Keeyask Generation Project
Terrestrial Effects Monitoring Plan

Beaver Habitat Effects and Mortality Monitoring Report
TEMP-2020-08

2019 -2020

KEEYASK GENERATION PROJECT

TERRRESTRIAL EFFECTS MONITORING PLAN

REPORT #TEMP-2020-08

BEAVER HABITAT EFFECTS AND MORTALITY 2019

Prepared for

Manitoba Hydro

By

Wildlife Resource Consulting Services MB, Inc.

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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 more needs to be done to reduce harmful effects.

Beavers are common in the Keeyask region and are an important furbearer species, having cultural, economic, and ecological value. Beavers do not typically inhabit the main channel of the Nelson River due to strong currents, however the nearby creeks, ponds, and lakes provide good habitat.

This report describes the results of beaver habitat effects monitoring conducted during the fall of 2019, the sixth year of Project construction. Monitoring occurred along the shorelines of waterbodies in Study Zone 4 (see map below).

Active (left photo) and inactive (right photo) beaver lodges in the Keeyask region

Why is the study being done?

Predicted Project effects on beavers included habitat loss or change, disturbance from noise, lights and traffic (sensory disturbance), and increased mortality. Reservoir impoundment will result in a permanent loss of beaver habitat as creeks, tributaries, and small ponds and lakes are flooded. As reservoir impoundment will flood their lodges, beavers have been humanely trapped out of affected areas by the local registered trapper to prevent the potential for starvation and drowning deaths after flooding. The objective of the study is to monitor the regional beaver population to verify predicted Project effects.

What was done?

Aerial surveys of the study area were conducted from September 30 to October 3, 2019 to determine the number and location of active and inactive beaver lodges in the future reservoir area and Study Zone 4. Characteristics of some beaver lodges observed during the aerial survey were also measured to establish a regional baseline and to explore whether the Project is affecting beaver lodges during construction and operation. Lodge characteristics in Study Zones 1 through 3 were compared with those in Study Zones 4 and 5 (see map below).

Beaver trapping in the future reservoir area continued in the winter of 2019/20 and various body measurements were used to estimate their age. Lodges were considered successfully trapped out if two adults (i.e., a breeding pair) were removed from a lodge.

Shorelines Surveyed
for Beaver Lodges
2019
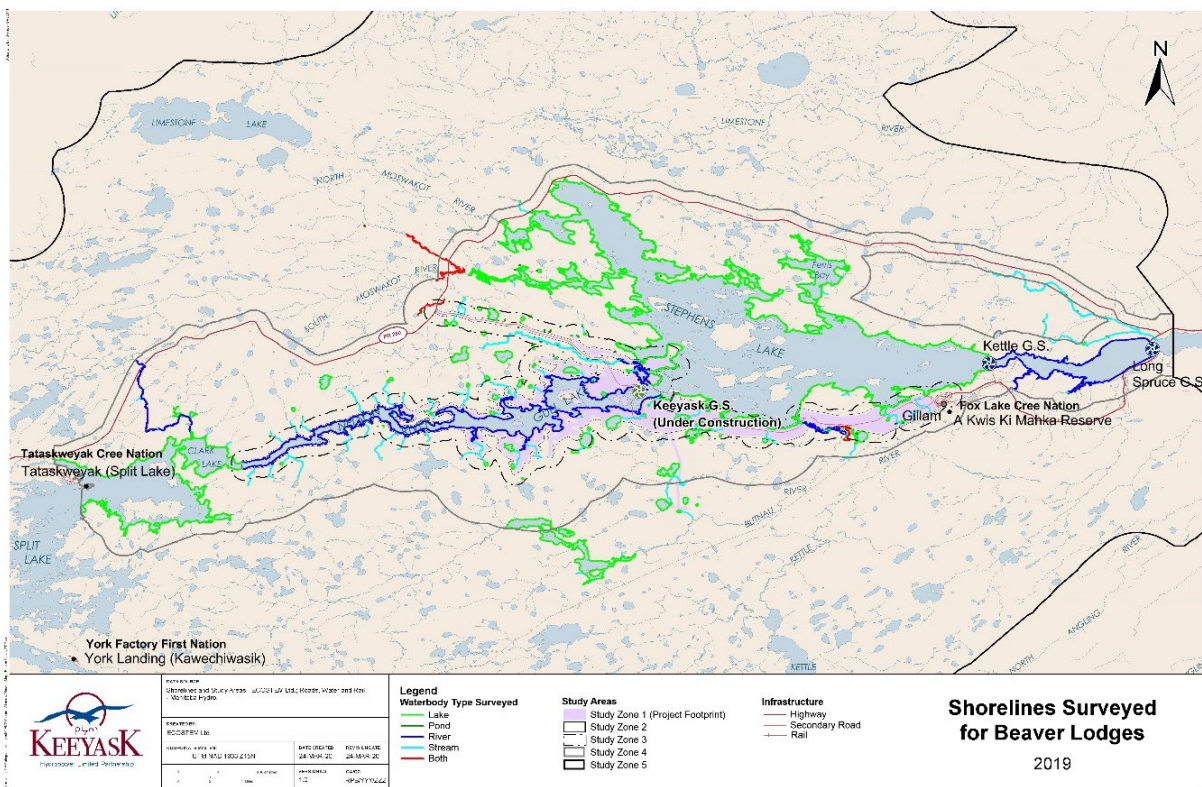
What was found?

During the 2019 aerial survey a total of 560 beaver lodges, including 507 standard lodges and 53 bank burrows, were observed. Of these, 154 standard lodges and 20 bank burrows were active. The number of active lodges in the Project footprint (the area affected by Project development, Study Zone 1) declined during construction, from 34 in 2016 to 7 in 2019. The decrease was caused by the Project's trapping program, which removed 19 beavers from eight lodges in winter 2016/2017, 18 beavers from eight lodges in winter 2017/2018, 6 beavers from four lodges in 2018/19, and 2 beavers from one lodge in 2019/20. Active lodge density remained consistent in the Keeyask region (Study Zone 4) from the pre-construction to construction period (2001-2019). No significant differences in lodge characteristics were observed in Study Zones 1–3 and 4–5.

Beaver Lodges

Gull Lake
Area, 2019
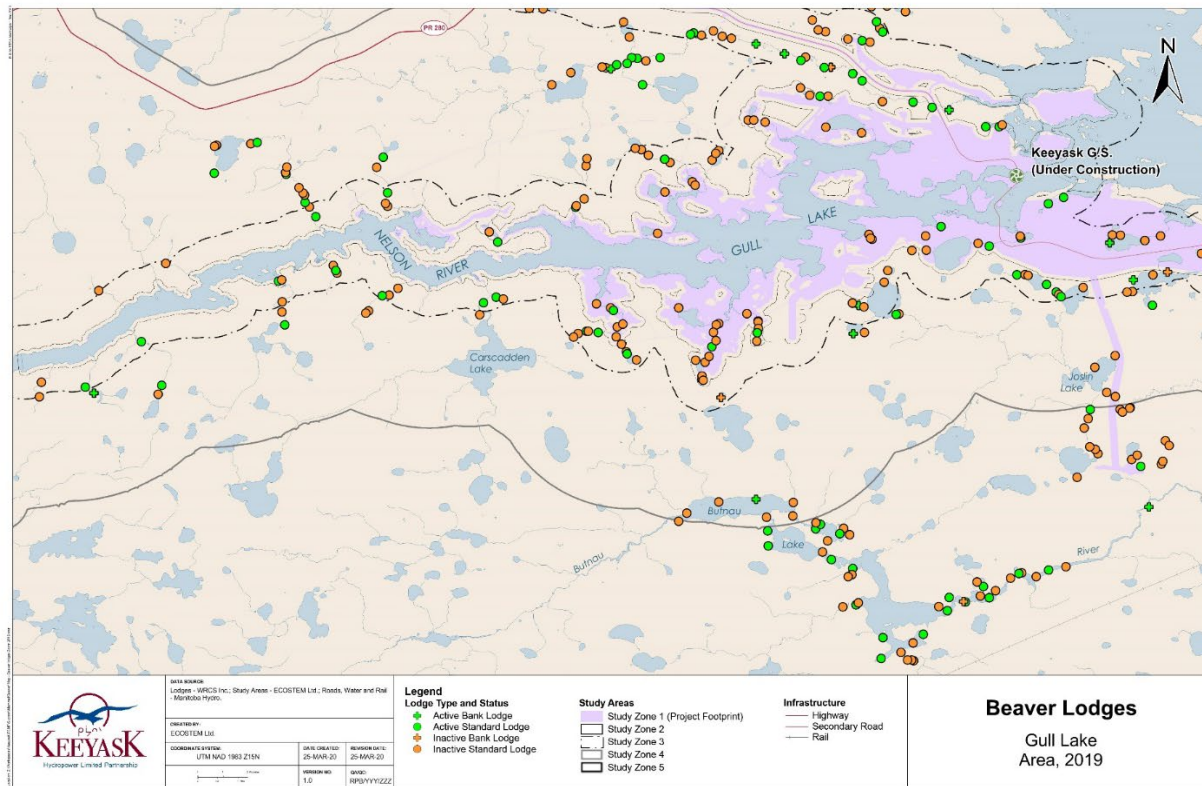
What does it mean?

The density of beaver lodges in the Keeyask region has generally remained unchanged since before Project construction began and no substantial Project-related effects on the regional population have been identified, despite the trapping of beavers from the future reservoir area. The small number of adults trapped in 2018/19 and 2019/20 compared to previous years suggests that active trapping has been successful at reducing the breeding population of beavers in the future reservoir area.

No significant differences in lodge characteristics were observed between Study Zones 1–3 and 4–5. This suggests that in locations where characteristics of active lodges were measured, availability of food and lodge construction/maintenance materials was adequate such that differences in lodge and cache size were not detectable.

What will be done next?

Construction monitoring for beaver habitat effects has now concluded. A multi-year monitoring synthesis report will provide an integrated evaluation of Project construction effects on beaver numbers and location and the availability of suitable habitat using results from this monitoring study.

STUDY TEAM

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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, beaver (*Castor canadensis*), during the construction phase.

