Appendix G

Terrestrial Environment Report: Wildlife

11/30/2020

Terrestrial Environment Report: Wildlife

Milltown Generating Station Decommissioning Project, Milltown, NB

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Project No. 20-0157

BOREAL
ENVIRONMENTAL

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1 Introduction

This document is a supplementary technical report that is intended to support the environmental impact assessment (EIA) registration document and other environmental permitting applications for the Milltown Generation Station Decommissioning Project (the Project) proposed by the New Brunswick Power Corporation (NB Power) in the neighbourhood of Milltown, in the Town of St. Stephen, Charlotte County, New Brunswick, Canada.

The Project is situated on the international boundary between Canada and the United States of America, within the wetted portion of the St. Croix River (also known as the Skutik by the Peskotomuhkati [Passamaquoddy] First Nation). Because of this physical location, the Project is subject to the regulatory review and approval processes by Canadian, U.S.A., and international jurisdictions.

In Canada, the Project is an "undertaking" under item (b) of Schedule A of the New Brunswick *Environmental Impact Assessment Regulation – Clean Environment Act* (EIA Regulation) ["(*b) all electric power generating facilities with a production rating of three megawatts or more*"]. Dillon Consulting Limited (Dillon) was retained by NB Power to complete natural environment surveys in support of a provincial EIA registration and other Canadian and U.S.A. environmental permitting requirements for the Project. Boreal Environmental Inc. (Boreal) was subcontracted to conduct certain elements of the study including conducting field work for the wildlife study and associated data analysis and reporting to characterize site-specific environmental conditions. The information collected for this study will be provided to regulatory agencies in the U.S.A., in particular the Maine Department of Environmental Protection (DEP), the United States Army Corps of Engineers (USACE), and the National Oceanic and Atmospheric Administration—National Marine Fisheries Service (NOAA-NMFS), as supporting information in their review of U.S.A. permit applications for the Project.

Wildlife is considered an important feature and valued component (VC) of the environment and thus makes up a key part of the assessment of the Project's potential effects on the environment. Because wildlife is a broad category, this study focusses on non-aquatic wildlife species that are have some potential for interaction with the Project and are either protected by laws or have populations considered to be vulnerable to human activities and development. For this Project, it was determined that the scope of study would include:

- Wood turtles and snapping turtles: There may be potential for these two species to occur along the impoundment above the dam and they are considered Species at Risk (SAR) as described in the regulatory framework section;
- Birds: birds are found in a wide range of habitats such as those found at the study area and most are protected under the *Migratory Birds Convention Act* or the New Brunswick *Fish and Wildlife Act*;

- Bats: Three of the four resident, overwintering bat species have recently been listed as SAR. The listed species may forage over water and some are known to form maternity colonies in buildings; and
- Other wildlife: Incidental observations of other wildlife present as noted during the above studies were recorded.

This technical report provides a summary of various wildlife field surveys of the Milltown Generating Station's properties that are located on the Canadian side of the international boundary, which were conducted in support of the Project's EIA registration and environmental permit applications. This report includes: a brief description of the Project; a description of the regulatory framework; survey scope and methodology; a summary of the results; and discussion thereof. The assessment of residual effects (including potential interactions and mitigation) of the Project on wildlife is addressed within the main body of the Project's EIA registration document (Dillon 2020a).

Though other focused environmental surveys were completed concurrently, the focus of this technical report is on wildlife, more specifically: birds, turtles and bats. Nocturnal owls were surveyed in May 2020 as part of a separate field study (Dillon 2020b) and are not discussed herein. The remaining field surveys (i.e., owls, wetlands, vegetation, and fish and fish habitat) are summarized in separate technical reports that are also intended to support the EIA registration and other environmental permits.

1.1 Project Overview

This Project overview is an abbreviated summary for the purposes of this technical report. For a detailed description of the Project facilities/components, phases and activities, the reader is referred to the EIA registration document (Dillon 2020a).

The Project will be carried out in the neighborhood of Milltown, in the Town of St. Stephen, Charlotte County, New Brunswick, Canada as well as in the City of Calais, Washington County, Maine, U.S.A. The parcel identifiers (PID) of the properties owned by NB Power in Canada and which are associated with the Milltown Generating Station (the Milltown Station), as referenced by Service New Brunswick, are PID Nos. 01311208, 15043961, 15086127, 01310713, 01309988, and 15086119. The Milltown Station is situated on the international boundary between Canada and the United States of America (U.S.A.). On the Canadian side of the Canada/U.S.A. international boundary, the land at the Milltown Station site has an area of approximately 5.86 hectares (ha). In addition, NB Power owns a submerged water lot of the Canadian portion of the Skutik/St. Croix River bed, with an approximate area of 2.0 ha.

Physical infrastructure on the U.S.A. side of the international boundary will be managed separately through the applicable U.S.A./State permitting processes.

The Milltown Station is comprised of the following existing facilities located on both sides of the international boundary:

- Powerhouses and related equipment: Powerhouses A, B, and C contain the turbine-generators and other mechanical and electrical systems and instrumentation, including: control room, motor control centres, various instrumentation, and related systems. In addition, there is office space, a lunch room, washrooms, and related amenities.
- Dam and related structures: the dam, which retains water in a relatively small impoundment, includes: a gated spillway with gate house, a rollway with flashboards, a spillway with stop logs, and an impoundment. The impoundment extends approximately 450-500 m upstream of the Milltown Station (i.e., the head of the impoundment is at the nearest upstream rapids located near some small islands in the river, known locally as Milltown Rapids), and has a surface area of approximately 6 ha.
- Fish passage facilities: An upstream pool-and-weir fishway adjacent to Powerhouse A, and a downstream fishway located at the gated spillway.
- Electrical substation: An electrical substation (terminal) is located on-site which connects the Milltown Station to the remainder of the New Brunswick electrical grid.
- Other related facilities and infrastructure: other facilities and infrastructure include a security guard house, security gate, perimeter fencing, navigational safety buoys in the impoundment, retaining walls, parking and related facilities, and other facilities typical of industrial facilities.

As currently envisioned by NB Power, decommissioning of the Milltown Station (i.e., the Project) will involve the full dismantling and removal of all equipment, buildings, and structures associated with the existing Milltown Station in both Canada and the United States (except for the on-site electrical substation which will remain in place), including a full bank-to-bank decommissioning of all structures within the Skutik/St. Croix River. All structures and mechanical and electrical components associated with the powerhouses, gate house, gated spillway, rollway, stop log spillway, dam, fishways, and other structures will be dismantled, demolished, and removed, and limited restoration of the site and the river at the location of the Milltown Station will be conducted with the ultimate goal of the Project to remove all human-made structures that obstruct fish passage so as to allow fish to naturally access the upstream reaches of the Skutik/St. Croix River.

While the Milltown Station was reportedly built atop a natural waterfall (Salmon Falls), the full removal of the Milltown Station, dam, and associated components will be carried out with the intention to allow the unimpeded ability for diadromous (migrating) fish that are able to ascend the falls to volitionally access a further 16 kilometres (km) of the Skutik/St. Croix River and its tributaries (i.e., up to the next upstream natural or human-made obstruction) in order to carry out their lifecycle processes.

1.2 Project Development Area

The Project Development Area (PDA) is defined as the area of physical disturbance (or physical footprint) associated with the Project. In Canada, the PDA on land consists of an area of approximately 1.4 ha (i.e.,

a portion of the Milltown site within the larger 5.86 ha properties associated with the Milltown Station) that will be directly affected by Project activities, and includes all Milltown Station-related facilities that will be decommissioned and removed as well as areas to be used as laydown/temporary storage for the decommissioning activities. In addition, the portion of the PDA located within the St. Croix River itself (Canadian side of the international boundary only) that will be directly affected by Project activities is approximately 0.54 ha.

The portion of the PDA located within the Skutik/St. Croix River itself (Canadian side only of the International Boundary Commission's official boundary line) that will be directly affected by Project activities is approximately 0.4 ha. The portion of the PDA that is within the U.S.A. side of the International Boundary Commission's official boundary line, within the St. Croix River is 0.13 ha.

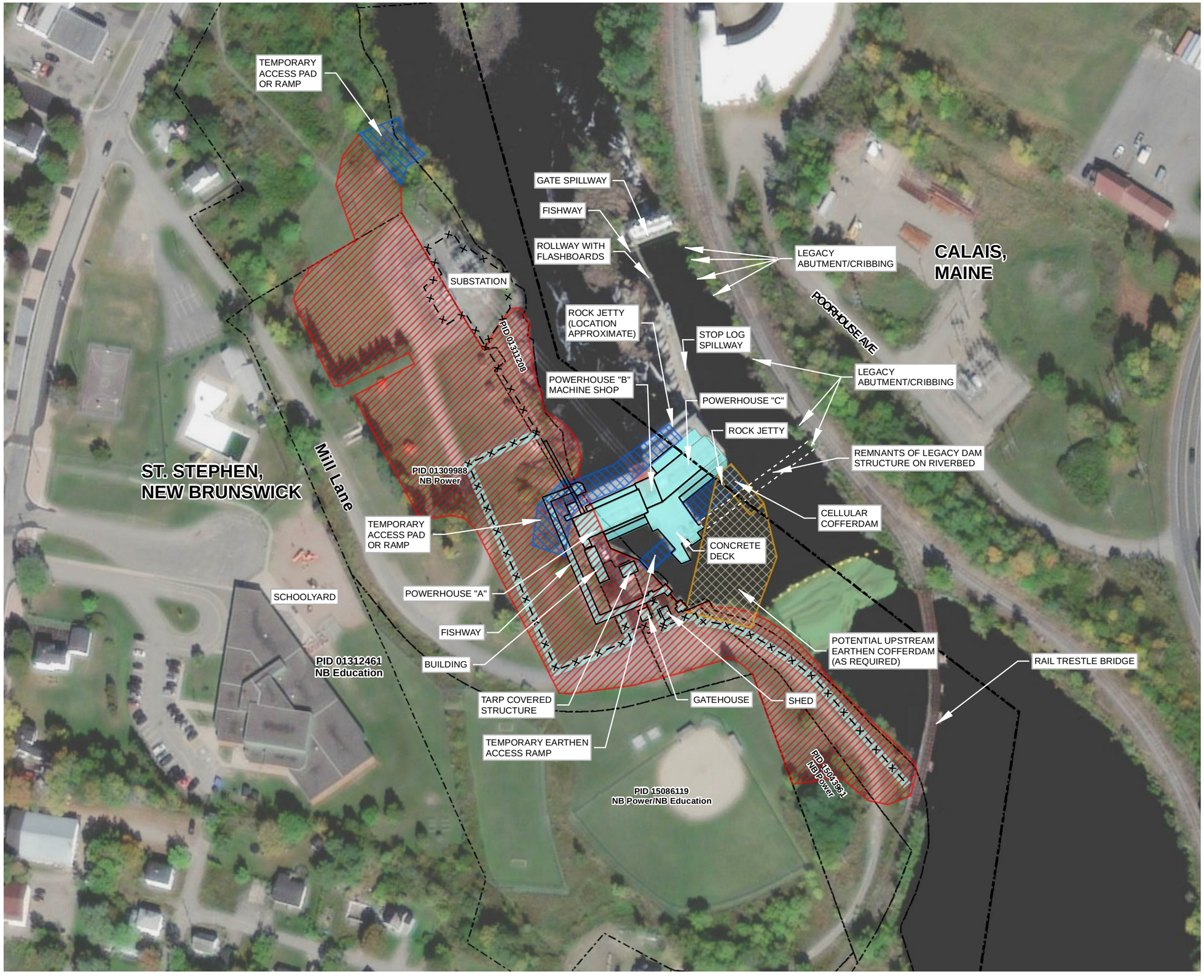
The Canadian portion of the PDA for the Project is presented on Figure 1. The study area (discussed below in Section 3.0) was based on the extent of the PDA plus any riparian area that might experience direct or indirect changes as a result of the project. The area of physical disturbance associated with the Project (i.e., PDA) on the U.S.A. side of the international boundary is shown for illustrative purposes on Figure 2.

