



WUSKWATIM GENERATING STATION
WUSKWATIM POWER LIMITED PARTNERSHIP

Manitoba
Hydro



YEAR IN REVIEW

For the year ending March 31, 2018



WUSKWATIM
Power Limited Partnership

Table of Contents

Introduction and Background	4
Message from the Chair	5
Operations	6
Environmental Monitoring	8
Financial Report	22





Directors of the General Partner of WPLP

Left to right (seated): Jimmy Hunter-Spence (Nisichawayasihk Cree Nation), Lorne Midford, Chair (Manitoba Hydro)
 Left to right (standing): Wesley Penner (Manitoba Hydro), Nancy Willms (Manitoba Hydro), Marcel Moody (Nisichawayasihk Cree Nation), Jamie MacCallum (Manitoba Hydro)



WUSKWATIM
 Power Limited Partnership

Wuskwatim Power Limited Partnership (WPLP), a legal entity involving Manitoba Hydro and Nisichawayasihk Cree Nation through its wholly owned Taskinigahp Power Corporation (TPC), has developed the Wuskwatim Generating Station on the Burntwood River in northern Manitoba. It marked the first time in Manitoba and Canada that a First Nation and an electric utility have entered into a formal equity partnership to develop and operate a hydroelectric project. Manitoba Hydro provides management and operational services to WPLP in accordance with the Project Development Agreement (PDA).



INTRODUCTION AND BACKGROUND

Nisichawayasihk Cree Nation and Manitoba Hydro spent nearly a decade discussing, planning and undertaking the environmental studies and regulatory processes for the 200-megawatt Wuskwatim Generation Project operating in Nisichawayasihk Cree Nation's traditional territory on the Burntwood River downstream of Wuskwatim Lake at Taskinigup Falls.

In 2006, the Wuskwatim Project Development Agreement (PDA) that governs all aspects of the Project was approved by Nisichawayasihk Cree Nation Citizens and signed by senior Manitoba Hydro officials and Nisichawayasihk Cree Nation Chief and Council. Construction started in August that year.

The agreement provided the option for Nisichawayasihk Cree Nation to own up to one-third of the Wuskwatim Generating Station through its wholly owned Taskinigahp Power Corporation. Nisichawayasihk Cree Nation has confirmed its intent to maintain its 33 per cent ownership position in the Wuskwatim Project.

The Wuskwatim Power Limited Partnership (WPLP) is governed by the Board of Directors of its General Partner (5022649 Manitoba Ltd., a wholly owned Manitoba Hydro subsidiary). The Board consists of two Nisichawayasihk Cree Nation and four Manitoba Hydro representatives. Pursuant to the PDA, WPLP contracted Manitoba Hydro to construct, manage, operate and maintain the Wuskwatim Generating Station.

Manitoba has a large self-renewing supply of waterpower with many hydroelectric generating stations developed to provide electrical energy for its citizens. Wuskwatim became fully operational in October 2012 and produces clean, renewable hydroelectric power. It adds to Manitoba's generation assets, helps to meet the province's domestic needs and provides energy to export customers.

MESSAGE FROM THE CHAIR



Lorne Midford
Chair, Wuskwatim Power Limited Partnership

I am proud to present the Year in Review for 2017-18 which reports on the current status the Wuskwatim Generating Station and highlights some of this year's achievements.

The Wuskwatim Generating Station continues to perform well. Over the past year, it produced 1.5 million megawatt hours of electricity and had an average monthly unit availability factor of 93.6 per cent which is above average for a hydraulic generating station of this kind. As well, the forced outage rate of 1.2 per cent was very low.

Northern Indigenous persons make up an important part of the facility's workforce. At the end of March 2018, 13 Indigenous

persons including three Nisichawayasihk Cree Nation (NCN) members were working at the facility whose workforce consists of 15 full-time employees and four rotational trainees. In addition, important indirect employment opportunities continue to be created. This past year alone, employment associated with monitoring activities have resulted in over one thousand hours of work.

We continue to promote a safe and healthy workplace. This year our efforts included presentations on boating and bear safety, bullying in the workplace and site security. In addition, two NCN members were hired by Manitoba Hydro's Waterways Management Program to patrol Wuskwatim Lake and gather data on debris.

Comprehensive programs to monitor the physical environment, resource use, aquatic, terrestrial and socio-economic impacts, which have been in place since the start of the Project, ensure that we have a full understanding of the impacts of our operations.

This environmental monitoring work is complemented by *Ethinesewin*, the traditional knowledge and collective wisdom of Nisichawayasi Nehethowuk, which focuses on the relationships with and between the land, nature and people. This past year, an NCN Elders team reviewed the list of planned inspection tasks and provided their perspectives based on these customary law principles which informed

the monitoring activities described later in this report. The information gathered and the insights and recommendations they generate play an important role in ensuring the overall environmental health of our operations.

From a financial perspective, WPLP reported a net loss for 2017-18 of \$25 million, which is consistent with expectations. This compares to a net loss of \$36 million in 2016-17. Hydroelectric generating stations characteristically show losses in the early years of operations due to high up-front carrying costs associated with significant initial capital investment.

I am pleased with the great working relationship and spirit of collaboration which exists and I am confident will continue well into the future. I look forward to building on our successes and working together to achieve mutual objectives and the benefits generated by the Partnership.

Tansi

Lorne Midford

A handwritten signature in black ink that reads "Lorne Midford". The signature is written in a cursive, flowing style.

Chair of the General Partner of
Wuskwatim Power Limited Partnership
(5022649 Manitoba Ltd.)

OPERATIONS



STATION PERFORMANCE

Manitoba Hydro uses three main criteria to measure generating station performance: net generation output, unit availability and unit forced outage rate.