The beaver is a medium-sized aquatic furbearer that inhabits waterbodies in forested areas. Beavers are common in the Keeyask region (Study Zone 4) and are an important furbearer species, having cultural, economic, and ecological value (Keeyask Hydropower Limited Partnership [KHLP] 2012). By building dams and through their feeding activities, beavers alter aquatic ecosystems, increase the diversity of species and habitat on a landscape, and create habitat for other species that use wetlands (e.g., Naiman et al. 1988; Wright et al. 2002). Beavers do not typically inhabit the main channel of the Nelson River due to strong currents (KHLP 2012). However, the nearby creeks, ponds, and lakes provide suitable habitat.

Predicted Project effects on beavers included habitat loss or alteration, sensory disturbance, and increased mortality. Reservoir impoundment will result in a permanent loss of beaver habitat as creeks, tributaries, and small ponds and lakes are flooded. Long-term habitat loss is also associated with shoreline erosion and peatland disintegration. Water level fluctuations in the future reservoir will make any potential habitat along the shorelines unsuitable. However, the formation of floating peatlands in the reservoir could attract beavers to these habitats and temporarily increase their abundance in the reservoir. Once these peatlands break down, beavers will most likely abandon the reservoir and seek habitat in the surrounding area. As reservoir impoundment will flood their lodges, beavers have been humanely trapped out of affected areas by the registered trapper to prevent prolonged exposure and displacement deaths.

2.0   METHODS

2.1   AERIAL SURVEYS

Aerial surveys for construction-phase beaver monitoring began in 2016 and continued in 2017. The survey was expanded in 2018 and repeated from September 30 to October 3, 2019 along shorelines in waterbodies and waterways in the Keeyask region (Study Zone 4; Map 1). The density of beaver lodges along the survey route (lodges/km) was compared among study zones to explore potential Project effects and the effectiveness of the trapping program in the future reservoir area. Direct Project effects (habitat loss and alteration) were anticipated in Study Zone 1 (the Project footprint), while direct and indirect (e.g., sensory disturbance) Project effects were expected in Study Zones 2 and 3. Study Zone 4 was the regional reference area for the beaver population.

Survey routes were flown in a Bell 206 Jet Ranger helicopter along preselected waterbodies and watercourses, at a speed of approximately 100 km/hr and approximately 50 m above ground level. Observers were stationed on the left side of the helicopter. Beaver lodge locations were recorded with a handheld Global Positioning System (GPS) unit and photographed. The presence of food caches and whether lodges were active or inactive was recorded. Beaver lodges were classified as either standard lodges or bank burrows. Standard lodges (Photo 1, Photo 2) are commonly freestanding conical mounds of branches and logs plastered with mud with one or more underwater openings to tunnels that meet at a cavity in the center of the mound (Novak 1999). Bank burrows (Photo 3) are dug into shoreline banks where the water is deep or fast, are often covered in sticks and mud, and are occasionally connected to an extensive underground network of tunnels (Novak 1999). Active beaver lodges were characterized by signs of lodge maintenance (fresh mud and timber), nearby recent foraging, and the presence and condition of a food cache (see Photo 1). Lodges lacking these characteristics were considered inactive (see Photo 2).

Waterbodies in Study Zone 4 were classified by size with a hybrid dataset created from shorelines produced by ECOSTEM Ltd. for the Nelson River and a few nearby lakes and with the National Topographic Data Base (NTDB) 1:50,000 dataset for the remainder of the study zone. Waterbodies larger than 0.5 km^2 were classified as lakes and those smaller than 0.5 km^2 were categorized as ponds. Watercourses appearing as dual polyline sections on a 1:50,000 topographic map were classified as rivers and those appearing as single polyline sections were classified as creeks. Some watercourses were temporarily categorized as 'both' (river and stream). Not all waterbodies and watercourses outside Study Zone 4 have been classified to type.
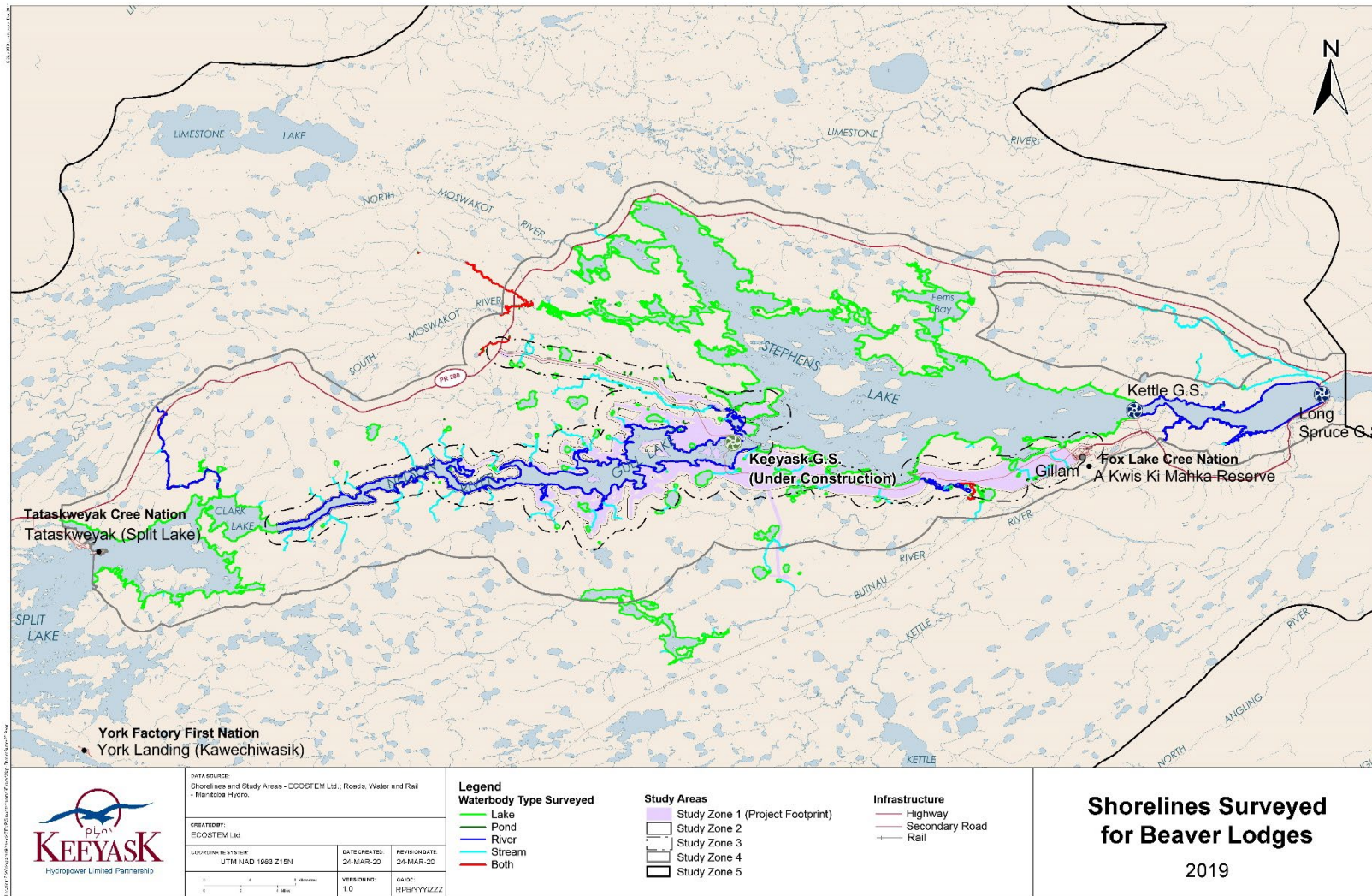
Map 1: Shorelines Surveyed for Beaver Lodges, 2019

Photo 1:   Active Standard Beaver Lodge with Large Food Cache

Photo 2:   Inactive Standard Beaver Lodge

Photo 3:   Active Beaver Bank Burrow

A complete census of beaver lodges was conducted along shorelines within Study Zone 3, while a sample of waterbodies and watercourses was surveyed in Study Zone 4. In Study Zones 1–4 a total of 1,532 km of shoreline was surveyed (Table 1). When Study Zone 5, a small portion of which was also surveyed, was included, 1,632 km of shoreline was surveyed in all.

Table 1:   Length of Shorelines Surveyed for Beaver Lodges, 2019

Study Zone	Length (km)
1 (Project Footprint)	235.1
2	72.9
3	220.6
4	1,003.5
1–4 Total	*1,532.1*
5	100.1
1–5 Total	*1,632.2*

2.2   BEAVER LODGE CHARACTERISTICS

A random sample of active and inactive standard lodges and bank burrows observed during the aerial survey was selected for measurement of lodge characteristics (Map 2). Lodges were visited from October 3 to 6, 2019. The length, width, and height of the above-water portion of each lodge was measured with a measuring tape. Water depth at the lodges was measured from the surface of the water to the point at which the lodge met the bottom of the waterbody. To calculate total

lodge height, water depth was added to the above-water height of each lodge. Size measurements taken for beaver lodges were approximate due to their irregular shape. Lodge volume for standard lodges was based on a cubic structure by multiplying the length, width, and total height measurements, which is not a precise measure of actual lodge size but allowed relative comparisons among lodges. The volume of bank burrows is difficult to determine due to their subterranean construction and was not calculated.

