Keeyask Generation Project

Year in Review

KEEYASK
Hydropower Limited Partnership

APRIL 2016 - MARCH 2017

Generating Stations (Existing)

Keeyask Generating Station

Wuskwatim Generating Station

Water flow

Control Structure

Community

KEEYASK

Hydropower Limited Partnership

Keeyask includes three separate projects, the Keeyask Infrastructure Project, the Keeyask Generation Project and the Keeyask Transmission Project. The Keeyask Generation Project (the Project) is a collaborative effort being undertaken by the Keeyask Hydropower Limited Partnership (KHLP or the Partnership), a partnership between Manitoba Hydro and four Manitoba First Nations: Tataskweyak Cree Nation and War Lake First Nation (acting as the Cree Nation Partners); York Factory First Nation and Fox Lake Cree Nation. The Keeyask Infrastructure Project, which was completed in 2014, was also developed by the KHLP. The Keeyask Transmission Project is being developed by Manitoba Hydro outside of the scope of the Partnership.

The 2009 Joint Keeyask Development Agreement (JKDA) between Manitoba Hydro and the partner First Nations governs how the Project will be developed and sets out understandings related to potential income, training, employment and business opportunities. Manitoba Hydro provides construction, operations and management services to the KHLP and will own at least 75 per cent of the equity of the Partnership. The four First Nations together have the right to own up to 25 per cent of the Partnership and will make their final investments once the station is fully operational.

Once built, the Keeyask Generating Station will be a source of renewable energy, providing approximately 695 megawatts of capacity and producing on average of 4,400 gigawatt hours of electricity each year. The energy produced will be integrated into Manitoba Hydro's electric system for use in Manitoba and to export power to other jurisdictions. The generating station is located on the Nelson River approximately 30 kilometers west of Gillam, in the Split Lake Resource Management Area within the ancestral home land of all four partner First Nations. It is anticipated that the first generator unit will be in-service by August 2021 and that all units will be commissioned by August 2022.

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Message from the Chair of the General Partner of KHLP

I am pleased to present the 2016-17 Keeyask Year in Review on behalf of the General Partner of the Keeyask Hydropower Limited Partnership Board of Directors. The past year has included a number of challenges unique to the Keeyask Generation Project which the KHLP continues to work together to address. It also saw the accomplishment of a number of important construction milestones.

The summer of 2016 was the first peak construction season and a total of 80,000 m^3 of concrete was placed for the Powerhouse, Intake, Tailrace, Service Bay and Spillway by March 31, 2017. Progress was also made on the permanent earthworks, including the North and Central dams and North Dyke.

Unfortunately, progress was slower than planned and by the fall of 2016, it was clear there would be an impact to the overall Project schedule and budget. A new control budget of $8.7 billion and a revised in-service date of August 2021 for the Project was provided by Manitoba Hydro in early 2017. The focus remains on completing the Project with minimal delay and the least possible cost increase, while continuing to meet or exceed commitments in the Joint Keeyask Development Agreement and elsewhere. In particular, Manitoba Hydro and the partner First Nations are working together to evaluate the impact of the cost and schedule changes to each partner First Nation's investment related interests in the Project.

The Partnership is proud of its support of local businesses, particularly for northern Indigenous businesses. To date, 63 per cent of Manitoba expenditures on goods and services have been purchased from northern Indigenous businesses. This includes over $470 million in Direct Negotiated Contracts awarded to the partner First Nations to date, ranging from the provision of camp services to heavy construction. These contracts are being successfully executed and are integral to the success of the Project.

Providing employment opportunities to northern Indigenous workers on Keeyask also remains a high priority for the KHLP. At the end of the fiscal year, 47 per cent of the total number of individuals employed on the Project were Indigenous. Efforts to recruit and retain Indigenous employees at the Keeyask site are ongoing and will continue in the coming years.

In addition to providing employment opportunities, there is also a responsibility to build and maintain a respectful workplace where all employees enjoy a positive, respectful, safe, and healthy work environment. By early fall of 2016, the Board was increasingly concerned that the goals of the Respectful Workplace Standard implemented at Keeyask were not being realized for everyone at the Project site. The Board selected the independent team of D. Carriere & Associates to review workplace culture at Keeyask and to provide recommendations for improvement. The initial study results confirmed that discrimination and harassment had been experienced and

witnessed by some site employees. This is taken very seriously by everyone involved in the Project. Efforts are underway to create a more positive work environment at Keeyask through the implementation of recommendations received through the study. I want to thank everyone who shared their experiences and perspectives about working at site as part of this process - your efforts are helping us make Keeyask a safer and more welcoming work place.

I would like to conclude by commenting on our continued successes in the areas of safety and environmental protection. Safety is a top priority for all involved in building this project. Although the number of hours worked at the construction site increased by more than 70 per cent this past fiscal year, the number of lost time injuries remained the same, and is at a rate below provincial industry standards for major construction projects. This is a major accomplishment for a project as large and complex as Keeyask.

Progress is also being made to fulfill the commitments made by the Partnership to mitigate adverse effects of the Project and to monitor ongoing environmental change. I am pleased that over the past year this has included the initiation of Aboriginal Traditional Knowledge monitoring programs.

I would like to thank everyone who has contributed to the success of the Project over the past year. As we start the 2017/18 construction season, I have great confidence that the efforts taken to reevaluate and update the Project schedule and budget, and to enhance workplace culture, will create positive change throughout the work site as we work towards Project completion.

Sincerely,

Lorne Midford

Chair of the General Partner
of the Keeyask Hydropower Limited Partnership

(5900345 Manitoba Ltd.)

Introduction

The Keeyask Project is a collaborative undertaking between Manitoba Hydro and four Manitoba First Nations – Tataskweyak Cree Nation and War Lake First Nation (acting as the Cree Nation Partners), York Factory First Nation, and Fox Lake Cree Nation – working together as the Keeyask Hydropower Limited Partnership (KHLP or the Partnership). The Project involves the development of a 695MW generating station and associated infrastructure on the lower Nelson River, 58 kilometres east of the community of Split Lake and 30 kilometres west of Gillam in the Split Lake Resource Management Area within the ancestral homeland of all four partner First Nations. The Generation Project will take approximately eight years to build, with a first unit in-service date of August 2021. All units should be in-service by August 2022. Site clean-up and rehabilitation will extend a few years beyond the date when the last unit is in-service.

The Project is being constructed as the lowest reservoir level option among the technically and economically feasible options studied, resulting in the least amount of flooding and ultimately operating within a one metre vertical range. Special measures have been taken to reduce impacts on fish, particularly Lake Sturgeon, and other important aquatic and terrestrial species and habitats. Efforts are also being made to enhance the benefits of the Project for local First Nations and Manitoba's northern Indigenous population. Once complete, the Keeyask Project will provide generations of Manitobans with a source of reliable and sustainable electricity.


Work at the Spillway


Leslie Flett (Tataskweyak Cree Nation)
holding a juvenile Lake Sturgeon

Victoria Lundie (Tataskweyak Cree Nation),
Steve Saunders (York Factory First Nation) and George Ponsak

The Partnership

The KHLP will own and operate the Project according to the terms outlined in the Joint Keeyask Development Agreement (JKDA). Manitoba Hydro and the partner First Nations are limited partners in the Partnership. There is one General Partner, 5900345 Manitoba Ltd., a wholly owned Manitoba Hydro subsidiary, which will manage and operate the Partnership and be liable for all its debt.

Pursuant to the JKDA, Manitoba Hydro has been contracted to construct, manage, operate and maintain the Keeyask Generation Project. Manitoba Hydro, in its role as the Project Manager, has contracts in place for nearly all work required to build the Project. Several construction services, labour and materials contracts have been directly negotiated with the partner First Nations; the general civil, electrical and mechanical contracts were publicly tendered.

Manitoba Hydro, the General Partner and each of the partner First Nations' investment entities have made initial investments in the equity of the Partnership. Manitoba Hydro and the General Partner will own at least 75 per cent of the equity and the partner First Nations, through their respective investment entities, can own up to a total of 25 per cent.

The business affairs of the KHLP are carried out by the General Partner. The General Partner is governed by a Board of Directors, which consists of seven Manitoba Hydro and five partner First Nations representatives. The Board meets quarterly and its inaugural meeting was held in December 2014. In addition to the Board, three formal advisory committees exist for the Project – a Monitoring Advisory Committee (MAC) to review the outcomes of environmental mitigation and monitoring; a Construction Advisory Committee (CAC) that reviews the status of construction activity; and an Advisory Group on Employment (AGE) to discuss construction employment at the site. These committees are made up of members from the partner First Nations and Manitoba Hydro and they have met on a regular basis since late fall 2014.

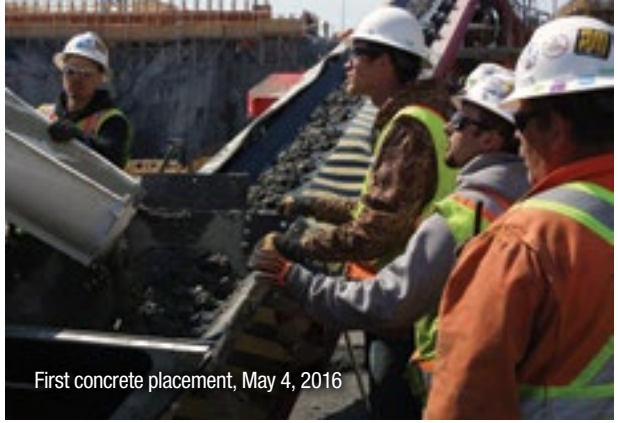
KHLP Board members

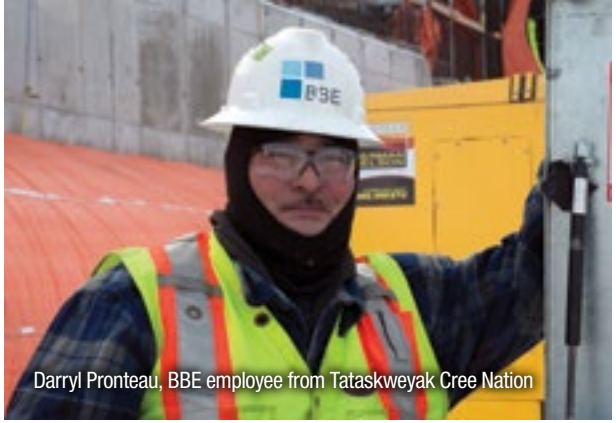
Back Row left to right: Liz Carriere (MH), Anthonie Koop (MH), John Kreml (MH), Jamie McCallum (MH), Nathan Neckoway (TCN), Louisa Constant (YFFN), Lorne Midford (MH), Sandra Nabess (FLCN).

Front Row left to right: Vicky Cole (MH), Chief Betsy Kennedy (WLFN), Ruth Kristjanson (MH)

Missing from photo: Chief Doreen Spence (TCN)

2016-17 Keeyask — Year at a Glance


First concrete placement, May 4, 2016


Darryl Pronteau, BBE employee from Tataskweyak Cree Nation


South access road construction by Amisk Construction, fall 2016

Construction

A new control budget of $8.7 billion and a revised in-service date of August 2021 for the Project was provided by Manitoba Hydro in early 2017. The focus remains on completing the Keeyask Project with minimal delay and the least possible incremental cost while continuing to meet Project commitments.

Construction of the South Access Road was completed in November 2016 by Amisk Construction, a joint venture partnership consisting of the Cree Nation Partners (Tataskweyak Cree Nation and War Lake First Nation) and Sigfusson Northern Ltd.

This past year, one quarter of the total volume of concrete required to build Keeyask was placed in the Powerhouse, Intake, Tailrace, Service Bay and Spillway and significant progress was also made on the permanent earth structures including the North Dyke and the Central and North dams.

There were more than five million person hours worked at the Project site over the last fiscal year; a 70 per cent increase over the previous year. Despite the substantial increase to the hours worked, there were only seven lost time injuries.

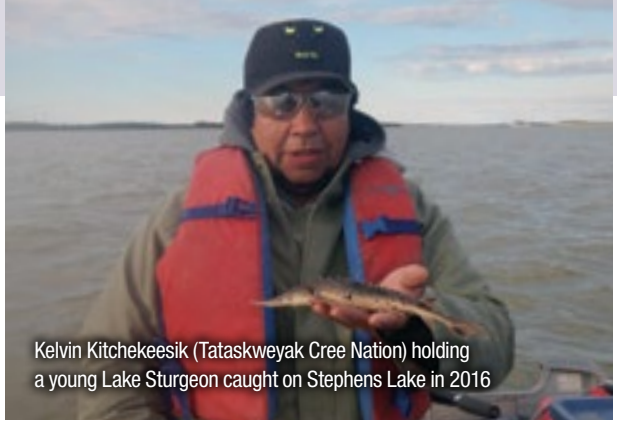
Employment and Business Opportunities

Forty-seven per cent of the total number of individuals employed on the Project were Indigenous. Fourteen Direct Negotiated Contracts (DNCs), with a total value of over $470 million, have been awarded to partner First Nation businesses, ranging from camp services to heavy construction. Sixty-three per cent of Manitoba expenditures on goods and services were purchased from northern Indigenous businesses.

The Keeyask Workplace Essential Skills Training Centre (KWEST) was established onsite. KWEST is providing support services to new and existing workers, to enhance their capacity to participate in on-the-job training, to carry out workplace tasks effectively and efficiently, and to prepare for advanced training and employment opportunities. KWEST has provided approximately 50 individuals skill development support.

To better understand concerns regarding workplace culture at Keeyask, and to create a better work environment going forward, a number of measures were undertaken, including contracting an independent third party to assess

Caleb Beardy, BBE employee from York Factory First Nation



Kelvin Kitchekeesik (Tataskweyak Cree Nation) holding a young Lake Sturgeon caught on Stephens Lake in 2016

current workplace culture at the Keeyask site. The independent assessment confirmed that discrimination and harassment exist at Keeyask, and the Partnership is working to make a number of changes at the site to address the findings and recommendations from the report.

People and the Environment

Community concerns remain regarding traffic safety and road conditions of PR 280 and PR 290, in particular, speeding, truck weights, convoys, and dust. Manitoba Hydro continues to monitor collision rates, traffic volumes, speeds, and vehicle types on these roads. A number of mitigation measures have been implemented to reduce the impacts of Project traffic on PR 280 including reconstruction and increased maintenance efforts; pre-hauling of materials during winter months; night hauling; and reductions in Manitoba Hydro truck traffic and reductions in truck weights during periods when the road has deteriorated substantially.

Fifty-seven archaeological sites have been investigated in the future reservoir area over the last three years. Thirty-one sites were investigated in 2016 and TCN students participated in the 2016 archaeological field work.

The Mercury and Human Health Implementation Group (composed of the partner First Nations, Manitoba Hydro, and provincial and federal health specialists) has finalized a “Road Map” to implement risk management activities in partner First Nation communities.

Thirteen Lake Sturgeon (two and three years old) reared in the Grand Rapids Fish Hatchery, that had been stocked in the Burntwood River, Gull Lake and Stephens Lake when they were one year old, were caught in 2016 - providing evidence that stocked Lake Sturgeon are surviving in the wild.

In June and July 2016, rehabilitation of the Project site commenced. More than 250,000 black spruce and jack pine seedlings were planted primarily at borrow pits along the North Access Road.

In February 2017, five eagle nest platforms were installed along the future reservoir shoreline, to replace recently active bald eagle nests that have been, or will be, affected by Project development.

Bald eagle nesting platform installation

Construction Progress

Keeyask includes three separate construction projects: the Keeyask Infrastructure Project, the Keeyask Generation Project, and the Keeyask Transmission Project. The Infrastructure Project began in 2012 and was completed in 2014. It included construction of the North Access Road, the Start-up Camp and the first phase of construction of the Main Camp. It provided for a timely and efficient start to the Generation Project.

The Generation Project commenced in 2014 and includes the construction of a 695 megawatt generating station with seven turbine units, a spillway, the South Access Road, phase II of the Main Camp, and clearing of the future reservoir. The first unit will be in-service by August 2021. The 2016-17 construction year was the first of three peak construction years.

The Keeyask Transmission Project will be wholly owned and operated by Manitoba Hydro. Construction commenced in 2014 and will be complete in 2020.

Powerhouse tailrace overview during night shift

Keeyask Generation Project

The summer of 2016 was to be the first of two peak construction years on the Keeyask Generation Project. In the past year, activities shifted from the construction of temporary river management structures and excavation to concrete placement and construction of the permanent earth structures. While the summer started off strong, the season ended without reaching the targets for the amount of concrete poured at the Powerhouse and Spillway, or meeting targets for the earthworks in the North Dyke and the Central and North dams. To set the Project up for success in 2017 and beyond, Manitoba Hydro, together with the General Civil Contractor, developed a recovery plan to minimize the delay in schedule and the cost increase. Development of this plan was based on an intensive Project review to understand the root causes of underperformance. This review resulted in a list of actions which will contribute to the Project meeting the revised cost and schedule estimates.

The previous control budget of $6.5 billion was increased to $8.7 billion and the in-service date of November 2019 was revised to August 2021. These changes were reviewed with the Keeyask GP Board in March 2017. The Project team is working to complete the Project with minimal delay and the least possible incremental cost increase while continuing to meet the Project commitments.

Camp check-in staff, Audry Dick (Tataskweyak Cree Nation), Lisa Saunders (York Factory First Nation), and Avery Spence (Tataskweyak Cree Nation)

With the updated schedule the peak construction years will extend into 2018 and there will be a need for an increased workforce on site. Work is underway to expand the Keeyask Main Camp by 120 rooms in order to accommodate the workforce required. The Main Camp contractor returned to site in January 2017 to begin installing additional dorm units, which will be required for at least two years.

Progress on the Project is made possible by the site services provided by the partner First Nations business ventures, which provide security, employee retention and support services, emergency medical services, catering, janitorial services, and camp maintenance. These services are essential to the success of the Project.

Principal Structures

This past year, approximately 80,000 m^3 of concrete was placed in the Powerhouse, Intake, Tailrace, Service Bay and Spillway. Although this is less than was planned for 2016, this volume represents about one quarter of the total volume of concrete required to build Keeyask. Significant progress was also made on the permanent earth structures including the North Dyke and the Central and North dams. Construction of these structures will continue throughout the next year.

Construction of the South Access Road was completed in November 2016 by Amisk Construction. When the principal structures of the Project are complete, the South Access Road will provide a direct link between Gillam and the Keeyask Station. Amisk Construction also resumed their work on clearing trees from the south side of the future reservoir in the fall of 2016. By the end of March 2017, the reservoir clearing was nearly completed. Most of this work was undertaken by heavy machinery while hand clearing was utilized in environmentally sensitive sites. Clearing of the reservoir is required prior to impoundment of the forebay.

Powerhouse - February 2017

Excavation of central dam

Infrastructure Completed

July 16, 2014 to March 31st, 2017

Legend

- Cofferdams
- Dam
- Dyke
- Haul & Site Road
- Constructed Gull Nesting Habitat

0 0.5 1 Kilometres

0 0.5 1 Miles

South Access Road construction


Draft tube formwork

Manufacturing

In the past year, progress has been made on the design and manufacturing of major power generating components such as turbines, generators, and cranes. Design for the turbines and generators is mostly complete and manufacturing is ongoing. Spillway and intake gates, guides and hoists are substantially complete and the majority of the equipment is ready to ship. Installation is planned for 2017. The Powerhouse cranes are also complete and ready for installation in 2017. These components are being manufactured at facilities all over the world including Canada, the United States, Brazil, and various locations in Europe.

Safety and Workplace Environment

The safety and health of all employees working on the Project is a top priority for Manitoba Hydro and the partner First Nations. Summer 2016 was the first peak of construction at Keeyask, which resulted in a significant increase in the number of workers on site and hours worked. During the 2016-2017 fiscal year, there were more than five million person-hours worked at the Project site; a 70 per cent increase over the previous year. With greater activity around the site, there is greater possibility for injuries or accidents to occur. Despite the substantial increase to the hours worked, there were only seven lost time injuries; the same as the previous year.

A number of safety programs implemented in 2015-2016, such as incident investigation and safety training, were refined over the last year. New to the camp in 2016-2017 is a Safety Information Hub, which provides easy access to important safety information such as seasonal hazards at the worksite, a summary of safety absolutes (intolerable actions) and safety statistics. The Safety Information Hub promotes safety awareness at the site and is located in the Arctic Corridor (central hallway) of the Main Camp.

Powerhouse area, August 2016

The Drug and Alcohol Standard, which was implemented in May 2015 to improve safety by targeting impairment at the jobsite, continues to be in place. This program provides the ability for treatment where addiction is present. As of March 31, 2017, eleven workers have completed treatment programs and have successfully returned to work. Treatment for addiction not only supports a safe working environment, but also improves the lives of these individuals and their families.

