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The Articles contains in this document are mandatory in their entirety, unless otherwise indicated. Acceptance of these Articles, in their entirety, as they appear in this document, is a Mandatory requirement of this RFP. Suppliers submitting a proposal containing statements implying that their proposal is conditional on modification of these clauses or containing terms and conditions that purport to supersede these clauses or derogate from them will be considered non-responsive.

Bidders with concerns regarding the provisions of the Bid Solicitation document (including the Resulting Contract Clauses) should raise such concerns in accordance with the Enquiries provision of this RFP.



PART 1 – GENERAL INFORMATION

1. Introduction

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

Part 1 General Information: provides a general description of the requirement;

Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;

Part 3 Bid Preparation Instructions: provides bidders with instructions on how to prepare their bid;

Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;

Part 5 Certifications: includes the certifications to be provided;

Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by bidders; and

Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include: the Statements of Work and the Basis of Payment.

The Appendixes include: The Technical Evaluation Criteria and the Financial Proposal Form

2. Summary

By means of the RFP, Natural Resources Canada (NRCan) is seeking proposals to support the Geological Survey of Canada's role in research that aims to quantify the role of groundwater in sustaining the National Capital, and to value groundwater in terms of ecosystem goods and services. The project will leverage and build upon previous and ongoing research in the South Nation Watershed in Eastern Ontario.

The period of the contract will be from date of award to March 30, 2023.

2.1 Trade Agreements

The requirement is subject to the provisions of the World Trade Organization – Agreement on Government Procurement (WTO-AGP), North American Free Trade Agreement (NAFTA), the Canada-Chile Free Trade Agreement, the Canada-Columbia Free Trade Agreement, the Canada-Panama Free Trade Agreement, the Canada-Honduras Free Trade Agreement, the Canada-Peru Free Trade Agreement, the Canada-Korea Free Trade Agreement and the Canada Free Trade Agreement (CFTA).

3. Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.



PART 2 – BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada. Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The **2003 (2019-03-04), Standard Instructions - Goods or Services - Competitive Requirements**, are incorporated by reference into and form part of the bid solicitation with the modifications to the text below. If there is a conflict between the provisions of 2003 and this document, this document prevails.

- In the complete text content (except Section 3) Delete: "Public Works and Government Services Canada" and Insert: "Natural Resources Canada." Delete: "PWGSC" and Insert: "NRCan"
- Section 2: Delete: "Suppliers are required to" and Insert: "It is suggested that suppliers"
- Under Subsection 2 of Section 20: Not applicable

Subsection 5.4 of **2003 (2019-03-04), Standard Instructions - Goods or Services - Competitive Requirements**, is amended as follows:

Delete: 60 days
Insert: 120 days

2. Submission of Bids

It is the Bidders responsibility to ensure that proposals are sent to the following e-mail address, by the time and date indicated on page 1 of this RFP document:

nrcan.quebecbid-soumissionquebec.nrcan@canada.ca

IMPORTANT

It is requested that you write the following information in "Subject" of the e-mail:

NRCan – 500001946 Integrated Groundwater Surface-Water Quality Modelling

The address above is reserved for the submission of your proposal. No other communication should be sent to that address.

Due to the nature of the bid solicitation, bids transmitted by mail or facsimile to NRCan will not be accepted.

NRCan will not assume responsibility for proposals directed to any other location.

The onus is on the Bidder to ensure that the proposal is submitted correctly to the above address. Not complying with the above instructions may result in NRCan's inability to ascertain reception date and/or to consider the bid prior to contract award. Therefore, NRCan reserves the right to reject any proposal not complying with these instructions.

3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than five (5) calendar days before the bid closing date. Enquiries received after that time may not be answered.



Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by Bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

4. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidders.

5. Improvement of Requirement During Solicitation Period

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least five (5) days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.



PART 3 – BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

Canada requests that Bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (1 electronic copy)

Section II: Financial Bid (1 electronic copy) in a separate file and document

Section III: Certifications (1 electronic copy)

Prices should appear in the financial bid only. No prices should be indicated in any other section of the bid.

Canada requests that Bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) format;
- (b) use a numbering system that corresponds to the bid solicitation.

Section I: Technical Bid

In their technical bid, Bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability in a thorough, concise and clear manner for carrying out the work.

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that Bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Financial Proposal Form in Appendix “2”. The total amount of Applicable Taxes must be shown separately.

Section III: Certifications

Bidders must submit the certifications required under Part 5.



PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

1. Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

1.1 Technical Evaluation

Mandatory Technical evaluation criteria included in Appendix "1".

2. Basis of Selection

Highest Rated Within Budget

- 1. To be declared responsive, a bid must:
 - a. comply with all the requirements of the bid solicitation;
 - b. meet all mandatory technical evaluation criteria; and
 - c. obtain the required minimum of 70% percent overall of the points for the technical evaluation criteria which are subject to point rating. The rating is performed on a scale of 195 points.
- 2. Bids not meeting (a) or (b) or (c) will be declared non responsive. The responsive bid with the highest number of points will be recommended for award of a contract, provided that the total evaluated price does not exceed the budget available for this requirement.



PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and additional information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue, whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

5.1 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

5.1.1 Declaration of Convicted Offences

In accordance with the [Ineligibility and Suspension Policy \(http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html\)](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html), the Bidder must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

5.2 Certifications Precedent to Contract Award and Additional Information

The certifications and additional information listed below should be submitted with the bid but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame specified will render the bid non-responsive.

5.2.1 Integrity Provisions – List of Names

In accordance with the [Ineligibility and Suspension Policy \(http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html\)](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html), the Bidder must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

- Bidders who are incorporated, including those bidding as a joint venture, must provide a complete list of names of all individuals who are currently directors of the Bidder or, in the case of a private company, the owners of the company.
- Bidders bidding as sole proprietorship, as well as those bidding as a joint venture, must provide the name of the owner(s).
- Bidders bidding as partnerships do not need to provide lists of names.