Characteristics of the surrounding area were also recorded at beaver lodges. The width and length of the portion of food caches visible above the water were estimated from their associated lodges. The depth of food caches could not be measured from the lodges. At bank burrows, shoreline slope was measured in degrees with a clinometer from the edge of the water up the bank. Shoreline slope was not assessed at standard lodges as they were often far from shore. For standard lodges, the distance to nearest bank was measured from the shoreline over open water to the nearest portion of the beaver lodge. Bank burrows were, by definition, on the banks of shorelines. The general height of nearby trees was estimated, as was the distance to the nearest standing food source. To explore whether the Project affected beaver lodges during construction, lodge characteristics in Study Zones 1–3 were compared with lodges in Study Zones 4–5 using a Student's t-test. Statistical significance was determined at the $\alpha = 0.05$ level.
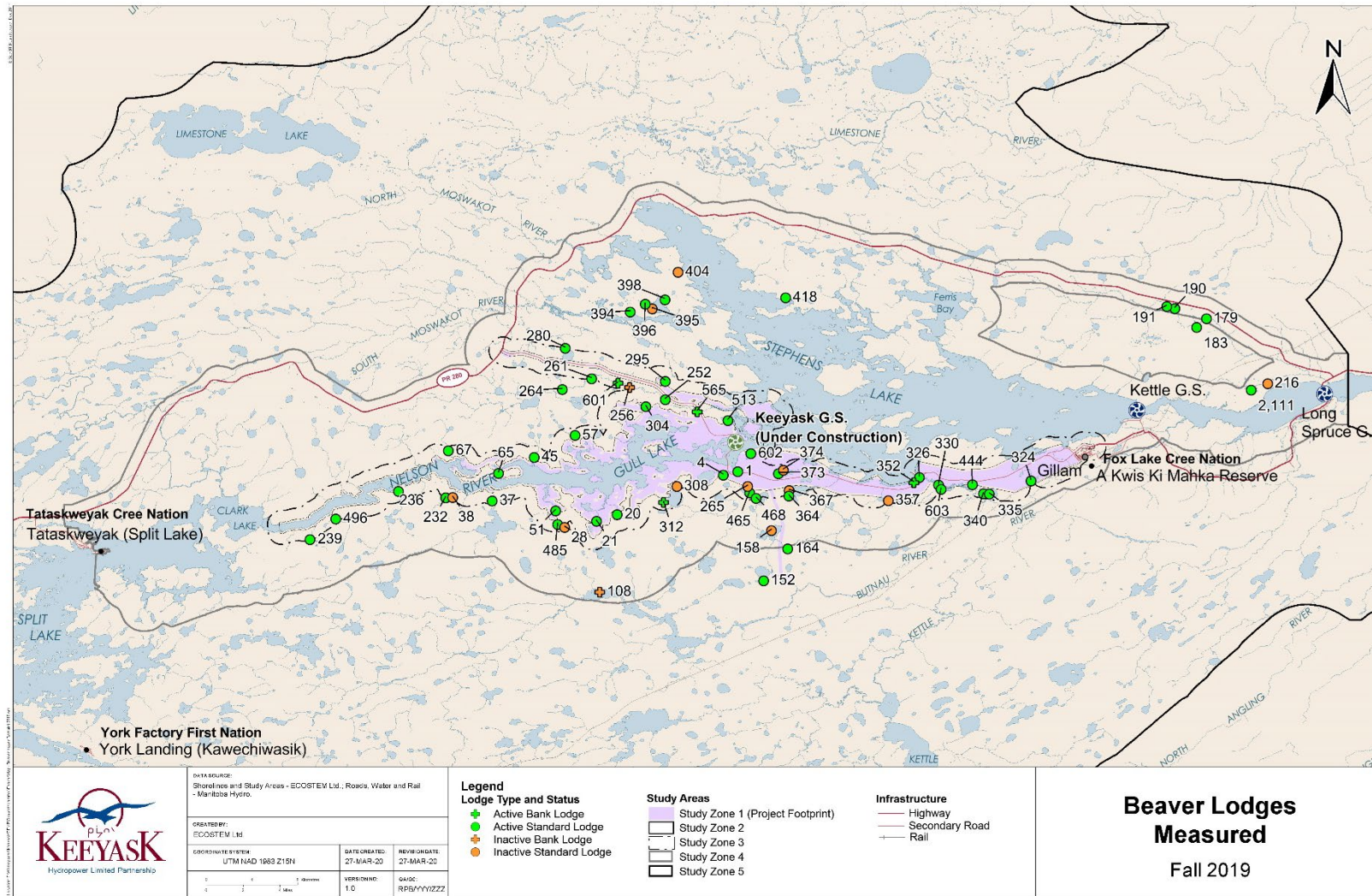
Map 2:   Beaver Lodges Measured, Fall 2019

2.3   BEAVER REMOVALS AND BODY MEASUREMENTS

During the winter of 2019/20, the licensed trapper's efforts were focused on the two remaining active beaver lodges in the future reservoir area, within Study Zone 1. Trapping activities occurred from January 4 to February 8, 2020. All traps were set in accordance with provincial humane trapping standards (Government of Manitoba 2018). Although all beavers were intended to be removed from lodges, if two adults (a breeding pair) are removed from a lodge, the lodge will likely be abandoned after the dispersal of subadults. The family can also disband if the female is removed (Beer 1955; Miller 1960). A lodge was considered successfully trapped out if two adults were removed from it.

For each beaver trapped, weight (kg) was measured using a spring scale and body length, skull width, and skull length (cm) were measured using a fabric measuring tape. To separate beavers into juveniles and adults, individuals that weighed 14 kg or more were considered potential adults (Flemming 1977). Although skull width and length have both been shown to be reliable predictors of beaver age, skull length is superior (Rosell et al. 2010). Beavers with skulls longer than 13 cm (Rosell et al. 2010) were considered potential adults. Beavers were categorized as adults only when both body length and skull length measurements met these criteria. All other beavers were considered juveniles.

3.0   RESULTS

3.1   AERIAL SURVEY

A total of 560 beaver lodges, including 507 standard lodges and 53 bank burrows were observed during the fall 2019 aerial survey. One hundred and fifty-four standard lodges were active and 353 were inactive. Thirty-three bank burrows were active and 20 were inactive. All beaver lodges observed during the fall aerial survey are shown in Map 4 to Map 6 and detailed in Appendix 1, Table 1-1.

The density of active beaver lodges was 0.11 lodges/km and of inactive lodges was 0.23 lodges/km in Study Zones 1–5 in 2019. The density of all active and inactive beaver lodges was similar in most study zones from 2018 to 2019 (Table 2). Relatively large increases in active lodge density (100%) and in inactive lodge density (135%) were observed in Study Zones 2 and 3, respectively. Three more active lodges were observed in Study Zone 1 in 2019 than in 2018. Two of these were reported as inactive lodges in 2018 and were trapped out in the winter of 2019/20 (see Section 3.3).