Net Generation Output

Wuskwatim Generating Station produced 1.5 million megawatt hours of electricity this year. Output at the generating station was as forecast and reflects normal flows. Monthly production averaged nearly 121,699 megawatt hours, with peak production of 143,169 megawatt hours in October and a low of 86,517 megawatt hours in July. These production numbers are a result of the near-normal water supply available in the Burntwood and Churchill River watersheds.

Unit Availability Factor

The generating station demonstrated an average monthly unit availability factor of 93.6 per cent, a measure of when the station is available to run when required. This is above average for a hydraulic generating station of this kind.

Unit Forced Outage Rate

The generating station demonstrated a forced outage rate of 1.2 per cent, a measure of the frequency of electrical or mechanical problems that remove a unit from service. The total of 288 hours of unit forced outage time is 1.2 per cent which is slightly greater than the 1 per cent target.

MAINTENANCE AND REPAIRS

In March 2017, Unit 3 was taken out of service for several days for a three-year maintenance check.

During a routine inspection in June 2016, cracks were found in some of the discharge ring rib stiffeners on all three units. Repairs have since been completed on the three units.

DIRECT CONTRACT OPPORTUNITIES

The service agreement with Nisichawayasihk Construction Limited Partners (NCLP) has expired and work is underway to renew the agreement.

SAFETY

Safety incident and activity reports are prepared monthly. During the past year, quarterly Workplace Safety and Health Committee meetings were held.

Presentations were delivered on topics such as boating and bear safety, bullying in the workplace and site security. No lost-time incidents occurred during this fiscal year.

NAVIGATION SAFETY

During the 2017 open water season, two Nisichawayasihk Cree Nation members were hired through Manitoba Hydro's Waterways Management Program to patrol Wuskwatim Lake and gather data on debris type and quantity. The crew patrolled a total of 2,525 kilometres of shoreline and

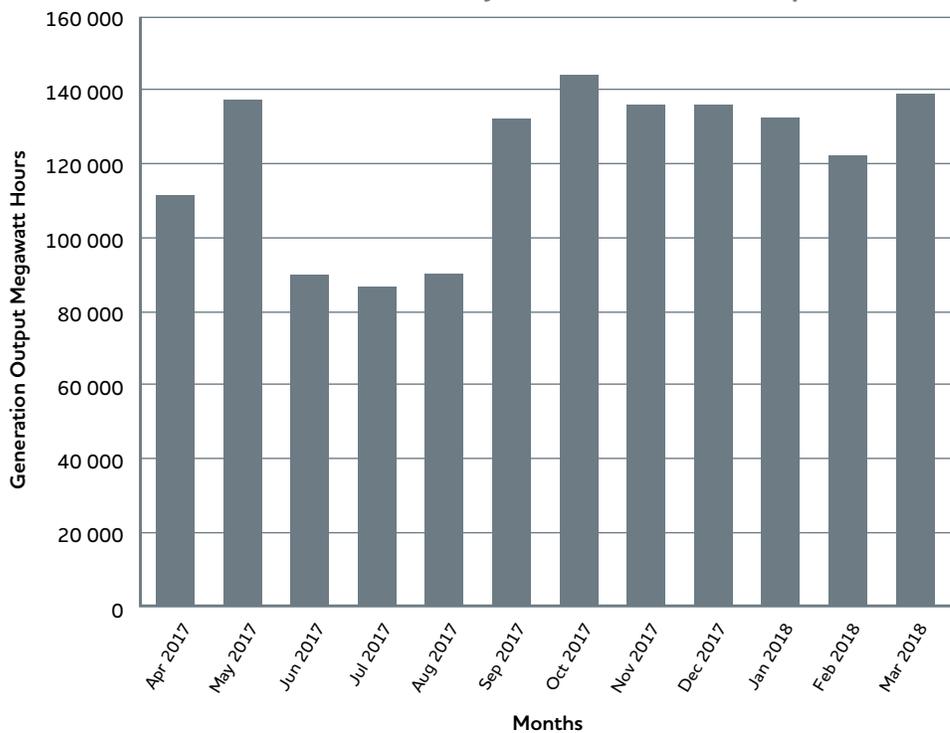
removed an estimated 200 pieces of debris. This work will continue during the 2018 open water season. In addition to patrolling the waterways, the crew also provided safe transportation for ceremonies and various community events throughout the season.

PLANT TOURS

This year, tours were given to representatives from The Midcontinent Independent System Operator (MISO), North American Electric Reliability Corporation (NERC), United States officials, Midwest Renewable Energy Tracking System (M-RETS), Midwestern Governors Association (MGA), Government of Manitoba and Nisichawayasihk Cree Nation members. In addition two representatives from the local Thompson radio station (CHTM) toured the Wuskwatim powerhouse in February 2018.



Wuskwatim Monthly Net Generation Output



ENVIRONMENTAL MONITORING

As part of Wuskwatim's federal and provincial licensing requirements, a rigorous environmental monitoring program has been in place since before construction began. With the generating station now operating, the monitoring program has evolved to focus on potential operations-related components to determine if the station is having any long-term environmental impacts upstream or downstream, on lands along the access road and at the station site.

ETHINESEWIN MONITORING

Ethinesewin is the traditional knowledge and collective wisdom of Nisichawayasi Nehethowuk (the people from where the three rivers meet and who speak the language of the four winds) that has been communicated orally for generations.

Like the traditional knowledge systems of other Indigenous peoples, *Ethinesewin* includes observation, classification, description and recording observations and results. The central focus of *Ethinesewin* is on relationships with and between the land, nature and people.