Name of Bidder: _____

OR

Name of each member of the joint venture:



Member 1: _____
 Member 2: _____
 Member 3: _____
 Member 4: _____

Identification of the administrators/owners:

SURNAME	NAME	TITLE

5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "[FCP Limited Eligibility to Bid](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)" list (http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml) available from [Employment and Social Development Canada \(ESDC\) - Labour's](#) website.

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](#)" list at the time of contract award.

5.2.3 Status and Availability of Resources

The Bidder certifies that, should it be awarded a contract as a result of the bid solicitation, every individual proposed in its bid will be available to perform the Work as required by Canada's representatives and at the time specified in the bid solicitation or agreed to with Canada's representatives. If for reasons beyond its control, the Bidder is unable to provide the services of an individual named in its bid, the Bidder may propose a substitute with similar qualifications and experience. The Bidder must advise the Contracting Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the Bidder: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Bidder has proposed any individual who is not an employee of the Bidder, the Bidder certifies that it has the permission from that individual to propose his/her services in relation to the Work to be performed and to submit his/her résumé to Canada. The Bidder must, upon request from the Contracting Authority, provide a written confirmation, signed by the individual, of the permission given to the Bidder and of his/her availability.



5.2.4 Education and Experience

The Bidder certifies that all the information provided in the résumés and supporting material submitted with its bid, particularly the information pertaining to education, achievements, experience and work history, has been verified by the Bidder to be true and accurate. Furthermore, the Bidder warrants that every individual proposed by the Bidder for the requirement is capable of performing the Work described in the resulting contract.

5.2.5 Former Public Servant

Contracts awarded to 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 awarded to FPSs, bidders must provide the information required below before contract award. If the answer to the questions and, as applicable the information required have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply with Canada's request and meet the requirement within the prescribed time frame will render the bid non-responsive.

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 FPSs 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 Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? **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 adjustment program.

Professional fees	Amount

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 Applicable Taxes.

5.2.6 Aboriginal Designation

Who is eligible?

- a) An Aboriginal business, which can be:
 - i. a band as defined by the Indian Act
 - ii. a sole proprietorship
 - iii. a limited company
 - iv. a co-operative
 - v. a partnership
 - vi. a not-for-profit organization

in which Aboriginal persons have at least 51 percent ownership and control,

OR



- b. A joint venture consisting of two or more Aboriginal businesses or an Aboriginal business and a non-Aboriginal business(es), provided that the Aboriginal business(es) has at least 51 percent ownership and control of the joint venture.

When an Aboriginal business has six or more full-time employees at the date of submitting the bid, at least thirty-three percent of them must be Aboriginal persons, and this ratio must be maintained throughout the duration of the contract.

The bidder must certify in its submitted bid that it is an Aboriginal business or a joint venture constituted as described above.

- Our Company is NOT an Aboriginal Firm, as identified above.
- Our Company is an Aboriginal Firm, as identified above.



PART 6 – SECURITY

There are no security requirements with this contract.



PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

1. Statement of Work

The Contractor must perform the Work in accordance with the Statement of Work at Annex "A" and the Contractor's technical bid dated _____. (*to be completed at contract award*)

2. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](#) issued by Public Works and Government Services Canada.

2.1 General Conditions

[2010B \(2018-06-21\) General Conditions - Medium Complexity - Services](#), apply to and form part of the Contract.

As applicable, replace references to Public Works and Government Services Canada (PWGSC) with Natural Resources Canada (NRCan).

3. Dispute Resolution

Mediation

If a dispute arising from this contract cannot be settled amicably through negotiation, then the parties agree in good faith to submit the dispute to mediation as administered by the Arbitration and Mediation Institute of Canada Inc. (AMIC). The parties acknowledge receipt of the rules of AMIC. The cost of mediation shall be borne equally by the parties.

Arbitration

If the parties cannot resolve the dispute through mediation within sixty (60) days, the parties agree to submit the dispute to arbitration pursuant to the Commercial Arbitration Act (Canada). The party requesting such arbitration shall do so by written notice to the other party/parties. The cost of the arbitration and fees of the arbitrator shall be borne equally by the parties. The arbitration shall take place in the city where the contractor carries on business before a single arbitrator to be chosen jointly by the parties. If the parties cannot agree on the choice of arbitrator within thirty (30) days of written notice to submit the dispute to arbitration, each party will choose a representative who will select the arbitrator.

The parties may determine the procedure to be followed by the arbitrator in conducting the proceedings, or may ask the arbitrator to do so. The arbitrator shall issue a written award within thirty (30) days of hearing the parties. The award may be entered in any court having jurisdiction and enforced as a judgment of that court.

Meaning of "Dispute"

The parties agree that the word "dispute" in this clause refers to a dispute of fact or of law, other than a dispute of public law.

The parties understand that the Procurement Ombudsman appointed pursuant to Subsection 22.1(1) of the *Department of Public Works and Government Services Act* will, on request or consent of the parties to participate in an alternative dispute resolution process to resolve any dispute between the parties respecting the interpretation or application of a term and condition of this contract and their consent to bear the cost of such process, provide to the parties a proposal for an alternative dispute resolution process to resolve their dispute. The Office of the



Procurement Ombudsman may be contacted by telephone at 1-866-734-5169 or by e-mail at boa.opo@boa.opo.gc.ca.

4. Term of Contract

4.1 Period of the Contract

The period of the contract shall be from **date of award** to March 30, 2023, inclusively.