Table 2:   Number and Density of Beaver Lodges in Study Zones 1–5, 2018 and 2019

Study Zone	Lodge Status	2018		2019	
		Number of Lodges	Density (lodges/km)	Number of Lodges	Density (lodges/km)
1	Active	4	0.02	7	0.03
	Inactive	28	0.12	42	0.18
2	Active	4	0.05	7	0.10
	Inactive	6	0.08	13	0.18
3	Active	47	0.21	50	0.23
	Inactive	43	0.19	100	0.45
4	Active	59	0.06	85	0.08
	Inactive	60	0.06	149	0.15
1–4	*Active*	*114*	*0.07*	*149*	*0.10*
	Inactive	*137*	*0.09*	*304*	*0.20*
5	Active	29	0.29	38	0.38
	Inactive	35	0.35	69	0.69
Grand Total	*Active*	*143*	*0.09*	*187*	*0.11*
	Inactive	*172*	*0.11*	*373*	*0.23*
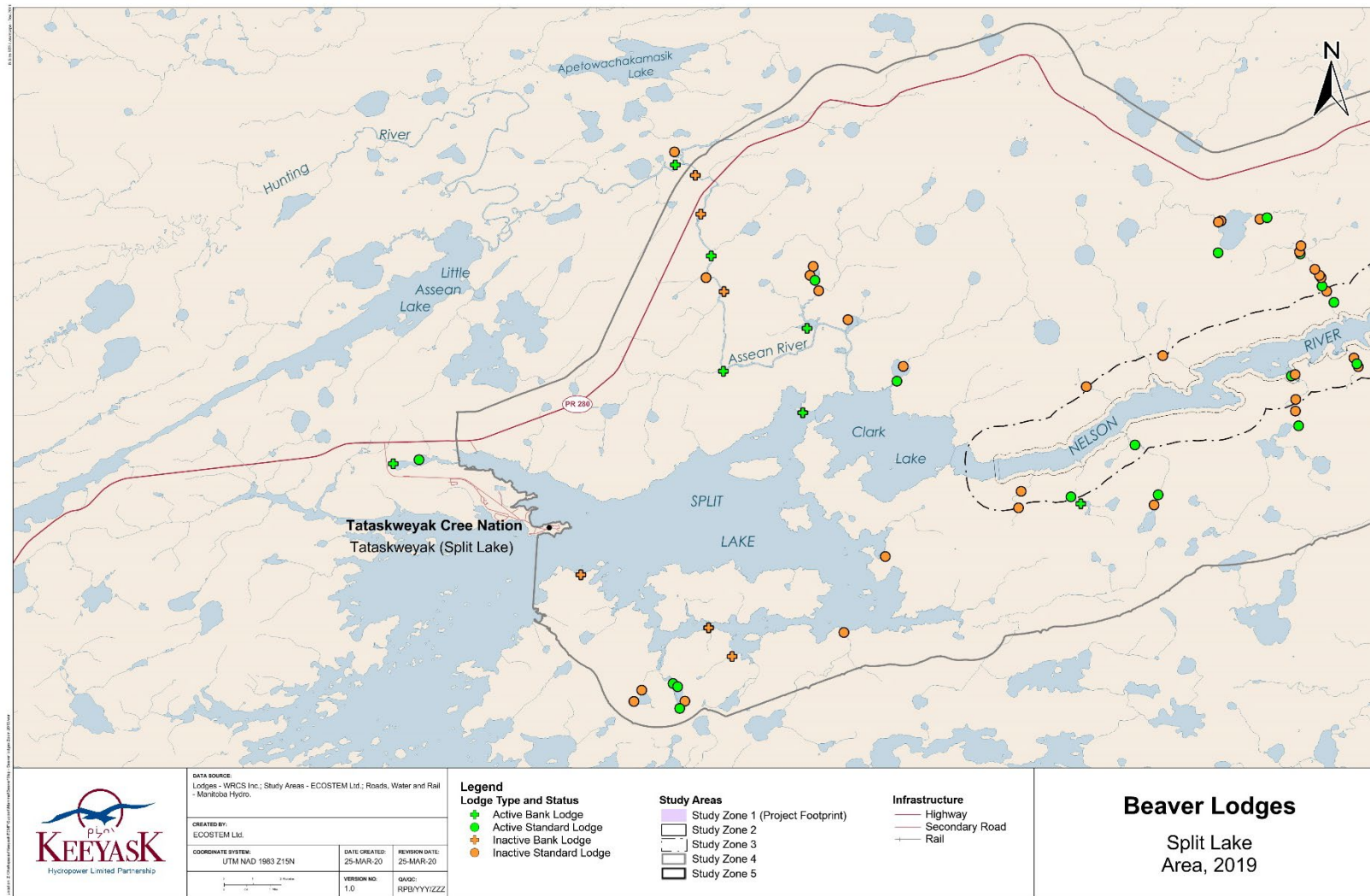
Map 3:   Locations of Beaver Lodges in the Split Lake Area, 2019
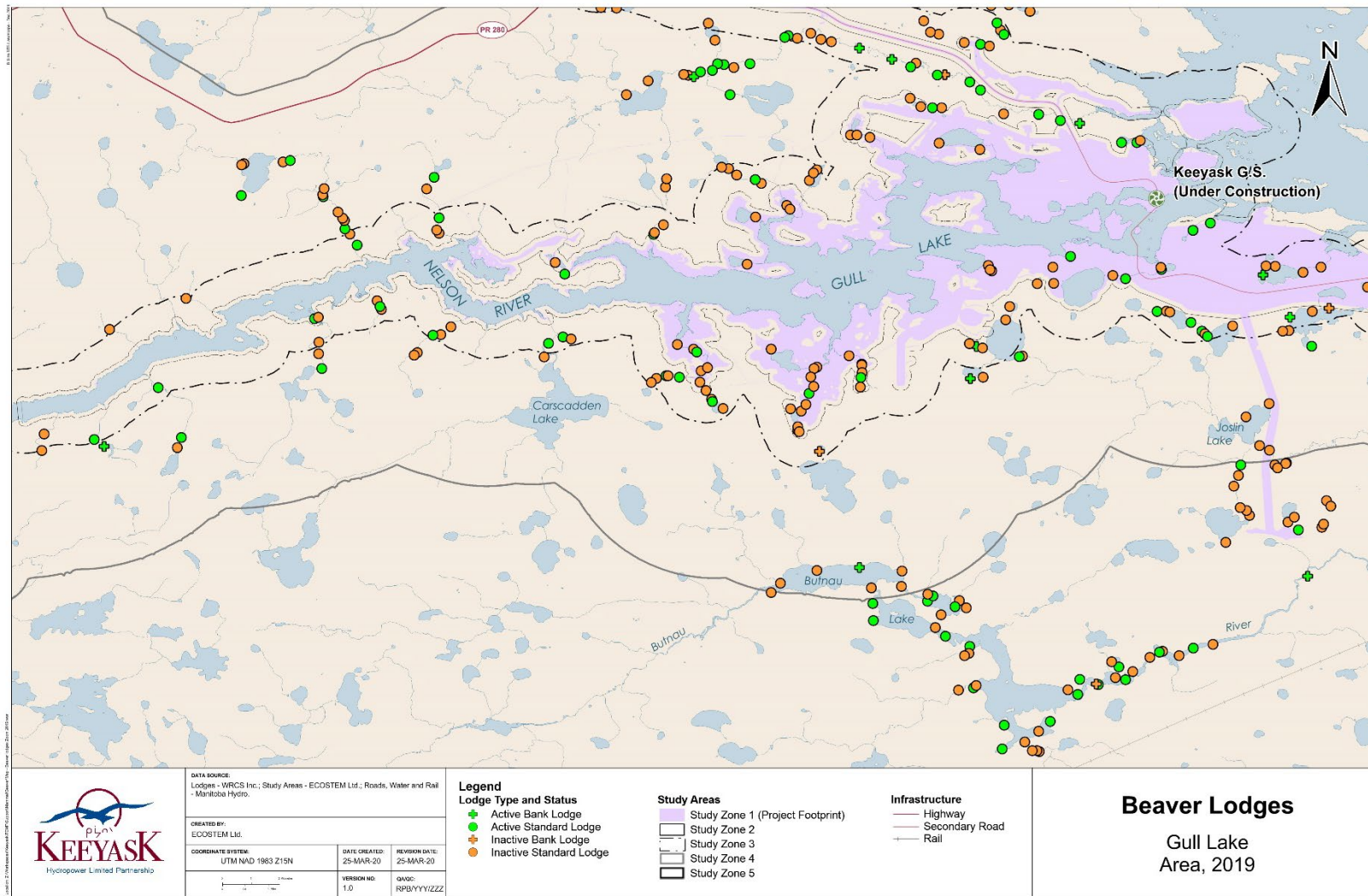
Map 4:   Locations of Beaver Lodges in the Gull Lake Area, 2019
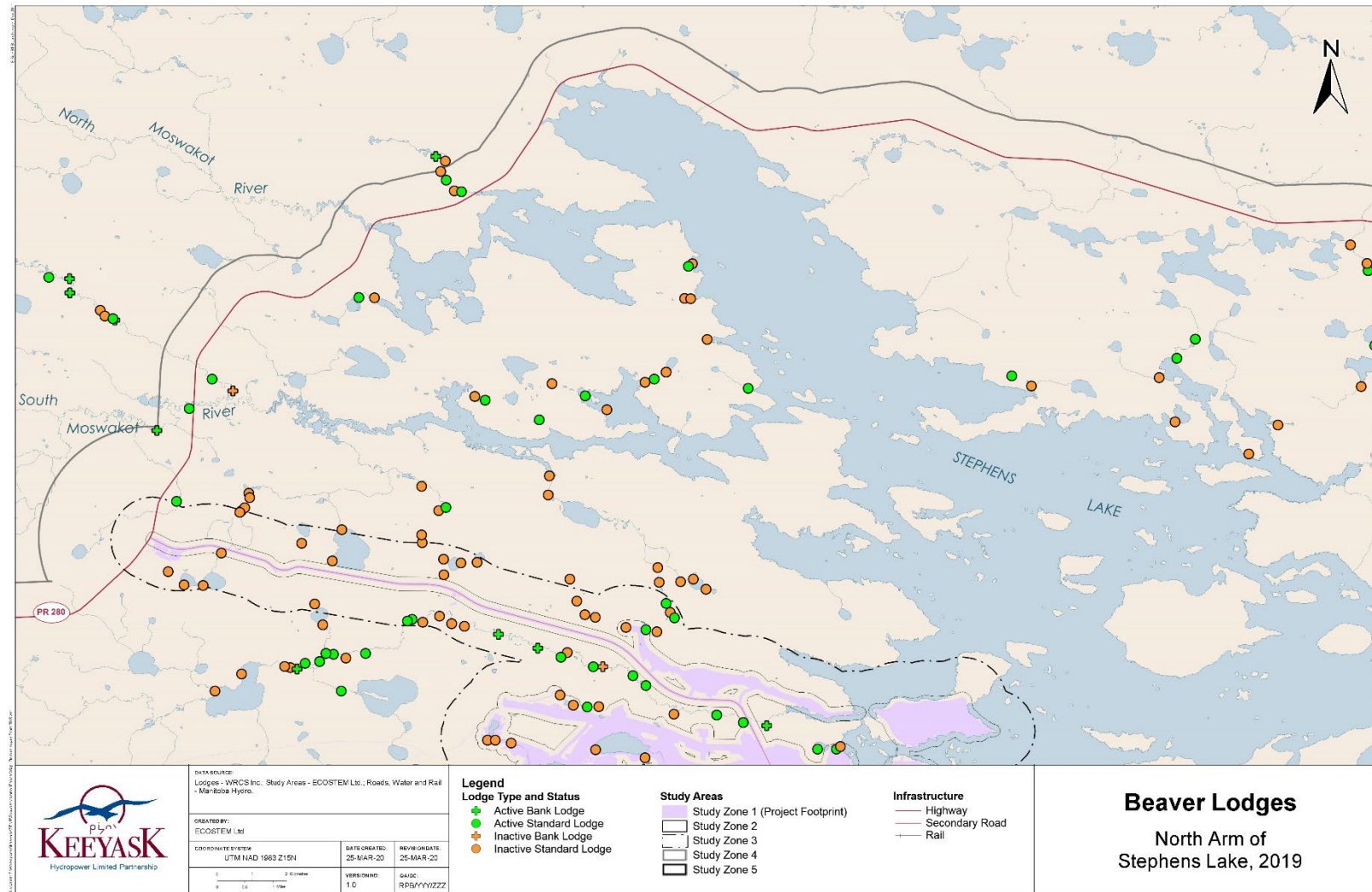
Map 5:   Locations of Beaver Lodges in the North Arm of Stephens Lake, 2019
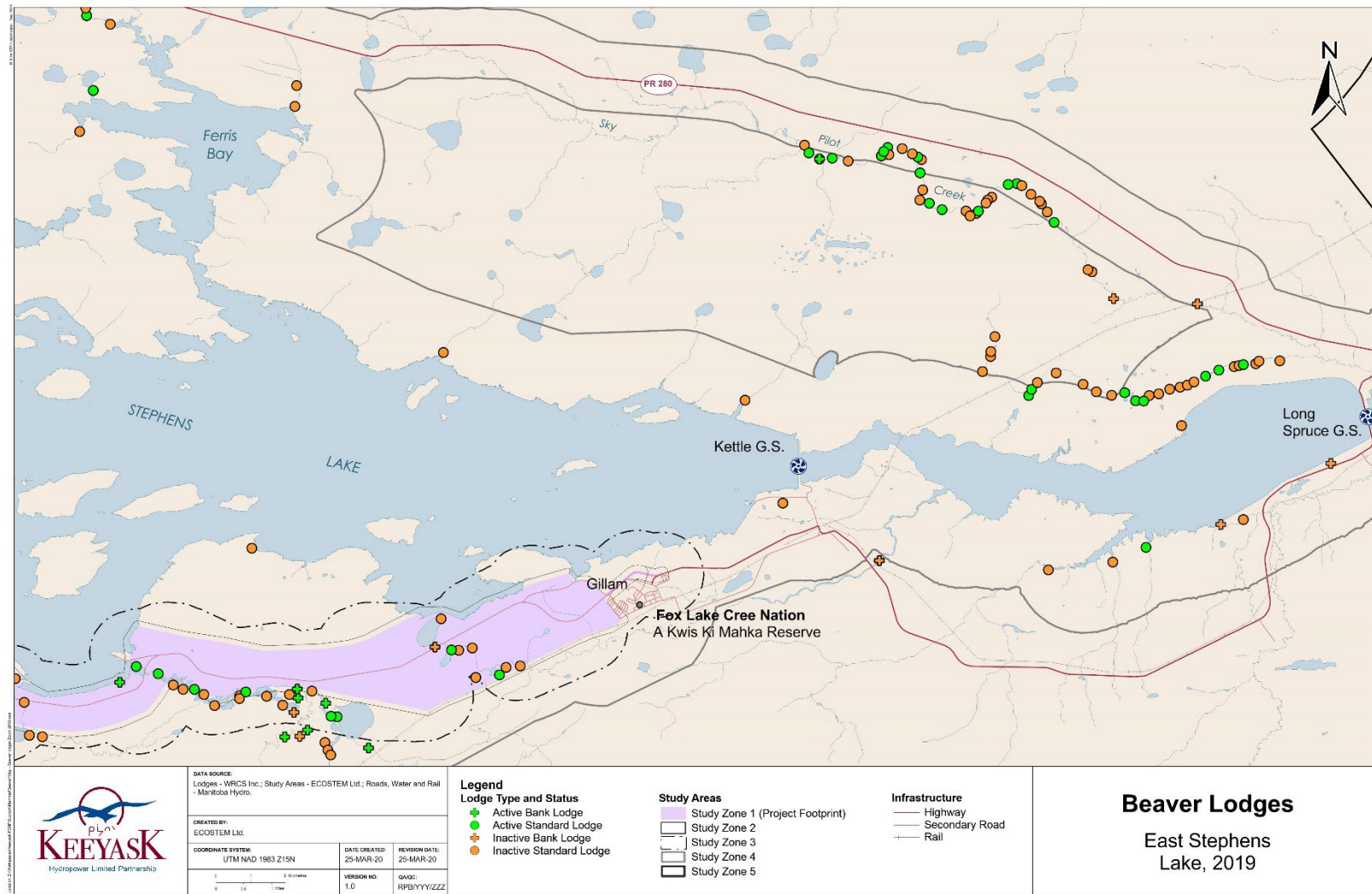
Map 6: **Locations of Beaver Lodges in East Stephens Lake, 2019**

