GENERAL INFORMATION

1. The project's name, nature and proposed location.

TransAlta MidAmerican Partnership (TAMA Power) is pleased to provide this Project Summary for the proposed Sundance 7 Project (the Project). TAMA Power is a partnership between TransAlta Corporation (TransAlta) and MidAmerican Energy Holdings Company.

The Project would be located near the existing TransAlta coal-fired power generation facilities in central Alberta, and is planned to be a combined-cycle natural gas-fired power generation plant in a 2 x 1 configuration with a gross nominal generation capacity of 856 megawatts (MW). The Project will be located in a green field site in northwest and southwest quarter-sections of 10-52-4 West of the Fifth Meridian (W5M), approximately 7 kilometres (km) southwest of the Village of Wabamun, Alberta (Figure 1). It is anticipated the Project will be in service in late 2018, in anticipation of the programed retirement of coal-fired assets in the region.

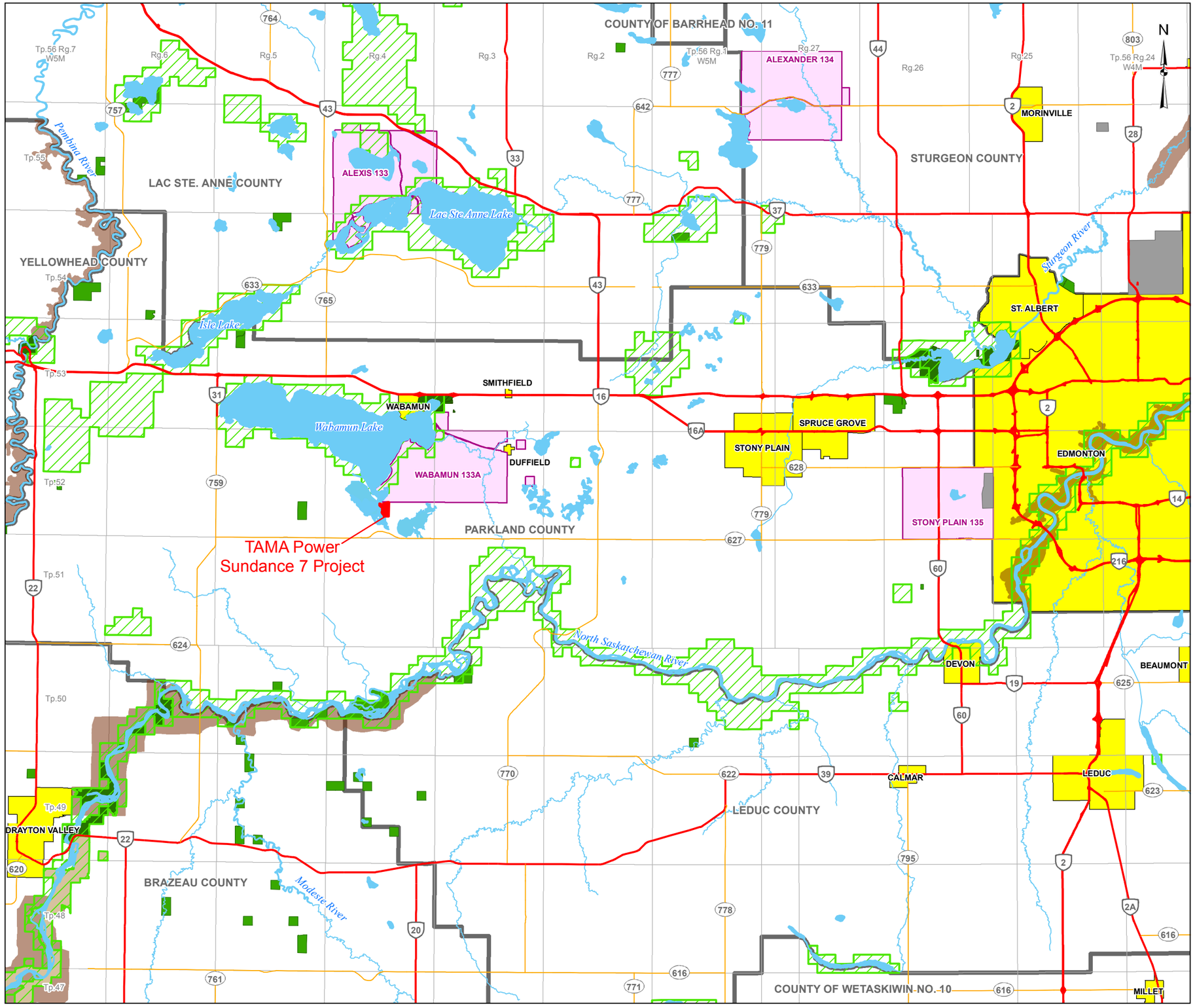
The Project will be a highly efficient combined cycle natural gas power plant and TAMA Power has incorporated low emission technology into the design to limit potential adverse environmental effects. The Project site was selected in order to take advantage of an existing power facility labor pool and infrastructure, thus reducing the footprint of new disturbance.

2. The proponent's name and contact information and the name and contact information of their primary representative for the purpose of the description of the project.

Name of the proponent: TransAlta MidAmerican Partnership

Address of the proponent:
TransAlta MidAmerican Partnership
110 - 12 Avenue SW
Calgary, AB
T2P 2M1

Principal contact person:
Lois Miller
Environmental Specialist
TransAlta Corporation
Telephone: 780-731-6000 Ext 6849
Facsimile: 780-731-6075
Email: Lois_Miller@transalta.com



LEGEND

- PROJECT SITE

BASE FEATURES

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- CITY / TOWN
- ENVIRONMENTALLY SIGNIFICANT AREA
- FEDERAL MILITARY LAND
- INDIAN RESERVE
- KEY WILDLIFE AND BIODIVERSITY ZONE
- MUNICIPAL BOUNDARY
- WATERBODY

PARK / PROTECTED AREA

- NATURAL AREA (NA)
- PROVINCIAL PARK (PP)
- PROVINCIAL RECREATION AREA (PRA)

REFERENCE

MUNICIPAL BOUNDARIES OBTAINED FROM ALTALIS © GOVERNMENT OF ALBERTA 2014. ALL RIGHTS RESERVED. NATIONAL ROAD NETWORK OBTAINED FROM GEOBASE®. HYDROLOGY, INDIAN RESERVE AND POPULATED PLACES OBTAINED FROM IHS ENERGY INC. PARKS AND PROTECTED AREAS OBTAINED FROM ALBERTA TOURISM, PARKS AND RECREATION, GOVERNMENT OF ALBERTA. ENVIRONMENTALLY SIGNIFICANT AREA OBTAINED FROM ALBERTA TOURISM, PARKS AND RECREATION, PREPARED BY FIERA BIOLOGICAL CONSULTING, 2009. KEY WILDLIFE AND BIODIVERSITY ZONES © GOVERNMENT OF ALBERTA, FISH AND WILDLIFE DIVISION 2013.
DATUM: NAD 83 PROJECTION: 3TM 114

10 0 10
SCALE 1:350,000 KILOMETRES

PROJECT
TAMA POWER
SUNDANCE 7 PROJECT

TITLE
REGIONAL AREA

Golder Associates

PROJECT	13-1334-0051		FILE No.		
DESIGN	CS	04 Mar. 2014	SCALE AS SHOWN	REV.	0
GIS	TN	28 Mar. 2014	**FIGURE: 1**		
CHECK	CS	20 Jun. 2014			
REVIEW	RR	20 Jun. 2014			

I:\2013\13-1334\13-1334-0051\Mapping\MXD\General\Fig_1_regional_area_20140620_FINAL.mxd

3. A description of and the results of any consultations undertaken with any jurisdictions and other parties including Aboriginal peoples and the public.

Overview of Stakeholder Consultation Program

TransAlta, on behalf of TAMA Power, has been undertaking a Participant Involvement Program (PIP) for the Project in accordance with Section 3 and Appendix A of Alberta Utilities Commission (AUC) *Rule 007: Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations and Hydro Developments* (Rule 007) (AUC 2014). The objectives of the consultation program are to engage and consult with the public and to build and maintain strong relationships with neighbours, interested stakeholders and other participants. The program has included consultations with local landowners and Aboriginal groups, government agencies, municipalities, companies and non-government community organizations.

Engagement activities for Project-specific PIP began in November 2013 and aspects of the consultation program will continue throughout the regulatory and public review process. Assuming the Project achieves regulatory approval and advances to detailed design, construction and commissioning, TransAlta and TAMA Power will continue to provide stakeholders with updates on the status of the Project, as appropriate.

The following participants were identified for the inclusion in the PIP.

Project notification:

- all landowners, residents and occupants within 2,000 metres (m) of the Project site boundary;
- all residents who fall within the Duffield postal code T0E 0N0; and
- other interested parties, including government agencies, elected officials, Aboriginal groups, TransAlta employees, municipalities and non-government organizations.

Personal consultation:

- all landowners, residents and occupants within 800 m of the Project site boundary;
- all residents within 2,000 m of the Project site boundary; and
- Aboriginal groups identified by the Government of Alberta Aboriginal Consultation Office (Paul First Nation [PFN] and Enoch Cree Nation [ECN]).

TAMA Power's consultation program for the Project consisted of multiple communication methods, including:

- introductory mail-out information about the Project, with periodic updates;
- publication of a Project-specific web site (http://www.transalta.com/facilities/facilities-development/sundance-7);

- Project-specific email address (sundance7@transalta.com);
- dedicated toll free phone number (1-855-825-3993);
- public open house and information session at the Sundance Training Centre in Parkland County;
- Paul First Nation open house;
- Enoch Elders meeting and site visit; and
- personal consultations with all land interest holders, including occupants, residents and landowners near the proposed Project location as per AUC Rule 007.

Consultations with Other Jurisdictions

TAMA Power has discussed the Project with a number of regulators and government representatives. The three primary regulators that will make environmental assessment or regulatory decisions about the Project are Alberta Environment and Sustainable Resource Development (ESRD), the AUC and Parkland County.

TAMA Power has consulted with ESRD on multiple occasions. An introductory meeting was held on March 6, 2014, to introduce TAMA Power and the Project. The Project team also provided an overview of the potential environmental effects of the Project and how TAMA Power plans to mitigate these effects. On March 25, 2014, ESRD determined that an Environmental Impact Assessment report is not required for the Project under the *Environmental Protection and Enhancement Act* (EPEA). Therefore, the primary application to ESRD under EPEA is the Industrial Approval Application, which was submitted to ESRD on April 14, 2014.