Nisichawayasi Nehethowuk, and in particular the NCN Elders, have been creating an understanding through *Ethinesewin* with Manitoba Hydro and Aski 'Otuoskeo Ltd (AOL) as an integral part of

the environmental monitoring activities conducted during station construction and the current Wuskwatim operational phase. The communicating of *Ethinesewin* is vital to ensuring the Project achieves *Kistethichikewin*, (the conduct of a person must adhere to the sacred responsibility to treat all things with respect and honour), according to *Kihche'othasowewin* (the Great Law of the Creator).

NCN Elders conducted their spring/summer annual 2017 environmental monitoring activities with the work plan set up by AOL by inspecting and evaluating the Wuskwatim Generating Station, Wuskwatim Access Road and Soil Bioengineering Stabilization and Restoration sites on Wuskwatim Lake. The NCN Elders were particularly interested in investigating the downstream end of the generating station. A safety discussion on the turbulent flow of the river was undertaken and it was determined that the use of a boat and motor was not a practical option for monitoring.

Orientation and Safety Reviews

As part of the spring/summer tour, the NCN Elders team reviewed the list of planned inspection tasks and were asked to provide their perspective of Nisichawayasi Nehethowuk customary law principles along with any of their own personal customs and principles that may apply. Some of the team members had participated in previous inspections, while others were joining the team for the first time.

As part of this initial orientation, the AOL coordinators managing the inspection tour reviewed the emergency job action plan

with the inspection team.

Review of Findings and Recommendations from the Previous Year's Ethinesewin Tour

The summary table compiled by Manitoba Hydro has been a useful tool in helping with the history of the *Ethinesewin* recommendations and WPLP responses. The team agreed that, since the Project will be operating for a long time; historical information, both written and oral, are needed to ensure that knowledge continues to be passed on.

Traditional knowledge includes the influence of moons and seasons on climate, weather, animals, plants and *Ethiniwuk* (individuals) as well as seasonal harvesting cycles and practices. It has not been easy for the technical and traditional knowledge systems to work together, but the Elders think that the collaboration should be continued and developed further into a balanced teaching tool that highlights both knowledge systems.

Wuskwatim Generating Station Forebay

A boat tour was arranged to further assess the ongoing changes related to the initial establishment of the reservoir's water level at its full supply level and its ongoing operation within a narrower range, as well as to study the shoreline conditions along the forebay's north and south shores, Wuskwatim Falls and the channel improvement area.

The forebay is considered by NCN Elders to be one of the most impacted areas of the entire Project. The history told in stories shared by NCN Elders tells us that



Wuskwatim Falls and Taskinigup Falls were a significant harvesting area for fish by our ancestors. The absent sound of the rapids has been noticed by all of the NCN Elders.

Another difference observed by the NCN Elders is the waterflow through Wuskwatim Falls and Taskinigup Falls area since the Wuskwatim Generating Station began operating is much less visible with the higher water level in the Wuskwatim forebay. To make a determination from an *Ethinesewin*

perspective, it is difficult to compare the flows going through the generating station relative to what they were prior to construction. The Elders asked if the differences in water flow affect the fish quality.

Heritage

Visits were made to known grave sites and maintenance on these sites was performed. *Aniskowatesewe Kanache Pumenikewin* means people must act in accordance with the sacred responsibility to protect heritage

resources. The NCN Elders strongly believe that the records of such sites need to be shared with the community so that the *Nisichawayasi Nehethowuk* history and culture are preserved.

During construction human remains were discovered/disturbed in the Wuskwatim channel improvement area and in a tributary near Wuskwatim Falls. The construction of the Wuskwatim Generating Station further confirmed our ancient

ENVIRONMENTAL MONITORING

existence in the Wuskwatim Lake area. The Elders feel that it is here, in particular, where shoreline erosion repair and rehabilitation should be carried out.



Wuskwatim Lake & Wuskwatim Generating Station Forebay

O'skotimi Pawistik	2
Sekanišiwīn	13 (plus soils)
Kecinehow	1
Conikanisihk	1
Astacikonahk	4
Wuskwatim Forebay	2

The NCN Chief and Council provided a mandate to AOL to initiate contact with the Manitoba Heritage Resources Branch (HRB) to provide a list of NCN ancestors that were in the temporary custody of the HRB. A list of 23 NCN ancestors was provided for the Wuskwatim Lake area. So began the task of bringing the ancestors back to the Wuskwatim Lake area for repatriation.



Past *Ethinesewin* monitoring tours identified a repatriation site in the Moostoochi Bay area (meaning; where cows were taken to feed), but the site was too close to shore. A large area was discovered that provided enough room for repatriation of Wuskwatim ancestors. An archaeologist was brought in to perform test digs to ensure that the site had not been previously used. The archaeologist determined that the site was ideal and indicated we could apply for a repatriation site licence. There was much

work and preparation that needed to be done before the Wuskwatim Lake ancestor's arrival. The repatriation site was immediately cleared of all brush, and rocks were brought in to construct a medicine wheel. The NCN Elders provided much guidance and knowledge in what was important for the repatriation site; the most important being that the water must be seen. To accommodate this, a trail was cleared to ensure Wuskwatim Lake could be seen.

Six experimental sites on Wuskwatim Lake for Soil Bioengineering Stabilization and Restoration

Site #3

The NCN *Ethinesewin* monitoring included an assessment of the crib wall installation. It was observed that the crib wall hasn't been effective in protecting the shoreline from wind and wave effects on Wuskwatim Lake. The NCN Elders noticed erosion of the shoreline is preventing better success. The concerns raised by the NCN Elders included the exposure of dead stout stakes and live wire (20 gauge steel wire) on the shorelines and that it is becoming a safety concern for animals. It was observed that the live drain trenches and brush mattress techniques are having success as the Red Willows and Dogwood Willows were in bloom.

Site #4

The NCN Elders expressed concern about the use of Diamond Willows as part of the bioengineering methodology as the survival rate has been low as was evident by the lack of budding and leafing. The accumulation of debris on the shoreline was also a concern to the *Ethinesewin* monitoring assessment group.