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Julia Pace
Title: Procurement Officer
Organization: Natural Resources Canada
Address: 1 Challenger Drive, Dartmouth, NS B2Y 4A2
Telephone: 902-426-7279
E-mail address: Julia.pace@canada.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

5.2 Project Authority (to be provided at contract award)

The Project Authority for the Contract is:

Name:
Title:
Organization:
Address:
Telephone:
Facsimile:
E-mail address:

The Project Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority; however, the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

5.3 Contractor's Representative

Name:
Title:
Tel:
Fax:
Email:



6. Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a Public Service Superannuation Act (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with Contracting Policy Notice: 2012-2 of the Treasury Board Secretariat of Canada.78. Payment

7.1 Basis of Payment – Firm Price

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price payable in milestone payments as specified in Annex "B" for a cost of \$ _____ (*insert the amount at contract award*). Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

7.2 Method of Payment

Milestone Payments

Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract if:

- a. an accurate and complete claim for payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b. all work associated with the milestone and as applicable any deliverable required has been completed and accepted by Canada.

8. Invoicing Instructions

Invoices shall be submitted using **one of the following methods:**

<p><u>E-mail:</u></p> <p>NRCan.invoice_imaging-service_dimagerie_des_factures.RNCan@canada.ca</p> <p>Note: Attach "PDF" file. No other formats will be accepted</p>
OR
<p><u>Fax:</u></p> <p>Local NCR region: 613-947-0987 Toll-free: 1-877-947-0987</p> <p>Note: Use highest quality settings available.</p>

Please do not submit invoices using more than one method as this will not expedite payment.

Invoices and all documents relating to a contract must be submitted on the Contractor's own form and shall bear the following reference numbers: Contract number: _____

Invoicing Instructions to suppliers: <http://www.nrcan.gc.ca/procurement/3485>



9. Certifications

9.1 Compliance

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing additional information are conditions of the Contract. Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the additional information, or if it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

10. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

11. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- a) the Articles of Agreement;
- b) the general conditions **2035 (2018-06-21), Higher Complexity – Services**
- c) Annex “A”, Statement of Work;
- d) Annex “B”, Basis of Payment;
- e) the Contractor's bid dated _____

12. Foreign Nationals (Canadian Contractor OR Foreign Contractor)

SACC Manual clause A2000C (2006-06-16) - Canadian Contractor

OR (*determined at time of contract award*)

SACC Manual clause A2001C (2006-06-16) – Foreign Contractor

13. Insurance Requirements

The Contractor is responsible for deciding if insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any insurance acquired or maintained by the Contractor is at its own expense and for its own benefit and protection. It does not release the Contractor from or reduce its liability under the Contract

14. Contract Administration

The parties understand that the Procurement Ombudsman appointed pursuant to Subsection 22.1(1) of the *Department of Public Works and Government Services Act* will review a complaint filed by [*the supplier or the contractor or the name of the entity awarded this contract*] respecting administration of this contract if the requirements of Subsection 22.2(1) of the *Department of Public Works and Government Services Act* and Sections 15 and 16 of the *Procurement Ombudsman Regulations* have been met, and the interpretation and application of the terms and conditions and the scope of the work of this contract are not in dispute. The Office of the Procurement Ombudsman may be contacted by telephone at 1-866-734-5169 or by e-mail at boa.opo@boa.opo.gc.ca.



ANNEX “A” - STATEMENT OF WORK

1. TITLE

Integrated Groundwater–Surface-Water Quality Modelling: Development of a Smart Virtual Watershed, South Nation Watershed

2. BACKGROUND

Land and Mineral Sector (LMS) and the Geological Survey of Canada (GSC) of Natural Resources Canada (NRCan) has a mandate to complete thematic groundwater studies and mapping Canadian Aquifers. As part of the Groundwater Geoscience Program, this theme has a 5 year time frame (2019–2024) and expectations to deliver innovative science on aquifers to support economic prosperity for Canada. The GSC has conducted, and continues to conduct, extensive research on the hydrogeological characteristics of the South Nation Watershed (SNW) in Eastern Ontario.

Much of the SNW is underlain by Champlain muds, which are up to 80 metres thick. The fine grained and commonly thick mud unit forms a regional aquitard in the watershed that protects underlying aquifer units from surface contaminants. The GSC has modeled the regional geological units of eastern Ontario and produced a three-dimensional numeric framework that has been converted to a hydrostratigraphic model. The intensive agricultural practices within the watershed and the large number of uses (domestic, municipal, irrigation, livestock) of the underlying aquifers makes it paramount that the aquitard properties and regional recharge patterns are adequately understood and protected; and conservation of natural capital and minimizing anthropogenic impacts within the recharge-discharge capture zones of these features, are a few ways to help achieve this. Further dependence on groundwater within the SNW relates to extensive glaciofluvial deposits, such as eskers, which provide cold and clean groundwater to surface water systems, making them an important source of water from both a supply and an ecohydrological perspective. However, glaciofluvial deposits also constitute the main source of exploitable sand and gravel within the watershed and thus are frequently at the roots of land use conflicts, and their overall influence on the hydrological function of the watershed, and their risk to contamination is not well understood.

Understanding the complex groundwater–surface-water (GW-SW) interactions within the SNW is well suited to a coupled GW-SW simulation framework. While application of physics-based fully integrated hydrologic models towards complex, watershed-scale groundwater-surface water investigations continues to expand, these state-of-the-art tools are still not commonly used for many of the complex problems for which they are ideally suited, such as that posed in the SNW. Furthermore, as forward looking insights on groundwater supply and quality are perceived to be of increasing value, there is a need to establish tools that can forecast future groundwater conditions as well as GW-SW interactions. This demand for hydrologic forecasting tools is especially high for agricultural ecosystems, where GW-SW (and associated interactions) are intrinsically linked to the crop production, ecosystem health and ecosystem goods and services (EGS) benefits. However, the current hydrologic forecasting tools are primitive in the sense that they tend to only consider surface water, and only with relatively rudimentary physical process representation.

