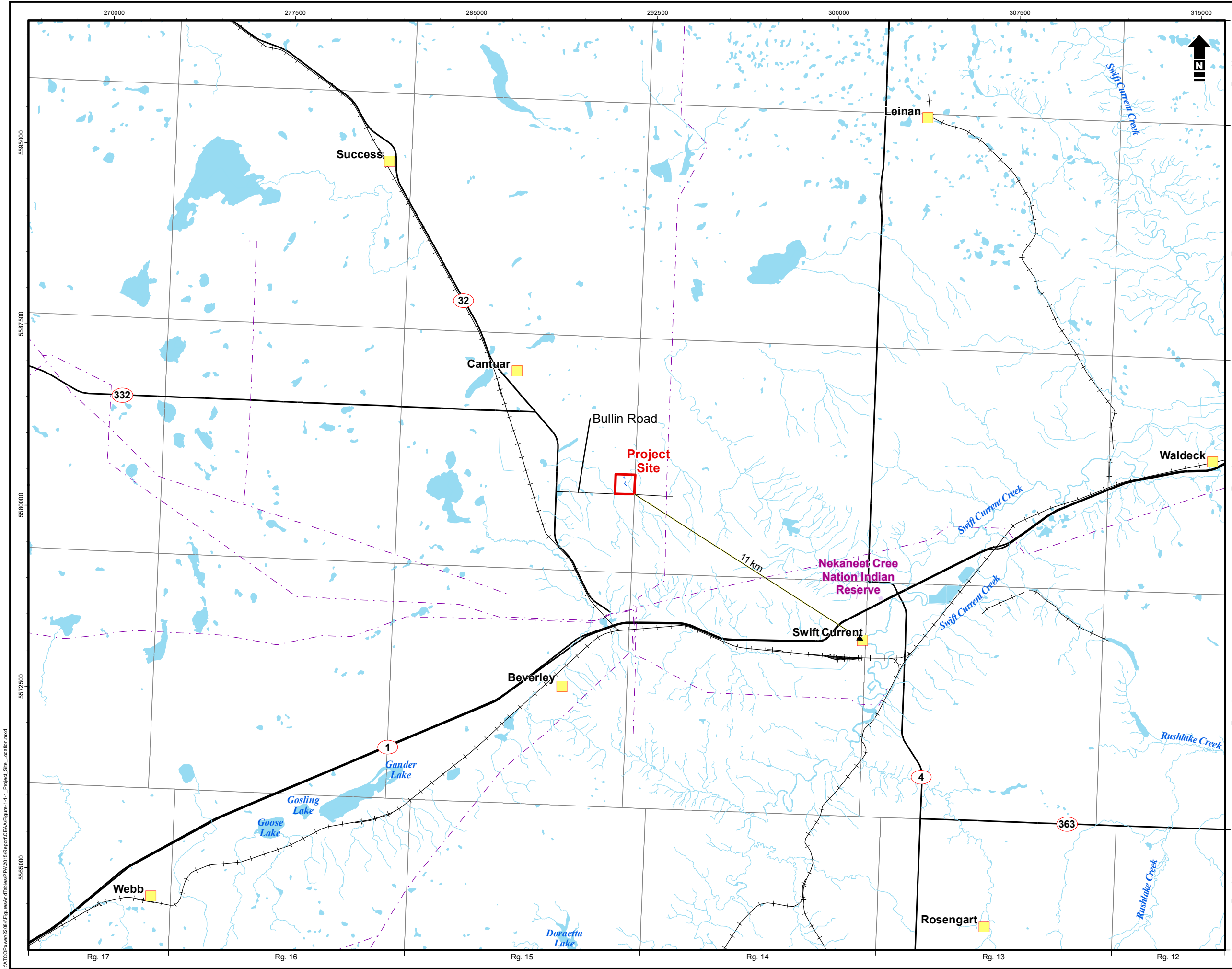
1.1 Nature and Proposed Location of Project

Describe the nature of the designated project, and proposed location (2–3 paragraphs; note that additional location details are to be provided in section 3).

ATCO Power Canada Ltd. is an experienced, industry-leading expert in developing, building and operating power generation facilities. We are known for our strong safety record and the reliability of our generating units with an ownership position in 13 power generation stations in Alberta, British Columbia, Saskatchewan, and Ontario. ATCO Power has entered a bid process initiated by Saskatchewan Power Corporation to design, build, and operate a 350 megawatt (MW) natural gas-fired combined cycle gas turbine electricity generation station (the Project). SaskPower is expected to award the Project in July 2016, which is planned to start operating by October 2019. As part of its evaluation of assessment and permitting requirements for the Project, ATCO Power is submitting this Project Description to determine if an environmental assessment is required under the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012).

The Project will be located approximately 11 km northwest of Swift Current, Saskatchewan, on a 64 ha or 158 acre land parcel privately owned by SaskPower at SE 13-016-15 W3M (the Project site). The Project will be entirely within the Rural Municipality of Swift Current No. 137 (RM of Swift Current No 137). Once constructed, the Project will occupy a maximum of 16 ha (the Project footprint). A regional map showing the Project site is presented on Figure 1.1-1.

The Project will be designed to use state-of-the-art gas turbine, heat recovery steam generator (HRSG), steam turbine, and air cooled condenser technology to achieve high energy efficiency while producing low air emissions, and with minimal water usage for the amount of electricity produced. The Project is located near the major utilities required for large power plants: high voltage transmission lines with available capacity, high pressure natural gas pipelines with available capacity, and a raw water supply from the City of Swift Current.



- Project Site
- Community
- Indian Reserve
- GeoBase Mapped Location of Water Body
- GeoBase Mapped Location of Seasonal Water Drainage/Watercourse
- - - Observed Location of Seasonal Water Drainage
- + Railway
- Highway
- - - Powerline

Reference: Data obtained from GeoBase® and GeoGratis © Department of Natural Resources Canada (all rights reserved) used under license. GDM transportation infrastructure data provided by IHS © 2015 used under license.

1:150,000

Kilometres

NAD 1983 UTM Zone 13N



Great Plains Generating Station

Project Site Location

Date: 11 Feb 2016		Project: 22084	
Technical: N. Huq	Reviewer: B. Fuchs	Drawn: J. Sturk	
Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to other parties with which ATCO Power has not entered into contract.			Figure 1.1-1

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1.2 Proponent Contact Information

Provide proponent contact information:

Name of the designated project: Great Plains Generating Station

Name of the proponent: ATCO Power Canada Ltd.

Address of the proponent: 400, 919 - 11 Ave. SW
Calgary, AB T2R 1P3

Chief executive officer: George Opocensky
President
ATCO Power Canada Ltd.
400, 919 – 11 Ave. SW
Calgary, AB T2R 1P3
Toll Free Feedback Number: 1.855.909.6951
Email: greatplains@atcopower.com

Principal contact person: Amit Bhargava
Manager, Environment and Regulatory Approvals
ATCO Power Canada Ltd.
Phone: 403.209.6955
Fax: 403.802.7516
Email: Amit.Bhargava@atcopower.com

1.3 List of Jurisdictions and Other Parties Consulted

Provide a list of any jurisdictions and other parties including Aboriginal groups and the public that were consulted during the preparation of the project description. (A description of the result of any consultations undertaken is to be provided in Sections 6 and 7).

The jurisdictions and other parties that ATCO Power has consulted with regarding the Project are listed in Table 1.3-1.

Table 1.3-1 Jurisdictions and Other Parties Consulted for the Project

Federal Government	Canadian Environmental Assessment Agency
Provincial Government	Saskatchewan Ministry of Environment Saskatchewan Ministry of Economy Saskatchewan Water Security Agency (WSA)
Municipal Government	RM of Swift Current No. 137 City of Swift Current
Aboriginal Groups	Carry the Kettle Nakoda First Nation

In addition, ATCO Power has attempted to contact the Nekanee Cree Nation, the Métis Nation of Saskatchewan and the File Hills Qu'Appelle Tribal Council regarding the Project (as described further in Section 6.2) but has not yet been successful in scheduling a meeting to introduce the Project. As described in Section 1.1, SaskPower is conducting a bid process for the design, construction, and operation of the Project. ATCO Power will continue to engage with the identified stakeholders if SaskPower selects ATCO Power to develop the Project.

1.4 Other Relevant Information

1.4.1 Environmental Assessment and Regulatory Requirements of Other Jurisdictions

a. Provide information on whether the designated project is subject to the environmental assessment and/or regulatory requirements of another jurisdiction(s).

The provincial environmental assessment requirements and regulatory review process for the Project are under the jurisdiction of Saskatchewan Environment (Saskatchewan ENV) – Environmental Assessment Branch. ATCO Power is planning to submit a Technical Proposal under the *Saskatchewan Environmental Assessment Act* in February 2016. The Technical Proposal is similar to the Project Description required under CEAA 2012, in that it provides information to Saskatchewan ENV to obtain Ministerial Determination of whether the Project is considered a “development” and requires a provincial environmental impact assessment. As per Section 2(d) of that Act, a development is defined as follows:

“development” means any project, operation or activity or any alteration or expansion of any project, operation or activity which is likely to:

- i) have an effect on any unique, rare or endangered feature of the environment;
- ii) substantially utilize any provincial resource and in doing so pre-empt the use, or potential use, of that resource for any other purpose;
- iii) cause the emission of any pollutants or create by-products, residual or waste products which require handling and disposal in a manner that is not regulated by any other Act or regulation;
- iv) cause widespread public concern because of potential environmental changes;
- v) involve a new technology that is concerned with resource utilization and that may induce significant environmental change; or
- vi) have a significant impact on the environment or necessitate a further development which is likely to have a significant impact on the environment (Environmental Assessment Act 2010).”

The information requirements of a Technical Proposal are provided in the *Technical Proposal Guidelines: A Guide to Assessing Projects and Preparing Proposals under the Environmental Assessment Act* (Saskatchewan ENV 2014b).

ATCO Power will also obtain the required federal, provincial, and municipal permits for construction and operation of the Project, as outlined in Table 1.4-1.

Table 1.4-1 Anticipated Project Permit and Regulatory Requirements

Project Component	Owner / Operator / Permit Holder	Permit/ Licence Required	Jurisdiction	Legislation	Permitting Requirements
Air emissions from operation of the Project	ATCO Power	Environmental Protection Plan	Province of Saskatchewan, Ministry of Environment	<i>Environmental Management and Protection Act</i>	ATCO Power will complete additional dispersion modelling, following detailed engineering design, to demonstrate compliance with the applicable <i>Saskatchewan Ambient Air Quality Standards</i> (Government of Saskatchewan n.d.) and Emissions Standards. ATCO Power will prepare and submit a certified Environmental Protection Plan for the Minister's approval.
Construction of the exhaust stack	ATCO Power	Approval from Transport Canada	Transport Canada	Canadian Aviation Regulations	ATCO Power will submit an Assessment Request for Obstruction Marking and Lighting to Transport Canada. The exhaust stack height will not exceed any of the criteria constituting an obstacle to navigation listed in Canadian Aviation Regulations 2012-1 <i>Division III – Marking and Lighting of Obstacles to Air Navigation, Section 601.23</i> .
Construction of the exhaust stack	ATCO Power	Approval from NAV CANADA	NAV CANADA	Canadian Aviation Regulations	NAV CANADA must assess and approve all proposals for land use near airports and air navigation infrastructure to ensure that air navigation system safety is not compromised. ATCO Power will submit a Land Use Application to NAV CANADA.
Removing Class II wetland during construction. Pumping to remove water, if necessary.	ATCO Power	Provincial Aquatic Habitat Protection Permit (AHPP)	Province of Saskatchewan, WSA	Environmental Management and Protection (General) Regulations, 2010	An AHPP will be obtained before construction in the area of the Class II wetland that is within the Project footprint.
Modifying seasonal waterway during construction	ATCO Power	Provincial AHPP	Province of Saskatchewan, WSA	Environmental Management and Protection (General) Regulations, 2010	An AHPP will be obtained for the modification of the seasonal waterway.

Project Component	Owner / Operator / Permit Holder	Permit/ Licence Required	Jurisdiction	Legislation	Permitting Requirements
Use of water from the City of Swift Current for the purposes of the Project	ATCO Power	Water Licence	Province of Saskatchewan, WSA	<i>Water Security Agency Act</i>	A Water Licence Application will be filed to the Saskatchewan WSA to supply water from the Swift Current water treatment plant.
Pipelines to supply water to the Project and to transport wastewater from the Project	ATCO Power	Permit	Province of Saskatchewan, Ministry of Environment	The Waterworks and Sewage Works Regulations	Regulatory applications will be filed to Saskatchewan ENV for approval to construct and operate the water supply and wastewater disposal infrastructure.
Construction and operation of the Project	ATCO Power	Development and Building Permit	RM of Swift Current No. 137		Application for development and building permits will be filed to RM of Swift Current No. 137.

Natural gas and utility infrastructure services for the Project will be provided by third-party suppliers (i.e., SaskPower, TransGas Limited, respectively). Approvals for these services will be sought separately as required. A list of applicable regulatory permitting requirements that will be required for third-party suppliers is provided in Table 1.4-2.

Table 1.4-2 Anticipated Third-party Permit and Regulatory Requirements

Project Component	Owner / Operator / Permit Holder	Permit/ Licence Required	Jurisdiction	Legislation	Permitting Requirements
Infrastructure to supply natural gas to the Project, including a gas meter station and connecting pipeline	TransGas	Pipeline License	Government of Saskatchewan, Ministry of Economy	<i>Pipelines Act</i>	Permit applications for this component will be filed to Saskatchewan Ministry of Economy for the natural gas pipeline that connects the Project to existing gas supply lines.
Transmission interconnection to export electricity from the Project	SaskPower	Application	Government of Saskatchewan	<i>The Power Corporation Act</i>	Applications for this component will be filed by SaskPower who will design, permit, construct, and operate the transmission interconnection system that connects the Project to existing transmission lines. As a Crown Corporation, SaskPower is responsible for supplying electricity to most of the province.
Telecommunications	SaskTel and/or SaskPower	n/a/	n/a	n/a	Telecommunications infrastructure is not regulated by provincial or federal regulators. It is expected that SaskTel and/or SaskPower will negotiate with private landowners or the RM of Swift Current No. 137 (as required) for surface access or easements to develop the required infrastructure.

1.4.2 *Regional Environmental Studies*

- b. Provide information on whether the designated project will be taking place in a region that has been the subject of a regional environmental study. Proponents are advised to contact the Agency during the preparation of the project description for information regarding any regional environmental studies that may be relevant.

The Project is not taking place in a region that has been the subject of a regional environmental study as defined by the CEA Agency.

2.0 Project Information

2.1 General Project Description

Provide the following information to the extent that it is available or applicable.

1. Provide a general description of the project, including the context and objectives of the project. Indicate whether the designated project is a component of a larger project that is not listed in the *Regulations Designating Physical Activities*.

The Project will be a highly efficient, operationally flexible, natural gas-fired combined cycle electricity generating station with a maximum capacity of 350 MW (net). The Project is not a component of a larger project that is not listed in the *Regulations Designating Physical Activities*. Additional details of the context and objectives of the Project are presented below.

The objectives of the Project are:

- To supply electricity to meet future electricity needs in Saskatchewan and support Saskatchewan's transition to a lower-carbon electrical grid with less contribution from coal-fired power plants.
- To effectively develop the Project on land owned and selected by SaskPower for this specific purpose.
- To configure and design the Project for maximum efficiency to reduce air emissions and water usage per unit of power produced, and to maximize power produced per unit of natural gas consumed.
- To configure and design the Project for flexible operation to allow Project electricity output to vary and offset changes in the supply of power in the Saskatchewan electrical system from both renewable and non-renewable generation sources that produce electricity intermittently and at variable rates. Saskatchewan has targeted an increase in the supply of intermittent renewable generation over the next 15 years.

2.2 Federal Regulatory Provisions

2. Indicate the provisions in the *Regulations Designating Physical Activities* setting out the designated activities that describe the project in whole or in part.

The *Canadian Environmental Assessment Act, 2012 (CEAA 2012) Regulations Designating Physical Activities* includes in Schedule 1, Section 2a the following provision that describes the Project as a designated activity:

"The construction, operation, decommissioning and abandonment of a new fossil fuel-fired electrical generating facility with a production capacity of 200 MW or more (CEAA 2012, amended December 2014)."

2.3 Components and Activities

2.3.1 Physical Works Associated with the Designated Project

- a. Physical works associated with the designated project (e.g., large buildings, other structures, such as bridges, culverts, dams, marine transport facilities, mines, pipelines, power plants, railways, roads, and transmission lines) including their purpose, approximate dimensions, and capacity. Include existing structures or related activities that will form part of or are required to accommodate or support the designated project.

The Project includes the power plant, the water source infrastructure, and the wastewater disposal infrastructure. If successful, ATCO Power would be responsible for the development, permitting, construction, and operation of the Project on a portion of the quarter section of land located at SE 13-016-15 W3M. Diagrams of the Project footprint and plant facility layout are provided on Figures 2.3-1 and 2.3-2, respectively.

The total land area to be leased by ATCO Power from SaskPower for the explicit purpose of developing the Project is 16 ha (400 m × 400 m). The actual disturbance associated with the Project is expected to be less than the leased area; however, for a conservative approach to this Project Description, the Project footprint is assumed to be the maximum allotted area (16 ha). The Project footprint map (Figure 2.3-1) identifies the location of the 16 ha Project footprint within the SE 13-016-15 W3M and presents aerial imagery of current conditions at the site in October 2015. The plant facility layout also identifies the individual components of the power plant facility and other services within the 16 ha footprint. For ease of reading, the legend identifying each of the numbered facility components on Figure 2.3-2 is presented in Table 2.3-1.

Within the plant facility, the powerhouse buildings will enclose the gas turbine generator (GTG); HRSG; steam turbine generator (STG); water and wastewater treatment systems; auxiliary boiler; and medium- and low-voltage electrical systems. Enclosing these components inside a building will reduce noise emitted from the plant facility. The powerhouse buildings will comprise an overall footprint of approximately 110 m × 95 m, and the average height of the roofs will be approximately 32 m. The maximum roof height will be approximately 38 m.

An air cooled condenser structure, which is a large heat exchanger, will condense steam from the outlet of the steam turbine and return condensate to the process system. The structure will be approximately 85 m × 30 m with a height of 25 m, and will be located adjacent to the powerhouse.

Administration, control, maintenance, and warehouse building(s) will be located adjacent to the main powerhouse building to house the facility administration offices, plant control room, maintenance shop, and spare parts warehouse. The Project will include several other small buildings or sheds to enclose pumps and motors, and to store supplies required for plant facility operation. The purpose of these small buildings is to provide protection from the elements and reduce the transmission of noise produced by the equipment contained within the buildings.

During construction, temporary structures will be required for construction offices, equipment storage, and workforce muster points. The temporary structures will be similar to those typically used on large

construction sites, such as integrated workforce trailer systems. All temporary structures will be removed from the site once construction is complete.

The plant facility will also include a raw water storage tank to provide the necessary operational reserves in the event of interruption of supply water and to provide sufficient quantities to extinguish a potential fire. Other tanks at the site (as presented on Figure 2.3-2) include a blowdown tank, a condensate collection tank, a demineralized water tank, and two wastewater tanks.

Stormwater at the Project will be routed to the onsite stormwater pond and then discharged to the ditches that surround it. The berms and ditches surrounding the plant facility will be designed to maintain the natural surface water drainage as much as practicable.

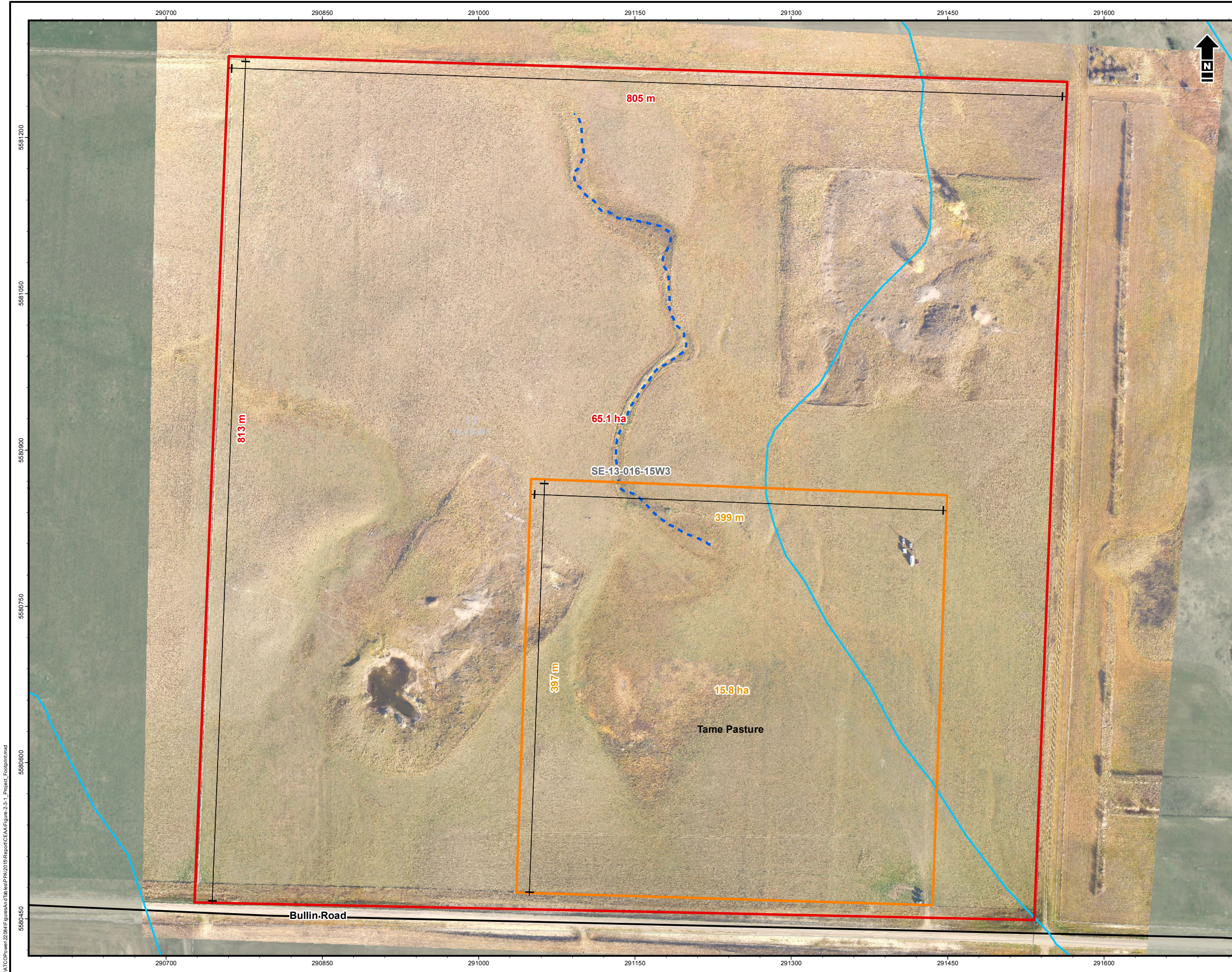
There are no existing structures that will form part of or are required to accommodate or support the Project. Access to the Project will be off the existing range road named Bullin Road south of the Project, which connects to Highway 32 approximately 2 km west of the Project (Figure 1.1-1). At this time, there are no permanent upgrades planned to Bullin Road to support development of the Project. ATCO Power will implement dust control measures on Bullin Road (as required) to minimize nuisance dust during the construction phase of the Project.

ATCO Power plans to source raw water for the Project from the City of Swift Current. The raw water will be pumped to the Project through an underground pipeline installed by ATCO Power. The specific routing for this water pipeline has not been determined. ATCO Power will work with the RM of Swift Current No. 137, the City of Swift Current, and any private landowners (as required) to obtain the required surface access (easements) to develop the water pipeline. The water pipeline will connect directly from the Project to the City of Swift Current water reservoir in the southwest portion of the city (18-015-13 W3M) approximately 13 km southeast of the Project.

ATCO Power plans to pipeline the wastewater to the City of Swift Current and connect to the wastewater treatment facility in the northeast portion of the city (32-015-13 W3M). ATCO Power has been working with the City of Swift Current and will sign a letter of intent for this wastewater treatment approach on or before the date of the bid submission to SaskPower (April 5, 2016). It is anticipated that ATCO Power and the City of Swift Current will enter into an agreement that will specify acceptable water quality criteria for effluent receipt and water quality testing methods and frequency (as required). The specified effluent receipt criteria will likely be based on the wastewater quality criteria specified in the City of Swift Current Water and Wastewater Utility Bylaw (Bylaw 17-2001). If required, ATCO Power would implement supplemental onsite wastewater treatment (e.g., reverse osmosis, filtration and/or electrodeionization) along with wastewater testing measures required to meet the effluent receipt criteria specified by the City of Swift Current. If required, this supplemental wastewater equipment would be procured as a packaged unit that would be housed within the proposed water treatment building.

ATCO Power's wastewater stream would be treated with the rest of the inlet stream to the City of Swift Current wastewater treatment facility and discharged. The City of Swift Current would be responsible for maintaining its effluent water quality in accordance with the discharge guidelines dictated by the Saskatchewan WSA. Physical activities will include an underground wastewater pipeline that would connect directly from the plant facility to the selected City of Swift Current wastewater treatment facility. The specific routing for this buried raw water pipeline has not been determined. ATCO Power will work with the RM of Swift Current No. 137, the City of Swift Current, and any private landowners (as required)

to obtain the required surface access (easements) to develop the water pipeline. A pump would be installed at the plant facility to transport the wastewater to the City of Swift Current wastewater treatment facility.



- ▭ Project Footprint
- ▭ Project Site
- GeoBase Mapped Location of Seasonal Water Drainage
- - - Observed Location of Seasonal Water Drainage
- Road

Reference: Data obtained from GeoBase® used under license. GDM midstream and transportation infrastructure data provided by IHS © 2015 used under license. UAV imagery (Oct 2015) obtained by ATCO Power and Matrix Solutions Inc. used under license.

1:3,500

0 Metres 100

NAD 1983 UTM Zone 13N



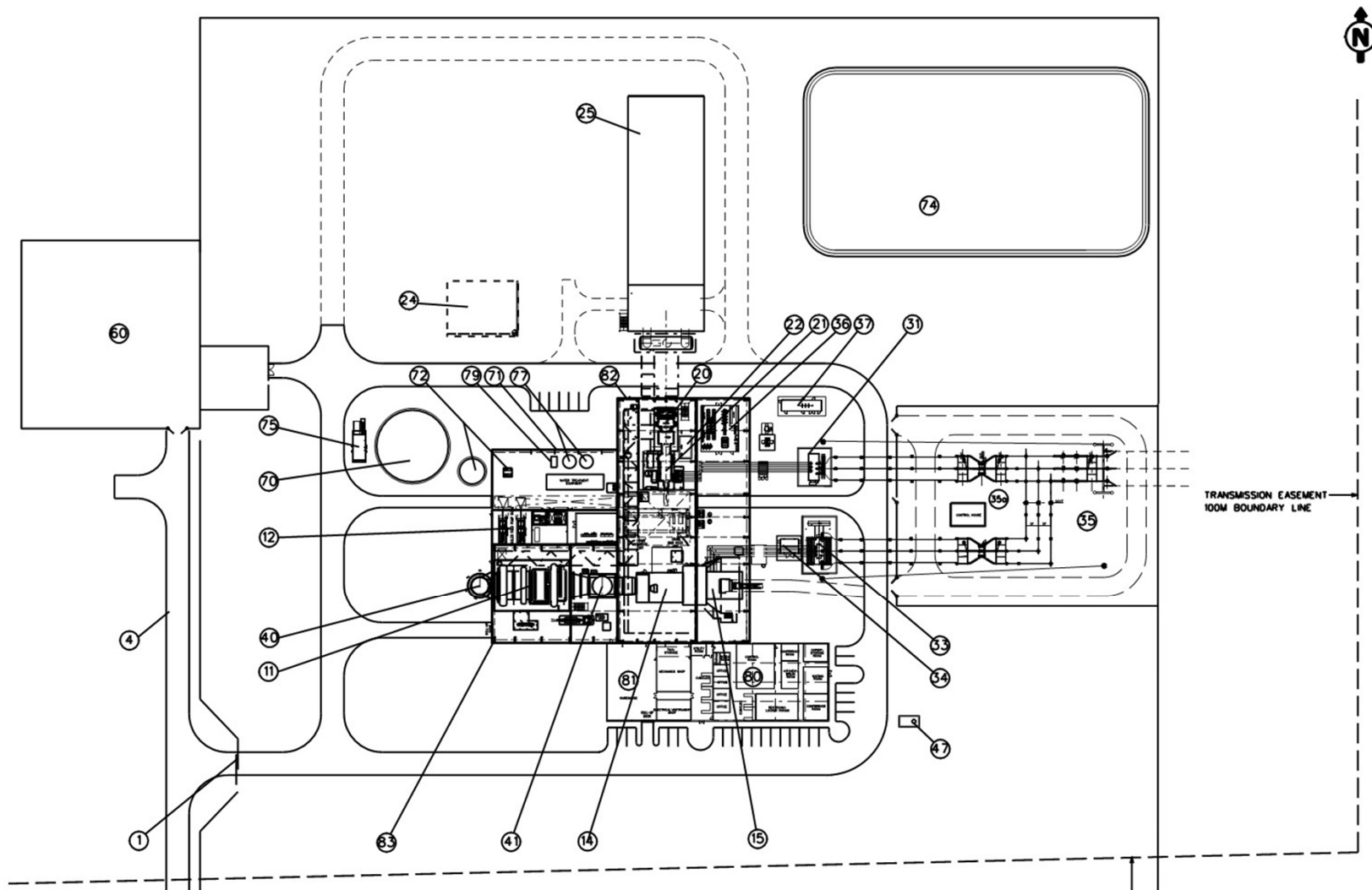
Great Plains Generating Station

Project Footprint

Date: 11 Feb 2016		Project: 22084
Technical: N. Huq	Reviewer: B. Fuchs	Drawn: M. Pfeifer

Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to other parties with which ATCO Power has not entered into contract.

I:\ATCO Power\22084\Figures\Aerial\PA\2015\Report\CEAA\Figure 2.3-1_Project_Footprint.mxd



Note: Figure legend presented in Table 2.3-1



Great Plains Generating Station

Plant Facility Layout

Date:	Project:	Technical:	Reviewer:	Drawn:
Jan 2016	ATCO Power	GP	AB	GP

Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to the other parties with which ATCO Power has not entered into contract.