1.3 Overview of Regulatory Framework

Because the Milltown Station is situated on the international boundary between Canada and the U.S.A., the Project is subject to both federal and provincial Canadian environmental permitting and EIA processes as well as federal, state, and local U.S.A. environmental permitting processes, and international jurisdictions.

The New Brunswick *Environmental Impact Assessment Regulation – Clean Environment Act*, administered by the New Brunswick Department of Environment and Local Government (NBDELG), establishes the EIA process in New Brunswick. The EIA Regulation requires that all "undertakings" listed on Schedule A of the EIA Regulation (including their proposed construction, operation, modification, extension, abandonment, demolition, or rehabilitation) require registration. The following item under Schedule "A" of the EIA regulation applies to the Project: *"(b) all electric power generating facilities with a production rating of three megawatts or more*" (for the physical decommissioning, demolition, abandonment, and rehabilitation work associated with the Milltown Station).

The *Migratory Birds Convention Act* (MBCA) provides overarching protection for individual and populations of birds and their nests against harm or destruction (Environment Canada 1994). The MBCA and associated regulations are administered by Environment and Climate Change Canada (ECCC) through its Canadian Wildlife Service (CWS) (Environment Canada 1994). The U.S. counterpart of the MBCA is called the *Migratory Bird Treaty Act* (MBTA). Species groups protected by the MBCA include: songbirds, waterfowl, and seabirds; however, grouse, hawks, eagles, owls, blackbirds or jays are not afforded protection under the MBCA (Environment Canada 1991), but are covered in New Brunswick under the New Brunswick *Fish and Wildlife Act*.



Énergie NB Power

F

- Fence
- Canada-USA Border
- Laydown/Access
- Earthen Structures
- Infrastructure to be Decomissioned/Removed
- Potential Cofferdam
- Property Parcels

* Project components on the US side of the International Boundary are not included in the scope of this EIA, but will be subject to applicable US permitting.

0 12.5 25 50 Metres

SCALE 1:1,500

N W E S

MAP DRAWING INFORMATION: ESRI, DIGITALGLOBE, GEOEYE, EATHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS,AEROGRID, IGN, AND THE GIS USER COMMUNITY
DATA PROVIDED BY: NEW BRUNSWICK POWER, DILLON CONSULTING, NB DEPARTMENT OF NATURAL RESOURCES, INTERNATIONAL BOUNDARY COMMISSION

MAP CREATED BY: SCM
MAP CHECKED BY: JAB
MAP PROJECTION: NAD 1983 CSRS NEW BRUNSWICK STEREOGRAPHIC

DILLON CONSULTING

PROJECT: 19-1594

DATE: 2020-11-30

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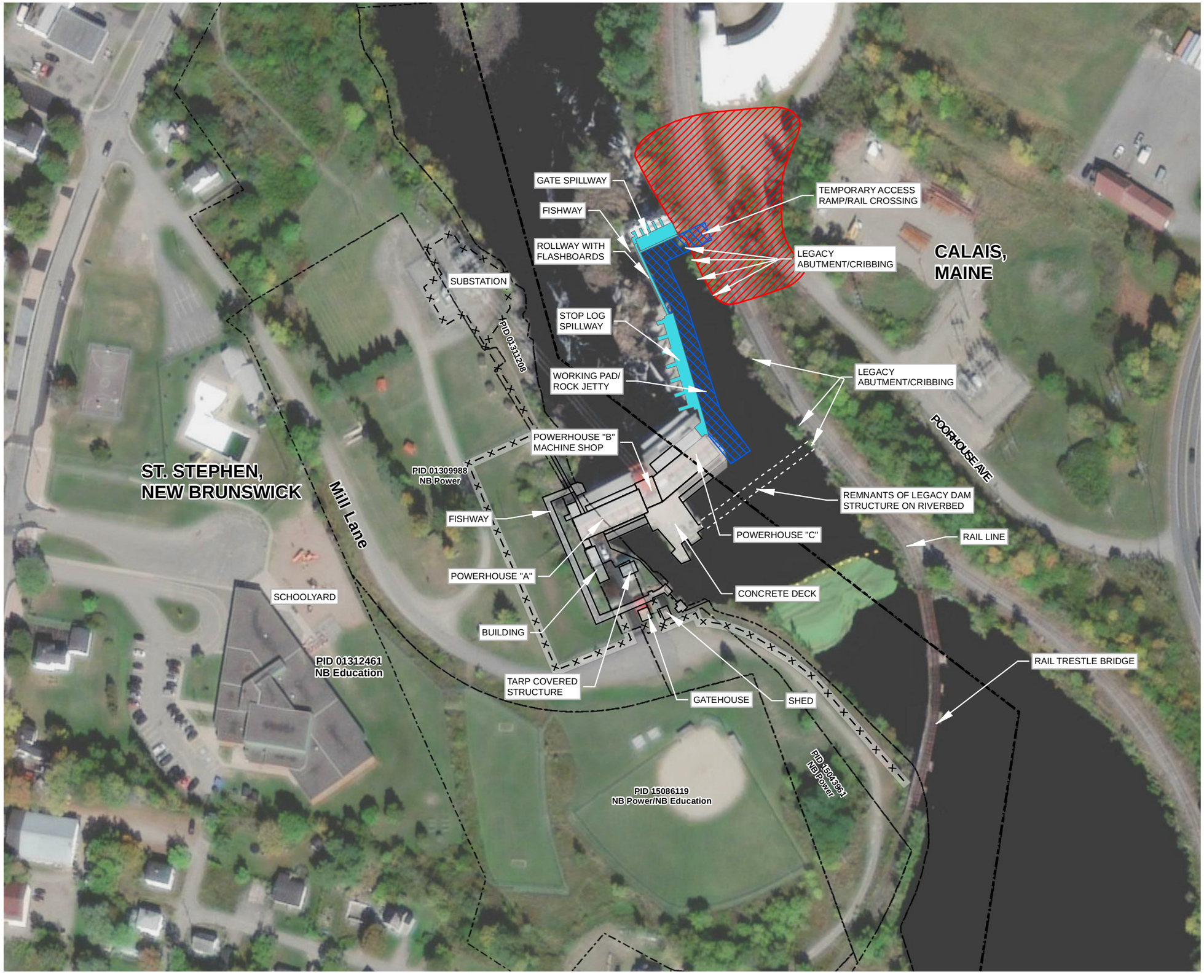

Énergie NB Power

- Fence
- Canada-USA Border
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DILLON CONSULTING

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In 2002, the federal *Species at Risk Act* (SARA) was created to provide additional protection for plant and wildlife species against extirpation, extinction or endangerment from human activities. Currently, only the species listed in Schedule 1 of *SARA* have federal protection (Government of Canada 2002). Provisions to protect and recover a species come into effect once it has been listed in Schedule 1 of SARA. The New Brunswick *Species at Risk Act* (NB SARA) provides legislative protection for species listed on its Schedule A.

Several bird species including those with potential to occur within the study area are listed under Schedule 1 of the SARA. The NB SARA includes four listed migratory bird species: Peregrine Falcon (*Falco peregrinus anatum*), Bald Eagle (*Haliaeetus leucocephalus*), Piping Plover *(Charadrius melodus melodus),* and Harlequin Duck (*Histrionicus histrionicus*). The wood turtle is listed as Threatened under Schedule 1 of SARA and Schedule A of NB SARA, while the snapping turtle is listed as Special Concern under SARA. A Special Concern designation does not extend legal protection to a species, but for the purposes of this study, the snapping turtle is considered an SAR. In 2014, three of the four New Brunswick resident overwintering bat species were listed as Endangered under the federal *Species at Risk Act* (SARA) due to the decimation of local populations by an introduced infectious disease known as white nose syndrome (WNS) that spreads in the damp conditions of natural winter hibernacula. These newly protected species are the tri-colored bat (*Perimyotis subflavus*), the little brown bat (*Myotis lucifugus*), and the northern myotis (*Myotis septentrionalis)*.

Within the U.S.A., some wildlife species are protected federally under the US *Endangered Species Act* of 1973 (US ESA) and in Maine under Maine's *Endangered Species Act* (MESA). The northern long-eared bat is listed as Threatened under US ESA and both the northern long-eared bat and little brown bat are listed under MESA as Endangered. Neither the eastern wood turtle nor the snapping turtle are protected in Maine.

Furthermore, the Milltown dam itself is regulated by the International Joint Commission (IJC), who is mandated by the Boundary Waters Treaty to maintain water levels in watercourses and water bodies that form an international boundary.

2 Scope of Work

The New Brunswick "Guide to Environmental Impact Assessment in New Brunswick" (EIA Guide; NBDELG 2018) as well as other environmental permitting in both Canada and the U.S.A. requires that physical and natural features be described and assessed to support assessment of environmental effects and permitting including, where appropriate, the collection of field data during appropriate seasonal windows. This information typically includes the following:

- The type, extent, and significance of any wildlife populations and/or habitat;
- Presence of, or potential for, wildlife species of conservation concern (SOCC) and species at risk (SAR) or their habitat; and
- The presence of other environmentally significant areas, including National Wildlife Areas, Migratory Bird Sanctuaries, game reserves, RAMSAR sites (i.e., wetlands of international significance), Important Bird Areas (IBAs), Western Hemisphere Shorebird Reserve Network (WHSHRN) sites, and designated critical habitats for species at risk.

