EIA Registration Document

Residential Development, Magnetic Hill Estates Subdivision Moncton, New Brunswick

Prepared for:

RobAly Homes Inc.

46 Diamond Head Court, Unit 113 Moncton, New Brunswick E1G 5S3

Project: 21.03.162 December 1, 2021





Hive Engineering Limited 29 Victoria Street, Unit 102 Moncton, NB, E1C 9J6 506.386.4897 www.hiveeng.ca

December 1, 2021 Project: 21.03.162

RobAly Homes Inc.

46 Diamond Head Court, Unit 113 Moncton, New Brunswick E1G 5S3

Attention: Robert LeBlanc

Re: EIA Registration Document, Residential Development

Magnetic Hill Estates Subdivision, Moncton, New Brunswick

Hive Engineering Limited has prepared the following EIA Registration Document for the proposed residential development in the Magnetic Hill Estates Subdivision in Moncton, New Brunswick. Our conclusions and recommendations are presented in the following report.

Do not hesitate to contact the undersigned with any questions regarding the information presented herein.

Sincerely,

Andrea Kalafut, M.Sc., E., P.Eng.

President and Senior Environmental Engineer

Hive Engineering Limited

Professional Review

The field work, report preparation and engineering review of this document was overseen by Ms. Andrea Kalafut, M.Sc.E., P.Eng., a recognized Environmental Site Professional and Professional Engineer licensed to practice in New Brunswick. It is the intent that this report be read in its entirety for a full understanding of environmental risk and liabilities.

The work was completed per engineering standards and guidelines in place in 2021. If significant time lapses prior to the undertaking of additional work, the findings of this report should be reviewed by the engineer to ensure the recommendations and conclusions comply with current environmental guidelines.

Information regarding the property and history of the Site are critical for identifying environmental liabilities. If any discrepancies, inaccuracies, or data gaps are identified in the report, we request the opportunity to review them with the client.

Hive Engineering Quality System					
Project No. 21.03.162	Date: December 1, 2021				
Prepared By: Katie Gillis, P.Eng.	HatteHillis				
Reviewed By: Andrea Kalafut, M.Sc.E., P.Eng.	Afeld				
#M6748 Andrea S. Kalafut Signature December 1, 2021 Date MGEMEURE MMATRICULE					



Glossary of Terms

Abbreviation	Definition
ACCDC	Atlantic Canada Conservation Data Centre
BMP(s)	Best Management Practice(s)
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
ECCC	Environment Climate Change Canada
EIA	Environmental Impact Assessment
NBDERD	(New Brunswick) Department of Energy and Resource Development
NBDELG	New Brunswick Department of Environment and Local Government
NB ESA	New Brunswick Endangered Species Act
PID(s)	Parcel Identifier(s)
SARA	Species at Risk Act
SNB	Service New Brunswick
SOCC	Species of Conservation Concern
TRC	Technical Review Committee
WAWA	Watercourse and Wetland Alteration



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INTRODUCTION

Hive Engineering Limited (herein "Hive") was retained by RobAly Homes Inc. (herein "Proponent") to prepare an Environmental Impact Assessment (EIA) registration document for the expansion of a residential subdivision within the existing Magnetic Hill Estates Subdivision in Moncton, New Brunswick. The residential subdivision is proposed to be constructed on the two properties identified by Service New Brunswick (SNB) as Parcel Identifiers (PIDs) 00939744 and 70183181.

This registration document is required under the New Brunswick *Environmental Impact* Assessment Regulation 87-83 of the Clean Environment Act. As per Item (v) of Schedule "A" of "A Guide to Environmental Impact Assessment in New Brunswick", the project will impact a wetland that is greater than two hectares in area.

1.0 THE PROPONENT

The Proponent details for this registration document are as follows:

Table 1Proponent Information

Name of Undertaking:	Expansion to Magnetic Hill Estates Subdivision (2022), Moncton, NB			
Name of Proponent:	RobAly Homes Inc.			
Address of Proponent:	46 Diamond Head Court, Unit 113, Moncton, NB E1G 5S3			
Principal Proponent Contact:	Contact:	Mr. Robert LeBlanc		
	Phone:	506.854.5320		
	Email:	cvrhomes@rogers.com		
Principal Contact for EIA:	Company:	Hive Engineering Limited		
	Contact:	Ms. Andrea Kalafut, M.Sc.E., P.Eng., President and CEO		
	Address:	29 Victoria Street, Unit 102, Moncton, NB, E1C 0T3		
	Cell Phone:	506.232.1306		
	Email:	andrea.kalafut@hiveeng.ca		
Property Ownership:	RobAly Hom	es Inc.		



2.0 PROJECT DESCRIPTION

2.1 Project Name

Expansion to Magnetic Hill Estates Subdivision (2022), Moncton, NB

2.2 Project Overview

The Project is the expansion to an existing residential subdivision in the north end of Moncton, New Brunswick and will include the construction of a public street and cul-de-sac (including municipal infrastructure) and 50 lots of semi-detached (two-unit) residential dwellings. The residential dwellings will be serviced with municipal water and sanitary sewer; storm drain infrastructure will also be present in roadways constructed as part of the subdivision. A storm water detention plan has also been developed to manage surface water drainage on the Site. The preliminary subdivision plan (WSP's "Unit #10 Amending Subdivision Plan: Magnetic Hill Estates Subdivision, Amending Liberty Hill Subdivision Unit 5, Phase 2 Plan 37945491 Situated on the North Side of Promenade Satara Drive, City of Moncton, Parish of Moncton, County of Westmorland, Province of New Brunswick" dated December 11, 2020) is presented in Appendix A.

The Project will take place on PIDs 00939744 and 70183181 (herein referred to as the "Site"). The Site is 5.96 hectares of vegetated and partially infilled land. The development will include the infilling of approximately 0.7 hectares of wetland on PID 00939744; however, the total area of the wetland is over 2 hectares (total delineated area of 3.7 hectares; 0.7 hectares on-site and 3.0 hectares off-site).

2.3 Purpose/Rationale/Need for Undertaking

The Site is situated within an existing subdivision in the north end of Moncton. Moncton is currently experiencing an unprecedented housing shortage. The development will provide new housing options for families and individuals within the City of Moncton, and within an existing subdivision that contains similar residential units and access to local amenities. The Site is located within walking distance to several elementary and middle schools, which will contribute to residents' health and wellness, and will also promote less vehicle traffic within the newly developed area.

According to the Proponent, each of the residential units (100 total) will be sold for a minimum of approximately \$259,900; the property assessment for each of the properties proposed as part of the subdivision will yield approximately \$2,030 per year, resulting in a minimum of \$203,000



in annual property tax revenue for the City of Moncton once the residential dwellings are constructed and occupied.

Municipal services including water, storm and sanitary sewer are present in nearby right-of-ways (August Terrace and Satara Drive). The Project will utilize these existing services to provide water and sewer services to the residential dwellings proposed as part of the Project.

The Project will include the construction of Belfry Street, which will begin at the current intersection of Augusta Terrace and Crowbush Crescent (northeast of the Site) and connect to Satara Drive (southwest of the Site). A cul-de-sac will also be constructed off the northern portion of Belfry Street extending west to service residential lots on the northern half of the Project.

According to as-builts provided by the Client and presented in Appendix B (J.R. Daigle Engineering Ltd.'s "Magnetic Hill Estates Subdivision, Unit No. 8 Roadways, Water & Sewer Services As Built" dated July 2005 and WSP's "Record Drawing Plan and Profile, Satara Drive, Liberty Hill Estates, Unit 5, Phase 2, Moncton, New Brunswick" dated January 2019), municipal services (i.e., 150 mm water main, 200 mm sanitary sewer and 600 mm storm sewer lines) have been constructed and capped in place at the northern termination point of Belfry Street. Municipal water and sanitary sewer lines (both 200 mm diameter) have also been capped in place near the intersection of Satara Drive and Ryan Street, immediately southwest of the Site. These streets will serve as the two connection points from the Project to existing residential development surrounding the Site. Typically, domestic water connections are safest when looped through streets to allow water to flow rather than to be stagnant at dead-end pressure zones; therefore, the extension of municipal water services along the length of the new street constructed as part of the Project will remove the current dead end for the water mains at the northern termination point of Belfry Street and Satara Drive, maximizing the functionality of municipal water services within the development.

The Project will provide much needed housing within the municipal boundary of the City of Moncton. There is a shortage of land within the municipal boundary. Coupled with the fact that the city is experiencing a housing shortage, if the development is not constructed, it will likely result in further urban sprawl. Urban sprawl will contribute to the development of unurbanized, natural areas and also likely contribute to increased carbon emissions associated with normal everyday travel in and out of the City of Moncton.

Alternatives for the Project would include the expansion of residential development outside of city limits; however, this would force the construction of subdivisions in rural areas and would



not fulfill the need for housing within the municipal boundary, and within walking distance to schools. The City of Moncton has identified the need to in-fill serviceable land with housing options prior to developing land for residential use outside of the municipal boundaries. Therefore, the development of the Project in this specific area is justified in fulfilling the current needs associated with the housing crisis in the City of Moncton.

2.4 Project Location

The Site is approximately 5.96 hectares of vegetated land (PIDs 00939744 and 70183181), situated within an existing subdivision in the north end of Moncton. The approximate coordinate for the centre of the Site is Lat: 46° 7′ 20″ N and Long: 64° 52′ 53″ W. The Site PIDs do not have civic addresses; however, SNB indicates that PID 00939744 is located on Belfry Street and PID 70183181 is located on Augusta Terrace, both in the City of Moncton in Westmorland County. Figure 1 shows the location of the Site within the existing north end residential development (GeoNB 2020 Aerial Photography).



Figure 1 – Project Location (GeoNB mapping, 2020 aerial photography).

The Site is generally bound by roadways and associated residential dwellings. Single-family residential dwellings are present immediately north and west of the Site, with municipal roadways beyond (Augusta Terrace and Ryan Street to the north and west, respectively). A walking trail Muirfield Drive are present immediately east

of the Site. The adjoining properties to the south consist of wetland and Satara Drive.



2.5 Siting Considerations

In 2018, RobAly Homes Inc. acquired the Site (PIDs 00939744 and 70183181), which is situated within the Magnetic Hill Estates subdivision. The residential development has been expanding at a consistent rate over the last 20 years in response to local housing demand.

Municipal sanitary, storm and water services are readily available in the area on existing right-of-ways to the north, east, west and south of the Site. According to as-builts provided by the City of Moncton (presented in Appendix B), municipal services were capped in place at the northern termination point of Belfry Street (immediately northeast of the Site) to facilitate the future residential development of the Site. Electricity for adjoining residential properties is currently provided by overhead services managed by NB Power. The area is situated on a local bus route to provide transportation options for future residents of the subdivision. The properties are also situated within 150 meters of Northrup Frye School and 750 meters of Maplehurst Middle School, which will allow residents to use alternative modes of transportation (i.e., walking, biking, skateboarding, etc.).

The Site consists of one of the last remaining areas that has not yet been developed as part of the existing subdivision in this area of Moncton. The consequence of not developing this Site for residential use will be perpetuating the demand for housing within the City of Moncton. Other options for providing new housing include the expansion of residential development outside of city limits, forcing the construction of subdivisions in rural areas. The City of Moncton has identified the need to in-fill serviceable land with housing options prior to developing land for residential use outside of the municipal boundaries.

According to the Proponent, previous owners of the Site historically utilized the Site as a construction yard during the development of residences in the surrounding areas.

According to the City of Moncton Zoning Map (amended October 25, 2021), the Site and adjoining properties to the north and east are zoned 'R2' for two unit dwelling zone. The adjoining properties to the south and east are zoned 'P-1' for community use zone.

GeoNB mapping indicates that a provincially regulated wetland is present on the eastern portion of the Site (PID 00939744) and adjoining property to the south (PID 70629431); a delineation confirmed that the wetland is approximately 3.7 hectares in area.



To address specific requirements outlined by NBDELG in the Siting Considerations, we offer the following:

- It is unlikely that archeological resources are present on-site; the potential archaeological resources are discussed in further detail in Section 3.2.2 of this report.
- It is understood that a WAWA permit will be required if the Project is approved.
- The Project is not located within Zone A or B as prescribed in "A Coastal Areas Protection Policy for New Brunswick".
- The Site is currently zoned by the Greater Moncton Planning commission for the future intended use (i.e., residential).

2.6 Physical Components and Dimensions of Project

A plan showing the location of the Site is presented in Appendix C. The Site occupies a total area of 5.96 hectares. The dimensions of the Site (at its largest width (west to east) and length (north to south)) are approximately 370 meters by 200 meters. There are no conceptual drawings of the semi-detached residential dwellings proposed for construction at the Site.

The Project will involve the development of the entire area of the Site (5.96 hectares), including the construction of public roadways that will later be owned and operated by the City of Moncton. The construction of the roadways will include the installation of municipal storm, sanitary sewer and water lines. The Project also includes the construction of storm water detention ponds to facilitate surface water management. The ponds will be constructed in accordance with municipal requirements. Additional details regarding the proposed development are presented in a site plan (WSP's "New Residential Development, Street Layout and Servicing Schematic" dated February 4, 2021) in Appendix D.

To address specific requirements outlined by NBDELG in the Physical Components and Dimensions of the Project in the Guide, we offer the following:

- The Project will include the construction of permanent roads and associated water and sewer infrastructure that will ultimately be maintained and owned by the City of Moncton;
- The Project will include the construction of 50, two-unit, semi-detached residential dwellings, which will be privately owned and managed.
- The length of the proposed Belfry Street, connecting to August Terrace (northeast of the Site) and Satara Drive (south of the Site) will be approximately 450 metres. The length of



the cul-de-sac to be constructed on the northern portion of the Site is approximately 200 metres.

- The approximate area of impervious surfaces in the Project area (including the streets, footprints of residential dwellings and driveways) will be approximately 35,000 square metres (3.5 hectares).
- Any external lighting required for the project will comply with the City of Moncton's requirements. It is anticipated that some roadway lighting will be required.
- The Project will adhere to any setbacks proposed by the municipality or utility service provider (i.e., NB Power). The work will encroach within a wetland and within the 30-metre wetland buffer. The Proponent does not have any intention of constructing permanent fencing; fencing will be at the discretion of the individual homeowners once the development is complete.
- Construction traffic (i.e., dump trucks, concrete trucks, delivery trucks hauling materials such as lumber, PVC piping, etc.) will increase over the short-term in order to accommodate the construction of the Project. Temporary lay down areas should be limited to the Site.

2.7 Construction Details

The Proponent intends to construct the subdivision in two separate Phases which are detailed in the following sections. The construction activities during both phases of construction will generally take place between 7am and 7pm, Monday to Friday.

2.7.1 Phase 1 Infrastructure Construction (Sub-grade Construction)

Phase 1 will begin with clearing and grubbing and the construction of a new street (Belfry Street) and associated infrastructure. Belfry Street will connect Augusta Terrace (northeast corner of the Site) to Satara Drive (located at the southwest corner of the Site). A cul-de-sac will also be constructed from the north end of Belfry Street extending west.

The Proponent has scheduled the first phase of the Project to begin in April of 2022; it is estimated that the work for Phase 1 will take approximately 10 weeks to complete. The first phase consists primarily of below grade work and will include the following steps:

 Clearing and grubbing of the entire Site; this will take place prior to mid-April prior to the start of the regional nesting period for nesting/breeding birds. Following clearing and grubbing, silt fencing will be installed along the perimeter of the Site for erosion/sediment control over the duration of the Project.



2. Earthwork for the shaping of storm water detention ponds and installation of storm water infrastructure. Overburden soil removed from the storm water detention pond locations will be re-used during Site grading.

3. Installation of municipal infrastructure (i.e., sanitary sewer, storm drain and water services) will be completed, beginning with the installation of the deepest pipe by elevation. Each residential lot will be serviced with a single storm lateral for footing drains, two sanitary laterals and two water service laterals, one for each unit of the two-unit

dwellings.

4. Once municipal infrastructure is installed, the excavations will be backfilled in accordance with engineering recommendations. The street and cul-de-sac will be backfilled to subgrade elevation and the curb drains will be installed and connected to catch basins in

the right-of-way.

5. During Phase 1, the drainage swales along the rear of the residential lots will also be

constructed.

Phase I of the Project will be overseen by civil and geotechnical engineering firms in accordance

with the City of Moncton requirements.

2.7.2 Phase 2 Infrastructure Construction (Above-grade Construction)

The Proponent has scheduled the second phase to being in July of 2022 and will consist of the

following:

1. Begin construction of the curb for the street (Belfry Street) on-site.

2. Surfacing of the street and sidewalk; this will be done under the supervision of qualified

quality control personnel. This portion of the construction should be completed in three

weeks.

3. Following the surfacing of the roadway and sidewalk, testing and inspection reports will

be completed and submitted to the City of Moncton for approval.

An earthwork contracting company owned and operated by the Proponent will be responsible

for completing the majority of the below grade construction (i.e., installation of municipal

infrastructure and site preparation). During these construction activities, the crew will generally

consist of five to seven employees. Equipment used on-site during the earthwork operations will

hive engineering

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consist of dump trucks, excavators, bulldozers and rollers used to excavate, backfill and compact material.

During the construction and finishing of the street, crews will generally consist of six to eight employees for constructing the curb, three to four employees for constructing the sidewalk and six to eight employees for surfacing the street with asphalt. Equipment used during this phase of the construction will consist of dump trucks, curb machines, pavers, asphalt rollers and concrete mixers.

The proposed schedule for the Project is as follows:

- Phase I Infrastructure Construction April 1, 2022 through mid to end of June 2022.
- Phase 2 Infrastructure Construction July 2022 through the end of July / beginning of August 2022.
- Construction of Semi-Detached Dwellings and Associated Landscaping July of 2022 until 2026 (estimate), depending on market demand.

The cleared vegetation and grubbings removed during Phase I will be taken off-site for disposal at a local pit. Any fill materials (i.e., crushed rock) will be clean and sourced from a local pit (likely from the Gorge Road). Although the Project will result in an increase in traffic in the area, no detours will be necessary to accommodate the work. The majority of the work will be limited to the Site until the project is complete.

Potential pollutants that could be generated during the construction phase include:

- Noise associated with the operation of machinery, vehicles and equipment.
- Airborne emissions (volatile organics) associated with the operation of machinery, vehicles and equipment.
- Dust associated with exposed soils and/or wind.
- Sediment in runoff during construction.
- Minor releases of hydraulic/diesel spills from equipment, vehicles and machinery operating on-site.
- Solid waste generated as part of general construction activities (i.e., excess PVC piping, concrete, asphalt, cardboard, plastics etc.).

The mitigation measures employed to reduce impacts to the environment are discussed in further detail in Section 5.0 of this report.



It is anticipated that during the earthwork operation and first phase of the Project, the Site will be accessed through Belfry Street.

Following the completion of the below grade construction and finishing of the roadway, sidewalks and storm water detention ponds, the final step of construction consists of the individual development of the residential lots. The Proponent has indicated that the construction of the residential dwellings will be completed by Moemar Homes or CVR Homes, both companies that are owned and operated by the Proponent. Depending on the market, the 50 dwellings will be built over a period of 4-5 years beginning in July 2022.

2.8 Operation and Maintenance Details

Upon the completion of the construction of the infrastructure for the subdivision, each of the residential dwellings will be sold and privately owned. Therefore, the operation and maintenance that will occur post-construction will be the responsibility of the owner of the individual residences.

Potable water and sanitary sewer services will be provided by the City of Moncton. The water and sewer system has been designed by a civil engineer licensed to practice in the Province of New Brunswick. Typical domestic waste generated in the individual residences will be collected curb-side by municipal waste management services on a weekly basis.

2.9 Future Modifications, Extensions or Abandonment

The Project will consist of the construction of 50, two-unit dwellings within an existing subdivision. Future modifications, extensions or abandonment are not expected. With the exception of the adjoining property to the south (consisting predominantly of approximately three hectares of wetland), areas immediately surrounding the Site are developed for residential or community use (i.e., are occupied by residential dwellings, roadways and a walking trail). Based on the location of the Site and current adjoining land use options for future modifications or expansions are limited.

2.10 Documents Related to the Undertaking

Documents relevant to the Project have been presented in Appendices A through H, including the following:

 WSP's "Unit #10 Amending Subdivision Plan: Magnetic Hill Estates Subdivision, Amending Liberty Hill Subdivision Unit 5, Phase 2 Plan 37945491 Situated on the North Side of



Promenade Satara Drive, Cit y of Moncton, Parish of Moncton, County of Westmorland, Province of New Brunswick" dated December 11, 2020 (presented in Appendix A).

- J.R. Daigle Engineering Ltd.'s "Magnetic Hill Estates Subdivision, Unit No. 8 Roadways, Water & Sewer Services As-Built" dated July 2005 (presented in Appendix B).
- WSP's "Record Drawing Plan and Profile, Satara Drive, Liberty Hill Estates, Unit 5, Phase 2, Moncton, New Brunswick" dated January 2019 (presented in Appendix B).
- Hive Engineering (obtained through GeoNB Mapping) "21.03.162 Site Plan" dated November 30, 2021 (presented in Appendix C).
- WSP's "New Residential Development, Street Layout and Servicing Schematic" dated February 4, 2021 (presented in Appendix D).
- WSP's Topographic Map of Site, "Job: 201-08268" (presented in Appendix E).
- Atlas of Canada's Toporama Map, obtained by Hive Engineering on November 30, 2021 (presented in Appendix E).
- Atlantic Canada Conservation Data Centre "Data Report 6980: Moncton, NB" prepared Juned 22, 2021 (presented in Appendix F).
- Overdale Environmental Inc.'s "Standard Wetland Delineation, Belfry Street, Moncton, NB, PID 00939744" dated June 16, 2020 (presented in Appendix F).
- Overdale Environmental Inc.'s "Wetland Delineation Report, Satara Drive, Moncton, NB" dated July 12, 2021 (presented in Appendix F).
- Aster Group Environmental Services Co-op's "CV Homes Bird Survey" dated June 21, 2021 (presented in Appendix G).
- New Brunswick Department of Heritage, Tourism and Culture (Heritage and Archaeological Services Branch), Archaeology Map of Site, obtained by Hive engineering on November 26, 2021 (presented in Appendix H).

No other applications to municipal, provincial or federal agencies have been submitted concurrently with this EIA registration with the exception of a building permit submitted to the City of Moncton.

3.0 DESCRIPTION OF EXISTING ENVIRONMENT

3.1 Physical and Natural Features

3.1.1 Topography

A topographic plan for the Site, as well as a topographic map provided by the Atlas of Canada is presented in Appendix E. In general, the Site and surrounding area slope east/southeast toward



the West Branch of Halls Creek and associated tributaries; the nearest tributary is located approximately 480 meters northeast of the Site (at its nearest point).

Locally, the area surrounding the Site has been developed for residential purposes; these areas have been locally graded to drain toward municipal storm water infrastructure in nearby roadways. The Site is vegetated and contains low-lying areas within an existing wetland on the southeast portion of the Site.

3.1.2 Watercourses

There are no watercourses present on the Site or immediate adjoining properties.

3.1.3 Coastal Features

The Site is located in the City of Moncton. There are no beaches, dunes, rock platforms, coastal marshes or diked lands on the Site or within 30 metres of the Site. There are no features in the area protected under *A Coastal Protection Policy for New Brunswick*.

3.1.3.1 General Geology

Surficial geological mapping indicates that the area is covered with blankets (0.5 to 3.0 meters thick) of Late Wisconsinan age morainal sediments that consist of loamy lodgement till, minor ablation till, silt, sand, gravel and rubble.

Bedrock geological mapping indicates that the bedrock in the area consists of Late Carboniferous-aged sedimentary bedrock.

3.1.4 Groundwater

The Site is located within an existing subdivision that is serviced with the City of Moncton municipal water services. Water for the City of Moncton is provided by the Turtle Creek reservoir, which is located more than 13 kilometres due south of the Site. The Site is not located within any protected wellfield areas, and groundwater in immediate proximity to the Site is not used as a potable drinking water supply. Given the fact that there are no communal or municipal groundwater wells in proximity to the Site, it is reasonable to assume that the Project will have no impact on the potable groundwater resources in the area.

3.1.5 Protected Wellfields/Watersheds

According to NBDELG records, the Site is not located within a watershed or wellfield protected area.



3.1.6 Ambient Air Quality

The Site is situated within an existing residential subdivision. Air quality is consistent with conditions expected to be present within a suburban residential area. There is currently no significant generation of dust or other emissions in the area surrounding the Project location.

3.1.7 Existing Ambient Noise Levels

The Site is situated within an existing residential subdivision. Ambient noise levels are consistent with conditions expected to be present within a suburban residential area (i.e., minor traffic noise, children playing, lawnmowers, snowblowers, etc.).

3.1.8 Fish Habitat

There are no open surface water bodies on-site or any immediate adjoining properties. There is no fish habitat on-site and the proposed project is not anticipated to impact fish or fish habitat.

3.1.9 Rare Flora and Fauna

Information from the ACCDC was obtained to provide desktop data of potentially rare species that may be present within five kilometres of the Site. The ACCDC data is presented in Appendix F.

The following table provides a list of rare flora and fauna that have been identified in the database and their current status and rarity rank:

Table 2 Summary of ACCDC Data

Species	COSEWIC	SARA	Provincial Legal Protection	Provincial Rarity Rank		
FLORA						
Black Ash (Fraxinus nigra)	Threatened	-	-	S4 S5		
FAUNA						
Atlantic Salmon – Inner Bay of Fundy pop. (Salmo saler pop.1)	Endangered	Endangered	Endangered	S2		
Loggerhead Shrike (Lanius ludovicianus)	Endangered	Endangered	-	SXB, SXM		
Eastern meadowlark (Stumella magna)	Threatened	Threatened	Threatened	S1B, S1M		
Least Bittern (Ixobrychus exilis)	Threatened	Threatened	Threatened	S1S2B, S1S2M		



Species	COSEWIC	SARA	Provincial Legal Protection	Provincial Rarity Rank
Wood Thrush (Hylocichla mustelina)	Threatened	Threatened	Threatened	S1S2B, S1S2M
Eastern Whip-Poor-Will (Anrostomus vociferus)	Threatened	Threatened	Threatened	S2B, S2M
Barn Swallow (Hirundo rustica)	Threatened	Threatened	Threatened	S2B, S2M
Bank Swallow (Riparia riparia)	Threatened	Threatened	-	S2S3B, S2S3M
Bobolink (Dolichonyx oryzivorus)	Threatened	Threatened	Threatened	S3B, S3M
American Eel (Anguilla rostrata)	Threatened	-	Threatened	S4
Barrows Goldeneye – Eastern pop. (Bucephala islandica – Eastern pop.)	Special Concern	Special Concern	Special Concern	S2M, S2N
Rusty Blackbird (Euphagus carolinus)	Special Concern	Special Concern	Special Concern	S3B, S3M
Olive-sided Flycatcher (Contopus cooperi)	Special Concern	Threatened	Threatened	S3B, S3M
Canada Warbler (Cardllina canadensis)	Special Concern	Threatened	Threatened	S3B, S3M
Common Nighthawk (Chordeiles minor)	Special Concern	Threatened	Threatened	S3B, S3M
Eastern Wood-Pewee (Contopus virens)	Special Concern	Special Concern	Special Concern	S4B S4M
Monarch (Danaus plexippus)	Endangered	Special Concern	Special Concern	S3B, S3M
Transverse Lay Beetle (Coccinella transversoguttata richardsoni)	Special Concern	-	-	SH
Wood Turtle (Glyptemys insculpta)	N/A	Threatened	Threatened	N/A
Bat hibernaculum or bat species occurrence ¹	N/A	Endangered	Endangered	N/A

Notes: ^{1.} Myotis lucifugus (Little Brown Myotis), Myotis septentrionalis (Long-eared Mytois) and Perimyotis subflavus (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under Federal Species at Risk Act and the NB Species at Risk Act



Following a review of the desktop data, field studies were completed at the Site including wetland delineations and review of existing vegetation, and a bird survey. The details of the field studies are presented in the following sections.

3.1.10 Wetlands and Existing Vegetation

A wetland is present on a portion of the Site (PID 00939744) and extends onto the adjoining property to the south (PID 70629431); A wetland delineation was completed to determine the actual extents of the wetland on the Site.

A wetland delineation was completed on PID 00939744 (eastern portion of the Site) in June of 2020; the report has been provided under separate cover and is included in Appendix G (Overdale Environmental Inc.'s "Standard Wetland Delineation, Belfry Street, Moncton, NB, PID 00939744" dated June 16, 2020). The report indicates that the wetland delineation was conducted by Theo Popma, M.Sc., in accordance with the NB Wetland Conservation Policy and the Clean Environment Act. The field survey indicated that the Site has been impacted by the residential development that has occurred on surrounding properties; a portion of the wetland observed on-site has been cleared and partially in-filled. Vegetation in the area generally consists of mixed hardwood and softwood trees and shrubs (including Wild Raisin (Viburnum nudum), Sheep Laurel (Kalmia Angustifolia) and Bunchberry (Cornus canadensis)) in dry forested areas, and shrub swamps/marshy conditions within the footprint of the wetland; vegetation within the wetland generally consists of Soft Rush (Juncus effusus), Silvery Sedge (Carex cannescens), and Canada Bluejoint (Calamagrostis canadensis). The report indicates that approximately 0.7 hectares of wetland habitat are present on the southern portion of the Site; the wetland habitat reportedly consists of approximately 0.5 hectares of shrub swamp and 0.2 hectares of marsh.

A second wetland delineation was completed by Overdale Environmental Inc. to confirm the overall size of the wetland (i.e., size of the wetland on the adjoining property to the south that is connected to the wetland previously delineated on-site in 2020). The report has been provided under separate cover and is included in Appendix G (Overdale Environmental Inc.'s "Wetland Delineation Report, Satara Drive, Moncton, NB" dated July 12, 2021). The field survey was conducted by Theo Popma, M.Sc. The report indicates that approximately three hectares of wetland habitat was identified on the adjoining property to the south. Vegetation observed in the wetland included Leatherleaf (Chamaedaphne clyculata), Rhodora (Rhododendron canadense), Sheep Laurel (Kalmia Angustifolia), Tamarack (Larix laricina), and Soft Rush (Juncus effusus). Vegetation in areas upland of the wetland included Wild Raisin (Viburnum nudum),



Balsam Fir (Abeis Balsamea), Gray Birch (Betula populifolia), Starflower (Trientalis borealis) and Wild Lilly of the Valley (Maianthemum canadense).

The results of the two wetland delineations confirm that the wetland, in total, is 3.7 hectares in area. The Project will include the infilling of 0.7 hectares of this wetland on PID 00939744. The remaining 3 hectares of wetland will not be impacted by the construction of the Project.

3.1.11 Birds and Bird Habitat

Roland Chiasson, a biologist with Aster Group Environmental Services Co-op was retained by Hive to conduct a bird survey within the Project footprint. The report has been provided under separate cover and is included in Appendix H (Aster Group Environmental Services Co-op's "CV Homes Bird Survey" dated June 21, 2021).

The purpose of the habitat assessment was to determine the quantity and quality of the bird habitat that exists within the Development Area, and to identify any bird Species of Conservation Concern (SOCC) in the area.

Prior to conducting the field reconnaissance, desktop data provided by the Maritime Bird Breeding Atlas and ACCDC was reviewed to preliminarily determine birds that are known or suspected to be present within a 100-kilometre radius of the project footprint. Particular to the bird habitat survey, the database search provided the following information:

- Reported observations of rare and endangered birds; and
- Expert Opinion Maps identifying species that have not been reported but are expected to be present based upon estimates of habitat and wildlife distribution.

Recognized bird survey techniques were followed by the biologist in the field to determine the presence of suitable bird habitat or bird behaviour to determine whether any endangered or bird species at risk were present in the Project area.

According to the report provided by Aster Group Environmental Services Co-op, bird species at risk or species of conservation including Bobolink (*Dolichonyx oryzivorus*), Rusty Blackbird (*Euphagus carolinus*), Common Nighthawk (*Chordeiles minor*), and Eastern Kingbird (*Tyrannus tyrannus*) in a suitable habitat within 100-kilometres of the Site had been identified in the ACCDC data. However, the biologist did not observe or hear any of the aforementioned birds during the field study. The biologist also indicated that the habitat available for species at risk is limited as the majority of the Site appears to have been previously cleared. The biologist did indicate that



hardwood trees and common bird species were observed on the Site. To mitigate risk to nesting/breeding birds, all clearing and grubbing will be completed outside of the nesting/breeding bird season, as recommended by Environment Climate Change Canada (ECCC).

The Project is situated in Zone C3 of the nesting zones in Canada (as outlined by the Government of Canada). The regional nesting period in this area is Mid-April to Late-August; therefore, the clearing and grubbing is proposed to take place outside of these dates. In the event that the clearing/grubbing cannot be completed outside of the nesting/breeding season, a bird biologist will be present on-site during the work to prevent accidental injury or death to nesting/breeding birds.

3.1.12 Environmentally Sensitive Areas

There are no environmentally sensitive areas reported within proximity to the Site.

3.2 Cultural Features

3.2.1 Traditional Use

The area surrounding the Site consists of suburban residential development. The Site and surrounding area are not known to be used provincially, federally or locally for tourism operations or cultural activities, nor is it used for hunting, fishing, gathering or other traditional uses by First Nations.

There is no known heritage or building heritage resources/areas such as historic sites, buildings or structures, national/provincial parks, fossil sites within proximity to the Site.

3.2.2 Archaeology and Heritage Resources

A map of the Site and surrounding area was obtained from the New Brunswick Heritage and Archaeological Services Branch to determine whether any known or suspected archaeological sites may be present in the area. The map indicates that there are no known heritage resources or archaeology sites in the area surrounding the Project. The map is presented in Appendix I.

3.2.3 Existing and Historic Land Uses

The adjoining properties immediately north and west of the Site are occupied by single-family or two-unit residential dwellings that are privately owned. The adjoining properties to the south are vacant and vegetated and the adjoining property to the east is a walking trail; these properties are both owned by the City of Moncton. Roadways in the area (Augusta Terrace to the north,



Muirfield Drive to the east, Ryan Street to the west and Satara Drive to the south) are all owned and operated by the City of Moncton.

The Site is situated in an existing subdivision in the north end of Moncton; the Site and surrounding areas were historically vacant and wooded prior to development for residential use. The residential subdivisions in proximity to the Site have been predominantly developed over the last 20 years.

Historical aerial photography confirms that the Site and surrounding lands have been vacant woodland/wetland since at least 1944. According to NBDELG records, the Site is not registered within the provincial contaminated sites management database. Based on our review of the historical land use of the property and other supplementary records, the Site and adjoining lands are not suspected to be contaminated sites.

3.3 Socio-Economic Considerations

The project will have an overall positive effect on the local economy. New housing options in an already developed area within the municipal boundary will help to close the gap associated with the current housing shortage in the City of Moncton. It will also reduce potential for additional urban sprawl and result in a reduction in greenhouse gas emissions related to 1) commuting into and out of the city and 2) providing alternative options for transportation (i.e., walking, biking, skateboarding, etc.) due to the developments close proximity to schools, amenities and public transit.

The construction of new residential dwellings will generate property tax revenue for the City of Moncton. It will also provide work for laborers employed by a New Brunswick-owned and operated company. The completion of the work will permit the continued economic growth of the City of Moncton.

4.0 IDENTIFICATION OF POTENTIAL ENVIRONMENTAL IMPACTS

The Site is situated within an existing subdivision and will be developed for the construction of 50, two-unit residential dwellings. The development will include the construction of storm water detention ponds and municipal water, storm and sanitary sewer infrastructure to service the new residential units.

The proposed undertaking will involve new construction and development within an existing subdivision. Potential environmental impact considerations associated with the expansion project could include the following:



- Solid waste generated as part of general construction activities (i.e., excess PVC piping, concrete, asphalt, cardboard, plastics etc.). The impact avoidance measures used to limit the impact associated with construction waste is discussed in further detail in Section 5.0.
- Disturbance of fauna that may be present in the area. The impact avoidance measures
 used to mitigate the potential impact to fauna is discussed in further detail in Section 5.0.
- Noise and airborne emissions (volatile organics) associated with the operation of machinery, vehicles and equipment. The **impact reduction** used to mitigate the effects of noise and airborne emissions during construction are discussed in further detail in Section 5.0.
- Dust associated with exposed soils and/or wind. The impact reduction used to mitigate
 dust emissions during construction are discussed in further detail in Section 5.0.
- Sediment in runoff during construction. The impact reduction used to mitigate sediment runoff and erosion during construction are discussed in further detail in Section 5.0.
- Minor releases of hydraulic/diesel spills from equipment, vehicles and machinery operating on-site. The **impact reduction** used to mitigate potential fuel spills during construction are discussed in further detail in Section 5.0.
- Result in the net loss of 0.7 hectares of a 3.7-hectare wetland. The **impact compensation** associated with the loss of wetland is discussed in further detail in Section 5.0.

5.0 SUMMARY OF PROPOSED MITIGATION

A summary of the proposed mitigation efforts associated with the Undertaking are outlined herein. For purposes of this Project, there are no environmental impacts that cannot be mitigated through the establishment of compensation projects, best management practices (BMPs) and/or proper management and operational practices. The mitigation measures to avoid, reduce and compensate for any potential impacts to the surrounding environment are presented in the following sections.

5.1 Impact Avoidance

5.1.1 Waste

To avoid the potential impact to the environment associated with construction waste generated on-site, the construction site will have multiple disposal bins for solid waste. All solid waste generated on-site will be temporarily placed into designated disposal bins. The waste bins will be taken off-site for disposal at an approved facility (either a C&D disposal facility or the sanitary landfill). No construction waste will remain on-site following the completion of the Project.



5.1.2 Disturbance of Fauna

To avoid the potential impact to fauna (predominantly birds) identified in the area, any grubbing or clearing of the Site will take place outside of the breeding/nesting season as advised by Environmental Climate Change Canada (i.e., outside of the months of mid-April to late-August).

ACCDC data identified the presence of two other species (Wood Turtle (Glyptemys insculpta) and Bat hibernaculum or bat species) within a 5-kilometre radius of the Site. Given the fragmented nature of the wetland (i.e., no ability to migrate in or out of the habitat) and lack of aquatic habitat (i.e., no substantial depth of water), it is unlikely that the area is suitable habitat for Wood Turtles. There is no known hibernaculum on-site that would suggest that bats would overwinter on the property.

5.1.3 Leak/Spill Prevention Plans

The contractor will have a spill prevention plan prepared prior to commencement of construction. The plan will require all operating machinery on-site to be in good working condition and designate areas for overnight equipment storage (if necessary). Overnight storage of vehicles and materials will not be situated in proximity to the wetland on the southern portion of the Site. Bulk storage of fuel for vehicles/equipment will not be present on-site at any point in time and vehicles/equipment will not be fuelled or maintained on-site. Any routine maintenance or fuelling will take place off-site.

5.1.4 Environmental and Safety Training for Personnel On-Site

All construction and operation personnel will have the appropriate health and safety training prior to working on-site. In addition, all equipment operating on-site will be equipped with emergency spill kits in the event of a minor fuel release (i.e., hydraulic oil, diesel). Staff will be trained in emergency response measures in the event of a minor spill (i.e., placement of oil absorbent booms, absorbent granular material, etc.). Any minor leaks will be immediately reported to the site supervisor and the NBDELG.

5.2 Impact Reduction

5.2.1 Noise and Airborne Emissions

To reduce the potential impact to the surrounding environment associated with noise and airborne emissions (volatile organics), the operation of machinery, vehicles and equipment will take place during routine business hours (7 am to 7pm, Monday through Friday). This will also be mitigated by ensuring equipment is in good condition and by establishing a no-idling policy. Any



increase in noise levels or airborne emissions will only take place during the construction phase; upon completion of the Project, there will be no long-term increase in noise or airborne emissions on the Site in comparison to surrounding areas, as the land use will be the same as surrounding areas (i.e., typical residential subdivision).

5.2.2 Dust Emissions

In order to mitigate fugitive dust emissions, the Proponent will minimize exposed stockpile areas of overburden material during the construction phases of the Project (i.e., will be reused or taken off-site). If dust becomes an issue, water trucks will be used to moisten exposed soils to limit dust emissions. Upon completion of work in any area of the Site, appropriate stabilization methods (i.e., hydroseeding, sodding or mulching) will be implemented to reduce the potential for dust emissions.

5.2.3 Erosion and Sedimentation

Prior to commencement of the project, erosion and sediment control (ESC) structures will be installed based upon the recommendations of a licensed civil engineer. To reduce or eliminate potential for erosion and/or sedimentation, the ESC structures will be inspected on a regular basis to ensure that they are functioning as intended.

Excavated soils, grubbings and fill will not be stored in immediate proximity to the wetland located to the south of the Site to reduce potential for off-site impacts. In the event of a major rain event, stockpiled materials will be taken off-site or tarped to eliminate the potential for sediment in runoff.

5.2.4 Stormwater Management Plan

A stormwater management plan was developed for the Project in accordance with the City of Moncton requirements. The plan includes the construction of a stormwater detention pond, which will mitigate post-construction, off-site stormwater flows. This will mitigate impacts to downstream receiving bodies of water.

5.2.5 Fuel Oil Spills from Equipment used during Construction and Operation

To reduce the potential for minor fuel spills during construction and operation activities, all equipment should be in good working condition and free of any known fluid leaks. Inspection of the equipment will also be completed regularly in order to prevent any equipment failure which could potentially cause a fuel release. Spill kits will be available in proximity to any fuel-operated



machinery in the event of an unexpected release. Any releases of fuel would be reported to NBDELG and remediated immediately in accordance with provincial guidelines.

5.2.6 Site Inspections

The Project will be inspected by representatives of engineering firms for geotechnical, civil and material testing services in accordance with the requirements of the City of Moncton.

