



HAMMOND RIVER HOLDINGS LIMITED
**Environmental Protection Plan for
Construction
(Phase 1 – Preliminary Site Preparation)**

Upham East Gypsum Quarry Project, Upham, New Brunswick



Record of Revisions

Version	Date	Nature of Revisions	Page No.	Approved By
Rev.0	October 2019	Original Version, covering activities for Phase 1 (Preliminary Site Preparation) –No works within 30 m of a watercourse or regulated (mapped) wetland	N/A	D. Marquis

Acronyms and Units

ACRONYMS

AC CDC	Atlantic Canada Conservation Data Centre
ANFO	Ammonium Nitrate Fuel/Oil
BCMP	Blast Control and Monitoring Plan
BMP	Best Management Practice
CEPA	<i>Canadian Environmental Protection Act</i>
CPA	<i>Community Planning Act</i>
CSA	Canadian Standards Association
DFO	Fisheries and Oceans Canada
ECCE	Environment and Climate Change Canada
EDP	Energy Dissipation Pool
EIA	Environmental Impact Assessment
EMM	Environmental Management Manual (developed by NBDTI)
EMP	Environmental Management Plan (for the operation phase)
EPP	Environmental Protection Plan (for construction, in various phases)
ERP	Emergency Response Plan
ESC	Erosion and Sediment Control
FPWC	Federal Policy on Wetland Conservation
GMP	Groundwater Monitoring Plan
HADD	Harmful Alteration, Disruption, or Destruction (of fish habitat)
HCA	<i>Heritage Conservation Act</i>
MBCA	<i>Migratory Bird Convention Act</i>
MRP	Mine and Reclamation Plan
NBDELG	New Brunswick Department of Environment and Local Government
NBDERD	New Brunswick Department of Energy and Resource Development
NBDTHC	New Brunswick Department of Tourism, Heritage and Culture
NBDTI	New Brunswick Department of Transportation and Infrastructure
NFC	National Fire Code
PDA	Project Development Area
PID	Parcel Identifier
POLs	Petroleum, Oil and Lubricants
RSC8	Regional Service Commission 8
ROW	Right-of-Way
SAR	Species at Risk
SARA	<i>Species at Risk Act</i>
SDS	Safety Data Sheet

ACRONYMS (continued)

SWMP	Surface Water Monitoring Plan
SOCC	Species of Conservation Concern
SOP	Standard Operating Procedure
TSS	Total Suspended Solids
TRC	Technical Review Committee
TDGA	<i>Transportation of Dangerous Goods Act</i>
TWCP	Temporary Water Control Plan
WAWA	Watercourse and Wetland Alteration
WC	Watercourse ID
WHMIS	Workplace Hazardous Materials Information System
WL	Wetland ID
WMP	Water Management Plan
WAWATG	Watercourse and Wetland Alteration Technical Guidelines

UNITS

mm	millimetre
cm	centimetre
GPM	gallons per minute
GVM	gross vehicle mass
ha	hectares
kg	kilograms
km	kilometre
km ²	square kilometres
L/s	litres per second
L/d	litres per day
m	metre
m/s	metre per second
mg/L	milligrams per litre
m ³ /s	cubic metres per second
t/yr	tonnes per year

Table of Contents

Record of Revisions

Acronyms and Units

1.0	Introduction	1
1.1	Project Overview.....	1
1.1.1	Project Location	2
1.1.2	Project Components	2
1.1.3	Project Phases.....	7
1.1.3.1	Construction.....	7
1.1.3.2	Operation	8
1.1.3.3	Reclamation and Closure Phase.....	8
1.2	Applicable Regulatory Framework.....	9
1.3	Organization of this EPP for Construction	12
2.0	Scope, Intent, and Application of the Environmental Protection Plan (EPP) for Construction (Phase 1 – Preliminary Site Preparation)	14
2.1	Purpose of the Environmental Protection Plan (EPP) for Construction.....	14
2.2	Roles and Responsibilities.....	15
2.2.1	Project Manager – Hammond River Holdings or Designate	15
2.2.2	Environmental Monitor – Hammond River Holdings or Designate	16
2.2.3	Indigenous Monitor – Third Party (If Applicable)	16
2.2.4	Contractor – Third Party	17
2.2.5	All Other Project Personnel.....	18
2.3	Training, Communication, and Record Keeping.....	19
2.4	EPP Revision	20
2.5	Other Complementary/Supporting Documents to this EPP	20
2.5.1	Water Management Plan (WMP)	21
2.5.2	Groundwater Monitoring Plan (GMP)	22
2.5.3	Surface Water Monitoring Plan (SWMP)	22
2.5.4	Blast Control and Monitoring Plan (BCMP).....	22
2.5.5	Mine and Reclamation Plan (MRP)	23

3.0	Environmental Protection Measures	24
3.1	General Environmental Planning and Management.....	24
3.2	Erosion and Sediment Control Measures	25
3.3	General Equipment Use, Refueling, and Trucking Operations	27
3.4	Noise Control	33
3.5	Dust and Other Emissions Control	34
3.6	Clearing, Dewatering, Grubbing, and Laydown/Storage Areas	35
3.7	Access Roads and Culvert Crossings	39
3.8	Ancillary Facilities.....	41
3.9	Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods	43
4.0	Environmentally Sensitive Areas	46
4.1	Surface Water (Watercourses and Wetlands)	46
4.1.1	Watercourses (including Fish and Fish Habitat).....	49
4.1.2	Wetlands	53
4.2	Wildlife, Migratory Birds, and Species at Risk.....	57
4.3	Heritage and Cultural Resources.....	61
5.0	Emergency Response and Contingency Measures	64
5.1	Hazardous Material or Fuel Spill	64
5.2	Forest Fire or Explosion.....	65
5.3	Wildlife Encounter	67
5.4	Discovery of Heritage or Traditional Resources.....	68
5.5	Discovery of Human Remains	68
5.6	Vehicle Accident.....	69
5.7	Erosion and Sedimentation Control Failure.....	69
6.0	Closing	70
7.0	References	71

List of Figures

Figure 1: Project Location and Property Boundaries	3
Figure 2: Updated Conceptual Site Layout Plan.....	5
Figure 3: Preferred Transportation Route	31
Figure 4: Environmentally Sensitive Areas of the PDA	47
Figure 5: Area of Elevated Archaeological Potential Within the PDA	63

List of Tables

Table 1: Authorizations, Approvals, Permits, Licenses, or Leases Required for the Project	10
Table 2: Summary of Watercourse Characteristics (Dillon 2018).....	50
Table 3: Summary of Authorized Watercourse Activities for the Upham East Gypsum Quarry Project	51
Table 4: Summary of Wetland Findings (Dillon 2018)	53
Table 5: Summary of Authorized Wetland Activities for the Upham East Gypsum Quarry Project	55

List of Appendices

A	Key Contacts and Contact Information
B	Environmental Impact Assessment (EIA) Certificate of Determination – Conditions of Approval
C	Approval to Construct (Phase 1 – Preliminary Site Preparation Only) – Conditions of Approval
D	Complaint Response Protocol
E	Water Management Plan (WMP)
F	Potential Site-Specific Species at Risk, and Bird Species at Risk Monitoring Protocol
G	Spill Reporting Procedures and Forms

1.0

Introduction

The Upham East Gypsum Quarry Project (the Project) is being developed by Hammond River Holdings Limited (Hammond River Holdings). The Project includes the development and operation of a quarry for the extraction of gypsum in the community of Upham, Kings County, New Brunswick (**Figure 1**) for use by other parties as a raw material in the production of gypsum wallboard. Based on a mineral exploration program conducted in 2018, the Upham East property has been identified as holding a reserve of approximately 2.5 million metric tonnes of suitable quality gypsum rock that could reasonably be extracted in an open pit configuration for subsequent processing and sale to customers.

The Project is an “undertaking” under item (a) of Schedule A of the New Brunswick *Environmental Impact Assessment Regulation – Clean Environment Act* (EIA Regulation) (“(a) all commercial extraction or processing of a mineral as defined in the Mining Act”). As such, the Project was registered under Section 5(1) of the EIA Regulation on November 2, 2018 (Dillon 2018). Following a detailed review of the environmental impact assessment (EIA) registration document and subsequent to providing responses to the questions and comments of the technical review committee (TRC), the Minister of the New Brunswick Department of Environment and Local Government (NBDELG) issued an EIA certificate of determination (File # 4561-3-1508) and conditions of approval on October 15, 2019. The EIA certificate of determination is provided in **Appendix B**.

As a condition of the EIA certificate of determination, and to satisfy commitments made during the EIA review, this Environmental Protection Plan (EPP) for Construction (Phase 1 – Preliminary Site Preparation) was prepared to guide general activities associated with the early site work that will be completed outside of watercourses, regulated wetlands, and their 30 m buffers, in advance of resource extraction activities. Future revisions of this EPP for Construction will be made to address activities that will be conducted in future phases of construction of the remaining site works, and a separate Environmental Management Plan (EMP) for Operation will be developed to guide activities associated with the operation phase of the Project, at the appropriate time. Finally, activities to be conducted during the reclamation and closure phase will be subject to the Mine and Reclamation Plan being developed in support of the mining lease under the New Brunswick *Mining Act*.

The EPP for Construction (Phase 1 – Preliminary Site Preparation) is intended to assist Hammond River Holdings and its contracted personnel for the Project in achieving its overarching goals and standards in relation to environmental management and sustainability of the Project components. It outlines the requirements and procedures to be implemented by all parties during preliminary construction activities for the Project so as to remain in compliance with environmental requirements and to maintain a sustainable approach to site development.

1.1

Project Overview

A brief overview of the Project, based on the descriptions provided in the EIA registration document (Dillon 2018), is provided below.

1.1.1 Project Location

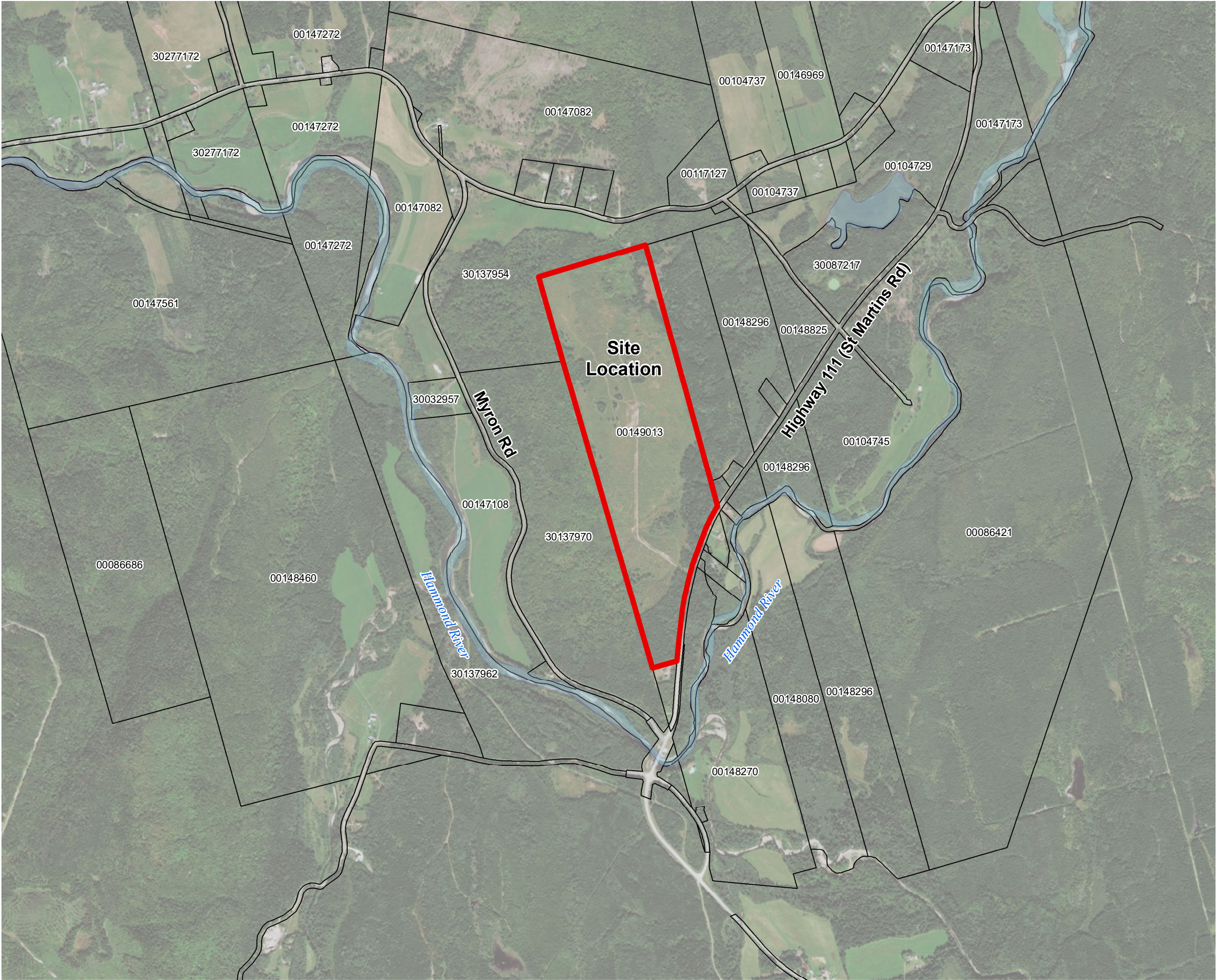
The Project Development Area (PDA; sometimes also referred to as the Project site) is defined as the area of physical disturbance associated with construction and operation of the Project. Specifically, the PDA consists of an area of approximately 61.81 ha that includes the open pit and all related surface facilities located on the property. The PDA consists of a near-rectangular-shaped property with approximate dimensions of 425 m wide by 1,450 m long and is the area represented by the physical Project footprint. The PDA and neighbouring properties are shown on **Figure 1**.

The PDA is located (at geographic centre) coordinates N 7386822 (Northing) and E 2567772 (Easting), and is referred to as parcel identifier (PID) No. 00149013 as referenced by Service New Brunswick (SNB). The PDA is easily accessible via the existing provincial highway network via Route 111 to the southeast of the Project site (where the current site access road is located).

1.1.2 Project Components

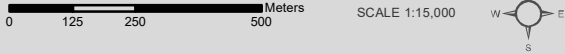
The following provides a high-level description of the Project. The Project components as currently conceived are presented in the updated conceptual site layout plan (updated as of September 23, 2019) shown in **Figure 2**. Based on early planning and design work, the Project would consist of the following key components and infrastructure to be constructed and subsequently operated as part of the Project:

- An open pit (quarry), for extracting approximately 250,000 t/yr of gypsum rock;
- Use of explosives, for blasting the open pit to extract gypsum rock;
- Portable crushing equipment, for primary crushing of extracted gypsum rock to a diameter of approximately 15-20 cm (6-8 inches);
- Heavy mobile equipment (e.g., front end loader, excavators, bulldozer, dump trucks) for moving gypsum rock, topsoil and overburden on-site and for loading gypsum into trucks for transportation to customers;
- A gypsum storage area, for temporary storage of crushed gypsum while awaiting transportation;
- Possible conveying and/or stacking equipment at the storage area, to stockpile crushed gypsum;
- Laydown storage areas for overburden and topsoil, for use in later site reclamation;
- Facilities for pit dewatering and runoff management, consisting of a sump at the bottom of the open pit, water management ponds (settling ponds), and associated perimeter and drainage channels, for collecting and storing contact water from the site (including from pit dewatering) to allow for settling of suspended sediments prior to release to the natural environment;
- An optional truck scale, for weighing trucks entering and leaving the property;
- A security gate, for controlling access to the site;
- An optional portable trailer, to serve as a site office/lunch room; and
- An existing access road from the provincial Route 111 to the site, and internal roads between various components of the Project.



HAMMOND RIVER HOLDINGS LIMITED
PROPOSED UPHAM EAST GYPSUM QUARRY

PROJECT LOCATION AND PROPERTY BOUNDARIES
FIGURE 1

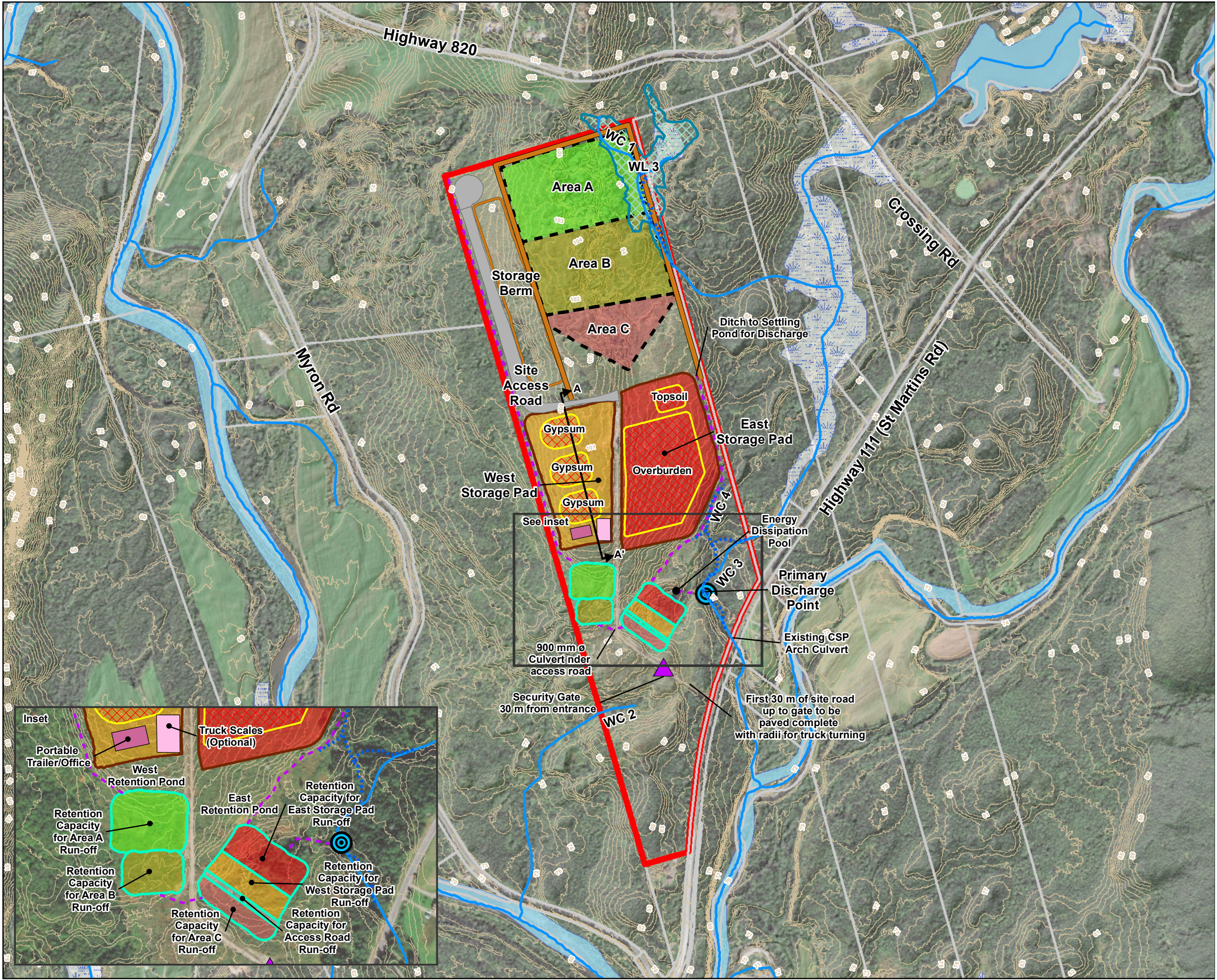


MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING LIMITED, CANVEC
SERVICE LAYER CREDITS: ESRI, HERE, GARMIN, INTERMAP, INCREMENT
P CORP, GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL,
ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISS
TOPO, OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
MAP CREATED BY: BQS
MAP REVISED BY: CS
MAP CHECKED BY: DM
MAP PROJECTION: NAD_1983_CSRS_New_Brunswick_Stereographic

FILE LOCATION: \\DILLON.CA\\DILLON_DFS\\FREDERICTON\\
FREDERICTON CAD\\CAD\\GIS\\188346 UPHAM GYPSUM QUARRY\\MXD



PROJECT: 18-8346
STATUS: FINAL
DATE: SEPT 2018



HAMMOND RIVER HOLDINGS LIMITED
PROPOSED UPHAM EAST GYPSUM QUARRY

UPDATED CONCEPTUAL SITE LAYOUT PLAN
FIGURE 2

- PROPERTY BOUNDARY
 - PROJECT DEVELOPMENT AREA
 - WATERBODY
 - WATERCOURSE
 - REGULATED WETLAND
 - FIELD DELINEATED WETLAND (REGULATED)
 - FIELD IDENTIFIED WATERCOURSE
- PROPOSED SITE FEATURES**
- DITCH
 - TRUCK SCALE (OPTIONAL)
 - SITE AREAS
 - DISCHARGE POINT
 - SECURITY GATE
 - PORTABLE TRAILER/OFFICE
 - ACCESS ROAD
 - STOCKPILE
 - CROSS SECTION
 - QUARRY BERM CONSTRUCTED FROM TOPSOIL AND OVERBURDEN (OFFSET MINIMUM 7m FROM PROPERTY BOUNDARY)
 - HATCHING INDICATES MATERIAL STOCKPILE AREA ON TOP OF STORAGE PAD
 - STORAGE PAD
 - RETENTION POND

0 50 100 200 m
SCALE 1:8,500

MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING LIMITED, CANVEC
SERVICE LAYER CREDITS: ESRI, HERE, GARMIN, INTERMAP, INCREMENT
P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, KADASTER NL,
ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISS
TOPO, OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
MAP CREATED BY: BQS
MAP REVISED BY: JAB
MAP CHECKED BY: DM
MAP PROJECTION: NAD_1983_CSRS_New_Brunswick_Stereographic

FILE LOCATION: \\DILLON.CA\\DILLON_DFS\\FREDERICTON\\
FREDERICTON CAD\\CAD\\GIS\\188346 UPHAM GYPSUM QUARRY\\MXD



PROJECT: 18-8346
STATUS: DRAFT
DATE: 2019/09/23

1.1.3 Project Phases

The key phases of the Project include:

- Construction of the Project infrastructure and associated facilities, including:
 - This Phase 1 for Preliminary Site Preparation activities (covered by this EPP); and
 - Later phases of construction for the remaining site works (to be covered by a future revision of this EPP).
- Operation of the quarry and the associated facilities (to be governed by a separate Environmental Management Plan (EMP) for Operation); and
- Reclamation and closure of the quarry and associated facilities (to be governed by a separate Mine and Reclamation Plan).

This EPP will address Phase 1 – Preliminary Site Preparation only. The subsequent phases of this undertaking will be addressed separately in future revisions to this EPP or as separate EPPs/EMPs.

The Project phases and activities to be carried out in each phase are detailed in the EIA registration document for the Project (Dillon 2018). A brief description of these phases is as follows.

1.1.3.1 Construction

The construction phase of the Project will consist of the site preparation and development activities to prepare the Project for operation.

Phase 1 – Preliminary Site Preparation

The Preliminary Site Preparation phase includes preliminary civil works associated with site preparation activities that can be completed outside of watercourses, regulated wetlands, and their 30 m buffers.

Phase 1 activities can encompass the following:

- Vegetation clearing and tree removal as required (where possible leaving root mat of immature vegetation intact in order to prevent erosion and siltation);
- Limited grubbing, levelling, and contouring of some areas of the site (where required, grubbing and earth moving activities will be carried out in small areas rather than large scale grubbing of the entire site, in order to limit potential for erosion of surface soils and siltation/sedimentation);
- Construction of the storage areas for gypsum, topsoil, and overburden;
- Construction of perimeter channels, drainage channels, and settling ponds (outside of the 30 m buffers for watercourse and regulated wetlands);
- Development of the site access road; and
- Installation of optional truck scale, optional portable trailer/office, and security gate.

It is important to note that no mineral resource extraction activities including blasting and the extraction, crushing, and stockpiling of gypsum will be carried out in this phase.

Later Phases: Phase 2 – Site Infrastructure, Grading, and Paving

Later phases of construction will include the remaining activities that are required for construction of the remaining site works, including construction of site infrastructure, grading, and paving of the first 30 m of the access road, and completing other works that require future permits to be obtained (e.g., WAWA permit, *Fisheries Act* authorization).

Later phases may also include construction activities that are required to be carried out within 30 m of a watercourse or regulated wetland (e.g., retention pond discharge location, quarry development), as well as any watercourse alteration that may be required (e.g., dewatering of the quarry area affecting watercourses), once a watercourse and wetland alteration (WAWA) permit and/or authorization under the *Fisheries Act* have been obtained.

During any phase of construction, gypsum will not be blasted, extracted, crushed, or stockpiled for commercial purposes. Materials being moved during the construction phase will include topsoil, overburden, and other organic soil materials and will not be used for their chemical/mineral properties.

1.1.3.2

Operation

Hammond River Holdings is currently preparing an application for a Mining Lease from NB Energy and Mines and an Approval to Operate from NBDELG. Once the Mining Lease and Approval to Operate have been issued by the Province, the project will become operational. The operation of the open pit (quarry) will include:

- Drilling, blasting, excavation, crushing, hauling, and storage activities;
- On-site transportation, storage, loading, and off-site transportation to customer(s); and
- Ongoing surface water management.

It is anticipated that some activities may occur concurrently with Phase 2 of the Construction, provided the necessary permits and approval are in place.

Once overburden materials are removed and stockpiled, gypsum rock will be blasted and/or excavated in the open pit. Blasting will be conducted by a licensed explosives contractor. Extracted gypsum rock will be crushed to a manageable size for transport using portable crushing equipment on-site, then temporarily stored on-site in a designated storage area pending transportation. Transport trucks will be used to transport gypsum to customers for use in the production of gypsum wallboard.

Activities to be carried out during the operation phase of the Project will be guided by a separate Environmental Management Plan (EMP) for Operation, to be developed prior to operation of the Project.

1.1.3.3

Reclamation and Closure Phase

The reclamation and closure phase of the Project at the end of its useful life (i.e., when the extractable mineral resource has been depleted) will consist of the following activities:

- Decommissioning of all Project infrastructure, components, and materials and surface facilities, and their removal from the site;
- Final reclamation of the Project site to as near natural conditions as including restoration works on the site (such as re-contouring and reshaping the site), re-vegetating with native species as appropriate or through natural regeneration (where possible), and, allowing the open pit to fill with water from natural precipitation (over time); and
- Final closure of the site, including the closure of the surface water drainage channels on the site as well as the settling pond will be removed, but the perimeter channels along the edges of the site will be maintained. Any drainage channels within the site itself will be directed, if possible, towards the open pit to direct runoff to the open pit to enable its filling with water.

Several other supplementary plans and permitting applications (e.g., *Fisheries Act* Authorization and associated Offsetting Plan, Watercourse and Wetland Alteration (WAWA) permit and associated Wetland Compensation Plan, Environmental Protection Plan, Approval to Construct, Mining Lease and associated Mine and Reclamation Plan, etc.) are currently being developed for the Project, and incorporate the most recent design specifications/plans for the Project's components.