Boreal's terrestrial ecologist conducted a number of field surveys for wildlife within the properties of the Milltown Station throughout summer 2020. NB Power's Indigenous field liaison accompanied Boreal staff for some of these surveys. The scope of work for wildlife surveys for this Project is based upon an understanding of the nature of the Project, the extent of the PDA, as well as Dillon's and Boreal's experience in assessing similar landscapes/natural systems. Given that this Project has a small terrestrial footprint and will primarily result in a change in the habitat within the riparian zone of the impoundment of the Milltown Generating Station, the potential for effects on non-aquatic wildlife are limited. For the purposes of this report in supporting the EIA registration for the Project, the scope of assessment for wildlife considers the potential for effects of those species that may be associated with the riparian habitat in this area and are either protected by legislation or have populations that are sensitive and even localized human-induced impacts may affect the viability of local populations. Aquatic species are addressed separately in the fish and fish habitat technical report (Dillon 2020c).

- **Birds** – All migratory birds and their eggs are protected from harm under the MBCA and many non-migratory birds are protected under the New Brunswick *Fish and Wildlife Act*. Among birds, special attention will be given to species of conservation concern and species at risk. We define "species at risk" (abbreviated SAR) as those species that are listed as "Extirpated", "Endangered", or "Threatened" on Schedule 1 of the *Species at Risk Act* (SARA) or the New Brunswick *Species at Risk Act* (NB SARA). We also define "species of conservation concern" (SOCC) as those species that are not SAR but are listed in other parts of SARA, NB SARA, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or are regionally rare or endangered by the Atlantic Canada Conservation Data Centre (AC CDC) (i.e., those species with AC CDC S-ranks of "extremely rare" [S1], "rare" [S2], or "uncommon" [S3]);

- **Bats** – According to the above definitions, all bats that occur in New Brunswick are considered SOCC or SAR. Three resident overwintering species have recently been designated as Endangered under the SARA due the population declines from white-nose-syndrome (northern long-eared bat, little brown bat, and tricolored bat). The latter two species are known to roost in buildings and forage over water and therefore may occur within the study area if present in the area;
- **Wood turtles and snapping turtles** – these SAR turtle species depend of aquatic habitat for part of their life cycles but lay their eggs on land. The wood turtle is listed as Endangered under both the NB SARA and the SARA, while the snapping turtle is listed as Special Concern under the SARA.There is potential for these species to occur along slower moving portion of the Skutik/St. Croix River system where slower moving water is present;
- **Critical or sensitive wildlife habitats** – These would include:
    - habitats designated as protected Critical Habitat as defined under Section 2 of the SARA;
    - any Environmentally Significant Areas (ESAs) noted for the support of certain wildlife species or groups such as birds (Tims and Craig 1995);
    - provincially designated Protected Natural Areas (PNAs); and
    - habitats identified as protected or managed for wildlife by federal and provincial authorities or non-governmental organizations (e.g., Nature Trust of New Brunswick).

Each of these categories of wildlife and wildlife habitat will be dealt with in separate section of this report. For each section, the survey methods will be described and a summary of the results provided. A discussion of the status of these categories of wildlife and habitat will follow, including a summary of the general importance of the site for these sensitive/protected species and habitats and important considerations for local populations of these species when considering changes to the river system.

It is understood that natural systems have some degree of interconnectivity. The wildlife and wildlife habitat VC deals with non-aquatic species and is most specifically directly connected to the terrestrial areas along the Skutik/St. Croix River, but can extend into the aquatic environment and derives its much of character from the hydrology of the river and the movement of ice in winter and spring.

The properties and riparian portions of the River on the U.S.A. side of the international boundary were not included within the scope of the wildlife technical field surveys and studies discussed herein, due to the relatively homogeneous nature of the river banks and related habitats on both sides of the international boundary line as well due to border restrictions, specifically a closed international border at the time of the surveys due to the COVID-19 pandemic. The concept of conducting field surveys on the Canadian side of the international boundary only was discussed with the Maine DEP and was determined to be acceptable. Nonetheless, the information presented herein is believed to be relevant and sufficient to inform the regulatory processes on the U.S.A. side of the international boundary. Certain aspects of the Project and VCs that are located within U.S.A. jurisdiction will be assessed as applicable following U.S.A. protocols and regulatory permitting processes, and will be summarized in separate documents as required.

3 Birds and Bird Habitat

Breeding bird surveys were conducted within the study area shown on Figure 3 using the methods outlined in the Maritime Breeding Bird Atlas (MBBA) for breeding bird survey meandering transects (i.e., area searches) (MBBA 2010). The study area represents the extent of anticipated changes to bird habitat that may result from the Project. To identify the types of bird habitat conditions present, the NBDNRED forest inventory boundaries within the study area were mapped using aerial photography prior to the commencement of the survey in June 2020 and later verified during field surveys.

3.1 Bird Survey Methodology

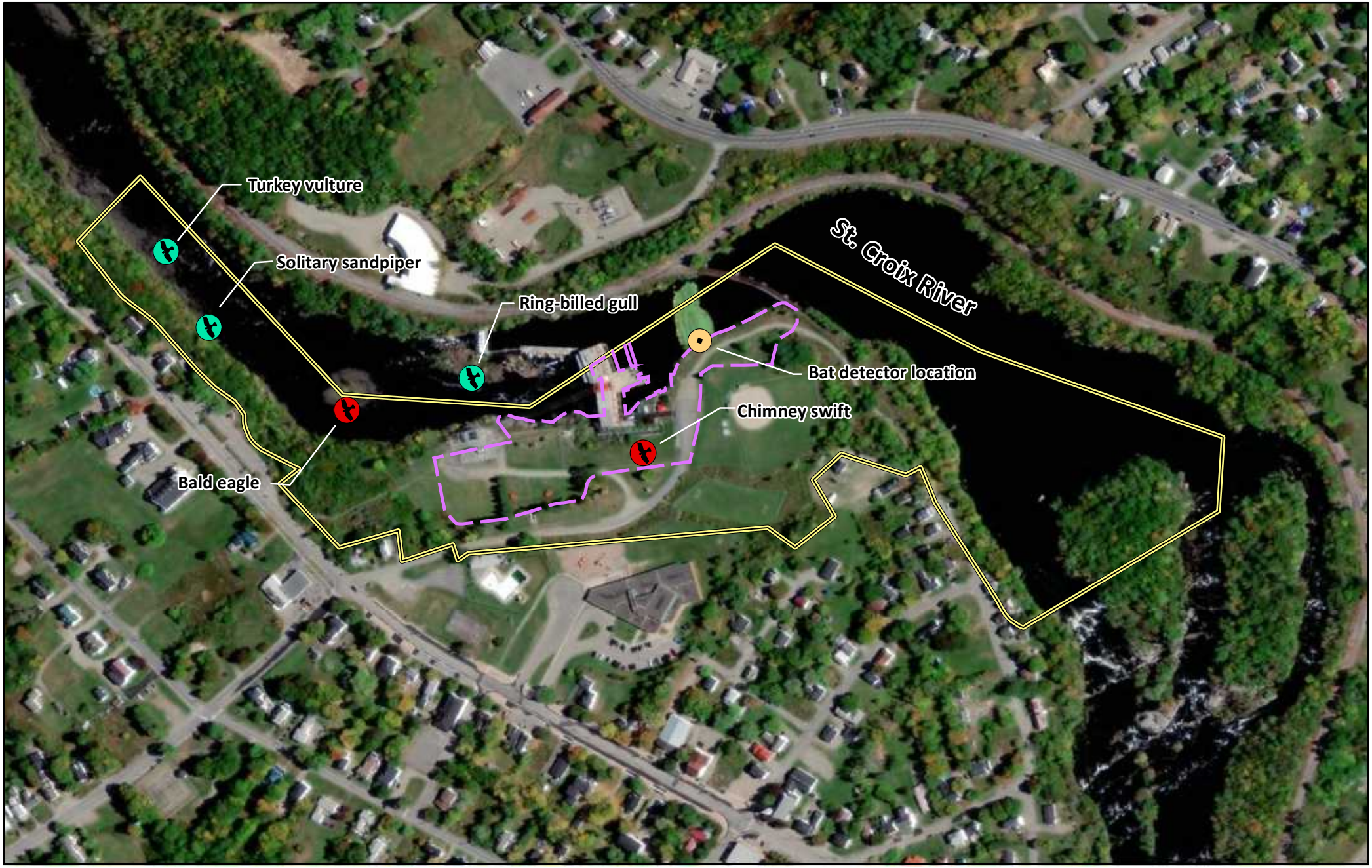
Area searches were conducted within the study area shown on Figure 3 on June 22, and July 15, 2020 for a duration of approximately 3 hours on each day. Area searches started no later than 1 hour after sunrise and continued for approximately 3 hours. Surveys were conducted on days when the weather conditions were favourable (i.e., light winds and no precipitation). The location of each bird detected within the study area was recorded. Evidence of breeding birds such as nests, territorial displays, alarm calling, individuals flushed, mating, and aggressive defending of territories was recorded. In addition to the area searches, incidental surveys were conducted on July 15, August 20, and September 1, 2020, concurrently with plant and fish habitat surveys.

Species observed or heard singing in suitable nesting habitat were classified as possible breeders. Species exhibiting the following behaviours were also classed as probable breeders:

- courtship behaviour between a male and female;
- birds visiting a probable nest site;
- birds displaying agitated behaviour; and
- male and female observed together in suitable nesting habitat.

Species were confirmed as breeding if any of the following items or activities were observed:

- nest building or adults carrying nesting material;
- distraction display or injury feigning;
- recently fledged young;
- occupied nest located; and
- adult observed carrying food or fecal sac for young.



Énergie NB Power

BOREAL ENVIRONMENTAL

Milltown Generating Station Decommissioning Project

Figure 3

St. Stephen, NB **November 30, 2020**

50 25 0 50 100 Meters

Imagery source: Esri

- Study Area
- Project Development Area
- Bat detector location
- Bird SOCC
- Bird SAR

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3.2 Bird Survey Results

The following section includes summaries of the habitat conditions present within the study area, the records of known occurrences for bird SAR and SOCC within the study area, and the results of the field surveys.

3.2.1 Bird Habitat Conditions

The total size of the study area is approximately 7.7 ha and consists of lawn and weedy vegetation, immature mid-successional hardwood forest, and anthropogenic habitat (i.e., structures and roads). The surrounding forested landscape (i.e., outside of the study area) consists of low density residential and commercial development.

Table 1 provides a summary of habitat types by area and percentage of the study area occupied by each type. Habitat types identified in the NBDNRED forest inventory were verified in the field during the field surveys and adjusted accordingly where the forest inventory differed from the field survey.

TABLE 1: SUMMARY OF HABITAT TYPES BY AREA AND PERCENT COVER

Stand Type	Area (ha)	Percent of Study Area (%)
Anthropogenic habitat	0.44	5.7
Lawn and weedy roadside habitat	1.86	70.3
Immature hardwood habitat	5.41	24.2
Total	**7.71**	**100**

Detailed descriptions of each habitat type are provided below.

