Keeyask Generation Project

Terrestrial Effects Monitoring Plan

Provincially Very Rare and Rare Plants Monitoring Report

TEMP-2017-04

KEEYASK

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KEEYASK GENERATION PROJECT

TERRESTRIAL EFFECTS MONITORING PLAN

REPORT #TEMP-2017-04

PROVINCIALLY VERY RARE AND RARE PLANT MONITORING REPORT

Prepared for

Manitoba Hydro

By

ECOSTEM Ltd.

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SUMMARY

BACKGROUND

Construction of the Keeyask Generation Project (the Project) at Gull Rapids began in July 2014. The Keeyask Hydropower Limited Partnership (KHLP) was required to prepare a plan to monitor the effects of construction and operation of the generating station on the terrestrial environment. Monitoring results will help the KHLP, government regulators, members of local First Nation communities, and the general public understand how construction and operation of the generating station will affect the environment, and whether or not more needs to be done to reduce harmful effects.

This report describes the results of rare plant monitoring conducted during the third summer of Project construction.

WHY IS THE STUDY BEING DONE?

Terrestrial plants perform important functions in ecosystems. Some terrestrial plants are particularly important for ecological reasons (e.g., rare species) and/or social reasons (e.g., food and cultural importance to the Keeyask partner First Nations).

Provincially very rare to rare plant species are especially sensitive because it is possible that the loss of a few plant patches can affect the species in the region. The environmental assessment studies did not find any of these rare species in the areas that will be affected by the Project. However, there could still be patches that were not found because these species are hard to find since they are rare. The Provincially Very Rare and Rare Plant study is conducting additional searches for these rare species and, if any are found, it proposes appropriate mitigation.

What was done?

Project areas which had not been previously searched during the environmental assessment studies, and which had the highest potential for supporting rare plant species, were selected for field surveys. A botanist (plant specialist) did ground surveys for rare plants in these areas. Any rare plants seen during invasive plant surveys (a different monitoring study) were also recorded.

If rare plants are found during surveys, they are documented by taking pictures, recording the location with a GPS, flagging the location so it can be found again and taking other notes. The notes included information such as type of plant (species), number of plants, plant health and site conditions where the plant was found.

Rare plant surveys were done on July 5 and 6, 2016 in the future reservoir area (south of the Nelson River) and along the western portions of the south dyke.

What was found?

Provincially very rare to rare plants were not found during the 2016 rare plant surveys. No uncommon plants of importance to the Keeyask partner First Nations were seen during these surveys.

One elegant hawksbeard plant was found at one location in a borrow area near the start-up camp during the invasive plant monitoring surveys. Elegant hawksbeard is considered to be a very rare plant in Manitoba. Due to its rarity, disturbance of the elegant hawksbeard plant should be avoided if at all feasible. Manitoba Hydro was notified that a provincially very rare plant was found. Their site staff flagged a buffer around this single plant so that it could be avoided during ongoing construction activities.

A photo of the elegant hawksbeard plant found near the start-up camp

What does it mean?

Monitoring to date has verified the absence of provincially very rare and rare plants in areas to be cleared for the Project.

A provincially very rare plant, elegant hawksbeard, has been able to colonize a granular material borrow area. During EIS studies, this species was also found growing in disturbed, bare mineral sites at 10 locations along Highway PR 280.

What will be done next?

More rare plant searches will be done in summer 2017 (Year 4 of construction) in Project areas which still need to be cleared and were not been previously searched during the environmental assessment studies. Also, the marked elegant hawksbeard location will be visited to confirm that it has not been disturbed.

ACKNOWLEDGEMENTS

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Chiefs and Councils of Tataskweyak Cree Nation (TCN), War Lake First Nation (WLCN), York Factory First Nation (YFFN) and Fox Lake Cree Nation (FLCN) are gratefully acknowledged for their support of this program.

We would also like to thank North/South Consultants Inc., in particular Ron Bretecher, Shari Fournier and Mary Lang, for their guidance, logistical support and other resources that made these studies possible.

Custom Helicopters is gratefully acknowledged for providing transportation during fieldwork and Ben Hofer for coordinating the logistics.

STUDY TEAM

Dr. James Ehnes was the project manager and study designer.

Fieldwork was conducted by Brock Epp, Ryan Sheffield, Alanna Sutton and Alex Snitowski.

