

**Specifications for Site Remediation  
Former Weather Station – Nottingham Island  
Nottingham Island, Nunavut**

**ISSUED FOR TENDER**

**Prepared for:**

Public Works and Government Services Canada

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END OF SECTION

PART 1      GENERAL

1.1          Precedence

- .1          Division 1 Sections take precedence over technical specification sections in other Divisions of this specification.

1.2          Background Information

.1          Introduction

- .1          The Nottingham Island site is a former Department of Transportation weather station and radio transmitter station. The site was originally established in 1884 and decommissioned in 1970. The site is located on federal lands on the southern end of Nottingham Island on the west shore of the Hudson Strait in Nunavut. Based on the findings of previous investigations, the site is currently occupied by decrepit buildings, impacted soil, hazardous and non-hazardous materials.

.2          Site Location

- .1          The site is located approximately 140 km southwest of Cape Dorset, Nunavut in the Qikiqtaaluk region along the banks of the Hudson Strait. Ivujivik, Quebec is situated approximately 80 km south of the site and is the closest community. The closest Nunavut community to the site is Cape Dorset, Nunavut (~140 Km, to the North). The approximate centre of the site is located at the coordinates 63.111974 N, 77.938633 W.

.3          Site Hazards

- .1          The site is a remote northern location. As such, hazards include (and not be limited to) the presence of wildlife, inclement weather and lack of facilities. In addition, the site is surrounded by bodies of surface and open water.

.4          Site Access

- .1          At the present time the site is accessible by helicopter with a landing pad south of the bunkhouse. There is no airstrip available for fixed-wing aircraft on the island. Historically, when the site was operational, it was accessible by boat with the landing area on the beach immediately south of the site. A trail runs east to west along the north end of the site and is approximately 2.7 m wide with no embankment, and is accessible by ATV at the present time. Saturated soil conditions within the work area might require the use of low weight bearing equipment in order to perform the remediation activities.

.5          Site Conditions

- .1          The site has been vacant and abandoned since 1970, when the former weather station was decommissioned. Presently, there are 14 structures, two empty above-ground storage tanks, numerous antennae, piles of debris, roadway and a communication tower.

- .2 The results of previous assessments have identified potential hazards remaining on site to include, but are not limited to, the following:
  - .1 Wood Waste – Non-Hazardous
  - .2 Other Waste – Non-Hazardous
  - .3 Asbestos Waste – Hazardous
  - .4 Liquid Organic Wastes in ASTs – Hazardous
  - .5 Aqueous Content in Drums - Hazardous
  - .6 Total Lead and Leachable Lead Paint on Waste – Hazardous
  - .7 Total Lead and Leachable Lead Paint on ASTs – Hazardous
  - .8 Total Lead and Leachable Lead Paint on Asbestos Panels – Hazardous
  - .9 Compressed Gas Cylinders – Hazardous
  - .10 Fire Extinguishers – Hazardous
  - .11 Creosote Treated Wood – Hazardous
  - .12 Other Hazardous Waste
  - .13 PHC Impacted Soil
  - .14 Metal Impacted Soil
  - .15 Co-Contaminated Soil (PHC and Metals)
  - .16 Impacted Water
  
- .3 Existing infrastructure as indicated, includes, but is not limited to:
  - .1 Abandoned Buildings:
    - .1 Storage Shed 01
    - .2 Old Kitchen
    - .3 New Radio Bldg & Small Shed
    - .4 Old Radio Building
    - .5 Outhouse
    - .6 Storage Shed 02
    - .7 Storage Building and Small Shed
    - .8 Chicken Coop, Caged Area
    - .9 Bunkhouse
    - .10 Generator Building
    - .11 House and Garage
    - .12 Shed
    - .13 House
    - .14 Building and 4 Wood Poles
  
  - .2 Drums – 77 empty have been identified in different areas throughout the site. Approximately 620 L of aqueous content has been identified. All of the drum contents should be considered hazardous. Drums are located in the following areas:
    - .1 Storage Shed – 1 drum
    - .2 Storage Building – 1 drum
    - .3 Chicken Coop – 1 drum
    - .4 Generator Building – 3 drums
    - .5 House and Garage – 3 drums

- 
- .6 House – 3 drums
  - .7 AST Farm – 1 drum
  - .8 Hudson Strait Shoreline – 20 drums
  - .9 Area between ASTs and Hudson Strait – 44 drums
- 
- .3 Debris Areas – Six (6) areas of concentrated debris (Hazardous and Non-Hazardous) are present within the limits of the site. Identified debris includes, but is not limited to, scrap metal, empty drums, former radio antennae, domestic waste, propane and gas cylinders and batteries.
  - .4 Above Ground Storage Tanks (ASTs) – Eight (8) ASTs (900L capacity each) were inventoried on Site, with a total of 1400 L of organic contents (assumed to be weathered heating oil) in four of these ASTs. Two (2) ASTs (73000L capacity each) were inventoried on Site, with no contents visually identified.
  - .5 Radio Antenna Tower – Steel frame sections of the radio antenna tower are located on the ground surface.
  - .6 Other miscellaneous debris – Miscellaneous debris comprising of both Hazardous and non-hazardous waste is scattered across the surveyed limits of the site.
- .6 Existing Roads
    - .1 A trail runs along the north end of the site, east to west, and is approximately 2.7 m wide with no embankment and is accessible by ATV. The trail continues northeast to Lake No.2; however, it is in poor condition and is poorly-drained in areas. Several overgrown trails surround the derelict buildings on site and are overgrown with moss.
- .7 Site Climate
    - .1 Climate data is available for Nottingham Island between 1927 and 1970 (Environment Canada 2012). The mean annual air temperature over this period was -8.8°C. July is the warmest month with average temperatures between 4 and 13 °C. February is the coldest month with average temperatures between -22 and -29 °C. The annual total precipitation ranged from 107 to 509 mm over the record period. Fog is common in late summer and autumn in this region.
- .8 Supporting Documents
    - .1 Previous investigations have been conducted at the site and the following documents have been made available:
      - .1 Remedial Action Plan – Nottingham Island, Nunavut. EBA: A Tetra Tech Company. April 2013.
      - .2 Environmental Assessment – Nottingham Island, Nunavut. EBA: A Tetra Tech Company. March 2013.
      - .3 Archaeological Impact Assessment (AIA) of the Nottingham Island Weather Station, Nottingham Island, Nunavut. Golder Associates. March 2013.

- .4 Phase I/II Environmental Site Assessment – Nottingham Island, Nunavut. WESA. March 2010.
- .5 Phase III Environmental Site Assessment – Nottingham Island, Nunavut. EBA: A Tetra Tech Company. January 2013.

1.3 Description of Work

- .1 Work of this Contract comprises the site remediation activities at the Former Weather Station at Nottingham Island, Nunavut including, but not limited to, the following:
  - .1 Preparation of planning documents and submittals required under this Specification (ie Site Specific Health and Safety Plan which includes On-Site Contingency and Emergency Response Plan, Spill Contingency Plan and Fire Safety Plan).
  - .2 Mobilization and demobilization of all personnel, equipment, support facilities and materials required to complete the Work as often as required.
  - .3 Recovery, collection, consolidation and transport to the on-site Temporary Storage Area (TSA), followed by containerization, transport and off-site disposal of all non-hazardous demolition debris and all other non-hazardous debris waste materials scattered within the surveyed limits of the site to the Contractors Designated Off-Site Disposal Facility.
  - .4 Recovery, collection, consolidation and transport to the on-site Temporary Storage Area (TSA), followed by containerization, transport and off-site disposal of all hazardous demolition debris and all other hazardous waste materials scattered within the surveyed limits of the site to the Contractors Designated Off-Site Disposal Facility.
  - .5 Demolition of existing structures, segregation of debris into waste streams (hazardous and non-hazardous), followed by appropriate containerization, transport and disposal to the Contractors designated licensed off-site disposal facility.
  - .6 Collection and containerization for appropriate off-site transportation and disposal of compressed gas cylinders and fire extinguishers to the Contractors designated licensed off-site disposal facility.
  - .7 Controlled on-site burning, collection and containerization for appropriate off-site transportation and disposal of non-hazardous wood waste.
  - .8 Collection and containerization for appropriate off-site transportation and disposal of debris and waste material painted with lead-based paint (including ASTs and Asbestos panels) to the Contractors designated licensed off-site disposal facility.
  - .9 Collection, cleaning, crushing, containerization for off-site transportation and disposal of all drum/ASTs and contents including containerization, transport and disposal of hazardous and non-hazardous drum/AST contents to the Contractors designated licensed off-site disposal facility.
  - .10 Collection and containerization for appropriate off-site transportation and disposal of Asbestos Containing Materials (including, but not limited to, attic insulation, fibre glass insulation, panels, vinyl floor tiles, light fixture backings, asphalt shingles, exterior siding, and furnace gaskets) to the Contractors designated licensed off-site disposal facility.

- .11 Collection and containerization for appropriate off-site transportation and disposal of creosote treated wood materials to the Contractors designated licensed off-site disposal facility.
- .12 Collection and containerization for appropriate off-site transportation and disposal of all miscellaneous hazardous waste (including, but not limited to, batteries, mercury in fluorescent lights, mercury, PCB light ballasts, PCBs, lead solder in electrical components, anti-freeze, oil, fuel, and other vehicle fluids) to the Contractors designated licensed off-site disposal facility.
- .13 Collection and containerization for appropriate off-site transportation and disposal of all miscellaneous non-hazardous waste (including, but not limited to, scrap metal, black felt, brick and brick mortar, cables, concrete, exterior metal siding, fibreglass insulation, flooring, glass windows, porcelain, rubber, asphalt shingles, and drums) to the Contractors designated licensed off-site disposal facility.
- .14 Excavation, collection and containerization of PHC impacted soil, Metal impacted soil and co-contaminated soil for appropriate off-site transportation and disposal to the Contractors designated licensed off-site disposal facility.
- .15 Backfill and grading in order to restore natural contours to the prevailing landscape in areas disturbed by the remediation efforts noted above.
- .16 Provide on-site borrow material as required in order to backfill and re-grade areas disturbed by the remediation efforts noted above.
- .17 Upgrading of site roads and to facilitate remediation activities.
- .18 Provision of the following site support services:
  - .1 Provision and maintenance of Departmental Representative's vehicles as specified in Section 01 52 00 – Construction Facilities.
  - .2 Construction Camp as specified in Section 01 54 00 – Camp Facilities, including operation, maintenance, catering and janitorial service.
  - .3 Safety, fire protection, office and medical services, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.
  - .4 Transportation services for Departmental Representative and Departmental Representative's Authorized Personnel from Ivujivik or Cape Dorset to Site.
  - .5 Communication services for Contractor and Departmental Representative as specified in Section 01 54 00 – Camp Facilities.
  - .6 Provision of Wildlife Monitors, as specified in Section 01 35 32 – Site Specific Health and Safety Plan.

#### 1.4

##### Definitions

- .1 Departmental Representative: Within the context of these Specifications, the term Departmental Representative refers to the person exercising the roles and attributes of Canada under the contract
- .2 Departmental Representative's Authorized Personnel: Within the context of these Specifications, the term Departmental Representative's Authorized Personnel refers to personnel appointed by Departmental Representative or authorized on site by Departmental

Representative. Departmental Representative's Authorized Personnel provide recommendations/technical guidance to Departmental Representative as required, for the enforcement of these specifications.

- .3 Contractor: Contractor procured to undertake the remediation Work as defined, within the context of these specifications, as Contractor.
- .4 Contractor's Site Superintendent: Contractor's resident site representative, who is authorized to make decisions on behalf of Contractor.
- .5 The word "provide" means supply and install, operate, submit or any other procedure necessary to complete the work as intended.
- .6 Authorities Having Jurisdiction (AHJ): Governmental agency or sub-agency that regulates the codes and standards that are to be met during the remediation process.
- .7 Designated Hazardous Waste Disposal Facilities: The Licensed Hazardous Waste Disposal Facilities designed by Contractor and pre-approved by Departmental Representative, for the disposal of all hazardous waste specified under the provisions of this contract. A Licensed Hazardous Waste Disposal Facility is a facility where by the destruction or final containment of a material occurs and the facility is able to provide final certificates of destruction or placement for hazardous and non-hazardous materials.

#### 1.5 Submittals

- .1 All submittals in accordance with Section 01 33 00 - Submittal Procedures

#### 1.6 On-Site Documents

- .1 Maintain at job site, one copy each of the following:
  - .1 Contract drawings.
  - .2 Specifications.
  - .3 Requests for Clarification and responses
  - .4 Addenda.
  - .5 Task Authorizations
  - .6 Change Orders
  - .7 Reviewed shop drawings.
  - .8 Other modifications to Contract.
  - .9 Field test reports.
  - .10 Copy of approved Work Schedule.
  - .11 Manufacturers' installation and application instructions.
  - .12 Material and Safety Data Sheets Specifications.
  - .13 Site Specific Health and Safety Plan including
    - .1 Spill Contingency Plan
    - .2 Fire Safety Plan.
    - .3 Emergency Response Plan.
  - .14 Waste disposal Work plan.
  - .15 Land Use Permit
  - .16 Water License.
  - .17 Quarry Permit
  - .18 Labour conditions and wage Schedules.
  - .19 Site Medic Credentials.
  - .20 Up-to-date record drawings.
  - .21 License for Radio Communication.
  - .22 All applicable Territorial permits and licenses.
  - .23 All applicable Federal permits and licenses.

- .24 Copies of manifests and bills of loading.
- .25 Demolition Plan
- .26 Hazardous material audit.
- .27 Worker Training Program
- .28 WCB Notification of Project
- .29 Letter of Good Standing with WCB
- .30 Copies of test results
- .31 Other documents as specified.

1.7 Work Schedule

- .1 Provide and maintain Work Schedule in accordance with instructions of Section 01 32 18 Construction Progress Schedules - Bar (GANTT) Chart.
- .2 Keep the Departmental Representative advised of planned Work in activities accordance with the instructions of Section 01 33 00 – Submittal Procedures.

1.8 Contractor Use of Site

- .1 Contractor's use of the site is restricted to the terms and conditions of the issued permits and all applicable guidelines and regulations.
- .2 Coordinate use of premises under direction of Departmental Representative.
- .3 Contractor is not permitted to disturb archaeological features as identified during the site work.
- .4 Use of the site shall comply with the environmental protection requirements of 01 35 43 – Environmental Procedures.

1.9 Examination of Site

- .1 Prior to mobilization, perform a Pre-Mobilization Site Visit in order to verify field conditions and ensure that execution of the Work can proceed as planned. The Contractor shall notify the Departmental Representative in writing, on all matters that could prejudice proper execution of the Work. Provide a minimum of seven (7) days notice to Departmental Representative prior to examining the site.
- .2 Commencement of mobilization constitutes acceptance of existing conditions and verification of dimensions.

1.10 Permits and Licenses

- .1 The Crown has applied for a Land Use Permit, Water Use License and Quarry Permit. All restrictions and requirements of these apply to Contractor.
- .2 Be responsible for obtaining and paying for all permits, licenses and approvals associated with the development and operation of a construction camp.
- .3 Register, obtain and pay for all required licenses and permits for individual tradesmen employed for Work as referenced in the various Sections of the Contract Specifications.
- .4 Obtain and pay for any other licenses or permits required to perform the activities required on site.
- .5 Provide supplemental information to the regulators for any necessary license amendments or

reporting requirements.

- .6 Pay all costs associated with complying with the requirements for the permits and licenses noted in the above clauses.

#### 1.11 Site Supervision

- .1 Designate Contractor's Site Superintendent to be on site at all times during construction, to have full authority to make decisions for Contractor, to be knowledgeable of the requirements of the contract, and to act upon Departmental Representative's instructions.
- .2 Notify Departmental Representative two (2) week in advance of Site Superintendent change and provide updated chain-of-command.

#### 1.12 Additional Drawings

- .1 Departmental Representative may furnish additional drawings to assist with proper execution of the Work. These drawings will be issued for clarification only. Such drawings have the same meaning and intent as if they were included with plans referred to in Contract documents.

#### 1.13 Worker Orientation Seminar

- .1 Develop, prior to the start of Work, course material for a Worker Orientation Seminar. The outline of this seminar will be approved by Departmental Representative and is intended to describe the remediation activities at the site, and provide instruction for the applicable health, safety, and environmental policies and regulations as related to the site Work activities. Course material will be prepared and presented in the English language and the local dialect. Provide a translator as required.
- .2 Submit two (2) hard copies and one (1) electronic copy of the Worker Orientation Seminar course material to Departmental Representative for review at least 30 days prior to the seminar. Include information describing the facility to be used for conducting the seminars.
- .3 The Orientation Course will address, but is not necessarily limited to, the following topics:
  - .1 Project Communication
    - .1 Roles of Departmental Representative and Departmental Representative's authorized representatives.
    - .2 Roles of Contractor and Contractor's authorized representatives
    - .3 Lines of Project communication.
  - .2 Remediation Activities (Scope of Work)
    - .1 Demolition and containerization of demolition waste materials.
    - .2 Excavation and containerization of contaminated soils.
    - .3 Asbestos abatement.
    - .4 Collection and disposal of site debris.
    - .5 Collection, containerization, and transportation of hazardous waste material.
  - .3 Regional Overview of the site
    - .1 Land use of area (hunting, fishing activities, etc.).
    - .2 Location of site relative to communities.
    - .3 Heritage resources including location of gravesites.

