APPENDIX A

Registry of Joint Stocks and Property Deed

NOVA SCOTIA
Service Nova Scotia and Municipal Relations
Registry of Joint Stock Companies

Print | Close Window

PROFILE - 2227754 NOVA SCOTIA LIMITED - as of 2006-11-07 10p.m.

Company/Society Name:	2227754 NOVA SCOTIA LIMITED
Registry ID:	2227754
Type:	N.S. Limited Company
Nature Of Business:	
Status:	Active
Jurisdiction:	Nova Scotia
Registered Office:	10442 Route 19 South West Mabou Port Hood NS B0E 2W0
Mailing Address:	Po Box 130 Port Hood NS B0E 2W0
Previous Name:	IDEAL CONCRETE (1993) LIMITED

PEOPLE

Name	Position	Civic Address	Mailing Address
JOHN VAN ZUTPHEN	Director	10442 Route 19 South West Mabou Port Hood NS B0E 2W0	
TED VAN ZUTPHEN	Director	10442 Route 19 South West Mabou Port Hood NS B0E 2W0	
JOHN VAN ZUTPHEN	PRESIDENT		
TED VAN ZUTPHEN	SECRETARY		
JOHN VAN ZUTPHEN	Recognized Agent	10442 Route 19 South West Mabou Port Hood NS B0E 2W0	Po Box 130 Port Hood NS B0E 2W0

ACTIVITIES

Activity	Date
Registered	1993-04-19
Incorporated	1993-04-19
Change of Directors	1993-04-20
Registered Office Change	1993-04-20
Agent Filed	1993-04-20
Special Resolution	1994-04-28
Annual Report Filed	1996-05-03
Annual Renewal	1997-05-15
Annual Statement Filed	1997-05-15
Annual Renewal	1998-05-05
Annual Renewal	1999-03-26
Address Change	1999-05-20
Annual Statement Filed	1999-05-20
Annual Renewal	2000-04-26
Annual Statement Filed	2000-04-26
Annual Renewal	2001-03-21
Annual Renewal	2002-04-03
Annual Statement Filed	2002-04-03
Annual Renewal	2003-04-16
Annual Renewal	2004-03-26
Annual Statement Filed	2004-03-26
Annual Renewal	2005-04-15
Annual Statement Filed	2005-04-15
Annual Renewal	2006-05-04
Annual Statement Filed	2006-05-04

Effective Date of Name Change	2006-08-03
Filed Name Change	2006-08-03
Special Resolution	2006-08-08

RELATED REGISTRATIONS

There are no related registrations on file for this company.

INVERNESS COUNTY REGISTRY OF DEEDS
I certify that this document was registered as shown here.
Stella Walker Registrar
Document # 81222359
01/17/05 10:05
MM DD YYY Time

(H)

Emm #Stora-46052

THIS WARRANTY DEED made this 19th day of November, 2004.

BETWEEN:

STORA ENSO PORT HAWKESBURY LIMITED, a body corporate, with an office at P.O. Box 9500, Port Hawkesbury, Nova Scotia, B9A 1A1, being the Owner of the lands described in Schedule "A" herein

(hereinafter called the "Grantor")

- and -

IDEAL CONCRETE (1993) LIMITED, a body corporate, with an office at P.O. Box 130, Port Hood, Nova Scotia, B0E 2W0

(hereinafter called the "Grantee")

WITNESSETH THAT in consideration of One Dollar and other good and valuable consideration;

THE GRANTOR hereby conveys to the Grantee the lands described in Schedule "A" to this Warranty Deed (the "lands") and hereby consents to this disposition, pursuant to the *Matrimonial Property Act* of Nova Scotia.

THE GRANTOR covenants with the Grantee that the Grantee shall have quiet enjoyment of the lands, that the Grantor has good title in fee simple to the lands and the right to convey them as hereby conveyed, that the lands are free from encumbrances, and that the Grantor will procure such further assurances as may be reasonably required.

IN THIS Warranty Deed the singular includes the plural and the masculine includes the feminine, with the intent that this Warranty Deed shall be read with all appropriate changes of number and gender.

IN WITNESS WHEREOF, the Grantor has properly executed this Indenture the day and year first above written.

SIGNED, SEALED AND DELIVERED
in the presence of

A. Wilma Ferguson
WITNESS - A Commissioner of Oaths
A. WILMA FERGUSON
A Commissioner of the Supreme
Court of Nova Scotia

STORA ENSO PORT HAWKESBURY LIMITED

Per: Russ Wayco

Per:

AFFIDAVIT OF SPOUSAL STATUS

CANADA
PROVINCE OF NOVA SCOTIA
COUNTY OF INVERNESS

I, Russ Waycott, of Port Hawkesbury, in the Province of Nova Scotia, make oath and say that:

1. I am the Vice President, Woodlands of Stora Enso Port Hawkesbury Limited (the "Corporation"). Except as otherwise stated I have personal knowledge of the matters to which I have sworn in this Affidavit.

2. I acknowledge that the Corporation executed the foregoing Instrument by its proper officer(s) duly authorized in that regard under seal on the date of this affidavit; this acknowledgment is made for the purpose of registering such Instrument pursuant to s.31(a) of the *Registry Act*, R.S.N.S. 1989, c.392.

3. The Corporation is a resident of Canada under the *Income Tax Act* (Canada).

4. The ownership of a share or an interest in a share of the Corporation does not entitle the owner of such share or interest in such share to occupy a dwelling owned by the Corporation.

SWORN TO at Port Hawkesbury, in the County of Inverness, Province of Nova Scotia this 19th day of November, 2004, before me,

A. Wilma Ferguson
A Commissioner of Oaths

A. WILMA FERGUSON
A Commissioner of the Supreme Court of Nova Scotia

Russ Waycott

SCHEDULE "A"

A lot of land containing 129 acres situate, lying and being in the County of Inverness, District of MacLeod's Settlement, in the County of Inverness, Province of Nova Scotia and bounded as follows:

BEGINNING at Crown Post and Stones No. 257A standing on the East bank of Southwest Mabou River at the junction of McLeod Brook with the said River, said point of beginning being distant twenty four chains eighty links on a bearing south one degree thirty minutes west from a maple tree marking the southeast angle of Grant No. 22542 to Hugh A. MacIsaac, in the District of MacLeod's Settlement, in the County of Inverness;

THENCE North fifty two degrees forty five minutes east forty three chains eighty seven links to Crown Post No. 257B on the west boundary of the Public Road running from McLeod Settlement to Upper South West Mabou;

THENCE southerly following the west boundary of the said Road to Crown Post No. 2570 on the north bank of a brook, said post being distant thirty eight chains fifty three links on a bearing south eleven degrees fifty five minutes east from the beforementioned post No. 257B;

THENCE westerly, southerly and westerly following the various courses of the north bank of the said brook to Crown Post No. 257 standing at the junction of the north bank of the said brook with the east bank of McLeod Brook aforesaid, said Post No. 257 being distant forty three chains eighty links on a bearing south eighty five degrees thirty eight minutes west from said Post No. 257C;

THENCE northerly, following the various courses of the east bank of the said McLeod Brook to the place of beginning, containing one hundred twenty nine acres more or less.

ALL bearings being by the magnet in the year 1961.

Registry Reference Book K, Page 33. See also Book 85, Page 371.

Reserving to Stora Enso Port Hawkesbury Limited, its successors and assigns, the right and privilege to use the existing logging road leading from the Public Highway in a southerly direction across the aforesaid parcel to access other lands owned by or leased to Stora Enso Port Hawkesbury Limited. The routing of the said logging road can be adjusted by the Grantee with the consent of Stora Enso Port Hawkesbury Limited so long as the logging road is constructed and maintained to meet the following standards:

Grade must not exceed 14%
Degree of curvature (maximum) 15%
Subgrade top width 5 meters
Running surface gravel width 4 meters (pit run)
Running surface gravel thickness 10 c.m (pit run)

P.I.D. #50044015
Tax Account #03573087

I hereby certify that
The Deed Transfer tax has been paid ☑
No Deed Transfer tax is due and payable ☐
within described property transfer
Dated this 17 day of January /05 AD
Stella Walker
Housing & Municipal Affairs
Inverness County Registrar of Deeds

APPENDIX B

MacLeod Settlement Sand Pit Hydrology

Hydro-Com Technologies
a division of R.V. Anderson Associates Limited

445 Urquhart Crescent
Fredericton New Brunswick E3B 8K4 Canada
Tel 506 455 2888 Fax 506 455 0193
Web www.hydro-com.com

October 20, 2006

Project # 05-6616(2)

Jacques Whitford Environment Limited
3 Spectacle Lake Drive
Dartmouth, NS
B3B 1W8

Attention: Mr. Brent Ferguson

Dear: Mr. Ferguson

Re: MacLeod's Settlement Sand Pit Hydrology -Phase 2

Hydro-Com Technologies, acting at your request, has performed a second review of the proposed *MacLeod's Settlement Sand Pit* development project. The objective of the review was to determine the hydrologic effects of this development. This report has been prepared solely for the project described above and contains a description of our methodologies and our findings.

Site Description

The plan view of the existing sand pit and proposed sand pit development area is presented in Figure 1. The proposed development is located near MacLeod Settlement in Inverness County, Cape Breton. The proposed development area is bordered by MacLeod Settlement Road to the east and MacLeod Brook to the west. The delimitation is assumed to establish appropriate buffer distances from the watercourses and roadways.

The proposed sand pit (delimited in red in Figure 1) is approximately 19.6 ha in size and is located on the western face of a medium sloping knoll (i.e. approx. 5%). The site is traversed by a paved roadway (as indicated in Figure 1) which divides site drainage area in two areas: AREA 1 and AREA 2 (see Figure 1). AREA 1 is approximately 10.5 ha is size and drains west toward MacLeod Brook. AREA 2 is approximately 9.11 ha in size and drains south toward Small Brook. AREA 1 is further bisected by a hydrologic divide and its overland flow drains toward two different watercourses. Approximately 5.10 ha from the southern portion of AREA 1 currently drains toward MacLeod Brook Tributary and 5.41 ha from the northern portion of AREA 1 drains west toward the main stem of MacLeod Brook.