Data analysis and report writing were completed by Brock Epp and James Ehnes. Cartography was completed by Alex Snitowski.

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1.0 INTRODUCTION

Construction of the Keeyask Generation Project (the Project), a 695 megawatt hydroelectric generating station (GS) and associated facilities, began in July 2014. The Project is located at Gull Rapids on the lower Nelson River in northern Manitoba where Gull Lake flows into Stephens Lake, 35 km upstream of the existing Kettle GS.

The *Keeyask Generation Project Response to EIS Guidelines* (the EIS), completed in June 2012, provides a summary of predicted effects and planned mitigation for the Project. Technical supporting information for the terrestrial environment, including a description of the environmental setting, effects and mitigation, and a summary of proposed monitoring and follow-up programs is provided in the *Keeyask Generation Project Environmental Impact Statement Terrestrial Supporting Volume* (TE SV). The *Terrestrial Effects Monitoring Plan* (TEMP) was developed as part of the licensing process for the Project. Monitoring activities for various components of the terrestrial environment were described, including the focus of this report, rare plants, during the construction and operation phases.

Priority plants are defined as those plants that are particularly important for ecological and/or social reasons. Priority plants are the native plant species that are highly sensitive to Project features, make high contributions to ecosystem function and/or are of particular interest to the partner First Nations. A plant species is considered to be highly sensitive to human features if it is globally, nationally, provincially or regionally rare, near a range limit, has low reproductive capacity, depends on rare environmental conditions and/or depends on the natural disturbance regime (wildlife studies monitor plant species that are critical for the survival and/or reproduction of an animal species). The partner First Nations have noted a variety of plants of traditional importance that are present in the Project area, such as *wihkis* (sweet flag), and northern Labrador tea.

The Priority Plants and Their Habitats study (see KHLP 2015, Section 3.1.3) verifies actual Project effects on known priority plant locations and priority plant habitats, including those plants that are important to the partner First Nations. This study commences in the final year of construction.

Because it is possible that existing locations of provincially very rare to rare plant species were not found during EIS studies, the Provincially Very Rare and Rare Plant study (*i.e.*, this study) conducts additional searches and, in the unlikely event any of these species are found, prescribes appropriate mitigation. Uncommon plants that are of importance to the Keeyask partner First Nations are also documented.

The third year of monitoring for the Provincially Very Rare and Rare Plant study was conducted in 2016.

The objectives of the Provincially Very Rare and Rare Plant study are to:

- Determine if any provincially very rare or rare plants occur within the Project zone of influence; and,
- In the unlikely event that a provincially very rare or rare plant is discovered:
  - Confirm that any identified locations are well marked for avoidance where avoidance is practicable;
  - Develop a transplanting plan for provincially very rare plant locations where avoidance is not practicable; and,
  - Monitor the survival and vigor of all plants in any identified locations.

2.0 METHODS

Section 3.1.2 of the Terrestrial Effects Monitoring Plan (TEMP) details the methods for this study. The following summarizes the activities conducted during 2016.

The rare plant species included in this study were generally those which the Manitoba Conservation Data Centre has classified as being provincially very rare to rare. This included species with conservation concern ranks of S1, S1?, S1S2, S2 or S2?. The two exceptions were small pondweed and Robbins pondweed, since the EIS analysis concluded that, while these species are provincially rare, they are not rare in the Keeyask region. Uncommon plants of importance to the Keeyask partner First Nations recorded during field surveys included northern Labrador tea and *wihkis* (sweet flag).

Pre-clearing rare plant surveys were conducted in areas that met all of the following three criteria:

- Could be directly or indirectly affected by the Project (Study Zone 2);
- Had not been previously surveyed for rare plants; and,
- Had the highest potential for supporting provincially very rare to rare species.

Map 2-1 shows the general areas searched to date during the EIS, Keeyask Early Infrastructure Project and TEMP monitoring. This map also shows the locations observed to date for provincially very rare to rare plants that have not been shown to be more common in the Keeyask region (map does not include small pondweed, Robbin's pondweed and muskeg lousewort).

Project components surveyed in 2016 included the future reservoir area (south of the Nelson River) and the western portion of the south dyke (Map 2-2).