- .4 Climate.
- .5 Geology and hydrology.
- .6 Flora and fauna.
  
- .4 Project Organization/Schedule/Administration
  - .1 Personnel policies.
  - .2 Supervisory reporting relationships.
  - .3 Communication.
  - .4 Payroll and banking procedures.
  - .5 Work Schedules and hours.
  - .6 Camp rules.
  
- .5 Environmental Issues and Protection Procedures
  - .1 Climate.
  - .2 Land use.
  - .3 Water resources/fisheries.
  - .4 Terrestrial resources.
  - .5 Heritage resources.
  - .6 Spill contingency plans/procedures.
  
  - .7 Training activities
  
- .6 General Site Specific Health and Safety
  - .1 Team Work.
  - .2 Work attitudes/productivity.
  - .3 Anti-Harassment Policy.
  - .4 First aid procedures.
  - .5 Protective equipment and clothing.
  - .6 Safe operation of equipment and tools.
  
  - .7 WHMIS requirements.
  - .8 Wildlife awareness.
  
- .7 Work Specific Task Requirements
  - .1 Asbestos abatement.
  - .2 Contaminated soil cleanup.
  - .3 Demolition and material disposal.
  - .4 Transportation of Dangerous Goods (TDG).
  - .5 Permafrost protection.
  - .6 Environmental mitigation procedures.
  - .7 Emergency spill response training.
  - .8 Barrel collection and disposal/containerization.
  
- .4 Prior to the start of Work, conduct Worker Orientation Seminars for all supervisors, foremen, Contractor's general Workforce, Departmental Representative and Departmental Representative's Authorized Personnel staff based on the course material approved by Departmental Representative.
  
- .5 Provide a training seminar for supervisors, foremen, Departmental Representative, Departmental Representative's on-site support staff and Contractor's general Work force. Each person on site will attend one of the seminars. Require each attendee to sign a record of attendance upon completion of the seminar. Retain, for Departmental Representative's review at any time, this record of attendance.

1.14 Measurement of Payment

- .1 Work under this contract will be paid for as follows:
  - .1 Lump sum pay items will be paid at the lump sum price tendered for each lump sum item listed in the Basis of Payment Form
  - .2 Unit price items will be paid at the unit price tendered for each unit price item listed in the Basis of Payment Form.
  - .3 Miscellaneous Project costs will be paid at the lump sum price tendered for "Balance of Project Costs" (BOPC) on the Basis of Pricing Form
  - .4 Provisional Cost Sum Items will be paid according to the actual costs expended, as certified by the Departmental Representative for each provisional cost item listed in the Basis of Payment Forms. Retain receipts for all Provisional Cost Sum Items.
- .2 Unit price items, lump sum pay items and provisional cost recoverable items will be paid under the Basis of Pricing which will form the Basis of Payment Schedule of the proposed contract. All other items, whether specifically defined in the specific sections of the Specifications or not, will be paid under Item BOPC-1, Balance of Project Costs, in the Basis of Payment Schedule.
- .3 Direct costs include all costs directly attributable to a particular pay item including equipment, operators, materials, equipment maintenance and depreciation, etc. All direct costs for lump sum and unit price items are to be included in the appropriate price item in the Basis of Payment Schedule.
- .4 Indirect costs include all costs not directly attributable to the pay items including profit, supervision, overhead, administration, CGL Insurance, WCB, allowance for equipment maintenance and depreciation repairs, and any other relevant costs. All indirect costs associated with specific unit price or lump sum items will be included in Item BOPC-1, Balance of Project Costs, in the Basis of Payment Schedule.
- .5 Include costs of any statement of or requirement for Work, goods or services required in this section that are not covered by appropriate payment clauses in other sections in Item BOPC-1, Balance of Project Costs, in the Basis of Payment Schedule.
- .6 Notify Departmental Representative of planned Work activities in accordance with requirements of Section 01 33 00 - Submittal Procedures, and at least two (2) days in advance of operations to permit required measurements for payment.
- .7 All costs for the preparation of the Worker Orientation Seminar Material and for conducting the seminars, including the preparation of meeting room facilities as required, are to be included in the unit price for Worker Orientation Seminar, Item 01 11 00-1, as indicated in the Basis of Payment Schedule.
- .8 The unit price payment for the Worker Orientation Seminar will be made in two progress instalments as follows:
  - .1 Sixty percent of the unit price payment for the Worker Orientation Seminar will be paid upon completion by Contractor and review by Departmental Representative of the Worker Orientation Seminar course material, and upon conducting the seminar prior to the start of Work.
  - .2 Forty percent of the unit price payment for the Worker Orientation Seminar will be paid upon demonstration by Contractor to Departmental Representative that all of Contractor's Workforce have attended the seminar at the start of each subsequent construction season. The Worker Orientation Seminar will be paid under Item 01 11

00-1.

- .9 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used.

PART 3 EXECUTION

3.1 Not Used

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 General

- .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified under various sections.
- .2 Provide and pay for all transportation and analyses required for all Contractor's samples to an accredited laboratory to meet the requirements specified.

1.2 Submittals

- .1 All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.3 Appointment and Payment

- .1 Departmental Representative will appoint and pay for services of testing laboratory required for the following:
  - 1. Confirmatory testing as described in this Section.
  - 2. Testing for the classification of hazardous contaminated soil for licensed disposal facility acceptance requirements.
  - 3. Testing associated with the characterization of barrel contents for the purpose of determining incineration requirements (if applicable).
  - 4. Testing associated with the identification and characterization of hazardous waste materials.
  - 5. Testing required for quality assurance.
- .2 Contractor will appoint and pay for testing services for quality control of Contractor's own Work including the following:
  - 1. Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
  - 2. Inspection and testing performed exclusively for Contractor's convenience.
  - 3. Testing of potable water.
  - 4. Testing of hazardous waste materials in accordance with all appropriate regulations for packaging, transport and off-site disposal.
  - 5. Testing of solvent rinsate used during cleaning of barrels.
  - 6. Testing to determine the disposal requirements of oil-absorbent material used as a filter for liquid wastes resulting from equipment decontamination, fuel tank/pipeline cleaning and barrel processing operations.
  - 7. Testing of explosive vapour concentrations associated with degassing of tanks.
  - 8. Testing of sewage effluent as indicated in Section 01 54 00 – Camp Facilities or as directed by Departmental Representative.
  - 9. Testing of wash water resulting from all cleaning activities, including barrel washing and equipment decontamination.
  - 10. Tests specified to be carried out by Contractor under the supervision of Departmental Representative.
  - 11. All tests required by Contractor to ensure conformance and quality control of Contractor's Work.
  - 12. Inspection and testing required by the conditions of permits issued for the Work.
- .3 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected Work.

- .4 The analytical testing laboratory designated by Contractor to carry out off-site tests, to be approved by Departmental Representative and certified by the Canadian Association for Laboratory Accreditation(CALA) for the specific tests required and in advance of analytical testing. Submit copies of the laboratory's CALA certification to Departmental Representative upon request.

#### 1.4 Contractor's Responsibilities

- .1 Provide labour, equipment and facilities to:
  - .1 Provide access to Work to be inspected and tested.
  - .2 Facilitate inspections and tests.
  - .3 Make good Work disturbed by inspection and test.
  - .4 Provide storage on site to store equipment and test samples.
- .2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Instruct testing laboratory to include Departmental Representative on result distribution list via facsimile or e-mail.
- .5 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

#### 1.5 Confirmatory Testing

- .1 Confirmatory testing will be carried out on contaminated soil areas by Departmental Representative's testing laboratory as follows:
  - .1 The actual location, frequency and method of testing will be determined by Departmental Representative.
  - .2 Soil sampling will be carried out by Departmental Representative within the perimeter of each contaminated soil excavation and at depth within the completed excavation area, immediately upon completion of excavation.
- .2 If required, classification testing will be carried out at waste material processing areas to classify and delineate contaminated soil and other materials.
- .3 It is anticipated that test results will be available within approximately fourteen (14) calendar days from the date that samples are transported from the site for laboratory analysis. Deliver Departmental Representative's samples to Departmental Representative's designated testing laboratory in Iqaluit, Nunavut within two (2) days maximum from site departure.
- .4 Be responsible for all costs associated with the packaging, preservation, handling and transport of Departmental Representative's samples from the site to Departmental Representative's designated testing laboratory in Iqaluit, Nunavut. It is critically important that Contractor ensures that the samples are expeditiously delivered from the site and transferred to commercial air service. Where cargo transfers are required from charter to commercial air service, provide personnel at transfer locations to facilitate timely transfers.
- .5 Assume all responsibility for samples damaged during transport including all costs for resampling, shipping, analysis and any resulting delays.

1.6 Measurement of Payment

- 1 Except as indicated above, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate cost of the Work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 Construction Progress Schedules – Bar (GANTT).

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

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PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION

PART 1      GENERAL

1.1          Definitions

- .1      Project Start-Up Teleconference: conference call to be held within 10 days after Contract Award and to include the Contractor and representatives from AANDC and PWGSC,
- .2      Pre-Construction Meeting: meeting to be held prior to Contractor Mobilization at location of Contractor's choice and to include the Contractor and representatives from AANDC and PWGSC.
- .3      Seasonal Meeting: meeting to be held between construction seasons at location of Contractor's choice and to include the Contractor and Departmental Representatives from AANDC and PWGSC
- .4      Monthly Meeting: meeting to be held on-site at approximately monthly intervals during the construction season and to include the Contractor and representatives from AANDC and PWGSC.
- .5      Pre-Mobilization Site Visit: Contractor's visit to the site to check field conditions and obtain actual conditions required to ensure correct execution of the Work prior to site mobilization.
- .6      Construction Meeting: meeting to be held on-site at approximately weekly intervals during the construction season and to include the Contractor and Departmental Representative.
- .7      Tailgate Meeting: meeting to be held on-site daily during the construction season and to include Contractor and all construction staff.
- .8      Community Meeting: meeting to be held prior to the commencement of work and after each construction season in Cape Dorset NU, Salluit QC and Ivujivik QC with Departmental Representative, AANDC, local leaders, officials, authorities and public.
- .9      Weekly Safety Meeting: Meeting to be held on site on a weekly basis during the construction season and to include the Contractor, all staff, on-site Departmental Representative and Departmental Representative's authorized personnel.
- .10     Joint Occupational Health and Safety Committee Meeting: Meeting as required by AHJ.

1.2          Administrative

- .1      Responsibilities of Departmental Representative:
  - .1      Schedule and administer Project meetings throughout the progress of the Work at the call of Departmental Representative.
  - .2      Prepare agenda for meetings unless otherwise specified.
  - .3      Distribute written notice of each meeting five (5) days in advance of meeting date.
  - .4      Preside at meetings unless otherwise specified.
  - .5      Record the meeting minutes unless otherwise specified. Include significant proceedings and decisions. Identify actions by parties.
  - .6      Reproduce and distribute copies of minutes within three (3) days after meetings and transmit to meeting participants and affected parties not in attendance and Departmental Representative.

- .2 Responsibilities of Contractor:
  - .1 Provide physical space and make arrangements for meetings.
  - .2 Representative of Contractor, Sub-Contractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

### 1.3 Project Start-up Teleconference Meeting

- .1 Within 10 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities. The meeting will be a teleconference between all parties in attendance.
- .2 Departmental Representative, Contractor, AANDC, major Sub-Contractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
- .4 Departmental Representative will chair the meeting and take minutes. Meeting will be informal and agenda to include the following:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Preliminary Schedule of Work.
  - .3 Preliminary Schedule of submission of Work Plan and Cost Breakdown and other submissions.
  - .4 Preliminary requirements for temporary facilities, site security, camp facilities, equipment and proposed methods of mobilization and demobilization.
  - .5 Set-up of Pre-Construction Meeting.

### 1.4 Pre-Construction Meeting

- .1 As per Project Start-up Teleconference Meeting, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Contractor, AANDC, major Sub-Contractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Schedule of Work: in accordance with Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.
  - .3 Schedule of submission in accordance with Section 01 33 00 - Submittal Procedures including but not limited to:
    - .1 Site Specific Health and Safety Plan
      - .1 Emergency Response Plan
      - .2 Spill Contingency Plan
      - .3 Wildlife Management Plan
    - .2 Insurances and transcripts
    - .3 Equipment to be used by Contractor
    - .4 Proposed camp facilities in accordance with Section 01 54 00 - Camp Facilities.
    - .5 Location of equipment and proposed methods for mobilization and demobilization.
    - .6 Shop Drawings

- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
- .5 Delivery Schedule of specified equipment.
- .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- .7 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .8 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .9 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .10 Monthly progress claims, administrative procedures, and hold backs.
- .11 Appointment of inspection and testing agencies or firms.
- .12 Regulatory Issues
- .13 Aboriginal involvement and reporting.
- .14 Project photographs requirements.
- .15 Regulatory review of all permits required to perform the Work.
- .16 Requirements for Waste Management.

1.5 Pre-Mobilization Site Visit

- .1 Prior to mobilization, perform a Pre-Mobilization Site Visit to check field conditions and obtain actual conditions required to ensure correct execution of the Work. Notify Departmental Representative in writing by submitting a Pre-Mobilization Site Visit Report within seven (7) days of completing the visit, of all matters which could prejudice proper execution of the Work.
- .2 Provide a minimum of seven (7) days notice to Departmental Representative prior to examining the site.
- .3 Departmental Representative, Contractor, and AANDC will be in attendance.
- .4 All the direct costs for the pre-mobilization site visit are to be included in the Lump Sum Unit Price Item 01 31 19-2, as indicated in the Basis of Payment Schedule.

1.6 Seasonal Meetings

- .1 Request a meeting of parties in contract to discuss the previous and upcoming construction season and resolve issues arising from same.
- .2 Departmental Representative, Contractor, AANDC, major Sub-Contractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum ten(10) days before meeting.
- .4 Departmental Representative will preside.
- .5 Agenda may include:
  - .1 Summary of the previous season's site activities.
  - .2 Comparison of progress achieved with the Project Schedule.
  - .3 Schedules and action Contractor plans to take to get back on Schedule, if required.
  - .4 Confirmation of quantities.
  - .5 Health, safety and security issues.
  - .6 Work plan for the following season, if any.
  - .7 Camp requirements.
  - .8 Summary of interactions with AHJ.

- .6 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance within seven (7) days after meeting.

1.7 Construction Meetings

- .1 During course of Work and weeks prior to Project completion, Departmental Representative will schedule progress meetings weekly.
- .2 Contractor, major Sub-Contractors involved in Work and Departmental Representative are to be in attendance.
- .3 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance shortly after meeting.
- .4 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction Schedule.
  - .5 Review of off-site fabrication delivery Schedules.
  - .6 Project Schedule review, identifying activities that are behind Schedule and providing measures to regain slippage.
  - .7 Corrective measures and procedures to regain Projected Schedule.
  - .8 Revision to construction Schedule.
  - .9 Progress Schedule, during succeeding Work period.
  - .10 Review submittal Schedules: expedite as required.
  - .11 Maintenance of quality standards.
  - .12 Review proposed changes for affect on construction Schedule and on completion date.
  - .13 Environmental, Health, Safety and Security issues.
  - .14 Camp requirements.
  - .15 Correspondence from or expected visits from authorities having jurisdiction.
  - .16 Compliance concerns with respect to the Land Use Permit, Water Licence and IOL Permit.
  - .17 Regulatory review
  - .18 Other business.
- .5 Contractor to preside over daily tailgate meetings with all construction staff and document minutes with daily reporting requirements.
- .6 Provide written explanations on activities which are overrunning estimated time. If any such activities are on the critical path, indicate what corrective action will be taken to bring them back on Schedule.

1.8 Monthly Progress Meetings

- .1 Department Representative will schedule Monthly Progress Meetings to be held on-site.
- .2 Departmental Representative, Contractor, AANDC, major Sub-Contractors, field inspectors and supervisors will be in attendance.
- .3 Departmental Representative will notify parties five (5) days prior to meetings.
- .4 Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance shortly after meeting.

- .5 Agenda may include the following:
  - .1 Summary of the previous month’s site activities.
  - .2 Comparison of progress achieved with the Project Schedule.
  - .3 Schedules and action Contractor plans to take to get back on Schedule, if required.
  - .4 Confirmation of quantities.
  - .5 Environmental, health, safety and security issues.
  - .6 Work plan for the following month.
  - .7 Summary of interactions with authorities having jurisdiction
  - .8 Camp requirements.
  - .9 Compliance concerns with respect to the Land Use Permit, Water Licence and IOL Permit.
  - .8 Other business.