Anthropogenic habitat occupies 0.44 ha (5.7%) of the study area and consists of asphalt, bare ground, and generating station buildings and associated infrastructure.

Lawn and weedy vegetation habitat occupies 5.41 ha (70.3%) of the study area and is characterized by regularly maintained and mowed lawn intermixed with small patches of shrubs, trees and weeds.

Immature hardwood habitat occupies 1.86 ha (24.2%) of the study area and is approximately 30 to 50 years old. This habitat type is confined to steep banks adjacent to the St. Croix River in the southern portion on the study area, a narrow fringe adjacent to the impoundment and the island located at Salmon Falls. The tree stratum is dominated by green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americanum*), red oak (*Quercus rubrum*), Norway maple (*Acer platanoides*) and black locust (*Robinia pseudoacacia*). The shrub layer is well developed with native shrub species immediately adjacent to the river and impoundment, and patchy elsewhere. The island has a dense understory of glossy buckthorn (*Frangula alnus*), a non-native invasive species. Away from the river, there are dense patches of non-

native invasive multiflora rose (*Rosa multiflora*). The herbaceous layer is patchy as well and consists of a mixture of native and non-native forb and graminoid species.

3.2.2 Environmentally Significant Areas (ESAs) and Important Bird Areas (IBAs)

The AC CDC report identifies one Environmentally Significant Area (ESA) for birds within 5 km of the study area: the St. Croix River Estuary (ESA #826). The estuary extends from the mouth of the St. Croix River at St. Stephen to the Village of St. Andrews to the southeast. There is considerable intermixing of freshwater from the St. Croix River and tidal water in the Passamaquoddy Bay system; however, the upper estuary is highly stratified, becoming partially-mixed as it widens into Oak Bay. This area is highly productive foraging area for bird species in several feeding guilds.

The nearest Important Bird Area (IBA) is over 30 km away from the study area, located along the southern coast of Deer Island and extending through Passamaquoddy Bay to the southern tip of Campobello Island.

3.2.3 Bird Species at Risk (SAR) and Species of Conservation Concern (SOCC)

Known historical records of bird SOCC and SAR within 5 km of the study area, as reported by the Atlantic Canada Conservation Data Centre (AC CDC 2020; Appendix B), and an estimation of their likelihood of breeding within the study area based on availability of suitable habitat, are presented below in Table 2.Records in bold indicate those that were observed during the field surveys for this Project. Although most of the bird species in Table 2 were not detected during the survey, there is suitable breeding habitat present for many of them. Of the species listed in the AC CDC records, only the SOCC that were recorded during the field surveys for this Project are discussed in detail below. Additionally, all SAR listed in the AC CDC report are addressed below if breeding habitat was present, regardless of whether they were recorded during the field surveys. A total of five SOCC and SAR were recorded by the AC CDC within the study area (Figure 3 and Table 2):

- Bald Eagle;
- Bank Swallow;
- Barn Swallow;
- Chimney Swift; and
- Common Nighthawk.

Of these, Bald Eagle and Chimney Swift were observed during the field surveys for this Project. There were no observations of Bank Swallow, Barn Swallow, or Common Nighthawk during the field surveys for the Project.

3.2.4 Bird SAR and SOCC Recorded or Reported by the AC CDC

Further details of the SAR and SOCC observations recorded or reported by the AC CDC (2020; Appendix B) are provided below.

TABLE 2: BIRD SPECIES AT RISK (SAR) AND SPECIES OF CONSERVATION CONCERN (SOCC) REPORTED BY THE AC CDC AS OCCURRING WITHIN 5 KM OF THE STUDY AREA

Common Name	Scientific Name	Breeding Habitat	Probability of Occurrence	Probability of Breeding	SARA (Schedule 1) or NB SARA Status	AC CDC S-Rank	General Status
Bald Eagle	*Haliaeetus leucocephalus*	Tall trees adjacent to water bodies.	Confirmed	Low	Threatened	S3S4B	At Risk
Baltimore Oriole	*Icterus galbula*	Breeds in deciduous or mixed woodland, open forest, or edges, riverside trees and shade trees.	Moderate	Moderate	N/A	S3	Secure
Bank Swallow	*Riparia riparia*	Riverbanks, aggregate pits, road cuts, lake and ocean bluffs. Sand-silt substrates are preferred for excavating nest burrows.	Moderate	Moderate	Threatened	S2S3B,S2S3M	Sensitive
Barn Swallow	*Hirundo rustica*	Nest mostly in caves, holes, crevices and ledges in cliff faces. Following European settlement, they shifted largely to nesting in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts.	Moderate	Moderate	Threatened	S3S4B	At Risk
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Deciduous thickets and shrub thickets on the edges of woodland or marshes. Also along shrubby edges of second growth of mixed forest.	Moderate	Moderate	N/A	S3B,S3M	Secure
Brown-headed Cowbird	*Molothrus ater*	Grasslands with low and scattered trees, forest edges, shrub thickets, fields, pastures, orchards, and residential areas.	Moderate	Low	N/A	S3B,S3M	Secure
Brown Thrasher	*Toxostoma rufum*	Dense shrub thickets around edges of deciduous or mixed woods, shrubby edges of swamps.	Moderate	Moderate	N/A	S2B,S2M	Sensitive
Chimney Swift	*Chaetura pelagica*	Chimneys and on other vertical surfaces in dim, enclosed areas, including air vents, wells, hollow trees and caves.	Confirmed	Low	Threatened	S2S3B, S2M	At Risk
Cliff Swallow	*Petrochelidon pyrrhonota*	Open to semi-open land, farms, cliffs, river bluffs, and lakes.	Moderate	Moderate	N/A	S2S3B,S2S3M	Sensitive
Common Nighthawk	*Chordeiles minor*	Open area habitats, abandon agriculture, disturbed areas, bogs, rock outcrops and gravel roofs. (COSEWIC 2007).	Low	Low	Threatened	S3B	At Risk
Eastern Kingbird	*Tyrannus tyrannus*	Fields with scattered shrubs and trees, orchards, and forest edges. Edges of marshes and farmland.	Moderate	Moderate	N/A	S3S4B	Sensitive
Great Crested Flycatcher	*Myiarchus crinitus*	Deciduous/mixed forests, and forest edges or abandoned orchards. Nests in natural cavity or old woodpecker holes.	Low	Low	N/A	S2S3B,S2S3M	Sensitive
Green Heron	*Butorides virescens*	Nest adjacent to swamps, marshes, lakes, ponds, impoundments, and other wet habitats with trees and shrubs to provide cover for nests.	Low	Moderate	N/A	S1S2B,S1S2M	Sensitive
House Wren	*Troglodytes aedon*	Variety of semi-open habitats, including suburbs, orchards, woodlots, open forest, streamside groves.	Moderate	Moderate	N/A	S1S2B,S1S2M	Undetermined
Indigo Bunting	*Passerina cyanea*	Forest and field edges, road sides, streams, rivers, and abandoned fields.	Moderate	Moderate	N/A	S3B	At Risk

Common Name	Scientific Name	Breeding Habitat	Probability of Occurrence	Probability of Breeding	SARA (Schedule 1) or NB SARA Status	AC CDC S-Rank	General Status
Killdeer	*Charadrius vociferus*	Open habitat. Pastures, plowed fields, large lawns, mudflats, lake shores and coastal estuaries.	Moderate	Low	N/A	S3B,S3M	Sensitive
Northern Mockingbird	*Mimus polyglottos*	Urban/suburban, farms, roadsides, shrub thickets. Favors areas with dense low shrubs and open ground.	Moderate	Moderate	N/A	S2B,S2M	Sensitive
Purple Martin	*Progne subis*	Tree cavities, buildings, rock crevices and bird houses.	Moderate	Low	N/A	S1B, S1M	May be at Risk
Solitary Sandpiper	*Tringa solitaria*	Nest near lakes, ponds, and streams in areas of muskeg bogs and spruce trees.	Confirmed	Low	N/A	S2B, S5M	Secure
Spotted Sandpiper	*Actitis macularius*	Edge of fresh water in a wide variety of settings, including lakes, ponds, rivers, streams, in either open or wooded country.	Moderate	High	N/A	S3S4B, S5M	Secure
Ring-billed Gull	*Larus delawarensis*	Nest on ground near freshwater, usually on low, sparsely vegetated terrain, sandbars, rocky beaches, driftwood, bare rock, concrete, or soil.	Confirmed	High	N/A	S3S4B,S5M	Secure
Rusty Blackbird	*Euphagus carolinus*	In eastern Canada, uses scrub riparian habitats of islands, lakes, rivers and streams, as well as, alder and willow thickets.	Moderate	Moderate	Special Concern	S3B, S3M	May Be At Risk
Turkey Vulture	*Cathartes aura*	Hollow trees, crevices in cliffs, under rocks, caves, inside dense thickets, or in old buildings.	Confirmed	Low	N/A	S3B	At Risk
Warbling Vireo	*Vireo gilvus*	Open deciduous or mixed forest, also in orchards and parks.	Moderate	Low	N/A	S3B,S3M	Secure

Bald Eagle (SAR, listed as Endangered under NB SARA)

Bald Eagles were observed on numerous occasions soaring above the river or perched on mature trees along the river's edge. Although Bald Eagles were observed frequently and on all survey events, foraging activity generally corresponded with spring gaspereau migration. Bald Eagles were observed scavenging dead alewives along the shoreline of the river. The highest number of Bald Eagles observed at any point during the surveys was two. It is assumed that all observations can be attributed to a few individuals. While the study area is frequented by at least two Bald Eagles scavenging for alewives and presumably hunting other prey, there were no nests in the found in the study area.

Bank Swallow (SAR, listed as Threatened under SARA)

Although there are historical AC CDC records of Bank Swallows within 5 km of the PDA, Bank Swallows were not observed during the field surveys for this Project. Bank Swallows prefer banks, aggregate pits, road cuts, lake and ocean bluffs with sand-silt substrates for excavating nest burrows (COSEWIC 2013). Although there is an abundance of riverbank habitat, there are few areas that consist of sand-silt substrates. The bank adjacent to the impoundment may provide some habitat, but the substrate, for the most part, is mixed with coarse debris (i.e., bricks, metal, concrete) from the demolition of the former cotton mill. Very little of this habitat type exists within the study area. The AC CDC reports four records of this species, all of them too old and too distant from the study area to be informative.

Barn Swallow (SAR, listed as Threatened under SARA)

Before European colonization, Barn Swallows nested mostly in caves, holes, crevices and ledges in cliff faces, and they would have been rare in New Brunswick. Following European settlement, they shifted largely to nesting in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts, and their populations grew significantly. However, since the use of traditional wooden barns is declining, along with falling aerial insect abundance, Barn Swallows are again declining in population in New Brunswick.

