APPENDIX

C

ENVIRONMENTAL INVENTORY

APPENDIX

C-1 *NATURAL ENVIRONMENT REPORT*

PUC TRANSMISSION LP

230kV Transmission Project

NATURAL HERITAGE ASSESSMENT

September 2022

FINAL

230kV Transmission Project

NATURAL HERITAGE ASSESSMENT

PUC TRANSMISSION LP

PROJECT NO.: 211-05846-00

DATE: SEPTEMBER 2022

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1 INTRODUCTION

PUC Transmission LP (PUC) has identified the need for a double-circuit 230 kilovolt (kV) transmission line and a new transformer station in the city of Sault Ste. Marie, in northern Ontario (the Project). The Project is proposed to serve the immediate need for increased power supply to Algoma Steel for its new electric arc furnaces (EAFs) project and to provide PUC Distribution Inc. with a new source of power that will support its long term asset management needs.

PUC has initiated work on development activities, including seeking relevant environmental approvals to construct the 230 kV line and transformer station, which will be approximately 12 kilometres (km) long, from the Hydro One Third Line Station to the future Algoma Steel EAF Station on its property. The purpose of this study is to complete a natural heritage inventory along the proposed routes and station sites, evaluate these options from a natural heritage perspective and complete an impact assessment of the preferred route and station location. The report will outline considerations to carry forward to detailed design.

The general route from the Third Line TS to the Algoma Steel Plant is approximately 10 km in length. The first 6.4 km extends westerly from the Third Line TS within a right-of-way (ROW) easement held by PUC, then southerly for the remaining 3.6 km to one of three substation options being considered. An additional 2 km of overhead transmission line is expected to connect the selected substation to the EAFs at the Algoma Steel Plant. For the purpose of this assessment, this general area has been identified as the *Area of Transmission Connection*.

A map of the study area can be found in Appendix A; Figure 1 (and plates A through H). In summary, there are four route options and three substation location options:

- **Route Option A** – shown in pale pink in **Figure 1**. Starting from the west end of the northern Common Elements Route segment, Route Option A would originate about 230 m south of Third Line West. The route would then extend west, parallel to Third Line West, to Allen's Side Road. Route Option A would then extend south along Allen's Side Road and then east on Wallace Terrace. The route would terminate west of the intersection of Brookfield Avenue and Wallace Terrace, where it would connect to the southern Common Elements Route segment. This route option is approximately 12 km in length, of which approximately 3.8 km is an alternative route option segment.
- **Route Option B** – shown in blue in **Figure 1.** Starting from the west end of the northern Common Elements Route segment, Route Option B would originate at approximately 230 m south of Third Line West and extend south approximately 820 m to just west of Arden Street, then extend west 785 m to Allen's Side Road, where the route would turn south parallel to Allen's Side Road until it turned east at the intersection of Allen's Side Road and Wallace Terrace. It would then terminate at the intersection of Brookfield Avenue and Wallace Terrace, where it would connect to the southern Common Elements Route segment. This route option is approximately 12 km in length, of which approximately 3.8 km is an alternative route option segment.

- **Route Option C** – shown in green in **Figure 1.** Starting from the west end of the northern Common Elements Route segment, Route Option C would originate approximately 230 m south of Third Line West and extend south approximately 820 m to just west of Arden Street, then extend west approximately 350 m until it turned south again, terminating west of the intersection of Brookfield Avenue and Wallace Terrace, where it would connect to the southern Common Elements Route segment. This route option is approximately 11.9 km in length, of which approximately 1.41 km is an alternative route option segment that occurs mostly within undeveloped lands and partly within the Wallace Terrace ROW.
- **Route Option D** – shown in magenta in **Figure 1.** Starting from the west end of the northern Common Elements Route segment, Route Option D would originate about 230 m south of Third Line West, then extend south approximately 370 m to just north west of Chippewa Street where it would extend south-west approximately 400 m, turning south until it terminated west of the intersection of Brookfield Avenue and Wallace Terrace, where it would connect to the southern Common Elements Route segment. This route option is approximately 11.9 km in length, of which approximately 1.46 km is an alternative route option segment.

Three sites are being considered for the transformer station, which include: Stations Options 1, 1-A and 2, all primarily located south of Wallace Terrace.

- **Station Option 1**: is located at 46°31'37.50"N and 84°23'17.99"W about 138 m from Yates Avenue and 240 m from Glasgow Avenue, on land owned by the City of Sault Ste. Marie.
- **Station Option 1-A**: is located directly south of Station Option 1, on land owned by Algoma Steel.
- **Station Option 2**: is located approximately at 46°31'24.65"N and 84°22'36.09"W, about 600 m away from the proposed Algoma Steel EAFs Station, on land owned by Algoma Steel.

The ‘study area’ discussed herein represents a 200 m radius surrounding the outermost limit of all transmission line and transformer station site options, and the greater area of the anticipated connection line to the Algoma Steel Plant. The 200 m radius has been selected with the intention to provide a broad screening area for the Project, particularly to allow for minor refinements to the alignment, and also account for natural heritage features (NHF) occurring adjacent to the alignments.

2 POLICY CONTEXT

2.1 ENVIRONMENTAL ASSESSMENT

This Project is being completed in accordance with the Class Environmental Assessment (Class EA) for Minor Transportation Facilities, as approved under the *Environmental Assessment Act*. The Class EA is a streamlined self-assessment process in which the proponent follows an established set of assessment requirements for categories of routine projects (e.g., transmission line, road planning) that are well understood and considered to

have predictable impacts. This approach allows projects to proceed without requiring review and individual approval from the Ministry of the Environment, Conservation and Parks (MECP).

One of the mandates for the Class EA process is to minimize potential harm and enhance benefits to the environment by evaluating alternative options, yet also seeking to benefit society as a whole.

This report has been designed to provide an assessment of the natural environment to support the overall evaluation of alternatives and assessment of the preferred options once selected. Identification of NHF's, as defined in the Provincial Policy Statement (PPS; Ontario Ministry of Municipal Affairs and Housing (OMMAH), 2020) and discussed further below, were the focus of this report.

2.2 PROVINCIAL POLICY STATEMENT

The PPS (OMMAH, 2020) is a planning document that provides a framework for, and governs development within, the Province of Ontario. In order to preserve various ecological resources deemed significant in the Province, development lands must be assessed for the presence of NHFs prior to construction. These NHFs (listed below) are both defined and afforded protections under the PPS. Linkages between NHFs, surface water and groundwater features are also recognized and afforded similar protections under the policy. Section 2.1.2 of the PPS also requires that the diversity and connectivity of all NHFs and the long-term ecological function of natural heritage systems be maintained, restored or improved where possible. Further to this, natural heritage systems within Ecoregion 5E are to be identified as per Section 2.1.3.

Under the PPS (OMMAH, 2020), development or site alteration is restricted within NHF's and development is typically only permitted within lands adjacent to these features if it has been demonstrated that there will be no negative impacts to these features or their ecological functions. The Natural Heritage Reference Manual (MNRF, 2005) is a document that was created to supplement the PPS (OMMAH, 2020), to provide further guidance in terms of NHF evaluation criteria and mitigation considerations. This document defines NHF adjacent lands as 120 m, with the exception of 50 m for areas of natural and scientific interest (ANSI), specifically for earth science, and also 300 m from inland lake trout lakes.

Development may be permitted in or adjacent to significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E, significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River), significant wildlife habitat (SWH), significant areas of natural and scientific interest (ANSI), and coastal wetland in Ecoregions 5E, 6E and 7E provided there will be no negative impacts to these features or their ecological functions due to the proposed undertaking. In addition, development and site alteration is not permitted in fish habitat, or habitat of endangered or threatened species, unless in accordance with provincial and federal legislation.

Natural heritage features as defined by the PPS (OMMAH, 2020) include:

- Fish Habitat;
- Habitats of Endangered and Threatened Species;
- ANSI;

- Significant Wetlands;
- Significant Coastal Wetlands;
- Other Coastal Wetlands in Ecoregions 5E, 6E and 7E;
- Significant Wildlife Habitat;
- Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River); and,
- Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River).

The study area occurs within Ecoregion 5E, therefore designations as it relates to Significant Woodlands and Significant Valleylands do not apply.

2.3 SPECIES AT RISK

The provincial *Endangered Species Act, 2007* (ESA; Ontario, 2007) and federal *Species at Risk Act* (SARA; Government of Canada, 2002) were created to protect Species at Risk (SAR) from being extirpated or becoming extinct.

SAR, as defined by the ESA (Ontario, 2007), includes management of species with the following designations:

- *Extirpated*: occurs in the wild, but no longer in Ontario.
- *Endangered*: occurs in Ontario but is facing imminent extinction or extirpation.
- *Threatened*: occurs in Ontario and is likely to become Endangered if threats are not managed.
- *Species Concern*: occurs in Ontario, but may become Threatened or Endangered due to biology and threats.

As it relates to protection of SAR, species designated as Extirpated, Endangered and Threatened receive protection under the ESA from killing and harassment, but also receive general habitat protection. Species designated as *Special Concern* are not afforded the same protection; however, do receive protection under the PPS (OMMHA, 2020) as SWH. Both SAR and SWH, as they relate to this Project, are discussed further herein.

The SARA applies primarily to federal lands, such as oceans and waterways, national parks, military training areas and First Nation reserve lands, but in some circumstances, applies also to both crown and private lands.

SAR identified with moderate or high likelihood to be impacted by the proposed works will require consultation with the MECP to determine approval requirements under the ESA. The full SAR screening is detailed in Section 5.6.

2.4 MIGRATORY BIRD CONVENTION ACT, 1994

The *Migratory Bird Convention Act, 1994* (MBCA; Government of Canada, 1994) protects migratory birds, sperm, eggs, embryos, tissue cultures and parts of a set list of species and subspecies identified in Article 1 of the MBCA from any activities that may result in harm or capture of the species. Activities associated with construction, and in particular work in or around vegetation or human made structures, have potential to result in harm to nesting birds.

There is currently no special permission under the MBCA that would allow work to harm or disturb a bird or active nest (e.g., relocate nest outside of work zone), with the exception of a safety concern, and therefore it is important to plan work appropriately using standard best management practices to avoid an encounter with a nesting migratory bird.

As provided by MECP, Sault Ste. Marie is within nesting zone C3, which has a nesting period running from mid-April to late August (Appendix B).

2.5 FISHERIES ACT

In August 2019, changes to the federal *Fisheries Act* (FA; Government of Canada, 2019) were implemented that updated how impacts to fish and fish habitat were to be assessed and modernized the Fish and Fish Habitat Protection Program within the Department of Fisheries and Oceans Canada (DFO). These changes included a shift in focus from Commercial, Recreational or Aboriginal (CRA) fisheries to "all fish", and the re-establishment of the concern over the death of fish, or the Harmful Alteration, Disruption of Destruction (HADD) of fish and fish habitat. The re-introduction of the HADD replaced the previous provisions referencing Serious Harm to fish and fish habitat.

Section 34.4 (1) of the *Fisheries Act* now states that "no person shall carry on any work, undertaking or activity, other than fishing, that results in the death of fish. Section 35 (1) now states "*no person shall carry on any work, undertaking or activity that results in harmful alteration, disruption or destruction of fish Habitat."*

DFO administers the *Fisheries Act* that defines Fish as, (a) parts of fish, (b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and (c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals. Fish Habitat is defined as "water frequented by fish and any other areas, on which fish depend directly or indirectly in order to carry out their life processes, including, spawning grounds, nursery, rearing, food supply and migration areas".

In 2019, new *fish and fish habitat provisions* (FFHPP) of the FA prevents any activity that would result in death of fish or HADD of fish habitat. Where impacts to fish and fish habitat are not avoidable, an application can be made under paragraph 34.4 (2)(b) or 35 (2)(b) of the FA to permit the activity.

DFO uses a standardized process where the proponent is to first complete a self-assessment of the Project to determine if through common mitigation practices harm to fish and fish habitat can be avoided. Where this is not possible or unclear, a Request for Project Review (RfR) is completed and submitted to the DFO for comment. The RfR considers the existing environmental conditions, detailed design and quantifiable impacts to fish or fish habitat.

If DFO determines that an Authorization is required, this then shifts into a FA Authorization permit application phase which includes the development of Off-setting measures to address the impacts of the works, and an Effectiveness Monitoring Program designed to monitoring the effectiveness of the off-setting measures on fish and fish habitat. There are five (5) watercourses within the study area that were assessed.

2.6 OFFICIAL PLAN

The City's Official Plan (OP; Sault Ste. Marie, 2006) was designed to conform to the PPS (OMMAH, 2020), with the ultimate goal of managing changes to the community and related impacts to the social, economic and natural environments.

The OP describes key NHF as either Category 1 or Category 2. No development is permitted in Category 1, and development may be permitted within Category 2 when supported by an impact study. The City's policies outlined that fish habitat is to be preserved and protected from HADD. Development is not permitted in Type 1 (critical) fish habitat, including St. Mary's River Rapids and Crystal Creek from Case Road to Minnehana Falls, both of which occur outside of the study area

Forested areas cover approximately 40% of the city. Corridors and greenbelts are to be maintained through the city and tree planting is encouraged.

The City manages development within areas of groundwater recharge in order to protect it's drinking water source. The City also manages development within and adjacent to wetlands and generally seeks to compensate for loss of wetland. Development exceptions, including those associated with utilities, may be considered an exception to the wetland policy.

An online GIS tool (SooMaps.com, 2021) was used to view Schedule A (Natural Resources/Soils) and Schedule B (Natural Constraints) of the OP. Several features identified in this mapping occur within the study area, including watercourses, fish habitat and floodlines, groundwater recharge areas, wetlands and fill areas.

2.7 CONSERVATION AUTHORITIES ACT

The *Conservation Authorities Act* gives individual conservation authorities the power to regulate development and activities in or adjacent to river or stream valleys, Great Lakes and large inland lakes and shorelines, watercourses, hazardous lands and wetlands.

Regulations made under the *Conservation Authorities Act* specify the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulations managed by individual Conservation Authorities. These regulations apply to lands within river or stream valleys, flood plains, wetlands, watercourses, lakes, hazardous lands or lands within 120 metres (m) of a Provincially Significant Wetland or wetlands greater than 2 hectares, or lands within 30 m of non-provincially significant wetlands. Development or site alteration within these regulated areas may be permitted provided development is conducted in accordance with existing policies.

The Sault Ste. Marie Region Conservation Authority (SSMRCA) administers *Ontario Regulation 176/06*. The online GIS tool (Soomaps.com, 2021) identifies areas within the city that are subject to the regulation. Portions of the study area associated with watercourses and wetlands are regulated by SSMRCA (Figure 2).

3 BACKGROUND INFORMATION

Background information sources were reviewed to develop an understanding of potential natural features in the study area, identify potential constraints and sensitivities, and assess the general connectivity to natural features within the surrounding landscape.

Background natural environment information collection included the following sources:

- Topographic mapping and Google satellite mapping (over the timeframe of 1998 to 2020);
- Ebird (accessed 2021);
- iNaturalist (accessed 2021);
- Natural Heritage Information Centre (MNRF, 2021);
- Ontario Reptile and Amphibian Atlas (ORAA, Ontario Nature 2019);
- DFO Distribution of Fish Species at Risk mapping (accessed 2021);
- Fort Creek Aqueduct Class EA: Existing Environmental Conditions and Impact Assessment (Tulloch, 2016a);
- MacDonald Avenue Drainage Environmental Study Report (Tulloch, 2016b);
- McNabb Street Drainage Environmental Study Report (Tulloch, 2016c); and,
- Sault Ste. Marie Solid Waste Management Environmental Assessment Natural Heritage Impact Assessment (Dillon, 2015).

A request for information was sent to the Ministry of Natural Resources and Forestry (MNRF) Sault Ste. Marie district, Natural Heritage Information Centre (NHIC) division of the MNRF, MECP, SSMRCA and the City (Appendix B). The request was to gather and confirm existing natural environment information in the vicinity of the study area, including information related to SAR, natural areas, fish and wildlife.

- The MNRF provided a response on January 29, 2021. The district management biologist (Derek Goertz) provided fisheries information for the study area. The biologist also indicated that a waterbird nesting colony (Figure 1) encompasses the study area; however, the exact location is not included in the observation and as a result the observation polygon appears to be drawn to encompass the entire Ontario Breeding Bird Atlas (OBBA) square (as opposed to the colony itself). The nesting site appears to be located outside of the study area.
- The MECP was contacted on January 20, 2021. At the time of writing this report, a response has not been received. Information received by the MECP will be provided to PUC and incorporated into future reporting for the Class EA to specifically summarize and address any new information provided.

- A response from the NHIC was received on January 21, 2021 with information related to tracked species within the study area.
- A response was received from SSMRCA on January 15, 2021 to confirm that it does not maintain records of fish and wildlife. The SSMRCA later provided spatial data for its regulation limit within the study area.
- A response from the City on January 24, 2021 indicated that it is in the process of finalizing a new official plan and to refer to the online mapping tool for applicable natural heritage data.

A record of correspondence is located in Appendix B.

4 SURVEY APPROACH

4.1 VEGETATION SURVEYS

4.1.1 ECOLOGICAL LAND CLASSIFICATION AND BOTANICAL INVENTORY

Vegetation field investigations were conducted from May 23 to 28 and from June 21 to 25, 2021. Field surveys included identifying vegetation communities and delineating them on aerial photography. The vegetation communities were classified and described using the Ecological Land Classification (ELC) for Ecoregion 5E – Great Lakes – St. Lawrence Region (Ecological Land Classification Working Group 2009), or for some cultural communities by the ELC System for Southern Ontario: First Approximation and Its Application (Lee et al., 1998), where applicable. General vegetation characteristics including age, habitat features, drainage conditions and anthropogenic disturbance were recorded.

Any observed SAR or provincially / regionally rare species were also noted. A list of recorded vascular plants is presented in Appendix C and vegetation community mapping is provided in Appendix A.

4.2 WILDLIFE SURVEYS

Incidental wildlife observations were recorded during all field visits. Species observed provide a good representation of the area as the existing PUC easement and all options were walked twice and observed during different times of the day (dawn, afternoon, night). The observations made during the field surveys were recorded, including sightings of species, as well as evidence of use (e.g., browse, carcasses, tracks / trails, scat, burrows, and vocalizations). Wildlife habitat potential was also evaluated during field surveys.

4.3 SPECIES AT RISK

4.3.1 BUTTERNUT HEALTH ASSESSMENT

Butternuts (*Juglans cinerea*) are listed as Endangered and as such, are protected under Ontario's *Endangered Species Act, 2007* (ESA). Therefore, in accordance with the regulations (O.Reg 230/08A), any potential Butternuts observed must be assessed to determine whether the trees are hybrids or pure Butternuts. The MNRF's scoring system can be used to evaluate hybridity in the field (The Butternut Health Assessor's Field Guide, 2015). See Appendix C for the scoring system and field characteristics evaluated for the field hybridity test.

To confirm hybridity test results, leaf samples are submitted to a MECP-approved lab for DNA analysis. If the trees are determined to be pure Butternuts, a Butternut Health Assessment (BHA) and BHA report must be submitted to the MECP.

4.3.2 EASTERN WHIP-POOR-WILL SURVEYS

Targeted surveys for Eastern Whip-poor-will were completed in potentially suitable habitat based on desktop screening. Eastern Whip-poor-will surveys were carried out in the study area in accordance with the Ministry of Natural Resources' proposed survey methodology under the Endangered Species Act, 2007. The protocol outlines the following parameters:

- The dates when this survey may be used are May 18 – June 30. A minimum of three surveys should be completed during the breeding season so that sufficient data is obtained to determine breeding status and interpret territories.
- Observers are to be familiar with species identification (by sound and habitat).
- Surveys must be conducted under field conditions with no precipitation, low noise levels, little or no wind, clear skies and good visibility. Because moon phase is known to affect calling rates, the moon should be > 50% illuminated, and above the horizon (generally one week on either side of date of full moon). The sky should have little or no cloud cover and temperature should be 10°C or above.
- Surveys are to start thirty minutes after sunset when the moon is visible above the horizon and may continue as long as the moon is visible. Observers undertake 5 minutes of observations. Information on all specimens observed or heard (including habitat, moon visibility and direction and distance of calling individuals) are to be recorded.

Three rounds of surveys were conducted on May 23-24, May 26-27 and June 21 and 23, 2021. Twenty point count stations were established throughout the Project limits in areas along the proposed alignment options and existing PUC easement with at least 500 m between stations. See Figure 1 (A-H), Appendix A, for point count locations.

4.3.3 BREEDING BIRD SURVEYS ON GRASSLAND HABITAT

Breeding bird surveys (2 visits) were completed to target grassland habitat areas based on desktop screening. Grassland habitat areas are specifically associated with two SAR birds: Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*). Since the intent of these breeding bird surveys were to capture the potential presence and habitats for these two SAR, the methodology generally followed the Ministry of Natural Resources' proposed Bobolink survey methodology under the Endangered Species Act, 2007. The protocol outlines the following parameters:

- Surveys are to be conducted under suitable field conditions (i.e., no precipitation, no or low wind speed, and good visibility).
- Nests are not to be disturbed.
- Observers are to be familiar with species identification (by sight and sound) and breeding behaviours.
- Surveys are to start at dawn and continue until no later than 9am. Observers undertake 10 minutes of observations. Information on all specimens observed or heard (including sex, general location, direction, distance, behaviour, and interactions) are to be recorded.
- Point count surveys are to be conducted between the last week of May and the first week of July with each survey separated by a week or more from previous surveys.
- Notes are to be taken on the general conditions of the fields at the locations where Bobolink are noted. This includes: broad habitat descriptors, vegetation height, vegetation type, percentage of grass versus broad-leaved plants, and the presence of litter. Photos are GPS point to be taken at each point count.

Two surveys were conducted on May 26, and June 23, 2021. Thirteen point count stations were established throughout the Project limits in areas along the proposed alignment options and existing PUC easement. Surveyed areas ranged in size from <1 ha to >14 ha and were bordered by roads, therefore each survey unit had areas of good visibility occurring along or within close proximity to the roadside. See Figures 1A-H, Appendix A, for point count locations.

4.4 AQUATIC SURVEYS

The known and potential watercourse crossings along the existing PUC route and route options were assessed and mapped. Specific habitat information was collected to conduct a fisheries impact assessment with the known proposed works. Watercourses were assessed 100 m upstream and downstream of the crossings. WSP ecologists completed aquatic surveys between August 31, 2021, and September 2, 2021. The collection of fish habitat information associated with the field surveys encompassed the following parameters:

- Stream channel dimensions, general gradient and profile;
- Bank/shoreline character (e.g., height and erosion);
- Flow characteristics, including evidence of groundwater discharge;
- Morphology and substrates;

- Instream/in-water cover opportunities (e.g., woody debris, undercut banks, boulders, vegetation);
- Riparian vegetation;
- Presence of physical barriers to fish movement;
- Presence of potential critical or specialized habitat areas including potential spawning areas, good nursery cover, holding habitat (deeper refuge pools);
- Disturbances and past habitat alterations (e.g., channelization, potential pollutant point sources); and,
- Potential habitat enhancement opportunities.

The habitat data sheets, mapping and other field notes have been included in Appendix D. See Figures 1A-1H in Appendix A for location of survey sites. Fish community surveys were completed by WSP ecologists, in addition to the habitat mapping, via electrofishing, dip netting and minnow traps.

Where possible, WSP collected general water quality parameters to support the fish community sampling results. Dissolved Oxygen, water pH, conductivity and water temperature were recorded at the time of the sampling.

5 EXISTING CONDITIONS

5.1 GENERAL OVERVIEW

The following sections describe the existing conditions of natural environment features within the study area as interpreted from desktop resources described in Section 3 and results of field survey below. Designated natural areas are shown in Appendix A; Figure 1A-1H).

The study area generally occurs among the periphery of the concentrated development cluster of the city. The existing ROW easement held by PUC extends from the Third Line TS westerly through a narrow cleared opening of coniferous, deciduous and mixed forest types (Appendix A, Figures 1A to 1D). Rural and subdivision properties occur within the study area along the local road intersections and subdivisions extending from Peoples Road south of the alignment. This alignment transverses approximately five (5) watercourses of Fort Creek, East Davigon Creek, and West Davigon Creek. Two wetland communities in 5 distinct units occur either on or adjacent (i.e., less than 30 m) to the alignment (Appendix A, Figure 1A-1H).

Where the alignment changes direction from east-west to north-south (Appendix A, Figure 1D), the natural area begins to include more open habitats, including agricultural fields. Route Options A and B generally occur within Allen's Side Road and Wallace Terrace ROW, which is comprised of rural and small residential clusters and agricultural fields. The northern extent of Route Options B, C and D occur along the perimeter of Mineral Meadow Marsh (Option D traverses through this open section). Route Option C and D then parallels a tributary to the Bennett-West Davignon Creek Flood Control Channel. There are two (2) notable larger forested areas along this alignment, including deciduous forests both east of Allen's Side Road

and south of Second Line West, and south of Wallace Terrace (Appendix A, Figure 1E). Route Option B and C (and part of D) extends along the perimeter of a Mineral Meadow Marsh, parallels the Bennett-West Davignon Creek Flood Control Channel for the majority of its length, then skirts through a segmented portion of an Aspen - Birch Hardwood. Route Option B separates from C and D and connected with Allen's Side Road through an existing private access road.

5.2 VEGETATION

Of the 17 vegetation communities identified during the field program only two (2) were classified as wetlands. These wetland communities were identified in five (5) units through the study area and for the most part small in size and located within the existing PUC easement (in the northern sections of the Common Element route) and along very narrow portions of riparian habitat of watercourses.

Vegetation communities were approximated using satellite imagery then field-checked to confirm the vegetation type, where possible. Vegetation units have been described using the ELC System for Ecoregion 5E – Great Lakes – St. Lawrence Region (Ecological Land Classification Working Group 2009), or the ELC System for Southern Ontario: First Approximation and Its Application (Lee et al., 1998) where the communities did not correspond to the Ecoregion 5E – Great Lakes – St. Lawrence Region system. ELC information gathered included vegetation community type, species associations, abundances and condition / level of disturbance. Natural vegetated areas within the study area include: Conifer Forest, Hardwood Forest, Shrub, Field, Meadow, Thicket Swamp and Meadow Marsh. Cultural vegetation types are primarily composed of introduced species or non-native weed species that are often associated with recently disturbed sites (e.g., residential areas, industrial sites, fallow agricultural lands, road and existing transmission line ROWs). Areas with species that demonstrate anthropogenic influence are generally found within the road and existing transmission line ROWs and in areas that are used recreationally for off-road vehicle usage and pedestrian trails.

In total, 206 plant species were recorded during WSP field surveys throughout the study area. A complete list of vascular plant species for each vegetation community is provided in Appendix C. Of the species recorded, 132 (64%) are native and 52 (25%) are non-native.

Provincial (or Subnational, or 'S') ranks are used by the NHIC to set protection priorities for rare species and natural communities. One provincially rare species (i.e., S-rank S1 – S3) was potentially recorded within the study area: Canada Cinquefoil (*Potentilla canadensis*; S2? [Imperiled – At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors. Inexact or Uncertain – Denotes inexact or uncertain numeric rank]), in Vegetation Unit 4C (G047S) and Unit 6 (G061N). Canada Cinquefoil has similar characteristics to the Common Cinquefoil (*Potentilla simplex*), which has a provincial ranking of S5 (secure). Common Cinquefoil has larger leaflets (usually more than 2 times as long as wide), and the flower is produced from the axil of the second stem leaf. Both species are found in upland, drier habitats and are indicators of impoverished soil. The other recorded native species have a provincial ranking of S4 or S5 [apparently secure (S4) or secure (S5) in Ontario]. No globally rare species (i.e., G-rank G1 - G3) were recorded.

One plant SAR, Black Ash (*Fraxinus nigra*), was recorded in Vegetation Unit 20: G068Tt/Tl (Route A). Black Ash is designated as Threatened by COSEWIC. It has not yet been added to the federal SAR List (i.e., Schedule 1 of SARA).

Black Ash was also assessed by COSSARO (provincial) in 2019 and designated as an Endangered species, subject to the provisions of the ESA on January 26, 2022. The MECP created a new Minister's regulation (O. Reg. 23/22) that temporarily pauses the application of the general prohibitions against adversely impacting species and their habitat under the ESA for Black Ash for two years. During this time, relevant information to determine optimal protection and recovery measures will be collected (Government of Ontario 2022). Therefore, Black Ash is not currently subject to the provisions of the ESA (2007) or SARA (2002).

Three (3) potential Butternuts, B01, B02 and B03, were identified during the field surveys within Unit 4B: Dry to Fresh, Coarse: Meadow (G045N), along the existing PUC easement (Common Elements). Further information is provided in Section 5.5.3.

A description of vegetation community findings is presented below with ELC mapping provided in Appendix A.

5.2.1 ECOLOGICAL LAND CLASSIFICATION

Unit 1A, Unit 7, Unit 17: Mineral Meadow Marsh (G142N)

This type of meadow marsh is typically dominated by sedges and grasses. The substrate is generally mineral and very moist.

Unit 1A occurred within the study area east and west of Old Goulais Bay Road along the existing transmission line ROW. The understorey of Unit 1A contained an abundance of Canada Bluejoint (*Calamagrostis canadensis*) with frequent amounts of Dark Green Bulrush (*Scirpus atrovirens*), Small-fruited Bulrush (*Scirpus microcarpus*), Soft Rush (*Juncus effusus*) and Wrinkled-Leaved Goldenrod (*Solidago rugosa*). The ground layer contained frequent amounts of Sensitive Fern (*Onoclea sensibilis*) and Field Horsetail (*Equisetum arvense*). A minor component of shrub species such as Grey Alder (*Alnus incana*), willow species such as Bebb's Willow (*Salix bebbiana*) and Meadow Willow (*Salix petiolaris*) and dogwood species (*Cornus* sp.) also occur.

Unit 7 was a second G142N community, which was noted east of Old Goulais Bay Road along the existing transmission line ROW, along all route options. This community was comprised of predominantly Reed Canarygrass (*Phalaris arundinacea* var. *arundinacea*) with occasional cattail species (*Typha* sp.) in the understorey and ground layers.

Unit 17 was also documented as a G142N community and was observed west of Moss Road and east and west of Goulais Avenue along the existing transmission line ROW. This community was dominated by Reed Canarygrass with frequent amounts of Soft Rush and Small-fruited Bulrush in the understorey layer and frequently Dark Green Bulrush, Field Horsetail and Spotted Joe Pye Weed (*Eutrochium maculatum*) in the ground layer.

Unit 1B, Unit 4A, Unit 6: Moist, Coarse: Meadow (G061N)

This unit typically consists of herbaceous (forb and/or graminoid) vegetation with trees and shrubs generally absent. The substrate is coarse and moist.

Unit 1B occurred in a single location east of Old Goulais Bay Road along the existing transmission line ROW. In Unit 1B, vegetation was comprised of frequent amounts of Sweet Vernal Grass (*Anthoxanthum odoratum*) and Yellow Trout-lily (*Erythronium americanum*). Occasionally shrubs such as North American Red Raspberry (*Rubus idaeus* ssp. *strigosus*) and Early Lowbush Blueberry (*Vaccinium angustifolium*) were observed in the understorey. The moss species Common Haircap Moss (*Polytrichum commune*) was present in frequent amounts.

A second G061N community, Unit 4A, was observed west of Peoples Road along the existing transmission line ROW. This unit contained abundant Sensitive Fern and frequent goldenrod species (*Solidago* sp.), Soft Rush and Bracken Fern (*Pteridium aquilinum*).

Unit 6 was also identified as a G061N community east of Moss Road along the existing transmission line ROW and contained frequent amounts of cattail species, Small-fruited Bulrush, Wrinkled-Leaved Goldenrod and Hemp Dogbane (*Apocynum cannabinum* var. *cannabinum*) in the understorey. The ground layer contained abundant amounts of Reed Canarygrass and frequent amounts of Large-leaved Aster (*Eurybia macrophylla*), Early Lowbush Blueberry, Poverty Oatgrass (*Danthonia spicata*), Sweet Vernal Grass and Bracken Fern.

Unit 2, Unit 5, Unit 10: Dry to Fresh, Coarse: Aspen – Birch Hardwood (G055Tt/Tl)

This community type is typically characterized by a hardwood canopy with varied canopy closure consisting mostly of aspen and/or birch species and is moderately shrub and herb rich. The substrate is sandy to coarse loamy and moisture ranges from dry to fresh.

Unit 2 was classified as a G055Tt/Tl community east and west of Old Goulais Bay Road, west of Moss Road, west of Goulais Avenue and south of Third Line along the existing transmission line ROW. The canopy of Unit 2 was dominated by Trembling Aspen (*Populus tremuloides*) with frequent amounts of Red Maple (*Acer rubra*) and White Spruce (*Picea glauca*). The sub-canopy consisted of an abundance of Trembling Aspen, Red Maple and Paper Birch (*Betula papyrifera*). The shrub layer contained frequent amounts of Interrupted Fern (*Claytosmunda claytoniana*) and Yellow Trout-lily, Sensitive Fern and Bracken Fern in the ground layer.

A second G055Tt/Tl community, Unit 5, was identified west of Peoples Road and east of Brule Road along the existing transmission line ROW. The canopy was dominated by frequent amounts of Trembling Aspen and White Spruce with an abundance of Trembling Aspen and frequent amounts of Red Maple in the sub-canopy. The shrub layer contained frequent amounts of Trembling Aspen and Sweet Cherry (*Prunus avium*). The ground layer was sparse and contained Reed Canarygrass.

Unit 10 was classified as a G055Tt/Tl unit east of Peoples Road, south of Third Line along the existing transmission line ROW and within Station Option 1. The canopy and sub-canopy were dominated by Trembling Aspen with abundant amounts of White Spruce and frequently Trembling Aspen in the shrub layer. The ground layer contained frequently Field Horsetail, Wrinkled-Leaved Goldenrod and Sweet Vernal Grass.

Unit 3: Moist, Fine: Sparse Shrub (G111S)

This shrub community is characterized by being dominated by tall and / or short shrub species and is typically tree poor. The substrate is silty to fine loamy to clayey and is moist.

This G111S community was observed east of Old Goulais Bay Road along the existing transmission line ROW. Unit 3 was dominated by Grey Alder with a limited understorey and the ground layer contained frequently Large-leaved Lupine (*Lupinus polyphyllus*), Field Horsetail, American Cow Parsnip (*Heracleum maximum*) and Goutweed (*Aegopodium podagraria*).

Unit 4B, Unit 8B, Unit 23: Dry to Fresh, Coarse: Meadow (G045N)

This meadow type is generally comprised of herbaceous species (forb and/or graminoid) with trees and shrubs generally absent. The substrate is sandy to coarse loamy and the moisture regime is dry to fresh.

Unit 4B was a G045N community east and west of Brule Road along the existing transmission line ROW. This unit was drier than G061N and was dominated by Kentucky Bluegrass (*Poa pratensis*) with occasional American Cow Parsnip, Wild Strawberry (*Fragaria virginiana*) and Common Buttercup (*Ranunculus acris*).

A second G045N community, Unit 8B, was noted within the Station Option 1 limits. This unit contained frequent amount of Reed Canary Grass in the understorey and frequently Spotted knapweed (*Centaurea stoebe*), Tansy (*Tanacetum vulgare*), Bird's-foot Trefoil (*Lotus corniculatus*), goldenrod species, Red Clover (*Trifolium pratense*) and Timothy (*Phleum pratense*).

Unit 23 was also identified west of Brule Road along the existing transmission line ROW and was classified as G045N. The ground layer consisted of frequently goldenrod species and grass species such as Sweet Vernal Grass and Kentucky Bluegrass.

Unit 4C: Dry to Fresh, Coarse: Shrub (G047S)

This shrub community type typically contains tall and/or short shrubs with limited treed and herbaceous vegetation. The substrate is typically sandy to coarse loamy and is dry to fresh.

Unit 4C was found along the slope west of Peoples Road along the existing transmission line ROW. The community contained occasionally Grey Alder, Bebb’s Willow, Meadow Willow and North American Red Raspberry. The herbaceous layer was limited and contained goldenrod species and occasionally Cinquefoil species (*Potentilla* sp.).

Unit 8A: Dry to Fresh, Coarse: Field (G044N)

This community type is characterized by herbaceous vegetation that is maintained by continuous human alteration. Trees and shrubs are generally absent. The substrate is sandy to coarse loamy and the moisture regime is dry to fresh.

Unit 8A was observed in several locations along Allen’s Side Road (Route Options A and B) and contained occasionally Reed Canary Grass in the understorey layer and the ground layer was dominated by agricultural grass species

Unit 9: White Spruce – European Larch Coniferous Plantation (CUP3-8)

This cultural plantation community was encountered adjacent to Allen's Side Road (Route Options A and B). The canopy contained predominantly European Larch (*Larix decidua*) and the sub-canopy was dominated by White Spruce.

Unit 11: Mineral Cultural Savannah (CUS1)

This cultural savannah community was characterized by a tree cover of less than 35%, but greater than 25%. This CUS1 type was observed along Allen's Side Road (Route Options A and B) and contained predominantly apple trees (*Malus* sp.) in the canopy and sub-canopy layers and Sweet Cherry. The ground layer contained frequently goldenrod species, Kentucky Bluegrass and Bird's-foot Trefoil.

Unit 12: Fresh, Silty to Fine Loamy: Meadow (G094N)

This community is typically dominated by herbaceous (forb and/or graminoid) vegetation with trees and shrubs generally absent. The substrate is typically silty to fine loam with a moisture regime of fresh.

Unit 12 was observed along Allen's Side Road (Options 1 and 4) and was dominated by Reed Canarygrass in the understorey and ground layer. The ground layer contained frequent amounts of Kentucky Bluegrass and Meadow Foxtail (*Alopecurus pratensis*).

Unit 13, Unit 15: Fresh, Silty to Fine Loamy: Shrub (G096S)

This shrub community is typically comprised of tall and/or short shrubs with limited trees and herbaceous vegetation. The substrate is silty to fine loamy and the moisture regime is fresh.

Unit 13 was observed along Allen's Side Road (Route Options A and B). This unit was characterized by frequent amounts of Trembling Aspen in the sub-canopy and shrub layers, frequent amounts of Sweet Cherry and Balsam Poplar (*Populus balsamifera*) in the shrub layer. The ground layer was dominated by Reed Canary Grass.

A second G096S community, Unit 15, was observed toward the south end of Allen's Side Road (this portion removed as an Option). And occurred adjacent to the channelized watercourse flowing beneath Allen's Side Road. This community was comprised of predominantly willow species and frequently Grey Alder in the shrub layer. The ground layer consisted of occasionally bulrush species (*Scirpus* sp.) and Field Horsetail.

Unit 14: Fresh, Silty to Fine Loamy: Aspen – Birch Hardwood (G104Tt/Tl)

This vegetation community typically consists of a hardwood canopy with mostly of aspen and/or birch species. The shrub and herb layers are moderately rich with silty to fine loamy substrates. The moisture regime is fresh.

Unit 14 was noted along Allen's Side Road (Route Options A and B) and contained abundant amounts of Canada Poplar (*Populus x canadensis*) and White Poplar (*Populus alba*) in the canopy with frequent amounts of White Spruce, White Poplar and Red Maple in the sub-canopy. The shrub layer contained occasionally White Poplar and Balsam Poplar and the herbaceous layer contained frequently Field Horsetail with abundant amounts of Ostrich Fern (*Matteuccia struthiopteris*) adjacent to the watercourse east of Ransome Drive.

Unit 16A, Unit 18: Mineral Thicket Swamp (G134S)

This tall shrub community is characterized by limited tree cover and moderately rich herbaceous cover. Typically, evidence of vernal pools or the presence of standing water is common. The substrate mineral or peaty phase with a very moist moisture regime.

Unit 16A was identified east and west of Moss Road and west of Goulais Avenue along the existing transmission line ROW. This unit was comprised of frequent amounts of Grey Alder, Balsam Poplar and Bebb's Willow in the sub-canopy with abundant amounts of Balsam Poplar and cattail species in the understorey layer. The ground layer contained frequently Common St. John's-wort (*Hypericum perforatum*) and an abundance of Reed Canarygrass and Field Horsetail.

A second G134S type unit, Unit 18, was noted west of Old Goulais Bay Road, east of Peoples Road, south of Third Line along the existing transmission line ROW and east of Allen's Side Road (Options A and B). This community contained predominantly Grey Alder in the canopy, sub-canopy and understorey layers. The sub-canopy also contained frequent amounts of willow species. The ground layer was dominated by Reed Canarygrass and contained frequently Sensitive Fern.

Unit 16B: Moist, Fine: Meadow (G110N)

This type of community typically contains herbaceous (forb and/or graminoid) vegetation while tees and shrubs are generally absent. The substrate is silty to fine loamy to clayey and is moist.

Unit 16B was observed west of Goulais Avenue and north and south of Third Line along the existing transmission line ROW. This community's herbaceous layer was dominated by Bracken Fern and contained an abundance of Kentucky Bluegrass and frequently Orchard Grass and Sweet Vernal Grass.

Unit 19, Unit 22: Moist, Coarse: Maple Hardwood (G075Tt/TI)

This type of community is characterized by a hardwood canopy consisting mostly of maple species with a moderately poor shrub layer and a moderately rich herbaceous layer. The substrate is sandy to coarse loamy and is moist.

Unit 19 was identified north of Third Line along the existing transmission line ROW (Common Elements). Sugar Maple (*Acer saccharum*) dominated the canopy and was abundant in the sub-canopy and frequent in the shrub layer. White Spruce was frequent in the sub-canopy and shrub layers. The herbaceous layer contained occasionally Sugar Maple seedlings and Chokecherry (*Prunus virginiana*).

Unit 22 was observed west and east of Brule Road along the existing transmission line ROW. The canopy layer was dominated by Sugar Maple with occasional White Pine (*Pinus strobus*). Sugar Maple also dominated the sub-canopy, which also contained occasional Red Maple, Balsam Fir and Paper Birch. The shrub layer contained occasionally Canada Yew (*Taxus canadensis*) and Bracken Fern. The ground cover layer was comprised of Wild Lily-of-the-valley (*Maianthemum canadense*), Large False Solomon's Seal (*Maianthemum racemosum*) and Sugar Maple seedlings.

Unit 20: Moist, Coarse: Conifer (G068Tt/Tl)

This vegetation type generally consists of a conifer canopy with a highly variable stand composition. The shrub and herb layers are typically poor with a substrate that is sandy to coarse loamy and moist.

Unit 20 was observed south of Third Line adjacent to the valley slope along the existing transmission line ROW (Route Option A). The canopy species consisted of occasionally Trembling Aspen and Paper Birch while the sub-canopy was dominated by Balsam Fir (*Abies balsamea*). The shrub layer contained an abundance of Balsam Fir with occasional Red Maple. The ground layer contained occasionally Red Maple saplings and Common Oak Fern (*Gymnocarpium dryopteris*). A patch of Reed Canarygrass was noted adjacent to the watercourse.

Unit 21: Moist, Coarse: Aspen – Birch Hardwood (G070Tt/Tl)

This vegetation community is characterized by a hardwood canopy consisting mostly of aspen and/or birch species. The shrub and herb layers are moderately rich with a substrate that is sandy to coarse loamy and moist.

Unit 21 was present north and south of Second Line (Route Options C and D) and south of Wallace Terrace (Common Elements). This unit was not permitted to be accessed so the vegetation community was assessed from the road ROW. The canopy was comprised of rarely Trembling Aspen and Canada Poplar with a sub-canopy that contained an abundance of Trembling Aspen with occasional Sugar Maple. The shrub layer contained frequent amounts of Chokecherry, Trembling Aspen, Balsam Poplar and Grey Alder. The ground layer was comprised of occasionally Reed Canarygrass and Field Horsetail.

5.3 WILDLIFE

5.3.1 AVIFAUNA

In total, 93 species were recorded within the Project limits during the 2021 field surveys. A total of 63 birds were recorded within the PUC easement (Common Elements), 36 within Route Option A / B (along Allen's Side Road), 17 within Route Options A/B & C, 26 within Route Options A/B/C & D, and 41 within Route Options A / B and part of the Common Elements along Wallace Terrace (for full results, refer to the Wildlife Table in Appendix C[1]). The majority of species observed are common and expected species. Diverse and variable wildlife habitat is present including forests, edge, urban dwellings, open country and meadow habitats.

[1] Wildlife Table shows species observed along Option 5 (Alternative 2, Underground Transmission Alternative). As the ecological field investigations were completed in 2021 in advance of the preliminary analysis and screening of alternative options it was included in the data collection.

Nine (9) avifauna SCC (including SAR) were recorded during the breeding bird surveys:

- **Species at Risk.** Three SAR were recorded:
  - Barn Swallow (*Threatened* in Ontario and Canada) – individuals observed foraging within the existing PUC easement. No nesting habitat was observed.
  - Bobolink (*Threatened* in Ontario and Canada) – eleven (11) individuals observed with either possible or probable breeding evidence within meadow habitat along all options. Further details are provided in 5.5.4.
  - Chimney Swift (*Chaetura pelagica*; *Threatened* in Ontario and Canada) – one (1) individual observed foraging within the existing PUC easement (Common Elements, northern portion).
- **Area Sensitive (MNRF 2015)**: Six (6) of the recorded species are considered "Area Sensitive" according to the Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (MNRF 2015), though no *Significant Wildlife Habitat* is present for this criterion:
  - Barred Owl (*Strix varia*) – one (1) individual heard near Station 18 during evening Eastern Whip-poor-will along the existing PUC easement.
  - Broad-winged Hawk (*Buteo platypterus*) – two (2) individuals observed as fly-bys within the existing PUC easement.
  - Merlin (*Falco columbarius*) – two (2) individuals calling within the existing PUC easement and along Wallace Terrace.
  - Northern Harrier (*Circus cyaneus*) – two (2) individuals observed foraging meadows within the existing PUC easement and along Allen's Side Road.
  - Red-tailed Hawk (*Buteo jamaicensis*) – one (1) individual observed as a fly-by within the existing PUC easement.
  - Savannah Sparrow (*Passerculus sandwichensis*) – multiple individuals recorded singing within the existing PUC easement and all route options.

5.3.2 HERPETOFAUNA

A total of four (4) anuran species, American Toad (*Anaxyrus americanus*), Gray Tree Frog (*Hyla versicolor*), Green Frog (*Lithobates clamitans*), and Spring Peeper (*Pseudacris crucifer*) and one (1) reptile species, Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) were observed as incidentals during the 2021 field surveys. No targeted amphibian surveys were conducted; however, most individuals were heard calling during active breeding season in the evening during Eastern Whip-poor-will surveys (for full results, refer to the Wildlife Table in Appendix C).

Although not recorded during the 2021 field surveys, the general area likely also supports the following additional common amphibian and reptile species (Ontario Nature 2021): Blanding's Turtle (*Emydoidea blandingii*), Blue-spotted Salamander (*Ambystoma laterale*), Midland Painted Turtle (*Chrysemys picta marginata*), Northern Leopard Frog (*Lithobates pipiens*) and Snapping Turtle (*Chelydra serpentina*).

5.3.3 INSECTS

A total of nine (9) insect species were observed as incidentals during the 2021 field surveys. Observations include Cabbage White (*Pieris rapae*), Canadian Tiger Swallowtail (*Papilio canadensis*), Common Whitetail (*Plathemis lydia*), Eastern Pondhawk (*Erythemis simplicicollis*), Four-spotted Skimmer (*Libellula quadrimaculata*), Harris's Checkerspot (*Chlosyne harrisii*), Monarch (*Danaus plexippus*), Mourning Cloak (*Nymphalis antiopa*) and Red-spotted Purple (*Limenitis arthemis astyanax*).

One SAR, Monarch *Special Concern* in Ontario and Canada was observed foraging and flying over meadow and ditch habitat within the PUC easement.

No additional provincially or federally designated SAR or provincially rare (S-Rank) insect species were observed within the Project limits during the field surveys.

5.3.4 MAMMALS

A total of 10 mammal species were observed as incidentals during the 2021 field surveys through visual observation or through evidence such as tracks, including: Beaver (*Castor canadensis*), Black Bear (*Ursus americanus*), Eastern Chipmunk (*Tamias striatus*), Eastern Cottontail (*Sylvilagus floridanus*), Grey Squirrel (*Sciurus carolinensis*), Porcupine (*Erethizon dorsatum*), Red Squirrel (*Tamiasciurus hudsonicus*), Striped Skunk (*Mephitis mephitis*), White-tailed Deer (*Odocoileus virginianus*) and Woodland Jumping Mouse (*Napaeozapus insignis*), (for full results, refer to the Wildlife Table in Appendix C).

Although not confirmed during field surveys, the general area supports several other common mammal species which are likely to occur within the Project limits, such Coyote (*Canis latrans*), Raccoon (*Procyon lotor*), Red Fox (*Vulpes vulpes*), Virginia Opossum (*Didelphis virginiana*) and a number of small mammals that often go undetected (e.g., shrews, moles, voles, mice, bats).

No provincially or federally designated species at risk or provincially rare (S-Rank) mammal species were observed within the Project limits during the field surveys.

5.3.5 CONCLUSIONS

A total of 93 wildlife species were observed from the PUC easement or roadside visits, 74% of which are birds. The PUC easement and partial segment of Option A (within the existing PUC easement) recorded the most species with 82 individuals. It is expected that the PUC easement would have the most species observed as it is the longest area and covers large areas of natural features. A portion of Route Options A, B and C overlap portion of the existing PUC easement and thus have many of the same species and habitat.

5.4 SPECIES AT RISK

5.4.1 BOBOLINK AND EASTERN MEADOWLARK

Bobolink and Eastern Meadowlark are designated as Threatened under SARO and subject to the provisions of the ESA (2007). In 2021, two (2) targeted surveys for Bobolink and Eastern Meadowlark were conducted at thirteen point count stations all habitats identified as Cultural Meadow during desktop screening.

Survey conditions met requirements outlined in 4.3.1:

- Round 1
  - May 26, 2021 – Stations 1-12 start at 5:55 until 8:42, partly cloudy, >1km visibility, temperature range 16 – 18°C, wind less than 12km/hr
  - May 28, 2021 – Station 13 was not identified during the desktop survey but added after field investigation of the area. Start time 7:57, 10% cloud cover, 4°C, >1km visibility, 7km/hr winds
- Round 2
  - June 23, 2021 – Stations 1-13, start 5:57 until 8:37, 8-10°C, low cloud cover, >1km visibility, 4-7km/hr winds

The ideal survey conditions were met each survey and variation in starting location to observed stations at different times. No Eastern Meadowlark were recorded on site. Evidence of Bobolink was recorded as singing males or observed pair within suitable breeding meadow and agricultural habitat at six (6) stations. See Table 5-1 below and Figures 1A-1H for 2021 survey results.

Table 5-1 Eastern Meadowlark (EAME) and Bobolink (BOBO) Point Count Survey Results

POINT COUNT STATION #	STUDY AREA LOCATION	26-MAY-21		23-JUN-21		ALL DATES			
		# of Bobo	**# of EAME**	**# of Bobo**	**# of EAME**	**Bobo Highest Breeding Abundance**	**EAME Highest Breeding Abundance**	**Bobo Highest Breeding Evidence**	**Notes**
1	Route A & B	1				1		Possible	
2	Route A & B	1		3		3		Probable	
3	Route A								
4	Route A	1		1		1		Probable	
5	Route A								
6	Route A								
7	Route A								
8	Common Elements for all Options (PUC easement)	2		1		2		Probable	Pair observed
9	Common Elements for all Options (PUC easement)	2		1		2		Probable	
10	Common Elements for all Options (PUC easement)								
11	Route C & D	2		1		2		Probable	
12	Route C & D								
13	Route A & B								
Total		**9**	**0**	**7**	**0**	**11**	**0**	**Probable**	

For Bobolink, only one point count location, Station 1 (along Route Option A & B), recorded one (1) individual with 'possible' breeding evidence within in suitable meadow habitat. Five point count locations, Stations 2, 4, 8, 9 and 11, recorded 'probable' breeding evidence within suitable meadow habitat. Seven point count locations had no observations during targeted surveys. However, Stations 3 and 5 recorded incidental observations of Bobolink during additional surveys outside the protocol daytime timing window. No confirmed breeding was recorded for Bobolink.

No Eastern Meadowlark were recorded within the Project limits during the 2021 targeted surveys. Eastern Meadowlark prefer habitats >5 ha with low proportions of shrub cover (i.e., less than 5%, with >35% being too dense; McCracken et al. 2013). Suitable habitat is present within the study area but there are no species records on eBird within 2km of the study area.

5.4.2 EASTERN WHIP-POOR-WILL

Eastern Whip-poor-will is designated as Threatened under SARO and subject to the provisions of the ESA (2007). In 2021, three rounds of targeted surveys were conducted at 20 point count stations along habitats identified as potentially suitable (open, coniferous, deciduous or mixed forest habitats, edges of habitats where there is exposed rock, clearings, younger forest or wetlands) during desktop screening. The location of Station 15 was changed for the second and third survey to avoid close proximity to the train tracks.

No Eastern Whip-poor-wills were recorded. Suitable habitat is limited within the study area and there are no species records on eBird within 4km of the study area.

Overall survey conditions met requirements outlined in 4.3.2:

- Round 1
  - May 23, 2021 – Stations 1-11, start at 21:54 until 00:23, <25% cloud cover, 91.9% moon illumination, temperature range 17 – 12°C, wind less than 5km/hr
  - May 24, 2021 – Stations 12-20, start at 21:45 until 00:22, cloudy skies but moon fully visible at Stations 12, 13 and 14, 84.6% moon illumination, temperature range 15 – 14° C, wind less than 11km/hr
- Round 2
  - May 26, 2021 – Stations 1-11, start 22:00 until 00:05, clear skies, 99.9% moon illumination, temperature 7-6°C, moderate breeze
  - May 27, 2021 – Stations 12-20, start 22:23 until 00:25, partly cloudy with overcast the last two (2) stations, 99% moon illumination, temperature 7-4°C, wind less than 11km/hr
- Round 3
  - June 21, 2021 – Stations 1-11, start 22:25 until 00:18, partly cloudy, 89.9% moon illumination, temperature 9°C, gentle breeze
  - June 23, 2021 – Stations 12-20, start 22:13 until 00:27, overcast with the first three (3) stations partly cloudy, 96.2% moon illumination, temperature 21°C, wind less than 11km/hr

The ideal survey conditions were not met every evening however, variation in starting location and weather provided suitable conditions were met at least once.

5.4.3 TREE SPECIES

Three (3) potential Butternuts, B01, B02 and B03, were identified during the field surveys within Unit 4B: Dry to Fresh, Coarse: Meadow (G045N). In accordance with the regulations of Ontario's Species at Risk Act, 2007, O.Reg 230/08A, a certified Butternut Health Assessor registered with the MNRF conducted a hybrid field analysis on June 24, 2021 to determine whether the trees are hybrid or pure Butternuts. Results of the field assessment determined that the trees are likely hybrids based on the MNRF's scoring system since trees were assigned a score of 4 (The Butternut Health Assessor's Field Guide, 2015). However, at least 5 characteristics are required to be assessed and only 4 traits were able to be evaluated during the field hybridity test given the age of the trees and the timing of assessment. See Appendix C for the ranking system for the field hybridity test.

To confirm hybridity test results, leaf samples were collected on June 24, 2021 and submitted to the Precision Biomonitoring Inc. (PBI) lab in Guelph, Ontario for DNA analysis. Results of the lab analyses received on July 12, 2021 confirmed that the tissue samples were not representative of pure Butternuts (Appendix C). Since hybrid trees are exempt from protection under the ESA, a full BHA and submission to the MECP is not required for these trees.

Black Ash was recorded in Vegetation Unit 20: G068Tt/Tl south of Third Line along the existing transmission line ROW (Route Option A). Black Ash was designated as Threatened by COSEWIC (federal) in 2018. It has not yet been added to the federal SAR List. Black Ash was also anticipated for consideration by COSSARO (provincial) in 2019 and may be added to the provincial SAR List. Therefore, Black Ash is not subject to the provisions of the Endangered Species Act, ESA (2007) or the Species at Risk Act, SARA (2002).

5.5 AQUATIC

The study area encompasses six (6) subwatersheds, including:

- Lake Superior Subwatershed (Fort Creek);
- East Davignon Creek Subwatershed (East Davignon Creek);
- Big Carp River Subwatershed (Central Creek);
- West Davignon Creek Subwatershed (West Davignon Creek);
- Fort Creek Subwatershed (Bennett Creek); and,
- Leigh Bay Creek Subwatershed (southern extent of Bennett Creek).

Five (5) watercourses occur within the study area. The watercourses are coldwater with the exception of Fort Creek which is identified as a coolwater system (pers. comm. MNRF; Appendix B). They all flow southerly and outlet into St. Mary's River. Review of imagery suggests that watercourses occurring within the study area are of moderate size, with approximate wetted widths ranging between approximately 1 m and 15 m, and wetted widths of headwater reaches indistinguishable through tree canopy (Google Earth, 2017). The

watercourses are identified as permanent, with only a single tributary to Fort Creek located north of the Third Line TS, as intermittent (MNRF, 2021).

Alterations to watercourses have taken place throughout the city as either historical alteration to facilitate industry, or as an effort to manage flood control. Three documented flood control channels occur downstream of the study area, including that of Fort Creek, East Davignon Creek and Central Creek, and one flood diversion channel crosses through the study area: Bennet-West Davignon Creek. These channels are regularly maintained through grass cutting and vegetation management to maintain flow (SSMRCA, 2021). The linear nature of other watercourse reaches that occur around fields, through subdivisions, or paralleling roadways, suggests additional realignment or flood management measures have taken place; however, were not specifically identified during background review.

Fort Creek has undergone many alterations, from the dam construction just north of Second Line between 1968 and 1970, to its flood control realignment north of Wellington Street, and underground aquaduct diversion through to Queen Street West (Tulloch, 2016a). An EA was completed in 2016 to document a preferred option to address the deteriorating aqueduct; therefore, is anticipated it will undergo further modification.

Figures 1A-1H (Appendix A) depict the location of the watercourses and flood control channels within and adjacent to the study area. Table 5-2 summarizes the watercourse crossings.

Four (4) watercourses within the study area were assessed by WSP ecologists from August 31, 2021 to September 2, 2021.

5.5.1 FORT CREEK (EXISTING PUC EASEMENT, COMMON ELEMENT) SITES WC-1 & WC-2

Fort Creek is a coolwater, permanent, small-sized meandering watercourse that originates as headwater drainage and seepage at the southwest corner of Great Northern Road and Fourth Line East. The watercourse flows southwest for approximately 1 km through wetland and woodland before entering the north limit of the study area. The creek initiates as several branches before converging at Third Line East. There are two branches within the study area.

The aquatic habitat of the eastern most branch consists of a mix of runs (90%) and pools (10%). Run sections have a mean wetted depth of 0.06 m, a mean wetted width of 0.4 m, a mean bankfull depth of 0.5 m and a mean bankfull width of 5.2 m. Substrate consists of clay (65%), silt (25%) and sand (10%). Pool sections have a mean wetted depth of 0.2 m, a mean wetted width of 1.3 m, a mean bankfull depth of 0.4 m and a mean bankfull width of 6.0 m. Substrate consists of clay (90%) and silt (10%). The banks are natural and have a steep/vertical slope with minor erosion. The height of the left upstream bank is 0.8 m and the right upstream bank is 0.5 m. Flow levels were low and the gradient was low. The instream cover consists of sparse undercut banks, moderate overhanging vegetation, moderate instream vegetation and sparse woody / organic debris. Riparian vegetation consists of grasses, sedges and cattail species (*Typha* sp.). Instream vegetation consisted of watercress and cattail species (*Typha* sp.). There was no forest cover. Groundwater indicators included the presence of watercress, iron staining and seepage. Schools of minnow were visually observed.

The aquatic habitat of the western branches consists of a mix of runs (50%), pools (40%) and flats (10%). Run sections have a mean wetted depth of 0.2 m, a mean wetted width of 1.6 m, a mean bankfull depth of 0.7 m and a mean bankfull width of 3.9 m. Substrate consists of sand (70%), gravel (25%) and silt (5%). Pool sections have a mean wetted depth of 0.4 m, a mean wetted width of 2.7 m, a mean bankfull depth of 1.0 m and a mean bankfull width of 3.9 m. Substrate consists of sand (70%), silt (27%) and clay (3%). Flat sections have a mean wetted depth of 0.2 m, a mean wetted width of 1.4 m, a mean bankfull depth of 0.7 m and a mean bankfull width of 3.4 m. Substrate consists of sand (60%) and silt (40%). The banks are natural and have a steep slope with moderate erosion. The height of the left upstream bank is 1.3 m and the right upstream bank is 1.6 m. Flow levels were low and the gradient was low. The instream cover consists of moderate undercut banks, moderate overhanging vegetation, sparse instream vegetation and moderate woody / organic debris. Riparian vegetation consists of grasses, riparian trees and cattail species (*Typha* sp.). Instream vegetation consisted of watercress and cattail species (*Typha* sp.). There was no forest cover. Groundwater indicators included the presence of watercress and seepage. Schools of minnows and lamprey were observed.

5.5.2 EAST DAVIGNON CREEK (EXISTING PUC EASEMENT, COMMON ELEMENT, STATION OPTION 2) SITES WC-3 AND WC-4

East Davignon Creek is a coldwater, permanent, small-sized meandering watercourse that originates as headwater drainage and seepage approximately 6 km northwest of the study area. The watercourse flows southeast through wetland and woodland before entering the north limit of the study area. Within the study area, the creek has two branches that crosses the existing PUC easement.

The aquatic habitat of the eastern branch consists of a mix of runs (80%), pools (10%) and flats (10%). Run sections have a mean wetted depth of 0.2 m, a mean wetted width of 0.7 m, a mean bankfull depth of 0.4 m and a mean bankfull width of 8.0 m. Substrate consists of silt (48%), clay (37%) and sand (15%). Pool sections have a mean wetted depth of 0.3 m, a mean wetted width of 0.9 m, a mean bankfull depth of 0.6 m and a mean bankfull width of 3.0 m. Substrate consists of clay (90%) and silt (10%). Flat sections have a mean wetted depth of 0.05 m, a mean wetted width of 2.5 m, a mean bankfull depth of 0.3 m and a mean bankfull width of 11.0 m. Substrate consists of silt (90%) and sand (10%). The banks are natural and have a gradual slope with moderate erosion. The height of the left upstream bank is 0.6 m and the right upstream bank is 1.0 m. Flow levels were low and the gradient was moderate, with one section with a steep gradient. The instream cover consists of sparse undercut banks, moderate overhanging vegetation and moderate instream vegetation. Riparian vegetation consists of grasses, sedges and cattail species (*Typha* sp.). Instream vegetation consisted of watercress and cattail species (*Typha* sp.). There was no forest cover. Groundwater indicators included the presence of watercress, iron staining and seepage. No fish were visually observed. Drops in the channel caused by erosion (~ 0.3 m), as well as a section with a steep gradient may be barriers to fish migration.

The aquatic habitat of the western branch consists of a mix of runs (80%) and pools (20%). Run sections have a mean wetted depth of 0.02 m, a mean wetted width of 0.3 m, a mean bankfull depth of 0.3 m and a mean bankfull width of 3.0 m. Substrate consists of sand (88%),

silt (8%) and clay (4%). Pool sections have a mean wetted depth of 0.2 m, a mean wetted width of 0.8 m, a mean bankfull depth of 0.8 m and a mean bankfull width of 2.8 m. Substrate consists of sand (70%), clay (25%) and silt (5%). The banks are natural and have a gradual slope with moderate erosion. The height of the left upstream bank is 8.0 m and the right upstream bank is 8.8 m. Flow levels were low and the gradient was steep. The instream cover consists of sparse undercut banks, moderate overhanging vegetation and moderate instream vegetation. Riparian vegetation consists of grasses, ferns and cattail species (*Typha* sp.). Instream vegetation consisted of cattail species (*Typha* sp.). Forest cover is 60%. Groundwater indicators included the presence of iron staining and seepage. No fish were visually observed. Drops in the channel caused by erosion (0.5 m to 1.5 m), as well as the steep gradient may be barriers to fish migration. However, there is confirmed fish in a lake upstream of the study area.

5.5.3 WEST DAVIGNON CREEK SITES WC-6 TO -8, WC-10 TO -14, WC-16 AND S4

West Davignon Creek is a coldwater, permanent, medium-sized meandering watercourse that originates as a series of lakes and headwater drainage approximately 4 km northwest of the study area. The watercourse flows southeast through wetland and woodland before entering the north limit of the study area. At the north end of the study area, the creek has three sections of branches that crosses the existing PUC easement, Route Options A & B. Northwest of Allen's Side Road and Second Line West, the watercourse crosses the Flood Control Channel and then continues flowing southeast alongside Station 1/1-A.

The aquatic habitat of the northeastern branch consists of runs (100%). Run sections have a mean wetted depth of 0.3 m, a mean wetted width of 1.1 m, a mean bankfull depth of 0.6 m and a mean bankfull width of 1.9 m. Substrate consists of sand (50%), gravel (30%) and cobble (20%). The banks are natural and have a gradual slope with minor erosion. The height of the left upstream bank is 1.5 m and the right upstream bank is 1.9 m. Flow levels were low and the gradient was low. The instream cover consists of moderate overhanging vegetation and sparse woody / organic debris. Riparian vegetation consists of grasses and sedges. There was no instream vegetation. There was no forest cover. There was no evidence of groundwater contributions. Schools of minnows were observed. There were no notable barriers to fish migration.

The aquatic habitat of the central branches consists of a mix of runs (40%), riffles (40%) and pools (20%). Run sections have a mean wetted depth of 0.07 m, a mean wetted width of 1.5 m, a mean bankfull depth of 0.6 m and a mean bankfull width of 6.0 m. Substrate consists of cobble (90%), gravel (5%) and sand (5%). Riffle sections have a mean wetted depth of 0.06 m, a mean wetted width of 3.4 m, a mean bankfull depth of 1.0 m and a mean bankfull width of 7.6 m. Substrate consists of cobble (85%), gravel (10%) and sand (5%). Pool sections have a mean wetted depth of 0.4 m, a mean wetted width of 2.4 m, a mean bankfull depth of 1.0 m and a mean bankfull width of 6.0 m. Substrate consists of sand (70%), gravel (20%) and cobble (10%). The banks are natural and have a steep slope with moderate erosion. The height of the left upstream bank is 1.6 m and the right upstream bank is 1.3 m. Flow levels were moderate and the gradient was low. The instream cover consists of sparse undercut banks, moderate overhanging vegetation and moderate woody / organic debris. Riparian vegetation consists of grasses. There was no instream vegetation. Forest cover is 50%. There

was no evidence of groundwater contributions. Schools of minnows were observed. There were no notable barriers to fish migration.

The aquatic habitat of the northwestern branches consists of undefined flow (100%) traversing agricultural fields. Flow levels were low, and the gradient was low. The instream cover consists of moderate overhanging vegetation and dense instream vegetation. Riparian vegetation consists of grasses and cattail species (*Typha* sp.). The instream vegetation consists primarily of dense cattail species. There was no forest cover. Groundwater indicators included iron staining and seepage. No fish were observed. Seasonal barriers to fish migration included low flow for much of the year.

The aquatic habitat of the Flood Control Channel consists of runs (40%), flats (40%), riffles (20%). Run sections have a mean wetted depth of 0.1 m, a mean wetted width of 2.9 m, a mean bankfull depth of 0.8 m and a mean bankfull width of 5.8 m. Substrate consists of cobble (60%) and sand (40%). Flat sections have a mean wetted depth of 0.2 m, a mean wetted width of 3.5 m, a mean bankfull depth of 1.0 m and a mean bankfull width of 5.7 m. Substrate consists of sand (80%), cobble (15%) and gravel (5%). Riffle sections have a mean wetted depth of 0.1 m, a mean wetted width of 3.0 m, a mean bankfull depth of 0.7 m and a mean bankfull width of 5.2 m. Substrate consists of boulder (50%), cobble (30%), gravel (10%) and sand (10%). The banks are manmade and have a steep slope with no erosion due to stabilization. The height of the left upstream bank is 1.3 m and the right upstream bank is 1.7 m. Flow levels were moderate and the gradient was low. The instream cover consists of sparse instream vegetation, sparse woody / organic debris and sparse rocks / boulders. Riparian vegetation consists of grasses and cut lawn. There was no instream vegetation. There was no forest cover. There was no evidence of groundwater contributions. Schools of minnows were observed. 200 m north of Second Line West, there is a weir with a 1.2 m drop potentially causing a permanent fish barrier.

The aquatic habitat of the West Davignon Creek flowing adjacent to Station Option 1/1-A consists of a mix of flats (90%) and pools (10%). Flat sections have a mean wetted depth of 0.2 m, a mean wetted width of 4.6 m, a mean bankfull depth of 0.8 m and a mean bankfull width of 6.6 m. Substrate consists of sand (90%) and silt (10%). Pool sections have a mean wetted depth of 0.3 m, a mean wetted width of 5.7 m, a mean bankfull depth of 0.7 m and a mean bankfull width of 7.2 m. Substrate consists of sand (70%) and silt (30%). The banks are straightened and have a steep slope with minor erosion. The height of the left upstream bank is 1.8 m and the right upstream bank is 2.0 m. Flow levels were moderate and the gradient was low. The instream cover consists of sparse undercut banks and moderate woody / organic debris. Riparian vegetation consists of grasses. There was no instream vegetation. Forest cover is 80%. There was no evidence of groundwater contributions. Schools of minnows were observed. There were no notable barriers to fish migration.

5.5.4 BENNETT CREEK (ROUTE OPTION A AND B) SITES WC-9, WC-15 AND WC-16

Bennett Creek is the most westerly watercourse in the study area and is a permanent, medium-sized meandering watercourse that originates as a series of lakes and headwater drainage approximately 7 km northwest of the study area. The watercourse flows southeast through wetland and woodland before entering the north limit of the study area. Just upstream

of the study area, the creek has two branches that converge at Second Line West, which then crosses Route Option A and B in two locations.

The aquatic habitat of the eastern branch consists of runs (90%) and pools (10%). Run sections have a mean wetted depth of 0.05 m, a mean wetted width of 1.1 m, a mean bankfull depth of 0.4 m and a mean bankfull width of 2.3 m. Substrate consists of sand (80%), gravel (10%) and cobble (10%). Pool sections have a mean wetted depth of 0.5 m, a mean wetted width of 1.5 m, a mean bankfull depth of 0.4 m and a mean bankfull width of 2.3 m. Substrate consists of sand (80%), gravel (10%) and cobble (10%). The banks are straightened and have a steep slope with no erosion. The height of the left upstream bank is 0.8 m and the right upstream bank is 0.9 m. Flow levels were low and the gradient was low. The instream cover consists of moderate overhanging vegetation and dense instream vegetation. Riparian vegetation consists of grasses and cattail species. There was no forest cover. Groundwater indicators included the presence of watercress. Schools of minnows were observed. There were no notable barriers to fish migration.

The aquatic habitat of the western branch consists of flats (60%), run (20%), riffles (10%) and pools (10%). Flat sections have a mean wetted depth of 0.3 m, a mean wetted width of 3.8 m, a mean bankfull depth of 0.7 m and a mean bankfull width of 6.3 m. Substrate consists of sand (40%), gravel (40%), silt (15%) and boulder (5%). Run sections have a mean wetted depth of 0.1 m, a mean wetted width of 2.0 m, a mean bankfull depth of 0.8 m and a mean bankfull width of 5.8 m. Substrate consists of clay (70%), gravel (20%) and sand (10%). Riffle sections have a mean wetted depth of 0.2 m, a mean wetted width of 1.8 m, a mean bankfull depth of 0.9 m and a mean bankfull width of 5.8 m. Substrate consists of gravel (30%), sand (20%), cobble (20%), clay (20%) and boulder (10%). Pool sections have a mean wetted depth of 0.4 m, a mean wetted width of 3.9 m, a mean bankfull depth of 1.1 m and a mean bankfull width of 9.3 m. Substrate consists of clay (60%) and sand (40%). The banks are natural and have a steep slope with high erosion. The height of the left upstream bank is 2.9 m and the right upstream bank is 1.8 m. Flow levels were moderate and the gradient was low. The instream cover consists of moderate undercut banks, moderate woody / organic debris and sparse rocks / boulders. Riparian vegetation consists of grasses. There was 70% forest cover. There was no evidence of groundwater contributions. Schools of minnows and a lamprey were observed. There were no notable barriers to fish migration.

The MNRF manages *Aquatic Resource Areas* spatial data (MNRF, 2021), which is regularly updated with fish collection record data. This resource revealed records from 2017 for the various watercourses throughout the city. This information has been summarized in the table below.

Fish community sampling was completed by WSP Ecologists between August 31, 2021 and September 2, 2021 using a backpack electrofisher, dip netting and minnow traps. Prior to sampling, a Licence to Collect Fish for Scientific Purposes was obtained on August 10, 2021. The fish collection data has been included in the table below.

Table 5-2 Aquatic Resource Areas Fish Survey Records for the Study Area

		WATERCOURSES				FLOOD DIVERSION CHANNELS			
COMMON NAME	SCIENTIFIC NAME	Fort	East Davignon	West Davignon	Bennett	Fort	East Davignon	Central	Bennet-West Davignon
American Brook Lamprey	*Lampetra appendix*	*x,o*		*x*	*x*	*x*			*x*
Bluntnose Minnow	*Pimephales notatus*			*x*	*x*				*x*
Blacknose Dace	*Rhinichthys atratulus*	*x,o*		*x*	*x,o*	*x*			*x,o*
Blacknose Shiner	*Notropis heterolepis*	*x*		*x*	*x*	*x*			*x*
Brassy Minnow	*Hybognathus hankinsoni*			*x*	*x*				*x*
Brook (Speckled) Trout	*Salvelinus fontinalis*		*x*	*x,o*	*x*		*x*	*x*	*x,o*
Brook Stickleback	*Culaea inconstans*	*x,o*		*x,o*	*x,o*	*x*			*x*
Central Mudminnow	*Umbra limi*				*x*				*x,o*
Coho Salmon	*Oncorhynchus kisutch*			*x*	*x*				*x*
Common Shiner	*Luxilus cornutus*				*x*				*x*
Creek Chub	*Semotilus atromaculatus*	*x,o*		*x,o*	*x,o*	*x*			*x,o*
Fathead Minnow	*Pimephales promelas*			*x*	*x*				*x*
Johnny Darter	*Etheostoma nigrum*			*x*	*x*				*x,o*
Longnose Dace	*Rhinichthys cataractae*			*x*	*x*				*x*
Mottled Sculpin	*Cottus bairdii*			*x,o*	*x,o*				*x,o*
Rainbow Trout (steelhead)	*Oncorhynchus mykiss*		*x*	*x,o*	*x,o*		*x*	*x*	*x*
White Sucker	*Catostomus commersonii*			*x*	*x*				*x,o*

x : ARA fish records
o : WSP fish records

Two (2) of the documented species are considered warmwater, including Bluntnose Minnow and Fathead Minnow, while the others are dependent on a cool to coldwater thermal regime. American Brook Lamprey has a provincial rank of S3 (rare to uncommon), is designated as Special Concern (SC) federally, and was documented in three of the watercourses (MNRF, 2021).

Additionally, two (2) species, including Silver Lamprey (federally SC; *Ichthyomyzon unicuspis*) and Lake Sturgeon (provincially END; *Acipenser fulvescens*) have potential occurrences within the Sault Ste. Marie area, as identified by DFO SAR mapping (accessed 2021) and NHIC database (MNRF, 2021), respectively. DFO SAR mapping identifies the lower reaches of Fort Creek, approximately 2 km downstream of the study area as possible habitat for Silver Lamprey (Appendix A, Figure 1).

Agency consultation also revealed potential for other aquatic SAR fish to occur within the study area, including: Redside Dace (*Clinostomus elongatus*), Shortjaw Cisco (*Coregonus zenithicus*), Threespine Stickleback (*Gasterosteus aculeatus*) and Northern Brook Lamprey (*Ichthyomyzon fossor*). Aquatic SAR is further discussed in the following sections.

Large predatory salmonid species, including Brook Trout, Brown Trout, Rainbow Trout and Coho Salmon are dependent on coldwater habitats and are generally sensitive to anthropogenic stressors, whereas species like Bluntnose Minnow and White Sucker are more tolerant to stressors (Eakins, 2020). It is anticipated that many of the headwater reaches have potential to function as nursery habitat for these species and more common generalists, therefore it is critical that all works consider design options and measures to avoid HADD.

The existing ROW which extends east-west is comprised of seven (7) watercourse crossings, including two (2) over tributaries to Fort Creek, two (2) crossings over East Davignon Creek and tributary, and three (3) crossings over West Davignon Creek and tributaries. Additionally, the alignment occurs partly within the Bennett-West Davignon Creek Flood Channel. The following table summarizes the watercourse and flood channel crossings for the transmission line and transformer station site options.

Table 5-3 Watercourse Crossing Summary

ROUTE OPTION A	ROUTE OPTION B	ROUTE OPTION C	ROUTE OPTION D	COMMON ELEMENTS	STATION OPTIONS
This alignment includes two (2) watercourses, and is adjacent to three (3) tributaries as follows: — one (1) 45° crossing of Bennett Creek (coldwater, permanent) — one(1) perpendicular crossing of West Davignon Creek (coldwater, permanent) — adjacent (~ <30 m) to three (3) tributaries of both Bennett Creek and West Davignon Creeks (coldwater, permanent)	This alignment includes two (2) watercourse and two (2) flood control channel crossings, as follows: — one (1) 45° crossing of a tributary to a tributary of West Davignon Creek (coldwater, permanent) — one (1) perpendicular crossing of Bennett Creek (coldwater, permanent) — two (2) crossings; (one 45° and one perpendicular) of Bennett-West Davignon Creek Flood Control Channel (coldwater, permanent)	This alignment includes two (2) watercourse crossings and generally follows the channel of the Bennett-West Davignon Creek Flood Control Channel, as follows: — one (1) perpendicular crossing of Bennett Creek (coldwater, permanent) — one (1) 45° crossing of a tributary to West Davignon Creek (coldwater, permanent) *This alignment occurs within or immediately adjacent to the Bennett-West Davignon Creek Flood Control Channel (coldwater, permanent).	This alignment includes three (3) watercourse crossings and generally follows the channel of the Bennett-West Davignon Creek Flood Control Channel, as follows: — one (1) perpendicular crossing of Bennett Creek (coldwater, permanent) — one (1) perpendicular crossing of a tributary to West Davignon Creek (coldwater, permanent) — one (1) 45° and two (2) perpendicular crossings of West Davignon Creek (coldwater, permanent)	This alignment includes four (4) watercourses and is adjacent to the channel of the Bennett-West Davignon Creek Flood Control Channel, as follows: — one (1) 45° and one (1) perpendicular crossing of West Davignon Creek (coldwater, permanent) — one (1) 45° and one (1) perpendicular crossing of East Davignon Creek (coldwater, permanent) — two (2) perpendicular crossings of Fort Creek (coolwater, permanent) — adjacent to the Bennett-West Davignon Creek Flood Control Channel (coldwater, permanent).	**1 / 1-A** Both sites occur adjacent to West Davignon Creek and Bennett Creek. **2** Adjacent to East Davignon Creek Flood Channel

ROUTE OPTION A	ROUTE OPTION B	ROUTE OPTION C	ROUTE OPTION D	COMMON ELEMENTS	STATION OPTIONS
			— one (1) perpendicular and one (1) skewed crossing of the Bennett-West Davignon Creek Flood Control Channel (coldwater, permanent) *This alignment occurs within or immediately adjacent to the Bennett-West Davignon Creek Flood Control Channel (coldwater, permanent).		

5.6 THREATENED AND ENDANGERED SPECIES

WSP Ecologists compiled and reviewed information gathered as part of this study, which included responses from agency consultation and online databases (Section 3.0). A comprehensive preliminary list of SAR and rare species were generated from these resources in order to review for their potential to occur within the study area based on habitat conditions inferred from available imagery and then field verified.

The table below provides a ranking for each Threatened and Endangered species as either having None, Low, Moderate or High potential for presence in the study area. Of the twenty-four (24) species evaluated, nine (9) were determined to have Low Potential, four (4) was determined to have Low to Moderate Potential, two (2) with Moderate Potential, and nine (9) with Moderate to High Potential for occurrence within the study area. These species are summarized in the table below.

Table 5-4 Potential for Threatened and Endangered Species within the Study Area

THREATENED SPECIES	ENDANGERED SPECIES
Low — Least Bittern (*Ixobrychus exilis*) — Lake Sturgeon (*Acipenser fulvescens*) — Shortjaw Cisco (*Coregonus zenithicus*) — Eastern Whip-poor-will (*Caprimulgus vociferus*) — Hill's Thistle (*Cirsium hillii*) — Houghton's Goldenrod (*Solidago houghtonii*) *Low-Moderate Potential* — Chimney Swift (*Chaetura pelagica*) — Eastern Meadowlark (*Sturnella magna*) — Bank Swallow (*Riparia riparia*) — Barn Swallow (*Hirundo rustica*) *Moderate Potential* — Blanding's Turtle (*Emydoidea blandingii*) *Moderate to High Potential* — Bobolink (*Dolichonyx oryzivorus*)	*Low* — Gattinger's False Foxglove (*Agalinis gattingeri*) — Golden Eagle (*Aquila chrysaetos*) — Redside Dace (*Clinostomus elongatus*) *Moderate Potential* — Wood Turtle (*Glyptemys insculpta*) *Moderate to High Potential* — Gypsy Cuckoo Bumble Bee (*Bombus bohemicus*) — Rusty-patched Bumble Bee (*Bombus affinis*) — Nine-spotted Lady Beetle (*Coccinella novemnotata*) — Little Brown Bat (*Myotis lucifugus*) — Northern Long-eared Bat (*Myotis septentrionalis*) — Small-footed Bat (*Myotis leibii*) — Tri-colored Bat (*Perimyotis subflavus*) — Black Ash (*Fraxinus nigra*)

It is noted that although a species may have potential to occur within the study area, the reasonable likelihood and magnitude of impacts to the species are generally considered to be Low. It is anticipated that there may be some flexibility in regard to structure placement that can limit disturbance in areas that may be most sensitive. Additionally, construction planning to avoid sensitive periods for wildlife may further minimize impacts to species. Opportunities to avoid or minimize impacts to SAR and/or their habitats are outlined below.

- SAR birds occurring within the general area, such as Chimney Swift, Barn Swallow and Bank Swallow may forage over the study area. By avoiding existing structure removal or demolition and leaving the banks of watercourses undisturbed, most permanent impacts to the habitat of these species can be prevented.
- Species that are dependent on open habitats of meadows or fields, including Bobolink, Eastern Meadowlark, Nine-spotted Lady Beetle, Gypsy Cuckoo Bumble Bee, and Rusty-patched Bumble Bee would use these habitats during the spring and summer months. Limiting permanent impacts to these areas and avoiding construction during the period in which this habitat is used (e.g., spring and summer), would avoid and/or minimize impacts to the species and their habitat. It should be noted that the last observation of Nine-spotted Lady Beetle in Ontario was in 1987; the date of observation for this species along the existing PUC easement provided by NHIC is unknown but likely to be a very old record. Bobolink were observed during the appropriate breeding bird window at several stations. At five of these locations, more than one individual were observed with ‘probable’ breeding habitat one both of the survey dates. These observations suggest that individuals are likely using the habitat for breeding and as such, these habitats are regulated under the ESA. Further discussions with MECP are required to determine permitting implications once details of the preferred route and design are completed.
- Species that are dependent on forested areas or treed habitats at specific times of year (e.g., SAR bats and migratory birds) can be protected by applying timing restrictions to tree removal. For forest communities that require removal for the transmission line will require further consultation with MECP to determine if acoustic surveys are required to confirm roosting habitat use.
- Turtles may use watercourses, wetlands and nearby gravelly areas as habitat. It is presumed that in-water work can be avoided and measures to protect turtles, including exclusionary fencing, will be employed.
- There is a low probability that aquatic SAR occur within the watercourses that are proposed for crossing along the routes; however, avoidance of in-water work or activities within the meander belt of direct habitat is possible.

Further assessment of potential impacts to identified SAR and development of a detailed mitigation plan will be completed during the EA and detailed design upon selection of the preferred alternative.

5.7 AREAS OF NATURAL AND SCIENTIFIC INTEREST

Areas of Natural and Scientific Interest (ANSI) are defined as areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education (OMMAH, 2020). ANSIs can be ranked as Provincially or Regionally significant.

The NHIC (MNRF, 2021) mapping was searched for the presence of ANSIs within the study area and no ANSIs were revealed.

5.8 SIGNIFICANT WETLANDS

Wetlands are defined in the PPS (OMMAH, 2020) as lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. There are four major wetland types; which are classified as swamps, marshes, bogs, and fens. A significant wetland is defined as an area identified as provincially significant by the Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time (OMMAH, 2020) significant in Ontario.

A review of the NHIC mapping (MNRF, 2021) did not reveal any Significant Wetlands within the study area. It is noted that small unevaluated wetlands have been mapped within the study area; however, field investigation identified two (2) wetland communities relatively small in size within five (5) units throughout the study area, most of which were found in the existing PUC easement.

5.9 SIGNIFICANT COASTAL WETLANDS

Wetlands are defined in the PPS (OMMAH, 2020) as lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. There are four major wetland types; which are classified as swamps, marshes, bogs, and fens. Coastal wetlands are wetlands located on one of the Great Lakes or their connecting channels, or any other wetland that lies on a tributary to any of the above specified waterbodies and lies, either wholly or in part, downstream of a line located 2 km upstream of the 1:100 year floodline of the detention pond in which the tributary is connected.

A review of the NHIC mapping (MNRF, 2021) and consultation with the MNRF (Appendix B) did not reveal any Significant Coastal Wetlands within the study area.

5.10 SIGNIFICANT WILDLIFE HABITAT

Wildlife habitat is defined as areas where plants, animals, and other organisms live and find adequate amounts of food, water, shelter, and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual life cycle; and areas which are important to migratory or non-migratory species (OMMAH, 2020).

Wildlife habitat is referred to as significant if it is ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System (OMMAH, 2020).

Guidelines and criteria for the identification of SWH are detailed in the Significant Wildlife Habitat: Technical Guide (OMNR, 2000), and the Significant Wildlife Habitat Criterion Schedule for Ecoregion 5E (MNRF, 2015). SWH is described under four main categories:

- Seasonal concentrations of animals;
- Rare vegetation communities or specialized habitats for wildlife;
- Wildlife movement corridors; and,
- Habitats of Species of Conservation Concern (SCC).

The MNRF did not reveal SWH within the study area and available spatial data obtained from Land Information Ontario also did not identify the presence of any SWH.

The presence of potential candidate SWH within the study area was determined based on the Significant Wildlife Habitat Criteria Schedule for Ecoregion 5E (MNRF, 2015). The following table lists SWH types applicable to Ecoregion 5E and those identified in **bold** are considered to have potential to occur within the study area.

The NHIC / MNRF indicated that the study area is adjacent to a Colonial Waterbird Nesting Area. Although this is not prescribed as SWH affording protection under the PPS, it has been included as an area of consideration and habitat impacts are unlikely.

Table 5-5 SWH Screening for the Study Area

SWH TYPE	WILDLIFE HABITAT
Seasonal Concentration Areas of Animals	- Waterfowl Stopover and Staging Areas (Terrestrial) - Waterfowl Stopover and Staging Areas (Aquatic) - Shorebird migratory Stopover Area - Raptor Wintering Area - Bat Hibernacula - **Bat Maternity Colonies** - Turtle-Wintering Areas - Reptile Hibernacula - Colonially - Nesting Bird Breeding Habitat (Bank and Cliff) - Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) - Colonially - Nesting Bird Breeding Habitat (Ground) - Deer Yarding Areas

SWH TYPE	WILDLIFE HABITAT
Rare Vegetation Communities	- Beach/Beach Ridge/Bar/Sand Dunes - Shallow Atlantic Coastal Marsh - Cliffs and Talus Slopes - Rock Barren - Sand Barren - Alvar - Old Growth Forest - Bog - Tallgrass Prairie - Savannah - Rare Forest Type: Red Spruce - Rare Forest Type: White Oak
Specialized Habitat for Wildlife	- Waterfowl Nesting Area - **Bald Eagle and Osprey Nesting, Foraging and Perching Habitat** - **Woodland Raptor Nesting Habitat** - **Turtle and Lizard Nesting Areas** - Seeps and Springs - Aquatic Feeding Habitat - Mineral Licks - Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf - **Amphibian Breeding Habitat (Woodland)** - **Amphibian Breeding Habitat (Wetlands)** - Mast Producing Areas
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)	- Marsh Breeding Bird Habitat - **Open Country Bird Breeding Habitat** - Shrub/Early Successional Bird Breeding Habitat - **Special Concern and Rare Wildlife Species**
Animal Movement Corridors	- Amphibian Movement Corridors - Cervid Movement Corridors - Furbearer Movement Corridor
Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 5E	EcoDistricts: - 5E-11 – Jack Pine Forest - 5E-13 – Lake Winter Moose Habitat

5.11 NATURAL HERITAGE FEATURE SUMMARY

A summary of the NHFs that have potential to occur within the study area are provided in the table below. This summary is based on background review and interpretation of aerial imagery.

Table 5-6 Significant Feature Summary

FEATURE	PRESENT	COMMENT
Fish Habitat	Yes	The watercourses within the study area support a cool or coldwater fishery.
Significant ANSIs	No	There are no known ANSIs within the study area.
Threatened or Endangered Species Habitat	Yes	There is potential the study area may provide habitat opportunities for Threatened and Endangered species.
Significant Wetland	No	There were no known significant wetlands within the study area.
Significant Wildlife Habitat	Yes	There is potential the study area to support a variety of SWH types. Although these habitats have not been confirmed.

6 EVALUATION OF ALTERNATIVE ROUTES

The ecological (or biophysical) criteria factors that are being considered for the evaluation of Route Options are Designated / Special Natural Areas, Vegetation, Wetlands and Floodplain Areas, Fish and Fish Habitat, Wildlife and Significant Habitat and Species at Risk. Since the 'Common Elements' sections are 'common' for all Route Options, these specific sections were not included in the evaluation. Refer to the Environmental Study Report (ESR) for the full evaluation.

7 PREFERRED ROUTE

The route with the least potential effects and greatest benefits is recommended as the preferred route from a technical, environmental and/or socio-economic perspective; in this case this was Route Option D and Station Option 1-A.

Following the completion of the draft ESR 30-day review period, based on public feedback received on the proposed location of the southern portion of the Common Element Route in relation to Glasgow Park, PUC decided to shift the 230 kV line west along Yates Avenue, in an area that is predominately zoned as heavy industrial, as well as rotating the preferred station option orientation (Station Option 1-A) by 90 degrees, now Station Option 1-A R (see **Figure 3**). These refinements will avoid impacting existing trees and vegetation east of the proposed station location.

Beyond the Common Element section in the north, Route Option D extends along the perimeter of a Mineral Meadow Marsh, parallels the Bennett-West Davignon Creek Flood Control Channel for the majority of its length, then shifts east at Yates Avenue and continues along the Common Element section paralleling the road until it turns southerly at the terminus of Yates Avenue to Station Option 1-A R. it then skirts through a segmented portion of an Aspen - Birch Hardwood forest as well as sections of mowed lawn and highly disturbed areas associated with the Algoma Steel Plant (refer to **Figures 4G and 4H**).

7.1 VEGETATION AND FLORA

7.1.1 Potential Effects – Preferred Route and Station Option

Direct impacts are associated with the clearing of vegetation along the transmission corridor. The Common Elements Route along the existing PUC easement has been previously cleared and continuously undergoes maintenance and is expected to continue for the new towers as well as for during operation of the line. Most of this alignment occurs within Meadow along with smaller scattered areas of Shrub, Mineral Meadow Marsh and Mineral Thicket Swamp communities; all these communities generally are characterized by low-lying vegetation where trees are absent. The adjacent communities beyond the PUC easement and along the Common Elements Route are dominated by forest communities, Aspen-Birch Hardwood.

Impacts are considered nominal, and vegetation in these areas is generally already subject to high levels of disturbance from existing transmission, road and pathway operation and maintenance activities. One provincially rare species (i.e., S-rank S1 – S3) was recorded within along the slope west of Peoples Road along the existing transmission line ROW: Canada Cinquefoil. The placement of towers to avoid more sensitive areas such as wetlands and where Canada Cinquefoil was found can be design measures to avoid / minimize impacts. The presence of Canada Cinquefoil will be verified during targeted field surveys conducted in September 2022. WSP staff will document and compare identification features with the similar species Common Cinquefoil, which has a provincial ranking of S5 (secure).

As with any construction activities, there is always potential for indirect impacts to adjacent retained vegetation features during and following construction (operation) including, but not limited to, the following:

- Release of construction-generated sediment to adjacent habitats.
- Vegetation clearing / damage beyond the working area.
- Spills of contaminants, fuels and other materials that may reach natural areas.
- Changes in drainage patterns (groundwater and/or surface runoff flow) that can impact dependent vegetation / wetland areas located either upgradient or downgradient of the ROW. Blocking of existing surface / subsurface drainage patterns can result in upstream and downstream vegetation dieback / condition changes. An increase in downstream runoff can result in erosion impacts on receiving vegetation.

These potential impacts to vegetation and habitat features can be managed through implementation of standard mitigation measures, as outlined in Section 8.

7.2 WILDLIFE AND WILDLIFE HABITAT

7.2.1 Potential Effects – Preferred Route and Station Option

Wildlife habitat impacts are generally similar to those described for vegetation (i.e., direct impact to meadow, marsh and some woodland habitat). Potential impacts would include disturbance to nesting birds or possibly loss of nests or young, if nests are present in the year of construction. Impacts to forest and associated wildlife habitat is anticipated to be negligible given these landscapes are not limiting in the general area. Within the study area, the open meadow areas are typically limited to areas which have undergone some level of disturbance and make up a small portion of the habitat type within the greater natural system. Preservation of meadow and grassland habitats is encouraged to promote species biodiversity and conserve SAR which are known to utilize these habitat types.

Although no confirmed wildlife habitat features were recorded (e.g., turtle nesting habitats, amphibian breeding habitat, cavity trees), there is potential that along the preferred route these habitats do exist. Refer to Section 7.4 for impacts to Bobolink habitat. That said, they are not limited to the general area and given the current disturbance by human activity (mowed areas along the flood diversion channel etc.) and existing cleared PUC easement, wildlife are likely to be using more suitable habitat in the general study area, away from these disturbances.

7.3 AQUATIC

7.3.1 Potential Effects – Preferred Route and Station Option

As the proposed work is assumed to not involve in-water works, it is unlikely to have direct impacts on fish and fish habitat. The Preferred Route Option includes crossing of four (4) watercourses: one of Bennett Creek at two locations (coldwater, permanent); one crossing of a tributary to West Davignon Creek (coldwater, permanent); two (2) of the Bennett-West Davignon Creek Flood Diversion Channel and three (3) of West Davignon Creek (coldwater, permanent). In addition, the Preferred Route will be located along manmade sections of the Bennett-West Davignon Creek Flood Diversion Channel which currently has high levels of disturbance from road activity, maintenance activities, urban runoff and highly variable flows. Along the existing PUC easement, the transmission line will cross over Fort Creek, East Davignon Creek (2 locations) and West Davignon Creek (2 locations).

However, temporary indirect impacts are possible if mitigation measures are not properly implemented as described in Section 8 below. The temporary construction-related impacts to fish and fish habitat associated with the transmission line works may consist of the following:

- Potential sedimentation and erosion associated with the excavation of bank material;
- Addition of deleterious substances to the watercourses such as sediment, fuel, oil, and lubricants associated with the use of heavy machinery; and,
- Removal of riparian vegetation.

7.4 SPECIES AT RISK

7.4.1 Potential Effects – Preferred Route and Station Option

There is moderate / high potential for 10 Endangered and/or Threatened species to be present along the Preferred Route. Although there were no recorded Eastern Meadowlark during the surveys and only 'possible' breeding recorded for Bobolink along the Preferred Route, habitat is present for Bobolink along the Common Elements Route in the existing PUC easement as well as along the Preferred Route adjacent to the Bennett-West Davignon Creek Flood Diversion Channel. The proposed alignment north of Third Line only impacts the perimeter of breeding habitat; however, the transmission line will traverse through larger sections of breeding habitat south of Third Line.

The reasonable likelihood and magnitude of impacts to the species are generally considered to be Low. It is anticipated that there may be some flexibility in regard to structure placement that can limit disturbance in areas that may be most sensitive. Additionally, construction planning to avoid sensitive periods for wildlife may further minimize impacts to species. Opportunities to avoid or minimize impacts to SAR and/or their habitats are outlined below.

- SAR birds occurring within the general area, such as Chimney Swift, Barn Swallow and Bank Swallow may forage over the study area. By avoiding existing structure removal or demolition and leaving the banks of watercourses undisturbed, most permanent impacts to the habitat of these species can be prevented.
- Species that are dependent on open habitats of meadows or fields, including Bobolink, Eastern Meadowlark, Nine-spotted Lady Beetle, Gypsy Cuckoo Bumble Bee, and Rusty-patched Bumble Bee would use these habitats during the spring and summer months. Limiting permanent impacts to these areas and avoiding construction during the period in which this habitat is used (e.g., spring and summer), would avoid and/or minimize impacts to the species and their habitat. It should be noted that the last observation of Nine-spotted Lady Beetle in Ontario was in 1987. It is recommended that further consultation with the MECP be completed to determine if a third visit to the point count location for SAR grassland birds is required to access habitat suitability and, if any, permitting is required (although unlikely given the substantial suitable habitat beyond the proposed line). The observations of multiple Bobolink at Stations 8, 9 and 11 during the breeding bird window during though survey dates suggests that individuals are likely using the habitat for breeding and as such, these habitats are regulated under the ESA. Further discussions with MECP are required to determine permitting implications once details of the preferred route and design are completed.
- Species that are dependent on forested areas or treed habitats at specific times of year (e.g., SAR bats and migratory birds) can be protected by applying timing restrictions to tree removal. For forest communities that require removal for the transmission line will require further consultation with MECP to determine if acoustic surveys are required to confirm roosting habitat use and potential compensation measures.

- Turtles may use watercourses, wetlands and nearby gravelly areas as habitat. It is presumed that in-water work can be avoided and measures to protect turtles, including exclusionary fencing, will be employed.
- There is a low probability that aquatic SAR occur within the watercourses that are proposed for crossing along the routes; however, avoidance of in-water work or activities within the meander belt of direct habitat is possible.

Given the highly disturbed nature of the Station location, there is low likelihood of SAR and/or their habitat to be present.

8 MITIGATION AND MONITORING MEASURES

The general mitigation measures outlined below are recommended to avoid or minimize impacts to vegetation and associated wildlife habitat features and aquatic features within the Preferred Route and Station Option, as well as protect adjacent vegetation and habitat features beyond these areas. Measures to protect wildlife generally and specifically protect migratory birds and potential SAR from harm during construction are also outlined. These measures should be reviewed and confirmed during Detail Design.

8.1 VEGETATION

- Further refinement to direct impacts to wetlands associated with the tower locations and gravel roads, both of which are considered to have a permanent footprint, should be carried through in consultation with the local Conservation Authority to determine permitting requirements.
- The limit of any area to be disturbed shall be clearly marked in the field prior to the commencement of the work and shall be maintained for the duration of work until the area is stabilized.
- Minimize removal and disturbance of vegetation where removal is required for construction, particularly in the local riparian systems and wetlands.
- If the species presence is confirmed during September 2022 field surveys, avoiding placing a tower at known locations of the one provincially rare species (i.e., S-rank S1 – S3), Canada Cinquefoil. Transplantation of this species could be considered upon further consultation with SSMCA.
- Delineate all wetlands, watercourses, forests, and entry into these areas for storage of materials shall be prohibited.
- The Erosion and Sediment Control (ESC) fencing shall also serve to mark the vegetation clearing zones and prevent encroachment into vegetation beyond ESC fencing.
- Ensure the use of appropriate vegetation clearing techniques (i.e., felling away from retained vegetation communities and watercourses) to avoid impacts / damage to sensitive areas (e.g., riparian and wetland habitats).

- During operations, no herbicides are to be used for ROW maintenance on a routine basis.
- Select spraying for weed and vegetation control may be carried out for station maintenance, as required, by a licensed Applicator or under the supervision of a licensed Supervisor.
- The licensed Applicator/Supervisor will have the responsibility to assess the work areas prior to any application of herbicide to identify the following:
  - Environmental values/areas of concern, and,
  - Landowner and/or property restrictions.
- The licensed Applicator/Supervisor will record the product applied and particulars of the application (e.g., date and time, meteorological data, and weather conditions).
- Re-stabilize and re-vegetate all exposed surfaces as soon as possible using appropriate native plantings / seed mix.
- Regular environmental monitoring/inspection shall be implemented throughout construction to ensure that environmental protection measures are implemented, maintained and repaired and that remedial measures are initiated where warranted.
- The removal of vegetation shall be minimized, and exposed soils stabilized and re-vegetated as soon as practical with suitable native vegetation seed. No seed or cover shall come in contact with waterbodies.
- The duration of soil exposure shall be limited and construction shall be staged where possible to minimize the amount of exposed soil.
- Trees, shrubs, and other vegetation not specified for removal shall be preserved.
- Shoreline or banks disturbed by any activity associated with the Project shall be stabilized immediately to prevent erosion and/or sedimentation, preferably through revegetation with native species suitable for the site.
- Construction materials shall be removed from the site upon Project completion.

8.2 WILDLIFE AND WILDLIFE HABITAT

Nesting migratory birds are protected under the *Migratory Birds Convention Act, 1994* (MBCA). No work is permitted to proceed that would result in the destruction of active nests (nests with eggs or young birds), or the wounding or killing of birds species protected under the MBCA and/or Regulations under that Act.

In order to protect nesting migratory birds, in accordance with the MBCA, the contractor will ensure that:

- Vegetation removal (including grubbing) will be avoided during the identified migratory bird nesting season (April 1 to August 31).
- If vegetation clearing and grubbing occur between March 25 and August 31, it shall be preceded by nest surveys conducted by an avian biologist not more than two days prior to the work.
- No active nests (nests with eggs or young birds) will be removed or disturbed in accordance with the MBCA.
- If a nesting migratory bird is identified within or adjacent to the construction site and the construction activities are such that continuing construction in that area would result in a contravention of the MBCA, all activities will stop and the Contract Administrator and Environment Canada will be contacted to discuss mitigation options.

For the protection of wildlife in general, the contractor will ensure that:

- Any wildlife incidentally encountered during construction will not be knowingly harmed and will be allowed to move away on its own. In the event that an animal encountered during construction does not move from the construction zone and construction activities are such that continuing construction in the area would result in harm to the animal, all activities that could potentially harm the animal will cease immediately and the Contract Administrator will be notified.
- Any equipment parked overnight in the area will also be inspected to ensure no wildlife have climbed into or beneath it.
- Disturbed areas will be restored to pre-construction conditions.

8.3 AQUATIC

- It is assumed that all activities can avoid direct in-water works and that the placement of towers can be situated away from top of bank and the floodplain (15 m setback) to avoid introducing deleterious substances into the watercourses. Any in and/or near-water work, work within or near wetlands, or new culverts required for access roads, should only occur after necessary approvals have been obtained, including authorization from agencies including but not limited to the DFO and SSMRCA.
- If in-water works are required, complete a self-assessment to determine if through common mitigation practices harm to fish and fish habitat can be avoided. Where this is not possible or unclear, a Request for Project Review will be completed and submitted to the DFO for comment.
- If DFO determines that an Authorization is required, a *Fisheries Act* Authorization permit application will be submitted to DFO.

- Activities that are proposed through, over or near a watercourse warrants further consideration to ensure compliance with the *Fisheries Act*. Other considerations include:
  - For the watercourses that are within the study area, this timing window restriction occurs between September 1 and June 15 (DFO, 2013) for coldwater watercourses and April 1 to June 15 (DFO, 2013) for coolwater watercourses, of any given year. This window should be confirmed by the MNRF.
  - During construction, a *Licence to Collect Fish for Scientific Purposes* is required to be obtained from the local MNRF office to relocate fish during any temporary isolation of flows, if required.
- Work shall be scheduled to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
- ESC measures shall be installed around all watercourses and wetlands prior to the initiation of construction works to prevent encroachment and the transfer of deleterious substances (e.g., sediment from exposed soils) into the aquatic habitat.
- ESC measures shall be inspected and maintained to ensure they are functioning as intended throughout the construction period and until such time that construction is complete and disturbed areas have been stabilized. All ESC measures that are failing shall be repaired/replaced as soon as possible.
- The size of disturbed areas shall be limited by minimizing non-essential clearing and grading.
- Storage and stockpiling of soil and other fill material shall be located a minimum of 30 m away from any watercourses and wetlands.
- The Contractor shall develop an Emergency Response Plan implemented immediately in the event of a sediment release or a spill of a deleterious substance. It shall include keeping an emergency spill kit on site when working in or near water.
- ESC measures that are non-biodegradable must be removed from the site when work is complete and the site is stabilized.
- Construction-related materials, equipment, and construction-generated materials (e.g., sediment in dewatering or runoff from exposed soils, stockpiled soils or other materials from clearing and grubbing) shall be properly stored/contained, maintained, filtered and otherwise handled and managed throughout and following construction.

8.4 SPECIES AT RISK

- If the species presence is confirmed during September 2022 field surveys, avoiding placing a tower at known locations of the one provincially rare species (i.e., S-rank S1 – S3), Canada Cinquefoil. Transplantation of this species could be considered upon further consultation with SSMCA.
- If a SAR or possible SAR is encountered in the construction area and the construction activities are such that continuing construction in that area would result in a contravention of the *Endangered Species Act, 2007*, all activities shall stop and the Contract Services Administrator will be notified immediately. The Contract Services Administrator will then contact MECP for direction.

- Species that are dependent on forested areas or treed habitats at specific times of year (e.g., SAR bats and migratory birds) can be protected by applying timing restrictions to tree removal. For forest communities that require removal for the transmission line will require further consultation with MECP to determine if acoustic surveys are required to confirm roosting habitat use and potential compensation measures prior to any construction activities such as vegetation/tree clearing.
- SAR or potential SAR will not be handled prior to consulting with the MECP SAR Biologist.
- Tree removal should occur outside the SAR bat active season (March 25 to September 30) to avoid harming SAR bats that may be roosting/resting in these trees.
- If work is scheduled during the turtle nesting season (June 1 to September 30), silt fencing shall be installed at the perimeter of the work zone prior to April 30 to exclude nesting turtles adjacent to wetlands and watercourses.

9 POTENTIAL PERMITS / AUTHORIZATIONS

The following permits and/or authorizations may be applicable to the study area:

- ***Conservation Authorities Act*** **(Ontario, 1990)** – Portions of the lands in the study area are regulated by the SSMRCA under Ontario Regulation 176/06: *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. The regulation applies to the wetlands and watercourse plus a defined buffer. To ensure that development has regard for natural hazard features and the natural environment while conforming to watershed development policies, the SSMRCA is authorized under the *Conservation Authorities Act* to implement and enforce its regulation. A permit to undertake development within the regulated area may be required by the governing Conservation Authority.
- ***Fisheries Act*** **(Fisheries and Oceans Canada, 1985)** – If the proposed works fall within fish habitat (below the ordinary high water mark), a review under the FA is required.
- ***Migratory Bird Convention Act, 1994*** **(Government of Canada, 1994)** – It is anticipated that vegetation removal or disturbance to vegetation may occur as part of the works. Works must not impact nesting birds or active nests, and authorization is generally not granted unless deemed as emergency works.
- ***Endangered Species Act, 2007*** **(MNRF, 2007)** – On provincial land, all species listed as Threatened and Endangered under the ESA (MNRF, 2007) have protection from being killed, harmed, or harassed and also receive habitat protection. It is recommended that once the final width of cleared area and tower locations are known, that consultation with MECP be undertaken to determine if removing potential bat roosting tree habitat / SAR grassland bird habitat for Bobolink can simply occur within the appropriate timing window and no further studies / compensation is required. As of April 2022, the SAR Conservation Fund can be used for impacts to Bobolink habitat.
- ***Species at Risk Act*** **(Government of Canada, 2002)** – In most cases, watercourses are considered federal lands and therefore species designated as Threatened or Endangered which inhabit watercourses are regulated under SARA. It is not anticipated that SARA permit is required for aquatic species.

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APPENDIX

A FIGURES

Prepared By: Tanya.Peterson

N

CVR
CVR
CVR
CVR
CVR
CVR
CVR

Unit 4B G045N
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
Unit 4C G047S
Unit 1A G142N
Unit 1B G061N
STATION 19
Unit 1B G061N
Unit 7 G142N
Unit 2 G055Tt/Tl
WC2
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
Unit 4B G045N
CVC_4
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
Fort Creek
WC1
CVC
Unit 1A G142N
Hydro One Third Line TS
Unit 2 G055Tt/Tl
Unit 4B G045N
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
STATION 20
CVR / mow
3RD LINE EAST
Unit 4B G045N
CVC
CVC
Unit 4B G045N
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
CVC

CVC: Industrial
CVC_4: Extraction
CVR: Residential
Unit 1A, G142N: Mineral Meadow Marsh
Unit 1B, G061N: Moist, Coarse: Meadow
Unit 2, G055Tt/Tl: Dry to Fresh, Coarse: Aspen - Birch Hardwood
Unit 4B, G045N: Dry to Fresh, Coarse: Meadow
Unit 4C, G047S: Dry to Fresh, Coarse: Shrub
Unit 7, G142N: Mineral Meadow Marsh

0 25 50 100 150 Metres

LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C
- ROUTE OPTION D
- COMMON ELEMENTS TO ALL OPTIONS
- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- FLOOD CONTROL CHANNEL
- WATERCOURSE (MNRF)
- WATERBODY (MNRF)
- UNEVALUATED WETLAND

THERMAL REGIME

- COOL

- NINE-SPOTTED LADY BEETLE (NHIC)
- HYBRID BUTTERNUT
- EASTERN WHIP-POOR-WILL SURVEY STATION
- BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION

BOBOLINK BREEDING EVIDENCE

- PROBABLE
- INCIDENTAL
- POSSIBLE
- CROSSING
- FLOW DIRECTION
- DIRECT FISH HABITAT
- INDIRECT FISH HABITAT
- ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS - MAP 1

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT: NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

WSP GOLDER

PROJECT NO.:	REVIEWED BY:
211-05846-00	JE
DATE: JULY 2022	FIGURE: 1A

D:\a\Projects\211-05846-00\MXD\211-05846-00 Figure 1.mxd

Prepared By: Tanya.Peterson

N

WC3

STATION 16

STATION 17

STATION 18

B01

B02

B03

East Davignon Creek

PEOPLES ROAD

Unit 5 G055Tt/Tl

Unit 4B G045N

Unit 17 G142N

Unit 4C G047S

Unit 4A G061N

Unit 1A G142N

Unit 2 G055Tt/Tl

mow

CVR

OA

HR

CV

CVR: Residential
HR: Hedgerow
OA: Open Aquatic
Unit 1A, G142N: Mineral Meadow Marsh
Unit 2, G055Tt/Tl: Dry to Fresh, Coarse: Aspen - Birch Hardwood
Unit 4A, G061N: Moist, Coarse: Meadow
Unit 4B, G045N: Dry to Fresh, Coarse: Meadow
Unit 4C, G047S: Dry to Fresh, Coarse: Shrub
Unit 5, G055Tt/Tl: Dry to Fresh, Coarse: Aspen - Birch Hardwood
Unit 16A, G134S: Mineral Thicket Swamp
Unit 17, G142N: Mineral Meadow Marsh

0 25 50 100 150 Metres

LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C
- ROUTE OPTION D
- COMMON ELEMENTS TO ALL OPTIONS
- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- FLOOD CONTROL CHANNEL
- WATERCOURSE (MNRF)
- WATERBODY (MNRF)

THERMAL REGIME

- COLD
- NINE-SPOTTED LADY BEETLE (NHIC)
- HYBRID BUTTERNUT
- EASTERN WHIP-POOR-WILL SURVEY STATION
- BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION

BOBOLINK BREEDING EVIDENCE

- PROBABLE
- INCIDENTAL
- POSSIBLE
- CROSSING
- FLOW DIRECTION
- DIRECT FISH HABITAT
- INDIRECT FISH HABITAT
- ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS - MAP 2

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT:
NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

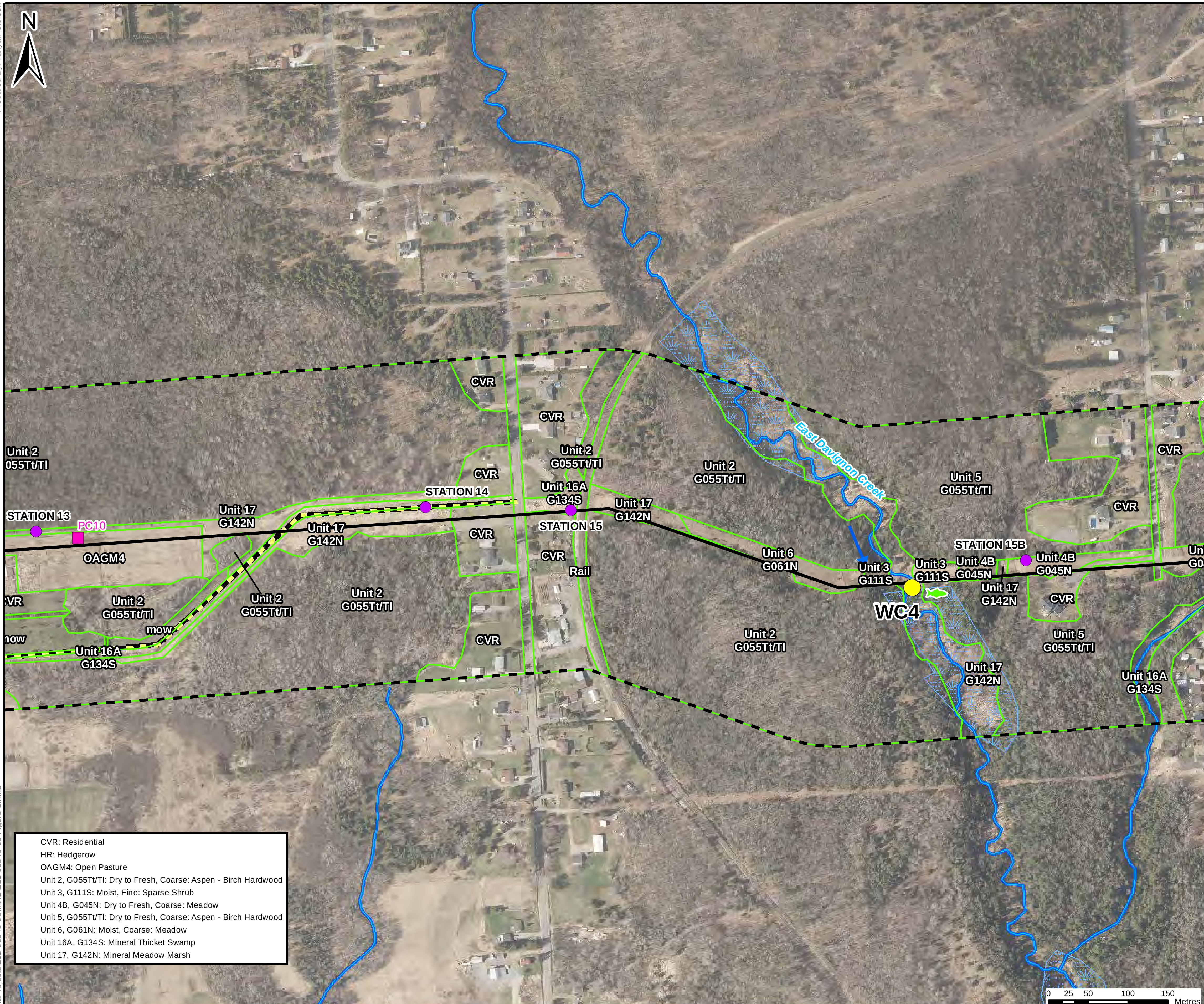
CLIENT:
PUC TRANSMISSION LP

GOLDER

PROJECT NO.:	REVIEWED BY:
211-05846-00	JE
DATE:	FIGURE:
JULY 2022	1B

D:\a\Projects\211-05846-00\MXD\211-05846-00 Figure 1.mxd

Prepared By: Tanya.Peterson



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LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C
- ROUTE OPTION D
- COMMON ELEMENTS TO ALL OPTIONS
- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- FLOOD CONTROL CHANNEL
- WATERCOURSE (MNRF)
- WATERBODY (MNRF)
- UNEVALUATED WETLAND

THERMAL REGIME

- COLD
- NINE-SPOTTED LADY BEETLE (NHIC)
- HYBRID BUTTERNUT
- EASTERN WHIP-POOR-WILL SURVEY STATION
- BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION

BOBOLINK BREEDING EVIDENCE

- PROBABLE
- INCIDENTAL
- POSSIBLE
- CROSSING
- FLOW DIRECTION
- DIRECT FISH HABITAT
- INDIRECT FISH HABITAT
- ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS - MAP 3

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT: NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

WSP GOLDER

PROJECT NO.:	REVIEWED BY:
211-05846-00	JE
DATE:	FIGURE:
JULY 2022	1C

Prepared By: Tanya.Peterson

N

Unit 19 G075Tt/Tl
Unit 19 G075Tt/Tl
Unit 17 G142N
Unit 16A G134S
STATION 12
Unit 18 G134S
Unit 17 G142N
Unit 8A G044N
CVR
Unit 18 G134S
Unit 18 G134S
CVR
CVR
Unit 2 G055Tt/Tl
STATION 13
PC10
OAGM4
STATION 11
Unit 16B G110N
Unit 10 G055Tt/Tl
Unit 2 G055Tt/Tl
Unit 2 G055Tt/Tl
Unit 8A G044N
CVR
CVR
HR
CVR / mow
HR
Unit 16A G134S
Unit 17 G142N
Unit 2 G055Tt/Tl
CVR
WC5
GOULAIS AVENUE
HR
West Davignon Creek
Unit 8A G044N
PC8
Tributary of West Davignon Creek
Unit 16A G134S
(2)
Unit 16B G110N
STATION 10
West Davignon Creek
CVR
CVR
CVR
WC7
WC6
Unit 20 G068Tt/Tl
Unit 8A G044N
PC9
(2)
CVR
Unit 17 G142N
Unit 20 G068Tt/Tl
CVR

CVR: Residential
HR: Hedgerow
OAGM4: Open Pasture
Unit 2, G055Tt/Tl: Dry to Fresh, Coarse: Aspen - Birch Hardwood
Unit 8A, G044N: Dry to Fresh, Coarse: Field
Unit 10, G055Tt/Tl: Dry to Fresh, Coarse: Aspen - Birch Hardwood
Unit 16A, G134S: Mineral Thicket Swamp
Unit 16B, G110N: Moist, Fine: Meadow
Unit 17, G142N: Mineral Meadow Marsh
Unit 18, G134S: Mineral Thicket Swamp
Unit 19, G075Tt/Tl: Moist, Coarse: Maple Hardwood
Unit 20, G068Tt/Tl: Moist, Coarse: Conifer

0 25 50 100 150 Metres

LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C
- ROUTE OPTION D
- COMMON ELEMENTS TO ALL OPTIONS
- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- FLOOD CONTROL CHANNEL
- WATERCOURSE (MNRF)
- WATERBODY (MNRF)

THERMAL REGIME

- COLD
- NINE-SPOTTED LADY BEETLE (NHIC)
- HYBRID BUTTERNUT
- EASTERN WHIP-POOR-WILL SURVEY STATION
- BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION

BOBOLINK BREEDING EVIDENCE

- PROBABLE
- INCIDENTAL
- POSSIBLE
- CROSSING
- FLOW DIRECTION
- DIRECT FISH HABITAT
- INDIRECT FISH HABITAT
- ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS - MAP 4

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT:
NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

	PROJECT NO.:	REVIEWED BY:
WSP GOLDER	211-05846-00	JE
	DATE: JULY 2022	FIGURE: 1D

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Prepared By: Tanya Peterson

N

CUM1-1: Dry – Moist Old Field Cultural Meadow
CUP: Cultural Plantation
CUP3-8: White Spruce – European Larch Coniferous Plantation
CVC: Industrial
CVR: Residential
HR: Hedgerow
OA: Open Aquatic
Unit 2, G055Tt/Tl: Dry to Fresh, Coarse: Aspen - Birch Hardwood
Unit 7, G142N: Mineral Meadow Marsh
Unit 8A, G044N: Dry to Fresh, Coarse: Field
Unit 10, G055Tt/Tl: Dry to Fresh, Coarse: Aspen - Birch Hardwood
Unit 11, CUS1: Mineral Cultural Savannah
Unit 12, G094N: Fresh, Silty to Fine Loamy: Meadow
Unit 16A, G134S: Mineral Thicket Swamp
Unit 17, G142N: Mineral Meadow Marsh
Unit 18, G134S: Mineral Thicket Swamp
Unit 19, G075Tt/Tl: Moist, Coarse: Maple Hardwood
Unit 20, G068Tt/Tl: Moist, Coarse: Conifer
Unit 21, G070Tt/Tl: Moist, Coarse: Aspen - Birch Hardwood

WC6
WC9
WC10
WC11
WC12
WC13
STATION 8
STATION 9
STATION 7
PC2
PC3
PC4
PC5
PC6
PC7
PC9
PC11
PC12
ALLENS SIDEROAD
West Davignon Creek
Tributary of West Davignon Creek
Bennett Creek
0 25 50 100 150 Metres

LEGEND:
ROUTE OPTION A
ROUTE OPTION B
ROUTE OPTION C
ROUTE OPTION D
COMMON ELEMENTS TO ALL OPTIONS
STUDY AREA (200 m RADIUS)
NEW PUC STATION OPTION
ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
FLOOD CONTROL CHANNEL
WATERCOURSE (MNRF)
WATERBODY (MNRF)
THERMAL REGIME
COLD
NINE-SPOTTED LADY BEETLE (NHIC)
HYBRID BUTTERNUT
EASTERN WHIP-POOR-WILL SURVEY STATION
BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION
BOBOLINK BREEDING EVIDENCE
PROBABLE
INCIDENTAL
POSSIBLE
CROSSING
FLOW DIRECTION
DIRECT FISH HABITAT
INDIRECT FISH HABITAT
ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS - MAP 5

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT: NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

GOLDER

PROJECT NO.: 211-05846-00
REVIEWED BY: JE
DATE: JULY 2022
FIGURE: 1E

D:\aProjects\211-05846-00\MXD\211-05846-00 Figure 1.mxd

Prepared By: Tanya.Peterson

N

CVR
Unit 21 G070Tt/Tl
Unit 12 G094N
(1) (1)
PC1
mow
Unit 21 G070Tt/Tl
Unit 10 G055Tt/Tl
CVC
Unit 21 G070Tt/Tl
CVC
CVR
HR
Unit 10 G055Tt/Tl
CVC
CVR
CVR
WC14
2ND LINE WEST
West Davignon Creek
CVR
CVR
mow
Unit 21 G070Tt/Tl
STATION 6
Unit 12 G094N
ALLENS SIDEROAD
CUP
CVR
Unit 16A G134S
Unit 16A G134S
Unit 14 G104Tt/Tl
CVR
Unit 18 G134S
HR
STATION 5
CVR
Bennett Creek
Unit 14 G104Tt/Tl
mow
WC15
Unit 7 G142N
CVR
HR
CVR
CVR
Unit 8A G044N
WC17
STATION 2
STATION 3
WALLACE TERRACE
PC13
0 25 50 100 150 Metres

CUP: Cultural Plantation
CVC: Industrial
CVR: Residential
HR: Hedgerow
Unit 7, G142N: Mineral Meadow Marsh
Unit 8A, G044N: Dry to Fresh, Coarse: Field
Unit 8B, G045N: Dry to Fresh, Coarse: Meadow
Unit 10, G055Tt/Tl: Dry to Fresh, Coarse: Aspen - Birch Hardwood
Unit 12, G094N: Fresh, Silty to Fine Loamy: Meadow
Unit 14, G104Tt/Tl: Fresh, Silty to Fine Loamy: Aspen - Birch Hardwood
Unit 16A, G134S: Mineral Thicket Swamp
Unit 18, G134S: Mineral Thicket Swamp
Unit 21, G070Tt/Tl: Moist, Coarse: Aspen - Birch Hardwood

LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C
- ROUTE OPTION D
- COMMON ELEMENTS TO ALL OPTIONS
- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- FLOOD CONTROL CHANNEL
- WATERCOURSE (MNRF)
- WATERBODY (MNRF)

THERMAL REGIME

- COLD
- NINE-SPOTTED LADY BEETLE (NHIC)
- HYBRID BUTTERNUT
- EASTERN WHIP-POOR-WILL SURVEY STATION
- BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION

BOBOLINK BREEDING EVIDENCE

- PROBABLE
- INCIDENTAL
- POSSIBLE
- CROSSING
- FLOW DIRECTION
- DIRECT FISH HABITAT
- INDIRECT FISH HABITAT
- ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS - MAP 6

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT:
NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

GOLDER

PROJECT NO.:	REVIEWED BY:
211-05846-00	JE
DATE:	FIGURE:
JULY 2022	1F

D:\aProjects\211-05846-00\WX\D\211-05846-00 Figure 1.mxd

Prepared By: Tanya.Peterson

N

WC15

WC16

WC17

WC18

Unit 14
G104Tt/Tl

CVR

HR

Bennett Creek

mow

Unit 7
G142N

Unit 8A
G044N

STATION 3

PC13

WALLACE TERRACE

STATION 2

Unit 21
G070Tt/Tl

Unit 16A
G134S

mow 15
G096S5

ALLEWS SIDEROAD

CVC

STATION 1

Unit 8B
G045N

Station
Option 1

xStation
Option 1-A

West Davignon Creek

STATION 4

CVC: Industrial
CVR: Residential
HR: Hedgerow
OA: Open Aquatic
Unit 7, G142N: Mineral Meadow Marsh
Unit 8A, G044N: Dry to Fresh, Coarse: Field
Unit 8B, G045N: Dry to Fresh, Coarse: Meadow
Unit 14, G104Tt/Tl: Fresh, Silty to Fine Loamy: Aspen - Birch Hardwood
Unit 15, G096S: Fresh, Silty to Fine Loamy: Shrub
Unit 16A, G134S: Mineral Thicket Swamp
Unit 18, G134S: Mineral Thicket Swamp
Unit 21, G070Tt/Tl: Moist, Coarse: Aspen - Birch Hardwood

0 25 50 100 150 Metres

LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C
- ROUTE OPTION D
- COMMON ELEMENTS TO ALL OPTIONS
- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- FLOOD CONTROL CHANNEL
- WATERCOURSE (MNRF)
- WATERBODY (MNRF)
- UNEVALUATED WETLAND

THERMAL REGIME

- COLD
- NINE-SPOTTED LADY BEETLE (NHIC)
- HYBRID BUTTERNUT
- EASTERN WHIP-POOR-WILL SURVEY STATION
- BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION

BOBOLINK BREEDING EVIDENCE

- PROBABLE
- INCIDENTAL
- POSSIBLE
- CROSSING
- FLOW DIRECTION
- DIRECT FISH HABITAT
- INDIRECT FISH HABITAT
- ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS -
MAP 7

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT:
NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

WSP GOLDER	PROJECT NO.: 211-05846-00	REVIEWED BY: JE
	DATE: JULY 2022	FIGURE: 1G

D:\aProjects\211-05846-00\MXD\211-05846-00 Figure 1.mxd

Prepared By: Tanya.Peterson

N

WALLACE TERRACE

GOULAIS AVENUE

Unit 21
G070Tt/Tl

Bennett Creek

CVC

CVR

Station
Option 1

S4

West Davignon Creek

xStation
Option 1-A

CVR

CVR

mow

CVC

East Davignon Creek

HR

HR

CVC

mow

Station
Option 2

WC19

WC18

OA

CVC

OA

CVC

OA

Unit 21
G070Tt/Tl

ASI EAF
Station

CVC

St. Marys
River

CVC: Industrial
CVR: Residential
HR: Hedgerow
OA: Open Aquatic
Unit 8B, G045N: Dry to Fresh, Coarse: Meadow
Unit 21, G070Tt/Tl: Moist, Coarse: Aspen - Birch Hardwood

0 25 50 100 150
Metres

LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C
- ROUTE OPTION D
- COMMON ELEMENTS TO ALL OPTIONS
- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- FLOOD CONTROL CHANNEL
- WATERCOURSE (MNRF)
- WATERBODY (MNRF)

THERMAL REGIME

- COLD
- NINE-SPOTTED LADY BEETLE (NHIC)
- HYBRID BUTTERNUT
- EASTERN WHIP-POOR-WILL SURVEY STATION
- BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION

BOBOLINK BREEDING EVIDENCE

- PROBABLE
- INCIDENTAL
- POSSIBLE
- CROSSING
- FLOW DIRECTION
- DIRECT FISH HABITAT
- INDIRECT FISH HABITAT
- ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS -
MAP 8

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT:
NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

	PROJECT NO.:	REVIEWED BY:
GOLDER	211-05846-00	JE
	DATE: JULY 2022	FIGURE: 1H

D:\aProjects\211-05846-00\MXD\211-05846-00 Figure 1.mxd

Prepared By: Tanya.Peterson

N

4TH LINE WEST

3RD LINE EAST

2ND LINE EAST

2ND LINE WEST

Hydro One Third Line TS

Station Option 1

Station Option 2

Station Option 1-A

ASI EAF Station

ALLENS SIDEROAD

GOULAIS AVENUE

ROSSMORE ROAD

KORAH ROAD

FARWELL TERRACE

ELLIOTT ROAD

PEOPLES ROAD

SACKVILLE ROAD

GREAT NORTHERN ROAD

BASELINE

WALLACE TERRACE

HENRIETTA AVENUE

LYONS AVENUE

CONMEE AVENUE

ELM AVENUE

NORTHERN AVENUE EAST

CARMEN'S WAY

JOHN STREET

NORTH STREET

GRAND BOULEVARD

WAWANOSH AVENUE

WELLINGTON STREET WEST

ST GEORGES AVENUE EAST

HURON STREET

MCNABB STREET

ALBERTA AVENUE

WEST STREET

CATHCART STREET

ALBERT STREET WEST

QUEEN STREET WEST

BAY STREET WEST

GORE STREET

WELLINGTON STREET EAST

ALBERT STREET EAST

QUEEN STREET EAST

BAY STREET

BRUCE STREET

MACDONALD AVENUE

PIM STREET

St. Marys River

0 125 250 500 750 Metres

LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C
- ROUTE OPTION D
- COMMON ELEMENTS TO ALL OPTIONS
- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- WATERCOURSE (MNRF)
- WOODLAND (MNRF)
- WATERBODY (MNRF)
- UNEVALUATED WETLAND
- SSMRCA REGULATION LIMIT

TITLE:
SSMRCA REGULATION LIMIT

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT:
NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

wsp GOLDER

PROJECT NO.:	REVIEWED BY:
211-05846-00	JE
DATE:	FIGURE:
JULY 2022	2

D:\aProjects\211-05846-00\MXD\211-05846-00 Figure 2 Reg Limit.mxd

Prepared By: Tanya.Peterson

N

4TH LINE WEST

MAP 3

MAP 2

MAP 1

MAP 4

Hydro One Third Line TS

2ND LINE EAST

PEOPLES ROAD

MAP 5

ALLENS SIDEROAD

GOULAIS AVENUE

ROSSMORE ROAD

ELLIOTT ROAD

KORAH ROAD

FARWELL TERRACE

GREAT NORTHERN ROAD

SACKVILLE ROAD

2ND LINE WEST

MAP 6

HENRIETTA AVENUE

ELM AVENUE

CONNEE AVENUE

NORTHERN AVENUE EAST

LYONS AVENUE

GRAND BOULEVARD

WAWANOSH AVENUE

WALLACE TERRACE

Station Option 1

Station Option 2

MAP 8

MAP 7

Station Option 1-A

ST GEORGES AVENUE EAST

MCNABB STREET

BASELINE

ASI EAF Station

St. Marys River

MACDONALD AVENUE

PIM STREET

0 125 250 500 750 Metres

LEGEND:

- ROUTE OPTION A
- ROUTE OPTION B
- ROUTE OPTION C
- ROUTE OPTION D
- COMMON ELEMENTS TO ALL OPTIONS
- STUDY AREA (200 m RADIUS)
- SPECIES AT RISK - SILVER LAMPREY (DFO)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- MAP INDEX
- WATERCOURSE (MNRF)
- WOODLAND (MNRF)
- WATERBODY (MNRF)
- UNEVALUATED WETLAND

THERMAL REGIME

- COLD
- COOL
- COLONIAL WATERBIRD NESTING AREA (NHIC)
- NINE-SPOTTED LADY BEETLE (NHIC)

TITLE:
STUDY AREA

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT:
NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

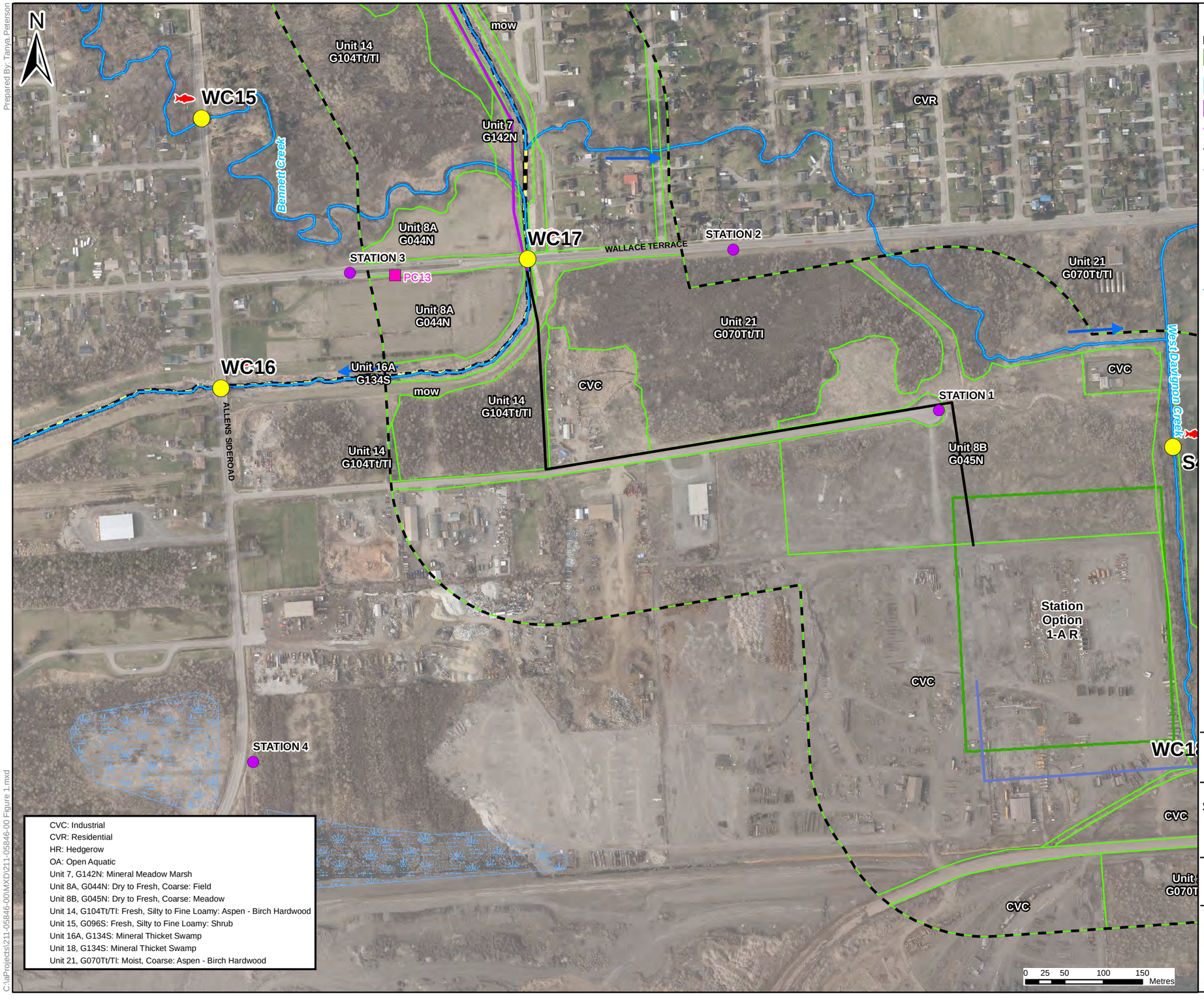
CLIENT:
PUC TRANSMISSION LP

GOLDER

PROJECT NO.:	REVIEWED BY:
211-05846-00	JE
DATE:	FIGURE:
JULY 2022	1

D:\aProjects\211-05846-00\MXD\211-05846-00 Figure Study Area New.mxd

Prepared By: Tanya.Peterson



CVC: Industrial
CVR: Residential
HR: Hedgerow
OA: Open Aquatic
Unit 7, G142N: Mineral Meadow Marsh
Unit 8A, G044N: Dry to Fresh, Coarse: Field
Unit 8B, G045N: Dry to Fresh, Coarse: Meadow
Unit 14, G104Tt/Tl: Fresh, Silty to Fine Loamy: Aspen - Birch Hardwood
Unit 15, G096S: Fresh, Silty to Fine Loamy: Shrub
Unit 16A, G134S: Mineral Thicket Swamp
Unit 18, G134S: Mineral Thicket Swamp
Unit 21, G070Tt/Tl: Moist, Coarse: Aspen - Birch Hardwood

LEGEND:

- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- ROUTE OPTION D
- 230 kV COMMON ELEMENT ROUTE
- 115 kV COMMON ELEMENT ROUTE
- FLOOD CONTROL CHANNEL
- WATERCOURSE (MNRF)
- WATERBODY (MNRF)
- UNEVALUATED WETLAND

THERMAL REGIME

- COLD
- NINE-SPOTTED LADY BEETLE (NHIC)
- HYBRID BUTTERNUT
- EASTERN WHIP-POOR-WILL SURVEY STATION
- BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION

BOBOLINK BREEDING EVIDENCE

- PROBABLE
- INCIDENTAL
- POSSIBLE
- CROSSING
- FLOW DIRECTION
- DIRECT FISH HABITAT
- INDIRECT FISH HABITAT
- ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS -
MAP 7

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT:
NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

GOLDER

PROJECT NO.:	REVIEWED BY:
211-05846-00	JE
DATE: SEPTEMBER 2022	FIGURE: 4G

C:\aProjects\211-05846-00\MXD\211-05846-00 Figure 1.mxd

Prepared By: Tanya.Peterson

LEGEND:

- STUDY AREA (200 m RADIUS)
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)
- ROUTE OPTION D
- 230 kV COMMON ELEMENT ROUTE
- 115 kV COMMON ELEMENT ROUTE
- FLOOD CONTROL CHANNEL
- WATERCOURSE (MNRF)
- WATERBODY (MNRF)

THERMAL REGIME

- COLD
- NINE-SPOTTED LADY BEETLE (NHIC)
- HYBRID BUTTERNUT
- EASTERN WHIP-POOR-WILL SURVEY STATION
- BOBOLINK AND EASTERN MEADOWLARK POINT COUNT LOCATION

BOBOLINK BREEDING EVIDENCE

- PROBABLE
- INCIDENTAL
- POSSIBLE
- CROSSING
- FLOW DIRECTION
- DIRECT FISH HABITAT
- INDIRECT FISH HABITAT
- ECOLOGICAL LAND CLASSIFICATION

TITLE:
EXISTING CONDITIONS -
MAP 8

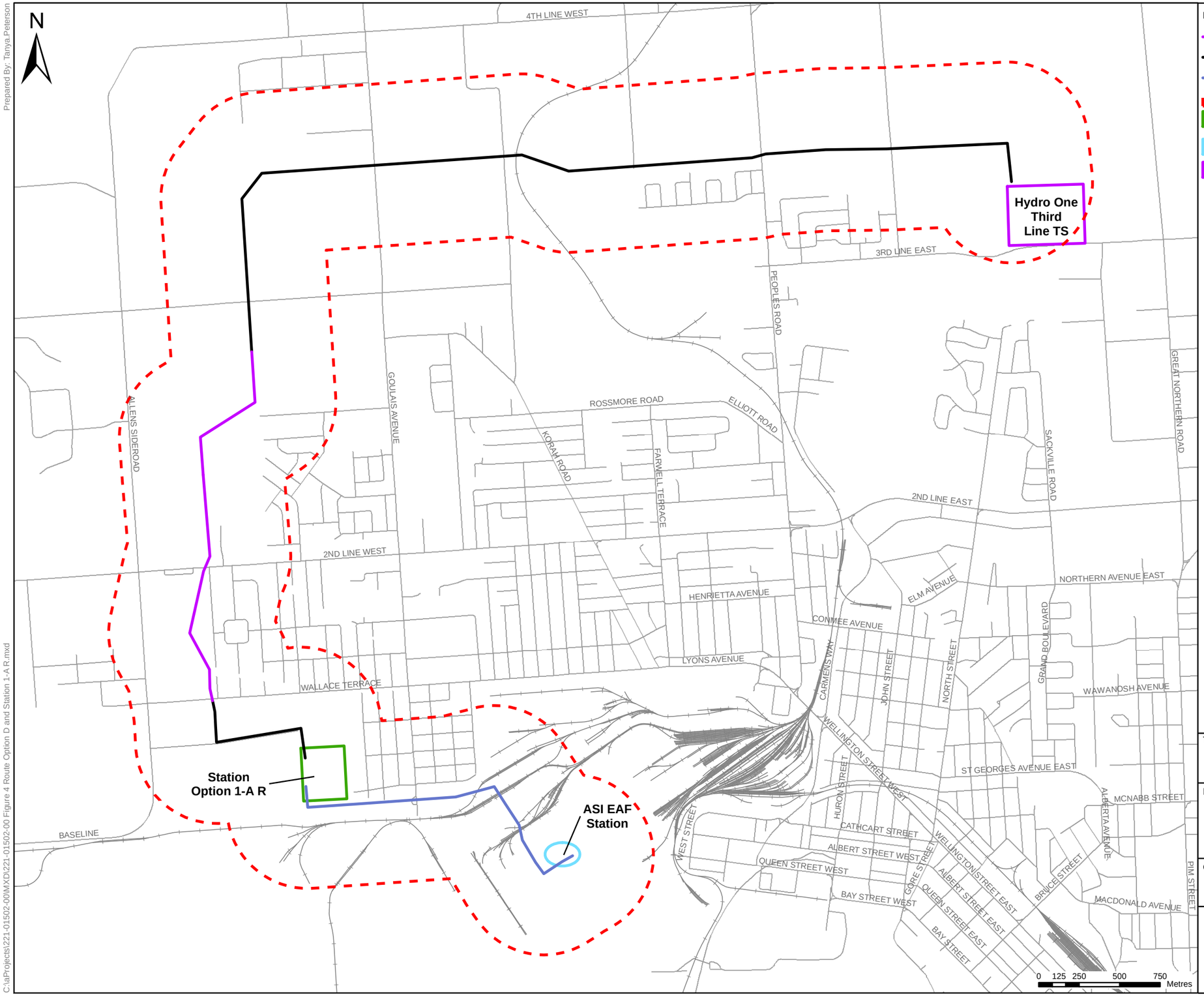
PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT:
NATURAL ENVIRONMENT ASSESSMENT
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

wsp GOLDER	PROJECT NO.: 211-05846-00	REVIEWED BY: JE
	DATE: SEPTEMBER 2022	FIGURE: 4H

C:\aProjects\211-05846-00\MXD\211-05846-00 Figure 1.mxd

Prepared By: Tanya.Peterson



LEGEND:

- ROUTE OPTION D
- 230 kV COMMON ELEMENT ROUTE
- 115 kV COMMON ELEMENT ROUTE
- LOCAL STUDY AREA – 500 m RADIUS
- NEW PUC STATION OPTION
- ALGOMA STEEL INC. (ASI) ELECTRIC ARC FURANCE (EAF) STATION
- HYDRO ONE THIRD LINE TRANSFORMER STATION (TS)

TITLE:
PREFERRED ROUTE OPTION D AND STATION OPTION 1-A R

PROJECT:
SAULT STE. MARIE 230 KV TRANSMISSION PROJECT: CLASS EA
SAULT STE MARIE, ONTARIO

CLIENT:
PUC TRANSMISSION LP

PROJECT NO.:	REVIEWED BY:
221-01502-00	LE
DATE: SEPTEMBER 2022	FIGURE: 1

GOLDER

C:\a\Projects\221-01502-00\MXD\221-01502-00 Figure 4 Route Option D and Station 1-A R.mxd

APPENDIX

B AGENCY CORRESPONDENCE

Rodo, Jaclyn

From: Rodo, Jaclyn
Sent: January 20, 2021 2:14 PM
To: SAROntario@ontario.ca
Cc: Roberts, Andrew
Subject: Sault Ste. Marie - Site Screening Request
Attachments: Screening Area.jpg; Screening Area.kmz

Good afternoon,

WSP Canada Inc. (WSP) is currently conducting a high level ecological screening assessment of an area within Sault Ste. Marie to understand the existing natural environment and associated constraints and opportunities, including those associated with Species at Risk. Please refer to the attached figure and associated KMZ/Google Earth file.

The purpose of the assessment is to document natural heritage features within the screening area, including records of known and possible Species at Risk (SAR). To-date I have completed a background review of available public resources including the Natural Heritage Information Centre's Make a Map (NHIC), iNaturalist, Ebird, Ontario Reptile and Amphibian Atlas and the Department of Fisheries and Oceans (DFO) SAR mapping tool. The results of this search are located below.

<u>Background Search Results (January 11, 2021)</u>

Endangered Species

- Gypsy Cuckoo Bumble Bee
- Golden Eagle

Threatened Species

- Bank Swallow
- Barn Swallow
- Bobolink
- Chimney Swift
- Eastern Meadowlark
- Lake Sturgeon
- Blanding's Turtle

Special Concern species

- Common Nighthawk
- Eastern Wood-Pewee
- Golden-winged Warbler
- Peregrine Falcon
- Bald Eagle
- Snapping Turtle
- Canada Warbler
- Rusty Blackbird
- Black Tern
- Horned Grebe
- Olive-sided Flycatcher
- Canada Warbler
- Silver Lamprey

We ask that your ministry provide any additional SAR occurrence information and available SAR mapping for the screening area.

Thank you,

Jaclyn Rodo
Ecologist

M 705 761 7792

294 Rink Street, Suite 103
Peterborough, Ontario K9J 2K2

Rodo, Jaclyn

From: Goertz, Derek (MNRF) <Derek.Goertz@ontario.ca>
Sent: January 29, 2021 11:54 AM
To: Rodo, Jaclyn
Subject: RE: Sault Ste. Marie - Site Screening Request

Hi Jaclyn,

Sault Ste. Marie is within nesting zone C3 (on the edge of C4). Both nesting zones have a nesting period running from mid-April to late August. Since this is under federal jurisdiction, its best to visit their website for more information. See link below.

The turtle active season in the Sault area is April 1 to September 30. Please don't hesitate to let me know if you have any questions.

https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html#ZoneC

Cheers,

Derek Goertz
Management Biologist

Ministry of Natural Resources and Forestry
Regional Operations Division – Sault Ste. Marie District
64 Church Street
Sault Ste. Marie, ON P6A 3H3

705-992-4775 **(new)**
derek.goertz@ontario.ca

From: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Sent: January 29, 2021 9:47 AM
To: Goertz, Derek (MNRF) <Derek.Goertz@ontario.ca>
Subject: RE: Sault Ste. Marie - Site Screening Request

Thank you for this information, Derek.

What is the bird nesting period and turtle active period for this area?

Thanks!

Jaclyn Rodo
Ecologist

M 705 761 7792

From: Goertz, Derek (MNRF) [mailto:Derek.Goertz@ontario.ca]
Sent: January 26, 2021 10:29 AM
To: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Subject: RE: Sault Ste. Marie - Site Screening Request

Hi Jaclyn,

Thanks for your email (and patience). Please see the bullets below for the info as per your request.

- As you note, there is a water bird nesting colony polygon that overlaps with your screening area. This colony is comprised of ring-billed gull, herring gull and double-crested cormorant. The observation is associated with an *Ontario Breeding Bird Atlas* (OBBA) survey conducted on 2001-05-01. The exact location isn't included in the observation and as a result the observation polygon appears to be drawn to encompass the entire OBBA square (as opposed to the colony itself). The nesting site appears to be located outside of your screening area on the St. Mary's River; and is either associated with a herring gull colony at 46.50903, -84.35786 (100m radius) or other sites much further east along the river.

- Bennett Creek, East Davignon and West Davignon Rivers are cold water ecosystems that provide habitat for numerous aquatic species. I have attached a fairly comprehensive list of fish species known to occur in the West Davignon River, which has endured more sampling than the other two rivers. All three systems are suspected to have similar fish communities. Locations of critical habitat (i.e. spawning areas) are not known.

- Fort Creek is a cool water system with cold water elements (i.e. groundwater fed tributaries). Species known to occur in this system include American brook lamprey, blacknose dace, blacknose shiner, brook stickleback and creek chub. There is an impoundment located at 46.54031, -84.34488 and from there, a large portion of the creek flows downstream through an underground aqueduct to the St. Mary's River. Similar to the streams above, locations of critical habitat are not known.

Best of luck with your project! Please don't hesitate to contact me if you have any questions

Regards,

Derek Goertz
Management Biologist

Ministry of Natural Resources and Forestry
Regional Operations Division – Sault Ste. Marie District
64 Church Street
Sault Ste. Marie, ON P6A 3H3

705-992-4775 **(new)**
derek.goertz@ontario.ca

From: Nixon, Erin (MNRF) <erin.nixon@ontario.ca>
Sent: January 20, 2021 2:45 PM
To: Rodo, Jaclyn < >; May, Bill (MNRF) <bill.may@ontario.ca>; Goertz, Derek (MNRF) <Derek.Goertz@ontario.ca>
Cc: Roberts, Andrew <Andrew.Roberts@wsp.com>
Subject: RE: Sault Ste. Marie - Site Screening Request

Hi Jaclyn,

Thank you for your email. I have cc'd Derek Goertz, district management biologist, on the response. Derek should be able to provide you with the information you are requesting or put you in contact with the proper person.

Regards,

Erin.

Erin Nixon | Resources Operations Supervisor | Sault Ste. Marie District
64 Church Street | Sault Ste. Marie, ON | P6A 3H3
Tel: (705) 542-7456 | fax: (705) 949-6450 | eml: erin.nixon@ontario.ca

Please Note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Sent: January-20-21 2:32 PM
To: Nixon, Erin (MNRF) <erin.nixon@ontario.ca>; May, Bill (MNRF) <bill.may@ontario.ca>
Cc: Roberts, Andrew <Andrew.Roberts@wsp.com>
Subject: [WARNING: UNSCANNABLE EXTRACTION FAILED]Sault Ste. Marie - Site Screening Request

Good afternoon, Erin and Bill.

Can you kindly direct the following information request to the appropriate staff member. Thank you.

--

WSP Canada Inc. (WSP) is currently conducting a high level ecological screening assessment of an area within Sault Ste. Marie to better understand the existing natural environment and potential and associated constraints. Please refer to the attached figure and associated KMZ/Google Earth file.

The purpose of the assessment is to document natural heritage features within the screening area. To-date I have completed a background review of the Natural Heritage Information Centre's Make a Map (NHIC) of fifteen (15) squares (i.e. 16FS9854, 16GS0054, 16GS0055, 16GS0154, 16GS0155, 16GS0254, 16GS0255, 16GS0354, 16GS0357, 16GS0358, 16GS0454, 16GS0455, 16GS0458, 16GS0554, and 16GS0555), which revealed three (3) element occurrences, including, St. Mary's River, Sault Ste. Marie Canal and a Colonial Waterbird Nesting Area. Mapping also reveals the presence of several watercourses and tributaries within the screening area, namely, Bennett Creek, West Davignon Creek, East Davignon Creek, and Fort Creek.

With respect to these occurrences, I am interested in obtaining the record for the colonial waterbird nesting area, available aquatic habitat information (i.e. thermal regime, species occurrence records, habitat mapping) and any other information that may be available for the documented natural heritage values.

All information provided would be greatly appreciated.

Thank you,

Jaclyn Rodo
Ecologist

M 705 761 7792

294 Rink Street, Suite 103
Peterborough, Ontario K9J 2K2

-LAEmHhHzdJzBiTWfa4Hgs7pbKI

Rodo, Jaclyn

From: NHIC-Requests (MNRF) <nhicrequests@ontario.ca>
Sent: January 21, 2021 12:21 PM
To: Rodo, Jaclyn; NHIC-Requests (MNRF)
Cc: Roberts, Andrew
Subject: RE: Sault Ste. Marie - Site Screening Request
Attachments: PTSOBS_WPS_ScreeningArea.xlsx; WSP_Grid_Squares_Species.xlsx

Hi Jaclyn,

Please find attached to spreadsheets:

- "PTSOBS_WPS_ScreeningArea.xlsx" – contains all Tracked Species which intersected the Screening Area shapefile you provided.
- "WSP_Grid_Squares_Species.xlsx" - only contains Tracked Species which intersected any one (or more) of the 15 grid squares you provided. There will be overlap with the above species list.

Please note that we did not compare to your current species list, we simply provided you with all the results. If you have any questions please let us know.

Cheers,

Rob

Robert Craig
Ontario Natural Heritage Information Centre
Ministry of Natural Resources and Forestry
300 Water Street, 2nd Floor North
Peterborough, ON K9J 3C7
NHICrequests@ontario.ca | 705.755.5401

Please Note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Sent: January 20, 2021 2:16 PM
To: NHIC-Requests (MNRF) <nhicrequests@ontario.ca>
Cc: Roberts, Andrew <Andrew.Roberts@wsp.com>
Subject: [WARNING: UNSCANNABLE EXTRACTION FAILED]Sault Ste. Marie - Site Screening Request

Good afternoon,

WSP Canada Inc. (WSP) is currently conducting a high level ecological screening assessment of an area within Sault Ste. Marie to understand the existing natural environment and associated constraints. Please refer to the attached figure and associated KMZ/Google Earth file.

The purpose of the assessment is to document natural heritage features within the screening area, including records of known and possible Species at Risk (SAR). To-date I have completed a background review of available public resources

including the Natural Heritage Information Centre's Make a Map (NHIC), iNaturalist, Ebird, Ontario Reptile and Amphibian Atlas and the Department of Fisheries and Oceans (DFO) SAR mapping tool. The results of this search are located below.

Background Search Results (January 11, 2021)

Endangered Species

- Gypsy Cuckoo Bumble Bee
- Golden Eagle

Threatened Species

- Bank Swallow
- Barn Swallow
- Bobolink
- Chimney Swift
- Eastern Meadowlark
- Lake Sturgeon
- Blanding's Turtle

Special Concern species

- Common Nighthawk
- Eastern Wood-Pewee
- Golden-winged Warbler
- Peregrine Falcon
- Bald Eagle
- Snapping Turtle
- Canada Warbler
- Rusty Blackbird
- Black Tern
- Horned Grebe
- Olive-sided Flycatcher
- Canada Warbler
- Silver Lamprey

I ask that the NHIC identify any additional SAR that is documented within the area, particularly within the fifteen (15) NHIC squares occurring within the screening area (i.e. 16FS9854, 16GS0054, 16GS0055, 16GS0154, 16GS0155, 16GS0254, 16GS0255, 16GS0354, 16GS0357, 16GS0358, 16GS0454, 16GS0455, 16GS0458, 16GS0554, and 16GS0555).

Thank you,

Jaclyn Rodo
Ecologist

M 705 761 7792

294 Rink Street, Suite 103
Peterborough, Ontario K9J 2K2

-LAEmHhHzdJzBlTWfa4Hgs7pbKl

SPECIES_ELEMENT_ID	SCI_NAME	COMMON_NAME	SARO_STATUS
180501	Lethenteron appendix	American Brook Lamprey	
181114	Cordulegaster obliqua	Arrowhead Spiketail	
180471	Dolichonyx oryzivorus	Bobolink	THR
17092	Potentilla rivalis	Brook Cinquefoil	
180427	Cardellina canadensis	Canada Warbler	SC
180473	Sturnella magna	Eastern Meadowlark	THR
180770	Lampropeltis triangulum	Eastern Milksnake	NAR
31040	Juncus greenei	Greene's Rush	
1256776	Bombus bohemicus	Gypsy Cuckoo Bumble Bee	END
181267	Arigomphus cornutus	Horned Clubtail	
17329	Acipenser fulvescens pop. 3	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	THR
180749	Chrysemys picta marginata	Midland Painted Turtle	
195270	Coccinella novemnotata	Nine-spotted Lady Beetle	END
133052	Vaccinium ovalifolium	Oval-leaved Bilberry	
180745	Chelydra serpentina	Snapping Turtle	SC
180623	Gasterosteus aculeatus	Threespine Stickleback	
195272	Coccinella transversoguttata	Transverse Lady Beetle	
201368	Bombus terricola	Yellow-banded Bumble Bee	SC

ATLAS_NAD83	ES_ELEME	ENGLISH_COMMON_NAME	RESTRICTED_SPECIES	COSEWIC_STATUS	S_RANK	SARO_STATUS
16GS0357	181114	Arrowhead Spiketail	N		S2	
16GS0358	181114	Arrowhead Spiketail	N		S2	
16GS0458	181114	Arrowhead Spiketail	N		S2	
16GS0454	17092	Brook Cinquefoil	N		SH	
16GS0455	17092	Brook Cinquefoil	N		SH	
16GS0354	180427	Canada Warbler	N	THR	S4B	SC
16GS0455	180427	Canada Warbler	N	THR	S4B	SC
16GS0555	180427	Canada Warbler	N	THR	S4B	SC
16GS0454	180275	Chimney Swift	N	THR	"S4B,S4N"	THR
16GS0254	180473	Eastern Meadowlark	N	THR	S4B	THR
16GS0255	180473	Eastern Meadowlark	N	THR	S4B	THR
16GS0354	180473	Eastern Meadowlark	N	THR	S4B	THR
16GS0454	180473	Eastern Meadowlark	N	THR	S4B	THR
16GS0455	180473	Eastern Meadowlark	N	THR	S4B	THR
16GS0554	180473	Eastern Meadowlark	N	THR	S4B	THR
16GS0555	180473	Eastern Meadowlark	N	THR	S4B	THR
16GS0455	180770	Eastern Milksnake	N	SC	S4	NAR
16GS0555	180770	Eastern Milksnake	N	SC	S4	NAR
16GS0354	31040	Greene's Rush	N		S3	
16GS0454	31040	Greene's Rush	N		S3	
16GS0455	31040	Greene's Rush	N		S3	
16GS0554	31040	Greene's Rush	N		S3	
16GS0555	31040	Greene's Rush	N		S3	
16GS0357	1256776	Gypsy Cuckoo Bumble Bee	N	END	S1S2	END
16GS0354	181267	Horned Clubtail	N		S3	
16GS0357	181267	Horned Clubtail	N		S3	
16GS0254	17329	Lake Sturgeon (Great Lakes - Upper St. Lawrence River	N	THR	S2	THR
16GS0354	17329	Lake Sturgeon (Great Lakes - Upper St. Lawrence River	N	THR	S2	THR
16GS0454	17329	Lake Sturgeon (Great Lakes - Upper St. Lawrence River	N	THR	S2	THR
16GS0154	180749	Midland Painted Turtle	N	SC	S4	
16GS0155	180749	Midland Painted Turtle	N	SC	S4	
16GS0254	180749	Midland Painted Turtle	N	SC	S4	

16GS0255	180749	Midland Painted Turtle	N	SC	S4	
16GS0354	180749	Midland Painted Turtle	N	SC	S4	
16GS0358	180749	Midland Painted Turtle	N	SC	S4	
16GS0454	180749	Midland Painted Turtle	N	SC	S4	
16GS0455	180749	Midland Painted Turtle	N	SC	S4	
16GS0454	133052	Oval-leaved Bilberry	N		S3	
16GS0254	193996	Peregrine Falcon	N	NAR	S3B	SC
16GS0154	1008471	Silver Lamprey (Great Lakes - Upper St. Lawrence	N	SC	S3	SC
16GS0254	1008471	Silver Lamprey (Great Lakes - Upper St. Lawrence	N	SC	S3	SC
16GS0354	1008471	Silver Lamprey (Great Lakes - Upper St. Lawrence	N	SC	S3	SC
16GS0154	180745	Snapping Turtle	N	SC	S4	SC
16GS0155	180745	Snapping Turtle	N	SC	S4	SC
16GS0254	180745	Snapping Turtle	N	SC	S4	SC
16GS0255	180745	Snapping Turtle	N	SC	S4	SC
16GS0354	180745	Snapping Turtle	N	SC	S4	SC
16GS0454	180745	Snapping Turtle	N	SC	S4	SC
16GS0455	180745	Snapping Turtle	N	SC	S4	SC
16GS0454	195272	Transverse Lady Beetle	N	SC	SH	
16GS0358	201368	Yellow-banded Bumble Bee	N	SC	S3S5	SC

Rodo, Jaclyn

From: Marlene McKinnon <mmckinnon@ssmrca.ca>
Sent: January 20, 2021 3:46 PM
To: Rodo, Jaclyn
Cc: Roberts, Andrew; Corrina Barrett
Subject: RE: SSM Community Transmission System - Request for Information

Jaclyn, that is a simple no to the wildlife/fish data. I will get you the shapefile next Wednesday.

Marlene

From: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Sent: January 20, 2021 3:43 PM
To: Marlene McKinnon <mmckinnon@ssmrca.ca>
Cc: Roberts, Andrew <Andrew.Roberts@wsp.com>; Corrina Barrett <cbarrett@ssmrca.ca>
Subject: RE: SSM Community Transmission System - Request for Information

Hi Marlene,

Thank you for the map. If you can provide the shapefile, that would be greatly appreciated.

Does your CA maintain any records of wildlife or fish for the area that can be shared?

Thanks again,

Jaclyn Rodo
Ecologist

M 705 761 7792

From: Marlene McKinnon [mailto:mmckinnon@ssmrca.ca]
Sent: January 20, 2021 1:21 PM
To: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Cc: Roberts, Andrew <Andrew.Roberts@wsp.com>; Corrina Barrett <cbarrett@ssmrca.ca>
Subject: RE: SSM Community Transmission System - Request for Information

Jaclyn,

I have created the attached map, making it less busy. When you look at it I've put the ortho layer on it so you could see where the transmission line ROW was cleared. The green line/hatching is our regulated area. Should you still need the shapefile I can get that to you next Wednesday.

Marlene

Please note that due to COVID19 our office is not open to the public. As of January 14th staff will be working remotely and therefore email and voice message responses may be delayed.

M. A. McKinnon, CGS
GIS Specialist / Source Water Protection Program Manager
Sault Ste. Marie Region Conservation Authority
1100 Fifth Line East
Sault Ste. Marie ON P6A 6J8
mmckinnon@ssmrca.ca
www.ssmrca.ca
Phone 705-946-8530 ext 1004
Fax 705-946-8533

Member of Canadian Institute of Geomatics
"Challenges are what make life interesting and overcoming them is what makes life meaningful." *Joshua J. Marine*

From: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Sent: January 15, 2021 11:38 AM
To: Marlene McKinnon <mmckinnon@ssmrca.ca>
Cc: Roberts, Andrew <Andrew.Roberts@wsp.com>; Corrina Barrett <cbarrett@ssmrca.ca>
Subject: RE: SSM Community Transmission System - Request for Information

Thank you, Marlene.

Regards,

Jaclyn Rodo
Ecologist

M 705 761 7792

From: Marlene McKinnon [mailto:mmckinnon@ssmrca.ca]
Sent: January 15, 2021 11:34 AM
To: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Cc: Roberts, Andrew <Andrew.Roberts@wsp.com>; Corrina Barrett <cbarrett@ssmrca.ca>
Subject: Re: SSM Community Transmission System - Request for Information

Jaclyn,
I will be in the office on Wednesday to respond in depth to you. But until then please use the Soomaps.com. On the left of the screen you will see additional tools. The first is data layers that can be turned on and off. In that list you will see Floodline 2019 and Regulation 176/06 both of those are the regulated area for SSMRCA under O.Reg. 176/06.

Should you need anything more specific please let me know and I'll respond on Wednesday.

Marlene

Please note that due to COVID19 our office is closed. Email responses may be delayed.

M. A. McKinnon, CGS
GIS Specialist
Sault Ste. Marie Region Conservation Authority
1100 Fifth Line East
Sault Ste. Marie ON P6A 6J8
mmckinnon@ssmrca.ca
www.ssmrca.ca
Phone 705-946-8530
Fax 705-946-8533

Member of Canadian Institute of Geomatics

There is no such thing as darkness only a failure to see. 'jarofquotes.com'

From: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Sent: 15 January 2021 10:27 AM
To: Marlene McKinnon <mmckinnon@ssmrca.ca>
Cc: Roberts, Andrew <Andrew.Roberts@wsp.com>
Subject: SSM Community Transmission System - Request for Information

Hello Marlene,

As you are aware, WSP Canada Inc. (WSP) has been retained by PUC Services Inc. (PUC) to support a Class Environmental Assessment study for Minor Transmission Facilities within the City of Sault Ste. Marie. To support the study for the Community Transmission project, we are currently collecting background information to better understand opportunities and constraints for the several options being reviewed. I have attached a figure which represents our study area.

We intend to reach out to the Ministry of Natural Resources and Forestry, and the Ministry of the Environment, Conservation and Parks to obtain information related to natural heritage features, including Species at Risk, and will be contacting the City to obtain relevant information as well. Do you have information for the area that can be shared, such as wildlife or fisheries records and natural heritage feature mapping? I see that the online mapping tool (soomaps.ca) offers official plan mapping – is there a way to obtain the regulation limit mapping from this for incorporation into our figures?

Any information you can provide would be greatly appreciated.

Thank you,

Jaclyn Rodo
Ecologist

M 705 761 7792

294 Rink Street, Suite 103
Peterborough, Ontario K9J 2K2

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Rodo, Jaclyn

From: Don McConnell <d.mcconnell@cityssm.on.ca>
Sent: January 24, 2021 3:27 PM
To: Rodo, Jaclyn; Roberts, Andrew; Catherine Taddo; Peter Tonazzo
Cc: Don Elliott; Tom Vair
Subject: RE: SSM Community Transmission System - Request for Information

Good afternoon Jaclyn –

The background report that you are looking for is more than 25 years old. We are in the process of finalizing a new official plan, however the natural heritage data that is available online is still applicable.

We anticipate releasing the proposed new natural heritage policies within the next few months. Please feel free to contact either Peter Tonazzo or myself if you need something sooner. We would be happy to discuss this project with you.

Thanks, Don

Donald B. McConnell, MCIP RPP
Director of Planning and Enterprise Services
The Corporation of the City of Sault Ste. Marie
Civic Centre, 99 Foster Drive
Sault Ste. Marie, ON
P6A 5X6
Tel: 705.759.5375
Fax: 705.541.7165

From: Tom Vair <t.vair@cityssm.on.ca>
Sent: Tuesday, January 19, 2021 11:41 AM
To: Don McConnell <d.mcconnell@cityssm.on.ca>
Subject: FW: SSM Community Transmission System - Request for Information

Hi Don,

Would you have a copy of the report WSP is looking for below that we could send?

Tx,
Tom

Tom Vair

Deputy CAO, Community Development and Enterprise Services
705.759.5264 t.vair@cityssm.on.ca

CITY OF SAULT STE. MARIE
99 Foster Drive, Sault Ste. Marie, ON P6A 5X6
saultstemarie.ca

From: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Sent: Tuesday, January 19, 2021 11:31 AM
To: Catherine Taddo <c.Taddo@cityssm.on.ca>
Cc: Tom Vair <t.vair@cityssm.on.ca>; Roberts, Andrew <Andrew.Roberts@wsp.com>; Don Elliott <d.elliott@cityssm.on.ca>
Subject: RE: SSM Community Transmission System - Request for Information

Thank you, Catherine.

Upon reviewing the City's Official Plan, I see reference to a 'technical background report' in *Section 3.2 Natural Heritage Features* (screenshot below). Are you able to provide a copy of this report?

3.2 Natural Heritage Features

Introduction

Natural heritage features and areas have been identified by the Ministry of Natural Resources and other agencies. They contain distinctive or unusual features performing a key ecological function and/or provide habitat for significant plant and/or animal species. Linkages between Natural Heritage features act as corridors to enhance and maintain the natural habitat of the municipality.

Schedule A identifies the location of key Natural Heritage Features. The Technical Background report contains descriptions and a Category 1 & 2 classification of the features.

Policies

H.1 No development is permitted in Category 1 Natural Features or Areas. The municipality shall maintain an inventory of these features and areas.

- 17 -

Thank you,

Jaclyn Rodo
Ecologist

M 705 761 7792

From: Catherine Taddo [mailto:c.Taddo@cityssm.on.ca]
Sent: January 15, 2021 10:57 AM
To: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>

Cc: Tom Vair <t.vair@cityssm.on.ca>; Roberts, Andrew <Andrew.Roberts@wsp.com>; Don Elliott <d.elliott@cityssm.on.ca>
Subject: FW: SSM Community Transmission System - Request for Information

Hi Jaclyn:

Thank you for your email. CDES typically oversees any information related to Natural Heritage features and Official Plan layers, and as such I'm copying Tom Vair on this email for response as may be required.

In relation to the proposed sites, I noted that the Yates Avenue proposed site is shown directly adjacent to a major City pump station. It is my understanding that WSP, and/or PUC has been in discussions with CDES in relation to Yates Avenue land availability. During the review period, it was identified that a large area is required to be retained by the City south of the existing pump station for future reconstruction purposes as may be required. The large sewer easement is also a constraint. It appears that the area to be retained by the City, has been included in the proposed transformer station area.

If you require anything further from Engineering please do not hesitate to contact me.

Sincerely,
Catherine Taddo, P. Eng.
Land Development and Environmental Engineer
Public Works and Engineering Services
705.759.5380 c.taddo@cityssm.on.ca

CITY OF SAULT STE. MARIE
99 Foster Drive, Sault Ste. Marie, ON P6A 5X6
saultstemarie.ca

From: Rodo, Jaclyn <Jaclyn.Rodo@wsp.com>
Sent: Friday, January 15, 2021 10:28 AM
To: Catherine Taddo <c.Taddo@cityssm.on.ca>
Cc: Roberts, Andrew <Andrew.Roberts@wsp.com>
Subject: SSM Community Transmission System - Request for Information

Hello Catherine,

As you are aware, WSP Canada Inc. (WSP) has been retained by PUC Services Inc. (PUC) to support a Class Environmental Assessment study for Minor Transmission Facilities within the City of Sault Ste. Marie. To support the study for the Community Transmission project, we are currently collecting background information to better understand opportunities and constraints for the several options being reviewed. I have attached a figure that depicts preliminary alignment options and the associated study area.

We are seeking natural heritage and other environmental information related to these options and adjacent 120 m buffer areas. I see the online mapping tool (soomaps.ca) depicts Official Plan layers, including watercourses, lakes, fish habitat, wetlands, floodways, floodlines, and groundwater recharge areas. Is it possible to obtain this spatial data for our use? We will be contacting the Ministry of Environment, Conservation and Parks, Ministry of Natural Resources and Forestry, and SSMRC to request natural heritage information. Are you aware of any additional mapping or information related to natural heritage features in the area?

Any information provided would be greatly appreciated.

Thank you,

Jaclyn Rodo
Ecologist

M 705 761 7792

294 Rink Street, Suite 103
Peterborough, Ontario K9J 2K2

-LAEmHhHzdJzBlTWfa4Hgs7pbKl

APPENDIX

C PLANT AND WILDLIFE TABLES

Common Name	Scientific Name	GRANK[1]	SRANK[2]	SARO (ESA) Status[3]	COSEWIC Status[4]	SARA Status[5]	Schedule[5]	Area Sensitive Birds - Ecoregion 5E[6]	Protected Under MBCA	Existing PUC ROW (Part of Common Elements)	Route Option A (along Allens Sideroad)	Partial Route Option A, B and C	Partial A, B, C and D	Partial A, B and Common Elements	Option 5 (screened out)
Birds (69 species)															
Alder Flycatcher	*Empidonax alnorum*	G5	S5B						✓	X	X	X	X	X	X
American Bittern	*Botaurus lentiginosus*	G4	S4B						✓	X					
American Black Duck	*Anas rubripes*	G5	S5B						✓	X					
American Crow	*Corvus brachyrhynchos*	G5	S5B							X	X	X	X	X	X
American Goldfinch	*Spinus tristis*	G5	S5B						✓	X	X		X	X	X
American Redstart	*Setophaga ruticilla*	G5	S5B						✓	X	X		X	X	
American Robin	*Turdus migratorius*	G5	S5B						✓	X	X		X	X	X
American Woodcock	*Scolopax minor*	G5	S4B						✓	X	X	X			
Barn Swallow	*Hirundo rustica*	G5	S4B	THR	THR	THR	1		✓	X					
Barred Owl	*Strix varia*	G5	S5					X		X					
Belted Kingfisher	*Megaceryle alcyon*	G5	S4B											X	
Black-billed Cuckoo	*Coccyzus erythropthalmus*	G5	S4B,SZN						✓	X	X			X	
Black-capped Chickadee	*Poecile atricapillus*	G5	S5						✓	X	X		X	X	
Black-throated Green Warbler	*Setophaga virens*	G5	S5B						✓	X					
Blue Jay	*Cyanocitta cristata*	G5	S5							X					
Blue-headed Vireo	*Vireo solitarius*	G5	S5B						✓	X	X			X	
Black-and-white Warbler	*Mniotilta varia*	G5	S5B						✓	X	X	X		X	
Bobolink	*Dolichonyx oryzivorus*	G5	S4B	THR	THR	THR	1		✓	X	X	X	X	X	
Broad-winged Hawk	*Buteo platypterus*	G5	S5B,SZN					X		X					
Brown-headed Cowbird	*Molothrus ater*	G5	S4B								X	X		X	
Canada Goose	*Branta canadensis*	G5	S5						✓	X	X			X	
Cedar Waxwing	*Bombycilla cedrorum*	G5	S5B						✓	X	X			X	
Chestnut-sided Warbler	*Setophaga pensylvanica*	G5	S5B						✓	X	X	X	X	X	
Chimney Swift	*Chaetura pelagica*	G5	S4B,S4N	THR	THR	THR	1		✓	X					
Chipping Sparrow	*Spizella passerina*	G5	S5B						✓	X	X		X	X	X
Common Grackle	*Quiscalus quiscula*	G5	S5B						✓	X	X		X	X	

Common Raven	*Corvus corax*	G5	S5						✓	X	X			X	
Common Yellowthroat	*Geothlypis trichas*	G5	S5B						✓	X	X	X	X	X	X
Downy Woodpecker	*Picoides pubescens*	G5	S5						✓	X					
Eastern Phoebe	*Sayornis phoebe*	G5	S5B						✓	X					
European Starling	*Sturnus vulgaris*	G5	SNA							X	X		X	X	X
Gray Catbird	*Dumetella carolinensis*	G5	S4B						✓	X			X	X	X
Great Crested Flycatcher	*Myiarchus crinitus*	G5	S4B						✓			X	X		X
Hairy Woodpecker	*Picoides villosus*	G5	S5						✓				X		
Hermit Thrush	*Catharus guttatus*	G5	S5B						✓	X					
Herring Gull	*Larus argentatus*	G5	S5B,S5N						✓	X					
House Wren	*Troglodytes aedon*	G5	S5B						✓	X					
Indigo Bunting	*Passerina cyanea*	G5	S4B						✓	X	X			X	
Killdeer	*Charadrius vociferus*	G5	S5B,S5N						✓	X			X	X	X
Least Flycatcher	*Empidonax minimus*	G5	S4B						✓	X					
Mallard	*Anas platyrhynchos*	G5	S5						✓	X	X	X		X	
Merlin	*Falco columbarius*	G5	S5B					X	✓	X				X	
Mourning Dove	*Zenaida macroura*	G5	S5						✓				X	X	X
Mourning Warbler	*Geothlypis philadelphia*	G5	S4B						✓	X					
Nashville Warbler	*Oreothlypis ruficapilla*	G5	S5B						✓	X					
Northern Cardinal	*Cardinalis cardinalis*	G5	S5						✓	X					
Northern Flicker	*Colaptes auratus*	G5	S4B						✓	X	X	X		X	
Northern Harrier	*Circus cyaneus*	G5	S4B					X		X	X			X	
Northern Parula	*Setophaga americana*	G5	S4B						✓	X					
Ovenbird	*Seiurus aurocapilla*	G5	S4B						✓	X					
Pileated Woodpecker	*Dryocopus pileatus*	G5	S5						✓	X					
Purple Finch	*Carpodacus purpureus*	G5	S4B						✓	X					
Red-breasted Nuthatch	*Sitta canadensis*	G5	S5						✓	X	X			X	
Red-eyed Vireo	*Vireo olivaceus*	G5	S5B						✓	X	X		X	X	X
Red-tailed Hawk	*Buteo jamaicensis*	G5	S5					X	✓	X					
Red-winged Blackbird	*Agelaius phoeniceus*	G5	S4						✓	X	X	X		X	
Ring-billed Gull	*Larus delawarensis*	G5	S5B,SZN						✓	X	X		X	X	
Rock Pigeon	*Columba livia*	G5	SNA						✓	X	X	X		X	
Ruby-crowned Kinglet	*Regulus calendula*	G5	S4B						✓	X					
Savannah Sparrow	*Passerculus sandwichensis*	G5	S4B					X	✓	X	X	X	X	X	X

Song Sparrow	*Melospiza melodia*	G5	S5B						✓	X	X		X	X	X
Swamp Sparrow	*Melospiza georgiana*	G5	S5B						✓	X					
Tree Swallow	*Tachycineta bicolor*	G5	S4B						✓		X	X		X	
Turkey Vulture	*Cathartes aura*	G5	S5B						✓	X	X		X	X	
Veery	*Catharus fuscescens*	G5	S4B						✓	X	X		X	X	
Warbling Vireo	*Vireo gilvus*	G5	S5B						✓	X			X	X	X
White-throated Sparrow	*Zonotrichia albicollis*	G5	S5B						✓	X	X	X	X	X	X
Yellow Warbler	*Setophaga petechia*	G5	S5B						✓	X	X	X	X	X	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	G5	S5B						✓	X					
Herpetiles (5 species)															
American Toad	*Anaxyrus americanus*	G5	S5							X	X	X			
Eastern Gartersnake	*Thamnophis sirtalis sirtalis*	G5T5	S5										X	X	X
Gray Treefrog	*Hyla versicolor*	G5	S5							X	X			X	
Green Frog	*Lithobates clamitans*	G5	S5							X				X	
Spring Peeper	*Pseudacris crucifer*	G5	S5							X	X	X	X	X	X
Insects (9 species)															
Cabbage White	*Pieris rapae*	G5	SNA								X			X	
Canadian Tiger Swallowtail	*Papilio canadensis*	G5	S5							X	X			X	
Common Whitetail	*Plathemis lydia*	G5	S5							X					
Eastern Pondhawk	*Erythemis simplicicollis*	G5	S5										X	X	X
Four-spotted Skimmer	*Libellula quadrimaculata*	G5	S5							X					
Harris's Checkerspot	*Chlosyne harrisii*	G4	S4							X					
Monarch	*Danaus plexippus*	G5	S2N,S4B	SC	END	SC	1			X					
Mourning Cloak	*Nymphalis antiopa*	G5	S5						✓				X	X	X
Red-spotted Purple	*Limenitis arthemis astyanax*	G5T5	S5							X					
Mammals (10 species)															
Beaver	*Castor canadensis*	G5	S5							X					
Black Bear	*Ursus americanus*	G5	S5							X					
Eastern Chipmunk	*Tamias striatus*	G5	S5							X	X			X	
Eastern Cottontail	*Sylvilagus floridanus*	G5	S5							X					
Grey Squirrel	*Sciurus carolinensis*	G5	S5							X					
Porcupine	*Erethizon dorsatum*	G5	S5							X					
Red Squirrel	*Tamiasciurus hudsonicus*	G5	S5							X					
Striped Skunk	*Mephitis mephitis*	G5	S5										X		

White-tailed Deer	*Odocoileus virginianus*	G5	S5							X					
Woodland Jumping Mouse	*Napaeozapus insignis*	G5	S5							X					
Total species: 93				**4**	**4**	**4**	**4**	**6**		**82**	**42**	**19**	**31**	**50**	**20**

WILDLIFE LIST LEGEND

[1]G-Rank (global)
Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

G1 Extremely rare - usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to Extinction.
G2 Very rare - usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to Extinction.
G3 Rare to uncommon - usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4 Common - usually more than 100 occurrences; usually not susceptible to immediate threats.
G5 Very common - demonstrably secure under present conditions.

[2]S-Rank (provincial)
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

S1 Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2 Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3 Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 Secure - Common, widespread, and abundant in the nation or state/province.
S#S# Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SAN Non-breeding accidental.
SE Exotic - not believed to be a native component of Ontario's fauna.
SZN Non-breeding migrants/vagrants.
SZB Breeding migrants/vagrants.

[3]SARO (Species at Risk in Ontario) Status
Provincial status from MECP (Status as of Jan 2020)
https://www.ontario.ca/page/species-risk-ontario

The provincial review process is implemented by the Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is an independent advisory panel to the Ontario Ministry of Environment, Conservation and Parks (MECP) that assesses the status of species at risk of extinction.

MECP Conservation Status Ranks
EXT Extinct - A species that no longer exists anywhere in the world.

EXP Extirpated - A species that lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.
END Endangered - A species that is facing imminent Extinction or extirpation.
THR Threatened - A species that is likely to become Endangered if steps are not taken to address factors threatening to lead to its Extinction or extirpation.
SC Special Concern – A species that may become Threatened or Endangered because of a combination of biological characteristics and identified threats.

[4]COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
The federal review process is implemented by COSEWIC (Status as of Jan 2020)

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent advisory panel to the Minister of Environment and Climate Change Canada that meets twice a year to assess the status of wildlife species at risk of extinction.
https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html

COSEWIC Conservation Status Ranks
EXT Extinct - A species that no longer exists.
EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.
END Endangered - A species facing imminent extirpation or Extinction.
THR Threatened - A species likely to become Endangered if limiting factors are not reversed.
SC Special Concern (formerly vulnerable) - A species that may become a Threatened or an Endangered species because of a combination of biological characteristics and identified threats.
NAR Not At Risk - A species that has been evaluated and found to be not at risk of Extinction given the current circumstances.
DD Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of Extinction.

[5]SARA (Species at Risk Act) Status and Schedule
Federal status from the Government of Canada's Species at Risk Public Registry (Status as of Jan 2020)
https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

EXT Extinct - A wildlife species that no longer exists.
EXP Extirpated **-** A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END Endangered - A wildlife species that is facing imminent extirpation or Extinction.
THR Threatened - A wildlife species that is likely to become Endangered if nothing is done to reverse the factors leading to its extirpation or Extinction.
SC Special Concern - A wildlife species that may become a Threatened or an Endangered species because of a combination of biological characteristics and identified threats.

Schedule 1: is the official list of species that are classified as Extirpated, Endangered, Threatened and Special Concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as Endangered or Threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as Special Concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are Extirpated, Endangered, Threatened and Special Concern, the prohibitions do not apply to species of Special Concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

[6] MNR Area Sensitive Species

Area Sensitivity is defined as species requiring large areas of suitable habitat in order to sustain population numbers

From: Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Science Section. 151pp. + appendices.

From: Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Criteria Schedules For Ecoregion 5E. January, 2015. Regional Operations Division, Southern Region Resources Section. 46pp.

SCIENTIFIC NAME	COMMON NAME	FAMILY	CC [1]	CW [1]	WEEDINESS [1]	OWES WETLAND PLANT LIST [2]	G_RANK [3]	N_RANK	S_RANK [4]	COSEWIC [5]	SARA [6]	SARO [7]	NATIVE STATUS [9]	Unit 1A: G142N	Unit 1B: G061N	Unit 2: G055Tt/TI	Unit 3: G111S	Unit 4A: G061N Unit 4B: G045N Unit 4C: G047S	Unit 5: G055Tt/TI	Unit 6: G061N	Unit 7: G142N	Unit 8A: G044N	Unit 8B: G045N	Unit 9: G052Tt/TI Plantation	Unit 10: G055Tt/TI	Unit 11: CUS1 Planted Apple, Savannah	Unit 12: G094N	Unit 13: G096S	Unit 14: G104Tt/TI	Unit 15: G096S	Unit 16A: G134S	Unit 16B: G110N	Unit 17: G142N	Unit 18: G134S	Unit 19: G075Tt/TI	Unit 20: G068Tt/TI	Unit 21: G070Tt/TI	Unit 22: G075Tt/TI	Unit 23: G045N
Abies balsamea	Balsam Fir	Pinaceae	5	-3		X	G5	N5	S5				N						X																	X		X	
Acer negundo	Manitoba Maple	Sapindaceae	0	0		X	G5	N5	S5				N										X		X				X	X							X		
Acer rubrum	Red Maple	Sapindaceae	4	0		X	G5	N5	S5				N			X			X	X									X			X			X	X		X	X
Acer saccharum	Sugar Maple	Sapindaceae	4	3			G5	N5	S5				N			X				X									X			X			X		X	X	
Achillea millefolium	Common Yarrow	Asteraceae		3	-1		G5	NNR	SNA				I										X			X	X			X									
Actaea pachypoda	White Baneberry	Ranunculaceae	6	5			G5	N5	S5				N			X																							
Actaea rubra	Red Baneberry	Ranunculaceae	6	3			G5	N5	S5				N			X																							
Aegopodium podagraria	Goutweed	Apiaceae		0	-3		GNR	NNA	SNA				I				X												X										
Agrimonia sp.	Agrimony sp.	Rosaceae														X																					X		
Alnus incana	Grey Alder	Betulaceae	6	-3		X	G5	N5	S5				N	X		X	X	X	X	X										X	X			X		X	X		X
Alopecurus pratensis	Meadow Foxtail	Poaceae		-3	-1		GNR	NNA	SNA				I														X						X						X
Amelanchier sp.	Serviceberry sp.	Rosaceae																	X	X		X				X			X								X	X	
Anemone quinquefolia	Wood Anemone	Ranunculaceae	7	0			G5	N5	S5				N	X		X																							
Anthoxanthum odoratum	Sweet Vernalgrass	Poaceae		3	-1		GNR	NNA	SNA				I		X			X		X		X			X							X							X
Apocynum androsaemifolium	Spreading Dogbane	Apocynaceae	3	5			G5	N5	S5				N							X																			
Apocynum cannabinum var. cannab	Hemp Dogbane	Apocynaceae	3	0			G5T5	N5	S5				N																			X							X
Aralia nudicaulis	Wild Sarsaparilla	Araliaceae	4	3			G5	N5	S5				N			X																				X			
Arctium minus	Common Burdock	Asteraceae		3	-2		GNR	NNA	SNA				I			X																							
Arisaema triphyllum	Jack-in-the-pulpit	Araceae	5	-3		X	G5	N5	S5				N			X																						X	
Artemisia ludoviciana	Silver Wormwood	Asteraceae		5	-1		G5	N5	SU				I		X																								
Asclepias syriaca	Common Milkweed	Asclepiadaceae	0	5			G5	N5	S5				N					X		X																			X
Athyrium filix-femina var. angustu	Northeastern Lady Fern	Dryopteridaceae	4	0		X	G5T5	N5	S5				N			X															X					X		X	
Athyrium sp.	Lady Fern sp.	Dryopteridaceae												X		X																							
Barbarea vulgaris	Bitter Wintercress	Brassicaceae		0	-1		GNR	NNA	SNA				I	X			X			X		X					X			X		X		X			X		
Betula alleghaniensis	Yellow Birch	Betulaceae	6	0		X	G5	N5	S5				N			X																							
Betula papyrifera	Paper Birch	Betulaceae	2	3		X	G5	N5	S5				N			X									X				X					X	X	X	X	X	
Calamagrostis canadensis	Bluejoint Reedgrass	Poaceae	4	-5		X	G5	N5	S5				N	X																									
Caltha palustris	Yellow Marsh Marigold	Ranunculaceae	5	-5		X	G5	N5	S5				N	X			X																						
Cardamine diphylla	Two-leaved Toothwort	Brassicaceae	7	3			G5	N5	S5				N			X																							
Carex arctata	Drooping Woodland Sedge	Cyperaceae	5	5			G5	N5	S5				N			X			X	X																			
Carex crinita	Fringed Sedge	Cyperaceae	6	-5		X	G5	N5	S5				N	X		X															X			X					
Carex debilis	White-edge Sedge	Cyperaceae	7	-3			G5	N5	S5				N	X						X																			
Carex deweyana	Dewey's Sedge	Cyperaceae	6	3			G5	N5	S5				N			X																							
Carex echinata	Star Sedge	Cyperaceae	7	-5		X	G5	N5	S5				N		X																								
Carex gracillima	Graceful Sedge	Cyperaceae	4	3		X	G5	N5	S5				N			X			X												X					X			
Carex gynandra	Nodding Sedge	Cyperaceae	7	-5		X	G5	N5	S5				N	X																									
Carex intumescens	Bladder Sedge	Cyperaceae	6	-3		X	G5	N5	S5				N	X		X																							
Carex pallescens	Pale Sedge	Cyperaceae	5	0		X	G5	N5	S4				N	X						X											X								
Carex pedunculata	Long-stalked Sedge	Cyperaceae	5	3			G5	N5	S5				N			X																				X			
Carex scoparia	Pointed Broom Sedge	Cyperaceae	5	-3		X	G5	N5	S5				N	X		X					X				X														X
Carex sp.	Sedge sp.	Cyperaceae																																		X			
Carex stipata	Awl-fruited Sedge	Cyperaceae	3	-5		X	G5	N5	S5				N							X	X												X						
Carex stricta	Tussock Sedge	Cyperaceae	4	-5		X	G5	N5	S5				N																							X			
Centaurea stoebe	Spotted Knapweed	Asteraceae		5	-3		GNR	NNA	SNA				I							X			X																
Chamaenerion angustifolium	Fireweed	Onagraceae	3	0			G5	N5	S5				N		X																		X						
Chelone glabra	White Turtlehead	Plantaginaceae	7	-5		X	G5	N5	S5				N			X																							
Cirsium palustre	Marsh Thistle	Asteraceae		-3		X	G5	NNA	SNA				I																				X						
Claytonia caroliniana	Carolina Spring Beauty	Portulacaceae	7	3			G5	N5	S5				N	X		X																							
Claytosmunda claytoniana	Interrupted Fern	Osmundaceae	7	0		X	G5	N5	S5				N		X	X			X	X													X						
Clematis virginiana	Virginia Clematis	Ranunculaceae	3	0		X	G5	N5	S5				N			X				X																			
Cornus alternifolia	Alternate-leaved Dogwood	Cornaceae	6	3			G5	N5	S5				N			X																							
Cornus canadensis	Bunchberry	Cornaceae	7	0			G5	N5	S5				N	X																						X			
Cornus racemosa	Grey Dogwood	Cornaceae	2	0		X	G5	N5	S5				N																X										
Cornus sericea	Red-osier Dogwood	Cornaceae	2	-3		X	G5	N5	S5				N	X				X	X			X			X			X	X	X	X			X		X	X		
Crataegus sp.	Hawthorn sp.	Rosaceae																							X	X		X	X	X							X		
Dactylis glomerata	Orchard Grass	Poaceae		3	-1		GNR	NNA	SNA				I									X		X								X							
Danthonia spicata	Poverty Oatgrass	Poaceae	5	5			G5	N5	S5				N	X				X		X												X							
Daucus carota	Wild Carrot	Apiaceae		5	-2		GNR	NNA	SNA				I							X		X	X									X					X		
Dichanthelium oligosanthes	Few-flowered Panicgrass	Poaceae	7	3			G5	N5	S4				N		X																								
Diervilla lonicera	Northern Bush-honeysuckle	Caprifoliaceae	5	5			G5	N5	S5				N																							X			
Drosera rotundifolia	Round-leaved Sundew	Droseraceae	7	-5		X	G5	N5	S5				N							X																			
Dryopteris carthusiana	Spinulose Wood Fern	Dryopteridaceae	5	-3		X	G5	N5	S5				N			X																						X	
Epigaea repens	Trailing Arbutus	Ericaceae	9	3			G5	N5	S5				N		X																								
Epipactis helleborine	Broad-leaved Helleborine	Orchidaceae		3	-2		GNR	NNA	SNA				I			X																							
Equisetum arvense	Field Horsetail	Equisetaceae	0	0		X	G5	N5	S5				N	X		X	X	X		X		X			X		X	X	X	X	X		X			X	X		X
Equisetum fluviatile	Water Horsetail	Equisetaceae	7	-5		X	G5	N5	S5				N																				X						
Equisetum hyemale ssp. affine	Common Scouring-rush	Equisetaceae	2	0		X	G5	N5	S5				N							X						X			X	X			X						X
Equisetum sylvaticum	Woodland Horsetail	Equisetaceae	7	-3		X	G5	N5	S5				N	X				X		X		X			X						X		X			X			
Erythronium americanum	Yellow Trout-lily	Liliaceae	5	5			G5	N5	S5				N		X	X		X		X															X	X	X		
Eurybia macrophylla	Large-leaved Aster	Asteraceae	5	5			G5	N5	S5				N			X				X							X									X		X	X
Euthamia graminifolia	Grass-leaved Goldenrod	Asteraceae	2	0			G5	N5	S5				N	X						X																			
Eutrochium maculatum	Spotted Joe Pye Weed	Asteraceae	3	-5		X	G5	N5	S5				N																	X			X						
Fragaria virginiana	Wild Strawberry	Rosaceae	2	3			G5	N5	S5				N	X				X		X		X			X				X			X							
Fraxinus nigra	Black Ash	Oleaceae	7	-3		X	G5	N5	S4	THR			N																							X			
Fraxinus pennsylvanica	Red Ash	Oleaceae	3	-3		X	G5	N5	S4				N																							X			
Galium aparine	Common Bedstraw	Rubiaceae	4	3			G5	N5	S5				N																		X								
Galium mollugo	Smooth Bedstraw	Rubiaceae		5	-2		GNR	NNA	SNA				I									X								X		X							
Galium palustre	Common Marsh Bedstraw	Rubiaceae	5	-5		X	G5	N5	S5				N																		X			X					
Galium triflorum	Three-flowered Bedstraw	Rubiaceae	4	3			G5	N5	S5				N			X																							
Gaultheria procumbens	Eastern Teaberry	Ericaceae	6	3			G5	N5	S5				N	X																									
Geum aleppicum	Yellow Avens	Rosaceae	2	0		X	G5	N5	S5				N			X																							
Geum canadense	Canada Avens	Rosaceae	3	0		X	G5	N5	S5				N			X																							
Geum rivale	Water Avens	Rosaceae	7	-5		X	G5	N5	S5				N																							X			
Glechoma hederacea	Ground-ivy	Lamiaceae		3	-2		GNR	NNA	SNA				I																			X							
Glyceria striata	Fowl Mannagrass	Poaceae	3	-5		X	G5	N5	S5				N			X				X					X								X			X			
Gymnocarpium dryopteris	Common Oak Fern	Cystopteridaceae	7	3		X	G5	N5	S5				N																							X			
Heracleum maximum	American Cow Parsnip	Apiaceae	3	-3		X	G5	N5	S5				N			X	X	X		X									X							X	X		
Hesperis matronalis	Dame's Rocket	Brassicaceae		3	-3		G4G5	NNA	SNA				I																							X	X		
Hieracium sp.	Hawkweed sp.	Asteraceae												X																						X			
Hypericum perforatum	Common St. John's-wort	Hypericaceae		5	-3		GNR	NNA	SNA				I																							X			
Hypericum punctatum	Spotted St. John's-wort	Hypericaceae	5	0		X	G5	N5	S5				N		X					X		X									X								X
Impatiens capensis	Spotted Jewelweed	Balsaminaceae	4	-3		X	G5	N5	S5				N	X		X															X			X					
Iris sp.	Iris sp.	Iridaceae												X				X																					
Iris versicolor	Harlequin Blue Flag	Iridaceae	5	-5		X	G5	N5	S5				N	X																			X			X			
Juglans sp.	Walnut sp.	Juglandaceae																X																					
Juncus effusus	Soft Rush	Juncaceae	4	-5		X	G5	N5	S5				N	X						X	X										X		X						X
Kalmia polifolia	Pale Bog Laurel	Ericaceae	10	-5		X	G5	N5	S5				N		X																								
Lactuca sp.	Lettuce sp.	Asteraceae												X																									
Larix decidua	European Larch	Pinaceae		5	-1		G5	NNA	SNA				I											X															
Larix laricina	Tamarack	Pinaceae	7	-3		X	G5	N5	S5				N			X		X	X												X								
Leersia oryzoides	Rice Cutgrass	Poaceae	3	-5		X	G5	N5	S5				N																							X			
Lepidium campestre	Field Peppergrass	Brassicaceae		5	-1		GNR	NNA	SNA				I										X																
Leucanthemum vulgare	Oxeye Daisy	Asteraceae		5	-1		GNR	NNA	SNA				I							X			X									X							X
Lonicera sp.	Honeysuckle sp.	Caprifoliaceae																																			X	X	
Lonicera tatarica	Tatarian Honeysuckle	Caprifoliaceae		3	-3		GNR	NNA	SNA				I												X														
Lotus corniculatus	Garden Bird's-foot Trefoil	Fabaceae		3	-2		GNR	NNA	SNA				I										X			X	X					X							X
Lupinus polyphyllus	Large-leaved Lupine	Fabaceae		5	-1		G5	N5	SNA				I		X		X																						
Lysimachia borealis	Northern Starflower	Primulaceae	6	0			G5	N5	S5				N					X																		X			
Maianthemum canadense	Wild Lily-of-the-valley	Magnoliaceae	5	3			G5	N5	S5				N	X		X				X																X		X	
Maianthemum racemosum	Large False Solomon's Seal	Asparagaceae	4	3			G5	N5	S5				N			X				X																		X	
Malus sp.	Apple sp.	Rosaceae													X	X				X		X			X	X											X		
Matricaria discoidea	Pineappleweed	Asteraceae		3			G5	N5	SNA				I										X																
Matteuccia struthiopteris	Ostrich Fern	Onocleaceae	5	0		X	G5	N5	S5				N																X										
Medicago lupulina	Black Medick	Fabaceae		3	-1		GNR	NNA	SNA				I										X																
Mentha aquatica	Water Mint	Lamiaceae		0			GNR	NNA	SNA				I																X										
Myosotis scorpioides	True Forget-me-not	Boraginaceae		-5	-1	X	G5	NNA	SNA				I			X																							
Myosotis sp.	Forget-me-not sp.	Boraginaceae														X	X		X						X														
Myrica gale	Sweet Gale	Myricaceae	6	-5		X	G5	N5	S5				N																							X			
Nasturtium officinale	Watercress	Brassicaceae		-5	-1		GNR	NNA	SNA				I									X																	
Oenothera perennis	Perennial Evening-primrose	Onagraceae	6	0			G5	N5	S5				N		X					X																			
Onoclea sensibilis	Sensitive Fern	Onocleaceae	4	-3		X	G5	N5	S5				N	X		X		X	X		X													X			X		
Osmunda regalis	Royal Fern	Osmundaceae	7	-5		X	G5	N5	S5				N	X		X			X																				
Osmundastrum cinnamomeum	Cinnamon Fern	Osmundaceae	7	-3		X	G5	N5	S5				N			X				X													X						
Phalaris arundinacea var. arundina	Reed Canarygrass	Poaceae	0	-3		X	G5TNR	NNR	S5				N	X			X		X	X	X	X	X	X	X	X	X	X			X		X	X		X	X		X
Phegopteris connectilis	Northern Beech Fern	Thelypteridaceae	8	3		X	G5	N5	S5				N			X																				X			
Phleum pratense	Common Timothy	Poaceae		3	-1		GNR	NNA	SNA				I									X	X																X
Phragmites australis ssp. australis	European Reed	Poaceae		-3		X	G5T5	NNA	SNA				I														X												
Picea glauca	White Spruce	Pinaceae	6	3	-1	X	G5	N5	S5				N			X	X	X	X	X	X	X		X	X			X	X			X			X	X		X	
Pilosella aurantiaca	Orange Hawkweed	Asteraceae		5	-2		GNR	NNA	SNA				I							X					X							X	X			X			X
Pilosella caespitosa	Meadow Hawkweed	Asteraceae		5	-2		GNR	NNA	SNA				I							X																			
Pinus banksiana	Jack Pine	Pinaceae	5	3			G5	N5	S5				N																		X								
Pinus nigra	Austrian Pine	Pinaceae		5	-1		GNR	NNA	SNA				I						X										X								X		
Pinus strobus	Eastern White Pine	Pinaceae	4	3		X	G5	N5	S5				N			X			X	X															X	X	X	X	
Pinus sylvestris	Scots Pine	Pinaceae		3	-3		GNR	NNA	SNA				I			X			X	X					X	X			X						X				
Plantago lanceolata	English Plantain	Plantaginaceae		3	-1		G5	NNA	SNA				I					X					X									X							

SCIENTIFIC NAME	COMMON NAME	FAMILY	CC [1]	CW[1]	WEEDINESS[1]	OWES WETLAND PLANT LIST[2]	G_RANK[3]	N_RANK	S_RANK[4]	COSEWIC[5]	SARA[6]	SARO[7]	NATIVE STATUS[9]	Unit 1A: G142N	Unit 1B: G061N	Unit 2: G055Tt/TI	Unit 3: G111S	Unit 4A: G061N Unit 4B: G045N Unit 4C: G047S	Unit 5: G055Tt/TI	Unit 6: G061N	Unit 7: G142N	Unit 8A: G044N	Unit 8B: G045N	Unit 9: G052Tt/TI Plantation	Unit 10: G055Tt/TI	Unit 11: CUS1 Planted Apple, Savannah	Unit 12: G094N	Unit 13: G096S	Unit 14: G104Tt/TI	Unit 15: G096S	Unit 16A: G134S	Unit 16B: G110N	Unit 17: G142N	Unit 18: G134S	Unit 19: G075Tt/TI	Unit 20: G068Tt/TI	Unit 21: G070Tt/TI	Unit 22: G075Tt/TI	Unit 23: G045N
Poa pratensis	Kentucky Bluegrass	Poaceae		3			G5	N5	S5				I					X				X				X	X					X					X		X
Populus alba	White Poplar	Salicaceae		5	-3		G5	NNA	SNA				I															X	X								X		
Populus balsamifera	Balsam Poplar	Salicaceae	4	-3		X	G5	NNR	S5				N		X					X					X			X	X	X	X					X	X		X
Populus grandidentata	Large-toothed Aspen	Salicaceae	5	5			G5	N5	S5				N			X																							
Populus tremuloides	Trembling Aspen	Salicaceae	2	0			G5	N5	S5				N		X	X			X		X				X			X			X	X	X			X	X	X	
Populus x canadensis	Canada Poplar	Salicaceae		0			GNA	NNA	SNA				I																X								X		
Potentilla canadensis	Canada Cinquefoil	Rosaceae	5	5			G5	N2N3	S2?				N					X		X																			
Potentilla recta	Sulphur Cinquefoil	Rosaceae		5	-2		GNR	NNA	SNA				I										X																
Potentilla simplex	Old-field Cinquefoil	Rosaceae	3	3			G5	N5	S5				N							X																			
Prunella vulgaris	Common Self-heal	Lamiaceae		0			G5	N5	S5				N			X																							
Prunus avium	Sweet Cherry	Rosaceae		5	-2		GNR	NNA	SNA				I			X		X	X	X	X	X			X	X	X	X	X	X	X								
Prunus pensylvanica	Pin Cherry	Rosaceae	3	3			G5	N5	S5				N					X		X																			
Prunus serotina	Black Cherry	Rosaceae	3	3			G5	N5	S5				N																						X				
Prunus virginiana	Chokecherry	Rosaceae	2	3			G5	N5	S5				N																						X		X		
Pteridium aquilinum	Bracken Fern	Dennstaedtiaceae	2	3			G5	N5	S5				N			X			X	X		X			X				X			X			X		X	X	X
Pyrola elliptica	Shinleaf	Ericaceae	5	5			G5	N5	S5				N																							X			
Quercus rubra	Northern Red Oak	Fagaceae	6	3			G5	N5	S5				N			X										X									X	X			
Ranunculus acris	Common Buttercup	Ranunculaceae		0	-2	X	G5	NNA	SNA				I			X		X							X								X			X		X	
Reynoutria japonica	Japanese Knotweed	Polygonaceae		3	-1		GNR	NNA	SNA				I							X																			
Rhamnus cathartica	European Buckthorn	Rhamnaceae		0	-3	X	GNR	NNA	SNA				I																								X		
Rhododendron groenlandicum	Common Labrador Tea	Ericaceae	9	-5		X	G5	N5	S5				N		X																								
Ribes glandulosum	Skunk Currant	Grossulariaceae	6	-3		X	G5	N5	S5				N			X																							
Ribes triste	Swamp Red Currant	Grossulariaceae	6	-5		X	G5	N5	S5				N			X																					X		
Rubus allegheniensis	Allegheny Blackberry	Rosaceae	2	3			G5	N5	S5				N							X											X								
Rubus hispidus	Bristly Dewberry	Rosaceae	6	-3		X	G5	N5	S4				N							X																			X
Rubus idaeus ssp. strigosus	North American Red Raspberry	Rosaceae	2	3			G5T5	N5	S5				N		X	X	X	X		X	X								X			X					X		
Rubus pubescens	Dwarf Raspberry	Rosaceae	4	-3		X	G5	N5	S5				N			X															X					X	X		
Rubus sp.	Raspberry sp.	Rosaceae																														X							
Rumex obtusifolius	Bitter Dock	Polygonaceae		-3	-1	X	GNR	NNA	SNA				I			X																							
Salix bebbiana	Bebb's Willow	Salicaceae	4	-3		X	G5	N5	S5				N	X				X													X	X	X			X			
Salix discolor	Pussy Willow	Salicaceae	3	-3		X	G5	N5	S5				N				X																						
Salix eriocephala	Cottony Willow	Salicaceae	4	-3		X	G5	N5	S5				N																		X		X						
Salix petiolaris	Meadow Willow	Salicaceae	3	-3		X	G5	N5	S5				N	X				X		X											X			X					
Salix sp.	Willow sp.	Salicaceae														X					X	X	X		X		X	X		X	X			X			X		
Sambucus canadensis	Common Elderberry	Caprifoliaceae	5	-3		X	G5	N5	S5				N																		X								
Sambucus racemosa	Red Elderberry	Caprifoliaceae	5	3			G5	N5	S5				N			X																						X	
Scirpus atrovirens	Dark-green Bulrush	Cyperaceae	3	-5		X	G5	N5	S5				N	X							X												X						
Scirpus microcarpus	Red-tinged Bulrush	Cyperaceae	4	-5		X	G5	N5	S5				N	X						X	X										X		X						
Scirpus sp.	Bulrush sp.	Cyperaceae																												X						X			
Silene vulgaris	Bladder Campion	Caryophyllaceae		5	-1		GNR	NNA	SNA				I										X																
Sisyrinchium sp.	Blue-eyed-grass sp.	Iridaceae													X								X																
Solidago rugosa	Rough-stemmed Goldenrod	Asteraceae	4	0			G5	N5	S5				N	X	X				X	X					X						X		X						X
Solidago sp.	Goldenrod sp.	Asteraceae																					X			X			X	X		X					X		X
Sonchus arvensis	Field Sow-thistle	Asteraceae		3	-1		GNR	NNA	SNA				I																		X								
Sorbus sp.	Mountain-ash sp.	Rosaceae														X		X	X																				
Spiraea alba	White Meadowsweet	Rosaceae	3	-3		X	G5	N5	S5				N					X																		X			
Tanacetum vulgare	Common Tansy	Asteraceae		5	-1		GNR	NNA	SNA				I										X				X									X			
Taraxacum officinale	Common Dandelion	Asteraceae		3	-2		G5	N5	SNA				I	X			X	X		X		X				X	X	X	X			X	X				X		
Taxus canadensis	Canada Yew	Taxaceae	7	3			G5	N5	S4				N																									X	
Thalictrum dasycarpum	Purple Meadow-rue	Ranunculaceae	5	-3		X	G5	N5?	S4?				N																							X			
Thalictrum pubescens	Tall Meadow-rue	Ranunculaceae	5	-3		X	G5	N5	S5				N							X									X							X			
Thelypteris palustris	Marsh Fern	Thelypteridaceae	5	-3		X	G5	N5	S5				N	X						X																			
Thuja occidentalis	Eastern White Cedar	Cupressaceae	4	-3		X	G5	N5	S5				N						X	X		X												X		X			
Tragopogon pratensis	Meadow Goatsbeard	Asteraceae		5	-1		GNR	NNA	SNA				I									X	X									X					X		
Trifolium pratense	Red Clover	Fabaceae		3	-2		GNR	NNA	SNA				I										X																
Trillium cernuum	Nodding Trillium	Melanthiaceae	8	0		X	G5	N5	S5				N			X																				X		X	
Typha angustifolia	Narrow-leaved Cattail	Typhaceae		-5		X	G5	N5	SNA				I																										X
Typha sp.	Cattail sp.	Typhaceae				X								X				X		X	X	X					X				X			X					
Ulmus rubra	Slippery Elm	Ulmaceae	6	0			G5	N5	S5				N			X																					X		
Ulmus sp.	Elm sp.	Ulmaceae																											X										
Vaccinium angustifolium	Early Lowbush Blueberry	Ericaceae	6	3			G5	N5	S5				N		X					X																			
Veronica serpyllifolia	Thyme-leaved Speedwell	Plantaginaceae		0			G5	N5	SNA				I																			X							
Veronica sp.	Speedwell sp.	Plantaginaceae														X																							
Viburnum nudum	Smooth Witherod	Adoxaceae	7	-3		X	G5	N5	S5				N	X	X	X																							
Vicia cracca	Tufted Vetch	Fabaceae		5	-1		GNR	NNA	SNA				I										X			X							X						X
Vicia sp.	Vetch sp.	Fabaceae																				X										X							
Viola cucullata	Marsh Blue Violet	Violaceae	5	-5		X	G5	N5	S5				N																		X								
Viola labradorica	Labrador Violet	Violaceae	3	0			G5	N5	S5				N			X				X																X			
Viola macloskeyi	Macloskey's Violet	Violaceae	6	-5		X	G5	N5	S5				N	X						X																			
Viola pubescens	Yellow Violet	Violaceae	5	3			G5	N5	S5				N			X				X																			
Viola sororia	Woolly Blue Violet	Violaceae	4	0		X	G5	N5	S5				N	X																									

VASCULAR PLANT SPECIES LIST LEGEND

Scientific Name, Common Name, and Family
Based on Vascan and NHIC (February 28, 2020)

Vascan: http://data.canadensys.net/vascan/search
NHIC: https://www.sdc.gov.on.ca/sites/MNRF-PublicDocs/EN/ProvincialServices/ONTARIO_SPECIES_LISTS.zip

[1] Coefficient of Conservatism, Coefficient of Wetness, Weediness, and Physiology/Habit
Oldham, M. J., W. D. Bakowsky and D. A. Sutherland. 1995. Floristic Quality Assessment System for Southern Ontario. Natural Heritage Information Centre, Ministry of Natural Resources. Peterborough, Ontario.
CC and CW values reflect updates by NHIC, current as of *February 28, 2020*).

CC: Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.
CW: Coefficient of Wetness. Value between 5 and –5. A value of –5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories.
Weediness: Assigned to all non-native species and range from -1 (low impact of the species on natural areas) to -3 (high impact of the species on natural areas).
Habit: Physiology/Habit. The growth form of the species (e.g. forb, shrub, tree).

[2] OWES Wetland Plant List
Ontario Ministry of Natural Resources. 2013. Ontario Wetland Evaluation System Southern Manual. 3rd Edition, Version 3.3; Ontario Ministry of Natural Resources. 2013. Ontario Wetland Evaluation System Northern Manual. 1st Edition, Version 1.3

Species presence or absence from the Ontario Wetland Evaluation System (OWES) Wetland Plant List.
Codes are defined as follows:
X: Present on the list

[3] G-Rank (Global)
Global Status from Nature Serve (via NHIC, February 28, 2020)
Nature Serve: http://explorer.natureserve.org/
NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

Global (G) Conservation Status Ranks
G1: Critically Imperiled - At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
G2: Imperiled - at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
G3: Vulnerable - At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
G4: Apparently Secure - At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
G5: Secure - At very low risk or extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
G#G#: Range Rank – A numeric range rank (e.g., G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).

GX: Presumed Extinct - Not located despite intensive searches and virtually no likelihood of rediscovery.

GH: Possibly Extinct - Known from only historical occurrences but still some hope of rediscovery. Examples of evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species has been searched for unsuccessfully, but not thoroughly enough to presume that it is extinct or eliminated throughout its range.

GU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

GNR: Unranked – Global rank not yet assessed

GNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities. A global conservation status rank may be not applicable for several reasons, related to its relevance as a conservation target. For species, typically the species is a hybrid without conservation value, or of domestic origin. For ecosystems, the type is typically non-native (e.g, many ruderal vegetation types), agricultural (e.g. pasture, orchard) or developed (e.g. lawn, garden, golf course).

?: Inexact Numeric Rank – Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status Ranks or GX or GH.

T#: Infraspecific Taxon (trinomial) - The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species, for example, a G1T2 subrank should not occur. A vertebrate animal population (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.

Q: Questionable taxonomy that may reduce conservation priority – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower priority (numerically higher) conservation status rank. The “Q” modifier is only used at a global level and not at a national or subnational level.

C: Captive or Cultivated Only – Taxon or ecosystem at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population or ecosystem restoration, not yet established. The “C” modifier is only used at a global level and not at a national or subnational level. Possible ranks are GXC or GHC. This is equivalent to “Extinct” in the Wild (EW) in IUCN’s Red List terminology (IUCN 2001).

[4] S-Ranks (Provincial)

Provincial Status from the NHIC (February 28, 2020)

NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

Provincial/Sub-national (S) Conservation Status Ranks

S1: Critically Imperiled – At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

S2: Imperiled – At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

S3: Vulnerable – At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

S4: Apparently Secure – At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or Secure – At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

SX: Presumed Extirpated – Species or ecosystem is believed to be extirpated from the jurisdiction (province). Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered. [equivalent to "Regionally Extinct" in IUCN Red List terminology]

SH: Possibly Extirpated (Historical) – Known from only historical records but still some hope of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.

SNR: Unranked – Nation of state/province conservation status not yet assessed.

SU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities (e.g., long distance aerial and aquatic migrants, hybrids without conservation value, and non-native species.

?: Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

T#: Infraspecific Taxon (trinomial) - The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the subnational rank of a critically imperiled subspecies of an otherwise widespread and common species would be S5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species, for example, a S1T2 subrank should not occur. A vertebrate animal population may be tracked as an infraspecific taxon and given a T rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.

[5] COSEWIC (Committee on the Status of Endangered Wildlife in Canada)

The federal review process is implemented by COSEWIC (Status as of February 28, 2020)

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent advisory panel to the Minister of Environment and Climate Change Canada that meets twice a year to assess the status of wildlife species at risk of extinction.
https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html

COSEWIC Conservation Status Ranks

EXT: Extinct – A species that no longer exists.

EXP: Extirpated – A species no longer existing in the wild in Canada, but occurring elsewhere.

END: Endangered – A species facing imminent extirpation or extinction.

THR: Threatened – A species likely to become endangered if limiting factors are not reversed.

SC: Special Concern (formerly vulnerable) – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

NAR: Not At Risk – A species that has been evaluated and found to be not at risk of extinction given the current circumstances.

DD: Data Deficient – Available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

[6] SARA (Species at Risk Act) Status and Schedule

Federal status from the Government of Canada's Species at Risk Public Registry (Status as of February 28, 2020)
http://www.registrelep-sararegistry.gc.ca/

The Act establishes Schedule 1, as the official list of species at risk in Canada. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed species are implemented. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

SARA Conservation Status Ranks

EXT: Extinct – A species that no longer exists.

EXP: Extirpated – A species that no longer exists in the wild in Canada, but exists elsewhere in the wild.

END: Endangered – A species that is facing imminent extirpation or extinction.

THR: Threatened – A species likely to become endangered if limiting factors are not reversed.
SC: Special Concern – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

[7] SARO (Species at Risk in Ontario)
Provincial status from MNRF (Status as of February 28, 2020)
https://www.ontario.ca/environment-and-energy/species-risk-ontario-list

The provincial review process is implemented by the MNR's Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is an independent advisory panel to the Ontario Ministry of Natural Resources and Forestry that assesses the status of species at risk of extinction.

MNRF Conservation Status Ranks
EXP: Extirpated – Extirpated – Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
END: Endangered – Lives in the wild in Ontario but is facing imminent extinction or extirpation.
THR: Threatened – Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
SC: Special Concern – Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.

[9] Native Status
Based on Vascan and NHIC (February 28, 2020)
Vascan: http://data.canadensys.net/vascan/search
NHIC: https://www.sdc.gov.on.ca/sites/MNRF-PublicDocs/EN/ProvincialServices/ONTARIO_SPECIES_LISTS.zip

Codes are defined as follows:
N: Native
I: Introduced

APPENDIX

D AQUATIC HABITAT MAPPING

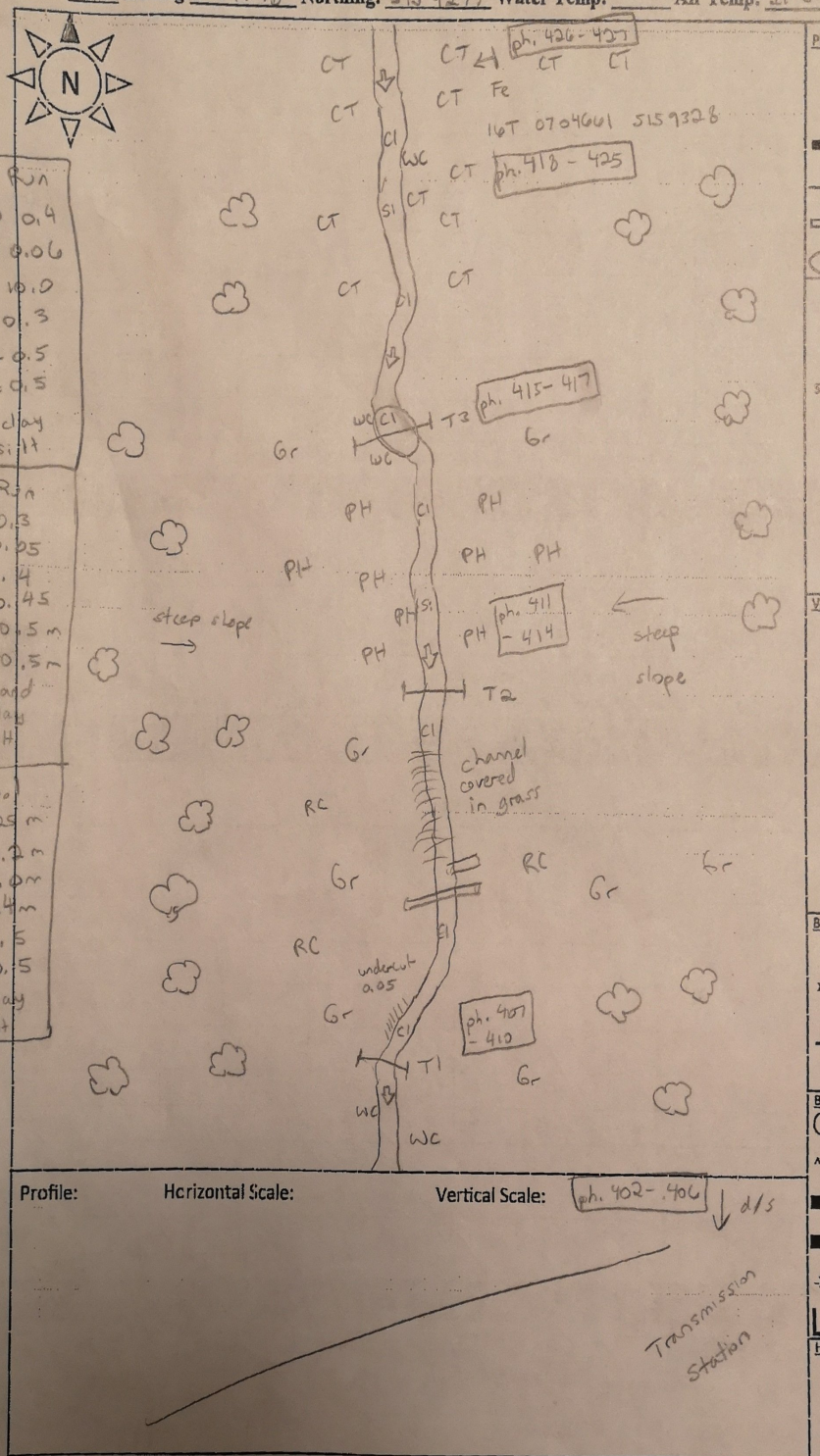
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PLC **Date:** Aug 31, 2021 **Time:** 15:09 **Photos:** Y

Watercourse Name: WC1 **Location:** SSM **Length:** ~200 m **Observers:** KM BS

Zone: 16T **Easting:** 0704670 **Northing:** 5159277 **Water Temp:** ____ **Air Temp:** 21°C **% Overhead Cover:** 30



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Se, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- — Debris

Vegetation:
- CT — Cattail PH
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ___ of ___

wsp

Project Name / #: SSM PVC **Date:** Aug 31, 202 **Time:** 15:09 **Photos:** Y

Watercourse Name: WC1 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16 **Easting:** 0704670 **Northing:** 5159277 **Water Temp:** ___ **Air Temp:** 21°C **% Overhead Cover:** 30

Section Type and Morphology

Type: (check all that apply)	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200 m	slow & low	

Sub-Section(s)	Run ☑	Pool ☑	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area	90	10				
Mean Depth Wetted (m)	0.06	0.2				
Mean Width Wetted (m)	0.4	1.3				
Mean Bankfull width (m)	5.2	6.0				
Mean Bankfull Depth (m)	0.5	0.4				
Substrate (%)	65 cl 25 si 10 sa	90 cl 10 si				

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	0.8m	steep	natural	some	grasses, sedges, phrag, cattails
Right Upstream Bank	"	0.5m	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation			X		20	
Instream Vegetation			X		20	
Woody / Organic Debris		X			10	
Rocks/Boulders	X				0	

Aquatic Veg Type (%):	Submergent: 30	Floating:	Emergent: 70	None
Predominant Species:	watercress		cattails, phragmites	

Migratory Obstructions:	None	Seasonal: —	Permanent: —
Critical Habitat:	Spawning: —	Groundwater: iron staining, seepage, watercress	Other:

Enhancement Opportunities / Fish Observed / Comments

Minnows observed. Phragmites could be removed. Appears to be coldwater.

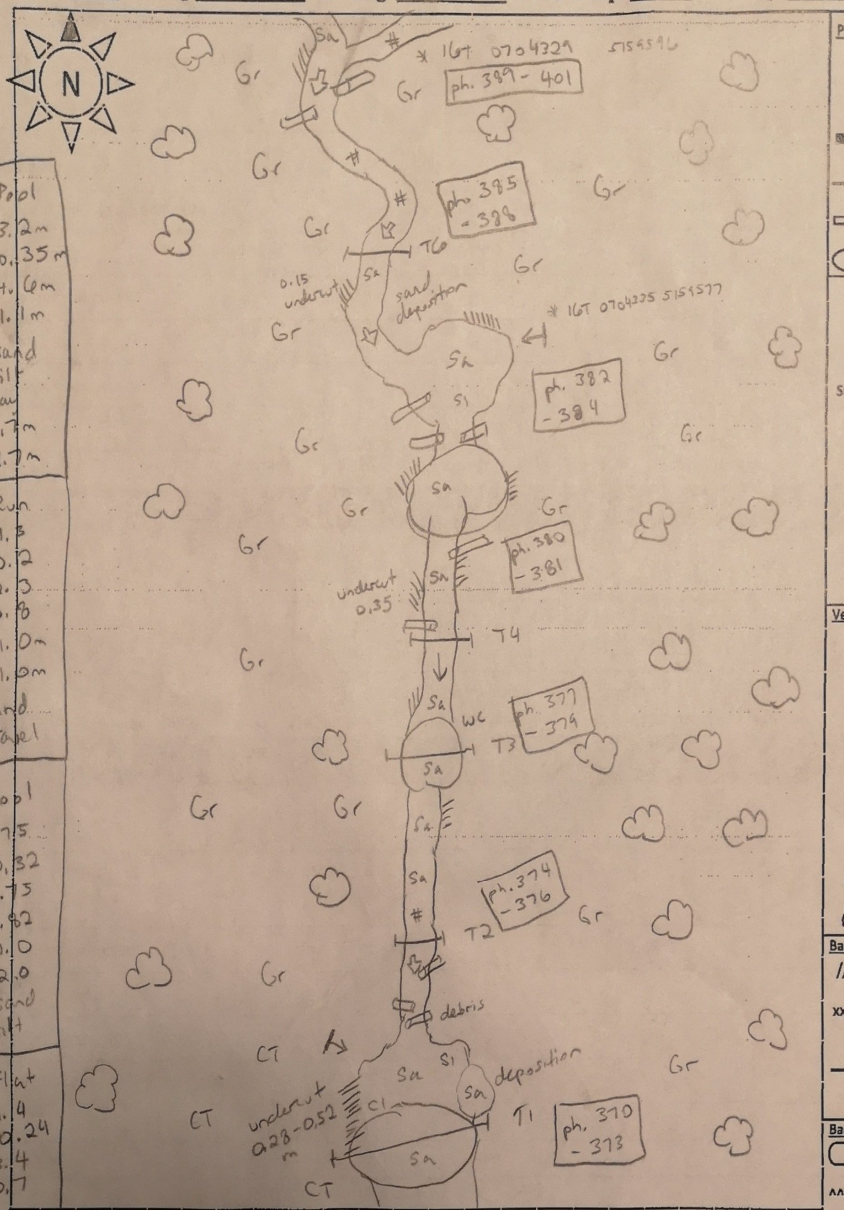
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Aug 31, 2021 **Time:** 12:10 **Photos:** Y

Watercourse Name: wc 2 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0704329 **Northing:** 5159546 **Water Temp:** ____ **Air Temp:** 20°C **% Overhead Cover:** 40



T1 Pool
WW 3.2m
WD 0.35m
BW 4.6m
BD 1.1m
80 sand
10 silt
10 clay
LB = 1.7m
RB = 1.7m

T2 Run
WW 1.3
WD 0.2
BW 2.3
BD 0.8
LB = 1.0m
RB = 1.0m
60 sand
40 gravel

T3 Pool
WW 1.75
WD 0.32
BW 3.75
BD 0.82
LB = 1.0
RB = 2.0
80 Sand
20 silt

T4 Flat
WW 1.4
WD 0.24
BW 3.4
BD 0.7
40 silt
60 sand
LB = 1.1
RB = 0.8

T5 Pool
WW 3.25
WD 0.5
BW 5.5
BD 1.0
LB = 1.2
RB = 2.5
50 sa 50 si

Profile: Horizontal Scale: Vertical Scale:

T6 Run
WW 1.85
WD 0.12
BW 5.4
BD 0.6
LB = 2.0
RB = 1.6
10 silt
80 sand
10 gravel

Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ___ of ___ WSP

Project Name / #: SSM PUC **Date:** Aug 31, 2021 **Time:** 12:10 **Photos:** Y

Watercourse Name: WC 2 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0704329 **Northing:** 5159546 **Water Temp:** — **Air Temp:** 20°C **% Overhead Cover:** 40

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☒	☐	☒	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200m	slow & low	

Sub-Section(s)	Run ☐	Pool ☒	Riffle ☐	Flats ☒	Culvert ☐	Other ☐
% Area	50	40		10		
Mean Depth Wetted (m)	0.2	0.4		0.2		
Mean Width Wetted (m)	1.6	2.7		1.4		
Mean Bankfull width (m)	3.9	3.9		3.4		
Mean Bankfull Depth (m)	0.7	1.0		0.7		
Substrate (%)	70 sa 25 gr 5 si	70 sa 27 si 3 cl		60 sa 40 si		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	mostly stable	1.3 m	steep	natural	moderate erosion	grasses and sedges, trees
Right Upstream Bank	"	1.6 m	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks			X		20	
Overhanging Vegetation			X		20	
Instream Vegetation		X			10	
Woody / Organic Debris			X		20	
Rocks/Boulders	X				0	

Aquatic Veg Type (%):	Submergent: 30	Floating:	Emergent: 70	None
Predominant Species:	watercress		grasses, cattails	

Migratory Obstructions:	None	Seasonal: —	Permanent: —
Critical Habitat:	Spawning: —	Groundwater: seepage, watercress	Other:

Enhancement Opportunities / Fish Observed / Comments

Minnows observed. Lamprey observed. Appears to be coldwater.

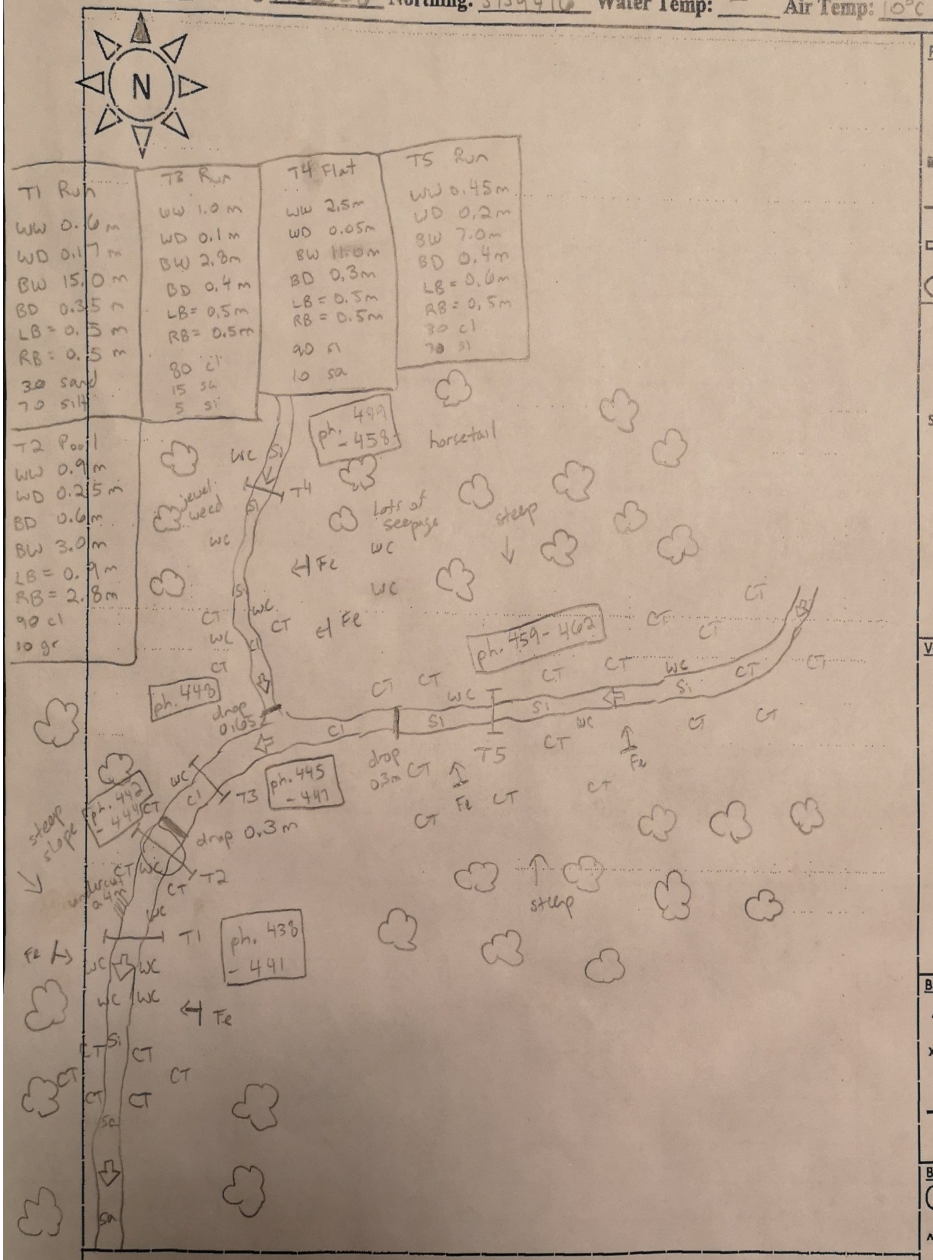
Aquatic Habitat Assessment

Page: ___ of ___

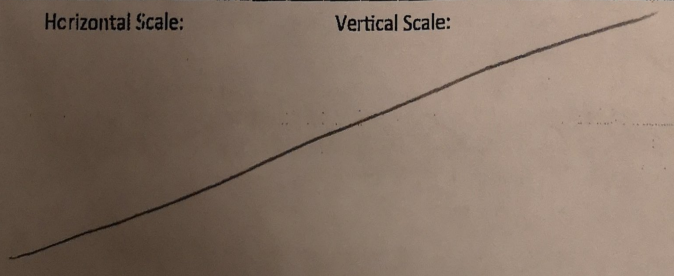
Project Name / #: SSM PUC **Date:** Sept 1, 2022 **Time:** 07:30 **Photos:** Y

Watercourse Name: WC 3 **Location:** SSM **Length:** ~200 m **Observers:** KM RS

Zone: 16T **Easting:** 0702326 **Northing:** 5159416 **Water Temp:** — **Air Temp:** 10°C **% Overhead Cover:** 10



Profile: **Horizontal Scale:** **Vertical Scale:**



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM PUC **Date:** Aug 31, 2021 **Time:** 07:30 **Photos:** Y

Watercourse Name: WC3 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0702326 **Northing:** 5159416 **Water Temp:** — **Air Temp:** 10°C **% Overhead Cover:** 10

Section Type and Morphology

Type: (check all that apply)	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200 m	slow & moderate	

Sub-Section(s)	Run ☑	Pool ☑	Riffle ☐	Flats ☑	Culvert ☐	Other ☐
% Area	80	10		10		
Mean Depth Wetted (m)	0.2	0.3		0.05		
Mean Width Wetted (m)	0.7	0.9		2.5		
Mean Bankfull width (m)	8.0	3.0		11.0		
Mean Bankfull Depth (m)	0.4	0.6		0.3		
Substrate (%)	15 sa 48 si 37 cl	90 cl 10 gr		90 si 10 sa		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	mostly stable	0.6	gradual	natural	some erosion	cattails, grasses, sedges
Right Upstream Bank	"	1.0	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X				
Overhanging Vegetation			X		20	
Instream Vegetation			X		20	
Woody / Organic Debris	X					
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent: 30	Floating:	Emergent: 70	None
Predominant Species:	watercress		cattails, grasses	

Migratory Obstructions:	None	Seasonal:	Permanent: drops 0.3 m
Critical Habitat:	Spawning: —	Groundwater: watercress, iron staining, seepage	Other:

Enhancement Opportunities / Fish Observed / Comments

No fish observed.

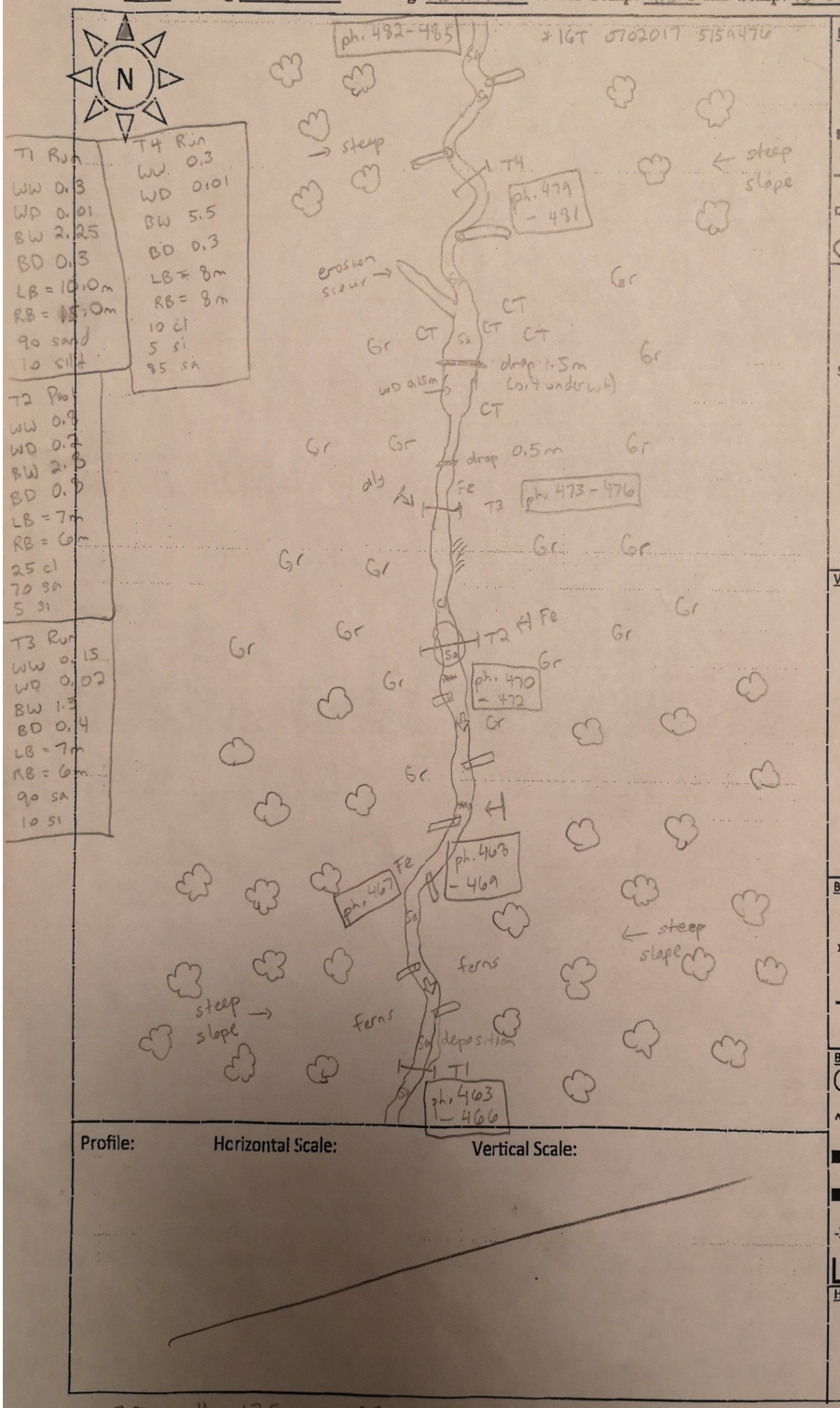
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 1, 2021 **Time:** 8:40 **Photos:** Y

Watercourse Name: WC 4 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0701997 **Northing:** 5159393 **Water Temp:** 11.5°C **Air Temp:** 12°C **% Overhead Cover:** 0



Profile: Horizontal Scale: Vertical Scale:

7.91 pH, 175 µs, 87 ppm

Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 1, 2021 **Time:** 8:40 **Photos:** Y

Watercourse Name: wc 4 **Location:** SSM **Length:** ~200 m **Observers:** KM RS

Zone: 16T **Easting:** 0701997 **Northing:** 5159393 **Water Temp:** 11.5°C **Air Temp:** 12 **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~ 200 m	slow & steep	

Sub-Section(s)	Run ☑	Pool ☑	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area	80	20				
Mean Depth Wetted (m)	0.02	0.2				
Mean Width Wetted (m)	0.3	0.8				
Mean Bankfull width (m)	3.0	2.8				
Mean Bankfull Depth (m)	0.3	0.8				
Substrate (%)	88 sa 8 si 4 cl	70 sa 25 cl 5 si				

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	8.0	steep	natural	some	cattails, grasses
Right Upstream Bank	"	8.8	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation			X		20	
Instream Vegetation		X			10	
Woody / Organic Debris		X			10	
Rocks/Boulders	X				0	

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent: 100	None
Predominant Species:			cattails	

Migratory Obstructions:	None	Seasonal:	Permanent: drops 0.5 - 1.5 m
Critical Habitat:	Spawning:	Groundwater: iron staining, seepage	Other:

Enhancement Opportunities / Fish Observed / Comments

No fish observed

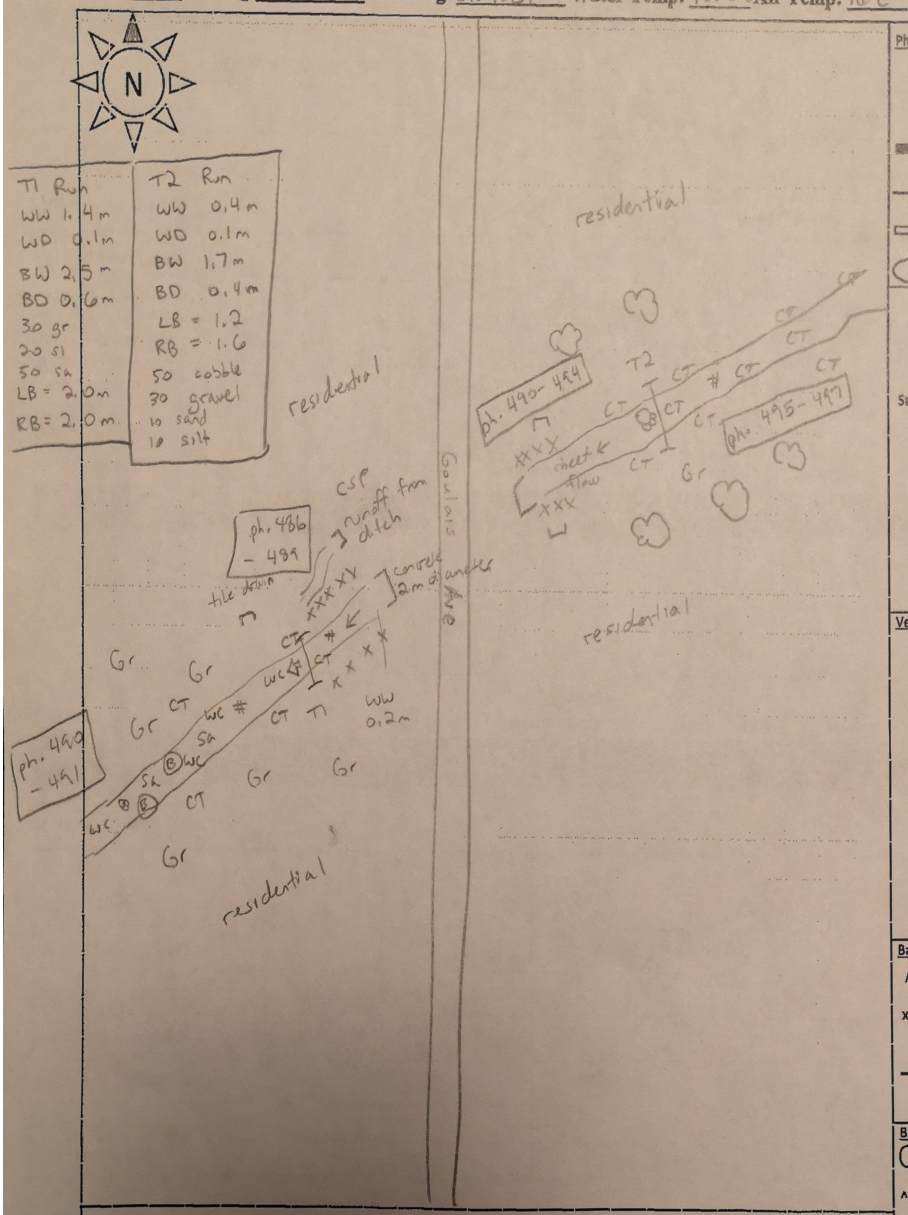
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 1, 2021 **Time:** 9:40 **Photos:** Y

Watercourse Name: wc 5 (added) **Location:** SSM **Length:** ~60 m **Observers:** KM

Zone: 16T **Easting:** 0700623 **Northing:** 5159301 **Water Temp:** 13.6°C **Air Temp:** 16°C **% Overhead Cover:** 0



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Profile: **Horizontal Scale:** **Vertical Scale:**

Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM PUC **Date:** Sept 1, 2021 **Time:** 9:40 **Photos:** Y

Watercourse Name: WC 5 **Location:** SSM **Length:** ~60 m **Observers:** KM RS

Zone: 16T **Easting:** 0700628 **Northing:** 5159301 **Water Temp:** 13.6°C **Air Temp:** 16°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☑	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
60 m	slow & low	

Sub-Section(s)	Run ☑	Pool ☐	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area	100					
Mean Depth Wetted (m)	0.1					
Mean Width Wetted (m)	2.0m					
Mean Bankfull width (m)	2.1m					
Mean Bankfull Depth (m)	0.5					
Substrate (%)	30 gr 25 co 15 si 30 sa					

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.9m	gradual	manmade	no	cattails, grasses
Right Upstream Bank	"	1.8m	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation			X		20	
Instream Vegetation			X		20	
Woody / Organic Debris	X					
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent: 30	Floating:	Emergent: 70	None
Predominant Species:	watercress		cattails, grasses	

Migratory Obstructions:	None	Seasonal:	Permanent: sheet flow at inlet
Critical Habitat:	Spawning: —	Groundwater: watercress	Other:

Enhancement Opportunities / Fish Observed / Comments

Minnows observed in culvert. Direct habitat d/s, indirect u/s, (of sheet flow)

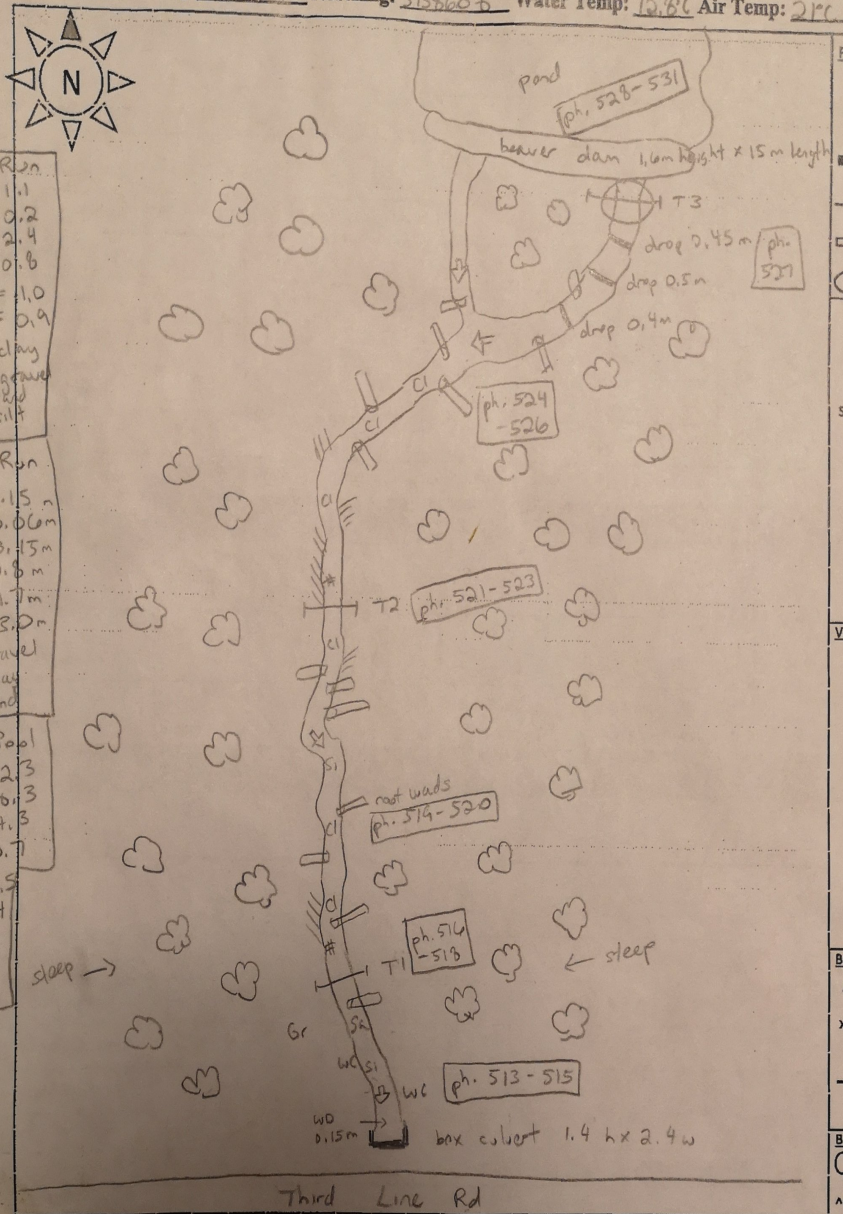
Aquatic Habitat Assessment

Page: ___ of ___

Project Name / #: SSM PUC **Date:** Sept. 1, 2021 **Time:** 11:15 **Photos:** Y

Watercourse Name: WC 6 (#1) **Location:** SSM **Length:** ~200 m **Observers:** KM RS

Zone: 16T **Easting:** 0699631 **Northing:** 5158609 **Water Temp:** 12.8°C **Air Temp:** 21°C **% Overhead Cover:** 0



T1 Run
WW 1.1
WD 0.2
BW 2.4
BD 0.6
LB = 1.0
RB = 0.9
40 clay
20 gravel
20 sand
20 silt

T2 Run
WW 1.15 m
WD 0.06m
BW 3.15m
BD 0.8 m
LB = 1.7m
RB = 3.0m
10 gravel
80 clay
10 sand

T3 Pool
WW 2.3
WD 0.3
BW 4.3
BD 0.7
LB = 1.5
RB = 4
30 mu
40 cl
30 si

Profile: **Horizontal Scale:** **Vertical Scale:**

16T 0699660 5158754 → ph. 535-536
16T 0699674 5158756 → ph. 537-538
16T 0699711 5158809 → ph. 539-542
Hood St → ph. 839-840

Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ___ of ___

Project Name / #: SSM RVC **Date:** Sept 1, 2021 **Time:** 11:15 **Photos:** Y

Watercourse Name: WC 6 (#1) **Location:** SSM **Length:** ~200 m **Observers:** KM RS

Zone: 16T **Easting:** 0699691 **Northing:** 5159609 **Water Temp:** 12.8°C **Air Temp:** 21°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River ☑	Channelized ☐	Permanent ☑	Intermittent ☐	Ephemeral ☐	Associated Wetland:

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200 m	moderate & low	u/s reach

Sub-Section(s)	Run ☑	Pool ☑	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area	90	10				
Mean Depth Wetted (m)	0.1	0.3				
Mean Width Wetted (m)	1.1	2.3				
Mean Bankfull width (m)	2.8	4.3				
Mean Bankfull Depth (m)	0.3	0.7				
Substrate (%)	60 cl 10 si 15 gr 15 sa	40 cl 20 mu 30 si				

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.4	steep	natural	minor	grasses and sedges
Right Upstream Bank	stable	2.6	steep	natural	minor	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation			X		20	
Instream Vegetation			X		20	
Woody / Organic Debris				X	40	
Rocks/Boulders	Y					

Aquatic Veg Type (%):	Submergent: 20	Floating:	Emergent: 80	None
Predominant Species:	watercress		grasses	

Migratory Obstructions:	None	Seasonal:	Permanent: beaver dams
Critical Habitat:	Spawning: —	Groundwater: watercress	Other:

Enhancement Opportunities / Fish Observed / Comments

57 ppm, 7 pH, 114 µs

Beaver dams creating ponds

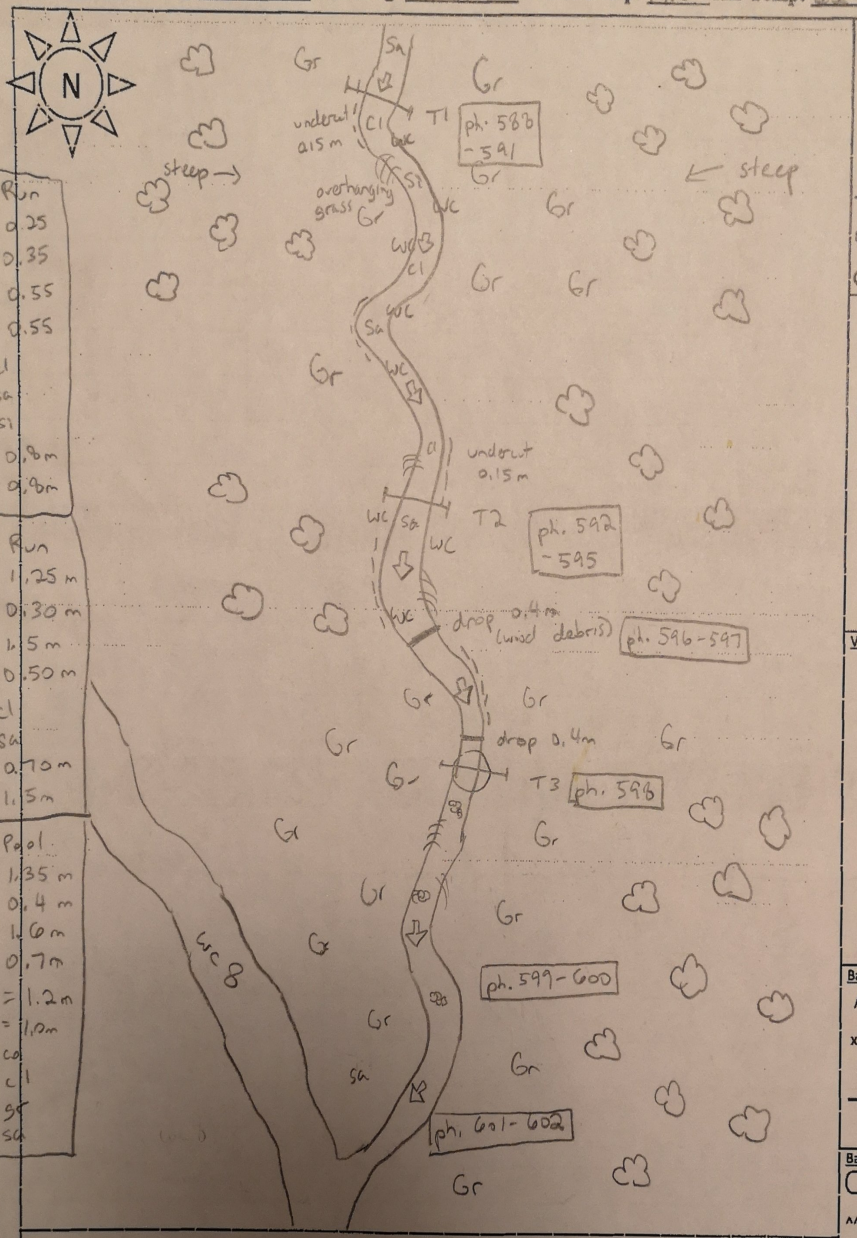
Aquatic Habitat Assessment

Page: ____ of ____

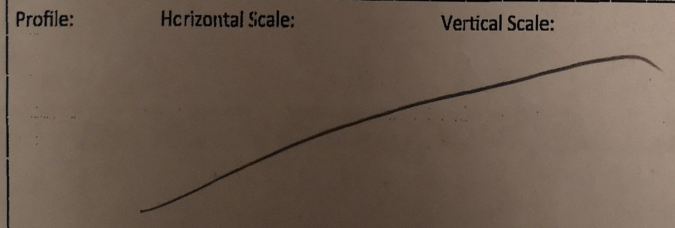
Project Name / #: SSM PLC **Date:** Sept 1, 2021 **Time:** 15:17 **Photos:** Y

Watercourse Name: W6 (#2) **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0699406 **Northing:** 5158737 **Water Temp:** 14.6°C **Air Temp:** 22°C **% Overhead Cover:** 0



Profile: **Horizontal Scale:** **Vertical Scale:**



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses (overhanging grass)
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 1, 2021 **Time:** 15:17 **Photos:** Y

Watercourse Name: WC6 (#2) **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0699406 **Northing:** 5158337 **Water Temp:** 14.6°C **Air Temp:** 22°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200m	moderate & low	d/s reach

Sub-Section(s)	Run ☑	Pool ☑	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area	90	10				
Mean Depth Wetted (m)	0.3	0.4				
Mean Width Wetted (m)	0.8	1.4				
Mean Bankfull width (m)	1.0	1.6				
Mean Bankfull Depth (m)	0.6	0.7				
Substrate (%)	55 cl 30 sa 15 si	40 co 10 gr 30 sa 20 cl				

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	0.9m	steep	natural	minor	grasses and sedges
Right Upstream Bank	stable	1.1m	steep	natural	minor	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation			X		30	
Instream Vegetation		X			10	
Woody / Organic Debris		X			10	
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent: 100	Floating:	Emergent:	None
Predominant Species:	watercress			

Migratory Obstructions:	None	Seasonal:	Permanent: 0.4m drop
Critical Habitat:	Spawning: —	Groundwater: watercress	Other:

Enhancement Opportunities / Fish Observed / Comments

Fish observed.

Aquatic Habitat Assessment

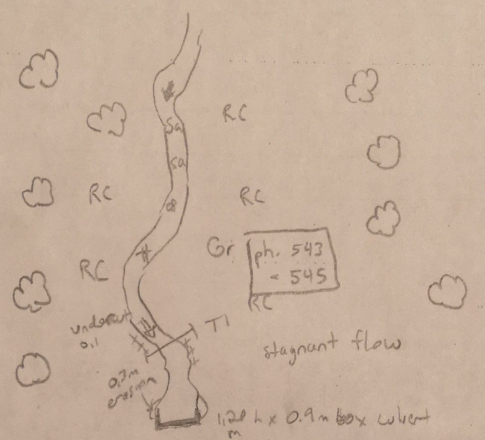
Page: ___ of ___

Project Name / #: SSM PLC **Date:** Sept. 1, 2021 **Time:** 12:50 **Photos:** Y

Watercourse Name: WC 7 **Location:** SSM **Length:** ~60m **Observers:** KM RS

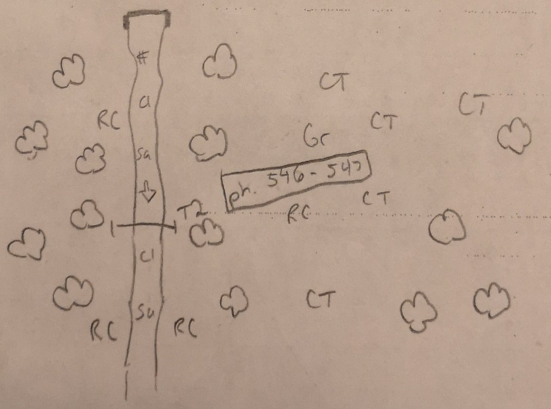
Zone: 11eT **Easting:** 0699945 **Northing:** 5158625 **Water Temp:** 14.4C **Air Temp:** 23C **% Overhead Cover:** 0

T1 Run
WW 0.9m
WD 0.35 m
BW 2.2m
BD 0.5 m
30 co
40 gr
30 sand
LB = 2.0m
RB = 2.0m

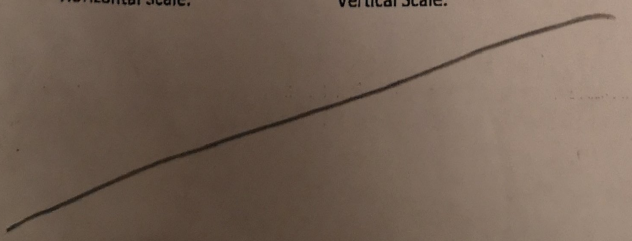


Third

T2 Run
WW 1.3
WD 0.3
BW 1.5
BD 0.65
LB = 1.0m
RB = 1.8m
10 co
20 gravel
30 clay
40 sand
10 sand



Profile: Horizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ___ of ___

wsp

Project Name / #: SSM PJC **Date:** Sept 1, 2021 **Time:** 12:50 **Photos:** Y

Watercourse Name: WC7 **Location:** SSM **Length:** ~60m **Observers:** KM RS

Zone: 16T **Easting:** 0699945 **Northing:** 5158625 **Water Temp:** 14.4C **Air Temp:** 23C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply)	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~ 60 m	low & low	

Sub-Section(s)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area	100					
Mean Depth Wetted (m)	0.3					
Mean Width Wetted (m)	1.1					
Mean Bankfull width (m)	1.9					
Mean Bankfull Depth (m)	0.6					
Substrate (%)	30 gr 20 co 50 sa					

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.5	steep	natural	minor	grasses and sedges
Right Upstream Bank	"	1.9	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation			X		30	
Instream Vegetation	X					
Woody / Organic Debris		X			10	
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:				

Migratory Obstructions:	None	Seasonal: —	Permanent:
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

Fish observed (minnows)

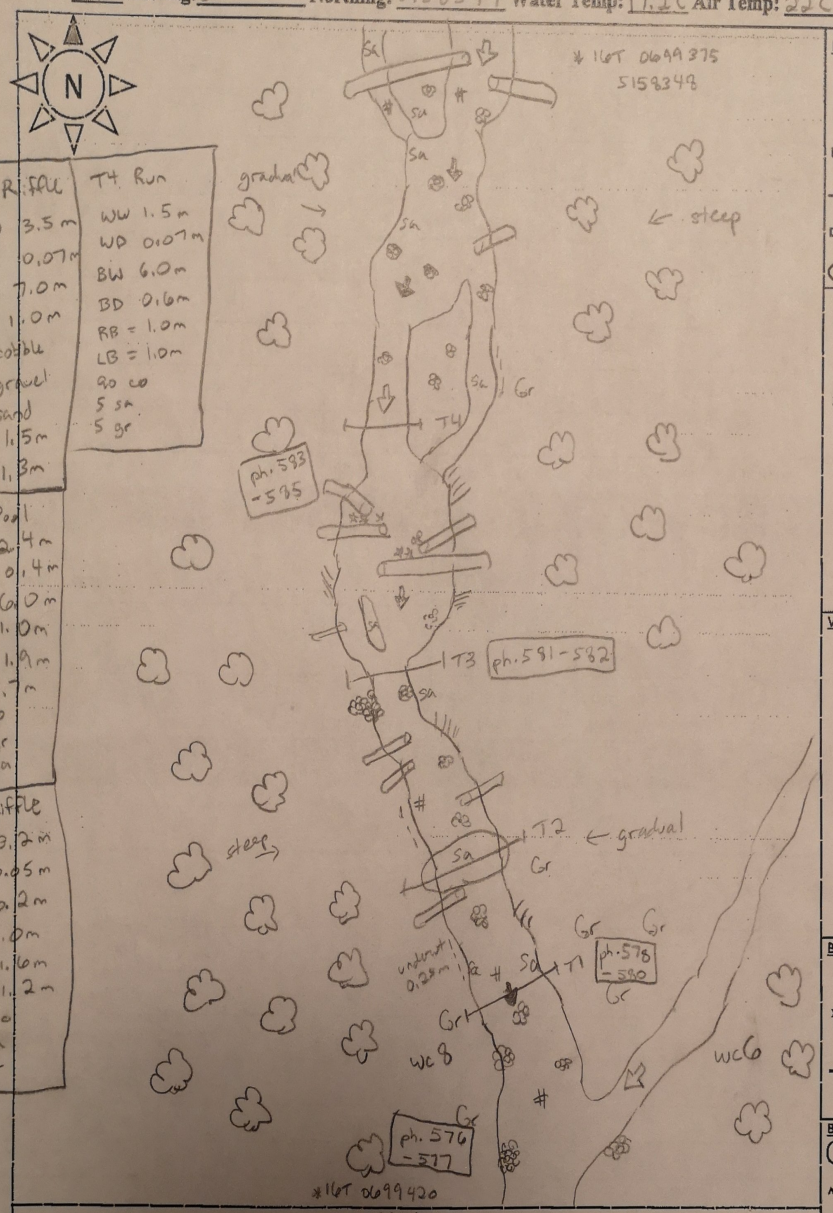
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept. 1, 2021 **Time:** 14:30 **Photos:** Y

Watercourse Name: wc9 **Location:** SSM **Length:** ~200 **Observers:** KM RS

Zone: 16T **Easting:** 699369 **Northing:** 5158544 **Water Temp:** 17.2°C **Air Temp:** 22°C **% Overhead Cover:** 0



Profile: **Horizontal Scale:** **Vertical Scale:**

16T 0699369 5158544 → ph. 572 - 573

16T 0699368 5158359 → ph. 574 - 575

Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PLC **Date:** Sept. 1, 2021 **Time:** 14:30 **Photos:** Y

Watercourse Name: WC 8 **Location:** SSM **Length:** ~200 **Observers:** KM, RS

Zone: 16T **Easting:** 699369 **Northing:** 5158544 **Water Temp:** 17.2°C **Air Temp:** 22°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
200	moderate & low	

Sub-Section(s)	Run ☐	Pool ☑	Riffle ☑	Flats ☐	Culvert ☐	Other ☐
% Area	40	20	40			
Mean Depth Wetted (m)	0.07	0.4	0.06			
Mean Width Wetted (m)	1.5	2.4	3.4			
Mean Bankfull width (m)	6.0	6.0	7.6			
Mean Bankfull Depth (m)	0.6	1.0	1.0m			
Substrate (%)	90 co 5 sa 5 gr	70 sa 20 gr 10 co	85 co 10 gr 5 sa			

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.6	steep	natural	moderate	grasses
Right Upstream Bank	"	1.3	steep	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation			X		20	
Instream Vegetation	X					
Woody / Organic Debris			X		30	
Rocks/Boulders		X			10	

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:				

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

Fish observed.

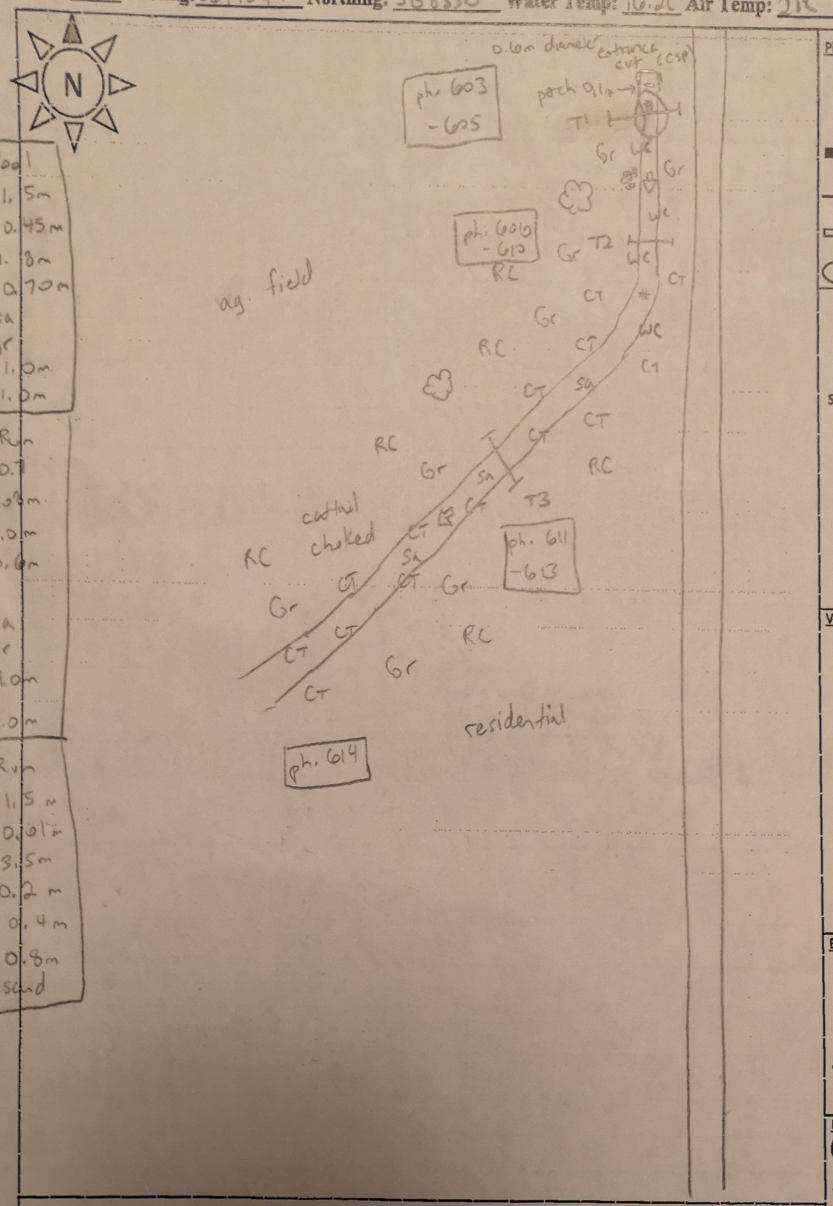
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept. 1, 2021 **Time:** 17:20 **Photos:** Y

Watercourse Name: WC 9 **Location:** SSM **Length:** ~30m **Observers:** KM RS

Zone: 16T **Easting:** 0699049 **Northing:** 5158330 **Water Temp:** 16.2C **Air Temp:** 21C **% Overhead Cover:** 0



T1 Pool
WW 1.5m
WD 0.45m
BW 1.8m
BD 0.70m
50 Sa
50 gr
LB = 1.0m
RB = 1.0m

T2 Run
WW 0.7
WD 0.3m
BW 1.0m
BD 0.6m
20 Si
60 Sa
20 gr
LB = 1.0m
RB = 1.0m

T3 Run
WW 1.5m
WD 0.01m
BW 3.5m
BD 0.2m
RB = 0.4m
LB = 0.8m
100 Sand

Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

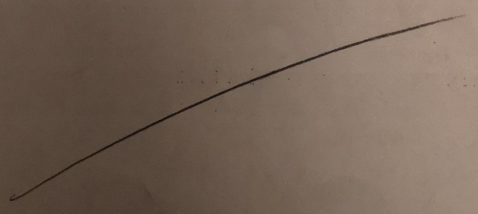
Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Profile: **Horizontal Scale:** **Vertical Scale:**



230 µS

Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM PUC **Date:** Sept 1, 2021 **Time:** 17:20 **Photos:** Y

Watercourse Name: WC 9 **Location:** SSM **Length:** ~30m **Observers:** KM RS

Zone: 16T **Easting:** 0699049 **Northing:** 5158330 **Water Temp:** 16.2°C **Air Temp:** 21°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☑	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~30 m	low & low	

Sub-Section(s)	Run ☑	Pool ☑	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area	90	10				
Mean Depth Wetted (m)	0.05m	0.45m				
Mean Width Wetted (m)	1.1m	1.5m				
Mean Bankfull width (m)	2.3m	1.8m				
Mean Bankfull Depth (m)	0.4m	0.7m				
Substrate (%)	80 SA 10 gr 10 si	50 SA 50 gr				

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	0.0	steep	manmade	no	cattails, grasses
Right Upstream Bank	"	0.9	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation			X		30	
Instream Vegetation				X	40	
Woody / Organic Debris	X					
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:	watercress	/	cattails, grasses	

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning: —	Groundwater: watercress	Other:

Enhancement Opportunities / Fish Observed / Comments

Brook Stickleback

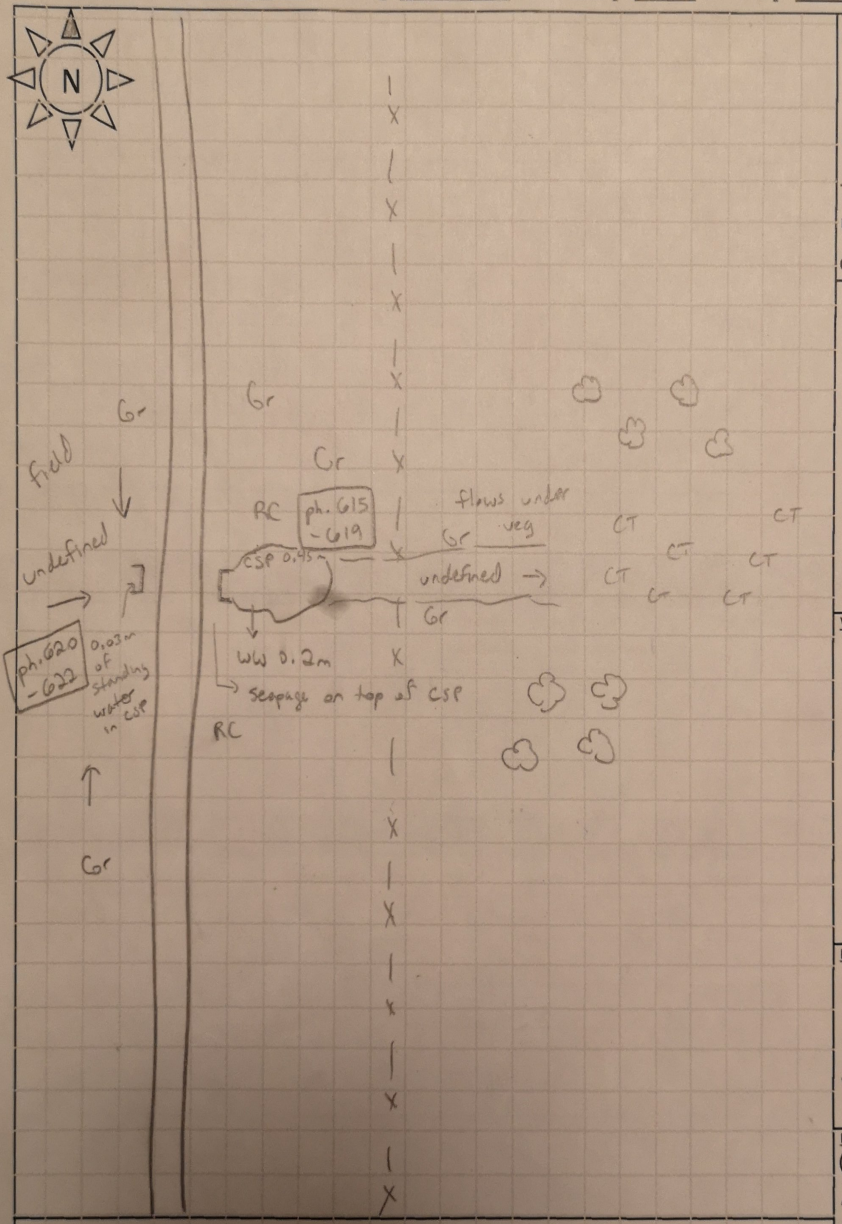
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept. 1, 2021 **Time:** 18:10 **Photos:** Y

Watercourse Name: WC10 **Location:** SSM **Length:** ~30 m **Observers:** KM RS

Zone: 16T **Easting:** 0699076 **Northing:** 5158090 **Water Temp:** 13.8°C **Air Temp:** 21°C **% Overhead Cover:** 0



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Profile: Horizontal Scale: Vertical Scale:

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 1, 2021 **Time:** 18:10 **Photos:** Y

Watercourse Name: UC10 **Location:** SSM **Length:** ~30m **Observers:** KM RS

Zone: 16T **Easting:** 699077 **Northing:** 5158090 **Water Temp:** 13.8°C **Air Temp:** 21°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☒	☐	☒	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~30m	low & low	undefined flow

Sub-Section(s)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area	undefined flow with sections					
Mean Depth Wetted (m)	of pools					
Mean Width Wetted (m)	0.03 – 0.2					
Mean Bankfull width (m)						
Mean Bankfull Depth (m)	no transects done, lack of property access					
Substrate (%)						

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.5m	steep	manmade	no	cattails, grasses
Right Upstream Bank	"	"	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation			X		40	
Instream Vegetation				X	50	
Woody / Organic Debris	X					
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:			cattails, grasses	

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning: —	Groundwater: seepage	Other:

Enhancement Opportunities / Fish Observed / Comments

Likely indirect habitat due to undefined flow.

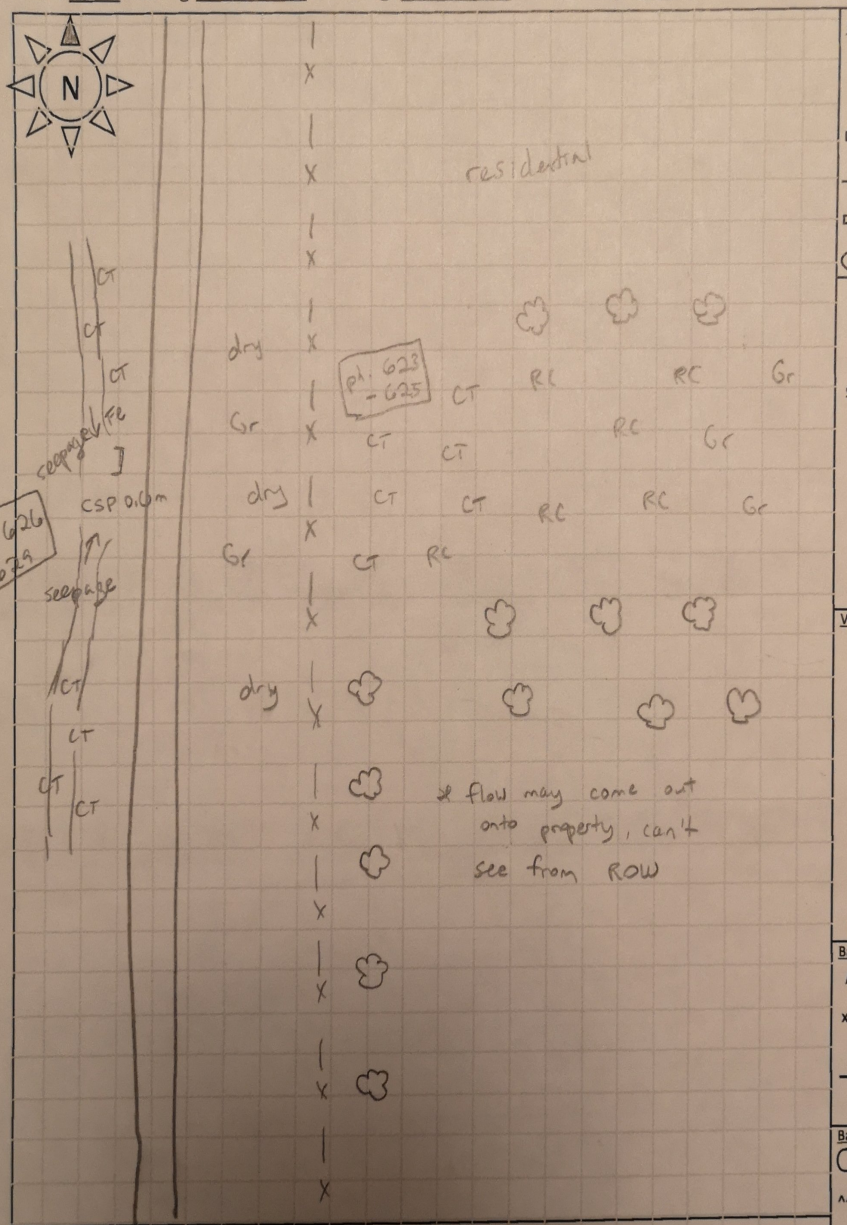
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 1, 2021 **Time:** 18:39 **Photos:** Y

Watercourse Name: well **Location:** SSM **Length:** ~30m **Observers:** KM RS

Zone: 16T **Easting:** 0699033 **Northing:** 5157923 **Water Temp:** — **Air Temp:** 21°C **% Overhead Cover:** 0



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

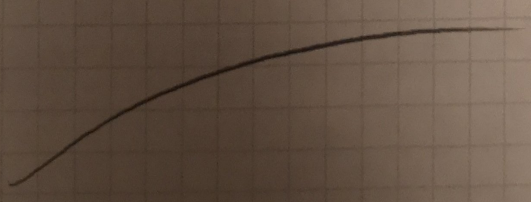
Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Profile: Horizontal Scale: Vertical Scale:



Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PVC **Date:** Sept 1, 2021 **Time:** 14:39 **Photos:** Y

Watercourse Name: WC 11 **Location:** SSM **Length:** ~30m **Observers:** KM RS

Zone: 16T **Easting:** 699038 **Northing:** 5157923 **Water Temp:** — **Air Temp:** 21°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☐	☐	☐	☑	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~30m	dry	

Sub-Section(s)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area						
Mean Depth Wetted (m)						
Mean Width Wetted (m)						
Mean Bankfull width (m)				no transects done		
Mean Bankfull Depth (m)						
Substrate (%)			undefined flow			

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank						cattails, reed canary, grasses
Right Upstream Bank						

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks						
Overhanging Vegetation			X		40	
Instream Vegetation				X	50	
Woody / Organic Debris						
Rocks/Boulders						

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent: 100	None
Predominant Species:			cattails, grasses	

Migratory Obstructions:	None	Seasonal: lack of flow	Permanent:
Critical Habitat:	Spawning:	Groundwater: iron staining, seepage	Other:

Enhancement Opportunities / Fish Observed / Comments

Likely indirect fish habitat

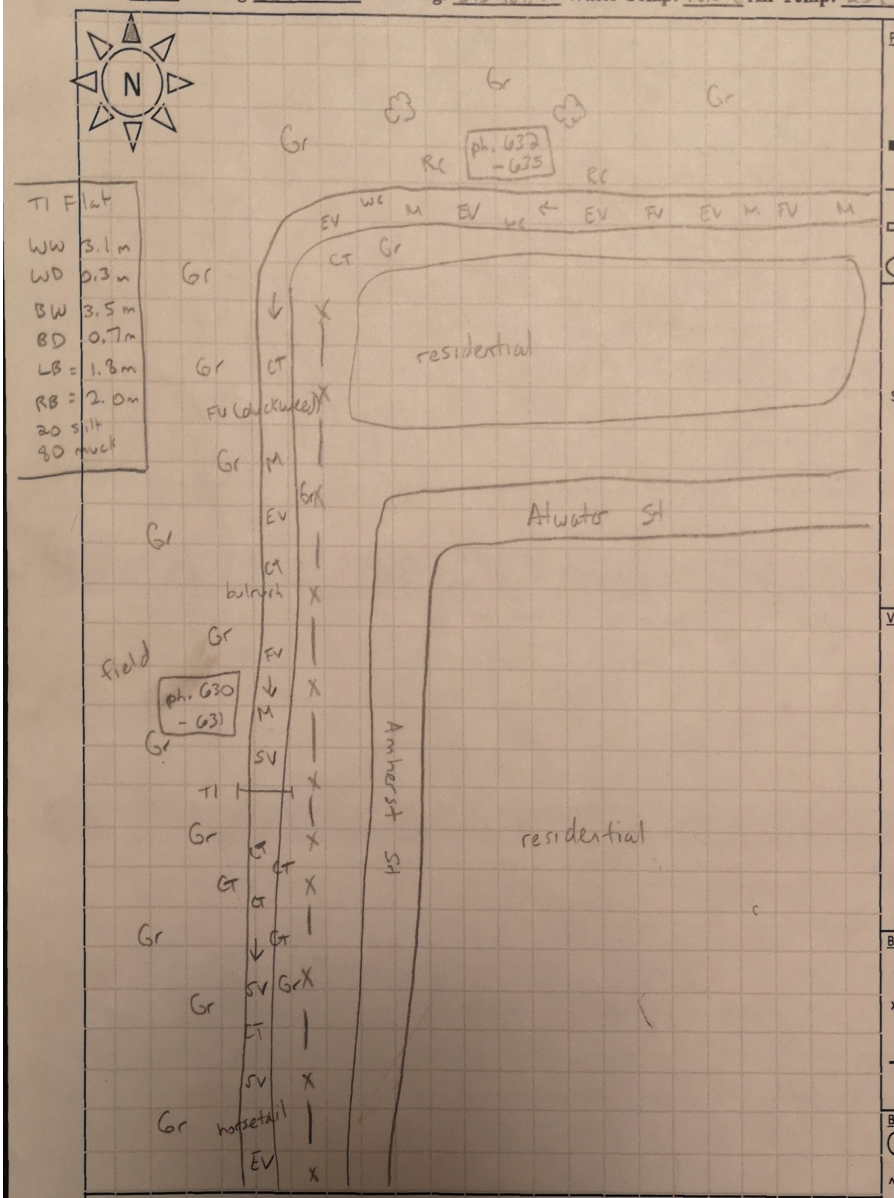
Aquatic Habitat Assessment

Page: ____ of ____

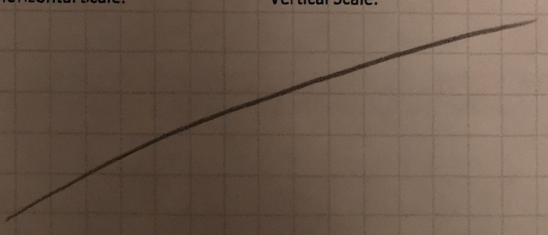
Project Name / #: SSM PLC **Date:** Sept. 1, 2021 **Time:** 19:01 **Photos:** Y

Watercourse Name: WC 12 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0699914 **Northing:** 5157087 **Water Temp:** 18.5°C **Air Temp:** 20°C **% Overhead Cover:** 0



Profile: Hcrizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

WSP

Project Name / #: SSM PVC **Date:** Sept 1, 2021 **Time:** 19:01 **Photos:** Y

Watercourse Name: WC 12 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 699914 **Northing:** 5157637 **Water Temp:** 13.5C **Air Temp:** 20°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River ☑	Channelized ☐	Permanent ☑	Intermittent ☐	Ephemeral ☐	Associated Wetland:

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200m	low & low	

Sub-Section(s)	Run ☐	Pool ☐	Riffle ☐	Flats ☑	Culvert ☐	Other ☐
% Area				100		
Mean Depth Wetted (m)				0.3		
Mean Width Wetted (m)				3.1		
Mean Bankfull width (m)				3.5		
Mean Bankfull Depth (m)				0.7		
Substrate (%)				80 mu 20 fi		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.3	steep	manmade	no	cattails, grasses
Right Upstream Bank	"	2.0	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation			X		40	
Instream Vegetation				X	50	
Woody / Organic Debris	X					
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent: 20	Floating: 20	Emergent: 60	None
Predominant Species:	watercress	duckweed	cattails, horsetails	

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning: —	Groundwater: watercress	Other:

Enhancement Opportunities / Fish Observed / Comments

Fish observed

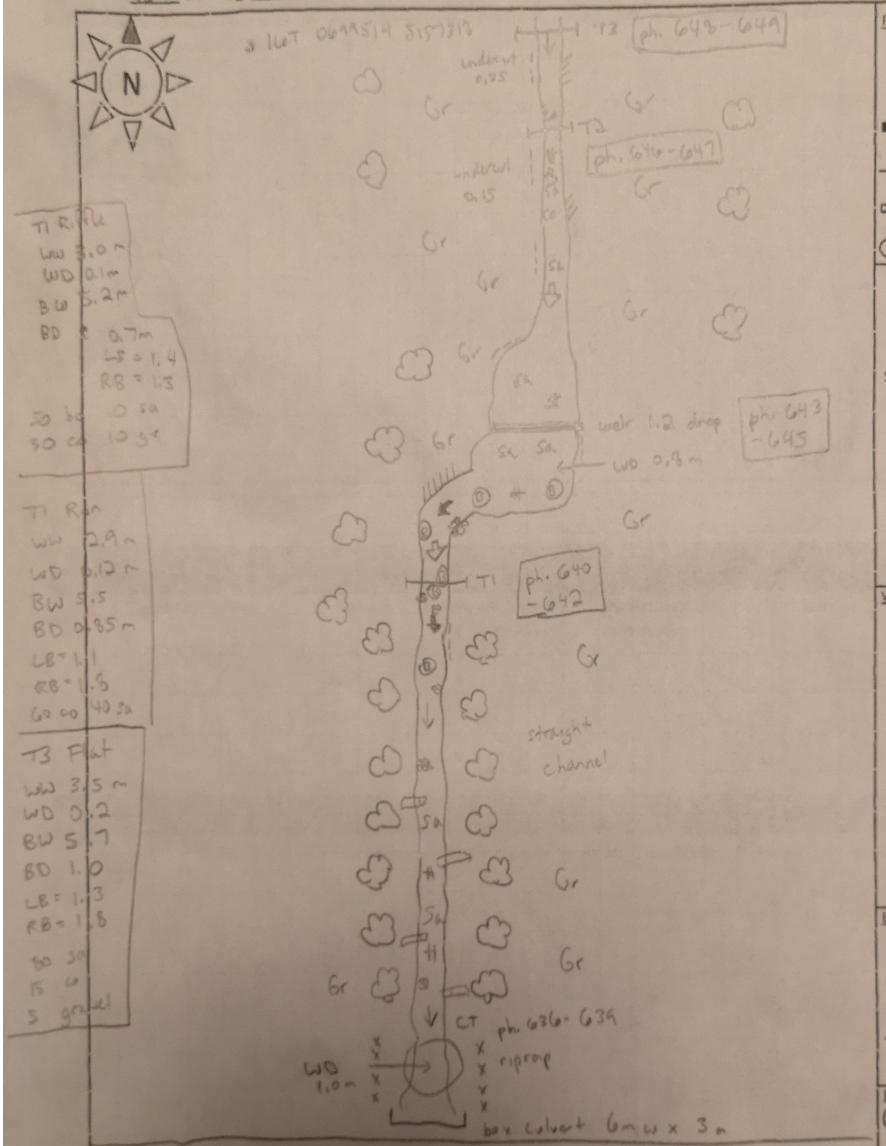
Aquatic Habitat Assessment

Page: ____ of ____

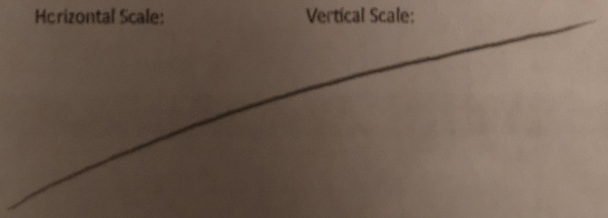
Project Name / #: SSM PUC **Date:** Sept. 2, 2021 **Time:** 9:40 **Photos:** Y

Watercourse Name: WC13 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0699569 **Northing:** 5156976 **Water Temp:** 11.9 **Air Temp:** 10°C **% Overhead Cover:** 0



Profile: Horizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 8:40 **Photos:** Y

Watercourse Name: WC13 (#1) **Location:** SSS **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 699568 **Northing:** 5156976 **Water Temp:** 11.8 **Air Temp:** 10°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200 m	moderate & low	

Sub-Section(s)	Run ☑	Pool ☐	Riffle ☑	Flats ☑	Culvert ☐	Other ☐
% Area	40	/	20	40	/	/
Mean Depth Wetted (m)	0.1		0.1	0.2		
Mean Width Wetted (m)	2.9		3.0	3.5		
Mean Bankfull width (m)	5.5		5.2	5.7		
Mean Bankfull Depth (m)	0.8		0.7	1.0		
Substrate (%)	60 co 40 sa		50 bo 10 sa 30 co 10 gr	80 sa 5 gr 15 co		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.3	steep	manmade	no	grasses
Right Upstream Bank	"	1.7	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation	X					
Instream Vegetation		X			10	
Woody / Organic Debris		X			15	
Rocks/Boulders		X			10	

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:	/	/	grasses, cattails	

Migratory Obstructions:	None	Seasonal: —	Permanent: weir 1.2 m drop
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

straightened and stabilized banks

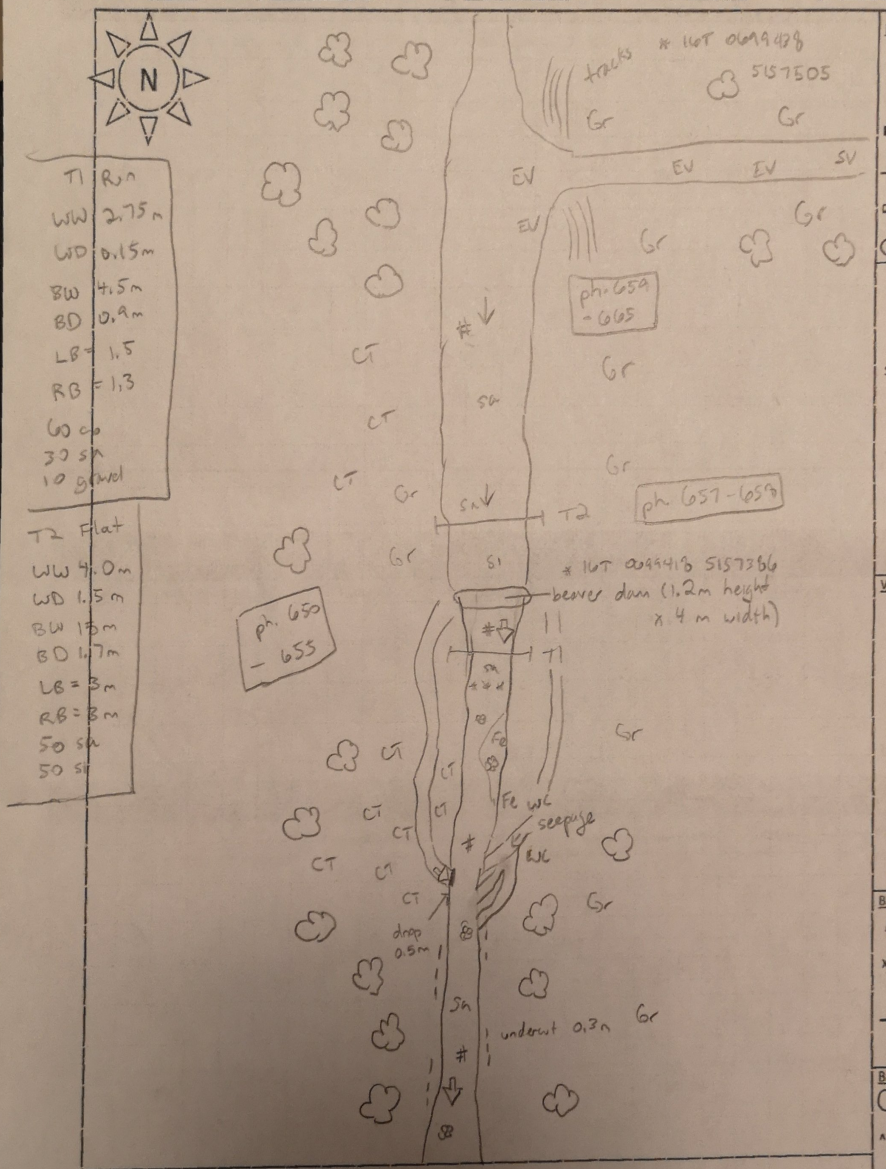
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PLC **Date:** Sept 2, 2021 **Time:** 9:30 **Photos:** Y

Watercourse Name: WC13 (2) **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 699438 **Northing:** 5157505 **Water Temp:** 11.8C **Air Temp:** 14°C **% Overhead Cover:** D



Profile: Horizontal Scale: Vertical Scale:

Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X--X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

2

Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM RVC Date: Sept 2, 2021 Time: 9:30 Photos: Y

Watercourse Name: WC13 (#2) Location: SSM Length: ~200m Observers: KM RS

Zone: 16T Easting: 699438 Northing: 5157505 Water Temp: 11.8°C Air Temp: 14°C % Overhead Cover: 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200 m	moderate & low	