3.2   BEAVER LODGE CHARACTERISTICS

During the fall 2019 beaver lodge ground survey, characteristics of 65 beaver lodges in Study Zones 1 through 5 were measured and described (Appendix 2, Table 2-1). Of these, 59 were standard lodges and 6 were bank burrows. Forty-eight of the standard lodges were active and 11 were inactive. Four active and two inactive bank burrows were measured.

Thirty-two active standard lodges were measured in Study Zones 1–3 and 16 were measured in Study Zones 4–5. On average, characteristics of active standard lodges in Study Zones 1–3 were not significantly different from active standard lodges in Study Zones 4–5 (Table 3). Six inactive standard lodges were measured in Study Zones 1–3 and five were measured in Study Zones 4–5. There was no significant difference in characteristics of inactive standard lodges between Study Zones 1–3 and Study Zone 4–5 (Table 4). While characteristics of bank lodges were measured (Table 5), no statistical comparisons were made due to the small sample size.

Table 3:   Comparisons Between Active Standard Lodge Characteristics in Study Zones 1–3 and 4–5, 2019

Lodge Characteristics	Study Zones 1–3		Study Zones 4–5			
	X	SD	X	SD	t	p
Lodge volume (m^3)	84.3	53.1	75.2	40.4	0.60	0.55
Distance to nearest shore (m)	42.0	41.4	43.8	33.5	0.11	0.91
Tree height (m)	14.8	6.5	12.5	4.5	0.90	0.38
Shrub height (m)	1.0	0.6	0.8	0.4	0.51	0.63
Distance lodge to food (m)	45.6	38.5	62.0	52.2	0.98	0.33
Food cache size (m^2)	21.6	10.5	15.6	8.1	1.37	0.18

Table 4:   Comparisons Between Inactive Standard Lodge Characteristics in Study Zones 1–3 and 4–5, 2019

Lodge Characteristics	Study Zones 1–3		Study Zones 4–5			
	X	SD	X	SD	t	p
Lodge volume (m^3)	94.8	74.0	38.5	40.4	1.51	0.16
Distance to nearest shore (m)	24.8	21.0	25.8	20.4	0.07	0.95
Tree height (m)	15.0	7.0	15.0	7.1	0	1.00
Shrub height (m)	1.4	0.7	0.8	0.6	0.87	0.43
Distance lodge to food (m)	41.8	39.5	96.0	84.2	1.26	0.25

Table 5:   **Characteristics of Beaver Bank Lodges in Study Zones 1 to 5, 2019**

Study Zone	Lodge Status	Number of Lodges	Average Shoreline Slope (°)	Average Tree Height (m)	Average Shrub Height (m)	Average Distance Lodge to Food (m)	Average Cache Size (m²)
1–3	Active	4	16	13	2	23	14
	Inactive	1	45	12	1	0	–
4–5	Inactive	1	30	6	1	0	–
All	Active	4	16	13	2	23	14
(1–5)	Inactive	2	38	9	1	0	–

3.3   BEAVER REMOVALS AND BODY MEASUREMENTS

Trapping efforts in winter 2019/20 focused on the two remaining active beaver lodges in the future reservoir area within Study Zone 1 (lodges 20 and 21; Map 7). Two beavers and one muskrat were trapped in January 2020 (Table 6). The two beavers were removed from the same lodge. Based on their measurements, both were classified as adults. Because two adults were removed from the lodge, it was considered successfully trapped out. No beavers were trapped at the remaining lodge, only muskrat. Animals removed in previous winters are listed in Appendix 3.

Table 6:   **Trapping Effort, Body Measurements, and Estimated Age of Animals Removed in Winter 2019/20**

Lodge	Species Harvested	Date Harvested	Weight (kg)	Body Length (cm)	Skull Width (cm)	Skull Length (cm)	Estimated Age Category
21	Beaver	January 10	18	116	11	14	Adult
21	Beaver	January 13	15	104	11	13	Adult
20	Muskrat	January 24	2	53	5	6	NA
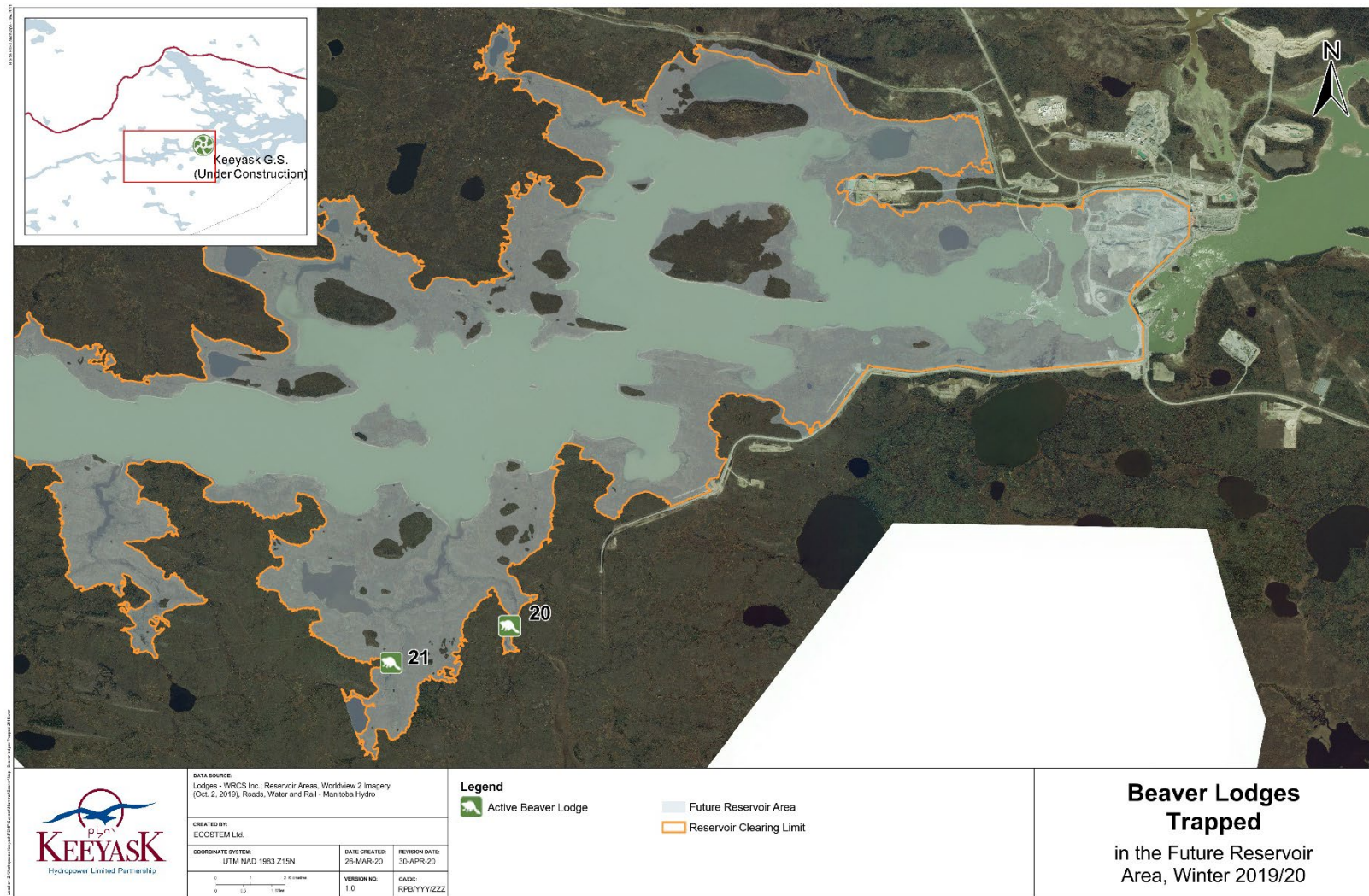
Map 7:   Beaver Lodges Trapped in the Future Reservoir Area, Winter 2019/20

4.0 DISCUSSION

The density of beaver lodges has been relatively consistent in Study Zones 1–4 since pre-construction surveys were conducted. In 2001 and 2003, the density of active beaver lodges was 0.11 and 0.08 lodges/km, respectively (KHLP 2012). During Project construction, active lodge density was 0.07 lodges/km in 2018 (WRCS 2019) and 0.10 lodges/km in 2019. The small increase in lodge density from 2018 to 2019 was attributed in part to observer bias (i.e., a priori knowledge of where lodges detected in 2018). There do not appear to have been substantial Project-related effects on the regional beaver population.