TAMA Power met with the AUC on February 21, 2014, to introduce TAMA Power and the Project. TAMA Power submitted an application under the *Hydro and Electric Energy Act* to the AUC on April 22, 2014.

TAMA Power has met with Parkland County on multiple occasions. TAMA Power filed a Development Permit Application with Parkland County on February 12, 2014. Parkland County supports the Project and has stated that the Project aligns with their strategic priorities to advance industry while protecting the environment.

Engagement with Aboriginal Groups

Engagement with Aboriginal groups was planned according to direction provided through discussions with the Alberta Aboriginal Consultation Office (ACO) and the Canadian Environmental Assessment Agency (CEA Agency). First Nations consultation followed the principles of the *Government of Alberta's First Nations Consultation Policy on Land Management and Resource Development, 2005* and *Alberta's First Nations Consultation Guidelines on Land Management and Resource Development, 2007*.

The ACO conducted a preliminary assessment of the Project in November 2013 and determined that the Project was at the lower end of the consultation spectrum because the Project will be on privately owned, cultivated land that is currently used for agricultural purposes. The ACO instructed TAMA Power to provide PFN and ECN with

a notification letter and a plain language summary, to share public notices and to conduct full consultation if there is a request for more information and if there is a potential to adversely impact Treaty Rights and Traditional Uses.

The CEA Agency advised TAMA Power in January 2014 that they would notify 13 additional First Nation and Métis groups during their review of the *Canadian Environmental Assessment Act (*CEAA) Project Description. These additional Aboriginal groups are listed in Table 1.

Table 1 First Nations Identified by the Alberta Aboriginal Consultation Office and Canadian Environmental Assessment Agency for Notification

First Nations Identified by the Alberta Aboriginal Consultation Office for Notification	Paul First Nation
	Enoch Cree Nation
Aboriginal Groups Identified by the Canadian Environmental Assessment Agency for Notification	Alexander First Nation
	Alexis Nakota Sioux Nation
	Ermineskin Cree Nation
	Louis Bull Tribe
	Montana First Nation
	O'Chiese First Nation
	Samson Cree Nation
	Sunchild First Nation
	Stoney Fist Nation (Bearspaw, Chiniki, Wesley)
	Tsuu T'ina Nation
	Whitefish (Goodfish) Lake First Nation.
	Métis Nation of Alberta Region 4
	Gunn Métis Local 55

Bi-monthly consultation logs for PFN and ECN are being maintained and have been submitted to the ACO. Before the consultation logs were submitted, they were shared with the PFN and ECN consultation coordinators for review and comment. In general, the consultation activities conducted to date have included mail, telephone, email, face-to-face meetings, Elders meetings, site visits and a community open house. Additional details regarding the consultation activities conducted to date for the PFN and ECN are provided below.

Paul First Nation's Chief and Council and the PFN consultation coordinator were sent a notification package on January 2, 2014 via registered mail. The package included a Project notification letter, an invitation to the public open house, the Project Information Booklet, and the AUC brochure *Public Involvement in Needs and Facilities Applications*. To date, no response has been received from the consultation coordinator. TAMA Power received a letter February 5, 2104, from the PFN Chief requesting an open house. The open

house was held April 2, 2014, and summaries were sent to the PFN households in the Duffield postal code. TAMA Power is awaiting response from the consultation coordinator or Band Manager as to what, if any, additional follow-up they request. As of June 16, 2014, TAMA Power has not received an indication that PFN would like to meet to further discuss the Project.

Enoch Cree Nation's Chief and Council and the ECN consultation coordinator were sent a notification package on January 2, 2014, via registered mail. The package included a Project notification letter, an invitation to the public open house, the Project Information Booklet and the AUC brochure *Public Involvement in Needs and Facilities Applications*. The ECN responded to the Project notification package on January 23, 2014, and requested further consultation. An introductory meeting was held with the consultation coordinator on January 27, 2014. The ECN provided a scope of work that included Elders meetings, interviews and mapping sessions. The scope of work is anticipated to be completed by the end of July. TAMA Power completed an Elders meeting and site visits to the Project site and to an existing natural-gas co-generation facility near Fort Saskatchewan on April 16 and 17, 2014. Meeting notes were prepared and shared with the consultation coordinator. A second Elders meeting and mapping session is for June 24. A project review meeting will be held by the end of July.

The CEA Agency indicated it would notify 13 additional Aboriginal groups during its review of this Project Description. TAMA Power believes in early engagement and decided to provide an information package to these additional Aboriginal groups at the same time as the public and other stakeholders. Notifications were sent on January 7, 2014, via registered mail to the Aboriginal groups listed in Table 1 (letters to the Chief and Council and to the consultation coordinator for each First Nation; and letters to the Métis President and Vice President of Region 4 and Gunn Metis Local 55). TAMA Power has also held face-to-face meetings when requested by the CEA Agency-identified Aboriginal groups.

To date, no Project-specific concerns have been raised by the ACO or CEA Agency-identified Aboriginal groups. TAMA Power is working with PFN and ECN, as required by the ACO, to discuss and resolve any concerns they may have regarding the potential for adverse impacts on Treaty Rights and Traditional Uses. The concerns that have been raised thus far are general in nature regarding environmental impacts, cumulative effects and traditional land use.

The PFN and ECN and five of the CEA Agency-identified First Nations have expressed concern that the Project may impact their Treaty Right to hunt, fish and trap on unoccupied Crown land or lands where they have right of access. The land proposed for the Project has been owned by TransAlta since the 1970s and has restricted access (it is fenced and leased to a local landowner for cultivation). TransAlta received clearance for the Project site under the *Historical Resources Act* on May 16, 2014.

Throughout the Aboriginal engagement program, TAMA Power has answered questions, documented concerns and followed up with the goal of resolving outstanding concerns. TAMA Power is committed to ongoing engagement throughout the life of the Project and to maintaining and documenting the engagement process.

Consultations with the Public and Other Parties

TransAlta, on behalf of TAMA Power, has taken a proactive approach to public consultation/stakeholder engagement for the Project since November 2013. The scope of the engagement program has included preparation and distribution of information about the Project to local landowners, residents and occupants within 2,000 m of the Project site boundary, and other interested parties.

In accordance with Appendix A of AUC Rule 007, personal consultation is required for all landowners, residents and occupants within 800 m of the proposed facility. There are no residences or occupants with 800 m of the Project fence line. TAMA Power decided to extend the personal consultation boundary to 2,000 m from the fence line in efforts to continue building trust and to demonstrate the desire to work with stakeholders. There are two residences within 2,000 m of the Project fence line; one owned by TransAlta and leased to the occupant, the second is a privately owned residence.

Personal consultation began on November 18, 2013, and will continue as the Project progresses. During the initial meetings, TAMA Power representatives explained the proposed Project, recorded participant concerns and feedback on Project-specific contact forms, and provided or arranged to provide additional information when requested. In some cases, additional visits and/or follow-up calls were made to participants based on feedback from the initial consultation.

A public open house was held on February 4, 2014, in Parkland County. A total of 84 people signed in at the information session. People who attended the open house were given an opportunity to complete a feedback form before leaving.

One landowner family that resides outside the 800 m boundary but within the 2,000 m range has expressed concerns about the Project, and in particular, about effects related to construction. TAMA Power has engaged the family six times since November 2013 to provide information on the Project, to understand their concerns and to provide answers and mitigation solutions to their questions and concerns. TAMA Power is committed to open consultation and will continue to provide opportunities for the family to engage TAMA Power and find reasonable solutions to their concerns.

The environmental concerns expressed to the Project team throughout the consultation program relate to potential effects on air quality, noise, water quality and quantity, and aquatic resources and cumulative effects. The Project team has taken these issues into account during the preliminary engineering phase of the Project. Concerns specific to construction are also being taken into account.

Throughout the consultation program, TAMA Power has answered questions, documented concerns and followed up on outstanding concerns. TAMA Power is committed to ongoing engagement throughout the life of the Project and to maintaining and documenting the public consultation/stakeholder engagement process.

4. The environmental assessment and regulatory requirements of other jurisdictions.

The environmental assessment requirements and regulatory review process for the Project are primarily under the jurisdiction of ESRD and the AUC. Applications have been submitted to both provincial agencies for approval to construct and operate the Project. The Project is also subject to secondary legislation administered by other municipal, provincial and federal agencies.

Alberta Environmental Protection and Enhancement Act

The Project will require an approval from ESRD under the Alberta *Environmental Protection and Enhancement Act* (RSA 2000, c.E-12). On March 25, 2014, ESRD determined that an Environmental Impact Assessment report is not required for the Project under EPEA. Therefore, the primary application to ESRD under EPEA is the Industrial Approval Application, which was submitted to ESRD on April 14, 2014.

Alberta Hydro and Electric Energy Act

Under Part 2, Section 11 of the Alberta *Hydro and Electric Energy Act* (RSA 2000, c.H-16), TAMA Power is required to file an application for the Project to the AUC for the construction and operation of a power plant. This application was submitted to the AUC on April 22, 2014, and was prepared in accordance with AUC *Rule 007: Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations and Hydro Developments* (AUC 2014).

Water Act

Raw water for the Project will be supplied from the existing Sundance Industrial Cooling Pond currently being used for an equivalent purpose for the existing Sundance Thermal Electric Power Plant. Makeup water to maintain water quality and level in the cooling pond is drawn from the North Saskatchewan River (NSR) via an existing raw water intake structure. The Project will require additional raw water from the NSR due to additional evaporative loss and to maintain water quality in the cooling pond. However, the additional water diverted from the NSR for the Project will be within the current Licence to Divert Water under the Alberta *Water Act* for the existing Sundance Thermal Electric Power Plant.

TAMA Power will submit an application to ESRD under the *Water Act* (RSA 2000, c.W-3) for approval to remove one wetland within the Project site. This application will be submitted in the fall of 2014 following an additional wetlands inventory field program.

TAMA Power currently plans to source potable water from two groundwater wells within the Project site. TAMA Power will submit an application to ESRD under the *Water Act* in 2015 requesting approval for groundwater diversion associated with the two groundwater wells.

Historical Resources Act

TAMA Power received clearance for the Project site under the *Historical Resources Act* (RSA 2000, c.H-9) on May 16, 2014.

NAV CANADA

NAV CANADA owns and operates Canada's civil air navigation system and is responsible for aviation safety in Canada. TAMA Power submitted a Land Use Proposal to NAV CANADA for evaluation. On May 21, 2014, NAV CANADA indicated it had no objections to the Project.

Parkland County – Development Permit

TAMA Power filed a Development Permit Application with Parkland County on February 12, 2014, and Parkland County provided TAMA Power with a letter of support for the Project. TAMA Power is continuing to work with the County to ensure that the Development Permit Application is processed in a manner that meets the needs of TAMA Power and the County.