It should be noted that the site will be progressively reclaimed while the site is still operational. A separate Mine and Reclamation Plan (MRP) will be developed to guide activities to be conducted during reclamation and closure of the site, and while some of the measures identified in this EPP may be useful during such activities, they are guided first and foremost by the MRP. This document is currently being prepared and will be submitted for regulatory review and approval prior to the Project becoming operational.

1.2 Applicable Regulatory Framework

Screening of the applicable federal and provincial legislation, policies, authorizations and permits anticipated to be relevant to the Project against the planned activities for Phase 1 – Preliminary Site Preparation have been outlined within **Table 1** below. It is noted that all applicable permits and approvals that are believed to be required for the Project, regardless of phase, are listed in **Table 1**; however, the final column of the table specifically identifies those permits and approvals that are required for Phase 1 of construction.

Table 1: Authorizations, Approvals, Permits, Licenses, or Leases Required for the Project

Issuing Agency	Name of Authorization, Approval, Permit, License, or Lease	Purpose	Enabling Legislation/ Regulation	Specific Requirements	Applicable to Phase 1 – Preliminary Site Preparation?
Provincial					
New Brunswick Department of Environment and Local Government (NBDELG)	Environmental impact assessment (EIA) registration	EIA registration to assess the residual effects of the Project following the application of mitigation.	<i>Environmental Impact Assessment Regulation</i> under the New Brunswick <i>Clean Environment Act</i> (referred to herein as the EIA Regulation).	The EIA Determination contains specific conditions. The Project Manager will have the responsibility to ensure that these conditions are addressed as required. Refer to Appendix B .	Yes. An EIA Determination is required prior to initiating any development activity on the Project site.
NBDELG	Watercourse and Wetland Alteration (WAWA) Permit	For alterations within a watercourse or regulated wetland, or within 30 m of a watercourse or regulated wetland.	<i>Watercourse and Wetland Alteration Regulation</i> under the New Brunswick <i>Clean Water Act</i> (referred to herein as the WAWA Regulation).	A WAWA permit may be required for work around watercourse 1 (WC1), WC3 and WC4 as well as two small drainage connections between wetland 4 (WL4) and WL5. Work within 30 m of WL 3 may also require authorization. Note that the conditions of future WAWA permits may be included in the Approval to Construct (discussed below) in accordance with Section 3(3)(b.3) of the WAWA Regulation. Refer to Section 4.1 for more details.	No. There will be no disturbance within the 30 m buffer for watercourses and regulated wetlands during this phase.
NBDELG	Approval to Construct	For construction activities that release contaminants to the environment.	<i>Air Quality Regulation</i> under the New Brunswick <i>Clean Air Act</i> and/or <i>Water Quality Regulation</i> under the New Brunswick <i>Clean Environment Act</i> .	The Approval to Construct stipulates terms and conditions for the construction activities associated with the refurbishment project (See Appendix C). Regular inspections to assure compliance with the conditions of the Approval to Construct, along with relevant acts, regulations,	Yes. An Approval to Construct to be issued in phases for specific activities to be carried out (including Phase 1 – Preliminary Site Preparation as

Issuing Agency	Name of Authorization, Approval, Permit, License, or Lease	Purpose	Enabling Legislation/ Regulation	Specific Requirements	Applicable to Phase 1 – Preliminary Site Preparation?
				guidelines and procedures shall be implemented.	well as future phases).
NBDELG	Approval to Operate	For operation activities that release contaminants to the environment.	<i>Air Quality Regulation</i> under the New Brunswick <i>Clean Air Act</i> and/or <i>Water Quality Regulation</i> under the New Brunswick <i>Clean Environment Act</i> .	The Approval to Operate will specify the operating conditions and emission/discharge limits. The Approval to Operate has not yet been issued at the time of publishing this EPP.	No. An Approval to Operate is only required to carry out operational activities leading to the commercial extraction and processing of gypsum.
New Brunswick Department of Energy and Resource Development (NBDERD)	Mining Lease	Governs the mining and reclamation of the site.	New Brunswick <i>Mining Act</i> .	A Mining Lease is required for the commercial operation of the Project to proceed. A Mine and Reclamation Plan suitable to NBDERD is a prerequisite to obtaining a mining lease.	No. A Mining Lease is only required to carry out operational activities leading to the commercial extraction of gypsum.
Federal					
Department of Fisheries and Oceans Canada (DFO)	Section 35(2) Authorization for Harmful Alteration, Disruption or Destruction of Fish Habitat	For temporary or permanent alterations to fish habitat.	<i>Fisheries Act</i> .	An authorization under Section 35(2) of the <i>Fisheries Act</i> may be required for WC1 and WC3 for any Project activities that would result in the loss of fish habitat that is considered harmful alteration, disruption or destruction (HADD) of fish habitat. Authorization under the Act requires that the proponent offset for loss of fish habitat. An Offsetting Plan must accompany the application for authorization. These activities will be conducted	No. There will be no activities carried out within watercourses or fish habitat during Phase 1 – Preliminary Site Preparation.

Issuing Agency	Name of Authorization, Approval, Permit, License, or Lease	Purpose	Enabling Legislation/ Regulation	Specific Requirements	Applicable to Phase 1 – Preliminary Site Preparation?
				as part of a future phase of construction or operation.	
Other					
Regional Service Commission 8 (RSC8)	Development Planning Approval	A development planning approval ensures that the Project development is compatible with other land uses in the area.	New Brunswick <i>Community Planning Act</i> .	Application to RSC8 is required. Of note, there is no rural plan for the community of Upham.	Yes. Hammond River Holdings will confirm requirements with RSC8.

In addition to the above, additional permits, approvals, or authorizations may be required, should Hammond River Holdings decide to proceed with certain optional components of the Project (e.g., petroleum storage license, approval of a water well, approval of a septic system, a magazine license); the need for such additional permits, approvals, or authorizations will be confirmed as part of the permitting for later phases of the Project.

Other requirements may include a development planning approval under the New Brunswick *Community Planning Act* (CPA), as administered by Regional Service Commission 8 (RSC8). There may also be local planning requirements for excavation activities, to be confirmed in consultation with RSC8 and/or the Local Service District (LSD) of Upham.

1.3 Organization of this EPP for Construction

This EPP for Construction has been developed to guide activities being conducted on the Project site during construction and operation of the project. The EPP is organized as follows.

- Section 1 (this section) provided an introduction to the EPP, including a brief Project overview and identification of the likely regulatory framework guiding the Project.
- Section 2 provides a discussion of the scope, intent, and application of the EPP. It discusses: the purpose of the EPP; the roles and responsibilities of parties that may be present on the Project site in administering the EPP; the training, documentation, and record keeping in support of the EPP; provisions for revisions to the EPP; and other complementary/supporting documents to this EPP.

- Section 3 outlines the Environmental Protection Measures that must be implemented as part of the activities to be conducted on the Project site during construction in order to maintain conformance with this EPP and compliance with the requirements of Acts, regulations, permits, licenses, approvals, and other forms of authorization.
- Section 4 provides further environmental protection measures to be implemented in regard to environmentally sensitive areas or media that require special consideration or protection beyond those general environmental protection measures identified in Section 3.
- Section 5 provides the emergency response and contingency procedures to be implemented in the unlikely event of an accident, malfunction, or unplanned event occurring during the development of the Project.
- Section 6 provides closing remarks.
- Section 7 provides references cited in this EPP.

Additional information is included in the appendices.

2.0 Scope, Intent, and Application of the Environmental Protection Plan (EPP) for Construction (Phase 1 – Preliminary Site Preparation)

2.1 Purpose of the Environmental Protection Plan (EPP) for Construction

The purpose of the EPP for Construction is to provide Project personnel (as outlined in **Section 2.2**) with the information required to support the proper implementation of the identified protective and mitigation measures aimed to reduce or eliminate potential adverse environmental effects associated with the construction of the Project. This version of the EPP for Construction is limited to activities that will be conducted in Phase 1 – Preliminary Site Preparation as defined in **Section 1.1.3.1** above; later revisions of the EPP will address activities to be carried out in later phases of construction, and the EMP will guide activities during the operation phase.

This EPP is also intended to satisfy the EIA conditions of approval (**Appendix B**), as well as identify actions to be taken in the event of an unplanned accident or emergency. It is intended to:

- Provide concise and clear instructions to Project personnel regarding procedures for protecting the environment and minimizing environmental impacts during the Project phases;
- Provide a reference document for personnel when planning and/or conducting specific activities;
- Provide a mechanism for documenting environmental concerns and continuous improvement;
- Communicate changes in the program through the revision process;
- Confirm commitments to reduce environmental effects of the Project;
- Identify environmental roles and responsibilities;
- Identify specific actions to be taken in the event of an unplanned accident or emergency; and
- Provide a reference to Project personnel to communicate applicable legal and other regulatory requirements.

A copy of this EPP (and future revisions, as applicable) will be maintained on the Project site throughout the duration of the Project. Overall, the intent of this EPP is to provide guidance to meet or exceed compliance requirements to minimize impacts of the Project on the environment.

2.2 Roles and Responsibilities

The successful implementation of the EPP is the responsibility of all Project personnel. All Project personnel are responsible for reading, understanding, and complying with the contents of this EPP as appropriate for their role. The applicable Project phase during which the role applies is also identified.

2.2.1 Project Manager – Hammond River Holdings or Designate

The Project Manager is an employee of Hammond River Holdings or a person designated by it to act in this role, and is responsible for the following activities during the construction phase of the Project:

- Manage and direct all aspects of the Project;
- Maintain and update the EPP as required;
- Develop the Project schedule and budget;
- Obtaining required regulatory approvals as appropriate;
- Ensure that appropriate protection measures, approval conditions, commitments from the EIA, and other Project requirements are implemented;
- Work with the Environmental Monitor to ensure that all permits, EIA commitments, and other requirements are implemented;
- Report all environmental incidents, non-conformances, or violations of the conditions of approvals and permits to Hammond River Holdings Senior Management and regulatory authorities as appropriate;
- Ensure that environmental requirements are included into contract specifications;
- Conducting a pre-construction site walkover with the Contractor and other designated personnel to review the requirements of the EPP including, in particular, the requirements for erosion and sedimentation control;
- Managing all activities on site;
- Ensure that all Project personnel, contractors, and visitors receive appropriate training including a safety orientation;
- Ensure that all Project personnel and contractors receive a site-specific orientation to this EPP;
- Coordinating, advising, and providing awareness to Project personnel in the identification of potential environmental concerns associated with their activities;
- Conducting periodic inspections to assure compliance with the conditions of the EIA Certificate of Determination and any other permits or approvals issued for the Project;
- Providing oversight on day-to-day implementation of the EPP;

- Stopping the work in the event of an environmental incident, environmental non-compliance with the conditions of approvals/permits, or failure of environmental protection measures, as appropriate;
- Reviewing methodologies with contractors to ensure proper understanding and implementation of environmental protection measures;
- Ensuring that environmental protection measures are carried out on the Project site;
- Ensuring that environmental constraints such as wetlands, watercourses, migratory birds, species at risk, archaeological resources, and the like are considered as part of the construction activities on the Project site; and
- Communicating and coordinating with the Environmental Monitor and Indigenous Monitor.

2.2.2 Environmental Monitor – Hammond River Holdings or Designate

The Environmental Monitor is an employee of Hammond River Holdings or a person designated by it to act in this role, and is responsible for the following activities during construction of the Project:

- Supervising and periodically auditing the daily activities of the Contractor and its personnel;
- Supporting the proper implementation of environmental protection measures, permit conditions, environmental assessment stipulations and requirements, and this EPP;
- Completing coordination meetings as required, including participation in relevant daily tailgate safety meetings;
- Ensuring the EPP is updated to reflect field conditions and scopes of work;
- Coordinating, advising, and training of Project personnel in the identification of potential environmental concerns;
- Conducting regular inspections to assure compliance with relevant Acts, Regulations, guidelines and procedures as well as commitments outlined in the EPP;
- Reporting non-compliances to the Project Manager; and
- Communicating and coordinating with the Project Manager and Indigenous Monitor.

2.2.3 Indigenous Monitor – Third Party (If Applicable)

Though Indigenous engagement and consultation is ongoing, First Nations may request that an independent Indigenous monitor be on-site to monitor activities during construction. If one is desired by First Nations leadership, the Indigenous Monitor is a designated representative of First Nations and could be responsible for the following activities during construction of the Project to be further discussed with Indigenous groups as required:

- Periodically monitoring the activities of the Contractor and its personnel;

- Periodically monitoring the activities of Hammond River Holdings on-site;
- Working with the Environmental Monitor to support the proper implementation of environmental protection measures, permit conditions, environmental assessment stipulations and requirements, and this EPP;
- Reporting deficiencies to the Environmental Monitor (who will report to the Project Manager as appropriate);
- Preparing a report summarizing the activities undertaken, including photographs, and descriptions of any concerns to Indigenous rights that are identified as a result of the project to be sent to respective First Nation communities; and
- Liaising with First Nations leadership and designated personnel as desired in respect of activities being conducted at the Project site.

2.2.4 Contractor – Third Party

The Contractor is a third party retained by Hammond River Holdings Limited to carry out construction activities. The Contractor is responsible for reading, understanding and complying with the requirements of its Contract with Hammond River Holdings, all applicable environmental legislation, and all other legal requirements and the practices and procedures identified within this EPP. The Contractor is also responsible for ensuring that all personnel and sub-contractors working under its authority on-site are familiar with this EPP and all other legal requirements, including the following elements during construction of the Project:

- Being knowledgeable of, and complying with, all applicable federal and provincial Acts and Regulations, local laws, and any requirements of permits issued for the Project. If there is conflict among federal and provincial Acts and Regulations, local laws, and permit requirements, the more stringent requirement will apply;
- Participating in relevant training and Project orientation prior to the start of work on-site;
- Reading, understanding, and implementing the measures of the EPP;
- Carrying out construction activities in a manner that complies with relevant Acts, Regulations, guidelines and procedures, approval/permit conditions, as well as commitments outlined in the EPP;
- Identifying and addressing environmental concerns which may arise during construction activities;
- Immediately reporting all deficiencies, incidents, and non-compliances to the Project Manager, who will seek direction as appropriate from the Project Manager;
- Leading, coordinating, and carrying out corrective actions to address deficiencies, incidents, and non-compliances;

- Ensure that all appropriate environmental and human safeguards are planned and executed in the course of performing the work including timely acquisition and handling of any required permits, licenses, and notifications as required;
- Leading, coordinating, and carrying out emergency and contingency response procedures during accidents, malfunctions, or unplanned events;
- Communicating with the Environmental Monitor and reporting concerns;
- Keep environmental disturbances to a minimum necessary for accomplishing the proposed activities in accordance with this EPP;
- Taking necessary precautions to avoid impacts to the natural environment, both within and adjacent to the work areas;
- Ensuring that good housekeeping is employed for the duration of the project. All wastes and surplus materials generated by project activities will be handled and transported in accordance with applicable laws and as directed in this EPP;
- Leaving the job site in a safe, clean, and environmental stable condition;
- Immediately notifying the Project Manager of any complaints from the public;
- Being responsible for adherence to the Specification and Contract Document as provided by Hammond River Holdings Limited;
- Leading daily tailgate meetings to coordinate construction and environmental mitigation activities; and
- Notifying the Project Manager, in writing, prior to project implementation any conflict between contract specifications, manufacturer's instructions, federal and/or provincial permits.

2.2.5 All Other Project Personnel

All Project personnel (including Hammond River Holdings personnel, consultants, contractor personnel, and visitors) are responsible for the following activities during the construction phase of the Project:

- Reading, understanding and implementing the measures of the EPP;
- Being knowledgeable of applicable federal and provincial Acts and Regulations, local laws, and any requirements of permits issued for the Project. If there is conflict among federal and provincial Acts and Regulations, local laws, and permit requirements, the more stringent requirement will apply;
- Carrying out construction activities in a manner that complies with relevant Acts, Regulations, guidelines and procedures, permit conditions, as well as commitments outlined in the EPP;
- Participating in relevant training and Project orientation prior to the start of work on-site;
- Identifying and addressing environmental concerns which may arise during construction activities;

- Ensuring that all equipment used is maintained in good working order and operated in accordance with the manufacturer's specifications;
- Immediately reporting all non-compliances to their supervisor, who will promptly notify the Project Manager; and
- Coordinating and carrying out emergency and contingency response procedures during accidents, malfunctions, or unplanned events.

2.3 Training, Communication, and Record Keeping

All Project personnel that are engaged in, or responsible for, the supervision of work involving the Project specific construction components or activities must have the appropriate knowledge, training and experience relevant to their assigned responsibility to enable them to perform their assigned function in a correct and responsible manner, and in accordance with federal and provincial requirements. The Contractor will be required to provide Hammond River Holdings copies of the applicable environmental policies and standard operating procedures (SOPs), and all personnel will be required to undergo Project-specific training (with requisite documentation thereof). Material relative to the environmental protection measures and emergency response and contingency measures that have been identified for the Project and within this EPP will be effectively communicated to all Project personnel.

All Project personnel will review the EPP prior to commencing work on the Project site and will be required to follow the protection and mitigation measures outlined in this EPP. As legislation and best management practices (BMPs) continuously evolve, the training materials will be evaluated and updated as required.

The Contractor is responsible that all their employees have appropriate orientation and environmental awareness training, including, but not limited to:

- **Environmental Legislation and Regulations Awareness** – Overview of environmental legislation and regulations and an introduction to due diligence, compliance, environmental risks associated with work sites/projects and incident reporting;
- **Transportation of Dangerous Goods** – For anyone who ships, receives, handles, stores or transports hazardous wastes;
- **Petroleum, oil, and lubricants (POLs) and Hazardous Spill Prevention and Response** – Customized training for the project site's needs;
- **Human Health and Safety** – To maintain controlled access during the program to those individuals who have been identified as part of the project and who have been properly trained in the applicable activities;

- **Working In and Around Water** – Overview of legislation, regulations and BMPs when working in and around water;
- **Emergency Response Procedures** – Training and awareness on contingency measures to address emergencies, accident and unplanned situations including, but not limited to, first aid, call out procedures, emergency rescue, fire, and environmental emergencies;
- **Working In and Around Sensitive Habitats** – Overview of legislation, regulations and BMPs when working in and around sensitive habitats such as migratory bird nest, Indigenous culturally significant habitat, and identified species at risk habitat;
- **Traditional Use Awareness** – For areas which may have indigenous traditional use and value; and
- **Archaeology and Heritage Awareness** – For areas which may have archaeological or heritage value.

Detailed and accurate records of daily construction activities as well as accidents and incidents shall be kept by all Project personnel that are involved with the planning, management, implementation and evaluation of the Project-specific components. The Contractor will maintain records as specified in the Contract Specification provided by Hammond River Holdings. Records in the form of logs, records and memos may include, but not necessarily be limited to, information related to the transport of POLs, daily construction and maintenance progress, personnel and times on site, incident reporting, and project monitoring. This information shall be stored in an organized and orderly manner in the event that it is necessary to reconstruct the history of any program components.

2.4 EPP Revision

This EPP outlines the requirements and procedures to be implemented during construction of the Project so as to remain in compliance with environmental requirements and to maintain a sustainable approach to site development.

The EPP will be updated as a result of changes in legislation, regulatory approval/permit requirements, if unexpected conditions are encountered at the Project site, or where continuous improvement is warranted. These additions and/or revisions shall be recorded in the “Record of Revisions” table included at the beginning of the EPP.

2.5 Other Complementary/Supporting Documents to this EPP

Hammond River Holdings is committed to manage its land in a sustainable manner throughout the Project phases and in accordance with the commitments it made in the EIA. Through these commitments, it must demonstrate that suitable design, environmental protection measures and monitoring are provided to prevent significant adverse effects. Independent technical reports, operational procedures and monitoring plans have been developed to complement this EPP and include site-specific geochemistry, hydrology and hydrogeology assessment information, further

characterization of the mineral resource, site closure and reclamation procedures, as well as baseline surface water and groundwater quality information.

As a best practice, the civil construction work for the Project shall meet the environmental protection objectives that the New Brunswick Department of Transportation and Infrastructure (NB DTI) has adopted for civil construction. These objectives are outlined in the NB DTI's Environmental Management Manual, Fourth Edition (NBDOT 2010, found at:

<https://www2.gnb.ca/content/dam/gnb/Departments/trans/pdf/en/RoadsHighways/EnvironmentalManagementManual.pdf>). Section 5.7.2 of the manual provides guidance on effective methods for sediment management. These methods will be adopted as required during Preliminary Site Preparation activities. The installation and performance of the sediment control measures will be audited by the Environmental Monitor for compliance.

The NBDELG's "Watercourse and Wetland Alteration Technical Guidelines" (WAWATG) (NBDELG 2012; found at: <https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Water-Eau/WatercourseWetlandAlterationTechnicalGuidelines.pdf>) will also be used for reference to manage water flows during the installation of the settling and retention ponds and cross culverts.

In addition, other supporting documents developed for the Project, as discussed below, provide specific design criteria requirements, SOPs, as well as monitoring commitments to be implemented during the Project phases to minimize potential environmental impacts. These documents are closely related to the EPP and are intended to be supporting documents to the EPP. The following is a list of independent documents either provided in the appendices of this report or under a separate cover that support the above information.

2.5.1 Water Management Plan (WMP)

The Water Management Plan (WMP; **Appendix E**) (Dillon 2019) outlines objectives aimed to reduce the rates and volumes of water on site and to minimize the changes to existing drainage patterns throughout the Project life. The WMP is a design document for construction that is intended to define the ultimate configuration and operation of the water management features on-site, primarily during the operation phase but also developed in stages in order to manage water on-site during various phases of construction. The WMP aims to assist at managing site runoff water under various climatic or weather conditions and provides a reliable water supply for site operation (e.g., for dust control). The WMP provides guidance on the design criteria as well as anticipated flow rates and volumes for the active operation area (i.e., quarry, storage pads, and access roads) and recommendations on how to maintain water quality objectives using a multi-component approach consisting of stormwater quality measures and erosion and sediment control (ESC) measures. Design details on stormwater infrastructure (e.g., settling ponds, ditching, and channelization) and ESC measures (e.g., silt fencing, check dams, settling ponds and revegetation) are provided in the WMP and is included in **Appendix E**.

2.5.2 Groundwater Monitoring Plan (GMP)

The Groundwater Monitoring Plan (GMP) outlines the commitments made in the EIA registration document and provides guidance on the monitoring objectives as well as provides baseline hydrogeological and groundwater conditions prior to the development of the Upham East Gypsum Quarry. The GMP provides baseline information to assess potential variations or changes in the groundwater quality and/or quantity during and following Project development. Groundwater monitoring will be assessed through the monitoring of dedicated monitoring wells and residential private wells. The GMP is currently being developed and will be submitted for NBDELG review and approval. As per Condition 13 of the EIA certificate of determination, subject to NBDELG approval, the proposed monitoring wells will be installed prior to the commencement of Phase 2 construction activities or blasting.

2.5.3 Surface Water Monitoring Plan (SWMP)

Similar to the GMP, the Surface Water Monitoring Plan (SWMP) outlines the commitments made in the EIA registration document and provides guidance on the monitoring objectives as well as provides baseline surface water conditions within three watercourses prior to the development of the Upham East Gypsum Quarry as well as for compliance monitoring of the discharge location from the Project during the operation phase. The SWMP provides baseline information to assess potential variations or changes in the surface water quality during and following Project development. Surface water monitoring will be assessed through the monitoring of dedicated sample locations.

Hammond River Holdings has initially planned to collect grab samples at the outlet of the discharge channel (“primary discharge point” on **Figure 2**) as well as at a point approximately 100 m upstream of the primary discharge point, within Watercourse WC3 (**Figure 2**) a minimum of weekly during the preliminary site preparation activities as well as during precipitation events to validate retention pond performance. Once the preliminary site preparation activities have been completed and there is no other on-site activity, the grab sampling frequency will be reduced to monthly as well as during precipitation events. The long-term sampling schedule will be refined based on the actual retention pond performance and Approval to Operate requirements, with sampling locations and sampling details to be specified in the SWMP for operation. The SWMP is primarily intended to support the operation of the Project and will thus be part of the EMP for Operation, once it is developed.

2.5.4 Blast Control and Monitoring Plan (BCMP)

The Blast Control and Monitoring Plan (BCMP) developed by Conquest Engineering Inc. (Conquest 2019) describes the blasting operations that may occur during operation of the Upham East Quarry Project. The purpose of the BCMP is to provide site-specific information concerning blasting procedures, including the safe use and storage of explosives, standard operating procedures (SOPs), pre-blast surveys, and best management practices (BMPs) that will be implemented to prevent potential adverse effects on human safety and the environment. The BCMP also provides guidance on the blast

monitoring requirements in accordance with approved provincial and federal requirements. The BCMP is primarily intended to support the operation of the Project and will thus be part of the EMP for Operation, once it is developed.

2.5.5 Mine and Reclamation Plan (MRP)

The purpose of the Mine and Reclamation Plan (MRP) is to outline the plan for the life of the quarry, objectives of reclamation, and the steps required to achieve these objectives. This report is in compliance with Sections 30 and 31 of the New Brunswick Regulation 86-98 under the *Mining Act*, as a pre-requisite to obtaining a mining lease for the Project. The MRP is a separate document independent of the EPP. The MRP is supported by the above technical documents for the Project.

3.0

Environmental Protection Measures

This section outlines the protective measures, mitigation and BMPs that will be applied to minimize potential impacts to the environment during the construction phase of the Project. The protection measures, mitigation and BMPs have been outlined as follows:

- 3.1 General Environmental Planning and Management;
- 3.2 Erosion and Sediment Control Measures;
- 3.3 General Equipment Use, Refueling, and Trucking Operations;
- 3.4 Noise Control;
- 3.5 Dust and Other Emissions Control;
- 3.6 Clearing, Grubbing, and Laydown/Storage Areas;
- 3.7 Access Roads and Culvert Crossings;
- 3.8 Ancillary Facilities; and
- 3.9 Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods.

It should be noted that, although the environmental protection and mitigation measures listed in each subsection below are numbered, the numbering is for ease of cross-referencing only and does not imply an order of priority or importance for the listed items.

3.1

General Environmental Planning and Management

Hammond River Holdings is committed to developing the Project in an environmentally responsible manner that is consistent with good environmental management principles and retaining to the extent possible the rural character of the community while meeting the market demand for gypsum. To this end, Hammond River Holdings will develop and carry out the Project in a manner that avoids or minimizes the adverse environmental effects of the Project, and enhances positive ones, in a manner that complies with applicable laws and regulations.

Several environmental protection and management measures will be implemented to guide the construction, operation, and reclamation and closure of the Project, as follows.