Figure
2.3-2

Table 2.3-1 Facility Plot Plan Legend

Number	Facility Component
1	Sliding gate
2	Security fence
3	Plant access road
4	Gas metering access road
11	Heat recovery steam generator (HRSG)
12	Boiler feedwater pumps
14	Gas turbine (GT)
15	Gas turbine generator (GTG)
19	Generator circuit breaker
20	Steam turbine (ST)
21	Steam turbine generator (STG)
22	Steam turbine lube oil skid
24	Fin fan cooler
25	Air cooled condenser (ACC)
31	STG Generator step-up transformer
33	CTG Generator step-up transformer
34	Unit auxiliary transformer (UAT)
35	Switchyard
35a	Switchyard control building
36	ST switchgear building
37	Diesel generator
40	Main stack
41	Bypass stack
47	Sanitary waste collection tank
60	Fuel gas metering
70	Service/fire water storage tank
71	Water treatment building
72	Demineralized water tank and transfer pumps
74	Storm water management pond (if required)
75	Electric and diesel fire water pumps
77	Waste water collection tanks
79	Oil water separator
80	Administration/control building
81	Warehouse/maintenance
82	Turbine building
83	HRSG building

2.3.2 *Anticipated Size or Production Capacity with Reference to Thresholds set out in the Regulations Designating Physical Activities*

- b. Anticipated size or production capacity of the designated project, with reference to thresholds set out in the Regulations Designating Physical Activities, including a description of the production processes to be used, the associated infrastructure, and any permanent or temporary structures.

The Project will have a maximum capacity of 350 MW (net), which is above the 200 MW threshold for new thermal power projects as defined in the *Regulations Designating Physical Activities*. The proposed plant will be a natural gas-fired combined cycle electricity generating station consisting of one GTG, one HRSG, and one STG.

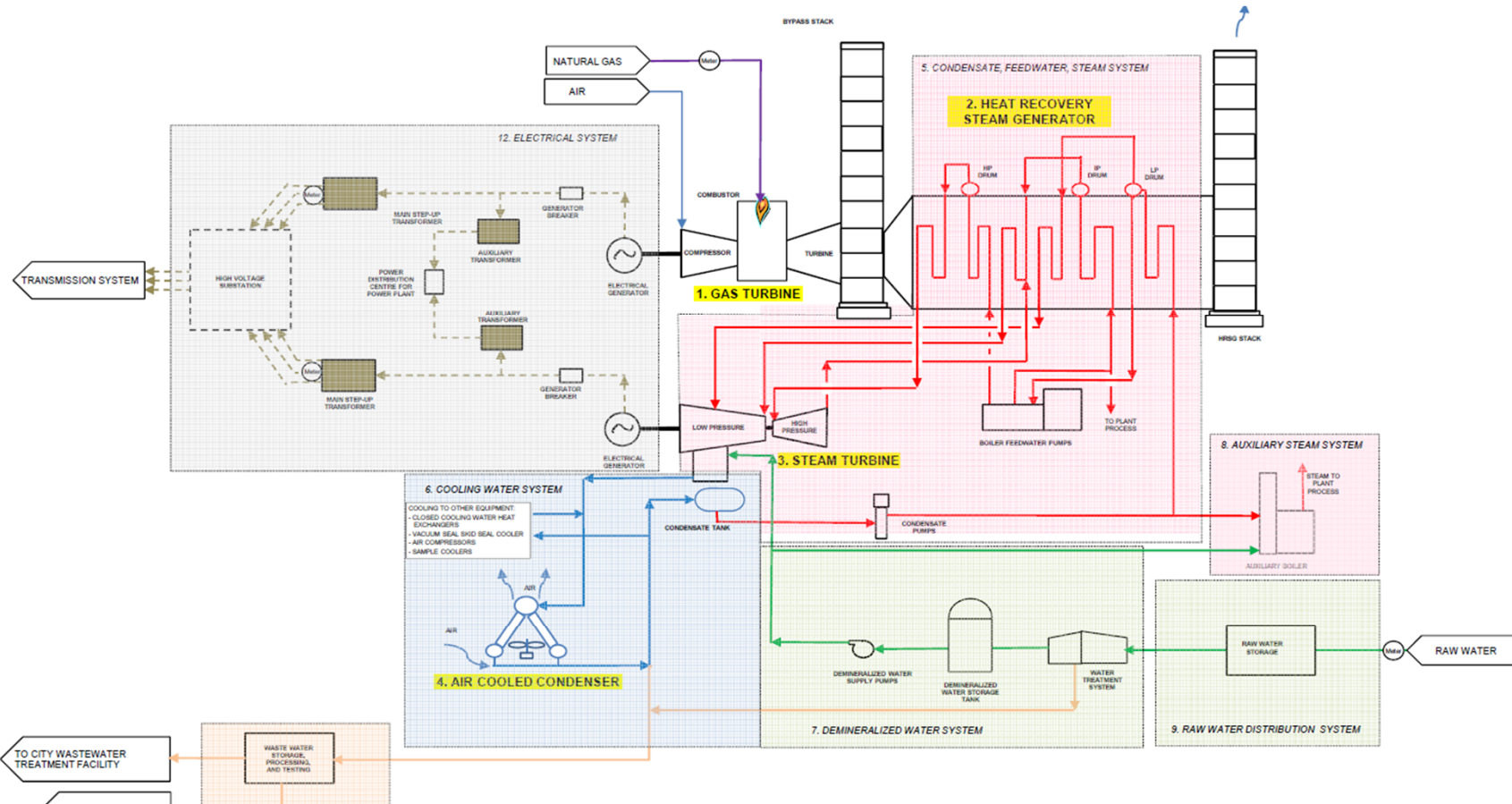
A general description of the generation process is shown on Figure 2.3-3 and is outlined below.

ATCO Power will purchase approximately 50 tonnes/hour of natural gas from TransGas that will be burned in the GTG. The GTG will be equipped with a low nitrogen oxides (NO_x) combustion system that will optimize the mixing and combustion of the natural gas and air to maximize combustion efficiency while reducing the formation of NO_x in the exhaust gases. The electricity generated by the GTG will be sent to the transmission system (operated by SaskPower). The waste heat generated by operation of the GTG will be transferred to the HRSG, where it will be used to boil water (sourced from the plant raw water supply) and generate steam. The produced steam will be sent to the STG to generate additional electricity and increase the overall efficiency of the plant facility. The electricity from the STG will also be sent to the transmission system (operated by SaskPower). The emissions produced by the GTG from combustion of natural gas will be released to the atmosphere through either the HRSG exhaust (during combined cycle operation) or through the GTG exhaust stack (during single cycle operation). These stacks are anticipated to be between 35 to 50 m in height (above grade). Specific stack heights will be determined during detailed design.

As described in Section 2.3.1, the raw water supply will be obtained from the City of Swift Current water reservoir in the southwest portion of the city. The incoming raw water from the city will be treated before being sent to the STG, GTG, or the HRSG to remove minerals that could otherwise result in fouling. The plant facility will also be equipped with an air cooled condenser that will be connected to the STG to regulate the temperature of the condensate.

Both the raw water treatment system and the steam blowdown system are expected to generate wastewater. The steam blowdown wastewater stream will be removed from the process cycle to avoid a buildup of minerals or dissolved solids within the steam generation system. As described in Section 2.3.1, wastewater generated from the Project will be sent to the City of Swift Current wastewater treatment facility through a buried pipeline. ATCO Power's wastewater stream would be treated with the rest of the inlet stream to the City of Swift Current wastewater treatment facility and discharged. The City of Swift Current would be responsible for maintaining its effluent water quality in accordance with the discharge guidelines dictated by the Saskatchewan WSA. Any solid waste (sludge) that accumulates in the water and wastewater treatment storage system will be removed periodically and disposed of at an accredited offsite landfill.

Other systems at the plant facility will include fire suppression systems, instrumentation and control systems, gas turbine water wash system, and a system to manage domestic (septic) waste. The septic waste will be stored in a self-contained septic system and will periodically be hauled to the Swift Current sewage treatment facility for disposal. ATCO Power will also import electricity from SaskPower to start up and allow for safe shutdown of the plant facility.



NOTES:
 1. DRAWING IS NOT TO SCALE
 2. SYSTEMS NOT SHOWN:
 13. CONTROL SYSTEM
 14. FIRE WATER PROTECTION SYSTEM



Great Plains Generating Station

Block Flow Diagram

Date:	Project:	Technical:	Reviewer:	Drawn:
Jan 2016	ATCO Power	GP	AB	GP

Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to the other parties with which ATCO Power has not entered into contract.

Figure **2.3-3**

2.3.3 *Percentage Increase in Capacity*

- c. If the designated project or one component of the designated project is an expansion, the percent of increase in size or capacity from the existing project (relative to the thresholds set out in the *Regulations Designating Physical Activities*).

The Project and all of its components will be new.

2.3.4 *Description of Incidental Activities*

- d. A description of the physical activities that are incidental to the designated project.

Activities that are incidental to the Project will include the provision of natural gas to supply the GTG, the development of electrical transmission lines to export the generated electricity, and the installation of a telecommunications network.

High pressure natural gas will be provided to the Project via a buried pipeline interconnection between the plant facility and the TransGas high pressure natural gas pipeline to the west of the Project. TransGas will be responsible for permitting, constructing, and operating the natural gas pipeline infrastructure in accordance with the permit requirements outlined in Table 2.3-2. The interconnection point is expected to be on the western edge of the Project footprint, at a location to be determined by TransGas. The installation of the natural gas pipeline connection is considered complementary to the Project, as the Project cannot operate without a natural gas supply. ATCO Power will not have the ability to direct or influence TransGas regarding the installation of the natural gas pipeline infrastructure or the availability of this infrastructure to other potential users.

Electrical transmission lines will be constructed to export generated electricity from the Project to the provincial power grid, or import sufficient electricity to support the facility when the generators are not operating. SaskPower will be responsible for permitting, constructing, and operating the electrical transmission infrastructure in accordance with the permit requirements outlined in Table 2.3-2. The interconnection point is expected to be on the eastern edge of the Project footprint, at a location to be determined by SaskPower. The installation of the electrical transmission connection is considered complementary to the Project, as the Project cannot operate without a means to export the generated electricity. ATCO Power will not have the ability to direct or influence SaskPower regarding the installation of the electrical transmission infrastructure or the availability of this infrastructure to other potential users.

Telecommunications service will likely be provided by SaskTel and/or SaskPower. The selected contractor(s) for this service will be responsible for permitting, constructing, and operating the telecommunications infrastructure required to service the Project in accordance with the permit requirements outlined in Table 2.3-2. The interconnection point for this service is currently unknown. The installation of the telecommunications infrastructure is considered complementary to the Project, as the Project cannot operate without telecommunications. ATCO Power will not have the ability to direct or influence the selected contractors regarding the installation of the telecommunications infrastructure or the availability of this infrastructure to other potential users.

Table 2.3-2 Anticipated Third-party Permit and Regulatory Requirements

Project Component	Owner / Operator / Permit Holder	Permit/ Licence Required	Jurisdiction	Legislation	Permitting Requirements
Infrastructure to supply natural gas to the Project, including a gas meter station and connecting pipeline	TransGas	Pipeline License	Government of Saskatchewan, Ministry of Economy	<i>Pipelines Act</i>	Permit applications for this component will be filed to Saskatchewan ECON for the natural gas pipeline that connects the Project to existing gas supply lines.
Transmission interconnection to export electricity from the Project	SaskPower	Application	Government of Saskatchewan	<i>The Power Corporation Act</i>	Applications for this component will be filed by SaskPower who will design, permit, construct, and operate the transmission interconnection system that connects the Project to existing transmission lines. As a Crown Corporation, SaskPower is responsible for supplying electricity to most of the province.
Telecommunications	SaskTel and/or SaskPower	n/a/	n/a	n/a	Telecommunications infrastructure is not regulated by provincial or federal regulators. It is expected that SaskTel and/or SaskPower will negotiate with private landowners or the RM of Swift Current No 137 (as required) for surface access or easements to develop the required infrastructure.

2.4 Emissions, Discharges and Wastes

Provide a description of any solid, liquid, gaseous or hazardous wastes likely to be generated during any phase of the designated project and of plans to manage those wastes, including the following:

- a. Sources of atmospheric contaminant emissions during the designated project phases (focusing on criteria air contaminants and greenhouse gases, or other non-criteria contaminants that are of potential concern) and location of emissions.
- b. Sources and location of liquid discharges.
- c. Types of wastes and plans for their disposal (e.g., landfill, licensed waste management facility, marine waters, or tailings containment facility).

2.4.1 Atmospheric Emissions

Sources of air emissions during both Project construction, and Project decommissioning and reclamation will be the operation of heavy industrial equipment (e.g., bulldozers, graders, cranes, trucks). Although specific equipment has not yet been identified, it is expected that this equipment will include diesel-fired engines. The emission sources will be mobile, but operation of the majority of this equipment will be confined to the Project site. There will also be smaller emission sources associated with the equipment used to install the raw water and wastewater pipelines. Major emissions from the diesel-fired engines are expected to include carbon monoxide (CO), NO_x, fine particulates (particulates smaller than 2.5 microns

[PM_{2.5}]), and greenhouse gasses (GHGs). Air emissions will be reduced by adopting standard mitigation and management practices such as regular maintenance of construction vehicles and equipment to reduce combustion emissions and maximize fuel efficiency, and minimum vehicle idling. Under dry, windy conditions, fugitive dust will be controlled using appropriate methods such as water sprinkling.

The main source of air emissions during Project operation will be the combustion of natural gas in the GTG. Emissions will be from a single stack connected to the powerhouse building and are expected to include CO, NO_x, PM_{2.5}, and GHGs. Because of the low sulphur content of the pipeline quality natural gas to be supplied by TransGas, the Project is not expected to emit measureable amounts of sulphur dioxide (SO₂). Similarly, because of the natural gas fuel and design of combined cycle power plants, the Project is not expected to have measureable emissions of volatile organic compounds (VOCs). The Project will also include two intermittent emission sources: a standby diesel-fired electrical generator and a standby diesel-fired fire pump, rated at 2 MW and 250 kW, respectively. These pieces of equipment will have dedicated stacks and will emit NO_x, CO, and PM_{2.5} only when they are operating during emergencies (fire pump), power outages, testing, or to support the safe shutdown of equipment during electrical system outages. An estimate of the Project air emissions profile during operations and its comparison in evaluating compliance with applicable emission guidelines is presented in Table 2.4-1.

Table 2.4-1 Estimated Project Emission Rates and comparison against applicable guidelines

Parameter	Maximum Emission Rate (kg/hour)	National Emission Guidelines ^a (CCME 1992) (kg/hour)
NO _x	65	176.4
CO	20	71.7
PM _{2.5}	5	n/a

Notes:

- a. Calculated based on a maximum net power output of 350 MW
- n/a - not applicable

As NO_x represents the largest proportion of the air emissions from the Project, ATCO Power will procure the GTG with a low NO_x combustion system to reduce formation of NO_x during combustion. The GTG will be designed to achieve NO_x emissions less than 15 parts per million by volume (ppmv) at full load and ambient temperatures in excess of -17°C. In a regional context, 40,383 t of total NO_x emissions were reported to NPRI in 2013 from industrial sources operating in Saskatchewan (NPRI, undated). The maximum NO_x emissions from the Project (570 t/y) represents only 1.4% of the provincial industrial emissions reported. Similarly, provincial emissions of CO and PM_{2.5} reported to NPRI from industrial sources in 2013 were 45,956 t and 5,655 t, respectively. The maximum CO (175 t) and PM_{2.5} (45 t) emissions from the Project represent less than 0.4% and 0.8% of the respective provincial totals. When compared to all 2013 emissions in the province (industrial and non-industrial sources), the maximum NO_x, CO and PM_{2.5} emissions from the Project represent 0.33%, 0.06% and 0.03%, respectively.

The Project will meet the applicable NO_x and CO emission requirements outlined in the *National Emission Guidelines for New Stationary Combustion Turbines* (CCME 1992). Continuous Emissions Monitoring System (CEMS) equipment will be installed on the HRSG stack to monitor the NO_x and CO emissions. The CEMS will comply with the applicable CEMS code, which describes requirements related to the installation, operation, maintenance and certification.

Preliminary air dispersion modelling results indicate that the predicted concentrations of NO₂, CO, and PM_{2.5} are below their respective *Canadian National Ambient Air Quality Objectives* (NAAQOs; CCME 1999) and *Saskatchewan Ambient Air Quality Standards* (Government of Saskatchewan n.d.) for the range of operating scenarios considered. Potential adverse changes to the air quality from the Project under all operating scenarios are therefore expected to be minimal, and no air treatment and control beyond the design considerations described earlier are proposed.

Once the specific equipment for the Project has been identified as part of detailed design, ATCO Power will complete additional air dispersion modelling of these parameters, and prepare and submit a certified Environmental Protection Plan to the Ministry of Environment for the Minister's approval, in accordance with the *Environmental Management and Protection Act, 2010*, by demonstrating compliance with the applicable *Saskatchewan Ambient Air Quality Standards* (Table 2.4-2) and emission standards. Dispersion modelling requirements are outlined in the *Saskatchewan Air Quality Modelling Guideline* (Saskatchewan ENV 2012) and are used to predict potential impacts of operations under a worst-case scenario.

Table 2.4-2 Ambient Air Quality Standards

Parameter	Average Periods	Saskatchewan Ambient Air Quality Standards (µg/m ³) ^a	NAAQOs (µg/m ³) ^b
NO _x	1 hour	300	400
	24 hour	200	200
	Annual	45	100
CO	1 hour	15,000	35,000
	8 hour	6,000	15,000
PM _{2.5}	24 hour	28 ^c	25 ^d
	Annual	10	n/a

Notes:

- a Source: Government of Saskatchewan n.d.
- b Source: CCME 1999; Acceptable level
- c 98th percentile
- d Reference level

The proposed federal Criteria Air Contaminants (CAC) requirements under the *Multi-sector Air Pollutant Regulations* (MSAPR; Environment Canada 2014a), was released in 2014. The goal of the MSAPR is to achieve consistent performance standards for combustion equipment across all industrial sectors, and to limit oxides of nitrogen and SO₂ emissions. The MSAPR have not yet been released for gas turbines; however, ATCO Power will ensure that the Project will meet the applicable federal and provincial emission standards and guidelines.

The emission of GHGs has been identified as an important issue by regulators. The Project will be designed to have GHG emission intensity less than 420 kg CO₂ equivalent per megawatt hour (MWh). The GHG emissions for the Project will be a maximum of 1,303 kt CO₂ equivalent/year; however, the actual GHG emissions for the Project will depend upon actual MWh of generation required based upon load and run-times. In a regional context, 74,800 kt of CO₂ equivalent were reported by Environment and Climate Change Canada in 2013 from facilities operating in Saskatchewan (Environment and Climate Change Canada, 2015). The maximum GHG emissions from the Project (1,303 kt/y) represents less than 1.75% of the provincial total. When compared to the total GHG emissions reported in Canada in 2013, the maximum GHG emissions from the Project represents less than 0.2%.

The selected technology (i.e., natural gas-fired combined cycle) represents the best available technology for the purpose of generating on-demand, reliable power, which results in the least CACs and GHGs emissions per MWh based on life cycle analysis, compared to any other currently available fossil fuel based power generation technology (SENES 2005). The Project is designed to allow flexible operation and provide electricity output to offset changes in the supply of power in the Saskatchewan electrical system from renewable generation that produces electricity intermittently and at variable rates. Saskatchewan has targeted an increase in the supply of intermittent renewable generation over the next 15 years. This Project will help support Saskatchewan's transition to a lower GHG emission intensity for the Saskatchewan electrical system.

ATCO Power will minimize the emission of GHGs by:

- using an efficient GTG with a natural gas fuel source that will result in more complete hydrocarbon combustion (as compared to other solid fuel sources)
- using a HRSG and STG to recover waste heat from the GTG and produce additional electricity without additional natural gas consumption

In Saskatchewan, facilities that emit more than 50 kilotons per year (kt/year) of GHGs are considered to be regulated emitters under the *Management and Reduction of Greenhouse Gases Act*. Based on this threshold, the Project would be considered a regulated emitter in Saskatchewan. Regulated emitters will be required to reduce annual GHGs to meet provincial targets; however, the framework by which GHG reductions from individual facilities will be aligned with identified provincial targets is still under development. Similarly, there is currently no federal GHG management framework in effect; however, a national framework for combatting climate change has been proposed (Government of Canada 2015). ATCO Power will work with provincial and federal regulators to align operation of the Project with pending GHG regulations as they are introduced.

2.4.2 *Liquid Discharges*

Both the raw water treatment system and the steam blowdown system are expected to generate wastewater. The steam blowdown wastewater stream will be removed from the process cycle to avoid a buildup of minerals or dissolved solids within the steam generation system. Total wastewater effluent rates are expected to be a maximum of 310 m³/day when the Project is operating at full load.

ATCO Power plans to pipeline the wastewater to the City of Swift Current and connect to the wastewater treatment facility in the northeast portion of the city (32-015-13 W3M). ATCO Power has been working with the City of Swift Current and will sign a letter of intent for this wastewater treatment approach on or before the date of the bid submission to SaskPower (April 5, 2016). It is anticipated that ATCO Power and the City of Swift Current will enter into an agreement that will specify acceptable water quality criteria for effluent receipt and water quality testing methods and frequency (as required). The specified effluent receipt criteria will likely be based on the wastewater quality criteria specified in the City of Swift Current Water and Wastewater Utility Bylaw (Bylaw 17-2001; Table 2.4-3). If required, ATCO Power would implement supplemental onsite wastewater treatment (e.g., reverse osmosis, filtration and/or electrodeionization) along with wastewater testing measures required to meet the effluent receipt criteria specified by the City of Swift Current. ATCO Power's wastewater stream would be treated with the rest of the inlet stream to the City of Swift Current wastewater treatment facility and discharged. The City of Swift

Current would be responsible for maintaining its effluent water quality in accordance with the discharge guidelines dictated by the Saskatchewan WSA.

Other liquid discharges generated by the Project will include facility drainage, water collection from containment areas, gas turbine wash water, used oil, and other solvents and sewage. Additional details regarding wastewater and liquid discharges are provided in Table 2.4-4.

Table 2.4-3 Bylaw 17-2001 Wastewater Discharge Criteria

Parameter	Concentration (mg/L)
Aluminum	50
Antimony	5.0
Arsenic	1.0
Benzene	0.5
Beryllium	1.0
Bismuth	5.0
Boron	5.0
BTEX	1.0
Cadmium	1.0
Chromium	3.0
Cobalt	5.0
Copper	3.0
Cyanide	3.0
Ethylbenzene	0.5
Fluoride	10.0
Hydrocarbons	50
Iron	50
Lead	1.0
Manganese	5.0
Mercury	0.01
Molybdenum	5.0
Nickel	3.0
Phenol Compounds	1.0
Selenium	1.0
Silver	5.0
Sulphate	1,500
Sulphides	3.0
Tetrachloroethylene	0.7
Thallium	0.5
Tin 5.0 milligrams	5.0
Titanium	5.0
Toluene	0.5
Vanadium	5.0
Xylenes	(total) 0.5
Zinc	3.0

Source: City of Swift Current, 2001

Table 2.4-4 Wastewater and Liquid Discharges Generated by the Great Plains Generating Station

Liquid Waste	Description	Volume		Containment	Disposal Method	Potential Effects on the Environment
		Normal	Maximum			
Waste effluent from HRSG blowdown	Waste effluent generated as a result of avoiding concentration of impurities during continuing evaporation of steam	2.7 m ³ /hour	5.6 m ³ /hour	Wastewater collection tank	Flows will be routed to the wastewater collection tanks to be discharged to the City of Swift Current wastewater treatment facility.	None; wastewater effluent will be treated at the City of Swift Current wastewater treatment facility before discharge.
Waste effluent from demineralized water treatment plant	Waste effluent from the water treatment plant	1.9 m ³ /hour	3.3 m ³ /hour	Wastewater collection tank	Flows will be routed to the wastewater collection tanks to be discharged to the City of Swift Current wastewater treatment facility.	None; wastewater effluent will be treated at the City of Swift Current wastewater treatment facility before discharge.
Sampling discharge	Drains from the analytical sampling system	1.6 m ³ /hour	n/a	Wastewater collection tank	Flows will be routed to the wastewater collection tanks to be discharged to the City of Swift Current wastewater treatment facility.	None; wastewater effluent will be treated at the City of Swift Current wastewater treatment facility before discharge.
Drainage within powerhouse building	Wastewater from floor wash and miscellaneous floor drains including water from containment areas	2.3 m ³ /hour	n/a	Drain to oil/water separator	Flows will be routed to an oil/water separator. Separated water will be stored in the wastewater collection tanks to be discharged to the City of Swift Current wastewater treatment facility. Oily sumps will be cleaned out on a regular basis and oil will be shipped offsite through an approved carrier.	None; wastewater effluent will be treated at the City of Swift Current wastewater treatment facility before discharge.
Gas turbine wash water	Gas turbine wash water will be treated as hazardous waste and collected and contained onsite	7 m ³ per wash. Approximately two washes per year	n/a	Gas turbine water wash collection sump	A qualified carrier will be used to dispose of gas turbine wash water.	None; water will be disposed offsite at an accredited facility.
Air cooled condenser wash water	Air cooled condenser wash water	200 m ³ per wash. Approximately two washes per year (at 15.9 m ³ /hour)	n/a	n/a	Wash water is service water that drains to the plant site stormwater systems; similar to rain water.	None; no sources of contamination present in this wash water stream.
Used oil and other solvents (hazardous waste)	Used lube and seal oil, glycol for inlet air heating system, chemical, and other solvents from the plant	TBD	TBD	Barrels located in designated areas of powerhouse building or power plant site	Removal by a qualified carrier for disposal or recycling on an as-needed basis.	None; waste fluids will be disposed offsite at an accredited facility.
Sewage	Sanitary waste from the administration building and water treatment building plumbing systems	12 m ³ /day	n/a	Facilities holding tank	Periodic removal by a qualified carrier.	None; sewage will be disposed offsite at an accredited facility.

Notes:

- Information provided is approximate for initial screening evaluations. These values will be finalized and updated in applicable permit applications.

2.4.3 Solid Wastes

The Project will generate both recyclable and non-recyclable solid waste. Recyclable material will be separated into containers and removed from site for recycling by a qualified carrier. Non-recyclable domestic waste will be collected onsite and sent to the municipal landfill through a qualified carrier. Onsite, solid waste materials will be properly labelled and stored in a waste storage area with secondary containment or liner. Potentially flammable or incompatible waste streams will be segregated. Any hazardous wastes generated onsite will be properly manifested and removed by a qualified carrier for recycling or disposal at an approved facility on an as-needed basis. Additional details regarding the solid wastes generated by the Project are provided in Table 2.4-5.

Table 2.4-5 Solid Wastes Generated by the Project

Waste Stream	Description	Containment	Disposal Method	Estimated Annual Quantity	Potential Effects on the Environment
Metal and recyclables (cardboard, air filters)	Metal and recyclables such as cardboard and paper from plant	Metal dumpsters with liner	Will be recycled through a qualified carrier	13 to 18 t	None
Domestic waste	Normal disposal waste from offices	Metal dumpsters with liner	Will be collected and sent through a qualified carrier to municipal landfill	7 to 10 t	None
Oil filters (hazardous waste), oily rags and absorbent	Filters from equipment and associated other oily wastes	Oil containment area with surrounding berm	Will be removed by a qualified carrier for disposal or recycling on an as-needed basis	4 to 6 t	None
Batteries	Batteries from plant uses	Plastic containers	Will be sent to a facility for recycling or disposal	80 to 100 L	None

Corporate and Project policy, procedure, and training will be in place to ensure that all regulations associated with the classification and characterization of waste are in place before Project operation commences. Roles and responsibilities for waste handling will be defined and key information will be summarized in the Project site policy documents.

2.5 Construction, Operation, and Decommissioning and Abandonment Phases and Scheduling

Provide a description of the timeframe in which the development is to occur and the key project phases, including the following:

- a. Anticipated scheduling, duration and staging of key project phases, including preparation of the site, construction, operation, and decommissioning and abandonment.
- b. Main activities in each phase of the designated project that are expected to be required to carry out the proposed development (e.g., activities during site preparation or construction might include, but are not limited to, land clearing, excavating, grading, de-watering, directional drilling, dredging and disposal of dredged sediments, infilling, and installing structures).

The scheduling, duration, and staging of key Project phases is presented in Table 2.5-1. The facility is designed for an approximate 35 year design life, followed by the decommissioning of the facility. While specific work schedules will be developed during detailed engineering (if ATCO Power is the successful proponent), ATCO Power is currently planning for construction to proceed on a 5 days/week and 8 hours/day schedule. During operations, the facility is expected to operate as a base load facility which will require operation 7 days per week, 24 hours/day year-round except for planned and unplanned outages. Additional details for Project activities are provided in the subsections below.

Table 2.5-1 Project Schedule

Construction Activity	Schedule
Notification of award	July 7, 2016
Site preparation (e.g., clearing, grading)	Q3 2016 to Q1 2017
Foundation excavation/construction	Q2 2017 to Q3 2018
Building erection and equipment installation	Q1 2018 to Q2 2019
Equipment commissioning and testing	Q3 2019
Start of operation	September 1, 2019 to October 1, 2019
Decommissioning (after 35 year Project life)	2054 to 2057

2.5.1 Pre-construction

Before construction, ATCO Power will complete environmental site assessments (ESAs) if areas of potential concern are identified (e.g., areas that could have potentially been affected by previous activities at the site). If these ESAs indicate that historical contamination is present on the Project site (or along the selected underground water and wastewater pipeline rights-of-way (RoWs), ATCO Power will work with the land owner (SaskPower for the plant facility or other private landowners for the pipeline RoWs) to remediate, where required, the areas to achieve soil/groundwater quality endpoints for parameters in compliance with provincial guidelines and Canadian Council of Ministers of the Environment guidelines, as updated.

A site-specific emergency response plan (ERP) will be prepared and implemented to detail steps in responding to all conceivable emergencies to facilitate a coordinated and organized approach that can be used to manage most emergencies. The ERP will provide a management plan, which addresses preparedness, response, notification, and recovery from an emergency. The ERP's primary purpose will be to protect the lives, safety, and health of neighbours, contractors, and employees. Also, an ERP will help in protecting environmental damage, as well as facility, property, and equipment loss. The ERP will cover emergencies (including but not limited to) such as fire, spills/releases, flood, severe weather, explosion, or natural gas leak.