Parkland County – Private Sewage Disposal Permit Application

TAMA Power plans to treat sanitary sewage onsite using a soil-based treatment system. Since this system will not receive more than 25 cubic metres of sewage per day and will serve a single property, it will fall under the jurisdiction of Municipal Affairs according to the Private Sewage Disposal Systems Regulation (Alberta Regulation 229/1997) under the Alberta *Safety Codes Act*.

TAMA Power will submit a Private Sewage Disposal Permit Application to Parkland County requesting approval for the soil-based treatment system in 2015.

4.1 A description of any environmental study that is being or has been conducted of the region where the project is to be carried out.

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

PROJECT INFORMATION

5. A description of the project's context and objectives.

TAMA Power is proposing to construct and operate a combined-cycle, natural gas-fired, power generating facility with a gross nominal generation capacity of 856 MW at the yearly average ambient condition. The plant design

will be a 2 x 1 configuration, with two natural gas combustion turbine generators (CTGs), two heat recovery steam generators (HRSGs), and one steam turbine generator (STG).

The objectives of the Project are to provide safe, reliable power that is economical and environmentally responsible.

6. The provisions in the schedule to the Regulations Designating Physical Activities describing the project in whole or in part.

The *Canadian Environmental Assessment Act (CEAA) 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 October, 2013).

7. A description of the physical works that are related to the project including their purpose, size and capacity.

Power Plant

The Project is a high-efficiency, combined-cycle, natural gas-fired power generating facility located on privately held land, owned by TransAlta. A scaled diagram of the Project site layout and the plant general arrangement are provided in Figure 2 and Figure 3. An artist rendering of the Project is provided in Figure 4.

Two natural gas CTGs, two HRSGs and one STG will be housed in the generation building. The power plant will also have several auxiliary systems, including the cooling water system, raw water and wastewater management systems, fuel gas system and standby power system.

Facility administration offices and the plant control room will be located in the administration building north of the generation building.

The cooling system will include a multi-cell mechanical draft cooling tower and pumped circulating water system. The circulating water system will use a series of underground pipes to provide cooling water to various systems throughout the facility.

Raw water for the Project will be supplied from the Sundance Industrial Cooling Pond west of the Project site. The Sundance Industrial Cooling Pond is a licenced, man-made structure that was built in the mid-1970s to supply cooling water, raw water and wastewater treatment capacity to the coal-fired Sundance Thermal Electric Power Plant. TAMA Power plans to use the existing cooling pond for a similar purpose for the Project.

A new intake structure will be installed in the Sundance Industrial Cooling Pond, and a pipeline will supply the raw water to the plant. Process-related wastewater will be discharged to the Sundance Industrial Cooling Pond for treatment. Water balance in the Sundance Industrial Cooling Pond is currently achieved through periodic blowdown (discharge) and makeup (withdrawal) to and from the NSR. The incremental change in blowdown and makeup for the Project will occur through the existing infrastructure that serves the Sundance Thermal Electric Power Plant. No changes will be made to the existing blowdown or intake infrastructure, including at the NSR intake and outlet structures.

Third-Party Interconnections

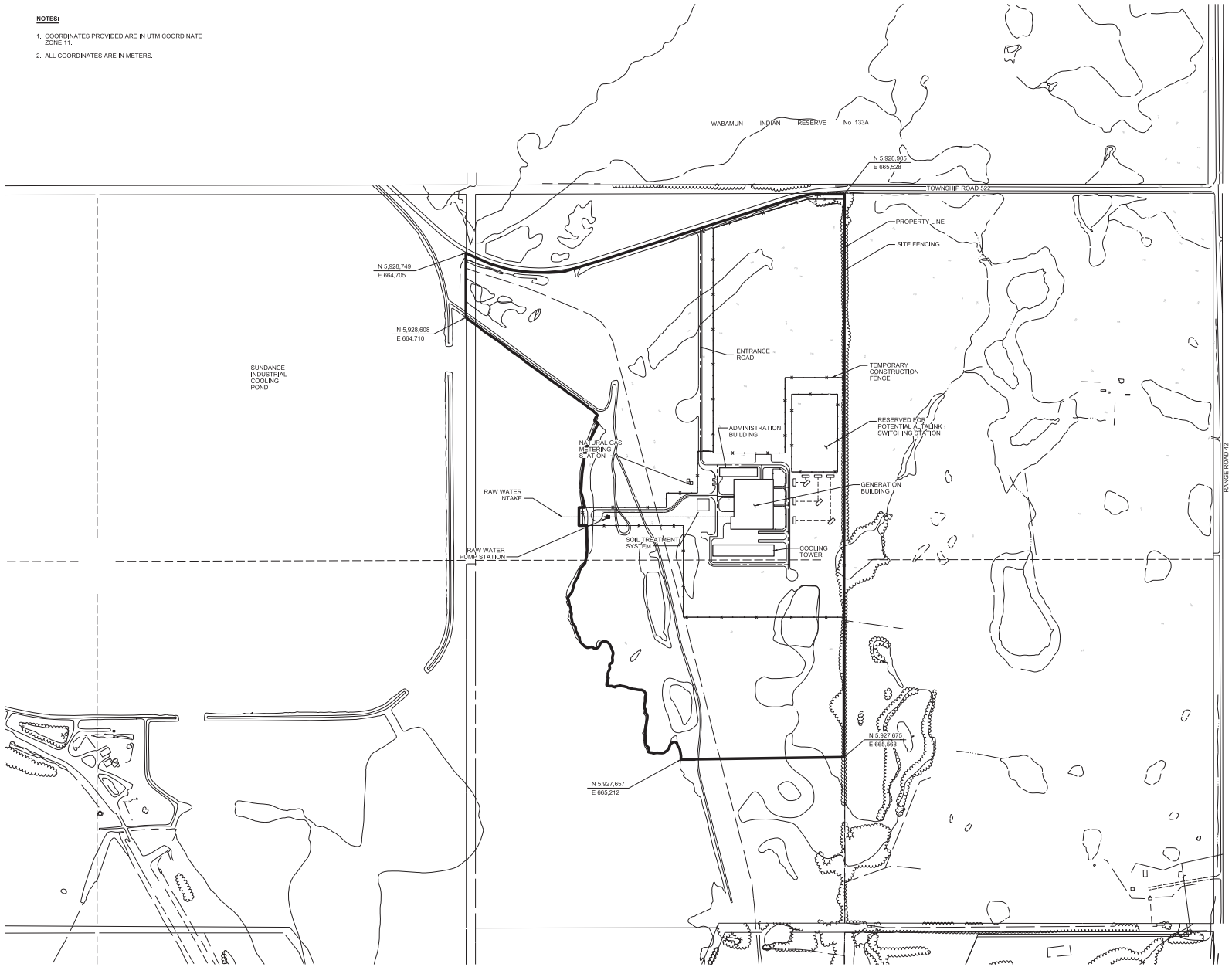
The Project will require two third-party interconnections for natural gas and a transmission connection to provide electricity to the Alberta Interconnected Electrical System. Natural gas will be used as fuel for the CTGs, duct burners, and auxiliary boiler. The natural gas provider, which has not yet been selected, will deliver natural gas via pipeline to a gas metering station located within the Project site.

The Project will be interconnected to the Alberta Interconnected Electrical System at 500 kilovolts (kV) by AltaLink Management Ltd. (AltaLink). AltaLink is investigating several connection options, which will include a switchyard and supporting transmission facilities.

AltaLink and the natural gas provider will be responsible for permitting, constructing and operating the required facilities in accordance with the applicable federal, provincial and municipal regulations.

NOTES:

1. COORDINATES PROVIDED ARE IN UTM COORDINATE ZONE 11.
2. ALL COORDINATES ARE IN METERS.



PRELIMINARY - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
A	04/09/14	DGK	JRD	ISSUED FOR PERMITTING

Burns & McDonnell SINCE 1898

date: FEB 26, 2014	detailed: S. NICHOLS
designed: D. KROGER	checked: J. DOWELL

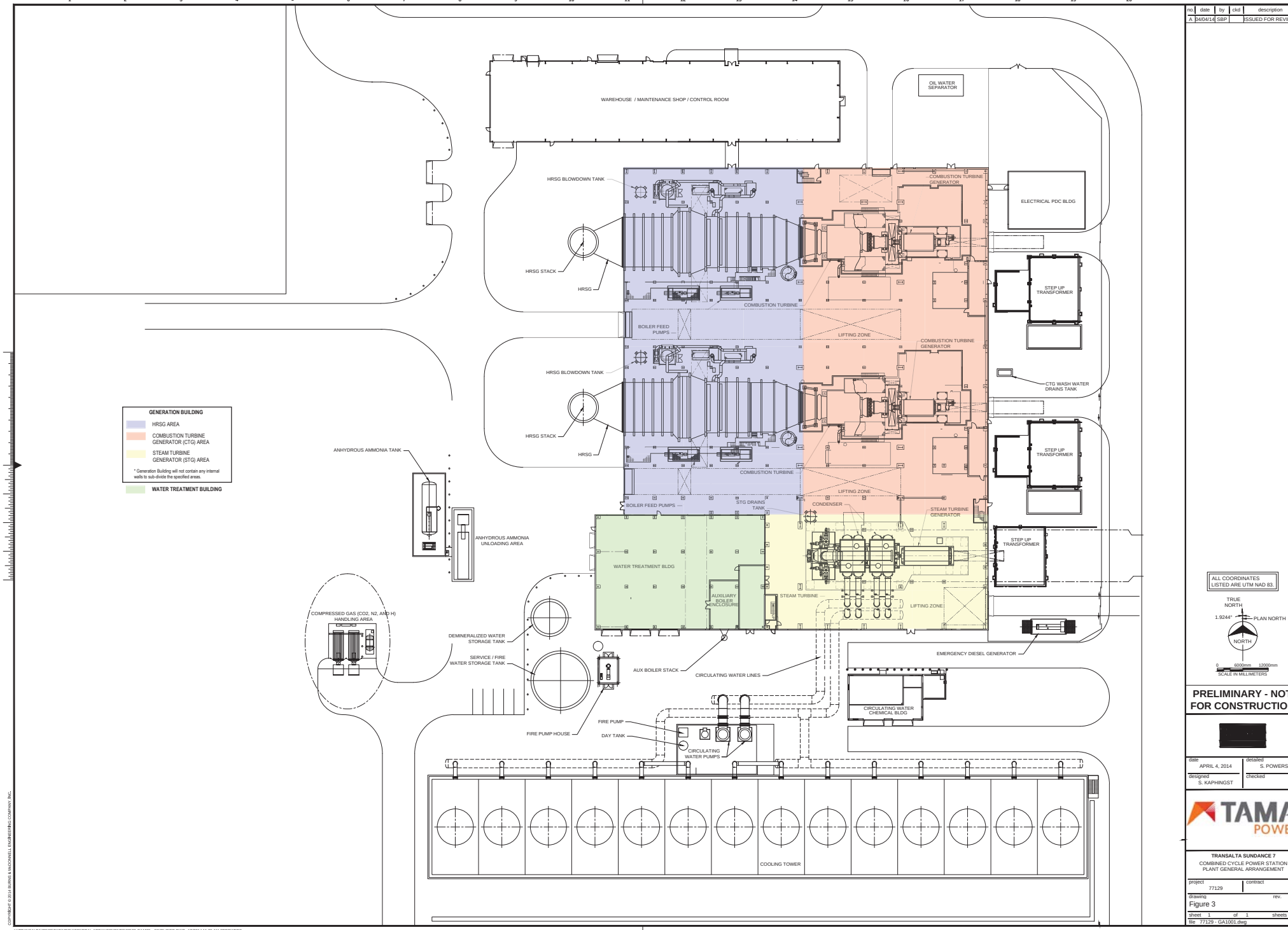
TAMA POWER

SUNDANCE UNIT 7 NATURAL GAS COMBINED CYCLE

COMBINED CYCLE POWER STATION
SITE LAYOUT

project: 77129	contract:
drawing: Figure 2	rev.:
sheet:	of: sheets:
file: 77129-SK001P.DGN	