Since Project construction began, the number of active lodges in Study Zone 1 has generally decreased, as expected. During fall surveys, 23 active beaver lodges were observed in 2011 (KHLP 2012), 34 in 2016, 15 in 2017 (WRCS 2018), 4 in 2018 (WRCS 2019), and 7 in 2019. The decrease was caused by Project-based trapping efforts in the future reservoir area that removed 19 beavers from eight lodges in winter 2016/2017, 18 beavers from eight lodges in winter 2017/2018, 6 beavers from four lodges in 2018/19, and 2 beavers from one lodge in 2019/20. The small number of adults caught in 2018/19 and 2019/20 (two each winter) compared to previous years (seven in 2016/17 and nine in 2017/18) suggests that active trapping has been successful at reducing the breeding population of beavers in the future reservoir area. Vegetation clearing in the future reservoir area likely reduced the quality of habitat for beavers, preventing the establishment of new lodges.

Although beaver lodge density differed among study zones, lodge characteristics were not significantly different in Study Zones 1–3 and 4–5. This suggests that the availability of food and lodge materials was adequate in both areas, since no differences in lodge or cache size could be detected. However, food caches were not measured in three dimensions (only width and length could be measured) and it is possible that some food caches were significantly larger than others. Consequently, confidence that food cache size was not statistically different in Study Zones 1–3 and Study Zones 4–5 is low.

5.0   SUMMARY AND CONCLUSIONS

The density of beaver lodges has been relatively consistent in Study Zones 1–4 from 2001 to 2019. Tree clearing and beaver trapping in the future reservoir area during Project construction resulted in the low active lodge density observed in Study Zone 1. No substantial Project-related effects on the regional beaver population were detected.

Where characteristics of active lodges were measured, there were no differences in lodge and cache sizes among study zones. This suggests that food and lodge materials were adequate throughout the study area. Construction monitoring for beaver habitat effects has concluded. Monitoring will continue during Project operation.

6.0   LITERATURE CITED

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APPENDIX 1:
AERIAL SURVEY OBSERVATIONS 2019

Table 1-1:   Location and Status of Beaver Lodges Observed During the Fall 2019 Aerial Survey

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
1	Lake	Inactive	Standard	10	✓	15 V 350340 6241985
(Project footprint)				13	✓	15 V 351400 6239812
				40		15 V 342769 6245016
				42		15 V 350893 6247017
				46		15 V 353122 6249484
				47		15 V 356235 6249205
				48		15 V 357659 6248977
				61		15 V 349495 6244954
				90	✓	15 V 351017 6239887
				294		15 V 357113 6252729
				305		15 V 355593 6250487
				316	✓	15 V 358077 6244726
				479	✓	15 V 351273 6239255
				544		15 V 353342 6249485
				10a	✓	15 V 350340 6241985
				42a		15 V 350893 6247017
	River	Active	Standard	236	✓	15 V 334324 6243045
				472	✓	15 V 360842 6245235
		Inactive	Standard	7	✓	15 V 357953 6244918
				22	✓	15 V 347053 6242142
				41		15 V 349788 6246612
				423		15 V 350996 6246888
				473	✓	15 V 358014 6244765
				475	✓	15 V 351943 6241349
				476	✓	15 V 351844 6241297
	Unknown	Active	Standard	20	✓	15 V 353486 6240991
				21	✓	15 V 351672 6240425
				24	✓	15 V 347731 6241880
				458	✓	15 V 365747 6246397
			Bank	51a	✓	15 V 348102 6241330
		Inactive	Standard	14	✓	15 V 351272 6239132
				17	✓	15 V 353522 6241457
				17a	✓	15 V 353522 6241457
				18	✓	15 V 353520 6241425
				19	✓	15 V 353529 6241161
				23	✓	15 V 347618 6241985
				25	✓	15 V 347886 6241224
				26	✓	15 V 347840 6240828
				27	✓	15 V 348053 6240534

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
1 (Project footprint)	Unknown	Inactive	Standard	43		15 V 353799 6249401
				51	✓	15 V 348102 6241330
				89	✓	15 V 351560 6240039
				211	✓	15 V 353468 6240653
				315	✓	15 V 360221 6244857
				474	✓	15 V 353073 6241744
				477	✓	15 V 351732 6241005
				478	✓	15 V 351835 6240671
				480	✓	15 V 351325 6239087
				89a	✓	15 V 351560 6240039
2	Lake	Active	Standard	65		15 V 343104 6244610
				513		15 V 363171 6249221
			Bank	373	✓	15 V 367593 6244584
		Inactive	Standard	456	✓	15 V 367697 6244900
				514		15 V 363288 6249298
			Bank	318	✓	15 V 388542 6244813
	Pond	Active	Standard	295		15 V 357687 6252666
	River	Inactive	Standard	307	✓	15 V 364015 6244850
				492	✓	15 V 334453 6243094
	Stream	Inactive	Standard	353	✓	15 V 376700 6243224
				360	✓	15 V 372670 6243769
				453	✓	15 V 372564 6243698
				455	✓	15 V 371590 6244337
	Unknown	Active	Standard	441	✓	15 V 389022 6244733
				565		15 V 360491 6249991
			Bank	444	✓	15 V 384569 6243606
		Inactive	Standard	2	✓	15 V 360253 6244291
				306		15 V 355212 6250778
				359	✓	15 V 374056 6243541
				553		15 V 345449 6254876
3	Lake	Active	Standard	37	✓	15 V 342531 6242185
				326	✓	15 V 379931 6244256
				335	✓	15 V 385725 6242805
				340	✓	15 V 385550 6242826
				465	✓	15 V 365072 6242911
				468	✓	15 V 365644 6242427
				485	✓	15 V 348275 6240142
				512		15 V 362628 6249222
				569		15 V 358508 6253007
			Bank	352	✓	15 V 379456 6243798
				367	✓	15 V 368538 6243100
				446	✓	15 V 385394 6243203

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
3	Pond	Inactive	Standard	577		15 V 345980 6256049
	River	Active	Standard	327	✓	15 V 380564 6244053
				330	✓	15 V 381604 6243597
				334	✓	15 V 383089 6243526
		Inactive	Standard	328	✓	15 V 380998 6243723
				329	✓	15 V 381283 6243596
				331	✓	15 V 381884 6243449
				345	✓	15 V 384152 6243145
				347	✓	15 V 382191 6243133
				443	✓	15 V 383688 6243397
			Bank	451	✓	15 V 384482 6242929
	Stream	Active	Standard	230	✓	15 V 343041 6242407
				239	✓	15 V 326598 6238810
				496	✓	15 V 328835 6240626
				457b	✓	15 V 365138 6246141
				466b	✓	15 V 365450 6242611
				466c	✓	15 V 365450 6242611
		Inactive	Standard	319	✓	15 V 389231 6244722
				320	✓	15 V 389621 6244789
				361	✓	15 V 372383 6243641
				362	✓	15 V 372312 6243568
				363	✓	15 V 371557 6243233
				371	✓	15 V 369628 6244855
				457	✓	15 V 365138 6246141
				466	✓	15 V 365450 6242611
				486	✓	15 V 346726 6241046
				499	✓	15 V 324842 6239008
				500	✓	15 V 324758 6238427
				466a	✓	15 V 365450 6242611
	Unknown	Active	Standard	1	✓	15 V 364033 6244770
				4	✓	15 V 362770 6244449
				45		15 V 346215 6246002
				67		15 V 338695 6246581
				70		15 V 335821 6245626
				226	✓	15 V 347120 6240994
				227	✓	15 V 346656 6241043
				232	✓	15 V 338480 6242468
				252		15 V 357683 6251058
				253		15 V 357311 6251341
				259		15 V 352084 6252841
				262		15 V 350942 6252967
				298		15 V 358267 6253420

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
3	Unknown	Active	Standard	304		15 V 355996 6250444
				462	✓	15 V 363881 6243301
				491	✓	15 V 336623 6243472
				559		15 V 350815 6252911
				562		15 V 355235 6251875
				563		15 V 356171 6251594
				564		15 V 359721 6250210
				462a	✓	15 V 363881 6243301
				562a		15 V 355235 6251875
				564a		15 V 359721 6250210
				57b		15 V 349786 6247923
			Bank	256		15 V 354572 6252133
				258		15 V 353435 6252533
				312	✓	15 V 357538 6242074
				445	✓	15 V 384600 6243353
				566		15 V 361164 6249895
		Inactive	Standard	3	✓	15 V 362328 6244562
				38	✓	15 V 338752 6242490
				39		15 V 338688 6246045
				54		15 V 338612 6246151
				56		15 V 350000 6247789
				57		15 V 349786 6247923
				59		15 V 349133 6248087
				62		15 V 346564 6246337
				71		15 V 335559 6246013
				228	✓	15 V 346321 6240955
				229	✓	15 V 346132 6240818
				231	✓	15 V 343319 6242337
				235	✓	15 V 336517 6243676
				250		15 V 358494 6250228
				255		15 V 355414 6252004
				261		15 V 351253 6252879
				275		15 V 343918 6254337
				286		15 V 351856 6254693
				293		15 V 356225 6253023
				296		15 V 358001 6252608
				303		15 V 356322 6250445
				459	✓	15 V 359675 6244274
				489	✓	15 V 339106 6242764
				490	✓	15 V 336667 6243375
				493	✓	15 V 334479 6242221
				495	✓	15 V 334464 6241818

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
3	Unknown	Inactive	Standard	538		15 V 346244 6246061
				560		15 V 351736 6253055
				561		15 V 352451 6252761
				571		15 V 355926 6253095
				572		15 V 355693 6253486
				259a		15 V 352084 6252841
				286a		15 V 351856 6254693
				313a	✓	15 V 357294 6242176
				57a		15 V 349786 6247923
				59a		15 V 349133 6248087
			Bank	254		15 V 356439 6251595
				313	✓	15 V 357294 6242176
4	Lake	Active	Standard	69		15 V 338523 6248008
				105		15 V 320484 6242870
				311	✓	15 V 359045 6241721
				364	✓	15 V 368505 6242635
				396		15 V 355931 6259402
				402		15 V 360636 6259620
				421	✓	15 V 372990 6260488
				431	✓	15 V 378696 6260849
				454	✓	15 V 369304 6242081
				501	✓	14 V 685032 6232067
				503	✓	14 V 685166 6231310
				507	✓	15 V 317609 6246401
				517		15 V 358909 6263134
				536		15 V 331754 6247369
				364a	✓	15 V 368505 6242635
				431a	✓	15 V 378696 6260849
			Bank	100	✓	15 V 317343 6244714
				460	✓	15 V 357329 6240948
				498	✓	15 V 326940 6238566
				506	✓	15 V 317188 6241757
				585		15 V 353435 6234320
		Inactive	Standard	53	✓	15 V 342379 6241708
				55	✓	15 V 375905 6258560
				63		15 V 346635 6247656
				64		15 V 346671 6247952
				83		15 V 331850 6248481
				86		15 V 333218 6248544
				95	✓	15 V 318768 6245020
				107		15 V 350663 6233779
				108		15 V 351944 6234227