Both the MacLeod Brook Tributary and Small Brook flow west into the main stem of MacLeod Brook. MacLeod Brook flows north into the Southwest Mabou River and into the Mabou Harbour located approximately 25 km from the proposed development area.

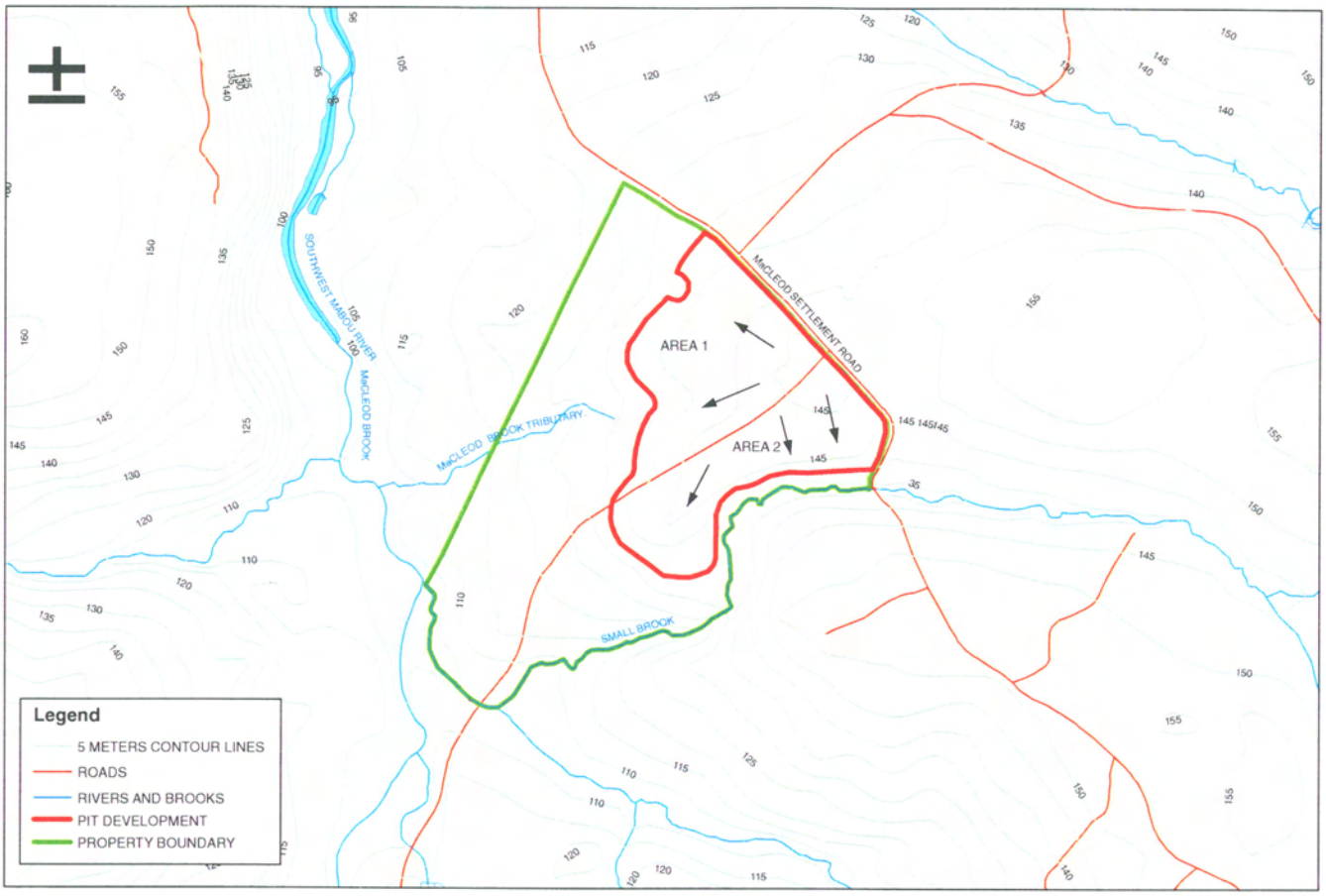


FIGURE 1

SITE HYDROLOGY

MAP PARAMETERS
PROJECTION: UTM-NAD83-Z20
SCALE : 1:10 000
DATE: OCTOBER 20, 2006

0 55 110 220 330 440 Meters

Hydro-Com Technologies

It is our understanding that runoff from the impacted sand pit areas following excavation and landforming will be collected at central locations in AREAS 1 and 2 for treatment before being discharged. In addition, the recommendations of this study are based on the assumption that off-site runoff will be diverted around the proposed sand pit development area.

It is also our understanding that no significant wetlands were identified within the proposed sand pit development area during site inspections conducted by Jacques Whitford Ltd personnel.

Objectives

The objectives for this assignment are as follows:

- estimate quantities of surface runoff from the proposed sand pit development area for the currently proposed ultimate level of sand pit development,
- estimate the size and design discharge capacity of the flow retention/siltation structures required for the currently proposed ultimate level of sand pit development, and
- assess potential effects of the sand pit on downstream flows and water quality for the currently proposed ultimate level of sand pit development.

Methodology

The methodologies that were used to satisfy the above objectives were as follows:

- the annual volume of runoff from the proposed sand pit development area was estimated using proration of mean annual flows from a nearby hydrometric station and using values from the MacLaren Atlantic Limited (1980)[1] study;
- the size and design discharge capacity of the required flow retention/siltation structures were determined using a HEC-1 runoff model and the Rational Method, and physiographic parameters of the proposed sand pit development area; and
- the effects on downstream flows and water quality were assessed based on experience with similar developments.

The following physiographic parameters were obtained from the available project mapping:

- drainage areas within the proposed sand pit development area:
  - Total area: 19.6 ha,
  - AREA 1: 10.5 ha, and
  - AREA 2: 9.11 ha;
- drainage slopes within the proposed sand pit development area:
  - AREA 1: 3.81%, and
  - AREA 2: 2.63%;
- time of concentration of flow from the proposed sand pit development area:
  - AREA 1: 0.229 hrs (13.7 min), and
  - AREA 2: 0.362 hrs (21.7 min);
- coefficient of runoff of the proposed sand pit development area: 0.50;

[1] MacLaren Atlantic Limited. 1980. *Regional Flood Frequency Analysis for Mainland Nova Scotia Streams.* Canadian-Nova Scotia Flood Reduction Program. Figure 3.1.

- Soil Conservation Service (SCS) land use curve number of the proposed development areas at the ultimate development condition for average antecedent moisture conditions (AMC II): 73; and
- MacLeod Brook drainage area upstream of the confluence with the MacLeod Brook Tributary: 49.9 km^2.

Mean Annual Site Runoff

The mean annual site runoff for the proposed sand pit development area was estimated using a number of different approaches for comparison purposes as shown in Table 1. The upper bound of the mean annual runoff volume was first calculated assuming that all precipitation contributes to runoff (using local climatic data). The lower bounds were obtained using area-based proration from a nearby hydrometric station and using mean annual runoff values for the area as reported by MacLaren Atlantic Ltd (1980). Because both of the estimation methods for the lower bounds derive mean annual runoff volumes from larger watersheds containing undeveloped areas (which help reduce overland runoff volumes), the expected mean annual runoff volume from the proposed development area at ultimate development conditions was estimated by increasing the lower bound value by a reasonable amount to reflect the expected hydrological conditions. The results of this analysis are presented in Table 1.

Table 1. Estimated mean annual runoff from the site based on different assessment methods.

Description	Method	Annual Flow Volume (m^3)	Mean Annual Flow (L/s)
Upper Bound	Annual Precipitation	302,000	9.6
Lower Bound	Hydrometric Station Proration	224,000	7.1
Lower Bound	MacLaren et al.	201,000	6.4
Expected Mean	Adjustment of lower bounds[a]	257,000	8.1

[a]Average of both lower bound estimates + expected increase in annual runoff.

Based on historical climatic data at the Port Hastings climate station (approximately 30 km from the project site) (1971-1988), the average annual precipitation at the site is 1538.5 mm. If all of this precipitation is converted into surface runoff (which would represent an upper bound of expected average annual runoff), the annual volume of runoff from the proposed sand pit development area was estimated to be 302,000 m^3, which corresponds to a mean annual flow of 9.6 L/s.

A lower bound for the expected annual volume of site runoff was established by a drainage area based proration of flows from a nearby hydrometric station. The hydrometric station 01FA001 (1965-2000), River Inhabitants at Glenora with a drainage area of 193 km^2, was chosen as most representative for proration purposes as its drainage area and hydrological characteristics were most similar to those at the proposed sand pit site. By prorating flows from the hydrometric station, a mean annual runoff volume for the proposed sand pit development was estimated to be 224,000 m^3, which corresponds to a mean annual flow of 7.1 L/s.

A second approach was used to estimate the lower bound of the expected annual runoff at the site for comparison purposes. Based on the MacLaren Atlantic study, which presents a spatial distribution of runoff volumes throughout Nova Scotia, a mean annual runoff depth of 1,025 mm was determined as the mean annual runoff depth for the region. Using this approach, the mean annual runoff volume for the proposed sand pit development area was computed to be 201,000 m^3 (which corresponds to a mean annual runoff flow of 6.4 L/s).

Development of the sand pit will involve the removal of vegetative cover and topsoil. Clearing the land of vegetative cover will reduce interception and temporary storage of precipitation. This hydrologic change will result in less evapotranspiration and more direct runoff from the site. The average *potential* evapotranspiration rate in the region is approximately 462 mm (Dzikowski et al, 1984)[2]. Assuming that the *actual* evapotranspiration rate is reduced by 225 mm and that the annual runoff volume is increased by the same amount, the annual runoff volume is computed to be approximately 257,000 m^3 (which corresponds to a mean annual flow of 8.1 L/s) following ultimate development of the sand pit development area.