4/11/2014



no	date	by	ckd	description
A	04/04/14	SBP		ISSUED FOR REVIEW

PRELIMINARY - NOT FOR CONSTRUCTION

date APRIL 4, 2014	detailed S. POWERS
designed S. KAPHINGST	checked

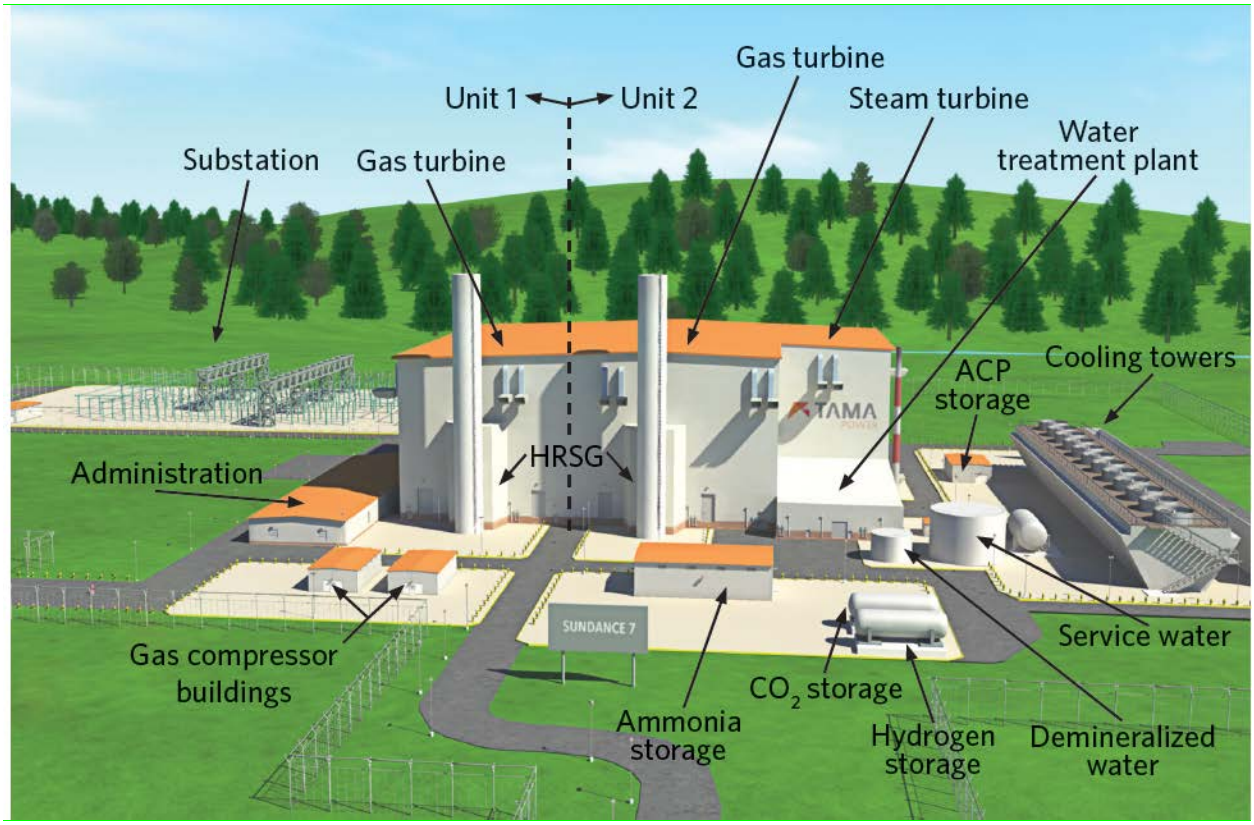
TAMA POWER

TRANSALTA SUNDANCE 7
COMBINED CYCLE POWER STATION
PLANT GENERAL ARRANGEMENT

project 77129	contract
drawing Figure 3	rev.
sheet 1 of 1 sheets	
file 77129 - GA1001.dwg	

U:\TRANSALTA\77129\CAD\MECH\GENERAL ARRANGEMENTS\77129-GA1001 - SIMPLIFIED.DWG 4/8/2014 11:05 AM SBPOWERS

Figure 4 Artist Rendering of the Sundance 7 Project



8. The anticipated production capacity of the project and a description of the production processes to be used, the associated infrastructure and any permanent or temporary structures.

The Project is planned to have a gross nominal generation capacity of 856 MW at the yearly average ambient condition. The plant design will be a 2 x 1 configuration with two natural gas CTGs, two HRSGs, and one STG housed within the generation building.

The two CTGs will compress filtered ambient air, combine the compressed air with natural gas in a combustion chamber, and then ignite the mixture. The high-temperature gases will expand and be forced past the turbine blades. This will rotate the turbine shaft to create mechanical energy. A generator connected to each turbine will convert the mechanical energy to electrical energy.

The hot exhaust gases from each CTG will be captured by the HRSGs. The heat energy will then be used in the HRSGs to convert water to steam. The steam will then be expanded through the STG. A generator connected to the STG will convert the mechanical energy to electrical energy. The cooled exhaust gases will exit the last section of each HRSG and enter the atmosphere via two 55-m-tall stacks.

Duct burners fuelled by natural gas will be installed in the HRSGs to increase the efficiency of electrical output of the plant. The duct burners will increase the temperature of the CTG exhaust gases that will be moving through the HRSGs, allowing the HRSGs to produce more steam and subsequently additional electricity in the STG.

9. A description of all activities to be performed in relation to the project.

The three main phases of the Project will be construction, operation and decommissioning. Construction is planned to start in August 2015 and will include site preparation, civil works, installation of equipment and equipment commissioning.

The Project site will first be levelled and graded based on the final grading plan that will be determined during detailed engineering and design. Topsoil will be salvaged in areas used for construction. In areas to be occupied by permanent facilities (i.e., the Project footprint), TAMA Power will salvage the topsoil and subsoil and store each separately in stockpiles located in the northwest and southeast corners of the Project site. Following construction, topsoil will be replaced in areas not occupied by permanent facilities. Topsoil will not be used for construction. Topsoil salvaged within the Project footprint will be stored for the life of the Project.

The Project site will be fenced and construction areas for laydown and storage will be designated. Subsurface infrastructure (e.g., piping for natural gas and water, electrical cables) and foundations for buildings and large equipment will then be installed. Structural steel components will be installed on the foundations for the generation building, administration building, and cooling tower. The major equipment will be installed before or after the buildings are enclosed depending on equipment delivery and the Engineering, Procurement and Construction (EPC) strategy.

Commissioning of the Project will start in April 2018 and will take approximately 9 months. The Project will be ready for operation after the commissioning phase, and is expected to operate for 30 years. The Project has been designed to be operated as a base load power plant, which means it can be operated at full design capacity for sustained periods. Actual day-to-day operations will vary depending on fluctuations in market conditions, so in practise the Project is expected to cycle between full load, idling and full shut-down.

At the end of the Project's life, the major equipment and subsurface infrastructure will be removed. The final land use and the degree of reclamation required for the Project site will be based on the regulatory requirements and stakeholder feedback at the time of reclamation.

10. A description of any waste that is likely to be generated during any phase of the project and of a plan to manage that waste.

Atmospheric Emissions

The Project has been designed to incorporate some of the cleanest fuel sources and technologies currently available to generate electricity from fossil fuels. Substances that are considered criteria air contaminants that will be directly or indirectly released to the air in a typical operating day include combustion products such as oxides of nitrogen (NO_x), particulate matter (PM), and carbon monoxide (CO). These substances will be released as a result of natural gas combustion in the CTGs, HRSGs, auxiliary boiler, and heaters.

The HRSGs and auxiliary boiler will be fitted with low emissions burners to reduce NO_x emissions. A selective catalytic reduction system, including an ammonia injection skid, will be installed on the HRSGs to further reduce NO_x emissions. The HRSG emissions will, therefore, include trace amounts of ammonia.

Natural gas combustion will also result in greenhouse gas emissions including carbon dioxide, methane and nitrous oxide.

Liquid Discharges

The primary source of wastewater will be blowdown water from the cooling tower. Blowdown water will not contain chemicals that are considered to be hazardous or detrimental to the environment. Therefore, the blowdown water will be discharged directly to the Sundance Industrial Cooling Pond for treatment. Reject water from the raw water distribution system and the demineralized water system will also be discharged directly to the Sundance Industrial Cooling Pond.

Service water from area wash-downs for plant maintenance and upkeep will pass through an oil/water/grit separator. Separated oil and grit will be collected and disposed of off-site at an approved disposal facility. The separated service water will be discharged to the Sundance Industrial Cooling Pond.

Blowdown water from the Sundance Industrial Cooling Pond is periodically discharged to the NSR to maintain water quality and level within the cooling pond for operational purposes. Blowdown water from the cooling pond, which will include the additional wastewater generated by the Project, will be discharged to the NSR in accordance with the parameter limits (e.g., pH, total iron) and monitoring and reporting requirements detailed in the EPEA Approval for the existing Sundance Thermal Electric Power Plant (EPEA Approval No. 9830-02-00).