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
4	Lake	Inactive	Standard	109		15 V 354907 6233666
				116		15 V 353858 6233616
				158	✓	15 V 366997 6239604
				159	✓	15 V 367810 6240075
				160	✓	15 V 367477 6238600
				165	✓	15 V 388786 6253300
				166	✓	15 V 397483 6251929
				240	✓	15 V 320082 6236718
				244	✓	15 V 318626 6234056
				272		15 V 345266 6250902
				273		15 V 348371 6252808
				280		15 V 348921 6255547
				310	✓	15 V 359157 6241737
				314	✓	15 V 357771 6240998
				325	✓	15 V 383265 6247667
				376		15 V 354899 6257097
				395		15 V 356558 6259006
				398		15 V 357656 6259799
				403		15 V 359453 6261031
				404		15 V 358799 6262214
				406		15 V 359029 6263207
				407		15 V 349859 6262224
				417	✓	15 V 368795 6259685
				419	✓	15 V 372940 6258651
				420	✓	15 V 372476 6259929
				421	✓	15 V 372990 6260488
				424	✓	15 V 378303 6259666
				426	✓	15 V 379185 6262756
				429	✓	15 V 384505 6260387
				430	✓	15 V 375058 6257731
				497	✓	15 V 329512 6238532
				502	✓	14 V 685327 6231579
				504	✓	14 V 683790 6231832
				505	✓	14 V 683552 6231416
				516		15 V 358978 6262204
				532		15 V 320710 6243381
				537		15 V 331760 6248439
				540		15 V 348600 6248363
				556		15 V 346026 6251387
				567		15 V 359049 6254125
				586		15 V 354927 6234206
				364b	✓	15 V 368505 6242635

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
4	Lake	Inactive	Standard	364c	✓	15 V 368505 6242635
				420a	✓	15 V 372476 6259929
				505a	✓	14 V 683552 6231416
				83a		15 V 331850 6248481
			Bank	92	✓	14 V 681306 6235671
				245	✓	15 V 314706 6233214
				246	✓	14 V 685931 6234208
	Pond	Active	Standard	276		15 V 346020 6256084
				324	✓	15 V 389720 6243940
				324a	✓	15 V 389720 6243940
		Inactive	Standard	324b	✓	15 V 389720 6243940
				324c	✓	15 V 389720 6243940
	River	Active	Standard	439	✓	15 V 409041 6247686
			Bank	101	✓	15 V 314400 6243206
				102	✓	14 V 684774 6246428
				509	✓	14 V 684896 6247209
		Inactive	Standard	102	✓	14 V 684774 6246428
				106		15 V 350339 6233453
				168	✓	15 V 410064 6251192
				224	✓	15 V 408088 6247267
				440	✓	15 V 406231 6247042
			Bank	103	✓	14 V 684396 6248627
				436	✓	15 V 414373 6250102
				438	✓	15 V 411202 6248343
				508	✓	14 V 685450 6245999
				510	✓	14 V 684087 6249964
	Stream	Active	Standard	279		15 V 344158 6256363
				409		15 V 351927 6265620
				413		15 V 352367 6265284
				521		15 V 401484 6259091
				529		15 V 406392 6257051
				548		15 V 345184 6259889
				550		15 V 344518 6259036
				589		15 V 410760 6252620
				592		15 V 408425 6252141
				2111		15 V 408973 6251902
			Bank	551		15 V 343591 6258408
		Inactive	Standard	161	✓	15 V 367824 6238440
				322	✓	15 V 390597 6244233
				323	✓	15 V 391001 6244274
				411		15 V 351766 6265871
				412		15 V 352159 6265309

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
4	Stream	Inactive	Standard	522		15 V 402017 6259176
				528		15 V 405462 6258110
				591		15 V 409134 6252065
				411a		15 V 351766 6265871
			Bank	549		15 V 345778 6259547
	Unknown	Active	Standard	73		15 V 335395 6246195
				76		15 V 334634 6247326
				87		15 V 333473 6248591
				169		15 V 411141 6252791
				175		15 V 406030 6257584
				178		15 V 405317 6258170
				179		15 V 405067 6258143
				187		15 V 402527 6258477
				189		15 V 402460 6258937
				191		15 V 401598 6259211
				203		15 V 405665 6252061
				204		15 V 405747 6252236
				209		15 V 408745 6251908
				219		15 V 411850 6252957
				238	✓	15 V 329654 6238879
				247	✓	14 V 684858 6232160
				263		15 V 349603 6251982
				264		15 V 348683 6251958
				265		15 V 348465 6251982
				267		15 V 348281 6251752
				268		15 V 348901 6250897
				269		15 V 347864 6251700
				321	✓	15 V 390407 6244015
				382		15 V 351923 6256187
				392		15 V 353052 6259275
				394		15 V 354613 6258714
				399		15 V 357923 6259887
				408		15 V 349416 6262235
				418	✓	15 V 368231 6259980
				422	✓	15 V 373520 6261035
				428	✓	15 V 378498 6263009
				494	✓	15 V 334578 6241306
				533		15 V 327129 6242676
				187a		15 V 402527 6258477
				194b		15 V 401416 6258970
				209a		15 V 408745 6251908
				265a		15 V 348465 6251982

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
4	Unknown	Active	Standard	267a		15 V 348281 6251752
				428a	✓	15 V 378498 6263009
				428b	✓	15 V 378498 6263009
				428c	✓	15 V 378498 6263009
			Bank	336	✓	15 V 386631 6241905
				448	✓	15 V 384875 6242427
				450	✓	15 V 384216 6242222
				557		15 V 347631 6251532
				450b	✓	15 V 384216 6242222
		Inactive	Standard	68		15 V 338254 6247593
				74		15 V 335368 6246488
				75		15 V 335308 6246576
				77		15 V 334604 6247391
				78		15 V 334662 6247613
				97	✓	15 V 317743 6246038
				98	✓	15 V 317446 6246574
				99	✓	15 V 317555 6246892
				174		15 V 406198 6257347
				176		15 V 405980 6257658
				177		15 V 405729 6257862
				188		15 V 402569 6258858
				190		15 V 402306 6259023
				193		15 V 401632 6258996
				194		15 V 401416 6258970
				198		15 V 399197 6259275
				212		15 V 409413 6252110
				213		15 V 409729 6252246
				214		15 V 410027 6252301
				215		15 V 410236 6252358
				216		15 V 410430 6252456
				217		15 V 411581 6252892
				218		15 V 411723 6252931
				220		15 V 412208 6252982
				221		15 V 412298 6253056
				222		15 V 412897 6253065
				233	✓	15 V 337932 6241861
				234	✓	15 V 337820 6241767
				270		15 V 347438 6251575
				271		15 V 347272 6251607
				277		15 V 346242 6256599
				284		15 V 351238 6255170
				285		15 V 351217 6255396

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
4	Unknown	Inactive	Standard	291		15 V 355490 6254124
				299		15 V 358064 6254030
				300		15 V 358023 6254454
				302		15 V 359417 6253828
				337	✓	15 V 385369 6242066
				338	✓	15 V 385454 6241850
				339	✓	15 V 385537 6241707
				366	✓	15 V 368288 6242609
				377		15 V 354867 6256548
				380		15 V 351216 6256796
				381		15 V 351713 6256097
				391		15 V 352751 6259386
				397		15 V 354978 6259757
				400		15 V 358263 6260084
				422	✓	15 V 373520 6261035
				432	✓	15 V 378472 6263221
				434	✓	15 V 377992 6263748
				435	✓	15 V 384560 6260987
				437	✓	15 V 411853 6248487
				482	✓	15 V 398575 6248966
				535		15 V 335151 6246783
				558		15 V 349034 6251850
				568		15 V 358681 6254049
				575		15 V 346264 6256473
				576		15 V 346120 6256178
				175a		15 V 406030 6257584
				194a		15 V 401416 6258970
				302a		15 V 359417 6253828
				337a	✓	15 V 385369 6242066
				391a		15 V 352751 6259386
				400a		15 V 358263 6260084
				400b		15 V 358263 6260084
				482a	✓	15 V 398575 6248966
				533a		15 V 327129 6242676
			Bank	170		15 V 410528 6254700
				449	✓	15 V 384647 6242241
5	Lake	Active	Standard	93	✓	14 V 675300 6239201
				110		15 V 355828 6233141
				111		15 V 356018 6233333
				118		15 V 357310 6231563
				122		15 V 361099 6229879
				123		15 V 361172 6230404

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
5	Lake	Active	Standard	124		15 V 361813 6230225
				128		15 V 362773 6230389
				133		15 V 360130 6228927
				137		15 V 358444 6227961
				138		15 V 358520 6228794
				139		15 V 357444 6230110
				144		15 V 356453 6231917
				145		15 V 353924 6232462
				146		15 V 353903 6233064
				587		15 V 356788 6232955
				139a		15 V 357444 6230110
			Bank	94	✓	14 V 674416 6238974
		Inactive	Standard	112		15 V 355832 6233392
				113		15 V 356939 6233167
				114		15 V 357181 6232917
				115		15 V 356307 6232668
				121		15 V 360748 6230038
				125		15 V 362412 6230461
				132		15 V 359730 6228582
				134		15 V 359238 6228214
				141		15 V 357528 6230195
				142		15 V 357282 6231320
				143		15 V 357125 6231239
				148		15 V 368473 6235918
				150		15 V 369659 6235734
				151		15 V 369714 6235847
				152		15 V 366287 6235206
				153	✓	15 V 367114 6236157
				579		15 V 368697 6236093
				580		15 V 369824 6236670
				581		15 V 369968 6236477
				588		15 V 356097 6232223
				597		15 V 363027 6230679
			Bank	583		15 V 361750 6230237
	River	Active	Standard	131		15 V 363959 6231359
				599		15 V 365146 6231497
			Bank	511	✓	14 V 683362 6250271
				582		15 V 369158 6234017
		Inactive	Standard	104	✓	14 V 683290 6250725
				129		15 V 363627 6231175
				130		15 V 364068 6231392
				598		15 V 364653 6231236

