

REQUEST FOR PROPOSAL

RETURN BIDS TO:
Environment Canada
Procurement and Contracting
867 Lakeshore Road
P.O. Box 5050
Burlington, Ontario
L7R 4A6

Title: Geospatial Habitat Dataset
Date: 04 July 2013
Request For Proposal No: KW405-13-0430
Solicitation Closes
At: 14:00:00 HRS. EDT
On: 18 July 2013

Address Enquiries To: Claire Cosentino

Telephone No: (905) 336-4992
Facsimile No: (905) 336-8907
E-Mail: claire.cosentino@ec.gc.ca

CONTRACTOR NAME & ADDRESS

(Print or type complete legal entity)

.....
.....
.....
.....
.....

Telephone No:

Facsimile No:

I (We), the undersigned, hereby offer to sell to Her Majesty the Queen in right of Canada, as represented by the Minister of Environment, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the services and/or supplies listed herein and on any attached sheets at the price(s) set out therefor.

.....
Name and title of person authorized to sign on behalf of vendor (type or print).

.....
Signature

.....
Date

SECTION 1 PROPOSAL INSTRUCTIONS

1. RECEIPT

The specified office will receive the sealed proposals or revisions up until the time and date specified on page 1 of the Request For Proposal.

2. UNACCEPTABLE

Proposals received after the proposal closing time will not be considered.

Faxed and Electronic proposals will **not** be accepted.

Proposals **NOT** submitted with a duly completed Financial Proposal (Offer of Service) form in the format specified by the Department will not be accepted.

Incomplete proposals will be considered non-responsive and rejected, and will not be evaluated further.

Any Financial Proposal (Offer of Service) that exceeds the stated ceiling or maximum price, if any, shall be considered non-responsive and rejected.

Proposals not signed on page 1 of the Request For Proposal document shall be considered non-responsive and rejected.

3. ACCEPTANCE

The Department will not necessarily accept the lowest priced or any of the proposals submitted.

4. COMPLETION

The Request For Proposal document must be completed, **in duplicate**, and submitted in the format presented by the Department

Proposals must include the following:

- a) an indication of an understanding of the objectives and responsibilities, a methodology and a time schedule as it relates to the requirements;
- b) a Corporate resume indicating relevant experience, the proposed personnel for the work team including their curriculum vitae;
- c) a list, if applicable, of subcontractor(s) including full names and address, portion(s) of work to be subcontracted and relevant firm experience.

Proposals which do not contain the above-mentioned documentation or deviate from the prescribed costing format shall be considered incomplete and non-responsive and shall be rejected.

It is the bidder's responsibility to ensure his/her complete understanding of the requirements and instructions specified by the Department. In the event clarification is necessary, bidders are advised to contact the Contracting Authority prior to making their submissions.

5. REFERENCE

If your proposal is of \$200,000 or more and your organization employs 100 or more permanent full-time or permanent part-time employees, it is mandatory that the requirements contained in the attached documentation on the Federal Contractors Program for Employment Equity be met or your proposal will not be considered.

The Department of Environment reserves the right, before awarding the Contract, to require the Contractor to submit such evidence of qualifications as it may deem necessary, and will consider evidence concerning the financial, technical and other qualifications and abilities of the contractor.

6. ENQUIRIES

All enquiries regarding the solicitation must be submitted in writing to the Contracting Authority named on page 1 of this document as early as possible in the solicitation period. Enquiries must be received no less than eight (8) calendar days prior to the closing date to provide sufficient time to provide a response. Enquiries received after that time may not be able to be answered prior to the closing of date of the solicitation.

All enquiries and other communications with government officials through the solicitation period are to be directed **ONLY** to the Contracting Authority named on page 1 of the solicitation. Non-compliance with this condition during the solicitation period may (for that reason alone) result in disqualification of your bid.

SECTION 2 FINANCIAL PROPOSAL

OFFER OF SERVICE

1. PROFESSIONAL SERVICES AND ASSOCIATED COSTS

1.1 Professional Services

The following is a breakdown for the Professional Services (show fee structure all-inclusive of profit and overhead). Overhead includes indirect costs such as liability insurance and days not worked due to statutory, sick, vacation and self-development days.

<u>Name (& Title) of Personnel</u>	<u>Per Diem Rate(s)</u>	<u>Number of Days</u>	<u>Total</u>
.....	\$.....	\$
.....	\$.....	\$
.....	\$.....	\$

OR

<u>Name (& Title) of Personnel</u>	<u>Hourly Rate(s)</u>	<u>Number of Hours</u>
.....	\$.....
.....	\$.....

OR

<u>Cost Per Sample/Word/Page</u>	<u>Special Rates (including requested changes)</u>
\$.....	\$.....

1.2 Travel Expenses

Not Applicable

Reimbursable at cost in accordance with the attached Treasury Board Travel Directive that is in effect at the time of travel (refer to Appendix A for current rates) and supported by receipts, vouchers, or other appropriate documents, to a financial limitation of:

\$ _____

My/Our estimate for travel expenses is based upon the following anticipated travel requirements:

1.3 Subcontractors

List subcontractors, including all direct charges and travel and living costs which will be to the account of the subcontractor:

Total estimated subcontractors: \$ _____

**1.4 TOTAL TENDER PRICE
(Canadian Currency)**

\$

+ HST \$ _____

TOTAL \$ _____

As a general rule, federal departments obtain services free of provincial ad valorem tax.

1. The Offer of Service will remain firm for a period of sixty (60) calendar days after the tender closing date.
2. Any resultant contract is for services, and will not be an employment contract. You must make your own arrangements for Canada Pension Plan, Unemployment Insurance, Workers' Compensation, Income Tax, Liability Insurance, etc. Your daily or hourly rate should reflect those overhead costs, as well as days not worked due to statutory, sick, vacation and self-development days.
3. Payment for professional services and associated costs will be effected upon completion, and acceptance by the departmental representative, or each phase of the work, and the submission of an invoice(s) detailing the work completed and delivered to date.

4. **Liability Insurance:** Your attention is drawn to the Liability and Indemnification clauses in the General Conditions. It is recommended that your financial proposal include the cost of obtaining adequate contractor's Liability Insurance to protect yourself and Her Majesty from liability claims brought by third parties, and for loss and or damage to Crown property for which you may be legally liable.

SECTION 3 REQUIREMENT/ STATEMENT OF WORK

1. REQUIREMENT

To create a geospatial habitat dataset for select priority coastal wetlands in the Huron-Erie Corridor in accordance with the Statement of Work detailed herein.

2. PERIOD OF CONTRACT

The proposed contract will be from 06 August 2013 to 31 January 2014.

3. BASIS OF PAYMENT

Should a contract be awarded, the basis of payment will be determined using the bidder's Financial Proposal as per Section 2.

The maximum budget allocated for this project shall not exceed \$25,000.00 (HST extra), (including all labour, associated costs, travel, and subcontractors). Bids valued in excess of this amount will be considered non-responsive. This disclosure of project funds does not commit Environment Canada to pay such an amount.

4. METHOD OF PAYMENT

Payment will be made upon submission of the final geodatabase and a detailed invoice indicating work to date, and upon acceptance of the work and invoice by the Departmental Representative prior to invoice payment.