- Employing good planning, design, and management practices to comply with regulated and/or industry design and management standards to satisfactorily deal with environmental risks such as unusual weather events, fire, flooding, and erosion;
- Engaging in open communications with the local residences, regulatory agencies and interested parties and establishing a complaint response protocol as part of the construction and subsequent operation of the Project. It is intended that this complaint response protocol will be distributed to nearby residents, and complaints, measures and corrective actions will be shared

via the website and other acceptable or desired forms of communication. The proposed elements of a complaint response protocol are provided in draft form in **Appendix D**;

- Siting facilities to avoid sensitive areas such as wetlands, watercourses and important habitat types as outlined in **Section 4.0 (Environmentally Sensitive Areas)**, where possible, and maintaining as much of a mature tree buffer as possible surrounding these features;
- Minimizing the footprint of Project facilities and activities to consequently reduce the amount of disturbed land, wetlands, and water resources;
- Employing good planning, design and management practices to comply with standards and objectives for air contaminant emissions, noise, vibration, and surface runoff; and
- Implementing progressive environmental protection, mitigation, and management strategies that avoid or minimize adverse environmental effects and maintain or enhance positive effects.

Project planning is integral to project components and to mitigation. Planning involves identifying the Project requirements prior to the initiation of the construction, operation (including maintenance), site restoration and closure phases to determine appropriate methods are used to facilitate Project objectives while also providing environmental protection. Planning has been undertaken in the form of the EIA registration, management plans as outlined in **Section 2.5 (Other Complementary/Supporting Documents to this EPP)** and design elements of the Project by Hammond River Holdings personnel. Project implementation generally consists of mobilization to designated work areas, pre-approved staging area set-up (near work areas), implementing the construction and maintenance activities, site clean-up, and demobilization off the site.

3.2 Erosion and Sediment Control Measures

Erosion and sediment control (ESC) measures will be implemented to prevent the deposition of sediment-laden water or other deleterious substances to the on-site mapped/regulated wetland (i.e., WL3), watercourses (i.e., WC1, WC2, and WC3), and downstream aquatic habitats (i.e., the Hammond River) as outlined in **Section 4.1 (Surface Water (Watercourses and Wetlands))**. Refer to **Figure 4** for the location of all watercourses and wetlands on-site.

The recommendations for ESC measures outlined in the NBDELG “Watercourse and Wetland Alteration Technical Guidelines” (WAWATG) (NBDELG 2012) will be used for reference. The WAWATG are located at the following website link: <https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Water-Eau/WatercourseWetlandAlterationTechnicalGuidelines.pdf>. In addition, Section 5.7.1 of NBDTI Environmental Management Manual (NBDOT 2010) also provides guidance on the ESC measures.

For the purposes of this EPP, the difference between erosion and sediment control measures is outlined as follows:

- **Erosion control** is intended to mitigate the potential for exposed soil and is the primary protective measure from preventing impacts to downstream aquatic resources; whereas

- **Sediment control** serves as the contingency measure to mitigate eroded soil from being transported and/or deposited beyond the limits of the construction and into sensitive aquatic habitats.

ESC measures will be designed for the appropriate protective measure and will be adaptable to accommodate potential changes to the environment or potential elevated sensitivities. As part of the WMP provided in **Appendix E**, both temporary (e.g., silt fence) and permanent (e.g., hydroseeding) ESC measures have been designed for the Project phases and are varied based on based on site conditions and field performance of implemented measures.

The following protection and mitigation measures shall apply for installation of ESC measures during the Construction of the Project:

1. The Project Manager and/or the Environmental Monitor shall conduct a walkover with the Contractor in advance of initiating earthworks to identify specific ESC requirements;
2. **No ground disturbance including infilling shall occur within 30 m of a watercourse or regulated wetland during Phase 1 – Preliminary Site Preparation;**
3. All ESC structures (i.e., silt curtains, cofferdams, and/or sediment fences) will be constructed and installed prior to beginning any activities involving work on ground surface near areas of high runoff potential. This will be confirmed and documented by the Project Manager and/or the Environmental Monitor;
4. In later phases of construction, construction activities within 30 m of a watercourse or regulated wetland (WL3) will be carried out in accordance with a WAWA Permit as issued under the New Brunswick *Watercourse and Wetland Alteration Regulation - Clean Water Act* (WAWA Regulation). Work within watercourses, regulated wetlands, and their 30 m buffers will be conducted between June 1 and September 30 unless otherwise authorized by NBDELG. The WAWA permit must be in the possession of worker or supervising staff on site at all times. Note that the conditions of the WAWA permit may be covered by the conditions of the Approval to Construct (at NBDELG discretion), as permitted under Section 3(3)(b.3) of the WAWA Regulation;
5. Ground disturbance will be minimized and, where possible, natural vegetation will be preserved to reduce the potential for erosion and sedimentation of watercourses or wetlands;
6. Exposed soils will be stabilized immediately using ESC measures (e.g., mulch, hay, geofabric, etc.), as outlined in the WAWATG (NBDELG 2012), to minimize emissions of particulate matter, erosion, and the release of sediment-laden runoff;
7. Ditches will be designed as outlined in **Appendix E (Water Management Plan (WMP))**. These measures may include rock check dams, energy dissipation pools, and straw/hay bale structures, as applicable to reduce energy dissipation and minimize erosion and sedimentation events;
8. Silt fences or other appropriate ESC measures shall be installed as necessary and as per the specifications outlined in the WAWATG (NBDELG 2012) and the NBDTI Environmental Management Manual (NBDOT 2010);

9. ESC structures including hay bales and silt fencing will be installed on the down-gradient side of exposed erodible soils, including access and parking areas on an as needed basis to control run-off;
10. Anionic flocculating agent(s) may be an additional measure used to manage TSS. If flocculants are necessary, the Contractor shall use agents that are appropriate for use near aquatic habitats. Supporting information from the supplier will be provided in advance of using any agents;
11. ESC structures will be inspected, at a minimum, monthly by the Project Manager and/or designated Project personnel and periodically by the Environmental Monitor, as well as prior to heavy rainfall (>20 mm) events to ensure they are continuing to operate properly;
12. Maintenance of ESC measures will be performed to address concerns identified during the inspections to ensure they are continuing to operate properly. Regular removal of accumulated sediment will be removed from ESC measures to maintain the effectiveness of the systems;
13. All materials placed or used during construction shall be clean and free of contaminants; and
14. In the event of an ESC failure, all work will be immediately stopped, and all available resources will immediately focus on mitigating the failure(s) in an effort to minimize negative impacts.

3.3 General Equipment Use, Refueling, and Trucking Operations

Standard conditions shall be implemented while using mechanical and non-mechanical equipment while operating within the PDA boundary. This section outlines the requirements for safe and responsible equipment and vehicle use and is intended for use by Hammond River Holdings personnel, Contractors and other civilian personnel that are involved with the operation of heavy equipment, refueling activities, trucking operations, and the supervision and monitoring during Project activities.

The potential impacts associated with the use of construction and trucking equipment on the surrounding environment such as air quality, terrestrial environment, and aquatic environment include emissions, accidental spills, and leaks as well as direct physical impacts to fish, wildlife, species at risk (SAR) and species of conservation concern (SOCC) and their habitats. The following sections provide protective measures outlined for General Equipment Use, Refueling, and Trucking Operations, to minimize these impacts.

Equipment Use and Maintenance

1. All equipment and vehicles transported and operated on site, including use of ATVs and snowmobiles, shall be in good working conditions, properly maintained, and inspected daily for potential leaks;
2. All site equipment and vehicles will be maintained according to emission and noise suppression standards and in good working order, and repaired in accordance with the manufacturer's specifications;

3. All construction equipment will be turned off when not in active use to minimize excess idling, wherever possible. When practical, a non-idling policy will be instituted and followed for operations of vehicles and construction equipment at the site;
4. Operations shall be conducted at times when management objectives can be maximized and environmental impacts can be minimized (i.e., avoiding storm events such as heavy rain and wind);
5. Vehicles shall not be washed within the PDA boundary, unless otherwise approved in designated areas and outside 30 m of an identified watercourse or regulated wetland;
6. Construction crews and machinery are to use designated roadways and access-points to limit disturbance off right of ways (ROWs) and minimize the interactions with wildlife and wildlife habitat, including species at risk and their habitat. Refer to **Section 4.2 (Wildlife, Migratory Birds, and Species at Risk)**;
7. All site equipment and vehicles will yield to people and wildlife;
8. Appropriate emergency spill response kits will be maintained on site as outlined in **Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods)**;
9. Equipment will be routinely inspected for leaks and mechanical conditions will be addressed immediately that have the potential to result in spills of fuel, lubricating oils, or hazardous materials;
10. All construction machinery shall be cleaned of mud and vegetation prior to entering and leaving wetlands within work areas to minimize the spread of invasive plant species;
11. Only minor maintenance of equipment will be allowed on the Project site; should major repairs, such as, engine/transmission removal be required, the equipment will be floated off site. All repairs should be discussed with the Project Manager prior to implementation;
12. Minor equipment maintenance required in the field shall be completed in approved staging areas whenever possible and be a minimum of 30 m outside of sensitive watercourse and wetland buffer zones;
13. Maintenance and inspections will be documented and records maintained as outlined in **Section 2.3 (Training, Communication, and Record Keeping)**;
14. Hammond River Holdings will implement an adverse weather shut down policy during construction for certain activities during inclement weather. The responsibility for implementation of this policy will be determined by the Hammond River Holdings Project Manager; and
15. Refer to applicable protective measures from:
 - a. Section 3.2 (Erosion and Sediment Control Measures);
 - b. Section 3.4 (Noise Control);
 - c. Section 3.5 (Dust and Other Emissions Control);

- d. Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods);
- e. Section 4.0 (Environmentally Sensitive Areas); and
- f. Section 5.0 (Emergency Response and Contingency Measures).

Equipment Fuelling and Storage

The following requirements shall apply when fueling and refueling equipment:

1. Maintaining and refueling vehicles will be restricted to designated areas as outlined in **Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods)**. No fueling will be conducted within 100 m of a mapped watercourse, or within 30 m of a regulated wetland or settling pond;
2. Fuel tanks (gas/diesel) must be CSA approved;
3. Re-fuel pumps and hoses must be in good working condition and fuel nozzles shall be firmly attached to tanks and stored/secured in proper holster mechanism;
4. Fueling and routine maintenance operations will be conducted in accordance with appropriate standards and guidelines;
5. Fuel will not be stored near generators or located adjacent to waterbodies as discussed in **Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods)** and **Section 5.1 (Hazardous Materials and Fuel Spills)**. Drip pans will be placed under equipment and appropriate spill kits will be maintained on site;
6. When refueling (with jerry cans) chainsaws, brush saws and small generators adjacent to watercourses and wetlands, special care shall be taken. Proper spill containment pads must be used to minimize the potential for accidental spills;
7. Pour spouts and funnels must be used when fueling and a nozzle is never to be left unattended. Tanks shall not be filled more than 95% of their capacity;
8. All equipment shall be operated and stored/parked in a designated area 30 m outside of a watercourse or regulated wetland and in such a way that prevents any deleterious substance from migrating to a watercourse/wetland; and
9. Refer to applicable protective measures from:
 - a. Section 3.2 (Erosion and Sediment Control Measures);
 - b. Section 3.4 (Noise Control);
 - c. Section 3.5 (Dust and Other Emissions Control);
 - d. Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods);
 - e. Section 4.0 (Environmentally Sensitive Areas); and
 - f. Section 5.0 (Emergency Response and Contingency Measures).

Trucking Operations

The preferred transportation route from the site to connect to Saint John is shown in **Figure 3** and will consist of the following sequence:

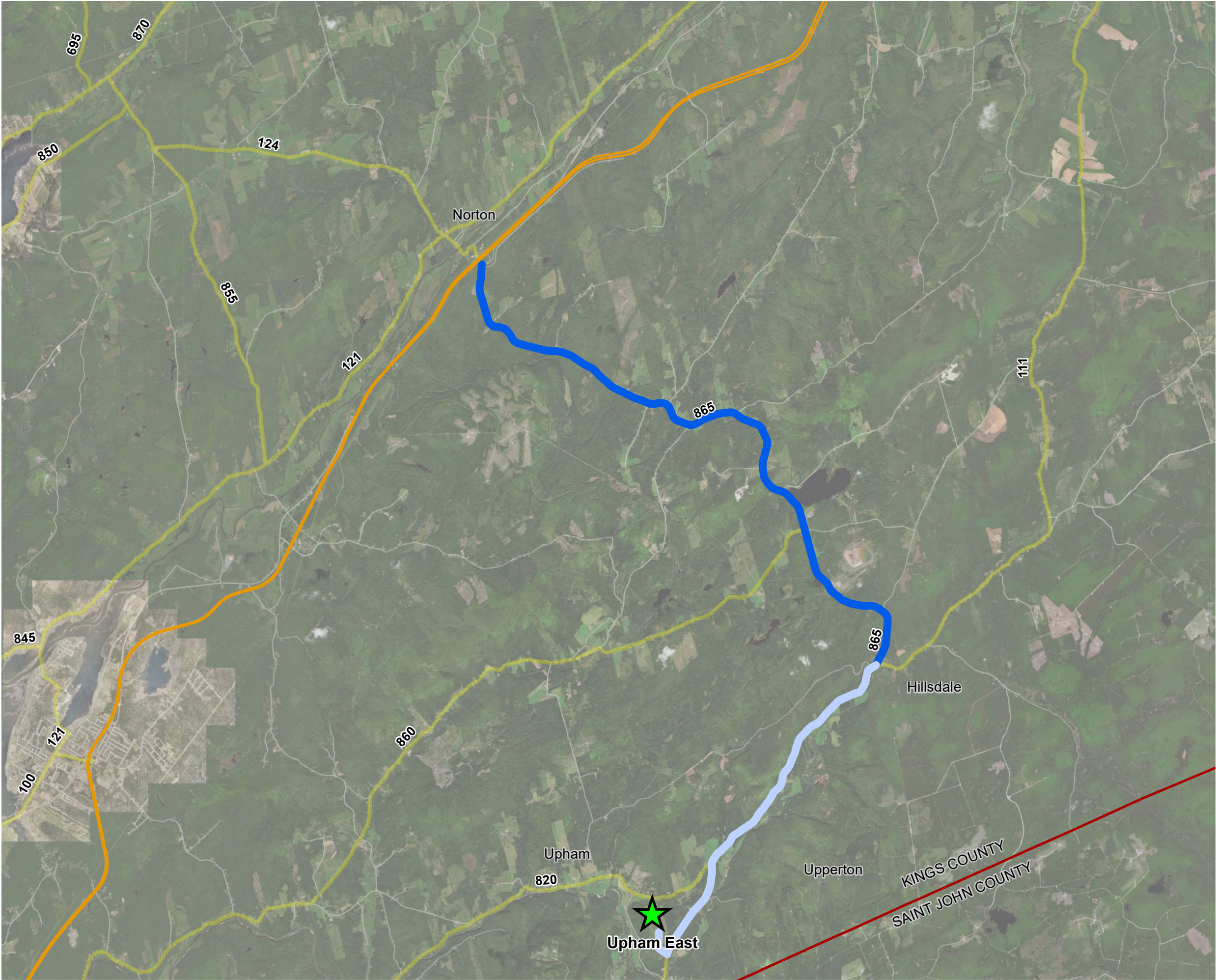
1. From the site access road, trucks will enter the provincial highway network via Route 111 in a northeasterly direction until they intersect with Route 865 at Hillsdale;
2. Take Route 865 in a northwesterly direction until it intersects with Route 1 at Norton; and
3. Take Route 1, where trucks will then follow the provincial highway system to deliver product to customers.

Route 111/Route 865/Route 1 is preferred since it enables the transportation of larger payloads for most of its length (i.e., 62,500 kg gross vehicle mass) compared to other trucking routes.

Note: a 9 km section of Route 111 (as shown in the light blue colour on **Figure 3**) has been subjected to a condition assessment by the New Brunswick Department of Transportation and Infrastructure (NBDTI), who confirmed that the route has a suitable weight-bearing capacity to meet the Project needs.

The following requirements shall apply during trucking operations on and off the Project site:

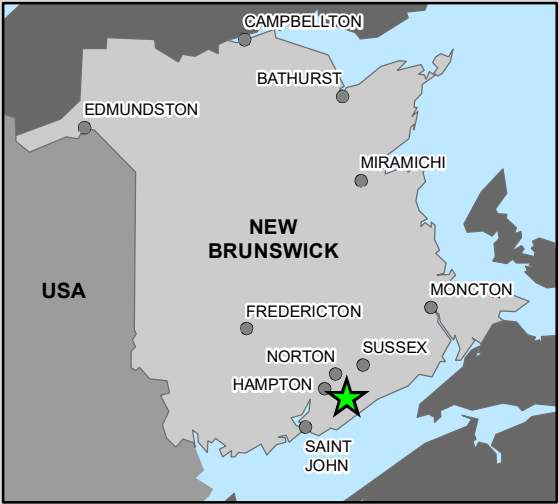
1. All personnel on site shall adhere to the posted speed limits and road signage established;
2. Speed limits on the Project site shall be limited to 30 km/h at all times;
3. A communications plan will be established to engage with local communities potentially affected by Project-related traffic;
4. All necessary permits will be obtained and industry best practices will be followed for special moves or traffic interruptions on public roads;
5. Large payloads will be used to the extent possible to minimize trucking operations;
6. Trucking vehicles shall only travel in areas designated for access, unless otherwise approved by the Project Manager;
7. Trucks used for the Project will adhere to the *Motor Vehicle Act*, including weight limits and spring weight restrictions as well as securing of loads during transit;
8. Crews will be educated in safe driving rules and local driving conditions within the Project site;
9. All vehicle accidents (including near misses), whether resulting in property damage or not, will be reported to the Site Manager as outlined in **Section 2.3 (Training, Communication, and Record Keeping)**;
10. All trucking vehicles for the Project will be properly inspected and maintained in good working order;
11. Dust control will be undertaken in accordance with **Section 3.5 (Dust and Other Emissions Control)**;
12. The Project Manager will confirm when dust levels are too excessive and may stop trucking until dust suppressants can be applied;



HAMMOND RIVER HOLDINGS LIMITED
PROPOSED UPHAM EAST GYPSUM QUARRY

PREFERRED TRANSPORTATION ROUTE
FIGURE 3

- ★ PROJECT LOCATION
(TRANSPORTATION ROUTE END POINT)
- SECTION OF PREFERRED TRANSPORTATION
ROUTE RATED AT 62,500 KG GVM
- SECTION OF PREFERRED TRANSPORTATION
ROUTE RATED AT 43,500 KG GVM
- HIGHWAY 1 GATEWAY TO MAJOR CENTERS
- NB ROAD NETWORK - HIGHWAY/EXPRESSWAY
- NB ROAD NETWORK - LOCAL STREETS
- COUNTIES



MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING LIMITED, CANVEC
SERVICE LAYER CREDITS: ESRI, HERE, GARMIN, INTERMAP, INCREMENT
P CORP, GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL,
ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISS
TOPO, OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
MAP CREATED BY: BQS
MAP REVIEWED BY: JH
MAP CHECKED BY: DM
MAP PROJECTION: NAD_1983_CSRS_New_Brunswick_Stereographic

FILE LOCATION: \\DILLON.CA\\DILLON_DFS\\FREDERICTON\\
FREDERICTON CAD\\CAD\\GIS\\188346 UPHAM GYPSUM QUARRY\\MXD



PROJECT: 18-8346
STATUS: DRAFT
DATE: OCT 2018

13. Equipment and vehicles will yield the right-of-way (ROW) to wildlife as outlined in **Section 4.2 (Wildlife, Migratory Birds, and Species at Risk)**;
14. All accidental wildlife strikes will be reported to the Project Manager, who will consult with the Environmental Monitor to determine if further action is required; and
15. Refer to applicable protective measures from:
 - a. Section 3.2 (Erosion and Sediment Control Measures);
 - b. Section 3.4 (Noise Control);
 - c. Section 3.5 (Dust and Other Emissions Control);
 - d. Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods);
 - e. Section 4.0 (Environmentally Sensitive Areas); and
 - f. Section 5.0 (Emergency Response and Contingency Measures).

3.4 Noise Control

Standard conditions shall be implemented while using mechanical and non-mechanical equipment while operating within the PDA boundary. This section outlines the requirements for minimizing noise generation to the extent possible intended for use by Hammond River Holdings personnel, Contractors and other civilian personnel that are involved with the operation of heavy equipment and trucking operations during Project activities.

Potential environmental concerns associated with the construction phase include increased levels of noise on the surrounding environment.

The following requirements shall apply for noise generation during the Project activities:

1. Noise generation will be managed in accordance with the conditions of the Approval to Construct (**Appendix C**) under the New Brunswick *Air Quality Regulation*;
2. All equipment and vehicles will be equipped with standard and well-maintained noise suppression devices as outlined in **Section 3.3 (General Equipment Use, Refueling, and Trucking Operations)**;
3. When practical, a non-idling policy will be instituted and followed for all operations of vehicles and construction equipment at the site;
4. Speed limits on the Project site shall be limited to 30 km/h at all times, to minimize noise emissions;
5. The use of compression release engine brakes (i.e., jake brakes) on trucks will be prohibited on-site and in the deceleration zone for the entrance to the site;
6. Hours of operation for construction will be limited to daytime hours between 7:00 and 19:00, Monday to Friday, excluding statutory holidays;

7. Any noise complaints received by Hammond River Holdings will be followed up in accordance with the Complaint Response Protocol provided in **Appendix D**; and
8. Refer to applicable protective measures from:
 - a. Section 3.3 (General Equipment Use, Refueling, and Trucking Operations); and,
 - b. Section 4.0 (Environmentally Sensitive Areas).

3.5 Dust and Other Emissions Control

Standard conditions shall be implemented while using mechanical and non-mechanical equipment while operating within the PDA boundary. This section outlines the requirements for minimizing dust generation to the extent possible intended for use by Hammond River Holdings Personnel, Contractors and other civilian personnel that are involved with the operation of heavy equipment and trucking operations during Project activities.

Potential environmental concerns associated with the construction phase include increased levels of dust on the surrounding environment.

The following requirements shall apply for dust and other emissions control during the Project activities:

1. Dust emissions will be managed and reported in accordance with the conditions of the Approval to Construct (**Appendix C**) under the New Brunswick *Air Quality Regulation*;
2. Speed limits on the Project site shall be limited to 30 km/h at all times, to minimize the generation of airborne dust from unpaved roadways;
3. During periods of high dust generation, speed limits will be further reduced or dust suppression methods will be applied;
4. Dust-producing site activities will be limited to daytime during weekdays only so that the Project does not cause excessive off-site migration of dust;
5. Water will be applied to on site access roads during dry periods using a water tanker. Application shall be restricted to the driving surface only;
6. Water to be used as a dust suppressant shall be sourced from the pit sump and/or settling pond(s), or brought to the site from an approved water supply source via tanker truck;
7. Chemical-based dust suppressants (e.g., calcium chloride, magnesium chloride, lignosulphonate) shall not be used at any time on-site unless specifically authorized by the Project Manager. During application, chemical dust suppressant spray nozzles will be shut off within 30 m of a watercourse, regulated wetland, or private water well to minimize potential runoff to nearby surface water. The “Best Practices for the Use and Storage of Chloride-Based Dust Suppressants” (ECCC 2004b) will be followed. Chemical dust suppressants stored on-site shall follow those protective measures as outlined in **Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods)**;

8. Where possible, efforts will be made to maintain as much mature vegetation (including trees) within the Project site to limit off-site dust migration;
9. Any dust complaints received by Hammond River Holdings will be followed up in accordance with the Complaint Response Protocol provided in **Appendix D**; and
10. Refer to applicable protective measures from:
 - a. Section 3.2 (Erosion and Sediment Control Measures);
 - b. Section 3.3 (General Equipment Use, Refueling, and Trucking Operations);
 - c. Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods); and
 - d. Section 4.0 (Environmentally Sensitive Areas).

3.6 Clearing, Dewatering, Grubbing, and Laydown/Storage Areas

Most of the PDA was cleared of mature vegetation in the early 2010s for the purpose of forest harvesting of merchantable timber (i.e., logging); therefore, clearing activities for the Project will be relatively limited and will consist predominantly of the removal of non-merchantable timber, regenerating timber, shrubs, and other ground vegetation in certain areas where they are required to accommodate the Project facilities. Mechanical (e.g., bulldozer) and non-mechanical (e.g., chain saw, brush saws) will be used. Grubbing will include the removal of the remaining trees and stumps. Soils will be segregated and placed in dedicated laydown areas to be used for future Site Reclamation/Closure as required.

This section outlines the requirements for safe and responsible clearing, grubbing and removal of vegetative material and is intended for use by Hammond River Holdings personnel, Contractors and other civilian personnel that are involved with these Project activities.

Environmental concerns associated with the clearing, grubbing, and disposal on the surrounding environment includes impacts to air quality, terrestrial environment, and aquatic environment including through emissions, noise, accidental spills, leaks, as well as direct physical impacts to fish, wildlife, species at risk (SAR), and their habitats. The following sections provide protective measures outlined for clearing, grubbing, and storage pad areas to minimize these impacts.