2.5.2 Construction

The construction phase includes the major work and activities required for construction of the Project, including site preparation, excavation and foundation construction, building erection, installation of equipment, and equipment commissioning. The construction of the Project is not expected to result in direct contamination of the soil, groundwater, or surface water within the Project site. The primary source of potential contamination during the construction phase is accidental spills. Before construction, ATCO

Power will develop a spill prevention and response plan that will outline responsibilities for the construction contractor and ATCO Power around contamination prevention.

An environmental management plan for the construction phase will be prepared and implemented before commencement of construction. No equipment or physical infrastructure is planned for environmental monitoring during construction; however, an environmental monitor will be onsite throughout the construction phase to record and report any environmental spills/releases that may occur during construction. Due to the nature of the Project and the use of standard construction practices and equipment, ambient air monitoring would not be required during Project construction.

A brief description of construction activities is presented in the subsections below.

2.5.2.1 Site Preparation

The Project site will be cleared and graded as required in accordance with the Project site surface water drainage plan, which will be developed during detailed design. Site clearing will be conducted between September 1, 2016 and April 14, 2017 to avoid clearing during the migratory bird nesting period for the area (April 15 to August 31). Topsoil and subsoil will be salvaged and stockpiled before site grading, placement of fill, and/or site development. ATCO Power will salvage topsoil in areas that will be disturbed for the Project and salvage upper subsoil where long-term facilities are planned (described further in Section 5.1.1). Salvaged topsoil and subsoil will be maintained as stable and vegetated stockpiles throughout the life of the Project.

Existing surface drainage within the Project site flows to the north. Berms and ditches surrounding the Project plant facility will be designed to direct stormwater and maintain natural surface water drainage. Erosion control measures will be implemented during construction and exposed soil will be vegetated to minimize erosion potential. As a component of site preparation, the onsite Class II wetland and the portion of the seasonal waterway that intersects the Project footprint will be drained and graded. The draining and grading activities will be conducted in accordance with the conditions of the AHPP to be obtained from the Saskatchewan WSA (described further in Section 5.1.2).

The Project site will be fenced and access to the site will be via a new road connected to the existing range road (Bullin Road) south of the plant site. Site construction infrastructure (i.e., trailers, electricity, natural gas services) will be installed at the plant facility. Construction laydown, storage, and fabrication areas will be established south of the plant facility.

2.5.2.2 Foundation Excavation and Construction

Excavations will be constructed to install subsurface infrastructure (e.g., cooling water piping, natural gas piping, water piping, and electrical cables).

It is anticipated that foundation piles may be installed to bear the loads of major equipment and for the powerhouse, transformers, and air cooled condenser. Once piles have been installed, they will be tied together with concrete foundation elements to complete the foundations. Once concrete slabs have been poured, backfill will be placed against the foundations to complete the surface works.

2.5.2.3 Building Erection and Equipment Installation

Structural steel will be erected on the foundations for the powerhouse and the administration buildings. Some modularization and pre-assembly work will occur where practical to speed building erection. Simultaneously with building erection, the HRSG, GTG, STG, and other major equipment will be located or installed in the powerhouse. The crane rails and bridge crane will be installed in the powerhouse to facilitate equipment assembly. Roof cladding and wall cladding will then be installed to enclose the building while equipment installation continues indoors. Once the building is enclosed, the building can be heated to facilitate construction in cold weather. During powerhouse construction, external tanks will be installed for raw and demineralized water storage.

The air cooled condenser will be assembled in parallel with work on the powerhouse. Construction will include casting a concrete foundation. It is anticipated that considerable pre-assembly of condenser modules will take place, with final assembly and tie in carried out onsite.

The generator step-up power transformers and other ancillary equipment will be assembled and installed outside the powerhouse during this period.

2.5.2.4 Equipment Commissioning and Testing

Before start-up of the facility, ATCO Power will test and commission equipment and systems. It is expected that the testing and commissioning phase of the Project will span the final 8 to 10 months of construction. The Project will then be ready for commercial operation.

2.5.2.5 Buried Pipeline Construction

The specific routing for the buried raw water and wastewater pipelines has not been determined. ATCO Power will work with the RM of Swift Current No. 137, the City of Swift Current, and any private landowners (as required) to obtain the required surface access (easements) to develop the pipelines. Criteria considered during route selection will include opportunities to parallel existing disturbances and to minimize watercourse crossings. During construction, an approximately 10 m wide RoW will be developed with 20 m of additional temporary workspace during construction to have adequate room for separating/piling the soils. Topsoil and underlying trench material within the pipeline RoWs will be salvaged separately and stored in a temporary workspace along the RoWs. If watercourse crossings are required, ATCO Power will work with the Saskatchewan WSA to obtain an AHPP before construction. Pipeline crossing installation would likely either occur under frozen conditions or using trenchless techniques. Specific details for pipeline watercourse crossings would be evaluated as part of detailed design. For each watercourse crossing identified (if any), ATCO Power would also complete a self-assessment based on the *Measures to Avoid Causing Hard to Fish and Fish Habitat* (Fisheries and Oceans Canada, 2013). Following construction, salvaged soils will be replaced. No long-term storage of soil material is planned. The pipeline RoWs will be seeded with a native seed mix and allowed to revegetate after construction. The pipeline RoW will be monitored and maintained to control erosion.

2.5.3 *Operation*

ATCO Power will purchase approximately 50 tonnes/hour of natural gas from TransGas that will be burned in the GTG. The GTG will be equipped with a low NO_x combustion system that will optimize the mixing and combustion of the natural gas and air to maximize combustion efficiency while reducing the

formation of NO_x in the exhaust gases. The electricity generated by the GTG will be sent to the transmission system (operated by SaskPower). The waste heat generated by operation of the GTG will be transferred to the HRSG, where it will be used to boil water (sourced from the plant raw water supply) and generate steam. The produced steam will be sent to the STG to generate additional electricity and increase the overall efficiency of the plant facility. The electricity from the STG will also be sent to the transmission system (operated by SaskPower). The emissions produced by the GTG from combustion of natural gas will be released to the atmosphere through either the HRSG exhaust (during combined cycle operation) or through the GTG exhaust stack (during single cycle operation). These stacks are anticipated to be between 35 to 50 m in height (above grade). Specific stack heights will be determined during detailed design.

Normal operating modes of the Project are described below. The phrase “normal operating modes” applies to the Project once the GTG, HRSG, STG, and the balance of plant components have been fully constructed, commissioned, and are deemed suitable for commercial operation.

The Project will normally operate in various modes, as dictated by dispatches from SaskPower and described as follows:

- **Offline** – The Project is not operating (generating electricity), but is maintained in a condition to start and come online as required.
- **Start or Stop Ramp** – The Project is in a transient state between operating and offline modes. Operation in this mode will be of short duration.
- **Minimum Stable Generation Level** – The Project is online and operating, but has been turned down to the minimum level at which it can operate while the STG is not offline.
- **Minimum Stable No STG Generation Level** – The Project is online and operating, but has been turned down to the minimum level at which it can operate while the STG is offline.
- **Normal Operation Ramp** – In this mode the Project output is changing, either up or down, between normal operating output levels. Typically, ramps will occur over short periods of time.
- **Baseload Generation Level** – The Project is operating at the maximum GTG and STG output. In this mode, the Project operates at maximum efficiency.
- **Automatic Generation Control (AGC) Operation** – AGC mode; in this mode the Project output is changing, either up or down, based on the Grid Dispatch Operational demands.
- **No STG AGC Operation** – AGC operations in the absence of the STG.
- **Outage** – The Project is offline and not available to operate due to maintenance or inspection work that requires the plant to be in a non-operating state. Operation in this mode will either be scheduled in advance (planned outage) or unscheduled (forced outage).

The Project will be designed to operate at full output continuously. Throughout its operating life, the Project may be called upon at any time and for any duration to produce electricity in any amount up to its maximum capacity as dispatched by SaskPower.

Verification of the accuracy of measuring and monitoring equipment used for environmental performance will be an essential element of Project operations. A specific procedure will be in place to monitor

equipment for operation, calibration, preventive and corrective maintenance, and evaluation. Environmental reporting will be managed through corporate and site policies and procedures that are written to ensure compliance with all reporting requirements outlined in the applicable approvals and permits. The policies and procedures will indicate the types of events to be reported, reporting process, timing, and regulatory agency contact information. Records of calibrations or verifications for environmental monitoring equipment will be retained at the Project site.

A maintenance management system for the Project will be used to record and schedule preventive maintenance activities and produce maintenance activity reports that provide information on the frequency and maintenance history for pieces of equipment. Compliance audits will be used to evaluate the Project's compliance to legal requirements and other requirements to which the company subscribes.

ATCO Power has policies providing instruction on responding to and reporting environmental incidents. The Project policies will include a table of conditions and emission limits that are applicable to Project operations. For each limit/condition the policy will include a description of the limit/condition, suggested actions for maintaining or returning to compliance, and applicable regulatory notification requirements. The operations staff will be authorized to take actions to control emissions, including modifying operations. Records of all environmental incident reports will be maintained on the Project site.

If an environmental incident is reportable to a regulatory body, ATCO Power policy requires that an investigation be conducted to identify root causes and corrective actions. Environmental incidents and potential incidents will be reported in the Project's incident and investigation reporting process and potential incidents that could have resulted in contraventions will be investigated. Actions resulting from incidents will be documented and tracked to ensure the actions are completed in a timely manner. Incidents with outstanding actions will be identified and a list forwarded to the responsible supervisor(s) and department managers each month.

2.5.4 Decommissioning

At the end of life of the Project, decommissioning will include removing all equipment and the associated piping and electrical systems from the site. ATCO Power will retain qualified contractors when removing equipment and structures (dismantling) and have a detailed plan in place to minimize the potential for spills and release of contaminants. Equipment, concrete, and gravel removed during decommissioning will be disposed of at appropriate locations offsite (e.g., landfills, recycling facilities, or other appropriate locations). Following decommissioning, ESAs will be completed at the plant facility to evaluate the presence of contamination associated with the operation of the Project. These ESAs will be completed in accordance with the guidelines and the regulations in place during decommissioning (anticipated being from 2054 to 2057). Where required, remediation will be completed with the endpoints for applicable parameters based on the remediation guidelines of the day.

After remediation, ATCO Power will reclaim the facility site. Reclamation will include recontouring the site to landform and drainage conditions consistent and integrated with the surrounding areas. ATCO Power will also alleviate soil compaction onsite under relatively dry soil conditions. After the Project site is recontoured, ATCO Power will replace salvaged subsoil, as applicable, and all topsoil materials onto the recontoured area. Consequently, the Project site will be reclaimed to an equivalent pre-disturbance agricultural land capability. The buried water and wastewater pipeline RoWs will be evaluated during

decommissioning in consultation with the RM of Swift Current No. 137, the City of Swift Current, and any private landowners whose lands were used to develop the pipelines. It is anticipated that these pipelines will either be repurposed for other uses or decommissioned in place.

3.0 Project Location

Provide a description of the designated project's location including:

1. Coordinates (i.e. longitude/latitude using international standard representation in degrees, minutes, seconds) for the centre of the facility or, for a linear project, provide the beginning and end points.

The Project will be located on the following parcel: SE 13-016-15 W3M (Figure 2.3-1). The 64 ha land parcel is privately owned by SaskPower and will be leased to ATCO Power for the purposes of constructing and operating the Project.

The geographic coordinates for the Project site are:

- SE 13-016-15 W3M
- 50° 20'27.2616 N 107° 55'57.2772 W

The area within the Project site that will be occupied by permanent facilities, defined as the Project footprint, is shown on Figures 2.3-1 and 2.3-2. The specific routing for the underground raw water and wastewater pipelines has not yet been determined.

2. Site map/plan(s) depicting location of the designated project components and activities. The map/plan(s) should be at an appropriate scale to help determine the relative size of the proposed components and activities.

The plant facility layout is provided on Figure 2.3-2.

3. Map(s) at an appropriate scale showing the location of the designated project components and activities relative to existing features, including but not limited to:
 - a. watercourses and waterbodies with names where they are known;
 - b. linear and other transportation components (e.g., airports, ports, railways, roads, electrical power transmission lines and pipelines);
 - c. other features of existing or past land use (e.g., archaeological sites, commercial development, houses, industrial facilities, residential areas and any waterborne structures);
 - d. location of Aboriginal groups, settlement land (under a land claim agreement) and, if available, traditional territory;
 - e. federal lands including, but not limited to National parks, National historic sites, and reserve lands;
 - f. nearby communities;
 - g. permanent, seasonal or temporary residences;
 - h. fisheries and fishing areas (i.e., Aboriginal, commercial and recreational);
 - i. environmentally sensitive areas (e.g., wetlands, and protected areas, including migratory bird sanctuary reserves, marine protected areas, and National Wildlife areas); and
 - j. provincial and international boundaries.

Maps of the designated Project components and existing features are provided on Figures 3.1-1 to 3.1-4. A concordance table identifying the locations of the requested landscape features is provided in Table 3.1-1.

Table 3.1-1 Location of Existing Landscape Features

Existing Features	Figure Number	Comments
Watercourses and water bodies with names where they are known	3.1-1, 3.1-4	Water bodies and watercourses within the immediate vicinity of the Project are shown on Figure 3.1-1. Many of the water bodies and watercourses in the area are unnamed or are intermittent streams not containing water for a portion of the year. The only named watercourse in the area is Swift Current Creek (Geobase 2016). Major watercourses and water bodies in the region are shown on Figure 3.1-4.
Linear and other transportation components (e.g., airports, ports, railways, roads, electrical power transmission lines, and pipelines)	3.1-1, 3.1-2, 3.1-4	Railways and highways are shown on Figure 3.1-4. Local roads and highways, pipelines, and transmission lines are shown on Figure 3.1-1. Airports are shown on Figure 3.1-2. There are no ports in the region. Many of the local roads and industry access roads are unnamed (IHS 2015).
Other features of existing or past land use (e.g., archaeological sites, commercial development, houses, industrial facilities, residential areas, and any waterborne structures)	3.1-1, 3.1-3, 3.1-4	Archaeological sites, industrial facilities, and energy infrastructure are shown on Figure 3.1-2, and communities are shown on a regional scale on Figure 3.1-4 and on a local scale on Figure 3.1-1. The closest local residence is shown on Figure 3.1-3.
Location of Aboriginal groups, settlement land (under a land claim agreement) and, if available, traditional territory	3.1-1, 3.1-4	First Nation reserves are shown on a local scale on Figure 3.1-1 and on a regional scale on Figure 3.1-4. The Project area is located within Treaty 4 boundaries; however, the scale of the maps does not show the extent of this boundary. No asserted traditional territory boundaries or settlement lands have been identified near the Project. ATCO Power will continue to consult with identified Aboriginal groups if they are the successful bidder for the Project. If further information regarding regional traditional land uses becomes available, ATCO Power will incorporate this information and identify mitigation measures into subsequent assessment and permitting for the Project.
Federal lands, including but not limited to, National parks, National historic sites, and reserve lands	3.1-1, 3.1-4	Federally managed lands areas are shown on Figure 3.1-4. First Nation Reserve lands are shown on a local scale on Figure 3.1-1 and on a regional scale on Figure 3.1-4.

Existing Features	Figure Number	Comments
Nearby communities	3.1-1, 3.1-4	Nearby communities are shown on a local scale on Figure 3.1-1 and on a regional scale on Figure 3.1-4.
Permanent, seasonal or temporary residences	3.1-3	The closest local residence is shown on Figure 3.1-3. There are no known seasonal or temporary residences near the Project.
Fisheries and fishing areas (i.e., Aboriginal, commercial, and recreational)	3.1-1	Swift Current Creek is the only known recreational fishing area near the Project (Figure 3.1-1). There are no known commercial or Aboriginal fisheries in the area.
Environmentally sensitive areas (e.g., wetlands and protected areas, including migratory bird sanctuary reserves, marine protected areas, and National Wildlife areas)	3.1-1	Environmentally sensitive areas near the Project are shown on Figure 3.1-1.
Provincial and international boundaries	3.1-4 (inset map)	The nearest provincial boundary is the Alberta border, which is 147.0 km west of the Project site. The nearest international boundary is the United States border, which is 149 km south of the Project site.

4. Photographs of work locations to the extent possible.

Photographs of the Project site are provided on Figures 3.1-5 through 3.1-7.

5. Legal description of land to be used for the designated project, including the title, deed or document and any authorization relating to a water lot.

The Project site is located on SE 13-016-15 W3M. A copy of the legal title for the land parcel is provided in Appendix A. The land parcel is owned by SaskPower and will be leased to ATCO Power for the Project.

6. Proximity of the designated project to:

a. any permanent, seasonal or temporary residences;

The closest permanent residence to the Project is located approximately 1.8 km west of the Project (Figure 3.1-3). There are no known seasonal or temporary residences identified near the Project.

If ATCO Power is the successful bidder for the Project, ATCO Power will engage directly with local residents in accordance with the consultation plan described further in Section 7.

b. traditional territories, settlement land (under a land claim agreement) as well as lands and resources currently used for traditional purposes by Aboriginal peoples; and

The Project is located within the boundaries of Treaty No. 4. The closest First Nation Reserve to the Project is an “urban reserve” held by the Nekaneet Cree Nation located within the City of Swift Current, approximately 11 km southeast of the Project. This reserve is used to operate the Living Sky Casino. It is understood that no members of the Nekaneet Cree Nation live on this reserve (Statistics Canada, 2015) or use this reserve for traditional purposes. The casino is a joint economic development with File Hills Qu’Appelle Tribal Council, Nekaneet Cree First Nation and the Saskatchewan Indian Gaming Authority. The Nekaneet Cree Nation also has reserve lands located approximately 113 km southwest of the Project.

The Carry the Kettle Nakoda First Nation Reserve is located approximately 66 km northwest of the Project. ATCO Power has contacted the Nekaneet Cree Nation and the Carry the Kettle Nakoda First Nation (as well as the File Hills Qu’Appelle Tribal Council) to introduce the Project and to identify their interests in the Project area. ATCO Power will continue to consult with these First Nations (and other First Nations, as directed by the CEA Agency or Saskatchewan ENV) if it is the successful bidder for the Project.

The Project is also located within the boundaries of Western Region III, as defined by the Métis Nation of Saskatchewan (Deloitte 2013). Within this region, the Métis locals in Swift Current and Maple Creek are not identified as being active. The closest active Métis Local is the Prairie Dog Métis Local 123, approximately 50 km south of the Project. ATCO Power has contacted the Métis Nation of Saskatchewan to introduce the Project and to request their assistance in identifying potential Métis communities that may be interested in the Project. ATCO Power will continue to consult with the Métis Nation of Saskatchewan and any identified Métis Local(s) if it is the successful bidder for the Project.

The Project site has been privately owned since 1951, and no traditional usage of the land by Aboriginal peoples has been noted. The land use before 1951 is unknown. A heritage sensitivity search was completed on October 15, 2015, using the Saskatchewan Parks, Culture, and Sport website (Government of Saskatchewan 2012a). The Project quarter section is deemed not heritage sensitive. ATCO Power has searched publicly available information and no traditional use specific to the Project area has been identified. No asserted traditional territory boundaries or settlement lands have been identified near the Project. The closest documented traditional use in the Great Sand Hills region (Peters et. al. 2006) is located approximately 70 km west of the Project. ATCO Power will continue to consult with identified Aboriginal groups if they are the successful bidder for the Project. If further information regarding regional traditional land uses becomes available, ATCO Power will incorporate this information and identified mitigation measures into subsequent assessment and permitting for the Project.

c. any federal lands.

The closest federal land is the Swift Current – Webb Community Pasture, which is located approximately 4.4 km west of the Project footprint (Figure 3.1-2). Agriculture and Agri-Food Canada (AAFC) is in the process of transitioning the land to users with a more direct interest and to phase out federal involvement in management (AAFC 2014). Transfers of community pastures are expected to occur over a 6-year

period until all pastures are transferred. The Swift Current-Webb Community Pasture is currently federally managed, but is expected to be transferred to provincial control between 2017 and 2018.

The Webb National Wildlife Area is located adjacent to the Swift Current-Webb Community Pasture, approximately 19.4 km south of the Project. This area is managed to maintain protected areas for the conservation of wildlife. Access to Webb National Wildlife Area is not restricted and some public access is allowed through permitting for livestock grazing.

Other public access is permitted through research, extension, and education events proposed and organized by other agencies.

Existing use of the Swift Current-Webb Community Pasture or Webb National Wildlife Area will not be altered due to the development of the Project, as access to these areas will continue to be restricted as described above. As described further in Section 5, the Project is not anticipated to have adverse effects on wildlife, surface hydrology, surface water quality, or fish and fish habitat. Existing wildlife or public use of these identified areas will be unchanged due to the development of the Project. The results of preliminary noise modelling indicate that the predicted sound power level at the Swift Current-Webb Community Pasture will be approximately 26.5 dBA, which is considered to be less than the sound within a recording studio (OSHA 2016). Accordingly, the Project will not adversely affect these federal lands.

3.1 Land and Water Use

To the extent that is known at this time, describe the ownership and zoning of land and water that may be affected by the project, including the following:

a. Zoning Designations

The Project site is currently on primarily tame pasture approximately 11 km northwest of Swift Current, SK, and approximately 2 km east of Highway 32 along Bullin Road. The Project will utilize a maximum of 16 ha within the 64 ha land parcel owned by SaskPower located at SE 13-016-15 W3M.

The land parcel is currently zoned by the RM of Swift Current No. 137 as Agricultural and Resource District as specified by the Swift Current Zoning Bylaw (RM No. 137 2010). The purpose of the Agricultural District is to accommodate agricultural and agriculture-related development and subdivisions. Public utilities, including electricity generation, are permitted principle uses in the Agricultural and Resource District (RM No. 137 2010); therefore, there is no conflict with the current zoning and the development of the Project.

The area surrounding the Project site within the RM of Swift Current No. 137 consists of a mix of industrial facilities, rural farms and residences, as well as public infrastructure including Highway 32 and railway lines. The Project site is located near several gas production wells operated by Husky Energy approximately 3 km west of the Project site (Figure 3.1-3). The Swift Current Newalta landfill is located approximately 1 km east of the Project site on the adjacent property. The landfill currently accepts commercial and industrial wastes. The properties to the north, south, and west are tame pasture grass with no buildings present.

Following a site selection process that evaluated various locations in Saskatchewan, SaskPower identified the Swift Current region as an optimal location for a large natural gas-fired combined cycle electricity generating station due to its close proximity to critical infrastructure such as transmission, gas pipelines, and water supply required to support the Project. In addition, the selected location for the Project will provide a boost to the local economy.

b. Current Land Ownership, including Sub-surface Rights

The land that the Project will be constructed on is owned by SaskPower. In 2015, the 64 ha (158 acre) land parcel in SE 13-016-15 W3M was purchased by SaskPower for the explicit purpose of developing the Project. If awarded the work, ATCO Power expects to enter a long-term lease agreement with SaskPower for the purposes of construction and operation of the Project.

There is currently one subsurface rights holder, Prairiesky Royalty Ltd., who owns the petroleum and natural gas (P&NG) rights within SE 13-016-15 W3M. The Project will not interact with Prairiesky's subsurface rights, as there is no subsurface development proposed as part of the Project. If Prairiesky chooses to develop its P&NG rights in future, it would consult with SaskPower (the landowner) regarding surface access.

c. Any applicable land use, water use (including ground water), resource management or conservation plans within and near the project site.

This site falls under the municipal land use bylaw of the RM of Swift Current and is zoned Agricultural and Resource District.

The land parcel is currently zoned by the RM of Swift Current No. 137 as Agricultural and Resource District as specified by the Swift Current Zoning Bylaw (RM No. 137 2010). The purpose of the Agricultural District is to accommodate agricultural and agriculture-related development and subdivisions. Public utilities, including electricity generation, are permitted principle uses in the Agricultural and Resource District (RM No. 137 2010); therefore, there is no conflict with the current zoning and the development of the Project.

There are no provincial land use or resource management plans applicable to the Project area.

The Saskatchewan Representative Areas Network designates ecologically important land and water areas within Saskatchewan. Three areas have been identified within the Saskatchewan Representative Areas Network near the Project. The Gray Archaeological site is located approximately 3.5 km east of the Project footprint (Figure 3.1-2). The Swift Current – Webb Community Pasture is located approximately 4.4 km west of the Project footprint (Figure 3.1-2). Two Wildlife Habitat Protection areas are located approximately 8 km and 10 km northeast of the Project.

As described further in Section 5, the Project is not anticipated to have adverse effects on wildlife, surface hydrology, surface water quality, or fish and fish habitat. Existing wildlife or public use of these identified areas will be unchanged due to the development of the Project. Accordingly, the Project will not adversely affect any of these representative areas.

- d. For the proposed construction, operation, decommissioning and abandonment of a marine terminal, state whether or not the lands are routinely, and have been historically, used as a marine terminal, or are designated for such use in a land use plan that has been the subject of public consultation.

The Project will not involve the construction, decommissioning, or abandonment of a marine terminal.

- e. If the project is to take place within the waters or lands administered by a Canada Port Authority under the Canada Marine Act and its regulations, describe applicable land status and zoning under the Port Land Use Plan.

The Project will not take place within waters or lands administered by a Canada Port Authority under the *Canada Marine Act* and its regulations.

- f. Describe whether the designated project is going to require access to, use or occupation of, or the exploration, development and production of lands and resources currently used for traditional purposes by Aboriginal peoples.

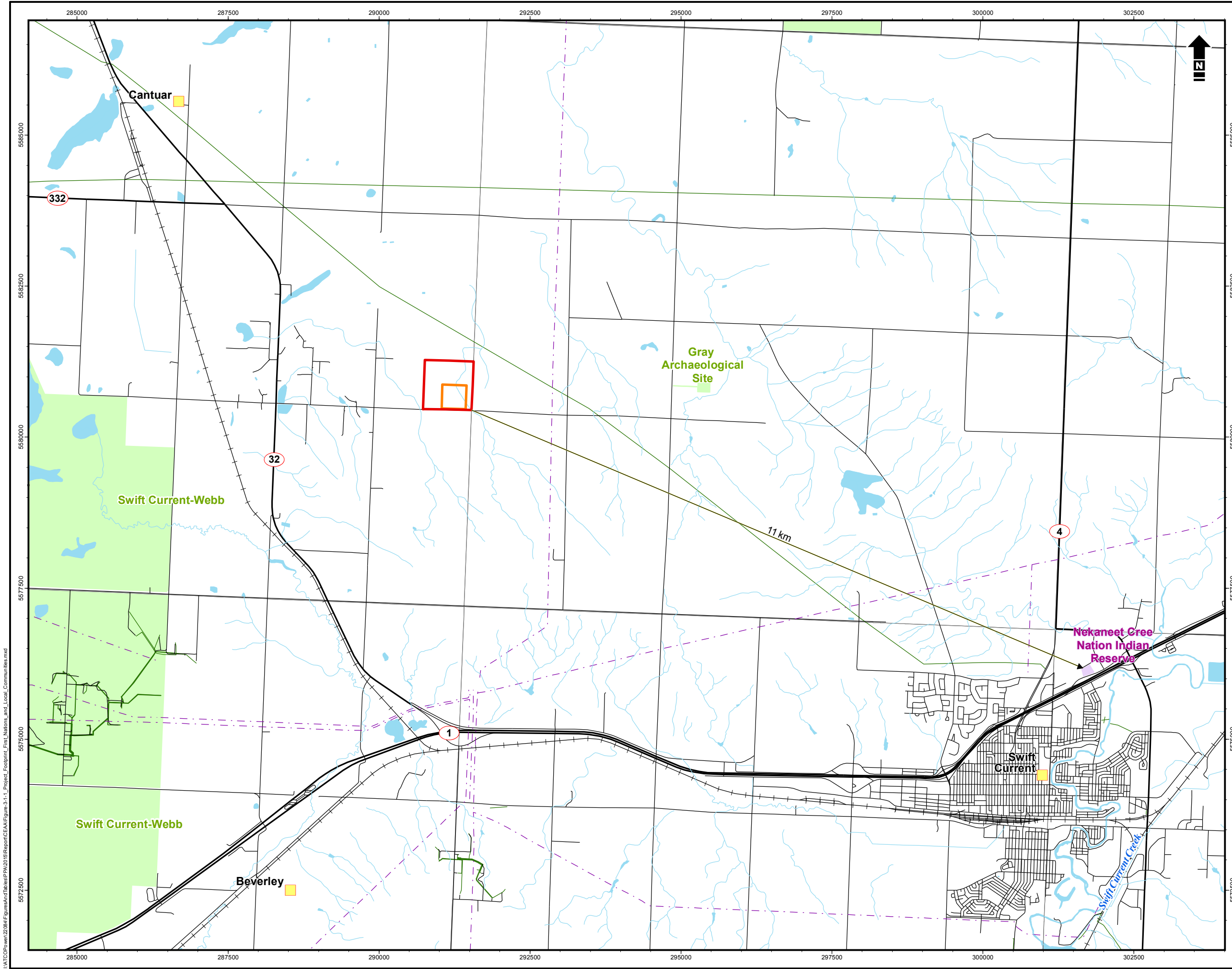
The Project will not require access to, use of, or the exploration, development, and production of resources or lands currently used for traditional purposes by Aboriginal peoples. The Project site has been privately owned since 1951 and no current traditional usage of the land by Aboriginal peoples has been noted. The land use before 1951 is unknown.

A heritage sensitivity search was completed on October 15, 2015, using the Saskatchewan Parks, Culture, and Sport website (Government of Saskatchewan 2012a). The Project quarter section is deemed not heritage sensitive. The Saskatchewan Register of Heritage Property identifies any heritage properties that have been officially designated under *The Heritage Property Act*. These sites can include archaeological objects, paleontological objects, and any property of interest for its architectural, historical, cultural, environmental, archaeological, paleontological, aesthetic or scientific value (Government of Saskatchewan 2012b). The heritage screening tool accesses a database of quarter-sections that have been reviewed for heritage-sensitivity. The screening tool serves to provide immediate clearance for developers as well as a planning tool to identify heritage sensitive areas in advance (Government of Saskatchewan 2012a).

ATCO Power has searched publicly available information and no traditional use specific to the Project area has been identified; however, ATCO Power recognizes that this does not mean that there has been no traditional use of the land in the past. No asserted traditional territory boundaries or settlement lands have been identified near the Project. The closest documented traditional use is noted in the Great Sand Hills region (Peters et. al. 2006), which is located approximately 70 km west of the Project. The Great Sand Hills is a significant topographical and physiological landmark within the area and was used for First Nations in terms of medicines, culture and spiritual practices. There is considerable archaeological evidence of use by historical peoples in the Great Sand Hills (Peters et. al. 2006).