Flow Retention/Siltation Treatment Structures

Peak design flows from the sand pit development area at the currently proposed ultimate level of development and the retention volumes associated with the required flow retention/siltation structures were also determined. These calculations are based solely on the drainage areas associated with the sand pit development, and assume that the surface runoff upstream of the development areas will be diverted around the sand pit development. The peak design flow for the structures represent the peak flow resulting from a 100 year return period storm event, while the minimum pond volume was to be equal to the runoff volume of a 6 hour duration storm event with a 25 year return period. Note that the low lying areas of the sand pit floor can provide adequate retention/siltation treatment, provided it meets the runoff volume retention standards.

Based on the Rational Method and HEC-1 modelling, the peak flow resulting from a 100 year return period storm event was estimated to have a magnitude of 1.78 m^3/s for AREA 1 and 1.39 m^3/s for AREA 2. All of the hydraulic control structures at the currently proposed ultimate level of development should thus be designed for a peak flow magnitude of no less than 1.78 m^3/s for AREA 1 and 1.39 m^3/s for AREA 2.

Using HEC-1 modelling, the runoff volume resulting from a 6 hour duration storm event with a 25 year return period was estimated to be approximately 1820 m^3 for AREA 1 and 1580 m^3 for AREA 2. The flow retention/siltation structure(s) (or capacity of sand pit floor allowing for water accumulation between the interstices of porous media) of the proposed sand pit development area should have a volume of no less than 1820 m^3 for AREA 1 and 1580 m^3 for AREA 2 to accommodate for site runoff at the currently proposed ultimate level of development.

[2] Dzikowski, P.A, G. Kirby, G. Read, W.G. Richards. 1984. *The Climate for Agriculture in Atlantic Canada.* Publication No. ACA 84-2-500. Agdex. No. 070. 19 pp.

Effects on Downstream Flows and Water Quality

The currently proposed ultimate level of sand pit development is expected to reduce the amount of evapotranspiration from the sand pit site and increase the volume of mean annual surface runoff. The magnitude of the above change is estimated to be approximately 44,121 m^3/year, which represents an approximate 21% increase of the mean annual flows from the proposed sand pit development area following ultimate development. Based on a 0.196 km^2 drainage area associated with the proposed sand pit development area, and the 49.9 km^2 drainage area of the watershed within which the sand pit is located, the above change in the volume of mean annual surface runoff from the sand pit would result in an increase in the mean annual flows in MacLeod Brook at the confluence with the MacLeod Brook Tributary of approximately 0.1%.

Although the sand pit development will result in an increase in the peak rates of surface runoff and a reduction of the low flows (i.e. water will run off more quickly following additional sand pit development) from the proposed sand pit area, the placement of free-draining material over the disturbed areas and the use of properly sized flow retention structures (or holding areas along the sand pit floor) is expected to greatly mitigate these changes in temporal flow patterns at the sand pit outlets.

The potential effects of the sand pit development on downstream water quality include an increase in the total sediment loading and an increase in chemical parameters associated with the sand being quarried. The placement of free-draining material over all disturbed areas and the use of properly sized flow retention/siltation structures (or holding areas along the sand pit floor) is expected to fully mitigate the potential increase in downstream sediment loading. As the amount of freshly exposed rock within the sand pit is likely to remain relatively constant (it should be a function of the production rate, rather than the overall sand pit size), the effects of the sand pit on downstream water quality are expected to be relatively minor and the downstream water quality should return to background levels following the termination of active sand pit operations.

In summary, we believe that the effects on the downstream flows and water quality associated with the currently proposed ultimate level of sand pit development can be greatly mitigated using the placement of free-draining material and properly sized flow retention/siltation structures. Following the use of these mitigative measures, the remaining residual effects on downstream flows and water quality are expected to be minor.

Closure

We trust that this satisfies your current requirements. If you have any questions or require additional information, please contact us at your convenience.

Yours truly,

Hydro-Com Technologies

Peter Wedge, M.Sc.E (candidate)., MIT.

Hans Arisz, M.Sc.E., P.Eng.

Hydro-Com Technologies
a division of R.V. Anderson Associates Limited

445 Urquhart Crescent
Fredericton New Brunswick E3B 8K4 Canada
Tel 506 455 2888 Fax 506 455 0193
Web www.hydro-com.com

November 03, 2006

Project # 05-6616(3)

Jacques Whitford Environment Limited
3 Spectacle Lake Drive
Dartmouth, NS
B3B 1W8

Attention: Mr. Brent Ferguson

Dear: Mr. Ferguson

Re: MacLeod's Settlement Sand Pit Hydrology -Phase 3

Hydro-Com Technologies, acting at your request, has performed a third review of the proposed *MacLeod's Settlement Sand Pit* development project. The objective of this hydrologic review was to determine the effect of routing all runoff from the quarry site to one central settling pond as opposed to the two separate ponds proposed in the previous review (Project # 05-6616(2)).

Considerations:

By routing runoff from the entire site to one central pond, located at the southern end of the site, three possible effects must be considered;

1. Removal of water from the unnamed brook watershed.
2. Removal of water from the MacLeod Tributary watershed.
3. Addition of water to the Small Brook watershed.

In terms of the total amount of runoff generated from the quarry into the larger watershed, the overall effects of the quarry site itself will remain unchanged from the second review. The location of the settling pond(s) has no bearing on the total amount of runoff generated by the quarry, but it will play a key role in the distribution of that runoff.

Runoff distribution:

The quarry site shares three (3) different drainage areas. At the north end, 30% of the quarry will drain into an unnamed brook, the middle portion of the quarry (24%) will drain into the MacLeod Tributary, and the southern portion (46%) of the quarry will drain into Small Brook.

Single retention pond:

One (1) settling pond situated at the southern tip of the quarry site will yield the scenario described below. These calculations are based solely on the drainage areas associated with the sand pit development, and assume that the surface runoff upstream of the development areas will be diverted around the sand pit development. It is also assumed that the runoff from the entire site is routed into that single retention structure.

The average annual runoff volume from the unnamed brook will be reduced by 22.1% when that section of the quarry is mined and the associated runoff is diverted to the settling pond at the

southern end of the property. The runoff that will be exported from this drainage area to the settling pond and ultimately the Small Brook watershed, factoring in the reduced evapotranspiratiuon (increased runoff) from the mining activity, is 73,750 m^3/yr. The average annual runoff volume from the MacLeod Tributary will be reduced by 27.8% and a total of 58,750m^3/yr will be exported to the Small Brook Tributary. This increase in flow from the unnamed brook and MacLeod Tributary drainage areas to the Small Brook watershed, along with the increased flows form the southern portion of the quarry, will be 152,750 m^3/yr, an increase of 6.8% from pre-development flows. Upstream of the confluence of Macleod Tributary and MacLeod Brook, the increase in mean annual flow will be 0.1% as mentioned in the second report.

It is assumed that as the mining operation progresses northward from the settling pond, a slope of at least .5% is maintained to convey water to the settling pond. Based on the Rational Method and HEC-1 modelling, the peak flow resulting from a 100 year return period storm event was estimated to have a magnitude of 2.35 m^3/s for the entire quarry area. All of the hydraulic control structures at the currently proposed ultimate level of development should thus be designed for a peak flow magnitude of no less than 2.35 m^3/s.

Using HEC-1 modelling, the runoff volume resulting from a 6 hour duration storm event with a 25 year return period was estimated to be approximately 3,620 m^3 for the entire quarry. The flow retention/siltation structure (or capacity of sand pit floor allowing for water accumulation between the interstices of porous media) of the proposed sand pit development area should have a volume of no less than 3,620 m^3 to accommodate for site runoff at the currently proposed ultimate level of development.

Closure

We trust that this satisfies your current requirements. If you have any questions or require additional information, please contact us at your convenience.

Yours truly,

Hydro-Com Technologies

Peter Wedge, M.Sc.E (candidate)., MIT.

Hans Arisz, M.Sc.E., P.Eng.

APPENDIX C

Letter to Union of Nova Scotia Indians & Project Information Sheet

Jacques Whitford

Engineering, Scientific, Planning and Management Consultants

3 Spectacle Lake Drive
Dartmouth Nova Scotia
Canada B3B 1W8

Bus 902 468 7777
Fax 902 468 9009

www.jacqueswhitford.com

Project No. 19677

October 11, 2006

Mr. Joe B. Marshall
Union of Nova Scotia Indians
47 Maillard Street
Membertou, Nova Scotia
B15 2P5

Dear Mr. Marshall:

Re: MacLeod Settlement Sand Pit Project

This letter is to inform you of the development of a sand pit near the community of MacLeod Settlement, Nova Scotia. This project may be located close to your area of interest.

The developer, Ideal Concrete 1993 Ltd., is proposing to excavate the area and maintain operations in accordance with the Pit and Quarry Guidelines of Nova Scotia. Ideal Concrete 1993 Ltd. is currently preparing the documentation required to register this project under the Environmental Assessment Regulations pursuant to the Nova Scotia *Environment Act*.

Please find enclosed the Project Information Sheet and the corresponding Figure A, which provide more details regarding the project and the site location.

Please contact the undersigned at (902) 481-1477 or the contacts listed on the Project Information Sheet with any comments, concerns, or questions you may have regarding the project by November 3, 2006.

Yours truly,

JACQUES WHITFORD LIMITED

Brent Ferguson, P.Geo.
Project Officer

BF/dw

Enclosure

P:\EnvSci\19xxx\19677-MacLeod Settlement Pit EA\Macleod_Letter_To_First_Nations.doc

Ideal Concrete 1993 Ltd.
MacLeod Settlement Pit Development
Project Information Sheet

Project Overview

Ideal Concrete 1993 Ltd. (Ideal Concrete) presently own property in Macleod Settlement, Cape Breton, Nova Scotia. The property is presently leased to a blueberry farmer who cultivates and harvests blueberries on site. Ideal Concrete proposes to develop the property into a sand pit. The proposed development area is shown on the attached Figure A.