Recently, fully integrated models have been investigated for their ability to provide coupled GW-SW forecasts, however as of yet, the application domains tend to be small in scale, heavily abstracted in terms of physical detail, and void of water quality and EGS endpoints. By developing and demonstrating the capability to utilize fully integrated hydrologic modeling tools for operational hydrologic forecasting in the context of water quality, groundwater – surface water and their respective interactions, as well as natural capital (NC) value and EGS endpoints, this project will provide significant advancement in the ability to track and predict the occurrence of water borne contaminants such as bacteria and agricultural nutrients at high spatial and temporal resolutions. Notwithstanding the capacity of these tools to physically represent the hydrogeological and hydrological characteristics of watersheds in high detail, and to provide a platform upon which the role that NC has in governing hydrologic conditions, in agricultural settings these forecast tools also provide the proactive capacity to mitigate flood risks before they occur via on farm and river scale water management that leverages the ability to assess how groundwater – surface water



interactions will potentially influence event based hydrologic response. Currently, applications involving fully integrated hydrologic models for water quality forecasting are absent from the scientific literature, and application of even simple hydrologic modeling tools towards water quality forecast endpoints is rare.

Considerable work has gone into developing and demonstrating proof-of-concept (POC) applications of fully integrated hydrologic modeling technology for the SNW, and its nested experimental subwatersheds that are heavily instrumented and have been the subject of numerous long-term studies. For purposes of flood and drought risk assessment at larger scale, and to quantify flood regulation associated with NC and EGS, a 3D HydroGeoSphere (HGS) model for the entire SNW also exists.

Further to the need for hydrologic forecasting to inform NC and EGS assessment and valuation activities, there is also a need to disseminate forecast information to a broad stakeholder base including researchers. Accordingly, a secondary focus of the contract is development of a cloud based portal that will serve as the mechanism by which the forecasted water quantity, quality, and hydrologic endpoints for EGS research will be distributed to relevant. This will allow for integrated models to serve as real-time decision and scientific support tools.

OBJECTIVES and PROJECT TASKS

The work required by this contract will support the Geological Survey of Canada's role in research that aims to quantify the role of groundwater in sustaining NC, and to value groundwater in terms of EGS. The project will leverage and build upon previous and ongoing research in the SNW.

Model Build: build a HydroGeoSphere (HGS) model for a 5 sq-km experimental watershed within the SNW. This activity will follow the methodology outlined in Hwang et al. (2019), and will yield a high-resolution HGS model for a pair of experimental watersheds composed of freely drained and control-drained tiles. Spatial resolution of the irregular 3D finite element mesh underlying the HGS model will be <5 m, and the soil profile will have the key horizons, structural features, and discrete tile drains resolved using tile maps to be provided. The contractor should expect upwards of 1000 discrete tile drain features to be incorporated into the model. It is required that a dual permeability porous media be employed (as demonstrated in Frey et al. 2016) to represent the surficial soil horizons, so that the effect of macropores can be represented in the simulations.

References:

Frey, S. K., Hwang, H.-T., Park, Y.-J., Hussain, S. I., Gottschall, N., Edwards, M., & Lapen, D. R. (2016). Dual permeability modeling of tile drain management influences on hydrologic and nutrient transport characteristics in macroporous soil. *Journal of Hydrology*, 535, 392-406. doi:<http://dx.doi.org/10.1016/j.jhydrol.2016.01.073>
Hwang, H.-T., Park, Y.-J., Frey, S. K., Callaghan, M. V., Berg, S. J., Lapen, D. R., & Sudicky, E. A. (2019). Efficient numerical incorporation of water management operations in integrated hydrosystem models: Application to tile drainage and reservoir operating systems. *Journal of Hydrology*, 575, 1253-1266. doi:10.1016/j.jhydrol.2019.03.098

Web portal development for the experimental watersheds: Develop and deploy a web portal delivering real time hydrologic forecast data feeds (updated on a daily basis) with 14 day forward-looking time intervals for the pair of experimental watersheds. The portal will disseminate at a minimum, individual discharge rates from all tile drained fields, surface water flows, groundwater – surface water exchange, soil moisture, and groundwater levels.

Develop a nutrient and FIB transport model for the SN basin: This activity will following the workflow outlined in Frey et al. (2013) and will utilize a hybrid hydrologic model / machine learning (ML) approach to predict nutrient (N and P species) and FIB levels for the 14 day forecast interval based on historic relationships between hydro-climatology and observed water quality indicators that will be provided to the contractor (historically collected since 2004).

Reference:

Frey, S.K. et al. (2013). Using SWAT, Bacteroidales microbial source tracking markers, and fecal indicator bacteria to predict waterborne pathogen occurrence in an agricultural watershed. *Water Res* 47:6326–6337. doi:
<https://doi.org/10.1016/j.watres.2013.08.010>



Development of nutrient and FIB models for the experimental watersheds: Using the high resolution hydrologic models as the primary driver and building on insights gained in activity (iii) above, ML algorithms for predicting water quality based on tile drain BMP implementation and NC details (riparian/channel characteristics), will be developed and subsequently employed for the experimental watersheds. Endpoints from this task will help determine positive benefits of instream terrestrialization (organic matter accrual) on watershed discharge characteristics, in field water/nutrient conservation, and associated crop yields (e.g., Sunohara et al., 2015).

Reference:

Sunohara M.D. et al. (2015) Long-Term Observations of Nitrogen and Phosphorus Export in Paired-Agricultural Watersheds under Controlled and Conventional Tile Drainage. *J Environ Qual* 44:1589–1604.