Clearing and Grubbing

The following requirements shall apply for clearing and grubbing during the Project activities:

1. Clearing and grubbing will be limited to areas which need to be subjected to such activities, and no more. Clearing and grubbing will occur in small areas to minimize the undue exposure of surface soils and potential erosion arising from it.
2. Prior to clearing and grubbing activities, flagging shall be placed to delineate clearing area limits and environmental sensitive areas (e.g., watercourse, wetland, or sensitive buffer areas) as outlined in **Section 4.0 (Environmentally Sensitive Areas)**;

3. Where practical, merchantable timber will be salvaged by the Contractor and non-merchantable material and brush will be shredded. A mechanical harvester(s) and rubber tired skidder(s) may be used to remove the timber and transport it to pre-approved stockpile areas where it will be loaded onto grappler equipped timber transport trucks;
4. Vegetation will be removed from Area C and portions of Area B of the quarry to minimize the potential for nesting birds to occupy areas near the planned quarry development activities in 2020. However, disturbance or grubbing of the root mat will be deferred until at least the spring of 2020 to mitigate the potential for soil erosion;
5. Clearing will consist of cutting as close to the ground as possible, with stump heights not exceeding 15 cm, and disposing of all standing trees, as well as removing all shrubs, debris and other perishable materials from the area;
6. All other trees, brush and grubblings will be hauled to an approved disposal area (e.g., storage or lay down areas) identified on-site and will occur outside the 30 m buffer of watercourse and regulated wetlands;
7. Clearing activities will adhere to applicable regulatory requirements and will only be done on an as required basis (i.e., unnecessary tree removal or vegetation removal will not occur);
8. **Clearing and grubbing activities within 30 metres of any watercourse and regulated wetlands and any flagged sensitive areas as outlined in Section 4.0 (Environmentally Sensitive Areas) will not occur during Phase 1 – Preliminary Site Preparation.** Hammond River Holdings will obtain the necessary permits and authorizations to enable these activities to be carried out in later phases;
9. Proper ESC measures will be implemented to reduce and control runoff of sediment-laden water as outlined in **Section 3.2 (Erosion and Sediment Control)**;
10. Burning of waste brush/slash material or grubblings will not be permitted unless otherwise approved by the Project Manager and the New Brunswick Department of Energy and Resource Development (NBDERD) through the issuance of a burning permit;
11. Topsoil will be segregated and stockpiled or windrowed on the storage pads separately for reuse during reclamation;
12. Clearing and vegetation removal activities will be scheduled to the extent possible outside of the normal breeding bird and migratory bird season (April 1 to August 31). At a minimum, if complete avoidance of these activities during the specified timeframe is not feasible, nest searches will be undertaken by an experienced biologist and avoidance setbacks will be established around active nests. Nest searches will only be completed following consultation with Environment and Climate Change Canada (ECCC). Additional provisions related to bird species at risk are provided in **Section 4.2**;
13. Workers will adhere to the *Migratory Birds Convention Act*, 1994 and the *Migratory Birds Regulations* as outlined in **Section 4.2 (Wildlife, Migratory Birds, and Species at Risk)**;

14. In the event that a nest is recovered, all work will stop and the Project Manager will consult with the Environmental Monitor for further protective measures as outlined in **Section 4.2 (Wildlife, Migratory Birds, and Species at Risk)**;
15. During grubbing activities, the organic vegetation mat and upper soil horizon material that has been grubbed will be spread in a manner so as to cover inactive exposed areas. Any surplus of such material will be stored or stockpiled for future site restoration or revegetation purposes;
16. If grubbed material will be buried, a minimum of 30 cm of overburden cover will be used to prevent erosion and loss of nutrients;
17. Debris landing on public roadways may create a safety concern to traffic. Excessive debris on the road (chunks of tree stems, tree tops, etc.) must be removed as the cutting progresses;
18. Levelling of the areas using mobile equipment such as excavators, front end loader, bulldozer, and articulated dump trucks shall be completed in accordance with **Section 3.3 (General Equipment Use, Refueling and Trucking Operations)**;
19. Any debris/excavated material generated by the project shall be stored or disposed such that it cannot re-enter a watercourse;
20. Contouring and shaping of the levelled areas will be conducted to maintain stable slopes and facilitate proper drainage to the drainage channels and settling pond;
21. Snow plowing and snow removal operations will be conducted so as to not interfere with operations on site or the collection and conveyance of surface water/snow melt. No stockpiling of snow from snow plowing/removal operations shall occur within any ditch, drainage channel, or retention (settling) ponds;
22. Should discovery of historic, traditionally or culturally significant or human remains be unearthed during the construction activities, work will cease immediately in the area as outlined in **Section 5.0 (Emergency Response and Contingency Measures)**. The Project Manager will immediately contact the Archaeological Services Branch of the New Brunswick Department of Tourism, Heritage and Culture (Brent Suttie at 506.453.3014), as applicable, to notify them of the discovery and establish a mitigation plan; and
23. Refer to applicable protective measures from:
 - a. Section 3.2 (Erosion and Sediment Control Measures);
 - b. Section 3.3 (General Equipment Use, Refueling, and Trucking Operations);
 - c. Section 3.4 (Noise Control);
 - d. Section 3.5 (Dust and Other Emissions Control);
 - e. Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods);
 - f. Section 4.0 (Environmentally Sensitive Areas); and
 - g. Section 5.0 (Emergency Response and Contingency Measures).

Dewatering of Excavations

The following requirements shall apply for excavation dewatering activities:

1. Collection ditches/drainage channels and settling (retention) ponds will be used to manage surface runoff and any groundwater flows as outlined in **Appendix E (Water Management Plan (WMP))**;
2. Water from excavations (including from unmapped wetlands on-site that require alteration for the Project components to be constructed) will be directed toward the settling (retention) ponds such that:
 - The total suspended solids (TSS) concentration of construction-altered water that is released into a natural waterbody shall not exceed 25 milligrams per litre above background levels as a monthly average of grab samples; and
 - The combined settling capacity and retention capacity of the settling (retention ponds) shall be at least 570 m³/ha of disturbed area. The outlet culvert will be set at an elevation to maintain 190 m³/ha of disturbed area.
3. Proper erosion and sediment control measures will be implemented where necessary to reduce and control runoff of sediment-laden water as outlined in **Section 3.2 (Erosion and Sediment Control Measures)**;
4. Dewatering and mass excavation activities will be temporarily suspended during periods of heavy rain (i.e., forecasted to be greater than 50 mm of rain equivalent per 24 hour period);
5. Settling (retention) ponds will be inspected prior to and following heavy rain events;
6. The condition of the NBDTI culvert under Highway 111 in the receiving watercourse will be inspected prior to and following heavy rain events; and
7. Refer to applicable protective measures from:
 - a. Section 3.2 (Erosion and Sediment Control Measures);
 - b. Section 3.3 (General Equipment Use, Refueling, and Trucking Operations);
 - c. Section 3.4 (Noise Control);
 - d. Section 3.5 (Dust and Other Emissions Control);
 - e. Section 3.11 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods);
 - f. Section 4.0 (Environmentally Sensitive Areas); and
 - g. Section 5.0 (Emergency Response and Contingency Measures).

Laydown and Storage Areas

The following requirements shall apply for siting and use of laydown and storage areas, including clearing and grubbing material to be used for future site reclamation:

1. Laydown areas will be sited as necessary within the boundary of the PDA. When siting, natural opening and landing will be used where possible and will not be piled into standing forest timber areas;
2. Overburden piles will be secured and covered as appropriately and sloped to prevent pooling of surface water;
3. The stored overburden will be used for future site restoration and closure of the quarry site;
4. Laydown areas will not be sited within 30 m of a surface water body as outlined in **Section 4.1 (Surface Water (Watercourses and Wetlands))** without a WAWA permit; and
5. Refer to applicable protective measures from:
 - a. Appendix E (Water Management Plan (WMP));
 - b. Section 3.2 (Erosion and Sediment Control Measures);
 - c. Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods);
 - d. Section 4.0 (Environmentally Sensitive Areas); and
 - e. Section 5.0 (Emergency Response and Contingency Measures).

3.7 Access Roads and Culvert Crossings

Site access roads connecting the various areas of the Project will be developed and/or upgraded as necessary to meet the Project needs. The current Project concept avoids crossing watercourses and there are no regulated wetlands within the footprint of the Preliminary Site Preparation activities that will be undertaken during Phase 1 of the Project.

Overburden and gravel from other earth moving activities on the Project site will be used for road development, supplemented as necessary by gravel and crushed rock sourced from approved local approved borrow pits. The end of the access road will be flared to a suitable radius to facilitate truck turning movements.

Environmental concerns associated with the access road construction and maintenance as well as from culvert crossing installation on the surrounding environment include impacts to air quality, terrestrial environment, and aquatic environment including through emissions, noise, accidental spills, leaks, as well as direct physical impacts to fish, wildlife, SAR, and their habitats. The following sections provide protective measures outlined for activities associated with Access Roads and Culvert Crossings to minimize these impacts.

Road Construction, Maintenance, and Decommissioning

Road construction including surface preparation, graveling, grading and ditching activities in support of the Project phases will consider the following measures:

1. The Contractor shall ensure adequate signage is displayed to warn traffic and people in the area that work is being undertaken;
2. Buffer zones of wetlands and watercourses shall be flagged prior to any disturbance activities as outlined in **Section 4.1 (Surface Water (Watercourses and Wetlands))**;
3. All stockpiled materials will be kept at a minimum of 30 m away from a watercourse or regulated wetland;
4. If rutting or ground disturbance occurs, the ground shall be immediately stabilized;
5. Work shall not be undertaken on easily erodible materials during or immediately following heavy rainfalls without erosion and sedimentation control measures in place;
6. Road ditching will be conducted in areas where no ditch currently exists, the ditch has become obstructed, or there is a ditch water drainage problem. Refer to **Appendix E (Water Management Plan (WMP))** and **Section 4.1 (Surface Water (Watercourses and Wetlands))**;
7. Water diversion ditches are to be constructed to divert water off roadways and into undisturbed areas on either side of the roadway, where necessary and in a manner that does not cause erosion;
8. Gravel and/or crushed rock will be hauled from a local borrow pit to the site by trucks and dumped on the required locations;
9. Gravel and/or crushed rock will be spread by a dozer to meet the designed road surface depth;
10. Road grading will be completed to remove ruts and potholes, and prevent water from pooling on road surfaces;
11. Grading should only be completed when deemed necessary and not during periods of heavy precipitation, since grading loosens road surface materials, increasing the likelihood of erosion;
12. ESC measures shall be applied in areas where soils are considered highly erodible and in accordance with **Section 3.2 (Erosion and Sediment Control Measures)**; and
13. Refer to applicable protective measures from:
 - a. Appendix E (Water Management Plan (WMP));
 - b. Section 3.2 (Erosion and Sediment Control Measures);
 - c. Section 3.3 (General Equipment Use, Refueling, and Trucking Operations);
 - d. Section 3.4 (Noise Control);
 - e. Section 3.5 (Dust and Other Emissions Control);
 - f. Section 3.6 (Clearing, Dewatering, Grubbing, and Laydown/Storage Areas);
 - g. Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods);
 - h. Section 4.0 (Environmentally Sensitive Areas); and
 - i. Section 5.0 (Emergency Response and Contingency Measures).

Cross Culvert Installations

No work is being completed within 30 m of a mapped watercourse or regulated wetland during this Phase 1 – Preliminary Site Preparation. However, cross culverts are required on-site, outside of watercourse or regulated wetland buffers, to convey storm water across the access road and into site drainage channels. The following protective measures shall apply for siting, installation, and maintenance of cross culverts under the access road:

1. Culvert installation will not be completed during extreme rain events;
2. Cross culverts will be installed “in the dry”;
3. The contractor will be responsible for preparing a temporary water control plan (TWCP) for the installation of each watercourse and wetland crossing and submitted as part of the WAWA permit application, as outlined in **Section 4.1 (Surface Water (Watercourses and Wetlands))**;
4. ESC measures shall be applied as outlined in **Section 3.2 (Erosion and Sediment Control Measures)** to protect downgradient mapped watercourses;
5. Filter fabric will be placed over the slopes at each end of the culvert. Riprap is then placed on the slopes around the culvert inlet and outlet;
6. All construction machinery shall be cleaned of mud and vegetation prior to entering and leaving wetlands within work areas to minimize the spread of invasive plant species; and
7. Implement applicable protective measures from:
 - a. Appendix E (Water Management Plan (WMP));
 - b. Section 3.2 (Erosion and Sediment Control Measures);
 - c. Section 3.3 (General Equipment Use, Refueling, and Trucking Operations);
 - d. Section 3.4 (Noise Control);
 - e. Section 3.5 (Dust and Other Emissions Control);
 - f. Section 3.6 (Clearing, Dewatering, Grubbing, and Laydown/Storage Areas);
 - g. Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods);
 - h. Section 4.0 (Environmentally Sensitive Areas); and
 - i. Section 5.0 (Emergency Response and Contingency Measures).

3.8 Ancillary Facilities

Throughout the project phases, there will be no permanent buildings, permanent fuel storage, or designated equipment maintenance on site. Only portable trailer, office, portable washrooms, temporary truck scale, and security gate will comprise the ancillary facilities on site.

Environmental concerns associated with the installation of temporary ancillary facilities include potential disturbance to the terrestrial and aquatic environment as well as wildlife due to human

presence, noise, accidental spills, and improper storage of domestic waste and hazardous materials. The following sections provide protective measures outlined for the use of ancillary facilities.

1. Emergency back-up power (e.g., solar panels, generator), as necessary, will be maintained on site to manage temporary power outages;
2. Mobile storage units located and/or transported to site shall be properly maintained and inspected to meet provincial and federal regulations;
3. While being transported, mobile storage facilities containing any hazardous substances must be signed with the appropriate placards as per the requirements **Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods)**. Signs must be weather proof and clearly visible;
4. Safety Data Sheets (SDS) for all chemicals and hazardous materials shall be clearly posted and readily available to users as outlined in **Section 3.9 (Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods)**;
5. Lighting will follow the ECCC guidance as outlined in **Section 4.2 (Wildlife, Migratory Birds, and Species at Risk)** to minimize night time distraction of birds and bats;
6. Domestic sewage from portable toilets and domestic waste will be disposed by a licensed waste removal service;
7. All solid waste materials (domestic and construction) shall be identified for re-use or recycling prior to disposal;
8. Waste receptacles maintained on-site shall be confined and secured, so as not to pose a risk to the environment or attract wildlife as outlined in **Section 4.2 (Wildlife, Migratory Birds, and Species at Risk)**;
9. Burning of construction debris waste will not be permitted unless approvals have been obtained from the Project Manager and NBDERD under an authorized burning permit;
10. Domestic or hazardous waste will not be burned on-site; and
11. Implement applicable protective measures from:
 - a. Section 3.2 (Erosion and Sediment Control Measures);
 - b. Section 3.3 (General Equipment Use, Refueling, and Trucking Operations);
 - c. Section 3.4 (Noise Control);
 - d. Section 3.5 (Dust and Other Emissions Control);
 - e. Section 3.9 (Storage, Handling and Transportation of Petroleum Products and Other Dangerous Goods);
 - f. Section 4.0 (Environmentally Sensitive Areas); and
 - g. Section 5.0 (Emergency Response and Contingency Measures).

3.9 Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods

Minor amounts of petroleum, oils, and lubricants (POLs) will be required for various activities associated with the Project. Fuel storage for mobile civil construction equipment (e.g., excavators, loaders, trucks etc.) will not occur on-site during the preliminary site preparation activities. Small amounts of fuel may be required for pumps, lighting plants, and small portable generators (< 20,000 W). The proper storage and handling of petroleum products and hazardous materials during the Project phases is important to limit the potential for accidental spills and leaks. Measures must be taken to prepare personnel for potential emergency situations and to reduce the possibility of incidents during storage and transportation.

Typical hazardous substances that may be used on-site during construction include, but are not necessarily limited to:

- petroleum, oil, and lubricants (POLs);
- chlorinated and non-chlorinated solvents (e.g., cleaner-degreasers);
- waste petroleum products (e.g., used engine oil);
- flammable gases (e.g., acetylene);
- corrosives (e.g., battery acid); and/or
- glycol (e.g., antifreeze).

This section outlines the requirements for safe and responsible storage and transportation of petroleum products and other hazardous materials temporarily stored on the Upham East Gypsum Quarry site and are intended for use by Hammond River Holdings personnel, Contractors and other civilian personnel that are involved with the transportation, storage, supervision, and monitoring of these products.

Environmental concerns associated with the handling and storage of POLs and hazardous materials on the surrounding environment includes impacts to air quality, terrestrial environment, and aquatic environment through potential uncontrolled release to the environment through leaks and spills and having direct physical impacts to fish, wildlife, SAR, and their habitats. The following sections provide protective measures outlined for activities associated with Storage, Handling, and Transportation of Petroleum Products and Other Dangerous Goods to minimize these impacts.

1. The transport of petroleum products will follow the *Transportation of Dangerous Goods Act* and any other applicable regulations;
2. The Contractor will inform the Project Manager of all movements of POLs and chemical products prior to commencement of transportation;
3. The Contractor shall adhere to all legislation regarding the storage of petroleum products and other dangerous goods;

4. The Contractor will store POL and chemical products in their original CSA approved containers with seals intact as supplied by the manufacturer until required for use. Pour spouts and/or funnels shall be used when refueling;
5. Mobile storage units will have adequate ventilation to prevent the accumulation of toxic and/or flammable vapours;
6. Chemical labels must be kept intact and legible as per WHMIS requirements;
7. Containers or packages that have been opened shall be closed or repackaged in a manner that controls spillage, odours, and vapours;
8. All POL products shall be protected from unauthorized access and use;
9. POL and chemical products must be stored in such a way that human health and safety is not compromised and in such a manner that they will not come into contact with food or drink intended for human or animal consumption;
10. The work site is required to have a POL spill cleanup kit. Either a single kit or a combination of smaller kits must be available to contain/cleanup varying spills;
11. Absorbent materials used for spill cleanup and all contaminated soil will be removed from the PDA and properly disposed at an approved waste treatment facility;
12. Mobile storage units located and/or transported to site shall be properly maintained and inspected to meet provincial and federal regulations. The following minimum setbacks will apply to the placement of mobile storage units:
 - a. 100 m from a mapped watercourse or regulated wetland;
 - b. 100 m from a potable water supply;
 - c. 30 m from an unmapped channel, drainage feature, or unmapped wetland; and
 - d. 100 m from the settling (retention) ponds.
13. Safety Data Sheets (SDS) for all hazardous materials shall be clearly posted and readily available to users;
14. Petroleum or hazardous material containers are to be constructed of a material with strength for reduced risk of puncture or some other method of breakage. These containers must be secured to the mobile storage facility in a manner such that they will not move freely while in transport. If there is any indication that spillage or leakage is evident in/on the mobile storage unit, a secondary containment will be required;
15. Mobile storage units will have adequate ventilation to prevent the accumulation of toxic and/or flammable vapours;
16. Contents of mobile storage units must be protected from rain, wind and other weather hazards to ensure integrity of the product, packaging and the label;

17. In the event of an accidental releases of hazardous substances into the environment all reasonable measures consistent with protection of the environment and public safety shall be implemented as outlined in **Section 5.1 (Hazardous Material and Fuel Spills)**; and
18. Implement applicable protective measures from:
 - a. Section 3.3 (General Equipment Use, Refueling, and Trucking Operations);
 - b. Section 4.0 (Environmentally Sensitive Areas); and
 - c. Section 5.0 (Emergency Response and Contingency Measures).

4.0

Environmentally Sensitive Areas

This section outlines the environmentally sensitive areas within the PDA and the mitigation and environmental protection measures that will be applied to minimize potential impacts during the construction of the Project. Although this initial EPP for Construction authorizes only certain activities to take place and prohibits any alteration within 30 m of a watercourse or regulated wetland, the sensitive environmental features of the PDA are discussed nonetheless for general awareness and for planning purposes. Future revisions of this EPP for Construction will be made to address future phases and later authorized activities (e.g., alteration of watercourses, regulated wetlands, and their 30 m buffers), and specific environmental protection measures intended to apply to them will be described.

The specific environmentally sensitive areas or Valued Components (VCs) identified in the EIA registration and the specific mitigation measures discussed in the following subsections are focused on the following:

- Surface Water (Watercourses and Wetlands) (Section 4.1);
- Wildlife, Migratory Birds, and Species at Risk (Section 4.2); and
- Heritage and Cultural Resources (Section 4.3).

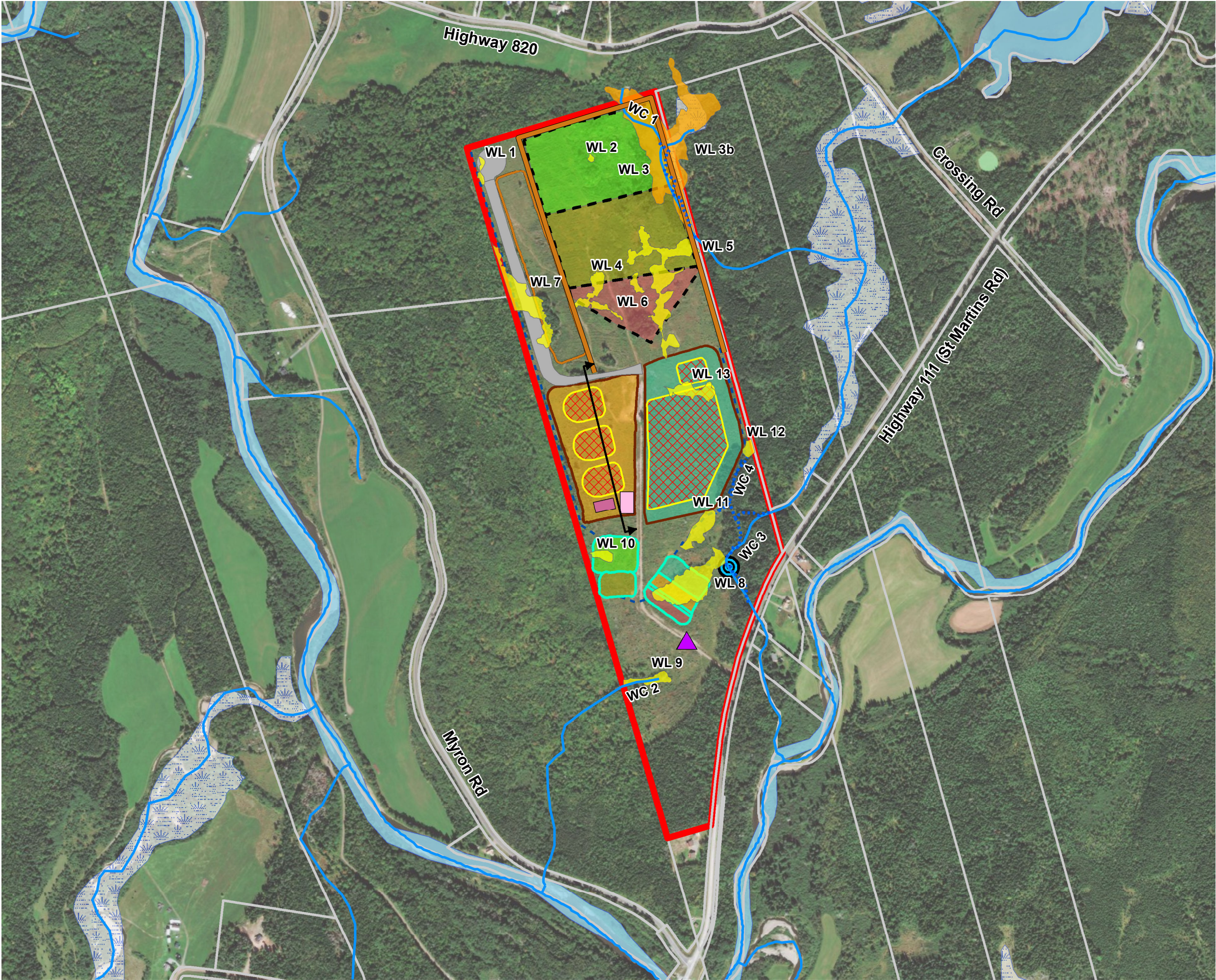
Refer to **Figure 4** for specific environmental sensitive areas identified for the PDA and the surrounding environment. For full details on all identified VCs, please see the EIA registration document (Dillon 2018).

4.1

Surface Water (Watercourses and Wetlands)

The Project is located in Kings County in southeastern New Brunswick within the Hammond River watershed, which drains into the Kennebecasis and Saint John Rivers (Bradford et al. 2015). The Hammond River watershed drains an area of 513 km² where forestry and agriculture are the predominant land uses (NBDOE 2007). The mapped watercourses (as mapped on the GeoNB website) that intersect with the PDA include the reaches of three small unnamed tributaries to the Hammond River, which are generally associated with wetland features on the Project site. The following information provides the details of the on-site surface water resources, including watercourses (and fish and fish habitat) and wetlands, protected under the *Watercourse and Wetland Alteration Regulation* (WAWA regulation) of the *Clean Water Act* or potentially influenced unmapped watercourses or wetlands identified as part of the EIA potentially affected by the Project phases.

The Project will result in a change in both surface water and groundwater flow across the Project site as the development of the open pit progresses (construction and operation phases) within 30 m of identified watercourses (WC1 and WC3) and a regulated (mapped) wetland (WL3) as well as the direct loss of field identified (unmapped) wetlands (construction phase), as depicted on **Figure 4**.



HAMMOND RIVER HOLDINGS LIMITED
PROPOSED UPHAM EAST GYPSUM QUARRY

**ENVIRONMENTALLY SENSITIVE AREAS
OF THE PDA**
FIGURE 4

- PROPERTY BOUNDARY
 - PROPERTY DEVELOPMENT AREA
 - WATERBODY
 - WATERCOURSE
 - 2019 FIELD DELINEATED WETLANDS (REGULATED)
 - 2018 FIELD DELINEATED WETLANDS (UNREGULATED)
 - REGULATED WETLAND
- PROPOSED SITE FEATURES**
- DITCH
 - TRUCK SCALE (OPTIONAL)
 - SITE AREA
 - DISCHARGE POINT
 - SECURITY GATE
 - PORTABLE TRAILER/OFFICE
 - STOCKPILE
 - ACCESS ROAD
 - STORAGE PAD
 - RETENTION POND
 - CROSS SECTION
 - QUARRY BERM CONSTRUCTED FROM TOPSOIL AND OVERBURDEN (OFFSET MINIMUM 7m FROM PROPERTY BOUNDARY)
 - HATCHING INDICATES MATERIAL STOCKPILE AREA ON TOP OF STORAGE PAD

0 50 100 200 m SCALE 1:8,500

MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING LIMITED.
SERVICE LAYER CREDITS: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISS TOPO, OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
MAP CREATED BY: BQS
MAP REVISED BY: GM
MAP CHECKED BY: DM
MAP PROJECTION: NAD_1983_CSRS_New_Brunswick_Stereographic

FILE LOCATION: \\DILLON.CA\\DILLON_DFS\\FREDERICTON\\FREDERICTON CAD\\CAD\\GIS\\188346 UPHAM GYPSUM QUARRY\\MXD



PROJECT: 18-8346
STATUS: DRAFT
DATE: 2019-10-04

The construction of the open pit and associated Project phases will occur within 30 m of a mapped watercourse or regulated wetland, therefore a WAWA permit under the *Clean Water Act* and a Wetland Compensation Plan for the loss of regulated (mapped) wetlands will be required prior to stripping overburden or quarrying gypsum within 30m of WL3 or WC1. . Potential impacts relating to water resources include changes to surface water drainage patterns, flow, quality, and/or quantity, as well as potential changes to turbidity levels.

4.1.1 Watercourses (including Fish and Fish Habitat)

Under the *Clean Water Act*, a watercourse is defined as “the full width and length, including the bed, banks, sides and shoreline, or any part, of a river, creek, stream, spring, brook, lake, pond, reservoir, canal, ditch or other natural or artificial channel open to the atmosphere, the primary function of which is the conveyance or containment of water whether the flow be continuous or not”.

With respect to regulating the alteration of watercourses in the province, this definition and the criteria outlined below applies to the administration of the WAWA Regulation (NBDELG 2018):




“Watercourses in New Brunswick are defined as: A feature in which the primary function is the conveyance or containment of water, which includes: a) the bed, banks and sides of any watercourse that is depicted on the New Brunswick Hydrographic Network layer (available on GeoNB Map Viewer); b) the bed, banks and sides of any incised channel greater than 0.5 metres in width that displays a rock or soil (mineral or organic) bed, that is not depicted on New Brunswick Hydrographic Network layer (available on GeoNB Map Viewer); water/flow does not have to be continuous and may be absent during any time of year; or c) a natural or man-made basin (i.e. lakes and ponds).”


The on-site watercourses identified within the PDA and within the boundaries of the Project phases comprise of four watercourses that meet the definition under the *Clean Water Act* are identified on **Figure 4** as well as two small drainage connections, as follows:

- Three mapped watercourses: (WC1, WC2, and WC3);
- One unmapped watercourse (WC4); and
- Two small drainage connections between WL4 and WL5 (refer to **Section 4.1.2 Wetlands**).

A summary of these watercourses is presented in **Table 2** below.