Specific project details are as follows:

- the expected operating area of the pit is predicted to be approximately 19.6 ha
- the facility will operate on a schedule of 12 hrs/day, 6 days/week, between April and December;
- operational activities will include excavation, screening and washing;
- the anticipated/proposed production rate for the pit will be up to 50,000 tonnes/year;
- the estimated on site reserve is approximately 4.3 million tonnes;
- there are two residences/structures within 2 km of the proposed pit boundary; one of which is dilapidated and not in use;
- the on-site streams and wetlands will be avoided with an appropriate buffer maintained;
- washing will be undertaken using a closed circuit with settling ponds;
- wash water would be sourced from an on-site wash water pond which will usually fill during the winter. This would be supplemented as required by intermittently running a two inch pump from an on-site stream, with an average withdrawal of less than 10,000 litres per day;
- drainage and surface runoff collection and controls will be in place for the development (*e.g.*, site grading sloped back to the wash water pond); and
- sand produced will be used in concrete production at facilities located away from the site.

Environmental Assessment Process

Ideal Concrete is required to register this project as a Class I Undertaking pursuant to the Nova Scotia *Environment Act* and *Environmental Assessment Regulations*. An Environmental Assessment Registration report will be prepared by environmental consultants Jacques Whitford Limited, on behalf of Ideal Concrete to fulfill these regulatory requirements in accordance with the *Guide to Preparing an EA Registration Document for Pit and Quarry Developments in Nova Scotia* (NSDEL 2002).

Other relevant provincial regulations will also be followed including the *Activities Designation Regulations*, which requires an Industrial Approval from the Nova Scotia Environment and Labour (NSEL) for the pit operation. In addition, Provincial guidelines will be adhered to including the Nova Scotia *Pit and Quarry Guidelines* (NSEL 1999).

The environmental assessment registration will evaluate potential environmental effects of the project and identify appropriate mitigation and monitoring to minimize these effects. The environmental assessment registration document will be available for public review and comment once it is filed with the NSEL.

Environmental Document Components

The environmental registration document focuses on those aspects of the environment of most concern. Components to be evaluated include:

- rare and sensitive flora;
- wildlife including herpetiles and breeding birds;
- wetlands;
- groundwater resources;
- surface water resources (*i.e.* hydrology), freshwater fish and fish habitat;
- archaeological and heritage resources;
- air quality; and
- socio-economic environment.

Potential effects of pit activities on these components will be addressed in the registration document.

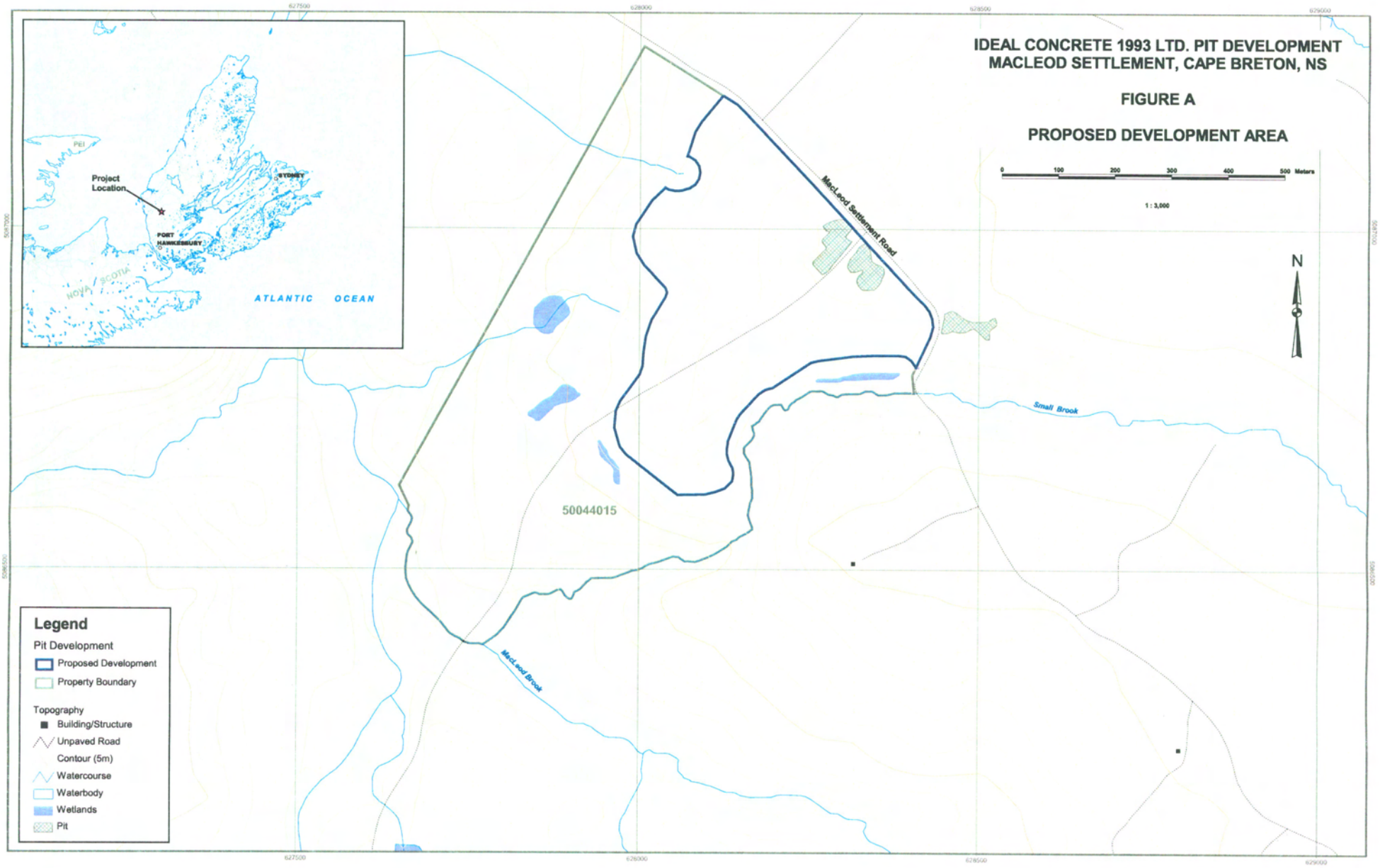
Contacts

If you have any questions or concerns about this project, please provide comments by November 3, 2006 to:

Vincent VanZutphen
Ideal Concrete 1993 Ltd.
(902) 945-2300 (tel.)
(902) 945-2087 (fax)

or

Angela Swaine, Environmental Analyst / Project Manager
Jacques Whitford Limited
3 Spectacle Lake Drive, Dartmouth, NS B3B 1W8
(902) 468-7777 ext. 210 (tel.)
(902) 468-9009 (fax)


IDEAL CONCRETE 1993 LTD. PIT DEVELOPMENT
MACLEOD SETTLEMENT, CAPE BRETON, NS
FIGURE A
PROPOSED DEVELOPMENT AREA
0 100 200 300 400 500 Meters
1 : 3,000
N
MacLeod Settlement Road
Small Brook
MacLeod Brook
50044015
Project Location
PEI
SYDNEY
PORT HAWKESBURY
NOVA SCOTIA
ATLANTIC OCEAN
Legend
Pit Development
Proposed Development
Property Boundary
Topography
Building/Structure
Unpaved Road
Contour (5m)
Watercourse
Waterbody
Wetlands
Pit

APPENDIX D

Vascular Plants Recorded in Study Area

Table D.1A: Vascular Plants Recorded During MacLeod Settlement Field Surveys (alphabetical by common name)

Common Name	Binomial	S-Rank
Balsam Fir	Abies balsamea	S5
Striped Maple	Acer pensylvanicum	S5
Red Maple	Acer rubrum	S5
Sugar Maple	Acer saccharum	S5
Mountain Maple	Acer spicatum	S5
Woodland Agrimony	Agrimonia striata	S5
Colonial Bentgrass	Agrostis capillaris	SE
Rough Bentgrass	Agrostis hyemalis	S5
Perennial Bentgrass	Agrostis perennans	S4S5
Spreading Bentgrass	Agrostis stolonifera	S5SE
Speckled Alder	Alnus incana	S5
Serviceberry	Amelanchier sp.	NA
Serviceberry	Amerlanchier sp.	NA
Pearly Everlasting	Anaphalis margaritacea	S5
Sweet Vernal Grass	Anthoxanthum odoratum	SE
Wild Sarsaparilla	Aralia nudicaulis	S5
Black Chokeberry	Aronia melanocarpa	S5
Whorled Aster	Aster acuminatus	S5
Farewell-Summer	Aster lateriflorus	S5
New Belgium American-Aster	Aster novi-belgii	S5
Swamp Aster	Aster puniceus	S5
Rough-Leaved Aster	Aster radula	S5
Parasol White-Top	Aster umbellatus	S5
Lady-Fern	Athyrium filix-femina	S5
Yellow Birch	Betula alleghaniensis	S5
Heart-Leaved Paper Birch	Betula cordifolia	S5
Paper Birch	Betula papyrifera	S5
Paper Birch	Betula papyrifera	S5
Chamomile Grape-fern	Botrychium matricariaefolium	S4
Least Grape-Fern	Botrychium simplex	**S2/S3**
Bearded Short-Husk	Brachyelytrum erectum	S4S5
Blue-Joint Reedgrass	Calamagrostis canadensis	S5
Black Sedge	Carex arctata	S5
Fringed Sedge	Carex crinita	S4S5
Softleaf Sedge	Carex disperma	S5
Little Prickly Sedge	Carex echinata	S5
Yellow Sedge	Carex flava	S5
Graceful Sedge	Carex gracillima	S4S5
A Sedge	Carex gynandra	S5
Bladder Sedge	Carex intumescens	S5
Black Sedge	Carex nigra	S5
New England Sedge	Carex novae-angliae	S5
Rough Sedge	Carex scabrata	S5
Stalk-Grain Sedge	Carex stipata	S5
Tussock Sedge	Carex stricta	S5
Three-Seed Sedge	Carex trisperma	S5
White Turtlehead	Chelone glabra	S5
Oxeye Daisy	Chrysanthemum leucanthemum	SE
Small Enchanter's Nightshade	Circaea alpina	S5
Creeping Thistle	Cirsium arvense	SE
Swamp Thistle	Cirsium muticum	S5
Virginia Virgin-Bower	Clematis virginiana	S5
Goldthread	Coptis trifolia	S5
Alternate-Leaf Dogwood	Cornus alternifolia	S5
Dwarf Dogwood	Cornus canadensis	S5
Silky Dogwood	Cornus sericea	S5
Beaked Hazelnut	Corylus cornuta	S5
Hawthorn	Crataegus sp.	NA
Pink Lady's-Slipper	Cypripedium acaule	S5