5. CONTRACTING AUTHORITY

Claire Cosentino
Contracting Officer
Procurement & Contracting
Environment Canada
Canada Centre For Inland Waters
867 Lakeshore Road
Burlington, Ontario
L7R 4A6

Telephone : (905) 336-4992

Fax: (905) 336-8907

6. STATEMENT OF WORK

Background

The Canadian Wildlife Service (CWS) is the primary federal body with responsibilities under the *Migratory Birds Convention Act* (MBCA), and *Species at Risk Act* (SARA). CWS is also responsible for reporting on the ecosystem health of Great Lakes Areas of Concern (AOCs) under the *Great Lakes Water Quality Agreement* (GLWQA). These responsibilities involve assessing and reporting on the condition of migratory bird communities and their habitats in Great Lakes coastal wetlands. The Ecological Land Classification (ELC) system is part of the background information required for many CWS habitat assessment and monitoring projects. In addition, CWS has refined the current ELC system to specifically target important habitat designations, and has implemented this approach across most National Wildlife Areas (NWAs), and long term wetland monitoring sites.

CWS Ontario (CWS-ON) uses methods developed for assessing Great Lakes basin-wide trends and implements them regionally to assess AOCs where wildlife populations and habitat are listed as impaired. AOC assessments along with the recently implemented Coastal Habitat Assessment and Monitoring Program (CHAMP) collect a suite of habitat and biotic community data at select wetland sites covering a range of disturbances through the Great Lakes basin. The AOC assessment and CHAMP protocols have been used to determine site-specific disturbance estimates using land use class composition calculations within and around each wetland. These disturbance estimates can be linked to biotic community attributes for the purposes of creating or refining local or regional-specific indices of biotic integrity.

Analysis of ELC mapping has also been used to evaluate the status of Beneficial Use Impairments (i.e., BUI 14 – Loss of fish and wildlife habitat) for AOCs. The evaluation criteria often require comparisons between wetland habitat composition (indicating habitat quantity and quality) inside and outside the AOC. The ELC system can also be used to monitor the habitat composition and quality of coastal wetlands over time by interpreting air photos of incremental vintage.

The purpose of this project is to create an ELC-based geospatial habitat dataset to help estimate disturbance at AOC and CHAMP reference sites, as well as evaluate migratory bird (including SAR) habitat quantity and quality. Furthermore, it will provide the ability to evaluate changes in wetland habitat over time.

The resulting dataset will fit into the existing CWS data warehouse structure and provide value-added opportunities in conjunction with other CWS ELC-based products.

There are three components to the project, all within up to 19 priority coastal wetlands in the Huron-Erie Corridor in Ontario.

- Part A: Delineation of priority historic coastal wetland areas – wetland and water habitat only (1978 imagery)
- Part B: Historic extent of common reed in priority coastal wetlands (2006 imagery)
- Part C: Delineation of priority coastal wetlands areas and surrounding habitat (2010 imagery)

The 19 priority coastal wetlands are as follows:

- Big Creek Wetland
- Canard River Marshes
- Canard River Mouth Marsh
- Chenal Ecarte Marshes (Snye River Marshes)
- Detroit River Marshes
- Fighting Island
- Grass Island Wetland
- Lake St. Clair Marshes (all)
- Marshy Creek Marsh
- Point Edward Marsh
- Ruscom Shores Marsh
- St. Clair River Delta
- Stag Island Marsh
- Peche Island Marsh
- Thames River Mouth Complex
- Tremblay Beach Marsh
- Turkey Creek Marsh
- Turkey Island
- St. Clair NWA (St. Clair and Bear Creek Units)

See Appendix 1 for extent of area of interest for the project.

REQUIREMENT

The contractor will be responsible for delivering a final report that contains:

1. A geodatabase (ESRI ArcGIS 10) containing Ecological Land Classification (ELC) feature classes for up to 19 priority Great Lakes coastal wetland and associated 1000-metre buffer for each of Parts A, B and C (a geodatabase shell will be provided detailing the expected extent for each of the three parts);
2. A summary report containing data audit details and data creation description; and,
3. Full metadata compliant with Federal Geographic Data Committee (FGDC) standards.

The contractor will be required to:

- delineate each of the six ELC community class polygons (Swamp, Fen, Bog, Marsh, Open Water, Shallow Water) that occurs within the provided wetland boundary and surrounding land use extent dataset (1978 imagery; Part A);
- delineate each of the two ELC community series polygons (Common Reed, Burn) that occurs within the provided wetland boundary and surrounding land use extent dataset (2006 imagery; Part B); and
- delineate each ELC community series vegetation unit that occurs within the provided wetland boundary and surrounding land use extent dataset (2010 imagery; Part C). This will include fully delineating community units that fall partially within the extent boundaries, where air photo coverage exists.

The minimum mapping unit (MMU) will be 0.25 hectares and follow the method described in the Ecological Land Classification for Southern Ontario Manual (Lee et al. 1998). The dataset will conform to standard topology rules (e.g., no overlapping polygons, and no gaps).

The contractor is then required to complete all of the necessary metadata to fully describe the end product. This will follow the FGDC standard template.

The contractor will provide a report which details the data audit, describes data creation (spatial and attribute) and discusses known or plausible limitations and/or information gaps in the final product.

STATEMENT OF WORK

The contractor shall:

Part A

1. Create a detailed ELC-based wetland and water habitat mapping product for up to 19 Great Lakes coastal wetlands and a 1,000m buffer. The process will rely on a heads-up visual interpretation of 1978 imagery from a standard monitor and the data creation/processing capabilities of the ArcGIS geodatabase structure. Habitat boundaries are to be interpreted using criteria and guidelines supplied by CWS-ON. An ELC dataset is to be completed for each of the up to 19 wetlands which includes a total of approximately 26,000 hectares of wetland/shallow water/open water habitat, of which 15,000 hectares has already been delineated to a combined wetland/water ELC system.
2. Classify each ELC community class polygon in the wetland habitat mapping product to one of six community classes (Swamp, Fen, Bog, Marsh, Open Water, Shallow Water; Appendix 2; Lee et al. 1998), as per the criteria and guidelines to be supplied by CWS-ON. All other habitat within the area of interest will be noted as not classified.

Part B

3. Create a detailed ELC-based common reed mapping product for up to 19 Great Lakes coastal wetlands and a 1,000m buffer. The process will rely on a heads-up visual interpretation of 2006 imagery from a standard monitor and the data creation/processing capabilities of the ArcGIS geodatabase structure. Habitat boundaries are to be interpreted using criteria and guidelines supplied by CWS-ON. An ELC dataset is to be completed for each of the up to 19 wetlands. Based 2010 common reed delineations for the same coastal wetlands, it is estimated the area to be delineated will be approximately 4,000 hectares (within an area of interest of 43,000 hectares).
4. Classify each ELC community class polygon in the wetland habitat mapping product to one of two community series (Common Reed, Burn; Appendix 2; Lee et al. 1998), as per the criteria and guidelines to be supplied by CWS-ON. All other habitat within the area of interest will be noted as not classified.

Part C

5. Create a detailed ELC-based mapping product for gaps in existing delineations for up to 19 Great Lakes coastal wetlands and a 1,000m buffer. The process will rely on a heads-up visual interpretation of 2010 imagery from a standard monitor and the data creation/processing capabilities of the ArcGIS geodatabase structure. Habitat boundaries are to be interpreted using criteria and guidelines supplied by CWS-ON. An ELC dataset is to be completed for each of the 19 wetlands – the product will add onto existing delineations for approximately 4,000 hectares.
6. Classify each ELC community series vegetation unit that occurs within the provided boundary (Appendix 2; Lee et al. 1998). Vegetation units should be edge matched and merged with existing delineations where applicable.