Table 2: Summary of Watercourse Characteristics (Dillon 2018)

Watercourse ID	Representative Photo	Average Stream Dimensions (m)	Dominant Aquatic Habitat Type and Other Observations
WC1 – Unnamed (Mapped) Tributary to Hammond River		Wet Width: 1.44 m Bankfull Width: 2.7 m Average Depth: 0.17 m	Fish Habitat Suitability: Small watercourse with good run/pool (fish) habitat associated with WL3. Fish were observed during the field survey. Dominant Substrate: 10% Cobble, 60% Gravel, 20% Sand, 10% Silt
WC2 – No Defined Channel (though Mapped)		Wet Width: N/A Bankfull Width: N/A	Fish Habitat Suitability: Not fish habitat. Drainage area of field identified WL9 with no defined channel in the PDA.
WC3 – Unnamed (Mapped) Tributary to Hammond River		Wet Width: 1.8 m Bankfull Width: 2.96 m Average Depth(s): 0.13 m	Fish Habitat Suitability: A fish-bearing watercourse with run and pool habitats. Brook trout present. Drainage input from WL8, WL11, and WC4. Dominant Substrate: 65% Cobble, 25% Gravel, 10% Sand

Watercourse ID	Representative Photo	Average Stream Dimensions (m)	Dominant Aquatic Habitat Type and Other Observations
WC4 – Dry drainage channel (Unmapped)		Wet Width: 0.78 m Bankfull Width: 0.85 m Average Depth(s): N/A (dry at time of survey)	Fish Habitat Suitability: Intermittent stream/Wetland Drainage connected to WC3, WL11, and WL12. Not fish habitat (no fish observed at the time of survey). Dominant Substrate: 25% Cobble, 20% Gravel, 15% Sand, 40% Silt

Authorized Interaction with On-site Surface Water

The Project will interact with surface water and fish and fish habitat through the potential impacts within 30 m of a watercourse and direct loss from earth moving activities during later phases of construction. As part of Phase 1 of the construction phase (Preliminary Site Preparation), no alteration of on-site watercourses or regulated wetlands is authorized, as outlined in **Table 3**. Only activities relating to the two small drainage connections between WL4 and WL5 are authorized herein at this time.

Table 3: Summary of Authorized Watercourse Activities for the Upham East Gypsum Quarry Project

Watercourse Number	Authorized Activity Within 30 m of a Watercourse
Construction Phase	
WC1 (mapped watercourse)	<ul style="list-style-type: none"> No activity within the watercourse or within 30 m of the watercourse is authorized under this EPP for Construction (Phase 1 – Preliminary Site Preparation) until a WAWA permit (as applicable) and authorization under Section 35(2) of the <i>Fisheries Act</i> is obtained (future Phase 2 of construction, or operation phase).
WC2 (mapped watercourse, no defined channel)	<ul style="list-style-type: none"> No activity within the watercourse or within 30 m of the watercourse is authorized under this EPP for Construction (Phase 1 – Preliminary Site Preparation) until a WAWA permit (as applicable) and authorization under Section 35(2) of the <i>Fisheries Act</i> is obtained (future Phase 2 of construction, or operation phase).
WC3 (mapped watercourse)	<ul style="list-style-type: none"> No activity within the watercourse or within 30 m of the watercourse is authorized under this EPP for Construction (Phase 1 – Preliminary Site Preparation) until a WAWA permit (as applicable) and authorization under Section 35(2) of the <i>Fisheries Act</i> is obtained (future Phase 2 of construction, or operation phase).

Watercourse Number	Authorized Activity Within 30 m of a Watercourse
WC4 (unmapped/field-identified watercourse)	<ul style="list-style-type: none"> No activity within the watercourse or within 30 m of the watercourse is authorized under this EPP for Construction (Phase 1 – Preliminary Site Preparation) until a WAWA permit (as applicable) and authorization under Section 35(2) of the <i>Fisheries Act</i> is obtained (future Phase 2 of construction, or operation phase).
Two small drainage connections between WL4 and WL5	<ul style="list-style-type: none"> Working within 30 m – as authorized under the EIA.

A future revision of this EPP for Construction will provide direction as to what activities are permitted in watercourses, and under what conditions, following the receipt of the WAWA permit and authorization under Section 35(2) of the *Fisheries Act*.

Environmental Protection Measures

In addition to those protective measures outlined in **Section 3.0 (Environmental Protection Measures)**, the following mitigation measures will be implemented as necessary to minimize the effects of the Project on watercourses (including fish and fish habitat):

- 1. Under no circumstances will work be allowed to proceed in, or within 30 m of, a mapped watercourse during Phase 1 (Preliminary Site Preparation);**
- Activities outside the authorized approvals of the EIA and the Approval to Construct shall not be allowed without prior approval from the Project Manager and obtaining a WAWA permit under the *Clean Water Act*;
- The areas to be cleared for development will be surveyed and flagged prior to construction activities as outlined on **Figure 4**, to clearly mark the sensitive areas where construction activities will not be permitted;
- Efforts will be made to maintain as much mature vegetation along the edges of the site to the extent possible to maintain buffers, in particular, existing treed buffers surrounding watercourses and wetlands located on the southeastern and southwestern portions of the PDA will be maintained to the extent possible;
- Proper ESC measures shall be implemented as appropriate and as outlined in **Section 3.2 (Erosion and Sediment Control Measures)**;
- As outlined in the Water Management Plan (WMP) in **Appendix E**, during operation, the East Retention Pond (**Figure 4**) will be equipped with an outlet to discharge the site water to a downgradient watercourse (WC3). No other discharge points to other watercourses or wetlands will be allowed without prior authorization under the WAWA Regulation of the *Clean Water Act*;
- At the discharge point, release of surface water from the Project site will target a total suspended sediment (TSS) concentration of less than 25 mg/L above background levels of the

receiving watercourse and a pH of between 6.5 and 9.0, as a monthly average of grab samples; Surface water drainage will be designed to minimize changes in drainage patterns in the local area (please see the Water Management Plan in **Appendix E**); and

8. Implement applicable protective measures from:
 - a. Section 3.0 (Environmental Protection Measures); and
9. Section 5.0 (Emergency Response and Contingency Measures).

In addition to these measures, during later phases of construction, the following will apply (to be specified in a future revision of this EPP):

10. Work will not proceed in or within 30 m of a watercourse without the required WAWA permit and Section 35(2) of the *Fisheries Act* authorization (as applicable);
11. For working “in the dry” for culvert installation, a fish rescue program will be implemented prior to undertaking construction activities, and fish will be removed and relocated as per DFO guidance and consultation; and
12. Implement requirements and limitations for blasting as outlined in the DFO *Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters* (Wright and Hopky 1998).

4.1.2 Wetlands

Under the *Clean Water Act*, “wetland means land that (a) either periodically or permanently, has a water table at, near or above the land’s surface or that is saturated with water, and (b) sustains aquatic processes as indicated by the presence of hydric soils, hydrophytic vegetation and biological activities adapted to wet conditions”.

The on-site wetlands identified within the PDA and within the boundaries of the Project phases are comprised of:

- One mapped (GeoNB) (regulated) wetland (WL3), a portion of which appears on the Project site and the remainder is located on a neighbouring property to the east of the Project site; and
- Twelve unmapped wetlands (WL1, WL2, and WL4 to WL13).

A summary of these wetlands is presented in **Table 4** below.

Table 4: Summary of Wetland Findings (Dillon 2018)

Wetland Identifier	Wetland Type	Key Wetland Functions ¹	Delineated Area (ha)	Area (ha) of Wetland to be Potentially Affected by the Project activities
Wetland 1 (WL1)	Shrub Swamp	Water Storage and Delay, Sediment Retention and Stabilisation,	0.06	0.06

Wetland Identifier	Wetland Type	Key Wetland Functions ¹	Delineated Area (ha)	Area (ha) of Wetland to be Potentially Affected by the Project activities
(unregulated/unmapped wetland)		Aquatic Invertebrate Habitat		
Wetland 2 (WL2) (unregulated/unmapped wetland)	Vernal Pond	Water Storage and Delay, Sediment Retention and Stabilisation, Phosphorus Retention, Nitrate Removal and Retention, Amphibian and Turtle Habitat, Waterbird Feeding Habitat, Waterbird Nesting Habitat	0.02	0.02
Wetland 3 (WL3) (regulated/mapped wetland)	Fen/Wet Meadow complex	Organic Nutrient Export, Anadromous Fish Habitat, Resident Fish Habitat, Waterbird Feeding Habitat, Waterbird Nesting Habitat, Songbird, Raptor, and Mammal Habitat, Pollinator Habitat, Native Plant Habitat	1.8	1.8
Wetland 4 (WL4) (unregulated/unmapped wetland)	Bog	Water Storage and Delay, Sediment Retention and Stabilisation, Nitrate Removal and Retention, Songbird, Raptor, and Mammal Habitat, Pollinator Habitat	0.30	0.30
Wetland 5 (WL5) (unregulated/unmapped wetland)	Bog/Wet Meadow complex	Songbird, Raptor, and Mammal Habitat, Pollinator Habitat	1.09	1.09
Wetland 6 (WL6) (unregulated/unmapped wetland)	Bog	Water Storage and Delay, Sediment Retention and Stabilisation, Phosphorus Retention, Nitrate Removal and Retention, Carbon Sequestration, Organic Nutrient Export, Aquatic Invertebrate Habitat	0.07	0.07
Wetland 7 (WL7) (unregulated/unmapped wetland)	Shrub Swamp	Water Cooling, Organic Nutrient Export, Songbird, Raptor, and Mammal Habitat, Pollinator Habitat	0.68	0.68
Wetland 8 (WL8) (unregulated/unmapped wetland)	Treed Swamp	Organic Nutrient Export, Songbird, Raptor, and Mammal Habitat, Pollinator Habitat, Native Plant Habitat	0.93	0

Wetland Identifier	Wetland Type	Key Wetland Functions ¹	Delineated Area (ha)	Area (ha) of Wetland to be Potentially Affected by the Project activities
Wetland 9 (WL9) (unregulated/unmapped wetland)	Treed Swamp	Songbird, Raptor, and Mammal Habitat, Pollinator Habitat, Native Plant Habitat	0.19	0
Wetland 10 (WL10) (unregulated/unmapped wetland)	Shrub Swamp	Water Storage and Delay	0.10	0.10
Wetland 11 (WL11) (unregulated/unmapped wetland)	Shrub Swamp/ Wet Meadow complex	- ²	0.31	0.31
Wetland 12 (WL12) (unregulated/unmapped wetland)	Shrub Swamp	Organic Nutrient Export, Resident Fish Habitat, Songbird, Raptor, and Mammal Habitat, Pollinator Habitat	0.08	0.08
Wetland 13 (WL13) (unregulated/unmapped wetland)	Wet Meadow	- ²	0.27	0.27
Total Wetland Area			5.90	4.78

Notes:

1. Key wetland functions are those functions that scored as 'higher' during the WESP-AC.
2. The WESP-AC functional assessment for this wetland did not identify higher scoring functions. The functions for this wetland scored low and moderate.

Authorized Interaction with On-site Wetlands

The Project will interact with regulated (mapped) and unregulated (unmapped) wetlands through the direct loss through infilling and site construction activities during construction. The following interactions identified in **Table 5** below have been authorized as part of this EPP, with the implementation of the applicable mitigation measures and adherence with this EPP and conditions of approval in the Approval to Construct (provided in **Appendix C**).

Table 5: Summary of Authorized Wetland Activities for the Upham East Gypsum Quarry Project

Wetland Number	Authorized Activity Within 30 m of a Wetland
Construction Phase	
WL1 (unmapped/unregulated wetland)	<ul style="list-style-type: none"> • Working within 30 m of the wetland– as authorized under the EIA • Partial infilling for access road construction

Wetland Number	Authorized Activity Within 30 m of a Wetland
WL2 (unregulated/unmapped wetland)	<ul style="list-style-type: none"> Alteration of the wetland and its 30 m buffers to make way for the quarry area – as authorized under the EIA
WL3 (regulated/mapped wetland)	<ul style="list-style-type: none"> No activity within WL3 or within 30 m of WL3 is authorized under this EPP for Construction (Phase 1 – Preliminary Site Preparation) until a WAWA permit (if required) and authorization under Section 35(2) of the <i>Fisheries Act</i> are obtained (future phases of construction).
WL4 WL5 WL6 (unregulated/unmapped wetlands)	<ul style="list-style-type: none"> Alteration of the wetland and its 30 m buffers, including Infilling – as authorized under the EIA
WL7 (unregulated/unmapped wetland)	<ul style="list-style-type: none"> Alteration of the wetland and its 30 m buffers, including Infilling – as authorized under the EIA
WL8 (unregulated/unmapped wetland)	<ul style="list-style-type: none"> Working within 30 m of the wetland, but no activity within the wetland itself – as authorized under the EIA
WL9 (unregulated/unmapped wetland)	<ul style="list-style-type: none"> Working within 30 m of the wetland, but no activity within the wetland itself – as authorized under the EIA
WL10 (unregulated/unmapped wetland)	<ul style="list-style-type: none"> Alteration of the wetland and its 30 m buffers, including Infilling – as authorized under the EIA
WL11 (unregulated/unmapped wetland)	<ul style="list-style-type: none"> Alteration of the wetland and its 30 m buffers, including Infilling – as authorized under the EIA
WL12 (unregulated/unmapped wetland)	<ul style="list-style-type: none"> Alteration of the wetland and its 30 m buffers, including Infilling – as authorized under the EIA
WL13 (unregulated/unmapped wetland)	<ul style="list-style-type: none"> Alteration of the wetland and its 30 m buffers, including Infilling – as authorized under the EIA

Environmental Protection Measures

In addition to those protective measures outlined in **Section 3.0 (Environmental Protection Measures)**, the following mitigation measures will be implemented as necessary to minimize the effects of the Project on wetlands:

1. **Under no circumstances will work be allowed to proceed in, or within 30 m of, a regulated wetland during Phase 1 (Preliminary Site Preparation);**
2. All construction machinery shall be cleaned of mud and vegetation prior to entering and leaving all wetlands (whether regulated or not) within work areas, to minimize the spread of invasive plant species;
3. Efforts will be made to maintain as much mature vegetation along the edges of the site to the extent possible to maintain buffers, in particular, existing treed buffers surrounding watercourses and wetlands located on the southeastern and southwestern portions of the PDA will be maintained to the extent possible;
4. Plantings/seeding of native flowering herbaceous vegetation will be incorporated into the re-vegetation plans for the Project where possible; and
5. Implement applicable protective measures from:
 - a. Section 3.0 (Environmental Protection Measures); and
 - b. Section 5.0 (Emergency Response and Contingency Measures).

In addition to these measures, during later phases of construction, the following will apply (to be specified in a future revision of this EPP):

6. Regulated (mapped) wetlands that are directly affected as a result of the construction of the Project will be compensated for under the WAWA Regulation under the *Clean Water Act* and New Brunswick Wetlands Conservation Policy (NBDNRE-NBDELG 2002). For this Project, this is limited to the on-site portion of WL3, under the current wetland rules being administered by the NBDELG.

4.2 Wildlife, Migratory Birds, and Species at Risk

Potential impacts to wildlife and wildlife habitat, including migratory birds and their habitats as well as potential interaction with species at risk, during construction have been identified. These include the temporary displacement of birds and wildlife due to:

- clearing, grubbing, and excavation activities that reduce or remove the quantity and quality of habitat within the proposed project area;
- disruption of sensitive bird activity such as breeding and/or feeding due to the presence of humans and the operation of vehicles and construction equipment; and
- the attraction of scavenging wildlife and birds to the project area due to improper waste management.

With the exception of migratory birds, no species at risk were identified during the EIA registration and field assessments. However, awareness training will be provided to the Project personnel by the Environmental Monitor or an experienced biologist using the Nova Scotia illustration guide <http://www.speciesatrisk.ca/SARGuide/>. Awareness will be provided on the potential occurrence of

typical protected species at risk (under federal SARA and NB SARA) in New Brunswick and more specifically within the available habitat in the Project area.

Environmental Protection Measures

The following mitigation measures will be implemented to minimize potential impacts to wildlife, migratory birds, species at risk, and their habitat:

1. Construction crews and machinery are to use designated roadways and access-points to limit disturbance off the project footprint and minimize the interactions with wildlife and wildlife habitat;
2. Workers will adhere to the *Migratory Birds Convention Act, 1994* and the *Migratory Birds Regulations*;
3. Clearing and grubbing activities will be scheduled to the extent possible outside of the normal breeding bird and migratory bird season (April 1 to August 31). At a minimum, if complete avoidance of these activities during the specified timeframe is not feasible, nest searches will be undertaken by an experienced biologist and avoidance setbacks will be established around active nests. Nest searches will only be completed following consultation with ECCC;
4. If there is a delay between clearing and operational activities such that Project operations are initiated during the breeding season, nest surveys will be conducted by an experienced biologist for the purpose of determining the presence and activities of birds, such as the common nighthawk, which are known to target cleared areas for nesting purposes;
5. On-site workers will receive training and reference material that will help them identify species that could be attracted to habitats created by Project operations (e.g., common nighthawk and bank swallow);
6. If workers encounter birds that they suspect may be nesting within the Project area, a biologist will be contacted to determine whether nesting is occurring and to locate the nest. Additional information on procedure for discovery of active nests are provided on the ECCC website (see “Planning ahead to reduce risks to migratory bird nests”, Website: <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reducing-risk.html>);
7. For beneficial management practices regarding how to avoid the incidental take of migratory birds nests and eggs, please refer to the Avoidance Guidelines (Website: <http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&dn=AB36A082-1>). This information includes processes to follow should an active nest be found at any time of the year;
8. If a nest is found within Project area, all work in the area will be stopped immediately, and appropriate setbacks will be established around the nest in which humans activities will be restricted until the young fledge from the nest and leave the area;
9. Equipment and vehicles will yield the right-of-way to wildlife;

10. No attempt will be made by any worker to chase, catch, divert, follow or otherwise harass wildlife by vehicle or on foot;
11. Construction activities will be limited to daylight hours to minimize disruptions with bird/bat activity at night;
12. Directional lighting will be used on-site with a downward lateral focus to minimize light leaving the site;
13. Workers will be provided with awareness training of potential provincial and federal species at risk using the Nova Scotia guide with illustrations <http://www.speciesatrisk.ca/SARGuide/>;
14. If a suspected species at risk is encountered (e.g., monarch, common nighthawk, wood turtle or bank swallow), contact will be made to a Species at Risk Biologist at NBDERD at 506.453.5873 or by email or ECCC at 506.364.5044. Typical bird species at risk are shown in **Appendix F**;
15. To minimize attraction of scavenging wildlife and/or birds, all personnel will practice proper waste management control by properly disposing of garbage;
16. A bird species at risk monitoring protocol is provided in **Appendix F**;
17. Lighting will follow this ECCC guidance to minimize distraction of birds and bats:
 - a) The minimum amount of pilot warning and obstruction avoidance lighting should be used on tall structures. Warning lights should flash, and should completely turn off between flashes;
 - b) The fewest number of site-illuminating lights possible should be used in the project area. Only strobe lights should be used at night, at the lowest intensity and smallest number of flashes per minute allowable by Transport Canada;
 - c) Lighting for the safety of the employees should be shielded to shine down and only to where it is needed;
 - d) LED lights should be used instead of other types of lights where possible. LED light fixtures are less prone to light trespass (i.e. are better at directing light where it needs to be, and do not bleed light into the surrounding area), and this property reduces the incidence of migratory bird attraction;
 - e) Directional lighting will be used on site with a downward lateral focus to minimize light leaving the site; and
18. Implement applicable protective measures from:
 - a. Section 3.0 (Environmental Protection Measures); and
 - b. Section 5.0 (Emergency Response and Contingency Measures).

Additional Measures Specific to Bird Species at Risk

Supplemental biological field surveys conducted during the summer of 2019 indicated the presence of three bird species at risk (i.e., Canada Warbler, Common Nighthawk, and Olive-sided Flycatcher), and while their presence on site during those surveys does not necessarily mean that they will be present on site during construction, it elevates the potential that they might be encountered on-site during construction activities in the future. In order to comply with the provisions of the federal *Species at Risk Act* and New Brunswick *Species at Risk Act*, the following additional measures relating to bird species at risk shall be implemented, in addition to the above measures:

18. All site personnel shall consider the possible presence of bird species at risk, including their nests, while carrying out activities on-site. **Appendix F** of this EPP provides information and photographs of the bird species at risk that are most likely to be present in the general vicinity of the Project (including possibly on-site), to assist the Contractor in the identification of potential species at risk;
19. Personnel shall keep an eye out for any nesting birds, including nests in trees and vegetation as well as potential nests located on the ground (since some species like Common Nighthawk are ground-nesting species). **Any nests that are discovered on-site shall not be disturbed, tampered with, or destroyed;**
20. In the event that a bird species at risk listed in **Appendix F**, or their nests, are identified, the following measures will immediately be implemented:
 - a. All activities in the area of the bird or nest shall immediately cease, and a 50 m buffer zone surrounding it shall be implemented;
 - b. A qualified avian biologist shall be contacted to confirm the identity of the species and to provide further instruction;
 - c. Should the species in question be confirmed by the avian biologist as a species at risk, contact will be made to a Species at Risk Biologist at NBDERD at 506.453.5873 or by email or ECCC at 506.364.5044 to inform them of the findings and receive further direction regarding additional mitigation to be implemented;
 - d. If during the normal breeding bird season (i.e., April 1 to August 31), a qualified avian biologist will regularly monitor the ongoing presence of the species at risk in question until it can be confirmed that the bird has left the area or that the young have fledged;
 - e. No construction activity shall be permitted to take place within the 50 m buffer zone until NBDERD/ECCC authorizes such activity to resume or until it can be confirmed that the bird has left the area or that the young have fledged; and
 - f. For those species at risk for which a Recovery Strategy has been implemented by ECCC, the provisions of the Recovery Strategy shall be considered and specific additional measures to be implemented in accordance with the Recovery Strategy shall be identified by, and in consultation with, ECCC.

4.3

Heritage and Cultural Resources

Heritage resources (including historical, architectural, archaeological, palaeontological, or other cultural resources), both human-made and naturally occurring, are those resources related to the past that remain to inform present and future societies of that past. Heritage resources are highly delicate features of the environment and their integrity is susceptible to ground-disturbing activities. Any Project activity that includes surface or sub-surface ground disturbance has the potential for interaction with heritage resources, where they are present. Accordingly, earth moving activities represent the component of the Project with the greatest potential for interaction with heritage resources that might be contained in surface soils or rock.

Heritage resources in New Brunswick are protected under the *Heritage Conservation Act* as administered by the New Brunswick Department of Tourism, Heritage and Culture (NBDTHC), and are very important and highly valued by the people of New Brunswick. The *Heritage Conservation Act* clearly outlines the Province's ownership of all archaeological, palaeontological, and burial site heritage objects. Any such objects determined to be of Aboriginal origin are specifically 'held in trust' on behalf of First Nations people and their communities. The Act also protects provincially designated heritage places.

A preliminary archaeological impact assessment (AIA) at the Project site (i.e., background research and archaeological walkover) was completed in November 2018, and based on the assessment and predictive modeling provided by Archaeological Services Branch of the NBDTHC, the PDA is located within an area that is of lower archaeological potential with the exception of the Hammond River itself (which will not be directly affected by Project activities), as well as 80 m on either side of WC3 located in the southeast portion of the PDA. Elevated archaeological potential at WC3, totaling 80 m in width, extending back from the bank up to 50 m of WC3 was ascribed as higher potential for archaeological resources, while the following 30 m (between 51 m and 80 m) from WC3 were ascribed as moderate potential for archaeological resources. Refer to **Figure 5** below.

It was recommended that shovel testing be carried out within 80 m on either side of WC3 where Project activities might be carried out. A further AIA was conducted in August/September 2019, where a total of 25 test pits were excavated within 80 m of the west side of WC3 (i.e., where some Project-related activities may take place) to determine if archaeological resources may be present. No artifacts or cultural material were found in any of the test pits. Therefore, pending the submission of an AIA report to the Archaeological Services Branch and assuming their concurrence with the conclusions, the entire area surrounding the west side of WC3 is provisionally considered to be of low archaeological potential.

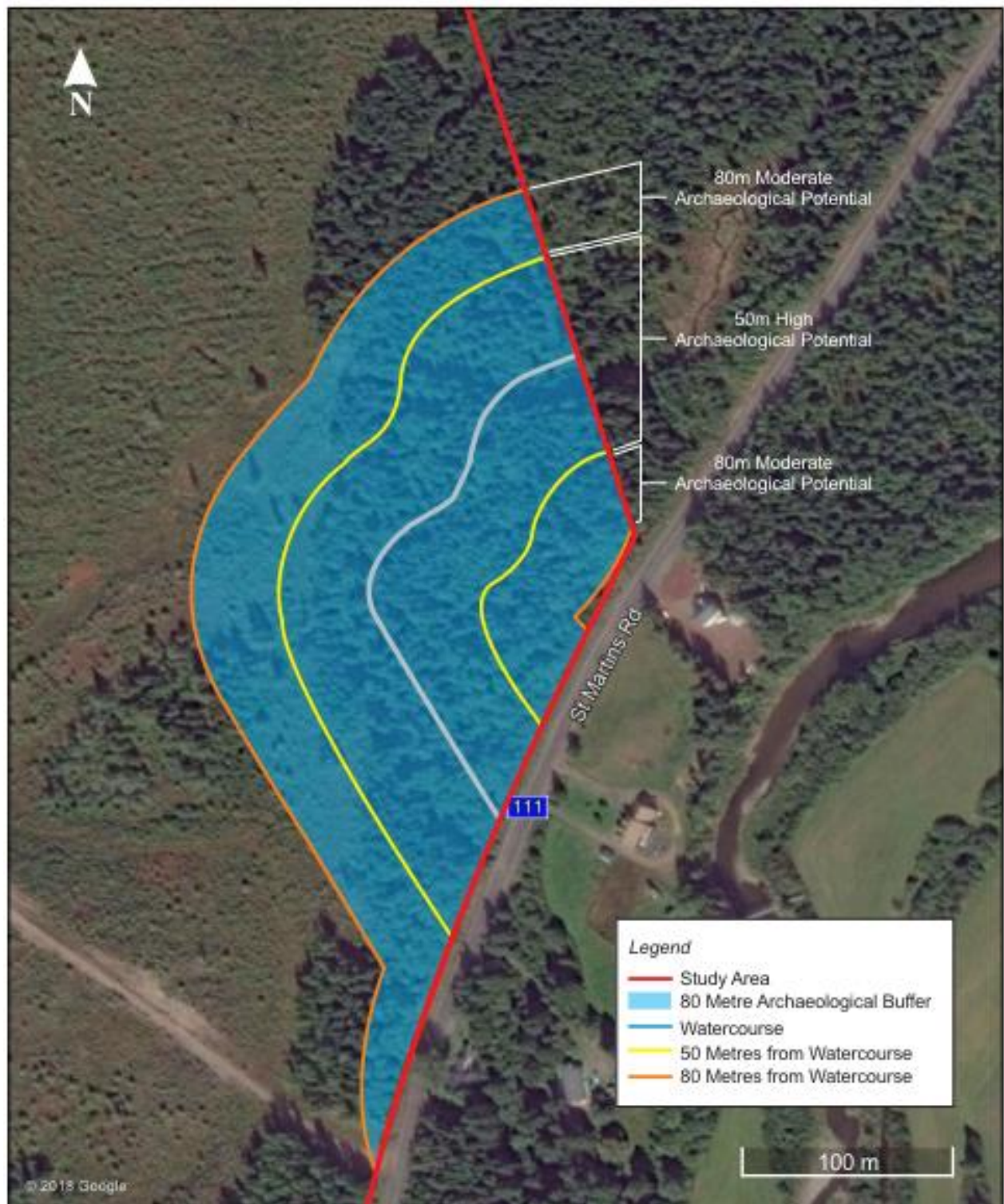
Similarly, information from the New Brunswick Museum determined that the PDA is of low potential to harbour palaeontological resources.