Site #5

The *Ethinesewin* monitoring assessment of this site noted lots of budding and leafing in the willows. The Elders were pleased with the success at this site but the noticeable debris along the shore was an issue of concern.



Crib wall protection



Dead stout stakes

Site #6

The *Ethinesewin* monitoring of Site #6 is especially significant to the NCN Elders since this site offers a beach shore and remnants of a log cabin. Once again, the Elders expressed concern with the debris along the shore. This site had two previous visits by the NCN debris management crew.



Shoreline debris



Shoreline erosion

Harmful Alteration Destruction Disruption (HADD) Sites

Threepoint Lake

HADD Site 1

With the low water levels on Threepoint Lake the NCN debris management crew visited this site to assess and determine if any maintenance work was required. The site had no debris on the exposed shore so maintenance work was not required.

HADD Site 2

The NCN debris management crew visited this site and determined that no maintenance work was required due to the lack of debris.

Wapisu Lake

HADD Site 1

The NCN Debris Management Program's central focus during operations has been on Wapisu Lake. This HADD site was visited and it was determined that no debris maintenance work was required.

Wuskwatim Lake

HADD Site W-1

The *Ethinesewin* monitoring crew inspected this site and determined that further maintenance work was required due to debris accumulation. The crew began winching out the debris, cutting it into three foot lengths and later burning it in the fall once a burn permit was obtained.

Wuskwatim Access Road

Stream Crossings

The *Ethinesewin* monitoring tour of the stream crossings raised no concerns by the NCN Elders. The NCN Elders inspected the culverts, erosion protection measures and re-vegetation growth along the Wuskwatim

Access Road. The stream had good flow with no obstruction by beaver activities.

Ditches

A big concern raised by the NCN Elders was the alfalfa plant and how it has become so noticeable in the ditches. The NCN Elders observed that the alfalfa plant is killing the black spruce and jack pine seedlings. An attempt to pull out the plant proved to be too difficult since the roots are firmly embedded in the soil. The Elders are very concerned about how the alfalfa plant is spreading and that it might start to take over the forest stands.

Borrow Pits

The decommissioning and reclamation of the borrow pits were assessed and it was

determined by NCN Elders that the jack pine seedlings are doing extremely well.

Aquatic and Terrestrial

The *Ethinesewin* monitoring planning team instructed all who were involved in assessments and inspections to note any wildlife observed or detected during the field work. The sightings and locations animals were noted and recorded.

Medicinal Plants

Once the NCN Elders arrive at Wuskwatim Village, medicinal plants are requested for medicinal use. There is much harvesting and medicine is prepared and offered to the Elders while in Wuskwatim, as well as medicine to take home to family and friends.

Harvests include:

- *Napakasihk* – Balsam Fir
- *Wekis* – Ginger root
- *Pusakan* – Trembling Aspen (Poplar) fungus
- *Pi Ki meh* – Birch fungus
- Black Bear – Bear grease (to treat sores and scabs)

Wuskwatim Lake Boat Launch

The *Ethinesewin* monitoring of the Wuskwatim Lake boat launch noted a large amount of debris accumulation. The *Ethinesewin* monitoring crew's responsibility was to cut debris to three-foot lengths and pile at an identified staging site. Manitoba Hydro personnel used their bucket loader





and hauled debris to the waste management area. It was noted that the breakwater protection berm has eroded due to wind and wave action. The beacon on the berm is at risk of falling into the lake.

Burntwood River Downstream Boat Launch

Ayakwamisiwin means a person must be cautious of their actions where there is uncertainty. The Burntwood River downstream of the Wuskwatim Generating Station is more turbulent than previously observed. The *Ethinesewin* monitoring tour of NCN Elders noted that warning signs and route guides are provided at the site.

For recreational users possibly using the Wuskwatim Generating Station portage route in the downstream direction, the warning signs are very important. All travellers up and down river must be aware of operational downstream fluctuations and have the necessary skills and take the precautions required for lake travel. Communication should be made available for dangerous downstream travel.

Erosion

Adverse effects have been noticed all around the Wuskwatim Lake shores, the Burntwood River and the north/south brooks. There was noticeable fresh vegetation in the water, slumping of clay shores and loss of shoreline. Elders expressed concern that this be addressed by conducting shoreline clearing. The Elders believe this will ease the stress the shorelines are experiencing.

Ethinesewin Monitoring



BIOLOGICAL MONITORING

Terrestrial Effects Monitoring Plan

Avian Monitoring

Breeding bird monitoring during operations began in 2014 to evaluate whether breeding bird diversity or abundance are affected by proximity to the access road. The Environmental Impact Study (EIS) predicted that the Project may affect birds through habitat loss, alteration and fragmentation along the road right-of-way. As well, the potential for auditory and visual disturbances from passing vehicles and potential mortality as a result of vehicle collisions. Vehicle collision mortality was expected to be very low during operations because of low traffic volumes. The 2016 findings represent year two of a three-year study. Eighty-one bird species were identified in 2016, 36 more than in 2014. Common and abundant species in 2016 included the ruby-crowned kinglet, Nashville warbler, chipping sparrow and white-throated sparrow. Species of Conservation Concern detected in 2016 included the common nighthawk, olive-sided flycatcher and rusty blackbird. To date, there is no evidence that road disturbance had an adverse effect on bird diversity or abundance in either 2014 or 2016. The absence of an adverse access road effect was not surprising given the very low traffic volumes on the road since construction completion. Monitoring will continue in 2018.