ATCO Power understands the uncertainty around identifying traditional and historical use and will continue to consult with identified Aboriginal groups if they are the successful bidder for the Project. If further information regarding regional traditional land uses becomes available, ATCO Power will

incorporate this information and identified mitigation measures into subsequent assessment and permitting for the Project.



- Project Footprint
- Project Site
- Community
- Indian Reserve
- Park, Protected or Natural Area
- GeoBase Mapped Location of Water Body
- GeoBase Mapped Location of Seasonal Water Drainage/Watercourse
- Railway
- Highway
- Road
- Powerline
- Pipeline

Reference: Data obtained from GeoBase® and GeoGratis® Department of Natural Resources Canada (all rights reserved) used under license. GDM midstream and transportation infrastructure data provided by IHS © 2015 used under license.

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NAD 1983 UTM Zone 13N



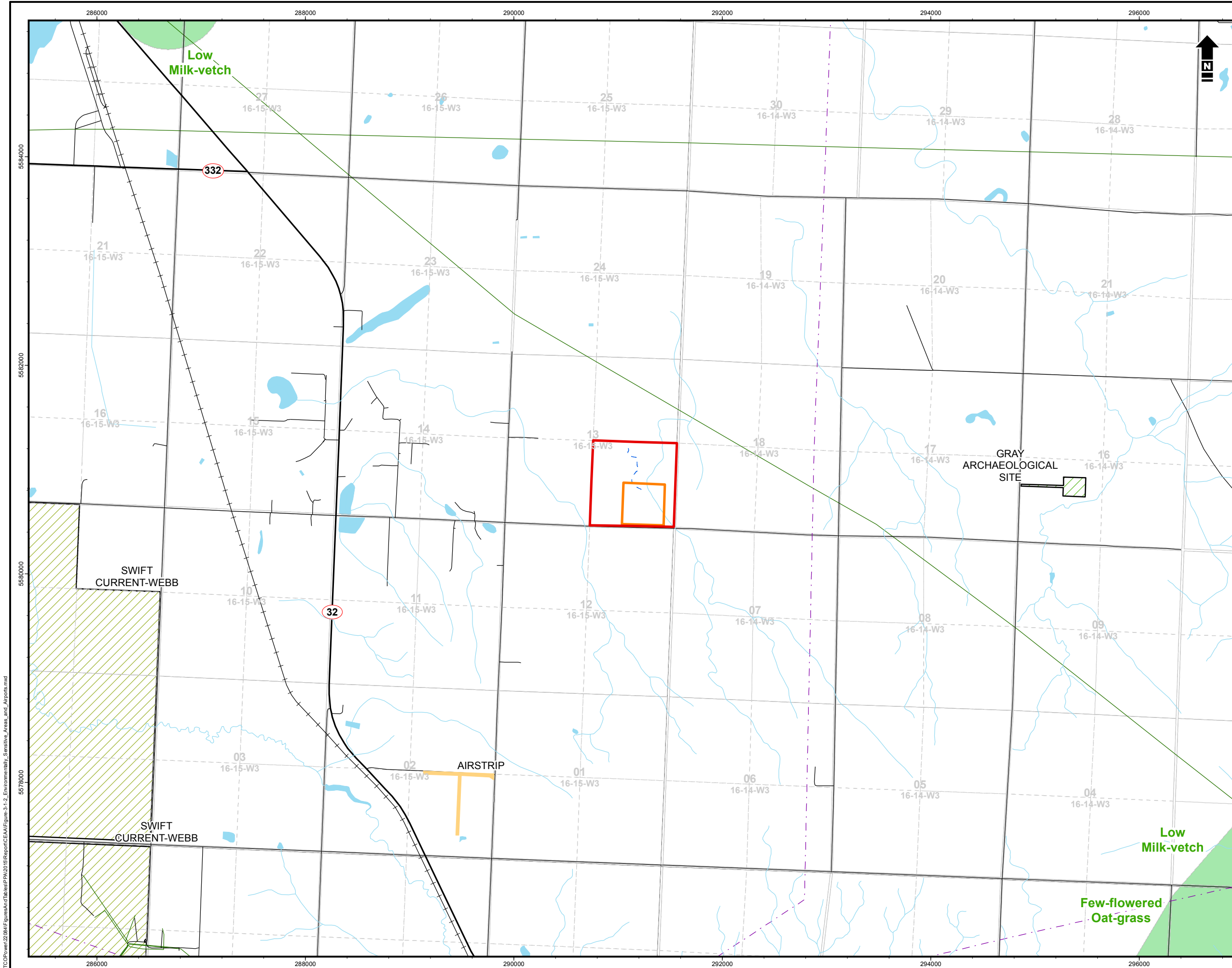
Great Plains Generating Station

Project Footprint, First Nations and Local Communities

Date: 11 Feb 2016	Project: 22084	
Technical: N. Huq	Reviewer: B. Fuchs	Drawn: J. Sturk

Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to other parties with which ATCO Power has not entered into contract.

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- Project Footprint
- Project Site
- Airstrip
- AESB Community Pasture
- Protected Area
- GeoBase Mapped Location of Water Body
- GeoBase Mapped Location of Seasonal Water Drainage/Watercourse
- Observed Location of Seasonal Water Drainage
- Railway
- Highway
- Road
- Powerline
- Pipeline
- Rare and Endangered Species**
- Plant

Reference: Data obtained from GeoBase®, GeoGratis © Department of Natural Resources Canada (all rights reserved) and © Saskatchewan Conservation Data Centre used under license. GDM midstream and transportation infrastructure data provided by IHS © 2015 used under license.

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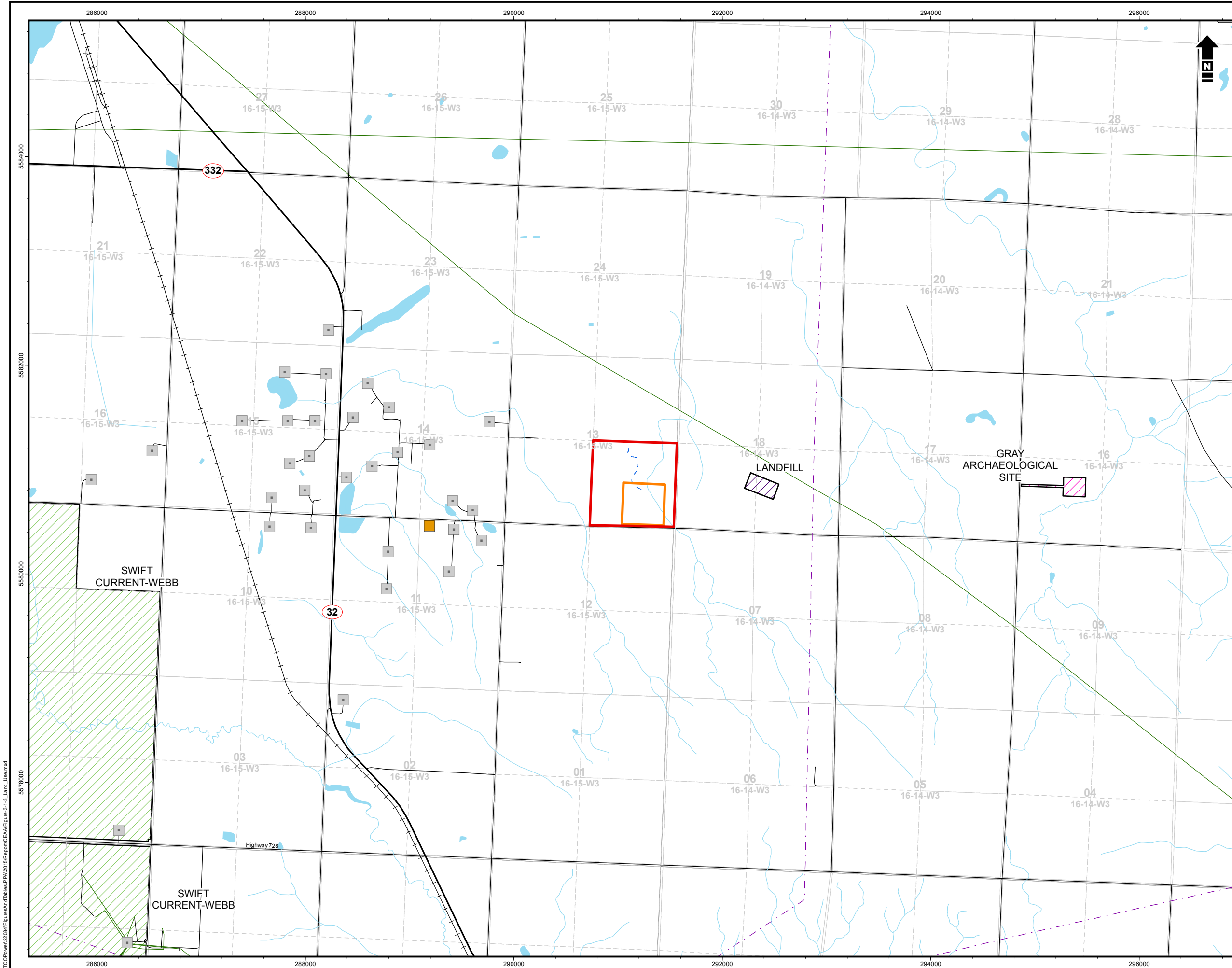


Great Plains Generating Station

Environmentally Sensitive Areas and Airports

Date: 11 Feb 2016 Project: 22084
 Technical: N. Huq Reviewer: B. Fuchs Drawn: M. Wilkinson

Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to other parties with which ATCO Power has not entered into contract.



- Project Footprint
- Project Site
- AESB Community Pasture
- Protected Area
- Landfill
- GeoBase Mapped Location of Water Body
- GeoBase Mapped Location of Seasonal Water Drainage/Watercourse
- Observed Location of Seasonal Water Drainage
- Railway
- Highway
- Road
- Powerline
- Pipeline
- Facility/Well
- Nearest Residence

Reference: Data obtained from GeoBase® and GeoGratis © Department of Natural Resources Canada (all rights reserved) used under license. GDM midstream and transportation infrastructure data provided by IHS © 2015 used under license. IHS well data provided by IHS © 2015 used under license.

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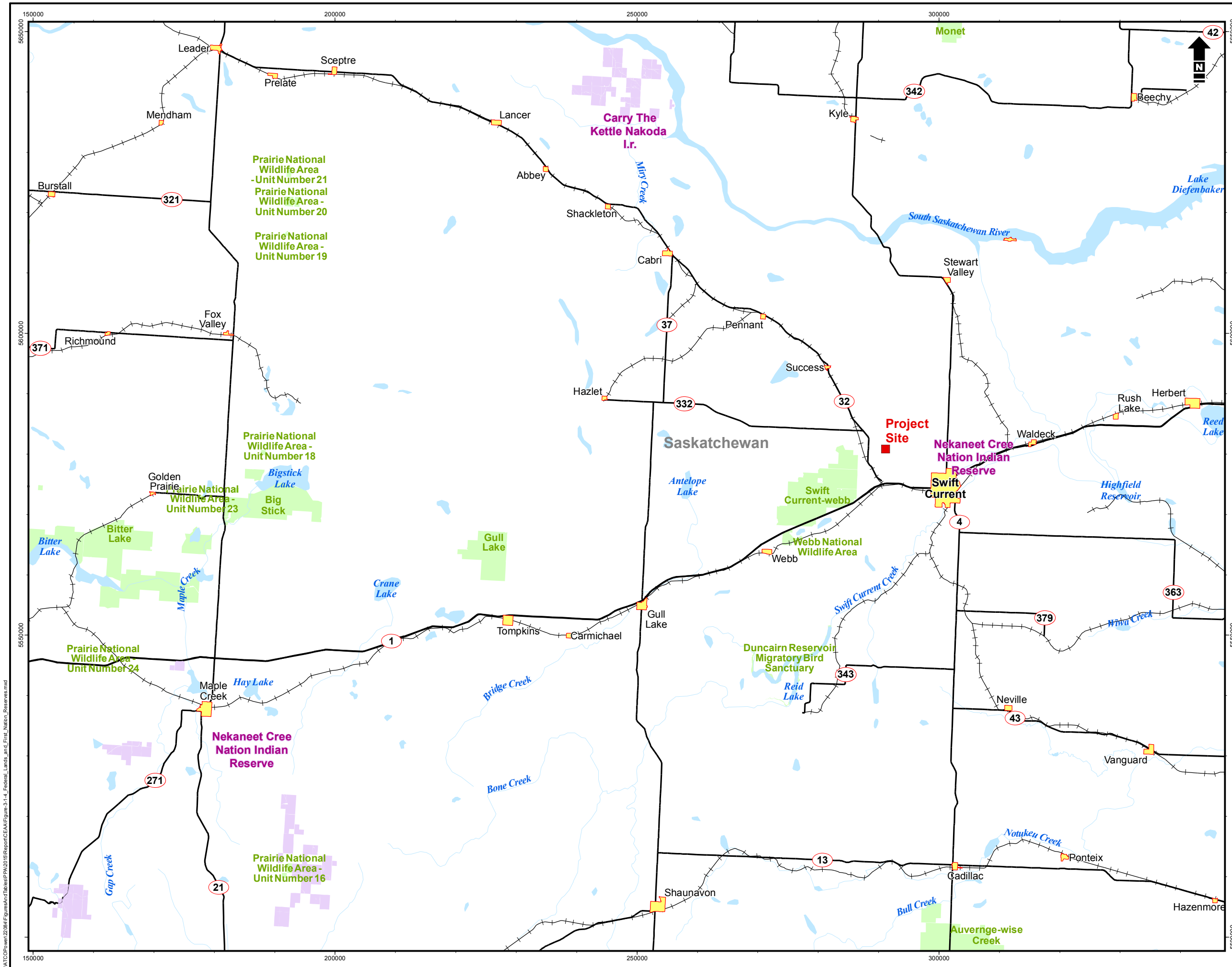
Great Plains Generating Station

Land Use

Date: 11 Feb 2016		Project: 22084
Technical: N. Huq	Reviewer: B. Fuchs	Drawn: M. Wilkinson

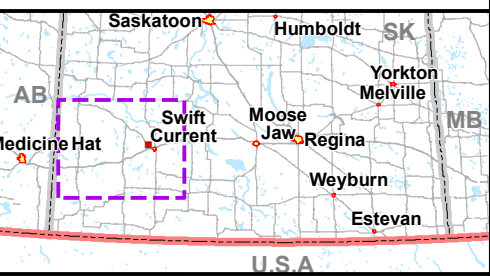
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- Project Site
- Community
- Indian Reserve
- National Park, Protected or Natural Area
- Provincial Boundary
- Federal Boundary
- GeoGratis Mapped Location of Water Body
- GeoGratis Mapped Location of Seasonal Water Drainage/Watercourse
- Railway
- Highway

Distance from Proposed Development Area	
Swift Current-Webb	4.7 km
Nekaneet Cree (Swift Current)	110 km
Carry The Kettle Nakoda Reserve	65.8 km
Nekaneet Cree Reserve	112.6 km
Alberta Border	147.0 km
U.S.A. Border	148.9 km
Wood Mountain Reserve	151.8 km
Little Pine Reserve	156.9 km
Cowessess Reserve	157.6 km
Whitecap Reserve	186.6 km
Poundmaker Reserve	194.0 km
Manitoba Border	456.5 km



Reference: Data obtained from GeoGratis © Department of Natural Resources Canada (all rights reserved) and Saskatchewan Ministry of Environment used under license. GDM transportation infrastructure data provided by IHS © 2015 used under license.
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 Kilometres
 NAD 1983 UTM Zone 13N



Great Plains Generating Station

Federal Lands and First Nation Reserves

Date: 11 Feb 2016 Project: 22084
 Technical: N. Huq Reviewer: L. Wright Drawn: M. Wilkinson

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Great Plains Generating Station

**Site Photograph – Class II Wetland Within
Western Portion of Project Footprint, Facing
North**

Date:	Jan 2016	Project:	ATCO Power	Technical:	GP	Reviewer:	AB	Drawn:	GP
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Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to the other parties with which ATCO Power has not entered into contract.

Figure
3.1-5



Great Plains Generating Station

**Site Photograph – Seasonal Drainage Channel
at Northern Edge of Project Footprint, Facing
North**

Date:	Jan 2016	Project:	ATCO Power	Technical:	GP	Reviewer:	AB	Drawn:	GP
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Figure
3.1-6



Great Plains Generating Station

Site Photograph – Mouth of Seasonal Waterway at Northern Edge of Project Footprint, Facing West

Date:	Project:	Technical:	Reviewer:	Drawn:
Jan 2016	ATCO Power	GP	AB	GP

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Figure
3.1-7

4.0 Federal Involvement

4.1 Federal Financial Support

Describe if there is any proposed or anticipated federal financial support that federal authorities are, or may be, providing to the designated project.

The Project does not include any proposed or anticipated federal financial support.

4.2 Federal Lands

Describe any federal lands that may be used for the purpose of carrying out the designated project. This is to include any information on any granting of interest in federal land (i.e., easement, right of way, or transfer of ownership).

The Project will not require the granting of any interest in federal land, including reserve land.

4.2.1 Federal Legislative or Regulatory Requirements

Detail any federal legislative or regulatory requirements that may be applicable, including a list of permits, licenses or other authorizations that may be required to carry out the designated project.

The Project will include two exhaust stacks approximately 35 to 50 m in height. As such, ATCO Power will submit an Assessment Request for Obstruction Marking and Lighting to Transport Canada, and a Land Use Application to NAV CANADA. The exhaust stacks will be the tallest obstruction on the Project site and will not exceed any of the criteria constituting an obstacle to navigation listed in Canadian Aviation Regulations 2012-1 *Division III – Marking and Lighting of Obstacles to Air Navigation, Section 601.23*.

There are no other federal permits, licences, or other authorizations required to carry out the Project.

5.0 Environmental Effects

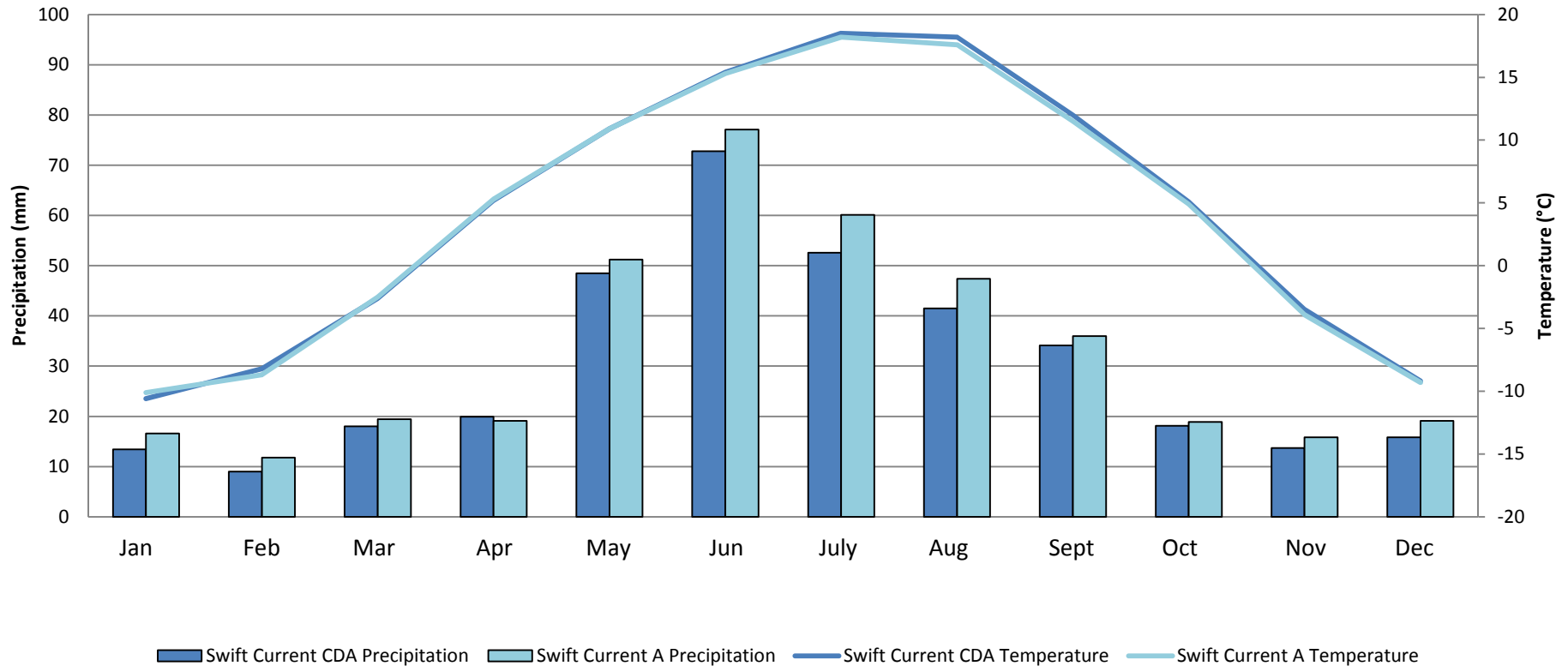
5.1 Physical and Biological Components that may be Adversely Affected by the Project

1. A description of the physical and biological setting, including the physical and biological components in the area that may be adversely affected by the project (e.g., air, fish, terrain, vegetation, water, wildlife, including migratory birds, and known habitat use).

5.1.1 Climate

Two climate stations: Swift Current CDA (ID: 4028060, 825 m above sea level [asl]) and Swift Current A (ID: 4028040, 817 m asl), are located 20 km from the Project site and are the closest Environment Canada climate stations with long-term climate normals. Climate normals are based on a 30 year historical record from 1981 to 2010. Both climate stations provide similar monthly average temperatures and precipitation as outlined on Figure 5.1-1. The Swift Current CDA station is considered the best representation of climatic conditions in the area as it meets the United Nation's World Meteorological Organization standards.

Average monthly temperatures are highest in July (18.5°C) and lowest in January (-10.6°C). The average annual temperature at Swift Current is 4.3°C. Average monthly temperatures are generally above zero between April and October, indicating the general transitions between the snowfall and snow melt period. Precipitation is highest between May and September, with the highest precipitation occurring in June (73 mm). The lowest precipitation occurs in January (13.4 mm) and February (9.0 mm).



**1981-2010 Average Monthly Climate Normals
Swift Current CDA and A Stations**



Great Plains Generating Station

**Average Monthly Climate Normals for
Precipitation and Temperature at Swift Current**

Date: Jan 2016	Project: ATCO Power	Technical: GP	Reviewer: AB	Drawn: GP
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Figure 5.1-1

5.1.2 Soils and Terrain

5.1.2.1 Baseline

The terrain within the Project site has low relief and a level to undulating surface with slopes ranging from 0.5% to 5%, with approximately 6 m of elevation drop from south to north across the land parcel. The Project site is on a Birsay Hatton soil map unit (Figure 5.1-2). Birsay Hatton soils are brown soils formed on a mixture of mainly loamy lacustrine (Birsay) soils, with sandy fluvial (Hatton) soils on the upper slopes. Birsay soils are medium-textured, fine sandy loam to very fine sandy loam surface textures, while Hatton soils are moderately-coarse, sandy loam to loamy sand surface textures.

The agricultural capabilities are listed as 80% class 4 soil with a severe limitation of insufficient water-holding capacity, and 20% class 5 soil with very severe limitations, including natural soil salinity and wind erosion risk. Within the class 5 soil, 10% to 20% of the area is weakly saline (electrical conductivity of 2 to 4 mS/cm) from 0 to 60 cm below ground surface (bgs), restricting yields of crops very sensitive to salinity. Saline soils occur throughout the bottoms of depressions and sloughs. Salinity may extend out from the slough or depression, but is generally most pronounced in the low-lying areas of the landscape (SSS 1990).

5.1.2.2 Potential Project Effects

Wind erosion risk is high for the majority of the soils within the Project site. Average growing conditions will not provide sufficient trash cover to protect these soils against wind erosion. Historical wind erosion has resulted in soil loss and thinner A horizons. There is very little mixing of the A and B horizons and minimal evidence of soil accumulation on mid and lower slopes. Physical loss of topsoil has lowered the capability of the land through a reduction in the amount of available nutrients and organic matter in the rootzone. Reduced agricultural capability is directly related to the proportion of soil lost, and is greatest where topsoil is less than 15 cm thick and remains highly erodible. Water erosion risk at the Project site is rated as low (SSS 1990). Although the specific routing of the raw water and wastewater disposal pipelines has not yet been determined, ATCO Power will construct these pipelines as described in Section 2.5.2. Pre-disturbance soil assessments will be completed along the selected pipeline RoWs before construction to determine appropriate soil salvage and handling requirements and to identify potentially sensitive soils.

The capability of soil to support plant growth may be affected by soil salvage, stockpiling, and replacement in the following ways:

- **Soil compaction:** generally, coarse-textured soils (e.g., sandy loam, loamy sand) have low compaction sensitivity, and medium- to fine-textured soils (e.g., loam, silty loam, clay loam, clay) have high compaction sensitivity when moist. The soils within the Project site have a low sensitivity to compaction under dry conditions, but are sensitive when moist.
- **Admixing of saline soil horizons with non-saline soil:** soils with elevated amounts of water soluble salts inhibit the uptake of moisture by plants. This inhibition of water uptake results in moisture stress and reduced plant growth.

- **Soil degradation through wind erosion:** wind erosion and topsoil loss reduces organic matter and plant nutrients in soil. Wind erosion also results in increased dust and potential complaints from the public.

5.1.2.3 Mitigation Measures

ATCO Power will implement the following measures to mitigate potential adverse environmental effects on soils in accordance with provincial regulatory requirements concerning conservation and reclamation:

Soil handling:

- avoid using topsoil for grading purposes and store topsoil in windrows for reclamation
- use three lift soil handling in saline/wetland or stony areas; strip topsoil, upper, and lower subsoil materials separately according to Pettapiece and Dell (1996)
- salvage and handle soil under dry or frozen conditions whenever possible; restrict traffic to these conditions in areas where topsoil will not be stripped
- store salvaged soil onsite and out of the way of surface water flow and operational activities

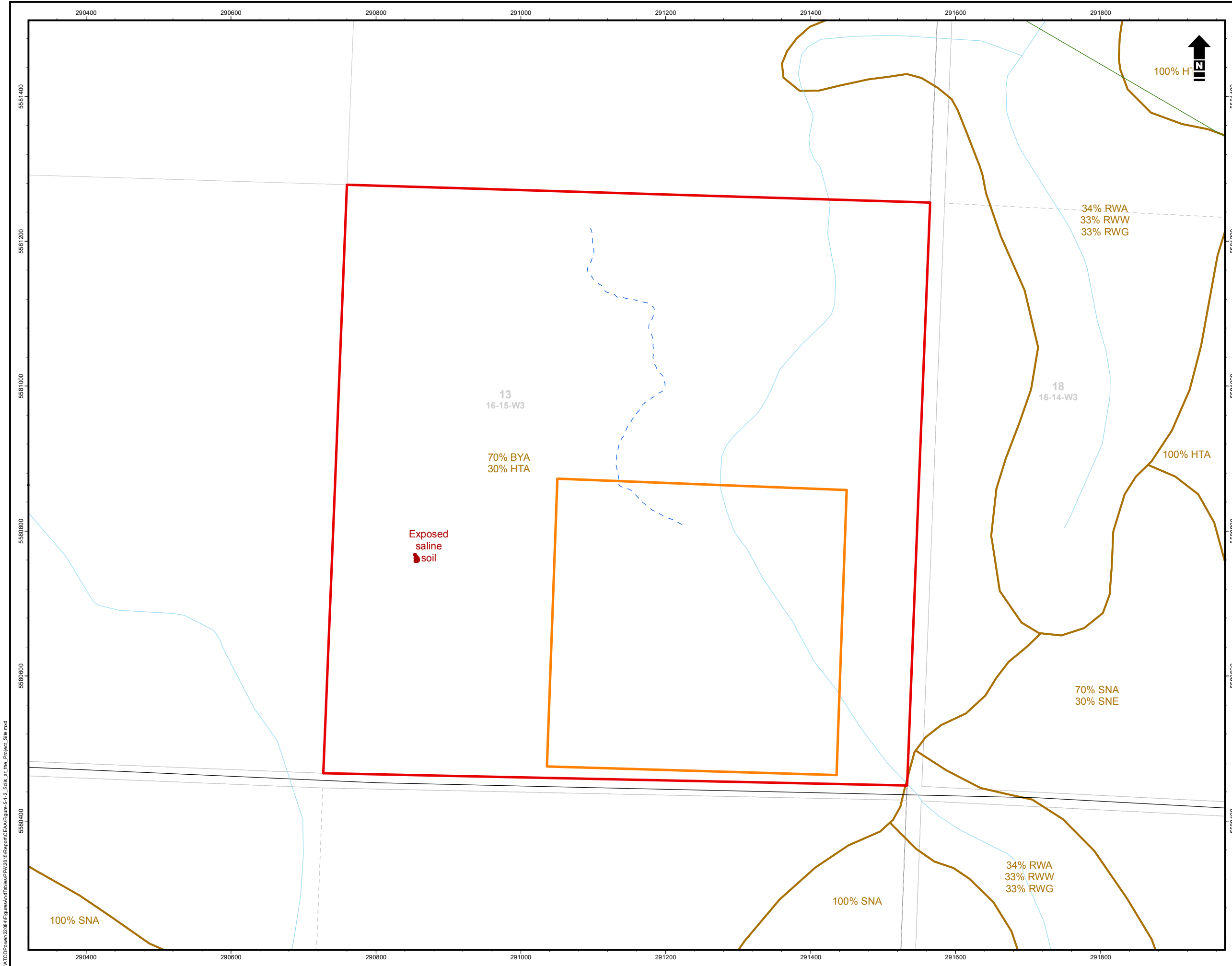
Soil compaction:

- avoid driving on stockpiled topsoil
- avoid construction during non-frozen conditions
- replace salvaged trench material and topsoil along the pipeline RoWs immediately following pipeline installation

Soil erosion:

- store topsoil in areas not susceptible to water erosion
- use soil tackifier where soils are susceptible to wind erosion
- seed stockpiles with salt-tolerant grasses to provide long-term protection against wind erosion
- monitor stockpiled soil for sufficient vegetation cover and signs of erosion
- install silt fences at the base of steep slopes where potential for heavy runoff exists to prevent offsite siltation
- re-seed all disturbed areas as soon as possible to prevent further soil loss
- minimize construction or reclamation activities during high winds or high precipitation events

Before construction begins, ATCO Power will complete a pre-disturbance assessment to confirm the thicknesses of topsoil and subsoil horizons. During construction, ATCO Power will monitor soil handling activities and ensure the above mitigation measures are successfully deployed. Once operations commence, and to the extent possible, portions of the Project footprint that are no longer required for operations will be restored using the stored soil materials. When the Project is decommissioned at the end of its operational life and depending on plans for subsequent land use, soils that were within areas of the facility footprint can be restored to an equivalent land capability using the stored topsoil and subsoil. As a result, the potential adverse environmental effects on soils will be localized to the Project site and limited to the duration of the Project.