Part A+B+C

7. Write a final project report that describes data creation (spatial and attribute) and discusses known or plausible limitations and/or information gaps in the final product.
8. Complete metadata report (FGDC compliant) for all new/updated geospatial information created for the wetland datasets dataset using a template and guidance documents provided by CWS-ON.

For all spatial datasets created, the minimum mapping unit (MMU) will be 0.25 hectares and follow the method described in the Ecological Land Classification for Southern Ontario Manual (Lee et al. 1998). The datasets will conform to standard topology rules (e.g., no overlapping polygons, and no gaps).

CWS shall provide:

Part A

1. Geodatabase with area of interest polygon;
2. Existing ELC delineations (combined wetland and water classification) for five of the coastal wetlands;
3. 1:10000 1978 Black and White orthophotography; and,
4. ELC community description document.

Part B

5. Geodatabase with area of interest polygon;
6. 1:10000 SWOOP 2006 orthophotography; and
7. ELC community description document.

Part C

8. Geodatabase with area of interest polygon;
9. Existing ELC delineations within the area of interest;
10. 1:10000 SWOOP 2010 orthophotography; and
11. ELC community description document.

Work Plan

Task	Completion/Submission Date
First meeting (teleconference) with CWS	6 August 2013
Interim ELC delineations for a small subset of each of the three products (Part A, B and C; specific coverage/areas to be discussed)	18 September 2013

Complete mapping, draft project report and draft metadata	10 January 2014
CWS-ON review period	10 January – 17 January 2014
Final meeting (if required)	20 January 2014
Final geodatabases, project report and metadata	31 January 2014

Deliverables

1. Monthly conference call to discuss the status of the contract.
2. Written summary of work completed on a monthly basis.
3. Completed Ecological Land Classification (following Lee et al. 1998) mapping for up to 19 Great Lakes coastal wetlands and surrounding 1000-metre buffers, for wetland and water habitat only in 1978 (as described in Part A) in a printed and electronic format, in an ArcGIS geodatabase structure.
4. Completed Ecological Land Classification (following Lee et al. 1998) mapping for up to 19 Great Lakes coastal wetlands and surrounding 1000-metre buffers, for Common Reed and Burn habitat only in 2006 (as described in Part B) in a printed and electronic format, in an ArcGIS geodatabase structure.
5. Completed Ecological Land Classification (following Lee et al. 1998) mapping for gaps for up to 19 Great Lakes coastal wetlands and surrounding 1000-metre buffers, for 2010 (as described in Part C) in a printed and electronic format, in an ArcGIS geodatabase structure.
6. Written project report that includes: details of the project methodology(ies) and decision making processes used to complete the data creation. This will include a thorough description of the final product limitations, considerations and/or information gaps.
Completed FGDC compliant metadata for all newly created or updated geospatial information products

7. EVALUATION OF BIDS

Environment Canada will evaluate the bids received based on the following factors:

- a) compliance with the terms and conditions of this solicitation;
- b) assessment of all deliverables including technical solicitation;
- c) other criteria (i.e. delivery date, price for a technically compliant proposal).

7.1 Evaluation Criteria

Rated Criteria

Points

Technical

Physical resources with operational experience, and demonstrated past performance (technical and administrative); product specialization.

10

Ability to perform heads-up visual interpretation and delineation of wildlife habitat using the data creation/processing capabilities and the geodatabase infrastructure of ArcGIS.	20
Experience performing air photo interpretation of wetland habitats including vegetation communities and/or wildlife habitat and/or land use.	20
Experience with data quality assessment and data quality control, and geospatial data best practices.	15
Knowledge of and experience using the manual Ecological Land Classification for Southern Ontario (Lee et al. 1998).	20
<u>Cost</u>	15

Proposals will be evaluated out of 100 points.

The proposal with the lowest price receives the maximum 15 points, and all higher priced proposals will be pro-rated relative to the lowest price.

A minimum score of 70% must be obtained for the proposal to be considered responsive.

Proposals totaling more than \$25,000.00 (including all labour, associated costs, travel, and subcontractors) + HST will not be considered.

7.2 **Basis of Selection**

A contract will be awarded based on best value taking into account technical merit and price.

SECTION 4 TERMS OF PAYMENT

TP1 **BASIS OF PAYMENT**

1.1 The Contractor shall not arrange or incur any expenditures on behalf of Her Majesty without prior authorization by the Contracting Authority.

TP2 **METHOD OF PAYMENT**

2.1 A claim in the form of an itemized account certified by the Contractor with respect to the accuracy of its contents shall be submitted to the Departmental Representative.

2.2 Payment by Her Majesty to the Contractor for the work shall be made:

- 2.2.1 In the case of a progress payment other than a final payment, within thirty (30) days following the date on which a claim for progress payment is received according to the terms of the contract;
- 2.2.2 In the case of a final payment, within thirty (30) days following the date of receipt of a final claim for payment, or within thirty (30) days following the date on which the work is completed, whichever date is the later;
- 2.2.3 If the Departmental Representative has any objection to the form of the claim for payment, he/she shall, within fifteen (15) days of its receipt, notify the Contractor in writing of the nature of the objection.

TP3 PAYMENT OF INTEREST ON OVERDUE ACCOUNTS

- 3.1 In this section, an amount is “due and payable” when it is due and payable by Her Majesty to the Contractor according to the provisions of the contract.
- 3.2 For the purposes of this section, an amount is overdue when it is unpaid on the first day following the day upon which it is due and payable.
- 3.3 In this section, “date of payment” means the date of the negotiable instrument drawn by the Receiver General for Canada and given for payment of an amount due and payable.
- 3.4 In this section, “Bank Rate” means the discount rate of interest set by the Bank of Canada.
- 3.5 Her Majesty shall be liable to pay to the Contractor simple interest at the “Average Rate” plus 3 per cent per annum on any amount that is overdue, from the day such amount becomes overdue until the date of payment. Interest shall be paid without notice from the Contractor for payment that has been outstanding for more than 15 days. For payment made within 15 days from the date that the payment becomes overdue, interest will be paid at the request of the Contractor. Interest will not be payable on overdue advance payments.
- 3.6 Her Majesty shall not be liable to pay to the Contractor any interest on unpaid interest.

TP4 GOODS AND SERVICES TAX

The Goods and Services Tax (GST) or Harmonized Sales Tax (HST) is, unless otherwise indicated herein, excluded from the contract price. The GST or HST, to the extent applicable, will be incorporated into all invoices and claims for progress payments made on or after the date of introduction of this tax and will be paid by the Government of Canada. The Contractor agrees to remit any GST or HST paid or due to Revenue Canada. All invoices submitted containing GST or HST will list GST or HST

as a separate item or contain a statement that GST or HST is included in the invoice price.

SECTION 5 GENERAL CONDITIONS

GC1 INTERPRETATION

- 1.1 In the contract,
 - 1.1.1 “Contract” means the contract documents referred to in the Articles of Agreement;
 - 1.1.2 “Invention” means any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement thereof;
 - 1.1.3 “Minister” includes a person acting for, or if the office is vacant, in place of the Minister and the Minister’s successors in the office, and the Minister’s or their lawful deputy and any of the Ministers or their representatives appointed for the purpose of the contract;
 - 1.1.4 “Work”, unless otherwise expressed in the contract, means everything that is necessary to be done, furnished or delivered by the Contractor to perform the Contractor’s obligations under the contract;
 - 1.1.5 “Departmental Representative” means the officer or employee of Her Majesty who is designated by the Articles of Agreement and includes a person authorized by the Departmental Representative to perform any of the Departmental Representative’s functions under the contract;
 - 1.1.6 “Prototype” includes models, patterns and samples;
 - 1.1.7 “Technical documentation” means designs, reports, photographs, drawings, plans, specifications, computer software, surveys, calculations and other data, information and material collected, computed, drawn or produced, including computer printouts.