In addition, the site supervisor will complete daily inspections of all equipment and ESC structures. Any equipment determined not to be in good working order will be removed from the Site. In the event that the site supervisor identifies a deficiency in ESC structures on-site, work on-site will stop until the ESC structure has been restored to operate as intended.

5.3 Impact Compensation

5.3.1 Infilling of the Existing Wetland

Approximately 0.7 hectares of a 3.7-hectare wetland will be infilled as part of the Project. The infilling of the wetland cannot be avoided in order to achieve the density required to make the Project economically feasible. The Project will leave the remaining 3 hectares of wetland on the adjoining property to the south untouched. In order to compensate for the loss of wetland, the Proponent has committed to funding a compensation project to mitigate the net loss of wetland. The compensation will be conducted based on the requirements outlined in the NBDELG's "Wetland Compensation General Guidance" dated August 19, 2020.

6.0 PUBLIC AND FIRST NATIONS ENGAGEMENT

It is understood that the Project will require engagement with the public and First Nations communities in the area. Once this EIA registration document has been posted on the Government of New Brunswick website for public access, Hive will conduct engagement with the public and First Nations communities that might be impacted by the project. The Proponent is committed to addressing questions, concerns and suggestions raised by the public or First Nations groups throughout the approval process.

7.0 APPROVAL OF PROJECT

The following approval is required for the proposed project:

 Authorization/conditional approval of the undertaking under the provincial EIA requirements outlined in NB Regulation 87-83.



 Watercourse and Wetland Alteration Permit under the Clean Water Act in NB Regulation 90-80.

The Proponent has already engaged the City of Moncton with regards to the construction permit and approvals process, which are not being overseen by Hive Engineering. However, these approvals are being carried out in tandem with the submission of the EIA registration document. No other permits or approvals are known to be required at this time.

8.0 FUNDING

The project is solely funded by the Proponent and does not include any municipal, provincial, or federal funding.

9.0 SIGNATURE

This EIA registration document was prepared by a team of professionals from Hive Engineering Limited on behalf of the Proponent.

Date: December 1, 2021

Andrea Kalafut, M.Sc.\., P.Eng.

Senior Environmental Engineer

Hive Engineering Limited



10.0 CLOSURE

This report has been prepared for the sole benefit of RobAly Homes Inc. This report and any of its content cannot be relied upon by any other person or entity without the express written consent of Hive Engineering Limited and RobAly Homes Inc. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Hive Engineering Limited accepts no responsibility for damages incurred by any third party resulting from decisions or actions based on the content of this report.

The conclusions presented herein represent the best technical judgement of Hive Engineering personnel based on current engineering and scientific practices and environmental standards at the time the work was performed. The conclusions are based on the site conditions encountered at the time the work was performed at the locations presented in this report.



11.0 REFERENCES

Aster Group Environmental Services Co-op. "CV Homes Bird Survey". June 21, 2021.

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Atlas of Canada. Toporama Map, obtained by Hive Engineering on November 30, 2021.

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Sewer Services As-Built". July 2005.

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Designation Order. Clean Water Act. November 2001.

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Moncton, New Brunswick". January 2019.

hive ENGINEERING

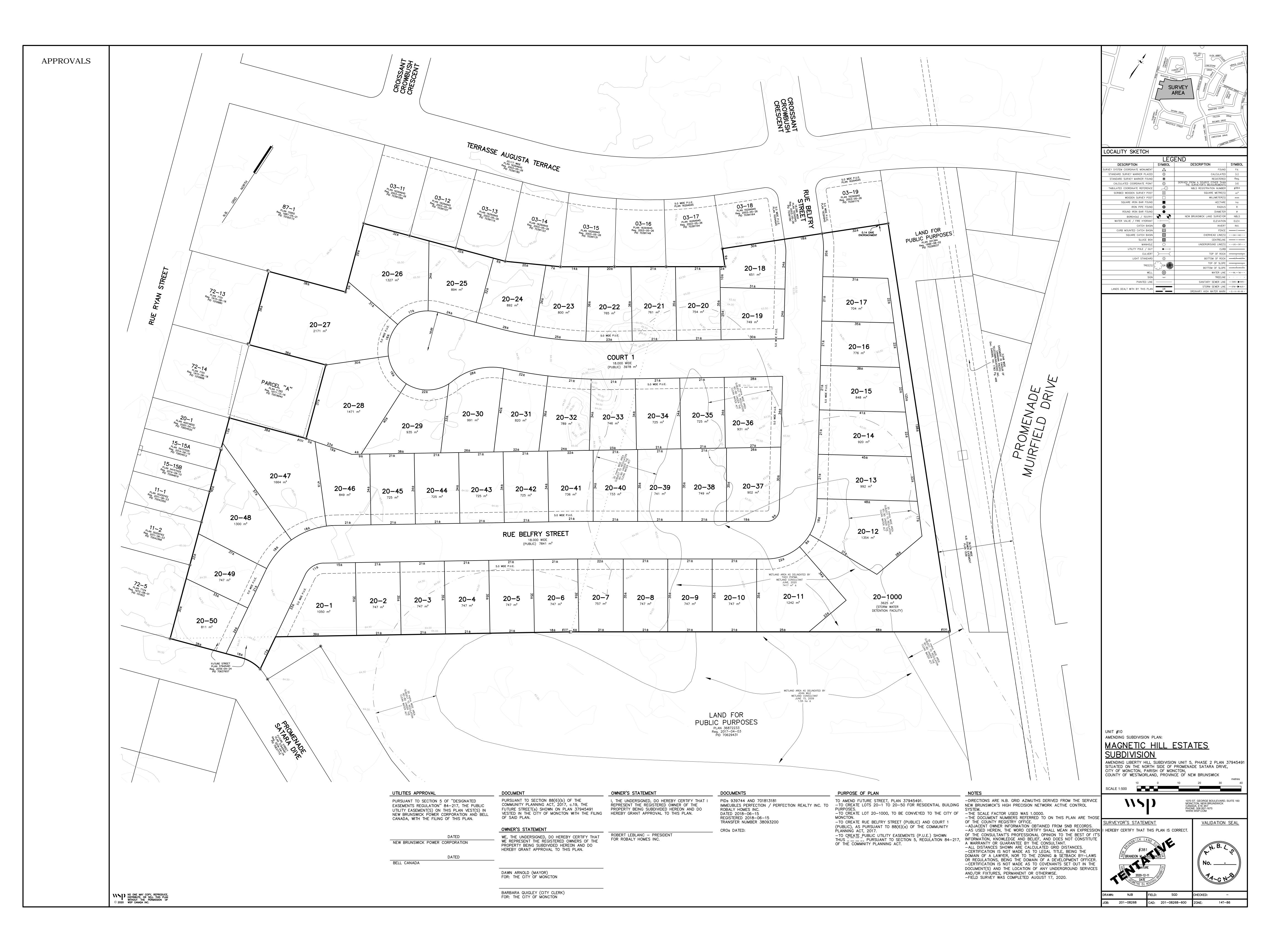
EIA Registration Document - Residential Development Magnetic Hill Estates Subdivision, Moncton, New Brunswick Project: 21.03.162 (December 1, 2021) WSP. Topographic Map of Site, "Job: 201-08268".

WSP. "Unit #10 Amending Subdivision Plan: Magnetic Hill Estates Subdivision, Amending Liberty Hill Subdivision Unit 5, Phase 2 Plan 37945491 Situated on the North Side of Promenade Satara Drive, Cit y of Moncton, Parish of Moncton, County of Westmorland, Province of New Brunswick". December 11, 2020.

Service New Brunswick. Registry and Mapping Services. (www.planetsnb.ca).



APPENDIX A Preliminary Subdivision Plan hive engineering



APPENDIX B As-Builts hive ENGINEERING

03-50

MAGNETIC HILL ESTATES SUBDIVISION

UNIT No. 8

ROADWAYS, WATER & SEWER SERVICES

AS - BUILT

	DWG. No.	DRAWING TITLE
LINUT NO. 8	ME-1-AB-1	WATERMAIN AS-BUILT
TERRASSE AUGUSTA TERRACE VIIII	ME-1-AB-2	SANITARY & STORM MAIN AS-BUILT
REY PLAN SCALE = 1:2500	ME-1-AB-3	SERVICES AS-BUILT

INSPECTOR:
PAUL RICHARD

CONTRUCTION PERIOD:
JANUARY - JUNE, 2003

INSPECTION & PROVISIONAL ACCEPTANCE:
DATE: APRIL 11, 2003

PRESENT: BRENDA DORE-KIDNEY, CITY OF MONCTON
ERNIE WEAVER, CITY OF MONCTON
GARY BURLOCK, CITY OF MONCTON
GUY BUCHARD, PERFECTION CONTRACTING
PAUL RICHARD, J.R. DAIGLE ENGINEERING LTD.

PIPE WORK

PERFECTION CONTRACTING

CURB & GUTTER WORK

BASTECH CONSTRUCTION LTD.

FOREMAN:
ZOEL BASQUE

INSPECTOR:
SIMON CHIPPER

CONTRUCTION PERIOD

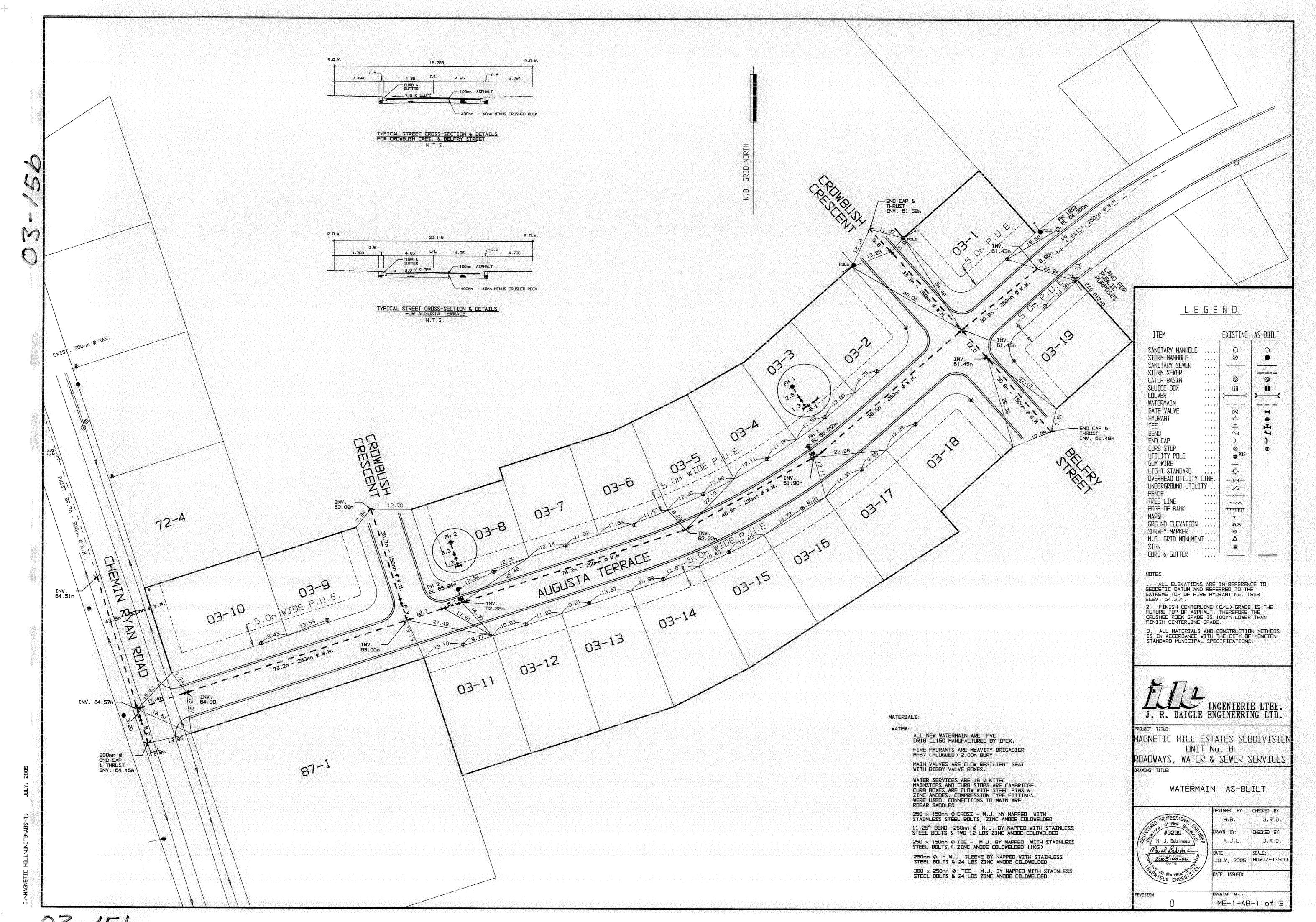
Developer: EASTCAN TRADING LIMITED

Consultant: J.R. DAIGLE ENGINEERING LTD.

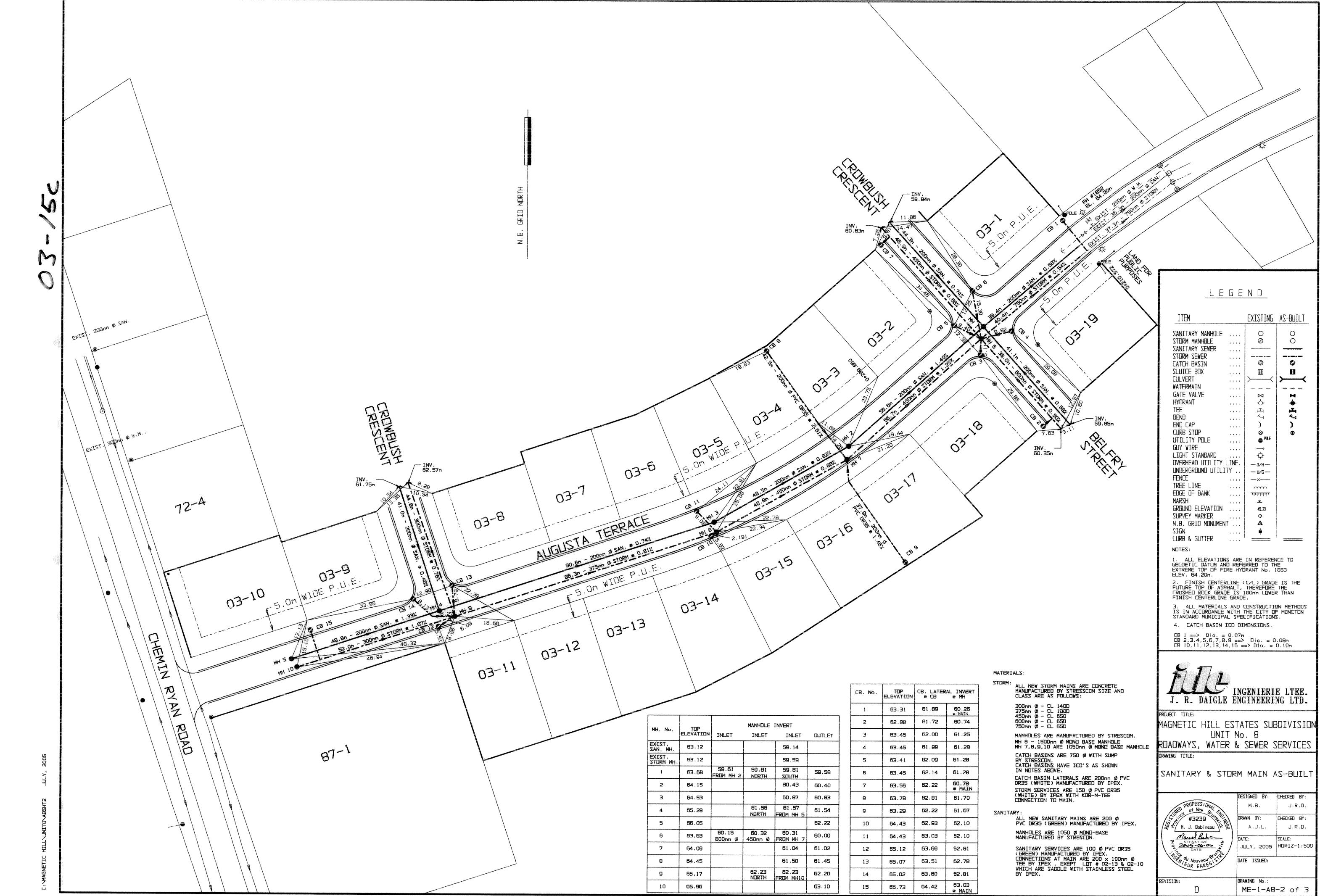
, JULY, 2005

ROADWAYS, WATER & SEWER SERVICES
SOVER SHEET
AUGUSTA TERR., CROWBUSH CRES., BELFRY ST.

03-15a



03-156



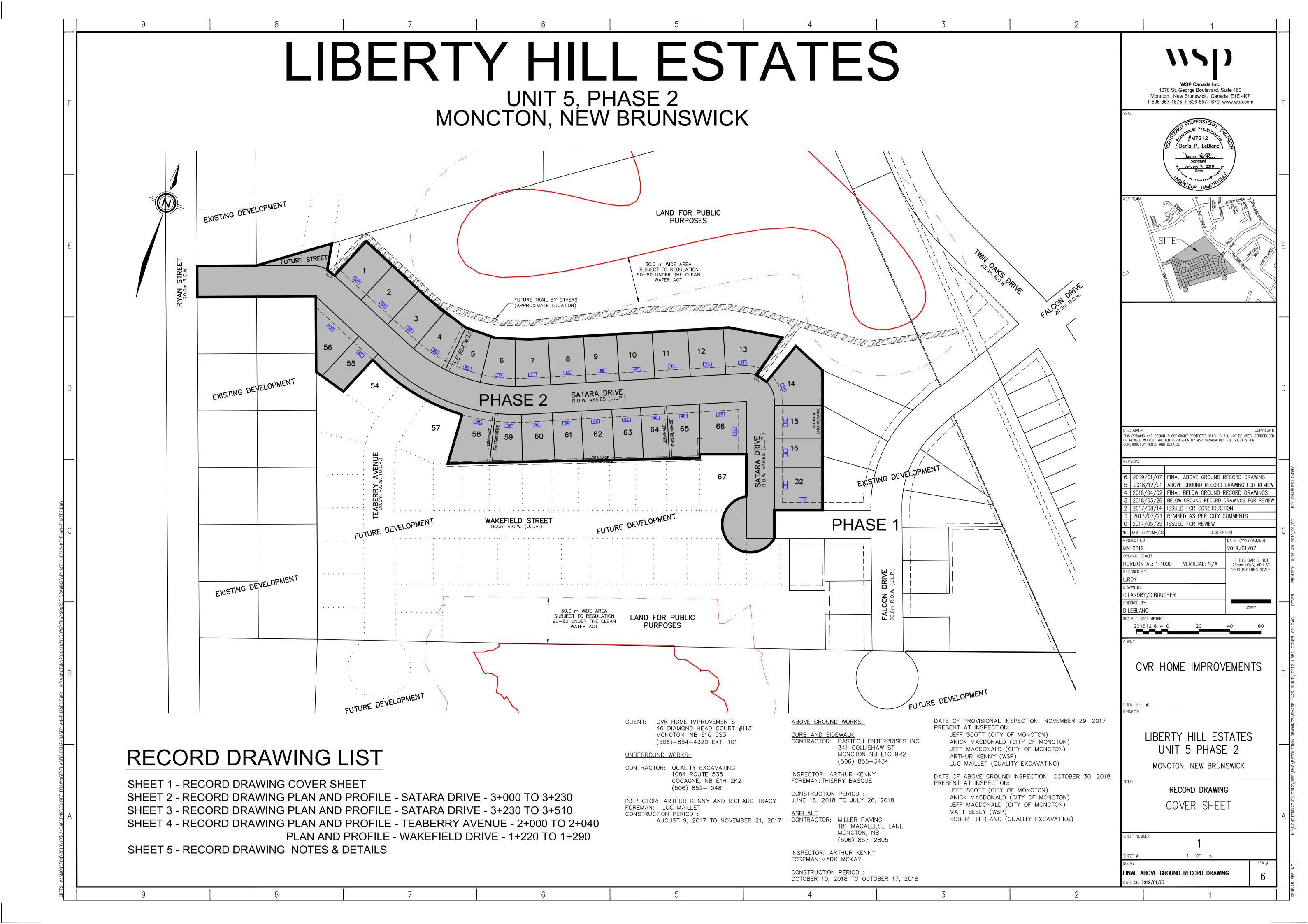
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UNIT 8
ROADWAYS, WATER 8
SANITARY & STORM S
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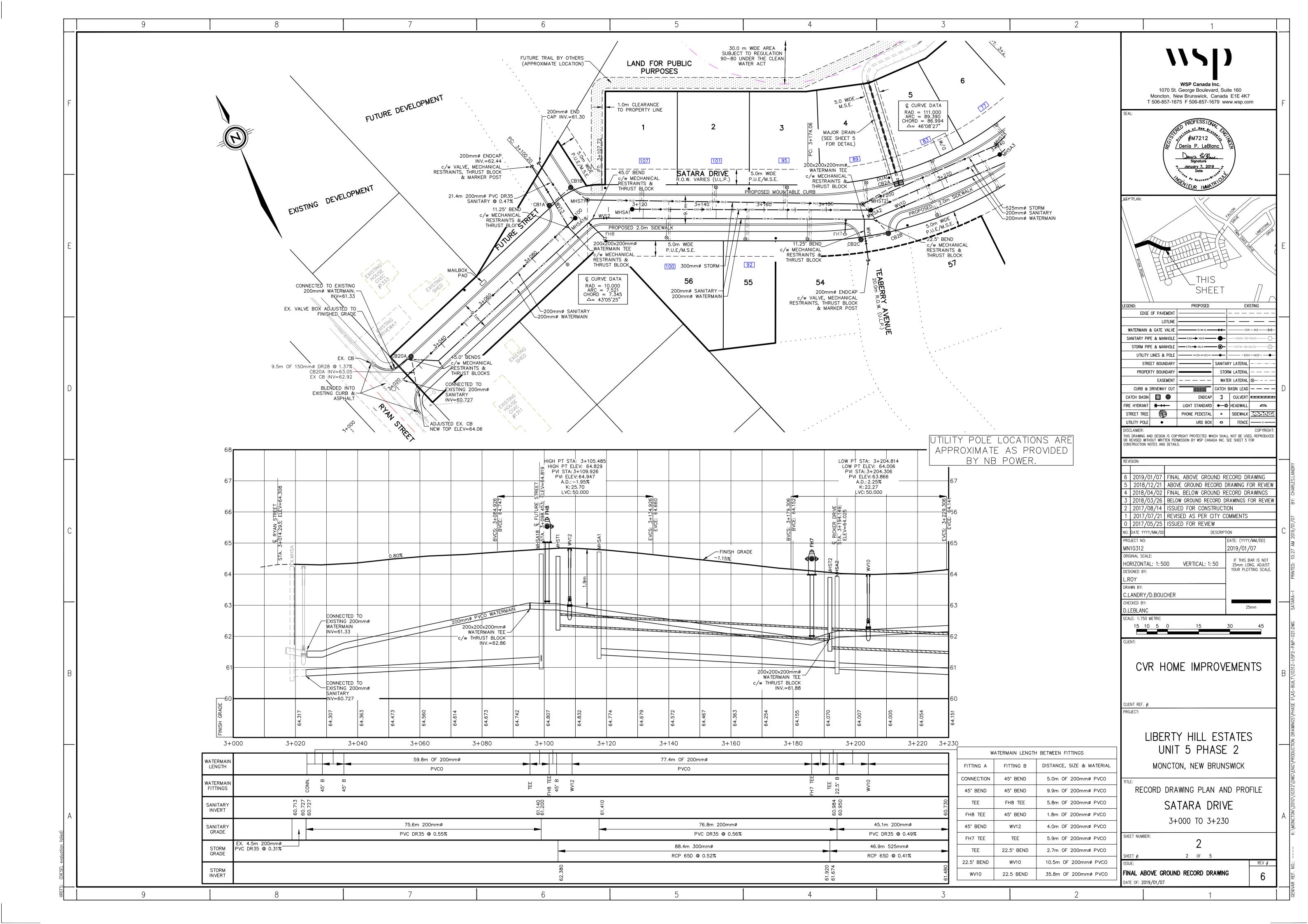
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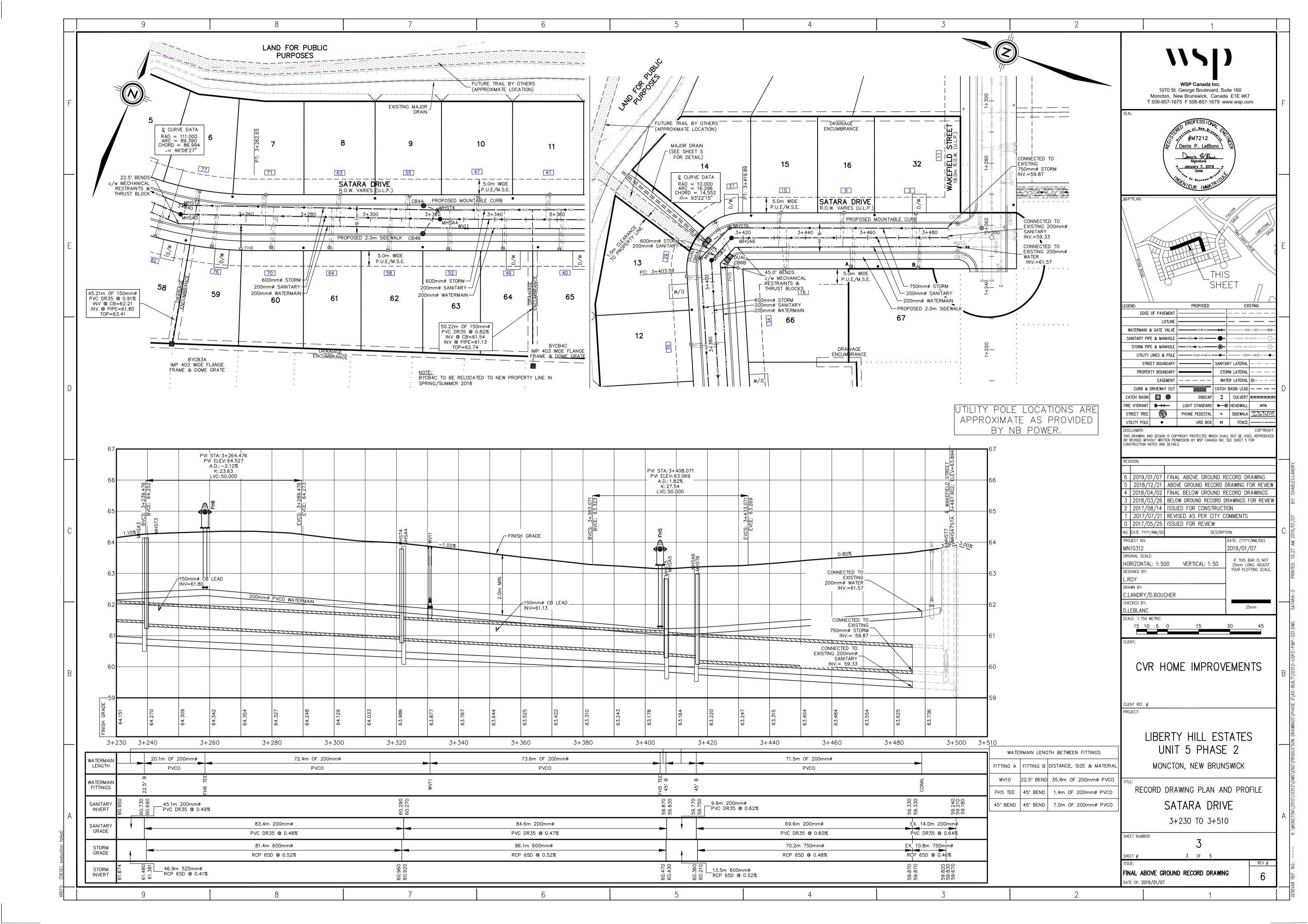
& SEWER SERVICES

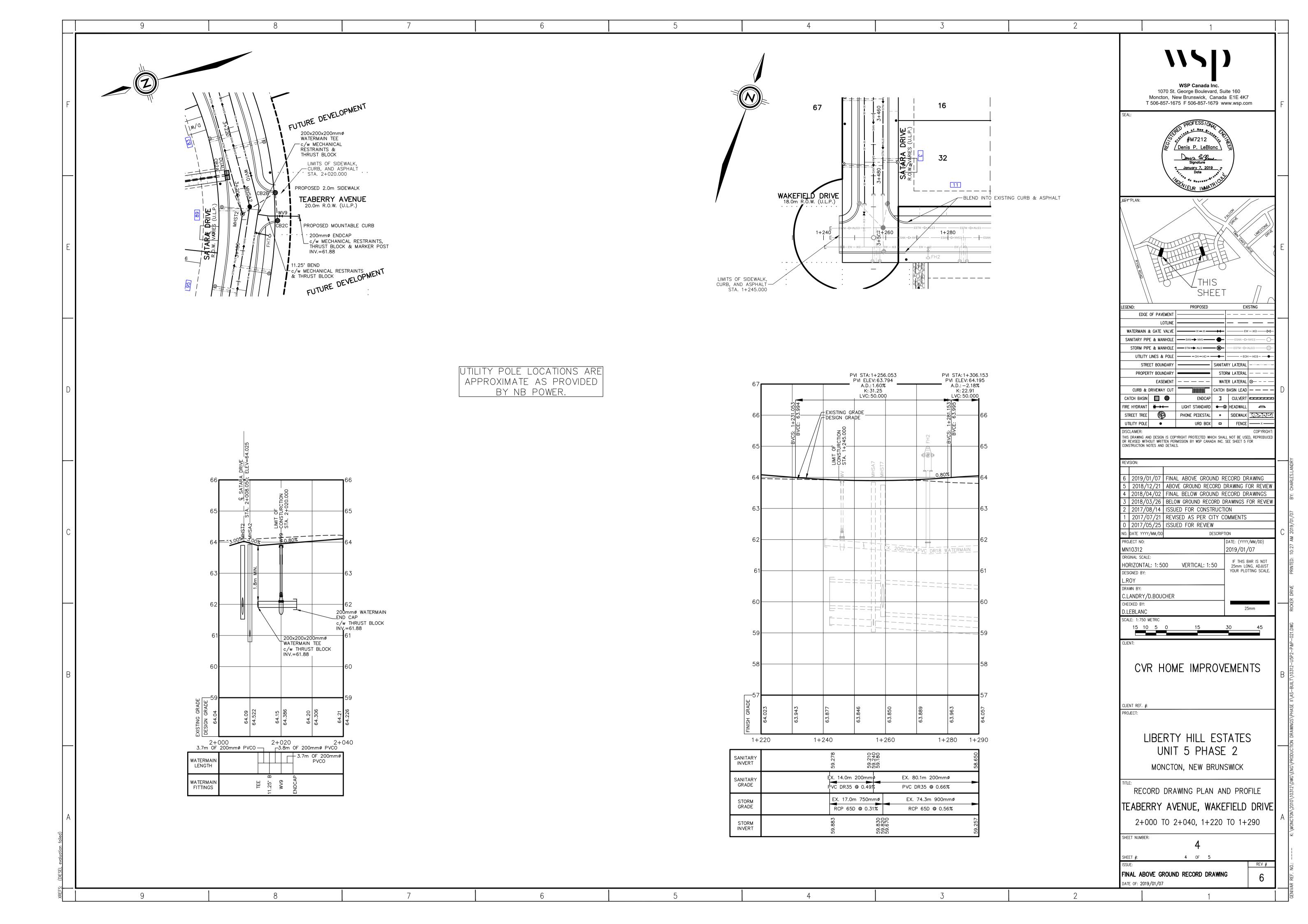
03-15c

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9 8 7 2

CONSTRUCTION NOTES

LOCAL GOVERNMENT.

1. ALL WORK PERFORMED IN ACCORDANCE WITH THE CITY OF MONCTON ENGINEERING AND ENVIRONMENTAL SERVICES DEPARTMENT STANDARD MUNICIPAL SPECIFICATIONS, 2013 EDITION.

2. ALL WORK PERFORMED IN ACCORDANCE WITH THE NEW BRUNSWICK DEPARTMENT OF THE ENVIRONMENT AND

3. ALL ELEVATIONS ARE APPROXIMATELY GEODETIC BASED ON NBCM 28155, N=7456492.126, E=2628800.997 WITH A PUBLISHED ELEVATION OF

MATERIALS

STORM SEWER

- MAINS: 750mmø, 600mmø, 525mmø & 300mmø CONCRETE RCP 65D BY STRESCON
- LATERALS: 150mmø PVC DR28 (WHITE) BY IPEX
- CONNECTORS: INSERT—A—TEECB LEADS: 150mmø PVC DR28 (WHITE) BY IPEX
- MANHOLES: 1500mmø, 1200mmø & 1050mmø CONCRETE BY STRESCON
 CATCH BASINS: 1050mmø & 750mmø CONCRETE BY STRESCON
- PERFORATED DRAIN PIPE BY ARMTECFITTINGS: 150mmø PVC DR35 LONG SWEEP 22.5° & 11.25° BENDS AND CAPS BY IPEX

CANITADY CEWED

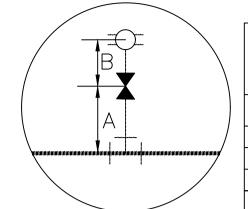
- SANITARY SEWER

 MAINS: 200mmø PVC DR35 (GREEN) BY IPEX
- LATERALS: 100mmø PVC DR35 (GREEN) BY IPEX
- MANHOLES: 1050mmø CONCRETE BY STRESCON
- CONNECTORS: 100mmø DR35 SADDLE BY IPEX
 FITTINGS: 100mmø PVC DR35 LONG SWEEP 45*, 22.5*, 11.25* BENDS AND CAPS BY IPEX

SEE MONCTON SUBDIVISION DEVELOPMENT PROCEDURES, STANDARDS AND GUIDELINES (LATEST EDITION) FOR TYPICAL ROAD CROSS SECTION.

WATERMAIN

- MAINS: 200mmø PVCO BIONAX BY IPEX
- HYDRANTS: CLOW CANADAGATE VALVES: 200mmø & 150mmø BY CLOW CANADA
- VALVE BOXES: MUELLER MVBSERVICE BOX: CLOW
- FITTINGS: 200x200mm, 200x150mm TEE; 200mm-22.5°, 11.25° BENDS BY STAR PIPE PRODUCTS
- MAIN STOP: 19mm BALL TYPE BY MUELLER
- CURB STOP: 19mm BALL TYPE BY MUELLER
- WATER LATERALS: 19mm Q-LINE BY IPEX
- SADDLES: CAMBRIDGE BRASSRESTRAINTS: MECHANICAL RESTRAINTS BY STAR PIPE PRODUCTS



FIRE HYDRANT								
CONNECTIONS								
FH	DIM"A"	DIM"B"	TOP ELEV.					
5	0.99	4.60	64.08					
6	1.37	6.25	65.27					
7	0.90	3.96	64.79					
8	0.57	6.76	65.84					

M_{\perp}	ANHOLE SCHED	ULE
MANHOLE LABEL	MANHOLE TOP ELEVATION	MANHOLE DIAMETER
MHSA1	64.80	1050mm
MHSA2	63.98	1050mm
MHSA3	64.22	1050mm
MHSA4	63.94	1050mm
MHSA5	63.13	1050mm
MHSA6	63.18	1050mm
MHSA18	64.78	1050mm
MHST1	64.71	1050mm
MHST2	64.02	1050mm
MHST3	64.20	1200mm
MHST4	63.87	1200mm
MHST5	63.08	1200mm
MHST6	63.10	1500mm

	CATCHBASIN SCHEDULE									
CATCHBASIN LABEL	COVER TYPE	CATCHBASIN LEAD TO	FINISHED TOP OF CATCHBASIN	LEAD DIAMETER (mm)	ICD FLOW (I/s)	INLET CONTROL DEVICE	DISTANCE TO MANHOLE (m)			
CB1A	W411 FRAME & GRATE	CB1B	64.52	150	N/A	N/A*	8.99			
CB1B	W411 FRAME & GRATE	MHST1	64.59	150	N/A	N/A*	6.26			
DUAL GRATE CB2A	S401 DOUBLE FRAME & GRATE	MHST2	63.80	150	N/A	N/A*	13.51			
CB2B	W411 FRAME & GRATE	MHST2	63.81	150	N/A	N/A*	12.60			
CB2C	W411 FRAME & GRATE	CB2B	63.83	150	N/A	N/A*	9.00			
BYCB3A	IMP 403 WIDE FLANGE FRAME & DOME GRATE	PIPE	63.41	150	N/A	N/A*	45.21			
CB4A	W411 FRAME & GRATE	MHST4	63.83	150	28.99	114.3mm (4.5")	4.87			
CB4B	W411 FRAME & GRATE	MHST4	63.81	150	28.99	114.3mm (4.5")	9.02			
BYCB4C	IMP 403 WIDE FLANGE FRAME & DOME GRATE	PIPE	63.74	150	28.99	114.3mm (4.5")	50.22			
DUAL GRATE CB6A	S401 DOUBLE FRAME & GRATE	MHST6	63.02	150	N/A	N/A*	8.32			
DUAL GRATE CB6B	S401 DOUBLE FRAME & GRATE	DUAL GRATE CB6A	63.00	150	N/A	N/A*	7.47			
CB20A	W411 FRAME & GRATE	EXCB	64.13	150	28.99	114.3mm (4.5")	9.60			
EXCB7A	W411 FRAME & GRATE	MHST7	63.67	150	28.99	114.3mm (4.5")	7.54			
EXCB7B	W411 FRAME & GRATE	MHST7	63.56	150	28.99	114.3mm (4.5")	8.13			
EXCB7C	W411 FRAME & GRATE	CB7B	63.50	150	N/A	N/A*	10.95			

ROADBED MATERIAL THICKNESS						
MATERIAL	WAKEFIELD STREET SATARA DRIVE RICKER DRIVE					
ASPHALT SEAL N.B.D.O.T. TYPE "D"	40mm	40mm	40mm			
ASPHALT SEAL N.B.D.O.T. TYPE "B"	60mm	60mm	60mm			
CRUSHED STONE 31.5mm MINUS	200mm	200mm	200mm			
CRUSHED STONE 75mm MINUS	300mm	300mm	300mm			
CRUSHED STONE UNDER CURB	335mm	335mm	335mm			
R.O.W. WIDTH	18.0m	VARIES	20.0m			
ALIGNMENT	OFFSET	OFFSET	OFFSET			
CURB TYPE	MOUNTABLE	MOUNTABLE	MOUNTABLE			
SIDEWALK	2.0m WIDE INTERGRATED	2.0m WIDE INTERGRATED	2.0m WIDE INTERGRATED			

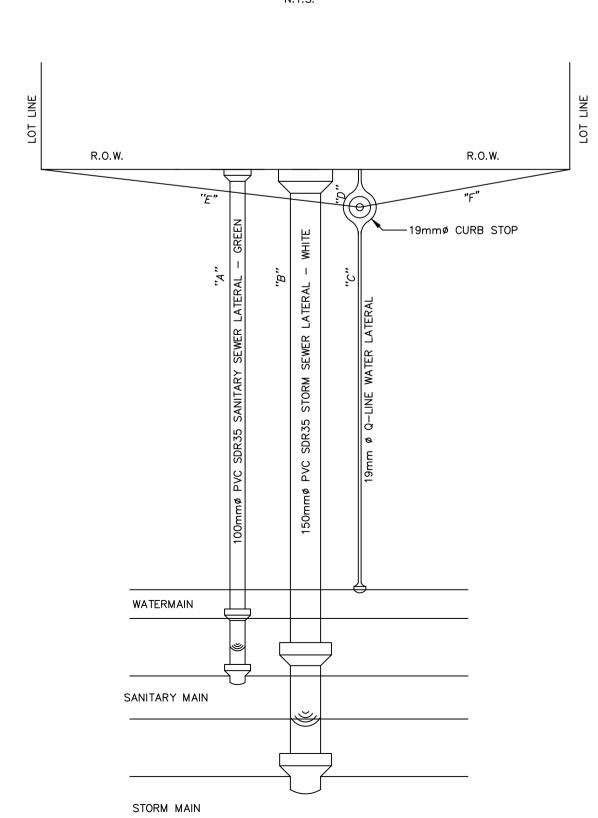
SEE DRAWING NO. S/D 2A SHOWN IN MONCTON SUBDIVISION DEVELOPMENT PROCEDURES, STANDARDS AND GUIDELINES (LATEST EDITION) FOR ROAD CROSS SECTION.

NOTE:
TOP ELEVATIONS OF BACKYARD CATCH BASINS WITH DOME
GRATES REFER TO LOWEST ELEVATION AT WHICH WATER CAN

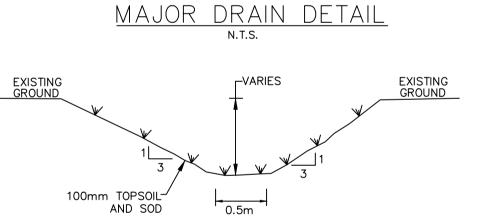
*CATCHBASINS DO NOT REQUIRE ICD SINCE 5 YEAR FLOW REQUIRES 150mmø LEAD

SINGLE UNIT SERVICE CONNECTION CONFIGURATION

N.T.S.