1.9 Tailgate Meetings

- .1 The Contractor shall schedule the daily on-site Tailgate Meetings during the construction season.
- .2 The Contractor and construction staff will be in attendance.
- .4 The Contractor shall maintain a record of the items discussed and a roster of the persons attending the meeting.
- .5 Topics of discussion should be those that are relevant to the work expected to be performed that day.

1.10 Community Meetings

- .1 Prior to the commencement of work and after each construction season is completed, arrange meetings with Departmental Representative, AANDC, local leaders, officials, authorities and public in Cape Dorset NU, Salluit QC and Ivujivik QC. Be prepared to discuss local hiring practices and any other items of operations which may impact upon the local communities. Minutes will be taken by Departmental Representative.
- .2 Conduct presentations via computer and projector using “Power Point” software. Provide wording in English and simultaneous translation to the local dialect during the presentation. Submit presentations to Departmental Representative for review a minimum of 14 days prior to each community meeting.
- .3 Provide hard copies of final approved presentation, in English and translated into Inuktitut, Nunavik and French, prior to community meeting, for disbursement to community members.
- .4 Contractor is responsible for advertising the community meeting at least seven (7) days in advance of the meeting. The meeting must be advertised in the local paper, on local radio and posted within the town office, arena and community centre (if applicable). Postings and radio advertisements are to be pre-approved by AANDC and the Departmental Representative. Proof of advertising and postings must be presented to the Departmental Representative.
- .5 Provide and pay for the following associated with these meetings:
  - .1 Meeting facility rental.
  - .2 Coffee, tea, pastries, cookies, etc.
  - .3 Translation services.
  - .4 All advertising costs.

1.11 Submittals

- .1 Submit Preliminary Construction Schedule to Departmental Representative within seven (7) working days of Contract Award, a Construction Progress Schedule GANTT Chart planning, monitoring and reporting of project progress in accordance with Section 01 32 18 – Construction Progress Schedule bar (GANTT) Chart.
- .2 Submit preliminary shop drawings, product data and samples 90 days prior to mobilization in accordance with 01 33 00 – Submittal Procedures for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to Departmental Representative.
- .3 Submit requests for payment for review, and for transmittal to Departmental Representative.
- .4 Submit requests for interpretation of Contract Documents, and obtain instructions through Departmental Representative.
- .5 Submit and process substitutions through Departmental Representative.
- .6 Submit and process task authorizations and change orders through Departmental Representative.
- .7 Deliver closeout submittals for review to Departmental Representative.
- .8 Submit to Departmental Representative, 3 hard copies and 1 electronic copy of the Site Specific Health and Safety Plan which will include the Spill Contingency Plan, Emergency Response Plan, and Fire Safety Plan fifteen (15) days after contract award.
- .9 Provide submittals to the Departmental Representative for review. Include submittals as noted in Table 01 33 00-1 in Section 01 33 00 – Submittal Procedures.

1.12 Coordination Drawings

- .1 Provide information required by Departmental Representative for preparation of coordination drawings.
- .2 Review and approve revised drawings for submittal to Departmental Representative.

1.13 Measurement of Payment

- .1 All direct costs for the Pre-construction Meeting are to be included in the lump sum price for Pre-construction Meeting, Item 01 31 19-1, as indicated in Basis of Payment Schedule. Contractor will be responsible for travel and accommodations costs for its own personnel only.
- .2 All direct costs for the Pre-Mobilization Site Visit are to be included in the lump sum price bid for Pre-Mobilization Site Visit, Item 01 31 19-2, as indicated in Basis of Payment Schedule.
- .3 All direct costs for the Seasonal Meetings are to be included in the unit price bid for Seasonal Meetings at Location of Contractor's Choice, Item 01 31 19-3, as indicated in Basis of Payment Schedule. Contractor will arrange for meeting facilities. Contractor will be responsible for travel and accommodation costs for its own personnel only.

- .4 The facilitation of Monthly Progress Meetings will be measured for payment by the meeting held and paid under Item 01 31 19-4, Monthly Progress Meetings, in the Basis of Payment Schedule.
- .5 The facilitation of Construction Meetings and Tailgate Meetings will be measured for payment by the meeting held and paid under Item 01 31 19-5, Construction Meetings, in the Basis of Payment Schedule.
- .6 The provision of return transportation of Departmental Representative's personnel from either Cape Dorset NU, or Ivujivik QC to the site during the Monthly Meetings will be measured by the number of person return trips, as described in Section 01 54 00 - Camp Facilities, and paid under item 01 54 00-4, Departmental Representative and Departmental Representative Authorized Personnel return transportation – Ivujivik or Cape Dorset to site. In the Basis of Payment Schedule.
- .7 The facilitation of Community Meetings in Cape Dorset NU, Salluit QC or Ivujivik QC will be measured for payment by the number of meetings held in Cape Dorset NU, Salluit QC or Ivujivik QC and paid under Item 01 31 19-6, Community Meetings– Cape Dorset NU, Salluit QC or Ivujivik QC in the Basis of Payment Schedule. Payment will include provision for transportation of three (3) Departmental Representative(s) and/or Authorized Personnel from the Contractor's Charter Base to Community Meeting Location.
- .8 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Definitions

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of Schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized Project management system.
- .3 Baseline: original approved plan (for Project, Work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Sunday, inclusive, will provide seven (7) days Work week and define Schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of Work periods (not including holidays or other nonworking periods) required to complete activity or other Project element. Usually expressed as workdays or workweeks.
- .6 Milestone: significant event in Project, usually completion of major deliverable.
- .7 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout Project life cycle.

1.2 Requirements

- .1 Ensure detailed Schedule is practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Provide and maintain a work schedule showing anticipated progress stages and final completion of work within time period required by Contract.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.
- .5 Prepare the schedule using critical path analysis techniques, showing resource loading. Identify tasks that lie on the critical path. Show total float for all activities.

1.3 Submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Project Schedule to Departmental Representative within five (5) working days of receipt of acceptance.

1.4 Project Schedule

- .1 Develop detailed Project Schedule.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
  - .1 Award.
  - .2 Shop Drawings, samples.
  - .3 Permits.
  - .4 Mobilization.
  - .5 Site Activities (expand as required to suit Contractor's task breakdown but to include as minimum:)
    - .1 Camp set up.
    - .2 Structure demolition.
    - .3 Collection, containerization and off-site disposal of non-hazardous waste/debris.
    - .4 Excavation and disposal of PHC, metal and co-contaminated soil.
    - .5 Collection, containerization and off-site disposal of hazardous waste materials.
    - .6 Regrading.
    - .7 Restoration of disturbed areas.
    - .8 Camp shut down.
  - .6 Interim Certificate of Completion
  - .7 Demobilization
  - .8 Closeout Submittals
  - .9 Final Certificate of Completion
- .3 Submit preliminary construction progress Schedule in accordance with Section 01 33 00 - Submittal Procedures to Departmental Representative coordinated with Departmental Representative's Project Schedule.
- .4 After review, revise and resubmit Schedule to comply with revised Project Schedule.
- .5 During progress of Work revise, update and resubmit the Project Schedule as directed by Departmental Representative. Provide the Revised Project Schedule a minimum of three (3) days prior to scheduled monthly meetings, or as directed by Departmental Representative.

1.5 Project Schedule Reporting

- .1 Update Project Schedule on monthly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.6 Project Meetings

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind Schedule and provide measures to regain slippage. Activities considered behind Schedule are those with Projected start or completion dates later than current approved dates shown on baseline Schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

1.7 Cost and Quantity Control

- .1 Provide a Contract Work Breakdown Structure (CWBS) based on Contractor's Cost Breakdown and any modifications requested by Departmental Representative as follows:
  - .1 CWBS to be an organization of the Work to be performed, services to be provided and data to be submitted by Contractor, as well as payments to be made to Contractor under the terms of the Contract.
  - .2 The CWBS to clearly define the Work elements of each item of the CWBS.
  - .3 The CWBS to include a breakdown of pay items included under Item BOPC -1, Balance of Project Costs in the Basis of Payment Schedule. All unit price, lump sum, and provisional cost sum allowance pay items included in the Basis of Payment Schedule to also be included in the CWBS.
  - .4 Prepare the CWBS in computerized spreadsheet format compatible with the most recent release of Microsoft Excel software. Provide CWBS in hard copy format.
  - .5 Submit the CWBS within 30 days following contract award date.
- .2 Equipment and Material Control:
  - .1 Record data on status of construction material and equipment and report upon Departmental Representative's request.
- .3 Manpower Performance Measures:
  - .1 Record and report manpower listing for each company employed under this Contract, including Sub-Contractors, detailing daily man-hours during the current month and cumulative total to date and report upon Departmental Representative's request.
  - .2 Provide statistical reporting.
  - .3 Provide statistics related to lost time accidents upon Departmental Representative's request.
  - .4 Monthly Performance Measures Templates are bound in this specification.

1.8 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION

PART 1      GENERAL

1.1          Definition

- .1      The term "submittals" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2      Shop Drawings: Drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by the Contractor to illustrate details of a portion of the Work.

1.2          Administrative

- .1      Submit to Departmental Representative submittals listed for review. Submittal list is bound into specification section and is for information only. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2      Work affected by submittal is not to proceed until review is complete.
- .3      Where items or information is not produced in SI Metric units converted values are acceptable.
- .4      Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific Project will be returned without being examined and will be considered rejected.
- .5      Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6      Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .7      Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .8      Keep one reviewed copy of each submission on site.

1.3          Samples

- .1      Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2      Deliver samples prepaid to Departmental Representative's business address site office.
- .3      Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4      Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

- .5 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .6 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

#### 1.4 Photographs

- .1 Provide digital photos in “Joint Photographic Experts Group” (.jpg) format for Progress Photographs and Final Photographs.
- .2 Digital photographs to have a minimum of 2,592 x 1,944 pixel (5 Megapixel) resolution.
- .3 Progress and Final Photographs to be submitted on a compact disc (CD). Provide one (1) copy of the Progress Photographs, and two (2) copies of the Final Photographs.
- .4 Printed (colour) copies of digital photographs to be provided for Final Photographs only:
  - .1 Size: 100 mm x 125 mm.
  - .2 Two digital photographs per 215 x 280 mm page.
  - .3 Pages to be white, of photographic quality paper and to be three-hole punched, ready for insertion into a three-ring binder. Binder(s) to be vinyl, hard-covered, 3 inch D ring, sized for 215 x 280 mm paper, with spine pocket.
- .5 Identification: Typewritten or generated by computer, the name and number of the Project on cover and spine of binder and CD case. Each photograph to be labelled with the digital photo file name positioned so as to not interfere with the view of the main activity or feature presented on the photograph. Also provide a description of each photograph in photographic log format. Photographic log to be included with each computer disk, CD, and binder. Description to include:
  - .1 Digital photograph file name
  - .2 Name and description of feature
  - .3 View direction
  - .4 Date of exposure.
  - .5 GPS location
  - .6 Before and after photograph of location
- .6 Quantity: Provide sufficient number of photographs to adequately describe the Work activities carried out during the reporting period. A minimum of two photographs taken from two viewpoints are to be provided for each clean up/construction activity. Viewpoint locations for final digital photographs to be determined by Departmental Representative. Provide “Before” and “After” photos of site showing key areas before remediation and after remediation. Provide “After” photos from the same Photographic Viewpoint as the “Before” photos, Record the location of the photographic Viewpoints with a handheld GPS and plot these locations on the record drawing mark-up. Consult with Departmental Representative to verify Photographic Viewpoints.
- .7 Submit progress photographs monthly with last weekly report or as directed by the Departmental Representative.
- .8 Provide two sets in two binders of final digital photographs.
- .9 Submit final photographs prior to final progress payment request.

1.5 Measurement of Payment

- .1 All direct costs for the photographs are to be included in the lump sum price for Photographs, Item 01 33 00-1, as indicated in Basis of Payment Schedule.
- .2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION

Specification Section	Description	Date
01 11 00	Worker Orientation Course Seminar Info.	30 days prior to seminar
01 11 00	Record of Attendance at Worker Orientation Seminar	Upon Departmental Representative's request
01 29 83	CALA Laboratory Certification	Upon Departmental Representative's request
01 31 19	Pre-Mobilization Site Visit Report	Within 7 days of the site visit
01 31 19	Community Meeting Presentation	14 days prior to meeting
01 31 19	Preliminary shop drawings, product data and samples	90 days prior to mobilization
01 31 19	Preliminary Construction Schedule	7 days after Contract Award
01 32 18	Contractor Work Breakdown Structure (CWBS) - Cash flow projections	30 days after Contract Award
01 32 18	Revised Project Schedule	Monthly - 3 days prior to monthly progress meetings
01 33 00	Document Submittals	Monthly with progress statement
01 33 00	Progress Photographs	Monthly with progress statement
01 33 00	Final Photographs	Prior to final progress payment request
01 35 15	Hazardous Material Audit	30 days after Contract Award
01 35 15	Wastewater Facility Design	60 days after Contract Award
01 35 32	Site Specific Health and Safety Plan	30 days after Contract Award
01 35 32	Updated Site Specific Health and Safety Plan	30 days before start of early construction season
01 35 32	Health and Safety Equipment and Supplies Inventory	10 days before start of early construction season
01 35 32	Proof of PPE certification	Prior to Work activities
01 35 32	Minutes of Weekly Safety Meetings	Within 3 days of meeting/weekly
01 35 32	Report Accidents	Verbal report immediately followed by written report in 24 hours
01 35 32	Spill Contingency Plan	30 days after Contract Award
01 35 43	Wildlife Protection Plan	60 days before the start of Remediation Activities
01 35 43	Details of Wastewater / Disposal System	30 days after Contract Award
01 35 43	Barge Landing Plan	45 days prior to mobilization
01 35 43	Erosion, Sediment and Drainage Control Plan	Prior to commencing Work
01 35 43	Copies of Environmental Agency Submittals/Approvals	As required
01 53 00	Mobilization and Demobilization Plan	30 days after Contract Award
01 53 00	Construction Equipment List	30 days prior to mobilization
01 54 00	Construction Camp Location Plan	20 days after Contract Award
01 54 00	Potable Water test results	Before opening camp
01 54 00	Camp Licences, permits, authorizations	Prior to establishing camp.
01 54 00	Proof of Adherence to Environmental Regulations	Before opening camp
01 54 00	Sketch of Proposed Field Laboratory	Prior to mobilization
01 54 00	Camp Rules	Prior to commencing camp operations
01 61 00	Material and Equipment List	20 days after Contract Award
01 71 01	Surveyor Information	30 days prior to construction commencement each season
01 71 01	Survey Data Submissions	As required and with Progress Claims
01 71 01	Survey Equipment Calibration Records	30 days prior to construction commencement each season
01 78 00	Manufacturers' Data Books	As required
01 78 00	Records and Survey Information	Prior to project completion
02 82 00 02	Arrangements for Disposable of Asbestos-Containing Waste	Prior to commencing asbestos abatement

02 82 00 02	Notice of Project Form Requirements	Prior to commencing asbestos abatement
02 82 00 02	Contractor's Asbestos Liability Insurance	Prior to commencing asbestos abatement
02 82 00 02	Submit Permits for Transport/Disposal of Asbestos-Containing Waste	As required
02 82 00 02	Proof of Asbestos-Containing Waste being Received & Properly Disposed Of	As required
02 82 00 02	Proof that Employees have had Instruction in Asbestos Work Procedures	Prior to commencing asbestos abatement
02 82 00 02	Proof that Supervisory Personnel Attended Asbestos Abatement Course (min. 2 day)	Prior to commencing asbestos abatement
02 82 00 02	Worker's Compensation Board Status & Insurance	Prior to commencing asbestos abatement
02 82 00 02	Submit MSDS Sheets (encapsulation, amended water and slow-drying sealer)	Prior to commencing asbestos abatement
02 82 00 03	Submit Permits for Transport and Disposal of Asbestos Waste	Prior to commencing asbestos abatement
02 82 00 03	Proof of Asbestos-Containing Waste to be Received & Properly Disposed Of	Prior to commencing asbestos abatement
02 82 00 03	Proof that Employees have had Instruction in Asbestos Work Procedures	Prior to commencing asbestos abatement
02 82 00 03	Proof that Supervisory Personnel Attended Asbestos Abatement Course (min. 2 day)	Prior to commencing asbestos abatement
02 82 00 03	Layout of Proposed Enclosures and Decontamination Facilities	Prior to commencing asbestos abatement
02 82 00 03	Notice of Project Form Requirements	Prior to commencing asbestos abatement
02 82 00 03	Submit Contractor's Asbestos Liability Insurance	Prior to commencing asbestos abatement
02 82 00 03	Proof that Employees Fit-Tested (Irritant Smoke) for Respirators	Prior to commencing asbestos abatement
02 82 00 03	Worker's Compensation Board Status & Insurance	Prior to commencing asbestos abatement
02 82 00 03	Submit MSDS Sheets (encapsulation, amended water and slow-drying sealer)	Prior to commencing asbestos abatement

PART 1 GENERAL

1.1 References

- .1 Transportation and Dangerous Goods Act.
- .2 Definitions:
  - .1 Camp Wastewater: wash water, rinse water, water from operation of camp facilities, and/or any other liquid effluent stream created or encountered during camp activities.
  - .2 Process Wastewater: water from decontamination activities, water from dewatering work areas, potentially contaminated groundwater, contact water and/or any other liquid effluent stream created or encountered during Work activities.
  - .3 Processed Wastewater: Wastewater processed through the Wastewater Treatment Facility.
  - .4 Treated Wastewater: Processed wastewater which has been tested and shown to be in compliance with applicable discharge criteria and requirements of this Section and Section 01 35 43 - Environmental Procedures.
  - .5 Contact Water: Water that has been in physical contact with known Contaminated Soil, either in defined soil excavations or excavated soil in treatment areas or stockpiles.