GC2 SUCCESSORS AND ASSIGNS

The contract shall ensure to the benefit of and be binding upon the parties hereto and their lawful heirs, executors, administrators, successors and assigns.

GC3 ASSIGNMENT

- 3.1 The contract shall not be assigned in whole or in part by the Contractor without the prior written consent of the Minister and any assignment made without that consent is void and of no effect.

3.2 No assignment of the contract shall relieve the Contractor from any obligation under the contract or impose any liability upon Her Majesty or the Minister.

GC4 TIME OF THE ESSENCE

4.1 Time is of the essence of the contract.

4.2 Any delay by the Contractor in performing the Contractor's obligations under the contract which is caused by an event beyond the control of the Contractor, and which could not have been avoided by the Contractor without incurring unreasonable costs through the use of work-around plans including alternative sources or other means, constitutes an excusable delay. Events may include, but are not restricted to: acts of God, acts of Her Majesty, acts of local or provincial governments, fires, floods, epidemics, quarantine restrictions, strikes or labour unrest, freight embargoes and unusually severe weather.

4.3 The Contractor shall give notice to the Minister immediately after the occurrence of the event that causes the excusable delay. The notice shall state the cause and circumstances of the delay and indicate the portion of the work affected by the delay. When requested to do so by the Departmental Representative, the Contractor shall deliver a description in a form satisfactory to the Minister, of work-around plans including alternative sources and any other means that the Contractor will utilize to overcome the delay and endeavour to prevent any further delay. Upon approval in writing by the Minister of the work-around plans, the Contractor shall implement the work-around plans and use all reasonable means to recover any time lost as a result of the excusable delay.

4.4 Unless the Contractor complies with the notice requirements set forth in the contract, any delay that would constitute an excusable delay shall be deemed not to be an excusable delay.

4.5 Notwithstanding that the Contractor has complied with the requirements of **GC4.3**, Her Majesty may exercise any right of termination contained in **GC8**.

GC5 LIABILITY AND INDEMNIFICATION

5.1 The Contractor shall indemnify and save harmless Her Majesty and the Minister from and against all claims, losses, damages, costs, expenses, actions and other proceedings, made, sustained, brought, prosecuted, threatened to be brought or prosecuted, in any manner based upon, occasioned by or attributable to any injury to or death of a person or damage to or loss of property arising from any wilful or negligent act, omission or delay on the part of the Contractor, the Contractor's servants or agents in performing the work or as a result of the work.

5.2 The Contractor shall indemnify Her Majesty and the Minister from all costs, charges and expenses whatsoever that Her Majesty sustains or incurs in or about all claims,

actions, suits and proceedings for the use of the invention claimed in a patent, or infringement or alleged infringement of any patent or any registered industrial design or any copyright resulting from the performance of the Contractor's obligations under the contract, and in respect of the use of or disposal by Her Majesty of anything furnished pursuant to the contract.

- 5.3 The Contractor's liability to indemnify or reimburse Her Majesty under the contract shall not affect or prejudice Her Majesty from exercising any other rights under law.
- 5.4 It is understood and agreed by the parties hereto, that Her Majesty will not be liable for claims in respect of death, disease, illness, injury or disability which may be suffered by employees or agents employed by the Contractor due to their negligence in carrying out the services described herein.
- 5.5 It is further understood and agreed by the parties hereto, that the Contractor shall be liable for any damage to or loss of Her Majesty's property occasioned by or attributable to the Contractor's employees or agents in carrying out the services described herein.

GC6 NOTICES

- 6.1 Where in the contract any notice, request, direction, or other communication is required to be given or made by either party, it shall be in writing and is effective if delivered in person, sent by registered mail, by telegram or by telex addressed to the party for whom it is intended at the address mentioned in the contract and any notice, request, direction or other communication shall be deemed to have been given if by registered mail, when the postal receipt is acknowledged by the other party; by telegram, when transmitted by the carrier; and, by telex, when transmitted. The address of either party may be changed by notice in the manner set out in this provision.

GC7 CANADIAN LABOUR AND MATERIALS

- 7.1 The Contractor shall use Canadian labour and material in the performance of the work to the full extent to which they are procurable, consistent with proper economy and the expeditious carrying out of the work.

GC8 TERMINATION OR SUSPENSION

- 8.1 The Minister may, by giving notice to the Contractor, terminate or suspend the work with respect to all or any part or parts of the work not completed.
- 8.2 All work completed by the Contractor to the satisfaction of Her Majesty in accordance with the provisions of the contract and, for all work not completed before the giving of such notice, Her Majesty shall pay the Contractor's costs as determined under the

provisions of the contract and, in addition, an amount representing a fair and reasonable fee in respect of such work.

- 8.3 In addition to the amount which the Contractor shall be paid under **GC8.2**, the Contractor shall be reimbursed for the Contractor's cost of and incidental to the cancellation of obligations incurred by the Contractor pursuant to such notice and obligations incurred by or to which the Contractor is subject with respect to the work.
- 8.4 Payment and reimbursement under the provisions of **GC8** shall be made only to the extent that it is established to the satisfaction of the Minister that the costs and expenses were actually incurred by the Contractor and that the same are fair and reasonable and are properly attributable to the termination or suspension of the work or the part thereof so terminated.
- 8.5 The Contractor shall not be entitled to be reimbursed any amount which, taken together with any amounts paid or becoming due to the Contractor under the contract, exceeds the contract price applicable to the work or the particular part thereof.
- 8.6 The Contractor shall have no claim for damages, compensation, loss of profit, allowance or otherwise by reason of or directly or indirectly arising out of any action taken or notice given by the Minister under the provisions of **GC8** except as expressly provided therein.

GC9 TERMINATION DUE TO DEFAULT OF CONTRACTOR

- 9.1 Her Majesty may, by notice to the Contractor, terminate the whole or any part of the work if:
 - (i) the Contractor becomes bankrupt or insolvent, or a receiving order is made against the Contractor, or an assignment is made for the benefit of creditors, or if an order is made or resolution passed for the winding up of the Contractor, or if the Contractor takes the benefit of any statute for the time being in force relating to bankrupt or insolvent debtors, or
 - (ii) the Contractor fails to perform any of the Contractor's obligations under the contract, or, in the Minister's view, so fails to make progress as to endanger performance of the contract in accordance with its terms.
- 9.2 In the event that Her Majesty terminates the work in whole or in part under **GC9.1**, Her Majesty may arrange, upon such terms and conditions and in such manner as Her Majesty deems appropriate, for the work to be completed that was so terminated, and the Contractor shall be liable to Her Majesty for any excess costs relating to the completion of the work.