Environmental Protection Measures

During the construction phase of the project, while the Project site in its entirety is provisionally considered to be of low archaeological potential, ground breaking activities have the potential to encounter items of historical, archaeological, palaeontological, or cultural significance, should they be present. The following environmental protection measures will be implemented:

1. **No work will be carried out within 30 m of any watercourse or regulated wetland as part of this Phase 1 (Preliminary Site Preparation).**
2. If a potential heritage or traditional artifact is discovered, work will be immediately stopped, and the area will be marked to prevent further disturbance. Refer to **Section 5.4 (Discovery of Heritage or Traditional Resources)** for the appropriate emergency and contingency measures and reporting to applicable regulatory agencies. No additional work will be permitted in this area of the site until approval has been received from the appropriate regulatory agency to resume the work;
3. Ongoing engagement will be conducted with First Nations throughout the Project to exchange information, address concerns, and assist in the development of management and reclamation plans for the Project;
4. If bones or human remains are found, work in the area must cease, and the RCMP shall be immediately notified. Refer to **Section 5.4 (Discovery of Heritage or Traditional Resources)** for the appropriate emergency and contingency measures; and
5. If the discovered resources are related to Indigenous Aboriginal culture, the New Brunswick Department of Aboriginal Affairs will be contacted to determine how best to proceed with respect to repatriation of the resources. Refer to **Section 5.4 (Discovery of Heritage or Traditional Resources)** for the appropriate emergency and contingency measures.

Figure 5: Area of Elevated Archaeological Potential Within the PDA



5.0

Emergency Response and Contingency Measures

This section describes the contingency plans to address emergency, accident and unplanned situations for the construction of the Upham East project, and includes procedures which will be implemented in case of the following accidents, malfunctions, or unplanned events:

- Hazardous Material or Fuel Spill (Section 5.1);
- Forest Fire or Explosion (Section 5.2);
- Wildlife Encounter (Section 5.3);
- Discovery of Heritage or Traditional Resources (Section 5.4);
- Discovery of Human Remains (Section 5.5);
- Vehicle Accident (Section 5.6); and
- Erosion and Sediment Control Failure (Section 5.7).

5.1

Hazardous Material or Fuel Spill

The following is the proposed Spill Reporting Procedure for the project, subject to change upon conditions outlined in the Approval to Construct for Phase 1. The accidental release of a hazardous material or fuel during construction of the Project may contaminate air, soils and groundwater and, through runoff, contaminating watercourses. All Project personnel will be properly trained to manage their respective duties as they relate to handling hazardous materials and fuels.

A spill is defined as reportable, depending on the class and quantity of dangerous goods involved, which varies between applicable Regulations. While the NBDELG typically requires spills greater than 10 L to be reported, the *Fisheries Act* requires that all spills that drain to a fish bearing watercourse are to be reported, regardless of size. Therefore, to ensure compliance with the requirements of both levels of government, any spills of any size in ditches or on roadways or in any other place that drain to a fish bearing watercourse will be reported.

In the event of an accidental release of hazardous materials or fuel, the following procedures will be implemented:

1. Any spill of hazardous material or fuels greater than 10 L or that has the potential to drain to a fish bearing watercourse, shall be reported to the appropriate regulatory agencies. The spill will be reported immediately by the individual who discovers, discharges or has control of the source. They are required to take adequate action and report it to the Project Manager, who will immediately report the issue to the NBDELG or the Canadian Coast Guard (as applicable), followed by a written report within 24 hours of the event;

At minimum, the verbal notification is to be made as soon as possible under the circumstances to the following authorities:

NBDELG Saint John Regional office 506.658.2558

(between 08:15 and 16:30, Monday to Friday)

or

Canadian Coast Guard 24-hour telephone line or 800.565.1633

***Note: If spilled material is an immediate threat (fire, explosion, etc.) towards public safety, 911 is the first call that should be made.**

The written report shall be provided within 24 hours following the event, to the following:

Regional Director, Saint John Region

New Brunswick Department of Environment and Local Government

8 Castle Street, P.O. Box 5001, Saint John, NB, E2L 4Y9

Email: elg.egl-region4@gnb.ca

2. A monthly report will be compiled and submitted to NBDELG of all spills that occur under 10 L that do not have the potential to reach fish bearing watercourse;
3. All reasonable attempts to immediately control or stop the spill will be immediately conducted, if such attempts can be carried out safely without undue risks to personnel;
4. All reasonable attempts to clean up the spill using available spill kit materials will be conducted as soon as practical after the flow of spilled material becomes under control;
5. Any major spills of material that may occur on New Brunswick highways will be promptly cleaned up upon discovery and in accordance with safe work practices;
6. The spill occurrence will be documented on the Spill Report Form provided in **Appendix G**; and
7. The written report as outlined in **Appendix G** should be made to the relevant authorities within 24 hours or as soon as possible under the circumstances.

5.2 Forest Fire or Explosion

The annual provincial fire season typically runs from mid-April until the end of October and fires are considered an operational emergency. As such, fire suppression within the PDA will be a priority activity. In New Brunswick, NBDERD has personnel and equipment available to fight forest fires within the province; under extreme or unique circumstances they may require reinforcements from the local firefighting organization. The PDA is located in NBDERD's Region 3 with the closest district office located at 1045 Main Street in Hampton, New Brunswick.

In the event of a fire or explosion, the following measures shall be observed:

1. Notify workers in the immediate area (i.e., sounding a horn/fire alarm);
2. Call 911 and initiate appropriate emergency response procedures;
3. Provide the following facts:
 - a. Name of person reporting fire, on site contact;
 - b. Your name and telephone number;
 - c. The exact location (coordinates) and cause of the fire;
 - d. A description of what is burning;
 - e. The approximate size of the fire;
 - f. Rate of spread and direction the fire is heading;
 - g. Values at risk (i.e., human life, adjacent buildings, neighbouring properties);
 - h. Firefighting resources on site (i.e., personnel, firefighting kit, heavy equipment);
 - i. Action being taken (i.e., monitoring, or suppression); and
 - j. Information required to access the fire.
4. Secure the area to prevent injury to individuals;
5. Implement evacuation procedures (if required); and
6. Confine, control, and extinguish fires if safe to do so.

All unplanned fires or explosions occurring within the PDA will be considered an emergency. The prompt accurate reporting of fires is a user responsibility and all vehicles and heavy equipment on site will be equipped with suitable fire extinguishers. As part of the awareness training, all personnel working on site will be trained in the use of fire suppression equipment.

1. All personnel shall be responsible for carrying out any of the requirements under the *Forest Fires Act, 2015* and Regulations of New Brunswick, in particular, the requirements for fire-fighting tools;
2. The Contractor shall prepare and submit a Contingency Plan for the management of spills or fires and shall be submitted for approval to the Project Manager. The Contingency Fire Safety Plan must conform to the National Fire Code of Canada, and will contain, at minimum emergency procedures to be used in case of fire;
3. No open fire will be ignited for any purpose during the Forest Fire Season unless authorized to do so by the local NBDERD District Ranger Control Office and under the conditions of a burning permit;
4. Work entailing use of toxic or hazardous materials, chemicals and/or explosives, or otherwise creating hazard to life, safety of health, will be conducted in accordance with National Fire Code of Canada;

5. Clearing activities conducted during fire season may require a Work Permit issued by NBDERD under the *Forest Fires Act, 2015*. The Project Manager or their Designate will contact NBDERD's Region 3 to confirm any additional requirements prior to clearing vegetation;
6. Smoking is strictly forbidden at all times while working on-site; and
7. All vehicles and heavy equipment operating on-site shall be equipped with a suitable dry chemical fire extinguisher.

5.3 Wildlife Encounter

The potential for a wildlife encounter (including migratory birds) exists within the PDA due to the rural environment which could be a potential risk to both site personnel and wildlife. In the event that wildlife is encountered during the Project phases, the following measures will be followed:

1. Wildlife sightings or encounters shall be reported to the Project Manager who may inform the Environmental Monitor or other personnel, depending on the nature of the encounter. All actions in response to nuisance wildlife (i.e., beavers, chipmunks, coyotes, foxes, deer mice, house mice, pigeons, porcupines, raccoons, skunks, squirrels, starlings and groundhogs) as identified by NBDERD, shall be managed by a Nuisance Wildlife Control Operators. The list of approved Nuisance Wildlife Control Operators for NBDERD Region 3 is located at: https://www2.gnb.ca/content/gnb/en/departments/erd/natural_resources/content/wildlife/content/NuisanceWildlifeControlOperatorsByRegion/Region3.html;
2. If a nest or young birds are encountered, the contractor shall cease work in the immediate area of the nest and contact a qualified avian biologist or ECCC at 506.364.5044 for identification of appropriate buffer zones;
3. In the event of a wildlife encounter (e.g., bears, coyote, moose, etc.) that may pose a risk to human safety, the following measures will be employed:
 - a) Make noise by yelling or using noisemakers such as horns or bells to scare wildlife away;
 - b) Do not approach wildlife and maintain a minimum distance of 100 m back;
 - c) Stand your ground;
 - d) Do not play dead;
 - e) Do not feed;
 - f) Back slowly away;
 - g) If the animal is not deterred by the above measures, throw rocks or sticks towards (but not at) the animal; and
 - h) Seek shelter in a nearby vehicle or trailer.
4. Any incidents that result in the displacement or killing of wildlife shall be reported to the Project Manager or the Environmental Monitor, complete with details on the incident and contact information; and

5. If a SAR is encountered, the contractor will be instructed to immediately stop work and notify a qualified biologist familiar with identification of SAR and SAR critical habitat. Further guidance may be required from ECCC should a SAR species be encountered and will be at the discretion of the qualified biologist. Refer to **Section 4.2 (Wildlife, Migratory Birds, and Species at Risk)**.

5.4 Discovery of Heritage or Traditional Resources

In the event that artifacts or materials of archaeological, palaeontological, or historical significance are unearthed during excavation, work will immediately cease, and the Project Manager will be notified who will take action on the following procedures:

1. Stop all work in the immediate area and immediately contact the Archaeological Services Branch of the New Brunswick Department of Tourism, Heritage and Culture (Brent Suttie, 506.453.3014) to notify them of the discovery and establish a mitigation plan;
2. Until a qualified archaeologist arrives at the scene, no one shall disturb, move, or rebury any uncovered artifact;
3. Construction at the site in the immediate area may resume only when authorized by the qualified archaeologist and once mitigative measures have been completed;
4. In the event that palaeontological resources are encountered during construction or operation activities, the Geology and Palaeontology Section of the New Brunswick Museum will be contacted (506.651.2684);
5. If the discovered resources are related to Indigenous Aboriginal culture, the New Brunswick Department of Aboriginal Affairs will be contacted to determine how best to proceed with respect to repatriation of the resources.

5.5 Discovery of Human Remains

In the event that human remains are unearthed, work in the area will cease, the Project Manager will be notified who will take action on the following procedures:

1. If bones or human remains are found, work in the area must cease, and the RCMP shall be immediately notified as outlined;
2. Stop all work in the immediate areas and report to the local Police or Royal Canadian Mounted Police (RCMP) – **DIAL 911**;
3. No one shall disturb, move or rebury any uncovered human remains; and
4. If the discovered resources are related to Indigenous Aboriginal culture, the New Brunswick Department of Aboriginal Affairs will be contacted to determine how best to proceed with respect to repatriation of the resources.

5.6 Vehicle Accident

Any vehicle accident that occurs on provincial highways (outside of the Project site) shall be immediately be reported to the RCMP. In addition, follow-up notification shall be made to the Project Manager.

In the event that a vehicle accident occurs on-site, work in the area will cease, the Project Manager will be notified who will take action on the following procedures:

1. Immediately arrange for medical attention, call 911 if required, and perform first aid as required;
2. Notify the Project Manager (or designate) immediately when medical attention for serious/life threatening injuries has been provided. The Project Manager will notify his/her supervisor, other personnel, and governmental agencies as required;
3. The Project Manager will notify WorkSafe NB immediately, as required;
4. The Project Manager will carry out an investigation as to the cause of all vehicle accidents, and if possible, will eliminate or remove the procedure or equipment which caused the accident after approval from WorkSafe NB and, if required, the RCMP;
5. Following the investigation, appropriate mitigative measure will be determined and implemented to avoid future accidents; and
6. Repair or replace equipment as required.

5.7 Erosion and Sedimentation Control Failure

Sediment and erosion control measures will be implemented to prevent the deposition of sediment-laden water or other deleterious substances to the on-site watercourses and downstream aquatic habitats. The recommendations for erosion and sediment control outlined in the “New Brunswick Department of Environment and Local Government Watercourse and Wetland Alteration Technical Guidelines” (WAWATG; NBDELG 2012) will be used for reference.

In the event of an erosion and/or sediment control failure, the following measures will be implemented:

1. All work will be immediately stopped;
2. All available resources will be immediately focused on mitigating the erosion and/or sediment control structure failure(s) and repairing the ESC measures in an effort to minimize negative impacts; and
3. No further work is permitted to occur in the area until the sediment and/or erosion problem is addressed and resumption of operations is approved by the Project Manager.

6.0

Closing

This report was prepared by Dillon Consulting Limited (Dillon) on behalf of Hammond River Holdings Limited. Dillon has used the degree of care and skill ordinarily exercised under similar circumstances at the time the work was performed by reputable members of the environmental consulting profession practicing in Canada. Dillon assumes no responsibility for conditions which were beyond its scope of work. There is no warranty expressed or implied by Dillon. The information contained herein should not be construed as legal advice.

The material in the report reflects Dillon's best judgment in light of the information available to Dillon at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report has been prepared by a team of Dillon professionals on behalf of Hammond River Holdings Limited.

Respectfully submitted,

DILLON CONSULTING LIMITED



Denis L. Marquis, M.Sc.E., P.Eng.
Associate, Project Manager

References

AC CDC (Atlantic Canada Conservation Data Centre). 2018. DATA REPORT 6215: Upham East, NB. September 2018 Data Request.

Archaeological Services. 2012. Guidelines and Procedures for Conducting Professional Archaeological Assessments in New Brunswick. Archaeological Services Branch, New Brunswick Department of Tourism, Heritage and Culture, Fredericton, New Brunswick.

Armstrong, T. (E.R.). 2014. Management Plan for the Bald Eagle (*Haliaeetus leucocephalus*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.

Bradford, H., L. Robinson, and S. Doyle. 2015. Hammond River Watershed Management Plan. Hammond River Angling Association, Nauwigewauk, New Brunswick.

CCME (Canadian Council of Ministers of the Environment). 1999. Canadian water quality guidelines for the protection of aquatic life: Introduction. In: Canadian environmental quality guidelines, 1999. Canadian Council of Ministers of the Environment, Winnipeg, Manitoba.

CESCC (Canadian Endangered Species Conservation Council). 2016. *Wild Species 2015: The General Status of Species in Canada*. National general Status Working Group: 128 pp.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2007a. COSEWIC assessment and status report on the Chimney Swift *Chaetura pelagica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Available at http://www.sararegistry.gc.ca/virtual_sara/files/cosewic/sr_chaetura_pelagica_e.pdf.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2007b. COSEWIC assessment and status report on the Common Nighthawk *Chordeiles minor* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2007c. COSEWIC assessment and status report on the Olive-sided Flycatcher *Contopus cooperi* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp. Available at: https://www.sararegistry.gc.ca/document/default_e.cfm?documentID=1629. Accessed on October 5, 2018.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2008. COSEWIC assessment and status report on the Canada Warbler *Wilsonia Canadensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2010. COSEWIC assessment and status report on the Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 42 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2011. COSEWIC assessment and status report on the Barn Swallow *Hirundo rustica* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2012. COSEWIC assessment and status report on the Wood Thrush *Hylocichla mustelina* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp. Available at: http://www.registrelep-sararegistry.gc.ca/document/default_e.cfm?documentID=977. Accessed on October 5, 2018.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2013. COSEWIC assessment and status report on the Bank Swallow *Riparia riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

CRM (Cultural Resource Management (CRM) Group Ltd.). 2018. Upham East Gypsum Quarry Archaeological Impact Assessment 2018, Preliminary Investigation, Upham, New Brunswick.

Conquest (Conquest Engineering Ltd.). 2019. Hammond River Holdings Limited: Blast Control and Monitoring Plan, Proposed Upham East Gypsum Quarry, Upham, NB. Project No. 191048. July 18, 2019.

Dillon (Dillon Consulting Limited). 2018. Hammond River Holdings Limited, Environmental Impact Assessment (EIA) Registration, Proposed Upham East Gypsum Quarry Project, Upham, New Brunswick. Prepared for Hammond River Holdings Limited by Dillon Consulting Limited, Fredericton, New Brunswick. Project 18-8346. October 2018. 217 pp. + appendices. Available at: [https://www.hammondriverholdings.com/assets/Uploads/db4253c138/Upham-East - EIA Registration_Final_20181026.pdf](https://www.hammondriverholdings.com/assets/Uploads/db4253c138/Upham-East_-_EIA_Registration_Final_20181026.pdf).

Dillon (Dillon Consulting Limited). 2019. Upham East Gypsum Quarry - Water Management Plan. Prepared for Hammond River Holdings Limited by Dillon Consulting Limited, Fredericton, New Brunswick. Project 17-5121. May 14, 2019.

Environment Canada. 2007. Best Practices for the Use and Storage of Chloride-Based Dust Suppressants. February 2007. Available at: <http://www.ec.gc.ca/nopp/roadsalt/reports/chlorideBP/en/ChlorideBPe.pdf>

Environment Canada. 2014. Management Plan for the Monarch (*Danaus plexippus*) in Canada. *Species at Risk Act* Management Plan Series. Environment Canada, Ottawa. iv + 39 pp.

Environment Canada. 2016. Recovery strategy for the Wood Turtle (*Glyptemys insculpta*). *Species at Risk Recovery Strategy Series*. Environment Canada, Ottawa. v + 48 pp.

NBDELG (New Brunswick Department of Environment and Local Government). 2012. Watercourse and Wetland Alteration Technical Guidelines. Sustainable Development, Planning and Impact Evaluation

Branch. Available at: <http://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Water-Eau/WatercourseWetlandAlterationTechnicalGuidelines.pdf>.

NBDELG (New Brunswick Department of Environment and Local Government). 2014. Rock Quarry Siting Standards. Effective August 2012, Revised August 2014. Available online at: <https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Air-Lair/RockQuarrySitingStandards.pdf>. Accessed on October 15, 2018.

NBDELG (New Brunswick Department of Environment and Local Government). 2018a. A Guide to Environmental Impact Assessment in New Brunswick. Environmental Impact Assessment Branch, Fredericton, NB. Available at: <https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/EIA-EIE/GuideEnvironmentalImpactAssessment.pdf>.

NBDNRE-NBDELG (New Brunswick Department of Natural Resources and Energy and New Brunswick Department of Environment and Local Government). 2002. New Brunswick Wetlands Conservation Policy. Government of New Brunswick. Available online at <https://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Wetlands-TerreHumides/WetlandsTerresHumides.pdf>.

NBDOE (New Brunswick Department of Environment). 2007. New Brunswick Watersheds Fact Sheets: Hammond River. Available at: <https://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/water/content/watersheds.html>. Accessed October 4, 2018.

NBDOT (New Brunswick Department of Transportation). 2010. Environmental Management Manual, Fourth Edition. New Brunswick Department of Transportation, Fredericton, NB. January 2010. Available at: <https://www2.gnb.ca/content/dam/gnb/Departments/trans/pdf/en/RoadsHighways/EnvironmentalManagementManual.pdf>

Wright, D.G., and G.E. Hopky. 1998. Guidelines for the use of explosives in or near Canadian fisheries waters. Can. Tech. Rep. Fish. Aquat. Sci. 2107: iv + 34p.

Appendix A

Key Contacts and Contact Information

Key Project Contacts (subject to change and posted as a revision)

Contact Role	Name of Contact	Telephone Number	Email
Project Manager	Daniel Guest	506.633.3331 (Office) 506.650.0701 (Cell)	guest.daniel@atlanticwallboard.com
Environmental Monitor	TBD	TBD	TBD
Indigenous Monitor	TBD	TBD	TBD
Contractor	TBD	TBD	TBD
General Manager	Jenna Hazelton	506.633.3311 (Office) 506.343.4430 (Cell)	hazelton.jenna@atlanticwallboard.com

Emergency Contacts and Regulatory Agencies for Reporting

Emergency Contact	Contact	Telephone Number
Fire	Upham Volunteer Fire Department	Emergencies: 911 General inquiries: 506.832.2154
Police (RCMP)	RCMP Hampton Detachment	Emergencies: 911 General inquiries: 506.832.5566
Ambulance New Brunswick	South Region Operations Manager: Gwynn Boyé	911 506.650.2610
Species at Risk	Canadian Wildlife Service, Sackville	506.364.5044
New Brunswick Department of Environment and Local Government (NBDELG)	EIA Branch Authorizations Branch Regional Office (Region #4)	506.444.5382 506.453.7945 506.658.2558
New Brunswick Department of Energy and Resource Development (NBDERD)	Species at Risk (Biodiversity Section)	506.453.5873
New Brunswick Department of Tourism, Heritage, and Culture	Archaeological Services Branch	506.453.3014
New Brunswick Department of Tourism, Heritage, and Culture	Geology and Palaeontology Section of the New Brunswick Museum	506.651.2684
New Brunswick Department of Aboriginal Affairs	Aboriginal Affairs Secretariat	506.462.5177
Canadian Coast Guard (spill reporting)f	Environmental Emergencies (24-hours)	800.565.1633

Appendix B

Environmental Impact Assessment (EIA) Certificate of Determination – Conditions of Approval

CERTIFICATE OF DETERMINATION CERTIFICAT DE DÉCISION

NEW BRUNSWICK ENVIRONMENTAL IMPACT ASSESSMENT REGULATION RÈGLEMENT SUR LES ÉTUDES D'IMPACT SUR L' ENVIRONNEMENT DU NOUVEAU-BRUNSWICK

File Number/Numéro du dossier: 4561-3-1508

This Certificate of Determination to **PROCEED** is hereby issued to the following proponent:
Ce Certificat de décision pour **PROCÉDER** est accordé au promoteur suivant:

Hammond River Holdings Limited

Description of undertaking:
Description de l'ouvrage:

Upham East Gypsum Quarry Project

Location of undertaking and PID:
Emplacement de l'ouvrage et NID:

Upham East, Kings County
PID 00149013

Address of proponent:
Adresse postale du promoteur:

Hammond River Holdings Limited, 210-65 Regent Street,
Fredericton, NB, E3B 7H8


Conditions of approval:
Conditions d'agrément:

AS PER THE ATTACHED DOCUMENT "A"
DOCUMENT 'A' CI-JOINT

Date of issue: October 15, 2019
Date d'émission: le 15 octobre, 2019

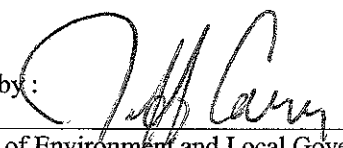
Recommended by:

Recommandé par :


Director, Environmental Impact
Assessment Branch
Directeur, Direction des Études
d'impact sur l'environnement

Determination by:

Décision par:


Minister of Environment and Local Government
Ministre, Environnement et Gouvernement locaux

DOCUMENT "A"

MINISTER'S DETERMINATION

CONDITIONS OF APPROVAL

Pursuant to Regulation 87-83 under the *Clean Environment Act*

October 15, 2019

File Number: 4561-3-1508

1. In accordance with section 6(6) of the Regulation, it has been determined that the undertaking may proceed following approval under all other applicable acts and regulations.
2. Commencement of this undertaking must occur within three years of the date of this Determination. Should commencement not be possible within this time period the undertaking must be registered under the *Environmental Impact Assessment Regulation (87-83)* – *Clean Environment Act* again, unless otherwise stated by the Minister of Environment and Local Government.
3. The proponent shall adhere to all obligations, commitments, monitoring and mitigation measures presented in the registration document entitled, "Proposed Upham East Gypsum Quarry Project, Upham, New Brunswick", dated October 2018, as well as all those identified in subsequent correspondence during the registration review. Additionally, the proponent shall submit a summary table detailing the status of each Condition listed in this Determination to the Director of the Environmental Impact Assessment (EIA) Branch of the Department of Environment and Local Government (DELG) every six months from the date of this Determination until such a time that it is deemed no longer necessary by DELG.
4. If it is suspected that remains of archaeological, including paleontological (i.e. fossils), significance are discovered during construction, operation, or maintenance of the proposed development, as per the *New Brunswick Heritage Conservation Act (2010)*, all activity shall be stopped near the find and the Manager of the Archaeological Regulatory Unit, Archaeological Services Branch, New Brunswick Department of Tourism, Heritage and Culture, shall be contacted at (506) 453-3014 for further direction.
5. The proponent must implement a breeding bird survey within the 2019 breeding bird season. The breeding bird survey results must be submitted for review and must be approved by the Director of DELG's EIA Branch prior to the commencement of any project related activities. Please note that the results of the survey may necessitate additional monitoring and mitigation as identified by the Director of DELG's EIA Branch.
6. The proponent must ensure that all project employees on site are made aware that if a nest or chick of a migratory bird is detected during project construction, work in the area shall be halted and the Canadian Wildlife Service shall be consulted for advice at 1-800-565-1633. The proponent must ensure that all project-related activities comply with the *Migratory Birds Convention Act*.
7. The proponent shall ensure that all project activities are conducted in compliance with the federal *Species at Risk Act* and the provincial *Species at Risk Act* and associated Regulations.



8. The proponent must complete a wetland delineation and functional assessment on WL3. The results must be submitted for review and receive approval from the Director of DELG's EIA Branch prior to the commencement of any project related activities.
9. All loss of regulated wetland habitat requires wetland compensation at a 2:1 ratio. A Wetland Compensation Plan for regulated wetland areas permanently impacted by the project must be submitted to the Director, EIA Branch, DELG for review and approval within six months of the date of this Determination.
10. A wetland monitoring plan including monitoring of wetland function at one, three and five year intervals from the date of the onset of construction must be submitted to the Director, EIA Branch, DELG for review and approval within six months of the date of this Determination. Compensation for permanently impacted regulated wetlands and additional mitigation for unmapped wetlands may be required if the results of the monitoring program demonstrate a loss of wetland function.
11. Any proposed work in or within 30 metres of a watercourse requires review by the Fisheries Protection Program of Fisheries and Oceans Canada (DFO) and a *Fisheries Act Authorization* must be obtained if required based on DFO's review.
12. The proponent must submit a water management plan for review and receive approval from the Director of DELG's EIA Branch prior to the commencement of each phase (e.g. construction (Phases 1 & 2), operation, decommissioning, etc.). The water management plan must include a protocol for pit dewatering and runoff management and mitigation. In order to ensure that there is no net increase in flow to the receiving watercourse which flows through the Department of Transportation and Infrastructure (DTI) watercourse crossing structures, the water management plan must include anticipated pre- and post-development stormwater flows, assuming a 100-year return rain event + 20% to account for climate change. Please note, if the calculated post-development flow is greater than the pre-development flow, a flow attenuation/retention pond will be required.
13. The proponent must submit to the Director of DELG's EIA Branch for review and approval the locations of the proposed nested monitoring wells and the proposed well construction details. The proposed monitoring wells must be installed, and baseline samples collected prior to the commencement of blasting activities or Phase 2 construction activities.
14. The proponent must submit a groundwater monitoring plan for review and receive approval from the Director of DELG's EIA Branch prior to the commencement of blasting activities or Phase 2 construction activities.
15. In the event of a complaint by a neighbouring water user that project activities have negatively impacted the quality or quantity of their private water supply, the proponent must investigate the complaint and notify the Director of DELG's EIA Branch. If it is determined that the proponent is responsible for any negative impacts, the proponent will be required to provide a temporary water supply for short-term impacts, or to repair, remediate, or replace any permanently impacted well(s), which might include, but is not limited to, deepening a well or drilling a new well.
16. Prior to the commencement of any construction activities (Phases 1 & 2), an *Approval to Construct* must be obtained from the Authorizations and Compliance Branch, DELG. Prior to



the commencement of any operational activities, an *Approval to Operate* must be obtained from the Authorizations and Compliance Branch, DELG. For more information, please contact the Authorizations and Compliance Branch at (506) 453-7945.