Table D.1A: Vascular Plants Recorded During MacLeod Settlement Field Surveys (alphabetical by common name)

Common Name	Binomial	S-Rank
Poverty Oat-Grass	Danthonia spicata	S5
Eastern Hay-Scented Fern	Dennstaedtia punctilobula	S5
Northern Bush-Honeysuckle	Diervilla lonicera	S5
Mountain Wood-Fern	Dryopteris campyloptera	S5
Spinulose Shield Fern	Dryopteris carthusiana	S5
Crested Shield-Fern	Dryopteris cristata	S5
Evergreen Woodfern	Dryopteris intermedia	S5
a Hybrid Wood-fern	Dryopteris x boottii	HYB
Fireweed	Epilobium angustifolium	S5
Hairy Willow-Herb	Epilobium ciliatum	S5
Marsh Willow-Herb	Epilobium palustre	S5
Field Horsetail	Equisetum arvense	S5
Water Horsetail	Equisetum fluviatile	S5
Woodland Horsetail	Equisetum sylvaticum	S5
Narrow-leaved Cotton-Grass	Eriophorum polystachion	S5
Tawny Cotton-Grass	Eriophorum virginicum	S5
Spotted Joe-Pye Weed	Eupatorium maculatum	S5
Spotted Joe-Pye Weed	Eupatorium maculatum	S5
Eyebright	Euphrasia sp.	
Flat-Top Fragrant-Golden-Rod	Euthamia graminifolia	S5
Virginia Strawberry	Fragaria virginiana	S5
Virginia Strawberry	Fragaria virginiana	S5
Brittle-Stem Hempnettle	Galeopsis tetrahit	SE
Rough Bedstraw	Galium asprellum	S5
Marsh Bedstraw	Galium palustre	S5
Small Bedstraw	Galium trifidum	S5
Sweet-Scent Bedstraw	Galium triflorum	S5
Creeping Snowberry	Gaultheria hispidula	S5
Purple Avens	Geum rivale	S5
Manna-grass	Glyceria sp.	NA
Fowl Manna-Grass	Glyceria striata	S5
Northern Oak Fern	Gymnocarpium dryopteris	S5
Orange Hawkweed	Hieracium aurantiacum	SE
Meadow Hawkweed	Hieracium caespitosum	SE
Canada Hawkweed	Hieracium canadense	S4S5
Common Hawkweed	Hieracium lachenalii	SE
Mouseear	Hieracium pilosella	SE
Rough Hawkweed	Hieracium scabrum	S5
Whiplash Hawkweed	Hieracium x flagellare	SE
A St. John's-Wort	Hypericum perforatum	SE
Black Holly	Ilex verticillata	S5
Spotted Jewel-Weed	Impatiens capensis	S5
Blueflag	Iris versicolor	S5
Soft Rush	Juncus effusus	S5
Sheep-Laurel	Kalmia angustifolia	S5
Pale Laurel	Kalmia polifolia	S5
American Larch	Larix laricina	S5
Common Labrador Tea	Ledum groenlandicum	S5
Twinflower	Linnaea borealis	S5
Mountain Fly-Honeysuckle	Lonicera caerulea	S4S4
American Fly-Honeysuckle	Lonicera canadensis	S5
Birds-Foot Trefoil	Lotus corniculatus	SE
Hairy Woodrush	Luzula acuminata	S5
Common Woodrush	Luzula multiflora	S5
Running Pine	Lycopodium clavatum	S5
Tree Clubmoss	Lycopodium obscurum	S5
Northern Bugleweed	Lycopus uniflorus	S5
Wild Lily-of-The-Valley	Maianthemum canadense	S5
Black Medic	Medicago lupulina	SE

Table D.1A: Vascular Plants Recorded During MacLeod Settlement Field Surveys (alphabetical by common name)

Common Name	Binomial	S-Rank
American Cow-Wheat	Melampyrum lineare	S5
Partridge-Berry	Mitchella repens	S5
Naked Bishop's-Cap	Mitella nuda	S5
Indian-Pipe	Monotropa uniflora	S5
Small Forget-Me-Not	Myosotis laxa	S5
Forget-me-not	Myosotis sp.	NA
Northern Bayberry	Myrica pensylvanica	S5
Mountain Holly	Nemopanthus mucronata	S5
Common Evening-Primrose	Oenothera biennis	S5
Small Sundrops	Oenothera perennis	S5
Sensitive Fern	Onoclea sensibilis	S5
Cinnamon Fern	Osmunda cinnamomea	S5
Interrupted Fern	Osmunda claytoniana	S5
White Wood-Sorrel	Oxalis acetosella	S5
Upright Yellow Wood-Sorrel	Oxalis stricta	S5
Northern Panic-Grass	Panicum boreale.	S5
Panic Grass	Panicum lanuginosum	S5
Arctic Butter-Bur	Petasites frigidus	S4S5
Northern Beech Fern	Phegopteris connectilis	S5
White Spruce	Picea glauca	S5
Black Spruce	Picea mariana	S5
Red Pine	Pinus resinosa	S4S5
Eastern White Pine	Pinus strobus	S5
English Plantain	Plantago lanceolata	SE
Nipple-Seed Plantain	Plantago major	SE
Leafy White Orchis	Platanthera dilatata	S4S5
Green Orchid	Platanthera huronensis	SU
Fowl Bluegrass	Poa palustris	NA
Kentucky Bluegrass	Poa pratensis	S5
Arrow-Leaved Tearthumb	Polygonum sagittatum	S5
Christmas Fern	Polystichum acrostichoides	S5
Quaking Aspen	Populus tremuloides	S5
Old-Field Cinquefoil	Potentilla simplex	S5
Tall Rattlesnake-root	Prenanthes altissima	S4S5
Three-Leaved Rattlesnake-root	Prenanthes trifoliolata	S5
Self-Heal	Prunella vulgaris	S5
Fire Cherry	Prunus pensylvanica	S5
Choke Cherry	Prunus virginiana	S5
Bracken Fern	Pteridium aquilinum	S5
Shinleaf	Pyrola elliptica	S5
One-Side Wintergreen	Pyrola secunda	S5
Tall Butter-Cup	Ranunculus acris	SE
Creeping Butter-Cup	Ranunculus repens	SE
Rhodora	Rhododendron canadense	S5
Bristly Black Currant	Ribes lacustre	S5
Swamp Red Currant	Ribes triste	S4
Smooth Blackberry	Rubus canadensis	S5
Bristly Dewberry	Rubus hispidus	S5
Red Raspberry	Rubus idaeus	S5
Dwarf Red Raspberry	Rubus pubescens	S5
Sheep Sorrel	Rumex acetosella	SE
Water Dock	Rumex orbiculatus	S5
Bebb's Willow	Salix bebbiana	S5
Pussy Wilow	Salix discolor	S5
Prairie Willow	Salix humilis	S5
Red Elderberry	Sambucus racemosa	S5
Black Snake-Root	Sanicula marilandica	S4
Field Basil	Satureja vulgaris	S5
Black-Girdle Bulrush	Scirpus cyperinus	S5

Table D.1A: Vascular Plants Recorded During MacLeod Settlement Field Surveys (alphabetical by common name)

Common Name	Binomial	S-Rank
Small-Fruit Bulrush	Scirpus microcarpus	S5
Golden Groundsel	Senecio aureus	S4
Tansy Ragwort	Senecio jacobaea	SE
Robbins Squaw-Weed	Senecio robbinsii	S4S5
Pointed Blue-Eyed-Grass	Sisyrinchium montanum	S3
Three-Leaf Solomon's-Plume	Smilacina trifolia	S4S5
Climbing Nightshade	Solanum dulcamara	SE
Canada Goldenrod	Solidago canadensis	S5
Broad-Leaved Goldenrod	Solidago flexicaulis	S5
Downy Goldenrod	Solidago puberula	S5
Rough-Leaf Goldenrod	Solidago rugosa	S5
Bog Goldenrod	Solidago uliginosa	S5
American Mountain-Ash	Sorbus americana	S5
Burr-reed	Sparganium sp.	NA
Narrow-Leaved Meadow-Sweet	Spiraea alba	S5
Ladies'-Tresses	Spiranthes lacera	S5
Tall Meadow-Rue	Thalictrum pubescens	S5
New York Fern	Thelypteris noveboracensis	S5
Northern Poison Oak	Toxicodendron rydbergii	S5
Marsh St. John's-Wort	Triadenum fraseri	S5
Northern Starflower	Trientalis borealis	S5
Red Clover	Trifolium pratense	SE
White Clover	Trifolium repens	SE
Colt's Foot	Tussilago farfara	SE
Broad-Leaf Cattail	Typha latifolia	S5
Late Lowbush Blueberry	Vaccinium angustifolia	S5
Velvetleaf Blueberry	Vaccinium myrtilloides	S5
Small Cranberry	Vaccinium oxycoccos	S5
American Speedwell	Veronica americana	S5
Gypsy-Weed	Veronica officinalis	S5SE
Possum-Haw Viburnum	Viburnum nudum	S5
Tufted Vetch	Vicia cracca	SE
Labrador Violet	Viola adunca	S5
Atlantic Canada Conservation Data Centre Species Rank Definitions		
S1	Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.	
S2	Rare throughout its range in the province (6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.	
S3	Uncommon throughout its range in the province, or found only in a restricted range, even if abundant at some locations. (21 to 100 occurrences).	
S4	Usually widespread, fairly common throughout its range in the province, and apparently secure with many occurences, but the Element is of long-term concern (e.g., watch list).	
S5	Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions.	
S#S#	Numeric range rank: A range between two consecutive numeric ranks. Denotes uncertainty about the exact rarity of the species (e.g., S1S2)	
S#?	Inexact or uncertain ranking.	