South Nation watershed hind-cast study/scenario analysis: Following the completion of activity (iii) above, historical reanalysis of hydrologic and water quality conditions in the SN basin will be made for the following three scenarios: model state reflects real world, model state reflects predevelopment land cover/soil, model state reflects a modest level of further development. This activity will facilitate a model based assessment of how watershed land management practices germane to NC can influence large-scale hydrologic/water quality characteristics and behaviour.

SN watershed scale operational water quality forecasting: This activity will combine the ML tools derived in activity (iii) above with the SNW HGS forecasting model currently in operation. The net result will be proof-of-concept water quality forecasting capability for the basin that provides 14 day forward looking insights on nutrient and FIB levels throughout the watershed.

Experimental watershed operational water quality forecasting: This activity will combine the ML model derived in activity (iv) above with the fully integrated hydrologic forecasting models for the experimental watersheds. The net result will be an operational water quality forecasting capability for the two experimental watersheds that provides 14 day forward looking insights on nutrient and FIB levels under different NC/tile drain management regimes.

Hydrologic and water quality forecast data dissemination: Core to the overall objectives of the project is the need to disseminate hydrologic and water quality forecast data effectively across the project team and jurisdictional bodies so that they can be used to inform on other endpoints, such as flood regulation, EGS, and public health services/benefits. Accordingly, functionality will be built into the web portal so that project members can download, or automatically obtain, forecast data that can be used in subsequent analytics.

Parallel to the above activities, the contractor will support NRCAN-GSC in the use of the modeling and forecasting platforms in combination with seismic, EM, and borehole information, in order to better inform model parameterization, and to provide localized definition of ecohydro(geo)logically important features within the SNW.

3. PROJECT REQUIREMENTS

Simulation software : Hydrogeosphere groundwater–surface-water simulation: For the contract a physically based fully coupled GW-SW code will be employed, for which HydroGeoSphere (HGS) is the code of choice, as established by its ability to: use unstructured finite element meshes, to dynamically simulate groundwater – surface water interaction, to incorporate tile drains and dual permeability porous media (both of which are intrinsic to the project), to incorporate tile drainage management schedules, and to simulate reactive chemical transport, and to operate in a forecasting model. Any alternative code proposed must be demonstrated to be convertible to HGS and to have equivalent capabilities as demonstrated by peer reviewed literature and operational forecasting platforms.

Climate forcing for hydrologic forecasting: The NAEFS (North American Ensemble Forecast System) will be used to drive forecast models in order to generate 14 day forward looking forecast data. Data output from the fully-integrated hydrologic simulations must be suitable for probabilistic analysis (i.e. an ensemble approach must be utilized).

WebPortal Development: Must be able to ingest and output data using Open GeoSpatial Consortium standards. Must be capable of synthesizing model outputs and presenting for public communication. Must provide a clear and



intuitive means of viewing temporally and spatially varying groundwater, surface-water, soil moisture, GW-SW exchange, and water quality indices. User access must be controlled via login and account management controls.

Existing Models: It is expected that the contractor will provide, or will have access to, a pre-existing fully integrated groundwater – surface water model for the entire SNW, and will have the requisite capabilities and expertise to further develop the model for water quality and artificial intelligence applications.

Requirement

It is expected that the contractor will conduct a technically vigorous review of the model post-construction, and provide the results of this review, along with a detailed final project report to the contracting authority. Because of the investigative/proof-of-concept nature of this work the contractor will have the requisite expertise on staff so as to ensure the final deliverable to GSC reflects work that is scientifically and technical valid. The contractor will document not only the model implementation but the computational environment and resources required to run the model. The contractor is expected to apply a best practices approach to the model development. The contractor must demonstrate proficiency with fully integrated groundwater – surface water simulations at scales ranging from watershed (i.e. the size of the SNW) to high-resolution subwatershed scale (i.e. 5 sq-km), as well as with preferential flow simulations in tile drained agricultural landscapes.

4. DELIVERABLES

Experimental Watershed Model Development

Deliverable 1.1. Build an HGS model for the free drained (FD) component of the experimental watershed:

Deliverable 1.2. Configure the FD model for operation in the HGSRT portal:

Deliverable 1.3. Development of nutrient and FIB models (public health risk) for both the experimental watersheds:

Deliverable 1.4. Experimental watershed operational water quality forecasting:

South Nation Watershed Model Development

Deliverable 2.1. Develop a nutrient and FIB transport model for the SN basin:

Deliverable 2.2. SN watershed hind-cast study/scenario analysis:

Deliverable 2.3. SN watershed scale operational water quality forecasting:

Web portal development

Deliverable 3.1 Hydrologic and water quality forecast data dissemination via the web-portal URL and access to site for 2 years

Deliverables and Schedule

	Tasks/Activities	Deliverables/Milestones	Time Schedule
1.1	Experimental Watershed Model Development	Report - MSWord document, submitted electronically.	8 month after start of contract
1.2	Configure the FD model for operation in the HGSRT portal:	Report - MSWord document, submitted electronically.	2021-03-30
1.3	Development of nutrient and FIB models (public health risk) for both the experimental watersheds:	Report - MSWord document, submitted electronically.	2021-03-30
1.4	Experimental watershed operational water quality forecasting:	Report - MSWord document, submitted electronically.	2023-03-30



2.1	Develop a nutrient and FIB transport model for the SN basin:	Report–MSWord document, submitted electronically. Presentation, all data inputs and model information so that model can be run at GSC	2021-03-30
2.2	SN watershed hind-cast study/scenario analysis:	Report–MSWord document, submitted electronically. Presentation, all data inputs and model information so that model can be run at GSC	2022-03-30
2.3	SN watershed scale operational water quality forecasting:	Report–MSWord document, submitted electronically. Presentation, all data inputs and model information so that model can be run at GSC	2022-03-30
3.1	Hydrologic and water quality forecast data dissemination via the web-portal	Final report - MSWord document, submitted electronically. Presentation, URL and access to site for 1 year	2022-03-30

4.1 Reporting Requirements

The contractor and scientific authority will communicate at the convenience of the respective parties. The final report deliverable will be submitted in a suitable format for a GSC Open File publication with the consultant’s authors and affinity as the publication authors.