Barn Swallows prefer various types of open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared rights-of-way, islands, wetlands, and subarctic tundra (COSEWIC 2011).

There are historical AC CDC records of Barn Swallows within 5 km of the PDA. The generating station and associated infrastructure may offer suitable nesting sites; however, Barn Swallows were not recorded during the surveys for this Project. Further observation and assessment of the generating station may be required to ensure that it is not being used by Barn Swallows.

Chimney Swift (SAR, listed as Threatened under SARA)

Chimney Swifts were observed on numerous occasions during the field surveys for this Project, ranging from one to twelve individuals foraging for insects over the study area. There are also several AC CDC records of this species occurring near the study area. There are likely to be many uncapped masonry chimneys on some of the many old homes, churches, and other structures in the surrounding landscape that can provide nesting and roosting sites for Chimney Swifts. No Chimneys Swifts were observed entering the generating station complex, however.

Common Nighthawk (SAR, listed as Threatened under SARA)

Common Nighthawk surveys were not conducted because it was determined that there was no suitable habitat present within the study area. Common Nighthawk's prefer open habitats, abandoned agriculture, disturbed areas, bogs, rock outcrops, and gravel roofs (COSEWIC 2007). Most of the open area habitats with the study area are regularly mowed during the breeding period, which would deter them from nesting in these areas. It was also confirmed that none of the rooves on the powerhouses or outbuildings are gravel and either consist of modified bitumen, metal, or asphalt shingle. The open areas along the rail line right-of-way (RoW) experience frequent rail traffic and would not favour nesting.

Indigo Bunting (SOCC)

Although there are historical AC CDC records of Indigo Buntings within 5 km of the PDA, Indigo Buntings were not detected during the field surveys conducted for this Project. Breeding habitat is present, particularly in the areas surrounding the Milltown Cotton Mill Memorial Park. The AC CDC reports six historical records of this species, but four of these records are more than 30 years old. Two other records are from 2010, but the precision of the provided locations is low (i.e., ±7 km from the centre of the study area). Indigo Buntings are conspicuous birds and their song is very distinctive. Although Indigo Buntings were not detected during the surveys for this Project, given the frequency and intensity of the field surveys throughout the breeding season, they would likely have been detected if they were present in the study area.

Ring-billed Gull (SOCC)

There are historical AC CDC records of Ring-billed Gull within 5 km of the PDA. Ring-billed Gulls were recorded on numerous occasions at and downstream from the generating station, especially during gaspereau migration in June when up to 42 individuals were observed scavenging along the shoreline at Rock Island. An AC CDC record from 1987 lists two historical sightings of two to ten Ring-billed Gulls, indicating that they may have nested in the area historically. Suitable nesting habitat, which includes rocky beaches, bare rock, and concrete pads does exist at and surrounding the generating station itself and downstream from the dam along the river edge; nevertheless, no nests were observed during the surveys.

Rusty Blackbird (SOCC)

Although there are historical AC CDC records of Rusty Blackbird within 5 km of the PDA, Rusty Blackbirds were not detected during any of the field surveys conducted for this Project; however, the island adjacent to Salmon Falls may provide marginal quality breeding habitat as this species does prefer scrubby riparian habitat in eastern Canada (COSEWIC 2006). The perimeter of the island consists of a narrow band of scrubby habitat adjacent to slow moving water at the impoundment. This portion of the study area was only accessible by boat and was not surveyed during the breeding season. The noise from rushing water through Salmon Falls made it impossible to conduct auditory surveys of the island. Visual surveys were difficult as well because the island could only be viewed from two locations along the shoreline, the closest location to the island being approximately 50 m.

Turkey Vulture (SOCC)

Turkey Vultures, similarly to Bald Eagles, were observed in every survey with the exception of the incidental survey on September 1, 2020. Up to nine individuals were observed on two occasions, scavenging for dead alewives along the rivers edge. Observations of small groups and individuals most often occurred outside of the study area; however, some were observed soaring over the impoundment and tailrace. While Turkey Vultures were frequently observed, it does not indicate that a nesting site is near the study area as they are known to travel long distances from their nesting sites to forage. The study area was intensively surveyed and no nests were found.Bird Field Survey Results.

A total of 33 bird species comprised of 407 individuals including two SAR (Bald Eagle and Chimney Swift) and three additional SOCC (Turkey Vulture, Ring-billed Gull, and Solitary Sandpiper) were recorded during the field surveys for this Project. The most frequently recorded species were European Starling, Ring-billed Gulls, Turkey Vulture, Common Grackle, Chimney Swift, Cedar Waxwing, Double-crested Cormorant, and Song Sparrow. These species were characteristic of mid-successional forest and suburban habitats that are typical of the region. No raptor nests were noted in the study area.

When birds were visually detected, they were observed for evidence of nesting behavior (e.g., agitation, distraction displays, pairs in suitable habitat, etc.). The most compelling evidence of breeding observed for each species was recorded in Table 3 below. A summary of the breeding bird survey data collected during the survey conducted during the surveys can be viewed in Table 3 Raw data can be viewed in Appendix B.

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TABLE 3: SUMMARY OF BIRD SPECIES RECORDED DURING THE SUMMER 2020 BREEDING BIRD SURVEYS

Common Name	Scientific Name	AC CDC S-Rank	SARA or NB SARA Status	NBDNRED Status	Highest breeding status[†]	Number Recorded
American Crow	*Corvus brachyrhynchos*	S5	-	Secure	PO	12
American Goldfinch	*Carduelis tristis*		-	Secure	PO	12
American Kestrel	*Falco sparverius*	S4B S4S5M	-	Secure	PO	2
American Redstart	*Setophaga ruticilla*	S5B S5M	-	Secure	CO	17
American Robin	*Turdus migratorius*	S5B S5M	-	At Risk	PO	7
Bald Eagle	*Haliaeetus leucocephalus*	S4	Endangered (NB SARA)	Sensitive	OB	9
Barn Swallow	*Hirundo rustica*	S2B S2M	Threatened	Secure	OB	1
Black and White Warbler	*Mniotilta varia*	S5B S5M	-	Secure	PO	2
Black-capped Chickadee	*Poecile atricapilla*	S5	-	Secure	PO	5
Cedar Waxwing	*Bombycilla cedrorum*	S5B S5M	-	At Risk	PO	21
Chimney Swift	*Chaetura pelagica*	S2S3B S2M	Threatened	Secure	PO	23
Common Grackle	*Quiscalus quiscula*	S5B S5M	-	Secure	CO	24
Double-breasted Cormorant	*Phalacrocorax auritus*	S5B S5M	-	Secure	PO	21
Downy Woodpecker	*Picoides pubescens*	S5B S5M	-	Secure	OB	2
Eastern Phoebe	*Sayornis phoebe*	S5	-	Secure	PR	2
European Starling	*Sturnus vulgaris*	S5B S5M	-	Exotic	OB	71
Gray Catbird	*Dumetella carolinensis*	SNA	-	Secure	PO	7
Herring Gull	*Larus argentatus*	S4B S4M	-	Secure	OB	2
Mourning Dove	*Zenaida macroura*	S5	-	Secure	PR	5
Northern Cardinal	*Cardinalis cardinalis*	S5B S5M S4N	-	Secure	PO	2
Osprey	*Pandion haliaetus*	S4	-	Secure	CO	2
Purple Finch	*Haemorhous purpureus*	S4S5B S5M	-	Secure	PO	1
Red-eyed Vireo	*Vireo olivaceus*	S4S5B SUN S5M	-	Secure	PO	10
Ring-billed Gull	*Larus delawarensis*	S5B S5M	-	Secure	PO	49
Rock Pigeon	*Columba livia*	S3S4B S5M	-	Exotic	OB	2
Solitary Sandpiper	*Tringa solitaria*	SNA	-	Secure	OB	1
Song Sparrow	*Melospiza melodia*	S2B S5M	-	Secure	CO	20
Spotted Sandpiper	*Actitis macularius*	S5B S5M	-	Secure	OB	2
Tree Swallow	*Tachycineta bicolor*	S3S4B S5M	-	Secure	OB	4
Turkey Vulture	*Cathartes aura*	S4B S4M	-	Secure	OB	38
Veery	*Catharus fuscescens*	S3B S3M	-	Secure	PO	3
White-breasted Nuthatch	*Sitta carolinensis*	S4B S4M	-	Secure	PO	1
Yellow Warbler	*Dendroica petechia*	S4	-	Secure	PR	13
Total:						**407**

[†]**Breeding Status Codes:**
OB = observed
PO = possible breeder
PR = probable breeder
CO = confirmed breeder

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4 Turtles

This portion of the study evaluates the potential use of the study area by wood turtles and snapping turtles, which are both considered to be SAR. Wood turtles have legal protection both federally under SARA and provincially under NB SARA where they are listed as Threatened, while snapping turtles are listed as Special Concern under SARA and do not have legal protection as SAR. Both are protected from collection and trade under the New Brunswick *Fish and Wildlife Act*.

The wood turtle is a medium-sized freshwater turtle. It is found throughout northeastern North America, with a non-continuous Canadian range from western Nova Scotia through New Brunswick, Quebec, and Ontario (COSEWIC 2016). Though semi-aquatic, the wood turtle spends more time in the terrestrial environment than most other freshwater turtles. The main aquatic habitat for this species is typically meandering watercourses with moderate current and sand or gravel bottoms (COSEWIC 2016). The preferred terrestrial habitat is generally riparian areas with diverse and patchy cover. The species has also been observed in a variety of other habitat types, including bogs, beaver ponds, coniferous and mixed forests, and agricultural fields.

Snapping turtles are one of the largest freshwater turtles in Canada. They are near their northern range limit in New Brunswick and are not known to occur in the northern part of the province. Their preferred habitat is slow moving uncontaminated water with a soft muddy bottom and dense aquatic vegetation (COSEWIC 2008). Snapping turtles are highly aquatic, only leaving the water for nesting and occasional commutes to other nearby waterbodies (COSEWIC 2008).

Both wood turtles and snapping turtles are long-lived but have low rates of reproduction and do not reach sexual maturity until they are over a decade old. The hatchlings have a low survival rate and are vulnerable to roadkill and predation from a variety of animals. In developed areas like the study area, there are often elevated population densities of certain species that prey on turtle eggs and hatchlings such as raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*), red fox (*Vulpes vulpes*), and even crows (*Corvus brachyrynchos*) and ravens (*Corvus corax*). Wood turtles in particular tend to wander away from waterbodies into the upland for up to hundreds of metres, putting them at risk of road mortality where development is present. These turtle species are also vulnerable to artificial lowering of water levels in the impoundments of hydroelectric dams in winter, which can expose their overwintering sites to freezing temperatures (COSEWIC 2016). Because of their legal status and sensitivity to human development, some mitigation may be warranted to avoid negative effects of the Project on individuals, their nests, and their habitat if they are present.