Table D.1B: Vascular Plants Recorded During MacLeod Settlement Field Surveys (alphabetical by binomial name)

Binomial	Common Name	S-Rank
Abies balsamea	Balsam Fir	S5
Acer pensylvanicum	Striped Maple	S5
Acer rubrum	Red Maple	S5
Acer saccharum	Sugar Maple	S5
Acer spicatum	Mountain Maple	S5
Agrimonia striata	Woodland Agrimony	S5
Agrostis capillaris	Colonial Bentgrass	SE
Agrostis hyemalis	Rough Bentgrass	S5
Agrostis perennans	Perennial Bentgrass	S4S5
Agrostis stolonifera	Spreading Bentgrass	S5SE
Alnus incana	Speckled Alder	S5
Amelanchier sp.	Serviceberry	NA
Amerlanchier sp.	Serviceberry	NA
Anaphalis margaritacea	Pearly Everlasting	S5
Anthoxanthum odoratum	Sweet Vernal Grass	SE
Aralia nudicaulis	Wild Sarsaparilla	S5
Aronia melanocarpa	Black Chokeberry	S5
Aster acuminatus	Whorled Aster	S5
Aster lateriflorus	Farewell-Summer	S5
Aster novi-belgii	New Belgium American-Aster	S5
Aster puniceus	Swamp Aster	S5
Aster radula	Rough-Leaved Aster	S5
Aster umbellatus	Parasol White-Top	S5
Athyrium filix-femina	Lady-Fern	S5
Betula alleghaniensis	Yellow Birch	S5
Betula cordifolia	Heart-Leaved Paper Birch	S5
Betula papyrifera	Paper Birch	S5
Betula papyrifera	Paper Birch	S5
Botrychium matricariaefolium	Chamomile Grape-fern	S4
Botrychium simplex	Least Grape-Fern	**S2/S3**
Brachyelytrum erectum	Bearded Short-Husk	S4S5
Calamagrostis canadensis	Blue-Joint Reedgrass	S5
Carex arctata	Black Sedge	S5
Carex crinita	Fringed Sedge	S4S5
Carex disperma	Softleaf Sedge	S5
Carex echinata	Little Prickly Sedge	S5
Carex flava	Yellow Sedge	S5
Carex gracillima	Graceful Sedge	S4S5
Carex gynandra	A Sedge	S5
Carex intumescens	Bladder Sedge	S5
Carex nigra	Black Sedge	S5
Carex novae-angliae	New England Sedge	S5
Carex scabrata	Rough Sedge	S5
Carex stipata	Stalk-Grain Sedge	S5
Carex stricta	Tussock Sedge	S5
Carex trisperma	Three-Seed Sedge	S5
Chelone glabra	White Turtlehead	S5
Chrysanthemum leucanthemum	Oxeye Daisy	SE
Circaea alpina	Small Enchanter's Nightshade	S5
Cirsium arvense	Creeping Thistle	SE
Cirsium muticum	Swamp Thistle	S5
Clematis virginiana	Virginia Virgin-Bower	S5
Coptis trifolia	Goldthread	S5
Cornus alternifolia	Alternate-Leaf Dogwood	S5
Cornus canadensis	Dwarf Dogwood	S5
Cornus sericea	Silky Dogwood	S5

Table D.1B: Vascular Plants Recorded During MacLeod Settlement Field Surveys (alphabetical by binomial name)

Binomial	Common Name	S-Rank
Corylus cornuta	Beaked Hazelnut	S5
Crataegus sp.	Hawthorn	NA
Cypripedium acaule	Pink Lady's-Slipper	S5
Danthonia spicata	Poverty Oat-Grass	S5
Dennstaedtia punctilobula	Eastern Hay-Scented Fern	S5
Diervilla lonicera	Northern Bush-Honeysuckle	S5
Dryopteris campyloptera	Mountain Wood-Fern	S5
Dryopteris carthusiana	Spinulose Shield Fern	S5
Dryopteris cristata	Crested Shield-Fern	S5
Dryopteris intermedia	Evergreen Woodfern	S5
Dryopteris x boottii	a Hybrid Wood-fern	HYB
Epilobium angustifolium	Fireweed	S5
Epilobium ciliatum	Hairy Willow-Herb	S5
Epilobium palustre	Marsh Willow-Herb	S5
Equisetum arvense	Field Horsetail	S5
Equisetum fluviatile	Water Horsetail	S5
Equisetum sylvaticum	Woodland Horsetail	S5
Eriophorum polystachion	Narrow-leaved Cotton-Grass	S5
Eriophorum virginicum	Tawny Cotton-Grass	S5
Eupatorium maculatum	Spotted Joe-Pye Weed	S5
Eupatorium maculatum	Spotted Joe-Pye Weed	S5
Euphrasia sp.	Eyebright	
Euthamia graminifolia	Flat-Top Fragrant-Golden-Rod	S5
Fragaria virginiana	Virginia Strawberry	S5
Fragaria virginiana	Virginia Strawberry	S5
Galeopsis tetrahit	Brittle-Stem Hempnettle	SE
Galium asprellum	Rough Bedstraw	S5
Galium palustre	Marsh Bedstraw	S5
Galium trifidum	Small Bedstraw	S5
Galium triflorum	Sweet-Scent Bedstraw	S5
Gaultheria hispidula	Creeping Snowberry	S5
Geum rivale	Purple Avens	S5
Glyceria sp.	Manna-grass	NA
Glyceria striata	Fowl Manna-Grass	S5
Gymnocarpium dryopteris	Northern Oak Fern	S5
Hieracium aurantiacum	Orange Hawkweed	SE
Hieracium caespitosum	Meadow Hawkweed	SE
Hieracium canadense	Canada Hawkweed	S4S5
Hieracium lachenalii	Common Hawkweed	SE
Hieracium pilosella	Mouseear	SE
Hieracium scabrum	Rough Hawkweed	S5
Hieracium x flagellare	Whiplash Hawkweed	SE
Hypericum perforatum	A St. John's-Wort	SE
Ilex verticillata	Black Holly	S5
Impatiens capensis	Spotted Jewel-Weed	S5
Iris versicolor	Blueflag	S5
Juncus effusus	Soft Rush	S5
Kalmia angustifolia	Sheep-Laurel	S5
Kalmia polifolia	Pale Laurel	S5
Larix laricina	American Larch	S5
Ledum groenlandicum	Common Labrador Tea	S5
Linnaea borealis	Twinflower	S5
Lonicera caerulea	Mountain Fly-Honeysuckle	S4S4
Lonicera canadensis	American Fly-Honeysuckle	S5
Lotus corniculatus	Birds-Foot Trefoil	SE
Luzula acuminata	Hairy Woodrush	S5

Table D.1B: Vascular Plants Recorded During MacLeod Settlement Field Surveys (alphabetical by binomial name)

Binomial	Common Name	S-Rank
Luzula multiflora	Common Woodrush	S5
Lycopodium clavatum	Running Pine	S5
Lycopodium obscurum	Tree Clubmoss	S5
Lycopus uniflorus	Northern Bugleweed	S5
Maianthemum canadense	Wild Lily-of-The-Valley	S5
Medicago lupulina	Black Medic	SE
Melampyrum lineare	American Cow-Wheat	S5
Mitchella repens	Partridge-Berry	S5
Mitella nuda	Naked Bishop's-Cap	S5
Monotropa uniflora	Indian-Pipe	S5
Myosotis laxa	Small Forget-Me-Not	S5
Myosotis sp.	Forget-me-not	NA
Myrica pensylvanica	Northern Bayberry	S5
Nemopanthus mucronata	Mountain Holly	S5
Oenothera biennis	Common Evening-Primrose	S5
Oenothera perennis	Small Sundrops	S5
Onoclea sensibilis	Sensitive Fern	S5
Osmunda cinnamomea	Cinnamon Fern	S5
Osmunda claytoniana	Interrupted Fern	S5
Oxalis acetosella	White Wood-Sorrel	S5
Oxalis stricta	Upright Yellow Wood-Sorrel	S5
Panicum boreale.	Northern Panic-Grass	S5
Panicum lanuginosum	Panic Grass	S5
Petasites frigidus	Arctic Butter-Bur	S4S5
Phegopteris connectilis	Northern Beech Fern	S5
Picea glauca	White Spruce	S5
Picea mariana	Black Spruce	S5
Pinus resinosa	Red Pine	S4S5
Pinus strobus	Eastern White Pine	S5
Plantago lanceolata	English Plantain	SE
Plantago major	Nipple-Seed Plantain	SE
Platanthera dilatata	Leafy White Orchis	S4S5
Platanthera huronensis	Green Orchid	SU
Poa palustris	Fowl Bluegrass	NA
Poa pratensis	Kentucky Bluegrass	S5
Polygonum sagittatum	Arrow-Leaved Tearthumb	S5
Polystichum acrostichoides	Christmas Fern	S5
Populus tremuloides	Quaking Aspen	S5
Potentilla simplex	Old-Field Cinquefoil	S5
Prenanthes altissima	Tall Rattlesnake-root	S4S5
Prenanthes trifoliolata	Three-Leaved Rattlesnake-root	S5
Prunella vulgaris	Self-Heal	S5
Prunus pensylvanica	Fire Cherry	S5
Prunus virginiana	Choke Cherry	S5
Pteridium aquilinum	Bracken Fern	S5
Pyrola elliptica	Shinleaf	S5
Pyrola secunda	One-Side Wintergreen	S5
Ranunculus acris	Tall Butter-Cup	SE
Ranunculus repens	Creeping Butter-Cup	SE
Rhododendron canadense	Rhodora	S5
Ribes lacustre	Bristly Black Currant	S5
Ribes triste	Swamp Red Currant	S4
Rubus canadensis	Smooth Blackberry	S5
Rubus hispidus	Bristly Dewberry	S5
Rubus idaeus	Red Raspberry	S5
Rubus pubescens	Dwarf Red Raspberry	S5