17. The project involves work in and within 30 meters of watercourses and a regulated wetland. All conditions applicable to this project under the *Watercourse and Wetland Alteration Regulation* will be stipulated in the *Approval to Construct* and *Approval to Operate* and must be strictly followed.
18. Pre-blast surveys must be conducted within the pre-blast survey radius. Blasts must be monitored using seismographs, to ensure that concussion noise levels do not exceed a peak pressure level limit of 128 decibels (dBL) and that peak particle velocities (PPV) do not exceed 12.5 mm/s. Pre-blast survey results must be sent to the Director of DELG's EIA Branch.
19. At least 30 days prior to undertaking any blasting activities, the proponent must notify residents within the pre-blast survey radius to alert them of the anticipated blasting dates. The proposed blasting schedule must be posted on the proponent's website and updated as soon as possible if there are any changes to the anticipated blasting dates.
20. A follow-up vegetation survey must be conducted in the Spring of 2019 to confirm *Spiranthes* species for proper identification of the potential rare plant, *Spiranthes lucida*. The vegetation survey results must be submitted for review and receive approval from the Director of DELG's EIA Branch prior to the commencement of construction work associated with the project. Please note that the results of the survey may necessitate additional monitoring and mitigation, as identified by the Director of DELG's EIA Branch.
21. Prior to the extraction of the mineral, the proponent must obtain a *Mining Lease* from the Department of Energy and Resource Development.
22. Prior to the commencement of any operational activities, the proponent must submit a Financial Security Plan (FSP) to the Director of DELG's EIA Branch for review and approval. The FSP is subject to the following conditions:
 - a. The financial security shall be in the form of cash, irrevocable letter of credit, bond of an approved guarantee company, or any other form of security or guarantee or protection that is acceptable to the Minister.
 - b. The FSP must indicate and provide that the total amount, or any portion thereof, may be accessed by the Minister on due notice to the proponent.
 - c. Security funds used by the Minister shall be replaced by the proponent as required by the Minister.
23. The proponent is required to contact the New Brunswick Department of Transportation and Infrastructure's (NBDTI) Permit Office (506-453-2982) to apply for a *Special Permit* for the transport of oversize and overweight loads on NBDTI highways. Also, the proponent shall submit a Traffic Management Plan to NBDTI for the transport of oversized/overweight loads.
24. Decommissioning of the project area must be initiated within one year of the cessation of operation. A decommissioning plan, including site reclamation details, must be reviewed and approved by the Director of DELG's EIA Branch prior to the commencement of decommissioning activities.

25. The proponent must prepare and submit for approval an Environmental Management Plan (EMP). Plans for specific phases (e.g. construction (Phases 1 & 2), operation, decommissioning, etc.) can be submitted separately for review to the Director of DELG's EIA Branch provided that they receive approval prior to the commencement of activities related to those phases. Each plan for specific phases must include water management. Noise management and noise monitoring plans, including complaint resolution, as appropriate, must be included as part of the EMP for the operational phase of the project. In the event of any noise complaints related to the project, additional mitigation measures may be imposed by the Director of DELG's EIA Branch. Contingency and emergency response plans must also be included as part of the EMP.
26. To ensure that First Nations are meaningfully engaged in ongoing planning, that project information is shared throughout the lifetime of the project and previously made commitments are adhered to, a First Nations Engagement Strategy must be developed and maintained by the proponent in conjunction with First Nations. The engagement strategy must be provided to the Director, EIA Branch, DELG, for review within three months of the date of this Determination and must include a reporting schedule.
27. In the event of the sale, lease, or any other conveyance or change of control of the property, or any portion thereof, the proponent must provide written acknowledgement from the lessee, controller, or purchaser confirming that they will comply with the Conditions of this Determination to the Director of DELG's EIA Branch.
28. The proponent shall ensure that any proposed project modifications are submitted for review and must be approved by the Director of DELG's EIA Branch prior to implementing the changes.
29. The proponent must ensure that all developers, contractors, and operators associated with the construction and operation of the project comply with the above.



Appendix C

Approval to Construct (Phase 1 – Preliminary Site Preparation Only) – Conditions of Approval

TO BE INSERTED ONCE APPROVAL HAS BEEN ISSUED

Appendix D

Complaint Response Protocol

Upham East Gypsum Quarry Project

Complaint Response Protocol

This Complaint Response Protocol has been developed by Hammond River Holdings Limited (Hammond River Holdings) with respect to its proposed Upham East Gypsum Quarry Project (the Project), to be located in the community of Upham, Kings County, New Brunswick.

As owner and operator of the Project, Hammond River Holdings is committed to developing, constructing, and operating the Project in an open, transparent, responsive, and environmentally responsible manner. This includes addressing public concerns regarding the Project in a responsive and timely fashion.

This Complaint Response Protocol (the Protocol) is intended to inform the members of the community on how issues, concerns, complaints, or other expression of dissatisfaction about the Project can be communicated to Hammond River Holdings, and how those issues will be addressed by Hammond River Holdings.

1.0 PURPOSE

The purpose of the Protocol is to ensure that concerns that are expressed to Hammond River Holdings about the Project are addressed in a respectful, timely, consistent, and effective manner.

In this regard, Hammond River Holdings will:

- Establish means by which issues, concerns, complaints, or other expression of dissatisfaction regarding the construction or operation to the Project can be easily and effectively communicated;
- Actively listen to the issues, concerns, complaints, or other expression of dissatisfaction that are brought forward by members of the community, the general public, Indigenous peoples, and stakeholder concerns and/or complaints;
- Be responsive in attempting to address those issues, concerns, complaints, or other expression of dissatisfaction in a timely manner, and manage those concerns promptly, openly, and properly;
- Resolve, or attempt to resolve, those issues, concerns, complaints, or other expression of dissatisfaction as soon as possible; or if they are not immediately resolvable, to communicate the steps taken (or to be taken) and anticipated timeline to resolve the concern to the individual(s) having raised the concern; and
- Learn from the issues, concerns, complaints, or other expression of dissatisfaction raised and how they were responded to, and improve its commitment to minimize the environmental effects of the Project on the environment, including the community.

2.0 SCOPE

This Protocol is established to address the issues, concerns, complaints, or other expression of dissatisfaction, either in written or spoken form, that are brought forward to the Hammond River Holdings regarding the construction or operation of the Project.

3.0 PROTOCOL

The Complaint Response Protocol for the Project is as follows.

1. Issues, concerns, complaints, or other expression of dissatisfaction can be communicated to Hammond River Holdings through the following mechanisms:
 - a. By communicating with the designated Hammond River Holdings representative directly via telephone, email, or regular mail. The current designated Hammond River Holdings representative's contact details are as follows:

Jenna Hazelton
General Manager
Atlantic Wallboard Limited (on behalf of Hammond River Holdings)
30 Jervis Lane
Saint John, NB E2J 1W4
Tel: 506.633.3311
Email: hazelton.jenna@atlanticwallboard.com
 - b. By leaving a voice message detailing the concern via the Hammond River Holdings information hotline at 506.632.4944;
 - c. By submitting a brief written message on the concern via the "Contact Us" link on the Hammond River Holdings webpage at <http://hammondriverholdings.com/contact-us/>; or
 - d. By emailing Hammond River Holdings at info@hammondriverholdings.com.
2. If the issue, concern, complaint, or other expression of dissatisfaction is received verbally via telephone when contact is made, the Hammond River Holdings individual who initially receives the concern or complaint will obtain the following information from the caller:
 - a. The general nature of the concern or complaint (e.g., noise, dust, vibration, traffic);
 - b. If known, the specific nature of the issue leading to the concern or complaint (e.g., vibration from blasting activities, noise from the crusher, truck traffic);
 - c. The date and time when the issue leading to the concern or complaint occurred, and duration;

- d. In the case of an ongoing or repeating issue, information regarding the time of day, day of week, frequency, and duration of the issue, and information regarding other conditions that might exacerbate the issue (e.g., weather conditions); and
 - e. Any other useful information in regard to the concern or complaint.
- 3. If the concern or complaint is received verbally via voice message, the designated Hammond River Holdings representative will attempt to contact the individual(s) having raised the concern or complaint via telephone, within three (3) business days of receipt, to obtain further information about the concern.
 - a. If verbal contact cannot be made, the designated Hammond River Holdings representative will continue to attempt to contact the individual(s) having raised the concern for a further five (5) business days of receipt. Should contact still not be possible, Hammond River Holdings will summarize the nature of the complaint (without revealing the identity of the individual(s)) and proposed resolution to the issue on its website, within ten (10) business days of receipt.
- 4. If the concern or complaint is received in written form via email or regular mail, the designated Hammond River Holdings representative will provide a written acknowledgement of, and response to, the complaint within five (5) business days of receipt.
- 5. Once the details relating to the issue, concern, complaint, or other expression of dissatisfaction are understood:
 - a. The designated Hammond River Holdings representative will assign an individual(s) within the organization to investigate the concern or complaint;
 - b. The individual(s) to whom the investigation was assigned will investigate complaints as soon as possible but no longer than within 20 business days of the initial receipt of the concern or complaint;
 - c. The individual(s) to whom the investigation was assigned will report back to the designated Hammond River Holdings representative who initially received the verbal or written communication about the concern or complaint with the outcomes, results, and/or actions taken (or to be taken) to address the issue (as applicable); and
 - d. The designated Hammond River Holdings representative will report back to the individual(s) who initially raised the issue with information on the outcomes and results of the investigation, and the actions taken (or to be taken) to address the issue, along with an anticipated timeline for implementation (as applicable).
- 6. All issues, concerns, complaints, or other expression of dissatisfaction will be logged in Hammond River Holdings' issues tracking database, with:
 - a. All known details about the concern or complaint collected as per above;

- b. To whom the investigation of the concern or complaint has been/was assigned, and the timeline for completing the investigation;
- c. Information on the outcomes or results of the investigation, and actions taken (or to be taken) to address those outcomes (as applicable); and
- d. Information on when, and to whom, the outcomes, results, and/or actions taken (or to be taken) were (or will be) communicated to the individual(s) having raised the issue, concern, complaint, or other expression of dissatisfaction.
- e. If the individual(s) having raised the issue, concern, complaint, or other expression of dissatisfaction is/are not satisfied with the initial response from Hammond River Holdings, the issue will be referred to a higher authority within the organization to identify other possible means of addressing the issue.

4.0 CLOSURE

This Complaint Response Protocol is intended to facilitate open and transparent discussion with Hammond River Holdings' neighbours about potential issues or concerns relating to the operations at the Upham East quarry site. It will be reviewed periodically to ensure that it is meeting its purpose and achieving the goal of facilitating mutual co-existence of the parties, and will be revised accordingly as required to achieve its intended purpose.

Appendix E

Water Management Plan (WMP)



MEMO

TO: Daniel Guest
FROM: Jeff Melanson, P.Eng
cc: Mark Guest, Geoff Allaby, Denis Marquis
DATE: October 18, 2019
SUBJECT: Upham East Gypsum Quarry - Water Management Plan
OUR FILE: File # 17-5121

Proposed Quarry Site

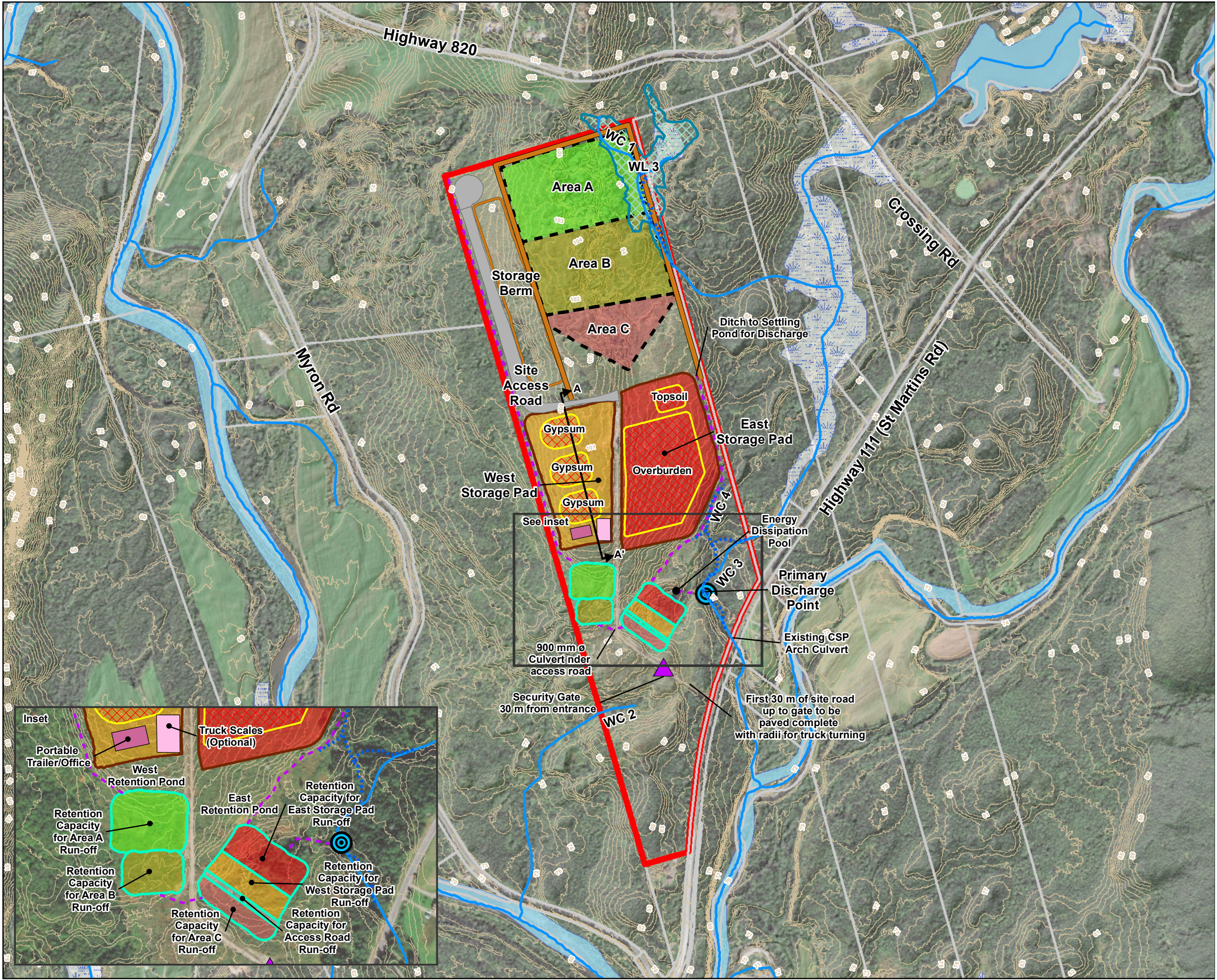
To support the environmental regulatory approval process, a water management plan has been completed for the proposed Upham East Gypsum Quarry site. The proposed site plan is shown in Figure 1. The active operation area (i.e. quarry, storage pads, and access roads) has a total area of approximately 35 ha and will be operated in three phases consisting of the development of Areas A, B, and C shown in Figure 1. The following sections describe the proposed Water Management Plan that will support the design and future operation of the quarry site.

Assessment of Hydrologic/Hydraulic Conditions

To investigate the requirements for the site drainage network, numerical simulation of runoff was undertaken to simulate flows during a 100-year, 24-hour rainfall event in the Upham area. A numerical simulation was completed using the latest version of the Computational Hydraulic Institute's (CHI) PCSWMM modeling software. This model was selected based on the integrated hydraulic and hydrologic computational abilities, as well as the dynamic wave unsteady flow modeling capabilities. This allows for the simultaneous simulations of rainfall-runoff relationship, flood routing, and accounts for storage and backwater effects within the system. The U.S. Soil Conservation Service (SCS) unit hydrograph and runoff curve number (CN) method has been used to simulate the rainfall-runoff relationship within the site.

It has been assumed that the quarry pits (Areas A, B, and C) capture 100% of locally generated runoff. Accumulated runoff volume will be temporarily stored and treated within the pit during intense rainfall, then pumped to the West Pond for additional treatment. The model was developed to allow for 100% capture of local rainfall within the pits. It is expected that the pumps would be turned off during intense rainfall events and that dewatering would resume after rainfall has ceased and sufficient downstream capacity is available.

In addition to the quarry pits, two storage pads are also proposed within the project development area. It is expected that these storage pads will be used to stockpile Gypsum (West) and Overburden (East) throughout operation of the facility. The East and West storage pads have a total area of 7.5 ha and 5.3 ha, respectively. Both storage pad areas were assigned a CN value of 85 to simulate runoff generated from the compacted gravel surface.



HAMMOND RIVER HOLDINGS LIMITED
PROPOSED UPHAM EAST GYPSUM QUARRY

UPDATED CONCEPTUAL SITE LAYOUT PLAN
FIGURE 1

- PROPERTY BOUNDARY
 - PROJECT DEVELOPMENT AREA
 - WATERBODY
 - WATERCOURSE
 - REGULATED WETLAND
 - FIELD DELINEATED WETLAND (REGULATED)
 - FIELD IDENTIFIED WATERCOURSE
- PROPOSED SITE FEATURES**
- DITCH
 - TRUCK SCALE (OPTIONAL)
 - SITE AREAS
 - DISCHARGE POINT
 - SECURITY GATE
 - PORTABLE TRAILER/OFFICE
 - ACCESS ROAD
 - STOCKPILE
 - CROSS SECTION
 - QUARRY BERM CONSTRUCTED FROM TOPSOIL AND OVERBURDEN (OFFSET MINIMUM 7m FROM PROPERTY BOUNDARY)
 - HATCHING INDICATES MATERIAL STOCKPILE AREA ON TOP OF STORAGE PAD
 - STORAGE PAD
 - RETENTION POND

0 50 100 200 m
SCALE 1:8,500

MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING LIMITED, CANVEC
SERVICE LAYER CREDITS: ESRI, HERE, GARMIN, INTERMAP, INCREMENT
P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, KADASTER NL,
ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISS
TOPO, OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
MAP CREATED BY: BQS
MAP REVISED BY: JAB
MAP CHECKED BY: DM
MAP PROJECTION: NAD_1983_CSRS_New_Brunswick_Stereographic

FILE LOCATION: \\DILLON.CA\\DILLON_DFS\\FREDERICTON\\
FREDERICTON CAD\\CAD\\GIS\\188346 UPHAM GYPSUM QUARRY\\MXD



PROJECT: 18-8346
STATUS: DRAFT
DATE: 2019/09/23

Additional land surfaces contributing runoff within the development area include site access roads and adjacent undeveloped lands north of the storage pad areas. A summary of input parameters for each area captured in the model is shown in Table 1.

Table 1: Additional Contributing Areas Input Parameters

	Undeveloped Land	Site Access Road Area	Site Road Area	East Storage Pad	West Storage Pad	Quarry Pits
Area (ha)	3.27	3.1	0.99	7.5	5.3	15.6
Flow Length (m)	150	50	430	180	170	N/A
CN	58	85	85	85	85	N/A ¹
Slope (%)	3	4	0.4	2.5	2.8	N/A

¹Assumed to be 100% impervious (i.e. all local rainfall is captured in the pit until pumping resumes)

Design Rainfall Events

The Environment and Climate Change Canada (ECCC) weather station Saint John A (#8104900), located approximately 31 km from Upham, was used to estimate high-intensity rainfall for the study. The period of record spans roughly 44 years. A summary of the 24-hour rainfall depths for the Saint John A (#8104900) station are presented in Table 2.

Table 2 also presents the 24-hour rainfall depth predictions for the 50 year period between 2020 and 2070. The rainfall depth values under climate change conditions have been estimated using the Intensity-Duration-Frequency Climate Change (IDF CC) tool developed by researchers at Western University and the Canadian Water Network (<http://www.idf-cc-uwo.ca/>). Based on current industry best practices, greenhouse gas emissions are closely following the Representative Concentration Pathway (RCP) 8.5 pathway; therefore, future rainfall predictions used in this study were developed using a high greenhouse gas concentration scenario (RCP 8.5). It can be seen in Table 2 that significant increases in rainfall depth are expected under the future climate scenario.

Table 2: Summary of 24-Hour Rainfall Depths

Return Period (years)	24-hour Rainfall Depth Saint John A – Historical (mm)	24-hour Rainfall Depth Saint John A – Future Climate Change (mm)
100	176.50	240.02
50	155.67	211.19
25	136.37	187.94
10	112.80	159.33
5	95.95	133.01
2	73.21	94.02

A Soil Conservation Service (SCS) Type III storm with a total of 180 mm of rain was used for the historical rainfall distribution. This synthetic rainfall event was used as an input into the PCSWMM model. The

24-hour rainfall distribution is presented in Figure 2. The same rainfall distribution was also used to support the future climate 100-year, 24-hour rainfall event (240 mm).

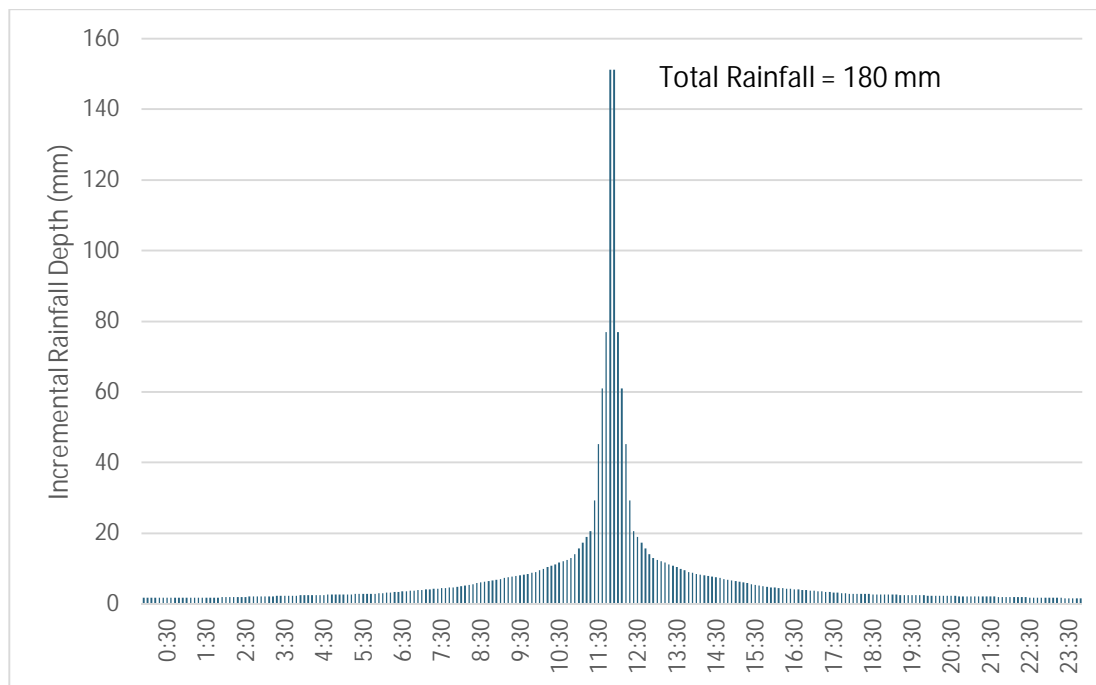


Figure 2: 24-Hour SCS type III rainfall event

Site Water Management Plan

The hydrologic and hydraulic inputs discussed above were used to evaluate future drainage performance within the proposed quarry site. The following sections describe the preliminary water management plan for the construction and operation of the quarry site. It is noteworthy that some of the design elements outlined below may need to be modified slightly during the design process, but the design principles remain unchanged.

Pit Operation

Under normal operation, the pit will be continuously dewatered by pumping excess water into the sedimentation ponds; however, during the passage of a large rainfall event, dewatering will cease and the pumps will be turned off. This will allow for significant attenuation of runoff within the quarry pits during intense rainfall.

Following a major rainfall event, it will be necessary to gradually dewater the pits to resume operation. It is assumed that a maximum pump capacity of 3500 gallon per minute (GPM) will be used for dewatering. This pumping rate corresponds to a discharge rate of approximately 0.2 m³/s, representing roughly 5-10% of the overall design capacity of the proposed drainage system. Since pumping will not occur during intense rainfall events, no adverse impacts associated with pit dewatering is expected.

Water pumped from the pits will be directed to the West Pond through the west perimeter ditch. This discharge is expected to be pre-treated prior to entering the West Pond, since some settlement of sediment is expected within the pit.

Proposed Drainage Network

Ditches located along the edge of the quarry, the stockpile areas, and between the two ponds have been sized to convey 100-year runoff with a minimum freeboard of 0.3 m. The proposed ditch alignment is presented in Figure 1.

The ditches will have a bottom width of 1.0 m, a depth of 1.0 m, and 2:1 (h:w) side slopes (for a total width of 2.0 m), however this may be refined as part of detailed design. The freeboard is provided to allow for the accumulation of snow and ice within the ditches; however, stockpiling of plowed snow within the ditches is not recommended. Riprap and geotextile liner will be placed in the ditches to provide stability within the channels. An R-25 riprap size is recommended to stabilize ditching and protect from erosion.

Erosion control structures will be placed in the ditches to reduce flow velocity and promote disposition of suspended sediments. There are multiple techniques available to control erosion along ditches and overland flow sections; these include rock check dams, energy dissipation pools, and straw/hay bale structures. These approaches to manage sediment will be employed throughout the upstream drainage network and integrated into the final design. Regular monitoring and maintenance of the erosion control features will be required throughout the operation period.

Retention and Sedimentation Ponds

Retention and sedimentation ponds will be constructed to promote settlement of sediment-laden runoff prior to discharging into the downgradient watercourse. As sediment settles to the bottom of each pond, clean water will flow out of the pond to the outlet. A minimum storage volume of 190 m³/ha of drainage area is recommended in the New Brunswick Environmental Management Manual (2010). Similarly, guidelines from the Province of Alberta suggest that a minimum storage volume of 250 m³/ha be provided. Both of these guidelines have been considered in sizing the proposed ponds.