Bird Collision Monitoring

The EIS predicted that there would be potential effects related to the risk of birds colliding with the transmission power lines and

a communication tower near the generating station. The predicted effects were expected to be small and not significant to local populations. Bird collision monitoring includes monitoring the frequency and types of birds colliding with the transmission lines and the communication tower during the fall migration period (September and October 2017).

Results from 2017 found a few occurrences of bird collisions (including a gray jay and two mallards) with the communications tower and wires on the Wuskwatim transmission line. No evidence of federally (*Species at Risk Act*) or provincially (*Manitoba Endangered Species and Ecosystems Act*) threatened or endangered bird species mortality was found. The results from 2017 were similar to the previous year and to collision rates reported in the scientific literature.

Beaver Lodge Survey

The EIS predicted potential Project related effects to beavers on Wuskwatim Lake due to water levels stabilized near the upper end of the current range and possible displacement of beavers downstream due to water level fluctuations. Effects were

predicted to be small and insignificant to the local beaver population.

Beaver lodge surveys were conducted in fall 2017 to assess the current distribution and relative abundance of beaver lodges both upstream and downstream of the generating station (GS). Comparisons were made between active lodge densities in 2017 and 2016 to three baseline years (2009, 2010 and 2011).

During the fall of 2017, 570 beaver lodges (active and inactive) were observed during the aerial survey with overall densities of 0.24 active lodges per kilometre of shoreline. Density of active lodges in areas upstream of the GS was double the density observed in the areas downstream of the GS.

In the entire Project study area, active lodge density was marginally greater in 2017 compared to active lodge densities in all baseline study years. The beaver population in the Project study area appeared stable, and near or at habitat carrying capacity, which is partly supported by a high ratio of inactive to active beaver lodges. Since the GS became operational, relatively stable





upstream water levels appeared to be favourable to beaver. Compared to the baseline, an increase in active lodge density in upstream areas was observed in 2017 in all water body types. In downstream areas, where water levels fluctuate more than in upstream areas since the GS became operational, a neutral effect on beaver lodge density was observed. Downstream active lodge density in 2017 remained within the range reported from 2009 to 2011 (pre-Project), except for streams, where active lodge density was much higher in 2017. The water level variations likely caused some beaver to move from the Burntwood River or Opegano Lake to streams where water levels can be controlled by beaver damming.

Invasive Plant Distribution and Abundance

Invasive plants are a concern because they have the potential to cause adverse effects on natural ecosystems. They can crowd out other plant species and, in extreme cases, change vegetation composition. They can also alter other ecosystem attributes such as soil conditions.

The EIS predicted that the Project was not expected to significantly increase the risk that invasive or other non-native plants would crowd out sensitive species or change terrestrial habitat composition.

As was the case in the previous three years of operation monitoring, the 2017 surveys found that non-native plants were widely distributed within the Project footprint.

Non-native plants occurred in 22 per cent of the surveyed roadside areas and nearly 33 per cent of the remaining areas surveyed. With one exception, no evidence was found indicating that any non-native plants were spreading into adjacent undisturbed native habitat. The exception was a few alfalfa plants found at one location. As expected, total non-native plant abundance was considerably lower than distribution, covering approximately two per cent of roadside areas and seven per cent of the remaining areas.

Monitoring in 2017 recorded 25 non-native plant species, which was three more than found during the 2016 surveys. The number of non-native species increased annually between 2011 and 2017. It appears that the increasing trend observed in past years

may have peaked in 2017. The possible peak in total non-native plant cover combined with increases in cover for desirable plant species, supports the expectation that regeneration of desirable species would eventually reduce non-native plant distribution and abundance over time.

An Invasive Species Control Plan is being developed with recommendations on measures to control the spread of invasive species.

AQUATIC EFFECTS MONITORING PROGRAM

As part of the Wuskwatim EIS, an Aquatic Effects Monitoring Plan (AEMP) was developed. The AEMP provides comprehensive monitoring of the aquatic environment during the second (2014), fourth (2016) and sixth (2018) year of the operations. The intent of these studies is to compare current conditions to those prior to construction of the GS and to the predictions in the Wuskwatim EIS.

Water Quality

The EIS predicted that operations could result in changes to water quality both upstream and downstream of the GS. Upstream, it was predicted there would be an increase in total suspended solids (TSS), metals, nutrients and dissolved oxygen fluctuations due to increased erosion, flooding and the conversion of intermittently wetted habitat to permanently wetted habitat. Downstream, it was predicted there would be a small increase in TSS due to upstream erosion and localized increases in nutrients and dissolved oxygen fluctuations along the north shore of Opegano Lake and backwater inlets due to water level

fluctuations and breakdown of peat.

Some changes in water quality were observed in 2016 relative to baseline conditions. Key changes observed in 2016 included increased TSS in the nearshore areas and outlet of Wuskwatim Lake, a decrease in dissolved oxygen and an increase in dissolved phosphorus along the north shore of Opegano Lake. The reduction in the average dissolved oxygen concentration and increase in dissolved phosphorus observed along the north shore of Opegano Lake likely indicates that peatland integrity may be impacted as predicted. Continued monitoring will be used to assess dissolved oxygen and dissolved phosphorus concentrations over time. Overall, data collected in 2016 indicates that changes were generally minimal and most water quality metrics remained within the ranges observed during the pre-Project studies.

Fish Community

The EIS predicted that operations would cause a small (i.e. not detectable) increase in the abundance of fish upstream of the GS due to greater access to spawning and feeding habitat, increased availability of food and unrestricted movements between the Wuskwatim forebay and Wuskwatim Lake. Downstream of the GS it was predicted that operations would cause a decrease in fish abundance due to the increased frequency of water level changes and a potential reduction in the number of fish moving downstream from Wuskwatim Lake. It was also predicted that erosion and sedimentation on Wuskwatim Lake might reduce the quality of Lake Whitefish and Cisco spawning habitat during the first five years after impoundment, while downstream

the increased frequency of water level changes could result in a small reduction in Lake Whitefish and Cisco spawning habitat. It was also predicted that, due to a post-Project increase in access to Wuskwatim Lake, there would be an increase in commercial and, to a lesser extent, domestic and recreational harvest of fish compared to pre-Project levels.