- 9.3 Upon termination of the work under **GC9.1**, the Minister may require the Contractor to deliver and transfer title to Her Majesty, in the manner and to the extent directed by the Minister, any finished work which has not been delivered and accepted prior to such termination and any materials or work-in-process which the Contractor has specifically acquired or produced for the fulfillment of the contract. Her Majesty shall pay the Contractor for all such finished work delivered pursuant to such direction and accepted by Her Majesty, the cost to the Contractor of such work plus the proportionate part of any fee fixed by the said contract and shall pay or reimburse the Contractor the fair and reasonable cost to the Contractor of all materials or work-in-process delivered to Her Majesty pursuant to such direction. Her Majesty may withhold from the amounts due to the Contractor such sums as the Minister determines to be necessary to protect Her Majesty against excess costs for the completion of the work.
- 9.4 The Contractor shall not be entitled to be reimbursed any amount which, taken together with any amounts paid or becoming due to the Contractor under the contract, exceeds the contract price applicable to the work or the particular part thereof.
- 9.5 If, after the Minister issues a notice of termination under **GC9.1**, it is determined by the Minister that the default of the Contractor is due to causes beyond the control of the Contractor, such notice of termination shall be deemed to have been issued pursuant to **GC8.1** and the rights and obligations of the parties hereto shall be governed by **GC8.1**.

GC10 RECORDS TO BE KEPT BY CONTRACTOR

- 10.1 The Contractor shall keep proper accounts and records of the cost of the work and of all expenditures or commitments made by the Contractor including the invoices, receipts and vouchers, which shall at reasonable times be open to audit and inspection by the authorized representatives of the Minister who may make copies and take extracts therefrom.
- 10.2 The Contractor shall afford facilities for audit and inspection and shall furnish the authorized representatives of the Minister with such information as the Minister or they may from time to time require with reference to the documents referred to herein.
- 10.3 The Contractor shall not dispose of the documents referred to herein without the written consent of the Minister, but shall preserve and keep them available for audit and inspection for such period of time as may be specified elsewhere in the contract or, in the absence of such specification, for a period of two years following completion of the work.

GC11 OWNERSHIP OF INTELLECTUAL AND OTHER PROPERTY INCLUDING COPYRIGHT



The Crown is invoking Section 6.5 of the Treasury Board Policy on Title to Intellectual Property Arising under Crown Procurement Contracts. The Canadian Wildlife Service Branch of Environment Canada has determined that the information gathered arising from the performance of the work under the Contract will vest in Canada, on the following grounds: Foreground material is subject to copyright except software and associated documents.

GC12 CONFLICT OF INTEREST

12.1 The Contractor declares that the Contractor has no pecuniary interest in the business of any third party that would cause a conflict of interest or seem to cause a conflict of interest in carrying out the work. Should such an interest be acquired during the life of the contract, the Contractor shall declare it immediately to the Departmental Representative.

12.2 It is a term of the contract:

- (1) that no former public office holder who is not in compliance with the post-employment provisions of the Conflict of Interest and Post-Employment Code for Public Office Holders shall derive a direct benefit from this contract; and
- (2) that during the term of the contract any persons engaged in the course of carrying out this contract shall conduct themselves in compliance with the principles of the Conflict of Interest and Post-Employment Code for Public Office Holders. Should an interest be acquired during the life of the contract that would cause a conflict of interest or seem to cause a departure from the principles, the Contractor shall declare it immediately to the Departmental Representative.

GC13 CONTRACTOR STATUS

This is a contract for the performance of a service and the Contractor is engaged under the contract as an independent contractor for the sole purpose of providing a service. Neither the Contractor nor any of the Contractor's personnel is engaged by the contract as an employee, servant or agent of Her Majesty. The Contractor agrees to be solely responsible for any and all payments and/or deductions required to be made including those required for Canada or Quebec Pension Plans, Unemployment Insurance, Workmen's Compensation, or Income Tax.

GC14 WARRANTY BY CONTRACTOR

14.1 The Contractor warrants that the Contractor is competent to perform the work required under the contract in that the Contractor has the necessary qualifications including the knowledge, skill and ability to perform the work.

14.2 The Contractor warrants that the Contractor shall provide a quality of service at least equal to that which contractors generally would expect of a competent contractor in a like situation.

GC15 MEMBER OF HOUSE OF COMMONS

15.1 No member of the House of Commons shall be admitted to any share or part of this contract or to any benefit to arise therefrom.

GC16 AMENDMENTS

16.1 No amendment of the contract nor waiver of any of the terms and provisions shall be deemed valid unless effected by a written amendment.

GC17 ENTIRE AGREEMENT

17.1 The Contract constitutes the entire agreement between the parties with respect to the subject matter of the contract and supersedes all previous negotiations, communications and other agreements relating to it unless they are incorporated by reference in the contract.

GC18 CRIMINAL CODE PROHIBITIONS

Subsection 784(3) of the Criminal Code prohibits anyone who has been convicted for an offence under:

- Section 121 - Frauds upon the Government
- Section 124 - Selling or Purchasing Office
- Section 418 - Selling Defective Stores to Her Majesty

from contracting with the government or receiving any benefit from a government contract.

GC19 ECOLOGO

19.1 The contractor should make every effort to ensure that all documents prepared or delivered under this contract are printed double-sided on Ecologo certified recycled paper or on paper with equivalent post-consumer recycled content, to the full extent to which it is procurable.

GC20 USE OF ELECTRONIC NETWORKS

20.1 Where the performance of work requires the presence of the Contractor or any of the Contractor's personnel on Crown premises and/or access to any Crown-owned or operated electronic network, the Contractor shall comply with and shall ensure that

the Contractor's personnel comply with the Policy on the Use of Electronic Networks promulgated under the authority of the Minister of the Environment.

GC21 CONFIDENTIALITY CLAUSE

- 21.1 The parties anticipate that it may be necessary to transfer to each other information relating to the Licensed Process, Patents, Trade-Mark, Know-How or other information relating to this Agreement, of a confidential nature. The parties shall keep all such information confidential during the life of this Agreement and for a period of five years after expiration or termination of this Agreement. Subject to the *Access to Information Act*, R.S. 1985, c.A-1, the parties agree that the terms of this Agreement are confidential and each party shall use the same degree of care to prevent disclosure of the terms of this Agreement to third parties as it uses to protect its own confidential information of similar nature.

SECTION 6 SUPPLEMENTAL CONDITIONS

1. INTERNATIONAL SANCTIONS

- 1.1 Persons and companies in Canada, and Canadians outside of Canada, are bound by economic sanctions imposed by Canada. As a result, Canada cannot accept delivery of goods or services that originate, either directly or indirectly, from the countries or persons subject to economic sanctions.

Details on existing sanctions can be found at:

<http://www.dfait-maeci.gc.ca/trade/sanctions-e.asp>

- 1.2 The Contractor must not supply to Canada any goods or services which are subject to economic sanctions.
- 1.3 By law, the Contractor must comply with changes to the regulations imposed during the life of the Contract. During the performance of the Contract should the addition of a country to the list of sanctioned countries or additions of a good or service to the list of sanctioned goods or services cause an impossibility of performance for the Contractor, the situation will be treated by the Parties as a force majeure. The Contractor shall forthwith inform Canada of the situation; the procedures applicable to the force majeure shall then apply.

2. NO BRIBE

The Contractor represents and covenants that no bribe, gift, benefit, or other inducement has been or will be paid, given, promised or offered directly or indirectly to any official or employee of Canada or to a member of the family of such a person, with a view to influencing the entry into the Contract or the administration of the Contract.

3. SECURITY REQUIREMENTS

3.1 The Contractor and/or personnel assigned on this Contract must have a Basic Reliability Check in accordance with the Security Policy of the Government of Canada.