- ▭ Project Footprint
 - ▭ Project Site
 - ⬭ Soil Map Unit
 - ⬭ Exposed Saline Soil
 - GeoBase Mapped Location of Seasonal Water Drainage
 - - - Observed Location of Seasonal Water Drainage
 - Road
 - Pipeline
- Soil Names**
- BYA** BIRSAY O.BC
 - HTA** HATTON O.BC
 - RWA** RUNWAY CHERNOZEMIC
 - RWG** RUNWAY GLEYSOLIC
 - RWW** RUNWAY REGOSOLIC
 - SNA** SWINTON E.BC
 - SNE** SWINTON O.BC

Reference: Data obtained from GeoBase® and Agriculture and Agri-Food Canada used under license. GDM midstream and transportation infrastructure data provided by IHS © 2015 used under license.

1:5,000

100 0 100
Metres

NAD 1983 UTM Zone 13N



Great Plains Generating Station

Soils at the Project Site

Date: 11 Feb 2016	Project: 22084
Technical: N. Huq	Reviewer: B. Fuchs
	Drawn: J. Sturk

Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to other parties with which ATCO Power has not entered into contract.

5.1.3 *Vegetation and Wetlands*

5.1.3.1 Baseline

The Project is situated in the mixed grassland ecoregion of Saskatchewan. Vegetation surveys, listed plant surveys, and a wetlands inventory and classification were conducted within the Project site on October 23, 2015, to evaluate site-specific vegetation conditions. Although the field survey was completed outside of the core growing season, the nature of the vegetation observed during the site visit is typically unaffected by seasonal variation. The surrounding landscape is dominated by cultivated cropland. The current vegetation make-up of the Project site is primarily tame grasses and foxtail barley, which is a species tolerant of soil salinity. One ephemeral wetland and one seasonal waterway are present at the Project site and overlap the proposed facility footprint. A second ephemeral wetland is currently present adjacent to the facility footprint. Canada thistle, a noxious weed species, was observed throughout the Project site.

The ephemeral wetland that overlaps the proposed facility footprint was assessed on October 23, 2015, and determined to be a Class II wetland (Stewart and Kantrud 1971). This wetland is dominated by sedges and thistles. It appears that the wetland holds water briefly in the spring and during heavy rain events that generate runoff, but based on a review of historical aerial imagery it is dry the majority of normal years. The wetland is currently not cultivated. This Class II wetland will be drained and graded during construction.

A seasonal waterway was observed that meanders north-northwest from the southeast corner of the Project site. The GeoBase National Hydro Network dataset shows this watercourse slightly east of the observed location, as presented on Figure 5.1-3. The seasonal waterway is currently cultivated and appears to have been modified by a landowner to enhance natural drainage. This waterway will be filled and graded during construction.

A second Class II wetland (Stewart and Kantrud 1971) is located 60 m west of the facility footprint and is associated with a dugout. This wetland will not be disturbed by Project construction and operations.

A search of federally and provincially listed plant species of concern through the Saskatchewan Data Conservation Centre (see search results in Appendix B) did not identify any species within 2 km of the Project site. Additionally, no federally or provincially listed plant species were observed during the October 2015 vegetation survey. The Project will not result in adverse environmental effects to listed plant species, because of their absence at the Project site.

The Project is not located on Crown land or in one of the Sensitive Geographic Areas listed in the *Environmental Review Guidelines for Oil and Gas Activities* (Saskatchewan ENV 2015). Consequently the Checklist for Development Projects on Private Land, which is provided in Appendix B of that document, was used to guide mitigation recommendations.

5.1.3.2 Potential Project Effects

Canada thistle, a noxious weed species, was observed throughout the Project site. Construction of the Project may increase the potential for this or other weed species to propagate throughout the Project site.

The Project will directly impact a Class II wetland (Stewart and Kantrud 1971) located within the Project footprint (Figure 5.1-3). The 1.35 ha wetland will be impacted by construction of the Project and will result in habitat loss for the duration of the Project life. Because the wetland is Class II and holds water for only a brief time annually, no adverse impacts are expected to the natural hydrology of the landscape.

The Project will also impact a seasonal waterway (Figure 5.1-3). This waterway is currently modified by agricultural practices and provides little wildlife habitat. There is seasonal flow through the waterway, so there is a risk that natural flow of water could be impacted by construction. Mitigation (berms and ditches) will be put in place to maintain seasonal water flows around the Project footprint.

Although the specific routing of the raw water and wastewater disposal pipelines has not yet been determined, ATCO Power will construct these pipelines as described in Section 2.5.2. Pre-disturbance vegetation assessments will be completed along the selected pipeline RoWs before construction to evaluate the potential for rare or sensitive plant species along the RoWs.

5.1.3.3 Mitigation Measures

To limit the potential for further introduction of weeds and to ensure compliance with the Saskatchewan *Weed Control Act*, construction equipment will enter the construction area in a clean condition, free of soil, vegetation, and seeds. Following construction of the facilities, areas not containing permanent facilities or access roads will be reclaimed. Only certified weed-free seed mixes will be used onsite, selected in consultation with the RM of Swift Current No. 137 and Saskatchewan ENV. With the implementation of these mitigation measures, the Project is not expected to introduce or spread noxious weed species.

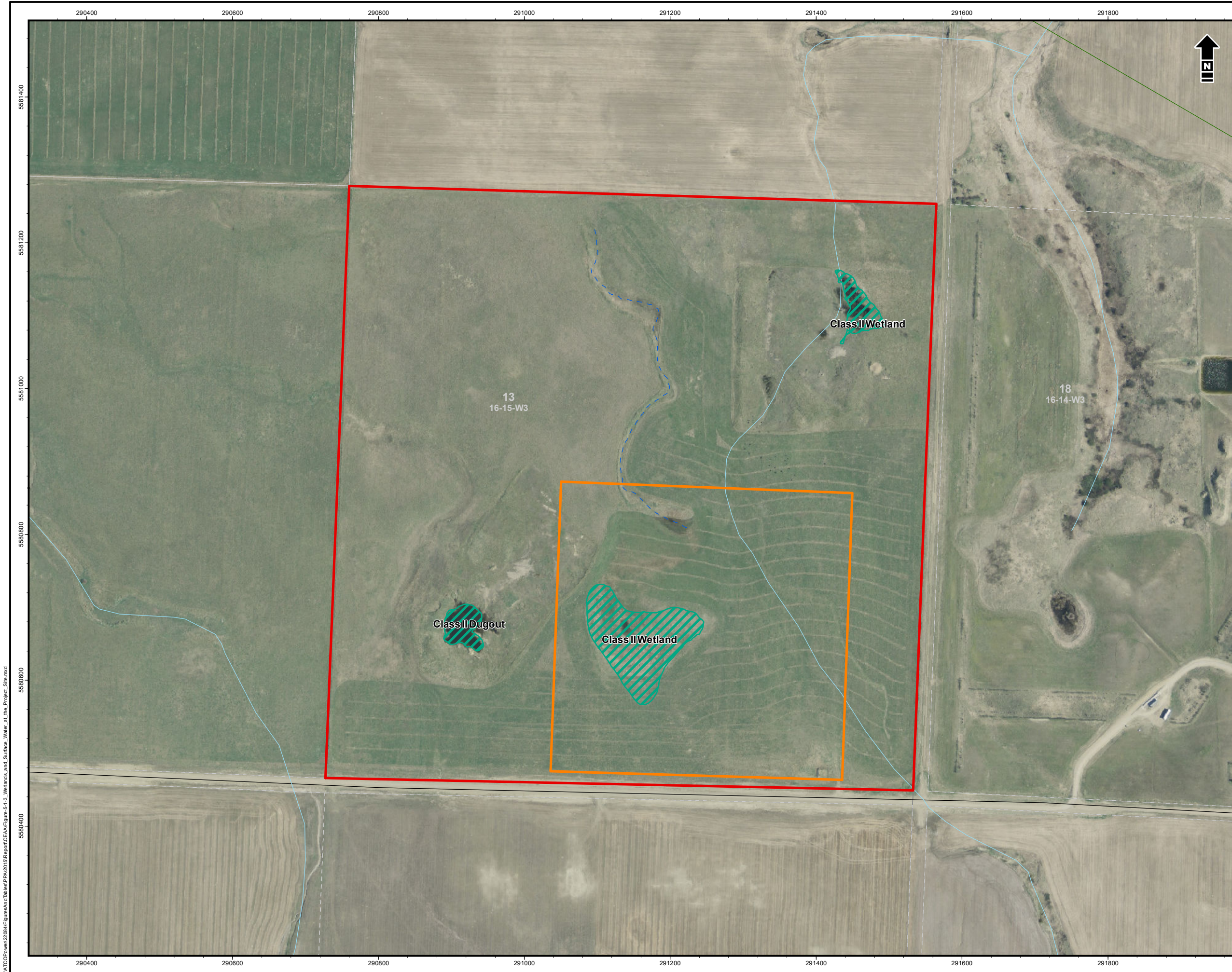
ATCO Power will obtain an AHPP from the Saskatchewan WSA before construction in the area of the Class II wetland that is within the facility footprint. The AHPP will include guidance regarding dewatering (if required), compensation (if required), and mitigation measures to be employed during construction. Construction will be done in accordance with the conditions in the AHPP. If practical, construction will occur under dry or frozen conditions.

ATCO Power will obtain a second AHPP from Saskatchewan WSA for the modification of the seasonal waterway (Figure 5.1-3). The drainage ditch and/or berm will be constructed to ensure that the natural seasonal flow of water is retained while avoiding the Project site. Silt fences may also be used if deemed necessary at the time of construction to mitigate soil erosion.

As described in Section 5.1.2.3, ATCO Power will complete a pre-disturbance assessment before construction begins, which will include an evaluation of seasonal changes in vegetation cover and the identification of additional mitigation measures (as required).

Along the pipeline RoWs, ATCO Power will seed replaced topsoil following installation to control erosion. If wetland watercourse crossings are identified along the pipeline RoWs, ATCO Power will work with the Saskatchewan WSA to obtain additional AHPPs (as required).

With the proposed mitigation measures, the potential adverse environmental effects on vegetation and wetlands will be localized to the Project site and limited to the duration of the Project.



- ▭ Project Footprint
- ▭ Project Site
- ▨ Wetland
- GeoBase Mapped Location of Seasonal Water Drainage
- - - Observed Location of Seasonal Water Drainage
- Road
- Pipeline



I:\ATCO\Power\22084\Figures\GIS\Wetlands\PA\2015\Report\CEAA\Figures-5.1-3_Wetlands_and_Surface_Water_at_the_Project_Site.mxd

Reference: Data obtained from GeoBase® used under license. GDM midstream and transportation infrastructure data provided by IHS © 2015 used under license. Imagery (2011) obtained from Valtus © (2015) used under license.
 1:5,000
 100 0 100
 Metres
 NAD 1983 UTM Zone 13N



Great Plains Generating Station

Wetlands and Surface Water at the Project Site

Date: 11 Feb 2016	Project: 22084
Technical: N. Huq	Reviewer: B. Fuchs
	Drawn: J. Sturk

Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to other parties with which ATCO Power has not entered into contract.

5.1.4 Wildlife and Wildlife Habitat

5.1.4.1 Baseline

The Project site is located in the mixed grassland ecoregion of Saskatchewan. This ecoregion provides a diverse range of habitats for birds, deer, coyote, fox, hare, and squirrels, among other species, and is a part of the North American waterfowl migration flyway (Acton et al. 1998). No provincially recognized wildlife protection zones overlap with the Project site. A field survey was conducted on October 23, 2015, by foot within the Project site. The objectives of the field survey scope were to record evidence of habitat for migratory birds, raptors, and other provincially or federally mandated amphibians, birds, or mammals within the Project site, and to determine if setbacks on important areas or timing restrictions would be recommended for regulatory compliance. The surrounding landscape is dominated by cultivated cropland. The current vegetation make-up of the Project site is primarily tame grasses and foxtail barley, which is a species tolerant of soil salinity. Species habitat and ranges were identified from the Saskatchewan Conservation Data Centre (SKCDC; SKCDC 2015), the Committee on the Status of Endangered Wildlife in Canada (COSEWIC; COSEWIC 2015), Acton et al. (1998), and Sibley (2003). The status of wildlife has been ranked federally by COSEWIC (COSEWIC 2015) and the *Species at Risk Act* (SARA; Government of Canada 2016), and provincially by the SKCDC.

At the federal level, Species at Risk (SAR) are designated as Endangered, Threatened, and of Special Concern. At the provincial level, the SKCDC assigns a conservation rank to each taxon, resident or transient found in the province (SKCDC 2015). A higher S-rank (e.g., S5) indicates that a species is more common, more stable, and less threatened than a species with a lower S-rank (e.g., S1). Therefore, a species with a lower rank indicates that the species is rarer, declining, facing a high threat level, or a combination of these factors. A range rank (e.g., S3S4) is used when the species overlaps the criteria of more than one rank (e.g., S3 and S4). The conservation rank may include modifiers that provide additional information (Table 5.1-1). Conservation activities are focussed on taxa that have a ranking of S1, S2, and S3, and avoidance or mitigation is often required for these taxa during development of projects (SKCDC 2015). For the purposes of this assessment, species with a ranking of S1, S2, and S3 were considered as SAR.

Table 5.1-1 Modifiers Used for Saskatchewan Conservation Data Centre Ranking

Rank	Description
A	accidental or causal in the province, including species recorded infrequently that are far outside their range (birds and butterflies)
B	for a migratory species, applies to the breeding population in the province
N	for a migratory species, applies to the non-breeding population in the province
M	for a migratory species, rank applies to the transient (migrant) population
H	historical occurrence of the taxon, without recent verification (e.g., 20 to 40 years or older)
U	status is uncertain in Saskatchewan because of limited or conflicting information (unrankable)
X	believed to be extinct or extirpated from the province
NR	rank is not yet assigned or species has not yet been assessed (not ranked)
NA	conservation status is not applicable to the species (e.g., it may have been determined to have been introduced in Saskatchewan)

Source: SKCDC 2015

The background review indicated that approximately 103 wildlife species potentially occur in the region, including 3 amphibians, 2 reptiles, 89 birds, and 9 mammals. SAR that have ranges overlapping the Project site and that are listed provincially or federally are included in Table 5.1-2. Migratory birds that may be present near the Project are provided in Appendix B2.

Table 5.1-2 Species at Risk Potentially Occurring in the Vicinity of the Project, Including Provincial and Federal Status

Common Name	Scientific Name	Status		
		COSEWIC ¹	SARA ²	SKCDC ³
Amphibians and Reptiles				
Northern leopard frog	<i>Lithobates pipiens</i>	Special Concern	Schedule 1	S3
Red-bellied snake	<i>Storeria occipitomaculata</i>	-	-	S3
Birds				
Greater sage-grouse	<i>Centrocercus urophasianus</i>	Endangered	Schedule 1	S1B, S1N
Ferruginous hawk	<i>Buteo regalis</i>	Threatened	Schedule 1	S4B, S4M
Golden eagle	<i>Aquila chrysaetos</i>	-	-	S3B, S4M, S3N
Turkey vulture	<i>Cathartes aura</i>	-	-	S2B, S2M, S2N
Yellow rail	<i>Coturnicops noveboracensis</i>	Special Concern	Schedule 1	S3B, S2M
Piping plover	<i>Charadrius circumcinctus</i>	Endangered	Schedule 1	S3B
Long-billed curlew	<i>Numenius americanus</i>	Special Concern	Schedule 1	S3B, S4M
Horned grebe	<i>Podiceps auritus</i>	Special Concern	No schedule	SFB
Western grebe	<i>Aechmophorus occidentalis</i>	Special Concern	No schedule	S5B
American white pelican	<i>Pelecanus erythrorhynchos</i>	Not at Risk	-	S3B
Great blue heron	<i>Ardea herodias</i>	-	-	S3B
Sandhill crane	<i>Grus canadensis</i>	-	-	S2B, S4M
Burrowing owl	<i>Athene cunicularia</i>	Endangered	Schedule 1	S1
Short-eared owl	<i>Asio flammeus</i>	Special Concern	Schedule 1	S3B, S2N
Common nighthawk	<i>Chordeiles minor</i>	Threatened	Schedule 1	S4S5B, S4S5M
Loggerhead shrike	<i>Lanius ludovicianus excubitorides</i>	Threatened	Schedule 1	S3B
Barn swallow	<i>Hirundo rustica</i>	Threatened	No schedule	S5B, S5M
Bank swallow	<i>Riparia riparia</i>	Threatened	No schedule	S5B, S5M
Sprague's pipit	<i>Anthus spragueii</i>	Threatened	Schedule 1	S3B
Chestnut-collared longspur	<i>Calcarius ornatus</i>	Threatened	Schedule 1	S5B
McCown's longspur	<i>Rhynchophanes mccownii</i>	Special Concern	Schedule 1	S3S4B
Baird's sparrow	<i>Ammodramus bairdii</i>	Special Concern	No schedule	S4B
Rusty blackbird	<i>Euphagus carolinus</i>	Special Concern	Schedule 1	S3
Bobolink	<i>Dolichonyx oryzivorus</i>	Threatened	No schedule	S5B
Mammals				
Pronghorn	<i>Antilocapra americana</i>	-	-	S3
American badger	<i>Taxidea taxus taxus</i>	Special Concern	No schedule	No Status

Notes:

1. COSEWIC 2015
2. Government of Canada 2016
3. SKCDC 2015

No potential SAR or wildlife species sensitive to human disturbance have historically been observed within the Project site or a surrounding 2 km radius. A long-billed curlew observation was recorded approximately 3.7 km south of the Project site and a ferruginous hawk nest observation was recorded 4.9 km southeast of the Project site. A copy of the search results of the online SKCDC database is provided in Appendix B.

During the October 23, 2015 site visit, field personnel visually scanned the area, using binoculars, and looked for signs of wildlife (important habitat features such as dens and nests, and incidental wildlife observations).

No wildlife species were observed within the Project site. The lack of wildlife observations does not preclude the potential wildlife use of the site, as many wildlife species would typically migrate to their wintering grounds by late October. The evaluation of potential project effects below acknowledges that the Project site may still be used as habitat by some wildlife species, potentially including the SAR identified in Table 5.1-2.

5.1.4.2 Potential Project Effects

The Project has the potential to affect wildlife through habitat loss, habitat alteration and sensory disturbance, and reduced habitat effectiveness, fragmentation, and Project-related wildlife mortalities. Minimal impacts to wildlife are expected since the plant facility will be constructed primarily within tame pasture, and ATCO Power will implement mitigation measures to reduce or eliminate potential Project-related effects.

Direct habitat loss results from the physical clearing of vegetation and soils within the 16 ha Project footprint. Habitat alteration occurs where habitat is removed during construction and replaced through reclamation (primarily along the buried pipelines RoWs). The Project facility will be constructed primarily within tame pasture, although the Project footprint also overlaps a Class II wetland (1.35 ha) and a seasonal waterway that has been modified by agricultural practices. Class II wetlands typically only contain water for several weeks throughout the course of a year; as a result, the habitat value of this wetland is expected to be limited. The seasonal waterway provides little wildlife habitat (Section 5.1.2).

When evaluating the Project site in comparison to the potential habitat in the surrounding area (Appendix B), the Project site was not considered to contain unique habitat that could not be available elsewhere. The specific routing of the raw water and wastewater disposal pipelines has not yet been determined. Pre-construction assessments will be completed along the selected pipeline RoWs before construction to evaluate the potential for sensitive wildlife habitat along the RoWs. Pipeline routes will be adjusted to include appropriate wildlife setbacks (as required).

Habitat effectiveness may be reduced during construction and operation of the Project. Reduced habitat effectiveness results when wildlife use of habitat is reduced due to Project influences. Loud or persistent noise or human presence during construction and operations may reduce the quality of undisturbed habitats. As a result, wildlife may reduce its use or selection of those habitats on site or on nearby lands. Wildlife response to disturbance will vary between and within species, and the response will be dependent on the nature of the stimulus and a variety of environmental factors (e.g., habitat type, topography, and other existing disturbances where the stimulus is encountered). Wildlife response also could depend on the previous experience of individual animals. Project construction and operations are expected to cause temporary reductions in habitat effectiveness.

Habitat fragmentation occurs when habitat is divided into fragments due to construction. In the context of the Project design, the new habitat fragments may be either too small to be of functional value, or are not accessible from other habitats. Wildlife species in the proposed Project site are adapted to living in open

grassland or pasture habitats, and it is unlikely that the Project activities will lead to isolation of habitat. Although fragmentation will occur, fragmentation effects on wildlife are expected to be negligible.

Wildlife mortality may occur through collisions with vehicles or through disturbance of wildlife or habitat features (e.g., nests and dens) during construction and operations. Wildlife mortality is expected to be minimal since the cleared area required for the Project is small (16 ha) and because site clearing and major earthworks are scheduled to occur between September 1, 2016 and April 14, 2017, outside the migratory bird restricted activity period (RAP) for the area (Environment Canada 2014b). If clearing were conducted between April 15 and August 31, this activity could potentially affect active migratory bird nests and recently fledged young.

5.1.4.3 Mitigation Measures

Strategies to mitigate the potential effects of the Project on wildlife will be implemented as outlined in Table 5.1-3. With the implementation of mitigation measures, potential Project effects on wildlife and wildlife habitat are expected to be limited to the removal of the 1.35 ha Class II wetland that provides minimal seasonal habitat.

Table 5.1-3 Mitigation Strategies for Potential Effects on Wildlife and Wildlife Habitat

Effect	Affected Species or Species Groups	Mitigation
Habitat Loss and Alteration	All potential SAR and other migratory birds	<ul style="list-style-type: none"> • minimize new surface disturbance to the extent practical • complete cleanup as soon as feasible following construction • reclaim disturbances to an equivalent land capability
Sensory Disturbance	<ul style="list-style-type: none"> • raptors • owls • songbirds • other migratory birds 	<ul style="list-style-type: none"> • avoid clearing (or conduct pre-clearing nesting/raptor surveys) between April 15 and August 31 (Environment Canada 2014b 2009), to avoid raptors, migratory birds, and active nests • ensure noise abatement equipment (e.g., mufflers) on machinery is in working order to control noise levels
Direct Mortality	<ul style="list-style-type: none"> • amphibians • reptiles • raptors • owls • songbirds • other migratory birds • antelope 	<ul style="list-style-type: none"> • avoid clearing (or conduct pre-clearing nesting/raptor surveys) between April 15 and August 31 (Environment Canada 2014b, 2009), to avoid raptors, migratory birds, and active nests • implement spill contingency and response plans • require personnel to observe local traffic laws to improve road safety and reduce risks of wildlife mortality • prohibit employee-owned dogs onsite during construction and operations • prohibit workers from feeding or harassing wildlife

5.1.5 *Groundwater*

5.1.5.1 Baseline

The information reviewed to establish a conceptual model of hydrogeology at the site consisted of:

- regional geology and hydrogeology data compilation completed by the Saskatchewan Research Council (SRC) for National Topographic System sheets 72J (Swift Current) and 72K (Prelate) (SRC 2007a, 2007b)

- a review of water well information within 2 km of the site available from the Saskatchewan Information Services Corporation (ISC – GeoSask 2014)
- oil and gas industry geologic information available in *geoSCOUT* (geoLOGIC 2016)

Three water wells in the Saskatchewan water well database (ISC – GeoSask 2014) were reported to be potentially located within 2 km of the Project and are summarized in Table 5.1-4 and illustrated on Figure 5.1-4. The locations of these wells (Figure 5.1-4) have not been field verified and are constrained to the reported quarter section or section.

Table 5.1-4 Water Wells Potentially Located Within 2 km of the Project

Well ID	Legal Location	Type of Well	Total Depth (m bgs)	Top of Screen (m bgs)	Bottom of Screen (m bgs)	Depth to Water (m bgs)	Depth to Bedrock (m bgs)
055405	NW 19-016-14W3	Domestic Withdrawal	15.2	6.1	12.8	1.8	10.7
062015	SW 19-016-14W3	Domestic Withdrawal	8.5	6.4	8.2	6.4	n/a
065927	23-016-15W3	Domestic Withdrawal	19.5	7.6	18.3	7.6	n/a

The subsurface stratigraphy beneath the site consists of unconsolidated Holocene and Quaternary deposits overlying Cretaceous bedrock. The thickness of unconsolidated deposits is interpreted to be less than 20 m. This is consistent with the water well data, which indicate that unconsolidated deposits are 10 m to at least 20 m thick at those locations (Table 5.1-4). Regional surficial mapping indicates that the surficial deposits are eolian in origin, generally consisting of fine sand (SRC 2007a, 2007b). This has been confirmed by water wells drilled in the area, which describe the upper 4 to 10 m of sediment as silt, sand, or till with a significant silt or sand component (ISC – GeoSask 2014). These deposits are expected to behave as an unconfined aquifer and may be overlain directly by topsoil in some areas. All of the water wells in Table 5.1-4 are interpreted to be completed either entirely or partly in this upper eolian unit. As discussed by the SRC (2007b), groundwater flow directions in the surficial aquifer are anticipated to be strongly influenced by overlying surface topography. At the site, ground surface slopes from south-southeast to the north-northwest from elevations of 750 to 740 m asl. This is consistent with regional topography, which is generally sloping toward the South Saskatchewan River valley that is located approximately 30 km north of the site. Water levels in this aquifer are likely variable seasonally, with the water well data indicating a depth of 2 to 8 m to water in the aquifer.

A deeper, confined Quaternary aquifer known as the Saskatoon Group Aquifer has been mapped to occur west-northwest of the site at depths ranging from 14 to 37 m bgs (SRC 2007a). The Saskatoon Group Aquifer unit may have been encountered in well 065927 at a depth of 13 to 18 m and is overlain by 0.6 m of till at this location. Another regionally significant confined Quaternary aquifer, the Empress Aquifer, occurs in the west-east trending Swift Current buried valley that is located approximately 6 km south of the site in Township 015-15 W3M. The Empress Aquifer is not interpreted to be present locally at the Project site (SRC 2007b).

The subcropping bedrock unit at the site is the Bearpaw Formation, which comprises marine shale with some sandstone members. The sandstone members are interpreted to behave as local aquifers. The thickest of these sandstone members is the Ardkenneth Member, which is anticipated to be approximately 30 m thick and present 100 m bgs at the site (SRC 2007b). The Judith River Formation, an

important regional aquifer, underlies the Bearpaw Formation and is anticipated to be approximately 320 m bgs and 60 m in thickness (SRC 2007b). Below the Judith River Formation are shales of the Lea Park Formation, Milk River Formation, and Colorado Group, which comprise a regional aquitard that is approximately 500 m thick in this area and separates the shallower aquifers discussed above from the Viking Formation and the Mannville Group. These lower units are brackish water bearing aquifers (average total dissolved solids of the Viking Formation and Mannville Group is 6,100 mg/L and 6,700 mg/L, respectively; geoSCOUT 2015). The Mannville Group is also an active hydrocarbon producing unit near the Project site.

As summarized in Table 5.1-4, the only expected groundwater users within a 2 km radius are three domestic water use wells interpreted to be completed in the surficial aquifer and/or the Saskatoon Group Aquifer. There were no industrial water source or disposal wells reported in geoSCOUT within 2 km of the Project site.

5.1.5.2 Potential Project Effects

Contaminants of potential concern at the Project that could result in potential impacts to groundwater quality in the event of an accidental release include:

- small volumes of lubricating solvents and chemicals stored at the Project site for maintenance purposes (Section 2.3)
- wastewater generated by the plant (to be sent to the City of Swift Current Wastewater Treatment Plant)

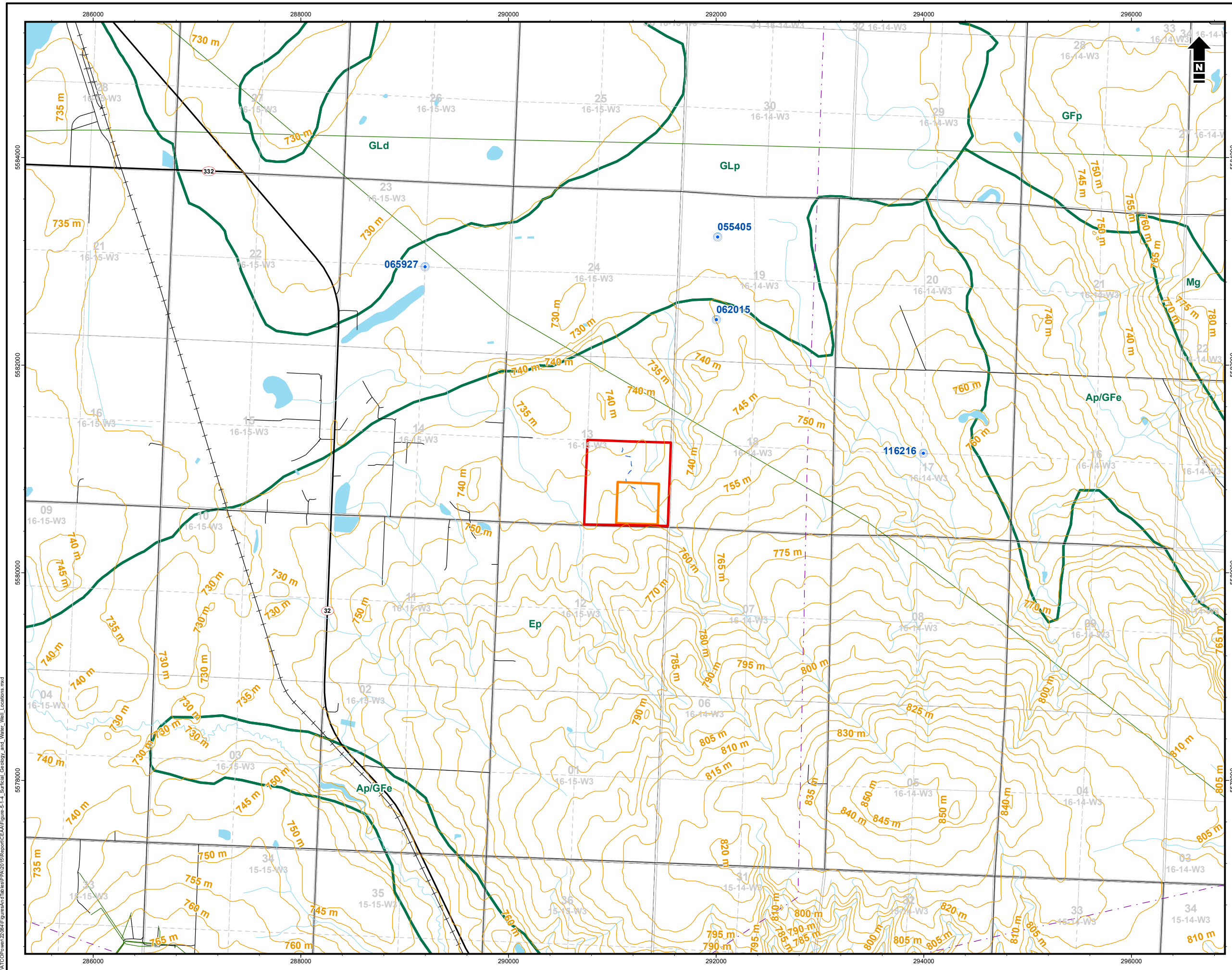
In terms of shallow groundwater issues, the regional assessments completed by the SRC use the aquifer vulnerability index (AVI) method developed by Van Stempvoort et al. (1993) to assess the vulnerability of fresh water aquifers. The AVI method considers the number, thickness, and vertical hydraulic conductivity of aquitards isolating a given aquifer from ground surface. As discussed in SRC 2007a, 2007b, because of the absence of a confining layer, all surficial aquifers in the Swift Current area are vulnerable to contamination from the ground surface (AVI less than 1: extremely high). All other aquifers below this unit near the Project have low to extremely low vulnerability to contamination (SRC 2007a, 2007b). The risk of widespread impacts to shallow groundwater quality would be dependent on several factors including:

- having an accidental release of fluids onsite
- groundwater flow direction and hydraulic gradients in the surficial aquifer
- hydraulic conductivity of the surficial aquifer

5.1.5.3 Mitigation Measures

Releases of materials to the environment at surface will be prevented through the use of appropriate secondary containment and disposal methods. Specifically, ATCO Power will equip dangerous goods storage areas with secondary containment that is impermeable and constructed of a compatible material.