4.1 Turtle Survey Methodology

The assessment of the study area for use by wood turtles and snapping turtles involved a review of previously known records, a series of walkovers intended to detect actual turtles and nesting sites, and

an evaluation of the quality of habitat based on their needs. The key factors that generally comprise habitat quality for turtles are overwintering habitat, foraging habitat, and nesting habitat.

4.1.1 Previous Records

The AC CDC data report in Appendix B (AC CDC 2020) was reviewed for known records of wood turtles and snapping turtles. To protect the turtle populations from poaching or collection, actual locations of the turtles are not disclosed to the public, but there is an indication of their presence or absence within a 5 km radius of the study area, which provides some indication of likelihood of their ongoing use of the area.

4.1.2 Field Surveys

The entire study area, shown on Figure 3, was traversed on foot and by boat over the course of terrestrial surveys conducted on June 18, 19, and 23, 2020, with additional surveys conducted on July 15, August 20, August 31, and September 1, 2020. The June surveys were more heavily focused on detecting presence of actual turtles as wood turtles are likely to occur within 10 m of the waterbody prior to July and when the ambient air temperature exceeds the temperature of the water (Flanagan et al. 2013). The riparian areas along the shores, particularly those with good exposure to the sun, were searched for presence of wood turtles, which spent a large proportion of their active periods out of the water. Snapping turtles live more aquatic lives, typically only leaving the water to nest. To the extent possible, areas with slow moving water less than 2 m depth were observed for presence of snapping turtles both by boat and by land.

Nesting habitat - Nesting habitat was noted in the field where loose deposits of bare sand or gravel occurred above the high water mark of the river. Nesting habitat must have favorable exposure to the sun to be suitable – preferably a southern exposure. Any exposed gravel banks encountered would also be searched for turtle tracks, depressions suggesting excavated turtle nests, and the remains of eggshells from hatched or predated turtles.

Foraging habitat - Suitable foraging habitat for wood turtles tends to be tall shrub and woods habitat with diverse and intact understory vegetation, particularly in floodplain areas tall shrub and deciduous wooded habitat with diverse and intact understory vegetation (OWTRT 2010). Prime foraging habitat is often floodplain areas. Snapping turtles eat primarily aquatic vegetation and algae but also eat carrion, vertebrates, and invertebrates found in or near water (COSEWIC 2008).

Overwintering habitat – wood turtles overwinter in watercourses that have pools of at least 60 cm depth in order to avoid freezing in winter. They prefer to lodge themselves into a gravelly or muddy substrate behind some imbedded object such as a large rock, woody debris, or overhanging bank (COSEWIC 2016). Snapping turtles require slow moving water of sufficient depth to avoid freezing in winter and a muddy or silty substrate in which they can bury themselves (COSEWIC 2008).

4.2 Turtle Survey Results

The AC CDC report in Appendix B (AC CDC 2020) shows that there is a previously known record of snapping turtle within 5 km of the study area, but the location is unknown. There are no previously known records

of wood turtles within 5 km of the study area, which is evidence that they do not likely occur in this area. No critical habitat for wood turtles in present within the study area.

Over the course of six field days, no turtles were found on the land or in the water, and no evidence of turtle nesting activity was found. In general, the aquatic portions of the study area are largely unsuitable for turtles. A summary of the conditions for the three major facets of turtle habitat is provided.

Nesting Habitat - Within the study area, there were no sand bars noted but there were occasional areas of exposed gravel along roadsides and developed areas of the upland. These areas appeared to be highly compact and subject to traffic, disturbance, and potential predation and were not deemed to be high quality. The banks of the river above and below the dam tend to be rocky, and suitable nesting sites along the river were not found.

Foraging Habitat – For snapping turtles, there was very little potential foraging habitat present. The lack of plant diversity and the overall dynamics of this high energy river system would represent difficulties for snapping turtles. Wood turtles, which typically forage on plants and insects in the riparian zone, may find some food along the narrow riparian banks of the study area, but the study area is dominated by roads and mowed lawns which do not present good foraging opportunities for wood turtles. The impoundment is also fenced up to the rail tracks, presenting a barrier to turtle movement. The small island at the eastern end of the study area may provide the best foraging opportunity for wood turtle, but the island is comprised of tightly stacked boulders which would make movement for turtles difficult. While the species composition and structural diversity of the riparian areas are not unfavorable for wood turtles, the setting within the developed area, and limited areas of natural riparian vegetation make the overall quality of the site to be low.

Overwintering Habitat – The Skutik/St. Croix River system in general is predominantly fast moving with rocky shorelines and substrate that is largely unsuitable for both overwintering and nesting habitat in most areas. The impoundment itself was largely too deep for both species, with an average depth ranging from 3.7 m to 4.9 m and with a predominantly bedrock substrate that is not suitable for either species. The fluctuating water level in the impoundment resulting from the operation of the generating station further diminished the potential for suitable overwintering habitat. Overall, the quality of overwintering habitat is low.

While the impoundment itself offers slow moving water and some suitable overwintering depths for both species and aquatic vegetation in some areas, the bedrock substrate, rocky banks, narrow, steep riparian areas, and instability of the system as a whole mean that the habitat suitability for both species is low. The lack of previous records further suggest that wood turtles are not present in the area. While there is a record for snapping turtle within 5 km of the study area, it is unlikely that the study area is important for these species.

5 Bats

In New Brunswick, there is evidence of the occurrence of seven different species of bats which include: the hoary bat (*Lasiurus cinereus*), red bat (*L. borealis*), silver-haired bat (*Lasionycteris noctivagans*), big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), northern myotis (*M. septentrionalis*), and tri-colored bat (*Perimyotis subflavus*). However, studies in Southern New Brunswick indicate that only two species were common prior to 2014: little brown bat and northern myotis (Broders, Findlay, and Zheng 2004). Of the seven species in the province, four are resident year-round: little brown bat, northern myotis, tri-colored bat, and the little brown bat. The other three species migrate to warmer climates to the south for the colder months (van Zyll De Jong 1985).

In 2014, three of the four New Brunswick resident bat species were listed as Endangered under the federal *Species at Risk Act* (SARA) due to the decimation of local populations by an infectious disease known as white nose syndrome (WNS). The disease is caused by the introduced fungus *Pseudogymnoascus destructans*, which survives in damp, cold cave conditions and infects hibernating bats (Lorch et al. 2011). WNS causes these species to arouse during hibernation, depleting them of resources and leading to death in almost all cases (Environment Canada 2014). Migratory bats occurring in New Brunswick tend not to be affected by the disease as they do not overwinter in caves inoculated with the fungus. It is estimated that populations of the two once-most common species in the province (i.e., little brown bat and northern myotis) were reduced by as much as 99% since 2011 when it was first detected in NB. The tri-colored bat, which was known to occur in New Brunswick in lower numbers (Broders, Findlay, and Zheng 2004), was also given an Endangered status under SARA. The population of tri-colored bats is believed to have been extirpated from New Brunswick as a result of WNS (CBC 2018).

Due to the tenuous existence of New Brunswick's remaining bats and the tendency for some to roost in buildings and forage over water, it was deemed necessary to determine use of the site by bats using acoustic monitoring during the active season for bats. If the site was found to be important for bat SAR, or there was evidence of nearby roosting of little brown or northern myotis, additional investigation or mitigation may be warranted.

5.1 Bat Survey Methodology

An acoustic data recorder was deployed, monitored, and data was collected and processed by Boreal's Derrick Mitchell, R.P.F., who has more than a decade of experience in acoustic surveys for bats. The location selected for the recorder was along the bank of the impoundment near to the west of the dam and is shown on Figure 3. This position was chosen to capture any activity of bats that might be active near the generating station and foraging activity over the water (i.e., impoundment) where insect prey availability tends to be high.

The acoustic data was recorded using a single Anabat Swift™ passive bat detector, deployed on the Milltown Station property adjacent to the impoundment on the Canadian side. The detector ran continuously between June 18, 2020 and the morning of June 24, 2020. The microphone was pointed downward above a 20 x 20 cm metal sheet mounted at a 45° angle to deflect sound upward into the microphone. The detectors were programmed to record bat passes from a half hour before sunset to a half hour after sunrise in order to determine relative activity patterns by species or species groups over time.

Anabat Insight tmv. 1.8.6. software (Titley Electronics, Ballina, NSW, Australia) was used to view and categorize frequency/time graphs from the bat calls recorded by the Anabat detectors. For each call, the slope, maximum frequency (i.e., the highest frequency), minimum frequency (i.e., the lowest frequency), and duration were noted in order to determine species. Each variable was then compared with a library of reference calls collected from individual bats that had been identified to species. We defined a bat call (call) as a single, recognizable vocalization from one bat and a bat pass (pass) as one or more sequential calls, representing calls from a single bat, recorded in a one Anabat digital file.

Bat species calls are usually distinguishable based on the characteristics of the geometry of the frequency/time graphs in Analook (Jones and Siemers 2010). However, call recordings sometimes lack sufficient detail to allow species level identification due to factors such as background noise, distance from the detector, weather, and other environmental factors. Given that call recordings are often of short duration or contain anomalies or disturbance, major categories were developed into which calls could consistently be classified under normal recording conditions:

- EPFU/LANO/LABO – [big brown bat/silver-haired bat/eastern red bat]: Silver-haired bats and big brown bats produce calls with a constant frequency (CF) tail around 22 – 25 kiloHertz (kHz). Although eastern red bats are the only species to produce calls with a minimum frequency between 30 – 35 kHz, they also produce calls with lower minimum frequencies within the range of big brown and silver-haired bats. As such, eastern red bats were included in this species group. However, red bat calls are often distinctive to experienced technicians, having calls that change frequency range between calls and can have a distinctive up curve in frequency at the end of the call. Where obvious, these calls would be classified as red bat. When calls are clear and of adequate durations, experienced-based professional judgment allows for accurate discrimination of big brown bat calls (EPFU). Separating EPFU calls where possible is important when assessing potential effects of a project and prescribing mitigation as big brown bats are resident bats, while both LANO and LABO are migratory bat species.
- LACI –hoary bat: Noticeably lower in frequency, with calls ranging from 25 to 18 kHz (maximum to minimum frequency). Calls are also noticeably longer in duration, with a longer CF tail compared to other bat species known to occur within the study area. Hoary bats can, therefore, be reliably differentiated from all other species.

- MYOTID SP + PESU – [little brown myotis, northern myotis, and tri-colored bat]: These species produce shorter duration calls with a minimum frequency between 40 – 45 kHz, and maximum frequencies ranging between 120 kHz and 80 kHz. Occasionally myotis calls can have a minimum call frequency of 35 kHz; while their maximum call frequencies distinguish them from potential eastern red bat calls. Also, typical tri-colored bat calls can have a Sc ('slope of the body') parameter of less than 25 and higher maximum frequencies, distinguishing them from myotis. Where evident in such cases, tri-colored bats would be identified to species.
- Any partial or fragmented calls that could not be identified to species were classified as unidentified bats (records recognized as bat calls, but for which frequencies could not be determined).