1.2 Regulatory Requirements

- .1 Comply with federal, provincial, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.

1.3 Submittals

- .1 All submittals in accordance with Section 01 33 00 - Submittal Procedures
- .2 Submit to Departmental Representative, 3 hard copies and 1 electronic copy of the Hazardous Material audit 30 days after contract award.

1.4 Wastewater Treatment Facility Design Requirements

- .1 Submit design details of wastewater treatment facilities conforming to requirements of Authorities Having Jurisdiction (AHJ) 60 days after contract award date. Wastewater treatment facility designs will be stamped by an Engineer registered or licensed to practice in Nunavut.
- .2 Contain wastewater from the following sources separately:
  - .1 Work Activities; including, but not limited to, wastewater streams from dewatering work areas, decontamination, process water, Contact Water, and wash/rinse water.
  - .2 Camp Operations; including, but not limited to, greywater, kitchen sumps and traps and blackwater.
- .3 Wastewater Treatment Facilities:
  - .1 Design wastewater treatment facilities capable of treating Contact Water generated from dewatering excavations, process water, and Work areas to meet the discharge criteria of the Water License, which are approximately the following:

Parameter	Maximum Allowable Concentration
Oil and Grease	5 mg/L, non visible
Non-Aqueous Phase Liquid / Free Product	Not Present
pH	6 to 9
Arsenic (total)	100 µg/L
Cadmium (dissolved)	10 µg/L
Chromium (total)	100 µg/L
Cobalt (dissolved)	50 µg/L
Copper (dissolved)	200 µg/L
Lead (dissolved)	50 µg/L
Mercury (total)	0.6 µg/L
Nickel (dissolved)	200 µg/L
Zinc (total)	500 µg/L
PCBs	1,000 µg/L

- .2 The Contractor should expect that Wastewater requiring treatment will be generated during site clean-up activities. Historically, parameters most often exceeding the maximum allowable levels include, but are not limited to, oil and grease, pH, zinc, chromium and cadmium.
- .3 Design wastewater treatment facilities capable of treating water generated from camp operations to meet the criteria of the Water License, which are approximately the following:

Parameter Maximum	Allowable Concentration
pH	6 to 9
Mineral Oil and Grease	5 mg/L and none visible
Total Suspended Solids	100 mg/L
BOD	80 mg/L
Faecal Coliforms	10,000 CFU/dL
Residual Chlorine	0.1 mg/L

- .4 Provide piping to transfer liquid/solid mixtures generated by dewatering operations which require treatment to the wastewater treatment facility.
- .5 Ensure wastewater treatment systems are capable of receiving liquid/solid mixtures to not cause delay to dewatering operations.
- .6 In the event of a discrepancy between the above listed wastewater requirements and those provided in the water license, the requirements in the water license shall take precedence.
- .7 Provide adequate storage for wastewater such that samples of wastewater can be obtained and analyzed prior to discharge.
- .1 Salvage of tanks on site is permitted, provided that the tanks are empty and clean prior to use.
- .2 Wastewater storage ponds meeting all requirements of AHJ are permitted.
- .8 Piping: Suitable material type, of sufficient diameter and structural thickness for purpose intended; satisfactorily tested for leaks with potable water in presence of Departmental Representative before handling wastewater.
- .9 Installation:
- .1 Provide labour, materials, and equipment and do Work required for setup and construction of water treatment plant.
- .2 Install component systems in accordance with installation procedures and as indicated.
- .3 Following installation of system, implement initial operation test in accordance with procedures developed by Contractor and submitted to Departmental Representative for review.
- .4 Install piping in accordance with manufacturer's instructions and test for leakage using potable water prior to commencing dewatering and filtering operations.

- .10 Initial Testing: Performance of water treatment plant provided by Contractor will initially be determined by Departmental Representative.
- .11 Operation:
  - .1 Obtain and analyze influent and effluent samples required to operate the system.
  - .2 Make system modifications required for effluent to satisfy effluent criteria based on analytical results.
  - .3 Operate water treatment plant by experienced, qualified personnel in accordance with manufacturer's instructions and procedures submitted by Contractor and approved by Departmental Representative.
  - .4 Operate the Water Treatment Facility such that storage tanks and storage ponds are either empty at the end of the construction season or have allowances for expansion of water due to freezing.
- .12 Decommissioning/Dismantling:
  - .1 Decontaminate and remove salvageable components of water treatment plant including water filtering system, pumps, piping, and electrical equipment.
  - .2 Dispose of non-salvageable equipment and materials at approved off-site disposal facility. Decontaminate salvageable equipment within facility area as required prior to removal from site.

#### 1.5 Wastewater Treatment Facility Discharge Requirements

- .1 Provide adequate containment facilities for processed wastewater, prior to discharge, to complete testing and analytical requirements. Salvage of tanks designated for removal on-site is permitted, provided that the tanks are empty and clean prior to use. Wastewater storage ponds meeting all requirements of AHJ are permitted.
- .2 Water discharge on-site must be in compliance with applicable permits, authorizations and approvals. Make adjustments to Water Treatment Facility or provide alternative equipment, at no additional cost, such that processed wastewater meets applicable permit requirements and limitations for discharge.
- .3 Ensure that wastewater discharges from site are in compliance with applicable permit requirements.
  - .1 Camp Wastewater is to be released onto the ground at a location, reviewed and accepted by the Departmental Representative, that is a minimum of 30 m from natural drainage courses and 100 m from fish bearing waters and conform to the discharge requirements set out by the AHJ.
  - .2 If unable to meet the discharge criteria, provide additional storage and/or treatment necessary to meet criteria prior to discharge.
  - .3 No direct discharge is allowed to wetland or surface waters.
  - .4 Contractor must obtain approval from the AHJ prior to discharging treated wastewater.
- .4 Dispose of any processed wastewater not meeting the applicable permit requirements and limitations for discharge in accordance with Section 02 61 33 - Hazardous Waste Material, at the Contractor's expense including, but not limited to, transporting and disposing of processed wastewater to off-site disposal facility.

#### 1.6 Wastewater Storage Tank

- .1 Provide, operate, and maintain wastewater storage tanks to store wastewater.
- .2 Wastewater includes hand basin, shower and laundry wastewater from Personnel Hygiene/Decontamination Facility.

- .3 If toilet facilities are provided in Personnel Hygiene/Decontamination Facility, store wastewater from these toilets with wastewater from hand basins, showers and laundry for ultimate disposal off site.
- .4 Discharges: Comply with applicable discharge limitations and requirements; do not discharge wastewater to site sewer systems that do not conform to or are in violation of such limitations or requirements; and obtain Departmental Representative's approval prior to discharge of wastewater.
- .5 Connect pumps, piping, valves, miscellaneous items, and necessary utilities as required for operation of facilities; and protect tanks, valves, pumps, piping, and miscellaneous items from freezing.
- .6 Install wastewater storage tanks in locations as directed by Departmental Representative.
- .7 Support tanks on temporary aboveground foundations.
- .8 Connect pumps, piping, valves, miscellaneous items, and necessary utilities as required for operation of facilities; and protect tanks, valves, pumps, piping, and miscellaneous items from freezing.
- .9 Do not operate wastewater storage tanks until inspected and approved by Departmental Representative.
- .10 Notify Departmental Representative three (3) days minimum in advance of when wastewater storage tank is anticipated to be full.
  - .1 Do not discharge additional liquids to filled tank following sampling by Departmental Representative.
  - .2 Departmental Representative will determine appropriate disposition of wastewater based on sample analysis.
- .11 Treat onsite or transport and dispose of wastewater at off-site disposal facility as identified by Contractor.
- .12 Payment for transporting and disposing of wastewater to off-site disposal facility will be determined in accordance with Section 01 54 00.

#### 1.7 Drums

- .1 Storage of Liquid Waste: 200 L steel drums meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.
- .2 Storage of Solid Waste: 200 L steel drums meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.

#### 1.8 Dust and Particulate Control

- .1 Execute Work by methods to minimize raising dust from construction operations.
- .2 Implement and maintain dust and particulate control measures during construction and in accordance with all applicable regulations.

1.9 Equipment Decontamination

- .1 Decontaminate equipment, including buckets and tracks, after working in potential and known contaminated work areas and prior to subsequent work or travel on clean areas.
- .2 At minimum, perform following steps during equipment decontamination:
  - .1 Mechanically remove loose waste solids, dirt, grit, and debris by manual methods without using steam or high-pressure water to minimize water usage and potential for contaminated rinsate generated. Clean soil lumps and particles prior to mobilizing excavating and other contaminated soil processing equipment.
  - .2 Should decontamination not be achieved using above, use high-pressure, lowvolume, hot water or steam supplemented by detergents or solvents as appropriate and accepted by Departmental Representative. Perform assessment as directed by Departmental Representative, to determine effectiveness of decontamination.
  - .3 Collect and dispose of the removed material in existing contaminated soil areas.
- .3 Contain any rinsate created during the removal process as wastewater. Contain soil removed from equipment with waste material.
- .4 Perform final decontamination of equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from site.
- .5 Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, respiratory protection, and face shields.
- .6 Each piece of equipment may be inspected by Departmental Representative or designate after decontamination and prior to removal from site and/or travel on clean areas. Departmental Representative will have right to require additional decontamination to be completed, if deemed necessary.
- .7 Take appropriate measures necessary to minimize drift of mist and spray during decontamination, including provision of wind splash screens, as required.
- .8 Take special precautions to mitigate the tracking of contaminated soil over the site area.

1.10 Water Control

- .1 Maintain excavations free of water.
- .2 Protect site from puddling or running water. Grade site to drain. Provide water barriers as necessary to protect site from soil erosion.
- .3 Prevent surface water runoff from leaving Work areas.
- .4 Do not discharge decontaminated water, or surface water runoff, or groundwater which may have come in contact with potentially contaminated material, off the site.
- .5 Prevent precipitation from infiltrating or from directly running off stockpiled waste materials. Cover stockpiled waste materials with an impermeable liner during periods of Work stoppage including at end of each working day and as directed by Departmental Representative .
- .6 Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.

- .7 Dispose of water in manner not injurious to public health or safety, to property, or to any part of Work completed or under construction.
- .8 Provide, operate, and maintain necessary equipment appropriately sized to keep excavations, staging pads, and other Work areas free from water.
- .9 Contain water from stockpiled waste materials. Transfer potentially contaminated surface waters to wastewater storage tanks separate from wastewater from Personnel Hygiene/Decontamination Facility.
- .10 Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment.
- .11 Contain and collect wastewater and transfer such collected wastewater to Contractor-supplied drums and/or wastewater storage tanks.

#### 1.11 Dewatering

- .1 Dewater various parts of Work including, without limitation, excavations, structures, foundations, and Work areas.
- .2 Employ construction methods, plant procedures, and precautions that ensure Work, including excavations, are stable, free from disturbance, and dry.
- .3 Provide sufficient and appropriate labor, plant, and equipment necessary to keep Work free of water including standby equipment necessary to ensure continuous operation of dewatering system.
- .4 Take precautions necessary to prevent uplift of any structure or pipeline and to protect excavations from flooding and damage due to surface runoff.
- .5 Test and analyze water generated from dewatering activities and treat to meet required discharge or disposal criteria.

#### 1.12 Erosion and Sediment Control

- .1 Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other Work areas. Prevent erosion and sedimentation.
- .2 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, re-grade, or otherwise develop in such a way as to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation as directed by Departmental Representative.
- .3 Provide and maintain temporary measures which may include, but are not limited to, silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, sedimentation basins, vegetative cover, dikes, and any other construction required to prevent erosion and migration of silt, mud, sediment, and other debris off site or to other areas of site where damage might result, or that might otherwise be required by Laws and Regulations. Make sediment control measures available during construction. Place silt fences and/or hay or straw bales in ditches to prevent sediments from escaping from ditch terminations.

- .4 Hay or Straw Bale: Wire bound or string tied; securely anchored by at least 2 stakes or rebars driven through bale 300 mm to 450 mm into ground; chinked (filled by wedging) with hay or straw to prevent water from escaping between bales; and entrenched a minimum of 100 mm into ground.
- .5 Silt Fence: An assembled, ready to install unit consisting of geotextile attached to driveable posts. Geotextile to be uniform in texture and appearance, having no defects, flaws, or tears that would affect its physical properties; and contain sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure.
- .6 Net Backing: Industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum width of 750 mm.
- .7 Posts: Sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment; post spacing 2.4 m maximum. Securely fasten each post to geotextile and net backing using suitable staples.
- .8 Plan construction procedures to avoid damage to Work or equipment encroachment onto water bodies or drainage ditch banks. In event of damage, promptly take action to mitigate effects. Restore affected bank or water body to existing condition.
- .9 Installation:
  - .1 Construct temporary erosion control items as indicated. Actual alignment and/or location of various items as directed by Departmental Representative.
  - .2 Do not construct bale barriers and silt fence in flowing streams or in swales.
  - .3 Check erosion and sediment control measures weekly after each rainfall; during prolonged rainfall check daily.
  - .4 Bales and/or silt fence may be removed at beginning of workday, but will be replaced at the end of workday.
  - .5 Whenever sedimentation is caused by stripping vegetation, re-grading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.
  - .6 Prior to or during construction, Departmental Representative may require the installation or construction of improvements to prevent or correct temporary conditions on site. Improvements may include berms, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, temporary roads, and other measures appropriate to specific condition. Temporary improvements must remain in place and in operation as necessary or until otherwise directed by Departmental Representative .
  - .7 Repair damaged bales, end runs, and undercutting beneath bales.
  - .8 Unless indicated or directed by Departmental Representative , remove temporary erosion and sediment control devices upon completion of Work. Spread accumulated sediments to form a suitable surface for seeding or dispose of, and shape area to permit natural drainage to satisfaction of Departmental Representative . Materials once removed become property of Contractor.
- .10 Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- .11 Do not disturb existing embankments or embankment protection.
- .12 Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- .13 If soil and debris from site accumulate in low areas, roadways, ditches, or other areas where in Departmental Representative's determination it is undesirable, remove accumulation and restore area to original condition.

1.13 Progress Cleaning

- .1 Maintain cleanliness of Work and surrounding site to comply with federal, provincial, and local fire and safety laws, ordinances, codes, and regulations.
- .2 Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

1.14 Final Decontamination

- .1 Perform final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from site.
- .2 Perform decontamination as specified to satisfaction of Departmental Representative . Departmental Representative will direct Contractor to perform additional decontamination if required.

1.15 Removal and Disposal

- .1 Remove surplus materials and temporary facilities from site.
- .2 Dispose of non-contaminated waste materials, litter, debris, and rubbish off site.
- .3 Do not burn rubbish and waste materials on site unless approved by Departmental Representative.
- .4 Do not bury rubbish and waste materials on site.
- .5 Do not discharge wastes into streams or waterways.
- .6 Dispose of following materials at appropriate off-site facility identified by Contractor and approved by Departmental Representative : Debris including excess construction material, non-contaminated litter and rubbish; disposable PPE worn during final cleaning; wastewater removed from wastewater storage tank, wastewater generated from final decontamination operations including wastewater storage tank cleaning; and lumber from decontamination pads.

1.16 Testing:

- .1 Carry out and pay for all testing required to confirm that Wastewater comply with Wastewater Treatment and Discharge Criteria outlined in this Section and Section 01 35 43 - Environment

1.17 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2      PRODUCTS

2.1          Not Used

.1          Not Used.