4.2 Method and Source of Acceptance

All deliverables rendered under any contract are subject to inspection by GSC technical staff (Ottawa) for the Project Authority. The Project Authority shall have the right to reject any deliverables that are not considered satisfactory, or require their correction before payment will be authorized.

5.0 OTHER TERMS AND CONDITIONS OF THE SOW

5.1 Contractor’s Obligations

The Contractor shall:

- submit all written reports in electronic Microsoft Office Word, PDF format;
- At the end of the contract the contractor will provide all of the files, data input and output to successfully allow the model to be rerun with the exception of the climate input data.
- The contractor should be prepared that all deliverables will be published by the GSC as an Open File report with the contractor’s authority as the author.

5.2 Location of Work, Work Site and Delivery Point

Work is to be completed at Contractor’s place of business.





ANNEX "B" - BASIS OF PAYMENT

To be completed at contract award



APPENDIX “1” - EVALUATION CRITERIA

Bidders are advised to address these criteria in the following order and in sufficient depth in their proposals to enable a thorough assessment. NRCan’s assessment will be based solely on the information contained within the proposal. NRCan may confirm information or seek clarification from bidders.

Bidders are advised that only listing experience without providing any supporting data to describe responsibilities, duties and relevance to the criteria will not be considered demonstrated for the purpose of this evaluation.

1. TECHNICAL CRITERIA

1.1 MANDATORY EVALUATION CRITERIA

Criterion ID	Mandatory Criteria	Proposal Page #	Pass/Fail
M1	<p>General description of the work to be performed</p> <p>The bidder must provide a proposal including a detailed work plan for fulfilling the mandate, specifically describing the work to be done to meet the requirements and a full description of how all deliverables described in the Statement of Work will be met.</p> <p>The work plan must include:</p> <ul style="list-style-type: none"> • Detailed information on the work to be performed, a complete description of the activities to be carried out and the resources used; • A table showing the breakdown of work including the number of hours allowed on each task, delivery dates of each deliverable including the resource name. • A list of deliverables with submission dates 		
M2	<p>Study Design: The bidder must include one project and a brief description of it.</p> <ul style="list-style-type: none"> • The project must have been completed during the <u>last 10 years</u> and deal with literature review and best practices in the domain of groundwater modelling with a coupled groundwater–surface-water model with applications to agricultural issues (e.g., tile drains, nutrient loading etc.). • The bidder must have performed the following activities: experience in researching, gathering, compiling, analyzing, summarizing data and publishing the information in a peer review journal. • The bidder must demonstrate that they possess the required experience by having performed this type of activity. 		



Criterion ID	Mandatory Criteria	Proposal Page #	Pass/Fail
<p>M3</p>	<p>Groundwater Modelling:</p> <ul style="list-style-type: none"> • The bidder must have at least five (5) years of experience in the fields of hydrogeological modelling (numeric modelling involving groundwater and surface water, in an integrated physically based model; Hydrogeosphere), climate (e.g., Weather and Forecasting model (WRF)), and agriculture (e.g., tile drainage, solute transport, nutrient loading, etc). <p>The bidder may propose more than one Resource but at a minimum, one Resource must have the minimum required years of experience in each field (e.g., hydrogeological modelling, climate, agriculture).</p> <ul style="list-style-type: none"> • All experience requirements must have been acquired within the last ten (10) years. • The resource(s) must have a PhD and a publication history in peer reviewed publications. • Copies of the curriculum vitae (CV) must be included referencing above 		
<p>M4</p>	<p>Machine Learning:</p> <ul style="list-style-type: none"> • The bidder must have at least five (5) years of experience in the field of machine learning and demonstrated applications to hydrogeological issues, particularly as it pertains to <u>agricultural watersheds</u> and <u>agricultural contaminates</u>. • The bidder may propose more than one resource but at a minimum, one resource must have the minimum required years of experience in each field (machine learning). • All experience requirements must have been acquired within the last ten (10) years. • The resource(s) must have a PhD and a publication history in peer reviewed publications. • Copies of the curriculum vitae (CV) must be included referencing above. 		



Criterion ID	Mandatory Criteria	Proposal Page #	Pass/Fail
M5	<p>Web Portal:</p> <ul style="list-style-type: none"> The bidder must document having developed a web portal delivering model results and groundwater–surface-water information. The bidder must demonstrate that they possess the required experience by having performed this type of activity. <p>Note: Provision of working URL’s will be considered documentation.</p>		

1.2 Point Rated Technical Criteria

The criteria contained herein will be used by NRCan to evaluate each proposal that has met all of the mandatory criteria. Bidders are advised to address these criteria in the following order and in sufficient depth in their proposals to enable a thorough assessment. NRCan’s assessment will be based solely on the information contained within the proposal. NRCan may confirm information or seek clarification from bidders.

Proposals must achieve the stated minimum points required for each rated criterion to be assessed as responsive under the point rated technical criteria section; proposals not meeting the minimum required points will be deemed non-responsive.

Only those proposals which are responsive (compliant) with all of the mandatory criteria and then achieve (or exceed) the stated minimum points required for the point rated technical criteria section (which is equivalent to 70% of the total points available) will be further considered for award of a contract. Proposals not meeting the minimum points required will be deemed non-responsive.