The fish community program targeted species that were identified as being of particular concern during the environmental assessment including Cisco, Lake Whitefish, Northern Pike and Walleye [collectively referred to as Valued Ecosystem Component (VEC) fish species]. Parameters measured during the monitoring represent overall species composition and abundance, as well as those related to the growth, condition, and health of the fish species.

Gill Netting Studies

Upstream fish community monitoring results to date indicate that the average catch per unit effort for Lake Whitefish, Northern Pike and Walleye has differed between sampling years (2014 and 2016) and to date has not shown a definitive increasing or decreasing trend. These results may be complicated by the initiation of a commercial fishery in Wuskwatim Lake in 2015. In addition, too little time has passed since GS operation to detect potential changes to fish abundance due to greater access to spawning and feeding habitat. Downstream of the GS there have been no adverse effects to fish populations observed to date.



August Mint



makwapkwatikwa
(Labrador tea)



akeminatikwa
(Balsam twigs)



oseemis
(Spruce buds)

Lake Whitefish and Cisco Larval Studies

To assess potential effects on Lake Whitefish and Cisco spawning habitat, larval fish were collected along the shorelines both upstream and downstream of the GS. Upstream results from 2016 indicate that larval numbers were similar to numbers from 2014 and pre-Project surveys and the distribution of larval fish continues to be widespread along shorelines. Some of the highest catches of larval fish in Wuskwatim Lake were collected off of eroding shorelines, suggesting that larvae continue to spawn successfully in these areas.

Downstream in the Burntwood River no Lake Whitefish or Cisco larvae were captured in 2016 while in 2014 small numbers of Lake Whitefish (3 larvae) and Cisco (3 larvae) were captured. Differences in the timing of sampling (which is dependent on ice conditions) may account for no larvae being captured in 2016. At Opegano Lake, the 2016 survey captured five Lake Whitefish larvae and one Cisco larva. In 2014, a small number of larvae of both species (3 of Cisco and 6 of Lake Whitefish) were captured. Based on the results to date, Lake Whitefish and Cisco continue to spawn downstream of the Wuskwatim GS in the Burntwood River (in 2014) and Opegano Lake (2014 and 2016) despite increases in the frequency and magnitude of water level fluctuations due to operations. Comparisons to pre-Project conditions are not possible as pre-Project surveys were not conducted in the Burntwood River or Opegano Lake due to environmental conditions.

Mercury in Fish

The EIS predicted increases in fish mercury as a result of flooding upstream of the Wuskwatim GS. Concentrations in Lake Whitefish, Northern Pike and Walleye in the forebay and Wuskwatim Lake were expected to increase by up to 0.04, 0.18 and 0.11 ppm, respectively, over pre-impoundment levels, reaching maximum levels of 0.14 ppm for whitefish, 0.39 ppm for Walleye and 0.56 ppm for pike. No measurable change in fish mercury levels were anticipated in Opegano Lake.

In 2016, mercury concentrations ranged from 0.08 ppm for Lake Whitefish to 0.38 ppm for Walleye and 0.41 ppm for Northern Pike. These concentrations, measured in the fifth summer after flooding, were generally similar to levels measured between 2000 and 2014. Thus, as of 2016, there is no indication of a measurable effect on fish mercury levels resulting from the Project.

RESOURCE USE MONITORING PLAN

It was predicted in the Wuskwatim EIS that increased access via the Wuskwatim access road during the operations phase would increase opportunities to harvest resources in the Wuskwatim Lake area by NCN residents. The Wuskwatim Resource Use Monitoring Program identified five monitoring components:

- 1) *Ethinsewin* (traditional knowledge, including the collective wisdom of Nisichawayasihk Nehethowuk, reported separately);
- 2) Harvest Calendar Study;
- 3) Country Foods Program;
- 4) Access road gate monitoring and Wuskwatim Lake; and,
- 5) Commercial harvest data.

Harvest Calendar Study

A third Harvest Calendar Study is in progress for 2017-18. The objectives of the study are to quantify traditional resource harvests, compare results from different times and to provide information to NCN to assist with decision-making about future resource harvesting and development activities. The current study is being done in the same way as the previous two studies: 2001-2002 (pre-Project) and 2013-2014 (post-Project), so harvests can be compared over time. Ninety-eight households are participating in the current study, which wraps up in June 2018.



Country Foods Program

The Country Foods Program (CFP) began in 1992 and employs a small staff to harvest wild fish and game within the Nelson House Resource Management Area (RMA) as well as purchases country foods from domestic harvesters and distributes the food to Elders and others within the community who are no longer able to harvest for themselves. Monitoring is intended to compare CFP harvests among the pre-construction, construction and operation periods and to document changes to the program's resource use activities and harvests. Distribution of foods through the CFP declined from the pre-Project period through construction to the post-Project period. Comparing the operation period from 2012-2017, in 2017 foods amounting to 2,214 kg (1,732 kg of fish, 398 kg of meat, 71 kg of waterfowl and 13 kg of berries and medicinal plants) were distributed to 1,020 residents of Nelson House surpassing any other year in the operation period.

Access Road

The Wuskwatim access road was identified in the EIS as having the potential to have the greatest effect on resource use of all resource use related impacts. In 2017, access into Wuskwatim Lake for the purposes of resource harvesting consisted of four to six commercial fishers and a group of approximately 10 traditional harvesters from Nelson House conducting the Ethinewin program.