The Project will also generate sanitary sewage that will be treated onsite using a soil-based treatment system.

Solid Wastes

The Project will generate sludge as part of the sewage treatment system and from treatment of used service water. The sludge will be collected and disposed of offsite at an approved disposal facility. The Project will also generate recyclable and non-recyclable waste during operation that will be collected onsite and transported to a qualified landfill or recycling facility.

11. A description of the anticipated phases of and the schedule for the project's construction, operation, decommissioning and abandonment.

The proposed Project schedule is provided in Table 2.

Table 2 Sundance 7 Preliminary Project Schedule

Construction Activity	Schedule
Detailed Engineering and Design	January 2015 to September 2016
Construction:	-
Site preparation (e.g., clearing, grading)	August 2015 to December 2015
Foundation excavation/construction	December 2015 to July 2016
Building erection	July 2016 to August 2017
Equipment installation	August 2017 to October 2018
Commissioning	April 2018 to December 2018
Operation	December 2018 to December 2048
Decommissioning	December 2048

PROJECT LOCATION INFORMATION

12. A description of the project's location, including:

(a) its geographic coordinates;

The latitude and longitude of the center of the Project site are 53° 28' 39.60" N and 114° 30' 36.20" W.

(b) site maps produced at an appropriate scale in order to determine the project's overall location and the spatial relationship of the project components;

A site plan of the Project is provided in Figure 2 and Figure 3. Maps showing the Project location and spatial relationship of Project components are provided in Figure 5, Figure 6, Figure 7 and Figure 8.

(c) the legal description of land to be used for the project, including the title, deed or document and any authorization relating to a water lot;

The Project site is in the northwest and southwest quarter-sections of 10-52-4 W5M. The land is owned by TransAlta, and a copy of the legal title has been included as Appendix A of the CEAA Project Description.

(d) the project's proximity to any permanent, seasonal or temporary residences;

There are two occupied permanent residences within 1.5 km of the Project site (Figure 7).

(e) the project's proximity to reserves, traditional territories as well as lands and resources currently used for traditional purposes by Aboriginal peoples; and

The ACO identified two First Nations that must be notified of the Project: PFN and ECN. The PFN is less than 1 km north of the Project, and the ECN is approximately 46 km east of the Project (Figure 5).

The two quarter-sections that will be used for the Project site have been owned by TransAlta since the 1970s and are not currently used for traditional purposes by Aboriginal peoples.

(f) the project's proximity to any federal lands.

The Wabamun 133A and 133B Indian Reserves are immediately north of the Project site. The closest national park is Elk Island National Park approximately 103 km east of the Project (Figure 8).

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100000 200000 300000 400000

6100000 6000000 5900000 5800000 5700000

N

JEAN BAPTISTE GAMBLER 183
STURGEON LAKE 154B, 154, 154A
HEART LAKE 167A
BEAVER LAKE 131
ALEXANDER 134A
ALEXANDER 134B
ALEXIS WHITECOURT 232
WHITE FISH LAKE 128
ALEXANDER 134
SADDLE LAKE 125
ALEXIS 133
STONY PLAIN 135A
ST. ALBERT
SPRUCE GROVE
TAMA Power
Sundance 7 Project
WABAMUN 133A, 133B
STONY PLAIN 135
EDMONTON
LEDUC
ALEXIS CARDINAL 234
ALEXIS ELK RIVER 233
PIGEON LAKE 138A
CAMROSE
BUCK LAKE 133C
WETASKIWIN
LOUIS BULL 138B
ERMINESKIN 138
O'CHIESE 203
SAMSON 137, 137A
MONTANA 139
SUNCHILD 202
LACOMBE
BIG HORN 144A
RED DEER
O'CHIESE CEMETERY 203A
BRITISH COLUMBIA
ALBERTA
STONEY 142B
STONEY 142, 143, 144
AIRDRIE
CALGARY
TSUU T'INA NATION 145
SIKSIKA 146

100000 200000 300000 400000

LEGEND

- PROJECT LOCATION
- NATIONAL PARK (NP)
- WATERBODY

BASE FEATURES

- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- PROVINCIAL BOUNDARY
- WATERCOURSE
- CITY / TOWN
- INDIAN RESERVE

50 0 50

SCALE 1:1,500,000 KILOMETRES

REFERENCE

NATIONAL ROAD NETWORK OBTAINED FROM GEOBASE®. INDIAN RESERVE, MÉTIS SETTLEMENT AND POPULATED PLACES OBTAINED FROM IHS ENERGY INC. NATIONAL PARKS OBTAINED FROM FROM ALBERTA TOURISM, PARKS AND RECREATION, GOVERNMENT OF ALBERTA. HYDROLOGY OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
DATUM: NAD 83 PROJECTION: UTM ZONE 12

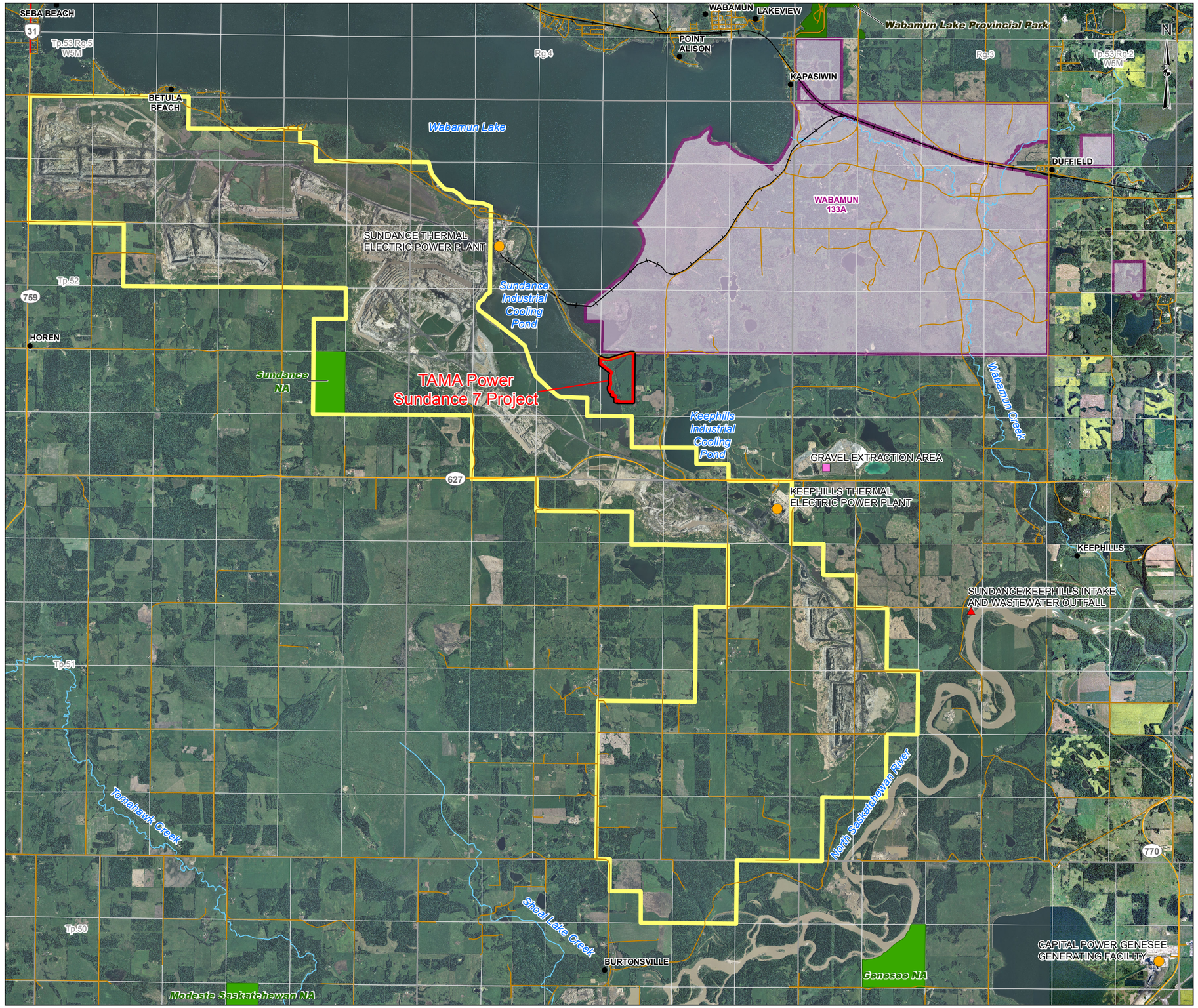
PROJECT
TAMA POWER
SUNDANCE 7 PROJECT

TITLE
ABORIGINAL COMMUNITIES

Golder Associates

PROJECT	13-1334-0051		FILE No.	
DESIGN	CS	06 May. 2014	SCALE AS SHOWN	REV. 0
GIS	UW	19 Jun. 2014		
CHECK	CS	19 Jun. 2014		
REVIEW	RR	19 Jun. 2014		

FIGURE: 5



LEGEND

- PROJECT SITE

BASE FEATURES

- COMMUNITY
- GENERATING FACILITY
- GRAVEL EXTRACTION AREA
- INTAKE AND OUTFALL STRUCTURES
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- INDIAN RESERVE
- HIGHVALE MINE PERMIT BOUNDARY

PARK / PROTECTED AREA

- NATURAL AREA (NA)
- PROVINCIAL PARK (PP)

REFERENCE

COMMUNITIES, WATERCOURSES AND INDIAN RESERVES OBTAINED IHS ENERGY INC. PARKS AND PROTECTED AREAS OBTAINED FROM ALBERTA TOURISM, PARKS AND RECREATION, GOVERNMENT OF ALBERTA. SECONDARY HIGHWAYS AND LOCAL ROADS OBTAINED FROM GEOBASE®. RAILWAYS OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. 0.4 M IMAGERY, CAPTURED IN 2013, OBTAINED FROM VALTUS IMAGERY SERVICES. 2M RESOLUTION IMAGERY CAPTURED IN 2009 OBTAINED FROM THE CLIENT.
DATUM: NAD 83 PROJECTION: 3TM 114

3 0 3
SCALE 1:100,000 KILOMETRES

PROJECT
TAMA POWER
SUNDANCE 7 PROJECT

TITLE
INDUSTRIAL FACILITIES AND NEARBY COMMUNITIES

Golder Associates

PROJECT		13-1334-0051	FILE No.	
DESIGN	CS	06 May. 2014	SCALE AS SHOWN	REV. 0
GIS	UW	19 Jun. 2014	**FIGURE: 6**	
CHECK	CS	19 Jun. 2014		
REVIEW	RR	19 Jun. 2014		