Requirement No.	Rated requirement	Scoring method for evaluation criteria	Maximum number of points
C1	<p>RESOURCE QUALIFICATION</p> <p>The proposal should demonstrate that the proposed resource(s) has (have) knowledge and experience directly related to the project requirements. (CV of resources including the list of projects completed). If the supplier proposes more than one resource, the final score of each resource will be added and the cumulative score recorded.</p> <p>Publications can be counted multiple times as applicable for different evaluation criteria at the C1, C2, etc level.</p>		100



	<p>C1.1. Experience in the field of groundwater modelling <u>at agricultural and watershed scales <5,000 km²</u>;</p>	<p>10 points: Groundwater modelling <u>at agricultural field scale and watershed scales <5,000 km²</u>.</p> <p>1 point per project documented by technical report (minimum title page and contact reference to be provided), and 2 points per project documented in a peer reviewed journal (title page and journal citation required) to a total of 10 points</p>	
	<p>C1.2 Experience modelling agricultural scale drainage features such as tile drains</p>	<p>10 points: Groundwater modelling at agricultural scale <u>and watershed scales <5,000 km²</u>.</p> <p>1 point per project documented by technical report (minimum title page and contact reference to be provided), and 2 points per project documented in a peer reviewed journal (title page and journal citation required) to a total of 10 points</p>	
	<p>C1.3. Experience in researching, gathering, compiling, analyzing and summarizing data in order to perform the literature review in the hydrogeological and numeric groundwater modelling in the prescribed domains;</p>	<p>20 points: Experience in the following modelling domains:</p> <ol style="list-style-type: none"> 1. Groundwater–surface-water 2. Climate 3. Solute transport 4. Agricultural field scale models (tile drains) 5. Web portal development <p>1 points per project with technical report documentation (minimum title page and contact reference to be provided), and 2 points per peer review journal publication (title page and journal citation required) to a maximum of 10 points per domain to a total of 20 points. Publications can be only counted once if applicable to multiple domains.</p>	
	<p>C1.4. A publication record in peer reviewed journals such as, but not limited to (WRR, Journal hydrogeology, Groundwater, Canadian Water Resources Journal in the</p>	<p>30 points: Publication record in modelling domains</p> <ol style="list-style-type: none"> 1. Groundwater–surface-water 	



	prescribed domains. 2 points for peer review publications (title page and journal citation required);	<ol style="list-style-type: none"> 2. Climate 3. Solute transport 4. Agricultural field scale modelling <p>2 points per article per domain up to a maximum of 10 points per domain and a total point count of 30 points. Publications can be only counted once if applicable to multiple domains.</p>	
	C1.5 The proposed resource should be able to document use of the Hydrogeosphere code;	<p>20 points: A publication record in technical reports and peer reviewed journals such as, but not limited to (WRR, Journal hydrogeology, Groundwater, Canadian Water Resources Journal using the proposed code(s))</p> <p>1 point for technical documents (minimum title page and contact reference to be provided), 2 points for peer review journal publications (title page and journal citation required) to a total point count of 20 points</p>	
C1 (Continued)	C1.6. The supplier should demonstrate that it has a resource(s) familiar with the bedrock and surficial geology and hydrostratigraphy of South Nation River watershed	<p>10 points: A publication record in technical reports, abstracts, and peer reviewed journals such as, but not limited to (WRR, Journal hydrogeology, Groundwater, Canadian Water Resources Journal using the proposed code(s))</p> <p>1 point for technical documents (minimum title page and contact reference to be provided), 2 points for peer review journal publications (title page and journal citation required) to a total point count of 20 points</p>	
Subtotal for C1 out of 100			
C2	<p>APPROACH AND METHOD</p> <p>The bidder should present a method clearly demonstrating an approach that will lead to the successful completion of the project.</p> <p>Note: The proposal will be evaluated based on the following factors:</p>		40



	C2.1. comprehension of the project needs and objectives;	10 points: for the comprehension of the project needs and objectives <ul style="list-style-type: none"> ▪ 0 = Unacceptable ▪ 2 = poor ▪ 4 = Unsatisfactory ▪ 6 = Good ▪ 8 = Very good ▪ 10 = excellent 	
	C2.2. information sources that will be consulted;	10 points: for information and data sources <ul style="list-style-type: none"> ▪ 0 = Unacceptable ▪ 2 = poor ▪ 4 = Unsatisfactory ▪ 6 = Good ▪ 8 = Very good ▪ 10 = excellent 	
	C2.3. research method: proposal, schedule, information-gathering mechanisms, instruments used, tool used in data compilation;	10 points: for the research method <ul style="list-style-type: none"> ▪ 0 = Unacceptable ▪ 2 = poor ▪ 4 = Unsatisfactory ▪ 6 = Good ▪ 8 = Very good ▪ 10 = excellent 	
	C2.4. documentation of portal development and accessibility;	10 points: for clarity in data transfer mechanisms <ul style="list-style-type: none"> ▪ 0 = Unacceptable ▪ 2 = poor ▪ 4 = Unsatisfactory ▪ 6 = Good ▪ 8 = Very good ▪ 10 = excellent <p><i>See the Evaluation Grid at the end of the document.</i></p>	
Subtotal for C2 out of 40			
C3	PROPOSAL AND TABLE SHOWING THE BREAKDOWN OF WORK CLARITY, ORGANIZATION & LOGIC OF THE PROPOSAL		20
	C3.1. Organization of document, sections are easy to find accompanying information is easy to track and information is well cross indexed	10 points: document is well organized, <ul style="list-style-type: none"> • 0 = Unacceptable • 2 = poor • 4 = Unsatisfactory • 6 = Good • 8 = Very good • 10 = excellent • 	