Table D.1B: Vascular Plants Recorded During MacLeod Settlement Field Surveys (alphabetical by binomial name)

Binomial	Common Name	S-Rank
Rumex acetosella	Sheep Sorrel	SE
Rumex orbiculatus	Water Dock	S5
Salix bebbiana	Bebb's Willow	S5
Salix discolor	Pussy Wilow	S5
Salix humilis	Prairie Willow	S5
Sambucus racemosa	Red Elderberry	S5
Sanicula marilandica	Black Snake-Root	S4
Satureja vulgaris	Field Basil	S5
Scirpus cyperinus	Black-Girdle Bulrush	S5
Scirpus microcarpus	Small-Fruit Bulrush	S5
Senecio aureus	Golden Groundsel	S4
Senecio jacobaea	Tansy Ragwort	SE
Senecio robbinsii	Robbins Squaw-Weed	S4S5
Sisyrinchium montanum	Pointed Blue-Eyed-Grass	S3
Smilacina trifolia	Three-Leaf Solomon's-Plume	S4S5
Solanum dulcamara	Climbing Nightshade	SE
Solidago canadensis	Canada Goldenrod	S5
Solidago flexicaulis	Broad-Leaved Goldenrod	S5
Solidago puberula	Downy Goldenrod	S5
Solidago rugosa	Rough-Leaf Goldenrod	S5
Solidago uliginosa	Bog Goldenrod	S5
Sorbus americana	American Mountain-Ash	S5
Sparganium sp.	Burr-reed	NA
Spiraea alba	Narrow-Leaved Meadow-Sweet	S5
Spiranthes lacera	Ladies'-Tresses	S5
Thalictrum pubescens	Tall Meadow-Rue	S5
Thelypteris noveboracensis	New York Fern	S5
Toxicodendron rydbergii	Northern Poison Oak	S5
Triadenum fraseri	Marsh St. John's-Wort	S5
Trientalis borealis	Northern Starflower	S5
Trifolium pratense	Red Clover	SE
Trifolium repens	White Clover	SE
Tussilago farfara	Colt's Foot	SE
Typha latifolia	Broad-Leaf Cattail	S5
Vaccinium angustifolia	Late Lowbush Blueberry	S5
Vaccinium myrtilloides	Velvetleaf Blueberry	S5
Vaccinium oxycoccos	Small Cranberry	S5
Veronica americana	American Speedwell	S5
Veronica officinalis	Gypsy-Weed	S5SE
Viburnum nudum	Possum-Haw Viburnum	S5
Vicia cracca	Tufted Vetch	SE
Viola adunca	Labrador Violet	S5

Atlantic Canada Conservation Data Centre Species Rank Definitions	
S1	Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
S2	Rare throughout its range in the province (6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
S3	Uncommon throughout its range in the province, or found only in a restricted range, even if abundant at some locations. (21 to 100 occurrences).
S4	Usually widespread, fairly common throughout its range in the province, and apparently secure with many occurences, but the Element is of long-term concern (e.g., watch list).
S5	Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions.
S#S#	Numeric range rank: A range between two consecutive numeric ranks. Denotes uncertainty about the exact rarity of the species (e.g., S1S2)
S#?	Inexact or uncertain ranking.

APPENDIX E

Fish and Fish Habitat Photographs

Photo 1: (Stream A) Closed bottom metal culvert

Photo 2: (Stream A) Looking downstream from a series of pools and riffles (50m from point of origin)

Photo 3: (Stream A) Wetland-like habitat

Photo 4: (Stream A) Log and woody debris, water moving beneath

Photo 5: (Stream A) Looking upstream, cascade over step-like bedrock at 280m

Photo 6: (Stream A) Brook trout (*Salvelinus fontinalis*)

Photo 7: (Stream B) Poorly defined channel, some pool of standing water

Photo 8: (Stream B) Poorly defined channel

Photo 9: (Stream B) Slow moving, shallow water

Photo 10: (Stream C) Poor salmonid rearing and spawning habitat

APPENDIX F

Bird Species Recorded in Study Area

Table F.1: Birds Recorded from MBBA Model

Binomial Name	Common Name	Breeding Status	ACCDC Rank	NSDNR Rank
Haliaeetus leucocephalus	Bald Eagle	Confirmed	S5B,S3N	Green

Table F.2A: Birds Recorded During MacLeod Settlement Field Surveys (alphabetical by common name)

Common Name	Binomial Name	NSDNR Rank
Alder Flycatcher	*Empidonax alnorum*	Green
American Goldfinch	*Carduelis tristis*	Green
American Robin	*Turdus migratorius*	Green
Barred Owl	*Strix varia*	Green
Bay-breasted Warbler	*Dendroica castanea*	Green
Belted Kingfisher	*Ceryle alcyon*	Green
Black-and-white Warbler	*Mniotilta varia*	Green
Blackburnian Warbler	*Dendroica fusca*	Green
Black-capped Chickadee	*Parus atricapillus*	Green
Black-throated Green Warbler	*Dendroica virens*	Green
Blue Jay	*Cyanocitta cristata*	Green
Boreal Chickadee	*Parus hudsonicus*	Green
Chimney Swift	*Chaetura pelagica*	Green
Common Yellowthroat	*Geothlypis trichas*	Green
Dark-eyed Junco	*Junco hyemalis*	Green
Double-crested Cormorant	*Phalacrocorax auritus*	Green
Downy Woodpecker	*Picoides pubescens*	Green
Golden-crowned Kinglet	*Regulus satrapa*	Green
Hermit Thrush	*Catharus guttatus*	Green
Herring Gull	*Larus argentatus*	Green
Least Flycatcher	*Empidonax minimus*	Green
Lincoln's Sparrow	*Melospiza lincolnii*	Green
Magnolia Warbler	*Dendroica magnolia*	Green
Mourning Warbler	*Oporornis philadelphia*	Green
Northern Flicker	*Colaptes auratus*	Green
Northern Goshawk	*Accipiter gentilis*	Yellow
Northern Waterthrush	*Seiurus noveboracensis*	Green
Ovenbird	*Seiurus aurocapillus*	Green
Parula Warbler	*Parula americana*	Green
Purple Finch	*Carpodacus purpureus*	Green
Red-eyed Vireo	*Vireo olivaceus*	Green
Ruby-crowned Kinglet	*Regulus calendula*	Green
Ruffed Grouse	*Bonasa umbellus*	Green
Solitary Vireo	*Vireo solitarius*	Green
Song Sparrow	*Melospiza melodia*	Green
Swainson's Thrush	*Catharus ustulatus*	Green
White-throated Sparrow	*Zonotrichia albicollis*	Green
Winter Wren	*Troglodytes troglodytes*	Green
Yellow-bellied Flycatcher	*Empidonax flaviventris*	Green
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Green
Yellow-rumped Warbler	*Dendroica coronata*	Green
Nova Scotia Department of Natural Resources General Status Ranks		
Red	Known to be or thought to be at risk.	
Yellow	Sensitive to human activities or natural events	
Green	Not believed to be sensitive, or at risk	

Table F.2B: Birds Recorded During MacLeod Settlement Field Surveys (alphabetical by binomial name)

Binomial Name	Common Name	NSDNR Rank
Accipiter gentilis	Northern Goshawk	Yellow
Bonasa umbellus	Ruffed Grouse	Green
Carduelis tristis	American Goldfinch	Green
Carpodacus purpureus	Purple Finch	Green
Catharus guttatus	Hermit Thrush	Green
Catharus ustulatus	Swainson's Thrush	Green
Ceryle alcyon	Belted Kingfisher	Green
Chaetura pelagica	Chimney Swift	Green
Colaptes auratus	Northern Flicker	Green
Cyanocitta cristata	Blue Jay	Green
Dendroica castanea	Bay-breasted Warbler	Green
Dendroica coronata	Yellow-rumped Warbler	Green
Dendroica fusca	Blackburnian Warbler	Green
Dendroica magnolia	Magnolia Warbler	Green
Dendroica virens	Black-throated Green Warbler	Green
Empidonax alnorum	Alder Flycatcher	Green
Empidonax flaviventris	Yellow-bellied Flycatcher	Green
Empidonax minimus	Least Flycatcher	Green
Geothlypis trichas	Common Yellowthroat	Green
Junco hyemalis	Dark-eyed Junco	Green
Larus argentatus	Herring Gull	Green
Melospiza lincolnii	Lincoln's Sparrow	Green
Melospiza melodia	Song Sparrow	Green
Mniotilta varia	Black-and-white Warbler	Green
Oporornis philadelphia	Mourning Warbler	Green
Parula americana	Parula Warbler	Green
Parus atricapillus	Black-capped Chickadee	Green
Parus hudsonicus	Boreal Chickadee	Green
Phalacrocorax auritus	Double-crested Cormorant	Green
Picoides pubescens	Downy Woodpecker	Green
Regulus calendula	Ruby-crowned Kinglet	Green
Regulus satrapa	Golden-crowned Kinglet	Green
Seiurus aurocapillus	Ovenbird	Green
Seiurus noveboracensis	Northern Waterthrush	Green
Sphyrapicus varius	Yellow-bellied Sapsucker	Green
Troglodytes troglodytes	Winter Wren	Green
Turdus migratorius	American Robin	Green
Vireo olivaceus	Red-eyed Vireo	Green
Vireo solitarius	Solitary Vireo	Green
Zonotrichia albicollis	White-throated Sparrow	Green

Nova Scotia Department of Natural Resources General Status Ranks	
Red	Known to be or thought to be at risk.
Yellow	Sensitive to human activities or natural events
Green	Not believed to be sensitive, or at risk

APPENDIX G

Additional Wetland Descriptions

Appendix G: Additional Wetland Descriptions

Wetland 3

Wetland 3 is a 0.231 ha wetland complex composed of low shrub dominated spring swamp and grass dominated seepage track marsh. This wetland has formed in a shallow declivity on a gentle slope. The wetland is located about halfway down the slope and is fed by a groundwater seep. The volume of groundwater entering the wetland is sufficient to keep the soils wet enough to promote the growth of facultative wetland plant species and impede the establishment of tree cover; however, there is no open water present.