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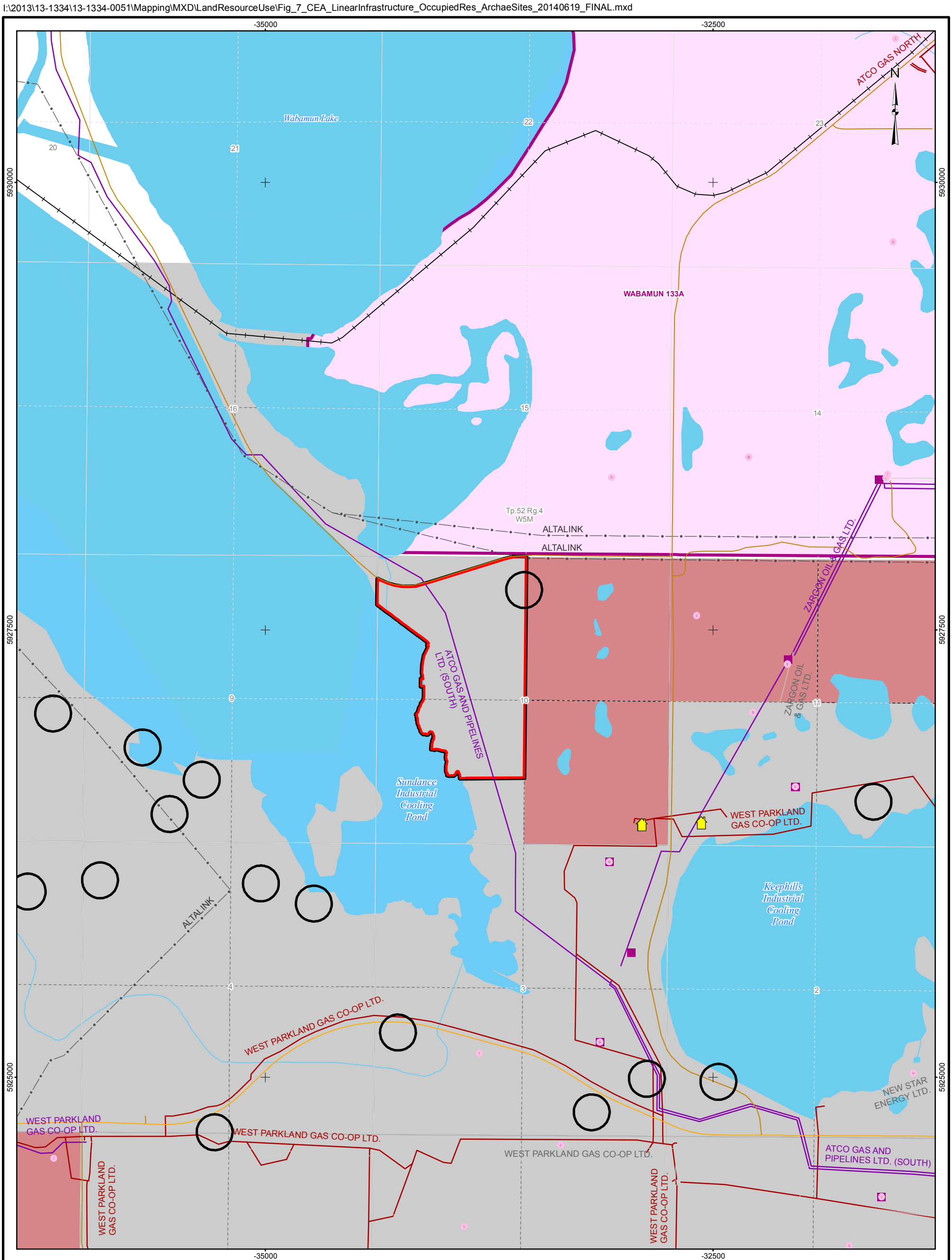
I:\2013\13-1334\13-1334-0051\Mapping\MXD\LandResourceUse\Fig_7_CEA_LinearInfrastructure_OccupiedRes_ArchaeSites_20140619_FINAL.mxd



LEGEND

- PROJECT SITE (69.1 ha)

LANDOWNERSHIP

- PRIVATE LAND
- TRANSALTA UTILITIES
- PREVIOUSLY RECORDED ARCHAEOLOGICAL SITE

BASE FEATURES

- COMMUNITY
- OCCUPIED RESIDENCE WITHIN 2,000 m OF FENCELINE
- OIL AND GAS FACILITY
- SURFACE WELL
- SECONDARY HIGHWAY
- LOCAL ROAD
- RAILROAD
- TRANSMISSION LINE
- ACTIVE HIGH PRESSURE PIPELINE
- INACTIVE HIGH PRESSURE PIPELINE
- LOW PRESSURE PIPELINE
- WATERCOURSE
- INDIAN RESERVE
- WATERBODY

500 0 500

SCALE 1:20,000 METRES

REFERENCE

COMMUNITIES, SURFACE WELLS, PIPELINES, OIL AND GAS FACILITIES, RAILWAYS AND INDIAN RESERVES OBTAINED FROM IHS ENERGY INC. NATIONAL ROAD NETWORK OBTAINED FROM GEOBASE ®. HYDROGRAPHY AND TRANSMISSION LINES OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. PREVIOUSLY RECORDED HISTORIC RESOURCE SITES OBTAINED FROM ALBERTA-CULTURE 2014-03-18. TRANSMISSION LINES DIGITIZED FROM AERIAL IMAGERY. LAND OWNERSHIP MAP DATED SEPTEMBER 2013 OBTAINED FROM SUNHILLS MINING.
DATUM: NAD 83 PROJECTION: 3TM 114

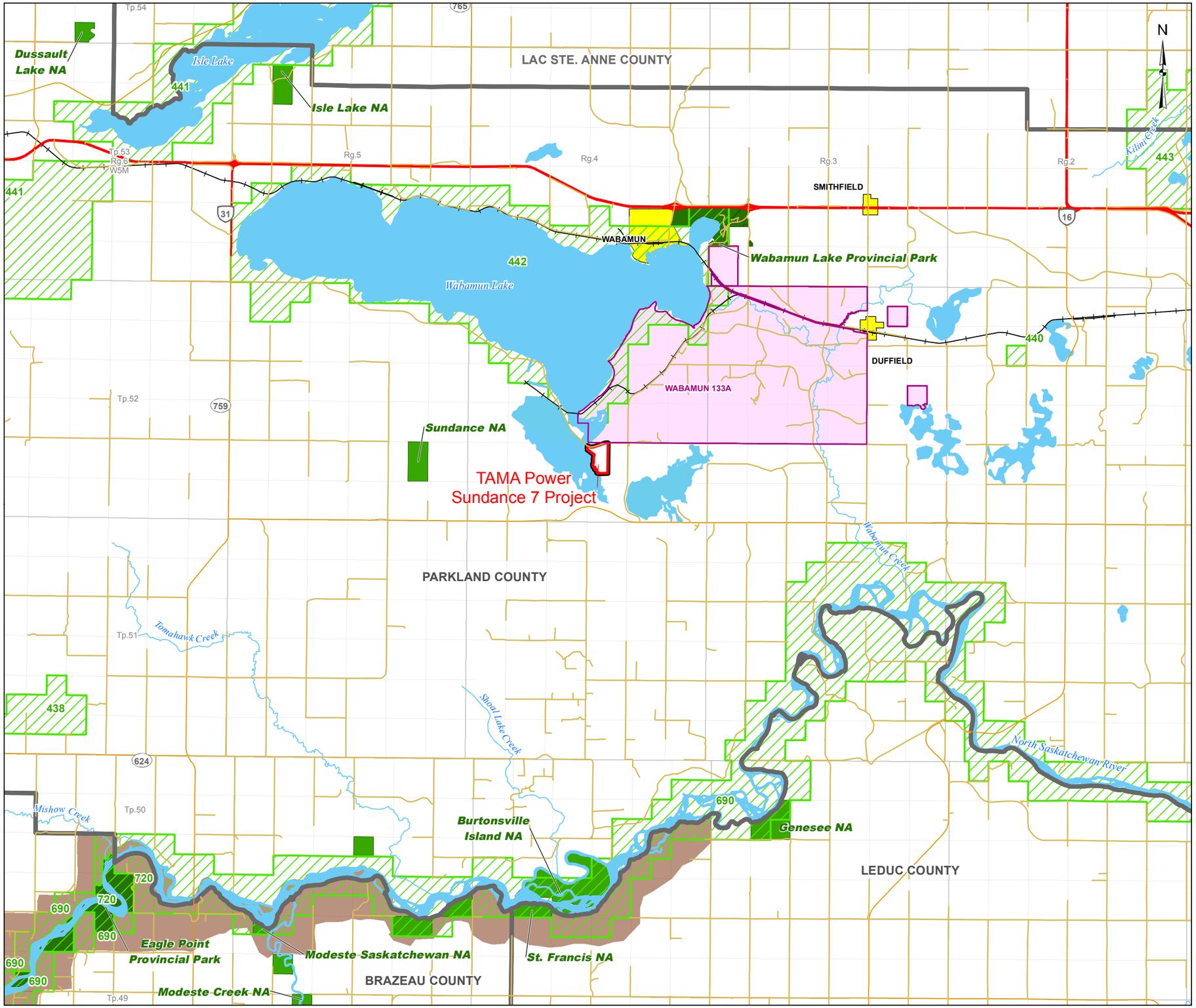
PROJECT
TAMA POWER
SUNDANCE 7 PROJECT

TITLE
LINEAR INFRASTRUCTURE, OCCUPIED RESIDENCES AND ARCHAEOLOGICAL SITES

Golder Associates

PROJECT		13-1334-0051	FILE No.	
DESIGN	GD	24 Mar. 2014	SCALE AS SHOWN	REV. 0
GIS	UW	19 Jun. 2014		
CHECK	CS	19 Jun. 2014		
REVIEW	RR	19 Jun. 2014		

FIGURE: 7



LEGEND

- PROJECT SITE

BASE FEATURES

- LOCAL ROAD
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- RAILROAD
- WATERCOURSE
- ENVIRONMENTALLY SIGNIFICANT AREA
- INDIAN RESERVE
- KEY WILDLIFE AND BIODIVERSITY ZONE
- MUNICIPAL BOUNDARY
- WATERBODY

PARK / PROTECTED AREA

- NATURAL AREA (NA)
- PROVINCIAL PARK (PP)

REFERENCE

MUNICIPAL BOUNDARIES OBTAINED FROM ALTALIS © GOVERNMENT OF ALBERTA 2014. ALL RIGHTS RESERVED. NATIONAL ROAD NETWORK OBTAINED FROM GEOBASE®. HYDROLOGY, INDIAN RESERVE, POPULATED PLACES AND RAILROAD DATA OBTAINED FROM IHS ENERGY INC. PARKS AND PROTECTED AREAS OBTAINED FROM ALBERTA TOURISM, PARKS AND RECREATION, GOVERNMENT OF ALBERTA. ENVIRONMENTALLY SIGNIFICANT AREA OBTAINED FROM ALBERTA TOURISM, PARKS AND RECREATION, PREPARED BY FIERA BIOLOGICAL CONSULTING, 2009. KEY WILDLIFE AND BIODIVERSITY ZONES © GOVERNMENT OF ALBERTA, FISH AND WILDLIFE DIVISION 2013.
DATUM: NAD 83 PROJECTION: 3TM 114

5 0 5
SCALE 1:160,000 KILOMETRES

PROJECT
TAMA POWER
SUNDANCE 7 PROJECT

TITLE
ENVIRONMENTALLY SENSITIVE AREAS

Golder Associates

PROJECT	13-1334-0051		FILE No.	
DESIGN	CS	06 May. 2014	SCALE AS SHOWN	REV. 0
GIS	UW	19 Jun. 2014		
CHECK	CS	19 Jun. 2014	**FIGURE: 8**	
REVIEW	RR	19 Jun. 2014		

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FEDERAL INVOLVEMENT

13. A description of any financial support that federal authorities are, or may be, providing to the project.

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

14. A description of any federal land that may be used for the purpose of carrying out the project.

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

15. A list of the permits, licences or other authorizations that may be required under any Act of Parliament to carry out the project.

