ADVANCE CONTRACT AWARD NOTICE (ACAN)

1. Title

Analysis of lake sediments and peat cores

2. Definition

An Advance Contract Award Notice (ACAN) allows departments and agencies to post a notice, for no less than fifteen (15) calendar days, indicating to the supplier community that it intends to award a good, service or construction contract to a pre-identified contractor. If no other supplier submits, on or before the closing date, a Statement of Capabilities that meets the requirements set out in the ACAN, the competitive requirements of the government's contracting policy have been met. Following notification to suppliers not successful in demonstrating that their Statement of Capabilities meets the requirements set out in the ACAN, the contract may then be awarded using the Treasury Board's electronic bidding authorities.

If other potential suppliers submit Statement of Capabilities during the fifteen calendar day posting period, and meet the requirements set out in the ACAN, the department or agency must proceed to a full tendering process on either the government's electronic tendering service or through traditional means, in order to award the contract.

3. Background

Peats and lake sediments are natural archives of past environmental conditions. Detailed identification and characterization of the arsenic (As)-hosting minerals preserved in these archives can be used to understand and predict the transport and fate of As in terrestrial and aquatic systems.

The deliverables of this request will help Natural Resources Canada (NRCan) to better understand how As is hosted in near-surface solid phase materials in northern ecosystems of the Yellowknife region, where approximately seventy-five years of gold mining and associated contamination obscures geochemical background. Peats and lake sediments have been collected from the Yellowknife region, Northwest Territories, and they will be sub-sampled for various analyses, including mineralogy. By studying the mineralogy of As, NRCan will be able to determine if solid phase As is geogenic or anthropogenic in origin, and thus characterize the environmental impact of past mining activity. Previous work has shown that the application of synchrotron-based techniques, scanning electron microscopy, and Mineral Liberation Analysis can be successfully used to distinguish As compounds known to have been emitted from historical stack emissions at Giant Mine, including arsenic trioxide and As-hosting maghemite and hematite, from arsenopyrite and other forms that are more likely to be natural in origin. Detailed micromineralogical analyses have also shown how post-depositional diagenesis can convert arsenic trioxide in lake sediments to less bioaccessible arsenic-bearing sulfide minerals.

4. Objectives

To identify As-hosting solid phases in lake sediments and peats using a combination of advanced mineralogical techniques. Where possible, to distinguish anthropogenic from natural As-bearing minerals and to evaluate the relative proportions of various As-hosting solid phases in samples.

5. Project Requirements

5.1 Tasks, Deliverables, Milestones and Schedule

Tasks

- Build upon initial method development from NRCan fiscal year 2015/2016 to prepare and mount peat samples for optimal SEM (Scanning Electron Microscopy) and SEM-MLA (Scanning Electron Microscopy – Mineral Liberation Analysis) analyses;
- Perform SEM to identify As-hosting phases in lake sediments and peat samples;

- Conduct Mineral Liberation Analysis (MLA) to locate all As-hosting particles in a sample, identify the mineral or solid compound, and determine the relative proportions of various As-hosting phases;
- Conduct synchrotron-based X-ray absorption near edge spectroscopy (XANES), µXRD (micro X-ray diffraction), and/or µXRF (micro X-ray fluorescence) on selected samples to characterize the As-bearing phases; and
- Provide a report.

Deliverables

- Deliverable (Deadline: March 31, 2017): Report detailing:
    1) Methods developed for observing peat under SEM to determine As mineralogy; and
    2) Results of SEM, MLA, XANES, µXRD , and µXRF analyses and appropriate method

5.2 Technical, Operational and Organizational Environment

This work is expected to be completed at the Contractor's place of business.

5.3 Contractor's Responsibilities

In addition to the obligations outlined above, the Contractor shall:

- keep all documents and proprietary information confidential;
- return all materials belonging to NRCan upon completion of the Contract;
- submit all written reports in hard copy and electronic Microsoft Office Word format;
- participate in teleconferences, as needed; and
- maintain all documentation in a secure area.

6. Trade Agreements

This requirement is not subject to any trade agreements.

7. Title to Intellectual property

Natural Resources Canada has determined that any intellectual property rights arising from the performance of the Work under the resulting contract will belong to Canada, on the following grounds:

- to generate knowledge and information for public dissemination
- outputs will be released as joint publications

8. Contract Period

The contract period shall be from date of award of contract to March 31, 2017.

9. Estimated Cost

The estimated maximum value of the contract is between $45,000.00 to $50,000.00 CAD, including all applicable taxes.

10. Exception to the Government Contracts Regulations and applicable trade agreements

Sole Source Justification - Exception of the Government Contract Regulations (GCR):

(d) Only one person or firm is capable of performing the contract

The contractor must:

1) Possess experience in the area of environmental geochemistry and mineralogical controls on the mobility of metals and metalloids (notably As) in mine waste and environmental media, as evidenced by a proven track record of at least 5 related publications in international peer-reviewed journals;
2) Must have at least five (5) years of experience charactering the As mineralogy of mine tailings and airborne particles produced from milling and roasting of refractory gold ores*, and a record of publications in scientific journals that dealt with As in mine waste;
3) Possess experience in the application of synchrotron-based X-ray analysis and other microanalytical methods to determine the solid-phase speciation of As in mine tailings, soils, peats, and sediments in at least one project;
4) Have access to SEM-MLA equipment, and a demonstrated ability to identify As-hosting phases and automatically locate and quantify the abundance of all primary and secondary As-hosting particles in samples of mine tailings, soils, peats, and sediments.

* Direct knowledge and experience working on mine wastes (e.g., tailings and arsenic trioxide) produced during past milling and roasting of refractory gold ores at the Giant Mine in Yellowknife would be considered a strong asset. Arsenic trioxide is a key contaminant of concern in the Yellowknife area and specialized techniques and knowledge are required to identify its presence in environmental media (soils, sediments, and peats), quantify its abundance, and assess various factors contributing to its long-term persistence in the environment.

Queen's University in Kingston, ON is the only provider that can meet all of the criteria above as well as the project requirements in paragraph 5.1 to 5.3.

11. Name and Address of the Proposed Contractor

Queen's University
99 University Ave
Kingston, ON
K7L 3N6

12. Inquiries on Submission of Statement of Capabilities

Suppliers who consider themselves fully qualified and available to provide the services/goods described herein, may submit a Statement of Capabilities in writing, preferably by e-mail, to the contact person identified in this Notice on or before the closing date and time of this Notice. The Statement of Capabilities must clearly demonstrate how the supplier meets the advertised requirements.

13. Closing Date

Closing Date: 2 February 2017
Closing Time: 4:00 p.m. EST

14. Contract Authority

Len Pizzi
Procurement Officer
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