PART 3      EXECUTION

3.1          Installation, Commissioning, Operation and Decommissioning of Wastewater Treatment Facilities:

- .1          Provide labour, materials, and equipment and complete Work required for setup and construction of water treatment plant.
- .2          Install component systems in accordance with installation procedures.
- .3          Following installation of system, implement initial operation test in accordance with procedures developed by Contractor and submitted to Departmental Representative for review.
- .4          Install piping in accordance with manufacturer's instructions and test for leakage using potable water prior to commencing treatment operations.
- .5          Operation:
  - .1          Obtain and analyze influent and effluent samples required to operate the system.
  - .2          Make system modifications required for effluent to satisfy effluent criteria based on analytical results.
  - .3          Operate Wastewater treatment facility by experienced, qualified personnel in accordance with manufacturer's instructions and procedures submitted by Contractor and accepted by Departmental Representative.
  - .4          Operate the Wastewater Treatment Facility such that storage tanks and storage ponds are either empty at the end of the construction season or have allowances for expansion of water due to freezing.
- .6          Decommissioning/Dismantling:
  - .1          Decontaminate and remove salvageable components of Wastewater treatment facility including water treatment system, pumps, piping, and electrical equipment.
  - .2          Dispose of non-salvageable equipment and materials at approved off-site disposal facility. Decontaminate salvageable equipment within facility area as required prior to removal from site.

END OF SECTION

PART 1        GENERAL

1.1            Definitions:

- .1        Separated Work Group: a work crew of any number of personnel working at a location where immediate medical attention from site medical personnel may not be possible due to environmental, mechanical or other factors.

1.2            Site Specific Health and Safety Requirements

- .1        Maintain and complete all health and safety, fire safety, and environmental compliance activities in accordance with applicable sections and Authorities Having Jurisdiction (AHJ).
- .2        Schedule a compliance meeting on an as required basis, as directed by Departmental Representative. Compliance meetings may be held in conjunction with regular meetings.
- .3        The intent of the compliance meeting is to review reporting and inspection requirements to meet the intent of the Nunavut Safety Act, the Water License, the Land Use Permit, regulatory, and other requirements as may be required.
- .4        Compliance meetings to be held at the Work site.
- .5        Departmental Representative will record minutes, chair the meeting and distribute minutes to parties of record prior to the next Scheduled meeting.
- .6        Attendees:
  - .1        Contractor: Manager and / or Supervisor(s), representatives of major Sub-Contractors, and others as necessary.
  - .2        Departmental Representative, and representatives of Independent Inspection Agencies.
  - .3        AANDC representative(s).
- .7        Agenda:
  - .1        Review and approval of minutes of previous meeting.
  - .2        Review of items of significance that could affect Work.
  - .3        Inspect the site on a monthly basis, or more or less often, as determined by the Departmental Representative or as dictated by the AHJ.
  - .4        Identify and record field observations, problems, and conflicts that must be noted in reports required by the AHJ.
  - .5        Identify corrective measures and procedures to regain approval from AHJ.
  - .6        Identification of requirements for maintenance of quality standards needed for compliance with applicable Codes and Legislation.
  - .7        Review site safety and security issues.
  - .8        Review environmental and regulatory compliance.
  - .9        Other topics for discussion as appropriate to current status of the Work.

1.3            Submittals

- .1        Submit 3 hard copies and 1 electronic copy of the Site Specific Health and Safety Plan no later than 30 days after contract award to the Departmental Representative for review. Any items, which are identified as missing, will be added and the plan revised, so as to incorporate the additional items. Submit the revised safety plan will be submitted to the AHJ for review and recommendations to ensure all the elements required by the Nunavut Safety Act, OSHA Regulations, other AHJ, and Contract Specifications have been addressed.

- .2 All submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Update the Site Specific Health and Safety Plan at the beginning of each construction season, and submit to the departmental representative no later than thirty (30) before the start of each construction season.
- .4 The Site Specific Health and Safety Plan will include, but is not limited to the following sections:
  - .1 A Statement of Contractor's Safety Policy.
  - .2 Environmental, Health and Safety Management Plan.
  - .3 Name and telephone number of Contractor's corporate Safety Officer and on-site Safety Representative.
  - .4 Safety Responsibilities of all on-site personnel.
  - .5 Anti-Harassment Policy.
  - .6 Safe Work Practices and/or Job Procedures.
  - .7 Requirements for safety meetings and documentation.
  - .8 Safety Inspection Plan.
  - .9 Camp Rules and their enforcement.
  - .10 Site traffic rules and speed limits
  - .11 First Aid Locations.
  - .12 Results of safety and health risk or hazard analysis for camp and construction activities.
  - .13 Procedures for, but not limited to, cold weather survival, heat stress, remote Work and general worker health and safety.
  - .14 Buddy system and procedures for working alone.
  - .15 Workplace Hazardous Materials Information System (WHMIS) and Material Safety Data Sheet (MSDS) records. Personal Protective Equipment (PPE) Program, including Contaminated Sites Working and Decontamination Procedures.
  - .16 Personnel hygiene.
  - .17 Respiratory Protection Program.
  - .18 Procedures for emergency site communications.
  - .19 On-site Contingency and Emergency Response Plan.
  - .20 Spill Contingency Plan.
  - .21 Fuel Management Plan
  - .22 Fire Safety Program.
  - .23 Wildlife Management Plan.
  - .24 Procedures for encountering suspected hazardous materials.
  - .25 Blasting Cap or unexploded ordnance (UXO) awareness and handling.
  - .26 Lockout/Tagout procedures for equipment that could become energized.
  - .27 Confined Spaces.
  - .28 Helicopter Safety.
  - .29 Marine Safety.
- .5 Conduct and submit to Departmental Representative, a site assessment of deficiencies in health, safety, medical/first aid supplies. Submit to Departmental Representative a Schedule for upgrading deficiencies to meet requirements of the authorities having jurisdiction (AHJ).
- .6 The on-site Contingency and Emergency Response Plan is to address standard operating procedures to be implemented during emergency situations. Plans including procedures are to meet Safety Requirements listed below:
  - .1 Prepare and coordinate a Contingency and Emergency Response Plan with contributions from appropriate authorities including the Government of Nunavut Safety Act, Hospitals, RCMP, Ministry of Transportation, and Ministry of Health. Plan will identify off-site Emergency Response Coordinator through whom all information and coordination will flow in the event of an incident.

- .2 Departmental Representative will have Contractor's On-site Contingency and Emergency Response Plan reviewed by AHJ and may request modifications or additions as necessary for the work.
- .7 The Fuel Management Plan is to include information related to storage, on-site transport, containment, handling and decommissioning.
- .8 Complete an inventory of Contractor's health, safety, medical and first aid equipment and supplies on-site to assess compliance with AHJ requirements. Submit the inventory to Departmental Representative within ten (10) days of mobilization each season. Include a schedule for upgrading deficiencies to meet requirements of AHJ.
- .9 The PPE Program will include, but is not limited to, the following.
  - .1 Donning and doffing procedures.
  - .2 PPE Selection based upon site hazards.
  - .3 PPE use and limitations of equipment.
  - .4 Work mission duration, PPE maintenance and storage.
  - .5 PPE decontamination and disposal.
  - .6 PPE inspection procedures prior to, during, and after use.
  - .7 Evaluation of effectiveness of PPE program and limitations during temperature extremes, and other appropriate medical considerations.
  - .8 Medical surveillance requirements for personnel assigned to work at site.
  - .9 Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment.
  - .10 Contaminated site working and decontamination procedures for both personnel and equipment.
  - .11 Written respiratory protection program for project activities.
  - .12 Proof of respirator fit testing.

#### 1.4 Construction Safety Measures

- .1 Observe and enforce construction safety measures required by the latest revisions of: Canada Labour Code, National Building Code of Canada, National Fire Code of Canada, Workers' Compensation Board, the applicable Occupational Health and Safety Regulations, and Territorial and local statutes and authorities.
- .2 In the event of discrepancies between any requirements of the above listed authorities, the more stringent requirements will govern.
- .3 Arrange regular safety meetings, to be held no less frequently than once per week. Record the minutes of such meetings and maintain a complete file for review by the appropriate authorities. Submit a copy of these meeting minutes to Departmental Representative within three (3) days of the meeting.
- .4 Maintain at the site, five safety hats with liners, and five safety hi-visibility vests for use by Departmental Representative and visitors. Maintain a supply of ear plugs.
- .5 Maintain a supply of Tyvek or equivalent suits of various sizes as required for Contractor's staff, Departmental Representative and up to three visitors for the duration of the Work.
- .6 Comply with all applicable health and safety policies and procedures of Departmental Representative.
- .7 Departmental Representative or his representative has the authority to stop Work on the contract if, in his/her opinion, the Work is being performed in an unsafe manner as required by the applicable safety legislation.

- .8 Prepare and coordinate a Contingency and Emergency Response Plan with contributions from appropriate authorities including Nunavut Safety Act, Hospitals, RCMP, Ministry of Transportation, and Ministry of Health. Plan will identify off site Emergency Response Coordinator through whom all information and coordination will flow in the event of an incident.
  - .9 Verify that emergency procedures including appropriate First aid facilities and First Aid personnel are in place at the Work Site. First aid facilities and First Aid personnel must be in compliance with the Nunavut Safety Act.
  - .10 Verify that procedures meet the WCB and HRSDC requirements.
  - .11 Develop, as part of Site Specific Health and Safety Plan written Contaminated Site Working and Decontamination procedures. Working procedures to outline personal protective equipment (PPE) requirements for various parts of site and for different operations.
  - .12 Working Procedures and Decontamination procedures consistent with requirements OSHA's 29 CFR 1910.120 HAZWOPER and territorial environmental regulations for:
    - .1 Working activities, where employees are likely to be exposed to 50% of Threshold Limit Values (TLV) listed by American Conference of Governmental Hygienists (ACGIH), TLVs and BEIs based on documentation of Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEI) 2004 and amendments thereto.
  - .13 Hazardous Material Discovery
    - .1 Immediately stop Work and notify Departmental Representative for further instructions with respect to abatement procedures required for asbestos conditions encountered when Work occurs in areas having materials resembling asbestos during course of Work.
- 1.5 Filing of Notice
- .1 File Notice of Work with Federal and Territorial AHJ prior to commencement of Work.
- 1.6 Regulatory Requirements
- .1 Comply with specified standards, regulations and orders of AHJ to ensure safe operations at sites containing hazardous or toxic materials and other hazards (such as wildlife encounters, falls, etc.).
  - .2 All equipment brought to the site must meet the Mine Health and Safety Act, equipment must have rotating beacons and vehicles should have beacons and buggy whips.
- 1.7 Responsibility
- .1 Be responsible for safety of persons and property on site and for protection of public off site and environment to extent that they may be affected by the site and conduct of Work.
  - .2 Control access to the site. Persons with business at the site and who are not Contractor's employees must be briefed on site specific health and safety issues, and provided with a copy of the site specific health and safety plan.

- .3 Contractor may refuse access to the site to any person not complying with site specific health and safety standards.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, territorial, and local statutes, regulations, and ordinances, and with Site-Specific Health and Safety Plan:
  - .1 Conduct appropriate safety training for all personnel working on the site.
  - .2 Conduct Work place safety inspections for all Work activities.
  - .3 Maintain a log of first aid and safety supplies, and notify appropriate personnel for restocking after each incident, and periodical restocking to replace out dated or consumable (headache medicines, bandages) products.

#### 1.8 Hazard Communication Requirements

- .1 Comply with Work Site Hazardous Materials Information System Regulations of the AHJ.
- .2 Provide Departmental Representative with Material Safety Data Sheets (MSDS) and documentation on any "hazardous" chemical that Contractor or Contractor Representatives plan to bring onto site; bound in one place and stored in accordance with the Site Specific Health and Safety Plan.

#### 1.9 Unforeseen Hazards

- .1 Should any unforeseen or peculiar safety related factor, hazard, or condition become evident, stop Work, assess, take steps to mitigate if necessary at that time and immediately advise Departmental Representative verbally and in writing.
- .2 Monitor potential low oxygen and Lower Explosive Limits areas with oxygen/LEL monitor if workers are working in and around area. These areas include but are not limited to trenches, excavations and areas near machinery exhaust.

#### 1.10 Safety and Hygiene

- .1 Provide training for all persons entering the site in accordance with specified personnel training requirements, maintain log of who was trained, what training was provided and by whom the training was conducted.
- .2 Personal Protective Equipment (PPE):
  - .1 Furnish site personnel with appropriate PPE as required by legislation.
  - .2 Verify that safety equipment and protective clothing is kept clean and well maintained.
  - .3 Ensure all clothing and personal protective equipment used on site, must remain on site, to be either decontaminated or disposed of. No Work clothing is to leave Work site without having been properly decontaminated. This includes, but is not limited to working coveralls.
  - .4 Outline and designate PPE for each site and Work activity in accordance with AHJ.
- .3 Develop written PPE care and use procedures to be included in the Site Specific Health and Safety Plan and verify that procedures are strictly followed by site personnel including, but not limited to, the following:
  - .1 Provisions for prescription eyeglasses with side shields worn as safety glasses and do not permit contact lenses on site within Work zones.
  - .2 Provisions, for footwear, are steel toed safety shoes or boots and are covered by rubber overshoes when entering or working in potentially contaminated Work areas.
  - .3 Dispose of or decontaminate PPE worn on site at end of each workday.
  - .4 Decontaminate reusable PPE before reissuing.
  - .5 Provisions for decontamination arising from entry or exit into contaminated areas.

- .4 Develop a written Respiratory Protection program to be included in the Site Specific Health and Safety Plan and ensure that the program is strictly followed by site personnel; include the following procedures as minimum:
  - .1 Provide site personnel with extensive training in usage and limitations of, and qualitative fit testing for, air purifying and supplied air respirators in accordance with specified regulations.
  - .2 Monitor, evaluate, and provide respiratory protection for site personnel.
  - .3 Verify that levels of protection as listed have been chosen to be consistent with site specific potential airborne hazards associated with major contaminants identified on site.
  - .4 Immediately notify Departmental Representative when level of respiratory protection required increases.
  - .5 Verify that appropriate respiratory protection during Work activities is available and readily accessible; all personnel entering potentially contaminated Work areas will be supplied with and use appropriate respiratory protection.
  - .6 Assess ability for site personnel to wear respiratory protection.
  - .7 Verify that site personnel have passed respirator fit test prior to entering potentially contaminated Work areas.
  - .8 Verify that facial hair does not interfere with proper respirator fit.
  - .9 Submit proof of fit testing for site personnel to Departmental Representative. Update submission when new personnel are added to the Work or when new Work activities occur.
- .5 Heat Stress/Cold Stress: Implement heat stress and cold stress monitoring program as applicable and include in the Site Specific Health and Safety Plan.
- .6 Personnel Hygiene and Personnel Decontamination Procedures: provide minimum as follows:
  - .1 Suitable containers for storage and disposal of used disposable PPE.
  - .2 Potable water and suitable sanitation facility.
  - .3 Access to shower facilities.
  - .4 Provisions for proper disposal of contaminated PPE.

#### 1.11 Site Communications

- .1 Post emergency numbers near site telephones.
- .2 Train personnel in the use of "buddy" system.
- .3 Provide alarm system to notify employees of site emergency situations or to stop Work activities if necessary. Identify emergency stations.
- .4 All equipment must have operational two-way radio communication while in operation.

#### 1.12 Safety Meeting

- .1 Conduct task specific safety meetings (toolbox) as per Project requirements and as directed by Departmental Representative.
- .2 Conduct safety meetings with workers engaged in constructing, maintaining or traveling on winter roads. Workers must be instructed on the dangers inherent with winter roads, and hazard avoidance procedures.

- .3 Conduct safety meetings with workers engaged in outdoor Work under summer or winter conditions. Topics must include hot and cold stress, exhaustion, snowmobile safety, buddy systems, and any other items inherent in working outdoors in winter in isolated environments.
- .4 Conduct mandatory daily safety meetings for personnel, and additionally as required by special or Work related conditions; include refresher training for existing equipment and protocols, review ongoing safety issues and protocols, and examine new site conditions as encountered. Hold additional safety meetings on an as needed basis or as specified by the AHJ. Keep records of meetings on file.

#### 1.13 Fuel Management

- .1 All vehicle and equipment refuelling must be conducted by appropriately trained personnel using the effective personal protective equipment in a manner which meets or exceeds regulatory requirements including using drip pans.
- .2 Records of fuel usage by activity must be maintained.
- .3 All fuel transports including mobile refuelling trucks and fuel transport to stationary equipment such as generators or pumps or distributed storage areas, must occur in approved (CSA) containers with the notification and consent of site safety personnel.

#### 1.14 Vehicle and Equipment Usage

- .1 Seatbelts must be worn at all times vehicle or equipment is in operation.
- .2 Speed limits must be set and obeyed.
- .3 If road conditions are unsafe or marginally unsafe, maintain roads to acceptable standards. Do not risk property damage or injury.
- .4 Vehicles are to not be idled for longer than 10 minutes (warm up) unless explicitly used as a place of refuge during animal encounters or for personnel working outdoors during winter operations. Exceptions are to be made in consultation with Departmental Representative.
- .5 Perform vehicle maintenance and lubrication of equipment in a manner that avoids spillage of fuels, oils, grease and coolants. When refuelling equipment, use leak free containers and reinforced rip and puncture proof hoses and nozzles. Remain in attendance for duration of refuelling operation, and ensure that all storage container outlets are properly sealed after use.
- .6 Place drip pans under stationary equipment with potential leaks.
- .7 All equipment brought to the site must have rotating beacons and vehicles should have beacons and buggy whips.