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
5	River	Inactive	Standard	600		15 V 365839 6231637
			Bank	225	✓	15 V 401357 6247302
	Stream	Active	Standard	164	✓	15 V 368419 6237994
				387		15 V 340477 6262821
				471	✓	15 V 366810 6237918
				519		15 V 399321 6259051
				524		15 V 402793 6257599
				547		15 V 342319 6261628
			Bank	385		15 V 342382 6261586
				386		15 V 341072 6262780
				518		15 V 351628 6266303
				545		15 V 341079 6262371
				520a		15 V 399630 6258871
		Inactive	Standard	154	✓	15 V 367018 6236327
				155	✓	15 V 366789 6236430
				156	✓	15 V 366574 6237173
				157	✓	15 V 366732 6237551
				162	✓	15 V 368010 6237915
				388		15 V 341960 6261873
				410		15 V 351905 6266166
				447	✓	15 V 384881 6240409
				470	✓	15 V 368393 6237965
				520		15 V 399630 6258871
				523		15 V 402525 6257690
				525		15 V 403971 6257233
				526		15 V 404151 6257311
				527		15 V 404433 6257607
				546		15 V 342092 6261699
				578		15 V 368106 6237822
				593		15 V 408049 6252072
				595		15 V 405910 6252437
				596		15 V 404565 6253187
				162a	✓	15 V 368010 6237915
				578a		15 V 368106 6237822
			Bank	531		15 V 408108 6254850
	Unknown	Active	Standard	126		15 V 362538 6230843
				149		15 V 368837 6235646
				183		15 V 404216 6257373
				185		15 V 403159 6257419
				197		15 V 399994 6258899
		Inactive	Standard	127		15 V 362280 6231026
				135		15 V 359505 6227901

Study Zone	Waterbody Type	Lodge Status	Lodge Type	Lodge	Observed in 2018	UTM
5	Unknown	Inactive	Standard	136		15 V 359744 6227871
				140		15 V 356909 6230030
				171		15 V 407483 6255627
				172		15 V 407369 6255687
				180		15 V 404592 6257777
				181		15 V 404481 6257690
				184		15 V 403854 6257375
				186		15 V 402603 6257983
				196		15 V 400460 6258814
				200		15 V 404685 6253764
				201		15 V 404571 6253331
				202		15 V 404331 6252756
				205		15 V 406449 6252708
				207		15 V 407230 6252386
				208		15 V 407613 6252174
				584		15 V 359665 6227902
				184a		15 V 403854 6257375

APPENDIX 2:
BEAVER LODGE AND FOOD CACHE
CHARACTERISTICS 2019

Table 2-1:   **Characteristics of Beaver Lodges and Food Caches in Fall 2019**

Study Zone	Lodge Type	Lodge Status	Lodge	Lodge Material	Lodge Volume (m³)	Food Cache Composition	Cache Size (m²)
1 (Project Footprint)	Standard	Active	20	Grass, black spruce, mud, willow	74	Willow	12
			21	Willow, black spruce, peat	27	Willow	9
			51	Peat, black spruce	27	Willow	na
			236	Black spruce, mud	53	Willow	8
2	Bank	Active	565	Mud, black spruce, willow	–	Willow, alder	21
	Standard	Active	65	Black spruce, peat	97	Willow	9
			295	Mud, peat, black spruce	91	Willow, birch, black spruce	9
			373	Black spruce, mud, alder	75	Black spruce, willow, alder	16
			444	Mud, black spruce	42	Willow, black spruce	15
			513	Peat, black spruce, mud	27	Willow, alder	15
3	Bank	Active	312	Peat, black spruce	–	Willow	6
			352	Peat, black spruce	–	Willow	6
			601	Mud, black spruce, willow	–	Willow, alder	24
		Inactive	256	Willow, mud	–	–	–
	Standard	Active	1	Peat, black spruce	45	Alder, willow, black spruce,	14
			4	Peat, willow, black spruce	65	Willow, black spruce	12
			37	Alder, willow, mud	37	Willow	18
			45	Willow, peat	169	Willow, birch	21
			57	Mud, peat, willow, black spruce, birch	80	Willow	20
			67	Peat, black spruce, willow	116	Willow	21
			232	Mud, willow, black spruce	145	Willow	9
			232a	Mud, willow, black spruce	145	Willow	24
			239	Peat, birch, black spruce, willow	84	Willow, birch	12
			252	Mud, black spruce, willow	35	Willow, alder, black spruce	16

Study Zone	Lodge Type	Lodge Status	Lodge	Lodge Material	Lodge Volume (m³)	Food Cache Composition	Cache Size (m²)
3	Standard	Active	261	Peat, black spruce	97	Black spruce, willow, tamarack	–
			304	Mud, peat, willow	67	Willow	24
			326	Black spruce, mud	123	Black spruce, willow, tamarack	6
			330	Mud, willow, black spruce	117	Willow	30
			335	Mud, black spruce	238	Willow	8
			340	Mud, willow, black spruce	149	Willow	24
			367	Willow, alder, peat, black spruce	36	Willow, alder	12
			468	Willow, black spruce, mud	185	Black spruce, tamarack, willow, alder	27
			485	Black spruce, alder, willow, peat	16	Willow, alder	–
			496	Peat, black spruce, willow	44	Willow, black spruce	8
			602	Willow, black spruce, mud	116	Willow, alder	40
			603	Mud, willow, stump	42	Birch, willow,	49
			465a	Black spruce, willow, birch	93	Black spruce, birch, willow, alder	36
		Inactive	28	Black spruce, peat	91	–	–
			38	Black spruce, peat, grass	168	–	–
			308	Peat, black spruce, birch	13	–	–
			357	Mud, black spruce, willow	199	–	–
			367	Willow, alder, mud	40	–	–
			374	Grass, mud, black spruce	58	–	–
4	Bank	Inactive	108	Peat, black spruce	–	–	–
	Standard	Active	179	Willow, mud	84	Willow, alder	10
			191	Willow, alder, mud	63	Willow, alder	21
			264	Mud, willow, black spruce	65	Willow, alder	24

Study Zone	Lodge Type	Lodge Status	Lodge	Lodge Material	Lodge Volume (m³)	Food Cache Composition	Cache Size (m²)
4	Standard	Active	280	Black spruce, peat	48	Black spruce, tamarack, willow	4
			364	Black spruce, peat	22	Willow	–
			394	Peat, black spruce	89	Tamarack, black spruce, willow	4
			396	Black spruce, mud	171	Willow	24
			398	Black spruce, willow, mud	64	Willow, black spruce	12
			418	Willow, black spruce, mud	79	Willow, poplar	18
			2111	Mud, willow, black spruce	91	Willow, black spruce	30
			190a	Black spruce, mud, willow	121	Willow, alder	24
			324a	Willow, mud	64	Willow	16
			324i	Peat, willow, black spruce	6	Willow	6
		Inactive	158	Peat, black spruce	8	–	–
			216	Peat, black spruce, willow	17	–	–
			395	Peat, black spruce	107	–	–
			404	Grass, mud, black spruce	40	–	–
			465b	Black spruce, willow, birch	20	–	–
5	Standard	Active	152	Willow, black spruce, mud	46	Willow	15
			164	Peat, black spruce	128	Willow	–
			183	Willow, birch, mud, aquatic plants	63	Willow, birch	18

APPENDIX 3:
ANIMALS REMOVED FROM THE FUTURE
RESERVOIR AREA 2017–2019

Table 3-1: **Trapping Effort, Body Measurements, and Estimated Age of Animal Removed from 2017 to 2019**

Year	Species Harvested	Lodge	Date Harvested	Weight (kg)	Body Length (cm)	Skull Width (cm)	Skull Length (cm)	Estimated Age Category
2017	Beaver	7	January 23	11	97	12	14	Juvenile
		10	January 21	28	97	15	15	Adult
		10	January 23	13	101	15	17	Juvenile
		12	January 23	11	95	12	14	Juvenile
		12	January 25	11	97	12	13	Juvenile
		14	February 20	5	79	10	11	Juvenile
		14	February 21	4	71	11	12	Juvenile
		14	February 23	18	110	15	17	Adult
		14	February 24	7	74	10	12	Juvenile
		14	February 24	5	74	12	15	Juvenile
		14	February 27	19	111	14	16	Adult
		14	February 27	11	95	12	13	Juvenile
		14	March 13	11	98	12	14	Juvenile
		19	January 14	9	94	11	12	Juvenile
		19	January 25	15	105	13	13	Adult
		23	March 6	12	978	12	14	Juvenile
		23	March 14	20	116	14	18	Adult
		23	March 14	14	103	13	15	Adult
		24	February 23	18	116	15	17	Adult
	River otter	14	March 13	8	111	10	12	–
		20	January 21	22	119	9	14	–
2018	Beaver	21	January 18	17	106	12	14	Adult
		21	January 24	14	100	11	13	Adult
		41	January 11	18	103	36	30	Adult
		41	January 16	19	109	12	15	Adult
		41	January 20	12	95	10	12	Juvenile
		41	January 23	8	83	9	11	Juvenile
		41	February 6	8	82	10	12	Juvenile
		41	February 16	20	108	11	14	Adult
		42	January 13	16	111	36	30	Adult
		47	January 13	6	76	28	23	Juvenile
		50	February 10	7	77	8	11	Juvenile
		50	February 10	6	78	9	11	Juvenile
		51	January 18	14	100	11	13	Adult
		51	January 24	18	112	13	15	Adult
		52	January 18	32	116	14	12	Juvenile
		52	January 18	19	115	14	16	Adult

Year	Species Harvested	Lodge	Date Harvested	Weight (kg)	Body Length (cm)	Skull Width (cm)	Skull Length (cm)	Estimated Age Category
2018	Beaver	52	January 24	8	82	9	12	Juvenile
		52	January 29	7	81	9	11	Juvenile
	Muskrat	43	February 22	2	58	5	6	–
2019	Beaver	26	January 9	12	100	9	11	Juvenile
		43	January 14	15	107	11	13	Adult
		46	January 6	14	105	12	14	Adult
		46	January 12	12	103	13	15	Juvenile
		55	January 9	14	102	10	12	Juvenile
		55	January 19	11	94	10	12	Juvenile
	Muskrat	26	February 13	1	52	5	6	–
		26	February 22	1	48	5	6	–
		26	February 27	1	54	6	6	–
		43	February 20	1	52	5	6	–
		55	February 19	1	47	5	5	–