Commercial Harvest

In 2017, Wuskwatim Lake was commercially

fished in June and July and then again in September and October by three licensed fishers and their helpers. The fish quota for Wuskwatim Lake is 18,200 kg of Lake Whitefish and Walleye. The 2017 catch totalled 7,335 kg of Lake Whitefish and Walleye. In addition to Lake Whitefish and Walleye, fishers marketed 279 kg of Northern Pike, 2,161 kg of Cisco, 11 kg of Yellow Perch and 3,095 kg of suckers. A total of 12,881 kg of fish was produced from Wuskwatim Lake in 2017. Fishers indicated they would fish in spring of 2018 and based on their production, they would decide whether to conduct fall fishing on Wuskwatim Lake or fish elsewhere in the NCN Resource Management Area (RMA).

PHYSICAL ENVIRONMENT MONITORING

The Physical Environment Monitoring Program (PEMP) is an adaptive program designed to measure various physical environment components that may experience some change from Wuskwatim Generating Station operations. Physical environment components addressed in the PEMP include climate, water regime, erosion, sediment transport and woody debris. The geographic area subject to PEMP monitoring includes a section of the Burntwood River upstream of the Wuskwatim Generating Station to the foot of Early Morning Rapids, including Wuskwatim Lake, and downstream to Birch Tree Lake.

Climate

To characterize climatic conditions in the Wuskwatim monitoring area, weather data from six meteorological stations within the

region were analyzed. Due to the quality and length of the climate record at Thompson, this site was selected as an indicator climate station. The 2017-18 annual average temperature recorded at Thompson was 0.6°C cooler than 1981 to 2010 normals and total annual precipitation was 42mm below normal.

Water Regime

Following record low flows throughout May and June, flows at the Notigi Control Structure remained well below normal until increases were initiated late in the summer season. Flows remained relatively constant near 960 cubic metres per second for the ice-covered portions of the 2017-18 period. Wuskwatim Lake operated within its licence limits of 233.75 metres to 234.0 metres.

Shoreline Erosion

Comparing 2017 to the previous year, annual bank recession rates at the lake monitoring sites revealed similar recession rates to those of 2016 (0.43 metres per year compared to 0.37 metres per year). Zero recession was measured at the riverine sites in 2017, compared to 0.35 metres the previous year

Lake Monitoring Sites

Of the 19 unaltered sites surveyed:

- Ten had negligible average bank recession rates since 2015 (less than 0.25 metres per year);
- One had moderate recession rates (0.25 to 0.99 metres per year); and
- Eight had recession rates greater than one metre per year.

River Monitoring Sites

Of the four unaltered riverbank erosion sites downstream of the station:

- Four had negligible average bank recession rates since 2015 (less than 0.25 metres per year);
- None had moderate recession rates (0.25 to 0.99 metres per year); and
- None had recession rates greater than one metre per year.

The post-Project increase in erosion rates at lake sites is consistent with a predicted increase due to the Project. It was also predicted that rates would decrease in the long term as shorelines gradually eroded back to bedrock

Sediment Transport

Sediment transport data was collected at 20 locations upstream and downstream of the generating station in the summer of 2017. Total suspended solids, turbidity data, and sediment grain size were measured at each site.

The average suspended-solids concentrations and turbidity levels observed were consistent with past observations. The results do not indicate any change in sediment-transport conditions at the monitoring sites.

SOCIO-ECONOMIC MONITORING

During construction a socio-economic monitoring program was in place. Construction employment, business and income outcomes were reported and social monitoring was undertaken, to follow up on the predictions of the environmental assessment. With the generating station now operating, socio-economic

construction monitoring has concluded. Operational employment will be tracked through the life of the Project.

During 2017-18, the majority of employees working at Wuskwatim were Mechanical and Electrical Technicians, Utility Workers and Operating Trainees. Other positions employed at Wuskwatim included Storekeepers, Maintenance Planners, Administrative Representatives

Components	Year 5	Year 6	Year 7
	2017/18	2018/19	2019/20
ETHINESEWIN MONITORING			
Traditional Knowledge Annual Tour	•	•	
BIOPHYSICAL MONITORING			
Aquatic			
Water Quality		•	
Fish Community		•	
Invertebrates		•	
Fish Movements	•	•	
Bioengineering Sites			
Mercury in Fish		•	
No Net Loss Plan	•	•	
Terrestrial			
Birds	•	•	
Plants	•	•	
Mammals	•	•	
Resource Use			
Harvest Calendar Study	•		
PHYSICAL MONITORING			
Climate	•	•	
Water Regime	•	•	
Erosion	•	•	
Sediment Transport	•	•	
SOCIO-ECONOMIC MONITORING			
Operations Employment	•	•	