#### 1.15 Flammable Liquids

- .1 The handling, storage and use of flammable liquids will be governed by the current National Fire Code of Canada.

- .2 Flammable liquids such as gasoline, kerosene and naphtha may be kept for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable liquids exceeding 45 litres for Work purposes, requires the permission of the permitting authority.
- .3 Do not transfer flammable liquids in the vicinity of open flames or any type of heat-producing devices.
- .4 Do not use flammable liquids having a flash point below 38°C such as naphtha or gasoline as solvents or cleaning agents.
- .5 Store flammable waste liquids, for disposal, in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and Departmental Representative is to be notified when disposal is required.
- .6 Dispose of all flammable liquids in accordance with all applicable environmental regulations and with the requirements of Section 02 61 33 - Hazardous Waste Material.

#### 1.16 Storage and Handling of Fuel

- .1 Locate fuel storage areas as approved by Departmental Representative.
- .2 Inspect fuel storage and dispensing facilities daily. Make available fire fighting and spill response equipment for immediate access at each fuel storage location.
- .3 Store all barrels containing fuel and /or hazardous materials in an elevated position, either on their side with bungs facing 9 and 3 o'clock position, or on pallets, upright, and banded.
- .4 All barrels to be individually identified. Label will be to industry standards and will provide all information necessary for health and safety and environmental purposes. Make available, to all personnel, Material Safety Data Sheets for all materials maintained at site or along right-of-ways.
- .5 All barrels/fuel containers to be labelled with AANDC's name, and Contractor's name as required by the Land Use Permit.
- .6 Treat all waste petroleum products, including used oil filters as hazardous materials.
- .7 Conduct regular inspections of all machinery hydraulic, fuel and cooling systems. Repair leaks immediately.
- .8 Pre-assemble and maintain emergency spill equipment, including at least two fuel pumps , empty 200 L barrels and absorbent material sufficient to clean up a 1000 litre spill at all fuel storage sites. Maintain spill mats or pan under mobile fuelling containers and a spill kit at the refuelling area.
- .9 Remove all full and empty barrels, fuel storage facilities and associated materials and equipment from site at conclusion of Work.

#### 1.17 Spill Contingency Plan

- .1 Submit to Departmental Representative for approval, detailed Spill Contingency Plan. Identify response capabilities by detailing response times, and types and volumes of spills to which Contractor can respond. Following information is required as a minimum:
  - .1 A description of pre-emergency planning.

- .2 Personnel roles, lines of authority and communication, emergency phone numbers.
- .3 Emergency alerting and response procedures.
- .4 Evacuation routes and procedures, safe distances and places of refuge.
- .5 Directions/methods of getting to nearest medical facility.
- .6 Emergency decontamination procedures.
- .7 Emergency medical treatment and First-Aid.
- .8 Emergency equipment and materials.
- .9 Emergency protective equipment.
- .10 Procedures for reporting incidents, and
- .11 Spill response and containment plans for all materials that could potentially be spilled.
- .12 Site specific spill contingency plans for all locations where refined petroleum products will be stored and used for refuelling including, but not limited to:
  - .1 An inventory of response and clean-up equipment.
  - .2 A site map with the location of storage facilities and the location of emergency equipment with spill response and clean-up equipment.
  - .3 A cover page that clearly identifies the NT-NU 24-hour Spill Report Line and the name, job title and 24-hour telephone number for person(s) responsible for activating the Spill Contingency Plan.

1.18 Medical

- .1 Provide and maintain first aid and medical care and facilities for all workers as required by the Statutes of the Nunavut Safety Act.
- .2 Maintain first aid supplies and sick quarters separately from general living quarters when camp population normally ranges between 26 and 50 occupants.
- .3 Provide the appropriate Nunavut first aid kit, based on the number of workers, in accordance with the Nunavut Safety Act.
- .4 Establish an emergency response plan acceptable to Departmental Representative, for the removal of any injured person to medical facilities or a doctor's care in accordance with applicable legislative and regulatory requirements.
- .5 Provide proof of First Aid credentials to Departmental Representative prior to the start of each construction season. Provide the appropriate number of first aid attendants on site in accordance with the Nunavut Safety Act.
- .6 Emergency and First Aid Equipment:
  - .1 Locate and maintain emergency and first aid equipment in appropriate location on site including first aid kit to accommodate number of site personnel; portable emergency eye wash; fire protection equipment as required by legislation.
  - .2 Locate sufficient self contained breathing apparatus units; blankets and towels; stretcher; and 1 hand held emergency siren in all confined access locations.
  - .3 Provide a minimum of 1 qualified first aid attendant on site at all times when Work activities are in progress; duties of first aid attendant may be shared with other light duty Work related activities.
  - .4 Provide a full time EMT - Emergency Medical Technician, c/w 1000 hours of classroom and practical training, 6 weeks of practical experience with required # of emergency response calls. The EMT will be territorially certified by a required exam and refresher exams every 2 years. An EMT is a highly trained medical professional who responds to medical and trauma emergencies in the pre-hospital setting ("in-field") for the purpose of stabilizing a patient's condition before and during transportation to an appropriate medical facility.

1.19 Accidents and Accident Reports

- .1 Immediately report, verbally, followed by a written report within 24 hours, to Departmental Representative, all accidents of any sort arising out of or in connection with the performance of the Work, giving full details and statements of witnesses. If death or serious injuries or damages are caused, report the accident promptly to Departmental Representative by telephone or facsimile in addition to any report required under federal and territorial laws and regulations.
- .2 If a claim is made by anyone against Contractor or Sub-Contractor on account of any accident, promptly report the facts in writing to Departmental Representative, giving full details of the claim.

1.20 Security

- .1 Enforce the Camp Rules as provided under Section 01 54 00 - Camp Facilities.
- .2 Limit site access only to persons employed on the Project. Unauthorized persons will be permitted on site only with the approval of Departmental Representative or Contractor.

1.21 Wildlife Management

- .1 Develop a wildlife management plan, as part of the Site Specific Safety Plan, that includes bear and large mammal safety and as a minimum meets the following requirements:
  - .1 Firearms must be stored and used in accordance with all AHJ. Terms of Use for firearms must be submitted to Departmental Representative for review.
  - .2 All wildlife encounters and sightings must be reported to Departmental Representative as part of the weekly report.
  - .3 A minimum of one person must be designated as a wildlife monitor and trained in firearms and wildlife deterrent use.

1.22 Wildlife Monitors

- .1 Provide for the duration of the construction seasons, full-time wildlife monitors acceptable to Departmental Representative. Provide sufficient number of wildlife monitors with firearms and ammunition to protect the safety of all workers in all areas, including Departmental Representative and Departmental Representative's support staff during site operations.
- .2 Assign a wildlife monitor to accompany Departmental Representative and Departmental Representative's support staff during all inspections and soil/material sampling activities that take place away from the construction camp area.
- .3 All Wildlife Monitors are required to have a valid Firearm Certificate as per AHJ. Copies of the firearms certificates to be provided upon request by the Departmental Representative.
- .4 Assume full responsibility for reporting incidents associated with wildlife encounters.
- .5 Supply one All Terrain Vehicle (ATV) per wildlife monitor to facilitate his duties. Ensure wildlife monitors are fully trained in the safe use of the ATV equipment.
- .6 Provide the wildlife monitors with mobile communication radios with charging units for on-site communication between the wildlife monitors, Contractor base radio, and Departmental Representative and Departmental Representative's Authorized Personnel. If radios do not provide sufficient range for continuous communication, provide satellite phones.

- .7 Qualifications and training plans for wildlife monitors must be submitted to Departmental Representative as part of the Site Specific Safety Plan.

#### 1.23 Fire Safety

- .1 Provide all fire prevention, fire protection and fire fighting services at the Project site.
- .2 Implement a fire safety program that includes fire prevention, fire protection and fire fighting requirements. Submit details of the fire safety program in writing to Departmental Representative for review prior to start of construction. Such review does not relieve Contractor from any obligations or responsibilities required by the Contract.
- .3 Ensure that any Sub-Contractors and other Contractor personnel on-site are briefed on fire safety requirements and are familiar with the fire prevention and fire fighting program.
- .4 The fire safety program to meet or exceed the most recent editions of the following codes and standards:
  - .1 Nunavut Safety Act.
  - .2 National Fire Code of Canada.
  - .3 Canada Labour Code.
- .5 Personnel designated for fire fighting services must be provided with training for any special hazards that may be present. These personnel must also be provided with protective equipment as required by the Canada Labour Code.

#### 1.24 Reporting Fires

- .1 A person discovering a fire and all fire related incidents will report immediately, by fastest available means, to Departmental Representative and site superintendent.
- .2 A person discovering a fire will if possible, remain in the vicinity to direct fire fighting personnel.

#### 1.25 Fire Extinguishers

- .1 Provide and maintain fire extinguishers in sufficient quantity to protect, in an emergency, the Work in progress and the physical plant on site.

#### 1.26 Smoking Precautions

- .1 Do not permit smoking in hazardous areas. Exercise care in the use of smoking materials in non-restricted areas.
- .2 Smoking is prohibited within the camp facilities unless in accordance with AHJ and as directed by Departmental Representative.
- .3 Provide and place signs prohibiting smoking in areas where smoking is not permitted.
- .4 Signs prohibiting smoking will be in English and the local dialect and will have black lettering not less than 50 mm high, with a 12 mm wide stroke on a yellow background. In lieu of lettering, symbols of not less than 150 mm by 150 mm may be used.
- .5 Smoking is prohibited within 7.5 metres of fuel storage and dispensing facilities.
- .6 Provide and place signs indicating that smoking within 7.5 metres of fuel storage and dispensing facilities is not permitted, and that the vehicle ignition must be turned off while the vehicle is being refuelled. Provide at least one weather-resistant sign at each fuel dispensing

location. The signs will have a minimum dimension of 200 mm and letters not less than 25 mm high. In lieu of lettering, signs may have international "No Smoking - Ignition Off" symbols not less than 100 mm in diameter. Install signs in a location visible to all drivers approaching the dispensing location, and at the dispensing unit.

1.27 Rubbish and Waste Materials

- .1 Rubbish and waste materials are to be kept to a minimum.
- .2 Storage:
  - .1 Extreme care is required where it is necessary to store oily waste in Work areas to ensure maximum possible cleanliness and safety.
  - .2 Greasy or oily rags or materials subject to spontaneous combustion will be disposed of as hazardous material in accordance with Section 02 61 33 - Hazardous Waste Material.

1.28 Hazardous Substances

- .1 If the Work entails the use of any toxic or hazardous materials or chemicals, or otherwise creates a hazard to life, safety or health, Work will be in accordance with the National Fire Code of Canada, Occupational Health and Safety Legislation, and WHMIS.
- .2 Departmental Representative is to be advised, and a "Hot Work" permit issued by Contractor's designated representative in all cases involving welding, burning or the use of blow torches and salamanders, in buildings or facilities. Special precautions are necessary to safeguard life and property from damage by fire or explosives.
- .3 Wherever Work is being carried out in dangerous or hazardous areas involving the use of heat, fire watchers, equipped with sufficient fire extinguishers, will be provided. The determination of dangerous or hazardous areas along with the level of precaution necessary for Fire Watch will be at the discretion of Contractor. Notify Departmental Representative prior to that determination.
- .4 Provide proper ventilation and eliminate all sources of ignition where flammable liquids, such as lacquers or urethanes are used.
- .5 Do not store flammable substances within 30 m of the Temporary PCB Materials Storage Area.

1.29 Questions and Clarifications

- .1 Direct any questions or clarification to Departmental Representative.

1.30 Measurement of Payment

- .1 All costs for the preparation and completion of the Site Specific Health and Safety Plan, are to be included in the lump sum price paid for under Item 01 35 32-1, as indicated in Basis of Payment Schedule. The lump sum price for the Site Specific Health and Safety Plan will be paid after a satisfactory Site Specific Health and Safety Plan has been submitted to Departmental Representative.
- .2 The provision of Wildlife Monitors, including ATV, will be measured for payment by the day that the services are provided. The provision of wildlife monitoring services will be paid under Item 01 35 32-2, Wildlife Monitors in the Basis of Payment Schedule.
- .3 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule.

Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2      PRODUCTS

2.1      Not Used

.1      Not used.

PART 3      EXECUTION

3.1      Not Used

.1      Not used.

END OF SECTION

PART 1      GENERAL

1.1          Definitions

- .1      Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
- .2      Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants

1.2          Regulatory Overview

- .1      Comply with all applicable environmental laws, regulations and requirements of Federal, Territorial and other regional authorities, and acquire and comply with such permits, approvals and authorizations as may be required.
- .2      Comply with and be subject to those permits and approvals obtained from Departmental Representative to conduct the Work.
- .3      Pay specific attention to the Land Use Permit, Water License and Quarry Permit.
- .4      Pay specific attention to the Migratory Birds Convention Act, as amended in 1994.

1.3          Submittals

- .1      Submit all required Contractor submittals to satisfy environmental requirements directly to the responsible agency and Authorities Having Jurisdiction (AHJ).
- .2      Submit one complete copy of all submittals and agency approvals to Departmental Representative.
- .3      All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.4          Relics and Antiquities

- .1      Relics and antiquities and items of historical or scientific interest such as cairns, tentrings, commemorative plaques, inscribed tablets, and similar objects found on-site or in buildings to be demolished will remain the property of the appropriate AHJ.
- .2      Prior to commencing Work at the site, review the following with Departmental Representative:
  - .1      The extent of the archaeological sensitive areas including gravesites.
  - .2      The methods to be used by Contractor to mark and protect the areas from construction/remediation activities.
- .3      Give immediate notice to Departmental Representative if evidence of archaeological finds are encountered during construction/remediation activities, and await Departmental Representative's written instructions before proceeding with Work in this area.
- .4      Protect archaeological finds and similar objects found during course of Work.

1.5 Wildlife Protection Plan

- .1 Submit a Wildlife Protection Plan that defines procedures for the protection of wildlife known to frequent the Project and surrounding areas. Wildlife Protection Plan shall include, but not be limited to, the following:
  - .1 Avoidance of active animal dens;
  - .2 Avoidance of active nests;
  - .3 Potential access restrictions and/or disturbance minimizing of migration activities;
  - .4 Minimizing disturbances caused by aircrafts.
- .2 Submit the Wildlife Protection Plan to the Departmental Representative sixty (60) days prior to initiation of on-site remediation activities.

1.6 Site Maintenance

- .1 Keep the site free from the accumulation of waste materials and debris as specified in this section.
- .2 Upon completion of the Work, clean away and dispose of all surplus material, supplies, rubbish and temporary works leaving the site neat and tidy to the requirements of Departmental Representative and the Land Use Permit.

1.7 Fires

- .1 Fires and burning of rubbish on site permitted only when approved by Departmental Representative.
- .2 Where fires or burning permitted, prevent staining or smoke damage to structures, materials or vegetation which is to be preserved. Restore, clean and return to new condition stained or damaged Work.
- .3 Provide supervision, attendance and fire protection measures as directed.
- .4 Obtain all required permits from AHJ.

1.8 Disposal of Wastes

- .1 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways.

1.9 Water Management

- .1 Provide potable water for drinking and cooking.

1.10 Wastewater Discharge Criteria

- .1 Wash water, meltwater collection, rinse water resulting from the cleaning of fuel tanks and pipelines, contaminated groundwater, water from dewatering contaminated soil areas, and/or any other liquid effluent stream will be released onto the ground at a location that is a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters, and will conform to the discharge requirements set out in the Water Licence:

- .2 Contractor must obtain approval from the Departmental Representative prior to discharging treated wastewater.

1.11 Camp Wastewater Discharge Criteria

- .1 Camp Wastewater will be released onto the ground at a location that is a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters and conform to the discharge requirements set out in the Water Licence.
- .2 Treat all camp wastewater to conform to the discharge requirements set out in the Water Licence.
- .3 If unable to meet the discharge criteria, provide additional storage and/or treatment necessary to meet criteria prior to discharge.
- .4 No direct discharge is allowed to wetland or surface waters.

1.12 Drainage

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
- .4 Provide erosion and sediment control plan that identifies type and location of erosion and sediment controls to be provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
- .5 Submit an Erosion, Sediment and Drainage Control Plan to Departmental Representative for review and approval prior to commencing Work in fisheries sensitive areas or in areas that may affect fisheries sensitive areas and specifically address the protection of water bodies, water courses, and the following:
  - .1 Details of grading Work to prevent surface drainage into or out of Work areas.
  - .2 Details of erosion control works and materials to be used, including the deployment of silt fencing, floating silt curtains and containment booms during construction and excavation activities.
  - .3 Work Schedule including the sequence and duration of all related Work activities.
  - .4 The treatment of site runoff to prevent siltation of watercourses.
  - .5 Dewatering procedures for excavated materials including silt removal procedures prior to discharge.
  - .6 Stabilizing procedures during excavation.
  - .7 Maintenance of filters and sedimentation traps.
- .6 Any dewatering activities will be released onto the ground at a location that is a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters.
- .7 Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment.