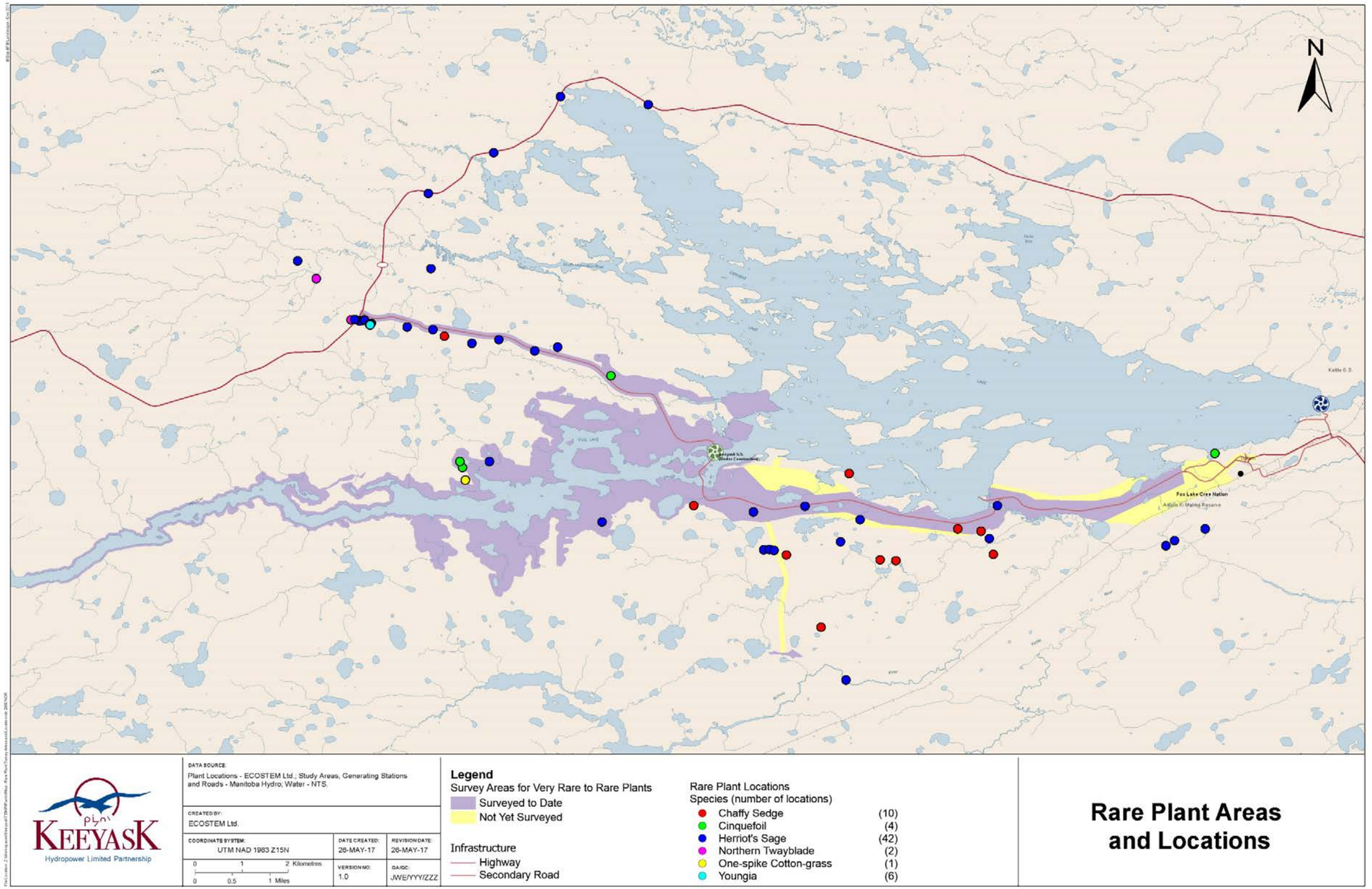
The stand-level habitat types with the highest potential for including these species were identified using the known habitat associations of the rare species that could potentially occur in Study Zone 2. Using the detailed terrestrial habitat map, habitat patches from these habitat types that were situated within Study Zone 2 and were not already surveyed during EIS or monitoring studies were selected for sampling. In the field, a botanist also flew over the general Project areas to be surveyed in 2016 in a helicopter, focusing on portions with the potential to support rare plant species. Any potential rare plant patches identified from the air were subsequently surveyed by foot.