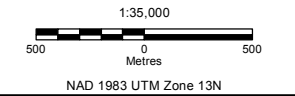
Overall, the Project has a low risk of potential spills that could cause groundwater impacts as onsite chemical and solvent quantities are either small or not deleterious. Therefore, adverse effects to groundwater quality are not anticipated from the Project.



- ▭ Project Footprint
- ▭ Project Site
- Surficial Geology Boundary
- GeoBase Mapped Location of Water Body
- GeoBase Mapped Location of Seasonal Water Drainage/Watercourse
- Observed Location of Seasonal Water Drainage
- + Railway
- Highway
- Road
- Powerline
- Pipeline
- Contour (5 m)
- Water Well Location

Surficial Geology Environment
 GLp - Glacilacustrine plain
 GFp - Glaciofluvial outwash plain
 GLd - Glacilacustrine delta
 Ep - Eolian plain
 Mg - Morainal
 Ap/GFe - Alluvial floodplain

Reference: Data obtained from Geological Atlas of Saskatchewan, GeoBase® and GeoGratis® Department of Natural Resources Canada (all rights reserved) used under license. GDM midstream and transportation infrastructure data provided by IHS © 2015 used under license.



Great Plains Generating Station

Surficial Geology and Water Well Locations

Date: 11 Feb 2016	Project: 22084
Technical: N. Huq	Reviewer: B. Fuchs
	Drawn: J. Sturk

Disclaimer: Prepared solely for the use of ATCO Power as specified in the accompanying report. No representation of any kind is made to other parties with which ATCO Power has not entered into contract.

5.1.6 Surface Hydrology

5.1.6.1 Baseline

The Project is located approximately 35 km south of the South Saskatchewan River; however, drainage from the Project site does not flow directly to the river. Instead, drainage from the Project site flows north through a series of coulees, disconnected watercourses, and drainage ditches. An unconfined surficial shallow groundwater aquifer with water levels that likely vary seasonally is strongly influenced by the local surface topography (Section 5.1.5).

A seasonal waterway was observed that meanders north-northwest from the southeast corner of the Project site. The GeoBase National Hydro Network dataset shows this watercourse slightly east of the observed location, as presented on Figure 5.1-3. The seasonal waterway is currently cultivated and appears to have been modified by a landowner to enhance natural drainage. This waterway will be filled and graded during construction.

Local drainage features surrounding the Project includes wetlands and seasonal drainages interspersed amongst cultivated land. The seasonal drainages were dry during a field visit conducted in October 2015. It is expected that the seasonal drainages convey flow during precipitation events in the summer months and during snowmelt in the spring. From the Project site, the seasonal drainages flow in a northerly direction through a series of disconnected seasonal drainages, until reaching a pothole or low depression area, approximately 2 km north of the Project. Water levels in this pothole vary seasonably and are influenced by the surficial shallow groundwater aquifer as there is no defined watercourse visible. There are no surface water bodies or watercourses present on the Project site aside from the prairie wetlands overlapping the Project footprint (Section 5.1.3) and the seasonal drainage on the east side of the Project (Figure 5.1-3).

Regionally, the South Saskatchewan River becomes Lake Diefenbaker, where levels are regulated by Gardiner Dam. The drainage area to the Water Survey of Canada (WSC) hydrometric station at Gardiner Dam (5HF003) is 136,000 km². Swift Current Creek is the largest tributary of the South Saskatchewan River with a drainage area of 5,592 km² (Saskatchewan Watershed Authority 2007) and is regulated by Duncairn Dam at Reid Lake to provide long-term water storage for the City of Swift Current (SCCWS 2016a). Swift Current Creek is located 13 km southeast of the Project and terminates at the upstream end of Lake Diefenbaker. Surface water drainage from the Project does not impact the Swift Current Creek watershed because drainage from the Project flows north away from the watershed.

The closest active, continuous recording hydrometric station to the Project is WSC hydrometric station Swift Current Creek near Leinan (05HD039). This station is located downstream of Duncairn Dam and is representative of the regulated flows of Swift Current Creek. This station has been active since 1973 and has a drainage area of 3,730 km². Mean annual flow at this station is 1.44 m³/s for a period of record between 1974 and 2014. The highest mean monthly flow of 4.28 m³/s occurs in March, which corresponds with spring snow melt. The lowest winter mean monthly flow occurs in January with 0.41 m³/s. Flows are provided in Table 5.1-5 below.

Table 5.1-5 Mean Monthly Flows - Water Survey of Canada Hydrometric Station Swift Current near Leinan (1974 to 2014)

Month	Mean Flow ¹ (m ³ /s)
January	0.41
February	0.67
March	4.35
April	4.07
May	1.56
June	1.73
July	0.94
August	0.81
September	0.72
October	0.82
November	0.61
December	0.49
Annual	1.44

Note:

1. Mean monthly flows are from the WSC hydrometric station Swift Creek near Leinan (05HD039) and are calculated off of mean monthly flows from 1974 to 2014.

Swift Current Creek contributes half of the runoff contribution to the South Saskatchewan River watershed (Saskatchewan Watershed Authority 2007). Regionally throughout the South Saskatchewan River watershed (from the Alberta-Saskatchewan border east to Lake Diefenbaker), runoff contribution is very low and on average equals 2% of the natural flow into the river (Saskatchewan Watershed Authority 2007).

ATCO Power is proposing to source raw water from the City of Swift Current reservoir in the southwest portion of the city. The City of Swift Current water reservoir is Reid Lake, which is regulated by Duncairn Dam on Swift Current Creek (SRC 2007a). The water licence for the City of Swift Current allocates an annual water volume of 5,726,000 m³. Annual potable water use in 2014 for the City of Swift Current totalled 2,674,000 m³ or 46.1% of the allocated volume (City of Swift Current Water Treatment Plant 2015, Pers. Comm.).

ATCO Power is proposing to dispose of generated wastewater from the Project at the City of Swift Current wastewater treatment facility in the northeast portion of the city. Treated effluent from this facility is returned to Swift Current Creek.

5.1.6.2 Potential Project Effects

Potential impacts to surface water due to the Project could result from source water withdrawals, wastewater disposal, and changes in runoff due to alterations of site drainage.

The Project is estimated to require a maximum water allocation volume of 350 m³/day (127,750 m³/year), for the purpose of boiler water makeup. During periods when the Project is operating at full load, the corresponding effluent flow rate returned to Swift Current Creek through the city wastewater treatment facility is approximately 310 m³/d. To be conservative, ATCO Power initially evaluated the potential effects of the total proposed water withdrawal only. Water use from the Project decreases the volume of available surface water that can be withdrawn by the City of Swift Current. In 2014, the City of Swift

Current used 46.1% of the total allocation volume, which leaves 3,086,000 m³ available based on the licence. The annual proposed volume required for the Project represents 4% of the City of Swift Current's unused allocation in 2014. Further, the daily proposed volume required for the Project is 0.49% of the mean annual flow at the WSC Swift Current near Leinan hydrometric station between 1974 and 2014. ATCO Power will work with the Saskatchewan WSA and the City of Swift Current to obtain a water license for the Project, with the objective of maintaining the total allocation volume from Swift Current Creek unchanged from baseline conditions. As a result, there will be no incremental environmental effects on Swift Current Creek beyond what has already been permitted as part of the City of Swift Current's existing water license.

Furthermore, ATCO Power expects that the wastewater generated at the Project will be sent to the City of Swift Current wastewater treatment facility and discharged back into Swift Current Creek after treatment. As a result, the surface water required for the Project will not represent a consumptive use (i.e., the majority of the surface water withdrawn will be treated and returned to Swift Current Creek further downstream). As a result, detectable changes to environmental base flows within Swift Current Creek are not anticipated due to the Project.

Potential impacts due to wastewater disposal are limited, as the treated effluent from the City of Swift Current wastewater treatment facility is returned to Swift Current Creek and is available for other uses including environmental flows.

Potential impacts due to construction of the Project may also include increases in surface runoff due to alterations of site drainage. The Project will affect an existing seasonal waterway within the facility footprint that is currently modified by agricultural practices. There is seasonal flow through the waterway, so there is a risk that natural flow of water could be impacted by construction. Effects to watercourses and water bodies downstream of the plant facility are not anticipated because ditches and berms will be used to direct flow around the Project and back to the seasonal drainage. Potential effects to on-site wetlands are discussed in Section 5.1.2. Additionally, mitigation measures and best management practices will be used to control runoff from the plant during construction activities and through the operational life of the Project.

Construction of the buried raw water and wastewater pipelines may require watercourse or wetland crossings. If watercourse crossings are required to develop the raw water and wastewater pipelines, ATCO Power will work with the Saskatchewan WSA to obtain an AHPP before construction. Pipeline crossing installation would likely either occur under frozen conditions or using trenchless techniques to avoid impacts to surface hydrology. Specific details for pipeline watercourse crossings would be evaluated as part of detailed design.

5.1.6.3 Mitigation Measures

Mitigation measures will be implemented to reduce potential Project-related effects on aquatic resources and comply with applicable regulatory requirements. The mitigation measures described in this section are consistent with regulatory guidelines and industry-related best management practices. The measures are designed to:

- minimize possible effects on surface water sources and erosion potential

- minimize increases to subwatershed sediment yield and runoff sediment loading to the receiving environment
- minimize the potential for spills and/or releases

Mitigation measures are described for each of the Project stages, including design, construction, operations, and reclamation. They are intended to address all aquatic resources, including water quantity and quality.

Design:

- use appropriate planning and layout of works, incorporating erosion control measures during construction, operation, and reclamation stages of the Project
- construct berms and ditches around the plant site to maintain seasonal flow of natural drainage
- construct the access roads such that the length of individual culverts along the adjacent range road (Bullin Road) are reasonable and easily maintained during the spring thaw

Spill and storage management:

- locate flow lines and storage tanks above ground to facilitate leak detection
- ensure comprehensive spill and leak plans are included in the ERP; review the ERP with site personnel before construction and operation activities begin
- report spills and unauthorized releases to a watercourse (e.g., sediment and other substances), both internally and to appropriate agencies, to trigger the appropriate response

Erosion and Sediment Control:

- use best management practices to control erosion and sedimentation from construction activities
- minimize areas of disturbance and maintain vegetative buffers wherever possible
- install perimeter controls such as sediment traps (e.g., ditch/berm with check dams and silt fence) in any areas where runoff leaves the site during construction
- minimize access points to construction sites to reduce the potential for offsite sedimentation; when necessary, stabilize access points with gravel pads or other suitable measures
- locate soil stockpiles above the high water mark; when necessary, install perimeter sediment controls (e.g., silt fence) around stockpiles
- use water or other approved dust control measures to minimize dust on fill areas, haul roads, temporary stockpiles, or other loose soil onsite during dry or windy conditions
- suspend construction during periods of prolonged and intense runoff (e.g., heavy rain or snowmelt events), and soil handling during intense rainfall events unless otherwise authorized by regulators
- select pipeline watercourse crossings techniques that maintain natural drainage

Operations:

- maintain and use vehicles, machinery, and facilities in a manner that minimizes the likelihood of the introduction of hydrocarbons or other potentially harmful substances into the environment
- comply with the conditions of the water license obtained from the Saskatchewan WSA, which will include annual water use tracking and reporting

With the proposed mitigation measures, the Project is not anticipated to result in adverse environmental effects on surface hydrology.

5.1.7 Surface Water Quality and Fish and Fish Habitat

5.1.7.1 Baseline

Baseline hydrologic conditions for the Project site and the surrounding area are described in Section 5.1.6.1. The Project site contains two ephemeral wetlands and a seasonal waterway (Section 5.1.3). These ephemeral water bodies were dry during the site visit in October 2015 and expected to only contain water seasonally. As a result, the water bodies present within the Project site are considered to provide nil fish habitat.

The closest named water body to the Project is Swift Current Creek, approximately 13 km from the site. Key fish species known to be present in Swift Current Creek include fathead minnow and white sucker (SCCWS 2016b).

5.1.7.2 Potential Project Effects

Potential impacts to surface water quality or fish and fish habitat that were evaluated for the Project related to source water withdrawals, wastewater disposal, and changes in runoff due to alterations of site drainage. As discussed below, ATCO Power has designed the Project to eliminate these potential impacts.

ATCO Power is proposing to source raw water from the City of Swift Current. ATCO Power will work with the Saskatchewan WSA and the City of Swift Current to obtain a water license for the Project, with the objective of maintaining the total allocation volume from Swift Current Creek unchanged. The annual proposed volume required for the Project (350 m³/d) represents 4% of the City of Swift Current's unused allocation in 2014. Based on this approach, there will be no incremental environmental effects on Swift Current Creek beyond what has already been permitted as part of the City of Swift Current's existing water license.

As described in Section 5.1.6, the surface water required for the Project will not represent a consumptive use (i.e., the majority of the surface water withdrawn will be treated and returned to Swift Current Creek further downstream). As a result, detectable changes to environmental base flows within Swift Current Creek are not anticipated due to the Project. Accordingly, adverse effects on water quality or fish and fish habitat are not anticipated due to source water withdrawals.

ATCO Power is proposing to dispose of generated wastewater from the Project at the City of Swift Current wastewater treatment facility in the northeast portion of the city (32-015-13 W3M). ATCO Power has been working with the City of Swift Current and will sign a letter of intent for this wastewater treatment approach on or before the date of the bid submission to SaskPower (April 5, 2016). It is anticipated that ATCO Power and the City of Swift Current will enter into an agreement that will specify acceptable water quality criteria for effluent receipt and water quality testing methods and frequency (as required). The specified effluent receipt criteria will likely be based on the wastewater quality criteria specified in the City of Swift Current Water and Wastewater Utility Bylaw (Bylaw 17-2001; Table 2.4-3). If required, ATCO Power would implement supplemental onsite wastewater treatment (e.g., reverse osmosis, filtration

and/or electrodeionization) along with wastewater testing measures required to meet the effluent receipt criteria specified by the City of Swift Current. ATCO Power's wastewater stream would be treated with the rest of the inlet stream to the City of Swift Current wastewater treatment facility and discharged. The City of Swift Current would be responsible for maintaining its effluent water quality in accordance with the discharge guidelines dictated by the Saskatchewan WSA. As a result, no adverse effects on water quality or fish and fish habitat are anticipated due to wastewater disposal.

Potential impacts due to construction of the Project may also include increases in surface runoff due to alterations of site drainage. The Project will affect an existing seasonal waterway within the facility footprint that is currently modified by agricultural practices. There is seasonal flow through the waterway, so there is a risk that natural flow of water could be impacted by construction. Effects to downstream watercourses and water bodies from changes in runoff are not anticipated because ditches and berms will be used to direct flow around the Project and back to the seasonal drainage.

Construction of the buried raw water and wastewater pipelines may require watercourse or wetland crossings. If watercourse crossings are required to develop the raw water and wastewater pipelines, ATCO Power will work with the Saskatchewan WSA to obtain an AHPP before construction. Pipeline crossing installation would likely either occur under frozen conditions or using trenchless techniques to avoid impacts to surface hydrology. Specific details for pipeline watercourse crossings would be evaluated as part of detailed design.

As no changes in downstream flow are anticipated, no adverse effects on water quality or fish and fish habitat are anticipated due to alterations of site drainage.

5.1.7.3 Mitigation Measures

Key mitigation measures pertaining to surface water resources (including surface water quality) and fish and fish habitat are presented in Section 5.1.6.3. In addition, site clearing and major earthworks are scheduled to occur between September 1, 2016 and April 14, 2017, when the ephemeral on-site water bodies are expected to be dry. If water is present in either of the ephemeral water bodies during site clearing, or if watercourse crossings are required to develop the raw water and wastewater pipelines, ATCO Power will complete a self-assessment based on the *Measures to Avoid Causing Hard to Fish and Fish Habitat* (Fisheries and Oceans Canada, 2013). The Project is not anticipated to result in adverse environmental effects on surface water quality or fish and fish habitat.

5.1.8 *Air Quality*

5.1.8.1 Baseline

A site-specific evaluation of baseline air quality conditions will be completed as part of the air dispersion modelling required under the provincial *Environmental Management and Protection Act* (described in Table 1.4-1). Saskatchewan ENV provides Regional Background Concentrations that are sufficient to describe baseline conditions in most cases. Southwest region baseline data combined with any industrial emissions sources within 5 km of the Project will be utilized to represent baseline air quality as specified in the *Saskatchewan Air Quality Modelling Guideline* (Saskatchewan ENV 2012) to evaluate cumulative effects on air quality.

5.1.8.2 Potential Project Effects

Sources of air emissions during both Project construction, and Project decommissioning and reclamation will be the operation of heavy industrial equipment (e.g., bulldozers, graders, cranes, trucks). Although specific equipment has not yet been identified, it is expected that this equipment will include diesel-fired engines. The emission sources will be mobile, but operation of the majority of this equipment will be confined to the Project site. There will also be smaller emission sources associated with the equipment used to install the raw water and wastewater pipelines. Major emissions from the diesel-fired engines are expected to include CO, NO_x, PM_{2.5}, and GHGs. Air emissions will be reduced by adopting standard mitigation and management practices such as regular maintenance of construction vehicles and equipment to reduce combustion emissions and maximize fuel efficiency, and minimum vehicle idling. Under dry, windy conditions, fugitive dust will be controlled using appropriate methods such as water sprinkling.

The main source of air emissions during Project operation will be the combustion of natural gas in the GTG. Emissions will be from a single stack connected to the powerhouse building and are expected to include CO, NO_x, PM_{2.5}, and GHGs. Because of the low sulphur content of the pipeline quality natural gas to be supplied by TransGas, the Project is not expected to emit measureable amounts of SO₂. Similarly, because of the natural gas fuel and design of combined cycle power plants, the Project is not expected to have measureable emissions of VOCs. Based on the lack of SO₂ and VOC emissions, the Project is not expected to result in offsite odours.

The Project will also include two intermittent emission sources: a standby diesel-fired electrical generator and a standby diesel-fired fire pump, rated at 2 MW and 250 kW, respectively. These pieces of equipment will have dedicated stacks and will emit NO_x, CO, and PM_{2.5} only when they are operating during emergencies (fire pump), power outages, testing, or to support the safe shutdown of equipment during electrical system outages. An estimate of the Project air emissions profile during operations and its comparison in evaluating compliance with applicable emission guidelines is presented in Table 5.1-6.

Table 5.1-6 Estimated Project Emission Rates and Comparison Against Applicable Guidelines

Parameter	Maximum Emission Rate (kg/hour)	National Emission Guidelines ^a (CCME 1992) (kg/hour)
NO _x	65	176.4
CO	20	71.7
PM _{2.5}	5	n/a

Notes:

- a. Calculated based on maximum net power output of 350 MW
n/a - not applicable

As NO_x represents the largest proportion of the air emissions from the Project, ATCO Power will procure the GTG with a low NO_x combustion system to reduce formation of NO_x during combustion. The GTG will be designed to achieve NO_x emissions less than 15 ppmv at full load and ambient temperatures in excess of -17°C. In a regional context, 40,383 t of total NO_x emissions were reported to NPRI in 2013 from industrial sources operating in Saskatchewan (NPRI, undated). The maximum NO_x emissions from the Project (570 t/y) represents only 1.4% of the provincial industrial emissions reported. Similarly, provincial emissions of CO and PM_{2.5} reported to NPRI from industrial sources in 2013 were 45,956 t and 5,655 t, respectively. The maximum CO (175 t) and PM_{2.5} (45 t) emissions from the Project represent less

than 0.4% and 0.8% of the respective provincial totals. When compared to all 2013 emissions in the province (industrial and non-industrial sources), the maximum NO_x, CO and PM_{2.5} emissions from the Project represent 0.33%, 0.06% and 0.03%, respectively.

The Project will meet the applicable NO_x and CO emission requirements outlined in the *National Emission Guidelines for New Stationary Combustion Turbines* (CCME 1992). CEMS equipment will be installed on the HRSG stack to monitor the NO_x and CO emissions. The CEMS will comply with the applicable CEMS code, which describes requirements related to the installation, operation, maintenance and certification.

Preliminary air dispersion modelling results indicate that the predicted concentrations of NO₂, CO, and PM_{2.5} are below their respective NAAQOs (CCME 1999) and *Saskatchewan Ambient Air Quality Standards* (Government of Saskatchewan n.d.) for the range of operating scenarios considered. Potential adverse changes to the air quality from the Project under all operating scenarios are therefore expected to be minimal, and no air treatment and control beyond the design considerations described earlier are proposed.

Once the specific equipment for the Project has been identified as part of detailed design, ATCO Power will complete additional air dispersion modelling of these parameters and prepare and submit a certified Environmental Protection Plan to the Ministry of Environment for the Minister's approval, in accordance with the *Environmental Management and Protection Act, 2010*, by demonstrating compliance with the applicable *Saskatchewan Ambient Air Quality Standards* (Table 5.1-7) and emission standards. Dispersion modelling requirements are outlined in the *Saskatchewan Air Quality Modelling Guideline* (Saskatchewan ENV 2012) and are used to predict potential impacts of operations under a worst-case scenario.

Table 5.1-7 Ambient Air Quality Standards

Parameter	Average Periods	Saskatchewan Ambient Air Quality Standards (µg/m ³) ^a	NAAQOs (µg/m ³) ^b
NO _x	1 hour	300	400
	24 hour	200	200
	Annual	45	100
CO	1 hour	15,000	35,000
	8 hour	6,000	15,000
PM _{2.5}	24 hour	28 ^c	15 ^d
	Annual	10	n/a

Notes:

- a. Source: Government of Saskatchewan n.d.
- b. Source: CCME 1999
- c. 98th percentile
- d. Reference level

5.1.8.3 Mitigation Measures

The proposed federal CAC requirements under the MSAPR (EC 2014), was released in 2014. The goal of the MSAPR is to achieve consistent performance standards for combustion equipment across all industrial sectors, and to limit oxides of nitrogen and SO₂ emissions. The MSAPR have not yet been released for gas turbines; however, ATCO Power will ensure that the Project will meet the applicable federal and provincial emission standards and guidelines.

The emission of GHGs has been identified as an important issue by regulators. The Project will be designed to have a GHG emission intensity less than 420 kg CO₂ equivalent/MWh. The GHG emissions for the Project will be a maximum of 1,303 kt CO₂ equivalent/year; however, the actual GHG emissions for the Project will depend upon actual MWh of generation required based upon load and run-times. The selected technology (i.e., natural gas-fired combined cycle) represents the best available technology for the purpose of generating on-demand, reliable power which results in the least CACs and GHGs emissions per MWh based on life cycle analysis, compared to any other currently available fossil fuel based power generation technology (SENES 2005). The Project is designed to allow flexible operation and provide electricity output to offset changes in the supply of power in the Saskatchewan electrical system from renewable generation that produces electricity intermittently and at variable rates. Saskatchewan has targeted an increase in the supply of intermittent renewable generation over the next 15 years. This Project will help support Saskatchewan's transition to a lower GHG emission intensity for the Saskatchewan electrical system.

In a regional context, 74,800 kt of CO₂ equivalent were reported by Environment and Climate Change Canada in 2013 from facilities operating in Saskatchewan (Environment and Climate Change Canada, 2015). The maximum GHG emissions from the Project (1,303 kt/y) represents less than 1.75% of the provincial total. When compared to the total GHG emissions reported in Canada in 2013, the maximum GHG emissions from the Project represents less than 0.2%.

ATCO Power will minimize the emission of GHGs by:

- using an efficient GTG with a natural gas fuel source that will result in more complete hydrocarbon combustion (as compared to other solid fuel sources)
- using a HRSG and STG to recover waste heat from the GTG and produce additional electricity without additional natural gas consumption

In Saskatchewan, facilities that emit more than 50 kt/year of GHGs are considered to be regulated emitters under the *Management and Reduction of Greenhouse Gases Act*. Based on this threshold, the Project would be considered a regulated emitter in Saskatchewan. Regulated emitters will be required to reduce annual GHGs to meet provincial targets; however, the framework by which GHG reductions from individual facilities will be aligned with identified provincial targets is still under development. Similarly, there is currently no federal GHG management framework in effect; however, a national framework for combatting climate change has been proposed (Government of Canada 2015). ATCO Power will work with provincial and federal regulators to align operation of the Project with pending GHG regulations as they are introduced.

5.1.9 Noise

5.1.9.1 Baseline

Currently, there are no legislated noise requirements in Saskatchewan. In recent experience with other project applications, Saskatchewan ENV has indicated to follow the noise guidelines provided in *Rule 012: Noise Control* (AUC 2013). As outlined in Rule 012, rural areas (such as the Project site) are considered to have a baseline sound level of 35 dBA Leq (nighttime).

5.1.9.2 Potential Project Effects

The main source of noise at the Project will be the operation of the GTG, HRSG, and STG. Rule 012 (AUC 2013) indicates that the Project must meet a permissible sound level (PSL) of 40 dBA Leq (nighttime) at 1.5 km from the facility fenceline (as the closest dwelling is greater than 1.5 km from the Project site). ATCO Power has conducted preliminary acoustic modelling and the noise assessment results indicate that the Project will be compliant with the most stringent PSLs specified in Rule 012. As a result, the Project is not expected to result in disruptive noise for landowners and stakeholders.

5.1.9.3 Mitigation Measures

Specific noise mitigation (if required) will be identified as part of the noise impact assessment. Based on the preliminary modelling results, the Project will not result in adverse environmental effects with respect to noise.

5.1.10 *Historical Resources*

5.1.10.1 Baseline

A heritage sensitivity search was completed on October 15, 2015, using the Saskatchewan Parks, Culture, and Sport website (Government of Saskatchewan 2012a). The Project quarter section is deemed not heritage sensitive.

5.1.10.2 Potential Project Effects

Based on the result of the heritage sensitivity search, clearance from the Heritage Conservation Branch is not required before Project construction. Project effects to historical resources are not anticipated.

5.1.10.3 Mitigation Measures

If historical resources are identified during Project construction, ATCO Power will contact Saskatchewan Parks, Culture, and Sport to determine the appropriate course of action.

As the Project site is deemed not heritage sensitive, the Project is not anticipated to result in adverse effects on historical resources.

5.1.11 *Accidents and Malfunctions*

Construction and operation of the Project has the potential to result in accidents and malfunctions. A site-specific ERP will be prepared and implemented to detail steps in responding to all conceivable emergencies to facilitate a coordinated and organized approach that can be used to manage most emergencies. The ERP will provide a management plan, which addresses preparedness, response, notification, and recovery from an emergency. The ERP's primary purpose will be to protect the lives, safety, and health of neighbours, contractors, and employees. Also an ERP will help in protecting environmental damage and facility, property, and equipment loss. The ERP will cover emergencies (including but not limited to) such as fire, spills/releases, flood, severe weather, explosion, or natural gas leak.

5.2 Changes that may be Caused by the Project to Fish and Fish Habitat, Listed Aquatic Species and Migratory Birds

2. A description of any changes that may be caused as a result of carrying out the designated project to:
 - a. fish and fish habitat, as defined in the Fisheries Act
 - b. marine plants, as defined in the Fisheries Act
 - c. migratory birds, as defined in the Migratory Birds Convention Act, 1994

5.2.1 Fish and Fish Habitat, as Defined in the Fisheries Act

Baseline hydrologic conditions for the Project site and the surrounding area are described in Section 5.1.6.1. The Project site contains two ephemeral wetlands and a seasonal waterway (Section 5.1.3). These ephemeral water bodies were dry during the site visit in October 2015 and expected to only contain water seasonally. As a result, the water bodies present within the Project site are considered to provide nil fish habitat.

The closest named water body to the Project is Swift Current Creek, approximately 13 km from the site. Key fish species known to be present in Swift Current Creek include fathead minnow and white sucker (SCCWS 2016b).

Potential impacts to fish and fish habitat due to the Project could result from source water withdrawals, wastewater disposal, and changes in runoff due to alterations of site drainage.

ATCO Power is proposing to source raw water from the City of Swift Current. ATCO Power will work with the Saskatchewan WSA and the City of Swift Current to obtain a water license for the Project, with the objective of maintaining the total allocation volume from Swift Current Creek unchanged. The annual proposed volume required for the Project (350 m³/d) represents 4% of the City of Swift Current's unused allocation in 2014. Based on this approach, there will be no incremental environmental effects on Swift Current Creek beyond what has already been permitted as part of the City of Swift Current's existing water license.