1.13 Site Clearing and Plant Protection

- .1 Protect trees and plants on site and adjacent properties where indicated.
- .2 Minimize stripping of topsoil and vegetation.

1.14 Work Adjacent to Waterways

- .1 Do not operate construction equipment in waterways.
- .2 Do not use waterway beds for borrow material.
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 Design and construct temporary crossings to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.
- .6 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- .7 Do not blast under water or within 100 m of indicated spawning beds.

1.15 Pollution Control

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.16 Barge Landing Plan

- .1 Submit a Barge Landing Plan to Departmental Representative for review forty-five (45) days prior to mobilization. The Plan is to address the following:
  - .1 Inspection of landing site prior to barge arrival.
  - .2 Timing windows for barge landing, loading and unloading.
  - .3 Mitigation plan for obstructions or other factors impacting barge landing, such as boulders.
  - .4 Procedures for off-loading, such as stabilization of the barge, potential fill placement or levelling of the shore and/or placement of beach plating.
  - .5 Procedures and equipment necessary for preventing disturbance to the inter-tidal zone.
  - .6 Spill response procedures and equipment.

1.17 Environment Protection Supplies

- .1 Comply with federal and territorial fisheries and environmental protection legislation, including preventing the loss or destruction of fish habitat, and minimizing the impact of sedimentation, siltation or otherwise causing a degradation in water quality.

- .2 Provide a minimum of 30 m or more and as required of polypropylene silt fence (typical height of 0.9 m) and the necessary stakes for installation. This will be used as necessary to prevent sediment transport into water bodies. Product acceptance will be based on compliance with the following minimum/maximum average values.
  - .1 Minimum Grab Tensile Strength (ASTM D4632):520 N.
  - .2 Maximum Elongation (ASTM D4632):15 %.
  - .3 Minimum Puncture Strength (ASTM D4833):250 N.
  - .4 Maximum Apparent Opening Size (ASTM D4751)500 m.
- .3 Provide a minimum of 50 lineal metres or more and as required of 200 mm diameter hydrophobic, sorbent booms. This will be used as necessary to prevent the migration of hydrocarbons.
- .4 Supply, transport, install and maintain erosion, sediment and drainage controls necessary to complete the Work in accordance with the requirements of Departmental Representative.
- .5 At the completion of construction, dispose of used silt fence off-site as non-Hazardous Waste. Dispose of used absorbent boom in accordance with Section 02 61 33 - Hazardous Waste Material.
- .6 Unused Erosion, Sediment and Drainage Control supplies will remain the property of Departmental Representative until the completion of the Contract.
- .7 Provide inventory of environmental protection supplies prior to mobilization.

1.18 Notification

- .1 Departmental Representative will notify Contractor in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations, permits, etc.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of Work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

1.19 Measurement of Payment

- .1 Include all direct costs for the supply and transport of the specified Environmental Protection Supplies including the silt fence and the sorbent booms and all necessary stakes and connecting hardware in the lump sum price for Environmental Protection Supplies, Item 01 35 43-1, as indicated in the Basis of Payment Schedule.
- .2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Polypropylene Silt Fence

- .1 Silt Fence: An assembled, ready to install unit consisting of geotextile attached to driveable posts. Geotextile to be uniform in texture and appearance, having no defects, flaws, or tears that would affect its physical properties; and contain sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure.
  - .1 Minimum Grab Tensile Strength (ASTM D4632): 520 N.
  - .2 Maximum Elongation (ASTM D4632): 15%.
  - .3 Minimum Puncture Strength (ASTM D4833): 250 N.
  - .4 Maximum Apparent Opening Size (ASTM D4751): 500  $\mu$ m
- .2 Net Backing: Industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum width of 750 mm.
- .3 Posts: Sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment; post spacing 2.4 m maximum. Securely fasten each post to geotextile and net backing using suitable staples.

2.2 Hydrophobic Sorbent Boom

- .1 200 mm dia. Polypropylene Material
- .2 Minimum gallons absorbed per 3 m length: 50 L.

2.3 Floating Silt Curtain

- .1 Provide floating silt curtains meeting the United States Army Corps of Engineers Type II designation and meeting the following values:
  - .1 Minimum Flotation Buoyancy: 250 N/m.
  - .2 Minimum Fabric Curtain Grab Tensile (ASTM D-5043) 1700 x 1650 N.
  - .3 Connectors: brass grommets nominally 300 mm o/c for lacing.
  - .4 Ballast Chain: minimum 8 mm galvanized chain, 1.4 kg/m.
  - .5 Load Cable: minimum 8 mm galvanized, vinyl coated 7x19 wire rope, min loading 40 kN.
  - .6 Constructed in Panels.
- .2 Provide mooring lines and anchors as necessary to secure the floating silt curtain in position.

PART 3 EXECUTION

3.1 Temporary Erosion Sedimentation Control

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff to adjacent properties, according to requirements of AHJ.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during Work.
- .3 Implement silt curtains and other erosion control methods as directed by Departmental Representative.

END OF SECTION

PART 1 GENERAL

1.1 References and Codes

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including all amendments and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.
- .3 Perform Work in accordance with the Specifications and meet or exceed all codes, standards and regulations applicable to the Work and issued under the authority of the Government of Canada and the Government of Nunavut. Advise Departmental Representative of any discrepancies in the codes, standards and regulations applicable to the Work.

1.2 References and Codes - Federal

- .1 Meet or exceed the governing codes, standards and guidelines, and regulations applicable to Work and issued under the authority of the Government of Canada as follows:
  - .1 Canada Labour Code Part II-Occupational Health and Safety (R.S. 1985, c.L-2).
  - .2 Canada Occupational Health and Safety Regulations (SOR/86-304).
  - .3 Canadian Environmental Protection Act, PCB Regulations (SOR/2008-273).
  - .4 Controlled Products Regulations (SOR/88-66) a.SOR/2001-254.
  - .5 Export and Import of Import of Hazardous Waste and Hazardous Recyclable Material Regulations (EIHWHRMR) (SOR/2005-149)
  - .6 Inter-Provincial Movement of Hazardous Waste Regulations (SOR/2002-301).
  - .7 National Fire Code of Canada, 1995 a. 2002.
  - .8 Ozone Depleting Substances Regulations, 1998 (SOR/99-7).
  - .9 Transportation of Dangerous Goods Act, 1992 (S.C. 1992, c.34) a.1999, c.31.
  - .10 Transportation of Dangerous Goods Regulations (SOR/2001-286) a.SOR/2011-60
  - .11 Territorial Land Use Regulations (C.R.C., c.1524) a.98-430.
  - .12 Storage Tank System for Petroleum Products & Allied Petroleum Products Regulations (SOR / 2008-197).
  - .13 Migratory Birds Convention Act.
  - .14 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (Environment Canada (EC)) 2008
  - .15 Nunavut Land Claim Agreement (Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada, 1993).
  - .16 Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 1999).
  - .17 Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME, 1999).
  - .18 Contaminated Sites Management Policy (INAC, 2002).
  - .19 Northern Affairs Contaminated Sites Management Policy (INAC, 2002).
  - .20 A Federal Approach to Contaminated Sites (CSMWG, 2002).
  - .21 Risk Management Guidance Document (INAC, 2006).
  - .22 Contaminated Sites Cost Estimating Guide (INAC, 2006).
  - .23 Treasury Board Policy on Management of Real Property (TB, 2007)
  - .24 Risk Management Tool & Reporting Tool User Guide (INAC, 2007)
  - .25 Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil (CCME, 2008).
  - .26 Environment, Health & Safety Management System Manual (INAC, 2008).
  - .27 Environment, Health & Safety Standard Operating Procedures Manual (INAC, 2008).
  - .28 Environment, Health & Safety Control Framework, Northern Contaminated Sites Program (INAC, 2008).

- .29 Environment, Health & Safety Audit Program Guide (INAC, 2008).
- .30 Construction Project Safety Management Guide, 5th Edition (PWGSC, 2008).
- .31 Abandoned Military Site Remediation Protocol (INAC, 2009)
- .32 Guidelines for Canadian Drinking Water Quality, April 2007.
- .33 Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments, April 1976.
- .34 Environment Canada Technical Document for Batch Waste Incineration, EC, 2010.

### 1.3 References and Codes - Nunavut

- .1 Meet or exceed the governing codes, standards and guidelines, and regulations applicable to Work and issued under the authority of the Government of Nunavut as follows:
  - .1 Environmental Protection Act (Nunavut) (R.S.N.W.T. 1988, c. E-7) a. 1998, c.21, c.24.
  - .2 Labour Standards Act (Nunavut) (R.S.N.W.T. 1988, c.L-1) amended S.N.W.T 2003, c.15, in force January 2004.
  - .3 Public Health Act, R.S.N.W.T. 1988, c.P-12.
  - .4 Spill Contingency Planning and Reporting Regulations R-068-93.
  - .5 Fire Prevention Act, R.S.N.W.T. 1988, c.F-6.
  - .6 Transportation of Dangerous Goods Act (1990 S.N.W.T. 1990, c.36).
  - .7 Used Oil and Waste Fuel Management Regulations, November 2003.
  - .8 Work Site Hazardous Materials Information System Regulations (R.R.N.W.T. 1990, c.S-2).
  - .9 Nunavut Waters and Surface Rights Tribunal Act (2002).
  - .10 Nunavut Environmental Guideline for Waste Asbestos (2002).

### 1.4 Standard and Guidelines

- .1 Meet or exceed the most recent amendments or revisions to the governing standards, guidelines, and policies applicable to the Work, including, but not limited to:
  - .1 Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, (PN 1326), 2003 CCME.
  - .2 Guidelines for Canadian Drinking Water Quality, April 2004, Canadian of Ministers of the Environment.
  - .3 Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments, April 1976, Environmental Conservation Directorate.
  - .4 Storage Tank Systems for Petroleum and Allied Petroleum Products Regulations, SOR/2008-197, CEPA.
  - .5 Environmental Guideline for Waste Batteries, (2011), Government of the Nunavut.
  - .6 Environmental Guideline for Waste Lead and Lead Paint, (2011).
  - .7 Guideline for the Management of Waste Batteries, January 2002 (Nunavut).
  - .8 Guideline for the Management of Waste Lead and Lead Paint, April 2004 (Nunavut).
  - .9 Guideline for Waste Solvents, January 2002 (Nunavut).
  - .10 Guideline for Contaminated Site Remediation, Revised March 2009 (Nunavut).
  - .11 Guideline for Ambient Air Quality, December 2002 (NWT)
  - .12 Guideline for Dust Suppression, January 2002 (Nunavut).
  - .13 Guideline for the General Management of Hazardous Waste, Revised April 2010 (Nunavut).
  - .14 Guideline for Ozone Depleting Substances, January 2002 (Nunavut).
  - .15 Environmental Guideline for Waste Solvent Division, (2011), Government of the Nunavut.
  - .16 Environmental Guideline for Contaminated Site Remediation, 2009, Government of the Nunavut.
  - .17 Environmental Guideline for Ambient Air Quality, (2011) Government of the Nunavut.

- .18 Environmental Guideline for Dust Suppression, (2002), Government of the Nunavut.
- .19 Environmental Guideline for the General Management of Hazardous Waste, 2010, Government of Nunavut.
- .20 Environmental Guideline for Ozone Depleting Substances, (2011), Government of the Nunavut.
- .21 Environmental Guideline for the burning and Incineration of Solid Waste (2012).
- .22 Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities (2011).
- .23 Environmental Guideline for Mercury-Containing Products and Waste Mercury (2010).
- .24 Environmental Guideline for Waste Paint (2010).
- .25 Environmental Guideline for Waste Antifreeze (2011).
- .26 Environmental Guideline for Waste Asbestos (2011).
- .27 Environmental Health and Safety Management System Manual (AANDC, 2012).

#### 1.5 Permits and Licenses

- .1 The following permits and licenses will be provided to Contractor when received by AANDC:
  - .1 Water License.
  - .2 Land Use Permit.
  - .3 Quarry Permit.
- .2 Any deviations from the current remediation plan may require land use permit amendments or field authorizations. Notify Departmental Representative of any proposed deviations so AANDC can contact the appropriate agency to obtain approval for the deviation.

#### 1.6 Hazardous Material Discovery

- .1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of demolition Work, immediately stop Work and notify the Departmental Representative.
- .2 Stop Work immediately and notify Departmental Representative upon discovery of following materials during course of Work that have not already been identified as part of the Work:
  - .1 Designated substances such as PCBs, asbestos, and mercury.
  - .2 Unknown and/or potentially hazardous substances.
- .3 Work at site will involve contact with:
  - .1 Metal impacted soil.
  - .2 PHC (total petroleum hydrocarbons) impacted soils.
  - .3 Hazardous liquids and petroleum based sludges.
  - .4 Demolition debris with lead based amended paints.
  - .5 Asbestos containing materials.

#### 1.7 WHMIS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.
- .2 Deliver copies of WHMIS data sheets to Departmental Representative on delivery of materials.

1.8 Submittals

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.9 Measurement of Payment

.1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used.

PART 3 EXECUTION

3.1 Not Used

.1 Not used.

END OF SECTION

PART 1      GENERAL

1.1          Inspection

- .1      Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2      Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3      If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4      Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such Work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative will pay cost of examination and replacement.

1.2          Submittals

- .1      All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.3          Independent Inspection Agencies

- .1      Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2      Provide equipment required for executing inspection and testing by appointed agencies.
- .3      Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4      If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.4          Access to Work

- .1      Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2      Co-operate to provide reasonable facilities for such access.

1.5          Procedures

- .1      Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2      Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 Rejected Work

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's Work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.7 Reports

- .1 Submit 3 copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to Sub-Contractor of Work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

1.8 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION

PART 1      GENERAL

1.1            Installation and Removal

- .1      Provide temporary utilities to facilitate all construction and camp activities.
- .2      Remove from site all such Work after use.
- .3      Provide all temporary utilities consisting of the design, supply, construction, maintenance, operation and removal of the utilities and services required to support the remediation of the site. Temporary utilities to meet requirements of Land Use Permit issued for the Work, satisfy requirements of Federal, Territorial and local Authorities Having Jurisdiction (AHJ), and comply with the requirements of Section 01 35 43 - Environmental Procedures.

1.2            Submittals

- .1      All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.3            Existing Services

- .1      The location of equipment and utility services specified or indicated on the Drawings is to be considered as approximate.
- .2      Before commencing Work, establish location and extent of services in area of Work, and notify Departmental Representative of findings.
- .3      Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .4      Record locations of maintained, joined, re-routed and abandoned service lines indicating horizontal distances and vertical elevations.
- .5      Take necessary precautions and prevent damage to existing services and facilities.
- .6      Repair and replace services or facilities damaged as a result of Contractor's operations at no additional cost to Departmental Representative.

1.4            Water Supply

- .1      Provide continuous supply of potable water for construction use.
- .2      Provide means to conserve water on-site, as suitable water sources may be seasonal. Consider using tanks to store water during high flow events.
- .3      Abide by terms of Water Licence regarding water usage.

1.5            Temporary Heating and Ventilation

- .1      Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2      Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.

- .3 Provide temporary heat and ventilation in enclosed areas as required to:
  - .1 Facilitate progress of Work.
  - .2 Provide adequate ventilation to meet health regulations for safe working environment.
  - .3 Protect Work and products against dampness and cold.
  - .4 Prevent moisture condensation on surfaces.
  - .5 Provide ambient temperatures and humidity levels for storage and installation of materials.
  
- .4 Provide ventilation for temporary facilities as follows:
  - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
  - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
  - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
  - .4 Ventilate storage spaces containing hazardous or volatile materials.
  - .5 Ventilate temporary sanitary facilities.
  - .6 Continue operation of ventilation and exhaust system for time after cessation of Work process to assure removal of harmful elements.
  
- .5 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
  - .1 Conform with applicable codes and standards.
  - .2 Enforce safe practices.
  - .3 Prevent abuse of services.
  - .4 Prevent damage to finishes.
  - .5 Vent direct-fired combustion units to outside.

#### 1.6 Temporary Power and Light

- .1 Provide, operate, and maintain an electrical power supply system, in accordance with governing regulations, to service Contractor's site power requirements.
- .2 Install temporary facilities as necessary for power distribution, such as power cable and pole lines, subject to Departmental Representative's approval.
- .3 Provide lighting and power at site for use during Work by Contractor, Sub-Contractors, and Departmental Representative's support personnel including outdoor lighting for night shift as applicable.