4. PROVINCIAL SALES TAX

4.1 The Contractor shall not invoice or collect any Ad Valorem Sales Tax levied by the Province in which the goods or taxable services are delivered to federal Government Departments under authority of the following Provincial Sales Tax Licences:

British Columbia	005521
Prince Edward Island	OP-10000-250
Manitoba	390516-0
Nova Scotia	U84-00-03172-3
New Brunswick	P87-60-01648
Ontario	11708174G
Quebec	Q-398-SS-3921-1-P
Newfoundland	32243-0-09

In all other provinces, Provincial Sales Taxes do not apply to goods or taxable services delivered to Federal Government Departments or Agencies under this contract.

The Contractor is not relieved of any obligation to pay Provincial Sales Taxes on goods or taxable services which the Contractor uses or consumes in the performance of this contract.

Provincial gallonage taxes on liquid fuels are to be charged on deliveries in Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Quebec and Ontario. In other provinces, these taxes are not applicable.

Federal Contractors Program for Employment Equity

Organizations that are subject to the Federal Contractors Program for Employment Equity (FCP-EE) but that have been declared ineligible to receive government contracts of goods and services over the threshold for solicitation of bids as set out in the *Government Contract Regulations* (GCRs) (currently \$25,000 including applicable taxes) by Human Resources Development Canada-Labour (HRDC-Labour), either as a result of a finding of non-compliance by HRDC-Labour, or following their voluntary withdrawal from the FCP-EE) for a reason other than a reduction in their workforce, have been advised by HRDC-Labour that as a consequence of this action they are no longer eligible to receive any government contract over this threshold. Consequently, their certificate numbers have been cancelled and their names have been placed on HRDC-Labour's List of Ineligible Contractors. Bids from such organizations will be considered non-responsive.

The bidder is required to certify that it has not been declared "ineligible" by HRDC-Labour to receive government contracts over the GCRs threshold for solicitation of bids (currently \$25,000) as a result of a finding of non-compliance, or as a result of having voluntarily withdrawn from the FCP-EE for a reason other than a reduction in their workforce.

Signature of authorized representative: _____

The bidder acknowledges that the Minister shall rely on this certification to award the contract. Should a verification by the Minister disclose a misrepresentation on the part of the bidder, the Minister shall have the right to treat any contract resulting from this bid as being in default.

Former Public Servant Certification – Competitive Requirement

Contracts with former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts with FPS, bidders must provide the information required below.

Definitions

For the purposes of this clause, "former public servant" is any former member of a department as defined in the [Financial Administration Act](#), R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- a. an individual;
- b. an individual who has incorporated;
- c. a partnership made of former public servants; or
- d. a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means, a pension or annual allowance paid under the [Public Service Superannuation Act](#) (PSSA), R.S., 1985, c.P-36, and any increases paid pursuant to the [Supplementary Retirement Benefits Act](#), R.S., 1985, c.S-24 as it affects the PSSA. It does not include pensions payable pursuant to the [Canadian Forces Superannuation Act](#), R.S., 1985, c.C-17, the [Defence Services Pension Continuation Act](#), 1970, c.D-3, the [Royal Canadian Mounted Police Pension Continuation Act](#), 1970, c.R-10, and the [Royal Canadian Mounted Police Superannuation Act](#), R.S., 1985, c.R-11, the [Members of Parliament Retiring Allowances Act](#), R.S., 1985, c.M-5, and that portion of pension payable to the [Canada Pension Plan Act](#), R.S., 1985, c.C-8.

Former Public Servant in Receipt of a Pension

As per the above definitions, is the Bidder a FPS in receipt of a pension? **Yes () No ()**

If so, the Bidder must provide the following information, for all FPS in receipt of a pension, as applicable:

- a. name of former public servant;

b. date of termination of employment or retirement from the Public Service.

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with [Contracting Policy Notice: 2012-2](#) and the [Guidelines on the Proactive Disclosure of Contracts](#).

Work Force Reduction Program

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of a work force reduction program?

Yes () No ()

If so, the Bidder must provide the following information:

- a. name of former public servant;
- b. conditions of the lump sum payment incentive;
- c. date of termination of employment;
- d. amount of lump sum payment;
- e. rate of pay on which lump sum payment is based;
- f. period of lump sum payment including start date, end date and number of weeks;
- g. number and amount (professional fees) of other contracts subject to the restrictions of a work force reduction program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including the Goods and Services Tax or Harmonized Sales Tax.

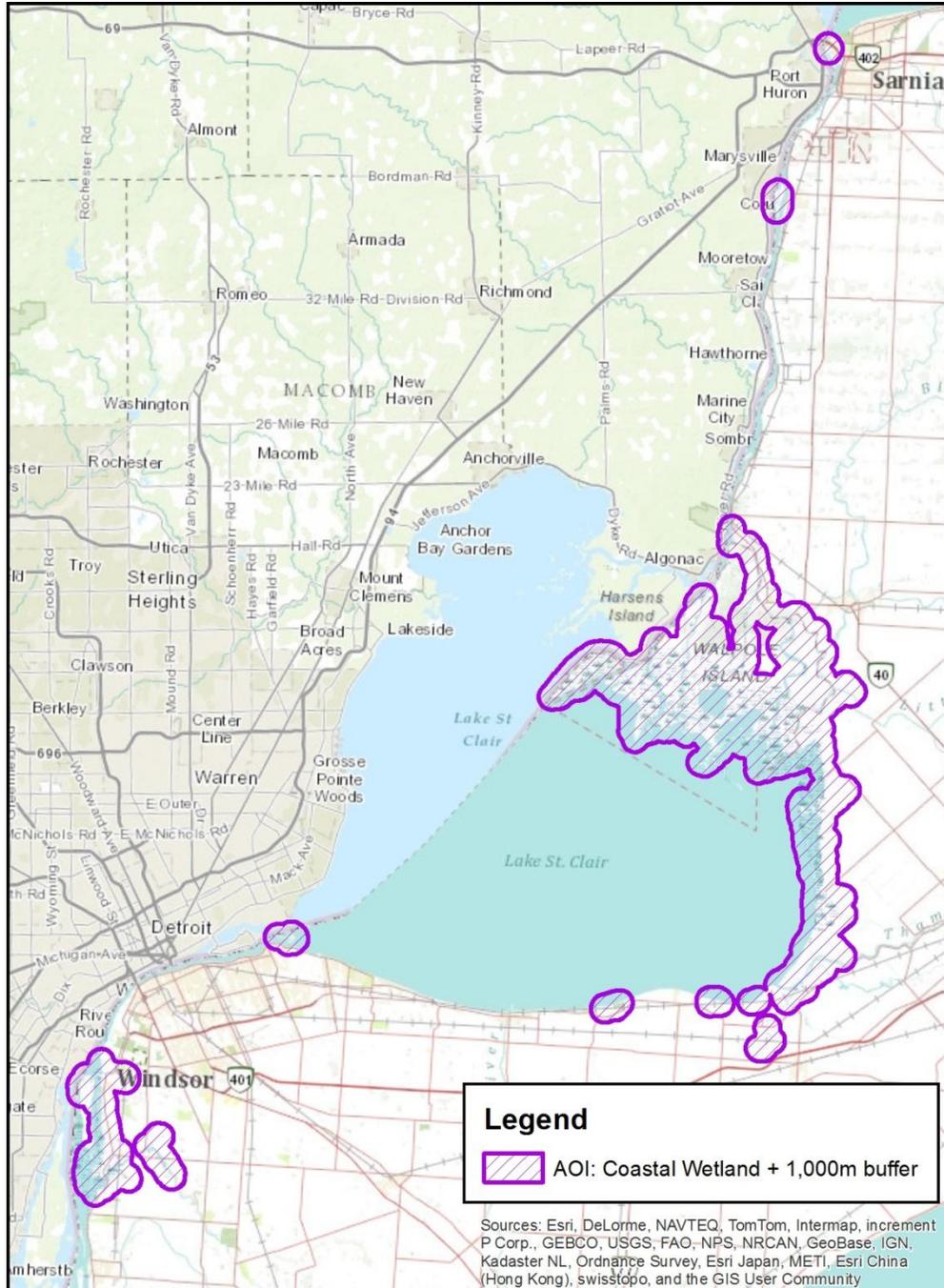
Certification

By submitting a bid, the Bidder certifies that the information submitted by the Bidder in response to the above requirements is accurate and complete.