As described in Section 5.1.6, the surface water required for the Project will not represent a consumptive use (i.e., the majority of the surface water withdrawn will be treated and returned to Swift Current Creek further downstream). As a result, detectable changes to environmental base flows within Swift Current Creek are not anticipated due to the Project. Accordingly, adverse effects on water quality or fish and fish habitat are not anticipated due to source water withdrawals.

ATCO Power is proposing to dispose of generated wastewater from the Project at the City of Swift Current wastewater treatment facility. ATCO Power has been working with the City of Swift Current and will sign a letter of intent for this wastewater treatment approach on or before the date of the bid submission to SaskPower (April 5, 2016). It is anticipated that ATCO Power and the City of Swift Current will enter into an agreement that will specify acceptable water quality criteria for effluent receipt and water quality testing methods and frequency (as required). The specified effluent receipt criteria will likely be based on the wastewater quality criteria specified in the City of Swift Current Water and Wastewater

Utility Bylaw (Bylaw 17-2001; Table 2.4-3). If required, ATCO Power would implement supplemental onsite wastewater treatment (e.g., reverse osmosis, filtration, and/or electrodeionization) along with wastewater testing measures required to meet the effluent receipt criteria specified by the City of Swift Current. ATCO Power's wastewater stream would be treated with the rest of the inlet stream to the City of Swift Current wastewater treatment facility and discharged. The City of Swift Current would be responsible for maintaining its effluent water quality in accordance with the discharge guidelines dictated by the Saskatchewan WSA. As a result, no adverse effects on fish and fish habitat are anticipated due to wastewater disposal.

Potential impacts due to construction of the Project may also include increases in surface runoff due to alterations of site drainage. The Project will affect an existing seasonal waterway within the facility footprint that is currently modified by agricultural practices. There is seasonal flow through the waterway, so there is a risk that natural flow of water could be impacted by construction. Effects to downstream watercourses and water bodies from changes in runoff are not anticipated because ditches and berms will be used to direct flow around the Project and back to the seasonal drainage. As no changes in downstream flow are anticipated, no adverse effects on fish and fish habitat are anticipated due to alterations of site drainage.

Construction of the buried raw water and wastewater pipelines may require watercourse or wetland crossings. If watercourse crossings are required to develop the raw water and wastewater pipelines, ATCO Power will work with the Saskatchewan WSA to obtain an AHPP before construction. Pipeline crossing installation would likely either occur under frozen conditions or using trenchless techniques to avoid impacts to surface hydrology. Specific details for pipeline watercourse crossings would be evaluated as part of detailed design. In addition, site clearing and major earthworks are scheduled to occur between September 1, 2016 and April 14, 2017. If water is present during site clearing or pipeline construction, ATCO Power will complete a self-assessment based on the *Measures to Avoid Causing Hard to Fish and Fish Habitat* (Fisheries and Oceans Canada, 2013).

5.2.2 Marine Plants, as Defined in the Fisheries Act

The Project will not affect marine plants as there will be no interactions with an ocean environment.

5.2.3 Migratory Birds, as Defined in the Migratory Birds Convention Act

The majority of the Project site is tame pasture and therefore could provide suitable nesting habitat for some songbirds, as presented in Section 5.1.4. Site clearing activities are scheduled to take place between September 1, 2016 and April 14, 2017, which is outside of Environment Canada's RAP (April 15 to August 31; Environment Canada 2014b).

If clearing activities must be completed during this RAP, a pre-construction survey will be conducted by an avian biologist before activities to demonstrate compliance with the *Migratory Birds Convention Act*. During the pre-construction survey, if nests are found or suspect to be present based on bird behavior in areas to be cleared, a temporary setback buffer will be applied to ensure construction activities will not disturb the nesting birds. Setback distances may vary depending on the time of year and level of disturbance (Environment Canada 2009). Temporary setback buffers will be removed once the nest is confirmed inactive, and the area is re-swept and no new nests are found. If no new nests are identified

during the survey then clearing can occur within 7 days. Additionally, wetlands will also be swept, before construction, to determine the presence of flightless waterfowl and any residual nesting birds in wetlands up to August 31 (Environment Canada 2014b).

The potential for other Project-related effects on migratory birds (i.e., reduced habitat effectiveness or habitat fragmentation) are described further in Section 5.1.4. Given the current scheduled clearing timing for the Project (between September 1, 2016 and April 14, 2017) and the implementation of mitigation measures that are consistent with the approach recommended by Environment and Climate Change Canada, the Project is not expected to result in adverse environmental effects on migratory birds, as defined under the *Migratory Birds Convention Act*.

5.3 Changes that may be Caused by the Project to Federal Lands or Lands Outside of Saskatchewan

3. A description of any changes to the environment that may occur, as a result of carrying out the designated project, on federal lands, in a province other than the province in which the project is proposed to be carried out, or outside of Canada.

Given that the Project is not expected to result in any adverse environmental effects within the region, adverse environmental effects on lands outside Saskatchewan or Canada are similarly not expected.

5.4 Changes that may be Caused by the Project to Aboriginal Peoples Resulting from Changes to the Environment

4. A description of the effects on Aboriginal peoples of any changes to the environment that may be caused as a result of carrying out the designated project, including effects on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

The Project is located within the boundaries of Treaty No. 4. The closest First Nation Reserve to the Project is an “urban reserve” held by the Nekaneet Cree Nation located within the City of Swift Current, approximately 11 km southeast of the Project. This reserve is used to operate the Living Sky Casino. It is understood that no members of the Nekaneet Cree Nation live on this reserve (Statistics Canada, 2015) or use this reserve for traditional purposes. The Nekaneet Cree Nation also has reserve lands located approximately 113 km southwest of the Project.

The Carry the Kettle Nakoda First Nation Reserve is located approximately 66 km northwest of the Project. ATCO Power has contacted the Nekaneet Cree Nation and the Carry the Kettle Nakoda First Nation (as well as the File Hills Qu’Appelle Tribal Council) to introduce the Project and to identify their interests in the Project area. The Project is also located within the boundaries of Western Region III, as defined by the Métis Nation of Saskatchewan (Deloitte 2013). Within this region, the Métis locals in Swift Current and Maple Creek are not identified as being active. The closest active Métis Local is the Prairie Dog Métis Local 123, approximately 50 km south of the Project. ATCO Power has contacted the Métis Nation of Saskatchewan to introduce the Project and to request their assistance in identifying potential

Métis communities or Métis Locals that may be interested in the Project. ATCO Power will continue to consult with the Métis Nation of Saskatchewan and any identified Métis Local(s) if it is the successful bidder for the Project.

The Project site has been privately owned since 1951 and no current traditional usage of the land by Aboriginal peoples has been noted. The land use before 1951 is unknown.

To evaluate potential effects on physical and cultural heritage, a heritage sensitivity search was completed on October 15, 2015, using the Saskatchewan Parks, Culture, and Sport website (Government of Saskatchewan 2012a). The Project quarter section is deemed not heritage sensitive. The Saskatchewan Register of Heritage Property identifies any heritage properties that have been officially designated under *The Heritage Property Act*. These sites can include archaeological objects, paleontological objects, and any property of interest for its architectural, historical, cultural, environmental, archaeological, paleontological, aesthetic or scientific value (Government of Saskatchewan 2012b). The heritage screening tool accesses a database of quarter-sections that have been reviewed for heritage-sensitivity. The screening tool serves to provide immediate clearance for developers as well as a planning tool to identify heritage sensitive areas in advance (Government of Saskatchewan 2012a).

ATCO Power has searched publicly available information and no traditional use specific to the Project area has been identified; however, ATCO Power recognizes that this does not mean that there has been no traditional use of the land in the past. No asserted traditional territory boundaries or settlement lands have been identified near the Project. The closest documented traditional use is noted in the Great Sand Hills region (Peters et. al. 2006), which is located approximately 70 km west of the Project. The Great Sand Hills is a significant topographical and physiological landmark within the area and was used for First Nations in terms of medicines, culture and spiritual practices. There is considerable archaeological evidence of use by historical peoples in the Great Sand Hills (Peters et. al. 2006).

Potential adverse effects are not anticipated to water quality (Section 5.1.7), air quality (Section 5.1.8), odours (Section 5.1.8) or noise (Section 5.1.9); as a result, adverse effects on human health are also not anticipated. Potential adverse effects to wildlife (including migratory birds) will be mitigated (Section 5.1.4) and potential adverse effects to fish and fish habitat are not anticipated (Section 5.1.7). The Project will result in employment opportunities and potential economic benefits for the entire region, including Aboriginal people. With regards to aesthetics, the HRSG exhaust stack and the GT exhaust stack at the plant facility will be visible in the surrounding area. ATCO Power will apply best management practices to minimize nuisance lighting and will use neutral colours for buildings and stacks to reduce aesthetic effects.

ATCO Power understands the uncertainty around identifying traditional and historical use and will continue to consult with identified Aboriginal groups if they are the successful bidder for the Project. If further information regarding regional traditional land uses becomes available, ATCO Power will incorporate this information and identified mitigation measures into subsequent assessment and permitting for the Project.

6.0 Proponent Engagement and Consultation with Aboriginal Groups

Experience has shown that engagement by proponents with Aboriginal groups early in the planning and design phases of a proposed project can benefit all concerned. By learning about Aboriginal interests and concerns and identifying ways to avoid or mitigate potential impacts, proponents can build these considerations into their project design, reducing the potential for future project delays and increased costs.

Provide the following information to the extent that it is available or applicable:

6.1 List of Potentially Affected and Interested Aboriginal Groups

1. A list of Aboriginal groups that may be interested in, or potentially affected by, the designated project, including contact information (location, name, mailing address, email address, and fax and telephone numbers).

The Project is located within the boundaries of Treaty No. 4, which covers much of southern Saskatchewan. The two closest First Nation reserves to the Project are the Nekaneet Cree Nation and the Carry the Kettle Nakoda Nation.

The Nekaneet Cree Nation reserve is located approximately 113 km southwest of the Project, near Maple Creek, Saskatchewan. The First Nation also has an “urban reserve” near the City of Swift Current, 11 km east of the Project, which is used to operate the Living Sky Casino. The First Nation has a total of 460 members with 118 living on the reserve (Statistics Canada 2015; File Hills Qu’Appelle Tribal Council n.d.). Carry the Kettle Nakoda First Nation, located approximately 66 km northwest of the Project, has a total registered population of 2,491 with 821 people living on reserve (Government of Canada 2013).

The Project is also located within the boundaries of Western Region III, as defined by the Métis Nation of Saskatchewan (Deloitte 2013). Within this region, the Métis Locals in Swift Current and Maple Creek are not identified as being active. The closest active Métis Local is the Prairie Dog Métis Local 123, approximately 50 km south of the Project.

ATCO Power has contacted the Nekaneet Cree Nation and the Carry the Kettle Nakoda First Nation (as well as the File Hills Qu’Appelle Tribal Council) to introduce the Project and to identify their interests in the Project area. The closest active Métis Local is the Prairie Dog Métis Local 123, approximately 50 km south of the Project. ATCO Power has contacted the Métis Nation of Saskatchewan Western Region III to introduce the Project and to request their assistance in identifying potential Métis communities or Métis Locals that may be interested in the Project. ATCO Power will continue to consult with these Aboriginal groups (and other Aboriginal groups, as directed by the CEA Agency or Saskatchewan ENV) if it is the successful bidder for the Project.

Contact information for the identified Aboriginal groups being contacted by ATCO Power is presented in Table 6.1-1.

Table 6.1-1 Contact Information for Identified Aboriginal Stakeholders

Name	Location	Mailing Address	Email Address	Fax Number	Telephone Number
File Hills Qu'Appelle Tribal Council	Fort Qu'Appelle, SK	PO Box 985 Fort Qu'Appelle, SK S0G 1S0	unknown	306.332.1811	306.332.8200
Métis Nation of Saskatchewan	Saskatoon, SK	231 Robin Crescent Saskatoon, SK S7L 6M8	info@mn-s.ca	306.343.0171	306.343.8285
Métis Nation of Saskatchewan – Western Region III	Regina, SK	3220 Dewdney Avenue E. Regina, SK S4N 5E4	nlarnold@sasktel.ca	306-525-2106	306.787.3606
Prairie Dog Métis Local 123	Swift Current, SK	780 – 8th Avenue NE Swift Current, SK S9H 2R5	unknown	unknown	306.773.4533
Nekaneet Cree Nation	113 km southwest of the Project	PO Box 548 Maple Creek, SK S0N 1N0	unknown	306.662.4160	306.662.3660
Carry the Kettle Nakoda Nation	66 km northwest of the Project	PO Box 57 Sintaluta, SK S0G 4N0	carrythekettle@sasktel.net	306.727.2149	306.727.2135

Specific details regarding engagement activities are described further in the Aboriginal Engagement Plan in Appendix C.

6.2 Description of Engagement or Consultation Activities Carried Out to Date with Aboriginal Groups

2. A description of the engagement or consultation activities carried out to date with Aboriginal groups, including:
 - a. names of Aboriginal groups engaged or consulted to date with regard to the project;
 - b. date(s) each Aboriginal group was engaged or consulted; and
 - c. means of engagement or consultation (e.g., community meetings, mail or telephone).

A summary of the Aboriginal consultation efforts completed to date by ATCO Power is presented in Table 6.1-2.

Table 6.1-2 Aboriginal Stakeholder Engagement Summary

Stakeholder Name	Meeting Date(s)	Means of Consultation
File Hills Qu'Appelle Tribal Council	January 20, 2016	Phone call. Told to follow up in one week.
File Hills Qu'Appelle Tribal Council	January 28, 2016	Left a message, No return call.
File Hills Qu'Appelle Tribal Council	February 1, 2016	Left a message. No return call.
File Hills Qu'Appelle Tribal Council	February 3, 2016	Left a message with the office administrator, explained reason for call. No return call.
Métis Nation of Saskatchewan	January 20, 2016	Phone call. No option to leave voicemail.
Métis Nation of Saskatchewan	January 28, 2016	Phone call. No option to leave voicemail.
Métis Nation of Saskatchewan	February 2, 2016	Phone call. No option to leave voicemail.
Métis Nation of Saskatchewan Western Region III	February 1, 2016	Phone call. Number incorrect.

Métis Nation of Saskatchewan Western Region III	February 3, 2016	Phone call. Requested other Locals. Contact will mention Project to Assinaboia Local. Told that Métis Nation of Saskatchewan office closed.
Nekaneet First Nation	January 28, 2016	Phone call. Left message. No return call.
Nekaneet First Nation	February 1, 2016	Phone call. Left message with office administration.
Nekaneet First Nation	February 3, 2016	Phone call. Left message requesting return call.
Nekaneet First Nation	February 5, 2016	Phone call. ATCO consultant requested meeting.
Nekaneet First Nation	February 8, 2016	Phone call. ATCO consultant requested meeting.
Carry the Kettle First Nation	January 28, 2016	Phone call. Left message.
Carry the Kettle First Nation	January 29, 2016	Phone call. Meeting arranged for February 9, 2016.
Carry the Kettle First Nation	February 9, 2016	Phone call. First Nation is currently not meeting with any proponents as they are conducting elections. Advised to leave a package at their lawyer's office in Regina.
Prairie Dog Metis Local 123	February 1, 2016	Phone call. Phone not in service.
Prairie Dog Metis Local 123	February 3, 2016	Phone call to new number. Requested a meeting.
Prairie Dog Metis Local 123	February 4, 2016	Phone call. Arranged a meeting for February 10, 2016.

ATCO Power is one of several companies being considered by SaskPower to develop the Project. ATCO Power plans to continue to engage with First Nation and Métis Groups, and engage with the other identified Aboriginal groups after the Project has been awarded (expected July 2016). ATCO Power's approach for Aboriginal consultation is provided in the attached Aboriginal Engagement Plan (Appendix C).

6.3 Key Comments and Concerns by Aboriginal Groups

3. [An overview of key comments and concerns expressed by Aboriginal groups identified or engaged to date, including any responses provided to these groups.](#)

No comments or concerns have been expressed by Aboriginal groups to date. If awarded the Project, ATCO Power will work with Aboriginal communities to identify and address comments and concerns expressed for the Project. ATCO Power's approach for Aboriginal consultation is provided in the attached Aboriginal Engagement Plan (Appendix C).

6.4 Current Aboriginal Traditional Land Use

4. [An overview of information on current use of lands and resources for traditional purposes by Aboriginal groups or peoples \(e.g., information provided verbally or in writing, and past or present studies\).](#)

The Project is located within the boundaries of Treaty No. 4. The closest First Nation Reserve to the Project is an "urban reserve" held by the Nekaneet Cree Nation located within the City of Swift Current, approximately 11 km southeast of the Project. This reserve is used to operate and the Living Sky Casino. It is understood that no members of the Nekaneet Cree Nation live on this reserve (Statistics Canada, 2015) or use this reserve for traditional purposes. The Nekaneet Cree Nation also has reserve lands located approximately 113 km southwest of the Project.

The Carry the Kettle Nakoda First Nation Reserve is located approximately 66 km northwest of the Project. ATCO Power has contacted the Nekaneet Cree Nation and the Carry the Kettle Nakoda First Nation (as well as the File Hills Qu'Appelle Tribal Council) to introduce the Project and to identify their interests in the Project area. The Project is also located within the boundaries of Western Region III, as defined by the Métis Nation of Saskatchewan (Deloitte 2013). Within this region, the Métis locals in Swift Current and Maple Creek are not identified as being active. The closest active Métis Local is the Prairie Dog Métis Local 123, approximately 50 km south of the Project. ATCO Power has contacted the Métis Nation of Saskatchewan to introduce the Project and to request their assistance in identifying potential Métis communities or Métis Locals that may be interested in the Project. ATCO Power will continue to consult with the Métis Nation of Saskatchewan and any identified Métis Local(s) if it is the successful bidder for the Project.

The Project site has been privately owned since 1951 and no traditional usage of the land by Aboriginal peoples has been noted. The land use before 1951 is unknown. A heritage sensitivity search was completed on October 15, 2015 using the Saskatchewan Parks, Culture, and Sport website (Government of Saskatchewan 2012a). The Project quarter section is deemed not heritage sensitive. ATCO Power has searched publicly available information and no traditional use specific to the Project area has been identified. No asserted traditional territory boundaries or settlement lands have been identified near the Project. The closest documented traditional use in the Great Sand Hills region (Peters et. al. 2006) is located approximately 70 km west of the Project.

ATCO Power will continue to consult with identified Aboriginal groups if they are the successful bidder for the Project. If further information regarding regional traditional land uses becomes available, ATCO Power will incorporate this information and identified mitigation measures into subsequent assessment and permitting for the Project.

6.5 Aboriginal Consultation and Information Gathering Plan

5. A consultation and information-gathering plan that outlines the ongoing and proposed Aboriginal engagement or consultation activities, the general schedule for these activities and the type of information to be collected (or, alternatively, an indication of why such engagement or consultation is not required).

ATCO Power will further refine the Aboriginal Engagement Plan (Appendix C) if the Project is successfully awarded to ATCO Power in July 2016.

7.0 Consultation with the Public and Other Parties (Other than Aboriginal Consultation Included Above)

Provide the following information to the extent that it is available or applicable:

7.1 Stakeholders and Related Consultation Activities

1. A list of stakeholders that may be interested and potentially affected by the carrying out of the designated project. In addition, please describe consultation activities carried out to date with stakeholders, including:
 - a. names of stakeholders previously consulted;
 - b. date(s) each stakeholder was consulted; and
 - c. means of consultation (e.g., community meetings, mail or telephone).

7.1.1 Potentially Affected and Interested Stakeholders

The stakeholders identified by ATCO Power who may be potentially affected and/or have an interest in the Project are listed in Table 7.1-1.

Table 7.1-1 Stakeholders Who May be Potentially Affected and/or Interested in the Project

Federal Government	CEA Agency Transport Canada NAV CANADA
Provincial Government	Saskatchewan ENV Saskatchewan ECON Saskatchewan WSA
Municipal Government	RM of Swift Current No. 137 City of Swift Current
Local Landowners	All landowners, residents, and occupants within a distance of the Project site boundary determined in consultation with Saskatchewan ENV
Regional Associations	Southeast Saskatchewan Airshed Association Saskatchewan Association of Watersheds

Landowners, residents, and occupants include private residents (e.g., farmers); local industries such as oil and gas producers (e.g., Husky Energy); landfill (e.g., Newalta), natural gas, and oil pipeline companies; electric and gas distribution utilities; and light industry such as fabrication and welding, and an auto wrecker.

7.1.2 Overview of Stakeholder Consultation Activities to Date

SaskPower undertook an extensive Saskatchewan-wide site selection process that began in 2012 (City of Swift Current 2015). SaskPower engaged municipalities throughout Saskatchewan to select the most appropriate location for the Project. The Project location was chosen based on a number of factors,

including proximity to existing transmission infrastructure and natural gas supply, as well as the growing demand for electricity in southwest Saskatchewan.

ATCO Power’s early consultation activities included discussions with municipal, provincial, and federal government officials. Meetings were held with representatives from City of Swift Current, Saskatchewan ECON, Saskatchewan WSA, and the CEA Agency, who are responsible for administering legislation potentially applicable to the Project. The purposes of these meetings were to:

- introduce and inform these parties of the Project scope, need, benefits, and schedule
- seek clarification regarding regulatory processes applicable to the Project
- obtain updates and seek clarification with respect to recent changes to regulatory application requirements

A summary of the consultation efforts completed to date by ATCO Power is presented in Table 7.1-2.

Table 7.1-2 Non-Aboriginal Stakeholder Engagement Summary

Stakeholder Name	Meeting Date(s)	Means of Consultation
CEA Agency	December 7, 2015 December 21, 2015 January 7, 2016 January 28, 2016	In person meeting Conference call In person meeting In person meeting
Saskatchewan ENV	January 6, 2016	In person meeting
Saskatchewan ECON	October 30, 2015	Phone call
Saskatchewan WSA	October 30, 2015 – November 16, 2015	Phone calls and e-mails
RM of Swift Current No. 137	October 23, 2015	In person meeting
City of Swift Current	October 22, 2015	In person meeting

If SaskPower awards ATCO Power with the Project (expected July 2016), ATCO Power will continue the development and implementation of its stakeholder engagement plan to inform and consult with all persons whose rights may be directly and adversely affected by the Project, as well as others who may have an interest in the Project. Details of the planned consultation activities are described in Section 7.3.

7.2 Key Comments and Concerns by Stakeholders

2. An overview of key comments and concerns expressed to date by stakeholders and any responses that have been provided.

Comments received from the RM of Swift Current and the City of Swift Current during ATCO Power’s engagement activities to date have expressed support for the Project and the development opportunities within the region. To date, ATCO Power has not received any Project-specific stakeholder concerns.

7.3 Overview of Any Ongoing or Proposed Stakeholder Consultation Activities

3. An overview of any ongoing or proposed stakeholder consultation activities.

ATCO Power will continue the development and implementation of its stakeholder engagement plan if the Project is successfully awarded to ATCO Power in July 2016. The goals of the stakeholder engagement plan will be to:

- inform and consult with stakeholders about the Project, location, onsite equipment, timelines, nature of potential impacts, need for the Project, and how to get more information or express a concern
- proactively engage stakeholders that may be directly and adversely affected by the Project so as their feedback and concerns can be heard, addressed, and taken into consideration in the design of the Project
- document the engagement activities in a report for inclusion in the applicable regulatory applications
- protect and enhance the ATCO Power, ATCO Ltd., and Canadian Utilities Limited reputation
- support our partners and providers (e.g., SaskPower, TransGas, SaskTel) in their public engagement activities

An example stakeholder engagement plan is provided in Table 7.3-1. The example lists the name of potential stakeholder groups and the expected specified engagement activities for type of stakeholder.

Table 7.3-1 Public Stakeholder Engagement Plan

Stakeholder Type	Activity	Messaging	Tools
Regulators	Face-to-face meetings	<ul style="list-style-type: none"> • Project overview and scope • needs assessment • location • regulatory requirement and process • consultation activities • clarify application requirements 	Project information package and presentation slide deck specific to each regulator
	Email the Project information package	<ul style="list-style-type: none"> • Project overview and scope • location • permit and approval requirements 	Project information package
	Submit required applications	<ul style="list-style-type: none"> • request for approval(s) 	Regulatory application forms and/or reports
Provincial Officials	Mail the Project information package	<ul style="list-style-type: none"> • Project overview and scope • needs assessment • location • regulatory requirement and process 	Project information package
Municipal Officials	Mail the Project Information Package	<ul style="list-style-type: none"> • Project overview and scope • needs assessment • location • regulatory requirement and process 	Project information package
	Face-to-face meeting	<ul style="list-style-type: none"> • Project overview and scope • needs assessment • location • regulatory requirement and process • consultation activities • clarify application requirements 	Project information package and presentation slide deck
Stakeholders within a radius of the Project site ¹	Mail the Project information package	<ul style="list-style-type: none"> • Project overview and scope • needs assessment • location • regulatory requirement and process 	Project information package
Stakeholders outside a radius from the Project site ¹	ATCO Power toll free phone line and ATCO Power website.	<ul style="list-style-type: none"> • Project overview and scope • needs assessment • location • regulatory requirement and process 	ATCO Power website and Project information package
	Semiannual community information evenings Hand out Project information packages to interested parties	<ul style="list-style-type: none"> • Project overview and scope • location • how to get more information 	Project information package

Stakeholder Type	Activity	Messaging	Tools
Regional, community, and industrial association groups	Mail the Project information package	<ul style="list-style-type: none"> • Project overview and scope • needs assessment • location • regulatory requirement and process 	Project information package
	Follow up phone call or email	Information specific to the stakeholder	Project information package

Note:

1 Specific stakeholders identified as potentially being involved are provided in Table 7.1-1. If ATCO Power is awarded the Project, ATCO Power will develop a specific list of stakeholders in consultation with Saskatchewan ENV.

ATCO Power will continue to work with local landowners and stakeholders to communicate changes and/or updates to the Project. If required, ATCO Power will also work with SaskPower on the design and/or public consultation efforts associated with the transmission line route and configuration required to interconnect the Project to the provincial power grid.

Feedback obtained through the stakeholder engagement plan will play an important role in continued Project planning. For example, personal consultations with participants will generate new information that will be used to identify additional mitigation measures during subsequent engineering design analysis.

7.3.1 Project Notification

Once awarded the work, ATCO Power will mail a Project information package to landowners, occupants, and residents within a distance of the Project site, to be determined in consultation with Saskatchewan ENV. The Project Information Package will also be mailed to other interested parties, such as municipalities, government departments, Aboriginal communities, and regional associations. The materials distributed by mail will also be made available on ATCO Power's website (<http://www.atcopower.com/Projects/>).

The Project Information Package will provide a description of the following:

- scope of the Project
- Project location
- need for the Project
- benefits of the Project
- Project technology
- Project schedule
- participant consultation process
- ATCO Power and Project contact information
- ATCO Power's power generation experience and the ATCO companies' presence in Saskatchewan.

ATCO Power will establish additional means for participants to contact the Project team through a dedicated 1-800 phone number, through a dedicated email address and through a Project website (<http://www.atcopower.com/Projects/>) where the public can provide feedback.

Subsequent Project updates will be mailed to the same group of participants to whom the Project information package will be sent. Updates may include:

- an update on the Project and Project schedule
- Project location
- additional information on the Project technology, including an explanation of and image showing, the location of major onsite equipment
- an explanation of the process whereby the Project will be interconnected to the grid
- an overview of the air quality assessment and noise impact assessment completed for the Project

7.3.2 *Project Open House*

If awarded the Project, ATCO Power plans to hold a Project open house in Swift Current. Open house invitations will be sent to all stakeholders listed in Table 7.3-1 and other parties as identified.

The purpose of the open house will be to provide participants with an opportunity to obtain information about the Project and share their questions and concerns. ATCO Power representatives will be available to speak with and consult with open house attendees. Attendees will be invited to complete feedback comment forms and to sign the optional sign-in sheet that ATCO Power will use to document attendance.

7.3.3 *Personal Consultations*

If awarded the Project, ATCO Power will conduct personal consultations with all land interest holders, including occupants, residents, landowners, and caveat holders within a distance of the Project site boundary, which will be determined in consultation with Saskatchewan ENV. The purpose of the consultations will be to explain the Project, to answer questions and address concerns, to document the views and concerns of participants, and to gather feedback regarding the Project.

7.4 **Consultations with Other Jurisdictions**

4. A description of any consultations that have occurred with other jurisdictions that have environmental assessment or regulatory decisions to make with respect to the project.

As described in Table 7.1-2, ATCO Power has been in consultation with the Saskatchewan WSA and Saskatchewan ECON since September 2015 regarding the Project. In addition, ATCO Power met with the CEA Agency in December 2015 to introduce ATCO Power and the Project, and to obtain information on federal regulatory processes that should be followed. ATCO Power met with Saskatchewan ENV in January 2016 to introduce ATCO Power and the Project, and to obtain information on provincial regulatory processes that should be followed. ATCO Power will continue to engage applicable regulators if awarded the Project.