				SERVICE	C LATERAL	L SCH	EDULE					
SA	ANITARY LA	TERALS		STORM LATERALS			WATER LATERALS					
LOT NUMBER	DISTANCE FROM MAINLINE TO PROPERTY LINE (ENDCAP)	INVERT AT PROPERTY LINE (ENDCAP)	LOT NUMBER	DISTANCE FROM MAINLINE TO PROPERTY LINE (ENDCAP)	INVERT AT PROPERTY LINE (ENDCAP)	LOT NUMBER	DISTANCE FROM MAINLINE TO CURBSTOP "C"	DISTANCE FROM CURBSTOP TO PROPERTY LINE "D"	INVERT AT PROPERTY LINE	CURBS PROPER	CE FROM TOP TO TY LINE ''F''	
1	7.90	62.40	1	5.16	62.40	1	10.37	0.63	62.81	12.44	10.76	
2	7.96	62.41	2	5.48	62.41	2	10.18	0.82	62.63	12.54	10.68	
3	8.01	62.36	3	5.79	62.36	3	10.20	0.80	62.37	12.21	10.69	
4	9.70	62.26	4	7.12	62.26	4	11.80	0.97	62.15	14.87	9.91	
5	7.11	62.15	5	4.04	62.03	5	9.71	0.40	62.15	12.43	11.50	
6	8.15	61.95	6	5.13	61.95	6	10.48	0.52	62.34	12.08	10.70	
7	6.81	61.75	7	3.90	61.75	7	9.78	0.04	62.44	10.65	12.21	
8	7.25	61.68	8	4.33	61.68	8	10.31	-0.13	62.33	11.82	11.04	
9	7.65	61.74	9	4.74	61.74	9	10.19	0.35	62.12	11.19	10.16	
10	7.88	61.66	10	4.89	61.63	10	9.93	0.89	61.90	11.93	11.00	
11	7.96	61.24	11	4.82	61.24	11	10.96	-0.12	61.66	10.96	10.86	
12	8.04	61.10	12	4.75	61.10	12	10.96	-0.08	61.43	11.89	10.97	
13	8.12	60.93	13	4.68	60.98	13	11.09	-0.18	61.29	10.93	8.14	
14	8.71	61.00	14	5.56	61.00	14	10.77	0.61	61.15	4.21	11.61	
15	8.04	61.29	15	4.86	61.29	15	11.20	-0.16	61.36	9.84	11.66	
16	8.02	61.01	16	4.91	61.01	16	11.04	-0.08	61.51	8.48	9.81	
32	8.01	60.96	32	4.98	60.96	32	10.67	0.21	61.80	13.42	14.23	
54	9.96	62.35	54	12.11	62.35	54	6.32	0.68	62.32	12.64	10.24	
55	10.01	62.42	55	12.38	62.42	55	6.42	0.58	62.54	9.80	7.01	
56	10.08	62.53	56	12.72	62.53	56	5.98	1.01	62.79	18.35	19.48	
57	10.80	62.21	57	13.80	62.21	57	6.87	0.86	62.17	14.23	10.14	
58	9.94	62.01	58	13.20	62.01	58	6.66	0.30	62.21	12.96	10.36	
59	10.83	61.85	59	13.71	61.85	59	7.14	0.57	62.46	9.83	6.96	
60	11.11	61.83	60	14.05	61.83	60	7.11	1.05	62.49	10.53	9.42	
61	10.78	61.94	61	13.70	61.94	61	6.88	0.99	62.39	10.30	8.34	
62	10.44	61.65	62	13.36	61.65	62	7.46	0.12	62.21	11.31	8.54	
63	10.15	61.65	63	13.08	61.65	63	6.69	0.58	62.02	10.46	8.12	
64	10.08	61.45	64	13.13	61.45	64	6.35	0.81	61.74	9.71	7.15	
65	10.02	61.21	65	13.20	61.21	65	6.65	0.51	61.64	12.89	8.51	
66	9.97	61.14	66	13.14	61.14	66	7.17	-0.15	61.51	20.62	13.40	
67A	10.01	60.80	65	13.08	60.80	65	6.24	0.82	61.56	35.25	1.11	
67B	10.00	60.98	66	13.01	60.98	66	6.71	0.43	61.82	13.77	22.24	
1311 RYAN	11.98	62.45	1311 RYAN	18.56	62.45	1311 RYAN	5.35	2.75	62.83	14.51	24.02	



CATCH BASIN IIII IIII ENDCAP I CULVERT LIGHT STANDARD → ★ HEADWALL ← STREET TREE PHONE PEDESTAL • SIDEWALK URD BOX □ FENCE ──× THIS DRAWING AND DESIGN IS COPYRIGHT PROTECTED WHICH SHALL NOT BE USED, REPRODUCED OR REVISED WITHOUT WRITTEN PERMISSION BY WSP CANADA INC. 5 2019/01/07 FINAL ABOVE GROUND RECORD DRAWING 5 | 2018/12/21 | ABOVE GROUND RECORD DRAWING FOR REVIEW 2018/04/02 FINAL BELOW GROUND RECORD DRAWINGS 3 2018/03/26 BELOW GROUND RECORD DRAWINGS FOR REVIEW 2017/08/14 ISSUED FOR CONSTRUCTION 2017/07/21 REVISED AS PER CITY COMMENTS 0 2017/05/25 ISSUED FOR REVIEW NO. DATE YYYY/MM/DD 2019/01/07 MN10312 ORIGINAL SCALE: IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE. HORIZONTAL: N/A VERTICAL: N/A DRAWN BY: C.LANDRY/D.BOUCHER CHECKED BY: D.LEBLANC CVR HOME IMPROVEMENTS CLIENT REF. #: LIBERTY HILL ESTATES UNIT 5 PHASE 2 MONCTON, NEW BRUNSWICK RECORD DRAWING NOTES & DETAILS 5 OF 5 REV # FINAL ABOVE GROUND RECORD DRAWING DATE OF: 2019/01/07

1070 St. George Boulevard, Suite 160

Moncton, New Brunswick, Canada E1E 4K7

T 506-857-1675 F 506-857-1679 www.wsp.com

#M7212

LEGEND:

EDGE OF PAVEMENT

STREET BOUNDARY

CURB & DRIVEWAY CUT

PROPERTY BOUNDARY

EXISTING

—— EW — M∃ ———

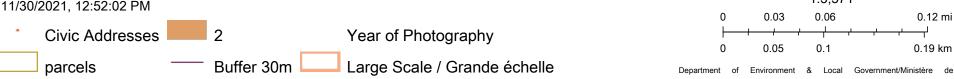
SANITARY LATERAL ----

CATCH BASIN LEAD — — —

APPENDIX C Site Location Plan hive engineering

21.03.162 - Site Location Plan





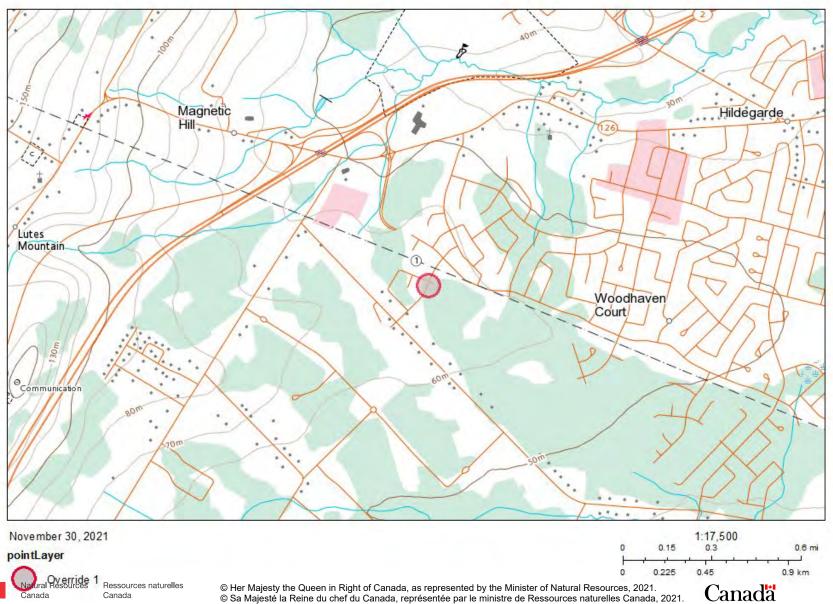
APPENDIX D Proposed Development Plan hive engineering

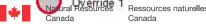


APPENDIX E Topography Mapping and Plan hive engineering



Toporama





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APPENDIX F Atlantic Canada Conservation Data Centre Report hive ENGINEERING



DATA REPORT 6980: Moncton, NB

Prepared 22 June 2021 by C. Robicheau, Data Manager

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- 1.2 Restrictions
- 1.3 Additional Information

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- 2.2 Fauna

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3.0 Special Areas

- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 3: Special Areas

4.0 Rare Species Lists

- 4.1 Fauna
- 4.2 Flora
- 4.3 Location Sensitive Species
- 4.4 Source Bibliography

5.0 Rare Species within 100 km

5.1 Source Bibliography



Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (AC CDC; www.accdc.com) is part of a network of NatureServe data centres and heritage programs serving 50 states in the U.S.A, 10 provinces and 1 territory in Canada, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology. The AC CDC was founded in 1997, and maintains data for the jurisdictions of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. Although a non-governmental agency, the AC CDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees.

Upon request and for a fee, the AC CDC queries its database and produces customized reports of the rare and endangered flora and fauna known to occur in or near a specified study area. As a supplement to that data, the AC CDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

<u>Filename</u> <u>Contents</u>

MonctonNB_6980ob.xls Rare or legally-protected Flora and Fauna in your study area

MonctonNB_6980ob100km.xls A list of Rare and legally protected Flora and Fauna within 100 km of your study area

1.2 RESTRICTIONS

The AC CDC makes a strong effort to verify the accuracy of all the data that it manages, but it shall not be held responsible for any inaccuracies in data that it provides. By accepting AC CDC data, recipients assent to the following limits of use:

- a) Data is restricted to use by trained personnel who are sensitive to landowner interests and to potential threats to rare and/or endangered flora and fauna posed by the information provided.
- b) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
- c) The AC CDC requires Data Users to cease using and delete data 12 months after receipt, and to make a new request for updated data if necessary at that time.
- d) AC CDC data responses are restricted to the data in our Data System at the time of the data request.
- e) Each record has an estimate of locational uncertainty, which must be referenced in order to understand the record's relevance to a particular location. Please see attached Data Dictionary for details.
- f) AC CDC data responses are not to be construed as exhaustive inventories of taxa in an area.
- g) The absence of a taxon cannot be inferred by its absence in an AC CDC data response.

1.3 ADDITIONAL INFORMATION

The accompanying Data Dictionary provides metadata for the data provided.

Please direct any additional questions about AC CDC data to the following individuals:

Plants, Lichens, Ranking Methods, All other Inquiries

Sean Blaney, Senior Scientist, Executive Director Tel: (506) 364-2658

sean.blaney@accdc.ca

Animals (Fauna)

John Klymko, Zoologist Tel: (506) 364-2660

john.klymko@accdc.ca

Data Management, GISJames Churchill, Data Manager

Tel: (902) 679-6146 james.churchill@accdc.ca **Plant Communities**

Sarah Robinson, Community Ecologist

Tel: (506) 364-2664 sarah.robinson@accdc.ca

BillingJean Breau

Tel: (506) 364-2657 jean.breau@accdc.ca

Questions on the biology of Federal Species at Risk can be directed to AC CDC: (506) 364-2658, with questions on Species at Risk regulations to: Samara Eaton, Canadian Wildlife Service (NB and PE): (506) 364-5060 or Julie McKnight, Canadian Wildlife Service (NS): (902) 426-4196.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Hubert Askanas, Energy and Resource Development: (506) 453-5873.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Donna Hurlburt, NS DLF: (902) 679-6886. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NS DLF Regional Biologist:

Western: Emma Vost (902) 670-8187

Emma.Vost@novascotia.ca

Harrison.Moore@novascotia.ca

Eastern: Harrison Moore

(902) 497-4119

Western: Sarah Spencer (902) 541-0081

Sarah.Spencer@novascotia.ca

Eastern: Maureen Cameron-MacMillan

(902) 295-2554 Maureen.Cameron-MacMillan@novascotia.ca Central: Shavonne Meyer

(902) 893-0816

Shavonne.Meyer@novascotia.ca Kimberly.George@novascotia.ca

Central: Kimberly George

(902) 890-1046

Eastern: Elizabeth Walsh

(902) 563-3370 Elizabeth.Walsh@novascotia.ca

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Garry Gregory, PEI Dept. of Communities, Land and Environment: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

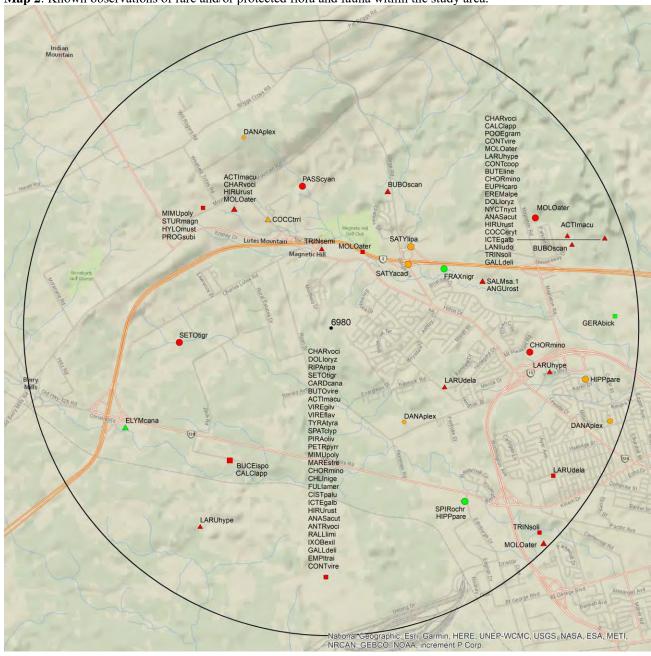
2.1 FLORA

The study area contains 4 records of 4 vascular and no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 158 records of 50 vertebrate, 8 records of 5 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

Map 2: Known observations of rare and/or protected flora and fauna within the study area.



RESOLUTION

- 4.7 within 50s of kilometers
- 4.0 within 10s of kilometers
- 3.7 within 5s of kilometers
- △ 3.0 within kilometers
- △ 2.7 within 500s of meters
- 2.0 within 100s of meters
- 1.7 within 10s of meters

HIGHER TAXON

- vertebrate fauna
- invertebrate fauna
- vascular flora
- nonvascular flora

3.0 SPECIAL AREAS

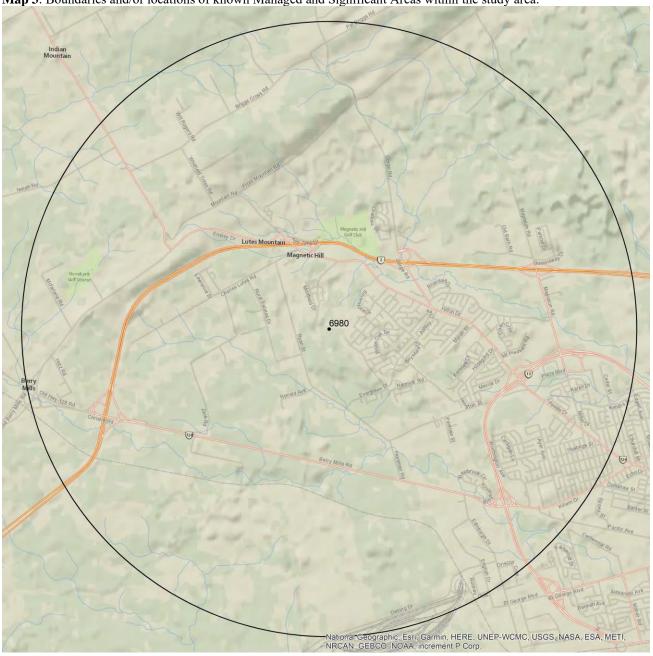
3.1 MANAGED AREAS

The GIS scan identified no managed areas in the vicinity of the study area (Map 3 and attached file: *msa.xls).

3.2 SIGNIFICANT AREAS

The GIS scan identified no biologically significant sites in the vicinity of the study area (Map 3 and attached file: *msa.xls).

Map 3: Boundaries and/or locations of known Managed and Significant Areas within the study area.



Managed Area Nignificant Area

Data Report 6980: Moncton, NB Page 5 of 28

4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding "location-sensitive" species, section 4.3) within the study area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (\pm the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
Р	Fraxinus nigra	Black Ash	Threatened			S4S5	1	2.1 ± 0.0
Ρ	Spiranthes ochroleuca	Yellow Ladies'-tresses				S2	1	3.6 ± 0.0
Ρ	Elymus canadensis	Canada Wild Rye				S2	1	3.7 ± 1.0
Р	Geranium bicknellii	Bicknell's Crane's-bill				S3	1	4.6 ± 5.0

4.2 FAUNA

1.2	Scientific Name	Common Name	COSEWIC	SARA	Drov Logal Drot	Drov Bority Book	# ***	Distance (km)
				_	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	Salmo salar pop. 1	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	1	2.6 ± 1.0
A	Lanius Iudovicianus	Loggerhead Shrike	Endangered	Endangered	Thurstoned	SXB,SXM	1	4.7 ± 0.0
Α	Sturnella magna	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B,S1M	1	2.9 ± 7.0
Α	Ixobrychus exilis	Least Bittern	Threatened	Threatened	Threatened	S1S2B,S1S2M	1	4.0 ± 7.0
A	Hylocichla mustelina	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	1	2.9 ± 7.0
A	Antrostomus vociferus	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B,S2M	1	4.0 ± 7.0
Α	Hirundo rustica	Barn Swallow	Threatened	Threatened	Threatened	S2B,S2M	5	2.5 ± 2.0
Α	Riparia riparia	Bank Swallow	Threatened	Threatened		S2S3B,S2S3M	5	4.0 ± 7.0
Α	Dolichonyx oryzivorus	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	6	4.0 ± 7.0
Α	Anguilla rostrata	American Eel	Threatened		Threatened	S4	1	2.6 ± 1.0
Α	Bucephala islandica (Eastern pop.)	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	1	2.7 ± 11.0
Α	Euphagus carolinus	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	1	4.7 ± 0.0
Α	Contopus cooperi	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B,S3M	1	4.7 ± 0.0
Α	Cardellina canadensis	Canada Warbler	Special Concern	Threatened	Threatened	S3B,S3M	2	4.0 ± 7.0
Α	Chordeiles minor	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	6	3.3 ± 0.0
Α	Contopus virens	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S4B,S4M	7	4.0 ± 7.0
Α	Bubo scandiacus	Snowy Owl	Not At Risk			S1N,S2S3M	2	2.4 ± 1.0
Α	Fulica americana	American Coot	Not At Risk			S1S2B,S1S2M	1	4.0 ± 7.0
Α	Buteo lineatus	Red-shouldered Hawk	Not At Risk			S2B,S2M	1	4.7 ± 0.0
Α	Chlidonias niger	Black Tern	Not At Risk			S2B,S2M	1	4.0 ± 7.0
Α	Vireo flavifrons	Yellow-throated Vireo				S1?B,S1?M	1	4.0 ± 7.0
Α	Progne subis	Purple Martin				S1B,S1M	1	2.9 ± 7.0
Α	Eremophila alpestris	Horned Lark				S1B,S4N,S5M	2	4.7 ± 0.0
Α	Butorides virescens	Green Heron				S1S2B,S1S2M	1	4.0 ± 7.0
Α	Nycticorax nycticorax	Black-crowned Night-heron				S1S2B,S1S2M	1	4.7 ± 0.0
Α	Empidonax traillii	Willow Flycatcher				S1S2B,S1S2M	1	4.0 ± 7.0
Α	Cistothorus palustris	Marsh Wren				S2B,S2M	8	4.0 ± 7.0
Α	Mimus polyglottos	Northern Mockingbird				S2B,S2M	6	2.9 ± 7.0
Α	Pooecetes gramineus	Vesper Sparrow				S2B,S2M	1	4.7 ± 0.0
Α	Mareca strepera	Gadwall				S2B,S3M	1	4.0 ± 7.0
Α	Tringa solitaria	Solitary Sandpiper				S2B,S5M	2	4.7 ± 0.0
Α	Larus hyperboreus	Glaucous Gull				S2N,S2M	3	3.6 ± 0.0
Α	Spatula clypeata	Northern Shoveler				S2S3B,S2S3M	3	4.0 ± 7.0
Α	Petrochelidon pyrrhonota	Cliff Swallow				S2S3B,S2S3M	3	4.0 ± 7.0
Α	Calcarius Iapponicus	Lapland Longspur				S2S3N,SUM	2	2.7 ± 9.0
Α	Rallus limicola	Virginia Rail				S3B,S3M	5	4.0 ± 7.0
Α	Charadrius vociferus	Killdeer				S3B,S3M	13	2.5 ± 2.0
		: :::::::::::::::::::::::::::::::::::::				,	. •	

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	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
Α	Tringa semipalmata	Willet				S3B,S3M	1	1.3 ± 0.0
Α	Coccyzus erythropthalmus	Black-billed Cuckoo				S3B,S3M	1	4.7 ± 0.0
Α	Vireo gilvus	Warbling Vireo				S3B,S3M	4	4.0 ± 7.0
Α	Piranga olivacea	Scarlet Tanager				S3B,S3M	1	4.0 ± 7.0
Α	Passerina cyanea	Indigo Bunting				S3B,S3M	1	2.4 ± 0.0
Α	Molothrus ater	Brown-headed Cowbird				S3B,S3M	9	1.3 ± 4.0
Α	Icterus galbula	Baltimore Oriole				S3B,S3M	10	4.0 ± 7.0
Α	Setophaga tigrina	Cape May Warbler				S3B,S4S5M	2	2.5 ± 0.0
Α	Anas acuta	Northern Pintail				S3B,S5M	2	4.0 ± 7.0
Α	Tyrannus tyrannus	Eastern Kingbird				S3S4B,S3S4M	5	4.0 ± 7.0
Α	Actitis macularius	Spotted Sandpiper				S3S4B,S5M	11	2.5 ± 2.0
Α	Gallinago delicata	Wilson's Snipe				S3S4B,S5M	9	4.0 ± 7.0
Α	Larus delawarensis	Ring-billed Gull				S3S4B,S5M	2	2.1 ± 0.0
- 1	Danaus plexippus	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	3	1.9 ± 0.0
- 1	Coccinella transversoguttata richardsoni	Transverse Lady Beetle	Special Concern			SH	1	2.0 ± 1.0
- 1	Hippodamia parenthesis	Parenthesis Lady Beetle				S3	2	3.6 ± 0.0
- 1	Satyrium acadica	Acadian Hairstreak				S3	1	1.6 ± 0.0
- 1	Satyrium liparops	Striped Hairstreak				S3S4	1	1.9 ± 0.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritimes province considers a number of species "location sensitive". Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in this report. Those intersecting your study area are indicated below with "YES".

New Brunswick

Scientific Name	Common Name	SARA	Prov Legal Prot	Known within the Study Site?
Chrysemys picta picta	Eastern Painted Turtle			No
Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	No
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	YES
Haliaeetus leucocephalus	Bald Eagle		Endangered	No
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Endangered	No
Cicindela marginipennis	Cobblestone Tiger Beetle	Endangered	Endangered	No
Coenonympha nipisiquit	Maritime Ringlet	Endangered	Endangered	No
Bat hibernaculum or bat species occurrence		[Endangered]1	[Endangered]1	YES

¹ Myotis lucifugus (Little Brown Myotis), Myotis septentrionalis (Long-eared Myotis), and Perimyotis subflavus (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the NB Species at Risk Act.

4.4 SOURCE BIBLIOGRAPHY

The recipient of these data shall acknowledge the AC CDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
70	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
62	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
21	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
3	iNaturalist. 2018. iNaturalist Data Export 2018. iNaturalist.org and iNaturalist.ca, Web site: 11700 recs.
3	iNaturalist. 2020. iNaturalist Data Export 2020. iNaturalist.org and iNaturalist.ca, Web site: 128728 recs.
2	Epworth, W. 2012. Species at Risk records, 2009-11. Fort Folly Habitat Recovery Program, 162 recs.
2	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
1	Benedict, B. Connell Herbarium Specimens. University New Brunswick, Fredericton. 2003.

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recs CITATION

- 1 Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
- Doucet, D.A. 2007. Lepidopteran Records, 1988-2006. Doucet, 700 recs.
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- Klymko, J. Univeriste de Moncton insect collection butterfly record dataset. Atlantic Canada Conservation Data Centre. 2017.
- 1 Majka, C. 2009. Université de Moncton Insect Collection: Carabidae, Cerambycidae, Coccinellidae. Université de Moncton, 540 recs.
- 1 Pike, E., Tingley, S. & Christie, D.S. 2000. Nature NB Listserve. University of New Brunswick, listserv.unb.ca/archives/naturenb. 68 recs.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 57560 records of 144 vertebrate and 1438 records of 81 invertebrate fauna; 8895 records of 320 vascular and 2262 records of 198 nonvascular flora (attached: *ob100km.xls).

Taxa within 100 km of the study site that are rare and/or endangered in the province in which the study site occurs (including "location-sensitive" species). All ranks correspond to the province in which the study site falls, even for out-of-province records. Taxa are listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record).

Taxonomic						Prov Rarity		5 1. # \	_
Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Rank	# recs	Distance (km)	Prov
A	Myotis lucifugus	Little Brown Myotis	Endangered	Endangered	Endangered	S1	23	27.1 ± 1.0	NB
A	Myotis septentrionalis	Northern Long-eared Myotis	Endangered	Endangered	Endangered	S1	13	27.1 ± 1.0	NB
A	Perimyotis subflavus	Eastern Pipistrelle	Endangered	Endangered	Endangered	S1	17	17.0 ± 1.0	NB
Α	Sterna dougallii	Roseate Tern	Endangered	Endangered	Endangered	S1?B,S1?M	1	98.3 ± 0.0	NS
Α	Charadrius melodus melodus	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B,S1M	1631	29.9 ± 0.0	NB
Α	Dermochelys coriacea (Atlantic pop.)	Leatherback Sea Turtle - Atlantic pop.	Endangered	Endangered	Endangered	S1S2N	5	55.4 ± 1.0	NB
Α	Salmo salar pop. 1	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered	Endangered	S2	644	2.6 ± 1.0	NB
Α	Salmo salar pop. 7	Atlantic Salmon - Outer Bay of Fundy pop.	Endangered		Endangered	SNR	403	13.7 ± 0.0	NB
Α	Rangifer tarandus pop. 2	Woodland Caribou (Atlantic- Gasp I-rsie pop.)	Endangered	Endangered	Extirpated	sx	2	20.7 ± 1.0	NB
Α	Lanius Iudovicianus	Loggerhead Shrike	Endangered	Endangered		SXB.SXM	1	4.7 ± 0.0	NB
Α	Sturnella magna	Eastern Meadowlark	Threatened	Threatened	Threatened	S1B.S1M	50	2.9 ± 7.0	NB
A	Ixobrychus exilis	Least Bittern	Threatened	Threatened	Threatened	S1S2B.S1S2M	19	4.0 ± 7.0	NB
Α	Hylocichla mustelina	Wood Thrush	Threatened	Threatened	Threatened	S1S2B,S1S2M	98	2.9 ± 7.0	NB
Α	Antrostomus vociferus	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S2B.S2M	28	4.0 ± 7.0	NB
Α	Hirundo rustica	Barn Swallow	Threatened	Threatened	Threatened	S2B.S2M	1646	2.5 ± 2.0	NB
Α	Catharus bicknelli	Bicknell's Thrush	Threatened	Threatened	Threatened	S2B,S2M	11	9.8 ± 2.0	NB
Α	Oceanodroma leucorhoa	Leach's Storm-Petrel	Threatened			S2B,SUM	1	39.8 ± 0.0	NB
Α	Glyptemys insculpta	Wood Turtle	Threatened	Threatened	Threatened	S2S3	717	2.8 ± 0.0	NB
Α	Chaetura pelagica	Chimney Swift	Threatened	Threatened	Threatened	S2S3B,S2M	275	7.7 ± 0.0	NB
Α	Riparia riparia	Bank Swallow	Threatened	Threatened		S2S3B,S2S3M	1561	4.0 ± 7.0	NB
Α	Acipenser oxyrinchus	Atlantic Sturgeon	Threatened		Threatened	S3	3	15.3 ± 1.0	NB
Α	Dolichonyx oryzivorus	Bobolink	Threatened	Threatened	Threatened	S3B,S3M	2151	4.0 ± 7.0	NB
Α	Limosa haemastica	Hudsonian Godwit	Threatened			S3S4M	436	32.9 ± 0.0	NB
Α	Anguilla rostrata	American Eel	Threatened		Threatened	S4	7018	2.6 ± 1.0	NB
Α	Tringa flavipes	Lesser Yellowlegs	Threatened			S4M	1716	10.0 ± 0.0	NB
Α	Coturnicops noveboracensis	Yellow Rail	Special Concern	Special Concern	Special Concern	S1?B,SUM	5	40.7 ± 3.0	NB
Α	Histrionicus histrionicus pop. 1	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S1B,S1S2N,S2 M	6	40.8 ± 0.0	NB
Α	Asio flammeus	Short-eared Owl	Special Concern	Special Concern	Special Concern	S2B,S2M	47	13.4 ± 64.0	NB
Α	Bucephala islandica (Eastern pop.)	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern	Special Concern	S2M,S2N	112	2.7 ± 11.0	NB
Α	Salmo salar pop. 12	Atlantic Salmon - Gaspe - Southern Gulf of St	Special Concern		Special Concern	S2S3	12	25.4 ± 50.0	NB

Taxonomic	Cajantifia Nama	Common Nama	COSEMIC	SARA	Duest Level Dues	Prov Rarity	4	Diatamas (km)	Dear
Group	Scientific Name	Common Name Lawrence pop.	COSEWIC	SAKA	Prov Legal Prot	Rank	# recs	Distance (km)	Prov
Α	Balaenoptera physalus	Fin Whale	Special Concern	Special Concern		S2S3	1	56.2 ± 1.0	NB
A	Acipenser brevirostrum	Shortnose Sturgeon	Special Concern	Special Concern	Special Concern	S3	2	94.1 ± 10.0	NB
A	Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	Special Concern	S3	21	22.7 ± 1.0	NB
A	Euphagus carolinus	Rusty Blackbird	Special Concern	Special Concern	Special Concern	S3B,S3M	125	4.7 ± 0.0	NB
A	Contopus cooperi	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B,S3M	601	4.7 ± 0.0	NB
Α	Cardellina canadensis	Canada Warbler	Special Concern	Threatened	Threatened	S3B,S3M	794	4.0 ± 7.0	NB
			•	Canadal Canasan		S3B,S3S4N,SU	373	10.7 ± 7.0	NB
Α	Coccothraustes vespertinus	Evening Grosbeak	Special Concern	Special Concern		M			
A	Chordeiles minor	Common Nighthawk	Special Concern	Threatened	Threatened	S3B,S4M	278	3.3 ± 0.0	NB
A	Phalaropus lobatus	Red-necked Phalarope	Special Concern	Special Concern		S3M	22	14.4 ± 0.0	NB
A	Phocoena phocoena	Harbour Porpoise	Special Concern		Spec.Concern	S4	3	40.5 ± 0.0	NB
A	Chrysemys picta picta	Eastern Painted Turtle	Special Concern	0 110	0 110	S4	29	28.5 ± 0.0	NB
A	Contopus virens	Eastern Wood-Pewee	Special Concern	Special Concern	Special Concern	S4B,S4M	834	4.0 ± 7.0	NB
A	Podiceps auritus	Horned Grebe	Special Concern	Special Concern	Special Concern	S4N,S4M S1?	53	30.0 ± 1.0	NB NB
Α	Hemidactylium scutatum	Four-toed Salamander Peregrine Falcon -	Not At Risk			51?	4	63.1 ± 0.0	NB NB
Α	Falco peregrinus pop. 1	anatum/tundrius	Not At Risk	Special Concern	Endangered	S1B,S3M	356	7.7 ± 5.0	IND
Α	Bubo scandiacus	Snowy Owl	Not At Risk			S1N,S2S3M	50	2.4 ± 1.0	NB
A	Accipiter cooperii	Cooper's Hawk	Not At Risk			S1S2B,S1S2M	10	12.1 ± 0.0	NB
Α	Fulica americana	American Coot	Not At Risk			S1S2B,S1S2M	65	4.0 ± 7.0	NB
Α	Aegolius funereus	Boreal Owl	Not At Risk			S1S2B,SUM	11	47.0 ± 0.0	NB
Α	Sorex dispar	Long-tailed Shrew	Not At Risk			S2	3	36.5 ± 1.0	NB
Α	Buteo lineatus	Red-shouldered Hawk	Not At Risk			S2B,S2M	26	4.7 ± 0.0	NB
Α	Chlidonias niger	Black Tern	Not At Risk			S2B,S2M	191	4.0 ± 7.0	NB
Α	Lynx canadensis	Canadian Lynx	Not At Risk		Endangered	S3	23	14.4 ± 10.0	NB
	Desmognathus fuscus -	Northern Dusky Salamander							NB
Α	Quebec / New Brunswick	- Quebec / New Brunswick	Not At Risk			S3	1	59.9 ± 0.0	
	population	population				000 01114	201	0.44.0	
A	Sterna hirundo	Common Tern	Not At Risk			S3B,SUM	691	8.4 ± 1.0	NB
A	Podiceps grisegena	Red-necked Grebe Atlantic White-sided Dolphin	Not At Risk			S3M,S2N S3S4	51 2	30.0 ± 1.0 39.2 ± 1.0	NB NB
A A	Lagenorhynchus acutus Haliaeetus leucocephalus	Bald Eagle	Not At Risk Not At Risk		Endangered	S3S4 S4	1328	39.2 ± 1.0 1.3 ± 0.0	NB NB
A	Canis lupus	Gray Wolf	Not At Risk		Extirpated	SX	2	65.7 ± 100.0	NB
A	Puma concolor pop. 1	Eastern Cougar	Data Deficient		Endangered	SNA	119	9.1 ± 1.0	NB
A	Calidris canutus rufa	Red Knot rufa subspecies	E.SC	Endangered	Endangered	S2M	724	28.6 ± 44.0	NB
A	Morone saxatilis	Striped Bass	E,SC	Lindarigorod	Lindarigorod	S3	8640	15.3 ± 0.0	NB
A	Salmo salar	Atlantic Salmon	E,T,SC			S2S3	1	94.7 ± 0.0	NB
A	Thryothorus Iudovicianus	Carolina Wren	_,.,			S1	10	9.2 ± 0.0	NB
Α	Salvelinus alpinus	Arctic Char				S1	3	65.6 ± 1.0	NB
Α	Vireo flavifrons	Yellow-throated Vireo				S1?B,S1?M	4	4.0 ± 7.0	NB
Α	Tringa melanoleuca	Greater Yellowlegs				S1?B,S5M	2513	7.4 ± 0.0	NB
Α	Aythya americana	Redhead				S1B,S1M	10	21.6 ± 0.0	NB
Α	Gallinula galeata	Common Gallinule				S1B,S1M	53	7.2 ± 0.0	NB
Α	Antigone canadensis	Sandhill Crane				S1B,S1M	24	31.6 ± 0.0	NB
A	Bartramia longicauda	Upland Sandpiper				S1B,S1M	56	7.9 ± 0.0	NB
A	Phalaropus tricolor	Wilson's Phalarope				S1B,S1M	34	14.3 ± 1.0	NB
A	Leucophaeus atricilla	Laughing Gull				S1B,S1M	10	9.3 ± 1.0	NB
A	Progne subis	Purple Martin				S1B,S1M	140	2.9 ± 7.0	NB
A	Oxyura jamaicensis	Ruddy Duck				S1B,S2S3M	113	7.9 ± 0.0	NB
A	Aythya affinis	Lesser Scaup				S1B,S4M	178	7.3 ± 0.0	NB
A	Aythya marila	Greater Scaup				S1B,S4M,S2N	11 70	32.8 ± 1.0	NB NB
A	Eremophila alpestris	Horned Lark Arctic Tern				S1B,S4N,S5M	70 25	4.7 ± 0.0 25.5 ± 7.0	NB NB
A A	Sterna paradisaea Fratercula arctica	Arctic Tern Atlantic Puffin				S1B,SUM S1B,SUN,SUM	25 3	25.5 ± 7.0 58.2 ± 11.0	NB NB
A	Fratercula arctica Chroicocephalus ridibundus	Black-headed Gull				S1B,SUN,SUM S1N.S2M	3 17	8.4 ± 0.0	NB NB
A	Branta bernicla	Brant				S1N,S2M S1N,S2S3M	35	30.0 ± 1.0	NB NB
A	Butorides virescens	Green Heron				S1S2B,S1S2M	35 8	4.0 ± 7.0	NB
^	Datorides viresceris	Green rielon				3 102D,3 132NI	U	7.0 ± 1.0	IAD

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A A	Nycticorax nycticorax Empidonax traillii	Black-crowned Night-heron Willow Flycatcher				S1S2B,S1S2M S1S2B,S1S2M	6 83	4.7 ± 0.0 4.0 ± 7.0	NB NB
Α	Stelgidopteryx serripennis	Northern Rough-winged Swallow				S1S2B,S1S2M	6	13.8 ± 0.0	NB
Α	Troglodytes aedon	House Wren				S1S2B,S1S2M	12	10.7 ± 7.0	NB
Α	Rissa tridactyla	Black-legged Kittiwake				S1S2B,S4N,S5 M	4	38.0 ± 0.0	NB
A	Calidris bairdii	Baird's Sandpiper				S1S2M	51	19.0 ± 0.0	NB
A	Cistothorus palustris	Marsh Wren				S2B,S2M	82	4.0 ± 7.0	NB
A	Mimus polyglottos	Northern Mockingbird				S2B,S2M	143	2.9 ± 7.0	NB
A	Toxostoma rufum	Brown Thrasher				S2B,S2M	30	30.2 ± 7.0	NB
A A	Pooecetes gramineus	Vesper Sparrow				S2B,S2M S2B,S3M	128 361	4.7 ± 0.0 4.0 ± 7.0	NB NB
	Mareca strepera	Gadwall				S2B,S3SN,S4			NB
A	Pinicola enucleator	Pine Grosbeak				S5M	40	10.1 ± 7.0	
A	Tringa solitaria	Solitary Sandpiper				S2B,S5M	186	4.7 ± 0.0	NB
A	Anser caerulescens	Snow Goose				S2M	24	9.3 ± 5.0	NB
A	Phalacrocorax carbo	Great Cormorant				S2N,S2M	50	7.2 ± 2.0	NB NB
A A	Somateria spectabilis	King Eider Glaucous Gull				S2N,S2M S2N,S2M	4 94	30.5 ± 0.0 3.6 ± 0.0	NB NB
A	Larus hyperboreus Asio otus	Long-eared Owl				S2N,S2W S2S3	9 4 26	3.6 ± 0.0 10.7 ± 7.0	NB NB
		American Three-toed							NB
A	Picoides dorsalis	Woodpecker				S2S3	15	20.5 ± 7.0	
A	Spatula clypeata	Northern Shoveler				S2S3B,S2S3M	476	4.0 ± 7.0	NB
A	Myiarchus crinitus	Great Crested Flycatcher				S2S3B,S2S3M	101	6.0 ± 7.0	NB
A	Petrochelidon pyrrhonota	Cliff Swallow				S2S3B,S2S3M	639	4.0 ± 7.0	NB
A	Pluvialis dominica	American Golden-Plover				S2S3M	219	28.7 ± 0.0	NB
A	Calcarius Iapponicus	Lapland Longspur				S2S3N,SUM	43	2.7 ± 9.0 45.1 ± 5.0	NB NB
A A	Cepphus grylle	Black Guillemot Red Crossbill				S3 S3	67 176	45.1 ± 5.0 10.1 ± 7.0	NB NB
A	Loxia curvirostra Spinus pinus	Pine Siskin				S3	458	6.0 ± 7.0	NB
A	Salvelinus namaycush	Lake Trout				S3	1	29.2 ± 0.0	NB
A	Sorex maritimensis	Maritime Shrew				S3	143	49.9 ± 1.0	NB
A	Eptesicus fuscus	Big Brown Bat				S3	12	5.7 ± 10.0	NB
Α	Cathartes aura	Turkey Vulture				S3B,S3M	212	7.6 ± 0.0	NB
Α	Rallus limicola	Virginia Rail				S3B,S3M	347	4.0 ± 7.0	NB
Α	Charadrius vociferus	Killdeer				S3B,S3M	1007	2.5 ± 2.0	NB
Α	Tringa semipalmata	Willet				S3B,S3M	1116	1.3 ± 0.0	NB
Α	Coccyzus erythropthalmus	Black-billed Cuckoo				S3B,S3M	158	4.7 ± 0.0	NB
Α	Vireo gilvus	Warbling Vireo				S3B,S3M	98	4.0 ± 7.0	NB
Α	Piranga olivacea	Scarlet Tanager				S3B,S3M	66	4.0 ± 7.0	NB
Α	Passerina cyanea	Indigo Bunting				S3B,S3M	62	2.4 ± 0.0	NB
A	Molothrus ater	Brown-headed Cowbird				S3B,S3M	309	1.3 ± 4.0	NB
A	Icterus galbula	Baltimore Oriole				S3B,S3M	135	4.0 ± 7.0	NB
A	Somateria mollissima	Common Eider				S3B,S4M,S3N	218	15.7 ± 80.0	NB
A	Setophaga tigrina	Cape May Warbler				S3B,S4S5M	323	2.5 ± 0.0	NB
A	Anas acuta	Northern Pintail				S3B,S5M S3B,S5M,S4S5	163	4.0 ± 7.0	NB NB
Α	Mergus serrator	Red-breasted Merganser				N	319	11.5 ± 0.0	
A	Arenaria interpres	Ruddy Turnstone				S3M	1045	10.0 ± 0.0	NB
A	Phalaropus fulicarius	Red Phalarope				S3M	5	47.3 ± 0.0	NB
A	Melanitta americana	Black Scoter				S3M,S1S2N	260	8.7 ± 0.0	NB
A	Bucephala albeola	Bufflehead				S3M,S2N	129	13.4 ± 64.0	NB
A	Calidris maritima	Purple Sandpiper				S3M,S3N	102	15.0 ± 0.0	NB
A	Uria Iomvia	Thick-billed Murre				S3N,S3M	2	73.3 ± 0.0	NS NB
A A	Synaptomys cooperi Tyrannus tyrannus	Southern Bog Lemming Eastern Kingbird				S3S4 S3S4B,S3S4M	95 629	41.3 ± 1.0 4.0 ± 7.0	NB NB
A	Actitis macularius	Spotted Sandpiper				S3S4B,S5M	1016	4.0 ± 7.0 2.5 ± 2.0	NB NB
^	กบแนง IIIaบนเสIIนัง	Spotted Sandpiper				0004D,00W	1010	2.J 1 2.U	IND