The pre-identified habitat patches were sampled using a combination of systematic and meandering transects. Several transects were surveyed in each habitat patch. Depending on the size and shape of the habitat patch, one or two parallel transects ran lengthwise through the patch. In the field, the botanist added meandering surveys through areas that had the potential for harboring the target plant species.

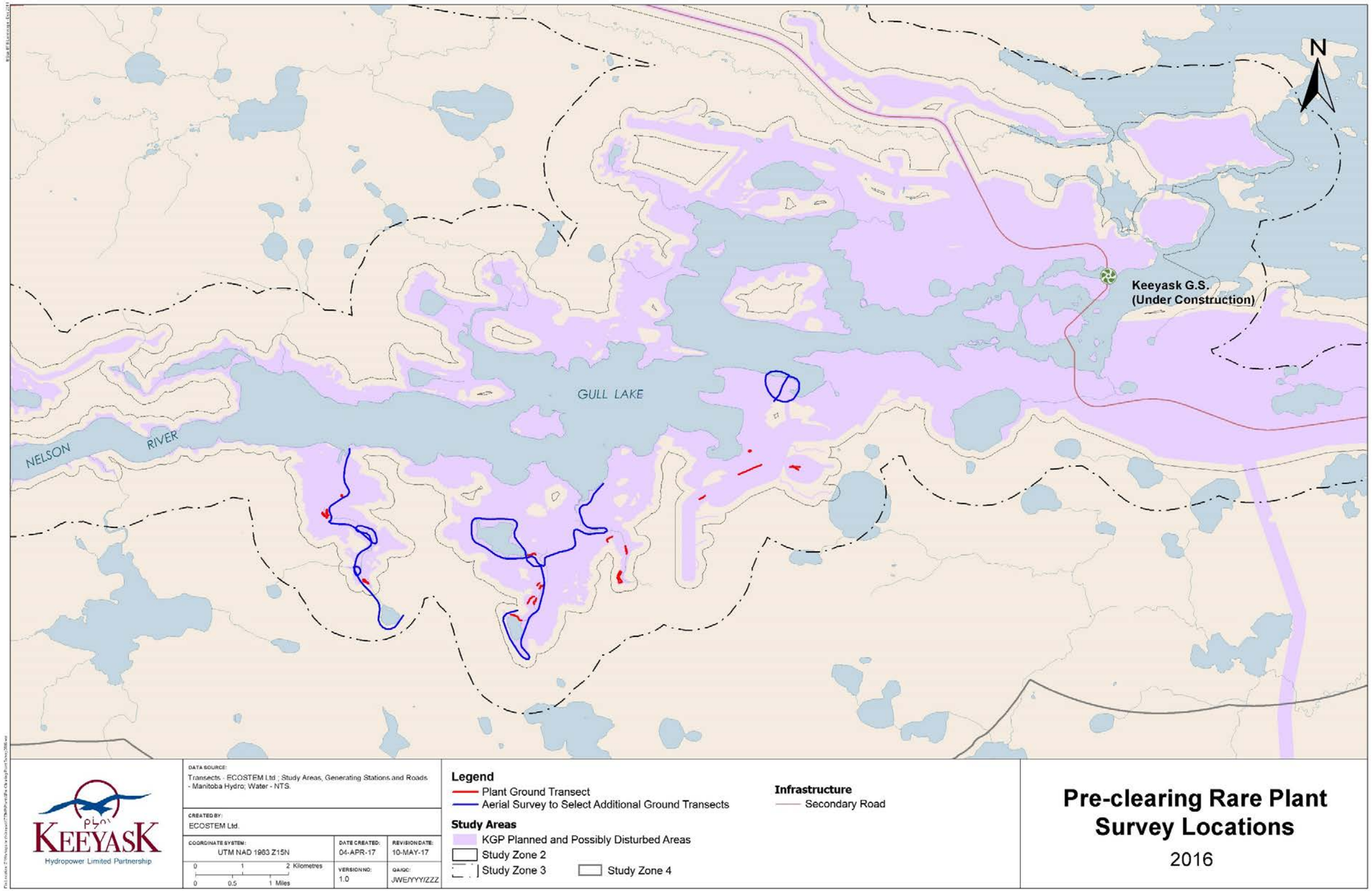
Additionally, rare plants were recorded if encountered incidentally during invasive plant surveys (TEMP, Section 3.2).