The low shrub dominated spring swamp is located at the upper end of the wetland. This plant community consists of a moderately dense cover of low shrubs composed mainly of narrow-leaved meadow-sweet. Other species comprising the shrub layer include speckled alder (*Alnus incana*), balsam willow (*Salix pyrifolia*), and red maple saplings. The ground vegetation layer consists mainly of dwarf red raspberry (*Rubus pubescens*), cinnamon fern, Robbin's squaw-weed (*Senecio robbinsii*), flat-top fragrant golden-rod (*Euthamia graminifolia*), black-girdle bulrush (*Scirpus cyperinus*), and Canada goldenrod (*Solidago canadensis*).

The grass dominated seepage slope marsh is characterized by a dense sward of blue-joint reedgrass that is underlain by a heavy cover of Robbin's squaw-weed. Shrub cover consists of a few red raspberry (*Rubus idaeus*), smooth gooseberry (*Ribes hirtellum*), narrow-leaved meadow-sweet, and possum-haw viburnum (*Viburnum nudum*).

A vegetation survey was conducted in the wetland that revealed the presence of 43 species of vascular plant. The wetland is characterized by average plant species richness. None of the species encountered is considered to be rare nationally (COSEWIC 2005) or provincially (ACCDC 2005; NSDNR 2002).

No wildlife species were observed in the wetland during the field survey. Bird species that may be expected to nest in the wetland include Common Yellowthroat, Lincoln's Sparrow, White-throated Sparrow, and Dark-eyed Junco. The wetland is too small to attract bird species that nest primarily in wetland habitats such as Swamp Sparrows and Red-winged Blackbirds. The wetland provides no brood rearing habitat for waterfowl but the dense cover of low shrubs and grass may occasionally be used as nesting habitat by American Black Ducks. Terrestrial mammals from the adjacent woodland habitat may use the wetland as foraging habitat or cover. Some small mammals such as meadow jumping mouse, meadow vole, deer mouse, common shrew, short-tailed shrew, and star-nosed mole may live in the wetland on a permanent or semi-permanent basis. Wetland 3 provides poor breeding habitat for pool nesting amphibian species. Other terrestrial amphibian species such as red-backed salamander, yellow-spotted salamander, northern spring peeper, wood frog and American toad may also forage in the wetland. Maritime garter snake and eastern smooth green snake can be expected to be present in the wetland. It is unlikely that any rare or sensitive wildlife species would be present in the wetland.

Wetland 3 is a groundwater discharge site. The wetland discharges into a small stream located to the west of the wetland. At the time of the field survey there was no water flowing from the wetland and there is not a well defined outfall leading to the stream

suggesting that Wetland 3 does not contribute substantial amounts of water to local streams. The storage capacity of Wetland 3 is very small and the amount of water that leaves the wetland is largely dictated by the availability of groundwater. As such, Wetland 3 is not expected to play a substantial role in stream water flow regulation.

The wetland appears to have relatively little socio-economic value. There is no evidence to indicate that it is used for recreational, agricultural, cultural, or business purposes. The wetland is not part of any protected area such as a national or provincial park, national wildlife area, federal migratory bird sanctuary, ecological reserve, provincial wildlife management area, wildlife refuge, or game sanctuary. There is no evidence of anthropogenic disturbance of the wetland in the past although the forested area around the wetland has been harvested within the past 20 to 30 years.

Wetland 4

Wetland 4 is a 0.093 ha semi-terraced, seepage slope wetland complex located along the southwest slope terrace, east of the dirt road that bisects the property between MacLeod Settlement Road and MacLeod Brook. This wetland is a coniferous treed seep swamp. It has a mosaic of open, fen like wet patches dominated by herbaceous species, mixed with treed areas and shrubby areas. Hill slope seepage discharge from several obvious points and more generally along the sand sandy till deposit slope base supplies this wetland with its water. Some of these water entry points, along the upper slope base of the semi-terrace, are visible above ground, presenting as small spring like pools, often with short channel outflows that peter out in the sodden substrate, further into the wetland. The moisture apparent at the surface of this wetland while subject to evaporation and transpiration loss also apparently sinks down into the soil and may contribute to mesic forest conditions further down slope.

This coniferous treed seep swamp has very wet, open patches dominated by herbaceous vegetation interspersed with, and edged by drier areas dominated by trees and shrubs. Very shallow peat bottomed pools that draw down in the summer are evident scattered about. Some areas of the wetland are more directly affected by seepage inflow seem less acidic and other areas, perhaps more removed from direct mineralized seepage inflow and are more acidic. This micro-spatial variance in wetland chemistry is reflected in the vegetation which shows both some segregation of species characteristic of more mineralized habitats from species of more acidic areas as well as considerable interspersion. The tree class vegetation is near 30% coverage. The dominants are black spruce (*Picea mariana*), balsam fir (*Abies balsamea*), and red maple (*Acer rubrum*) with some American larch (*Larix laricina*). The shrub layer has some young balsam fir and black spruce, and also a scattering of swamp red currant (*Ribes triste*) and bristly black currant (*Ribes lacustre*), and occasional red-osier dogwood (*Cornus sericea*) are present as well as clumps of Labrador tea (*Ledum groenlandicum*) and sheep laurel (*Kalmia angustifolia*).

The ground vegetation is dominated near equally by sphagnum mosses (*Sphagnum sps.*) and other moss species. Growing from this moss carpet is a diverse mix of herbaceous vascular plant species. Herbaceous species dominants include dwarf red raspberry (*Rubus pubescens*), creeping buttercup (*Ranunculus repens*), cinnamon fern (*Osmunda cinnamomea*), fowl manna-grass (*Glyceria striata*). Other dominants include bog goldenrod (*Solidago uliginosa*) a variety of asters (*Aster umbellatus, A. novi-belgii*

and *A puniceus*), horsetails (*Equisetum sylvaticum* and *E. arvense*), and a lesser mix of three-seed sedge (*Carex trisperma*). In some areas within the wetland, drifts of the exotic species coltsfoot (*Tussilago farfara*) are nearby lesser drifts of the similar but native, arctic butter-bur (*Petasites frigidus*). Tall meadow rue (*Thalictrum* pubescens) and purple avens (*Geum rivale*) is present along with occasional specimens of broad-leaf cattail (*Typha latifolia*). Both the native swamp thistle (*Cirsium muticum*) and the exotic, creeping thistle (*Cirsium arvense*) are present. Wetter areas have considerable three-leaf Solomon's-plume (*Smilacina trifolia*) and water dock (*Rumex orbiculatus*) while adjacent drier areas have wild lily-of-the-valley (*Maianthemum canadense*), dwarf dogwood (Cornus canadense) and twinflower (*Linnea borealis*). While not provincially rare species the presence of species like the arctic butter-bur, leafy white orchis (*Platanthera dilatata*), and occasional black snake-root (*Sanicula marlandica*) is notable.

A vegetation survey was conducted in the wetland that revealed the presence of 53 species of vascular plants. The wetland is characterized by average plant species richness. None of the species encountered is considered to be rare nationally (COSEWIC 2005) or provincially (ACCDC 2005; NSDNR 2005).

A wildlife survey conducted in the wetland revealed the presence of one species of bird, one species of mammal, one reptile species, and one species of amphibian in the wetland. Other species of fauna recorded from the general non-aquatic habitats on the overall site would be expected to at some time or another use or move through this wetland. Bird species recorded in and near the wetland included Black-capped chickadee (*Poecile atracapilla*). Suitable nesting habitat is present in the wetland for this and other bird species. Varying hare (*Lepus americanus*) was the only mammal species for which evidence was noted during the survey.

A single reptile species, the Maritime garter snake (*Thamnophis sirtalis*) was noted in this wetland. The only amphibian species noted was the northern spring peeper (*Pseudacris crucifer*). Overall the wetland provided only marginal breeding habitat for even ephemeral pool breeding amphibian species. None of these species of fauna are considered to be rare or sensitive (COSEWIC 2005, NSDNR 2005a) and are also characteristic of the surrounding terrestrial environment.

The wetland is located on a semi-terraced slope area and is fed primarily by rainfall absorbed in the sandy till substrate that covers the plateau like hilltop above it. This water as a groundwater source apparently contacts a less permeable substrate below and discharges along the slope as specific and non-specific seepage. This seepage creates the wetland conditions existing here. Seepage is discharged here but apparently also sinks into the ground again and contributes to mesic forest conditions further down slope suggesting the wetland has an input to groundwater. The relatively small size of the wetland suggests the wetland has a minor influence on the regulation of surface flow in the watershed of McLeod Brook, and from there to the Southwest Mabou River. It would be expected that extensive removal of the sandy deposits up slope of this wetland as a result of sandpit operations would alter the hydrology of this wetland. This alteration will likely, over time reduce and possibly dry up the seepage that supplies this wetland with water and the wetland would shift to a non-wetland forested or other such upland habitat. Though the wetland may not be directly infringed upon by sandpit development and substrate extraction nearby, indirect effects are to be expected.

The wetland appears to have relatively little socio-economic value. There is no evidence to indicate that it is used for recreational, agricultural, cultural, or business purposes. The wetland is not part of any protected area such as a national or provincial park, national wildlife area, federal migratory bird sanctuary, ecological reserve, provincial wildlife management area, wildlife refuge, or game sanctuary. While the wetland presents as somewhat uncommon form of wetland and has the appearance of a habitat that might host rare species of flora, no truly rare species were discovered in this wetland.