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
Α .	Gallinago delicata	Wilson's Snipe				S3S4B,S5M	1189	4.0 ± 7.0	NB
Α	Larus delawarensis	Ring-billed Gull				S3S4B,S5M	451	2.1 ± 0.0	NB
Α	Setophaga striata	Blackpoll Warbler				S3S4B,S5M	77	14.0 ± 7.0	NB
Α	Pluvialis squatarola	Black-bellied Plover				S3S4M	2051	13.8 ± 0.0	NB
Α	Calidris pusilla	Semipalmated Sandpiper				S3S4M	2666	9.5 ± 0.0	NB
Α	Calidris melanotos	Pectoral Sandpiper				S3S4M	475	9.5 ± 18.0	NB
A	Calidris alba	Sanderling				S3S4M.S1N	1569	30.0 ± 1.0	NB
A	Morus bassanus	Northern Gannet				SHB,S5M	183	28.6 ± 44.0	NB
ì	Cicindela marginipennis	Cobblestone Tiger Beetle	Endangered	Endangered	Endangered	S1	94	86.9 ± 0.0	NB
'	Bombus (Psithyrus)	Copplesione riger beetle	Lildarigered	Lildangered	Lildangered				NB
I	bohemicus	Gypsy Cuckoo Bumble Bee	Endangered	Endangered		S1	6	18.9 ± 5.0	
I	Gomphus ventricosus	Skillet Clubtail	Endangered	Endangered	Endangered	S1S2	2	51.7 ± 0.0	NB
I	Danaus plexippus	Monarch	Endangered	Special Concern	Special Concern	S3B,S3M	238	1.9 ± 0.0	NB
I	Ophiogomphus howei	Pygmy Snaketail	Special Concern	Special Concern	Special Concern	S2	12	76.2 ± 0.0	NB
I	Alasmidonta varicosa	Brook Floater	Special Concern	Special Concern	Special Concern	S2	34	15.0 ± 1.0	NB
1	Lampsilis cariosa	Yellow Lampmussel	Special Concern	Special Concern	Special Concern	S2	25	62.2 ± 0.0	NB
1	Bombus terricola	Yellow-banded Bumblebee	Special Concern	Special Concern		S3?	168	23.4 ± 0.0	NB
	Coccinella transversoguttata		•	- poolal 001100111					NB
I	richardsoni	Transverse Lady Beetle	Special Concern			SH	31	2.0 ± 1.0	
I	Appalachina sayana	Spike-lip Crater	Not At Risk			S3?	1	78.0 ± 1.0	NB
I	Erora laeta	Early Hairstreak				S1	1	5.7 ± 1.0	NB
I	Leucorrhinia patricia	Canada Whiteface				S1	10	75.8 ± 1.0	NB
I	Arigomphus furcifer	Lilypad Clubtail				S1	1	89.3 ± 0.0	NB
I	Plebejus saepiolus	Greenish Blue				S1S2	2	24.5 ± 7.0	NB
I	Cicindela ancocisconensis	Appalachian Tiger Beetle				S2	2	69.2 ± 0.0	NB
i	Satyrium calanus	Banded Hairstreak				S2	1	97.6 ± 7.0	NB
i	Strymon melinus	Grey Hairstreak				S2	2	13.3 ± 2.0	NB
i	Somatochlora brevicincta	Quebec Emerald				S2	2	13.4 ± 0.0	NB
i	Somatochlora tenebrosa	Clamp-Tipped Emerald				S2	8	27.4 ± 1.0	NB
i	Ladona exusta	White Corporal				S2	1	63.6 ± 0.0	NB
:		Subarctic Bluet				S2 S2	3	79.6 ± 1.0	NB
:	Coenagrion interrogatum					S2 S2	5 5		
!	Ischnura posita	Fragile Forktail						28.0 ± 0.0	NB
!	Chrysops delicatulus	a Horse Fly				S2S3	1	89.4 ± 1.0	NB
!	Callophrys henrici	Henry's Elfin				S2S3	12	7.3 ± 0.0	NB
!	Psyrassa unicolor	a Longhorned Beetle				S3	1	35.9 ± 0.0	NB
I	Elaphrus americanus	a Ground Beetle				S3	1	46.8 ± 0.0	NB
I	Agonum crenistriatum	a Ground Beetle				S3	1	8.2 ± 1.0	NB
I	Agonum consimile	a Ground Beetle				S3	1	8.2 ± 1.0	NB
I	Lachnocrepis parallela	a Ground Beetle				S3	1	45.8 ± 0.0	NB
I	Dyschirius setosus	a Ground Beetle				S3	3	45.8 ± 0.0	NB
I	Harpalus fulvilabris	a Ground Beetle				S3	1	46.5 ± 0.0	NB
I	Olisthopus parmatus	a Ground Beetle				S3	1	45.5 ± 0.0	NB
I	Amara pallipes	a Ground Beetle				S3	2	8.2 ± 1.0	NB
I	Carabus maeander	a Ground Beetle				S3	1	8.2 ± 1.0	NB
I	Carabus serratus	a Ground Beetle				S3	2	9.4 ± 1.0	NB
i	Hippodamia parenthesis	Parenthesis Lady Beetle				S3	15	3.6 ± 0.0	NB
i	Xylotrechus undulatus	a Longhorned Beetle				S3	2	27.8 ± 1.0	NB
i	Calathus gregarius	a Ground Beetle				S3	1	57.3 ± 1.0	NB
i	Gonioctena americana	a Leaf Beetle				S3	1	46.5 ± 0.0	NB
:	Naemia seriata	a Ladybird beetle				S3	9	40.7 ± 0.0	NB
1		,				S3 S3	9 1		NB NB
!	Beckerus appressus	A Click Beetle						57.1 ± 0.0	
1	Saperda lateralis	a Longhorned Beetle				S3	1	66.3 ± 0.0	NS
!	Trachysida aspera	a Longhorned Beetle				S3	1	50.6 ± 0.0	NB
!	Dicerca caudata	Tailed Jewel Borer				S3	1	56.8 ± 0.0	NB
I	Enoclerus muttkowskii	a Checkered Beetle				S3	2	8.6 ± 0.0	NB
1	Haanaria aaaaaau	Indian Skipper				S3	4	39.9 ± 0.0	NB
1	Hesperia sassacus							00.0 ± 0.0	
i I	Euphyes bimacula	Two-spotted Skipper				S3 S3	20	9.9 ± 1.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
	bretonensis								
1	Lycaena hyllus	Bronze Copper				S3	164	7.1 ± 1.0	NB
i	Lycaena dospassosi	Salt Marsh Copper				S3	108	30.2 ± 0.0	NB
i	Satyrium acadica	Acadian Hairstreak				S3	17	1.6 ± 0.0	NB
i	Callophrys polios	Hoary Elfin				S3	15	13.4 ± 0.0	NB
i	Plebejus idas	Northern Blue				S3	6	72.3 ± 0.0	NS
i	Plebejus idas empetri	Crowberry Blue				S3	26	45.3 ± 7.0	NB
i	Speyeria aphrodite	Aphrodite Fritillary				S3	19	6.2 ± 0.0	NB
i	Boloria bellona	Meadow Fritillary				S3	10	87.5 ± 0.0	NB
i	Boloria chariclea	Arctic Fritillary				S3	10	38.4 ± 7.0	NB
:	Polygonia satyrus	Satyr Comma				S3	5	37.9 ± 5.0	NB
1	Polygonia satyrus Polygonia gracilis	Hoary Comma				S3	4	72.4 ± 15.0	NB
:	Nymphalis I-album	Compton Tortoiseshell				S3	10	72.4 ± 13.0 5.7 ± 10.0	NB
:									NB
!	Gomphus vastus	Cobra Clubtail				S3	8	89.5 ± 0.0	NB NB
!	Gomphus abbreviatus	Spine-crowned Clubtail				S3	9	69.2 ± 0.0	
!	Gomphaeschna furcillata	Harlequin Darner				S3	7	13.6 ± 0.0	NB
!	Dorocordulia lepida	Petite Emerald				S3	5	37.7 ± 1.0	NB
!	Somatochlora cingulata	Lake Emerald				S3	4	53.5 ± 0.0	NB
I	Somatochlora forcipata	Forcipate Emerald				S3	9	32.0 ± 0.0	NB
I	Williamsonia fletcheri	Ebony Boghaunter				S3	19	9.9 ± 2.0	NB
I	Lestes eurinus	Amber-Winged Spreadwing				S3	35	13.3 ± 1.0	NB
I	Enallagma geminatum	Skimming Bluet				S3	6	77.1 ± 0.0	NB
1	Enallagma signatum	Orange Bluet				S3	4	44.3 ± 0.0	NB
I	Stylurus scudderi	Zebra Clubtail				S3	11	6.0 ± 0.0	NB
1	Alasmidonta undulata	Triangle Floater				S3	54	15.9 ± 1.0	NB
I	Leptodea ochracea	Tidewater Mucket				S3	65	44.5 ± 1.0	NB
I	Neohelix albolabris	Whitelip				S3	1	82.5 ± 0.0	NB
1	Pantala hymenaea	Spot-Winged Glider				S3B,S3M	6	28.8 ± 0.0	NB
	•	Banded Soft-winged Flower				,			NB
1	Collops vittatus	Beetle				S3S4	1	14.5 ± 3.0	
I	Hemicrepidius memnonius	a Click Beetle				S3S4	3	35.9 ± 0.0	NB
i	Bolitophagus corticola	a Darkling Beetle				S3S4	1	35.9 ± 0.0	NB
i	Satvrium liparops	Striped Hairstreak				S3S4	33	1.9 ± 0.0	NB
i	Satyrium liparops strigosum	Striped Hairstreak				S3S4	4	5.3 ± 1.0	NB
i	Cupido comyntas	Eastern Tailed Blue				S3S4	11	41.6 ± 0.0	NB
N	Erioderma mollissimum	Graceful Felt Lichen	Endangered	Endangered	Endangered	SH	2	66.6 ± 1.0	NB
IN.	Erioderma mollissimum Erioderma pedicellatum	Boreal Felt Lichen - Atlantic	Liluarigered	Liluarigered	Liluarigered			00.0 ± 1.0	NS
N	(Atlantic pop.)	pop.	Endangered	Endangered	Endangered	SH	2	81.9 ± 0.0	NO
N	Peltigera hydrothyria	Eastern Waterfan	Threatened	Threatened		S1	787	29.2 ± 0.0	NB
						S1?			NB
N	Pannaria lurida	Wrinkled Shingle Lichen	Threatened	Threatened			4	34.8 ± 1.0	
N	Anzia colpodes	Black-foam Lichen	Threatened	Threatened		S1S2	15	27.5 ± 0.0	NB
N	Fuscopannaria leucosticta	White-rimmed Shingle	Threatened			S2	66	49.0 ± 0.0	NB
N	De ete nie niemekee	Lichen	0	0	0	04	45	70.0 . 4.0	NO
N	Pectenia plumbea	Blue Felt Lichen	Special Concern	Special Concern	Special Concern	S1	15	78.9 ± 1.0	NS
N	Pseudevernia cladonia	Ghost Antler Lichen	Not At Risk			S2S3	13	58.0 ± 0.0	NB
N	Aloina rigida	Aloe-Like Rigid Screw Moss				S1	1	49.6 ± 0.0	NB
N	Arrhenopterum	One-sided Groove Moss				S1	1	79.7 ± 0.0	NB
	heterostichum								
N	Campylostelium saxicola	a Moss				S1	1	82.1 ± 0.0	NB
N	Dicranoweisia crispula	Mountain Thatch Moss				S1	1	57.4 ± 0.0	NB
N	Didymodon rigidulus var.	a moss				S1	1	64.7 ± 1.0	NB
IN	gracilis	a 111055				31	1	04.7 I 1.0	
N	Syntrichia ruralis	a Moss				S1	1	63.9 ± 0.0	NB
	Zygodon viridissimus var.								NB
N	viridissimus	a Moss				S1	1	80.5 ± 0.0	
N	Enchylium tenax	Soil Tarpaper Lichen				S1	2	82.7 ± 0.0	PE
N	Sticta fuliginosa	Peppered Moon Lichen				S1	14	81.8 ± 0.0	NS
N	Cladonia straminea	Reptilian Pixie-cup Lichen				S1	5	50.8 ± 1.0	NB
		p					•	30.0 = 1.0	

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N	Coccocarpia palmicola	Salted Shell Lichen				S1	1	50.8 ± 1.0	NB
N	Peltigera malacea	Veinless Pelt Lichen				S1	2	61.8 ± 1.0	NB
N	Bryoria bicolor	Electrified Horsehair Lichen				S1	1	61.8 ± 1.0	NB
N	Hygrobiella laxifolia	Lax Notchwort				S1?	1	62.5 ± 1.0	NB
N	Bartramia ithyphylla	Straight-leaved Apple Moss				S1?	2	58.3 ± 1.0	NB
N	Dicranum condensatum	Condensed Broom Moss				S1?	2	57.5 ± 0.0	NB
N	Entodon brevisetus	a Moss				S1?	1	52.7 ± 10.0	NB
N	Oxyrrhynchium hians	Light Beaked Moss				S1?	1	67.2 ± 0.0	NB
N	Homomallium adnatum	Adnate Hairy-gray Moss				S1?	4	29.5 ± 1.0	NB
N	Plagiothecium latebricola	Alder Silk Moss				S1?	3	63.8 ± 1.0	NB
N	Rhytidium rugosum	Wrinkle-leaved Moss				S1?	2	64.7 ± 1.0	NB
N	Seligeria recurvata	a Moss				S1?	3	24.6 ± 15.0	NB
N	Rhizomnium pseudopunctatum	Felted Leafy Moss				S1?	1	78.1 ± 0.0	NB
N	Heterodermia squamulosa	Scaly Fringe Lichen				S1?	75	83.0 ± 1.0	NS
N	Cephaloziella spinigera	Spiny Threadwort				S1S2	2	47.8 ± 0.0	NB
N	Odontoschisma francisci	Holt's Notchwort				S1S2	4	48.6 ± 0.0	NB
N	Harpanthus flotovianus	Great Mountain Flapwort				S1S2	2	50.3 ± 1.0	NB
N	Jungermannia obovata	Egg Flapwort				S1S2	1	60.0 ± 0.0	NB
N	Odontoschisma sphagni	Bog-Moss Flapwort				S1S2	1	90.4 ± 0.0	NB
N	Pallavicinia lyellii	Lyell's Ribbonwort				S1S2	2	52.7 ± 1.0	NB
N	Radula tenax	Tenacious Scalewort				S1S2	1	60.0 ± 0.0	NB
N	Reboulia hemisphaerica	Purple-margined Liverwort				S1S2 S1S2	1	64.7 ± 0.0	NB
N						S1S2 S1S2	3	60.0 ± 2.0	NB
N N	Brachythecium acuminatum	Acuminate Ragged Moss				S1S2 S1S2	3 1	60.0 ± 2.0 63.8 ± 1.0	NB
	Ptychostomum salinum	Saltmarsh Bryum							
N	Tortula obtusifolia	a Moss				S1S2	1	98.5 ± 0.0	NB
N	Distichium inclinatum	Inclined Iris Moss				S1S2	5	64.7 ± 1.0	NB
N	Ditrichum pallidum	Pale Cow-hair Moss				S1S2	1	52.4 ± 1.0	NB
N	Drummondia prorepens	a Moss				S1S2	1	82.2 ± 0.0	NB
N	Hygrohypnum bestii	Best's Brook Moss				S1S2	5	52.0 ± 0.0	NB
N	Seligeria brevifolia	a Moss				S1S2	4	80.2 ± 0.0	NB
N	Timmia norvegica Timmia norvegica var.	a moss				S1S2	3	64.9 ± 0.0	NB NB
N	excurrens	a moss				S1S2 S1S2	1 7	64.9 ± 0.0 55.3 ± 1.0	NB
N	Tortella humilis Pseudotaxiphyllum	Small Crisp Moss							NB
N	distichaceum	a Moss				S1S2	2	32.2 ± 1.0	
N	Umbilicaria vellea	Grizzled Rocktripe Lichen				S1S2	1	64.2 ± 1.0	NB
N	Pilophorus cereolus	Powdered Matchstick Lichen				S1S2	1	36.2 ± 5.0	NB
N	Peltigera scabrosa	Greater Toad Pelt Lichen				S1S2	4	49.0 ± 1.0	NB
N	Tritomaria scitula	Mountain Notchwort				S1S3	1	56.2 ± 1.0	NB
N	Amphidium mougeotii	a Moss				S2	11	54.3 ± 0.0	NB
N	Anomodon viticulosus	a Moss				S2	2	36.6 ± 10.0	NB
N	Cirriphyllum piliferum	Hair-pointed Moss				S2	4	35.4 ± 1.0	NB
N	Dicranella palustris	Drooping-Leaved Fork Moss				S2	9	50.3 ± 1.0	NB
N	Didymodon ferrugineus	Rusty Beard Moss				S2	1	64.4 ± 0.0	NB
N	Anomodon tristis	a Moss				S2	9	57.2 ± 10.0	NB
N	Hypnum pratense	Meadow Plait Moss				S2	1	87.4 ± 0.0	PE
N	Isopterygiopsis pulchella	Neat Silk Moss				S2	7	55.1 ± 1.0	NB
N	Isothecium myosuroides	Slender Mouse-tail Moss				S2	2	94.1 ± 3.0	NS
N	Meesia triquetra	Three-ranked Cold Moss				S2 S2	1	89.6 ± 100.0	NB
N						S2 S2	6	58.8 ± 4.0	NB
N N	Orthotrichum speciosum Platydictya	Showy Bristle Moss False Willow Moss				S2 S2	4	58.8 ± 4.0 24.6 ± 15.0	NB NB
	jungermannioides								
N	Pohlia elongata	Long-necked Nodding Moss				S2	14	57.5 ± 0.0	NB
N	Pohlia sphagnicola	a moss				S2	1	76.6 ± 0.0	NB
N	Seligeria calcarea	Chalk Brittle Moss				S2	2	50.3 ± 0.0	NB
N	Sphagnum centrale	Central Peat Moss				S2	8	51.2 ± 1.0	NB

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N	Sphagnum flexuosum	Flexuous Peatmoss			•	S2	4	51.3 ± 10.0	NB
N	Tayloria serrata	Serrate Trumpet Moss				S2	7	34.6 ± 100.0	NB
N	Tetrodontium brownianum	Little Georgia				S2	13	57.2 ± 10.0	NB
N	Thamnobryum alleghaniense	a Moss				S2	25	28.8 ± 0.0	NB
N	Ulota phyllantha	a Moss				S2	4	64.7 ± 0.0	NB
N	Anomobryum julaceum	Slender Silver Moss				S2	4	64.7 ± 1.0	NB
N	Cladonia macrophylla	Fig-leaved Lichen				S2	3	56.7 ± 1.0	NB
N	Leptogium milligranum	Stretched Jellyskin Lichen				S2	21	32.8 ± 0.0	NB
N	Nephroma laevigatum	Mustard Kidney Lichen				S2	30	74.1 ± 0.0	NB
N	Anacamptodon splachnoides	a Moss				S2?	3	57.4 ± 1.0	NB
N	Andreaea rothii	a Moss				S2?	5	54.3 ± 0.0	NB
IN	Andreaea rounii	Blunt-leaved Anomodon						34.3 ± 0.0	NB
N	Anomodon minor	Moss				S2?	1	35.9 ± 1.0	
N	Ptychostomum pallescens	Tall Clustered Bryum				S2?	1	64.1 ± 100.0	NB
N	Dichelyma capillaceum	Hairlike Dichelyma Moss				S2?	1	52.5 ± 3.0	NB
N	Hygrohypnum montanum	a Moss				S2?	2	53.6 ± 1.0	NB
N	Schistostega pennata	Luminous Moss				S2?	1	87.2 ± 100.0	NB
N	Seligeria diversifolia	a Moss				S2?	2	91.6 ± 0.0	NB
N	Sphagnum angermanicum	a Peatmoss				S2?	2	52.2 ± 10.0	NB
N	Trichodon cylindricus	Cylindric Hairy-teeth Moss				S2?	2	24.6 ± 15.0	NB
N	Plagiomnium rostratum	Long-beaked Leafy Moss				S2?	5	59.3 ± 0.0	NB
N	Ramalina labiosorediata	Chalky Ramalina Lichen				S2?	1	62.0 ± 1.0	NB
N	Collema leptaleum	Crumpled Bat's Wing Lichen				S2?	8	79.6 ± 0.0	NB
N	Imshaugia placorodia	Eyed Starburst Lichen				S2?	1	83.1 ± 0.0	PE
N	Nephroma arcticum	Arctic Kidney Lichen				S2?	2	59.9 ± 1.0	NB
N	Ptychostomum cernuum	Swamp Bryum				S2S3	1	64.7 ± 0.0	NB
N	Calliergonella cuspidata	Common Large Wetland Moss				S2S3	4	38.4 ± 5.0	NB
N	Drepanocladus polygamus	Polygamous Hook Moss				S2S3	2	56.7 ± 0.0	NB
N	Palustriella falcata	a Moss				S2S3	2	61.6 ± 0.0	NB
N	Didymodon rigidulus	Rigid Screw Moss				S2S3	8	60.0 ± 2.0	NB
N	Ephemerum serratum	a Moss				S2S3	3	62.7 ± 0.0	NB
N	Orthotrichum elegans	Showy Bristle Moss				S2S3	2	35.8 ± 0.0	NB
N	Pohlia proligera	Cottony Nodding Moss				S2S3	13	24.6 ± 15.0	NB
N	Codriophorus fascicularis	Clustered Rock Moss				S2S3	3	57.4 ± 0.0	NB
N	Racomitrium affine	a Moss				S2S3	1	51.4 ± 1.0	NB
N	Saelania glaucescens	Blue Dew Moss				S2S3	2	57.4 ± 0.0	NB
N	Sphagnum subfulvum	a Peatmoss				S2S3	3	75.8 ± 0.0	NB
N						S2S3	2	60.0 ± 1.0	NB
	Taxiphyllum deplanatum	Imbricate Yew-leaved Moss							
N	Zygodon viridissimus	a Moss				S2S3	3	60.0 ± 1.0	NB
N	Schistidium agassizii	Elf Bloom Moss				S2S3	3	51.4 ± 1.0	NB
N	Loeskeobryum brevirostre	a Moss				S2S3	11	54.3 ± 0.0	NB
N	Cyrtomnium hymenophylloides	Short-pointed Lantern Moss				S2S3	7	50.5 ± 0.0	NB
N	Cetrariella delisei	Snowbed Icelandmoss Lichen				S2S3	2	38.1 ± 0.0	NB
N	Cladonia acuminata	Scantily Clad Pixie Lichen				S2S3	2	64.2 ± 1.0	NB
N	Cladonia ramulosa	Bran Lichen				S2S3	4	58.8 ± 1.0	NB
N	Cladonia sulphurina	Greater Sulphur-cup Lichen				S2S3	5	48.9 ± 1.0	NB
N	Dendriscocaulon	a lichen				S2S3	1	82.5 ± 0.0	NB
N	umhausense Parmeliopsis ambigua	Green Starburst Lichen				S2S3	1	67.2 ± 1.0	NB
N N	Sphaerophorus globosus	Northern Coral Lichen				S2S3 S2S3	13	50.1 ± 0.0	NB NB
N N		Curved-leaved Plait Moss				S2S3 S3	8	50.1 ± 0.0 54.3 ± 0.0	NB NB
	Hypnum curvifolium								
N	Tortella fragilis	Fragile Twisted Moss				S3	1	64.9 ± 0.0	NB
N	Schistidium maritimum	a Moss				S3	6	61.3 ± 0.0	NB
N	Hymenostylium recurvirostre	Hymenostylium Moss				S3	6	65.2 ± 1.0	NB
N	Collema nigrescens	Blistered Tarpaper Lichen				S3	6	82.1 ± 3.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
N	Solorina saccata	Woodland Owl Lichen		9 ,		S3	6	64.2 ± 1.0	NB
N	Ahtiana aurescens	Eastern Candlewax Lichen				S3	3	77.2 ± 0.0	NB
N	Normandina pulchella	Rimmed Elf-ear Lichen				S3	20	58.8 ± 1.0	NB
N	Cladonia farinacea	Farinose Pixie Lichen				S3	5	58.0 ± 1.0	NB
N	Hypotrachyna catawbiensis	Powder-tipped Antler Lichen				S3	17	63.7 ± 0.0	NB
N	Scytinium lichenoides	Tattered Jellyskin Lichen				S3	6	64.2 ± 1.0	NB
N	Nephroma bellum	Naked Kidney Lichen				S3	5	56.5 ± 1.0	NB
N	Peltigera degenii	Lustrous Pelt Lichen				S3	3	58.5 ± 1.0	NB
N	Usnea strigosa	Bushy Beard Lichen				S3	34	24.7 ± 0.0	NB
N	Stereocaulon condensatum	Granular Soil Foam Lichen				S3	8	45.1 ± 0.0	NB
N	Leptogium laceroides	Short-bearded Jellyskin Lichen				S3	14	51.5 ± 1.0	NB
N	Peltigera membranacea	Membranous Pelt Lichen				S3	25	28.5 ± 0.0	NB
N	Cladonia botrytes	Wooden Soldiers Lichen				S3	3	39.3 ± 0.0	NB
N	Cladonia carneola	Crowned Pixie-cup Lichen				S3	2	58.2 ± 0.0	NB
N	Cladonia deformis	Lesser Sulphur-cup Lichen				S3	9	54.8 ± 0.0	NB
N	Aulacomnium androgynum	Little Groove Moss				S3?	10	24.6 ± 15.0	NB
N	Ptychostomum inclinatum	Blunt-tooth Thread Moss				S3?	1	95.7 ± 3.0	NS
N	Dicranella rufescens	Red Forklet Moss				S3?	1	64.9 ± 0.0	NB
N	Rhytidiadelphus loreus	Lanky Moss				S3?	3	64.3 ± 0.0	NB
N	Sphagnum lescurii	a Peatmoss				S3?	8	50.6 ± 1.0	NB
N	Scytinium subtile	Appressed Jellyskin Lichen				S3?	12	68.6 ± 0.0	PE
N	Rostania occultata	Crusted Tarpaper Lichen				S3?	4	79.5 ± 3.0	NS
N	Stereocaulon subcoralloides	Coralloid Foam Lichen Lesser Bird's-claw Beard				S3?	1	62.0 ± 1.0	NB NB
N	Barbula convoluta	Moss				S3S4	1	46.6 ± 15.0	
N	Brachytheciastrum velutinum	Velvet Ragged Moss				S3S4	2	57.0 ± 1.0	NB
N	Calliergon giganteum	Giant Spear Moss				S3S4	1	84.4 ± 0.0	PE
N	Dicranella cerviculata	a Moss				S3S4	3	54.0 ± 2.0	NB
N	Dicranella varia	a Moss				S3S4	2	77.1 ± 0.0	PE
N	Dicranum majus	Greater Broom Moss				S3S4	22	50.5 ± 0.0	NB
N	Dicranum leioneuron	a Dicranum Moss				S3S4	2	31.8 ± 0.0	NB
N	Encalypta ciliata	Fringed Extinguisher Moss				S3S4	2	64.4 ± 0.0	NB
N	Fissidens bryoides	Lesser Pocket Moss				S3S4	4	53.9 ± 5.0	NB
N	Elodium blandowii	Blandow's Bog Moss				S3S4	1	84.3 ± 0.0	PE
N	Heterocladium dimorphum	Dimorphous Tangle Moss				S3S4	6	35.8 ± 0.0	NB
N	Isopterygiopsis muelleriana	a Moss				S3S4	19	50.5 ± 0.0	NB
N	Myurella julacea	Small Mouse-tail Moss				S3S4	2	64.9 ± 0.0	NB
N	Physcomitrium pyriforme	Pear-shaped Urn Moss				S3S4	3	42.9 ± 0.0	NB
N	Pogonatum dentatum	Mountain Hair Moss				S3S4	4	62.8 ± 0.0	NS
N	Sphagnum compactum	Compact Peat Moss				S3S4	6	42.3 ± 0.0	NB
N	Sphagnum quinquefarium	Five-ranked Peat Moss				S3S4	2	35.8 ± 0.0	NB
N	Sphagnum torreyanum	a Peatmoss				S3S4	2	63.8 ± 0.0	NB
N	Sphagnum austinii	Austin's Peat Moss				S3S4	1	58.7 ± 0.0	NS
N	Sphagnum contortum	Twisted Peat Moss				S3S4	1	63.8 ± 0.0	NB
N	Tetraphis geniculata	Geniculate Four-tooth Moss				S3S4	14	46.6 ± 15.0	NB
N	Tetraplodon angustatus	Toothed-leaved Nitrogen				S3S4	2	79.8 ± 0.0	NB
N	Weissia controversa	Moss Green-Cushioned Weissia				S3S4	1	65.2 ± 1.0	NB
N	Abietinella abietina	Wirv Fern Moss				S3S4	1	64.9 ± 0.0	NB
N	Trichostomum tenuirostre	Acid-Soil Moss				S3S4 S3S4	4	57.4 ± 0.0	NB
N	Rauiella scita	Smaller Fern Moss				S3S4 S3S4	1	74.6 ± 0.0	NB
N N						S3S4 S3S4	21	74.6 ± 0.0 64.5 ± 1.0	NB
	Pannaria rubiginosa	Brown-eyed Shingle Lichen				S3S4 S3S4			
N	Pseudocyphellaria holarctica	Yellow Specklebelly Lichen					87	19.3 ± 0.0	NB
N	Ramalina thrausta	Angelhair Ramalina Lichen				S3S4	13	49.0 ± 1.0	NB
N	Hypogymnia vittata	Slender Monk's Hood Lichen				S3S4	28	49.0 ± 1.0	NB
N	Scytinium teretiusculum	Curly Jellyskin Lichen				S3S4	11	76.0 ± 0.0	PE
N	Montanelia panniformis	Shingled Camouflage Lichen				S3S4	5	51.0 ± 1.0	NB

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N	Cladonia floerkeana	Gritty British Soldiers Lichen				S3S4	4	57.7 ± 1.0	NB
N	Vahliella leucophaea	Shelter Shingle Lichen				S3S4	18	28.8 ± 0.0	NB
N	Xylopsora friesii	a Lichen				S3S4	1	64.2 ± 1.0	NB
N	Nephroma parile	Powdery Kidney Lichen				S3S4	16	18.3 ± 0.0	NB
N	Protopannaria pezizoides	Brown-gray Moss-shingle Lichen				S3S4	26	28.0 ± 0.0	NB
N	Usnea subrubicunda	Reddish Beard Lichen				S3S4	2	80.0 ± 3.0	NS
N	Stereocaulon paschale	Easter Foam Lichen				S3S4	2	46.1 ± 1.0	NB
N	Pannaria conoplea	Mealy-rimmed Shingle Lichen				S3S4	39	52.6 ± 0.0	NB
N	Physcia tenella	Fringed Rosette Lichen				S3S4	6	58.9 ± 0.0	NB
N	Anaptychia palmulata	Shaggy Fringed Lichen				S3S4	72	40.2 ± 0.0	NB
N	Peltigera neopolydactyla	Undulating Pelt Lichen				S3S4	10	50.8 ± 1.0	NB
N	Cladonia cariosa	Lesser Ribbed Pixie Lichen				S3S4	4	45.4 ± 0.0	NB
N	Hypocenomyce scalaris	Common Clam Lichen				S3S4	1	62.0 ± 1.0	NB
	Trypoceriomyce scalaris	Brookside Stippleback							NB
N	Dermatocarpon luridum	Lichen				S3S4	128	8.3 ± 0.0	IND
N	Leucodon brachypus	a Moss				SH	13	53.0 ± 1.0	NB
N	Splachnum luteum	Yellow Collar Moss				SH	13	64.1 ± 100.0	NB NB
N		a Moss				SH	1	89.6 ± 100.0	NB
	Thelia hirtella					SH SH	3		NB NB
N	Cyrto-hypnum minutulum	Tiny Cedar Moss						58.1 ± 10.0	
Р	Juglans cinerea	Butternut	Endangered	Endangered	Endangered	S1	63	35.3 ± 1.0	NB
Р	Symphyotrichum	Gulf of St Lawrence Aster	Threatened	Threatened	Endangered	S1	42	72.1 ± 0.0	NB
•	laurentianum				2.1441.90.04				
P	Fraxinus nigra	Black Ash	Threatened			S4S5	339	2.1 ± 0.0	NB
P	Isoetes prototypus	Prototype Quillwort	Special Concern	Special Concern	Endangered	S2	3	98.5 ± 0.0	NS
Р	Lechea maritima var. subcylindrica	Beach Pinweed	Special Concern	Special Concern	Special Concern	S2	928	43.2 ± 0.0	NB
Р	Symphyotrichum subulatum	Bathurst Aster - Bathurst	Not At Risk		Endangered	S2	21	56.4 ± 0.0	NB
Г	(Bathurst pop)	pop.	NOT AT KISK		Endangered	32	21	30.4 I 0.0	
Р	Cryptotaenia canadensis	Canada Honewort				S1	2	66.0 ± 1.0	NB
Р	Sanicula trifoliata	Large-Fruited Sanicle				S1	1	98.6 ± 5.0	NB
Р	Antennaria parlinii ssp. fallax	Parlin's Pussytoes				S1	5	96.7 ± 1.0	NB
Р	Antennaria howellii ssp. petaloidea	Pussy-Toes				S1	1	99.2 ± 5.0	PE
Р	Bidens discoidea	Swamp Beggarticks				S1	1	78.8 ± 0.0	NB
Р	Pseudognaphalium obtusifolium	Eastern Cudweed				S1	28	47.5 ± 5.0	NB
Р		Denieled Heudoveed				S1	2	02 0 + 0 0	ND
P P	Hieracium paniculatum	Panicled Hawkweed					2	93.0 ± 0.0	NB NB
-	Hieracium robinsonii	Robinson's Hawkweed				S1	12	51.5 ± 0.0	NB
P	Solidago multiradiata	Multi-rayed Goldenrod				S1	19	31.9 ± 0.0	NB
Р	Symphyotrichum subulatum (non-Bathurst pop)	Annual Saltmarsh Aster				S1	12	81.0 ± 0.0	NB
Р	Betula michauxii	Michaux's Dwarf Birch				S1	3	96.4 ± 0.0	NB
Р	Barbarea orthoceras	American Yellow Rocket				S1	1	74.6 ± 1.0	NB
P	Cardamine parviflora	Small-flowered Bittercress				S1	6	92.2 ± 0.0	NS
Р	Draba arabisans	Rock Whitlow-Grass				S1	30	58.3 ± 0.0	NB
Р	Draba glabella	Rock Whitlow-Grass				S1	7	64.6 ± 0.0	NB
Р	Stellaria crassifolia	Fleshy Stitchwort				S1	3	29.2 ± 5.0	NB
Р	Chenopodiastrum simplex	Maple-leaved Goosefoot				S1	6	31.3 ± 5.0	NB
P	Blitum capitatum	Strawberry-Blite				S1	2	91.3 ± 1.0	NB
Р	Suaeda rolandii	Roland's Sea-Blite				S1	13	26.9 ± 1.0	NB
P	Hypericum virginicum	Virginia St. John's-wort				S1	2	61.8 ± 0.0	NS
P	Corema conradii	Broom Crowberry				S1	19	97.3 ± 0.0	PE
P	Vaccinium boreale	Northern Blueberry				S1	5	41.9 ± 1.0	NB
P	Vaccinium corymbosum	Highbush Blueberry				S1	1	61.4 ± 0.0	NS
P		Seaside Spurge				S1 S1	15	74.4 ± 10.0	NB
P	Euphorbia polygonifolia								
٢	Lespedeza capitata	Round-headed Bush-clover				S1	11	89.7 ± 0.0	NB

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Р .	Proserpinaca pectinata	Comb-leaved Mermaidweed				S1	2	79.2 ± 5.0	NS
P	Polygonum douglasii	Douglas Knotweed				S1	1	63.9 ± 0.0	NB
Р	Lysimachia quadrifolia	Whorled Yellow Loosestrife				S1	4	92.2 ± 0.0	NB
Р	Primula laurentiana	Laurentian Primrose				S1	39	57.8 ± 3.0	NB
P	Amelanchier fernaldii	Fernald's Serviceberry				S1	2	26.6 ± 1.0	NB
P	Crataegus jonesiae	Jones' Hawthorn				S1	1	68.1 ± 1.0	NB
Р	Dryas integrifolia	Entire-leaved Mountain Avens				S1	15	31.8 ± 3.0	NB
Р	Potentilla canadensis	Canada Cinquefoil				S1	1	78.3 ± 0.0	NB
Р	Rubus flagellaris	Northern Dewberry				S1	3	48.5 ± 1.0	NB
Р	Geum fragarioides	Barren Strawberry				S1	1	48.7 ± 1.0	NB
Р	Salix myrtillifolia	Blueberry Willow				S1	25	32.5 ± 0.0	NB
Р	Saxifraga paniculata ssp. laestadii	Laestadius' Saxifrage				S1	41	61.8 ± 0.0	NB
Р	Agalinis purpurea var. parviflora	Small-flowered Purple False Foxglove				S1	58	29.7 ± 0.0	NB
Р	Carex annectens	Yellow-Fruited Sedge				S1	3	37.0 ± 0.0	NB
P	Carex atlantica ssp. atlantica	Atlantic Sedge				S1	8	53.1 ± 0.0	NB
P	Carex backii	Rocky Mountain Sedge				S1	3	35.7 ± 0.0	NB
P	Carex merritt-fernaldii	Merritt Fernald's Sedge				S1	1	36.2 ± 0.0	NB
Р	Carex scirpoidea	Scirpuslike Sedge				S1	6	68.1 ± 0.0	NB
Р	Carex sterilis	Sterile Sedge				S1	1	35.4 ± 2.0	NB
•	Carex sterilis	Inflated Narrow-leaved						33.4 I Z.U	NB
Р	Carex grisea	Sedge				S1	12	67.1 ± 5.0	
Р	Cyperus lupulinus ssp. macilentus	Hop Flatsedge				S1	18	91.4 ± 0.0	NB
Р	Scirpus pendulus	Hanging Bulrush Narrow-leaved Blue-eyed-				S1	9	35.8 ± 0.0	NB NB
Р	Sisyrinchium angustifolium	grass				S1	2	52.8 ± 0.0	
Р	Juncus greenei Juncus stygius ssp.	Greene's Rush				S1	9	50.9 ± 10.0	NB NB
P -	americanus	Moor Rush				S1	17	50.9 ± 10.0	
Р	Goodyera pubescens	Downy Rattlesnake-Plantain				S1	12	30.6 ± 5.0	NB
Р	Malaxis monophyllos var. brachypoda	North American White Adder's-mouth				S1	3	85.9 ± 0.0	PE
Р	Malaxis monophyllos	White Adder's-mouth				S1	1	28.7 ± 0.0	NB
P	Platanthera flava	Southern Rein-Orchid				S1	1	28.7 ± 0.0	NB
P	Platanthera macrophylla	Large Round-Leaved Orchid				S1	12	35.8 ± 0.0	NB
P	Bromus pubescens	Hairy Wood Brome Grass				S1	1	76.0 ± 0.0	NB
Р	Calamagrostis stricta ssp. inexpansa	Slim-stemmed Reed Grass				S1	3	51.6 ± 1.0	NB
Р	Cinna arundinacea	Sweet Wood Reed Grass				S1	3	92.9 ± 1.0	NB
Р	Danthonia compressa	Flattened Oat Grass				S1	18	38.9 ± 0.0	NB
P	Festuca subverticillata	Nodding Fescue				S1	6	85.0 ± 0.0	NS
Р	Potamogeton friesii	Fries' Pondweed				S1	7	45.6 ± 0.0	NB
Р	Potamogeton nodosus	Long-leaved Pondweed				S1	1	95.1 ± 0.0	NB
Р	Potamogeton strictifolius	Straight-leaved Pondweed				S1	1	97.7 ± 2.0	NB
P	Cystopteris laurentiana	Laurentian Bladder Fern				S1	1	66.8 ± 1.0	NB
Р	Dryopteris filix-mas ssp. brittonii	Britton's Male Fern				S1	2	28.9 ± 1.0	NB
Р	Huperzia selago	Northern Firmoss				S1	1	97.1 ± 1.0	NS
Р	Schizaea pusilla	Little Curlygrass Fern				S1	9	57.5 ± 0.0	NB
Р	Bidens heterodoxa	Connecticut Beggar-Ticks				S1?	2	85.7 ± 0.0	NB
P	Cuscuta campestris	Field Dodder				S1?	3	91.5 ± 5.0	NB
P	Polygonum aviculare ssp.	Narrow-leaved Knotweed				S1?	4	36.9 ± 0.0	NB
Р	neglectum	Leene Flowers - Co-des				040	4	070.70	NC
P P	Carex laxiflora Selaginella rupestris	Loose-Flowered Sedge Rock Spikemoss				S1? S1S2	1 9	97.0 ± 7.0 60.6 ± 1.0	NS NB