Construction Advisory Committee

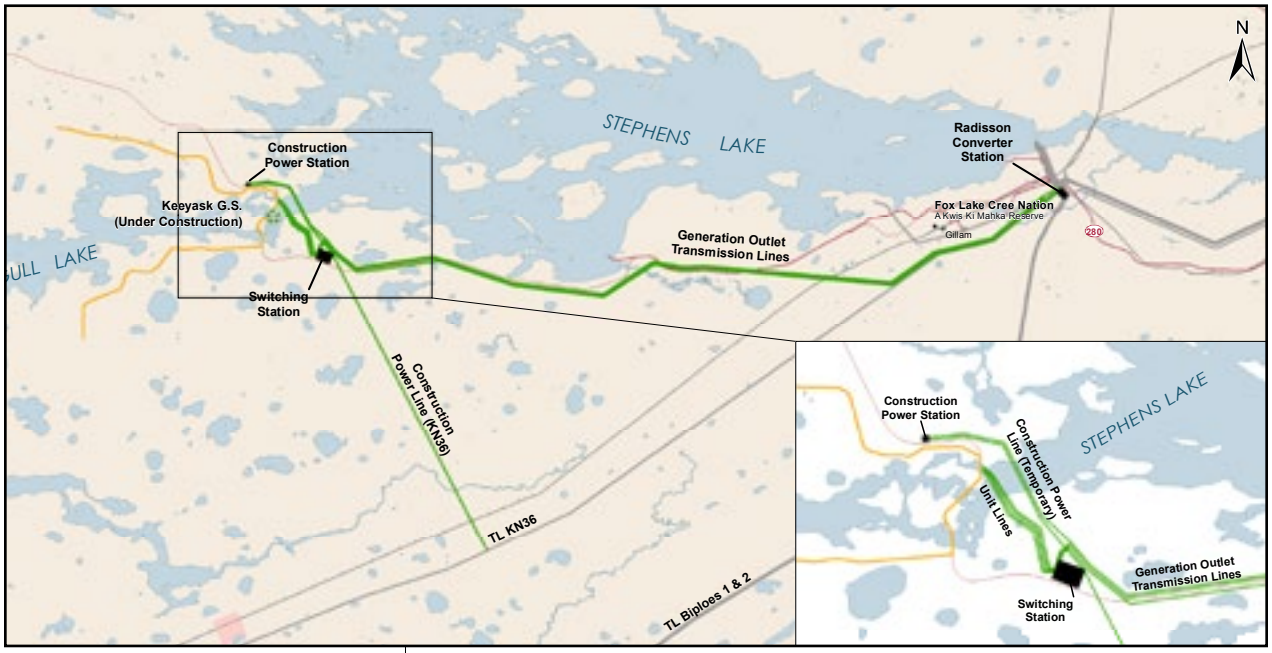
The Construction Advisory Committee (CAC) was created as a forum to share information and to discuss construction activities related to the Keeyask Project. It meets regularly to review construction updates on current and upcoming construction activities related to the Project. The CAC provides a discussion forum for all partners, and the information delivered is passed on by committee members to their respective communities. By having the meetings at site, members are able to see the progress of construction during site tours. Tours this year included seeing progress on the construction of the Spillway, Tailrace, North and Central dams and the Powerhouse. At these meetings, members are also given presentations on a variety of topics such as the gull and tern control program, where raptors are used to ward off nesting gulls, and the use of drones to capture unique video footage of the site.

Construction Advisory Committee left to right: Marie Ryle-Beardy (YFFN), Rita Spence (MH), Leah Macdonald (MH), Jimmy Beardy (YFFN), Michael Cobb (WLFN Advisor) Missing from photo: Robert Garson (TCN), Dustin Maud (TCN), Gary Garson (TCN), Leroy Spence (TCN), Roy Ouskun (WLFN), Dwayne Flett (WLFN), Noah Massan (FLCN), Morris Beardy (FLCN), Richard Goulet (MH), Barry Nazar (MH)

Keeyask Transmission Project

The Keeyask Transmission Project is being built at the same time as the Keeyask Generating Station. When the Keeyask Generating Station is operational, the Transmission Project will link the power produced at Keeyask to the Manitoba Hydro system. The Transmission Project is owned and managed by Manitoba Hydro and is outside the scope of the KHLP. The main components of this project include: three Generation Outlet Transmission Lines, four unit transmission lines, a new Keeyask switching station, and upgrades to the Radisson Converter Station in order to prepare the station for the power produced at Keeyask. The site improvements for the future switching station were completed in the fall of 2016 and equipment replacement and station upgrades are well underway at Radisson Converter Station. Breaker replacements have been on-going throughout the winter and will continue until 2020.

The Transmission Project also provides the Keeyask Project site with permanent, reliable power during construction. The Keeyask Construction Power Project consists of two transmission lines and a construction power station. The second transmission line was commissioned and brought into service in summer 2016, completing the Construction Power Project.



Keeyask Transmission Project

Legend

- Transmission Line (Under Construction)
- Transmission Station (Under Construction)
- Transmission Line (Existing)
- Keeyask Principal Structures

0 4.5 9 Kilometres
0 4 8 Miles


Construction power facilities


Transmission tower with lines that span the Nelson River

Employment Business Opportunities

Keeyask is influencing the Manitoba economy by providing employment (creating labour income) and through the purchase of goods and services required to build the Project. In turn, these expenditures result in incremental provincial tax revenues and contributions to the provincial gross domestic product. The following sections discuss the major, direct, economic impacts of the Keeyask Generation Project from the beginning of construction in July 2014 to March 31, 2017.

Concrete Placement - May 4, 2016

Employment

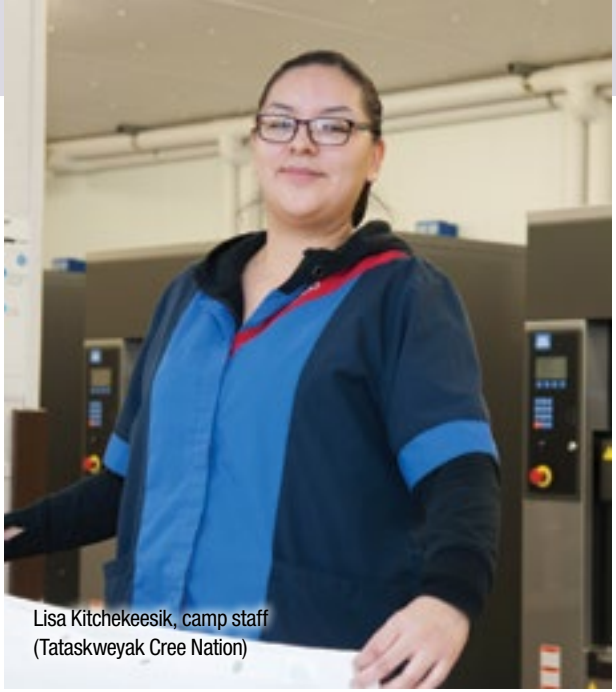
Employment statistics are tracked to determine the overall employment outcomes of Project construction, with particular emphasis on Indigenous and northern resident participation. Employment is being measured in a few ways, including hires, employees and person-years. Hires refer to the number of people hired for any amount of time at the Project site. One individual may be hired more than once and each hire is recorded separately. However, when part-time and/or seasonal workers are hired, it is useful to standardize the hires in terms of person-years of employment. A person-year of employment means one, full-time position for one year. This usually means about 2,000 hours of work per year using a standard 40 hour work week in most industries; whereas for Keeyask construction work, a person-year of employment represents 3,000 hours of work per year. The person-years of employment presented are shown both at 2,000 hours of work per year, for economic comparisons to other industries, as well as at 3,000 hours (identified in parentheses) of work per year.

Person-years of Employment

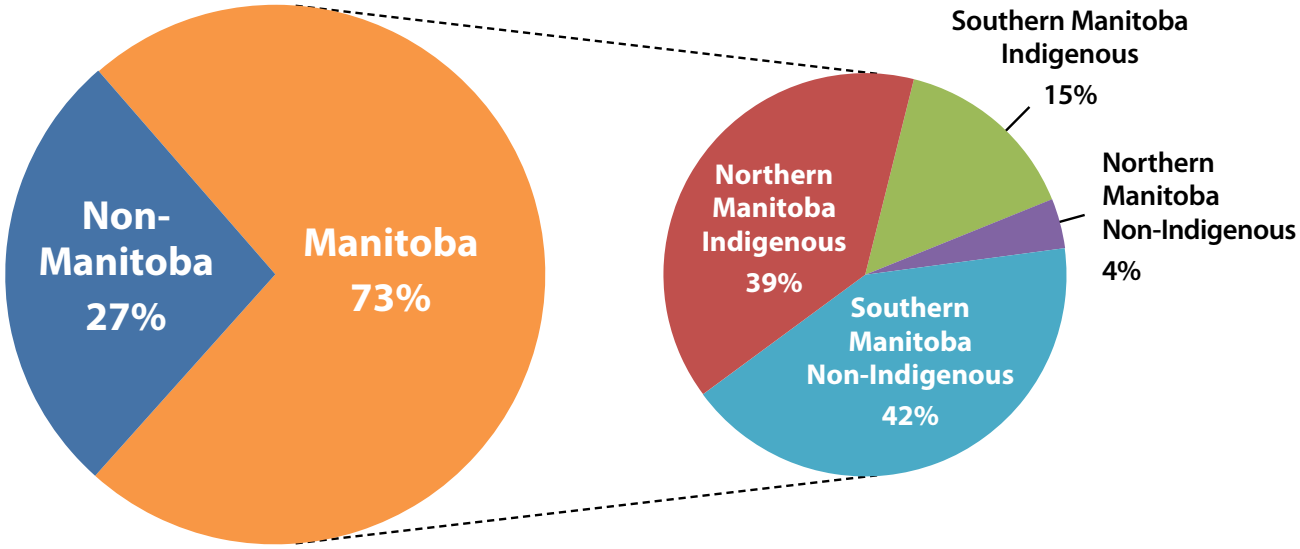
From the start of construction to March 31, 2017, direct employment on the Project totalled 4,397 (2,932) person-years. As the figure illustrates, 73 per cent, or 3,192 (2,128) of these person-years, represent people already living in Manitoba.

Of the 73 per cent of employees already living in Manitoba:

- Northern Manitobans represent 43 per cent, or 1,363 (909) person-years;
- Other Manitobans represent 57 per cent, or 1,829 (1,219) person-years
- Indigenous employment represents 54 per cent, or 1,721 (1,147) person years; and
- Non-Indigenous employment represents 46 per cent, or 1,471 (981) person-years of the Manitoba employment.



Lisa Kitchekeesik, camp staff (Tataskweyak Cree Nation)

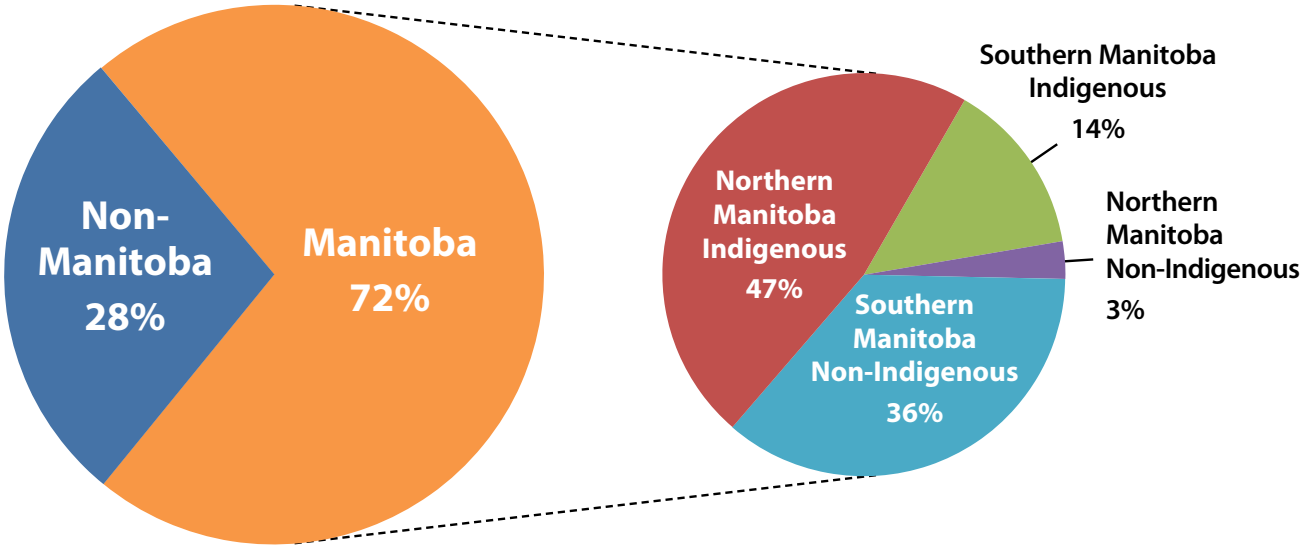


Total Person Years of Employment Breakdown

Construction Start – March 31, 2017

Margaret Thomas (York Factory First Nation), camp kitchen staff

Curtis McDonald, 3rd Level Electrician Apprentice (Nelson House, BBE)



Breakdown of Hires

Construction Start – March 31, 2017

Hires

From the start of the Keeyask Generation Project construction in July 2014 to March 31, 2017, there were 7,897 hires on the work site. Of the total hires, 5,681 or approximately 72 per cent were Manitobans.

- Total northern Manitoban hires represent 50 percent (2,854 hires);
- Indigenous hires represent 61 per cent (3,470 hires); and
- Non-Indigenous hires represent approximately 39 per cent (2,211) hires.

Total Hires by Job Classification	Total Hires	Percent of Total Hires	CBN[1]	Indigenous	Non-Indigenous	Northern MB	Other MB	Non-MB
Labourers	1636	21%	609	998	638	819	551	266
Security Guards	117	1%	12	46	71	34	83	<5[2]
Crane Operators	122	2%	<5	18	104	7	87	28
Equipment Operators	757	10%	140	314	443	208	316	233
Teamsters	621	8%	227	395	226	320	249	52
Carpenters	1081	14%	55	270	811	112	321	648
Millwrights	9	<1%	<5	<5	8	<5	9	<5
Painters	6	<1%	<5	<5	5	<5	6	<5
Floor Covering Installers	9	<1%	<5	<5	9	<5	8	<5
Insulator Workers	66	1%	<5	10	56	<5	53	11
Lathing and Drywall Workers	42	1%	<5	8	34	<5	14	27
Cement Masons	68	1%	<5	16	52	<5	35	31
Sheet Metal Workers	10	<1%	<5	<5	8	<5	10	<5
Roofers	11	<1%	<5	<5	10	<5	10	<5
Sheeters, Deckers and Cladders	25	<1%	<5	7	18	<5	24	<5
Boilermakers	9	<1%	<5	<5	8	<5	7	<5
Iron Workers	340	4%	5	91	249	21	167	152
Rod person	59	1%	<5	20	39	<5	21	36
Electrical Workers	205	3%	27	53	152	47	151	7
Plumbers and Pipefitters	85	1%	12	32	53	14	71	<5
Refrigeration Workers	13	<1%	<5	7	6	<5	8	<5
Sprinkler System Installers	<5	<1%	<5	<5	<5	<5	<5	<5
Office and Professional Employees	419	5%	93	169	250	136	150	133
Caterers	1058	13%	747	1020	38	997	38	23
Elevator Constructors	6	<1%	<5	<5	6	<5	6	<5
Other[3]	1122	14%	87	171	951	129	431	562
Total Hires	7897	100%	2022	3651	4246	2854	2827	2216

[1] CBN stands for Churchill-Burntwood-Nelson communities identified in the Burntwood Nelson Agreement as part of the hiring preference Zone 1
[2] For employee privacy and confidentiality reasons, categories with less than five hires are shown as <5
[3] The "Other" category refers to hires in job classifications not covered by the Burntwood Nelson Agreement, i.e. "out of scope" positions. This would include managerial and supervisory staff (both Contractor and Manitoba Hydro).

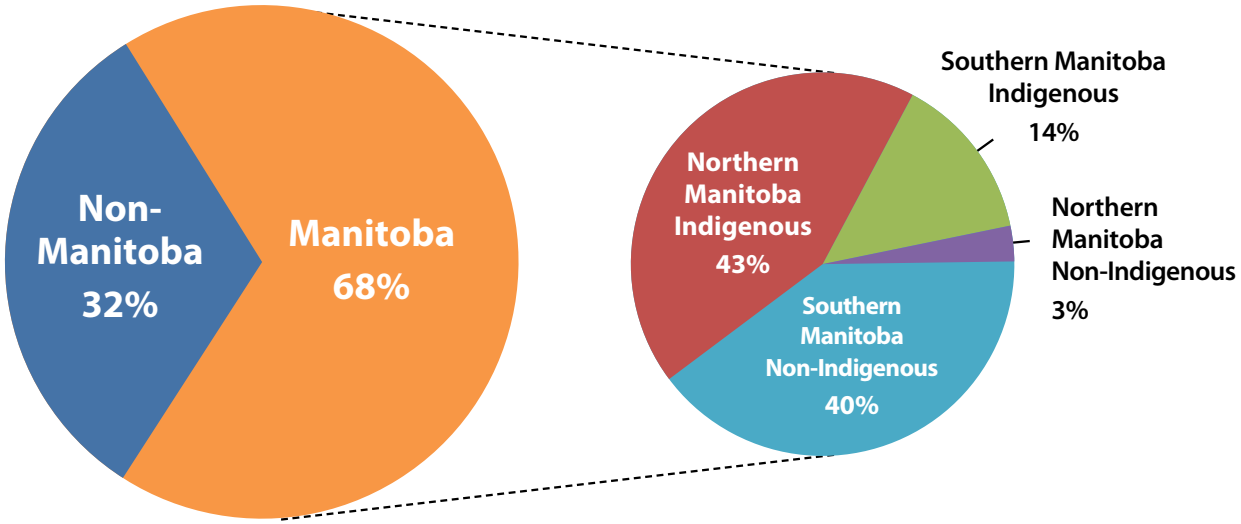

Rose Connell, Rock Truck Driver (Tataskweyak Cree Nation)

Individual Employees

A total of 5,319 individual employees were hired on the Keeyask Generation Project. Of this, 68 per cent (3,623 individual employee hires) were Manitobans.

The total number of employees is less than the total number of hires (7,897) because the same individual may have been hired more than once. The difference of 2,578 identifies the number of re-hires at the Project site.


Sean Shlachetka (Cormorant)



Breakdown of Individual Employees

Construction Start – March 31, 2017

Rate of Turnover

The cumulative rate of turnover is calculated as total incidents of separation, for discharges and resignations, divided by hires[1] from the start of construction to a given point in time. The cumulative rate of turnover does not include layoffs or transfers to other positions or contracts.

From the start of construction to March 31, 2017, the cumulative turnover rate for the Project is 31 per cent for total hires, 44 per cent for Indigenous hires and 20 per cent for non-Indigenous hires.

[1] Hires for calculating turnover has been modified to exclude Contract 016125 (Emergency Medical Services) as hiring and work scheduling practices for this contract can misrepresent the true turnover rate.

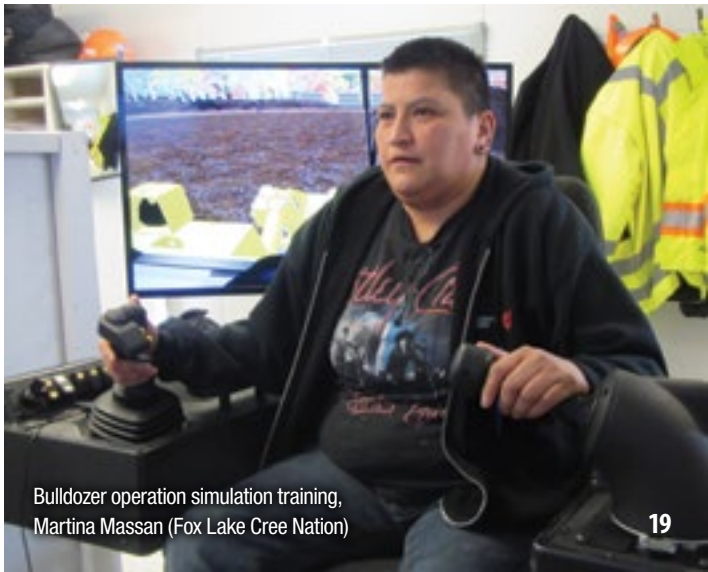
On-the-Job Training Opportunities

On-the-job training programs were developed at site to hire individuals as trainees and apprentices and to enhance their qualifications for further career development. The programs offered during this period were in the following areas:

- Catering, janitorial services and housekeeping;
- Maintenance services;
- Security services;
- Emergency medical & ambulance services;
- South access road;
- General civil contract; and
- Reservoir clearing.

BBE site employees working in the Powerhouse

As of March 31, 2017, 1,017 Indigenous employees had training opportunities on the Project (429 were in On-the-Job Training Programs); 443 of these were filled by partner First Nation members (151 were in On-the-Job Training Programs). First year apprenticeship opportunities were available in trade classifications such as Construction Labourers and Trade Helpers, Red Seal Chefs, Carpenters, Electricians, Crane Operators, Cement Masons, Iron Workers and Pipefitters.



Bulldozer operation simulation training, Martina Massan (Fox Lake Cree Nation)

Advisory Group on Employment

The Advisory Group on Employment (AGE) is a forum for addressing employment-related issues associated with construction of the Keeyask Generation Project. In particular, an emphasis is placed on the employment and training of partner First Nations' members in both designated and non-designated trades. The AGE creates a collaborative environment for interaction between various committee members, including the Province of Manitoba, contractors, Manitoba Hydro, the Hydro Projects Management Association, Allied Hydro Council and the partner First Nations. The AGE Sub-Committee was established in 2015 and is a smaller subset of the AGE with a goal of further addressing issues related to employment and training at Keeyask. Several initiatives have been undertaken to get more partner First Nations' members hired on the Project and to progress in trade jobs.

Job Seeker Managers (JSMs) are based in each of the four partner First Nations. Each JSM is responsible for developing an annual community employment plan. All four plans are unique, but also have common goals including improving the ability for employers to make contact with members and ensuring that members' qualification profiles are up to date. The JSMs provide several employment support services to community members. The partner First Nation site representatives also act as a backup JSM by helping to contact job seekers, and by providing assistance with job profile updates. Additionally, as part of the employment ramp down strategy in the fall of 2016, representatives from the Province's Job Referral Service (JRS) attended the Keeyask Project site to update job seeker profiles in early November. This was very well received and a key contributing factor in ensuring a smooth ramp up in the spring of 2017.

Community Engagement Sessions were held in the four partner First Nation communities from November 2016 to February 2017. Over 50 potential job seekers attended the sessions, where they were able to learn about employment and training opportunities at Keeyask and speak with various contractor representatives. Job seekers who had not previously worked at Keeyask were given the opportunity to attend a two-day site orientation session from February 21-22, 2017. The site orientation session provided individuals with the chance to experience the Project first-hand, learn more about training and employment opportunities from the contractors, and to experience camp life for a couple of days. Eight potential job seekers and two JSMs attended.

Partner First Nation members are given the opportunity to sign up to the Keeyask Engagement Project (KEP) Referral List. Maintained by Training and Employment Services, the KEP Referral List identifies an individual's current trade and level, and preferred trade(s). The KEP Referral List is distributed on a regular basis and

Heavy equipment simulator training

contractors can use the list to direct hire individuals into training and apprenticeship programs without having to post a job order through the JRS. Use of the KEP Referral List for hiring has received positive reviews from both contractors and job seekers and has proven to be successful in identifying and filling training and apprentice positions in an expeditious manner.

In August 2016, the Keeyask Workplace Essential Skills Training (KWEST) Centre was established onsite by the AGE and Training and Employment Services. The goal of KWEST is to provide new and existing workers access to skill development support, to enhance their capacity to participate in on-the-job training, to carry out workplace tasks effectively and efficiently, and to prepare for advanced training and employment opportunities. Participants are assessed for the essential skills required for the trade they are in or are interested in pursuing. Opportunities to address skill gaps through tutorial and small group sessions are provided. Since its inception in August until March 31, 2017, KWEST has provided approximately 50 individuals skill development support and has led to numerous success stories.

Advisory Group on Employment members

Back Row left to right: Michael Cobb (WLFN Advisor), Dustin Czmola (Allied Hydro Council), Richard Flett (TCN Job Seeker Manager), John Bola (Keeyask Maintenance Services), Richard Goulet (MH), Tony Landry (Hydro Projects Management Association), Evelyn Beardy (YFFN), Craig Saunders (Partner First Nation Site Rep for YFFN), Rita Spence (MH), Christina Brown (Industry, Training and Employment Services - ITES).

Front Row left to right: Monica Genaille (BBE), Carl Johnson (Amisk), Jacqueline Lagimodiere (Industry, Training and Employment Services - ITES), Victor Spence (TCN), Kelly Bryll (MH), Sarah Cole (TCN), Tim Johnson (MH)

Missing from photo: Chief Betsy Kennedy (WLFN), Roy Ouskun (WLFN), Victoria Henderson (FLCN), Clara McLeod (FLCN), Gary Garson (TCN), Wendy Saunders (YFFN), Robert Wavey (Employee Retention Services, Fox and York JV), Vincent Kuzdak (MH), Dave Little (MH), Brian Finch (Fox, York and Sodexo JV), Sudhir Sandhu (Allied Hydro Council), Conway Arthurson (Partner First Nation Site Rep for FLCN), Elizabeth Beardy (Partner First Nation Site Rep for TCN), Ron Castel (Allied Hydro Council), Todd Smith (BBE), Kristopher Remillard (Canmec)

Keeyask Workplace Culture

The KHLP is committed to creating a respectful workplace culture for all employees at the Keeyask site. A Respectful Workplace Standard has been implemented at Keeyask. The standard describes a strong vision for a workplace free from discrimination and harassment and the importance of being respectful of different cultures. Achieving this goal is the responsibility of everyone involved in the Keeyask Project.

The Partnership is aware there are concerns that this goal is not being realized for everyone at the Project site. To better understand these concerns and to create a better work environment going forward, a number of measures were undertaken during 2016-17. This included contracting an independent third party to assess current workplace culture at the construction site. As part of its assessment, the consultant conducted over 200 interviews to hear and understand the experiences and perspectives of current and past employees, contractors, the Allied Hydro Council, and the Hydro Projects Management Association. The consultant also reviewed the current site policies and procedures and the outcome of previous workplace investigations regarding discrimination and harassment.

The independent assessment confirmed that discrimination and harassment exist at Keeyask and that all parties need to implement measures to create a more respectful, positive work environment. The Partnership is working to make changes at the site, including:

- standardizing policies and procedures, including the reporting and investigation of workplace complaints;
- improving training for managers, supervisors and others involved in addressing workplace complaints; and
- enhancing the supports available for employees.

A committee has been established at the Project site to continue efforts to create a positive work environment for all individuals working at Keeyask. This committee includes representation from Manitoba Hydro, each of the partner First Nations and contractors on site.

In late 2016, an independent assessment of the workplace culture at Keeyask was undertaken. Poster cards (right) were one of the communication materials used in that process. These cards were posted at site after the reporting period.

Business Opportunities

Project construction will present direct and indirect business opportunities locally, regionally and across the province as a whole. Business outcomes of Project construction are being tracked, with a particular focus on Indigenous and northern Manitoba business participation.

Direct impacts result from Project expenditures and include employment, purchases, and income generated by the Project. Indirect impacts refer to the employment, purchases and income created in other industries as the effects of Project expenditures work their way through the economy. For example, there are indirect impacts on businesses supplying materials and equipment to companies in the direct impact segment. At the peak of the General Civil Contract, Key Person Interviews will be undertaken in Thompson, Gillam and each partner First Nation community to ascertain any indirect business opportunities that may be generated as a result of the Project.

Direct Negotiated Contracts

As of the end of March 2017, fourteen Direct Negotiated Contracts (DNCs) for the Keeyask Generation Project, ranging from camp services to heavy construction, have been awarded to the partner First Nations with a total value exceeding $470 million. These DNCs with partner First Nation joint ventures include work undertaken on the following components of the Project:

Services (throughout Infrastructure and Generation projects)

- Catering and janitorial services
- Security services
- Camp maintenance services
- Employee retention and support services
- Emergency medical services

Infrastructure

- PR 280 Part 1 for Section 1
- North Access Road (Part A and B)
- Start-up camp and work areas site preparation
- Looking Back Creek bridge
- Work areas site development

Amisk crew undertaking reservoir clearing activities

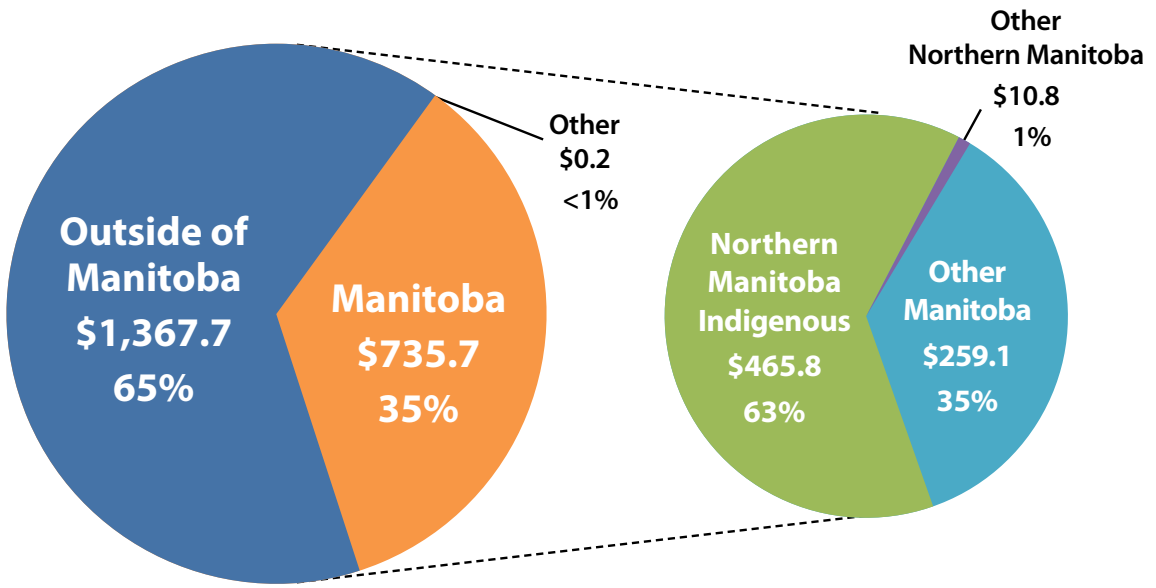
Generation

- Southside containment dykes
- South Access Road
- Reservoir clearing

In addition, there have also been three DNCs awarded to TCN for the Keeyask Transmission Project with a total value exceeding $45 million. DNCs have been highly successful in providing significant employment opportunities for members of the partner First Nations.

Spreading of organics on embankment slopes on the South Access Road

Chriso Sinclair (South Indian Lake)
and Warren Denechez (Lac Brochet)



Direct Purchases
to March 31, 2017

Project Purchases

There was $2,103.6 million spent on goods and services for the Project. Of this, $735.7 million were Manitoba purchases. Total northern Manitoba (Indigenous and non-Indigenous) purchases represent $476.6 million or 64 per cent of the total Manitoba purchases. This information reflects direct purchases of the Project for contractors and services. Indirect purchases made by contractors, in turn, would include purchases of goods and services from Manitoba based businesses.

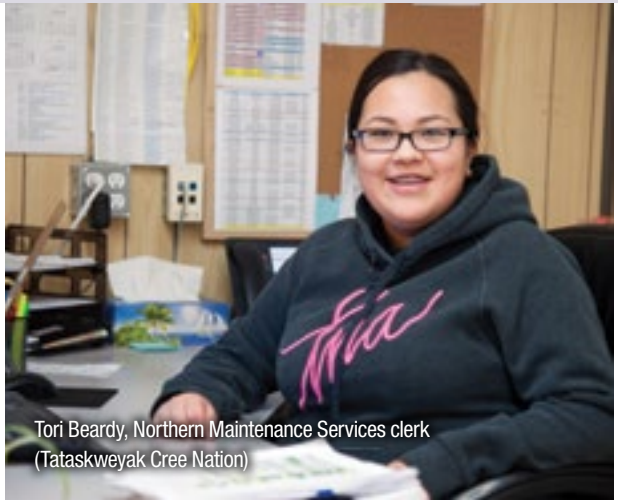
Steve Saunders, red seal chef apprentice
(York Factory First Nation)

Income

Project construction will generate income from a number of sources including employment, business opportunities and payment of taxes. Partner First Nations' income will originate mainly from employment and to a lesser extent from business opportunities resulting from construction. During the operation phase, the partner First Nations will receive equity income as a result of investing in the Project.

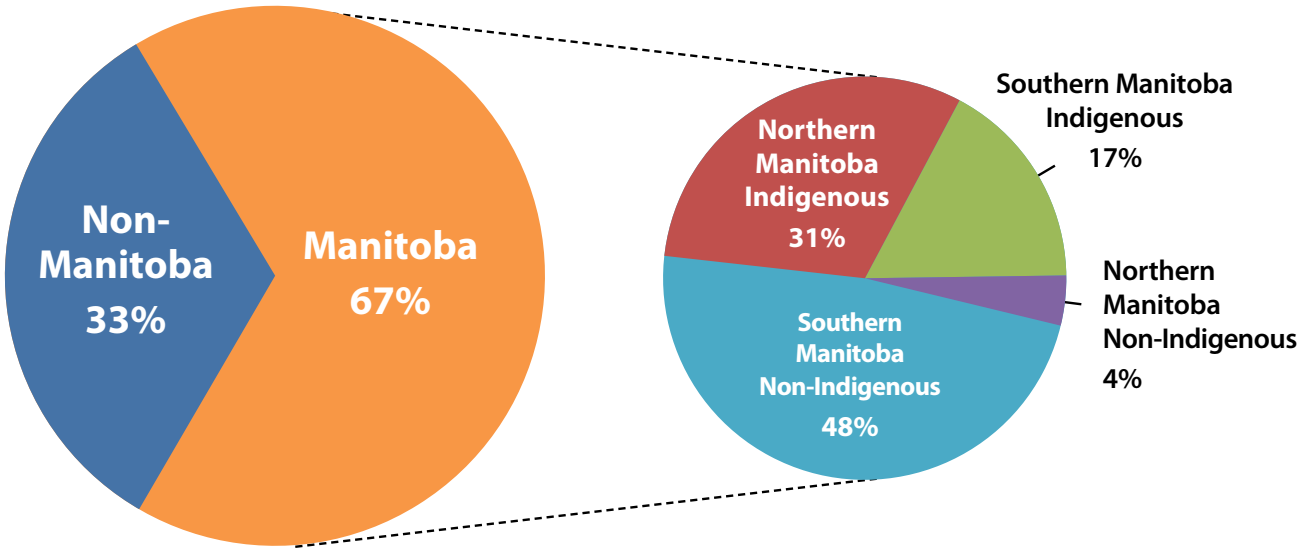
Labour income is an important indicator of the economic impact of a project. It is the sum of wages and salaries earned by workers.

The Keeyask Project, from July of 2014 to March 2017, has generated $424.0 million in total labour income. Of this, Manitoba labour income represented $283.8 million or approximately 67 per cent of total labour income. Of total Manitoba labour income, Indigenous labour income represented approximately $135.7 million (48 per cent), northern Manitoba Indigenous labour incomes represented approximately $88.6 million (31 per cent), northern Manitoba non-Indigenous represented approximately $12.6 million (4 per cent), and non-Indigenous represented $148.1 million (52 per cent). Partner First Nation labour income represented approximately $47.7 million (11 per cent) of total Manitoba labour income.



Tori Beardy, Northern Maintenance Services clerk (Tataskweyak Cree Nation)

BBE employee working in the Powerhouse



Total Project Labour Breakdown

Construction Start – March 31, 2017

People and the Environment

Prior to obtaining a Manitoba *Environment Act* licence and a federal *Fisheries Act* authorization to construct the Keeyask Generation Project in 2014, many years of study were conducted to understand the pre-Project conditions in the Keeyask area. Both Aboriginal Traditional Knowledge (ATK) and technical science were used during the assessment. Predictions were made on the effects that the Project would have on people and the environment and mitigation plans were developed to reduce the impact.

Now, during construction of the Project, ATK and technical science monitoring are being used to follow up on the predictions, and assess the effectiveness of mitigation measures

Planting a jack pine seedling, Michael Spence (Tataskweyak Cree Nation), Amisk

Aboriginal Traditional Knowledge

Tataskweyak Cree Nation

Tataskweyak Cree Nation (TCN) led its own community evaluation process which resulted in predictions of impacts from the Project on members, and on the terrestrial and aquatic environments.

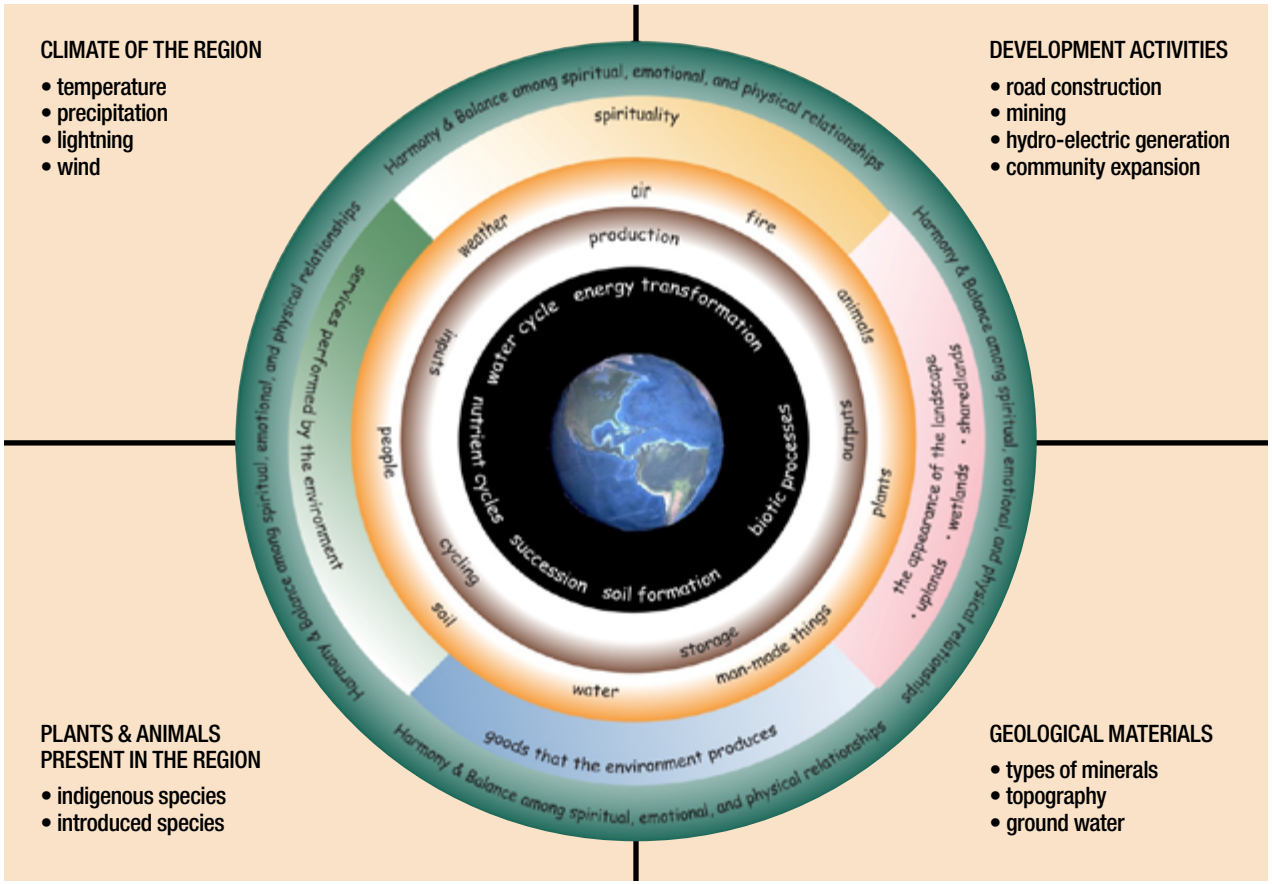
Knowledge that reflects our experience, understanding, wisdom, values, beliefs, norms and priorities help govern the relationships with Mother Earth since time immemorial. ATK is inextricably linked to our culture and our world view.

TCN has been involved with the planning and development of the Environmental Protection Program to monitor, manage and mitigate the predicted environmental effects resulting from the operation and construction of the Keeyask Generation Project. TCN members participated in all of the Monitoring Advisory Committee meetings as required by the Partnership.

Elder Arthur Beardy preparing moose meat on his trapline in Black water (Source: Victor Spence)

We are currently in the process of developing an ATK Monitoring Plan. There are integral challenges with executing the process. Community members will provide guidance and assistance through meetings, workshops and going out on the land.

TCN implemented a holistic approach, using the Mother Earth Ecosystem model and the Overview of Water and Land (OWL) process. TCN recognizes Traditional Knowledge as the summation of past experience, beliefs, wisdom and values.



Tataskweyak Cree Mother Earth Ecosystem Model

Combing aspects of how Tataskweyak Cree people view their surrounding environment along with science-based ecosystem concepts, this model is intended to serve as a teaching tool for improving understanding and communication among Tataskweyak Cree as well as between Tataskweyak Cree and others.

Elder Late Allison Kitchekeesik preparing goose with his grandchildren Clayton & Cheyanne Kitchekeesik and son Jonathan; in his traditional Territory Gull Lake (Source: Linda Kitchekeesik)

The basis of current cultural manifestations, as applied to day to day living, includes knowledge and its relationship to animals, lands and water. It is the foundation of these relationships that keeps our traditional knowledge vibrant and relevant. This knowledge will guide all future monitoring studies.

Traditional knowledge lives within us. It is our way of life for countless generations, and orally and physically taught to our people.

War Lake First Nation Aboriginal Traditional Knowledge Monitoring Program

War Lake First Nation (War Lake) made the decision to proceed with an Aboriginal Traditional Knowledge (ATK) Monitoring Program independently in 2016. Previously, War Lake had been working with Tataskweyak Cree Nation to develop a joint program. This decision resulted in the development of an ATK Monitoring Program designed specifically for War Lake members and to meet the reporting requirements committed to during the regulatory review of the Keeyask Project.

In 2016, War Lake continued to work with its partners in the KHLP to finalize a comprehensive, multi-year monitoring program for the duration of Project construction. War Lake's ATK Monitoring Program has been developed to promote the participation of a diverse group of War Lake members in ongoing monitoring activities, including Elders, youth, resource users, and other interested members.

War Lake is in the process of hiring an ATK Coordinator to help coordinate and implement Program activities and to participate on the Monitoring Advisory Committee (MAC). Once hired, the ATK Coordinator will organize a Community Meeting to introduce the Program to Community members. At this meeting, an Introductory Survey will be distributed to targeted War Lake members to gather information related to areas of interest for future ATK Monitoring, including past and present resource use and areas of cultural importance.

Once the Community Meeting and Introductory Survey are completed, the results will be compiled to determine locations of interest for future War Lake Monitoring Trips. War Lake intends that their first Monitoring Trip will occur in the summer of 2017.

War Lake Monitoring activities are anticipated to include trips to the Keeyask site to experience firsthand the effects of construction on the immediate environment. Additional monitoring activities will be focused on the Keeyask Project Area (outside of the construction zone) and within War Lake's Traditional Use Area.

War Lake First Nation members at a site visit

It is also anticipated that, in the upcoming year, War Lake will begin to meet with the other partner First Nations' Monitoring staff to discuss activities and results from each Community's Program and to identify areas of common interest for future observation.

Some of the monitoring activities described are subject to change in future years based on the experience and suggestion of participants in War Lake's ATK Monitoring Program.

York Factory First Nation - Askiy Nanakacihtakewin (AN) Stewardship Program

Program Overview

Askiy Nanakacihtakewin (AN) means, "to watch out for and take care of the lands, waters, wildlife, plants, and people of the land". YFFN has chosen the term "stewardship" for its "monitoring" program, as this word is better aligned with Ininiw perspectives on caring for Askiy. The program is designed to incorporate traditional science and Ininiw kiskenihtamowin (ATK), with cultural, educational, and traditional elements in understanding the effects of the Keeyask Project on YFFN's members and their traditional lands.

The AN program now has two permanent staff members - the YFFN Stewardship Coordinator and Stewardship Assistant - and a contracted Monitoring Support Worker.

Work Planning

The AN Program began the year operating under an Interim funding agreement. Staff and Steering Committee members spent much of the year meeting internally and with Manitoba Hydro to come to an agreement on a work plan for future program activities. In early February, YFFN and Manitoba Hydro finalized a contribution agreement, work plan, and budget that cover the program until March 31, 2018.

Monitoring Activities

In addition to work planning and budget discussions with Manitoba Hydro, the AN program conducted a number of community-based activities between April 2016 and March 2017:

Steering Committee Meetings

The AN Steering Committee met more than ten times to review program activities and provide direction to AN Staff. The Steering Committee is made up of 12 YFFN members, including youth, Elders, resource users, staff from the Keeyask Implementation Office, a member of Council, a member of the YFFN Resource Management Board, and others. This broad membership provides grass-roots direction for the program and ensures linkages to other First Nation programs and activities.

Community Survey

The AN program conducted a survey of community members. The survey focused on identifying changes that have occurred since the beginning of the Keeyask Project, and on priority areas for community monitoring. Key points of concern identified through the survey are:

- Travel safety – Members note increasingly uncertain ice and water conditions on Split Lake and the Aiken River. They see these conditions as influenced by system operation, watershed management, upgrades at the Kelsey GS, climate change, and other factors. Members continue to be concerned about the potential for Keeyask to contribute to challenges with safety, access and resource use in the area.

YFFN members heading out to collect medicinal plants Source: Gilbert Beardy

- Water quality – Like travel safety, members see water quality as the product of multiple factors. They report an on-going decline in the quality of water for drinking, swimming, and ecosystem health. Skin conditions are reported, particularly among children, and fishers have struggled in recent years with silt and algae coming downstream through the Kelsey GS. Again, members are concerned that Keeyask will further contribute to these problems.
- Barriers to employment – A number of barriers were identified, including the quality of pre-project training, employment databases, access to site, lack of advancement on site, dismissals from camp, and resignations – often due to workplace problems and family separation.
- Income – Survey results suggest that the standard of living has improved somewhat for YFFN members employed with the project, but members note that money earned on-site has in some ways contributed to social problems in the community.

- Environment and way of life – Environmental change in the region continues to affect YFFN members' access to traditional resources and family gathering places. The survey report emphasizes the need for land based healing and reconciliation programs involving community Elders. Reconciliation is seen as a long-term process that must be navigated and led at the community level.
- Caribou – The survey also documents concerns with an apparent decline in caribou in the York Landing area over the last several years. Members question whether current construction has affected caribou movements and if recent experiences will transfer into long-term trends.

The survey outcomes confirm a number of on-going priorities for YFFN. The AN team, the Keeyask Implementation Office, and community leadership will continue to address these concerns through their respective work.

YFFN members boating on the Hayes River during field trip
Source: Gilbert Beardy

Field Trip

An eight-day Elders and youth retreat was held in YFFN's home territory along the Hudson Bay coast. It provided an opportunity for Elders to revisit and observe changes in the York Factory area; for youth to see and learn about their history and traditional lands; and for members of YFFN's AN Stewardship Program to document oral history, practices, knowledge and observations shared during the trip.

Caribou Workshop and Mapping

Program staff have been meeting with Elders and resource users to document community observations of caribou on a year-by-year basis.

2015/2016:

- Community observations indicate that in 2015/16, caribou migrated into the area east of York Landing (along the railway tracks towards Ilford), but did not use areas burned in the 2013 fire, and did not travel as far west as York Landing or Split Lake.
- Discussion with Elders from other First Nations, at a joint ATK workshop raised a concern that, in early 2016, animals may have encountered linear disturbances (new cut lines and power lines) in the Gillam area, and turned away from their regular course.

2016/2017:

- YFFN resource users indicated no caribou in the York Landing or War Lake areas in the winter of 2016/2017. The only caribou observed by YFFN harvesters in that year were near Panko Lake (northeast of Gillam), and near Shamattawa. Discussions with neighbouring communities indicate that caribou moved through the Oxford Lake and God's Lake areas this year – near the southern extent of their routes.

YFFN plans to continue to document caribou observations on a year-by-year basis. The AN program is looking to foster discussions with other communities, as well as with other research programs, and build an understanding of regional caribou movements, and changes over time using all available knowledge systems. YFFN continues to endorse development of a regional caribou management committee in Northeastern Manitoba.

Sturgeon Workshop

The AN program staff teamed up with YFFN's Kichi Sipi Namao (sturgeon stewardship) committee representatives to co-host a community workshop on sturgeon. Seven Elders participated in the workshop. They underscored the importance of teaching young people about sturgeon stewardship and encouraged Kischi Sipi Namao representatives to continue with education and awareness activities such as field trips to sturgeon releases and a 'sturgeon days' event at the school.

Spiritual Activities

The AN program provides regular funding support to traditional spiritual activities in York Landing including sweat lodges, teachings, and other events. These activities support on-going relations with Askiy, providing opportunities for learning, reflection, and healing at an individual level.

Ice and Water Monitoring Program

Ice and water conditions are among YFFN's top priorities with respect to Keeyask monitoring, as was confirmed in the 2016 community survey. AN staff have begun to develop a monitoring strategy, and hope to begin pilot monitoring activities in 2017.

Meeting with Keeyask Partners

In addition to carrying out community based monitoring activities, AN staff represent the First Nation on a number of partnership committees and working groups.

- Keeyask Monitoring Advisory Committee (MAC)
- Keeyask Caribou Coordination Committee (KCCC)
- Keeyask Mercury and Human Health Implementation Group
- Socio-Economic Monitoring Plan (SEMP) Steering Committee
- First Nation Collaboration Sessions

YFFN's Ten Shilling Camp at York Factory Source: Gilbert Beardy

Each offers a forum to share community perspectives and monitoring outcomes; to build understanding of *Ininiw kiskenihtamowin* (ATK); and to advance the Partnership's efforts to provide 'equal weight' to ATK and western science.

This work has not been without its challenges, but YFFN remains committed to bringing Ininiw perspectives to the Project.

Fox Lake Cree Nation

The Fox Lake Cree Nation (FLCN) Impact Assessment Unit (IAU) consists of a team of environmental monitors that are monitoring the entire Keeyask Project footprint, which includes the South Access Road, Keeyask Transmission Lines and all known heritage and cultural sites. These areas have been monitored since the beginning of construction and will continue to be monitored through the construction and operational phases of the Keeyask Project.

The IAU undertakes the following activities as outlined in the monitoring plans:

- Monitor and report on the presence/absence of wildlife, rare/important plant sightings, work done in the area, concerns from FLCN members, seasonal events (migration, spawning, hunting/fishing/trapping seasons), access trails, and heritage/cultural sites observed;
- Provide environmental liaison employment opportunities for community members within the communities, Fox Lake Cree Nation Traditional Territory, Keeyask Project area;
- Report any protection and prevention measure to the proper resources: Natural Resources;
- Assist by locating and identifying environmentally sensitive sites: Heritage sites: settlements, graves, artifacts;
- Work with Environmental Inspectors, researchers, with persons relating to the Project and report to the Senior Environmental Assessment Officer;

Muskwa (bear) footprints

- Report information regarding monitoring to FLCN: Community update(s) and information sessions and inform FLCN members through social media (Facebook) and newsletters; and
- Gather information from FLCN members through interviews and questionnaires.

Inninuwuk Science

The foundation on which we operate is the compilation of knowledge gathered through a millennia of activity, experimentation, and observation of past generations of FLCN members. This is Inninuwuk Science. This education is gained through teachings and activities out in the field. The Impact Assessment Unit is constantly engaged in the pursuit of this education to remain effective in our roles and responsibilities.

This science heavily emphasizes our connection to the world, and identifies the most effective and meaningful ways with which to interact with it. While western science is necessary for measurement and documentation, Inninuwuk focuses on relationships, as well as traits and behaviours. For these reasons, its inclusion throughout our monitoring approach is critical.

Elder Sessions

Meeting with Elders regularly has provided a level of knowledge and understanding otherwise impossible to attain. Their experience is valued highly and depended upon for our monitoring activities. Through these sessions, we are able to understand what it was about this region that attracted and sustained us. These sessions are integral for their ability to provide an understanding of the current situation, and the journey that has brought us here.

The previous absence of environmental studies and most other studies in general, pertaining to our land, underscores the need for knowledge of the past. By piecing together this knowledge with monitoring excursions on the land, we are able to get a good understanding of changes already experienced, and those yet to come.

Knowledge from our Elders is contradictory to some positions that Manitoba Hydro holds. Though this life experience does not hold weight in all forums, we remain confident in our beliefs.

Blueberry harvesting

Ground Truthing

Going out on the land is done regularly and is key to our monitoring activities. Key areas are targeted, as well as areas of concern that arise. Consistency is maintained to provide us with the best possible level of understanding.

Ecosystems are compared from past project areas, current project areas, and areas yet undamaged. Prime examples are that of the Kettle River, and the creeks dried up around the dykes on the Kettle fore-bay. Without the knowledge of our Elders and the ability to compare these areas with undamaged ecosystems, we would not understand the true extent of which these areas functioned as oases. This gives us the ability to accurately predict the upcoming changes to ecosystems like that of the seasonal oasis Looking Back Creek.

Construction Monitoring

Regular inspections are done to monitor work being done, as well as identify and record the changes that occur and compound. Inspections of work being done posed a challenge as our team lacked familiarity in the exact processes of these particular construction activities. We have, however, been fortunate to have guidance from the Manitoba Hydro employees who accompany us from time to time.

These activities have identified numerous optimistic indications of the way in which some employees of this project care for and respect the land. However, the need for continued monitoring exists as there have been concerns raised about some behaviours related to respect for the land. These concerns and other inputs from construction monitoring have been brought forward at Monitoring Advisory Committee (MAC) meetings where they have and will continue to be addressed and necessary changes and solutions implemented.

Fox Lake Cree Nation members at a site visit

Community Notification

Regular communication with Elders and resource users is maintained to ensure they are informed of construction activities. This includes permit alterations, site access and harvesting rights, wildlife sightings and interactions.

Community meetings are also held throughout the year. These provide a larger forum to review construction project details and gather input from our members. These activities allow us to maintain relationships with the community, and ensure the safety of our community.

Soil sampling

Salvage Wood Pile

On April 13, 2017, we met with Manitoba Hydro to talk about the salvage wood pile we had out along the South Access Road. This wood pile is set aside for our Fox Lake Cree Nation members to take as needed. There will be arrangements made for this wood to be moved to a better more convenient location.

Community Involvement

In addition to the above, the IAU has implemented and continues to plan ongoing traditional activities/ practices and outings with FLCN members. This includes harvests, traditional education, and site visits/tours. FLCN members are encouraged to take part in these activities.

Population, Infrastructure and Services

Population

The Project's Environmental Impact Statement (EIS) predicted that the Project would not result in notable changes to the number of people in the partner First Nations communities and that there will not be many people moving into the communities because of Project construction. Similarly, Gillam was not predicted to see any substantial population growth as a result of Project-related construction and Thompson was also not expected to see any major construction-related population change.

However, accurately identifying the precise levels of in- and out-migration is difficult and the partner First Nations have noted that any in-migration to their communities could stress services already at capacity. Population is being monitored to confirm the extent of Project-induced migration in the partner First Nation communities and Gillam.

Partner First Nation Communities

The Partnership has monitored the total on-reserve and on own Crown land populations of each of the partner First Nations.[1] The total on-reserve and on own Crown land population of the partner First Nations represents the population assumed to be most likely to access housing, infrastructure and services on reserve.

Population monitoring is based on data from Indigenous and Northern Affairs Canada, from December 31, 2003 to December 31, 2016. The growth rate in the pre- (2003–2014) and post-construction (2014-2016) periods are reported to show change that has occurred since the Project began. Over this past reporting period, population increased modestly in each of the partner First Nations (as shown in the table below). Data for the communities dating back to 2003 shows periods of moderate population growth and decline across years.

The increase from 2016 to 2017 is consistent with the overall trends observed over time which show variability.

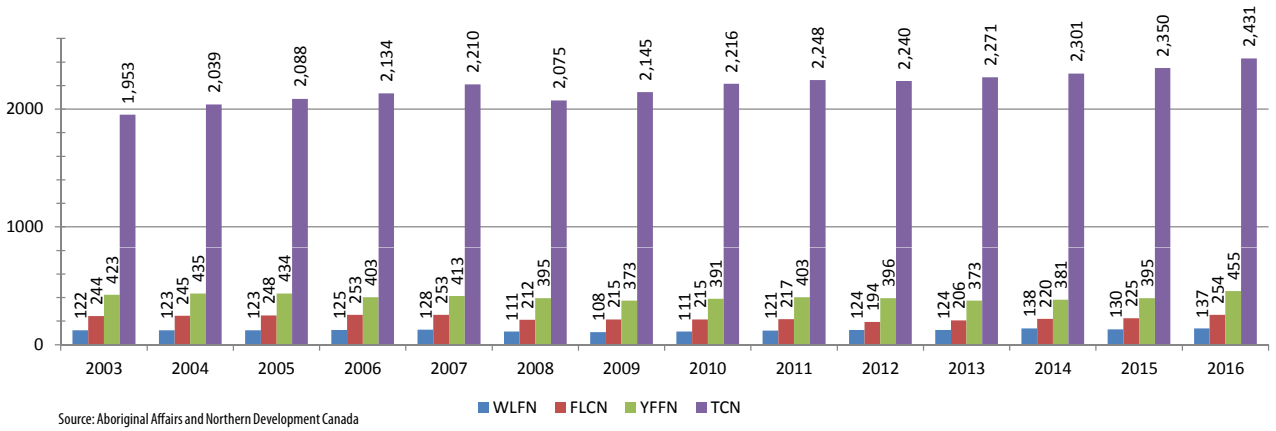
It should be noted that when looking at relatively small communities, the addition of a few families can result in what appears to be substantial changes in growth rates. This is why trends over multiple years are considered in tracking population. Population change in the partner First Nations will continue to be monitored during construction, and further considered as part of the Key Person Interview program in each partner First Nation regarding housing, infrastructure and services.

A comparison of partner First Nations' on-reserve and on own Crown land populations from 2003 to 2016 is demonstrated in the graph below (all population statistics reported as of December 31, 2016).

	TCN	WLFN	YFFN	FLCN
Total population increase				
Between 2003 & 2016	478	15	32	10
Between 2015 & 2016	81	7	60	29
Average annual growth rate				
Between 2003 & 2016	1.7%	0.9%	0.6%	0.3%
Pre-construction (2003-2014)	1.5%	1.1%	-0.9%	-0.9%
Post-construction (2014-2016)	2.8%	-0.4%	9.3%	7.4%

[1] On Own Crown lands are those lands not classified as reserve lands but Crown lands that have been assigned to a particular Band.

Total On-Reserve and On Own Crown Land Population at Partner First Nations



Source: Aboriginal Affairs and Northern Development Canada

Welcome signs at the Gillam Airport

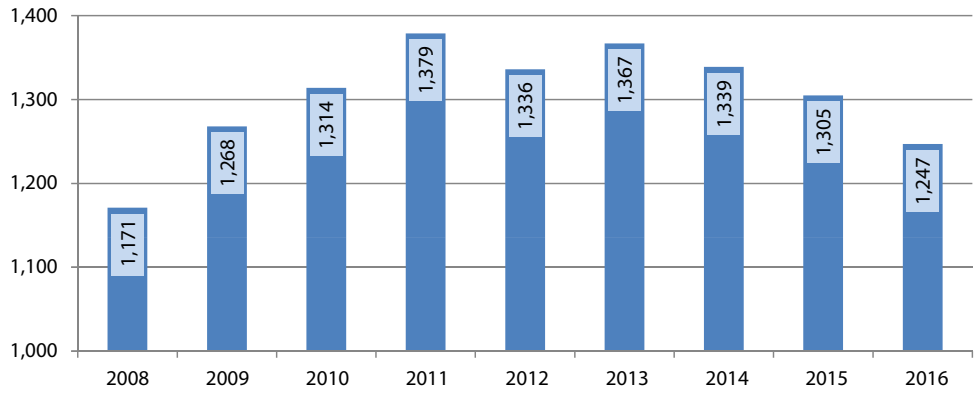

Gillam Airport

Town of Gillam

Based on data from Manitoba Health's annual health statistics, the total population at Gillam increased from 1,171 to 1,247 - an increase of 76 people, between June 1, 2008 and June 1, 2016. This represents an average annual growth rate of 0.8 per cent over the period. Between 2015 and 2016 specifically, the total population of Gillam decreased by 58 people. In the pre-construction and construction periods, the average annual changes were 2.3 per cent and -3.5 per cent, respectively.

A comparison of the Gillam population from 2008 to 2016 (as of June 1) is demonstrated in the graph below.

Gillam Population (2008-2016)



Source: Manitoba Health

Worker Interaction

A Worker Interaction Subcommittee was established prior to the beginning of Keeyask construction. This subcommittee is part of a corporate-wide initiative to address anticipated increases in the Gillam area workforce resulting from Keeyask and other Manitoba Hydro projects being constructed in an overlapping timeframe, as well as from other Manitoba Hydro-related work in the area.

The subcommittee is intended as a forum for information sharing and communication for early identification of potential worker interaction concerns, prevention of issues to the extent possible, and identification of ways to work cooperatively to address issues as they arise including any related increases in the demand for services and accommodation in Gillam. Subcommittee members are Manitoba Hydro, Fox Lake Cree Nation, the Town of Gillam, the RCMP (Gillam Detachment), the Gillam Hospital, and the Gillam School. Other stakeholder members may be identified by the subcommittee on an as needed basis.

The subcommittee met four times in 2016-17 to continue monitoring and discussing areas of community interest regarding potential Project impacts on the residents. This included maintaining an ongoing reporting and tracking system for specific community concerns and incidents identified by or to its members. Through this mechanism, as well as subcommittee meetings and ongoing communications between members, the subcommittee considered members' concerns related to public safety, community services, and infrastructure, including:

- local road conditions and traffic safety (e.g. traffic speed and oversized loads on PR 280 and PR 290);
- use of Gillam services and facilities (e.g. the Gillam hospital, the Gillam airport and air service);
- the behaviour of non-local persons (e.g. at the Gillam airport and the Butnau Marina); and
- the presence of drugs in Gillam.

In addition, the subcommittee continued to monitor updates provided by the Gillam Hospital related to demands for health services (e.g. "out of town" visits to the Gillam Hospital), and by the Gillam RCMP related to demands on policing (e.g. RCMP calls). Given privacy requirements in data collection, as well as the various developments taking place in the area over the period, it was not always possible to link concerns or demands for services to specific projects.

Examples of activities undertaken during 2016-2017 in relation to concerns and topics discussed at the subcommittee include: providing a hospital services information sheet developed by the Gillam Hospital (regarding hospital facilities, doctor availability, and related hours) to Keeyask and Keewatinohk workers; providing instructions to Keeyask and Keewatinohk buses/shuttles to park in a designated area away from the airport doors to reduce traffic congestion; communicating with contractors regarding concerns about workers' behaviour in public; communicating subcommittee members' perspectives to forums responsible for implementing traffic and road safety measures; and implementing cultural awareness training by FLCN for short-term contractors.

The information provided by subcommittee members will continue to be used to identify adaptive measures to reduce negative impacts of hydroelectric development in the region.


Gillam Hospital

Housing, Infrastructure and Services

Little new demand for housing in the partner First Nation communities and in Gillam is anticipated during Project construction. Also, minimal effects on infrastructure and services in the partner First Nations are expected. One-time Key Person Interviews will take place during Project construction to identify any apparent Project effects on housing or infrastructure and services in the partner First Nations' communities. Manitoba Hydro and the partner First Nations have initiated discussions regarding the design and implementation of the Key Person Interviews. Interviews are in progress in both FLCN and YFFN.

Travel and Public Safety

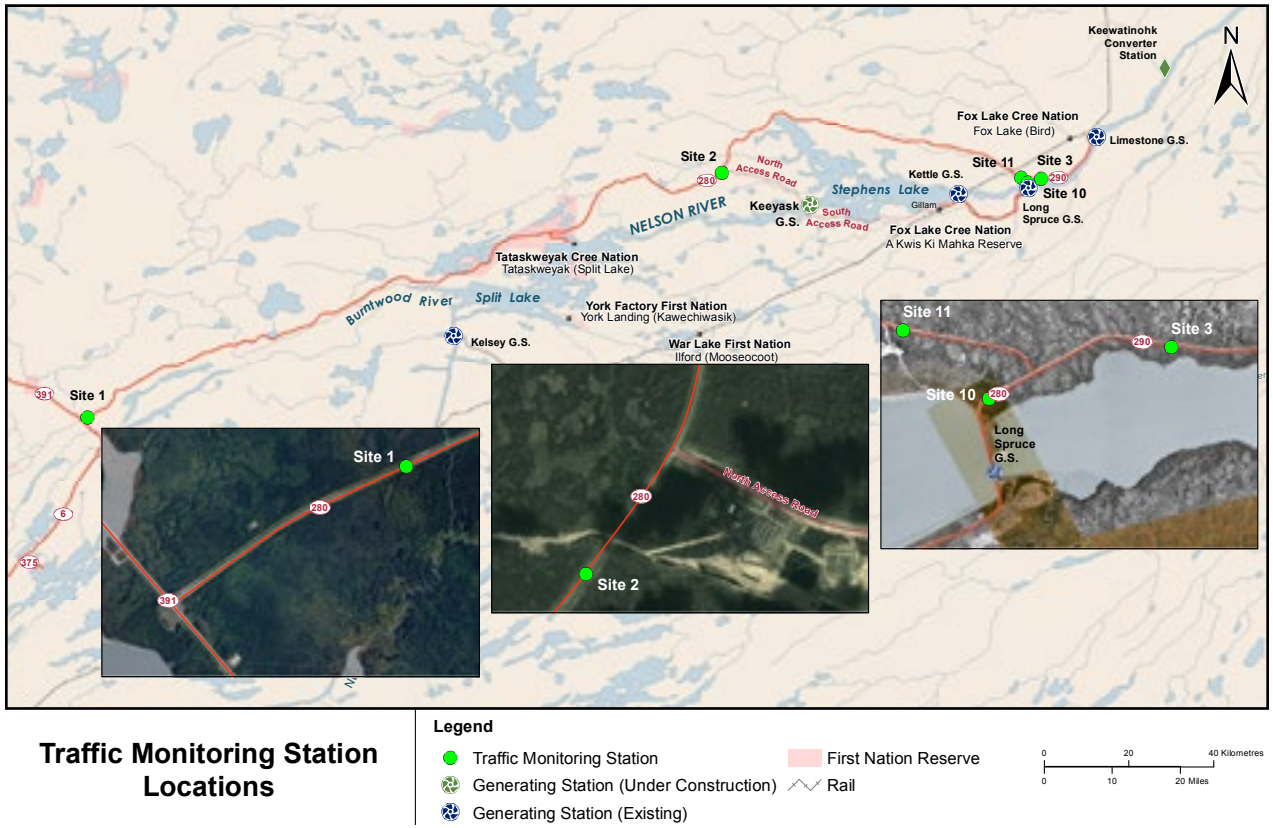
Provincial Roads

While the EIS predicted that existing transportation networks and plans for Provincial Road (PR) 280 upgrades would be able to accommodate the changes in road use associated with Project construction, community concerns remain regarding traffic safety and road conditions, in particular, speeding, truck weights, convoys, road surface conditions (making travel difficult), vehicle damage, and dust.

Manitoba Infrastructure (MI) is responsible for the existing provincial highway system, including the maintenance and upgrade of PR 280. Monitoring efforts are being undertaken in collaboration with MI, Manitoba Public Insurance (MPI), and the RCMP to assess EIS predictions and respond to community concerns. Manitoba Hydro is committed to helping the Province improve PR 280 and continues to make significant contributions toward road upgrades and maintenance.

In response to community concerns, the Province established the PR 280 Joint Advisory Committee in the fall of 2014. The committee is comprised of representatives from the Province of Manitoba, Manitoba Hydro, the Town of Gillam and the partner First Nations to involve the latter directly in the planning of upgrades to PR 280. In the period between April 2016 and March 2017, the PR 280 Joint Advisory Committee met twice, in May and September of 2016.

Road conditions on PR 280 deteriorated significantly in the spring of 2016. Soft subgrade conditions resulted in the road being nearly impassable at some locations. Traffic safety and road conditions have been a substantial concern expressed by the partner First Nations, in a number of forums including the PR 280 Joint Advisory Committee, Construction Advisory Committee and the Monitoring Advisory Committee. These concerns were heightened in the spring of 2016, which resulted in a blockade of PR 280. As a result of the negotiations among partner First Nations, Manitoba Hydro and the Province, a number of mitigation measures have been adopted to reduce the impact of Project traffic on PR 280 including road reconstruction and increased maintenance efforts, operation of the Provincial Trunk Highway (PTH) 6 weigh station near Thompson, and communicating driver expectations to contractors in an effort to promote appropriate driving behaviour on PR 280.



Traffic Monitoring Station Locations

Provincial Road 280

In the fall of 2016, Manitoba Hydro developed a comprehensive transportation management plan to reduce the impacts of Project traffic on PR 280. The plan includes pre-hauling construction materials to site during the winter months, night hauling, reductions in Manitoba Hydro truck traffic and reductions in truck weights during periods when the road has deteriorated substantially. The plan will help reduce wear and tear on the road and allow MI to focus on areas requiring increased maintenance.

Manitoba Hydro will continue to monitor traffic volumes, speeds, and vehicle types on PR 280 and PR 290 in 2017-18.

PR 280 Traffic Volumes

Highway	Segment	Annual Average Daily Traffic						
		2003	2005	2007	2009	2011	2013	2015
PR 280	PR 391 to Split Lake	230	155	135	175	210	270	340
	Split Lake to PR 280/290	115	95	95	120	140	160	230
	PR 280/290 to Gillam	205	210	235	225	255	375	450

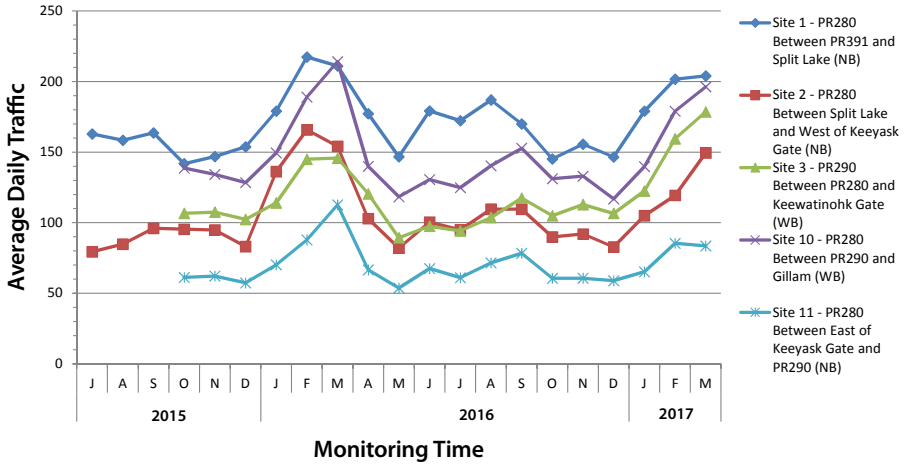
Traffic Volumes

Traffic volume data is typically collected by MI every two years and published through the Manitoba Highway Traffic Information System (MHTIS). Traffic data from the MHTIS for PR 280 is divided into three segments: PR 391 to Split Lake, Split Lake to the PR 280/PR 290 intersection and PR 280/PR 290 intersection to Gillam. A summary of the annual, average daily traffic for past years (combined for northbound and southbound traffic rounded to the nearest five) are shown in the PR 280 Traffic Volumes table above. Use of PR 280 and PR 290 has steadily increased since 2003. A larger increase in use has been observed since the start of construction on the Project, as anticipated.

To better understand traffic patterns during construction, Manitoba Hydro worked with MI to have five permanent traffic counters installed on PR 280 and PR 290. Installation of the counters was completed in the fall of 2015 and data are being collected by MI. The traffic monitoring counter locations are shown on the map on the previous page. The traffic volume data collected at these locations, between April 2016 and March 2017, are shown in the traffic volume graphs. The segment of PR 280 with the highest traffic volumes is between PR 391 and Split Lake where from April 2016 to March 2017, the average traffic counts (northbound and southbound combined) were 347 vehicles per day. Of the 347 vehicles per day, 68 were large trucks.

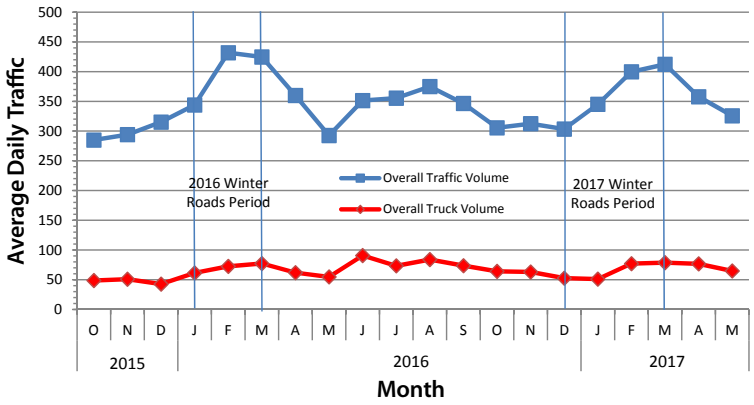
Based on data collected since 2015, trends in traffic volumes appear to be cyclical with peaks occurring during the winter months from January to March. Traffic tends to decrease later in the spring and then flatten out over the summer months. However, it should be noted that there is very little difference in truck traffic counts throughout the year as shown in the total traffic vs. truck traffic graph on the next page. There is a slight increase in truck traffic during the winter months, but the main driver of the increase in traffic during winter is small vehicles (i.e. cars, pick-up trucks, vans). The winter increase may be attributed to a few factors, including pre-hauling of construction materials to site, an increase in the number of trips from communities while the winter road system is in operation, and traffic related to Bipole III Transmission Line construction which occurs mainly during the winter months. As Bipole III construction winds down in 2018, it is expected that the traffic counts over the winter months will decrease.

Traffic Volume North Bound - Average Daily Traffic by Month

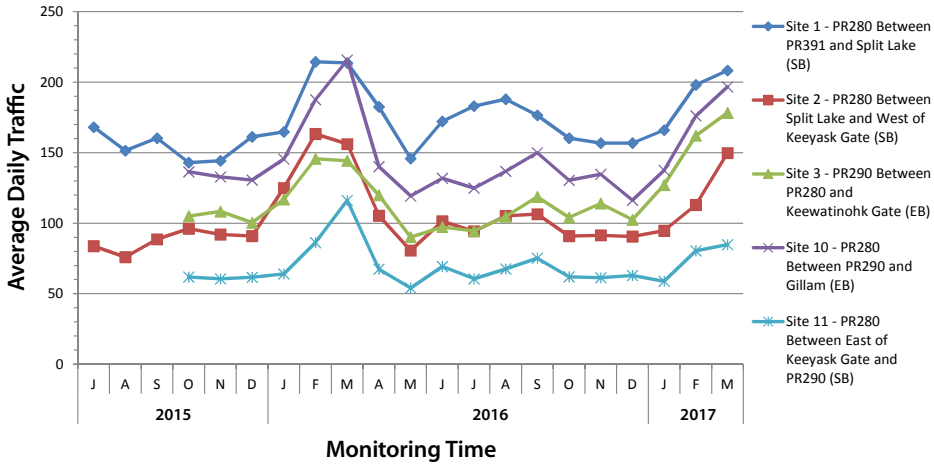


Total Traffic vs Truck Traffic at Site 1 - Monthly Variations

(Both Directions Combined)



Traffic Volume South Bound - Average Daily Traffic by Month



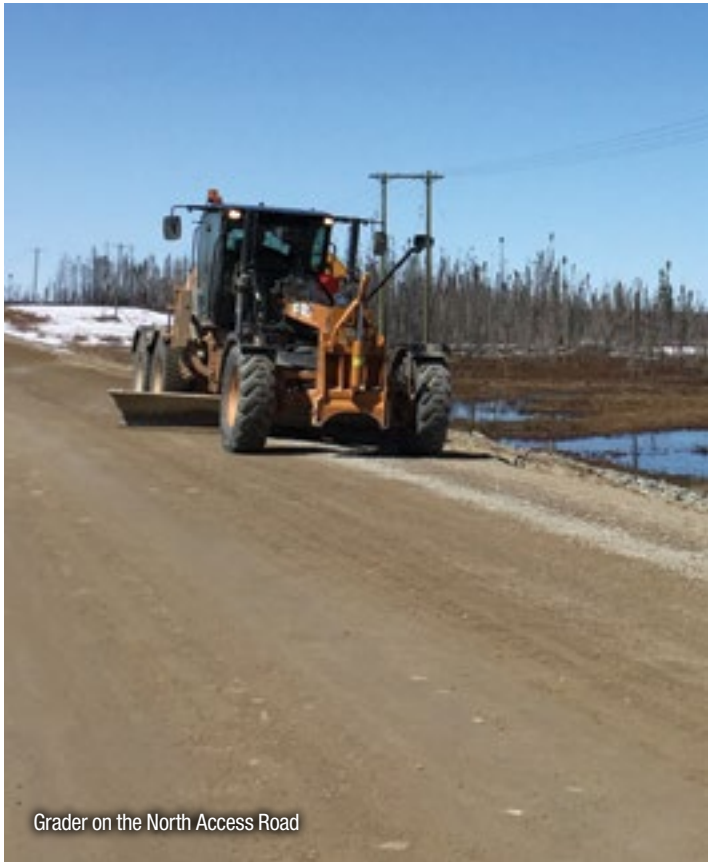
Collision Data

Collision data for PR 280 for the years 2005 to 2016 have been provided by MPI. There were a total of 88 reported collisions on PR 280 in the years prior to construction (2005 to 2013); an average of 10 collisions per year. From the start of construction on the Project (2014) to the end of 2016, there have been 91 reported collisions on PR 280; an average of 30 collisions per year. Although the average number of collisions has increased due to the increase in traffic, collision severity has decreased between the pre-construction and the construction periods, with fewer collisions resulting in injuries or fatalities. Single vehicle collisions were most frequent, accounting for approximately 90 percent of all collisions during both pre-construction and construction periods.

Collision rate is measured as the number of reported collisions per million vehicle-kilometres of travel (MVKT) on a roadway section during a given period. Using the traffic monitoring data, a collision rate of 1.20 incidents per MVKT was calculated for 2016. There were a total of 179 collisions on PR 280 over the 12-year period from 2005 to 2016. Collisions during the spring (March, April and May) and fall (September, October and November) months were most frequent, accounting for 58 percent of all collisions. Based on the annual average daily traffic and the number of collisions for 2005, 2007, 2009, 2011, 2013 and 2015, PR 280 had a collision rate of approximately 0.61 incidents per MVKT over that period.

Due to the limited amount of detail associated with the collision data provided by MPI for both pre-construction and construction periods, it is difficult to determine any site specific conditions or locations that may influence the collision rates.

North Access Road



Grader on the North Access Road

Keeyask Site Access

The Keeyask North Access Road connects PR 280 to the construction site. It is a private road with restricted access, which is controlled by a security gate near the PR 280/North Access Road intersection. The gate office is staffed 24 hours per day, 7 days per week and security staff document all authorized vehicles entering and exiting the road. Monitoring traffic volumes on the access road takes place using gate records and security reports from patrols.

The tables on the right provide North Access Road gate use counts from January 2016 to March 2017. On average, 120 vehicles per day used the road during 2016 and an average of 113 vehicles used the road during the first three months of 2017. This compares to an average of 92 vehicles using the road per day during the final six months of 2014, and an average of 104 vehicles in 2015. Personnel vehicles (vehicles that transport workers on the North Access Road including shuttle buses) accounted for 87 percent of all traffic in 2016, delivery vehicles accounted for approximately 10 percent of traffic with the remainder of traffic attributed to visitors.

Comparing traffic counts from the monitoring station located at Site 2 (closest station to the Keeyask North Access Road) with gate counts at site allows construction related traffic to be quantified with regards to overall traffic on PR 280. Over the past year, these two sets of traffic counts indicate that Keeyask related construction traffic accounts for 40 per cent to 50 per cent of all traffic on PR 280 near the PR 280/Keeyask North Access Road intersection.

Security Gate near PR280/ North Access Road intersection

Keeyask Monthly Access Road Traffic Volumes

	2016												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Summary
Total	4,973	6,113	6,337	3,332	2,549	3,141	3,105	3,296	3,234	2,806	2,785	2,097	43,768
Daily Average	160	218	204	111	82	105	100	106	108	91	93	68	120

Keeyask Monthly Access Road Traffic Volumes

Traffic Count	2017			
	Jan	Feb	Mar	Summary
Total Vehicles	3,036	2,570	4,608	10,214
Daily Average	98	92	149	113

Waterways Management Program

The purpose of the Keeyask Waterways Management Program (WMP) is to contribute to the safe use and enjoyment of the waterway between Split Lake and Stephens Lake throughout the construction and operational stages of the Project. The Keeyask WMP is currently implementing two safety initiatives focusing on safe water travel and safe ice travel. Through these initiatives, members of the partner First Nations were employed to provide safe navigation on the waterways throughout the 2016-17 year.

Boat Patrol

The Keeyask Boat Patrol Program ran for 24 weeks from the end of May to October 2016 and played a fundamental role in monitoring and minimizing the hazards of debris in the waterways. Throughout that time, the boat patrol travelled the length of the Nelson River between the community of Split Lake and just upstream of the Project site at Gull Rapids numerous times, as well as going into back bay areas. The total distance travelled during the program was over 6200 kilometres. In addition to patrolling the waterway, the crews also provided support for emergency response situations and assistance to community members during the open water season.

Boat patrol at Birthday Rapids,
Jack Kitchekeesik (TCN) and Harold Disbrowe (TCN)

Keeyask
Boat Patrol Routes

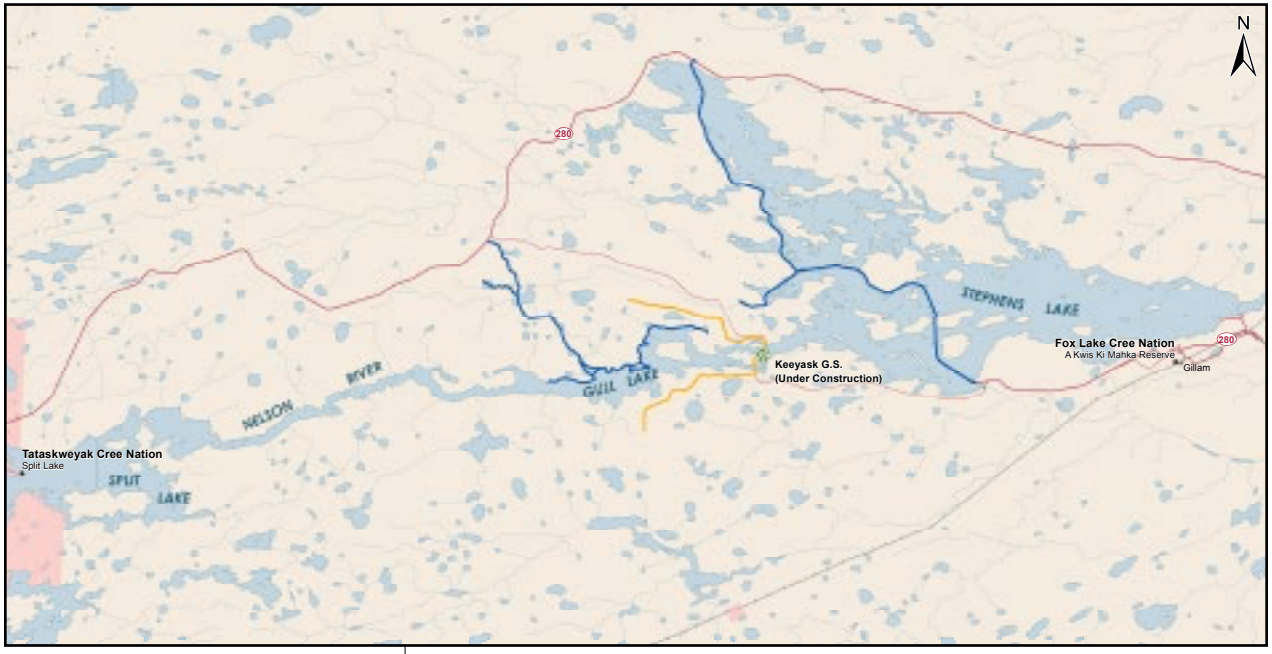
Legend
- Boat Patrol Route
- Keeyask Principal Structures
- Access Road

0 4.5 9 Kilometres
0 4 8 Miles

Keeyask Safe Ice Trails

The safe ice travel initiative is part of the Safe Ice Trails Program, which is intended to provide safe travel on impacted waterways during the winter months. Throughout the 2016-17 winter season, one partner First Nation trap line holder, Jonathan Saunders, and one helper, Mark Saunders, were contracted to install, monitor and maintain 89 kilometres of trails in and around Gull and Stephens Lakes. Once installed, the trails were regularly maintained. The ice trail crew covered the length of the trails several times during their patrols, travelling approximately 245 kilometres throughout the winter season.

Patrolling the safe ice trails near Keeyask



Keeyask Safe Ice Trails

Legend

- Safe Ice Trail (Installed and Patrolled)
- Keeyask Principal Structures
- Access Road

0 7 14 Kilometres
0 6.5 13 Miles

Mark Saunders (TCN) & Jonathan Saunders (TCN)

Culture and Spirituality

Since the start of construction, various measures were put in place to support the retention of northern and Indigenous employees at the job site, and to ensure that sensitivity and respect for local culture is maintained throughout construction of the Project. These measures include orientation sessions for partner First Nation members, on-site Indigenous awareness training for employees, voluntary counseling services and cultural ceremonies marking key construction activities.

Employee Retention Services staff, Cynthia Massan (Fox Lake Cree Nation), Alex Beardy (York Factory First Nation), Bobby Apetagon (Norway House), Edna Spence (Norway House)

Partner First Nations Members Orientation

The purpose of these orientation sessions is to prepare partner First Nations' members for the construction camp experience and to enhance their prospects of benefiting from Project employment. The focus is on key factors that affect the economy, culture and social conditions of each community. This includes the historical and ongoing effects of hydro development and relationships with Manitoba Hydro.

Cultural awareness training session

Indigenous Awareness Training

On-site training workshops are provided for staff working at the Keeyask site. In the past fiscal year, 113 training workshops were held with 2050 participants. The purposes of training workshops are to:

- increase understanding and appreciation of the cultural differences, beliefs and values of individuals within the various parties/communities working at the site;
- enhance comfort in living, working and/or doing business in a culturally diverse environment;
- identify barriers and issues between the various parties working at the site;
- identify common goals;
- develop strategies and action plans for addressing issues/barriers, reaching common goals and developing and maintaining long-term harmonious relationships;
- increase participants' understanding of contemporary issues facing Indigenous peoples;
- challenge participants to re-think their assumptions and personal biases about Indigenous peoples; and
- provide participants with information that will promote understanding and respect of Indigenous cultures, enabling participants to work effectively with Indigenous peoples.

On-site counseling

On-site Counseling

On-site counseling is available to help all employees, on a voluntary basis, to deal with any issues experienced while working on the Project. This could include, work adjustment problems, vocational/career issues, cultural adjustments, family stresses and money management. The intent is to reduce attrition for all Project workers, but particularly for northern Indigenous workers of Cree heritage, by assisting them in dealing with challenges directly affecting their work performance.

Cultural Site Ceremonies

Site ceremonies are being held at key construction milestones to help mitigate the effect of the Project on partner First Nations' culture, and to demonstrate respect for the land and all that is supported by the land. Attendance at ceremonies is welcome and voluntary, and consists of various community members at large and staff of the contractors and Manitoba Hydro. Between April 2016 and March 2017, there were two ceremonies held.


Spring ceremony, Bobby Apetagon, Shawna Arthurson, Rita Spence, Danielle Beardy, Fanny Beardy


Cultural Ceremony

Heritage Resources

During development of the Project, everyone is to be alert for the possibility of discovering or disturbing human remains or heritage objects and to stop work immediately if this occurs to ensure that what is found is safeguarded and managed properly. No human remains or heritage artifacts were found between April 2016 and March 31, 2017 at the construction site.

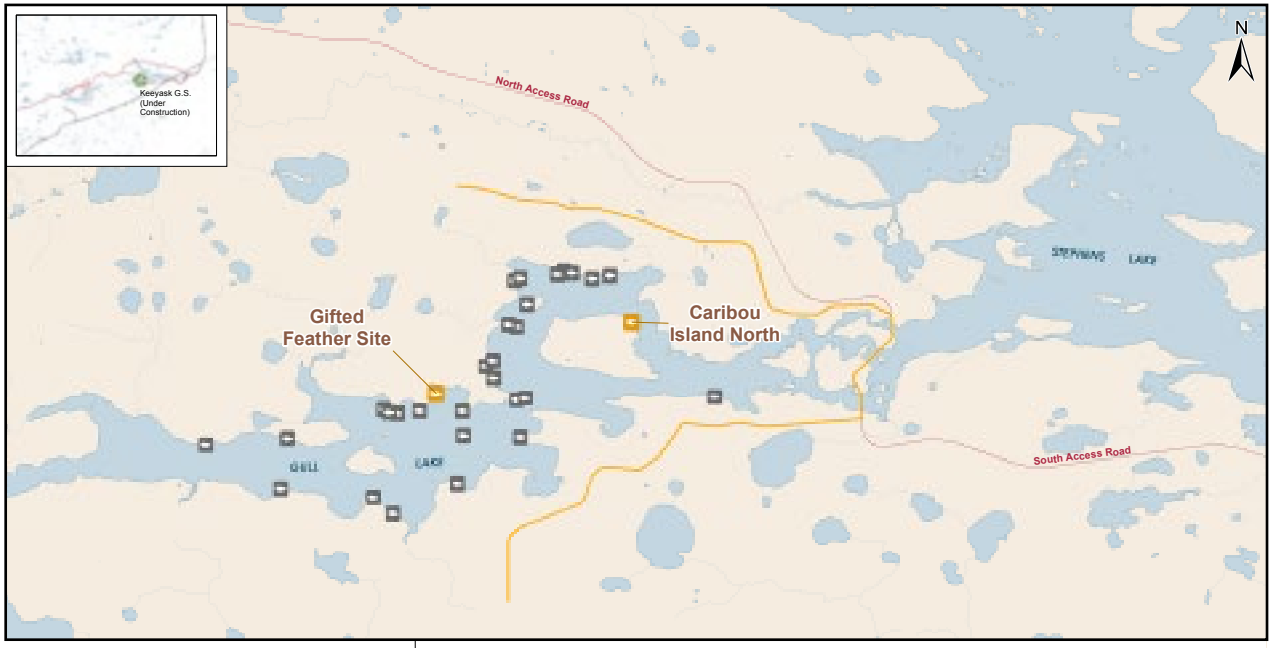
To protect heritage resources in the Project area, the Project's archaeological team conducted investigations and recovered artifacts at 31 archaeological sites in the future reservoir between June and August 2016. Of these sites, two were newly identified with site types consisting of a pre-European campsite with pottery and an isolated find consisting of a lithic (stone) tool. Students from TCN participated in the field work at two sites where heritage resource salvage occurred, including the excavation of an early 1900's cabin foundation. The methods used to locate and recover heritage resources at the sites included intensive shovel testing, extensive shoreline surveys, mapping and artifact collection.

Over 2,600 artifacts (1,149 artifacts, 1,469 animal remains) were recovered, cleaned, analyzed, catalogued and prepared for submission to the Historic Resources Branch in 2016. Interesting finds included unusually decorated Laurel pottery from 1,000 to 2,000 years ago, the trigger assembly of a late 1800's double barrel shot gun and a woman's locket. This brings the total number of artifacts recovered since 2014 to 8,616 (6,287 artifacts, 2,329 animal remains). The artifacts collected during the investigations reveal a human occupation of the area back to the Shield Archaic Period (ca. 3,500-6,500 years ago).


Piece of Laurel pottery (ca. 1,000-2,000 years ago)


Trigger assembly of a late 1800's double barrel shot gun


Digging shovel test pits



Heritage Protection and Mitigation Fieldwork

April 1, 2016 – March 31, 2017

Legend

- New Registered \ Mitigated Archaeological Site (2016/17)
- Mitigated Heritage Site (2016)
- Keeyask Principal Structures

0 2 4 Kilometres
0 2 4 Miles

Mercury and Human Health

Mercury is a metal found naturally in small amounts in rock, soil, water, living organisms, as well as in manufactured products. Flooding soil or wetlands commonly results in a temporary increase in mercury and its organic form, methylmercury, in the water. The latter form is taken up by the organisms that live in, and use those environments. The vast majority of mercury exposure to people occurs through the consumption of fish. When fish high in mercury are eaten, particularly large and long-lived predatory fish, there is a potential for a negative effect on human health. There is also a potential for a negative effect on health and wellness if people substantively limit their consumption of healthy fish due to a fear of mercury.

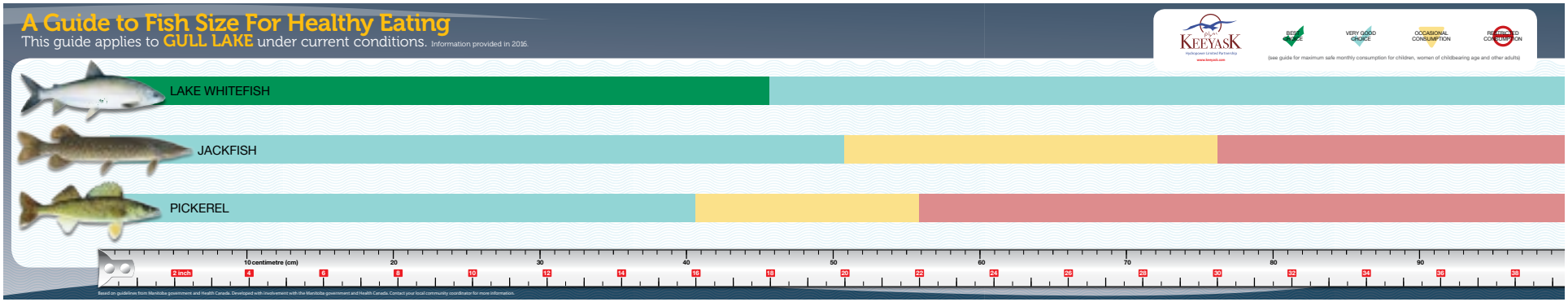
As a result of past experience with hydroelectric development, the partner First Nations raised the issue of mercury and human health as a primary concern in relation to the Project. Potential impacts and mercury and human health risk management and wellness enhancement strategies have been the subject of considerable study and long-term planning by the Partnership.

Because Project effects of mercury in the reservoir, and to a lesser extent in Stephens Lake, will occur post-flooding, the majority of related monitoring will occur in the operation phase. Mercury levels in fish from Gull Lake are expected to peak three to seven years after impoundment and then decline over the next 20 to 30 years until they reach pre-Project levels or stable concentrations.

The Partnership has prepared a Mercury and Human Health Risk Management Plan in consultation with provincial and federal regulators. The plan includes:

- Monitoring of mercury in fish, wildlife, plants;
- Voluntary hair sampling and wild foods survey of First Nation community members;
- Human health risk assessments; and
- A communication strategy for partner First Nation communities, Gillam, and other users of fish in affected waterbodies.

The goals of the risk management plan are: to support discussion and build understanding around mercury and fish; to allow individuals and families to confidently assess and manage the benefits and risks associated with eating wild fish in the Project area; to support and enhance local practices of fishing for sharing and eating wild fish at levels that are healthy for all community members. The Mercury and Human Health Implementation Group (composed of the partner First Nations, Manitoba Hydro, and provincial and federal health specialists) has finalized a “Road Map” to implement risk management activities in partner First Nation communities.



Water

Water Levels and Ice

Water level and ice regime monitoring continues to take place throughout the study area. Construction of instream works in 2014 increased water levels within and upstream of Gull Rapids as anticipated and these effects continued to occur in 2016.

Flows have continued to be above average, ranging from 3,250 to 4,100 m^3/s the past winter (2015-16) and ranging from around 4,000 to 4,700 m^3/s over the summer of 2016. Higher flows occurred again in the winter of 2016-17 with flows ranging from about 3,600 to 4,800 m^3/s resulting in above average water levels. The median river flow is approximately 3,300 m^3/s.

Ice cover above the ice boom immediately after freeze up

Preparing to go to a Sediment Management Plan site

Water levels rose during the summer of 2016 in response to higher flows on the Nelson River. The formation of an ice cover in mid-November caused water levels to increase upstream of the Keeyask ice-booms, as expected. The ice front progressed up to Birthday Rapids by late December 2016 and stalled there until early March 2017. Gradual water level increases at Birthday Rapids in January and February, combined with a winter storm in early March, provided conditions that allowed the ice cover to pass through Birthday Rapids in March. The upstream progression of the ice front stalled about six kilometers upstream from Birthday Rapids, similar to the upstream progression observed in 2015 and during various years prior to construction.

Water Quality

Water quality is important to people and for the health of plants and animals that use it. The greatest effects of construction on water quality relate to increasing the amount of sediment, such as sand and clay, in the Nelson River. The sediment can come from building structures in the river (e.g. cofferdams), from riverbanks that erode because of changing water levels or loss from the land where the vegetation has been cleared.

At Keeyask, water that is pumped from the site to the river must contain less than 25 mg/L of total suspended solids (TSS), which is a measurement of the amount of sediment that is carried in water. When the TSS exceeds this limit, it is pumped into thick vegetation on land where it seeps into the ground and the sediment filters out. In 2016, construction activities behind the Central Dam Cofferdam proved challenging because of the amount of seepage water that leaked through the cofferdam into pools in the construction area. In order to address the seepage problem, water with high TSS (well over 25 mg/L) had to be pumped to the river

Field crew members performing maintenance at a turbidity monitoring site

over a two day period, as there was no vegetated area in proximity and with a large enough area to absorb the water and filter out the sediment. Provincial and federal regulators were informed about this event.

Besides monitoring sediment in water pumped away from the construction site, sediment in the river is monitored constantly during construction using in-stream sensors.

Some of these sensors provide monitoring results in real-time every 15 minutes, 24 hours per day. Results measured immediately upstream of the construction area in Gull Rapids are compared with results measured approximately two kilometers downstream of the rapids to determine if there are changes in sediment levels due to construction. This allows site personnel to take immediate action to modify in-water construction work to prevent the sediment from getting higher than what is acceptable to the regulator. As in previous years during construction, monitoring in 2016 showed no detectable change in the amount of sediment in the river caused by construction.

Samples of water were collected from areas upstream and downstream of the construction site in 2016 and were sent to a laboratory for analysis. A range of parameters were analyzed, including total suspended solids, metals and nutrients. Water quality parameters measured in the river were similar to what they were before construction began.

Sensors are suspended in the water from the platform, as shown, and measure the sediment in the river

A field crew member labeling a water sample bottle in August 2016

A field crew member measuring water temperature and oxygen using a probe in September 2016

A sensor used to measure suspended sediment in the river

A dredge is used to collect a sample of sediment off the river bottom during benthic invertebrate monitoring

Benthic Invertebrates

Benthic invertebrates are young insects, clams and worms that live on the sediment at the bottom of rivers and lakes. They are an important source of food for fish, including Lake Sturgeon. When the numbers and kinds of invertebrates change, it may be a sign that changes are happening in the river. Benthic invertebrates are collected at three locations downstream of the construction site each year, and the numbers are compared to samples collected in previous years. In 2016, the numbers and kinds of invertebrates collected at the site closest to construction were similar to samples collected before construction began. At the two sites further downstream, there were lower numbers of some groups, such as mayflies, in samples collected from shallow water. Because the site closest to construction showed no change when compared to before construction, the differences at the two downstream sites were likely not related to construction.

Zebra mussels

A site staff member decontaminating a barge with hot water at the Keeyask site.

Zebra Mussels

Zebra mussels, which are small, clam-like animals, are known as an "aquatic invasive species" in Manitoba because they are not native to the area, they reproduce quickly, and have no natural predators. They are invading as a result of human activities and can become so prolific that they block pipes and other water-based infrastructure. Federal and provincial legislation was introduced in 2015 to contain and prevent the spread of zebra mussels, which have been found in Manitoba's southern waterbodies that connect to the Nelson River. Partner First Nations and Manitoba Hydro are attentive to the risks associated with introducing zebra mussels to the Nelson River. Precautions are being taken to ensure that the Project does not contribute to the spread of this invasive species.

Monitoring of Gull Lake was conducted in 2016 by taking water samples and having them analyzed at a lab to see if young zebra mussels (not visible to the naked eye) were present. As expected none were found. Although zebra mussels have not been found at Keeyask, a decontamination unit was constructed at the site in September of 2016 to prevent the spread of zebra mussels on boats and equipment that have been used elsewhere. Four instances of decontamination were carried out, which involved spraying boats, trailers and any other water-based equipment with hot water (>60°C) over all parts that came into contact with the water. The water ran off onto a constructed pad, which was built in such a way that it allowed the water to rapidly filter into the ground and prevented it from flowing off site.

Fish

Monitoring studies are focused on three fish species (Lake Sturgeon, Lake Whitefish and Walleye) because of their importance to the partner First Nations, and because construction and operation of the Keeyask Generating Station will change or destroy habitat they use. Spawning habitat at Gull Rapids, which is used by all three species, is being lost due to construction of the generating station. Reservoir impoundment will raise water levels, which will change Lake Sturgeon spawning habitat at Birthday Rapids. Altered flows may change Lake Sturgeon young-of-the-year (YOY) habitat in Stephens Lake, and may increase the risk of dewatering of Lake Whitefish eggs.

The goal of the KHLP is to create a self-sustaining population of Lake Sturgeon and to maintain the current self-sustaining Lake Whitefish and Walleye populations both above and below the generating station. To achieve this, the KHLP is committed to constructing replacement spawning habitat for all three species that will be available once construction is complete, and to monitor habitat in Birthday Rapids and Stephens Lake and enhance it for Lake Sturgeon, if required.

Recording data on Lake Sturgeon in the field

Checking a gill net used to capture Lake Sturgeon during population monitoring work

One of seven Lake Sturgeon caught that was born in 2016 (YOY)

Lake Sturgeon Populations

Lake Sturgeon (Namao in Cree) is being monitored because of its importance to the partner First Nations, because the populations in Gull and Stephens lakes were low before the Project and because the generating station will change or destroy habitat. Both adult and juvenile Lake Sturgeon are being monitored to see how many adults are spawning and how juveniles born in the wild contribute to the population.

Measuring the "fork length" of an adult Lake Sturgeon in June 2016

During 2016, 190 Lake Sturgeon (118 adults) were caught in Gull Lake. Biologists used this number to estimate there were 709 adult Lake Sturgeon in Gull Lake in 2016. In Stephens Lake, 71 Lake Sturgeon were caught and 58 of these were adults. This number is too low to make an estimate of the Stephens Lake population, but it was an increase over previous years and suggests the population of Lake Sturgeon in Stephens Lake has increased.

Juvenile Lake Sturgeon are fish that are typically between one and ten years old. Population monitoring in 2016 found juvenile sturgeon of different ages and sizes in the Upper Split Lake Area (Split Lake, the Burntwood River and downstream of the Kelsey generating station). Two "young of the year" (YOY), or fish that are less than a year old, were caught in the Burntwood River, which is encouraging as it shows that Lake Sturgeon continue to successfully reproduce in the wild. Many juveniles were caught in Gull Lake, including 5 YOY, as well as in Stephens Lake. Thirteen stocked fish from the Grand Rapids Fish Hatchery were captured in 2016, which indicates that hatchery fish are able to survive in the wild.

Field crew member holding a YOY Lake Sturgeon caught in September 2016.

Adult Lake Sturgeon captured during population monitoring work in June 2016

Youth and Elders from Tataskweyak Cree Nation at a spring release of yearling Lake Sturgeon into the Burntwood River

Lake Sturgeon Stocking

The KHLP committed to produce hatchery reared Lake Sturgeon for release (stocking) into the Burntwood River, Gull Lake/the future Keeyask reservoir and Stephens Lake until a self-sustaining population is achieved. Stocking is already underway and alternates annually between the Burntwood and Nelson rivers. Each year, wild, spawning male and female Lake Sturgeon are captured and held at a river-side spawn camp. The milt (sperm) and eggs are collected and mixed to produce fertilized eggs. These eggs are taken to the Grand Rapids Fish Hatchery, where they are cared for. As the space available to rear fish is limited, as many fish as possible are kept in the hatchery to grow for up to a year, and the extra larvae are released back into the river from which their parents came.

In May 2016, 23 one year old Lake Sturgeon were stocked into the Burntwood River. Three of the fish were released during a cultural ceremony organized by the Kischi Sipi Namao Committee by members from Tataskweyak Cree Nation.

In the spring of 2016, milt and eggs were collected from one male and two females captured below Birthday Rapids. Of the approximately 500,000 eggs fertilized, more that 439,000 Lake Sturgeon hatched. Due to the large number, over 192,000 larvae were released at the base of Birthday Rapids and over 175,000 were released into Stephens Lake shortly after they hatched. Between July and September, another 9,579 sturgeon were stocked into Stephens Lake and 780 were stocked into Gull Lake. This left 1,250 fish that were kept at the hatchery over the winter and will be stocked into the Nelson River in spring 2017.

Following a series of unusual and difficult conditions at the Nelson River spawn camp in 2016, both females died following the egg collection. These were the first known deaths of fish used at the spawn camp since the stocking program began in 2013. A new set of procedures has been developed by the lead biologist in consultation with individuals at spawn camp, the Monitoring Advisory Committee, and regulators to prevent this from happening in the future.

Tataskweyak youth at a Kischi Sipi Namao Committee release event

Larvae being released downstream of Birthday Rapids on June 21, 2016

Fingerlings being released into Gull Lake on September 27, 2016

Fish Movements

Fish movements are being studied to find out if fish are avoiding the Project construction area and if fish are moving over Gull Rapids during construction in order to live their life. Movements are tracked using acoustic tags surgically implanted inside fish. These tags send out a unique sound called a "ping", which is detected and recorded by devices (called acoustic receivers) placed in the Nelson River between Clark Lake and the Limestone Reservoir. By looking at the "pings" recorded by receivers in different places, the movement of each tagged fish can be followed.

Since the start of construction, there has been no observed change in the movement patterns of adult Lake Sturgeon, and tagged fish continue to use the areas immediately upstream and downstream of Gull Rapids. The majority of juvenile Lake Sturgeon tagged in Stephens Lake have been detected at some point near the base of Gull Rapids and most spend the open water period in that area, which could make them more vulnerable to construction effects,

A field crew downloads data on fish movements and removes acoustic receivers in October 2016

Fish biologists conducting acoustical tagging surgery on a Walleye in June 2016

such as sediment. In contrast to the adults, juveniles tagged in Gull Lake do not use the upstream area close to the rapids/construction area.

During construction, Walleye and Lake Whitefish tagged in Gull Lake have not used the area immediately upstream of Gull Rapids and are therefore well away from in-water activities. Conversely, many Walleye and Lake Whitefish tagged in Stephens Lake have been observed in the area at the base of Gull Rapids, including during the spawning period for both species, but they do not appear to be disturbed by construction.

Since 2011, six adult Lake Sturgeon have moved upstream through Gull Rapids, but none have moved upstream since the start of construction in 2014. Five have moved downstream. Juveniles have not passed in either direction through the rapids during construction and very few Walleye and Lake Whitefish have passed in either direction through the rapids. It is believed that upstream movement is no longer possible for fish because of the high river flows passing through a more constricted area after constructing cofferdams part way across the river.

An acoustic tag prior to being implanted into a Walleye

In 2016, 40 Walleye were tagged in both Gull and Stephens lakes to account for expiring batteries in previously tagged fish. After tagging the fish in Gull Lake, twelve fish died. None of the fish in Stephens Lake were affected. This was a highly unusual event and not something that has been observed before by the biologists conducting the work. The tags and tagging process used by the biologists in 2016 was the same as that used in previous years, and it is believed the fish must have died because they were naturally weak or sick and the process of inserting the tags caused additional stress and mortality.