NAV CANADA owns and operates Canada's civil air navigation system and is responsible for aviation safety in Canada. TAMA Power submitted a Land Use Proposal to NAV CANADA for evaluation and NAV CANADA indicated on May 21, 2014, that it had no objections to the Project.

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

ENVIRONMENTAL EFFECTS

16. A description of the physical and biological setting.

Soils and Terrain

Soils information for the Project site was obtained from a desktop assessment and a soils field survey conducted in June 2010. Two soil map units were identified within the Project site: Highvale (99%) and Manatokan (1%). The majority of the soils within the Project site are composed of silty clay loam on rolling landforms with 6% to 15% slopes and no surface stoniness.

During construction and operation, the Project has the potential to reduce the reclamation suitability of the topsoil and subsoil and result in soil erosion and compaction. To mitigate potential adverse environmental effects, TAMA Power will salvage all topsoil in areas used for construction. In areas to be occupied by permanent facilities (i.e., the Project footprint), TAMA Power will salvage the topsoil and subsoil and store each separately in stockpiles located in the northwest and southeast corners of the Project site.

Following construction, topsoil will be replaced in areas not occupied by permanent facilities. Topsoil will not be used for construction. Topsoil salvaged within the Project footprint will be stored for the life of the Project.

TAMA Power will follow standard construction practices to limit adverse environmental effects during soil salvage activities. Soil salvage operations will be monitored by a qualified soil scientist. When the Project is decommissioned at the end of its operational life and depending on plans for subsequent land use, soils that were within the Project footprint can be restored to an equivalent land capability using the stored topsoil and subsoil. As a result, the Project is not expected to result in adverse environmental effects on soils following site reclamation.

Vegetation and Wetlands

A desktop review was carried out using orthoimagery to identify major plant communities and potential survey sites. A wetlands inventory, listed plant species survey and vegetation communities survey were conducted on June 10, 2010. The Project site is predominantly agricultural land (i.e., hayfields or pasture), interspersed with remnant native woodlots of aspen with minor components of white birch or balsam poplar.

One small, Class II mineral wetland of approximately 0.22 hectares (less than 1% of the Project site) occurs as a small depression surrounded by an agricultural field and did not contain any standing water at the time of the survey. TAMA Power will conduct a supplemental wetlands field survey in June 2014 to reconfirm the wetland class and to confirm there are no additional wetlands located within the Project site. TAMA Power will submit an application under the *Water Act* requesting approval to remove wetlands within the Project site, and will develop a wetlands compensation program according to ESRD requirements.

No federally or provincially listed plant species were observed at the Project site. While no noxious weeds were identified during the vegetation survey, TAMA Power will implement standard construction practices to limit the potential for introduction of weeds.

With the mitigation described above and the lack of listed plant species on the Project site, the Project is not anticipated to have adverse environmental effects on listed plant species and communities.

Wildlife and Wildlife Habitat

A desktop review of existing information was carried out to characterize the wildlife community composition, available wildlife habitat, and potential occurrence of listed species within the Project site. The desktop review identified 22 listed species within the 5 km by 5 km wildlife study area centered around the Project site.

Three wildlife field surveys were conducted on two visits (May 27 and June 10, 2010) to confirm the absence or presence of listed species within the Project site. These surveys included a visual scan survey for waterfowl along the shoreline of the adjacent Sundance Industrial Cooling Pond, a nocturnal breeding call survey for amphibians on the Project site, and a marshbird survey on the Project site. Native habitat areas were not large

enough to warrant a 50-m radius breeding bird point count. However, in time-based surveys that were part of the marshbird survey, all birds heard within a five-minute survey period were recorded. Birds that were heard while traversing the Project site were also recorded.

No wildlife species of concern were identified on the Project site during the amphibian and marsh bird surveys. Given the high amount of agricultural land use in the wildlife study area and the general scarcity of native habitat within the Project site, the Project is not expected to have adverse environmental effects on wildlife and wildlife habitat. To further ensure this is the case, the following mitigation will be implemented by TAMA Power:

- If possible, vegetation clearing will occur outside of the Restricted Activity Period of the *Migratory Birds Convention Act*, which is between mid-April and the end of August (Environment Canada 2014). If vegetation clearing activities are required during this period, a pre-construction survey for active nests will be completed by an avian biologist.
- TAMA Power will submit an application under the *Water Act* requesting approval to remove one small Class II wetland and will develop a wetlands compensation program according to ESRD requirements.
- TransAlta promotes wildlife collision awareness for its personnel, which includes techniques to scan for and avoid wildlife while driving. TransAlta also sponsors local initiatives to establish wildlife warning reflector corridors.

On the Sundance Industrial Cooling Pond, very few waterfowl were observed during the waterfowl survey, likely due to the lack of high-quality breeding habitat along the shoreline of the Cooling Pond adjacent to the Project site. Only one listed species was identified on the Sundance Industrial Cooling Pond: American white pelicans (Pelecanus erythrorhynchos) were observed rafting on the Pond and flying towards Wabamun Lake. American white pelican is listed as “Sensitive” provincially (ASRD 2010) and as “not at risk” federally (COSEWIC 2013). The predicted water quality changes due to the Project are minor and would not be expected to cause an adverse environmental effect on birds that may use the Sundance Industrial Cooling Pond.

Groundwater

The predominant surficial material on the Project site is interpreted to be low-permeability glacial till underlain by shale bedrock. Glaciolacustrine clay and silt with minor sand units are found to the southeast of the Project site, while fine-textured lacustrine deposits are found on the adjacent shores of Wabamun Lake (TransAlta 2010). An ESRD drilling record for a water well indicates clay material (likely glacial till) overlying shale bedrock approximately 25 m below the ground surface underlying the Project site.

Discontinuous coarse sand and gravel lenses of variable thickness are common within the glacial till. The till surrounding these lenses often has low hydraulical conductivity. If upper sand and gravel aquifers are present around the Project site, they most likely occur as small isolated pockets of permeable material and are not laterally extensive. The Project site is not likely underlain by regional surficial sand and gravel aquifers or pre-glacial buried channels.

The Project may affect groundwater quality only as a result of accidental spills or leaks during construction and operations. Mitigation such as proper materials storage, the use of aboveground storage tanks with secondary containment for liquids and implementation of an emergency response plan will reduce the potential for adverse environmental effects. TAMA Power intends to ensure hazardous materials are disposed of off-site and contamination is prevented.

Groundwater monitoring programs are in effect at TransAlta-owned facilities at the nearby Highvale Mine and the Sundance Thermal Electric Power Plant. Given the existing coverage from these monitoring programs and the low risk to groundwater quality from the Project, it is not expected that a separate groundwater monitoring program for the Project will be required by ESRD.

Surface Hydrology

The Project site is within the NSR watershed, one of the largest watersheds in Alberta. The NSR is a glacier-fed river that flows east from the Canadian Rockies to central Saskatchewan. The NSR has a gross drainage area of 28,000 square kilometres at the Environment Canada hydrometric station 05DF001 (NSR at Edmonton). With the addition of the new plant, blowdown and makeup rates to and from the NSR will be increased to maintain water quality within the Sundance Industrial Cooling Pond. Analysis shows that the net change in flow due to the Project is 0.07% of the mean annual flow. The additional water diverted from the NSR for the Project will be within the current Licence to Divert Water under the Alberta *Water Act* for the existing Sundance Thermal Electric Power Plant. The Project is not anticipated to result in a change in flow in the NSR that would result in adverse environmental effects on aquatic resources in the river.

The Project site is approximately 10 km northwest of the NSR and less than 1 km southeast of Wabamun Lake. Runoff within the Project site generally flows from the higher elevations near the centre of the site toward the southwest and the north. Existing drainage conveys runoff from the south area to an interceptor ditch along the east side of the Sundance Industrial Cooling Pond and into Wabamun Lake. This interceptor ditch was originally created to divert clean water from the undeveloped mining areas south of Highway 627 to Wabamun Lake and does not currently serve any operational purpose. Runoff from the northern area of the Project site drains into Wabamun Lake via roadside ditches. Once the Project has been developed, runoff from the Project footprint will be discharged to the Sundance Industrial Cooling Pond, while runoff from the undeveloped areas on the North portion of the Project site will flow towards Wabamun Lake as is the current situation. As a result, the Project is not expected to cause adverse environmental effects from runoff into waterbodies adjacent to the Project site.

Surface Water Quality

Baseline total metal concentrations in the NSR in the region of the Project from 1953 to 2013 were variable and concentrations of some metals were occasionally to frequently above chronic aquatic life and human health guidelines. Total phosphorus and metals were higher in the open-water season compared to winter, reflecting high flows from surface runoff and associated elevated suspended sediment concentrations.

The potential effects of wastewater releases from the Project were evaluated using conservative quantitative and qualitative methods. Potential changes in water quality in the Sundance Industrial Cooling Pond as a result of the Project were evaluated by constructing a cooling pond water quality model. This model was used to predict the potential incremental changes in cooling pond blowdown chemistry caused by the Project, and subsequently the potential effects of the Project on the NSR.