	C3.2. Document is easy to understand, grammatical and language to technical level and explained for a non-specialist.	<p>10 points: expression of ideas</p> <ul style="list-style-type: none"> • 0 = Unacceptable • 2 = poor • 4 = Unsatisfactory • 6 = Good • 8 = Very good • 10 = excellent <p><i>See the Evaluation Grid at the end of the document.</i></p>	
Subtotal for C3 out of 20			
C4.	Machine Learning		20
	C4.1 The proposed resource must be able to document use of the proposed machine learning approaches	<p>10 points: A publication record in technical reports, published abstracts, and peer reviewed journals such as, but not limited to (WRR, Journal hydrogeology, Groundwater, Canadian Water Resources Journal using the proposed approach(s)</p> <p>1 point for technical documents and abstracts (minimum title page and contact reference to be provided), 2 points for peer review journal publications (title page and journal citation required) to a total point count of 20 points</p>	
	C4.2 The proposed resource must be able to document use of proposed machine learning approaches specifically to groundwater–surface-water modelling and agriculture	<p>10 points: A publication record in technical reports, abstract conference proceedings, and peer reviewed journals such as, but not limited to (WRR, Journal hydrogeology, Groundwater, Canadian Water Resources Journal using the proposed approach(s)</p> <p>1 point for technical documents and abstracts (minimum title page and contact reference to be provided), 2 points for peer review journal publications (title page and journal citation required) to a total point count of 20 points</p>	
Subtotal for C4 out of 20			
C.5	Website An interactive web mapping site		15



	C5.1. Is able to accesses and ingest data served to Open Geospatial Consortium standards and information deliver using webservice protocols (e.g., WFS 3.0, WMS)	5 points: For published supporting documentation of Open Geospatial Consortium standards <ul style="list-style-type: none"> • <i>points per example with 1 point per website URL and example of implementation</i> 	
	C5.2. Delivery of time series data in graphical format using OGC standard Time Series ML	5 points: For published supporting documentation of Open Geospatial Consortium standards <ul style="list-style-type: none"> • <i>points per example with 1 point per website URL and example of implementation</i> 	
	C5.3. Data synthesis and delivery from groundwater–surface-water model output for public communication using standards per 6.1–6.2	5 points: For documentation of data synthesis and generation of communication indices <ul style="list-style-type: none"> • <i>points per example with 1 point per website URL and example of implementation</i> 	
Subtotal for C5 out of 15			
		Subtotal for C1 out of 100	
		Subtotal for C2 out of 40	
		Subtotal for C3 out of 20	
		Subtotal for C4 out of 20	
		Subtotal for C5 out of 15	
A minimum score of 70% (136 Points) is required		Total out of 195	

EVALUATION GRID	
Excellent (100%)	Rated criteria are covered in-depth and submitted information demonstrate a complete and deep understanding of all rated criteria elements.
Very good (80%)	Submitted information clearly indicates a full understanding of all rated criteria elements.
Good (60%)	Submitted information clearly indicates a full understanding of most of rated criteria, but not all.
Unsatisfactory (40%)	Submitted information indicates some understanding of criteria outlined, but do not demonstrate a full understanding of all rated criteria.
Poor (20%)	Submitted information indicates that the tenderer has a minimal understanding of criteria outlined.
Unacceptable (0%)	Submitted information does not meet criteria



APPENDIX “2” - FINANCIAL PROPOSAL FORM

1. FIRM PRICE - Milestone Payments

Bidder tendered all-inclusive firm price to perform the work is in Canadian funds, applicable taxes excluded. Any Travel and Living Expenses and other miscellaneous expenses must be included in the firm price.

The bidder must complete the schedule below indicating the firm proposed amounts for each step in conjunction with #2 funding Limitation.

2 Funding Limitation

NRCan has allocated a maximum of **\$250,000.00** in funding for this requirement, inclusive of the Price to perform the Work. Tax (GST) or Harmonized Sales Tax (HST) are extra.

The maximum amount per fiscal year:

- 2020-2021: \$130,000
- 2021-2022: \$85,000
- 2022-2023: \$35,000

Bids valued in excess of this amount will be considered non-responsive. This disclosure does not commit Canada to pay the maximum funding available.

Tasks/Activities		Deliverables/Milestones	Time Schedule	All inclusive total firm price in Canadian funds
1.1	Experimental Watershed Model Development	Report - MSWord document, submitted electronically.	8 month after start of contract	\$ _____
1.2	Configure the FD model for operation in the HGSRT portal:	Report - MSWord document, submitted electronically.	2021-03-30	\$ _____
1.3	Development of nutrient and FIB models (public health risk) for both the experimental watersheds:	Report - - MSWord document, submitted electronically.	2021-03-30	\$ _____
2.1	Develop a nutrient and FIB transport model for the SN basin:	Report–MSWord document, submitted electronically. Presentation, all data inputs and model information so that model can be run at GSC	2021-03-30	\$ _____
A) All inclusive firm price for Fiscal year ending March 30, 2021 (\$130,000.00 Maximum)				\$ _____



2.2	SN watershed hind-cast study/scenario analysis:	Report–MSWord document, submitted electronically. Presentation, all data inputs and model information so that model can be run at GSC	2022-03-30	\$ _____
2.3	SN watershed scale operational water quality forecasting:	Report–MSWord document, submitted electronically. Presentation, all data inputs and model information so that model can be run at GSC	2022-03-30	\$ _____
3.1	Hydrologic and water quality forecast data dissemination via the web-portal	Final report - - MSWord document, submitted electronically. Presentation, URL and access to site for 1 year	2022-03-30	\$ _____
B) All inclusive firm price for Fiscal year ending March 30, 2022 (\$85,000.00 Maximum)				\$ _____
1.4	Experimental watershed operational water quality forecasting:	Report - - MSWord document, submitted electronically.	2023-03-30	\$ _____
C) All inclusive firm price for Fiscal year ending March 30, 2023 (\$35,000.00 Maximum)				\$ _____
A+B+C Total Bid Price in Canadian Funds (\$250,000.00 Maximum)				\$ _____