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Р	Coryphopteris simulata	Bog Fern				S1S2	17	35.8 ± 0.0	NB
Р	Cuscuta cephalanthi	Buttonbush Dodder				S1S3	6	30.2 ± 0.0	NB
Р	Eriophorum russeolum ssp.	Smooth-fruited Russet				S1S3	13	15.0 ± 0.0	NB
•	albidum	Cottongrass						13.0 ± 0.0	
Р	Spiranthes arcisepala	Appalachian Ladies'-tresses				S1S3	7	44.6 ± 0.0	NB
Р	Spiranthes incurva	Sphinx Ladies'-tresses				S1S3	1	7.2 ± 0.0	NB
P	Neottia bifolia	Southern Twayblade			Endangered	S2	50	14.2 ± 0.0	NB
Р	Osmorhiza longistylis	Smooth Sweet Cicely				S2	5	77.0 ± 1.0	NS
Р	Ionactis linariifolia	Flax-leaved Aster				S2	26	70.5 ± 5.0	NB
Р	Symphyotrichum racemosum	Small White Aster				S2	4	78.6 ± 0.0	NB
Р	Symphyotrichum subulatum	Annual Saltmarsh Aster				S2	10	99.9 ± 0.0	NB
Р	Pseudognaphalium macounii	Macoun's Cudweed				S2	42	30.6 ± 5.0	NB
Р	Impatiens pallida	Pale Jewelweed				S2	9	67.8 ± 0.0	NB
Р	Alnus serrulata	Smooth Alder				S2	1	98.1 ± 0.0	NB
Р	Boechera stricta	Drummond's Rockcress				S2	17	35.5 ± 0.0	NB
Р	Sagina nodosa	Knotted Pearlwort				S2	2	96.7 ± 0.0	PE
Р	Sagina nodosa ssp. borealis	Knotted Pearlwort				S2	2	96.5 ± 0.0	PE
Р	Stellaria longifolia	Long-leaved Starwort				S2	10	36.5 ± 2.0	NB
Р	Atriplex glabriuscula var. franktonii	Frankton's Saltbush				S2	4	36.4 ± 0.0	NB
Р	Oxybasis rubra	Red Goosefoot				S2	11	34.0 ± 0.0	NB
Р	Hypericum x dissimulatum	Disguised St. John's-wort				S2	3	62.0 ± 1.0	NB
P	Triosteum aurantiacum	Orange-fruited Tinker's Weed				S2	7	22.8 ± 0.0	NB
Р	Viburnum lentago	Nannyberry				S2	1	56.7 ± 0.0	NB
P	Viburnum recognitum	Northern Arrow-Wood				S2 S2	1	37.9 ± 0.0	NB
P	Shepherdia canadensis	Soapberry				S2 S2	42	28.1 ± 0.0	NB
P	Oxytropis campestris var.	Field Locoweed				S2	27	87.3 ± 0.0	NB
D	johannensis	D O - I:				00	0.7	05.4.00	ND
P	Quercus macrocarpa	Bur Oak				S2	37	65.4 ± 0.0	NB
P	Gentiana linearis	Narrow-Leaved Gentian				S2	1	47.6 ± 50.0	NB
P	Myriophyllum humile	Low Water Milfoil				S2	1	54.1 ± 1.0	NB
P	Proserpinaca palustris	Marsh Mermaidweed				S2	1	80.6 ± 0.0	NB
P	Hedeoma pulegioides	American False Pennyroyal				S2	3	64.2 ± 0.0	NB
P	Nuphar x rubrodisca	Red-disk Yellow Pond-lily				S2	16	8.9 ± 0.0	NB
P	Aphyllon uniflorum	One-flowered Broomrape				S2	1	99.4 ± 1.0	NB
Р	Polygaloides paucifolia	Fringed Milkwort				S2	8	59.0 ± 1.0	NB
Р	Persicaria amphibia var.	Long-root Smartweed				S2	15	78.3 ± 0.0	NB
•	emersa	•							
P	Persicaria careyi	Carey's Smartweed				S2	11	36.5 ± 2.0	NB
P	Anemone parviflora	Small-flowered Anemone				S2	9	32.8 ± 0.0	NB
Р	Hepatica americana	Round-lobed Hepatica				S2	1	81.2 ± 1.0	NB
Р	Ranunculus flabellaris	Yellow Water Buttercup				S2	1	19.7 ± 0.0	NB
P	Crataegus scabrida	Rough Hawthorn				S2	7	51.3 ± 1.0	NB
P	Crataegus succulenta	Fleshy Hawthorn				S2	2	78.3 ± 0.0	PE
Р	Cephalanthus occidentalis	Common Buttonbush				S2	1	99.0 ± 0.0	NB
P	Agalinis neoscotica	Nova Scotia Agalinis				S2	1	57.7 ± 0.0	NS
Р	Euphrasia randii	Rand's Eyebright				S2	7	66.1 ± 0.0	NB
Р	Scrophularia lanceolata	Lance-leaved Figwort				S2	2	64.0 ± 1.0	NB
Р	Dirca palustris	Eastern Leatherwood				S2	1	23.3 ± 1.0	NB
Р	Sagittaria montevidensis ssp. spongiosa	Spongy Arrowhead				S2	86	45.6 ± 0.0	NB
Р	Symplocarpus foetidus	Eastern Skunk Cabbage				S2	128	55.7 ± 18.0	NB
Р	Carex comosa	Bearded Sedge				S2	7	51.6 ± 0.0	NB
Р	Carex granularis	Limestone Meadow Sedge				S2	11	37.0 ± 0.0	NB
P	Carex gynocrates	Northern Bog Sedge				S2	1	64.0 ± 1.0	NB
P	Carex hirtifolia	Pubescent Sedge				S2	8	22.9 ± 0.0	NB

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P	Carex livida	Livid Sedge				S2	9	57.9 ± 0.0	NS
P	Carex plantaginea	Plantain-Leaved Sedge				S2	3	65.6 ± 0.0	NB
Р	Carex rostrata	Narrow-leaved Beaked				S2	3	55.4 ± 0.0	NB
P	0 "	Sedge				00		70.5 . 0.0	ND
P P	Carex sprengelii	Longbeak Sedge				S2	2	70.5 ± 0.0	NB
,	Carex tenuiflora	Sparse-Flowered Sedge				S2	9	33.7 ± 10.0	NB
P	Carex albicans var.	White-tinged Sedge				S2	14	11.2 ± 0.0	NB
_	emmonsii	ŭ ŭ							
))	Cyperus squarrosus	Awned Flatsedge				S2	16	86.8 ± 0.0	NB
	Eriophorum gracile	Slender Cottongrass				S2	51	32.2 ± 0.0	NB
D	Blysmopsis rufa	Red Bulrush				S2	32	64.1 ± 0.0	NB
D	Juncus vaseyi	Vasey Rush				S2	12	8.4 ± 0.0	NB
D	Allium tricoccum	Wild Leek				S2	18	26.3 ± 0.0	NB
P	Galearis rotundifolia	Small Round-leaved Orchid				S2	3	53.4 ± 0.0	NB
•	Calypso bulbosa var. americana	Calypso				S2	3	30.4 ± 5.0	NB
•	Coeloglossum viride	Long-bracted Frog Orchid				S2	7	25.7 ± 10.0	NB
o	Cypripedium parviflorum var.	Small Yellow Lady's-Slipper				S2	2	23.6 ± 0.0	NB
	makasin	* ''				02	2	20.0 ± 0.0	
	Goodyera oblongifolia	Menzies' Rattlesnake- plantain				S2	2	84.8 ± 0.0	PE
.	Chiranthas lucida					S2	6	31.3 ± 1.0	NB
, ,	Spiranthes lucida	Shining Ladies'-Tresses							
	Spiranthes ochroleuca	Yellow Ladies'-tresses				S2	16	3.6 ± 0.0	NB
)	Dichanthelium linearifolium	Narrow-leaved Panic Grass				S2	1	75.5 ± 0.0	NB
-	Elymus canadensis	Canada Wild Rye				S2	1	3.7 ± 1.0	NB
•	Piptatheropsis canadensis	Canada Ricegrass				S2	4	13.1 ± 10.0	NB
•	Puccinellia phryganodes ssp. neoarctica	Creeping Alkali Grass				S2	2	46.4 ± 1.0	NB
P	Poa glauca	Glaucous Blue Grass				S2	23	60.2 ± 0.0	NB
	Puccinellia nutkaensis	Alaska Alkaligrass				S2	2	35.3 ± 1.0	NB
•	Schizachyrium scoparium	Little Bluestem				S2	30	79.3 ± 0.0	NB
)	Zizania aquatica var.	Eastern Wild Rice				S2	7	47.8 ± 0.0	NB
_	aquatica								
P	Piptatheropsis pungens	Slender Ricegrass				S2	5	35.4 ± 0.0	NB
D	Potamogeton vaseyi	Vasey's Pondweed				S2	1	72.3 ± 0.0	PE
•	Asplenium trichomanes	Maidenhair Spleenwort				S2	12	35.9 ± 1.0	NB
)	Anchistea virginica	Virginia chain fern				S2	28	60.9 ± 0.0	NS
•	Woodsia alpina	Alpine Cliff Fern				S2	5	51.5 ± 0.0	NB
•	Diphasiastrum sitchense	Sitka Ground-cedar				S2	4	37.1 ± 0.0	NB
•	Selaginella selaginoides	Low Spikemoss				S2	8	60.2 ± 0.0	NB
•	Toxicodendron radicans var. radicans	Eastern Poison Ivy				S2?	12	43.7 ± 0.0	NB
_	Symphyotrichum novi-belgii					000	_	540.40	NB
P	var. crenifolium	New York Aster				S2?	5	54.6 ± 1.0	
P	Humulus lupulus var. Iupuloides	Common Hop				S2?	2	52.2 ± 5.0	NB
	Crataegus macrosperma	Big-Fruit Hawthorn				S2?	2	14.2 ± 0.0	NB
P	Rubus x recurvicaulis	arching dewberry				S2?	6	28.5 ± 1.0	NB
P	Galium obtusum	Blunt-leaved Bedstraw				S2?	10	27.9 ± 10.0	NB
P	Salix myricoides	Bayberry Willow				S2?	2	32.4 ± 1.0	NB
P	Carex vacillans	Estuarine Sedge				S2?	4	53.5 ± 7.0	NB
P	Platanthera huronensis	Fragrant Green Orchid				S2?	4	58.1 ± 0.0	NB
>	Solidago altissima	Tall Goldenrod				S2S3	3	46.8 ± 0.0	NB
o	Callitriche hermaphroditica	Northern Water-starwort				S2S3	7	46.3 ± 0.0	NB
o	Elatine americana	American Waterwort				S2S3	7	47.1 ± 0.0	NB
o	Bartonia paniculata	Branched Bartonia				S2S3	2	64.7 ± 0.0	NS
		בימווטווכט במונטווומ				3200	2	U-7.1 ± U.U	
P	Bartonia paniculata ssp.	Branched Bartonia				S2S3	24	53.7 ± 0.0	NB

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
Р	Geranium robertianum	Herb Robert	COSLIVIO	JANA	110v Legari 10t	S2S3	90	50.6 ± 0.0	NB
P	Myriophyllum quitense	Andean Water Milfoil				S2S3	5	97.7 ± 0.0	NB
P	Epilobium coloratum	Purple-veined Willowherb				S2S3	19	42.9 ± 0.0	NB
P	Rumex persicarioides	Peach-leaved Dock				S2S3	3	7.6 ± 1.0	NB
P		Seabeach Dock				S2S3	7	47.0 ± 0.0	NB
P	Rumex pallidus					S2S3 S2S3	30		NB NB
	Rubus pensilvanicus	Pennsylvania Blackberry						20.8 ± 0.0	
Р	Galium labradoricum	Labrador Bedstraw				S2S3	14	22.9 ± 0.0	NB
P	Carex adusta	Lesser Brown Sedge				S2S3	14	7.0 ± 10.0	NB
Р	Scirpus atrovirens	Dark-green Bulrush				S2S3	1	73.6 ± 0.0	PE
Р	Corallorhiza maculata var. occidentalis	Spotted Coralroot				S2S3	14	9.9 ± 10.0	NB
Р	Corallorhiza maculata var. maculata	Spotted Coralroot				S2S3	4	55.8 ± 0.0	NB
Р	Neottia auriculata	Auricled Twayblade				S2S3	1	61.6 ± 0.0	NB
Р	Spiranthes cernua	Nodding Ladies'-Tresses				S2S3	21	36.1 ± 0.0	NB
Р	Eragrostis pectinacea	Tufted Love Grass				S2S3	6	6.8 ± 1.0	NB
Р	Stuckenia filiformis	Thread-leaved Pondweed				S2S3	2	34.7 ± 1.0	NB
Р	Potamogeton praelongus	White-stemmed Pondweed				S2S3	11	57.6 ± 0.0	NS
Р	Ophioglossum pusillum	Northern Adder's-tongue				S2S3	5	56.4 ± 1.0	NB
P	Panax trifolius	Dwarf Ginseng				S3	35	12.5 ± 0.0	NB
	Artemisia campestris ssp.	•							NB
P -	caudata , ,	Tall Wormwood				S3	83	53.8 ± 0.0	
Р	Artemisia campestris	Field Wormwood				S3	10	66.1 ± 0.0	NB
Р	Bidens hyperborea	Estuary Beggarticks				S3	45	27.9 ± 1.0	NB
Р	Erigeron hyssopifolius	Hyssop-leaved Fleabane				S3	98	29.0 ± 1.0	NB
Р	Nabalus racemosus	Glaucous Rattlesnakeroot				S3	26	79.0 ± 0.0	NB
Р	Tanacetum bipinnatum ssp. huronense	Lake Huron Tansy				S3	11	99.2 ± 0.0	NB
Р	Symphyotrichum boreale	Boreal Aster				S3	12	22.7 ± 0.0	NB
Р	Betula pumila	Bog Birch				S3	121	14.2 ± 0.0	NB
Р	Turritis glabra	Tower Mustard				S3	1	74.1 ± 0.0	NB
Р	Arabis pycnocarpa	Cream-flowered Rockcress				S3	12	29.4 ± 0.0	NB
Р	Cardamine maxima	Large Toothwort				S3	30	74.2 ± 0.0	NB
Р	Subularia aquatica ssp. americana	American Water Awlwort				S3	2	54.9 ± 0.0	NB
Р	Stellaria humifusa	Saltmarsh Starwort				S3	15	29.3 ± 5.0	NB
P	Ceratophyllum echinatum	Prickly Hornwort				S3	36	9.9 ± 0.0	NB
P	Hudsonia tomentosa	Woolly Beach-heath				S3	398	37.4 ± 0.0	NB NB
P		Silky Dogwood				S3	71	57.4 ± 0.0 57.2 ± 0.0	NB NB
P	Cornus obliqua								
•	Crassula aquatica	Water Pygmyweed				S3	6	47.2 ± 0.0	NB
P	Rhodiola rosea	Roseroot				S3	90	56.6 ± 0.0	NB
P	Penthorum sedoides	Ditch Stonecrop				S3	34	19.8 ± 0.0	NB
P	Elatine minima	Small Waterwort				S3	2	55.4 ± 0.0	NB
P	Geranium bicknellii	Bicknell's Crane's-bill				S3	28	4.6 ± 5.0	NB
Р	Myriophyllum farwellii	Farwell's Water Milfoil				S3	9	47.3 ± 0.0	NB
Р	Myriophyllum heterophyllum	Variable-leaved Water Milfoil				S3	25	79.0 ± 0.0	NB
Р	Myriophyllum verticillatum	Whorled Water Milfoil				S3	16	46.9 ± 0.0	NB
Р	Teucrium canadense	Canada Germander				S3	125	27.8 ± 0.0	NB
Р	Nuphar microphylla	Small Yellow Pond-lily				S3	6	46.2 ± 0.0	NB
Р	Epilobium hornemannii	Hornemann's Willowherb				S3	5	61.4 ± 0.0	NB
Р	Epilobium hornemannii ssp. hornemannii	Hornemann's Willowherb				S3	1	61.3 ± 0.0	NB
Р	Epilobium strictum	Downy Willowherb				S3	29	21.9 ± 0.0	NB
P	Polygala sanguinea	Blood Milkwort				S3	65	24.0 ± 5.0	NB
P	Persicaria arifolia	Halberd-leaved Tearthumb				S3	141	15.0 ± 0.0	NB
P		Dotted Smartweed				S3	28	39.5 ± 0.0	NB NB
P	Persicaria punctata					S3	28 77	39.5 ± 0.0 17.1 ± 0.0	NB NB
P P	Fallopia scandens	Climbing False Buckwheat				S3			
Р	Littorella americana	American Shoreweed				ა ა	4	95.3 ± 1.0	NB

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Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	Samolus parviflorus	Seaside Brookweed				S3	140	23.9 ± 0.0	NB
P	Pyrola minor	Lesser Pyrola				S3	6	51.3 ± 1.0	NB
P	Clematis occidentalis	Purple Clematis				S3	16	35.0 ± 0.0	NB
P	Ranunculus gmelinii	Gmelin's Water Buttercup				S3	51	10.5 ± 1.0	NB
Р	Thalictrum confine	Northern Meadow-rue				S3	8	83.2 ± 0.0	NB
Р	Amelanchier canadensis	Canada Serviceberry				S3	20	31.3 ± 0.0	NB
Р	Rosa palustris	Swamp Rose				S3	8	51.4 ± 0.0	NB
P	Rubus occidentalis	Black Raspberry				S3	5	40.9 ± 0.0	NB
P	Sanguisorba canadensis	Canada Burnet				S3	19	58.0 ± 0.0	NB
P	Galium boreale	Northern Bedstraw				S3	5	61.9 ± 0.0	NB
P		Black Willow				S3	54	64.7 ± 0.0	NB
P	Salix nigra					S3	54 66	25.9 ± 0.0	NB NB
P	Salix pedicellaris Salix interior	Bog Willow				S3	1	26.4 ± 1.0	NB
P		Sandbar Willow							
P P	Comandra umbellata	Bastard's Toadflax				S3	51	30.1 ± 0.0	NB
	Limosella australis	Southern Mudwort				S3	87	23.9 ± 0.0	NB
P	Pilea pumila	Dwarf Clearweed				S3	70	20.2 ± 0.0	NB
P	Viola adunca	Hooked Violet				S3	7	36.1 ± 0.0	NB
P	Viola nephrophylla	Northern Bog Violet				S3	14	53.9 ± 0.0	NB
P	Carex arcta	Northern Clustered Sedge				S3	14	31.2 ± 5.0	NB
Р	Carex capillaris	Hairlike Sedge				S3	20	60.0 ± 0.0	NB
Р	Carex chordorrhiza	Creeping Sedge				S3	74	47.2 ± 0.0	NB
Р	Carex conoidea	Field Sedge				S3	10	37.1 ± 0.0	NB
Р	Carex eburnea	Bristle-leaved Sedge				S3	18	34.6 ± 100.0	NB
Р	Carex exilis	Coastal Sedge				S3	6	66.6 ± 0.0	NS
Р	Carex garberi	Garber's Sedge				S3	1	33.7 ± 0.0	NB
Р	Carex haydenii	Hayden's Sedge				S3	21	10.4 ± 0.0	NB
Р	Carex lupulina	Hop Sedge				S3	27	19.8 ± 0.0	NB
Р	Carex michauxiana	Michaux's Sedge				S3	17	46.2 ± 1.0	NB
Р	Carex ormostachya	Necklace Spike Sedge				S3	6	20.7 ± 1.0	NB
P	Carex rosea	Rosy Sedge				S3	23	61.6 ± 0.0	NB
Р	Carex tenera	Tender Sedge				S3	23	6.6 ± 0.0	NB
Р	Carex tuckermanii	Tuckerman's Sedge				S3	30	28.7 ± 0.0	NB
Р	Carex wiegandii	Wiegand's Sedge				S3	177	12.6 ± 0.0	NB
P	Carex recta	Estuary Sedge				S3	17	25.1 ± 0.0	NB
P	Carex atratiformis	Scabrous Black Sedge				S3	3	90.1 ± 0.0	NS
P	Cyperus dentatus	Toothed Flatsedge				S3	126	53.6 ± 1.0	NB
P	Cyperus esculentus var.	Perennial Yellow Nutsedge				S3	28	40.7 ± 0.0	NB
	leptostachyus	ŭ							
P	Eleocharis intermedia	Matted Spikerush				S3	1	51.9 ± 0.0	NB
Р	Rhynchospora capitellata	Small-headed Beakrush				S3	2	72.1 ± 1.0	NB
Р	Rhynchospora fusca	Brown Beakrush				S3	12	53.7 ± 0.0	NB
Р	Trichophorum clintonii	Clinton's Clubrush				S3	25	61.3 ± 0.0	NB
Р	Bolboschoenus fluviatilis	River Bulrush				S3	7	29.6 ± 1.0	NB
Р	Schoenoplectus torreyi	Torrey's Bulrush				S3	8	10.3 ± 0.0	NB
Р	Lemna trisulca	Star Duckweed				S3	26	17.8 ± 0.0	NB
Р	Cypripedium reginae	Showy Lady's-Slipper				S3	37	22.5 ± 0.0	NB
Р	Liparis loeselii	Loesel's Twayblade				S3	33	9.4 ± 0.0	NB
Р	Platanthera blephariglottis	White Fringed Orchid				S3	603	10.9 ± 0.0	NB
Р	Platanthera grandiflora	Large Purple Fringed Orchid				S3	47	18.2 ± 1.0	NB
Р	Bromus latiglumis	Broad-Glumed Brome				S3	28	17.1 ± 0.0	NB
P	Calamagrostis pickeringii	Pickering's Reed Grass				S3	32	17.4 ± 0.0	NB
Р	Dichanthelium depauperatum	Starved Panic Grass				S3	31	41.8 ± 0.0	NB
Р	Heteranthera dubia	Water Stargrass				S3	5	93.2 ± 0.0	NB
Р	Potamogeton obtusifolius	Blunt-leaved Pondweed				S3	36	21.4 ± 0.0	NB
Р	Potamogeton richardsonii	Richardson's Pondweed				S3	6	87.9 ± 0.0	NB
Р	Xyris montana	Northern Yellow-Eyed-Grass				S3	242	10.3 ± 0.0	NB
P	Zannichellia palustris	Horned Pondweed				S3	48	23.7 ± 0.0	NB

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Taxonomic						Prov Rarity			
Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Rank	# recs	Distance (km)	Prov
Р	Adiantum pedatum	Northern Maidenhair Fern				S3	1	81.2 ± 1.0	NB
Р	Cryptogramma stelleri	Steller's Rockbrake				S3	1	91.8 ± 0.0	NB
Р	Asplenium viride	Green Spleenwort				S3	17	35.9 ± 1.0	NB
Р	Dryopteris fragrans	Fragrant Wood Fern				S3	81	50.1 ± 0.0	NB
Р	Woodsia glabella	Smooth Cliff Fern				S3	67	50.3 ± 0.0	NB
Р	Isoetes tuckermanii ssp. tuckermanii	Tuckerman's Quillwort				S3	4	53.7 ± 0.0	NB
Р	Diphasiastrum x sabinifolium	Savin-leaved Ground-cedar				S3	17	35.7 ± 0.0	NB
Р	Huperzia appressa	Mountain Firmoss				S3	46	61.5 ± 0.0	NB
Р	Sceptridium dissectum	Dissected Moonwort				S3	9	32.4 ± 1.0	NB
Р	Botrychium lanceolatum ssp. angustisegmentum	Narrow Triangle Moonwort				S3	18	28.2 ± 5.0	NB
Р	Botrychium simplex	Least Moonwort				S3	6	45.6 ± 0.0	NB
Р	Polypodium appalachianum	Appalachian Polypody				S3	30	32.6 ± 1.0	NB
Р	Crataegus submollis	Quebec Hawthorn				S3?	5	92.9 ± 1.0	NB
Р	Mertensia maritima	Sea Lungwort				S3S4	8	49.5 ± 0.0	NB
Р	Lobelia kalmii	Brook Lobelia				S3S4	2	88.7 ± 10.0	NB
Р	Suaeda calceoliformis	Horned Sea-blite				S3S4	37	8.7 ± 0.0	NB
Р	Myriophyllum sibiricum	Siberian Water Milfoil				S3S4	8	60.8 ± 0.0	NS
Р	Stachys pilosa	Hairy Hedge-Nettle				S3S4	2	94.8 ± 0.0	NB
Р	Utricularia gibba	Humped Bladderwort				S3S4	3	48.0 ± 0.0	NB
Р	Rumex fueginus	Tierra del Fuego Dock				S3S4	110	6.8 ± 0.0	NB
Р	Rubus chamaemorus	Cloudberry				S3S4	160	12.6 ± 0.0	NB
Р	Geocaulon lividum	Northern Comandra				S3S4	43	18.2 ± 0.0	NB
Р	Juniperus horizontalis	Creeping Juniper				S3S4	25	26.7 ± 1.0	NB
Р	Cladium mariscoides	Smooth Twigrush				S3S4	7	49.2 ± 1.0	NB
Р	Eriophorum russeolum	Russet Cottongrass				S3S4	317	14.3 ± 0.0	NB
Р	Eriophorum russeolum ssp. russeolum	Russet Cottongrass				S3S4	53	34.2 ± 0.0	NB
Р	Triglochin gaspensis	Gasp - Arrowgrass				S3S4	70	37.9 ± 0.0	NB
Р	Spirodela polyrhiza	Great Duckweed				S3S4	19	46.2 ± 0.0	NB
Р	Corallorhiza maculata	Spotted Coralroot				S3S4	25	31.8 ± 0.0	NB
P	Calamagrostis stricta	Slim-stemmed Reed Grass				S3S4	31	28.5 ± 2.0	NB
Р	Calamagrostis stricta ssp. stricta	Slim-stemmed Reed Grass				S3S4	15	52.9 ± 0.0	NB
Р	Distichlis spicata	Salt Grass				S3S4	92	27.0 ± 5.0	NB
P	Potamogeton oakesianus	Oakes' Pondweed				S3S4	14	20.1 ± 0.0	NB
Р	Montia fontana	Water Blinks				SH	4	28.6 ± 1.0	NB
Р	Brachyelytrum erectum	Bearded Shorthusk				SH	2	36.5 ± 2.0	NB
Р	Agalinis maritima	Saltmarsh Agalinis				SX	2	67.3 ± 50.0	NB
•	g					•	_	- · · · · · · · · · · · · · · · · · · ·	

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The recipient of these data shall acknowledge the AC CDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

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APPENDIX G Wetland Delineation Reports (2020 & 2021) hive engineering

WETLAND DELINEATION REPORT: SATARA Dr., MONCTON, NB July 12, 2021

For

CVR Homes 46 Diamond Head Ct #113 Moncton, NB E1G 5S3

Ву

Theo Popma MSc. (Wetland Delineator) at Overdale Environmental Inc. 342 Highfield Street
Moncton, NB
E1C 5R6
tpopma@nb.sympatico.ca
www.Overdale.net
506-227-7605

Figures: Appendix A
Datapoint Photos: Appendix B
Wetland Data Sheets: Appendix C
Background Information: Appendix D
Google Earth Files: Attachment

Introduction

A Wetland Delineation survey was conducted on PID 70629431 (Figure 1) by Theo Popma of Overdale Environmental Inc. on June 26 and 27, 2021. Mr. Popma is a recognized wetland delineator in the province of New Brunswick. Weather conditions were cloudy with moderate wind with temperatures around 22C. Recently there had been a mix of rain and sun.

This report is in support of an EIA being conducted for permitting for development of the site.

Results

See Figure 3.

Photos at each datapoint location are shown in Appendix B. Datasheets are shown in Appendix C.

Datapoints are described below.

DP 1 (Upland)

No hydrological indicators were present here. Soils were mottled with the majority of the matrix being un-depleted. Vegetation was generally hydric and dominated by shrubs and saplings such as Wild Raisin (*Viburnum nudum*) and Balsam Fir (*Abies balsamea*).

DP 2 (Wetland)

Soils were depleted and saturated with 20cm of peaty organics at the surface. Vegetation was typical of bogs and included Leatherleaf (*Chamaedaphne calyculata*) and Rhodora (*Rhododendron canadense*).

DPs 3 and 4 (Wetland)

Soils were saturated histosols. Dominant vegetation was typical of bogs: Sheep Laurel (*Kalmia angustifolia*) and Tamarack (*Larix laricina*).

DP 5 (Wetland)

The only hydrological indicators here were Sparsely Vegetated Depressions (SVD) and Drainage Patters. Soils were depleted to a thickness of 7cm starting within the top 10cm from the surface and so were designated as a Depleted Matrix. Vegetation was dominated by wetland graminoids such as Soft Rush (*Juncus effusus*).

DPs 6, 7, 10, 12 (Wetland)

These were all atypical situations where human activity such as ditching, deforestation and infilling are significantly influencing hydric indicators. Soils were generally depleted to some extent and mottled with the parent material. Hydrological indicators consisted predominantly of SVD. These were sometimes difficult to distinguish from skidder tracks. Vegetation was still dominated by hydric plants.

DPs 8 and 13 (Upland)

These points were situated in a regenerating clearcut and were therefore atypical. Hydrological indicators were absent. Gray Birch (*Betula populifolia*) was dominant over most of the area. Soils were not depleted.

DPs 9 (Upland)

This point was somewhat influenced by human activity on the PID directly to the north, although forest habitat was fairly mature. Hydrological indicators consisted only of SVD. Soils had low chromas but also low value so were not Depleted Matrices. Vegetation was dominanted by typical forest species such as Starflower (*Trientalis borealis*) and Wild Lilly of the Valley (*Maianthemum canadense*).

DP 11 (Upland)

This point was also influenced by human activity on the PID directly to the north. The only hydrological markers were Water Stained Leaves in SVDs, and these were somewhat obscured. Soils were depleted but depleted horizons were thin. Much of the soil matrix was not depleted. Organics on the surface appeared to be peaty and drieddown.

Discussion

The delineation began at the northeast corner where the boundary was clear between the bog and upland forest. This boundary was followed south into the open bog by the powerline where a large culvert was noted. The boundary then turned to follow the edge of a dirt road along the south side of the wetland. This area was highly disturbed.

The western edge was delineated by beginning with marshy habitat which was associated with a culvert in the southwest corner of the PID. This edge was followed up the west side through shrubby transitional habitat to the deforested PID to the north. The northern boundary was briefly delineated as it paralleled the PID boundary as well. This boundary was obscured by atypical indicators.

The majority of the northern boundary of the PID was embedded in wetland habitat.

The small portion of wetland in the southeastern corner was added later since it was dissociated from the rest of the wetland by the dirt road. Ditching here was particularly deep and habitats were dried-down.

Conclusion

Approximately 3 Hectares of wetland was identified and delineated on the PID. This wetland is known to continue onto the PID to immediately to the north as per a previous delineation conducted by Overdale.

Wetland habitats included intact Bog and Shrub Swamp as well as heavily impacted marshy shrubby habitat where indicators were considered to be atypical due to nearby development of new residential subdivisions.

Closing

We trust this information meets your current needs. Please feel free to contact us via telephone at (506) 227-7605 or by email at tpopma@nb.sympatico.ca with any questions or comments.

Sincerely,

Theo Popma BSc, MSc.

President, Overdale Environmental Inc.

APPENDIX A

FIGURES

APPENDIX A: FIGURES

Figure 1. Survey Area



Figure 2. GeoNB Wetlands Map

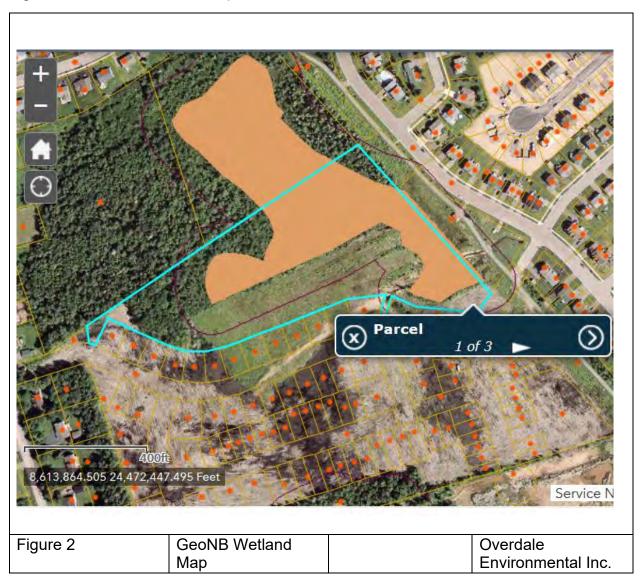
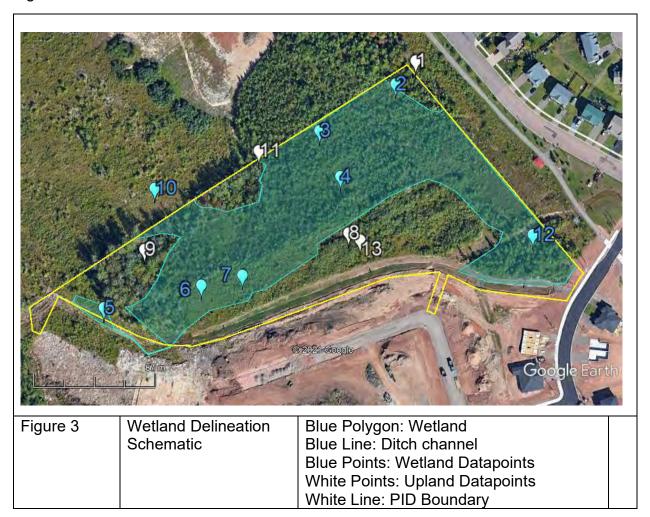
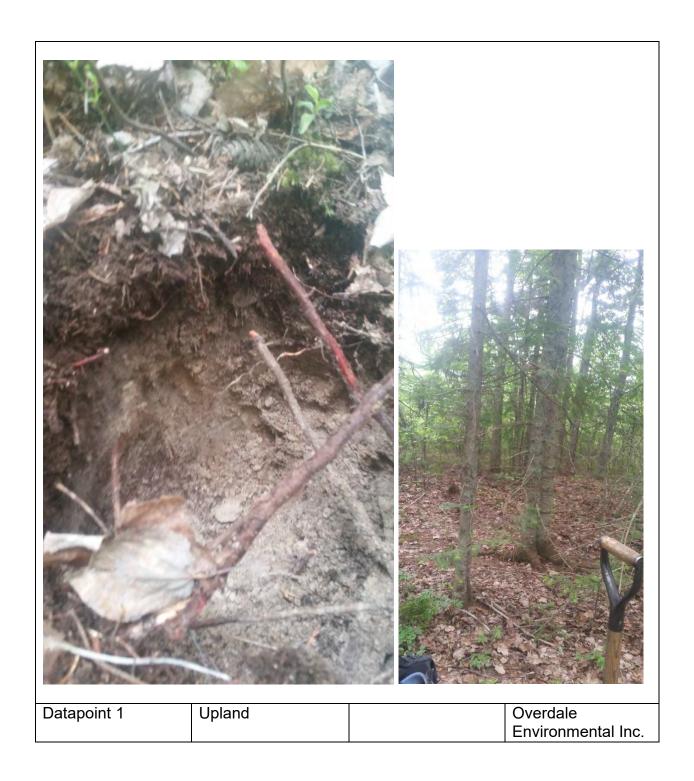


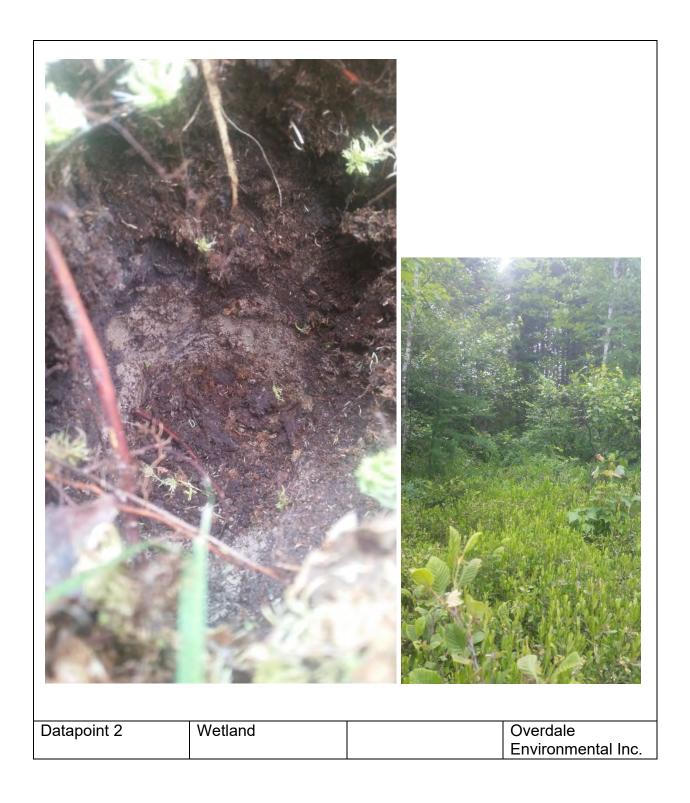
Figure 3. Wetland Delineation Schematic.