An acoustic receiver mounted on a concrete anchor records fish movements

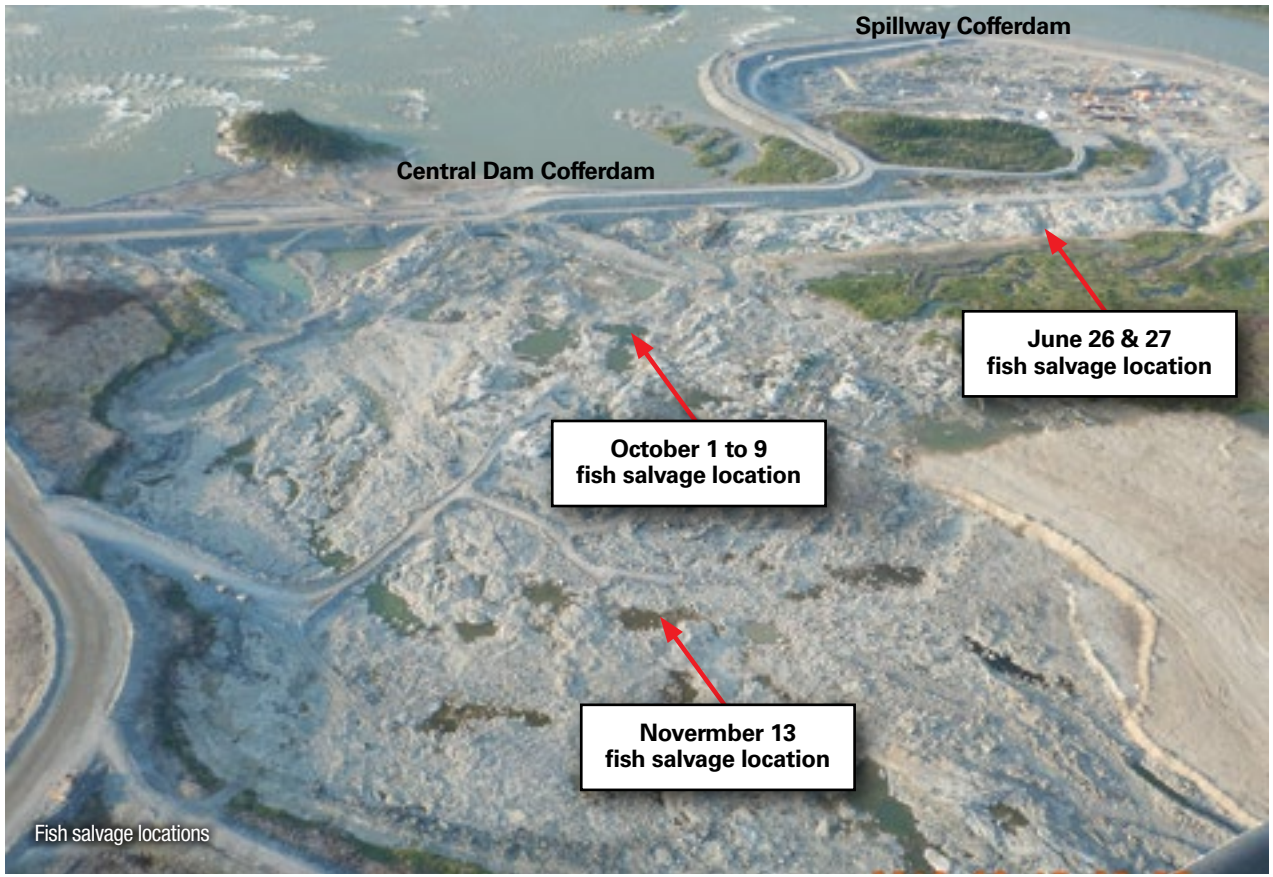
Fish Salvage

Areas that become isolated from the river by cofferdams have the water pumped out so that Project structures can be built in the dry. Before all of the water is pumped out fish that are found must be captured and released to surrounding water bodies. In 2016, environmental site staff monitored dewatering within cofferdams to determine if any of the isolated pools within them contained stranded fish. Three pools contained fish. These fish would have been in these pools since the summer of 2015. Under the supervision of site staff with fish biology experience, 167 fish, mostly Longnose Suckers, were captured using dip nets. The fish were released to the river safely away from construction activities. There were no Lake Sturgeon captured.


Large bodied fish moved during fish salvage


Fish salvage during dewatering using dip nets


Small bodied fish moved during fish salvage



Fish salvage locations

Terrestrial Habitat and Plants

Terrestrial habitat refers to areas on the land that support plants and animals. For the Keeyask Project there is a rigorous effort to reduce the effects of construction on the terrestrial habitat. Monitoring the terrestrial habitat and plants can tell us if there are any Project effects on plants and soils in the area.

Sensitive Sites

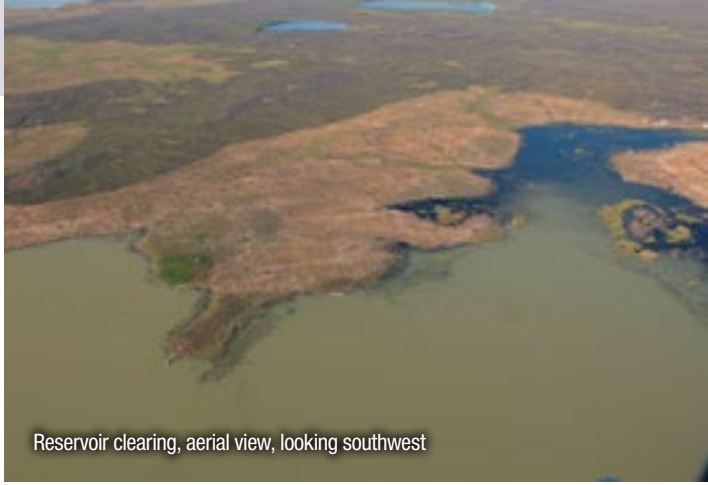
One of the ways that Project effects are being minimized is making sure environmentally sensitive sites are not disturbed during clearing or other activities. Before starting any clearing, a walk-through with the contractor and site environmental staff occurs and purple flagging tape is put up to clearly mark the areas that are not to be disturbed.

An environmentally sensitive area marked off with purple flagging tape

Habitat Loss

Habitat loss is being monitored to determine effects caused by clearing or other disturbances from construction. Project clearing and disturbance in 2016 were mapped using satellite imagery and information collected during helicopter surveys. Mapping showed that as of September 2016, approximately 3,561 ha of terrestrial habitat have been cleared or disturbed for the Project, which is just over one-quarter of the land area in the total Project footprint. In some cases, the Project footprint has been enlarged to accommodate for areas that were not originally identified during Project planning (e.g. land required for borrow pits along the South Access Road). In other cases, areas that are part of the Project footprint that were expected to be used have not been needed. Most of the clearing that occurred during 2016 was in the future reservoir area.

Some habitat types are considered priority habitat if they are rare or uncommon in the Keeyask region, especially areas important for environmental health and/or to people, or very important to wildlife such as caribou calving islands. The Project was expected to cause some loss of priority habitat. The map of Project clearing and disturbance was used to determine how much and which types of priority habitat were affected. In 2016, Project clearing and disturbance occurred in less than three per cent of these areas. Jack pine forest is one of the priority habitat types that has been disturbed to date. So far, there have been no unanticipated Project effects on priority habitats. More surveys will be done in the summer of 2017 to continue to document the amount of priority habitat affected by the Project.


Reservoir clearing, aerial view, looking southwest


Reservoir clearing, close-up view

Spill Kit

Spills in Disturbed Areas

Another way to reduce construction effects on the land is by having Hazardous Materials Spill Response Plans that provide guidelines for spill prevention and include responding to hazardous materials spills, reporting requirements and clean-up of spills. At Keeyask, all spills, regardless of quantity are reported and cleaned up.

Between April 1 2016 and March 31 2017, there were 15 hazardous material releases of quantities that were reportable according to legislation. Manitoba Hydro notified regulatory authorities about all of these releases. The contaminated material was removed and soil and water samples were collected around each spill site to ensure Canadian Council of the Ministers of the Environment guidelines were met during clean-up activities.


Seedlings planted as erosion control in the KM 4 borrow pit


Amisk workers planting trees in the KM 4 borrow pit

Vegetation Rehabilitation

The KHLP is committed to rehabilitating areas disturbed by construction that are not needed for operation. Rehabilitation includes planting trees, grasses and traditional plants that are native to the area, as well as facilitating natural plant regeneration. Between June 14th and July 16th 2016, more than 250,000 black spruce and jack pine seedlings were planted throughout the Project site. Thirty hectares were planted; including three borrow pits that were used for the Keeyask Infrastructure Project, areas around the Main and Start-up Camps, and at the Cemetery. Amisk Construction provided the labour force for the tree planting.


Jack Pine seedlings planted in the KM 9 borrow pit

Surveyed marsh, aerial view

Wetlands

Wetlands are areas where the ground is either wet or often under shallow water. Wetlands are important for many reasons, including providing habitat for some plants and animals and providing hunting areas for moose and waterfowl. Some medicinal and food plants used by partner First Nations, such as sweet flag, are found in wetlands.

Wetlands make up most of the land area in the Keeyask region. The majority of these wetlands will remain undisturbed. In the Keeyask region, a very important wetland type is the marsh because it is rare. Marshes are surrounded by plants such as grasses and cattails, rather than trees. In late August 2016, wetland monitoring surveys were conducted at 41 marshes that are close to Project construction areas. All were surveyed by helicopter, and some were also surveyed on the ground. While there was some Project clearing or disturbance near four of these marshes, there have been no unexpected effects as it was predicted that some locations close to the Project footprint might be impacted during construction. To reduce any potential future effects, erosion control measures have been recommended where there are potential risks to a marsh or its surrounding habitat. Monitoring at these sites will be ongoing.

Wetland Development

Impounding the Keeyask reservoir will lead to the loss of 12 hectares of marsh wetland habitat. In order to compensate for this loss, a marsh wetland will be constructed at the Project site to replace it. The wetland will be constructed in the future dewatered riverbed area immediately downstream from the spillway.

Two nursery sites, one on the north side and one on the south side of the river, have been selected within the Project construction area to grow marsh plants that can be transplanted into the new wetland when it is developed. In September, seeds were collected for the second year for use in the nursery site. All of the seeds will be frozen until they are required. During October, a team of wetland specialists and partner First Nations assistants planted a portion of the southern nursery site, which lies along the South Access Road. After planting, the team installed erosion protection to keep the plants in place and prevent soil from leaving the site.

The south-side nursery site after planting, with erosion protection in place (coconut blanket)

Team members planting at the southern nursery site

Collecting wetland plant seed, September 2016

Priority Plants

Some plant species are important to the partner First Nations for food and cultural reasons, and/or are important for ecological reasons (e.g., rare species). These important plants are called "priority plants". Although the Project area was assessed for priority plants prior to the start of construction, it is probable that not all existing locations of these plants were found. Each year additional ground searches for priority plants are carried out prior to clearing new areas for the Project. When priority plants are found, they are photographed, flagged, and their locations are documented. In 2016, one priority plant (elegant hawksbeard) was found at a single location near the Start-up Camp. A buffer was put in place around the site and flagged so that it could be avoided during ongoing construction activities. This summer, the flagged location will be re-visited to confirm that it was not disturbed.

Elegant hawksbeard, a rare plant in the Project area

Invasive Plants

Invasive and non-native plants are of concern because once they are introduced into newly disturbed areas, which can happen from vehicles or footwear, they can quickly spread and may crowd out native plant species. Equipment is supposed to come to the site clean to reduce the risk of this happening. It was predicted that invasive and/or non-native plants would be confined within human-disturbed areas, and not crowd out native species or change the local vegetation in the Project area. To confirm this, invasive plant surveys are conducted each year in and around the Project construction areas to determine if they are affecting native plants.

During the 2016 surveys, 21 species of non-native plants were found. Of those, seven were seen for the first time in the region and almost half (10) are considered invasive. Most of the invasive or non-native plants were located in the disturbed areas created by the Project, and not in the surrounding areas. In 2016, Lamb's quarters were again the most abundant and widespread invasive species found, however the amount of area it covered had decreased from 2015. A single scentless chamomile plant (a quick spreading invasive) was found in the surveyed area in fall 2016, and was removed and disposed of by Manitoba Hydro site staff the next day.

Spreading of some invasive and non-native plant species is happening due to Project construction. To help reduce further spread, herbicides were sprayed in a few areas in late August 2016. Application was focused on areas where invasive plants were most abundant and had the highest potential for seeds to be carried to other Project areas on vehicles and footwear. Invasive plant surveys will continue in 2017, to monitor the effectiveness of the herbicide treatment and to confirm if spreading of invasive plants within the Project site is continuing. Ultimately, vegetation rehabilitation of temporary Project areas will dramatically reduce the distribution and abundance of the invasive species.

Lamb's quarters

Removal of scentless chamomile plant

Birds

There are more than 120 different species of birds found at or near Keeyask. Observations of birds at the Project site are noted by site environmental staff. In 2016, bird sightings at the Project included ptarmigan, eagle, snowy owl, red tailed hawk, Canada goose, gull, tern, sharp tailed grouse, pelican, swan, robin, sandpiper, sandhill crane, white throated sparrow, mallard, common nighthawk, and common eider.

Nesting cavity in a tree

Pre-Clearing Nest Surveys

Most Project clearing is scheduled outside of the breeding bird nesting period (April 24-August 25) to minimize effects to breeding birds. If clearing is required during the nesting period, pre-clearing nest surveys are conducted. In 2016, two pre-clearing surveys took place. The first was within the spillway cofferdam area and the second was for the expansion of a contractor work yard.

Nesting activity was not noted during the survey in the spillway cofferdam area, and clearing proceeded. In the work yard, nesting was noted at multiple locations during the survey; because of this, clearing at the work yard was deferred until after the breeding bird nesting period.

Conducting a pre-clearing nest search

Nest found during pre-clearing survey

Gulls and Terns

The Project is being constructed in an area where colonial waterbirds (ring-billed gulls, herring gulls and common terns) traditionally nest. The rocky islands and reefs found in Gull Rapids can support hundreds of gulls and terns during the nesting season. Protection, monitoring and mitigation measures for gulls and terns are in place during the Project to stop them from nesting in areas of active construction; monitor the impacts of the Project on where they nest, and their numbers; and provide alternate nesting habitat.

Protection

Since 2014, a gull and tern control program has been in place for the Project to discourage gulls and terns from nesting in active construction areas. The program helps to protect site workers, birds and eggs, as well as prevent property damage caused by nesting gulls and terns.

In 2016, the gull and tern control program ran from April 29 to July 16. Falconry, the use of trained birds of prey (raptors) to chase other birds, was used as the main control method. Raptors are natural predators of gulls and terns, so the gulls and terns instinctively try to avoid them.

Gull and Tern Mitigation Measures

Legend

- Tern Nesting Platform
- Gull and Tern Control Area
- Constructed Gull Nesting Habitat
- Cofferdams
- Dykes

0 0.5 1 Kilometres
0 0.25 0.5 Miles

By flying the raptors in certain areas of the Project where nesting by gulls and terns could cause damage or danger, the program encourages the gulls and terns to look elsewhere to nest. Raptor species used during the 2016 control program included gyrfalcons, peregrine falcons and Harris's hawks.

While falconry was the main control method used in the gull and tern control program, it had some limitations. For example, raptors could not be flown on snowy or extremely windy days. On days when the raptors could not work, other control methods were used, such as stock whips, pyrotechnics, drones and kites.

The gull and tern control area was also checked daily for the presence of ring-billed gull, herring gull and common tern nests and eggs. Under an Environment Canada permit, one herring gull nest was removed from the gull and tern control area. No other nests and no eggs were removed in 2016.

Falconry, in combination with other gull and tern control methods, was successful in moving gulls and terns out of the active construction areas. No gulls or terns were killed by raptors during the control program.


Raptors on patrol in the gull and tern control area


Herring gull nest removed from the gull and tern control area

Unmanned aerial vehicle (UAV or drone) used to monitor gulls and terns

Common tern chick on a floating platform

Photo of a gull colony at Gull Rapids from an unmanned aerial vehicle (UAV or drone)

Monitoring

Gulls and terns were monitored in June and July of 2016. Drones were used to take photos of the Gull Rapids area. Helicopters were used to survey the broader Keeyask region between the Kelsey GS and the Limestone GS, and also included some waterbodies removed from the Nelson River system (known as reference sites). The number of gulls and terns captured in the drone photos were counted. The number gulls and terns observed from the helicopter were also counted.

During the drone surveys in the Gull Rapids area:

- Between 4,300-5,100 gulls and 860 nests were counted. By July, 1,775 gull chicks were counted.
- Between 25-138 terns and 10 tern nests were counted.

During the helicopter surveys in the broader Keeyask region:

- The number of ring-billed gulls counted was between 5,576 and 13,316.
- The number of common terns counted was between 797 and 915.
- The number of herring gulls counted was between 45 and 72.

The number of ring-billed gulls and common terns observed at Gull Rapids in 2016 was similar to those observed in previous years during Project construction (2014 and 2015), and during the pre-construction period (2001-2013). Helicopter aerial surveys found the number of non-breeding gulls and terns observed in the broader study area in 2016 was much higher compared to 2015. This difference in annual numbers of colonial waterbirds may have been due to natural fluctuations in the population or non-breeding individuals moving into the region from elsewhere. The results of the UAV surveys and helicopter surveys suggest that Project construction is not negatively affecting gulls and terns.

Mitigation

To mitigate the loss of gull and tern habitat at Gull Rapids, some alternate gull and tern habitat was created. In early 2015, an area on the south side of William Smith Island (west) was cleared to create a new gull nesting habitat area. Trail cameras were installed at the site in 2015 and 2016 to record the use of the site by gulls. To date, the area has not been used by gulls. Project monitoring showed that the birds were able to find other suitable areas of natural habitat in the region, including islands in the south channel of Gull Rapids. The habitat enhancement area will continue to be available for gulls in 2017.

Two floating tern platforms were installed on Gull Lake in June 2016. This was the second year the platforms were installed. These platforms provide alternate nesting areas away from active construction areas. Trail cameras were placed on each platform to record their use by terns. Terns were photographed using the platforms from early June until the end of August in 2016. A pair of common terns nested on one of the platforms laying three eggs. All three of these eggs hatched, and the fledglings were photographed on the platform throughout July. The second platform was not used for tern nesting, but solitary terns were photographed using it for resting.

Gull habitat enhancement area on William Smith Island

Bank Swallows

Bank swallows are a priority bird for Project monitoring because they are now designated as Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and are being considered for listing under the federal *Species at Risk Act*. The main objective of the bank swallow study is to confirm their presence and distribution in the Project area. This was the first year of Project monitoring.

Aerial surveys for bank swallow colonies were carried out in the Keeyask region in June 2016 and most sites were re-surveyed by boat in June and July 2016. Bank swallows and nest burrows were counted and a series of photographs were taken to confirm counts. Seventeen bank swallow colonies were observed, with an estimated 2,000 breeding pairs inhabiting the Keeyask region. About one-half of the colonies were found on islands in Gull and Stephens lakes, while most of the remaining colonies were located on the shorelines of the Nelson River. One colony was observed in a borrow area developed during construction of the Keeyask Infrastructure Project. Some of the bank swallow habitat along the river may be affected by Project development. Continued monitoring will help determine the extent of any future effects, as well as possible mitigation measures to minimize impacts.

Bank swallows in flight

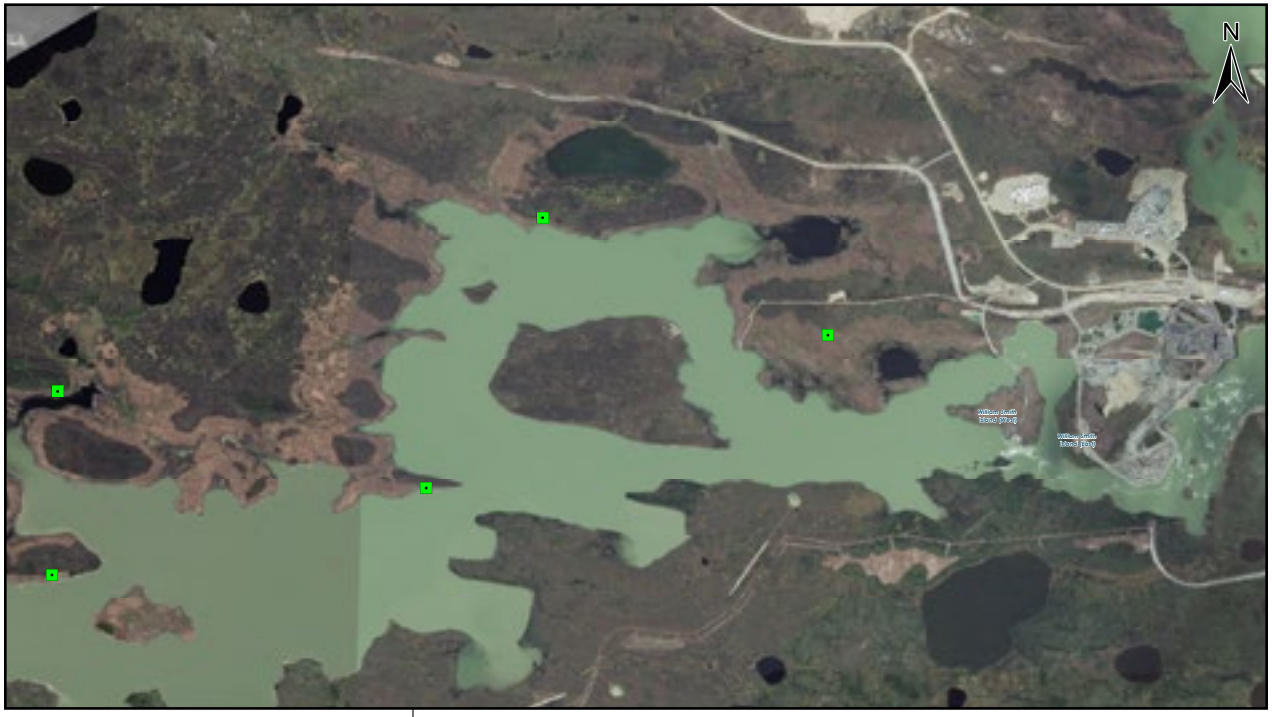
Bank swallow colony on the Nelson River

Bald Eagles

Bald eagles are the most common raptor species along the lower Nelson River and are important to local people. Their large stick nests can be reused for many years.