Release of the treated wastewater from the Project to the NSR was found to result in non-measurable to small changes in concentration of water quality parameters for all assessed scenarios, with no change in baseline exceedances of aquatic life guidelines. The predicted effect of the treated wastewater discharge on water quality in the NSR can be characterized as low, because changes in some parameters may be measurable under worst-case conditions. However, the Project is not expected to cause adverse environmental effects on aquatic life in the NSR because there is no change in baseline exceedances of aquatic life guidelines and the change in concentrations of parameters with guidelines are predicted to be non-measurable to small under all assessed scenarios. In addition, the contribution of the Project to existing cumulative effects is expected to be negligible.

Potential aquatic effects of stormwater management, and spills and leaks were considered negligible based on the method of stormwater management, and spill response and cleanup procedures that will be in place at the Project site. Consequently, the Project is not expected to cause adverse environmental effects on aquatic resources through stormwater runoff.

The Project is not expected to cause adverse environmental effects through acidification of surrounding waterbodies. This is because of the low atmospheric emissions from the Project and the fact that regional lakes are not sensitive to acid deposition.

Fish and Fish Habitat

There are no fish-bearing watercourses or waterbodies on the Project site.

All process-generated wastewater will be discharged to the Sundance Industrial Cooling Pond for treatment before it is discharged to the NSR. There will be no untreated wastewater discharges directly to other off-site fish-bearing waterbodies, including Wabamun Lake.

The NSR contains important regional fish communities and fish habitat. The NSR in the vicinity of the Sundance Industrial Cooling Pond outfall consists of long, moderately deep runs and some riffle habitat; consequently, habitat complexity is limited. Spawning habitat is likely available for most of the fish species present.

In total, 30 species of fish have been identified in the NSR near the Sundance Thermal Electric Power Plant (Golder 2001, 2007 and 2008; ESRD 2011a), several of which are of management importance because they are targeted by anglers (e.g., Goldeye [*Hiodon alosoides*], Northern Pike [*Esox lucius*], Walleye [*Sander vitreus*], and Mountain Whitefish [*Prosopium williamsoni*]). Several of these species are also potentially available for

subsistence (i.e., First Nations) fisheries. There are also several species of conservation concern including Bull Trout (*Salvelinus confluentus*), Lake Sturgeon (*Acipenser fulvescens*), Sauger (*Sander canadensis*), Northern Redbelly Dace (*Phoxinus eos*) and Spoonhead Sculpin. The Lake Sturgeon in the NSR has also been nominated for listing under the federal *Species at Risk Act*. None of the other species are listed under the *Species at Risk Act*.

Treated wastewater from the Project will be conveyed through the Sundance Industrial Cooling Pond to the NSR by existing infrastructure that services the Sundance Thermal Electric Power Plant. No changes will be made to the existing blowdown infrastructure from the cooling pond outlet to the NSR. The Project will use the existing intake infrastructure in the NSR and no changes to this infrastructure will be required as a result of the Project. Therefore, there will be no construction-related adverse environmental effects on fish or fish habitat in the NSR.

The predicted net change in flow in the NSR due to the Project is too small to be measureable; and therefore, can be considered negligible. Withdrawal for the Project will not result in a change in the instantaneous withdrawal rate from the NSR. Therefore, the withdrawal for the Project is not expected to result in adverse environmental effects on fish or fish habitat.

The cooling water system for the Project has been designed to minimize thermal loading to the Sundance Industrial Cooling Pond. Changes in water temperature in the cooling pond, and subsequently the NSR, are expected to be negligible (i.e., no measureable change); and therefore, are unlikely to affect fish and/or fish habitat in the NSR (Golder 2012a).

The water quality modelling completed for the Project predicts that there will be measureable changes in some water quality parameters in the blowdown discharge to the NSR under worst-case conditions. However, these changes are predicted to remain well below guidelines in the maximum Project discharge scenarios and are not expected to degrade water quality in the NSR compared to existing conditions. Therefore, effects of the Project on aquatic life in the NSR (including fish) due to changes in water quality are expected to be negligible.

Air Quality

An air quality assessment was completed for the Project according to the requirements of ESRD, and was submitted as an appendix to the Industrial Approval Application filed with ESRD on April 14, 2014. The assessment assessed baseline air quality, the effects of the Project alone and the effects of the Project combined with baseline emissions.

Concentrations of nitrogen dioxide, carbon monoxide and ammonia within the 40 km by 40 km air quality study area were predicted to be below respective Alberta Ambient Air Quality Objectives for normal operations. The incremental increase in the nitrogen dioxide, carbon monoxide, and PM with a mean aerodynamic diameter of 2.5 microns or smaller ($PM_{2.5}$) concentration due to the Project were predicted to be minimal (i.e., less than 1%). The dispersion modelling results demonstrated that the Baseline Case predicted concentrations of $PM_{2.5}$ exceed the 24-hour Alberta Ambient Air Quality Objective for two days of the year (i.e., 0.55% of the time), primarily due

to other industrial activity in the area. With the addition of the Project, the frequency and location of the maximum 24-hour $PM_{2.5}$ predicted concentration remained unchanged from the Baseline Case.

Potential adverse environmental effects on air quality from the Project are; therefore, expected to be minimal and the Project will meet provincial and federal air quality requirements.

Historical Resources

TAMA Power received clearance under the *Historical Resources Act* on May 16, 2014, for the Project site. One previously recorded historic resource site, an isolated find site, is reported to occur along the northeastern margin of the Project site. However, Alberta Culture has denoted this archaeological site with a Historic Resource Value rating of 0, indicating that this site has no interpretive significance regarding the prehistory of the province. The Project is not anticipated to adversely affect historic resources of a paleontological, archaeological or cultural nature.

17. A description of any changes that may be caused, as a result of carrying out the project, to:

(a) fish and fish habitat as defined in Subsection 2(1) of the Fisheries Act;

The Project is unlikely to cause adverse environmental effects on fish and fish habitat, either on or off the Project site, for the following reasons:

- No fish-bearing waters; and therefore, no fish habitat are located on the Project site.
- Untreated wastewater will not be discharged directly to off-site fish-bearing waterbodies. Process-generated wastewater will be discharged to the Sundance Industrial Cooling Pond for treatment before it is discharged to the NSR. Although measureable changes are predicted in some water quality parameters in the blowdown discharge to the NSR under worst-case conditions, these changes are not expected to degrade water quality in the NSR compared to existing conditions. Therefore, the Project is not expected to have adverse environmental effects on aquatic life in the NSR (including fish) due to changes in water quality.
- Treated wastewater originating from the Project will be discharged through the Sundance Industrial Cooling Pond and to the NSR by existing infrastructure that services the Sundance Thermal Electric Power Plant. No changes will be made to the existing blowdown infrastructure from the cooling pond outlet to the NSR, including at the NSR outlet structure.
- Water withdrawal for the Project from the NSR will be through existing infrastructure, including the intake structure at the river and the makeup water pipeline to the Sundance Industrial Cooling Pond. No changes will be made to the existing intake infrastructure.
- Water withdrawal for the Project from the NSR is not expected to result in changes in water quantity in the NSR that might cause an adverse environmental effect on fish or fish habitat.

- The additional water diverted from the NSR for the Project will be within the current Licence to Divert Water under the Alberta *Water Act* for the existing Sundance Thermal Electric Power Plant. Water withdrawal for the Project will not result in a change in the instantaneous withdrawal rate from the NSR.
- Potential aquatic effects of stormwater management are considered negligible based on the method of stormwater management. Clean runoff from the undeveloped north portion of the Project site will be routed through existing drainage courses to Wabamun Lake similar to pre-development conditions. Runoff from the developed areas of the Project site will be routed to the Sundance Industrial Cooling Pond.

(b) aquatic species, as defined in Subsection 2(1) of the Species at Risk Act; and

No listed aquatic species, as defined under the *Species at Risk Act*, were observed on the Project site. In addition, the predicted changes in water quality and water quantity in the NSR are not expected to have adverse environmental effects on aquatic species within the NSR.

(c) migratory birds, as defined in Subsection 2(1) of the Migratory Birds Convention Act, 1994.

The majority of the Project site consists of agricultural lands and is considered lower quality habitat for most wildlife species.

One small Class II wetland will be removed to accommodate the Project. TAMA Power will submit an application under the *Water Act* requesting approval to remove this wetland and will develop a wetlands compensation program according to ESRD requirements.

If possible, vegetation clearing will occur outside of the Restricted Activity Period of the *Migratory Birds Convention Act,* which is between mid-April and the end of August (Environment Canada 2014). If vegetation clearing activities are required during this period, a pre-construction survey for active nests will be completed by an avian biologist.

Given the low habitat quality and mitigation described above, the Project is not expected to adversely affect migratory birds within the Project site.

A small number of individuals of several migratory bird species were observed on and within the vicinity of the Sundance Industrial Cooling Pond, indicating the cooling pond is used to a limited extent by birds. The predicted incremental changes due to the Project in the quality of the water in the cooling pond are minor and would not be expected to cause an adverse environmental effect on birds.

18. A description of any changes to the environment that may occur, as a result of carrying out the 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.

The closest federal lands to the Project are the Wabamun 133A and 133B Indian Reserves immediately north of the Project site. Potential environmental effects on Aboriginal peoples are discussed in detail in Section 19.

The closest national park is Elk Island National Park approximately 103 km east of the Project. The Project is not expected to result in adverse environmental effects on Elk Island National Park due to its distance from the Project.

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

The Project is not expected to adversely affect Aboriginal peoples from changes to the environment for the following reasons:

- In general, the Project is a highly efficient combined-cycle, natural gas-fired power plant and TAMA Power has incorporated low emission technology into the design of the Project to limit potential adverse environmental effects.
- The two quarter-sections that will be used for the Project have been privately owned by TransAlta since the 1970s. The Project site has restricted access, with a fence preventing entry from the adjacent roadway, and it is not currently used for traditional purposes by Aboriginal peoples.
- TAMA Power received clearance for the Project site under the *Historical Resources Act* on May 16, 2014. It is not anticipated that the Project will adversely affect historic resources of a paleontological, archaeological or cultural nature.
- The Project site is predominantly agricultural land (i.e., hayfields or pasture) with minimal wildlife habitat. Consequently, the Project is unlikely to cause adverse environmental effects on the use of wildlife species by Aboriginal peoples.
- As described in Section 17 (a), the Project is unlikely to cause adverse environmental effects on fish and fish habitat on the Project site, in nearby waterbodies or within the NSR.

- As discussed in Section 16, potential adverse changes to air quality from the Project are expected to be minimal and are not anticipated to adversely affect nearby Aboriginal communities or lands used by Aboriginal peoples.