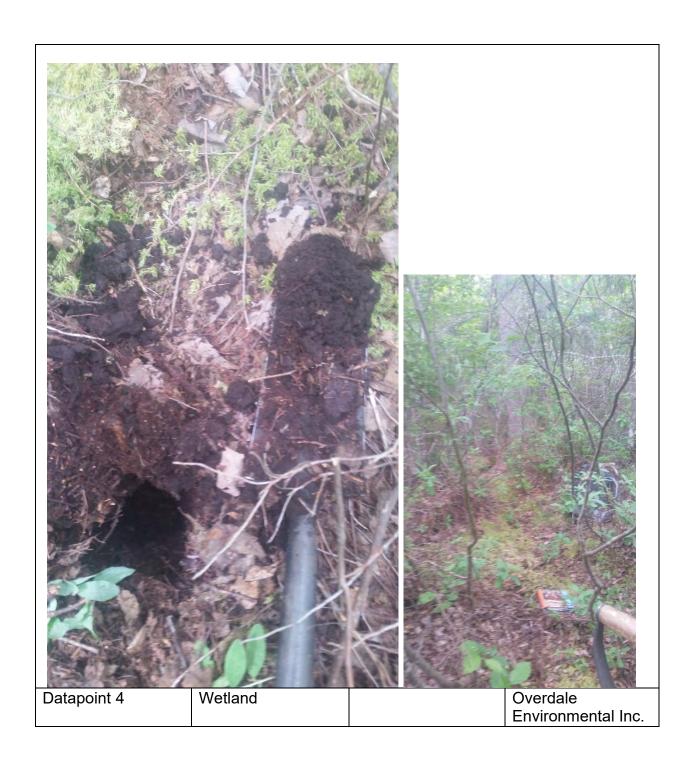
APPENDIX B

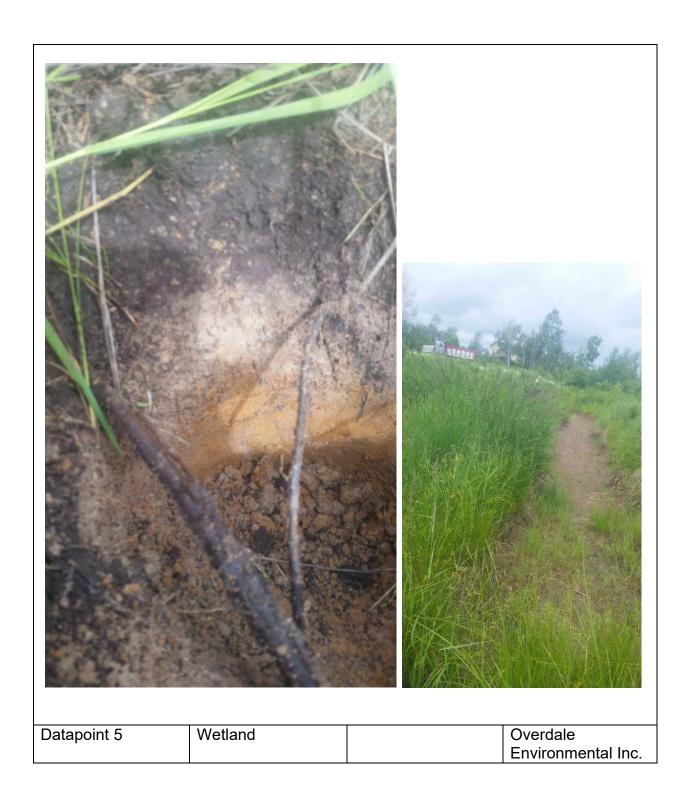
DATAPOINT PHOTOS





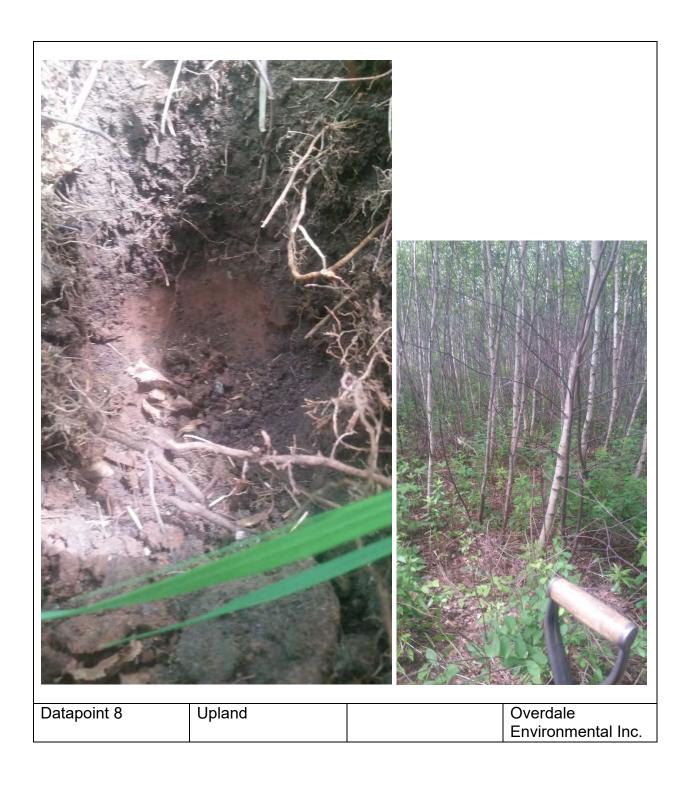




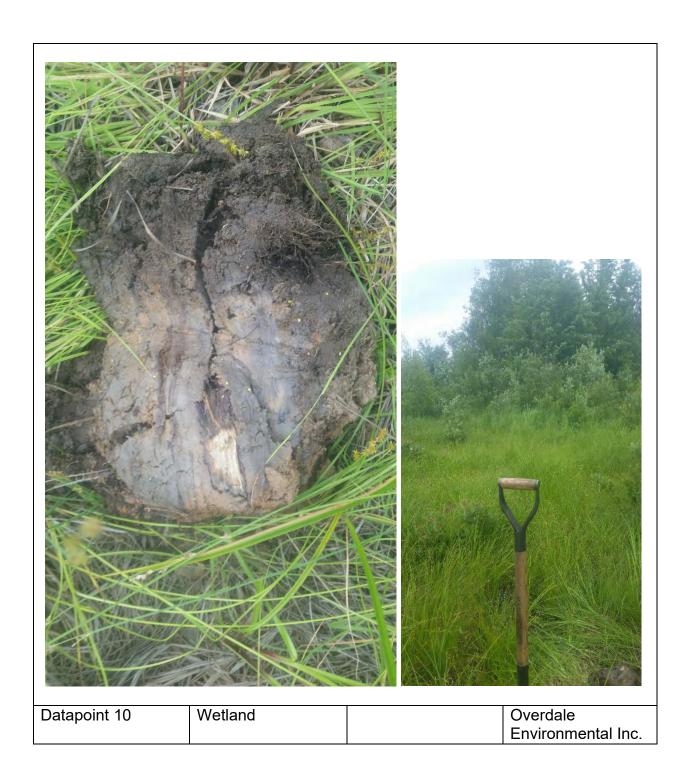


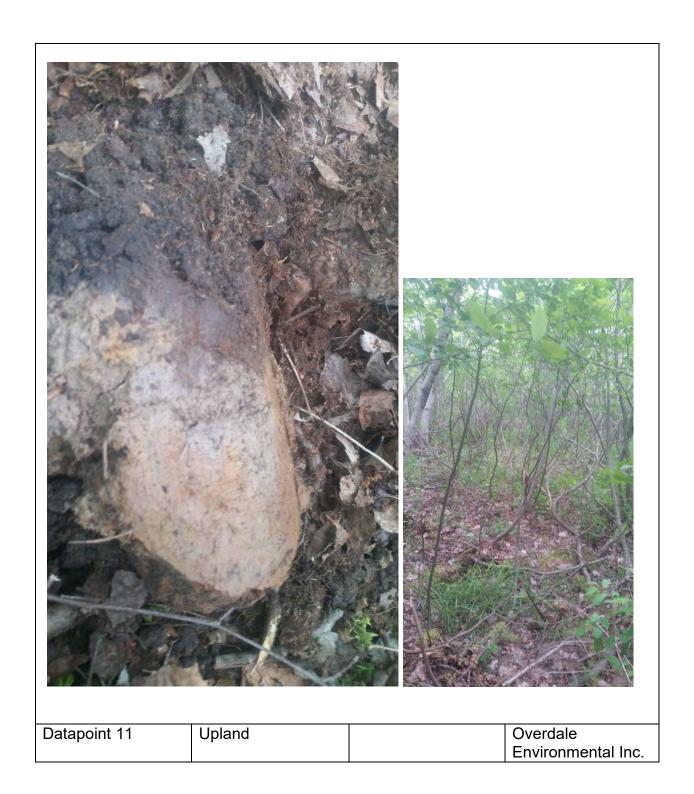
















APPENDIX C

WETLAND DATASHEETS

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Pro Dep 0 to 20 - ¹Typ Hvd	pe:C=Cc lric Soil Histosol Histic E Black H Hydrog	Mate Color(morganic 10YR 5/	rix oist) 2 on,D= rs: (A2)		<u>%</u>		Col	Matrix, Stripp Dark Polyv	CS=Coped Ma	overed satrix (Se	or Co	Type¹		Loc	Loca Coa 5cm	ation:	PL=Po	T T	Lining,) (S3)			nark
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1 Ty	pe:C=Cc dric Soil Histoso Histic E	Color(morganic	on,D=		<u>%</u>		Col	lor(mo	CS=Co	edox Fe	atures r Coa	Type ¹	<u>L</u>	s.2Lo	catio	n:PL=	Pore	Textu	ng,N		latrix		nark
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1 Ty	pe:C=Ccdric Soil Histoso Histic E Black F Hydrog	oncentration (A1) indicato (A1) inpipedon listic (A3) en Sulfide	on,D= rs: (A2)	-Depleti	<u>%</u>		Col	Matrix Strip Dark Poly	CS=Co	elow Sur	r Coa	Type ¹	<u>L</u>	5c ²	catio past I	n:PL=	Pore Re	Textue Liniudox (A or Pe	ng,N 116)) (S3)			nark
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Project S	Site:	Woo	odhaver	n, Mag	netic	Hill, Moi	nctor	1			1	Date:	26-	Jun-	21			San	nple F	Point	t: 4	1	Page	1	WF	PT #:	T	65
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	_		m Lines	, ,	1-00				_	Aquitard (` '	1	-	_	_								
_			son Wa		e (C2)				_	oographic		(D4)											
			Burrow						FAC-Ne	utral Test	(D5)					FACV							
_	_		on Visible	e on Aeı	rial Im	age	ry (C9)	4								FACU	0						
	eld Obs							\perp					I A	4>B :	=hyc	lric							
			er Prese	ent?	Yes	_	No x	_	epth						_								
			resent?		Yes	_	No x	De	epth														
Hiç	gh Wat	erta	able Pre	sent?	Yes	5	No x	De	epth			Wetlan	d Hyd	rolo	gy P	resent	?		Yes		х	No	
50	il Prof	iie																					
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9 to	ofile Depth(cm	esc <u>า)</u> า	Color(m organic 7.5YR 5	rix noist)	pe to t		lepth ne			Redox I	Feature	s	_		nce d	of indic	ator		ture			Rem	nark
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0 to 9 to 16	ofile Dopth(cm) o 9cm o 16cm - /pe:C=	esc n) Cor oil I	Mat Color(m organic 7.5YR 5 7.5YR 4	rix (5/2) (4/6) (on,D=D) (rs:		<u>%</u>		Co	olor(moist) Matrix, CS	Redox	Feature %	Type ¹	<u>L</u>	_oc²				Tex		M=M		Ren	narks
0 to 9 to 16	ofile Depth(cm	Cor oil I	Mat Color(m organic 7.5YR 5 7.5YR 4	rix noist) 5/2 4/6 on,D=D rs:		<u>%</u>		Co	Matrix,CS	Redox	Feature % I or Coa	Type ¹	<u>L</u>	_oc²	ocati		=Por	Tex	ning,N			Ren	narks
0 to 9 to 16	ofile Depth(cm	Cor oil I	Mat Color(m organic 7.5YR 5 7.5YR 4 ncentrati Indicato (A1)	rix noist) 5/2 4/6 on,D=D rs:		<u>%</u>		Co	Matrix,CS Stripped Dark St	Redox	H or Cos	Type ¹	<u>L</u>	ns.2l	.ocati	on:PL	=Por	Tex	ning,N)	atrix	Ren	narks
0 to 9 to 16	ofile Depth(cm o 9cm o 16cm - /pe:C= //pe:C= //peics Histo Histo Black Hydr	Corroll Solution	Color(m organic 7.5YR 5 7.5YR 4 ncentrati Indicato (A1) Dipedon stic (A3)	rix rix rix rix rix rix rix rix		<u>%</u>		Co	Matrix,CS Stripped Dark St. Polyvalt	Redox	H or Coa	Type ¹	<u>L</u>	Loc ²	ocati Coas	on:PL	=Por	Tex	ning,N (A16)) (S3)	atrix	Ren	narks
0 to 9 to 16	ofile Depth(cm o 9cm o 16cm - /pe:C= //pe:C= //peics Histo Histo Black Hydr Strati	Cor oil I sol E Er k Hi oge	Color(m organic 7.5YR 5 7.5YR 4 ncentrati Indicato (A1) pipedon stic (A3) in Sulfide d Layers	rix rix rix rix rix rix rix rix	epletio	<u>%</u>	M=Red	Co	Matrix,CS Strippec Dark St. Polyvalt Thin Da	Redox S=Covered Matrix (Surfaces	Hor Coa 66) 7) Surface	Type¹ Type¹ ated Sano (S8)	<u>L</u>	Loc ²	Coasi	on:PL t Prairi Mucky Manga	=Por	Tex re Lir adox (t or F Mas	ning,N (A16) Peat () (S3) F12	atrix	Ren	narks
0 to 9 to 16	ofile Depth(cm o 9cm o 16cm - /pe:C= rdric S Histo Histic Black Hydr Strati	Corroll I	Material Mat	rix	epletio	<u>%</u>	M=Red	Co	Matrix,CS Stripped Dark St. Polyvalt Thin Da	Redox S=Coverec Matrix (Surfaces	Feature % If or Coal (66) (7) Surface (S9) Surface	Type¹ Type¹ ated Sano (S8)	<u>L</u>	_oc²	Coas	on:PL t Prairi Mucky Manga	e Re Pea	Tex edox (t or F Mass	ning,N (A16) Peat (sses (sses)) (S3) (F12 (F1)	atrix	Ren	narks
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0 to 9 to 16	ofile Depth(cm o 9cm o 16cm - /pe:C= /dric S Histo Histi Black Hydr Strati Depte Sand	Cornoil I	Mat Color(m organic 7.5YR 5 7.5YR 4 ncentrati Indicato (A1) bipedon stic (A3) n Sulfide Layers d Below I dark Surfa	rix	eepletid	<u>%</u>	M=Red	Co	Matrix,CS Strippec Dark St Polyvalt Thin Da Loamy Deplete Redox D	Redox I B=Covered Matrix (Surfaces (Sue Below Surfaces Gleyed Matrix (FO) Matrix	Feature % If or Coal (66) (7) (69) (7) (69) (7) (7) (7) (7) (80) (7) (80) (7) (80) (80) (80) (80) (80) (80) (80) (80	Type¹ Type¹ ated Sanc (S8)	<u>L</u>	Loc ²	Coast	on:PL t Prairi Mucky Manga nont FI Parent Shallo	e Re Pea nese oodp Mate	Tex dedox (t or F Mass blain:	(A16) Peat (Soils F21)	(S3) F12 (F1	atrix	Ren	narks
0 to 9 to 16	ofile Dopper of the performance	Corroll I	Mat Color(m organic 7.5YR 5 7.5YR 4 ncentrati Indicato (A1) ostic (A3) on Sulfide d Layers d Below I ark Surfa	rix rix rix rix rix rix rix rix	rface (51)	<u>%</u>	M=Red	Co	Matrix,CS Strippec Dark St. Polyvalu Thin Da Loamy Deplete Redox D Deplete	Redox S=Covered If Matrix (Surfaces (Surfaces (Surfaces (Surfaces (Seyed Matrix (Foork Surfaced Dark Surfaced	Hor Coa 66) 7) Surface e (S9) strix (F2 F3) sce (F6 rface (Type¹ Type¹ ated Sanc (S8)	<u>L</u>	Loc ²	Coast	on:PL t Prairi Mucky Manga nont Fl	e Re Pea nese oodp Mate	Tex dedox (t or F Mass blain:	(A16) Peat (Soils F21)	(S3) F12 (F1	atrix	Ren	narks
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0 to 9 to 16	ofile Doppth(cm) o 9cm o 16cm - //pe:C= ordric S Histor Histor Deple Thick Sand Sand Sand	Corroil I	Mat Color(m organic 7.5YR 5 7.5YR 4 ncentrati Indicato (A1) ostic (A3) on Sulfide d Layers d Below I ark Surfa	on,D=D on	epletion rface (22) (31) (43)	<u>%</u>	M=Red	Co	Matrix,CS Strippec Dark St. Polyvalu Thin Da Loamy Deplete Redox D Deplete	Redox S=Covered If Matrix (Surfaces (Surfaces (Surfaces (Surfaces (Seyed Matrix (Foork Surfaced Dark Surfaced	Hor Coa 66) 7) Surface e (S9) strix (F2 F3) sce (F6 rface (Type¹ Type¹ ated Sanc (S8)	l l l		coasti Coass Form I Fiedri Red F Very	on:PL t Prairi Mucky Manga nont FI Parent Shallo	e Re Pea nese oodp Mate w Da	Tex dox (t or F Mass lain : erial (urk Si	(A16) Peat (Soils F21)	(S3) F12 (F1!	atrix))))) 22)	Rem	nark:
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Project Si	te: Wo	odhaver	, Magi	netic Hi	II, Mor	cton	_			Date:	26-	Jun-	21			Sampl	e Po	oint:	6	Page	1	WF	PT #:	89	
Client/own		CVR H								Field I	nvesti	gator	(s):	Theo	Popma										
County:	We	stmorlar	nd							Coord						162.63									
PID 70629	9431									Do no	rmal e	nviro	nme	ntal co	ndition	ıs exist	on-s	site?		Yes	х		No		
If no, expl	ain:																								
			.,						D.:	ļ. L	Щ.	Ь.	C.II.				<u>.</u>								
Atypical S			Yes		No			xplai			_			ng, exc	avatior	n, defor	esta	ition,	artific	cial dra	inage				
Is this a p	otential	Problen	1 Area	?		Y	es	_	No	Х	Ext	olain:										Т	I		
Wetland	Detern	nination																							
(Check O	ne Only	For Ea	ch Crit	eria)																					
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Dominant	Hydro	hytic Ve	egetatio	on (50/	20 rule	e)				Yes	х	No					V	Vetla	nd De	etermi	nation				
Wetland F	•	gy								Yes	Х	No													
Hydric So			1							Yes	Х	No					Х		YES			10			
Wetland	• •		rub Sv							<u> </u>							_	_	_			_			
Rational 1	or Det	erminat	ion:	gr	assy s	nrubby	ımpa	acted	wetla	nd area	1	I					+	+		+			-		
Vegetatio	n		-	-			+	D	omina	nt				\vdash	-		+	+		+++		+			
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1	nor																			pecies					
2																				CW,F			7		
3																									
4																To	otal a	# of [Domir	nant					
5																S	peci	es a	cross	all stra	ta:		7		
6																									
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						0	=	= T	otal C	over						<u>th</u>	at a	re Ol	BL,FA	CW,F	AC:		100		
Shrub	_	m: (Plot		5m2)																				
1		ula popu				10		>	_		fac					P	reva				orkshe	et:			
2		er rubrur				10		>			fac							_		Cover	of:		Multip		
3		oulus tre		les		10		>	_		fac							Spec					x 1 =		0
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Llaula	C44	-: /Dl-+ C	\	10			-	-										Speci		-)	-	x 5 =		0
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											9)		-									
		Vater Tabl	e (A2)						Fauna (B1 posits (B1					-				_				
_	_ Satura Water	ation (A3)					_				24)		-	-								
			ite (DO)						n Sulfide			Dooto (22)	-				_				
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		ation Visib					. —	Other (E	xplain in F	Remark	s)		-	-								
Х		ely Vegeta					/						-	-								
<u>Se</u>		y Indicato			of tw	<i>i</i> o requi	red)	ļ <u>.</u>			<u> </u>		-	-								
		ce Soil Cra)					or Stresse													
Х	_	age Patteri	_ ` _ ′						phic Positi		2)											
	_	Trim Lines							Aquitard (_									
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		sh Burrow						FAC-Ne	utral Test ((D5)		Α			ACW							
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		rvations:										A	>B:=	hydr	ic							
Su	rface W	ater Pres	ent?	Yes		No x	De	pth														
Sa	turation	Present?		Yes		No x	De	pth														
Hig	gh Wate	rtable Pre	esent?	Yes		No x	De	pth			Wetlan	d Hydi	olog	y Pro	esent	?		Yes		х	No	
	il Profil																					
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Pre		scription: Ma	trix	e to th		epth ne			Redox F	eature	s			ce of	indica	ators						
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O to	ofile Depth(cm) o 5cm o 20	Scription: Mai Color(n organic 5YR 4/2	trix noist) 2		<u>%</u>		Co	lor(moist)	Redox F	eature %	S Type ¹	<u>L</u>	oc²				Text		л=М		Ren	narks
O to	ofile Depth(cm) o 5cm o 20 pe:C=C	scription: Mat Color(n organic 5YR 4/2 Concentrate il Indicate	trix noist) 2		<u>%</u>		Co	lor(moist)	Redox F	eature %	S Type ¹	<u>L</u>	oc²				Text		л=М		Ren	narks
O to	ofile Depth(cm) o 5cm o 20 'pe:C=C dric So Histos	scription: Mat Color(n organic 5YR 4/2 Concentrate il Indicate ol (A1)	noist) 2 ion,D=De		<u>%</u>		Co	lor(moist) Matrix,CS	Redox F	or Coa	S Type ¹	<u>L</u>	oc²				Text		Л=М		Rem	narks
O to	ofile Depth(cm) o 5cm o 20 rpe:C=C dric So Histos Histic	scription: Mar Color(n organic 5YR 4/2 Concentrati il Indicate ol (A1) Epipedon	trix noist) 2 ion,D=Doirs:		<u>%</u>		Co	lor(moist) Matrix,CS Stripped	Redox F	or Coa	S Type ¹	<u>L</u>	oc²	ocatio	n:PL=	Por	Textu	ng,N			Ren	narks
O to	ofile Depth(cm) o 5cm o 20 rpe:C=C dric So Histos Histic	scription: Mat Color(n organic 5YR 4/2 Concentrate il Indicate ol (A1)	trix noist) 2 ion,D=Doirs:		<u>%</u>		Co	lor(moist) Matrix,CS Stripped	Redox F	or Coa	S Type ¹	<u>L</u>	oc²	ocatio		Por	Textu	ng,N			Rem	narks
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Profile De Depth(cm) 0 to 10cm 10 to 1 Type:C=C Hydric So Histic Black Hydro Stratif Deple Thick Sandy 5cm N Sandy	scription: Mature Color(morganic 5YR 4/2 Concentratii il Indicator ol (A1) Epipedon (Histic (A3) gen Sulfide ied Layers ied Below I Dark Surfar Mucky Miducky Peat of Gleyed M	rix	Depletion Surface 12) (S1) eat (S3) S4)	% (A1	M=Redu	Co	Matrix,CS: Stripped Dark Sur Polyvalu Thin Dar Loamy G Depleted Redox D Depleted	Redox Fi	eature: object Simple Sim	Type¹ Type¹ Atted Sand (S8)	Lc Lc	2Loco 5cr Iror Pie Rec Ver	ast Prassing Mucon-Man de Pares Shaeer (ex	PL=Po airie R ky Pea ganese t Flood ent Mat	Text Text Text Text Text Text Text Text	(A16 Peat (sses (Soils (F21)) (S3) (F12 (F1)		ark
Profile De Depth(cm) 0 to 10cm 10 to 1 Type:C=C Hydric So Histic Black Hydro Stratif Deple Thick Sandy 5cm N	Scription: Mate Color(m organic 5YR 4/2 Concentratii il Indicator oli (A1) Epipedon (Histic (A3) gen Sulfide ied Layers ted Below It Dark Surfar Mucky Miducky Peat Gleyed M. Layer Typ	rix	Depletion Surface 12) (S1) eat (S3) S4)	% (A1	M=Redu	Co	Matrix,CS: Stripped Dark Sur Polyvalue Thin Dar Loamy C Depleted Redox D Depleted Redox D	Redox Fi	eature: object Simple Sim	Type¹ Type¹ Atted Sand (S8)	Lc Lc	2Loco 5cr Iror Pie Rec Ver	ast Prassing Mucon-Man de Pares Shaeer (ex	PL=Po	Text Text Text Text Text Text Text Text	(A16) Peat (Soils (F21)) (S3) (F12 (F1) 9) (22)		ark
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Project Si	ite: Woodhaven,	Magnetic	Hill Mor	octon				Date:	26-	Jun-2	21			Sar	mple	Poin	ıt· !	8	Page	1	WP	T #·		101
Client/owr			i iii, ivioi	ictori				Field In				Theo	Ponm		пріс	· Oiii	ic.		i age		**1	ι π.		101
County:	Westmorland							Coordi					93; 74		2 26									
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Wetland	Determination																							
(Check O	one Only For Eac	h Criteria)																						
Dominant	t Hydrophytic Ve	getation (50	0/20 rule	e)				Yes	х	No						We	tland	De	termina	tion				
	Hydrology						_	Yes			Х													
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Field Obse		ΠÏ		J-							A>		ydric							
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Saturation			Yes		No x	De														
High Wate	rtable Pre	sent?	Yes		No x	De				Wetland	d Hydro	ology	Prese	ent?		Yes			No	x
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Profile De Depth(cm) 0 to 11cm 11 to	scription: (Mate Color(m organic 5YR 3/3	oist)		<u>%</u>		Co	lor(moist)	Redox Fe	eatures	Type ¹	Lo	C ²			Tex		M=M		Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to	Scription: (Material Material	oist)		<u>%</u>		Co	lor(moist)	Redox Fe	eatures	Type ¹	Lo	C ²			Tex		M=M		Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to	scription: (Mating Color(morganic 5YR 3/3))	oist)		<u>%</u>		Co	lor(moist)	Redox Fe	eatures	Type ¹	Lo	C ²			Tex		M=M		Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to Type:C=C Hydric So Histos	scription: (Mating Color(morganic 5YR 3/3))	on,D=		<u>%</u>		Co	lor(moist) Matrix, CS=	Redox Fe	eatures bor Coa	Type ¹	Lo	C ²			Tex		M=M		Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to Type:C=C Hydric So Histos Histic	scription: (Mating Color(morganic 5YR 3/3)) Concentration (Indicator Color (A1))	on,D=		<u>%</u>		Co	lor(moist) Matrix,CS=	Redox Fe	eatures	Type ¹	Lo	c²	ation:		Tex	ning,N			Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to Type:C=C Hydric So Histos Histic Black	scription: (Mate Color(m organic 5YR 3/3 concentratic il Indicator ol (A1) Epipedon (on,D=		<u>%</u>		Co	Matrix, CS= Stripped Dark Sur	Redox Fe	or Coa	Type ¹	Lo	c ²	ation:I	PL=Po	Tex re Lir	ning, N)	atrix	Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to Type:C=C Hydric So Histos Histos Black Hydro	Scription: Mate Color(morganic 5YR 3/3 Concentration il Indicator on (A1) Epipedon (Histic (A3)	on,D= (A2)		<u>%</u>		Co	Matrix,CS= Stripped Dark Sur Polyvalue	Redox Fe % % *Covered c Matrix (S6 faces (S7)	or Coa	Type ¹	Lo	c ² 2Loc Coa	eation:l	PL=Po	re Lir	ning,N) (S3)	atrix	Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to Type:C=C Hydric So Histic Black Hydro Stratifi	Scription: Material	on,D= rs: (A2) (A5)	Depletion	% on,R	M=Redu	Co	Matrix, CS= Stripped Dark Sur- Polyvalue Thin Dark	Redox Fe // // // // // // // // // // // // //	or Coa	Type¹ tted Sand (S8)	Lo	2Loc Coa 5cn Iror	ast Pram Muc	PL=Po	re Lir	(A16) Peat () (S3) [F12]	atrix	Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to 1Type:C=C Hydric So Histos Histos Hydro Stratifi Deplet	Mature Ma	on,D= rs: (A2) (A5) Oark S	Depletion	% on,R	M=Redu	Co	Matrix, CS= Stripped Dark Sur Polyvalue Thin Dark Loamy G	Redox Fe % **Covered c Matrix (S6 faces (S7) Below Su s Surface (eyed Matrix (Se) **Covered C	or Coa or Coa (S9) ix (F2)	Type¹ tted Sand (S8)	Lo	2Loc Coa 5cm Iror Pie	ast Pram Muc	PL=Po hairie Re ky Pea ganese Flood	Tex Tex Tex Tex Tex Tex Tex Tex	(A16) Peat (sees (Soils) (S3) (F12)	atrix	Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to 1Type:C=C Hydric So Histic Black Hydro Stratifi Deplet Thick	scription: (Mature Color(morganic SYR 3/3) Concentration (il Indicator) of (A1) Epipedon (Histic (A3) gen Sulfide ed Layers ed Below Dork Surfa	on,D= (A2) (A5) (A5) (Cark Sace (A)	Depletion Surface 12)	% on,R	M=Redu	Co	Matrix, CS= Stripped Dark Sur Polyvalue Thin Dark Loamy G	Redox Fe % **Covered c Matrix (S6 faces (S7) Below Su s Surface (eyed Matrix (F3) Matrix (F3)	or Coa (S9) ix (F2)	Type¹ tted Sand (S8)	Lo	2Loc Coa 5cm Iror Pie	ast Pram Much-Man-Mannd Pare	PL=Po airie Re ky Pea ganese Flood nt Mat	Tex re Lir re Lir at or F Massephain S	(A16) Peat (ses (Soils) (S3) (F12)	atrix)	Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to 1Type:C=C Hydric So Histic Black Hydro Stratifi Deplet Thick Sandy	scription: Material	ix visit vis	Depletion Surface 12) (S1)	<u>%</u> on,R	M=Redu	Co	Matrix, CS= Stripped Dark Sur Polyvalue Thin Dark Loamy G Depleted Redox Da	Redox Fe % **Covered c Matrix (S6 faces (S7) Below Su s Surface (Seyed Matrix (F3) Matrix (F3) **Ark Surface (F3) **The Covered Covere	rface (S9) ix (F2)	Type ¹ ted Sand	Lo	2Loc Coa 5cn Iror Pie Rec Ver	ast Pra n Muc n-Man ddmont d Pare	PL=Po	Tex re Lir re Lir at or F Massephain S	(A16) Peat (ses (Soils) (S3) (F12)	atrix)	Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to 1Type:C=C Hydric So Histic Black Hydro Stratifi Deplet Thick Sandy 5cm M	Scription: Mate Color(m organic 5YR 3/3 organic 5YR 3/3 organic 5YR 3/3 organic 6 organic 7 org	ix voist) Don,D= SE A2) (A5) Oark S ce (A4) or Pe	Depletion Surface 12) (S1) eat (S3)	<u>%</u> on,R	M=Redu	Co	Matrix, CS= Stripped Dark Sur Polyvalue Thin Dark Loamy G Depleted Redox Da Depleted	Redox Fe % **Covered of the control of the contro	rface (S9) ix (F2)	Type ¹ ted Sand	Lo	2Loc Coa 5cn Iror Pie Rec Ver	ast Pram Much-Man-Mannd Pare	PL=Po	Tex re Lir re Lir at or F Massephain S	(A16) Peat (ses (Soils) (S3) (F12)	atrix)	Rem	ark
Profile De Depth(cm) 0 to 11cm 11 to 1Type:C=C Hydric So Histic Black Hydro Stratifi Deplet Thick Sandy 5cm M Sandy	Mature Ma	ix voist) Don,D= SE A2) A2) CAS CAS CAS CAS CAS CAS CAS CA	Depletion Surface 12) (S1) eat (S3) S4)	<u>%</u>	M=Redu	Co	Matrix, CS= Stripped Dark Sur- Polyvalue Thin Dark Loamy G Depleted Redox Da Depleted Redox Da	Redox Fe % **Covered c Matrix (S6 faces (S7) Below Su s Surface (Seyed Matrix (F3) Matrix (F3) **Ark Surface (F3) **The Covered Covere	rface (S9) ix (F2)	Type ¹ ted Sand	Grains	2Loc Coa 5cm Iror Pie Rec Ver	ast Pras n Muc n-Man d Pare d Pare y Sha	PL=Po PlePo Pl=Po PlePo Pl	re Lir	(A16) Peat (ses (Soils F21)) (S3) (F12) (F19))))))))		
Profile De Depth(cm) 0 to 11cm 11 to 1Type:C=C Hydric So Histic Black Hydro Stratifi Deplet Thick Sandy 5cm M Sandy	Mature Ma	ix voist) Don,D= SE A2) A2) CAS CAS CAS CAS CAS CAS CAS CA	Depletion Surface 12) (S1) eat (S3) S4)	<u>%</u>	M=Redu	Co	Matrix, CS= Stripped Dark Sur Polyvalue Thin Dark Loamy G Depleted Redox Da Depleted	Redox Fe % **Covered of the control of the contro	rface (S9) ix (F2)	Type ¹ ted Sand	Grains	2Loc Coa 5cm Iror Pie Rec Ver	ast Pras n Muc n-Man d Pare d Pare y Sha	PL=Po	re Lir	(A16) Peat (ses (Soils) (S3) (F12) (F19))))))))	Rem	
Profile De Depth(cm) 0 to 11cm 11 to 1Type:C=C Hydric So Histos Histos Black Hydro Stratifi Deplet Thick Sandy 5cm M Sandy Restrictive	Scription: Mate Color(m organic 5YR 3/3 organic 5YR 3/3 organic 5YR 3/3 organic 5YR 3/3 organic 6 organic 7 organic	ix voist) Don,D= SE A2) A2) CAS CAS CAS CAS CAS CAS CAS CA	Depletion Surface 12) (S1) eat (S3) S4)	<u>%</u>	M=Redu	Co	Matrix, CS= Stripped Dark Sur- Polyvalue Thin Dark Loamy G Depleted Redox Da Depleted Redox Da	Redox Fe % **Covered of the control of the contro	rface (S9) ix (F2)	Type ¹ ted Sand	Grains	2Loc Coa 5cm Iror Pie Rec Ver	ast Pras n Muc n-Man d Pare d Pare y Sha	PL=Po PlePo Pl=Po PlePo Pl	re Lir	(A16) Peat (ses (Soils F21)) (S3) (F12) (F19))))))))		
Profile De Depth(cm) 0 to 11cm 11 to 1 Type:C=C Hydric So Histic Black Hydro Stratifi Deplet Thick Sandy 5cm M	Scription: Mate Color(m organic 5YR 3/3 organic 5YR 3/3 organic 5YR 3/3 organic 5YR 3/3 organic 6 organic 7 organic	ix voist) Don,D= SE A2) A2) CAS CAS CAS CAS CAS CAS CAS CA	Depletion Surface 12) (S1) eat (S3) S4)	<u>%</u>	M=Redu	Co	Matrix, CS= Stripped Dark Sur- Polyvalue Thin Dark Loamy G Depleted Redox Da Depleted Redox Da	Redox Fe % **Covered of the control of the contro	rface (S9) ix (F2)	Type ¹ ted Sand	Grains	2Loc Coa 5cm Iror Pie Rec Ver	ast Pras n Muc n-Man d Pare d Pare y Sha	PL=Po PlePo Pl=Po PlePo Pl	re Lir	(A16) Peat (ses (Soils F21)) (S3) (F12) (F19))))))))		

Project Site: Woodhaven, Magnetic Hill, I	Moncton	Date: 26-J	un-21	Sample Point: 9 Pa	age 1 WPT#:	102
Client/owner: CVR Homes		Field Investig	ator(s): Theo Popma			
County: Westmorland		Coordinates:	2625105.41; 745			
PID 70629431		Do normal er	vironmental condition	ns exist on-site?	es x No	
If no, explain:						
31				n, deforestation, artificial	drainage	
Is this a potentialProblem Area?	Yes	No x Expl	ain:			
Wetland Determination						+
(Check One Only For Each Criteria)						
(enesit one only to East one in						1
Dominant Hydrophytic Vegetation (50/20	rule)	Yes x	No	Wetland Deter	mination	
Wetland Hydrology		Yes x	No			
Hydric Soils		Yes	No x	YES	x NO	
Wetland Type:						
Rational for Determination:						
Vegetation		minant				
Tree Stratum: (Plot size: 9m2)			cator Status	Dominance Test W		
1 Acer rubrum	5 X	fac		# of Dominant Spec		
2 Abies balsamea	5 X	fac		that are OBL,FACW	<u>,FAC:</u> 13	
3 Populus tremuloides 4	5 X	fac		Total # of Dominant		
5				Species across all s		
6				Species across all s	<u>II ala.</u> 13	
0				% of Dominant Spe	oioo	
	15 = Tot	al Cover		that are OBL,FACW		
Chruh Stratum (Diet size: Em?)	10 - 100	ai oovei		triat are OBL,1 AOV	<u>,1740.</u> 100	
Shrub Stratum: (Plot size: 5m2) 1 Populus tremuloides	10 X	fac		Prevalence Index	Workshoot:	
2 Alnus incana	10 X	facy	,	Total %Cov		ply by:
3 Acer rubrum	10 X	fac		OBL Species	x 1 =	
4 Betula populifolia	10 X	fac		FACW Species	x 2 =	
5 Viburnum nudum	10 X	fac		FAC Species	x3=	
		al Cover		FACU Species	x 4 =	
	30 - 100	ai oovei		ULP Species	x5=	
Herb Stratum: (Plot Size: 1m2)				Column Totals:	0	0
1 Maianthemum canadense	5 X	fac				
2 Carex trisperma	5 X	obl				
3 Carex intumescens	5 X	fac		Hydrophytic Veget	ation Indicators:	
4 Trientalis borealis	5 X	fac		x Rapid Test for I	Hydrolic Vegetation	
5				x Dominance Tes	it is >50%	
				Prevalence Ind	ex is<3.01	
	20 = Tot	al Cover			Adaptations ¹ (explain)	
					drophytic Vegetation	
						(=: \$15)
				¹ Indicators of hydric	soil and weland hyd	Irology
Comments				must be present, un		95
				problematic		
			Hydrophyti	ic Vegetation Present?	Yes x	No