A botanist surveyed, by foot, approximately 5 km of pre-clearing rare plant transects on July 5 and 6, 2016 (Map 2-2). Botanists also conducted invasive plant surveys in approximately 1,156 ha of the Project footprint.

Patches of provincially very rare to rare plant species discovered during the surveys were documented with notes and geo-referenced photographs. Recorded information included attributes such as location, plant species, plant vigor, site conditions and surrounding habitat. Bright flagging tape is placed around the location to prevent disturbance. The locations and sizes of the plant patches were later mapped in a GIS (a “patch” could consist of one or a few individual plants). The locations of any provincially very rare or rare species were reported to Manitoba Hydro.



Map 2-1: Project areas searched to date for very rare to rare plants, and locations where these plants were observed



Map 2-2: Pre-clearing rare plant transects surveyed in 2016

3.0 RESULTS

3.1 PRE-CLEARING RARE PLANT SURVEYS

No provincially very rare to rare species were observed along any of the rare plant transects surveyed in 2016.. Uncommon plants of importance to the Keeyask partner First Nations were not observed during the 2016 field surveys.

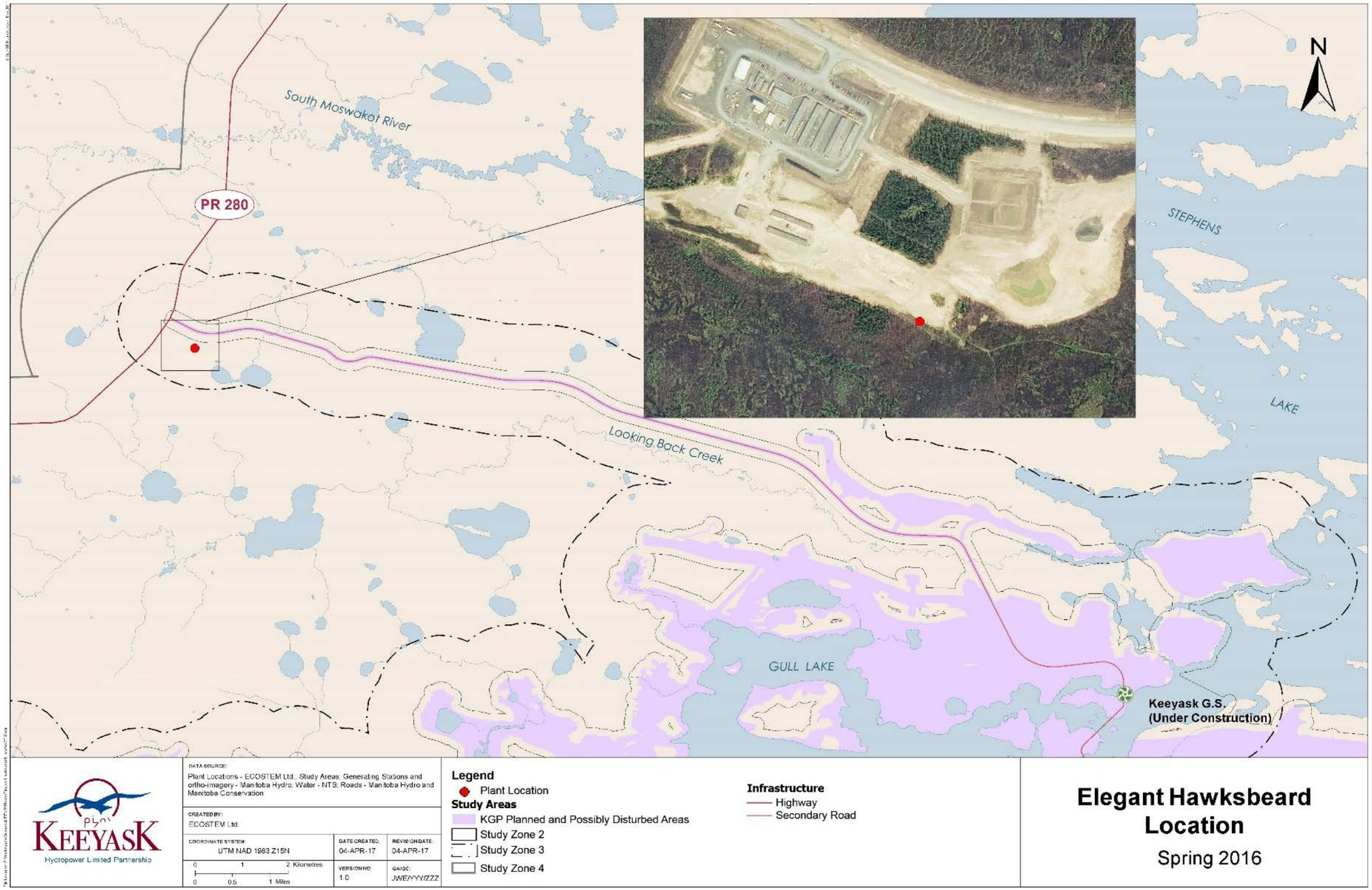
During the invasive plant monitoring surveys, a single elegant hawksbeard (*Crepis elegans* [also called *Askellia elegans*]; Photo 3-1) plant was found near the edge of the borrow area adjacent to the start-up camp (Map 3-1). Elegant hawksbeard is ranked as provincially very rare to rare (S1) by the CDC (Conservation Data Centre). Temporary flagging was placed at the location. Manitoba Hydro was notified, and their site staff later flagged a buffer around the location (Photo 3-2).