Accumulation of sediment on the bottom of the ponds will be regularly monitored, and regular dredging will be undertaken to maintain effective operation of the facility. Dredged material will be stockpiled on site to allow for dewatering, ultimately establishing a vegetative cover to mitigate potential future erosion.

It is noteworthy that internal berming within the ponds is required for equipment access and maintenance (i.e. dredging). These internal berms will be oriented along the short axis of the ponds, having a top width of 6 m and placed approximately 14 m apart. The pond volume presented below accounts for the storage losses associated with these internal berms.

Two sedimentation ponds are proposed to store runoff from the East and West storage pads, service roads, and undeveloped lands within the project development area. Pumped flows from the quarry pits will also be directed toward the sedimentation ponds. The proposed location of these ponds is presented in attached Figure 1. The associated outlet from the sedimentation ponds will be regularly

tested for total suspended sediment (TSS) concentration according to the conditions of the approval to operate.

The total storage volume provided for the ponds will be in the order of 20,000 m³. During the 100-year, 24-hour rainfall event, the ponds are expected to have a minimum freeboard in the order of 0.3 m. An emergency spillway system will be included in the design to accommodate flows in excess of the simulated 100-year, 24-hour event. The spillway will safely convey excess outflow from the ponds to the downstream ditch via a rock armoured weir and channel to protect the pond berms from erosion. The spillway is estimated to have a depth of approximately 0.2 m below the top of berm elevation and a width of approximately 5-6 m.

The general sedimentation pond construction parameters are presented in Table 3.

Table 3: Sedimentation Pond Construction Parameters

	Sedimentation Pond Parameters
Maximum Depth (m)	2.5
Outlet Pipe Invert Position above Pond Invert (m)	1.0
Storage Available Below Outlet Pipe (Permanent Pool) (m ³)	6,650 ¹
Total Storage Volume (m ³)	20,000 ¹

¹ Volume accounts for storage losses associated with internal berms

It is noteworthy that the storage available below the outlet pipe invert elevations (permanent pool) available for treatment meets the NB EMM (2010) requirement of 190 m³/ha of available storage. The total available storage in the ponds (including freeboard) is expected to be 570 m³/ha.

Outlet Conditions

An assessment of existing peak flow contributions from the site to the downstream watercourse was undertaken to estimate the overall impact on site discharge rate. The 100-year + 20% peak flow from the existing site was estimated to be 2.31 m³/s. Peak discharge from the proposed Sedimentation Pond Facility (900 mm diameter outlet) was simulated to be 2.25 m³/s for the 100-year + 20% event. Therefore, peak flow to the downstream watercourse is of a similar magnitude before and after implementation of the proposed Water Management Plan.

It is noteworthy that a corrugated metal arch pipe having an approximate span of 3 m and rise of 2 m exists approximately 100 m downstream and crosses NB Route 111. This culvert will receive runoff from the site. Given the pre and post development balance in peak flow, the performance of this culvert is not expected to be appreciably impacted by the quarry.

Velocity controls are required at the East Pond outlet to protect the downstream watercourse from erosion. An energy dissipation pool (EDP) is proposed immediately downstream of the East Pond outlet pipe to control outlet velocity. The EDP will discharge over a rock armoured apron and into a ditch flowing approximately 50 m prior to discharge into the downstream watercourse. The uncontrolled velocity exiting the pond is estimated to be in the order of 4-5 m/s. The addition of an EDP, having the

dimensions shown in Table 5, reduces the 100-year velocity to approximately 1 m/s. This reduced velocity is expected to be close to natural background levels and within the stable channel velocity threshold for the downstream receiving watercourse.

Table 4: Energy Dissipation Pool dimensions

Parameter	Dimensions
Median Riprap Diameter (mm)	330 (R-50)
Dissipation pool depth (m)	0.7
Length of dissipation pool (m)	6.7
Apron length (m)	3.5
Basin width at exit (m)	7.5

Climate Change Sensitivity Analysis

To consider the impacts of a potential future climate condition, a 240 mm 24-hour rainfall event was simulated to evaluate drainage system performance; this rainfall event is equivalent to a 100-year 24-hour rainfall event predicted for 2070. It is proposed that the basis for drainage system design remain the historical 100-year event (180 mm). However the future climate results will be used to inform the level of risk posed to the system, and whether design modifications are required.

The available freeboard in both ponds during the future climate event are significantly lower and are approximately 0.1 m in each pond. The emergency spillway is activated in both ponds, and the site peak release rate is expected to be in the order of 3.7 m³/s. The ponds are not expected to breach during the 100-year future climate event.

The freeboard in the ditches has also decreased significantly for the future climate event, however no flooding is expected.

Although there is a substantial increase in rainfall for the assumed future condition, the system is designed such that it can control the extra rainfall without overtopping the banks of the ponds and ditches. It is noted that the future climate rainfall has been derived for the period of 2020 – 2070. The operational period for the quarry site is expected to be in the order of 10 years. Therefore, it is expected that the projected future rainfall event is conservative given the relatively short quarry operation period. For these reasons, the historical rainfall event is expected to be the preferred design criteria for the water management system.




References

New Brunswick Environmental Management Manual, Fourth Edition. The New Brunswick Department of Transportation, 2010.




Appendix F

Potential Site-Specific Species at Risk, and Bird Species at Risk Monitoring Protocol




Species At Risk Historically Observed within 5 km of the Project (AC CDC 2018)

Species	Status*	Habitat	Potential to Occur in Project Area
<p>Bald Eagle (<i>Haliaeetus leucocephalus</i>)</p>  <p>Photo credit: allaboutbirds.org</p>	<p>COSEWIC: Threatened SARA: Threatened NB SARA: Threatened</p>	<p>Typically nest in forested areas adjacent to large bodies of water, staying away from heavily developed areas when possible. However, bald eagles are tolerant of human activity when foraging. During winter, they are often found in areas which have access to open water (Armstrong 2014).</p>	<p>Based on the proximity of the PDA to the Hammond River and the presence of forested areas within the PDA, it is possible that this species may use the Project area for foraging purposes or occur within the PDA incidentally. The PDA does not offer preferential habitat for this species.</p>
<p>Bank Swallow (<i>Riparia riparia</i>)</p>  <p>Photo credit: Ontario.ca species at risk</p>	<p>COSEWIC: Threatened SARA: Threatened NB S Rank: S2S3B,S2S3M/3</p>	<p>Typically nest in steep embankments along eroding river/ocean shore and forage in open areas (COSEWIC 2013).</p>	<p>There are no large open habitats directly within the LAA. The Hammond River and other nearby tributaries may offer an eroding river bank which may provide potential nesting habitat. There is potential for this species to occur in the PDA incidentally or use the area for foraging purposes; however, the PDA does not offer preferential habitat for this species.</p>
<p>Barn Swallow (<i>Hirundo rustica</i>)</p>  <p>Photo Credit: Journey North</p>	<p>COSEWIC: Threatened SARA: Threatened NB SARA: Threatened NB S Rank: S2B,S2M/3 Sensitive</p>	<p>Typically nest on human-made structures such as abandoned buildings or barns and forages in open areas (COSEWIC 2011).</p>	<p>The species may use the PDA for foraging purposes; however, the PDA does not offer preferential habitat for this species.</p>



Species At Risk Historically Observed within 5 km of the Project (AC CDC 2018)

Species	Status*	Habitat	Potential to Occur in Project Area
<p>Bobolink (<i>Dolichonyx oryzivorus</i>)</p>  <p>Photo Credit: allaboutbirds.org</p>	<p>COSEWIC: Threatened SARA: Threatened NB SARA: Threatened NB S Rank: S3B,S3M/ 3 Sensitive</p>	<p>Typically nest in lush meadows, open grasslands, and hayfields (COSEWIC 2010).</p>	<p>The PDA consists predominantly of young deciduous regrowth, and some mixed mature forest to the east and west. There are no large open agricultural fields, preferred by bobolink directly within the LAA, although there are open fields located within 5 km. The PDA does not provide preferential habitat for this species and it is unlikely that this species would use habitat within the PDA.</p>
<p>Canada Warbler (<i>Cardellina Canadensis</i>)</p>  <p>Photo Credit: Ontario.ca</p>	<p>COSEWIC: Threatened SARA: Threatened NB SARA: Threatened NB S Rank: S3B, S3M/1 At Risk</p>	<p>Typically breeds throughout Maritimes and southeastern Canada. Typical habitat includes a variety of forest types (COSEWIC 2008). They prefer wet mixed forest with well-developed shrub layer as well as regenerating areas.</p>	<p>The Project area is dominated by young deciduous regrowth, consistent with Canada warbler preferential habitat. A Canada warbler was observed foraging (incidentally) in a wetland (WL7) in the northwestern portion of the PDA during biological field studies in summer 2018, and has the potential to occur in areas within the LAA.</p>
<p>Chimney Swift (<i>Chaetura pelagica</i>)</p>  <p>Photo Credit: Audubon.org</p>	<p>COSEWIC: Threatened SARA: Threatened NB SARA: Threatened NB S Rank: S2S3B,S2M</p>	<p>Historically, the Chimney Swift used mainly large hollow trees for nesting sites but have adopted chimneys as preferred nesting sites. They are generally associated with urban and rural areas where chimneys are available for nesting and roosting. Chimney swifts are aerial</p>	<p>Although there are unlikely any large hollow trees suitable for this species within the PDA, there may be hollow trees or chimneys for nesting and roosting within the LAA. The watercourses within the PDA could provide marginal foraging habitat</p>

Species At Risk Historically Observed within 5 km of the Project (AC CDC 2018)

Species	Status*	Habitat	Potential to Occur in Project Area
		foragers and tend to concentrate near water where insects are abundant (COSEWIC 2007a).	although it is expected that the nearby Hammond River would be selected as a preferred area for foraging.
<p>Common Nighthawk (<i>Chordeiles minor</i>)</p>  <p>Photo Credit: allaboutbirds.org</p>	<p>COSEWIC: Threatened SARA: Threatened NB SARA: Threatened NB S Rank: S3B,S4M/1 At Risk</p>	<p>Common nighthawk typically breeds throughout the Maritimes and nests on the ground in open vegetation free habitats (COSEWIC 2007b).</p>	<p>The PDA is dominated by young deciduous regrowth. There are few vegetation free habitats directly within the PDA, however, there are open wetlands located in the northeastern portion of the PDA. The species was observed (incidentally) foraging during biological field studies in summer 2018, and has the potential to occur in areas within the LAA.</p>
<p>Olive-sided Flycatcher (<i>Contopus cooperi</i>)</p>  <p>Photo Credit: allaboutbirds.org</p>	<p>COSEWIC: Threatened SARA: Threatened NB SARA: Threatened NB S Rank: S3B,S3M/1 At Risk</p>	<p>Typically breeds in coniferous edges and open areas with perches (e.g., forest openings near wetlands and clear-cuts) (COSEWIC 2007c)</p>	<p>The PDA consists of young deciduous regrowth, surrounded by mature coniferous dominant habitat with available wetland habitats. There is preferential habitat for this species immediately adjacent to the PDA and it is possible that this species may use areas within the LAA for foraging purposes.</p>
<p>Wood Thrush (<i>Hylocichla mustelina</i>)</p>  <p>Photo Credit: Audubon.org</p>	<p>COSEWIC: Threatened SARA: Threatened NB SARA: Threatened NB S Rank: S1S2B,S1S2M</p>	<p>Wood Thrush nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Large forest mosaics are preferred, but they may also nest in small forest fragments (COSEWIC 2012b).</p>	<p>The PDA consists predominantly of young deciduous regrowth, and some mixed mature forest to the east and west. The PDA does not provide preferential habitat for this species and it is unlikely that this species would use habitat within the PDA.</p>

Species At Risk Historically Observed within 5 km of the Project (AC CDC 2018)

Species	Status*	Habitat	Potential to Occur in Project Area
<p>Wood Turtle (<i>Glyptemys insculpta</i>)</p>  <p>Photo Credit: Sylvain Giguere, Environment Canada</p>	<p>COSEWIC: Threatened SARA: Threatened NB SARA: At Risk NB S Rank: S2S3</p>	<p>Wood Turtles are generally found in forested landscapes and are associated with clear freshwater streams and the associated floodplains. It prefers streams with riverbeds of sand or gravel and sand. Nest typically occurs in open, sunny areas with sandy or gravelly soil. Nests are usually found on beaches and riverbanks but have been observed in human made clearings such as gravel pits, roads and old fields (Environment Canada 2016).</p>	
<p>Monarch Butterfly (<i>Danaus plexippus</i>)</p>  <p>Photo Credit: Karine Beriault, Environment Canada 2007</p>	<p>COSEWIC: Special Concern SARA: Special Concern NB SARA: Special Concern NB S Rank: S3B, S3M</p>	<p>Adults from eastern Canada travel to Mexico for the winter. Caterpillars feed exclusively on milkweed (CESCC 2016). As the larvae feed solely on the leaves, flowers and fruits of milkweed, their breeding habitat is tightly associated with the presence of these plants (Environment Canada 2014).</p>	

Upham East Gypsum Quarry Project

Bird Species at Risk Monitoring Protocol

Background

As committed to in the Environmental Impact Assessment (EIA) registration document for the Upham East Gypsum Quarry Project (Dillon 2018), baseline breeding bird surveys were conducted on the Project Development Area (PDA) of the Upham East site on April 10-11, June 13, and July 9, 2018. These surveys were conducted as a follow-up measure to validate the predictions about breeding bird occupancy in the PDA contained in the EIA registration document. The results of these surveys were detailed in the Supplemental Report submitted in support of the EIA, titled “Hammond River Holdings Limited: Supplemental Report (Revised), 2019 Natural Environment Field Surveys – Proposed Upham East Gypsum Quarry, Upham, New Brunswick” (Dillon 2019a).

Among the 53 different bird species recorded within the PDA during these baseline surveys, three bird species at risk (SAR) were detected during these baseline breeding bird surveys: Canada Warbler (*Cardellina Canadensis*), Common Nighthawk (*Chordeiles minor*), and Olive-sided Flycatcher (*Contopus cooperi*), all of which are listed as “Threatened” under the federal *Species at Risk Act* (SARA) and the New Brunswick *Species at Risk Act* (NB SARA).

In its review of the EIA registration document and related documentation, the New Brunswick Department of Environment and Local Government’s (NBDELG) Technical Review Committee (TRC) identified the need for further monitoring of these species during and following construction of the Project, as outlined in item 3) of the TRC’s letter dated October 11, 2019, as follows (NBDELG 2019):

“3. *The report indicates that there were four SAR species identified in the project assessment area; Canada Warbler, Olive-side Flycatcher, Common Nighthawk and Wood Thrush¹ and breeding habitat for these species will be affected during proposed project activities. Canada Warbler and Olive-sided Flycatcher are known to use vegetated wetlands, and these species appear to have been detected in the vicinity of such habitats. Vegetation conditions of forested wetlands removed or altered by the project will not be re-established for the life of the project and will result in a loss of wetland habitat function. Can you please describe monitoring which will be implemented to assess the post-construction changes in conditions in the project development area (PDA) for the species listed under SARA? The mitigation hierarchy of avoidance, minimization, and compensation should be followed and the use of conservation allowances are recommended as the preferred form of the compensation step.*”

This Protocol is intended to address this item from the TRC.

¹ An earlier version of the Supplemental Report (submitted to the NBDELG on September 25, 2019) had incorrectly identified Wood Thrush as having been observed during the breeding bird surveys; however, in fact, Wood Thrush were not observed.

Monitoring Protocol

To address the potential presence of bird SAR including Canada Warbler, Olive-sided Flycatcher, and Common Nighthawk on the Project site, the following monitoring protocol shall be implemented:

1. Hammond River Holdings will ensure that follow-up breeding bird surveys will be conducted on the Project site in spring (approximately mid-April) and summer (approximately mid-June) for two years (on Years 1 and 3) following the completion of the construction phase for the Project.
2. The breeding bird surveys will be conducted according to the following methods:
 - a. The breeding bird surveys will be conducted using point count survey methods based on the standard North American Breeding Bird Survey protocol (ECCC 2019), by a qualified avian biologist or experienced bird specialist skilled at identifying birds by song, call, and sight.
 - b. Point counts will be conducted at the eight point count locations within the PDA that are shown in the attached **Figure F.1**, which correspond to the same locations that were chosen systematically within and near the PDA for the purpose of conducting the baseline surveys that were reported in the Supplemental Report. A total of eight point count locations (PC#) were selected and dispersed throughout the Project site in representative habitats, as well as habitats (e.g., wetlands) that may have higher potential to be used by SAR. Point count locations are spaced at least 250 m apart and each point count location will be surveyed at least twice during the breeding season. A point count approach was chosen for monitoring because the SAR detected in 2018 tend not to nest in the same locations annually, and because new individuals may choose to nest in this area.
 - c. The surveys will be conducted in the morning hours, during favourable weather conditions (as defined in the standard North American Breeding Bird Survey protocol (ECCC 2019)).
 - d. The total number of individuals detected (i.e., heard or seen) during the ten minute observation period will be recorded at each point count along with the timing. Particular attention will be paid to identifying bird SAR (including Canada Warbler, Common Nighthawk, and Olive-sided Flycatcher).
 - e. Weather conditions (i.e., temperature, wind speed, and direction, cloud cover, and precipitation) during the surveys will be recorded.
 - f. Any nests identified within the PDA as a result of these surveys will be flagged, and communication with Project personnel will be initiated.
3. In concert with these surveys, follow-up vegetation and wetland surveys will be conducted at Years 1 and 3 following the completion of the construction phase to determine the potential presence of vegetation species at risk and to evaluate any changes in wetland function arising from the Project. The location of any bird nests observed during these surveys will be marked

with flagging tape, and global positioning system (GPS) coordinates will be recorded. Potential changes to wetland habitats within the PDA that could affect Canada Warbler, Common Nighthawk, or Olive-sided Flycatcher will be noted.

4. Should the surveys detect Canada Warbler, Common Nighthawk, or Olive-sided Flycatcher in active areas of the PDA where construction or operational activities are taking (or are to take) place, adaptive management measures (discussed below) will be considered.
5. Should the breeding bird surveys conducted in Years 1 and 3 following the completion of construction determine that Canada Warbler, Common Nighthawk, or Olive-sided Flycatcher were not present on the PDA where construction or operational activities are taking (or are to take) place, no further follow-up breeding bird surveys will be conducted and the issue will be considered to have been addressed.

Adaptive Management

Should the breeding bird surveys conducted at Years 1 and 3 following completion of the construction phase detect a bird SAR (Canada Warbler, Common Nighthawk, or Olive-sided Flycatcher), or their nests, in active areas of the PDA where construction or operational activities are taking (or are to take) place, the following adaptive management process will be initiated:

1. A “nest sweep” of the active areas of the PDA where construction or operation activities are taking (or are to take) will be conducted by a qualified avian biologist, and the location of any nest discovered (regardless of species) will be clearly marked with flagging tape, and GPS coordinates will be recorded.
2. The qualified avian biologist will determine if the nest in question is a Canada Warbler, Common Nighthawk, or Olive-sided Flycatcher nest.
3. If Canada Warbler, Common Nighthawk, or Olive-sided Flycatcher nest is confirmed by a qualified avian biologist to be located within the active areas of the PDA where construction or operational activities have been taking place, the following shall be established:
 - a. For those active areas of the PDA where construction or operational activities have been occurring continuously since the start of the breeding bird window period (i.e., mid-April 1 to late August for the regional nesting period Zone C3), those birds are assumed to be habituated to these activities and no buffer will be applied;
 - b. For those active areas of the PDA where construction or operational activities have not occurred during the breeding bird window period, a minimum 50 m buffer will be established, within which no construction or operational activity will be allowed to take place until such time as:
 - i. the official breeding bird window (i.e., mid-April 1 to late August for the regional nesting period Zone C3) has elapsed;
 - ii. it can be confirmed that the bird in question has left the nest; or
 - iii. it can be confirmed that the young have fledged the nest.

- c. The Canadian Wildlife Service (CWS) of Environment and Climate Change Canada (ECCC) and the Biodiversity Section of the New Brunswick Department of Energy and Resource Development (NBDERD) will be immediately notified.
- 4. The area will continue to be monitored to determine whether there is an active nest at the site, or whether the individual detected consists only of a singing male.
- 5. Other measures that could be feasibly implemented to prevent adverse effects to these nesting bird SAR, including avoidance, mitigation, or compensation will be discussed with the CWS and NBDERD at the earliest opportunity.
- 6. In addition to the above, other reasonable mitigation measures or approaches, including those that were listed in Dillon's March 25, 2019 response to the TRC's third round of comments on the EIA of the Project (Dillon 2019b), will be considered in consultation with CWS and NBDERD.

References

Dillon (Dillon Consulting Limited). 2018. Hammond River Holdings Limited: Environmental Impact Assessment (EIA) Registration, Proposed Upham East Gypsum Quarry, Upham, New Brunswick. Prepared by Dillon Consulting Limited on behalf of Hammond River Holdings Limited, Fredericton, NB. Project No. 18-8346. October 2018.

Dillon (Dillon Consulting Limited). 2019a. Hammond River Holdings Limited: Supplemental Report (Revised), 2019 Natural Environment Field Surveys – Proposed Upham East Gypsum Quarry, Upham, New Brunswick. Prepared by Dillon Consulting Limited on behalf of Hammond River Holdings Limited, Fredericton, NB. Project No. 18-8346. Revision 1, October 2019.

Dillon (Dillon Consulting Limited). 2019b. RE: Hammond River Holdings' Response to Technical Review Committee (TRC) Questions and Comments Round #3 – Proposed Upham East Gypsum Quarry, EIA Registration Document File No. 4561-3-1508. Letter from Denis Marquis of Dillon to Cassandra Colwell of the NBDELG, March 25, 2019.

ECCC (Environment and Climate Change Canada). 2019. North American Breeding Bird Survey: Instructions and Safety Guidelines. Available at: https://www.canada.ca/content/dam/eccc/migration/main/reom-mbs/5ee0adba-a60b-4142-9add-644f35e5935e/bbs_instructions_formatted_en.pdf.

NBDELG (New Brunswick Department of Environment and Local Government). 2019. RE: Proposed Upham East Gypsum Quarry Project. Letter from Cassandra Colwell, Project Manager, NBDELG to Bruce Eddy of Hammond River Holdings Limited, October 11, 2019.

Appendix G

Spill Reporting Procedures and Forms

1. Stop the Flow

- a) Act immediately to reduce the risk of environmental impacts.
- b) Communicate with others working in the area to inform them of the spill and get assistance with clean up if necessary.
- c) Stop the flow of the spill at its source. For example, close valves, shut off pumps or plug holes/leaks, set containers upright.

2. Secure the Area

3. Contain the Spill

- a) Block off and protect drainage pathways.
- b) Prevent spilled material from entering drainage structures (i.e., local watercourses).
- c) Use spill absorbent material to contain the spill.
- d) If necessary, use a constructed dam or other methods to prevent any discharge off-site.
- e) Make every effort to minimize contamination and contain the spill as close to the source as possible.

4. Verbally notify the Project Manager and Environmental Monitor Immediately who will notify NBDELG. Verbal notification information will include:

- a) The reporting person's name, and the telephone number at which the person can be immediately contacted;
- b) The name of the person who owns or has the charge, management or control of the substance immediately before the environmental emergency;
- c) The date and time of the release;
- d) The location of the release;
- e) The name/CAS registry number of the substance released;
- f) The estimated quantity of the substance released;
- g) The means of containment (from which the substance was released) and a description of its condition;
- h) The number of deaths and injuries resulting from the environmental emergency;
- i) The surrounding area/environment affected and potential impact of the release mobility of release and weather or geographic conditions at the site);
- j) A brief description of the circumstances leading to the release;

- k) The cause of the release (if known);
- l) Details of the actions taken or further actions contemplated (to contain, recover, cleanup and dispose of the substance involved); and
- m) The names of agencies notified or on-scene.

Complete the Spill Reporting Form below and submit completed form to appropriate authorities and project personnel.

5. Report

The following information must be included in the written report:

- a. the name, civic address and telephone number of the person who owns or has the charge, management or control of the substance released;
- b. the date, time and location of the release;
- c. the name and CAS registry number of the substance released;
- d. the quantity of the substance released or, if the quantity cannot be determined, an estimate of the quantity;
- e. the identification of the container from which the substance was released and a description of its condition;
- f. the location of the release and description of the potential negative effects on the environment or on human life or health;
- g. a description of the circumstances and of the cause of the release (if known) and of the measures taken to mitigate any negative effects on the environment or on human life or health;
- h. the identification of all persons and agencies notified as a result of the release; and
- i. all measures taken or planned to be taken to prevent similar releases.

SPILL REPORT FORM

IDENTIFICATION

Spill Date:	Time:	
Location:	:	
Civic Address of Incident:		
Field Contact:	Phone Number:	

SPILL NOTIFICATION

<input type="checkbox"/> Supervisor (During working hours) - Name (specify):
<input type="checkbox"/> Department of Environment (During working hours) Saint John Region – 506.658.2558
<input type="checkbox"/> Coast Guard – 800.565.1633

SPILL INFORMATION

Product Spilled:	<input type="checkbox"/> Transformer Oil <input type="checkbox"/> Hydraulic Fluid <input type="checkbox"/> Other (specify):	Quantity (L): Quantity (L): Quantity (L):	
Equipment:	<input type="checkbox"/> Pole-top transformer	Serial / ID1 Number:	
	<input type="checkbox"/> Heavy Equipment		
	<input type="checkbox"/> Vehicle	*Year of Manufacture:	
	<input type="checkbox"/> Other (specify):		
Environmental Impact:	Watercourse within 100 m	YES <input type="checkbox"/>	NO <input type="checkbox"/>
	Domestic well within 100 m	<input type="checkbox"/>	<input type="checkbox"/>
Cause and additional detail:			
Samples sent to RPC laboratory for analysis (Address: 921 College Hill Rd, Fredericton, 506.452.1212)			
<input type="checkbox"/> Oil (from equipment): _____ ppm			
<input type="checkbox"/> Soil (unable to sample equipment): _____ ppm			
<input type="checkbox"/> Other (watercourse): _____ ppm			

SEQUENCE OF EVENTS

[illegible]

ADDITIONAL INFORMATION

	YES	NO
Is source of spill stopped?	<input type="checkbox"/>	<input type="checkbox"/>
Is spill contained?	<input type="checkbox"/>	<input type="checkbox"/>
Is spill cleaned-up?	<input type="checkbox"/>	<input type="checkbox"/>

EXTERNAL RESOURCES / INSPECTORS (if applicable)

	YES	NO	If "yes", indicate Name, Date and Time
Environment Inspector on-site	<input type="checkbox"/>	<input type="checkbox"/>	
Contractor used for clean-up	<input type="checkbox"/>	<input type="checkbox"/>	
Site Professional used for remediation support	<input type="checkbox"/>	<input type="checkbox"/>	

APPROVAL AND REVIEW

Initiator	Signature:	Date Prepared:
Supervisor/Manager	Signature: Comments: Spill kit and spill response supplies replenished?	Date Reviewed: YES <input type="checkbox"/> NO <input type="checkbox"/>
EMS Coordinator	Signature:	Date Completed: