

JUNCTION CREEK DELTA WETLAND CHARACTERIZATION AND DELINEATION

FOR

Greenstone Environmental Engineering Junction Creek Delta / Sudbury, Ontario

SUBMITTED TO:

Janice Christian, Senior Project Manager Greenstone Environmental Engineering

janice@greenstoneengineering.ca

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TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Project Overview	1
1.2	Study Area	1
2.0	METHODS	1
2.1	Wetland Delineation and Characterization	1
3.0	RESULTS	2
3.1	Junction Creek Delta Wetland	3
3.2	Isolated Wetlands	3
33	Pahingan Laka Wastern Watland	۸
0.0	Robinson Lake Western Wetland	4
4.0	CLOSURE	4 4

LIST OF FIGURES

Figure 1 – Project Location

Figure 2 – Fisher Wavy Site Boundary

Figure 3 – Wetland Delineation

LIST OF TABLES

Table 1 - Wetland Types Based on the Ontario Wetland Evaluation System Manual (OWES; MNRF,	
2022)	2
Table 2 - Wetland Vegetation Growth Forms, based on the Ontario Wetland Evaluation System Manu	ual
(OWES; MNRF, 2022)	2

LIST OF APPENDICES

Appendix A Site Map & Figures Appendix B Photo Log



1.0 INTRODUCTION

Blue Heron Solutions for Environmental Management Inc. (Blue Heron) was retained by Greenstone Environmental Engineering (Greenstone) to complete wetland delineation and characterization for a portion of the Junction Creek Delta Wetland (JCD Wetland) and surrounding isolated wetlands in support of the proposed Wavy Quarry expansion at 1 Ceasar Road (the Site) in the City of Greater Sudbury, Ontario.

1.1 Project Overview

Fisher Wavy Inc (Fisher Wavy; the Client) is proposing to expand the boundaries of their Wavy Quarry. The expansion requires an Official Plan and Zoning By-Law amendment, approved by the City of Greater Sudbury, and an *Aggregate Resources Act* (ARA) Licence approved by the Ministry of Natural Resources (MNR). Additionally, the JCD Wetland and surrounding wetlands are within the jurisdiction of Conservation Sudbury and would require an assessment on possible impacts from the proposed quarry expansion. In support of the ARA application, Official Plan and re-zoning amendment, and Conservation Sudbury impact assessment, the section of the JCD Wetland and any isolated wetlands that are on the Site or directly adjacent to the Site need to be delineated and characterized.

1.2 Study Area

The Study Area is defined as the western wetlands on Robinson Lake; three isolated wetlands on the Site; and the northern and southern extents of the JCD wetland, up to the southern boundary of the West End Business Park. A map of the Study Area is provided in Appendix A (Figure 1 and Figure 2).

2.0 METHODS

2.1 Wetland Delineation and Characterization

Preliminary mapping of the outer wetland boundaries and identification of the plant community types were completed as a desktop exercise using available land cover data and aerial imagery.

The wetlands were delineated on August 21st and 22nd, 2024. At the time of assessment, the weather was sunny and clear, with winds up to 16 kilometres per hour (km/hr) and an average temperature of 21 degrees Celsius (°C). A qualified biologist delineated the outer wetland boundaries using the "50% rule", as described in the *Ontario Wetland Evaluation System – Northern Manual* (MNRF 2022). Using this method, the boundary of the wetland is established where wetland vegetation (i.e., hydrophilic plants) makes up 50% of the plant cover. This is based on the inference that where wetland species make up most of the cover in an area, the area must contain wetter substrates and thus indicate wetland conditions (MNRF 2014). Supplementary, the vegetation communities in those wetlands were delineated, and the dominant vegetation forms were identified (Appendix A, Figure 3). A Global Positioning System (GPS) was used to track the biologist's movements.



3.0 RESULTS

The wetland delineation is provided in Appendix A, Figure 3. A total of three wetland types were observed on the Site during the delineation (Table 1). Additionally, vegetation communities were delineated for all wetlands and the dominating vegetation forms were identified. Regardless of the vegetative species and abundances, which will vary from one wetland to the next, wetlands fulfill an assortment of ecological functions, including but not limited to:

- Water storage;
- Water filtration; and
- Biological productivity.

Table 1 - Wetland Types Based on the Ontario Wetland Evaluation System Manual (OWES;
MNRF, 2022)

Wetland Type	Wetland Type Definition	
Fen (F)	Fens are peatlands characterized by surface layers of poorly to moderately decomposed peat, often with well-decomposed peat near the base. Fen peats generally consist of mosses and sedges. Rich fens typically have a high pH and can be dominated by sedges, grasses and low shrubs (i.e., Sweet Gale [<i>Myrica gale</i>]). If tall shrubs are present, the cover is less than 25%.	
Marsh (M), including Open Water Marsh), Open rsh Marshes are wet areas periodically inundated with standing or slowly moving water, and/or permanently inundated areas characterized by robust emergent (i.e., cattails [<i>Typha latifolia</i>]). Water remains within the rooting zone of plants during at least part of the growing season.	
Swamp (S)Swamps are wooded wetlands with 25% cover or more of live trees Standing to gently flowing water occurs seasonally or persists for long surface. Often dried pools or channel are evident in swamps. The subs continuously waterlogged.		

For mapping purposes, the wetland vegetation is described by growth form. Table 2, below, provides a list of growth forms observed during the field work, along with examples of each.

Table 2 - Wetland Vegetation Growth Forms, based on the Ontario Wetland Evaluation System Manual (OWES; MNRF, 2022)

Growth Form Name	Growth Form Symbol	Example(s)
Floating Rooted Plants	f	Pond Lily
Submerged Plants	su	Pondweed
Herbs	gc	Spotted Joe-Pye-weed;
Narrow-leaved Emergents	ne	Woolgrass; sedges; grasses
Robust Emergents	re	Cattails; Reeds



Growth Form Name	Growth Form Symbol	Example(s)
Tall Shrubs	ts	Speckled Alder; Willow
Low Shrubs	ls	Leatherleaf; Labrador Tea

3.1 Junction Creek Delta Wetland

The northern extent of the JCD Wetland is bedrock-controlled. Water levels fluctuate seasonally and yearly, changing the floating and submerged marsh appearance at the confluence of Junction Creek and Kelley Lake. Because of the consistent water level fluctuations, the delineation of this section of the wetland was completed using historical imagery, recent imagery and field observations. The northern extent of the JCD Wetland is a complex of marshes and fens, with some inclusions of shrub swamp. The marsh is characterized by common cattail (*Typha latifolia*), reeds (*Phragmites* sp.), and graminoids, with pockets of visible open water. The fen habitat consists predominantly of sedges and graminoids. Areas supporting tall shrubs and low shrubs are considered swamps inclusions within the complex.

The southern section of the JCD Wetland is fen habitat, with the vegetative community consisting mostly of sedges and grasses, with shrubs interspersed sparsely throughout the wetland. This habitat transitions to a cattail marsh with proximity to Kelley Lake.

The creek bed is comprised of densely packed clay substrate with little to no vegetation growing within the watercourse, although submerged and floating vegetation were observed while traversing the banks of the creek. South of the existing quarry parking lot, the banks of Junction Creek have an accumulation of erosional deposits, which have caused the southern shoreline of the creek to become built up with sandy substrate. The resultant habitat supports species such as goldenrods (*Solidago spp.*), asters (*Asteraceae spp.*) and Sweet Joe-Pye-weed (*Eutrochium purpureum*) which were observed along the banks

3.2 Isolated Wetlands

There is a total of three isolated wetlands on the Site. These wetlands are bedrock-controlled and are not hydrologically connected to any other water features. Instead, water accumulation is from rainwater.

The isolated wetland located at the southwestern extend is a graminoid fen (approximately 324 m²).

The isolated wetland at the northwestern extent of the Site was comprised of a small margin of fen habitat, along the shoreline transitioning into an open water marsh (approximately 6,165 m²). Vegetation within this wetland was sparse, consisting of sedges along the shoreline.

The third and easternmost isolated wetland is located south of the existing quarry. It consists of a fen, with large areas of open water (approximately 2,195 m²). Vegetation in this wetland is also sparse and both wetlands appear to be in the early stages of wetland habitat development from open water pools. This is consistent with the upland habitat that surrounds the areas between these two wetlands, which is largely denuded as a result of historic mining activities in the region.



Other depressional bedrock-controlled areas on the Site were visited to confirm that they were not wetlands. At the time of the field program, these depressions were dried out or dominated by upland grasses and forbs and no longer considered wetlands.

3.3 Robinson Lake Western Wetland

Along the perimeter of the open water, a floating marsh comprised of water lilies (*Nymphaeaceae* spp.) and pondweed (*Potamaageton* spp.) create a small buffer from the rooted wetland to the west. The rooted wetland is a marsh, dominated by cattails, reed grasses (*Calamagrotis* spp.) and rushes. Throughout the wetland, there are small inclusions of tall shrub and low shrub swamps. The rooted wetland bisected by Southview Drive, where water is connected to Kelley Lake via a culvert.

4.0 CLOSURE

This information presented in this report is confidential and has been prepared for the exclusive use of Greenstone Environmental Engineering to provide the wetland delineation and characterization for the Junction Creek Delta Wetland in support of the Wavy Quarry expansion. Blue Heron accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust that the information presented in this report meets your needs and expectations. Should you have any questions, comments or concerns, please do not hesitate to contact the undersigned.

Sincerely,

BLUE HERON SOLUTIONS FOR ENVIRONMENTAL MANAGEMENT INC.

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Josie-Ann Tessier, E.P. Field Coordinator / Terrestrial Biology Supervisor

Jennifer Braun, M.Sc. Senior Biologist / Biophysical Dept. Manager



5.0 REFERENCES

MNRF. (2022). *Ministry of Natural Resources and Forestry, Ontario Wetland Evaluation System -Northern Manual, 2nd Edition.* King's Printer for Ontario.

Appendix A

Site Map & Figures













Appendix B

Photo Log





Photo 1: Robust emergent wetland



Photo 3: Narrow-leaved emergent wetland



Photo 2: Southern bank of Junction Creek with erosional deposition



Photo 4: Upland grass meadow located within the bedrockcontrolled area on the Site



Photo 5: Overlooking Junction Creek Delta's northern Photo 6: Isolated wetland at the center of the Site wetland



Photo 7: Narrow-leaved emergent (i.e., grasses, sedges, and Photo 8: Narrow-leaved emergent (i.e., sedges) wetland reeds) wetland







Photo 9 : Over-looking Junction Creek Delta



Photo 10: Robinson Lake wetland



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705.264.4342