Signed _____

Date

Appendix 1 – Area of Interest: 19 coastal wetlands + 1,000m buffer



Appendix 2.

ELC Community Units	ELC Code	Vegetation Characteristics	Landscape Characteristics
Terrestrial Systems		- open, shrub and treed communities; average wetness index typically > 0; plant communities consist mainly of facultative, facultative upland, and upland plant species	- water table rarely above substrate surface; vernal pools on substrates of parent mineral material, mineral soil, or organic material < 40 cm; moisture regime typically
Cliff and Talus	CL	- vegetation cover varies from patchy and barren to more closed and treed	Cliff and Talus are considered together here because they are spatially associated with each other; near vertical bedrock, rock rubble accumulations; aspect, elevation, exposure (rock fall - erosion and gravity) processes prevail Cliff - vertical or near-vertical exposed bedrock - > 3 m height; bedrock type important - sharp to variably broken edges, faces and rims; - highly exposed; subject to extremes in temperature and moisture Talus - slopes of rock rubble at the base of cliffs - coarse rocky debris > 50% of substrate surface; some localized accumulations of organic matter amongst talus (e.g. folisols); bedrock type important
Open Cliff and Talus	CLO	- tree cover < 25%; shrub cover < 25%	open cliffs tend to be restricted to the bare, lichen covered, broken, near-vertical rock faces; open talus slopes tend to have organic accumulations amongst mainly bare or lichen covered surfaces; the open communities are more subject to temperature and moisture
Shrub Cliff	CLS	- tree cover < 25%; shrub cover > 25%; shrub cover varies from clumped or patchy to continuous	- typically on more heterogenous substrates, where rock rubble accumulated in pockets, ledges and cracks
Treed Cliff	CLT	- tree cover > 25%	- typically a narrow community along the cliff rim, vernal pools? land?
Rock Barren	RB	- vegetation cover varies from patchy and barren to more closed and treed - tree cover ≤ 60%	-bedrock controlled topography; surface features of level and unfractured, to rolling rock knob and hollows and fissure - rock type important; patchy soil development; substrate and variable - extremes in moisture and temperatures
Open Rock Barren	RBO	- tree cover ≤ 25%; shrub cover ≤ 25%	- dominated by bare rock surfaces; scattered accumulations in cracks and pockets; extreme conditions inhibit woody establishment
Shrub Rock Barren	RBS	- tree cover < 25%; shrub cover > 25%; shrub cover varies from clumped or scattered to continuous	- shrub cover usually reflects more substantial soil accumulation in cracks and pockets; may also reflect time since disturbance conditions less extreme -- e.g. shade effects on temperature conditions
Treed Rock Barren	RBT	- tree cover > 25%	- tree cover usually reflects more substantial soil accumulation and pockets; may also reflect time since disturbance conditions less extreme -- e.g. shade effects on temperature and moisture
Shoreline	SH	- vegetation cover varies from patchy and barren to more closed and treed	- sites associated with and adjacent to permanent or semi-permanent water subject to active shoreline processes: ice scour, wave seepage or sheetflow, and deposition; above high water level disturbance (energy), moisture and temperature
Open Shoreline	SHO	- tree cover ≤ 25%; shrub cover ≤ 25%	- shoreline processes most severe; most woody species inhibited
Shrub Shoreline	SHS	- tree cover < 25%; shrub cover > 25%; shrub cover varies from clumped or patchy to	- shoreline processes less severe; woody species res

Treed Shoreline	SHT	continuous - tree cover > 25%	- active processes least severe; woody species invasion and tree species
Bluff	BL	- vegetation cover varies from patchy and barren to continuous herbaceous or shrub cover - tree cover ≤ 60% tree invasion restricted by erosion-related disturbances	- active, steep to near-vertical exposures of unconsolidated material; > 2 m in height; - disturbances from erosion and mass wasting prevalent; chemistry (I.e. Calcareous or not); gravity and hydrology controlled by angle of repose - typically restricted to extant or historical lacustrine shorelines; subject to extremes in moisture and temperature - seepage areas often the cause of slope failures
Open Bluff	BLO	- tree cover ≤ 25%; shrub cover ≤ 25% - common colonizing plants include Field Horsetail, Coltsfoot, Canada Goldenrod, Narrow-leaf Goldenrod and Sweet White Clover	- substrate recently disturbed; subject to ongoing erosion - least stable substrates
Shrub Bluff	BLS	- tree cover ≤ 25%; shrub cover > 25% - Staghorn Sumac common - Field Horsetail, Coltsfoot, Canada Goldenrod, Narrow-leaf Goldenrod and Sweet White Clover	- longer time since disturbance or erosional processes - more stable substrates
Treed Bluff	BLT	- tree cover > 25%	- longer time since disturbance or erosional processes - more stable substrates with tree regeneration
Sand Barren and Dune	SD	- vegetation cover varies from patchy and barren to more closed and treed - tree cover ≤ 60%	- active and droughty sands, often formed by extant and aeolian processes; Sand Dunes restricted to the Great Lakes in 6E and 7E - stability of substrate variable; little to no accumulation of organic materials; low nutrient availability - subjected to drought and temperature extremes
Open Sand Barren and Dune	SDO	- tree cover ≤ 25%; shrub cover ≤ 25%	
Shrub Sand Barren	SDS	- tree cover < 25%; shrub cover > 25%; shrub cover varies from clumped or patchy to continuous	
Treed Sand Barren	SDT	- tree cover > 25%	
Meadow	ME	- tree and shrub cover < 25%; open herbaceous communities; cover varies from scattered and patchy to continuous meadow; natural areas typically have unique floras (e.g., Tallgrass Prairie), areas with a cultural legacy, typically dominated by invasive plant species	- mineral soil > 30 cm deep; shrub and tree establishment inhibited or have been removed by land use practices to natural disturbance (e.g., fire) or recovering from disturbance (e.g., clearing, pasture)
Graminoid Meadow	MEG	- dominated by grass-like species (e.g., grass, sedge);	
Forb Meadow	MEF	- dominated by broadleaf species;	
Mixed Meadow	MEM	- mix of grass-like and broadleaf species	
Thicket	TH	- shrub cover > 25%; tree cover < 25%; shrub cover varies from scattered and patchy to continuous; natural areas typically have unique floras, areas with a cultural legacy, typically dominated by more invasive shrub species	- mineral soil > 30 cm deep; tree establishment inhibited or have been removed by land use practices; areas subject to natural disturbance (e.g., fire) or recovering from disturbance (e.g., clearing, pasture); often found associated with the dune wetlands
Coniferous Thicket	THC	- coniferous shrub species dominate; coniferous cover >75%	
Mixed Thicket	THM	- both coniferous and deciduous shrub species	