Hydrology	alamiaal !!! - 1						all that !	0		-			-			Point:	9	Pag
	ological Indicato	ors:(minir	num of	one is											\vdash	\vdash	-	
	ce Water (A1)				_		ed Leaves (B	9)										
	Water Table (A2)			_		uatic Faun		-						-			_	
	ation (A3)			_	_	arl Deposits	. ,	24)						-			_	
	rmarks (DC						ılfide Odor (0		. D 4-	(00				-	-		-	
	nent Deposits (B2	()					zospheres o		ROOTS	(03)			-	+	\vdash		
	Deposits (B3)				_		Reduced Iro	_ , _ ,	-: (00	,					+	\vdash		
	Mat of Crust (B4)			-	_		eduction in t	tillea So	DIIS (Co)				-	+	\vdash	-	
	Deposits (B5)			-7\	_		urface (C7)	- \		-				-	-		-	
	ation Visible on A				Ot	ner (Expiai	n in Remark	S)		-				-	+	\vdash		
	sely Vegetated Co				-					-				-	-		-	
	dicators:(minimu		require	<u>ea)</u>	0.			(54)		-				-	+	\vdash		
	ce Soil Cracks (E	-		-	_		ressed Plant	/						-			_	
	age Patterns (B10)				_		Position (D2	()		-				-	-		-	
	Trim Lines (B16)				_	allow Aquit	_ , ,	D4\		-				-	+	\vdash		
	Season Water Tal	` '			_		phic Relief (D4)			ODI	E4014		-	-		-	
	ish Burrows (C8)		- 10	٥,	_ F <i>F</i>	C-Neutral	Test (D5)			Α		, FACW		-	-		-	
	ation Visible on A	erial Ima	gery (C	9)	-							, FACU	0	-	\perp	\vdash		
Field Observa				_						A>E	3:=hy	dric		-	\perp	\vdash		
Surface Water		Yes	No		epth										-			
Saturation Pre		Yes	No		epth								_					
High Watertal Comments:	ole Present?	Yes	No	x D	epth			Wetla	and Hy	drol	ogy	Present	?		Yes)	No	
Soil Profile	intion:(Describe	to the de	oth need	ded to	docu	ment the in	idicator or or	onfirm	the ahs	ence	of i	ndicator	6)					
Profile Descr	iption:(Describe	to the de	oth need	ded to	docu				the abs	sence	e of i	ndicator	s)					
	Matrix					Re	dox Feature	S				ndicator	s)	Tox	turo		Por	marke
Profile Descr Depth(cm)	Matrix Color(moist)		oth need							Loc		ndicator	s)	Tex	dure		Rei	narks
Profile Descr Depth(cm)	Matrix Color(moist) organic					Re	dox Feature	S				ndicator	s)	Tex	dure		Rei	marks
Profile Descr Depth(cm) 0 to 2 cm 2 to 12	Matrix Color(moist) organic 10YR 3/2					Re	dox Feature	S				ndicator	s)	Tex	dure		Rei	marks
Profile Descr Depth(cm)	Matrix Color(moist) organic					Re	dox Feature	S				ndicator	s)	Tex	dure		Rei	marks
Profile Descr Depth(cm) 0 to 2 cm 2 to 12	Matrix Color(moist) organic 10YR 3/2					Re	dox Feature	S				ndicator	s)	Tex	dure		Rei	marks
Profile Descr Depth(cm) 0 to 2 cm 2 to 12 12 -	Matrix Color(moist) organic 10YR 3/2 7.5YR 4/4	9	6	C	olor(r	Re moist)	dox Feature	S Type ¹		Loc	2					atriv	Rei	marks
Profile Descr Depth(cm) 0 to 2 cm 2 to 12 12 -	Matrix Color(moist) organic 10YR 3/2 7.5YR 4/4 centration,D=Dep	9	6	C	olor(r	Re moist)	dox Feature	S Type ¹		Loc	2					atrix	Rei	marks
Profile Descr Depth(cm) 0 to 2 cm 2 to 12 12 - ¹ Type:C=Con- Hydric Soil Ir	Matrix Color(moist) organic 10YR 3/2 7.5YR 4/4 centration,D=Dep	9	6	C	olor(r	Re moist)	dox Feature	S Type ¹		Loc	2					atrix	Rei	marks
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Profile Descr Depth(cm) 0 to 2 cm 2 to 12 12 - 1 Type: C=Cone Hydric Soil Ir Histor Histor Black	Matrix Color(moist) organic 10YR 3/2 7.5YR 4/4 centration,D=Dep dicators: sol (A1) Epipedon (A2) Histic (A3)	geletion,RM	6	C	olor(r	Remoist) S=Covered ripped Matrark Surface	d or Coated rix (S6) es (S7)	S Type ¹		Loc	ation	:PL=Poi	re Li	ning,	,M=M (A16))	Rei	marks
Profile Descr Depth(cm) 0 to 2 cm 2 to 12 12 - 1Type:C=Cont Hydric Soil Ir Histo Histo Black Hydric Hydric Hydric	Matrix Color(moist) organic 10YR 3/2 7.5YR 4/4 centration,D=Dep dicators: sol (A1) Epipedon (A2) Histic (A3) ogen Sulfide (A4)	geletion,RM	6	C	trix,C	Remoist) S=Covered ripped Matrix Surface	d or Coated rix (S6) es (S7) low Surface	S Type ¹		Loc	ation Coa 5cm	:PL=Poi	re Li e Re	ning, edox t or F	,M=M (A16) Peat () (S3)	Rei	marks
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Profile Descr Depth(cm) 0 to 2 cm 2 to 12 12 - 1 Type:C=Con- Hydric Soil Ir Histo- Histo- Black Hydric Strati Deple Thick	Matrix Color(moist) organic 10YR 3/2 7.5YR 4/4 centration,D=Dep dicators: sol (A1) Epipedon (A2) Histic (A3) ogen Sulfide (A4) fied Layers (A5) ted Below Dark S Dark Surface (A	letion,RM burface (A	=Reduc	C	Strix, C	S=Covered ripped Matrark Surface lyvalue Bel in Dark Su amy Gleye	d or Coated rix (S6) es (S7) low Surface urface (S9) d Matrix (F2	Sand ((S8)		Loc	ation Coa 5cm Iron Piece	:PL=Pol st Prairi Mucky -Manga Imont Fl Parent	e Re Pea nese oodp	ning, edox t or f Mas blain	,M=M (A16) Peat (sses (Soils (F21)	(S3) (F12) (F19)		marks
Profile Descr Depth(cm) 0 to 2 cm 2 to 12 12 - 1 Type:C=Con- Hydric Soil Ir Histo- Histo- Black Hydric Strati Deple Thick Sand	Matrix Color(moist) organic 10YR 3/2 7.5YR 4/4 centration,D=Dep dicators: sol (A1) Epipedon (A2) Histic (A3) ogen Sulfide (A4) fied Layers (A5) ted Below Dark S Dark Surface (A y Mucky Mineral	gletion,RM burface (A 12) (S1)	=Reduc	C	Strix, C Strix De Pc Th Lo De Re	S=Covered ipped Matrark Surface ilyvalue Bei in Dark Su amy Gleye spleted Mat	d or Coated rix (S6) es (S7) low Surface urface (S9) d Matrix (F2) trix (F3) Surface (F6)	Sand (Loc	ation Coa 5cm Iron Piec Red Very	st Prairi Mucky -Mangar Imont Fl Parent / Shallo	e Re Peanese coodpMatew Da	ning, edox t or f Mas blain	,M=M (A16) Peat (sses (Soils (F21)	(S3) (F12) (F19)		marks
Profile Descr Depth(cm) 0 to 2 cm 2 to 12 12 - 1 Type:C=Con- Hydric Soil Ir Histo- Histo- Histo- Strati Deple Thick Sand 5 cm	Matrix Color(moist) organic 10YR 3/2 7.5YR 4/4 centration,D=Dep dicators: sol (A1) Epipedon (A2) Histic (A3) ogen Sulfide (A4) fied Layers (A5) ted Below Dark S Dark Surface (A y Mucky Mineral Mucky Peat or Pe	Surface (A 12) (S1) eat (S3)	=Reduc	C	Strix, C Stri Da Pc Th Lo Dee	Remoist) S=Covered ripped Matrark Surface lyvalue Bel in Dark Su amy Gleye epleted Mat edox Dark S epleted Dare	d or Coated rix (S6) es (S7) low Surface urface (S9) ed Matrix (F2) curface (F6) ek Surface (F6)	Sand (Loc	ation Coa 5cm Iron Piec Red Very	:PL=Pol st Prairi Mucky -Manga Imont Fl Parent	e Re Peanese coodpMatew Da	ning, edox t or f Mas blain	,M=M (A16) Peat (sses (Soils (F21)	(S3) (F12) (F19)		marks
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Profile Descr Depth(cm) 0 to 2 cm 2 to 12 12 - 1 Type:C=Con- Hydric Soil Ir Histor Histor Black Hydra Strati Deple Thick Sand 5 cm Sand	Matrix Color(moist) organic 10YR 3/2 7.5YR 4/4 centration,D=Dep dicators: sol (A1) Epipedon (A2) Histic (A3) ogen Sulfide (A4) fied Layers (A5) ted Below Dark S Dark Surface (A y Mucky Mineral Mucky Peat or Pe	Surface (A 12) (S1) eat (S3) S4)	=Reduc	C	Sti Da Pc Th Lo De Re Re	Remoist) S=Covered ripped Matrark Surface lyvalue Bel in Dark Su amy Gleye epleted Mat edox Dark S epleted Dare	d or Coated rix (S6) es (S7) low Surface urface (S9) ed Matrix (F2) curface (F6) ek Surface (F6)	Sand (Loc	ation Coa 5cm Iron Piec Red Very Othe	st Prairi Mucky -Mangar Imont Fl Parent / Shallo	e Re Peanese oodp Mater w Da	ning, edox t or I Mass blain erial	,M=M (A16) Peat (sses (Soils (F21)	(S3) (F12) (F19)		
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	ge Patterns	` '						•	Position	` '											
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Soil Profile																					
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Profile Des Depth(cm) 0 to 5cm	Color(moisorganic				epth ne			Red	lox Feat	ures	rm the			f indic	ators		<u>ure</u>			Rem	nark
Profile Des Depth(cm) 0 to 5cm 5 - 15	Color(moisorganic 7.5YR 4/1				epth ne			Red	lox Feat	ures	rm the			f indic	ators		<u>ure</u>			Rem	nark
Profile Des Depth(cm) 0 to 5cm	Color(moisorganic				epth ne			Red	lox Feat	ures	rm the			f indic	ators		ure			Rem	nark
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Profile Des Depth(cm) 0 to 5cm 5 - 15 15 - Type:C=Cc Hydric Soil Histosc Histic E Black I Hydrog Stratific Deplete Thick E	Cription: (D Matrix Color (moisorganic 7.5YR 4/4 7.5YR 4/4 Concentration Indicators I (A1) Epipedon (A distic (A3) Iden Sulfide (Iden Sulfide	,D=De	epletion	<u>%</u>	M=Redu	Co	Matrix, CS Strippe Dark S Polyval Thin Da Loamy Deplete	S=Cow d Matri urface: ue Bekark Sur Gleyeced Matri	ered or x (S6) s (S7) ow Surface (St Matrix ix (F3)	Coated Sar ace (S8) 9) (F2)		Loc²	Coast Coast Final Piedm Coast Coa	Prairi /lucky /langar nont Fl	=Por =Peat nese poodp	e Lin dox (or P Mass Mass rial (I	A16) eat (ses (Soils	S3) F12) (F19	atrix)	Rem	nark
Profile Des Depth(cm) 0 to 5cm 5 - 15 15 - Type:C=Cc Hydric Soil Histosc Histic E Black I Hydrog Stratific Deplete Thick E Sandy	Cription: (D Matrix Color (moisorganic 7.5YR 4/1 7.5YR 4/4 Concentration Indicators I (A1) Epipedon (A distic (A3) Iden Sulfide (Iden Sulfide) Iden Sulfide (Iden Sulfid	,D=De 	epletion	<u>%</u>	M=Redu	Co	Matrix, CS Strippe Dark S Polyval Thin Da Loamy Deplete Redox I	S=Cow d Matri urface: uer Bekark Sur Gleyeced Matro	ered or x (S6) s (S7) ow Surface (Sid Matrix ix (F3) urface (Coated Sar ace (S8) 9) (F2)		Loc²	Coast Coast Form N Piedm Red P	Prairi Prairi Jucky Jangar Juarent	=Por Peat nese poodp Mate	e Lin dox (or P Mass Mass rial (I	A16) eat (ses (Soils	S3) F12) (F19	atrix)	Rem	nark
Profile Des Depth(cm) 0 to 5cm 5 - 15 15 - Type:C=C Hydric Soil Histosc Histosc Histosc Stratific Deplete Thick E Sandy 5cm Mi	Cription: (D Matrix Color (moisorganic 7.5YR 4/1 7.5YR 4/4 Concentration Indicators I (A1) Epipedon (A Estic (A3) En Sulfide (Ed Layers (AE) En Sulfide (E	A4) A5) rk Suri	pepletion face (//)) (S3)	<u>%</u>	M=Redu	Co	Matrix,CS Strippe Dark S Polyval Thin Da Loamy Deplete Redox I Depletes	S=Cow d Matri urface: ue Bek ark Sur Gleyec d Matr Dark S ed Dark	ered or x (S6) s (S7) by Surface (S1 Matrix ix (F3) urface (c Surface (c Surf	Coated Sar ace (S8) 9) (F2) F6) e (F7)		Loc²	Coast Coast Form N Piedm Red P	Prairi /lucky /langar nont Fl	=Por Peat nese poodp Mate	e Lin dox (or P Mass Mass rial (I	A16) eat (ses (Soils	S3) F12) (F19	atrix)	Rem	nark
Profile Des Depth(cm) 0 to 5cm 5 - 15 15 - Type:C=C Hydric Soil Histosc Histic E Black H Hydrog Stratific Deplete Thick E Sandy 5cm M Sandy	Cription: (D Matrix Color (moisorganic 7.5YR 4/1 7.5YR 4/4 Concentration Indicators I (A1) Cepipedon (A Ced Layers (Act and Concentration Ce	D=De D=De D=De D=De D=De D=De D=De D=De	gepletion fface (A) (S3)	<u>%</u>	M=Redu	Co	Matrix, CS Strippe Dark S Polyval Thin Da Loamy Deplete Redox I Deplete Redox I	S=Cow d Matri urface: ue Bek ark Sur Gleyec d Matr Dark S ed Dark	ered or x (S6) s (S7) ow Surface (Sid Matrix ix (F3) urface (Coated Sar ace (S8) 9) (F2) F6) e (F7)		Loc²	Coast Coast Form M Piedm Red P Very S	Prairi Mucky flangai ont Flarent Shallo (expla	=Por = Peat nese poodp Mate	e Lin dox (. t or P Mass lain S rial (I	A16) eat (ses (soils F21)	S3) F12) (F19	atrix))))) 22)		nark
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Project S	Site: Woodhaven	. Magnetic	Hill. Mor	cton			Da	ate: 2	26-J	Jun-2	21	_		Sam	ple	Poin	t:	11	Page	1	WF	T#:	117	
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County:	Westmorlan	ıd						oordinat			26251				.39									
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If no, exp	olain:																							
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	it Hydrophytic Ve	egetation (5	0/20 rule)			Ye		_	No						Wet	tland	De	termina	ation				
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	e Stratum: (Plot si	ize: 0m2 \		%Cover		Speci		l.	ndi	cator	· Statu	9	+		Dor	nina	nce 7	Γρεί	Work	shoot	- -			
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2	Acer rubrur			5		x			ac										CW,FA	C:		8		
3	71007 Tabrar	"				^		1	uo						uiac	ui o	ODL,	. ,	700,170	<u>v.</u>		U		
4															Tota	ıl # o	f Dor	mina	ent					
5																			all strata	a:		8		
6																				-				
															% o	f Do	mina	nt S	pecies					
				20	=	Total	Cove	er											CW,FA			100		
Shri	ub Stratum: (Plot	size: 5m2)																					
1	Betula popu			10		х		f	ac						Pre	valei	nce	Inde	ex Wo	rkshe	et:			
2	Acer rubrur			10		Х		f.	ac										Cover o	_	Ť	Multip	lv bv:	
3	Alnus incar			15		Х			acv	v					OBL		ecies			_		x 1 =		0
4	Spiraea alb	а		5				f.	ac						FAC	w s	Speci	es				x 2 =		0
5																	ecies					x 3 =		0
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Herb	Stratum: (Plot S	Size: 1m2)														Totals		0					0
1	Rubus idae	us		5		Х		f	ac															
2	Equisetum .	sylvaticum		5		Х		f.	ac															
3	Glyceria ca	nadensis		5		Х		C	bl										getatio					
4															Х	Rap	id Te	st fo	or Hydr	olic V	'egeta	ation		
5															Х	Don	ninan	ce ⁻	Test is	>50%				
																Prev	valen	ce I	ndex is	<3.0 ¹				
				15	=	Total	Cove	er								Mor	pholo	gic	al Adap	tation	s¹(ex	plain)		
																			Hydrop				(expla	ain)
															¹ Ind	icato	rs of	hyd	dric soi	l and	welar	nd hydr	ology	
Com	nments																	ent,	unless	distu	rbed	or		
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											H	ydro	onytic	: Veg	eta	tion	Pres	ent	?	Y	es	Х	No	

	ology arv Hv	drologica	al Indica	tors:	(mir	nimum (of one	is required;c	heck all that	t apply)					341	nple I	J		11	
		Water (A			\	IIIIGIII	X	Water Stain												
_		ater Table						Aquatic Fau		50)										
_		on (A3)	J (7 (Z)				_	Marl Deposit												
	Vaterm						_	Hydrogen S		(C1)										
_		nt Deposi	ts (B2)					Oxidized Rhi			Roots (C	3)								
_		posits (B						Presence of				,								
		at of Crus						Recent Iron			s (C6)									
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_		ion Visible	,	ial Im	age	rv (B7)		Other (Expla		,										
		y Vegetat					3)													
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		Soil Cra		_			T	Stunted or S	Stressed Pla	nts (D1)										
		e Pattern						Geomorphic												
		rim Lines					-	Shallow Agu												
_		ason Wat	` '	(C2)				Microtopogra		(D4)										
	•	h Burrows		Ì				FAC-Neutral			Α	OBI	L, FACV	V 0						
		on Visible		ial Im	agei	y (C9)					В		_, FACU							
		vations:									A>	B:=h	ydric							
Surfa	ce Wa	ter Prese	nt?	Yes		No x	De	pth				Τ.								
Satura	ation P	resent?		Yes		No x	De	pth												
Hiah \	Watert	able Pre	sent?	Yes		No x	De	pth		Wetlan	d Hydro	loav	Presen	t?		Yes		х	No	
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Profil Depth 0 to 1 10 to 15 to Type Hydri H B	le Desc n(cm) 0cm 15 e:C=Co ic Soil distosol distic E	cription: (rix oist) 1 1 1 con,D=De rs: (A2) e (A4)		<u>%</u> 50		10°	Natrix,CS=Cc Stripped Ma Dark Surface Polyvalue Be	sedox Feature % 50 byvered or Countrix (S6) ces (S7) celow Surface	Type ¹ Dated Sance e (S8)	Lo	2Loca Coa 5cn	ation:PL ast Prair	=Por	Tex Te Lir	ning,N (A16)	S3)	atrix	Rem	narks
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Profil Depth 0 to 1 10 to 15 to 1Type Hydri H S S C T T S 5 5 5	le Deside (m) 00cm 15 15 15 15 15 15 15 15 15 15 15 15 15	Cription: Mate Color(m Organic 10YR 4/ 10YR 4/ 10YR 4/ Indicator Indicator I (A1) pipedon (listic (A3) en Sulfide d Layers d Below [ark Surfa Mucky Mi acky Peat	rix oist) 1 1 1 con,D=De rs: (A2) (A5) Oark Sur occ (A12 neral (S or Peat	face (S3)	% 50 pn,R	M=Red	10°	Stripped Ma Dark Surfac Polyvalue Be Thin Dark S Loamy Gleye Depleted Ma Redox Dark Depleted Da	bedox Feature bovered or Countrix (S6) bes (S7) below Surface (S9) bed Matrix (F3) below Surface (F3) cark Surface (F4)	reserved Type ¹ Type ¹ Dated Sance (S8) (F7)	Lo	2Loca Scn Iror Piec Rec Ver	ation:PL ast Prair n Mucky n-Manga dmont F	=Por Pea Pea Ioodp Mate	Tex	(A16) Peat (A16) Soils F21)	S3) F12 (F1	atrix	Rem	nark
Profil Depth 0 to 1 10 to 15 to Type Hydri H S S C T S S S	le Deside (Indicate Indicate Color(m Organic 10YR 4/ 10YR 4	rix oist) 1 1 1 con,D=De rs: (A2) (A5) Oark Sur coc (A12 neral (S or Peat atrix (S4	face (S3)	% 50 pn,R	M=Red	10°	Stripped Ma Dark Surfac Polyvalue Be Thin Dark S Loamy Gleyd Depleted Ma Redox Dark Depleted Da Redox Depre	bedox Feature bovered or Countrix (S6) bes (S7) below Surface (S9) bed Matrix (F3) below Surface (F3) cark Surface (F4)	reserved Type ¹ Type ¹ Dated Sance (S8) (F7)	d Grains.	c² 2Loca 5cn Iror Piece Reco Ver	ast Prair n Mucky n-Manga dmont F I Parent y Shallo er (expla	=Por ie Re Pea Pea loodp Mate w Da	Tex	(A16) Peat (ses (Soils F21)	S3) F12 (F1	atrix))))) 22)		nark	
Profil Depth 0 to 1 10 to 15 to Type Hydri H S S C T S S S	le Deside (Indicate Indicate Cription: Mate Color(m Organic 10YR 4/ 10YR 4/ 10YR 4/ Indicator I(A1) pipedon (istic (A3) en Sulfide d Layers d Below [ark Surfa Mucky Mi acky Peat	rix oist) 1 1 1 con,D=De rs: (A2) (A5) Oark Sur coc (A12 neral (S or Peat atrix (S4	face (S3)	% 50 pn,R	M=Red	10°	Stripped Ma Dark Surfac Polyvalue Be Thin Dark S Loamy Gleye Depleted Ma Redox Dark Depleted Da	bedox Feature bovered or Countrix (S6) bes (S7) below Surface (S9) bed Matrix (F3) below Surface (F3) cark Surface (F4)	reserved Type ¹ Type ¹ Dated Sance (S8) (F7)	d Grains.	c² 2Loca 5cn Iror Piece Reco Ver	ast Prair n Mucky n-Manga dmont F I Parent y Shallo	=Por ie Re Pea Pea loodp Mate w Da	Tex	(A16) Peat (A16) Soils F21)	S3) F12 (F1	atrix))))) 22)	Rem	nark:	
Profil Depth 0 to 1 10 to 15 to 1 Type Hydri H B H S C T S S Restri	le Deside (Indicate Indicate Color(m Organic 10YR 4/ 10YR 4	rix oist) 1 1 1 con,D=De rs: (A2) (A5) Oark Sur coc (A12 neral (S or Peat atrix (S4	face (S3)	% 50 pn,R	M=Red	10°	Stripped Ma Dark Surfac Polyvalue Be Thin Dark S Loamy Gleyd Depleted Ma Redox Dark Depleted Da Redox Depre	bedox Feature bovered or Countrix (S6) bes (S7) below Surface (S9) bed Matrix (F3) below Surface (F3) cark Surface (F4)	reserved Type ¹ Type ¹ Dated Sance (S8) (F7)	d Grains.	c² 2Loca 5cn Iror Piece Reco Ver	ast Prair n Mucky n-Manga dmont F I Parent y Shallo er (expla	=Por ie Re Pea Pea loodp Mate w Da	Tex	(A16) Peat (ses (Soils F21)	S3) F12 (F1	atrix))))) 22)		nark:	

Project Site: Woodhaven, Magnetic Hill, M	Moncton	Date: 26-Jun	-21 Sample	Point: 12 Page 1	WPT#: 127
Client/owner: CVR Homes	MOTICION		r(s): Theo Popma	Tome 12 rage 1	VVI I π. 121
County: Westmorland		Coordinates:	2625384.79; 7459203.75	5	
PID 70629431			onmental conditions exist of		No
112 10020101		Do Horrian Grivin	On montal conditions cauc	AT GREE. TOO X	110
If no, explain:					
in no, oxpiaini					
Atypical Situation? Yes x	lo Explain: Dit	ching, roadways,	infilling, excavation, defore	estation, artificial drainage	
Is this a potentialProblem Area?		x Explain		, ,	
Wetland Determination					
(Check One Only For Each Criteria)					
Dominant Hydrophytic Vegetation (50/20 r	ule)	Yes x No		Wetland Determination	
Wetland Hydrology		Yes x No			
Hydric Soils		Yes x No		x YES N	10
Wetland Type: Forested Wetland					
Rational for Determination: Dried	-down forested wetland a	nd shrubby bog			
	 				
Vegetation	Domina		011	- 1111	
Tree Stratum: (Plot size: 9m2)	%Cover Species			ominance Test Workshee	i.
1 Picea rubens	10 X	fac		of Dominant Species	5
2			una	at are OBL,FACW,FAC:	5
3 4			Ta	tal # of Dominant	
					-
5			2	ecies across all strata:	5
6			0/	15 . 10 .	
	40 - Tatal C	Naview		of Dominant Species	100
	10 = Total C	over	una	at are OBL,FACW,FAC:	100
Shrub Stratum: (Plot size: 5m2)	0.5			<u> </u>	
1 Rhododendron canadense	25 X	fac	Pr	evalence Index Workshe	
2 Viburnum nudum	10	fac		Total %Cover of:	Multiply by:
3 Picea rubens	10	fac		BL Species	x 1 = 0
4 Spiraea alba	10	fac		CW Species	x 2 = 0
5 Betula populifolia	10	fac		C Species	x 3 = 0
	65 = Total C	over		CU Species	x 4 = 0
				P Species	x 5 = <u>0</u>
Herb Stratum: (Plot Size: 1m2)			Co	olumn Totals: 0	0
1 Chamaedaphne calyculata	5 X	obl			
2 Cornus canadensis	5 X	fac		desired to Manadadi in the	
3 Kalmia angustifolia	5 X	fac		drophytic Vegetation Ind	
4			X	Rapid Test for Hydrolic V	•
5			X	Dominance Test is >50%	
				Prevalence Index is < 3.01	
	15 = Total C	over		Morphological Adaptation	ns ¹ (explain)
				Problematic Hydrophytic	Vegetation ¹ (explain)
			l ln	dicators of hydric soil and	weland hydrology
Comments				ıst be present, unless distu	
			pro	oblematic	
			Hydrophytic Veget	ation Present? Y	es x No

Hydrology	rological Indiasters	/min:-	auma a	of one	io ro	nuirodiobaa	k all that and	4						Cum	. ت. م	Poin	L.	12	ı-a(
	rological Indicators	s: (minin	num c	one					-								\vdash	-	
	ace Water (A1)		-	-	-		ed Leaves (B	9)							-				
	Water Table (A2)		-	-		Aquatic Fau								\vdash	-				
	ration (A3)	-			_	Marl Deposi		24)	_										
	ermarks	-			_	, ,	Sulfide Odor (0			100									
	ment Deposits (B2)	-					izospheres o			(C3)								
	Deposits (B3)	-			-		f Reduced Iro												
	Mat of Crust (B4)	-			-		reduction in	illed So	oils (C6	5)									
	Deposits (B5)				_		Surface (C7)												
	dation Visible on Aer				_	Other (Expla	ain in Remark	s)											
	sely Vegetated Cond			. ,															
	ndicators:(minimum		<u>requi</u>	red)															
	ace Soil Cracks (B6)				-		Stressed Plant	/											
	nage Patterns (B10)				_		Position (D2)											
	Trim Lines (B16)				_	Shallow Aqu													
	Season Water Table	(C2)			-		aphic Relief (D4)											
	fish Burrows (C8)				ш	FAC-Neutra	l Test (D5)			Α		, FACV							
	ration Visible on Aer	ial Imag	jery (C9)								, FACU	0						
Field Observa										A>E	3:=hy	dric							
Surface Water	er Present?	Yes	No	x	Dept	h													
Saturation Pr	esent?	Yes	No	х	Dept	th													
High Waterta	ble Present?	Yes	No	х	Dept	h		Wetla	and Hy	drol	ogy l	Present	?		Yes		х	No	
Soil Profile				Ţ.									Ļ						
Profile Desci	ription:(Describe to	the dep	oth ne	eded	to do				the abs	ence	e of i	ndicator	s)						
	Matrix			eded		R	Redox Feature	s				ndicator	s)						
Profile Desci Depth(cm)	Matrix Color(moist)	the dep		eded						ence		ndicator	s)	Text	<u>ure</u>			Rem	narks
Profile Descripe Depth(cm) 0 to 3cm	Matrix Color(moist) organic			eded		R	Redox Feature	s				ndicator	s)	Text	ure			Rem	narks
Profile Descripe Depth(cm) 0 to 3cm 3 to 8	Matrix Color(moist) organic 10YR 4/1	9/	<u>6</u>	eded	Colo	r(moist)	Redox Feature %	s				ndicator	s)	Text	<u>ure</u>			Ren	<u>narks</u>
Profile Description Depth(cm) 0 to 3cm 3 to 8 8 to 20	Matrix Color(moist) organic 10YR 4/1 10YR 4/1		<u>6</u>	eded	Colo	R	Redox Feature	s				ndicator	s)	Textu	ure			Rem	<u>narks</u>
Profile Descripe Depth(cm) 0 to 3cm 3 to 8	Matrix Color(moist) organic 10YR 4/1	9/	<u>6</u>	eded	Colo	r(moist)	Redox Feature %	s				ndicator	s)	Text	<u>ure</u>			Rem	<u>narks</u>
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 -	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4	6	0		<u>Colo</u>	r(moist)	Redox Feature % 40	Type ¹	1	Loc	2							Rem	<u>nark</u> s
Profile Description Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 -	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet	6	0		<u>Colo</u>	r(moist)	Redox Feature % 40	Type ¹	1	Loc	2					atrix		Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet	6	0		<u>Colo</u>	r(moist)	Redox Feature % 40	Type ¹	1	Loc	2					atrix		Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1)	6	0		7.5Y	R 4/4	Redox Feature % 40 ed or Coated	Type ¹	1	Loc	2					atrix		Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type: C=Con Hydric Soil II Histo Histo	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1) c Epipedon (A2)	6	0		7.5Y	R 4/4 s,CS=Covero	Redox Feature % 40 40 atrix (S6)	Type ¹	1	Loc	2 ation	:PL=Poi	re Li	ning,N	л=Ма			Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histo Blaci	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 ccentration,D=Deplet ndicators: sol (A1) c Epipedon (A2) K Histic (A3)	6	0		7.5Y	R 4/4 CCS=Covered Stripped Management Management Surface	Redox Feature % 40 atrix (S6) ces (S7)	S Type ¹	1	Loc	ation	:PL=Por	re Li	ning,N	/I=Ма			Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histi Blact Hydric Hydri	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1) Epipedon (A2) Histic (A3) ogen Sulfide (A4)	6	0		7.5Y	R 4/4 CCS=Covered Stripped Mathematical Mat	Address (S6) Address (S7) Address (S7) Address (S7) Address (S7) Address (S7) Address (S7)	S Type ¹	1	Loc	ation Coa 5cm	:PL=Poi	re Li e Re	ning,N edox (A	л=Ма А16) eat (S3)		Ren	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histo Histo Hydric Strat Strat	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1) c Epipedon (A2) k Histic (A3) ogen Sulfide (A4) ified Layers (A5)	66	0 =Redu		7.5Y	R 4/4 CCS=Covero Stripped Ma Dark Surfac Polyvalue B Thin Dark S	Add Add Add Add Add Add Add Add Add Add	Sand (1	Loc	ation Coa 5cm	:PL=Poi st Prairi Mucky -Mangai	re Li Pea	ning,Nedox (/ edox (/ t or Pe	Λ=Μa A16) eat (ses (S3) F12)		Ren	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histo Histo Hydric Strat Strat	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1) Epipedon (A2) Histic (A3) ogen Sulfide (A4)	66	0 =Redu		7.5Y	R 4/4 CCS=Covero Stripped Ma Dark Surfac Polyvalue B Thin Dark S	Address (S6) Address (S7) Address (S7) Address (S7) Address (S7) Address (S7) Address (S7)	Sand (1	Loc	ation Coa 5cm	:PL=Poi	re Li Pea	ning,Nedox (/ edox (/ t or Pe	Λ=Μa A16) eat (ses (S3) F12)		Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histi Blact Hydr Strat Deple	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1) c Epipedon (A2) k Histic (A3) ogen Sulfide (A4) ified Layers (A5)	6 ion,RM	0 =Redu		7.5YY	R 4/4 CCS=Covero Stripped Ma Dark Surfac Polyvalue B Thin Dark S	Add Add Add Add Add Add Add Add Add Add	Sand (1	Loc	ation Coa 5cm Iron	:PL=Poi st Prairi Mucky -Mangai	re Li Pea Pea nese	ning,N edox (/ t or Pe Mass	M=Ma A16) eat (ses (Goils	S3) F12) (F19		Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histi Blact Hydr Strat Depl Thick	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1) Epipedon (A2) Histic (A3) ogen Sulfide (A4) ified Layers (A5) eted Below Dark Sur k Dark Surface (A12	66 ion,RM:	0 =Redu		Coloo 7.5YY	R 4/4 CCS=Covered Stripped Mathematical Ma	Add Add Add Add Add Add Add Add Add Add	Sand ((S8)	1	Loc	ation Coa 5cm Iron Piec	st Prairi Mucky Manga Mangatlmont Fl Parent	e Re Pea nese oodp	ning,N edox (A t or Po Mass blain S erial (F	A16) eat (ees (l Soils	S3) F12) (F19)	Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histo Histo Histo Strat Deple Thick	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1) c Epipedon (A2) c Histic (A3) ogen Sulfide (A4) ified Layers (A5) eted Below Dark Sur k Dark Surface (A12 by Mucky Mineral (S	66 ion,RM:	0 =Redu		Colo 7.5YY	R 4/4 CCS=Covern Stripped Ma Dark Surface Polyvalue B Thin Dark S Loamy Gley Depleted Ma Redox Dark	Add Add Add Add Add Add Add Add Add Add	Sand ((S8)	1	Loc	ation Coa 5cm Iron Piec Red Very	st Prairi Mucky Mangar Imont Fl Parent / Shallo	e Re Pea nese oodp Mate	ning,N edox (A t or Po Mass blain S erial (F	A16) eat (ees (l Soils	S3) F12) (F19)	Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histo Histo Histo Hydric Strat Deple Thick Sanc 5cm	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1) c Epipedon (A2) k Histic (A3) ogen Sulfide (A4) ified Layers (A5) eted Below Dark Sur k Dark Surface (A12 by Mucky Mineral (S Mucky Peat or Peat	66 face (Act) 1) (S3)	0 =Redu		7.5YY	r(moist) R 4/4 CCS=Covero Stripped Ma Dark Surfac Polyvalue B Thin Dark S Loamy Gley Depleted Ma Redox Dark Depleted Dark	Addox Feature % 40 ded or Coated atrix (S6) des (S7) delow Surface (S9) ded Matrix (F2) atrix (F3) Surface (F6) ark Surface (F6)	Sand ((S8)	1	Loc	ation Coa 5cm Iron Piec Red Very	st Prairi Mucky Manga Mangatlmont Fl Parent	e Re Pea nese oodp Mate	ning,N edox (A t or Po Mass blain S erial (F	A16) eat (ees (l Soils	S3) F12) (F19)	Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histo Histo Histo Hydric Strat Deple Thick Sanc Sanc	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration, D=Deplet ndicators: sol (A1) c Epipedon (A2) k Histic (A3) ogen Sulfide (A4) ified Layers (A5) eted Below Dark Sur k Dark Surface (A12 by Mucky Mineral (S Mucky Peat or Peat by Gleyed Matrix (S4	66 face (Act) 1) (S3)	0 =Redu		7.5YY	r(moist) R 4/4 CCS=Covero Stripped Ma Dark Surfac Polyvalue B Thin Dark S Loamy Gley Depleted Ma Redox Dark Depleted Dark Redox Dark Depleted Dark Redox Depr	Add Add Add Add Add Add Add Add Add Add	Sand ((S8)	1	Loc	Coa 5cm Iron- Piec Red Very	st Prairi Mucky Mangai Imont Fl Parent / Shallover (explai	e Re Peanese oodp	ning, N dox (/ dox (/ Mass Jain S Prial (F	M=Ma A16) eat (Soils F21)	S3) F12) (F19))))))))))))))		narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histo Histo Histo Hydric Strat Deple Thick Sanc Sanc	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration,D=Deplet ndicators: sol (A1) c Epipedon (A2) k Histic (A3) ogen Sulfide (A4) ified Layers (A5) eted Below Dark Sur k Dark Surface (A12 by Mucky Mineral (S Mucky Peat or Peat	66 face (Act) 1) (S3)	0 =Redu		7.5YY	r(moist) R 4/4 CCS=Covero Stripped Ma Dark Surfac Polyvalue B Thin Dark S Loamy Gley Depleted Ma Redox Dark Depleted Dark	Addox Feature % 40 ded or Coated atrix (S6) des (S7) delow Surface (S9) ded Matrix (F2) atrix (F3) Surface (F6) ark Surface (F6)	Sand ((S8)	1	Loc	Coa 5cm Iron- Piec Red Very	st Prairi Mucky Mangar Imont Fl Parent / Shallo	e Re Peanese oodp	ning, N dox (/ dox (/ Mass Jain S Prial (F	A16) eat (ees (l Soils	S3) F12) (F19))))))))))))))	Rem	narks
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histic Blact Hydric Strat Depli Thick Sanc Sanc Restrictive La	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration, D=Deplet ndicators: sol (A1) c Epipedon (A2) k Histic (A3) ogen Sulfide (A4) ified Layers (A5) eted Below Dark Sur k Dark Surface (A12 by Mucky Mineral (S Mucky Peat or Peat by Gleyed Matrix (S4	66 face (Act) 1) (S3)	0 =Redu		7.5YY	r(moist) R 4/4 CCS=Covero Stripped Ma Dark Surfac Polyvalue B Thin Dark S Loamy Gley Depleted Ma Redox Dark Depleted Dark Redox Dark Depleted Dark Redox Depr	Addox Feature % 40 ded or Coated atrix (S6) des (S7) delow Surface (S9) ded Matrix (F2) atrix (F3) Surface (F6) ark Surface (F6)	Sand ((S8)	1	Loc	Coa 5cm Iron- Piec Red Very	st Prairi Mucky Mangai Imont Fl Parent / Shallover (explai	e Re Peanese oodp	ning, N dox (/ dox (/ Mass Jain S Prial (F	M=Ma A16) eat (Soils F21)	S3) F12) (F19))))))))))))))		nark
Profile Desci Depth(cm) 0 to 3cm 3 to 8 8 to 20 20 - 1 Type:C=Con Hydric Soil II Histo Histo Histo Histo Hydric Strat Deple Thick Sanc Sanc	Matrix Color(moist) organic 10YR 4/1 10YR 4/1 7.5 YR 4/4 centration, D=Deplet ndicators: sol (A1) c Epipedon (A2) k Histic (A3) ogen Sulfide (A4) ified Layers (A5) eted Below Dark Sur k Dark Surface (A12 by Mucky Mineral (S Mucky Peat or Peat by Gleyed Matrix (S4	66 face (Act) 1) (S3)	0 =Redu		7.5YY	r(moist) R 4/4 CCS=Covero Stripped Ma Dark Surfac Polyvalue B Thin Dark S Loamy Gley Depleted Ma Redox Dark Depleted Dark Redox Dark Depleted Dark Redox Depr	Addox Feature % 40 ded or Coated atrix (S6) des (S7) delow Surface (S9) ded Matrix (F2) atrix (F3) Surface (F6) ark Surface (F6)	Sand ((S8)	1	Loc	Coa 5cm Iron- Piec Red Very	st Prairi Mucky Mangai Imont Fl Parent / Shallover (explai	e Re Peanese oodp	ning, N dox (/ dox (/ Mass Jain S Prial (F	M=Ma A16) eat (Soils F21)	S3) F12) (F19))))))))))))))		narks

	termination Only For Each Criteria)		-			-		+		++					+
CHECK OHE	Only For Each Onlena)							-							_
Cominant H	drophytic Vegetation (50)	/20 rule)		Ye	s x	No				Wat	and Dete	rminati	ion	-	
Vetland Hyd		20 (dic)		Ye		No				FFCER	and Dete	miac			
lydric Soils				Ye		No	×				YES	х	NO		
Vetland Ty				100			<u> </u>			Н	120				
	Determination:														
/egetation				Dominant											
	atum: (Plot size: 9m2)	%Cover	r	Species	Inc	dicato	r Status		Do	minan	ce Test \	Worksl	neet:		
1	none										inant Spe				
2											BL,FAC			6	
3															
4									Tot	al # of	Dominan	nt			
5											across all	_		6	
6															
-									% (of Don	ninant Spe	ecies			
		0	=	Total Cove	r						BL,FAC			100	
Shrub S	stratum: (Plot size: 5m2	1										,			
1	Betula populifolia	15		x	fac	c			Pre	evalen	ce Index	Work	sheet:		_
2	Spiraea alba	15		X	fac			_			Total %Co		onoot.	Multipl	v bv
3	Rhododendron canaden			X	fac				OB	L Spe		JVCI OI.		x1=	<u>у Бу.</u>
4	Alnus incana	15		x	fac			_			pecies			x2=	0
5	Airius iricaria	10		^	740			_		C Spe				x3=	0
- 0		00	=	T-1-1-0				-							-
		60		Total Cove	r			-		CU Sp P Spec				x 4 = x 5 =	0
I Iamb Ch	ratum: (Plot Size: 1m2							-		lumn T		0		x 5 =	<u>C</u>
1	Juncus filiformis	5	-	х	ob	J		-	Col	iumn i	otals:	U			
2	Chamaedaphne calycula		_	X	ob		_	-							-
3	опаттаецарнне сапусив	ala J	-	1^	OD	"		+	Lisa	dronk	ytic Vege	ntatio=	Indiact	ore:	-
4			-					+	X		ytic vege d Test for				-
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Hydrology											T				San	nnle	Poin	F	13	Page	2
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Surface Water (A1)	<u> </u>	(1111111111111111111111111111111111111				Stained L			<u> </u>		\dashv										+
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Surface Soil Cracks (B		1 110 10	- quire		Stunted	or Stres	sed F	Plants	(D1)		\pm										+
Drainage Patterns (B10	-			-		phic Pos			(01)		\pm										+
Moss Trim Lines (B16)				-		Aquitard		• •			\pm										+
Dry-Season Water Tab	e (C2)					pographi			1)		\pm										+
Crayfish Burrows (C8)	0 (02)					eutral Tes			.,	Α		OBL. F	ΔΟΛ	<i>/</i> 0							+
Saturation Visible on Ae	rial Ima	agery (C	:9)	\vdash	1710-140	Juli ai 100	(DC)		В		JPL, F									+
Field Observations:		-g-, y (C	,								_	=hydri									+
Surface Water Present?	Yes	No	Y	Dept	th					^		-iiyuii									+
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Comments:	103	140	^	БСР	u 1				Votiuii	u riyui	0.0	99	JUIT	•		103		^			+
Confinents.																					
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Color(moist)		<u>%</u>		Colo	r(moist)		<u>%</u>	1	ype ¹	L _C	oc ²	_	-		Tex	ture			Ren	<u>narks</u>	_
0 to 10 organic											4										
10 to 7.5 YR 4/4											_										
¹ Type:C=Concentration,D=E	epletio	n,RM=R	Reduc	ced M	fatrix,CS	S=Covere	ed or	Coate	d Sano	d Grains	s.2L	ocatio	n:PL:	=Por	e Lin	ing,N	M=M	atrix			
Hydric Soil Indicators:																					
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Histic Epipedon (A2)					Stripped	Matrix (S6)														
Black Histic (A3)					Dark Su	ırfaces (S7)				- (Coast F	Prairi	e Re	dox (A16)				
Hydrogen Sulfide (A4)				\Box	Polyvalu	ie Below	Surf	ace (S	(8)			5cm M	ucky	Peat	or F	eat ((S3)				
Stratified Layers (A5)				-		rk Surfac			-/		_	ron-Ma					` ')			
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Sandy Mucky Mineral (5cm Mucky Peat or Pea	t (S3)			-		d Dark S)		'		expia	in)							_
Sandy Mucky Mineral (t (S3)			-		d Dark S Depressio)			Julei (ехріа	in)							
Sandy Mucky Mineral (5cm Mucky Peat or Pea	t (S3) 4))	Н		ric Soil	Ė	Ĺ	?	Yes			No	x	
Sandy Mucky Mineral (5cm Mucky Peat or Pea Sandy Gleyed Matrix (S	t (S3) 4)				Redox D)	Н			Ė	Ĺ	?	Yes			No	x	
Sandy Mucky Mineral (5cm Mucky Peat or Pea Sandy Gleyed Matrix (S	t (S3) 4)				Redox D					Н			Ė	Ĺ	?	Yes			No	x	
Sandy Mucky Mineral (1) 5cm Mucky Peat or Pea Sandy Gleyed Matrix (S Restrictive Layer Type (if ob	t (S3) 4)				Redox D					Н			Ė	Ĺ	?	Yes			No	X	
Sandy Mucky Mineral (1) 5cm Mucky Peat or Pea Sandy Gleyed Matrix (S Restrictive Layer Type (if ob	t (S3) 4) served	in top la	yer.		Redox [Depth:					Н			Ė	Ĺ	?	Yes			No	х	

APPENDIX D

BACKGROUND INFORMATION

APPENDIX D: BACKGROUND INFORMATION

Legislation

These identified wetlands are subject to the *Watercourse and Wetland Alteration Regulation* (REG # 90-80), of the New Brunswick *Clean Water Act*. Any proposed alteration within these areas or within the 30 meter regulated upland buffer requires permitting through the Department of Environment, Watercourse and Wetlands Alteration Program. These areas may also be subject to *Environmental Impact Assessment* (REG 87-83) of the New Brunswick *Clean Environment Act* and other *Acts* and Regulations. It is the responsibility of the proponent to ensure that all regulatory requirements are met prior to development within these areas.

Methodology

Surveys were conducted according to the guidelines established by NBDELG based on the US Army Corps of Engineer Wetland Delineation Manual (1987), Field Indicators of Hydric Soils in the United States and Lichvar, 2005. The Flora of NB (Hinds, 2000) was consulted for plant identification.

Datapoints were analyzed for soil, hydrology and vegetation characteristics at several different locations (Figure 3). Color of soil strata are described in terms of texture, 'value' and 'chroma' according to a Munsell Soil Color Chart. The wetland delineation line was then completed by walking with a handheld Garmin 64ST GPS unit.

Datapoint locations and boundary-flag positions are provided as an attachment to this digital document as a Google Earth File. Coordinates are in UTM NAD83.

Wetland habitat was identified by establishing the presence of dominating hydric vegetation, of hydric soils and of hydrological markers such as surface water, soil saturation and channeling. The wetland edge was identified with paired Data Points (DPs) (wetland and upland) which straddled the boundary. Data sheets are included in Appendix C.

Sources:

The Canadian Wetland Classification System, 2nd ed. 1997. National Wetlands Working Group. Wetlands Research Center, University of Waterloo, ONT.

Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. Field Indicators of Hydric Soils in the United States. 2006.

Hinds, H. 2000. The Flora of New Brunswick.

Lichvar, R., 2005. Wetland Identification, Delineation and Classification. Humbolt Field Research Institute, Steuben, ME, USA.

U.S. Army Corps of Engineers. 200X. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-0X-XX. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

US Army Corps of Engineer Wetland Delineation Manual. 1987.

US Department of Fish and Wildlife. 1988. National List of Plant Species that occur in Wetlands Regional Supplement to the Corps of Engineers Wetland Delineation Manual:Atlantic and Gulf Coastal Plain Region. 2010

STANDARD WETLAND DELINEATION

Belfry st. Moncton, NB

PID 00939744

June 16, 2020

For

Robert Bouchard c/o CVR Home Improvements Inc. 46 Diamond Head Ct #113, Moncton, NB E1G 5S3

By

Theo Popma MSc. (Wetland Delineator) at Overdale Environmental Inc. 342 Highfield st.
Moncton, NB
E1C 5R6
tpopma@nb.sympatico.ca
www.Overdale.net
506-227-7605

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Appendix B: Datapoint and Flag Positions

Appendix C: Wetland Data Sheets

Appendix D: Photos

Introduction:

A Standard Wetland Delineation was conducted by Theo Popma, a recognized Delineator at Overdale Environmental Inc. The property (PID 00939744) is located on Belfry st.in Moncton, NB (Figure 1, Appendix A). The GeoNB wetlands map shows the potential for the presence of wetland on the PID (Figure 2). Note that the wetland polygon from the GeoNB map portal differs slightly from that of the Data Catalogue.