When calls are clearly identifiable to a single species, more resolution may be used in identification than as prescribed above.

5.2 Bat Survey Results

The ambient recorded temperature during the survey nights varied between 14 and 24 degrees Celsius and there was no precipitation or wind speeds greater than 20 km/h. The conditions for bat activity were very good and the survey dates are within the active foraging season for resident bats. A total of 18 identifiable bat calls were recorded between the evening of June 18 and the morning of June 24, 2020. All calls were identifiable as big brown bats and were of sufficient quality that identification to species was possible with reasonable level of certainty.

Most of the calls (11 of 18) were recorded on the evening of June 20/21 but there were not enough calls recorded over the four-night period to show meaningful temporal patterns of activity as all calls recorded in a given night could have been made by a single individual bat.

While the presence of *Myotis* spp. and tri-colored bats in the area cannot be ruled out based on the four days of recording, it can be assumed that the impoundment area is not a highly important foraging area for those species. Given how low their remaining numbers are in the province, it is unlikely that they are present in this area. Compared to bat activity levels prior to WNS decimating resident bat numbers, the recorded activity is very low for a site of this type. When bats were abundant in the province, recording at a similar larger watercourse in southern New Brunswick would have yielded hundreds of *Myotis* spp. calls in a single night (Broders, Findlay, and Zheng 2004).

The presence of some big brown bat activity is unsurprising given the location of the detector in southern New Brunswick near two towns, each with a large number of old buildings that would support overwintering and maternity colonies for this species. While the data do not provide proof that the area is not used by other species, they do suggest that it is not of high importance to any species.

The AC CDC report in Appendix B (AC CDC 2020) lists a known bat hibernaculum within 5 km of the study area. While there is no comprehensive database of bat hibernacula in the province, there is a list of historic mine locations available from NBDNRED (2016). The southwestern region of the province is not known for natural caves or karst geology, and well-known natural winter hibernacula tend to be located more in the southeast portion of the province (Moseley 2007). The AC CDC record (AC CDC 2020) likely refers to one of many historic mine shafts within Charlotte County; only one of which is located within 5 km of the study area at Dennis Stream located 3 km to the east. This shaft is only 40 feet deep and is unlikely to be an important hibernaculum and may not have been used since WNS was discovered. No critical habitat for bats is identified within the study area.

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6 Other Wildlife Observations

Other SAR and SOCC wildlife species were not directly observed within the study area during any of the field surveys. Direct and indirect (scat and tracks) observations of common wildlife species include white-tail deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), red-tailed fox (*Vulpes vulpes*), groundhog (*Marmota monax*), and chipmunk (*Tamias striatus*). Although not observed, it is highly likely that striped skunk (*Mephitis mephitis*) is present on occasion, along with several species of rodent (i.e., voles and mice). All of these species are common and would be expected to occur in fragmented suburban habitats. A few small patches of common milkweed (*Asclepias syriaca*) were encountered during the surveys and were checked for eggs, caterpillars, and chrysalis, and none were found. No amphibian species or monarch butterfly (*Danaus plexippus*) were recorded during surveys.

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7 Summary and Discussion

This technical report is intended to support the environmental impact assessment (EIA) registration document and other environmental permitting applications for the Milltown Generation Station Decommissioning Project in Milltown, New Brunswick, Canada and is a part of a series of reports summarizing studies of the various VCs identified as part of the scope of the EIA. The following sections provides a summary and some context for the study results for each wildlife species group.

7.1 Birds

There were 407 observations of 33 bird species made during area search surveys and incidental observations. Many of these observations are assumed to multiple records of the same individuals on different days throughout the survey time period. This assemblage of bird species recorded during the survey are typical of this region. Although there were many records of SAR and SOCC species (122 records) the highest number of individuals recorded for SAR and SOCC at any one time were two Bald Eagles, 12 Chimney Swift, 42 Ring-billed Gulls, nine Turkey Vultures, and two Solitary Sandpiper. It is reasonable to infer that these numbers are a close estimation of the local breeding populations of these species.

Foraging activity amongst SAR and SOCC species (Bald Eagle, Ring-billed Gull, and Turkey Vulture) was highest during gaspereau migration in mid- to late June on the downstream side of the dam. Double-crested Cormorants were also seen in abundance foraging below the dam during this time period. Numerous observations of dead gaspereau were observed along the shoreline in this area. The abundance of gaspereau below the dam may be an important factor in the presence of four of the five SAR/SOCC species.

Several observations of up to 12 Chimney Swifts were made within the study area especially over maintained (lawn) and impoundment area. Chimney Swifts appeared to forage for brief periods of time generally moving downstream or into adjacent suburban neighborhoods. This suggests that foraging is more generalized and not concentrated over the study area and PDA.

Other notable bird observations include a nesting pair of Eastern Phoebe within the PDA. The pair was observed on several occasions while nesting in fish passage infrastructure near the main gate. The pair was observed flying to and from the nest with food for chicks. Birds, eggs, and active nests are all protected under the MBCA.

The study area does not represent critical habitat for birds. The IBA Quoddy region (NB 037) is too distant from the study area to have any influence over foraging or breeding activity. The St. Croix River ESA is relatively close, within a few kilometers from the study area beginning at the head of tide; however, this area represents very different habitat (i.e., estuarine) than the study area offers. Some species, particularly the ones observed during spring gaspereau migration are opportunistic with regards

to foraging/scavenging and likely move upstream to the dam where seasonal foraging opportunities exist. Foraging activity dropped off dramatically when spring gaspereau migration ended.

7.2 Turtles

There are no known historical records in the area for wood turtles according to the AC CDC records in Appendix B (AC CDC 2020). During field work for this Project, no turtles or evidence of turtle nesting was found within the study area, and habitat quality is generally low in all categories. The impoundment is generally too deep for both species with unsuitable substrate and the periodic water level fluctuations in the impoundment further reduce the quality of overwintering habitat. Some suitable aquatic habitat for both species exists in the impoundment near the shores where there is shallow water, but the habitat of the lower Skutik/St. Croix River system in general is not suitable in that it flows too swiftly and water levels fluctuate greatly. The location of the impoundment within the developed areas of St. Stephen and Calais further diminishes the habitat suitability for these species due to the hazards posed by the many roadways and higher densities of predators such as raccoons. Roadside habitats are frequently used for nesting, but nests in developed areas along roadsides have high rates of predation. The study area is not likely to be important for wood turtles or snapping turtles.

7.3 Bats

Acoustic bat surveys in June revealed low levels of big brown bat activity in the impoundment area, while no other species were found to be present. While bat populations in Nova Scotia may be showing signs of a slow recovery (MTRI 2019), there is not yet any compelling evidence to that effect in New Brunswick (McAlpine, D., pers. comm., 2019). Despite this, the big brown bat may be increasing in range and numbers by occupying niches formerly dominated by the myotis species. The big brown bat is less susceptible to WNS as it tends to spend winters in larger buildings (McAlpine et al. 2002) where *P. destructans* does not tend to flourish. Big brown bats are also known to hibernate in caves, but there is some evidence that they have some resistance to *P. destructans* (Frank et al. 2014). It is likely that the big brown bat is now the most common species in the province (McAlpine, D., pers. comm., 2019). The study results did not suggest that the impoundment or facilities are of high importance to big brown bats or other species.

7.4 Other Wildlife

No other SAR or SOCC wildlife species were recorded during the surveys other than those that commonly occur in fragmented suburban habitats in the region. No amphibian species or monarch butterfly *(Danaus plexippus)* were recorded during surveys.

8 Closure

This report was prepared by Boreal Environmental (Boreal) for Dillon Consulting Limited (Dillon) on behalf of the New Brunswick Power Corporation, in support of the EIA and permitting of the Milltown Generating Station Decommissioning Project. Boreal has used the degree of care and skill ordinarily exercised under similar circumstances at the time the work was performed by reputable members of the environmental consulting profession practicing in Canada. Neither Boreal nor Dillon assumes no responsibility for conditions which were beyond its scope of work. There is no warranty expressed or implied by Boreal or Dillon.

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Yours truly,

BOREAL ENVIRONMENTAL for DILLON CONSULTING LIMITED

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Appendix A

Breeding Bird Survey Data

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Date	Type	Weather	Temperature (°C)	Beaufort	Common Name	Scientific Name	Number Observed	Breeding Code	Notes
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Eastern Phoebe	*Sayornis phoebe*	2	P	Pair observed foraging around fish ladder/Nest observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Gray Catbird	*Dumetella carolinensis*	1	H	Observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Mature Bald Eagle observed flying up river
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Turkey Vulture	*Cathartes aura*	9	X	Observed up to 9 Turkey Vulture soaring over facility at spillway.
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Adult observed perched in tree on edge of river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	3	H	3 observed flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Black-capped Chickadee	*Poecile atricapilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	European Starling	*Sturnus vulgaris*	20	H	Approximately 20 flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Robin	*Turdus migratorius*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Black-capped Chickadee	*Poecile atricapilla*	1	H	Observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Veery	*Catharus fuscescens*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Red-eyed Vireo	*Vireo olivaceus*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Singing on island
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Double-crested Cormorant	*Phalacrocorax auritus*	20	H	Basking on rocks in river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Mature Bald Eagle on rock in river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Gray Catbird	*Dumetella carolinensis*	1	H	Observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Crow	*Corvus brachyrhynchos*	1	H	Calling
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Goldfinch	*Carduelis tristis*	1	H	Observed flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Red-eyed Vireo	*Vireo olivaceus*	1	H	Observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Black-capped Chickadee	*Poecile atricapilla*	2	H	2 observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	H	Observed/singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Goldfinch	*Carduelis tristis*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Rock Pigeon	*Columba livia*	2	H	2 perched on transmission lines over river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Red-eyed Vireo	*Vireo olivaceus*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	H	Observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Downy Woodpecker	*Picoides pubescens*	1	H	Female observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Gray Catbird	*Dumetella carolinensis*	1	H	Observed female
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Singing/observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Singing/observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Goldfinch	*Carduelis tristis*	1	H	Observed flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	2	H	2 observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Red-eyed Vireo	*Vireo olivaceus*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	3	H	3 observed