During reservoir clearing in winter 2015/16, a single tree with an unoccupied bald eagle nest was left standing. The nest became occupied again during the 2016 nesting season. During south side reservoir clearing in February 2017, another unoccupied eagle nest was discovered. This tree, with the nest, was also left standing, so it is available for use by bald eagles in future nesting seasons. The nest will be monitored in the summer of 2017 to determine if it is active. These trees will remain in place, but will eventually fall over after impoundment of the reservoir. The tree will then likely be removed by a Keeyask boat patrol crew.

In October 2016, a recently active bald eagle nest was removed during Project clearing. The nest had previously been used by bald eagles, but was not occupied at the time of removal. This is the third bald eagle nest to be removed by the Project to date. Five eagle nest platforms were installed along the future reservoir shoreline in February 2017, to replace recently active bald eagle nests that have been, or will be, affected by Project development. All five platforms were installed on the north side of the Nelson River, where the majority of eagle nests are naturally found near the Project site. The platforms will be monitored as part of the Project's bald eagle monitoring study, to determine whether they are used for nesting in the future.



Bald Eagle Nest Platforms

Legend

Bald Eagle Nest Platforms

0 2 4 Kilometres
0 1 2 Miles

Bald eagles in the Keeyask area

Wildlife

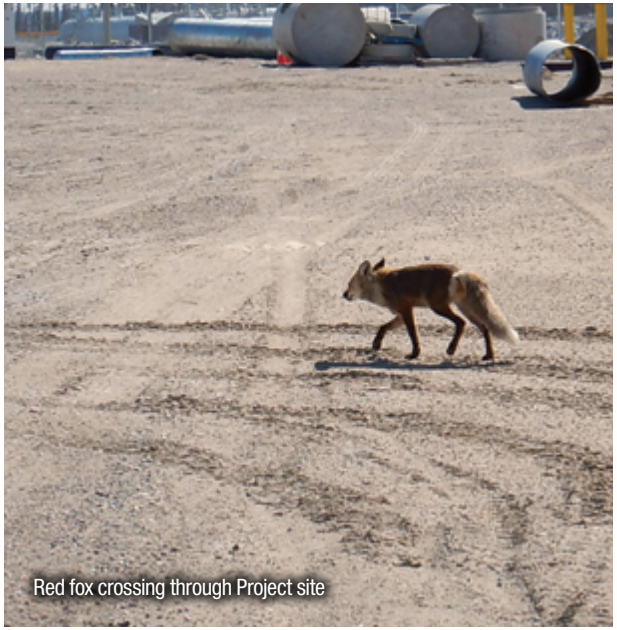
Bald eagles nesting in cleared future reservoir area

The Keeyask Project is surrounded by wildlife. Wildlife interactions within the Project site are monitored on a daily basis by the site environmental staff and other construction personnel. Observations of wildlife at site in 2016 included caribou, moose, bear, wolverine, lynx, wolf, red fox, arctic fox, marten, otter, beaver, muskrat, snowshoe hare, and wood frog.

To reduce wildlife attraction to the Project work areas, food waste is disposed of in wildlife-proof containers. As well, kitchen waste areas are surrounded by fences to limit access to wildlife. Project staff are reminded of the importance of not feeding the wildlife, and educational posters are put up at the construction site.

Moose observed near construction area

Assembling an eagle nest platform for installation



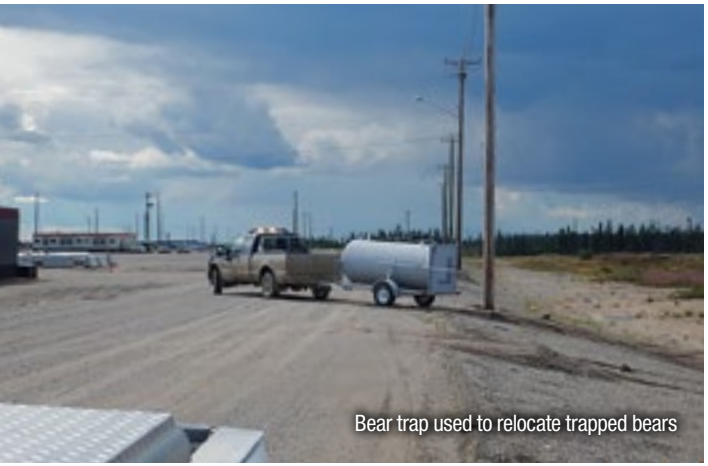
Red fox crossing through Project site

Wildlife poster up at Project site

Bears

Bear Relocations

Despite measures taken to reduce attractants to the Project site, bears are still sometimes present at the site and pose a safety concern. In these cases, bear traps are set in consultation with the local Conservation Officer. In 2016, there were six bear re-locations in August and September. All bears were removed from site using a bear trap and were relocated by the local Conservation Officer.



Bear trap used to relocate trapped bears

Bear Den Surveys

Black bears use dens for birthing, rearing young and hibernating. Bear den surveys take place when the timing of planned Project clearing overlaps with den use. If any active dens are found during surveys, a marked buffer of 100 m is established around the den for protection.

In 2016, a pre-clearing bear den survey was conducted in October. About 1,157 ha were searched during the survey, within portions of the reservoir area on the south side of the Nelson River that were scheduled for clearing in the winter of 2016-2017. Surveys were focused in areas with habitat types that had higher potential to be selected by bears for denning. No active black bear dens were found during the 2016 survey.

Black bear den excavation found outside of the planned clearing area

Black bear in the Keeyask area

Frogs

Frog Habitat Replacement

As a way to temporarily mitigate the loss and disturbance of frog habitat due to Project development, woody debris (slash) piles were placed in a cleared borrow area that is no longer in use. Four slash piles were placed in the KM-4 borrow area, off the North Access Road in December 2016. Material was placed in a previously cleared portion of the borrow area, between an area of standing water and some undisturbed forest habitat.

These slash piles are intended to provide temporary frog habitat until vegetation in this area is re-established. The slash piles can provide nursery cover and a source of food for juvenile frogs, winter cover, and a habitat corridor from the breeding ponds to the upland foraging habitat. This site will be monitored for use by frogs over the next several years.

Wood frog on rock

Woody debris (slash) piles for temporary frog habitat

Beaver and Muskrat

Beaver and muskrat are important species in the Keeyask region, having cultural, economic, and ecological value. As the future reservoir impoundment will flood habitat for these species, beaver and muskrat are being trapped from within the future reservoir area to reduce the winter mortality that would likely occur. This mitigation measure is designed to minimize the distress of these furbearers by removing them prior to flooding.

A helicopter survey was done in fall 2016 to document the number of active beaver lodges within the future reservoir area. During this survey, six active lodges were found on the north side of the river, and 22 on the south side. Beaver trapping within this area occurred on the south side of the river from January to March 2017. Trapping was carried out by the Registered Trapline (RTL) 15 holder. This year, traps were set at 13 active lodges, and a total of 19 beaver were trapped. No muskrats were trapped in 2017. Trapping efforts will continue in the upcoming construction years prior to reservoir impoundment, including both the north and south portions of the future reservoir area.

Beaver baffles (also commonly referred to as beaver bafflers or beaver deceivers) are physical structures installed at or around culvert entrances to prevent beavers from getting inside and blocking the flow of water. Along the South Access Road, culverts are being monitored to determine if these devices are needed. In 2016, two culvert locations were identified where blockage from beavers was a concern due to nearby dams; after consultation with Manitoba Sustainable Development on these two sites, two metal beaver cones, which are cone-shaped metal beaver baffles, were purchased and will be installed when site conditions allow.

Active beaver lodge within the future reservoir area

Caribou

Predicted Project effects on caribou include a small loss or change in winter habitat and calving and rearing habitat (less than one per cent of the available habitat in the surrounding region), as well as disturbance from construction activities at the Project site (noise from people and equipment, and lights). Caribou movement in and through the Keeyask region could also be affected, and an increase in harvest and predation from the development of roads and trails may occur. Mitigation to reduce potential effects on caribou included placing some Project footprints away from known caribou calving areas, not clearing trees from future island areas within the reservoir area, and installing signs along the access roads to warn drivers about possible caribou crossings.

Three migratory caribou herds (two coastal caribou herds and occasionally a barren-ground herd) can be found in the Keeyask region in winter. A small group of caribou stays near Keeyask in the summer to calve (referred to as summer resident caribou). Two separate monitoring studies took place for caribou in 2016 to verify predicted effects, both focused on the summer resident caribou.

Summer Resident Caribou Winter Range

To learn more about the winter range (the area where an animal can be found in winter) of the summer resident caribou, an aerial survey took place in early December 2016, before the migratory caribou herds would typically come into the Keeyask region. The survey was conducted between Split Lake and Gillam.

Caribou or their signs were observed at five locations during the survey. Four caribou were observed south of the Nelson River between Stephens Lake and Clark Lake. They were in two groups, each with one adult female and one calf. Fecal droppings were collected and will be genetically tested to help confirm whether any of the caribou observed during the winter survey are the same animals calving in the Keeyask area during the summer (i.e., staying in the area year-round).

Signs and observations of caribou during this survey were all south or west of the summer resident caribou's previously identified summer calving range, indicating that the winter range likely covers a broader area. Data from the 2016 winter will contribute to winter range mapping for the summer resident caribou that will be created after three years of surveys are completed.

Caribou observed during the summer resident winter range survey

Summer Resident Caribou Sensory Disturbance

Monitoring took place in 2016 to see if the noise and light from Project construction are affecting caribou use of calving habitats (islands in lakes and mainland habitat). Trail cameras were exclusively used in 2016 on islands in lakes (118 cameras) and on habitat islands in mainland habitat (34 cameras) to document the presence of caribou and other large mammals between April and September.

Caribou were photographed on many of the islands in lakes and in mainland habitat in the Keeyask region. The number of islands in lakes on which caribou were photographed more than doubled from the previous year (7 in 2015 and 16 in 2016), while the number of habitat islands in mainland habitat on which caribou were photographed decreased slightly from 2015 to 2016 (13 in 2015 and 12 in 2016). Sensory disturbance did not appear to be limiting the use of habitat in 2016 as Caribou Island, which burned in 2013 and is only four kilometers from the Project site, was still being used by caribou, as were islands near active borrow areas (N-5 and G-3, in Stephens Lake).

Keeyask Caribou Coordination Committee

The Keeyask Caribou Coordination Committee (KCCC) includes members from TCN, WLFN, YFFN, FLCN, and Manitoba Hydro and is a sub-committee of the Monitoring Advisory Committee. The KCCC met in June and December 2016, to share information on caribou in the Keeyask region and discuss the caribou monitoring being done for the Project. Manitoba Sustainable Development was invited to the December meeting to share results from its coastal caribou collaring program with the KCCC, which has some spatial overlap with the Keeyask region.

At KCCC meetings, the partner First Nations have voiced concerns about decline of caribou and observations that coastal caribou not entering the Keeyask area in winter. It is believed that development has caused changes in migration and that the Project will contribute to this problem. ATK and western science monitoring will continue to be shared at KCCC meetings to determine Project effects on caribou.

Summer resident caribou and calf photographed by trail camera

Resource Use

Resource use is monitored to understand Project effects on traditional harvest by people from local First Nations. Harvest by the Project workforce within the Project site is not expected because hunting is prohibited on the Project site. However, if the workforce harvests resources in areas away from the Project, this may affect the success of local First Nation people's resource use.

In November 2016, a Keeyask construction workforce harvest survey was carried out, which covered the period from June to November 2016. One hundred and sixty eight workforce harvest surveys were completed. The survey included questions to determine whether or not the workforce participated in hunting activities. This was the third workforce survey since the start of Project construction. The 2016 results are consistent with the results found in the previous two surveys which indicate little to no increase in resource harvest in the local area associated with the Project workforce.

Interviews with Manitoba Sustainable Development staff about changes in licensed moose and caribou harvest in Game Hunting Area (GHA) 2, 3 and the eastern portion of GHA 9 (which covers most of northeastern Manitoba above the 53rd parallel) took place in the winter of 2017. The demand for moose licences in GHA 3 and 9 increased between 2014 and 2015, but did not further increase in 2016. Workforce survey results do not suggest the Keeyask workforce contributed to the increase in moose licenses issued. Licensed caribou harvest was not documented to have changed in any of the years interviews took place with Manitoba Sustainable Development.

Moose in the Project area

Monitoring Advisory Committee

The Monitoring Advisory Committee (MAC) is responsible for reviewing and discussing the Project's environmental, social and economic monitoring and mitigation activities, including Aboriginal Traditional Knowledge (ATK) monitoring programs.

During the past year the MAC:

- reviewed the activities and results included in the annual technical science reports and the ATK report that were prepared for submission to Manitoba Sustainable Development on June 15, 2016 as required by the Project's *Environment Act* licence;
- developed the 2015-16 Environmental Overview, which was a summary document of all of the monitoring and mitigation undertaken in the year, for partner First Nation members and the general public;
- planned and hosted open houses in Ilford, York Factory, Fox Lake and Gillam presenting the highlights of the activities undertaken to date and demonstrating some of the monitoring equipment used during the environmental studies; and
- had detailed presentation on topics of interest to members including PR 280 road safety, Lake Sturgeon monitoring and stocking, and heritage resources.

The committee is progressing in fulfilling its objectives of discussing and disseminating social and environmental information related to the Project. MAC members are sharing perspectives, both technical science and ATK, and are building relationships.

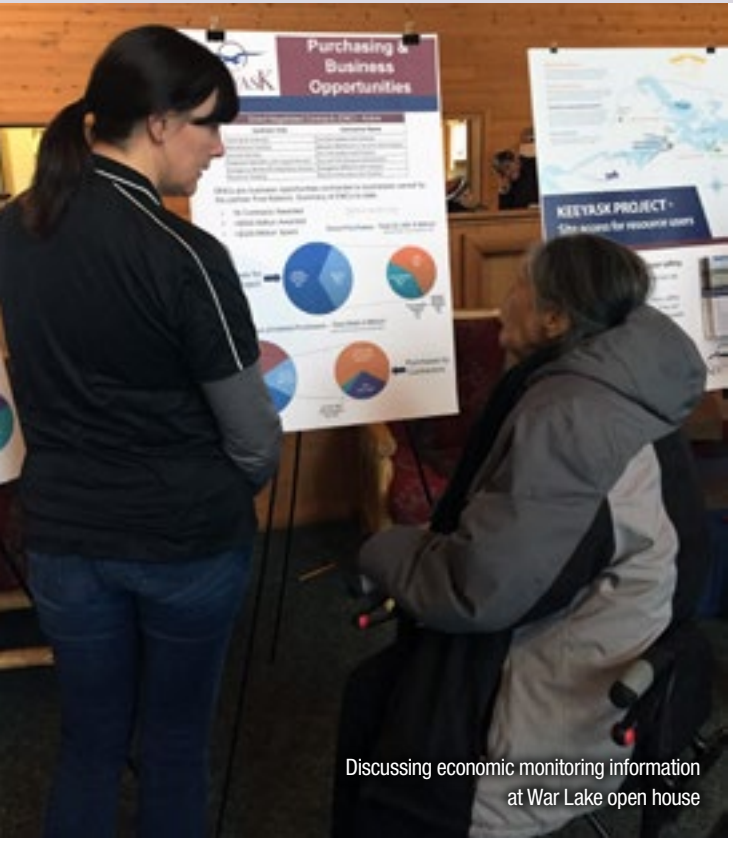
As the members are learning to work together, discussions have occurred on ways to bring together technical science and traditional knowledge in reports and how to make MAC meetings more meaningful for members.

Monitoring Advisory Committee:

Back Row left to right: Carolyne Northover (MH), Elly Bonny (YFFN advisor), Robert Spence (TCN), Dwayne Flett (WLFN), Demian Lawrenchuk (FLCN), Val Massan (FLCN), Laura McKay (MH), Robin Gislason (MH), Diana Mager (MH).

Front Row left to right: Jimmy Beardy (YFFN), Roy Massan (WLFN guest), Victor Spence (TCN), Russ Schmidt (MH), Jodine MacDuff (MH), John Whitaker (WLFN advisor)

Missing from photo: Joseph Harvey (TCN), Sarah Cole (TCN), Robert Garson (TCN), Roy Ouskun (WLFN), Roy Redhead (YFFN), Kurt Fey (MH)



Discussing economic monitoring information at War Lake open house


War Lake students at open house in Ilford

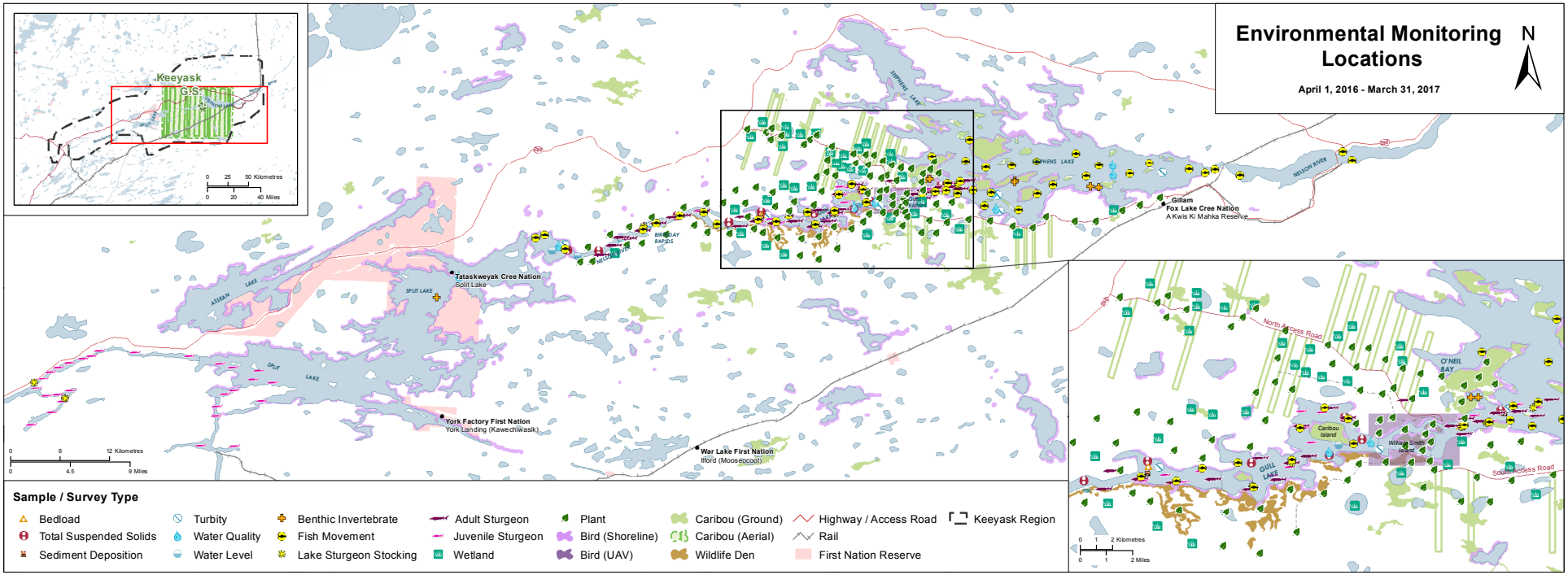

Discussion at open house for York Factory First Nation

Fox Lake members at open house in Bird

Financials

FINANCING AND INVESTING ACTIVITIES (for the year ended March 31)

(in millions of dollars)	**2017**	2016
FINANCING ACTIVITIES		
Proceeds from Partners' contributions	**237**	173
Net proceeds from long-term debt	**755**	554
	992	727
INVESTING ACTIVITIES		
Generating station	**(948)**	(697)
Transmission line	**(44)**	(32)
	(992)	(729)


Environmental Monitoring Locations
April 1, 2016 - March 31, 2017
N
Keeyask
GS
Tataskweyak Cree Nation
Split Lake
York Factory First Nation
York Landing (Kawechiwasik)
War Lake First Nation
Ilford (Mooseocoot)
Gillam
Fox Lake Cree Nation
A Kwis Ki Mahka Reserve
North Access Road
South Access Road
O'NEIL BAY
GULL LAKE
Caribou Island
Wilson Smith Island
Sample / Survey Type
Bedload
Total Suspended Solids
Sediment Deposition
Turbity
Water Quality
Water Level
Benthic Invertebrate
Fish Movement
Lake Sturgeon Stocking
Adult Sturgeon
Juvenile Sturgeon
Wetland
Plant
Bird (Shoreline)
Bird (UAV)
Caribou (Ground)
Caribou (Aerial)
Wildlife Den
Highway / Access Road
Rail
First Nation Reserve
Keeyask Region

KEEYASK

Hydropower Limited Partnership

KEEYASK
Hydropower Limited Partnership

Keeyask Hydropower Limited Partnership

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