Deciduous Thicket	THD	cover > 25% - deciduous shrub species dominate; deciduous cover > 75%	
Savanna	SV	- 25 < tree cover < 35%; semi-open treed communities; natural areas typically have unique floras (e.g. Tallgrass Savanna), areas with a cultural legacy, typically dominated by more invasive herbaceous, shrub, and tree species; tree cover typically scattered or clumped	- mineral soil > 30 cm deep; areas with intermediate environmental limitations (e.g. fire, drought), intense disturbances, or time since last disturbance;
Coniferous Savanna	SVC	- coniferous tree species dominate; coniferous cover >75%	
Mixed Savanna	SVM	- both coniferous and deciduous tree species cover > 25%	
Deciduous Savanna	SVD	- deciduous tree species dominate; deciduous cover > 75%	
Woodland	WO	- 35% < tree cover < 60%; semi-closed treed communities; natural areas typically have unique floras (e.g. Tallgrass Woodland), areas with a cultural legacy, typically dominated by more invasive herbaceous, shrub, and tree species; tree cover more closed and shaded	- mineral soil > 30 cm deep; areas with intermediate environmental limitations (e.g. fire, drought), intense disturbances, or time since last disturbance;
Coniferous Woodland	WOC	- coniferous tree species dominate; coniferous cover >75%	
Mixed Woodland	WOM	- both coniferous and deciduous tree species cover > 25%	
Deciduous Woodland	WOD	- deciduous tree species dominate; deciduous cover > 75%	
Forest	FO	- tree cover > 60%	- site conditions and substrate types variable
Coniferous Forest	FOC	- conifer tree species > 75% of canopy cover	
Mixed Forest	FOM	- conifer tree species > 25% and deciduous tree species > 25% of canopy cover	
Deciduous Forest	FOD	- deciduous tree species > 75% of canopy cover	
Cultivated	CT	- tree cover < 60% - often having a large proportion of non-native plant species	- site conditions and substrate types variable - community resulting from, or maintained by culture based disturbances
Open Cultivated	CTO	Lawns, golf courses; Actively maintained and managed	
Shrub Cultivated	CTS	Orchards	
Treed Cultivated	CTT	Orchards	
ARI – Monoculture	CTR	Continuous Row Crop - No Rotation	
ARI - Mixed	CTM	Row Crop, Hay, Improved Pasture Rotation	
ARI - Unimproved Pasture	CTP	Grazing Land	
ARI - Marginal Land	CTL	Idle Land > 10 years	
Constructed	CS	Human created structures, modified landscape	- cultural or anthropogenically created structures
Transportation	CST	Roads, parking lots	
Residential	CSR	Houses, small barns, structures	
Urban Core	CSU	Office buildings, apartments, Shopping centers	
Industry & Utility	CSI	Manufacturing plants, industrial structures	
Civic	CSC	Civic Infrastructure, Hospitals, municipal	

Extraction	CSE	buildings Mines, quarries, pits	
Terrestrial/Wetland System			
Burn	BRN	Less than 60% cover by trees/shrubs	
Wetland Systems		- open, shrub and treed communities; average wetness index typically > 0; plant communities consist mainly of facultative, facultative upland, and upland plant species; consult the Ontario Wetland Evaluation System (OWES) for up to date wetland plant species indicators	- water table seasonally or permanently at, near, or a surface; flooded bedrock or hydric mineral or organic substrates; standing water, pools or vernal pooling > coverage; wetland plant indicator species (OWES) of wetness score of a site for native species => 0; moist < 5;
Swamp	SW	- tree or shrub cover > 25% - dominated by hydrophytic shrub and tree species	- variable flooding regimes - water depth < 2 m - standing water or vernal pooling > 20% of ground
Coniferous Swamp	SWC	- tree cover > 25%; trees > 5 m in height - conifer tree species > 75% of canopy cover - richer coniferous swamps, especially on organic substrates	
Mixed Swamp	SWM	- tree cover > 25%; trees > 5 m in height - deciduous tree species > 25% and coniferous tree species > 25% of canopy cover - typically fern rich	
Deciduous Swamp	SWD	- tree cover > 25%; trees > 5 m in height - deciduous tree species > 75% of canopy cover - typically fern and sedge rich	
Thicket Swamp	SWT	- tree cover < 25%; trees < 5 m in height - hydrophytic shrubs > 25%	
Fen	FE	- tree cover (trees > 2m high) ≤ 25% - sedges, grasses and low (< 2 m) shrubs dominate	- substrate organic; > 40 cm of brown moss or sedge organic - go to Great Lakes Coastal Meadow Marsh Meadow Marshes) - rarely flooded, always saturated - pH is slightly alkaline to mildly non-calcareous - minerotrophic peatland
Open Fen	FEO	- tree cover ≤ 10%; shrub cover ≤ 25%	
Shrub Fen	FES	- tree cover ≤ 10%; shrub cover > 25%	
Treed Fen	FET	- 10% < tree cover ≤ 25%	
Bog	BO	- tree cover (trees > 2m high) ≤ 25%	- substrate organic; > 40 cm of Sphagnum peat; rare saturated - pH is moderate to highly non-calcareous (< 4.2) - ombrotrophic peatland
Open Bog	BOO	- tree cover ≤ 10%; shrub cover ≤ 25%	
Shrub Bog	BOS		
Treed Bog	BOT	- 10% < tree cover ≤ 25% - continuous Sphagnum spp. Cover	
Marsh	MA	- tree and shrub cover ≤ 25% - dominated by emergent hydrophytic macrophytes	- variable flooding regimes; - water depth < 2 m
Shallow Marsh	MAS	- species less tolerant of prolonged flooding; species restricted to facultative and obligate wetland plants	- water up to 2 m deep - standing or flowing water for much or all of growing season - varies from bare bedrock or parent mineral material substrates
Meadow Marsh	MAM	- species less tolerant of prolonged flooding	- flooding seasonal – soils flooded in spring, moist throughout summer - represents the wetland – terrestrial interface

Common Reed	PHG	- species less tolerant of prolonged flooding, grass cover dominant. - Common Reed (<i>Phragmites australis</i>) dominates with scattered herbaceous species. MAMM1-12	- flooding seasonal – soils flooded in spring, moist t - typically mineral soil based
Aquatic Systems			
Open Water	OA	- dominated (<25%) by submerged macrophytes, no tree or shrub cover - plankton dominated	- water depth > 2 m - lake trophic status
Open water	OAW	- no macrophyte vegetation	
Open aquatic	OAO	- dominated (<25%) by submerged macrophytes	
Shallow Water	SA	- submerged or floating-leaved macrophytes - emergent vegetation may be present but never dominant - no tree or shrub cover	- water up to 2 m depth - standing water always present - shoreline energy; substrate; nutrients
Open, Submerged, Floating-Leaved, Mixed	SAO	- dominated (>25%) by a mixture of emergent, submerged and floating-leaved macrophytes	
Submerged Shallow Aquatic	SAS	- dominated (>25%) by submerged macrophytes	
Mixed Shallow Aquatic	SAM	- dominated (>25%) by a mixture of submerged and floating-leaved macrophytes	
Floating-leaved Shallow Aquatic	SAF	- dominated (>25%) by floating-leaved macrophytes	