Photo 3-1: Elegant hawksbeard

Photo 3-2: Elegant hawksbeard plant surrounded by bright flagging tape to prevent disturbance

Of the S1 and S2 species potentially occurring in the Keeyask study area, muskeg lousewort (*Pedicularis macrodonta*; S2 species) was of particular interest as it had been observed in five locations within the planned Project footprint during the 2014 pre-clearing rare plant surveys (ECOSTEM 2015). In order to evaluate whether transplanting or some other mitigation measure was needed for these plants, locations outside of Study Zone 2 were surveyed in 2015 to determine if at least 20 patches of this species would remain undisturbed. Muskeg lousewort was found in 14 additional locations, increasing the total number in areas that would not be affected by the Project to 22 (ECOSTEM 2016).

Rare and invasive plant surveys in 2016 did not identify any additional muskeg lousewort locations.



Map 3-1: Elegant hawksbeard location observed during 2016 field surveys

4.0 SUMMARY AND CONCLUSIONS

4.1 PROVINCIALLY VERY RARE AND RARE PLANTS MONITORING

Priority plants are those plants that are particularly important for ecological and/or social reasons. Of special interest are plants that are provincially very rare to rare because the loss of a few plant patches can sometimes affect the regional population. For this reason, the Project includes mitigation for these species. The Provincially Very Rare and Rare Plant study conducts additional pre-clearing searches for these species in areas that may be directly or indirectly affected by the Project (Study Zone 2), and that were not previously surveyed during the assessment process. In the event that very rare or rare plant locations are identified, appropriate mitigation and follow-up monitoring are recommended.

In 2016, a botanist conducted rare plant searches along approximately 5 km of transects in the future reservoir area (south of the Nelson River) and along the western portion of the south dyke. The purpose of these surveys was to further determine if there were any provincially very rare to rare plant species in these areas. Uncommon plants of importance to the Keeyask partner First Nations were also recorded during these surveys. Botanists also watched out for rare plants while conducting invasive plant monitoring in approximately 1,156 ha of the Project footprint.

No provincially very rare or provincially rare plants were found during the 2016 rare plant surveys. No uncommon plants of importance to the Keeyask partner First Nations were seen during these surveys.

One rare plant species, elegant hawksbeard (*Crepis elegans*; ranked S1), was found incidentally during the invasive plant surveys. A single elegant hawksbeard plant was observed near the start-up camp, growing in a sandy area excavated by the Project for borrow material. Manitoba Hydro was notified, and their site staff flagged an avoidance buffer around this location. It is recommended that the marked elegant hawksbeard location be avoided during ongoing construction activities.

During EIS studies, elegant hawksbeard was found growing in disturbed, bare mineral sites at 10 locations along Highway PR 280. At the Wuskwatim Generation Project, monitoring has found it to be colonizing bare gravel and mineral substrates in borrow areas.

4.2 NEXT STEPS

Pre-clearing rare plant surveys will continue in 2017. The elegant hawksbeard location that was marked for avoidance will be visited to confirm it has been avoided. No changes to field methods are anticipated.

5.0 LITERATURE CITED

ECOSTEM 2015. Keeyask Generation Project: 2014 pre-clearing rare plant surveys: Annual report 2014-2015.

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