Evaluation and Adaptive Management

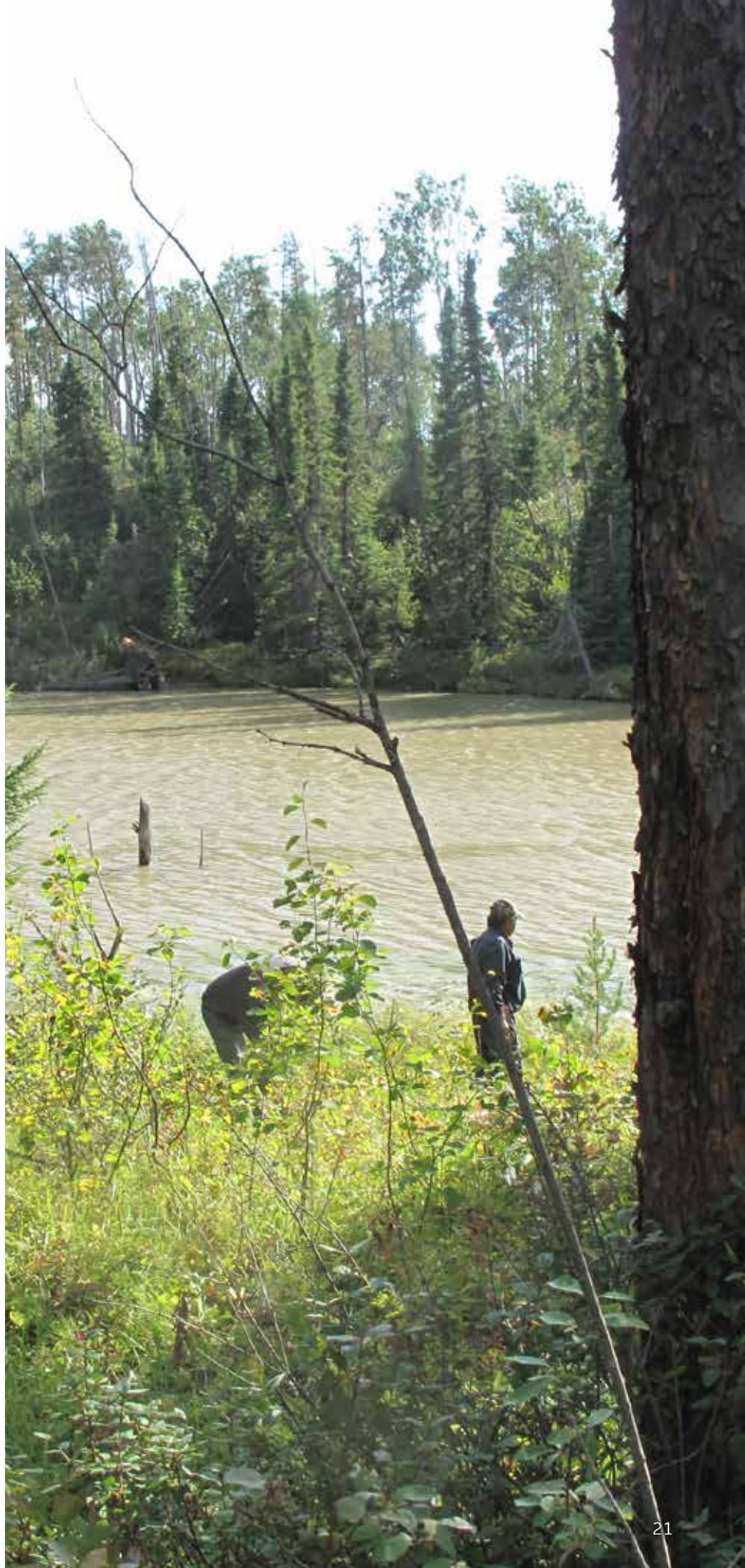
and supervisory staff. As at the end of March 2018, there were 15 full-time employees and four rotational trainees. Thirteen are Indigenous and includes three NCN members.

Indirect employment throughout the year included terrestrial and aquatic environmental monitoring during the 2017 field season including: semi-aquatic fur bearer mercury sampling, spring larval fish sampling, waterfowl aerial surveys, commercial fishery monitoring, fish movement monitoring, beaver lodge and dam surveys, Early Morning breeding bird surveys, acoustic monitoring, sediment trap and habitat truthing and monitoring of sensitive plants, benthic macroinvertebrates, water quality and fish community. Employment associated with this in 2017-18 resulted in over 1,000 hours of work or approximately 0.5 person-year of employment.

Since operations began in 2012 to the end of 2017-18, there has been almost 20,000 hours of indirect work or approximately 9.9 person-years of employment. A person-year of employment is defined as one full-time job for one year, which is typically about 2,000 hours of work.

PHASES OF OPERATIONAL MONITORING

With the transition to operations, a 15 year, two-phase monitoring plan was developed beginning with the 2013-14 fiscal year. Phase 1, ending in 2019-20, is mapped out in detail. Once Phase 1 findings are complete and analyzed, a Phase 2 plan and schedule will be developed to cover the subsequent seven-year period ending in 2025-26.



2017-2018 FINANCIAL REPORT

Statement of Loss

(for the year ended March 31)

(in millions of dollars)	2018	2017
Revenue	91	80
Expenses		
Operating and administrative	9	10
Finance expense	77	76
Depreciation	19	19
Amortization	6	6
Water rentals	5	5
	116	116
Net loss	(25)	(36)

Partnership Assets, Liabilities and Equity

(as of March 31)

(in millions of dollars)	2018	2017
Assets		
Property, plant and equipment	1234	1 250
Intangible assets	270	276
Current assets	21	13
	1 525	1 539
Liabilities and Equity		
Current liabilities	23	24
Long-term debt	1 405	1 393
Partners' capital	97	122
	1 525	1 539

Partners' Capital
(as of March 31, 2018)

	Units	%	(net) Capital (in millions of dollars)
General Partner ¹	32.967	0.01	–
Manitoba Hydro	220 843.700	66.99	65
Taskinigahp Power Corporation	108 790.000	33.00	32
	329 666.667	100.00	97

Operating, Financing and Investing Activities
(for the year ended March 31)

(in millions of dollars)	2018	2017
Operating Activities		
Cash receipts from customers	85	80
Cash paid to suppliers	(14)	(14)
Interest paid	(77)	(76)
Cash used in operating activities	(6)	(10)
Financing Activities		
Net proceeds of long-term debt	12	10
Cash provided by financing activities	12	10
Investing Activities		
Additions to property, plant and equipment	(4)	(2)
Other	(2)	2
Cash used in investing activities	(6)	–

¹ The business affairs of WPLP are carried out by a general partner (GP), 5022649 Manitoba Ltd., a wholly owned Manitoba Hydro subsidiary.



WUSKWATIM
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