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9.0 Acronyms

AAFC	Agriculture and Agri-Food Canada
AGC	Automatic Generation Control
AHPP	Aquatic Habitat Protection Permit
Asl	above sea level
AVI	aquifer vulnerability index
bgs	below ground surface
CAC	Criteria Air Contaminants
CEA	Canadian Environmental Assessment
CEAA, 2012	Canadian Environmental Assessment Act, 2012
CO	carbon monoxide
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
EAB	Environmental Assessment Branch
ERP	emergency response plan
ESA	environmental site assessment
GHG	greenhouse gas
GTG	gas turbine generator
HRSG	heat recovery steam generator
kt/year	kilotons per year
MSAPR	Multi Sector Air Pollutant Regulations
MWh	megawatt hour
NAAQO	National Ambient Air Quality Objectives
NO _x	nitrogen oxides
NTS	National topographic series?
P&NG	petroleum and natural gas
PM _{2.5}	fine particulates smaller than 2.5 microns
ppmv	parts per million by volume
PSL	permissible sound levels
RM	Rural Municipality
RAP	restricted activity period
ROW	right-of-way
SAR	Species at Risk
SARA	Species at Risk Act
Saskatchewan ECON	Saskatchewan Ministry of Economy
Saskatchewan ENV	Saskatchewan Ministry of Environment
SaskPower	Saskatchewan Power Corporation
SaskTel	Saskatchewan Ministry of Telecommunication
SKCDC	Saskatchewan Conservation Data Centre
SO ₂	sulphur dioxide
SRC	Saskatchewan Research Council
STG	steam turbine generator
VOC	volatile organic compound
MW	megawatt

WMO	World Meteorological Organization
WSA	Water Security Agency
WSC	Water Survey of Canada

Appendix A

Legal Land Title

Online Services
Land Registry

- > [Online Submission \(OLS\)](#)
- > [Map Search \(New!\)](#)
- > [Quick Search](#)
- > [Search](#)
- > [Grant Search](#)
- > [General Record Search](#)
- > [Packet Quick Check](#)
- > [Packet Detailed Check](#)
- > [Image Request Search](#)
- > [Document Storage Library](#)

Survey Plans

- > [Plan Submissions Online](#)
- > [Plan Search](#)
- > [Change Order Search](#)
- > [Support Document Search](#)
- > [Field Book Search](#)
- > [Request Status Check](#)

Personal Property Registry

- > [SPPR Application](#)

Judgment Registry

- > [Judgment Search](#)

Corporate Registry

- > [Corporate Registry Online](#)
- > [Business Registrations Saskatchewan](#)

[View fees for this visit](#)
Quick Search Results

Search By: Land Description
With Criteria: Quarter Section = SE
 Section = 13
 Township = 16
 Range = 15
 Meridian = 3
 As Of Date = 14 Dec 2015 15:36:58

Title Information
[Download To Spreadsheet \(.CSV\)](#)

Land Description SE 13-16-15-3 Ext 1			
Owner(s) SASKATCHEWAN POWER CORPORATION			
Title	Number S146723036	Share 1/1	Title Lock Information N/A
Last Amendment Date 22 Jun 2015 13:39:50.523		Old Land Description	
Parcel 165218351	Parcel Type Surface Regular	Municipality RM OF SWIFT CURRENT NO. 137	Ties
Validated Ties	Commodity/Unit	Linked to Unit	
N/A	N/A	N/A	

Land Description Blk/Par H-Plan 102015155 Ext 0			
Owner(s) Her Majesty The Queen in Right of Saskatchewan			
Title	Number S140496475	Share 1/1	Title Lock Information N/A
Last Amendment Date 30 Mar 2011 16:20:04.377		Old Land Description	
Parcel 165218306	Parcel Type Surface Regular	Municipality RM OF SWIFT CURRENT NO. 137	Ties
Validated Ties	Commodity/Unit	Linked to Unit	
N/A	N/A	N/A	

Land Description SE 13-16-15-3 Ext 0 As described on Certificate of Title 95SC01720.			
Owner(s) Her Majesty the Queen in Right of Saskatchewan			
Title	Number S123102289	Share 1/2	Title Lock Information Uncertified Mineral Title-Producing Area-Transfer Permitted
Last Amendment Date 21 Aug 2007 08:27:23.317		Old Land Description	
Parcel 151618732	Parcel Type Mineral	Municipality RM OF SWIFT CURRENT NO. 137	Ties
Validated Ties	Commodity/Unit	Linked to Unit	
	All mines and minerals as referenced on Certificate of Title 95SC01720	N/A	

Land Description SE 13-16-15-3 Ext 0 As described on Certificate of Title 95SC01720.			
Owner(s) PRAIRIESKY ROYALTY LTD.			
Title	Number S134248215	Share 1/2	Title Lock Information N/A
Last Amendment Date 21 Aug 2007 08:27:23.533		Old Land Description	
Parcel 151618732	Parcel Type Mineral	Municipality RM OF SWIFT CURRENT NO. 137	Ties
Validated Ties	Commodity/Unit	Linked to Unit	
	All mines and minerals as referenced on Certificate of Title 95SC01720	N/A	

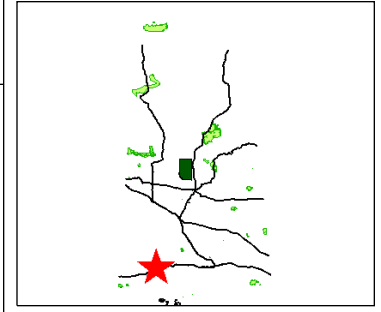
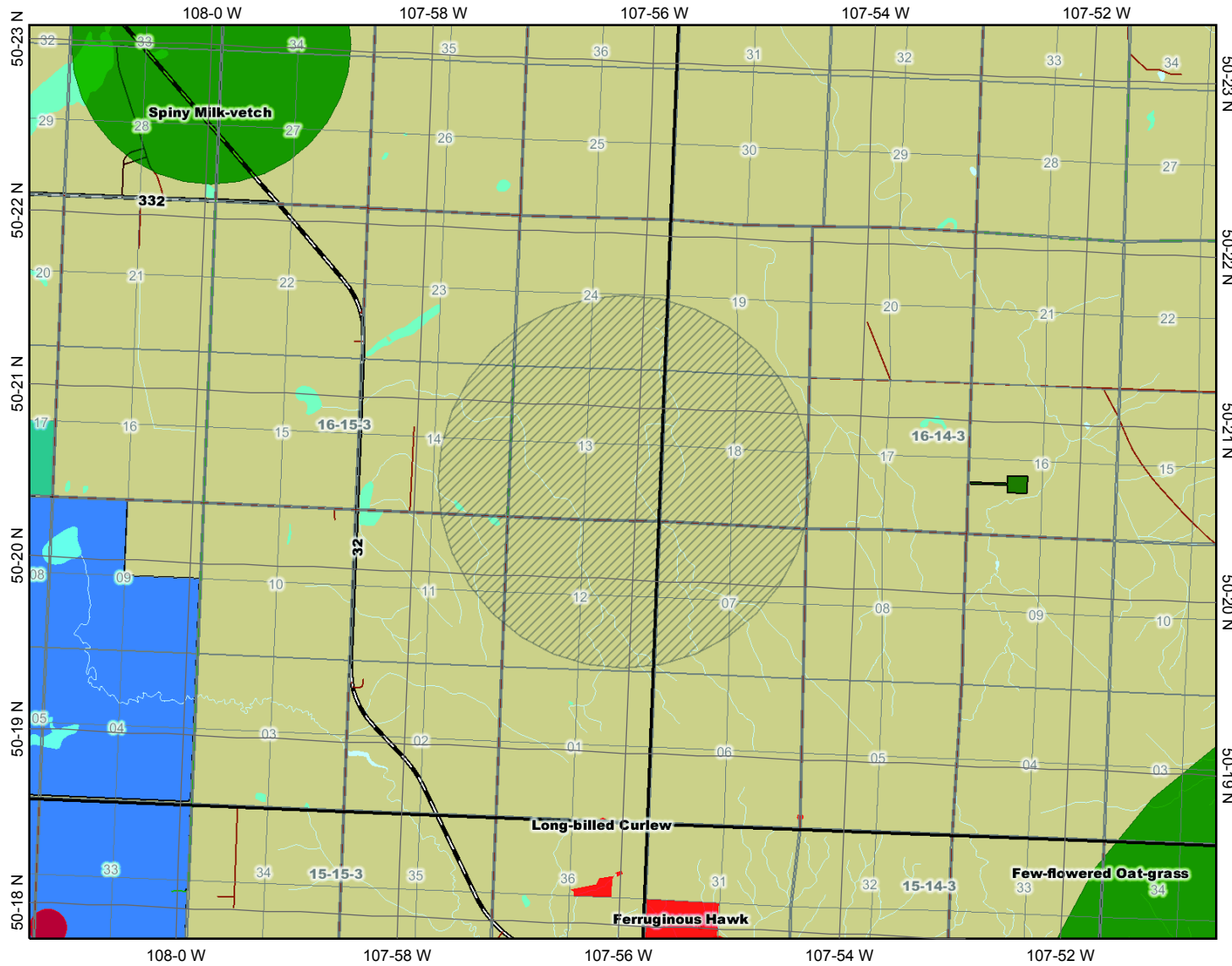
3 Records

[Back to Search](#)
[Back to top](#)

Appendix B

Saskatchewan Conservation Data Centre Wildlife Sensitivity Search Results

SE 13-016-15 W3M Species of Special Concern



Legend

- Ec_Outlined
- Soak Outline
- Soak W soak
- Townships
- Sections
- Quarter Sections
- Rare and Endangered Species
- Animal
- Community
- Forelands
- Other
- Plant
- Fish and Wildlife Development
- Fund Lands
- Wildlife Habitat Protection
- Agricultural Stream Land
- SUIRN Roads
- Level / Street
- Reserve / Kennel
- Cellar
- Urban Municipalities
- SUIRN Highways
- Lakes BOK
- Intermittent Water
- Permanent Water
- Flooded Area
- Trigridin Canal
- Rivers BOK
- IFRA Community Features
- Rangeland Wetland



Map center: 50° 20' 34" N, 107° 56' 7" W



Scale: 1:68,673

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Notes: No species of special concern were identified within a 2 km radius of the site.

Table B2 Migratory Birds Potentially Occurring in the Vicinity of the Project, Including Provincial and Federal Status

Common Name	Scientific Name	Status		
		COSEWIC ¹	SARA ²	SKDC ³
Canada goose	<i>Branta canadensis</i>	-	-	S5B,S5M,S2N
Osprey	<i>Pandion haliaetus</i>	-	-	S4B,S3M
Bald eagle	<i>Haliaeetus leucocephalus</i>	Not at Risk	-	S5B,S4M,S4N
Northern harrier	<i>Circus cyaneus</i>	Not at Risk	-	S5B,S4M,S2N
Northern goshawk	<i>Accipiter gentilis atricapillus</i>	-	-	S4B,S4M,S3N
Coopers hawk	<i>Accipiter cooperii</i>	Not at Risk	-	S4B,S2M,S2N
Swainson's hawk	<i>Buteo swainsoni</i>	-	-	S4B
Red-tailed hawk	<i>Buteo jamaicensis</i>	Not at Risk	-	S5B,S5M,S1N
Ferruginous hawk	<i>Buteo regalis</i>	Threatened	Schedule 1	S4B,S4M
Golden eagle	<i>Aquila chrysaetos</i>	-	-	S3B, S4M, S3N
Turkey vulture	<i>Cathartes aura</i>	-	-	S2B, S2M, S2N
Gadwall	<i>Anas strepera</i>	-	-	S5B,S5M,S2N
American wigeon	<i>Anas americana</i>	-	-	S5B,S5M,S2N
Mallard	<i>Anas platyrhynchos</i>	-	-	S5
Blue-winged teal	<i>Anas discors</i>	-	-	S5B,S5M
Cinnamon teal	<i>Anas cyanoptera</i>	-	-	S4B,S4M
Northern shoveler	<i>Anas clypeata</i>	-	-	S5B,S5M
Northern pintail	<i>Anas acuta</i>	-	-	S5B,S5M,S4N
Green-winged teal	<i>Anas crecca</i>	-	-	S5B,S5M,S2N
Canvasback	<i>Aythya valisineria</i>	-	-	S5B,S5M,S2N
Redhead	<i>Aythya americana</i>	-	-	S5B,S5M,S2N
Lesser scaup	<i>Aythya affinis</i>	-	-	S5B,S5M,S3N
White-winged scoter	<i>Melanitta fusca</i>	-	-	S5B,S3M
Ruddy duck	<i>Oxyura jamaicensis</i>	-	-	S5B
Gray partridge	<i>Perdix perdix</i>	-	-	SNA
Ring-necked pheasant	<i>Phasianus colchicus</i>	-	-	SNA
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	-	-	S5
American white pelican	<i>Pelecanus erythrorhynchos</i>	Not at Risk	-	S3B
Great blue heron	<i>Ardea herodias</i>	-	-	S3B
Sandhill crane	<i>Grus canadensis</i>	-	-	S2B, S4M
Greater sage-grouse	<i>Centrocercus urophasianus urophasianus</i>	Endangered	Schedule 1	S1B,S1N
Pied-billed grebe	<i>Podilymbus podiceps</i>	-	-	S5B
Western grebe	<i>Aechmophorus occidentalis</i>	Special Concern	No Schedule	S5B
Horned grebe	<i>Podiceps auritus</i>	Special Concern	No Schedule	SFB
Red-necked grebe	<i>Podiceps grisegena</i>	Not at Risk	-	S5B
Eared grebe	<i>Podiceps nigricollis</i>	-	-	S5B
American bittern	<i>Botaurus lentiginosus</i>	-	-	S4B
Black-crowned night heron	<i>Nycticorax nycticorax</i>	-	-	S5B
Yellow rail	<i>Coturnicops noveboracensis</i>	Special Concern	Schedule 1	S3B,S2M
Piping plover	<i>Charadrius melodus circumcinctus</i>	Endangered	Schedule 1	S3B
Sora	<i>Porzana carolina</i>	-	-	S5B
American coot	<i>Fulica americana</i>	Not at Risk	-	S5B
Killdeer	<i>Charadrius vociferus</i>	-	-	S5B

Common Name	Scientific Name	Status		
		COSEWIC ¹	SARA ²	SKDC ³
American avocet	<i>Recurvirostra americana</i>	-	-	S5B,S5M
Lesser yellow legs	<i>Tringa flavipes</i>	-	-	S5B,S5M
Willet	<i>Tringa semipalmata</i>	-	-	S5B,S4M
Upland sandpiper	<i>Bartramia longicauda</i>	-	-	S5B,S5M
Long-billed curlew	<i>Numenius americanus</i>	Special Concern	Schedule 1	S3B,S4M
Marbled godwit	<i>Limosa fedoa</i>	-	-	S5B,S5M
Spotted sandpiper	<i>Actitis macularius</i>	-	-	S5B,S5M
Wilson's phalarope	<i>Phalaropus tricolor</i>	-	-	S5B,S5M
Wilson's snipe	<i>Gallinago delicata</i>	-	-	S5B
Franklin's gull	<i>Leucophaeus pipixcan</i>	-	-	S4B,S4M
Black tern	<i>Chlidonias niger</i>	-	-	S4B,S4M
Common tern	<i>Sterna hirundo</i>	Not at Risk	-	S5B,S5M
Forster's tern	<i>Sterna forsteri</i>	-	-	S4B
Rock pigeon	<i>Columba livia</i>	-	-	SNA
Mourning dove	<i>Zenaida macroura</i>	-	-	S5B
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	-	-	S5B
Great horned owl	<i>Bubo virginianus</i>	Not at Risk	-	S5
Burrowing owl	<i>Athene cunicularia</i>	Endangered	Schedule 1	S1
Short-eared owl	<i>Asio flammeus</i>	Special Concern	Schedule 1	S3B,S2N
Common night hawk	<i>Chordeiles minor</i>	Threatened	Schedule 1	S4S5B,S4S5M
Downy woodpecker	<i>Picoides pubescens</i>	-	-	n/a
Hairy woodpecker	<i>Picoides villosus</i>	-	-	n/a
Northern flicker	<i>Colaptes auratus</i>	-	-	n/a
American kestrel		-	-	S5B,S5M,S1N
Merlin	<i>Falco columbarius</i>	-	-	n/a
Least flycatcher	<i>Empidonax minimus</i>	-	-	n/a
Western kingbird	<i>Tyrannus verticalis</i>	-	-	n/a
Eastern kingbird	<i>Tyrannus tyrannus</i>	-	-	n/a
Loggerhead shrike	<i>Lanius ludovicianus excubitorides</i>	Threatened	Schedule 1	S3B
Black-billed magpie	<i>Pica hudsonia</i>	-	-	S5
Warbling vireo	<i>Vireo gilvus</i>	-	-	n/a
Horned lark	<i>Eremophila alpestris</i>	-	-	n/a
Tree swallow	<i>Tachycineta bicolor</i>	-	-	n/a
Barn swallow	<i>Hirundo rustica</i>	Threatened	No Schedule	S5B,S5M
Bank Swallow	<i>Riparia riparia</i>	Threatened	No Schedule	S5B, S5M
House wren	<i>Troglodytes aedon</i>	-	-	SF
Marsh wren	<i>Cistothorus palustris</i>	-	-	S5B
Mountain bluebird	<i>Sialia currucoides</i>	-	-	S5B
American robin	<i>Turdus migratorius</i>	-	-	S5B
Gray catbird	<i>Dumetella carolinensis</i>	-	-	S5B
Brown thrasher	<i>Toxostoma rufum</i>	-	-	S5B
European starling	<i>Sturnus vulgaris</i>	-	-	SNA
Yellow warbler	<i>Setophaga petechia</i>	-	-	S5B
Cedar waxwing	<i>Bombycilla cedrorum</i>	-	-	S5B
Common yellowthroat	<i>Geothlypis trichas</i>	-	-	S5B
Spotted towhee	<i>Pipilo maculatus</i>	-	-	S5B
Yellow-breasted chat	<i>Icteria virens auricollis</i>	-	-	S4B

Common Name	Scientific Name	Status		
		COSEWIC ¹	SARA ²	SKCDC ³
Sprague's pipit	<i>Anthus spragueii</i>	Threatened	Schedule 1	S3B
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	Threatened	Schedule 1	S5B
McCown's Longspur	<i>Rhynchophanes mccownii</i>	Special Concern	Schedule 1	S3S4B
Clay-colored sparrow	<i>Spizella pallida</i>	-	-	S5B
Vesper sparrow	<i>Poocetes gramineus</i>	-	-	S5B
Lark sparrow	<i>Chondestes grammacus</i>	-	-	S5B
Lark bunting	<i>Calamospiza melanocorys</i>	-	-	S4B
Savannah sparrow	<i>Passerculus sandwichensis</i>	-	-	S5B
Grasshopper sparrow	<i>Ammodramus savannarum</i>	-	-	S4B
Baird's Sparrow	<i>Ammodramus bairdii</i>	Special Concern	No Schedule	S4B
Song sparrow	<i>Melospiza melodia</i>	-	-	S5B
Sharp-tailed sparrow	<i>Ammodramus nelson</i>	-	-	S5B
le Conte's sparrow	<i>Ammodramus leconteii</i>	-	-	S4B
bobolink	<i>Dolichonyx oryzivorus</i>	Threatened	No Schedule	S5B
red-winged blackbird	<i>Agelaius phoeniceus</i>	-	-	S5B
western meadowlark	<i>Sturnella neglecta</i>	-	-	S5B
yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	-	-	n/a
brewer's blackbird	<i>Euphagus cyanocephalus</i>	-	-	n/a
common grackle	<i>Quiscalus quiscula</i>	-	-	S5B
rusty blackbird	<i>Euphagus carolinus</i>	Special Concern	Schedule 1	S3
brown-headed cowbird	<i>Molothrus ater</i>	-	-	S5B
baltimore oriole	<i>Icterus galbula</i>	-	-	S5B
house sparrow	<i>Passer domesticus</i>	-	-	SNA
American goldfinch	<i>Spinus tristis</i>	-	-	S5B

Notes:

1. COSEWIC 2015
2. Government of Canada 2016
3. SKCDC 2015

Appendix C

Aboriginal Engagement Plan



Great Plains Generation Station Project

Aboriginal Engagement Plan

400, 919-11 Avenue SW, Calgary AB, Canada T2R 1P3
Tel: 1-403-209-6900 Fax: 780-209-6920
www.atcopower.com

January, 2016

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Appendix 1: Aboriginal Community Organization Information

1. Introduction

1.1 The Aboriginal Engagement Plan

ATCO Power's (ATCO) relationship with its Aboriginal communities has evolved over many years. ATCO believes that:

"Positive relationships with Aboriginal communities are critical to the success of our projects and our on-going business activities. The foundation for positive relationships is to recognize and respect the legitimate rights and interests of Aboriginal people relative to Aboriginal lands." (ATCO Policy)

Through information sharing, consultation and collaboration, the company works with Aboriginal communities to understand issues and concerns and we strive to reach practical solutions that best meet the needs of both parties. This is the foundation of our Aboriginal Consultation Process.

This plan has been developed to help ensure ATCO achieves excellence in our consultation efforts, providing direction to the Indigenous Relations project team and communicating the scope of consultation activities to enhance transparency and accountability. This plan demonstrates ATCO's commitment to engage in meaningful consultation and reflects our commitment to build and maintain positive relationships with Aboriginal communities and achieve successful project outcomes.

1.2 Revisions

This plan will be reviewed and updated upon project award and in consultation with regulatory agencies. Any changes to this plan will be made only with the approval of the Indigenous Relations Supervisor. Requests or suggestions for change should be submitted to Nicole Minde, Consultation Advisor. Approved changes will result in a document revision, as tracked in the table below:

Document Version	Prepared/Revised by	Date
Draft Rev0	Nicole Minde	January 19, 2016

1.3 Approval

The contents of this document have been reviewed and approved.

Supervisor, Indigenous Relations	Date

2 General Project Information

2.1 Project Description and Location Overview

ATCO Power Canada Limited (ATCO Power) has entered a bid process initiated by Saskatchewan Power Corporation (SaskPower) to design, build and operate a 350 megawatt (MW) natural gas-fired combined-cycle gas turbine electricity generating station (the Project). Along with the construction of the generating station, connections will be completed to the existing electrical transmission system and natural gas supply in the area. Raw water will be supplied from the existing City of Swift Current fresh water supply system and waste water will be sent to the City’s existing waste water treatment facility.

The proposed Great Plains Generating Station will be located approximately 11 kilometers north-west of Swift Current, Saskatchewan (SE 13-16-15 W3M). This land has been privately owned since 1951 and is currently classified as tame pasture. The land is currently owned by SaskPower. The area to be leased by ATCO Power for the purpose of developing the Project is 16 hectares (400 metres x 400 metres). A heritage sensitivity search was completed on October 15, 2015 using the Saskatchewan Parks, Culture and Sport website (GOS 2015). The Project quarter section is deemed not heritage sensitive. The closest First Nation Reserve is the Nekaneet Urban Reserve, approximately 11 km to the south east. The closest crown land, the Swift Current-Webb Community Pasture lies approximately 4 kilometers due west of the project site.

ATCO will work with the appropriate regulatory bodies to identify and confirm the Aboriginal Groups to engage. Through internal assessment and review of the Government of Saskatchewan’s *Proponent Handbook, Voluntary Engagement with First Nation and Metis Communities to inform Government’s duty to consult Process (November 2013)*, the following Aboriginal Communities/groups were identified to engage:

- Carry the Kettle First Nation
- File Hills Qu’Appelle Tribal Council
- Metis Nation Saskatchewan - Western Region 3
- Nekaneet First Nation
- Metis Nation of Saskatchewan
- Prairie Dog – Metis Local 123

2.2 Proposed Project Timing

Aboriginal Communities/Groups will be notified of changes in timelines as information becomes available.

SaskPower issued a public RFP	June 2015
ATCO Power expresses interest to RFP.....	July 2015
ATCO Power to initiate Aboriginal Engagement	January 2016
ATCO Power – Final RFP submission	April 2016
Project Award/Proponent Notified	July 2016
ATCO Power – Aboriginal Engagement (Target date).....	July 2016
Construction start (Target date).....	Q3 2016

In-Service Date.....Q3 2019
Decommission Date (Target date)2054/2057

2.3 ATCO Power/ATCO Electric Indigenous Relations Team (IR)

Staff Name and Contact Information	Role
Ken White (780) 509-2285 Ken.White@atcoelectric.com	Indigenous Relations Supervisor: <ul style="list-style-type: none"> • Approves and monitors the engagement between the IR team and Aboriginal Communities/Groups. • Assists with risk and issue management. • Works with ATCO Electric Indigenous Relations Senior Manager to inform Executive Project Team.
Nicole Minde (780) 420-5591 Nicole.Minde@atcoelectric.com	Consultation Advisor: <ul style="list-style-type: none"> • Responsible in managing and monitoring Community documentation, including community consultation activity tracking. • Works with Liaisons to provide project information to Aboriginal Communities/Groups and additional information requested. • Responsible for Aboriginal Engagement reporting and submission to appropriate regulatory bodies.
Aaron Schmidt (780) 887-9987 Aaron.Schmidt@atcoelectric.com	Liaison(s): <ul style="list-style-type: none"> • Direct point of contact with the identified Aboriginal Communities/Groups. • Works with the Consultation Advisor to manage and track Community issues and commitments. • Documents all community contact and follow up. Forwards community activities to Consultation Advisor for record and tracking purposes.

3 Aboriginal Consultation

3.1 Consultation Requirements

ATCO is committed to engaging in meaningful consultation in project developments. A key component in developing this consultation plan is identifying with whom ATCO will engage. The Aboriginal engagement will be classified (and distinguished) at two levels:

1. Consultation

At this level of involvement, there is a more extensive scope of activities (described in section 3.6 of this plan). The use of the term “consultation” in this context has specific reference to consultation as required and described in *The Government of Saskatchewan First Nation and Métis Consultation Policy Framework* (June 2010). As such, this engagement will only apply to Saskatchewan-based First Nations and Metis Groups as required.

2. Engagement

This level of involvement is limited in scope and applies more broadly to include First Nations and other Aboriginal communities where applicable (such as Tribal Organizations and Metis Nation of Saskatchewan). This engagement only involves providing project information and an opportunity for interested parties – who may have a stake in the project to voice their concerns (if any) on the development.

3.2 First Nations and Metis Groups to Consult

The IR Consultation Advisor will work with the appropriate ministries within the GOS and Federal agencies to confirm consultation requirements and First Nations to consult. Through internal discussions, ATCO recommends face to face contact with:

- Carry the Kettle First Nation
- Nekaneet First Nation
- Prairie Dog – Metis Local 123

Note: The GOS, Tribal Councils, Metis Nation of Saskatchewan, and Metis Nation of Saskatchewan Western Region 3 will be contacted to confirm First Nations and possible Metis Groups to consult. If other Aboriginal Communities/Groups are identified by these organizations during the course of the project, the Consultation Advisor will revise the appropriate listings accordingly.

3.3 Communities and Organizations to be engaged

As described in section 3.1, ATCO will provide project information to the following First Nations and other Aboriginal communities or organizations:

- Fort Hills Qu’Appelle Tribal Council
- Metis Nation of Saskatchewan
- Metis Nation Saskatchewan - Western Region 3

3.4 Scope of Work and Execution Strategy

The anticipated scope of involvement for IR is based on the current understanding of the planned project (activity types and the potential impacts to Crown land) and includes the following:

- **Complete Preliminary Assessment.** Review available information to determine if any regulatory requirements for First Nations or Metis Consultation are expected to be triggered. Preliminary assessment considers activity type and location, regulatory and government requirements.

- **Planning and implementing appropriate engagement** to support required regulatory processes and approvals as needed. Based on the preliminary assessment and government direction, as well as internal best practices, the preliminary scope will include engaging with First Nations and Metis Groups. ATCO will send/deliver a project notification to identified communities in January, 2016. ATCO will be available to respond to any questions or concerns about the project to the best of its ability and as appropriate. Questions may be forwarded to SaskPower, as appropriate.
- **Community Engagement and Issues Management:** When appropriate regulatory direction has been confirmed and ATCO is notified as the successful bidder, ATCO will review the Aboriginal Consultation plan and implementation of the plan will commence. Further notification that ATCO is the successful bidder will be provided to the communities and engagement with the First Nation and Metis Groups will commence. Community consultation protocols will be explored, engagement activities will be scheduled and carried out and specific sites of interest will be requested. This could also include support beyond engagement and consultation to any issues management needs that may arise, as required.
- **Community consultation** activities are based on project scope and access, and may include the following: Community open house, Chief and Council meetings, Elders/Knowledge Holder mapping sessions, ground site visits and follow up meetings when information becomes available.
- **Document Management and Regulatory Reporting.** As part of the communication and transparency process, all engagement activities are documented and recorded using a consultation record that will be provided to each involved community. The community will have the opportunity to review the record for accuracy. The consultation record and supporting documentation will then be used when applying for the appropriate regulatory approvals. Ongoing notifications will be provided to the First Nation and Metis Groups, as available, throughout the project process.
- **Provide additional support to the project team,** as required, following Aboriginal engagement to manage any Aboriginal-related issues that may arise during the project lifecycle that may impede the successful completion of the project or create adverse impacts to ATCO's reputation and/or existing relationships.
- **Consultation Hand-over:** Once the project has been completed, outcomes from consultation are to be reviewed with Aboriginal groups, or utility operational staff, as required, to ensure any outstanding commitments and/or issues are addressed.

Appendix 1: Aboriginal Community/Organization Contact Information

Community /Organization	Leadership (Term)	Notes:
<p>Carry the Kettle First Nation P.O. Box 57 Sintaluta, SK S0G 4N0 Office: 306-727-2135 Fax:306-727-2149 Email: carrythekettle@sasktel.net</p>	<p>Chief Barry (Kenneth) Kennedy (Apr. 1/14 – Mar. 31/16)</p>	<p>-Treaty 4 First Nation and affiliated with Fort Hills Qu’Appelle Tribal Council -Band Lands Manager: Corrina Rider -website: www.ckfirstnation.ca</p>
<p>Nekaneet First Nation P.O. Box 548 Maple Creek, SK S0N 1N0 Office: 306-662-3660 Fax: 306-662-4160</p>	<p>Chief Jordi Fourhorns (Apr. 1/14 – Mar. 26/17)</p>	<p>-Urban reserve located within Swift Current, SK. -Treaty 4 First Nation and affiliated with File Hills Qu’Appelle Tribal Council</p>
<p>Prairie Dog – Metis Local 123 780 – 8th Avenue NE Swift Current, SK S9H 2R5 Office: 306-773-4533</p>	<p>Cecile Blanke, President</p>	<p>- Closest Metis Local located approximately 60 km south of Swift Current, Sk. - Metis Local within the MNS – Western Region 3</p>
<p>File Hills Qu’Appelle Tribal Council P.O. Box 985 Fort Qu’Appelle, SK S0G 1S0 Office: 306-332-8200 Fax: 306-332-1811</p>	<p>Elaine Chicosse, Tribal Chair Ira Lavallee, Vice Tribal Chair</p>	<p>- 11 First Nations within FHQTC. - Website: www.fhqtc.com</p>
<p>Metis Nation of Saskatchewan 231 Robin Crescent Saskatoon, SK S7L 6M8 Office: 306-343-8285 Fax: 306-343-0171 Email: info@mn-s.ca</p>	<p>Robert Doucette, President</p>	<p>- Métis Environment and Resource Management Advisory Committee - Website: www.mn-s.ca - Office currently closed.</p>
<p>Metis Nation of Saskatchewan Western Region 3 3220 Dewdney Avenue E. Regina, SK S4N 5E4 Office: 306-787-3606 Fax: 306-525-2106 Email: nlarnold@sasktel.ca</p>	<p>Lela Arnold, Area Director</p>	<p>- The project is located within this Métis Region.</p>