The delineation was conducted in accordance with the NB Wetland Conservation Policy and the Clean Environment Act.

It is recommended that this report be provided by the client to the New Brunswick Dept. of Environment for review.

Legislation

These identified wetlands are subject to the *Watercourse and Wetland Alteration Regulation* (REG # 90-80), of the New Brunswick *Clean Water Act.* Any proposed alteration within these areas or within the 30 meter regulated upland buffer requires permitting through the Department of Environment, Watercourse and Wetlands Alteration Program. These areas may also be subject to *Environmental Impact Assessment* (REG 87-83) of the New Brunswick *Clean Environment Act* and other *Acts* and Regulations. It is the responsibility of the proponent to ensure that all regulatory requirements are met prior to development within these areas.

Site Description (See Photos in Appendix D**)**

The southern portion of the site is intact but is affected by development on all sides in the form of infilling, resurfacing, ditching and other activities relating to home construction. A portion of previously existing wetland has been altered where an area has been cleared and partially filled. Forests are regenerating mixed hardwoods and softwoods and wetlands are generally dried-down Shrub Swamps where trees are slowly maturing in drier conditions. Marshy conditions persist in disturbed areas.

Methodology

Surveys were conducted according to the guidelines established by NBENV based on the US Army Corps of Engineer Wetland Delineation Manual (1987), Field Indicators of Hydric Soils in the United States and Lichvar, 2005. The Flora of NB (Hinds, 2000) was consulted for plant identification.

Datapoints were analyzed for soil, hydrology and vegetation characteristics at several different locations. Color of soil strata are described in terms of texture, 'value' and 'chroma' according to a Munsell Soil Color Chart. The wetland

delineation line was then completed by walking with a handheld Garmin GPS unit.

Datapoint locations and boundary-flag positions are listed in Appendix B. Coordinates are in UTM NAD83.

Wetland habitat was identified by establishing the presence of dominating hydric vegetation, of hydric soils and of hydrological markers such as surface water, soil saturation and channeling. The wetland edge was identified with paired Data Points (DPs) (wetland and upland) which straddled the boundary. Data sheets are included in Appendix C.

Results

Approximately 0.7Ha of Wetland habitat was delineated on the site. That includes 0.5Ha of intact Shrub Swamp and 0.2Ha of disturbed Marsh. The boundaries of wetland habitats on the PID are shown in the schematic in Figure 3. Photos of each datapoint location are shown in Appendix D. Below is a description of each Datapoint.

Datapoint 10: Upland

This point indicates the relatively undisturbed forested upland that surrounds wetland habitat on the site. It is dominated by mixed medium aged hardwood and softwood trees as well as typical shrub and herb flora including Wild Raisin (Viburnum nudum), Sheep Laurel (Kalmia angustifolia) and Bunchberry (Cornus canadensis). Hydrological indicators are generally absent since soils are not saturated and no water table was found after digging to shovel depth. Depletion of soils below Chroma 2 was not observed.

Datapoints 1, 2: Wetland

These points represent intact Forested/Shrub Wetland. This area was probably originally dominated by shrubs but has grown up with large saplings since being recently dried down. It occupies the majority of the southern portion of the site. Soils were saturated and depleted, water tables were high, organic layers were at least 20cm thick and naturally-occurring sparsely vegetated depressions were frequent.

Datapoints 3, 4, 5, 6, 9: Mosaic of complex Uplands

These points were all sampled in heavily disturbed areas. While vegetation and surface characteristics of these points were similar, soil samples showed variation in the color and thickness of layers. Hydrological indicators were also variable where skidder tracks could appear as sparsely vegetated depressions. It

is likely that some small wetland influence is present in these areas especially in early spring but that it cannot be reasonably isolated or delineated. DPs 7, 8: Wetland

These points represent the area which has been cleared but where wetland conditions still persist in some form. Vegetation is dominated by graminoids commonly found in marshes such as Soft Rush (*Juncus effusus*), Silvery Sedge (*Carex cannescens*) and Canada Bluejoint (*Calamagrostis canadensis*). Soils were, again, variable due to the disturbance and included both depleted and histic horizons. While no saturation, inundation (except for some puddles) or high water table were observed, other hydrological indicators were evident such as drainage channels, cracked soil, sparsely vegetated depressions and water-stained leaves. This is likely due to partial flooding of the area during the spring or in the event of heavy rain.

Conclusion

This Wetland Delineation survey on PID 00939744 identified two major wetland types: Shrub Swamp and Marsh. The swamp was relatively intact but is indirectly impacted by nearby development. Recent tree growth is beginning to dominate the canopy. The marshy area has been heavily impacted by still displays wetland indicators. Other surrounding upland habitat is also heavily impacted by development and can be considered a complex of various soil, surface and vegetative characteristics including roads ditches, berms, tracks etc...

It should be noted that this is considered an Atypical Situation where human impacts affect analysis of wetland indicators.

Closing

I trust this information meets your current needs. Please feel free to contact me via telephone at (506) 227-7605 or by email at tpopma@nb.sympatico.ca if further clarification or explanation is required.

Sincerely,

Theo Popma BSc, MSc.

Hogema

President, Overdale Environmental Inc.

Sources:

The Canadian Wetland Classification System, 2nd ed. 1997. National Wetlands Working Group. Wetlands Research Center, University of Waterloo, ONT.

Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Field Indicators of Hydric Soils in the United States. 2006.

Hinds, H. 2000. The Flora of New Brunswick.

Lichvar, R., 2005. Wetland Identification, Delineation and Classification. Humbolt Field Research Institute, Steuben, ME, USA.

U.S. Army Corps of Engineers. 200X. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-0X-XX. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

US Army Corps of Engineer Wetland Delineation Manual. 1987.

US Department of Fish and Wildlife. 1988. National List of Plant Species that occur in Wetlands.

APPENDIX A: FIGURES

Figure 1. Survey Area

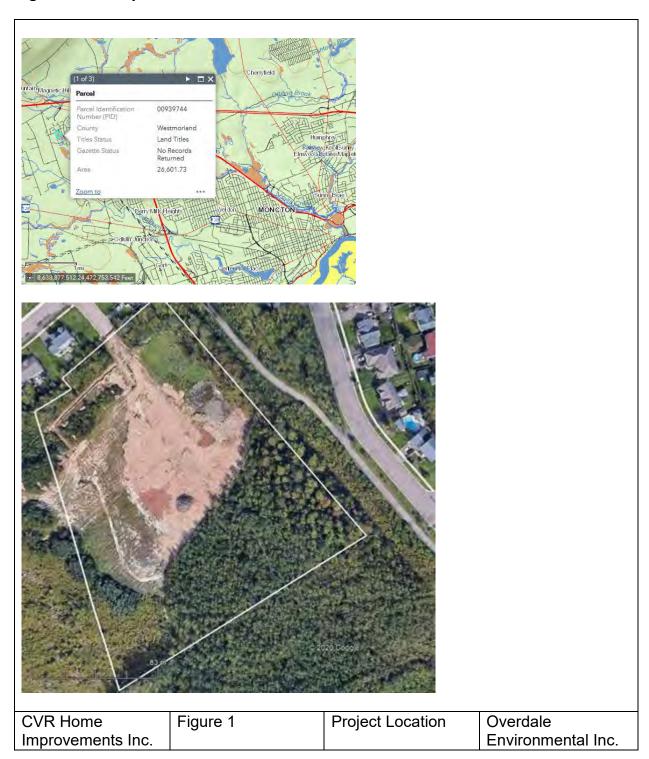
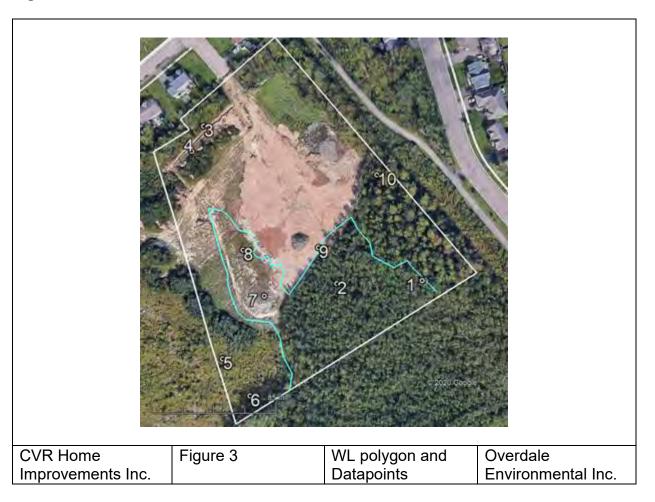


Figure 2. Wetland Boundary on and near PID 00939744 according to GeoNB and the GeoNB Data Catalogue



Figure 3. Wetland Delineation Schematic



APPENDIX B: DATAPOINT AND FLAG POSITIONS

Boundary Points

Label	Latitude	Longitudo
		Longitude
457	46.122489	-64.879113
458	46.122564	-64.879203
459		-64.879337
460	46.122678	-64.87935
461	46.12263	-64.879476
462	46.122704	-64.879656
463	46.122769	-64.879678
464	46.12285	-64.879773
465	46.122928	-64.879842
466	46.122836	-64.879992
467	46.122781	-64.880073
481	46.122741	-64.880089
482	46.122641	-64.880182
483	46.122553	-64.880266
484	46.122469	-64.880353
485	46.12253	-64.880432
486	46.12259	-64.880398
487	46.122648	-64.880434
488	46.122646	-64.880473
489	46.122691	-64.880531
490	46.122679	-64.880573
491	46.122693	-64.880633
492	46.122718	-64.88066
493	46.122728	-64.880636
494	46.122773	-64.880623
495	46.122829	-64.880687
496	46.122843	-64.880771
497	46.122919	-64.880852
498	46.122956	-64.880913
499	46.122964	-64.881024
500	46.12284	-64.880977
501	46.122666	-64.880906
502	46.12259	-64.880867
503	46.122526	-64.880863
504	46.122469	-64.88084
505	46.122369	-64.880783
506	46.122326	-64.880715
507	46.12231	-64.880503
508	46.122221	-64.880429
509	46.122116	-64.8804
510	46.121909	-64.880339
511	46.121909	-64.880326
211	40.122017	-04.000320

Datapoints

Label	Name on GPS	Latitude	Longitude
1	456	46.122553	-64.879243
2	468	46.122536	-64.87995
3	471	46.12344	-64.881059
4	472	46.123296	-64.88116
5	473	46.122104	-64.880898
6	474	46.12189	-64.880672
7	478	46.122463	-64.880557
8	479	46.122728	-64.880734
9	480	46.122742	-64.880107
10	449	46.12316	-64.87962

APPENDIX C: WETLAND DATASHEETS

Project Site: Belfry st., Moncton								Date:	ate: 11-Jun-20 Sample Point: 1								Pag	ge #:	1	_
Client/owner: Robert Bouchard								Field I	ield Investigator(s): Theo Popma											
County:	Westmo	orland						Coordi	inates	. 4	46.12255	5; 64.87924								_
PID 939744								Do noi	rmal e	nviron	mental o	onditions exist	on-s	site?	Yes	х		No		
no, explair	n:																			
typical Si	tuation?	Yes	х	No		Expl	ain: Infi	lling, dit	ching,	bulld	ozing									
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4	Picea ru	ıbens			5				fac					of Domii			-	40		+
5												Sp	ecie	es across	all st	ata:	-	13		÷
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	Kalmia	angustifoli	ia		10		Х		fac											L
1	Larix lar	icina			10		Х		fac			Pr	eva	lence In	dex \	Vorksh	eet:			
2	Acer rui	orum			10		Х		fac					Total %	Cove	of:		Multip	oly b	y:
3	Betula p	oopulifolia			10		Х		fac			OE	BL S	pecies				x 1 =		0
4	Spiraea	alba			10		Х		fac			FA	CW	Species				x 2 =		0
5	Viburnu	m nudum	var. ca	assinoi	10		Х		fac			FA	C S	pecies				x 3 =		0
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												UL	P S	pecies				x 5 =		0
Herb St	ratum: (P	lot Size:	1m2									Co	lum	n Totals:		0				0
														Preval	ence	Index	= B/	A =	##	
1	Iris vers	icolor			10		Х		fac	W +										
2	Calama	grostis ca	naden	sis	10		Х		fac	w										
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F	Project Site:	Belfry	st., N	lonctor	1							Date:	11-	Jun-2	20				Samp	le P	oint	: 3				P	age #:	1		
C	lient/owner	R	obert l	Boucha	ard							Field In	nvesti	gator	(s):	The	o Po	pma												
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				rs:(minimum of one is required;check all that apply) x Water Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (C3) Presence of Reduced Iron (C4) Recent Iron reduction in tilled Soils (C6) Thin Muck Surface (C7) Other (Explain in Remarks) a Surface (B8) n of two required) Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5) Imagery (C9) Shallow Aquitard (D3) Wetland Hydrology Present? Yes x No Technology Present? Yes x No Redox Features % Color(moist) % Type¹ Loc² Texture Remark Clay 50 7.5YR 5/1																
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Saturation	on Visible	on A	\erial lm	ager	y (C9)														
Field Observ	ations:																		
Surface Wat	er Present	t?	Yes		No x	De	pth												
Water Table	Present?		Yes		No x	De	pth				Wetlan	d Hydrolog	y Pre	esent?	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	⁄es		No	х
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							Stunted or Stressed Plants (D1) Geomorphic Position (D2) Shallow Aquitard (D3) Microtopographic Relief (D4) FAC-Neutral Test (D5) epth epth wetland Hydrology Present? Yes No x ed to document the indicator or confirm the absence of indicators) Redox Features												
Soil Profile	Aquatic Fauna (B13) Water Table (A2) Aquatic Fauna (B13) Marl Deposits (B15) Imment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) It Deposits (B3) Presence of Reduced Iron (C4) all Mat of Crust (B4) Recent Iron reduction in tilled Soils (C6) Thin Muck Surface (C7) Indiation Visible on Aerial Imagery (B7) Stunted or Stressed Plants (D1) inage Patterns (B10) Stunted or Stressed Plants (D1) inage Patterns (B10) Soemorphic Position (D2) ss Tim Lines (B16) Shallow Aquitard (D3) Season Water Table (C2) Visible on Aerial Imagery (C9) sservations: Water Present? Yes No x Depth Wetland Hydrology Present? Yes No x Depth This Present? Yes No x Depth Matrix Redox Features Calorimoist) Matrix Redox Features Calorimoist) Matrix Redox Features T.5YR 2.5/1 T.5YR 5/8																		
		at Indicators: (minimum of one is required: check all that apply) At)																	
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High Water Table (A2)	Surface				es \(1111	arriul	01 01	_									+				+	
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Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Thin Dark Surface (S9) Loamy Gleyed Matrix (F2) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Scm Mucky Peat or Peat (S3) Depleted Dark Surface (F6) Sandy Gleyed Matrix (S4) Redox Dark Surface (F7) Sandy Gleyed Matrix (S4) Restrictive Layer Type (if observed Polyvalue Below Surface (S8) Loamy Gleyed Matrix (F2) Depleted Matrix (F2) Depleted Dark Surface (F6) Redox Depressions (F8) Hydric Soil Present? Yes x No	0 to 1cm 1 to 6cm 6 - 1 Type:C=Cc Hydric Soil Histosc	7.5YR 5/ 7.5YR 5/ poncentration	/1 /8 on,D=	Depletion	20	7	7.5YR	5/8 I Matrix,	CS=Co	edox Fea %	atures	Type ¹		Loc ²		0	<u>Te</u> rgan	exture iic	M=M		emar	rk
Stratified Layers (A5) Depleted Below Dark Surface (A11) Thin Dark Surface (S9) Loamy Gleyed Matrix (F2) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sem Mucky Peat or Peat (S3) Sandy Gleyed Matrix (S4) Redox Dark Surface (F6) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Restrictive Layer Type (if observed Thin Dark Surface (S9) Depleted Matrix (F2) Depleted Matrix (F3) Depleted Dark Surface (F7) Hydric Soil Present? Yes x No	0 to 1cm 1 to 6cm 6 - Type:C=Cc Hydric Soil Histosc Histic E	7.5YR 5/ 7.5YR 5/ 7.5YR 5/ pncentration I Indicato	/1 /8 on,D=	Depletion	20	7	7.5YR	5/8 I Matrix, Sandy Strippe	CS=Co	overed or (S5)	atures	Type ¹		Loc ²		0	<u>Te</u> rgan	exture iic	M=M		emari	<u>k</u>
Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Som Mucky Peat or Peat (S3) Sandy Gleyed Matrix (S4) Redox Dark Surface (F6) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Restrictive Layer Type (if observed Depth: Hydric Soil Present? Yes x No	0 to 1cm 1 to 6cm 6 - Type:C=Cc Hydric Soil Histosc Histic E Black H	7.5YR 5/ 7.5YR 5/ 7.5YR 5/ Indicato	/1 //8 // // // // // // // // // // // //	Depletion	20	7	7.5YR	5/8 I Matrix, Sandy Strippe Dark S	CS=Co	edox Fea % byered or x (S5) rix (S6) ss (S7)	r Coate	ed San		Loc ²		0	<u>Te</u> rgan	exture iic	M=M		emar	<u>k</u>
Thick Dark Surface (A12)	0 to 1cm 1 to 6cm 6 - Type:C=Cc Hydric Soil Histosc Histic E Black H Hydrog	7.5YR 5/ 7.5YR 5/ 7.5YR 5/ 9.00 concentration of (A1) Epipedon (distic (A3) en Sulfide	(A4)	Depletion	20	7	7.5YR	5/8 I Matrix, Sandy Strippe Dark S Polyva	Redoxed Mat	edox Fea % byered or x (S5) rix (S6) ss (S7) elow Surfi	Coate	ed San		Loc ²		0	<u>Te</u> rgan	exture iic	M=M		emar	<u>k</u>
Sandy Mucky Mineral (S1) Sem Mucky Peat or Peat (S3) Depleted Dark Surface (F6) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Restrictive Layer Type (if observed Depth: Hydric Soil Present? Yes x No	0 to 1cm 1 to 6cm 6 - 1Type:C=Cc Hydric Soil Histosc Histic E Black H Hydrog Stratifie	7.5YR 5/ 7.5YR 5/ 7.5YR 5/ 9.00 concentration on (A1) Epipedon (distic (A3) en Sulfide ad Layers	(A4)		20 DDN,R	- - - - - - - - - - - - - - - - - - -	7.5YR	5/8 I Matrix, Sandy Strippe Dark S Polyva Thin D	Redoxed Mat Gurface lue Be ark Su	edox Fea % byered or x (S5) rix (S6) es (S7) elow Surfurface (S	r Coate	ed San		Loc ²		0	<u>Te</u> rgan	exture iic	M=M		emar	·k:
5cm Mucky Peat or Peat (S3) Depleted Dark Surface (F7) Sandy Gleyed Matrix (S4) Redox Depressions (F8) Depth: Hydric Soil Present? Yes x No	0 to 1cm 1 to 6cm 6 - 1Type:C=Cc Hydric Soil Histosc Histic E Black H Hydrog Stratific Deplete	7.5YR 5/ 7.5YR 5/ 7.5YR 5/ 9.00 concentration on (A1) Epipedon (Histic (A3) en Sulfide ed Layers ed Below E	noist) 1/1 1/8 1/1 1/8 1/1 1/8 1/1 1/8 1/1 1/8 1/1 1/8 1/1 1/8 1/1 1/8 1/1 1/8	Surface	20 DDN,R	- - - - - - - - - - - - - - - - - - -	7.5YR	5/8 I Matrix, Sandy Strippe Dark S Polyva Thin D Loamy	Redoxed Mat Surface lue Be ark Sur	edox Fea % Section 19 Secti	r Coate	ed San		Loc ²		0	<u>Te</u> rgan	exture iic	M=M		emar	rks
Sandy Gleyed Matrix (S4) Redox Depressions (F8) Restrictive Layer Type (if observed Depth: Hydric Soil Present? Yes x No	0 to 1cm 1 to 6cm 6 - 1Type:C=Cc Hydric Soil Histosc Histic E Black H Hydrog Stratifie Deplete Thick E	7.5YR 5/ 7.5YR 5/ 7.5YR 5/ 7.5YR 5/ Poncentration Discrete for the contraction of (A1) Epipedon (distric (A3) en Sulfide ad Layers and Below E	(A4) (A5) (A6) (A7)	Surface	20 DDN,R	- - - - - - - - - - - - - - - - - - -	7.5YR	5/8 Matrix, Sandy Strippe Dark S Polyva Thin D Loamy Deplet	Redox Redox Bed Mat Gleye Gleye Ed Mat	edox Fea % Section 1999 Exercise	r Coate	ed San		Loc ²		0	<u>Te</u> rgan	exture iic	M=M		emari	<u>rk</u> .
Restrictive Layer Type (if observed Depth: Hydric Soil Present? Yes x No	0 to 1cm 1 to 6cm 6 - 1Type:C=Cc Hydric Soil Histosc Histic E Black H Hydrog Stratifie Deplete Thick E Sandy	7.5YR 5/ 7.5YR 5/ 7.5YR 5/ 7.5YR 5/ 9.000 contration 1 Indicato 10 I(A1) Epipedon (distic (A3) en Sulfide ad Layers ad Below E 10 Park Surface Mucky Mi	non,D= rs: (A4) (A5) Oark See (A1)	Surface 12) (S1)	20 DDN,R	- - - - - - - - - - - - - - - - - - -	7.5YR	5/8 Matrix, Sandy Strippe Dark S Polyva Thin D Loamy Deplet Redox	Redox ed Mat durface lue Be ark Su Gleye ed Mat	edox Fea % Section 19	r Coate	ed San		Loc ²		0	<u>Te</u> rgan	exture iic	M=M		emari	<u>'k</u>
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Comments:	0 to 1cm 1 to 6cm 6 - 1 Type:C=Cc Hydric Soil Histore Black H Hydrog Stratifie Deplete Thick E Sandy 5cm Mi Sandy	7.5YR 5/ 7.5YR 5/ 7.5YR 5/ 7.5YR 5/ Doncentration Epipedon (distic (A3) en Sulfide ed Layers ed Below E Dark Surface Mucky Mitucky Mitucky Peat Gleyed Mit	(A4) (A5) Oark See (A1) neral or Petatrix (Surface 12) (S1) (S1) (S3)	20 Dn,R	- - - - - - - - - - - - - - - - - - -	7.5YR	5/8 Matrix, Sandy Strippe Dark S Polyva Thin D Loamy Deplet Redox Deplet Redox	Redox ed Mat durface llue Be ark Su Gleye ed Mal Dark \$ ed Dar	edox Fea % by by covered or covered o	r Coate r Coate (F2)	ed San	dd Gra	Loc²	ocatic	on:PL=F	Tergan	exture nic		atrix		<u>'k</u>
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Profile Depth(c) 0 to 30c 30 to Type:C Hydric His x His	Descent) C=Co Soil tosol titic E	7.5YR 4	oist) I/1 on,D= ors: (A2)		<u>%</u>		Co	I Matrix Sand	,CS=C	Covered ox (S5) atrix (S6	or Coa	Type ¹		Loc ²			Org	Texto anic d		=Matı		nark
Profile Depth(c) 0 to 30c 30 to 1Type:C Hydric His x His Bla	Descent) C=Co Soil ttosol ttic E	7.5YR 4 ncentrati Indicate (A1) pipedon listic (A3	oist) I/1 on,D= ors: (A2)	Depletion	<u>%</u>		Co	I Matrix Sand Stripp Dark	,CS=0	Covered ox (S5) atrix (S6 ses (S7)	or Coa	Type ¹		Loc ²			Org	Texto anic d		=Mati		nark
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Profile Depth(c) 0 to 30c 30 to 1Type:C Hydric His X His Bla Hyd Str. Dep	Desc cm)	7.5YR 4 ncentrati Indicate (A1) pipedon istic (A3 en Sulfide d Layers d Below	on, D= On, D= (A2) (A5) (A5) (A5)	-Depletion	% on,R	RM=Rec	Co	Sand Stripp Dark Polyv Thin I	, CS=C	Covered ox (S5) atrix (S6 ces (S7) selow S6 surface (yed Matrix	or Coa	Type ¹ Attended San (S8)		Loc ²			Org	Texto anic d		=Matı		nark
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Profile Depth(c) 0 to 30c 30 to 1Type:C Hydric His RHS Bla Hyd Str. Dep Thi Sal	Descent) Com Com Soil Itosol tic E ck H droge attified ck D attified ck D attified ck D attified ck D	7.5YR 4 ncentrati Indicate (A1) pipedon istic (A3 en Sulfide d Layers d Below ark Surfa	on,D= (A2) (A5) (A5) Capacitan (A5) (A6) Capacitan (A6)	Surface 12) (S1)	% on,R	RM=Rec	Co	Sand Stripp Dark Polyv Thin I Loam Deple Redo:	y Reddiese Bourface Boark Syr Gley	Covered Cov	or Coal	Type ¹ Atted San (S8)		Loc ²			Org	Texto anic d		=Matı		nark
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F	PID 939744											Do nor	mal e	nviro	nme	ntal c	onditio	ns exis	t or	n-site?		Yes	3	Х		No		
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	High W	ater Tabl	e (A2)					A	quatic	Fau	na (B	13)												
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	Watern	narks						H	/droge	en Si	ulfide	Odor (C1)											
	Sedime	ent Depos	its (B2)				0	xidize	d Rh	izosp	heres (on Livi	ng R	oots	(C3)								
	Drift De	posits (B	3)					P	esenc	ce of	Redu	ced Irc	n (C4)										
	Algal M	lat of Cru	st (B4)					R	ecent	Iron	reduc	tion in	tilled	Soils	(C6)								
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	Drainag	ge Patterr	ns (B10)				G	eomor	phic	Posit	ion (D	2)											
	Moss 1	rim Lines	(B16)					S	nallow	Αqι	iitard ((D3)												
	Dry-Se	ason Wa	ter Tab	e (C2)		Ш		M	icroto	pogra	aphic	Relief	(D4)											
	Crayfis	h Burrows	s (C8)					F	AC-Ne	utral	Test	(D5)				_								
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¹ Ty	dric Soi Histoso Histic E Black F	oncentrati	on, D=[Drs: (A2)	Depleti	on,R	M=R	educ	S: S: D:	andy F ripped ark Su	Redo d Ma urface	ox (S5 trix (S)		Sand	Gra	ins.2	Locat	ion:P	L=Pc	ore Li	ning,M	Л=Ма	trix	
¹ Ty	Histose Histic E Black I Hydrog	I Indicate of (A1) Epipedon Histic (A3)	ion, D=[Drs: (A2))	Depleti	on,R	M=R	educ	Si Si Di	andy F ripped ark Su	Redo d Ma urface ue Be	ex (S5 trix (Ses (S7 elow S) (6) (7) Surface		Sand	Gra	ins.2	Locat	ion:P	L=Po	pre Li	ning,M	Л=Ма	trix	
¹ Ty	Histoso Histic E Black H Hydrog Stratifie	I Indicate I (A1) Epipedon Histic (A3	ion,D=[Drs: (A2)) e (A4) (A5)				educo	Si Si Di Pi	andy F ripped ark Su blyvalu nin Da	Redo d Ma urfaco ue Bo rk Si	ox (S5 trix (S es (S7 elow S urface) (6) (7) Surface	· (S8)	Sand	Gra	ins.2	Locat	ion:P	L=Pd	pre Li	ning,M	Л=Ма	trix	
¹ Ty	Histoso Histic E Black H Hydrog Stratified Deplete	Indicate Ind	ion,D=[ors: (A2)) e (A4) (A5) Dark S	urface			educc	Si Si Di Pi Tr	andy F ripped ark Su blyvalu nin Da	Redo d Ma urface ue Be rk Si Gley	ox (S5 trix (S es (S7 elow S urface ed Ma) 66) 7) Surface (S9)	· (S8)	Sand	Gra	ins.2	Locat	iion:Pl	LL=Pc	pre Li	ning,N	ll=Ma	trix	
¹ Ty	Histoso Histic E Black H Hydrog Stratified Deplete Thick E	Indicate of (A1) Epipedon Histic (A3 en Sulfide d Layers ad Below	(A2)) e (A4) (A5) Dark S ace (A1	urface 2)			educ	Si Si Di	andy F ripped ark Su blyvalu nin Da bamy (Redo d Ma urface ue Be rk Si Gley d Ma	ex (S5 trix (Ses (S7 elow Surface ed Ma atrix (F) 66) 7) Surface (S9)	(S8) 2)	Sand	Gra	ins.2	Locat	ion:Pl	LL=Pc	pre Li	ning,M	∄-Ma	ttrix	
¹ Ty	dric Soi Histoso Histic E Black H Hydrog Stratifie Deplete Thick E Sandy	I Indicate ol (A1) Epipedon Histic (A3 en Sulfide ed Layers ed Below ark Surfa	(A2)) e (A4) (A5) Dark S ace (A1 lineral (urface 2) S1)	(A1 ⁻		educ	Si Si Di Pi Tr Lo	andy Fripped ark Sublyvaluin Da pamy (eplete	Redo d Ma urface ue Be rk Si Gley d Ma Dark	ox (S5 trix (Ses (S7 elow Selow) 66) 7) Surface (S9) atrix (F	(S8) 2)	Sand	Gra	ins.2	Locat	iion:Pl	L=Pc	pre Li	ning, M	Malana Ma	ttrix		
¹ Ty	dric Soi Histoso Histic E Black I Hydrog Stratifie Deplete Thick E Sandy 5cm M	I Indicate ol (A1) Epipedon Histic (A3 en Sulfide ed Layers ed Below bark Surfa Mucky M	ion,D=[Ors: (A2)) e (A4) (A5) Dark S ace (A1 lineral (urface 2) S1) at (S3	(A1 ⁻		educ	Si Si Di Pi Ti Lo Di Ri	andy Faripped ark Sublyvalu blyvalu bin Da bamy (caplete edox [caplete	Redo d Ma urface ue Be rk Si Gley d Ma Dark d Da	ox (S5 es (S7 elow S urface ed Ma atrix (F Surfa) 66) 7) Surface (S9) atrix (F -3)	(S8) 2) 1	Sand	Gra	ins.2	Locat	ion:Pl	L=Pd	pre Li	ning, M	Л=Ма	trix	
¹ Туу	dric Soi Histoso Histic E Black I Hydrog Stratifie Deplete Thick E Sandy 5cm M Sandy	Indicate of (A1) Epipedon Histic (A3 en Sulfide d Layers d Below Dark Surfa Mucky M ucky Pea	ion,D=I (A2) (A5) Dark S Sace (A1 ineral (it or Pelatrix (s	urface 2) S1) at (S3	(A1 ²		educ	Si Si Di Pi Tr Lo Di Ri	andy Faripped ark Sublyvalu blyvalu bin Da bamy (caplete edox [caplete	Redo d Ma urface ue Be rk Si Gley d Ma Dark d Da	ox (S5 es (S7 elow S urface ed Ma atrix (F Surfa) 66) 7) Surface (S9) atrix (F 3) ce (F6 rface (I	(S8) 2) 1	Sand				iil Pre			ning, M	Л=Ма	No	x
¹ Туу	dric Soi Histoso Histic E Black I Hydrog Stratifie Deplete Thick E Sandy 5cm M Sandy	I Indicate of (A1) Epipedon Histic (A3 en Sulfide d Layers d Below Dark Surfa Mucky M ucky Pea Gleyed M	ion,D=I (A2) (A5) Dark S Sace (A1 ineral (it or Pelatrix (s	urface 2) S1) at (S3	(A1 ²		educ	Si Si Di Pi Tr Lo Di Ri	andy Frippedark Sublyvaluin Dabamy Gepleteedox [epleteedox [eplete	Redo d Ma urface ue Be rk Si Gley d Ma Dark d Da	ox (S5 es (S7 elow S urface ed Ma atrix (F Surfa) 66) 7) Surface (S9) atrix (F 3) ce (F6 rface (I	(S8) 2) 1	Sand								//-Ma		x
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APPENDIX D: PHOTOS









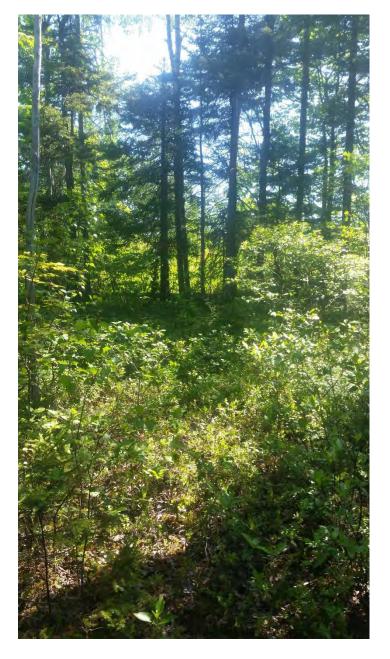












(No soil pit photo available)

CVR Home	Datapoint 10	Upland	Overdale
Improvements Inc.			Environmental
			Inc.

APPENDIX H Bird Survey Report (2021) hive engineering

Aster Group Environmental Services Co-op 28 High Marsh Rd Sackville NB, E4L 1K2 506-536-1260 www.astergroup.ca



CV Homes Bird Survey June 21, 2021



For

For Hive Engineering Andrea Kalafut, M.Sc.E., P.Eng.

Submitted by

Roland Chiasson
Aster Group
28 High Marsh Rd
Sackville NB
E4L 1K2
506-536-7348
roland.chiasson@astergroup.ca

Introduction

A bird survey was carried out on June 18, 2021, on two parcels of land with PID Numbers: 05465255 and 00939744. This site is slated for a future housing development, to be developed by CV Homes.

Methodology

Two bird data bases were consulted, the Maritime Bird Breeding Atlas and the Atlantic Canada Conservation Data Centre (AC CDC). Results from these two data bases can be found in the appendix.

The following recognized bird survey techniques were used to survey for breeding birds: Point Counts, Maritime Breeding Bird Atlas and Common Nighthawk survey protocols. Point counts were based on the North American Bird breeding survey (https://www.canada.ca/en/environment-climate-change/services/bird-surveys/landbird/north-american-breeding/overview.html), with two differences. Point counts lasted ten minutes instead of three minutes and point count locations were spaced closer together than usual, often less than one hundred meters, as compared to 200 hundred meters. Both modifications were to ensure that all habitat types were surveyed for birds. Special attention was given to bird species at risk potentially on site. This was based on the availability of suitable habitat and if they were observed or heard. Techniques developed by the Maritime Breeding Bird Atlas, (https://www.mba-aom.ca), use bird behavior to determine if birds are breeding. The Common Nighthawk survey was carried out before sun rise at 5:15 am, and was based on "Surveying Whippoor-wills & Nightjars in The Land Between Canadian Nightjar Survey Protocol - 2020" (https://www.thelandbetween.ca/wp-content/uploads/2020/05/TLB-Nightjar-Survey-Protocol-1.pdf).

Results

Based on the bird data bases consulted, some species at risk and other birds of conservation interest could have been present. Based on the desktop study of the AC CDC data, the following bird species at

risk or species of conservation interest that have been observed within 100 kilometers and where suitable habitat is available: Bobolink (Dolichonyx oryzivorus), Rusty Blackbird (Euphagus carolinus), Common Nighthawk (Chordeiles minor), and Eastern Kingbird (Tyrannus tyrannus). However, no species at risk or other species of conservation interest were observed or heard. Limited habitat is available for species at risk. About half of the site has been bulldozed and or cleared of brush. There has been some regeneration of young hardwoods on the site. Many of the species that were seen were birds that are well suited to this type of habitat (see picture). No Common Nighthawks were seen or heard before sun rise.



Twenty-four species of birds were observed. The five most numerous birds observed were: Cedar Waxwings (Bombycilla cedrorum), Alder Flycatcher (*Empidonax alnorum*), Red-Eyed Vireo (*Vireo olivaceus*), Song Sparrow (Melospiza melodia) and Veery (*Melospiza melodia*). These five birds were not necessarily abundant but were seen more frequently because the point counts were close together and the birds were more than likely counted twice.

Weather conditions were ideal; light winds, clear sky, temperature range from 9 to 11 and within a week of a full moon. Please find a summary of the results below with the number of times birds were observed. A complete data set can be found in the appendix.

Birds observated	Scientific Name	# of Observations	Other Species observed
Cedar Waxwing	Bombycilla cedrorum	10	White-tailed Deer
Alder Flycatcher	Empidonax alnorum	9	Green Frog
Red-eyed Vireo	Vireo olivaceus	8	Red Fox
Song Sparrow	Melospiza melodia	7	
Veery	Catharus fuscescens	6	
American Crow	Corvus brachyrhynchos	5	
Black-capped Chickadee	Poecile atricapillus	4	
Chestnut-sided Warbler	Setophaga pensylvanica	4	
Common Grackle	Quiscalus quiscula	4	
Common Yellowthroat	Geothlypis trichas	4	
Northern Flicker	Colaptes auratus	4	
White-throated Sparrow	Zonotrichia albicollis	4	
American Redstart	Setophaga ruticilla	3	
Ringed-necked Pheasant	Phasianus colchicus	3	
American Goldfinch	Carduelis tristis	2	
Veery	Catharus fuscescens	2	
American Robin	Turdus migratorius	1	
American Woodcock	Scolopax minor	1	
Black and White Warbler	Mniotilta varia	1	
European Starling	Sturnus vulgaris	1	
Magnolia Warbler	Setophaga magnolia	1	
Purple Finch	Carpodacus purpureus	1	
Swamp Sparrow	Melospiza georgiana	1	
Yellow Warbler	Setophaga petechia	1	

Recommendations

Save some of the older trees for landscaping values and to provide habitat for birds.

Some of the remaining original bog/wetland habitat can be seen below in the picture with some larger trees in the background. Keeping areas like this provides good habitats for birds.



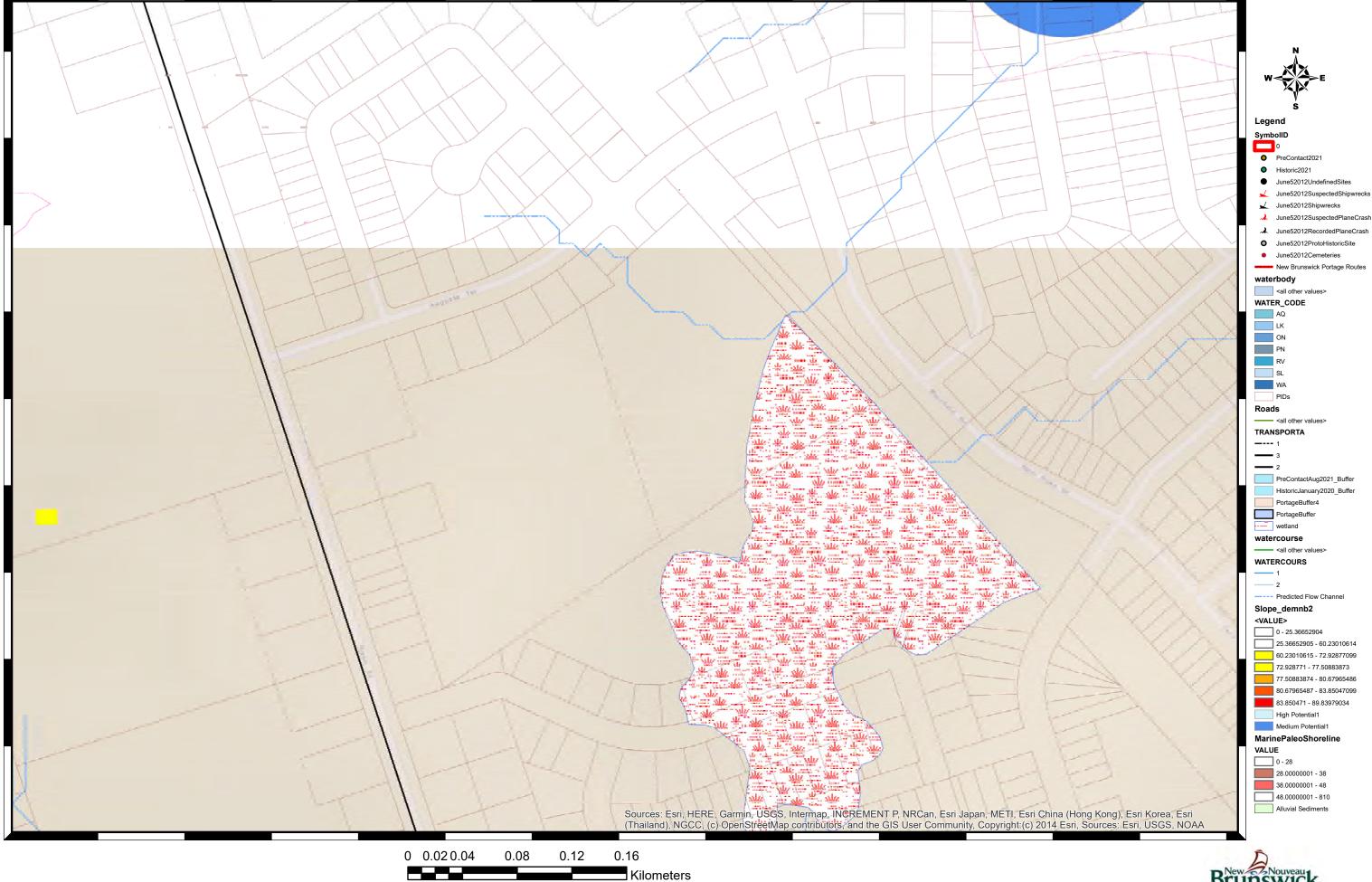
Appendix (in separate files)

ACCDC Data for this region

Maritime Bird Breeding Atlas Results for this region

Bird Survey Results from this study

APPENDIX I Archaeology Mapping hive engineering





Date: 11/24/2021