Date	Type	Weather	Temperature (°C)	Beaufort	Common Name	Scientific Name	Number Observed	Breeding Code	Notes
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Eastern Phoebe	*Sayornis phoebe*	2	P	Pair observed foraging around fish ladder/Nest observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Gray Catbird	*Dumetella carolinensis*	1	H	Observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Mature Bald Eagle observed flying up river
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Turkey Vulture	*Cathartes aura*	9	X	Observed up to 9 Turkey Vulture soaring over facility at spillway.
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Adult observed perched in tree on edge of river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	3	H	3 observed flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Black-capped Chickadee	*Poecile atricapilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	European Starling	*Sturnus vulgaris*	20	H	Approximately 20 flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Robin	*Turdus migratorius*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Crow	*Corvus brachyrhynchos*	1	H	Calling
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Goldfinch	*Carduelis tristis*	1	V	Calling
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Robin	*Turdus migratorius*	1	H	Observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Mourning Dove	*Zenaida macroura*	1	H	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Observed/singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Red-eyed Vireo	*Vireo olivaceus*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	4	H	At least 4 singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Common Grackle	*Quiscalus quiscula*	1	H	Observed flying over river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	1	FY	Fledgling observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Song Sparrow	*Melospiza melodia*	2	D	2 males fighting
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Crow	*Corvus brachyrhynchos*	4	H	4 observed flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	European Starling	*Sturnus vulgaris*	6	H	6 observed in dead elm tree
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Tree Swallow	*Tachycineta bicolor*	2	V	2 observed foraging over river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Ring-billed Gull	*Larus delawarensis*	1	V	1 adult observed on roof of facility
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Downy Woodpecker	*Picoides pubescens*	1	V	Male observed
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Northern Cardinal	*Cardinalis cardinalis*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Herring Gull	*Larus argentatus*	2	H	2 observed on roof
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Turkey Vulture	*Cathartes aura*	2	X	2 on rocks in river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Chimney Swift	*Chaetura pelagica*	1	X	1 observed foraging near substation and over river
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	Osprey	*Pandion haliaetus*	1	CF	Food carry
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	CF	Food carry
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	Veery	*Catharus fuscescens*	1	S	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	European Starling	*Sturnus vulgaris*	20	H	Fly over
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	H	Observed
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	3	S	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Observed
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	Red-eyed Vireo	*Vireo olivaceus*	1	S	Observed
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	Common Grackle	*Quiscalus quiscula*	1	S	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	American Goldfinch	*Carduelis tristis*	1	S	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	American Goldfinch	*Carduelis tristis*	3	S	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	American Goldfinch	*Carduelis tristis*	2	H	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	Gray Catbird	*Dumetella carolinensis*	1	S	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	American Robin	*Turdus migratorius*	1	S	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	American Robin	*Turdus migratorius*	1	H	Observed

Date	Type	Weather	Temperature (°C)	Beaufort	Common Name	Scientific Name	Number Observed	Breeding Code	Notes
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Eastern Phoebe	*Sayornis phoebe*	2	P	Pair observed foraging around fish ladder/Nest observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Gray Catbird	*Dumetella carolinensis*	1	H	Observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Mature Bald Eagle observed flying up river
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Turkey Vulture	*Cathartes aura*	9	X	Observed up to 9 Turkey Vulture soaring over facility at spillway.
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Adult observed perched in tree on edge of river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	3	H	3 observed flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Black-capped Chickadee	*Poecile atricapilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	European Starling	*Sturnus vulgaris*	20	H	Approximately 20 flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Robin	*Turdus migratorius*	1	S	Singing
22-Jun-20	Area search	Foggy	14 to 18	0 to 1	Red-eyed Vireo	*Vireo olivaceus*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Common Grackle	*Quiscalus quiscula*	1	H	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	American Robin	*Turdus migratorius*	1	H	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Ring-billed Gull	*Larus delawarensis*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Black and white warbler	*Mniotilta varia*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Black-capped Chickadee	*Poecile atricapilla*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Double-breasted cormorant	*Phalacrocorax auritus*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	American Goldfinch	*Carduelis tristis*	2	P	Pair observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	3	H	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	3	H	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Double-breasted cormorant	*Phalacrocorax auritus*	20	X	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Gray Catbird	*Dumetella carolinensis*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Veery	*Catharus fuscescens*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Red-eyed Vireo	*Vireo olivaceus*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Ring-billed Gull	*Larus delawarensis*	1	X	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Common Grackle	*Quiscalus quiscula*	1	CF	Food carry
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Song Sparrow	*Melospiza melodia*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Turkey Vulture	*Cathartes aura*	8	X	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	2	X	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Chimney Swift	*Chaetura pelagica*	2	X	Fly over
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Ring-billed Gull	*Larus delawarensis*	3	X	Observed

Date	Type	Weather	Temperature (°C)	Beaufort	Common Name	Scientific Name	Number Observed	Breeding Code	Notes
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Eastern Phoebe	*Sayornis phoebe*	2	P	Pair observed foraging around fish ladder/Nest observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Gray Catbird	*Dumetella carolinensis*	1	H	Observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Mature Bald Eagle observed flying up river
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Turkey Vulture	*Cathartes aura*	9	X	Observed up to 9 Turkey Vulture soaring over facility at spillway.
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Adult observed perched in tree on edge of river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	3	H	3 observed flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Black-capped Chickadee	*Poecile atricapilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	European Starling	*Sturnus vulgaris*	20	H	Approximately 20 flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Robin	*Turdus migratorius*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Red-eyed Vireo	*Vireo olivaceus*	1	S	Observed
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Chimney Swift	*Chaetura pelagica*	1	X	Barn or bank swallow too far away to confirm
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Mourning Dove	*Zenaida macroura*	2	S	Singing
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Turkey Vulture	*Cathartes aura*	5	X	Perched on cell tower US side
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Turkey Vulture	*Cathartes aura*	9	X	Soaring down river from site
22-Jun-20	Area search	Sunny/clear	14 to 18	0 to 1	Mourning Dove	*Zenaida macroura*	2	P	Pair observed
23-Jun-20	Incidental	Sunny/clear	NA	NA	Chimney Swift	*Chaetura pelagica*	2	X	2 foraging over head pond
23-Jun-20	Incidental	Sunny/clear	NA	NA	Ring-billed Gull	*Larus delawarensis*	42	X	42 at rock island
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Likely same bird from last survey
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Tree Swallow	*Tachycineta bicolor*	2	H	2 birds foraging over ball field
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	European Starling	*Sturnus vulgaris*	25	H	Estimated 25 individuals
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	American Crow	*Corvus brachyrhynchos*	1	S	Singing
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	American Robin	*Turdus migratorius*	2	H	Observed pair
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	American Crow	*Corvus brachyrhynchos*	5	H	5 birds
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Northern Cardinal	*Cardinalis cardinalis*	1	H	Observed female
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Yellow Warbler	*Dendroica petechia*	1	S	Singing
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Common Grackle	*Quiscalus quiscula*	20	H	20 individuals
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Yellow Warbler	*Dendroica petechia*	1	S	Singing
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Gray Catbird	*Dumetella carolinensis*	1	X	Observed
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Double-crested Cormorant	*Phalacrocorax auritus*	1	X	Upstream tip of rock island
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Turkey Vulture	*Cathartes aura*	1	X	Observed
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Black and white warbler	*Mniotilta varia*	1	S	Singing
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Red-eyed Vireo	*Vireo olivaceus*	1	X	Observed
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Yellow Warbler	*Dendroica petechia*	2	P	Pair observed
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Ring-billed Gull	*Larus delawarensis*	1	X	Juvenile
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Chimney Swift	*Chaetura pelagica*	1	X	1 bird foraging over head pond
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Spotted Sandpiper	*Actitis macularius*	1	X	Heard partial song not positive on ID
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Turkey Vulture	*Cathartes aura*	1	X	1 flying over head pond
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Cedar Waxwing	*Bombycilla cedrorum*	3	H	3 individuals observed
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Gray Catbird	*Dumetella carolinensis*	1	H	Observed
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Purple Finch	*Haemorhous purpureus*	1	S	Male singing
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Spotted Sandpiper	*Actitis macularius*	1	X	Observed
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	American Kestrel	*Falco sparverius*	1	X	Fly over
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Juvenile fly over

Date	Type	Weather	Temperature (°C)	Beaufort	Common Name	Scientific Name	Number Observed	Breeding Code	Notes
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Eastern Phoebe	*Sayornis phoebe*	2	P	Pair observed foraging around fish ladder/Nest observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Gray Catbird	*Dumetella carolinensis*	1	H	Observed
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Mature Bald Eagle observed flying up river
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Turkey Vulture	*Cathartes aura*	9	X	Observed up to 9 Turkey Vulture soaring over facility at spillway.
18-Jun-20	Incidental	Sunny/clear	13 to 22	0 to 1	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Adult observed perched in tree on edge of river
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Yellow Warbler	*Dendroica petechia*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Cedar Waxwing	*Bombycilla cedrorum*	3	H	3 observed flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	Black-capped Chickadee	*Poecile atricapilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Redstart	*Setophaga ruticilla*	1	S	Singing
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	European Starling	*Sturnus vulgaris*	20	H	Approximately 20 flyover
19-Jun-20	Area search	Sunny/clear	15 to 26	0 to 1	American Robin	*Turdus migratorius*	1	S	Singing
15-Jul-20	Area search	Sunny/clear	14 to 18	2 to 3	Chimney Swift	*Chaetura pelagica*	12	X	12 foraging near and over generating station
20-Aug-20	Incidental	Sunny/clear	NA	NA	Bald Eagle	*Haliaeetus leucocephalus*	1	X	Adult observed over the facility
20-Aug-20	Incidental	Sunny/clear	NA	NA	Turkey Vulture	*Cathartes aura*	1	X	Fly over
20-Aug-20	Incidental	Sunny/clear	NA	NA	Turkey Vulture	*Cathartes aura*	2	X	2 fly over circling
20-Aug-20	Incidental	Sunny/clear	NA	NA	Chimney Swift	*Chaetura pelagica*	5	X	5 foraging over the facility
20-Aug-20	Incidental	Sunny/clear	NA	NA	Solitary Sandpiper	*Tringa solitaria*	1	X	Observed
1-Sep-20	Incidental	Sunny/clear	NA	NA	White-breasted Nuthatch	*Sitta carolinensis*	1	H	Observed
1-Sep-20	Incidental	Sunny/clear	NA	NA	Osprey	*Pandion haliaetus*	1	X	Observed
1-Sep-20	Incidental	Sunny/clear	NA	NA	American Kestrel	*Falco sparverius*	1	X	Observed

***Breeding codes** (Taken from MBBA 2020)

X - Species observed in its breeding season (no breeding evidence)

H - Species observed in its breeding season in suitable nesting habitat.

S - Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season

P - Pair observed in suitable nesting habitat in nesting season

D - Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation

CF - Adult carrying food for young

FY - Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight

**Beaufort – is a scale ranging from 0 to 12 used to estimate wind force via visual observations. Bird surveys must stop when the Beaufort is estimated to be greater than 3.

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Appendix B

Atlantic Canada Conservation Data Centre Report

Please refer to EIA Registration Appendix A