Sub-Section(s)	Run ☑	Pool ☐	Riffle ☐	Flats ☑	Culvert ☐	Other ☐
% Area	40			60		
Mean Depth Wetted (m)	0.2			1.5		
Mean Width Wetted (m)	2.8			4.0		
Mean Bankfull width (m)	4.5			15		
Mean Bankfull Depth (m)	0.9			1.7		
Substrate (%)	60 co 30 sa 10 gr			50 sa 50 si		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	2.3	steep	manmade	no	cattails, grasses
Right Upstream Bank	"	"	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation		X			10	
Instream Vegetation			X		30	
Woody / Organic Debris	X					
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent: 10	Floating:	Emergent: 90	None
Predominant Species:	watercress		cattails, grasses	

Migratory Obstructions:	None	Seasonal:	Permanent: beaver dam
Critical Habitat:	Spawning:	Groundwater: Fe staining, seepage, watercress	Other:

Enhancement Opportunities / Fish Observed / Comments

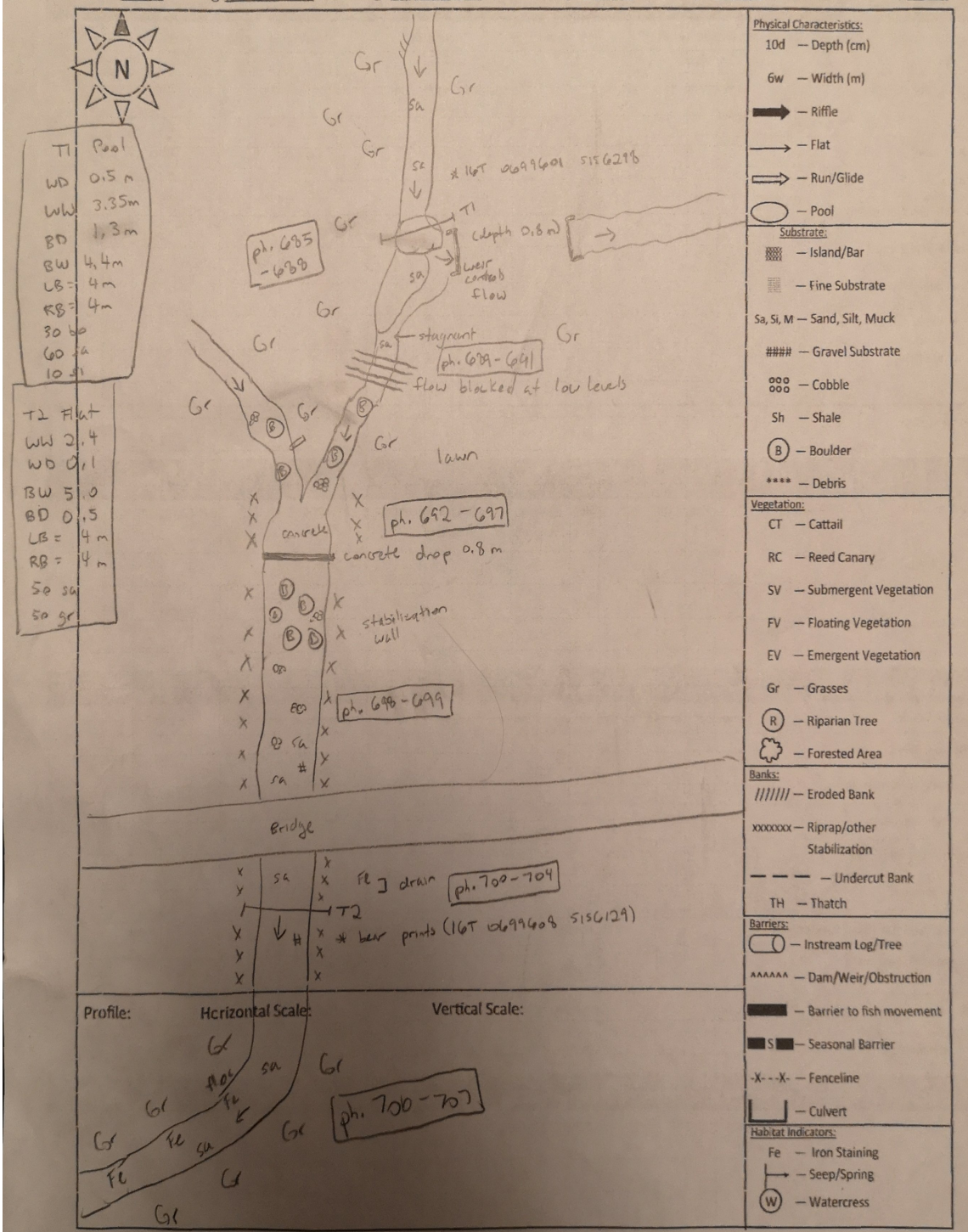
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 10:00 **Photos:** Y

Watercourse Name: WC 13 - weir **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 699601 **Northing:** 5156298 **Water Temp:** 11.8°C **Air Temp:** 14°C **% Overhead Cover:** 0



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X---X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 10:00 **Photos:** Y

Watercourse Name: WC 13 - weir **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 699601 **Northing:** 5156298 **Water Temp:** 18°C **Air Temp:** 14°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200 m	moderate & low	

Sub-Section(s)	Run ☐	Pool ☑	Riffle ☐	Flats ☑	Culvert ☐	Other ☐
% Area		10		90		
Mean Depth Wetted (m)		0.5		0.1		
Mean Width Wetted (m)		3.4		2.4		
Mean Bankfull width (m)		4.4		5.0		
Mean Bankfull Depth (m)		1.3		0.5		
Substrate (%)		60 sa 30 bo 10 si		50 sa 50 gr		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	4	steep	manmade	no	grasses
Right Upstream Bank	"	4	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation		X			10	
Instream Vegetation	X					
Woody / Organic Debris		X			10	
Rocks/Boulders			X		30	

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:				

Migratory Obstructions:	None	Seasonal:	Permanent: concrete drop
Critical Habitat:	Spawning: —	Groundwater: Fe staing	Other:

Enhancement Opportunities / Fish Observed / Comments

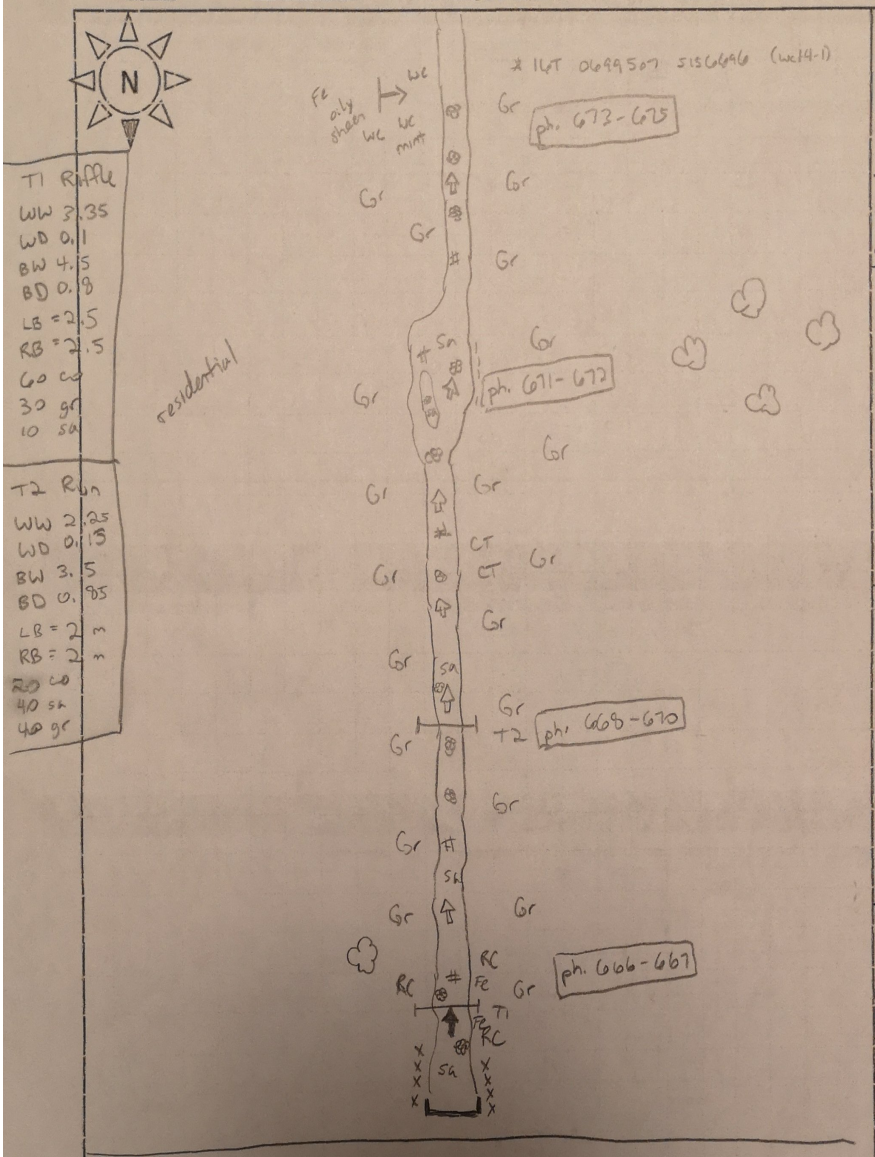
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PVC **Date:** Sept 2, 2021 **Time:** 10:20 **Photos:** Y

Watercourse Name: WC14 (#1) **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0699559 **Northing:** 5515934 **Water Temp:** 11.8°C **Air Temp:** 16°C **% Overhead Cover:** 0



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

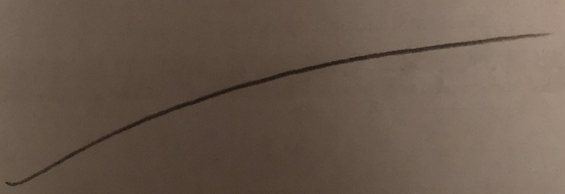
Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X--X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Profile: **Horizontal Scale:** **Vertical Scale:**



Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM PLC **Date:** Sept 2, 2021 **Time:** 10:20 **Photos:** Y

Watercourse Name: WC 14 (#1) **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 699559 **Northing:** 5156934 **Water Temp:** 11.8°C **Air Temp:** 16°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200m	moderate & low	

Sub-Section(s)	Run ☑	Pool ☐	Riffle ☑	Flats ☐	Culvert ☐	Other ☐
% Area	90		10			
Mean Depth Wetted (m)	0.2		0.1			
Mean Width Wetted (m)	2.3		3.4			
Mean Bankfull width (m)	3.5		4.5			
Mean Bankfull Depth (m)	0.9		0.8			
Substrate (%)	40 SA 20 CO 40 GR		60 CO 10 SA 30 GR			

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	2.3	steep	manmade	no	grasses
Right Upstream Bank	"	"	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation		X			10	
Instream Vegetation		X				
Woody / Organic Debris	X					
Rocks/Boulders		X			10	

Aquatic Veg Type (%):	Submergent: 100	Floating:	Emergent:	None
Predominant Species:	watercress			

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning: —	Groundwater: Fe staining, seepage	Other:

Enhancement Opportunities / Fish Observed / Comments

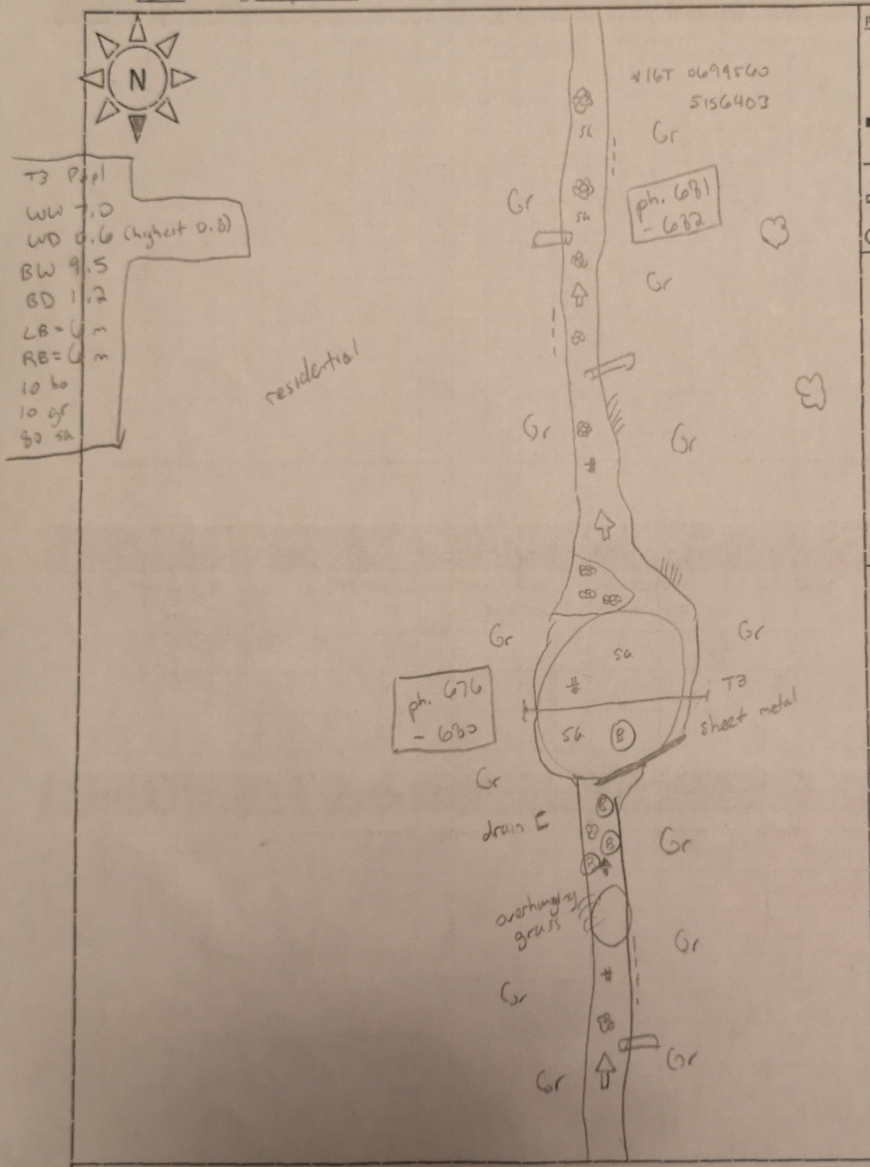
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM RVC **Date:** Sept 2, 2021 **Time:** 10:40 **Photos:** Y

Watercourse Name: WC 19 (#2) **Location:** SSM **Length:** ~200m **Observers:** KM KS

Zone: 16T **Easting:** 699560 **Northing:** 5156403 **Water Temp:** 11.6 **Air Temp:** 16°C **% Overhead Cover:** 0



Physical Characteristics:

- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:

- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:

- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:

- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

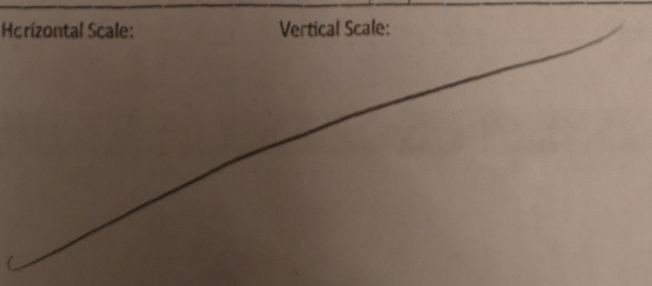
Barriers:

- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- -X- — Fenceline
- — Culvert

Habitat Indicators:

- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Profile: **Horizontal Scale:** **Vertical Scale:**



Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM RvC **Date:** Sept 2, 2021 **Time:** 10:40 **Photos:** Y

Watercourse Name: WC 14 (#2) **Location:** SSM **Length:** ~200 **Observers:** KM RS

Zone: 16T **Easting:** 699560 **Northing:** 5156409 **Water Temp:** 11.8 **Air Temp:** 16 **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply)	Stream / River ☐	Channelized ☐	Permanent ☑	Intermittent ☐	Ephemeral ☐	Associated Wetland:
Total Section Length: ~200 m	Current Velocity & Gradient: moderate & low	Comments / Description				

Sub-Section(s)	Run ☐	Pool ☑	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area		100				
Mean Depth Wetted (m)		0.6				
Mean Width Wetted (m)		7.0				
Mean Bankfull width (m)		9.5				
Mean Bankfull Depth (m)		1.2				
Substrate (%)		80 SA 10 [illegible] 10 gr				

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	6	steep	manmade	moderate	grasses
Right Upstream Bank	"	"	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks			X		30	
Overhanging Vegetation		X			10	
Instream Vegetation	X					
Woody / Organic Debris		X			10	
Rocks/Boulders		X			10	

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:				

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning:	Groundwater:	Other:

Enhancement Opportunities / Fish Observed / Comments

Minnows observed

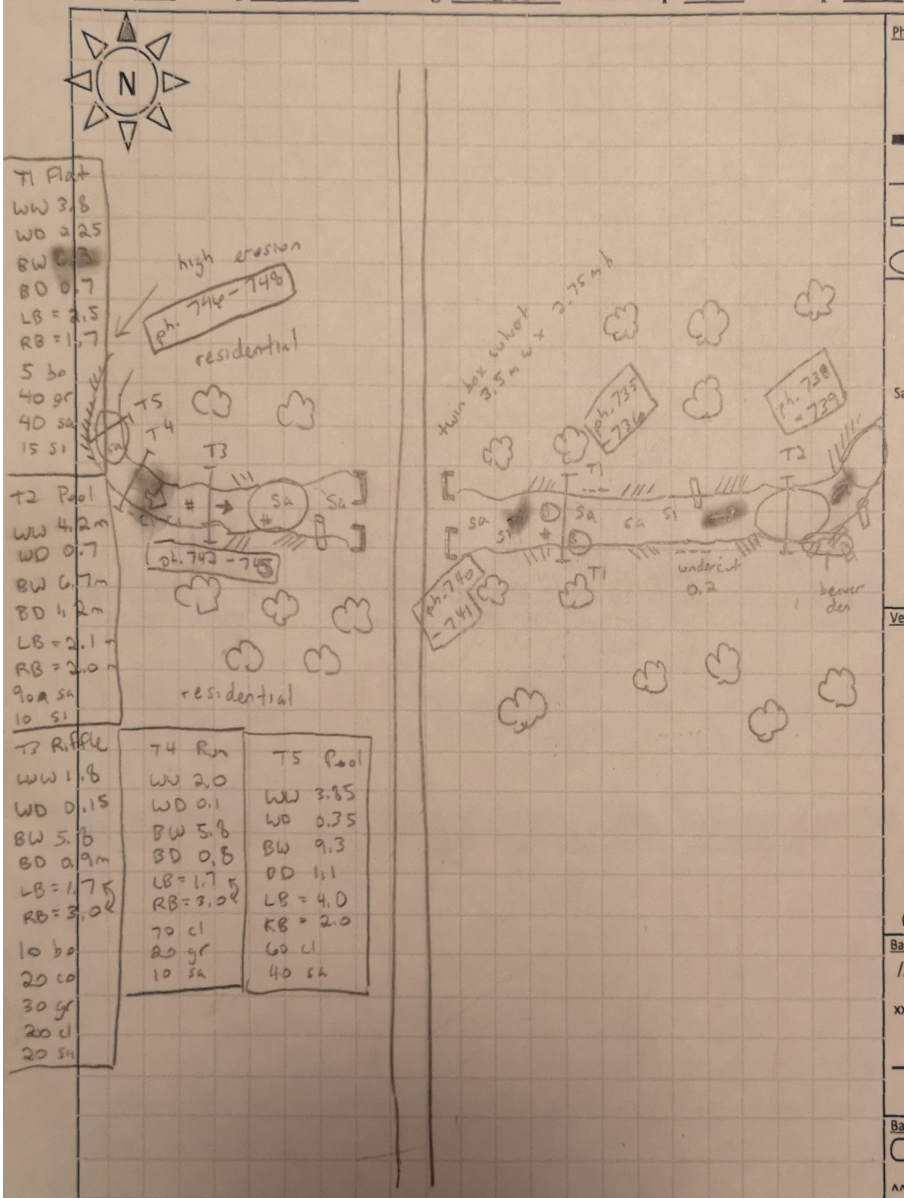
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 13:40 **Photos:** Y

Watercourse Name: WC 15 **Location:** SSM **Length:** ~60 m **Observers:** KM RS

Zone: 10T **Easting:** 0699196 **Northing:** 5156334 **Water Temp:** 14.6°C **Air Temp:** 21°C **% Overhead Cover:** 0



Profile: Horizontal Scale: Vertical Scale:

- property owner mentioned beaver dam was removed lowering levels. she has also observed "otters," which are likely weasels or something similar.

Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 13:40 **Photos:** Y

Watercourse Name: WC15 **Location:** SSM **Length:** ~60 m **Observers:** KM RS

Zone: 16T **Easting:** 699196 **Northing:** 5156334 **Water Temp:** 14.6 **Air Temp:** 21 **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~60 m	moderate & low	

Sub-Section(s)	Run ☑	Pool ☑	Riffle ☑	Flats ☑	Culvert ☐	Other ☐
% Area	20	10	10	60		
Mean Depth Wetted (m)	0.1	0.4	0.2	0.3		
Mean Width Wetted (m)	2.0	3.9	1.8	3.8		
Mean Bankfull width (m)	5.8	9.3	5.8	6.3		
Mean Bankfull Depth (m)	0.8	1.1	0.9	0.7		
Substrate (%)	70 cl 20 gr 10 sa	60 cl 40 sa	30 gr 20 sa 20 cb 10 bo 20 cl	40 gr 5 bo 40 sa 15 si		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	2.9	steep	natural	high	woodland
Right Upstream Bank	"	1.8	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks			X		20	
Overhanging Vegetation	X					
Instream Vegetation	X					
Woody / Organic Debris		X	X		20	
Rocks/Boulders		X			10	

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent:	None
Predominant Species:				

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

Lamprey (103 mm) found on bank

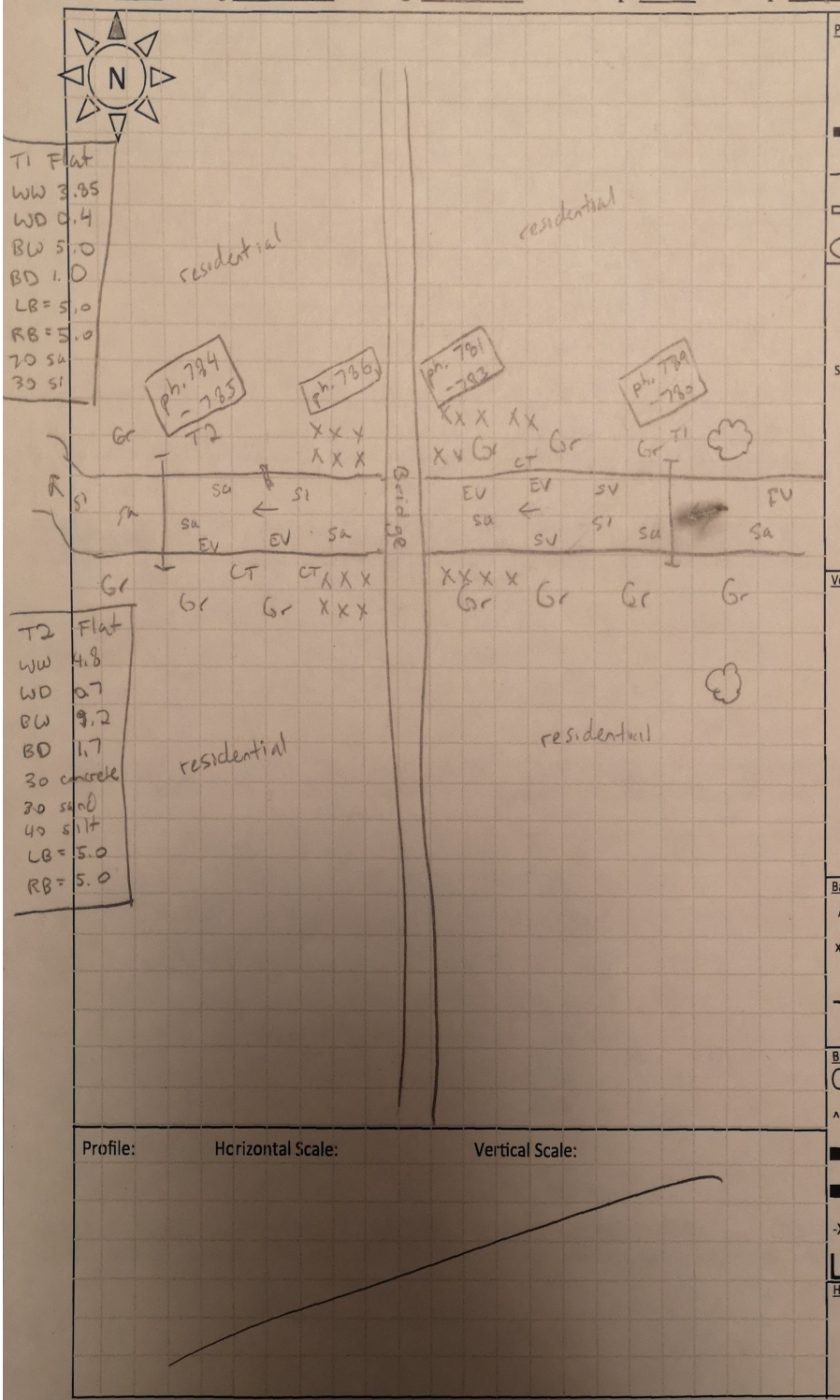
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 15:16 **Photos:** Y

Watercourse Name: uc116 **Location:** SSM **Length:** ~60m **Observers:** KM RS

Zone: 16T **Easting:** 0699219 **Northing:** 5155986 **Water Temp:** 19.1°C **Air Temp:** 22°C **% Overhead Cover:** 0



Profile: Horizontal Scale: Vertical Scale:

Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 15:16 **Photos:** Y

Watercourse Name: wc16 **Location:** SSM **Length:** ~60m **Observers:** KM RS

Zone: 16T **Easting:** 699219 **Northing:** 5155986 **Water Temp:** 18.1°C **Air Temp:** 22°C **% Overhead Cover:** 10

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~ 60 m	moderate & low	

Sub-Section(s)	Run ☐	Pool ☐	Riffle ☐	Flats ☑	Culvert ☐	Other ☐
% Area				100		
Mean Depth Wetted (m)				0.60		
Mean Width Wetted (m)				4.3		
Mean Bankfull width (m)				7.1		
Mean Bankfull Depth (m)				1.4		
Substrate (%)				70 sa 30 si		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	5.0	steep	manmade	no	grasses
Right Upstream Bank	"	"	"	"	"	

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks	X					
Overhanging Vegetation		X			10	
Instream Vegetation			X		40	
Woody / Organic Debris	X					
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent:	Floating: 20	Emergent: 80	None
Predominant Species:		duckweed	grasses, cattails	

Migratory Obstructions:	None	Seasonal: —	Permanent: —
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

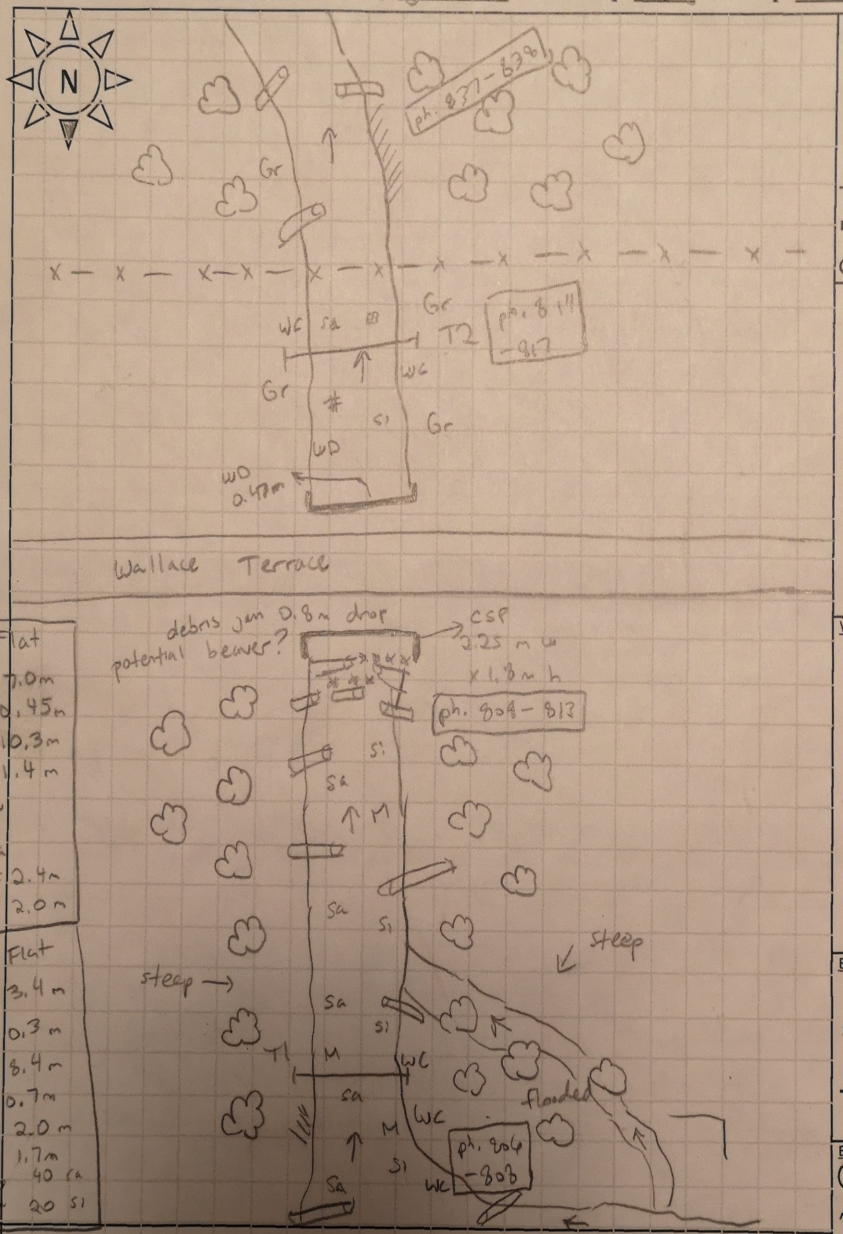
Aquatic Habitat Assessment

Page: ____ of ____

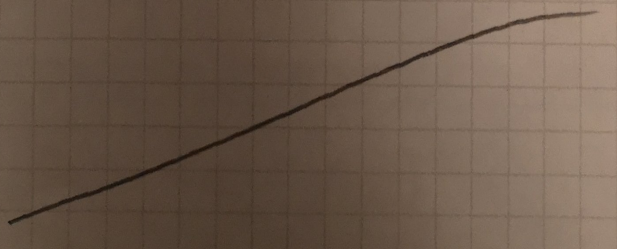
Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 17:39 **Photos:** Y

Watercourse Name: WC17 **Location:** SSM **Length:** ~60m **Observers:** KM RS

Zone: 16T **Easting:** 0700043 **Northing:** 5156199 **Water Temp:** 11.6°C **Air Temp:** 22°C **% Overhead Cover:** 0



Profile: Horizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 17:39 **Photos:** Y

Watercourse Name: WC 17 **Location:** SSM **Length:** ~60m **Observers:** KM RS

Zone: 16T **Easting:** 700043 **Northing:** 5156199 **Water Temp:** 16.6°C **Air Temp:** 22°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~60 m	low & low	

Sub-Section(s)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area				100		
Mean Depth Wetted (m)				0.4		
Mean Width Wetted (m)				5.2		
Mean Bankfull width (m)				9.4		
Mean Bankfull Depth (m)				1.1		
Substrate (%)				35 sa 15 gr 35 si 10 co 15 mu		

Comments: u/s of Wallace backed up by debris at culvert inlet

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	2.2	steep	natural	minor	grasses, woodland
Right Upstream Bank	"	1.9	"	"	"	"

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation		X			10	
Instream Vegetation		X			10	
Woody / Organic Debris			X		40	
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent: 40	Floating:	Emergent: 60	None
Predominant Species:	watercress		grasses	

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning:	Groundwater: watercress	Other:

Enhancement Opportunities / Fish Observed / Comments

Remove debris from culvert.

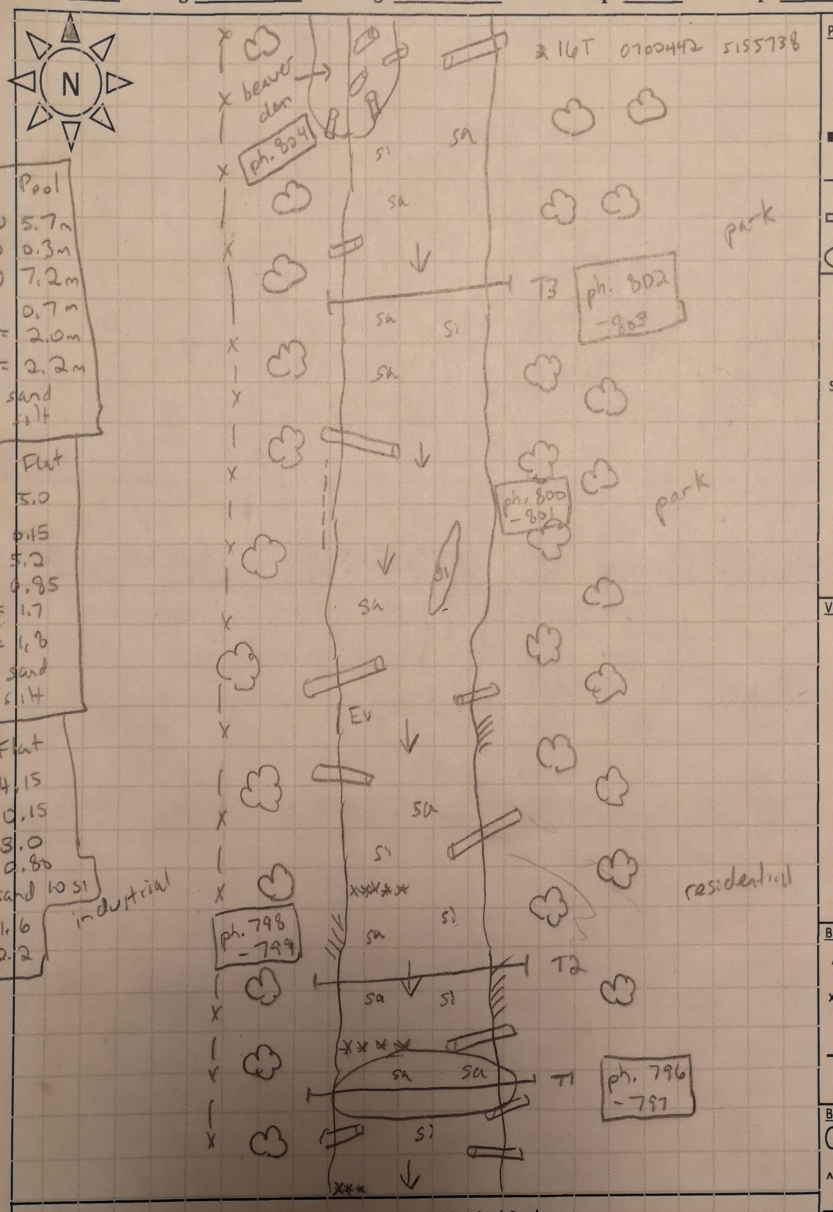
Aquatic Habitat Assessment

Page: ____ of ____

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 16:25 **Photos:** Y

Watercourse Name: WC Site 4 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 0700446 **Northing:** 5155702 **Water Temp:** 15.1°C **Air Temp:** 22°C **% Overhead Cover:** 0

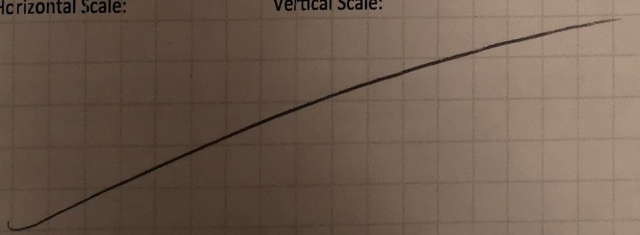


T1 Pool
WW 5.7m
WD 0.3m
BW 7.2m
BD 0.7m
LB= 2.0m
RB= 2.2m
70 sand
30 silt

T2 Flat
WW 5.0
WD 0.15
BW 5.2
BD 0.95
LB = 1.7
RB = 1.8
90 sand
10 silt

T3 Flat
WW 4.15
WD 0.15
BW 3.0
BD 0.80
90% sand 10 SI
LB= 1.6
RB= 2.2

Profile: Horizontal Scale: Vertical Scale:



Physical Characteristics:
- 10d — Depth (cm)
- 6w — Width (m)
- — Riffle
- — Flat
- — Run/Glide
- — Pool

Substrate:
- — Island/Bar
- — Fine Substrate
- Sa, Si, M — Sand, Silt, Muck
- #### — Gravel Substrate
- — Cobble
- Sh — Shale
- (B) — Boulder
- **** — Debris

Vegetation:
- CT — Cattail
- RC — Reed Canary
- SV — Submergent Vegetation
- FV — Floating Vegetation
- EV — Emergent Vegetation
- Gr — Grasses
- (R) — Riparian Tree
- — Forested Area

Banks:
- /////// — Eroded Bank
- xxxxxxx — Riprap/other Stabilization
- — — — — Undercut Bank
- TH — Thatch

Barriers:
- — Instream Log/Tree
- ^^^^^^ — Dam/Weir/Obstruction
- — Barrier to fish movement
- S — Seasonal Barrier
- -X- - -X- — Fenceline
- — Culvert

Habitat Indicators:
- Fe — Iron Staining
- — Seep/Spring
- (W) — Watercress

Aquatic Habitat Assessment

Page: ____ of ____

wsp

Project Name / #: SSM PUC **Date:** Sept 2, 2021 **Time:** 16:25 **Photos:** Y

Watercourse Name: WC Site 4 **Location:** SSM **Length:** ~200m **Observers:** KM RS

Zone: 16T **Easting:** 720446 **Northing:** 5155702 **Water Temp:** 15.1°C **Air Temp:** 22°C **% Overhead Cover:** 0

Section Type and Morphology

Type: (check all that apply	Stream / River	Channelized	Permanent	Intermittent	Ephemeral	Associated Wetland:
	☑	☐	☑	☐	☐	

Total Section Length:	Current Velocity & Gradient:	Comments / Description
~200 m	moderate & low	

Sub-Section(s)	Run ☐	Pool ☐	Riffle ☐	Flats ☐	Culvert ☐	Other ☐
% Area		10		90		
Mean Depth Wetted (m)		0.3		0.15		
Mean Width Wetted (m)		5.7		4.6		
Mean Bankfull width (m)		7.2		6.6		
Mean Bankfull Depth (m)		0.7		0.8		
Substrate (%)		70 sa 30 si		90 sa 10 si		

Comments:

Banks / Stability

Bank Averages	Stability	Height (m)	Slope (gradual, steep, vertical)	Natural/Manmade/ Stabilized	Erosion?	Riparian Vegetation
Left Upstream Bank	stable	1.8	steep	manmade	minor	woodland
Right Upstream Bank	"	2.0	"	"	"	

Habitat / Vegetation

Instream Cover	None	Sparse	Moderate	Dense	% Surface Area	Comments:
Undercut Banks		X			10	
Overhanging Vegetation	X					
Instream Vegetation	X	X			10	
Woody / Organic Debris			X		40	
Rocks/Boulders	X					

Aquatic Veg Type (%):	Submergent:	Floating:	Emergent: 100	None
Predominant Species:			grasses	

Migratory Obstructions:	None	Seasonal:	Permanent:
Critical Habitat:	Spawning: —	Groundwater: —	Other:

Enhancement Opportunities / Fish Observed / Comments

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Location Soo (SSM) Date Aug. 31, 2021

Project / Client SSM PUC

wc2

Blacknose Dace 21, 19, 24, 73, 76

(27)

Brook Stickleback 52

(1)

American Brook Lamprey? 156

(1)

497.6 sec, 60 Hz, 250 V

wc3

No fish caught

60 Hz, 250 V, 112.2 sec

Location SSM Date Aug 31, 2021

Project / Client SSM PUC

wc 1

Brook Stickleback 43, 31, 33

Creek Chub 86

250 V, 60 Hz, 112.6 sec

wc 4

No fish

52.1 sec, 60 Hz, 250 V

Location wc 6 Date Sept. 1, 2021

Project / Client SSM PVC

Brown Trout 83

Rainbow Trout 76, 142

366.8 sec, 60 Hz, 250 V

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wc 7

Brook Stickleback 29, 32, 54, 73

455.6 - 366.8 = 88.8 sec

60 Hz, 250 V

Location wc 8 Date Sept. 1, 2021

Project / Client SSM SUC

wc 8

Rainbow Trout 110, 95, 59, 46

Mottled (?) Sculpin 31, 26, 24

416.3 sec, 60 Hz, 350 V

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wc 9

Brook Stickleback 61

81.6, 60 Hz, 250 V

---

wc 12

Creek Chub 31, 23

147.3 sec, 60 Hz, 250 V

128

Location SSM Date Sept. 2, 2021

Project / Client SSM PUC

wc 15

348.3 sec, 60 Hz, 250 V

Efisher settings →

Mottled Sculpin ☒ 27, 82

Rainbow Trout 59

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wc 16

Central Mudminnow 92, 74

White Sucker 62

Brook Stickleback ☐ 51, 21

Blacknose Dace 82

↳ black dot parasites

Location SSM Date Sept 2, 2021

Project / Client SSM PUC

wc 16 continued...

Creek Chub 12, 35

↳ black dots

Johnny Darter 72, 69, 38

Mottled Sculpin 88

Fishing settings

277.2 sec, 60 Hz, 250V

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wc 17

Mottled Sculpin 49, 42, 38

Creek Chubs 34, 48, 53

Blacknose Dace 42, 27, 56

130

Location SSM Date Sept. 2, 2021

Project / Client SSM PUC

WC	17	continued		
Brook		Stickleback		41
RBM	Rainbow	Trout		52

545.0 sec, 60 Hz, 250 V