#### 1.7 Temporary Communication Facilities

- .1 Provide and pay for temporary telephone fax data hook up, lines equipment necessary for Contractor use and use of Departmental Representative.

#### 1.8 Fire Protection

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

1.9 Drainage

- .1 Refer to Section 01 35 43 - Environmental Procedures

1.10 Signs and Notices

- .1 Safety and Instruction Signs and Notices:
  - .1 Signs and notices for safety and instruction to be in English, and the local dialect.
- .2 Maintenance and Disposal of Site Signs:
  - .1 Maintain approved signs and notices in good condition for duration of Project, and dispose of off site on completion of Project, or earlier if directed by Departmental Representative.

1.11 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION

PART 1      GENERAL

1.1            Definitions

- .1      Temporary Storage Area: A designated area used for the consolidation and storage of containerized Hazardous Waste Materials, containerized contaminated soils and containerized Non-Hazardous Debris.

1.2            Installation and Removal

- .1      Provide construction facilities in order to execute Work expeditiously.
- .2      Remove from site all such Work after use.
- .3      Provide all temporary facilities consisting of the design, supply, construction, maintenance, operation and removal of the facilities and services required to support the remediation of the site. Provide temporary facilities as specified at the Work site, and any other location where temporary facilities are essential to the Work. Temporary facilities to meet requirements of Land Use Permit issued for the Work, satisfy requirements of Federal, Territorial and local Authorities Having Jurisdiction (AHJ), and comply with the requirements of Section 01 35 43 - Environmental Procedures.
- .4      Prepare site plan indicating proposed location and dimensions of area to be used by Contractor for construction facilities with the number of trailers to be used and avenues of ingress/egress in and out of the work areas identified.

1.3            Location of Equipment and Fixtures

- .1      Location of equipment indicated or specified are to be considered as approximate.
- .2      Inform Departmental Representative of impending installation and obtain his approval for actual location if deviation from specified location is contemplated.
- .3      Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.4            Access and Dust Control

- .1      Provide and maintain adequate access, including snow removal, to all working areas of the site, camp, utilities and offices during all periods of Work by Contractor, Sub-Contractors and other Contractors performing Work for Departmental Representative.
- .2      Access includes removal of snow, as may be required, to gain access to site, as required, to meet the Project Schedule.
- .3      Control site remediation operations to eliminate all excessive dust-creating activities, or as directed by Departmental Representative. The use of oil for dust control is prohibited. Use only water or dust suppressant approved by the DR.

1.5            Scaffolding

- .1      Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, and temporary stairs as necessary for the completion of Work.
- .2      Construct and maintain scaffolding in a rigid, secure and safe manner.

- .3 Erect scaffolding independent of walls. Remove promptly when no longer required.
- .4 Design and construct scaffolding in accordance with CSA S269.2-M87. Provide details and procedures for ensuring all scaffolding equipment, materials, and construction practices meet all applicable regulations and site specific requirements.
- .5 Conform to safety requirements of Section 01 35 32, Site Specific Health and Safety Plan.

1.6 Hoisting

- .1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Sub-Contractors for use thereof.
- .2 Hoists to be operated by qualified operator.

1.7 Site Storage/Loading

- .1 Confine Work and operations by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.8 All Terrain Vehicles

- .1 Provide two (2) two-passenger four-wheel drive all-terrain vehicles (ATVs) complete with hard or soft enclosures. ATVs will have an original equipment manufacturer supplied pick-up style rear box suitable for carrying samples and equipment. Equip ATVs with buggy whips. Supply tire repair kit.
- .2 The use of these vehicles will not be shared with Contractor.
- .3 Vehicles provided for purposes of this contract are accepted at risk of contractor whether in possession of contractor or Departmental Representative.
- .4 Deliver vehicles to location designated by Departmental Representative at the site.
- .5 Store vehicles in accordance with manufacturer's recommendations.
- .6 Maintain all vehicles in good running order for duration of Project. If vehicles are out of commission for any period of time, provide other replacement vehicles.
- .7 Repair and maintain vehicles expeditiously.
- .8 Provide and pay for all fuel and lubricants required to operate the vehicles for the duration of the Project.

1.9 Equipment, Tool and Materials Storage

- .1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with Work activities.

1.10 Sanitary Facilities

- .1 Provide sanitary facilities for Work force in accordance with governing regulations and ordinances.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.11 Construction Signage

- .1 Maintain approved signs and notices in good condition for duration of Project, and dispose of off site on completion of Project or earlier if directed by [Departmental Representative].

1.12 Start-up and Winterizing of Facilities

- .1 Commission camp, vehicles and equipment at the beginning of each construction season.
- .2 Winterize and secure camp, equipment and vehicles at the end of each construction season.
- .3 When Project is closed down at end of construction season, keep facilities operational until close down is approved by Departmental Representative.

1.13 Installation and Removal

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.14 Protection for Off-Site and Public Property

- .1 Protect surrounding private and public property, including historical gravesites from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.15 Temporary Storage Area

- .1 Develop Temporary Storage Areas (TSA) at Nottingham Island for the storage of containerized Non-Hazardous Waste and Hazardous Waste as outlined in the applicable related sections within this specification.
- .2 Prepare the TSA to comply with the following (at minimum):
  - .1 Provide an easy access to the off-site transport equipment.
  - .2 The area is to be free of standing/ponding water.
  - .3 Allow the containers to be flat and evenly distribute the weight of the containers to the supporting surface.
  - .4 The area must not be subject to flooding or excessive snow drifting.
  - .5 Supply, place, and compact additional granular borrow material or grade out area as required to meet the minimum requirements outlined in this Section and Section 02 61 33 – Hazardous Waste Material.
  - .6 Surface water run-on to the area must be minimized.
  - .7 Size the area sufficiently so that it will accommodate all hazardous, nonhazardous waste, drums and other debris to be containerized and transported off-site for disposal.
  - .8 Sufficiently compact the area to prevent the containers from settling into the ground.

- .3 Confirm the location of the TSA with the Departmental Representative at least one (1) week prior to commencing operations to allow for baseline sampling if required.
- .4 The TSA is to be located as follows:
  - .1 More than 30 metres away from any waterbody/wetland/spring.
  - .2 On stable and compact ground.
  - .3 In an area not routinely accessed or essential to Contractor's employees or on-site personnel.
  - .4 More than 30 metres away from all flammable materials.
  - .5 TSA must segregate the various types of materials including but not limited to:
    - .1 Containerized Hazardous Solid Waste Materials.
    - .2 Containerized Hazardous Liquid Waste Materials.
    - .3 Containerized Drum, Tank, and Pipeline Contents.
    - .4 Non-Hazardous waste Materials/debris.
    - .5 PHC, metal and co-contaminated soils

1.16 Measurement of Payment

- .1 All direct costs for the Start-up of Facilities are to be included in the unit price for Start-up of Facilities, Item 01 52 00 - 1, as indicated in Basis of Payment Schedule.
- .2 All direct costs for the Winterizing of Facilities are to be included in the unit price for Winterizing of Facilities, Item 01 52 00 - 2, as indicated in Basis of Payment Schedule.
- .3 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Mobilization and Demobilization

- .1 Provide all labour, equipment and materials, and performance of all Work necessary for mobilization to, and demobilization from site. This will include all Departmental Representative provided supplies, equipment and material.
- .2 Mobilization to include transportation to site of Contractor's labour, equipment, camp facilities, materials, and assembling, erecting, and preparing site in readiness to start Work, all in accordance with Contractor's Schedule.
- .3 Demobilization to include dismantling and removal from site, of all Contractor's equipment, camp facilities and materials, waste resulting from cleanup of site and transportation of labour from site.
- .4 Decontaminate and clean all equipment used on the Project prior to demobilization.
- .5 Do not mobilize to the site without written authorization from the Departmental Representative.
- .6 Summarize the proposed mode, route, equipment, labour and all other requirements for the mobilization and demobilization of all required equipment, materials, waste and personnel to complete the remediation of the project, as indicated in these specifications, in a Mobilization and Demobilization Plan. Submit the Mobilization and Demobilization Plan to the Departmental Representative a maximum of 30 days after contract award.
- .7 All mobilization and demobilization methods to comply with the requirements of all applicable codes, standards, guidelines and Land Use Permit and Water License.
- .8 A Post-Demobilization site visit will be required as part of the Post-Demobilization Inspection as per Section 01 77 00 – Closeout Procedures.

1.2 Mobilization and Demobilization Plan and Equipment List

- .1 Provide a Mobilization and Demobilization Plan which shall include, but not be limited to, the following items:
  - .1 Proposed mode(s), route, and timing
  - .2 In-transit storage or staging areas
  - .3 Equipment, labour and other requirements
  - .4 Equipment and materials to be brought to site to complete the remediation of the project, as indicated in these specifications.
- .2 Compile a complete Construction Equipment List comprised of manufacturer name, model number, year, and hours for construction equipment that is being mobilized to site and submit to Departmental Representative.

1.3 Submittals

- .1 Submit Mobilization and Demobilization Plan in accordance with Section 01 33 00 - Submittal Procedure for review by Departmental Representative.
- .2 Submit to Departmental Representative, 3 hard copies and 1 electronic copy of the Mobilization and Demobilization Plan 30 days after contract award.

- .3 Submit to Departmental Representative three (3) hard copies and one (1) electronic copy of the Construction Equipment List thirty (30) days prior to mobilization.

1.4 Measurement of Payment

- .1 Mobilization via sealift and/or secondary mobilization via air charter to be paid for at the lump sum price tendered for under Item 01 53 00 - 1 on the Basis of Payment.
- .2 Demobilization via sealift and/or secondary mobilization via air charter to be paid for at the lump sum price tendered for under Item 01 53 00 - 2 on the Basis of Payment.
- .3 All costs for Mobilization of all equipment and materials, including the submission of the Mobilization and Demobilization Plan, are to be included in the lump sum price for Mobilization, Item 01 53 00-1, as indicated in the Basis of Payment Schedule. The lump sum price for mobilization is to include all labour, equipment, materials, meals, accommodation, flights and any other costs necessary to undertake work required.
- .4 All costs for Demobilization of all equipment and materials are to be included in the lump sum price for Demobilization, Item 01 53 00-2 as indicated in the Basis of Payment schedule. The lump sum price for Demobilization is to include all labour equipment, materials, meals, accommodation, flights and any other costs necessary to undertake the work required. Payment for Demobilization will be made after satisfactory cleanup of the site, removal from the site of all equipment, materials, site demolition debris materials and contaminated soils, as indicated and submission to Engineer of all Contractor submittals.
- .5 All costs for Transportation of Contractor's Personnel, including all transportation cost for crew rotations, meals in transit, accommodations in transit and any other cost necessary to mobilize and demobilize Contractor's Personnel are to be included respectively in Section 01 53 00-1 Mobilization and Section 01 53 00-2 Demobilization as indicated in the Basis of Payment Schedule.
- .6 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION

PART 1      GENERAL

1.1          Preliminary Requirements

- .1          Prior to installation of camp facilities and service area submit location and layout plan to Departmental Representative for review.
- .2          The location of the camp facilities must be approved by Departmental Representative. Provide 20 days after Contract award.
- .3          Temporary camp facilities to be established and operated in accordance with local regulations and Authorities Having Jurisdiction (AHJ).
- .4          Provide and operate complete camp facilities services, including provision, preparation and serving of food, for construction personnel, Departmental Representative and his authorized personnel, and other specified site visitors.
- .5          Provision of camp facilities services consisting of:
  - .1          Design, supply, installation, and operation and maintenance of camp facilities including:
    - .1          All associated facilities.
    - .2          Utilities and services required for camp facilities such as heating, lighting, fuel, potable, and domestic water systems.
    - .3          Sewage collection.
    - .4          Treatment and disposal systems.
    - .5          Waste, refuse and garbage collection and disposal system.
    - .6          Camp facilities fire prevention.
    - .7          Alarm and fire fighting system.
    - .8          Camp facilities safety and security service.
    - .9          Meals and catering service.
    - .10          Shower/wash facilities.
    - .11          Sleeping and washroom facilities.
    - .12          Bedding and bedding laundry services.
    - .13          Janitorial services.
    - .14          Personnel laundry facilities.
    - .15          Recreational facilities.
    - .16          Snow removal services.
    - .17          Camp re-supply and staff rotation charter flights.
    - .18          Satellite communications (phone, fax and internet).
  - .2          Obtain and pay for, as part of provision of camp facilities services all licenses, permits, and authorizations required to comply fully with all laws, ordinances and regulations of Federal and local authorities in connection with the performance of Work of this section.
  - .3          Provide camp facilities services for own workforce, a medic, surveyors, laboratory testing personnel, Departmental Representative, specialist inspectors and for three (3) over night visitors. Separate space is to be provided for cook(s), cook's helpers and for female staff.
  - .4          Demobilize camp facilities from site at completion of contract.
- .6          Provide camp facilities services for own workforce, Departmental Representative, and Departmental Representative's authorized personnel as follows:
  - .1          Resident Departmental Representative: duration of the Project.
  - .2          Specialist Inspectors: person for the duration of the Project.

- .3 Departmental Representative's Authorized Personnel, PWGSC and AANDC Office Personnel: on an as required basis (maximum of 2 persons at any one time).
- .7 Camp Facilities will not be older than 10 years.
  - .1 Departmental Representative will arrange to have the proposed camp facilities inspected by a third-party building inspector prior to mobilization.
  - .2 Provide written notice two (2) weeks prior to mobilization for Departmental Representative to arrange inspection. Contractor to note that a satisfactory building inspection is required before camp facilities will be paid.
  - .3 Contractor will address any recommendations arising from building inspector's report before camp facilities are paid.
- .8 Provide and maintain a digital communication system for the site consisting of full duplex and secure voice, real time fax and high speed internet. Provide two (2) separate phone lines for the Departmental Representative. The communication system is to be based on monthly charges with unlimited internet access. Provide wireless B/G network access points such that the entire camp area has wireless high speed internet. Maintain one (1) handheld satellite telephone on-site for emergency purposes or when the main communication system is non-functional. Use of the handheld satellite telephone for primary site communications for extended periods is not acceptable.
- .9 Shared use areas, kitchen dining areas and sleeping quarters shall be maintained as smoke-free areas. Provide a smoking area at Contractor's discretion, in accordance with Federal, Territorial and local regulations and guidelines.

## 1.2 Regulatory Requirements

- .1 Camp facilities including utilities, services, location and operation is subject to Departmental Representative's approval and is to be designed, established and operated in accordance with applicable Federal, Territorial and local codes, regulations and requirements governing camp facilities.
- .2 Camp facilities location to be established at a location which does not interfere with operations undertaken on site. Camp facilities and service area locations are subject to Departmental Representative's approval.
- .3 Obtain applicable licenses, permits and authorizations prior to establishing camp. Submit proof of same to Departmental Representative. Pay for all costs for inspection of camp facilities and electrical facilities by AHJ.
- .4 Provide water that meets Health Canada Guidelines for Canadian Drinking Water Quality. Submit information on water, including the source and water quality test results to Departmental Representative prior to opening the camp facilities.
- .5 Collect samples each week from the potable water source distribution point (after treatment – if required) and have analyzed at a CALA accredited laboratory for all Health Canada Guidelines for Canadian Drinking Water Quality requirements. Submit results to Departmental Representative upon receipt.
- .6 Provide bottled water that meets Health Canada Guidelines for Canadian Drinking Water Quality until it is demonstrated, by two consecutive sets of analytical test results, that the local source meets the Health Canada Guidelines for Canadian Drinking Water Quality. In the absence of analytical test results, local sources must not be used, and the supply of bottled water must be maintained. Submit information on bottled water, including the source and water quality test results to Departmental Representative prior to opening the camp.

- .7 Comply with all requirements of the Water Use License, Land Use Permit and all other licenses, permits and authorizations.
- .8 Operate the camp in accordance with the camp rules as specified in this Section.

1.3 Environment

- .1 Comply with environmental regulations as per Section 01 35 43 - Environmental Procedures.
- .2 Adhere to applicable guidelines and in accordance with AHJ.
- .3 Submit to Departmental Representative before opening of camp facilities, proof of adherence to all environmental regulations. Display all applicable regulatory permits at the camp facilities site.
- .4 Comply with sewage treatment, disposal and closure requirements as outlined in Section 01 35 43 - Environmental Procedures.
- .5 Install and maintain fire protection equipment as specified in Section 01 35 32 – Site Specific Health and Safety Plan.
- .6 Quality of potential water supplies for the camp is included in Appendix C.

1.4 Camp Facilities Installation and Removal

- .1 Mobilize equipment, camp facilities, personnel, and materials.
- .2 Establish approved temporary buildings, shops, offices and facilities required.
- .3 Place all camp facilities so as not to interfere with any construction or other site activities.
- .4 Carry out all Work necessary to protect environment, such as constructing pads (if required), prior to actual installation of camp facilities.
- .5 Locate camp generators minimum 30 m to any sleeping facility, camp kitchen or an area with constant human presence.
- .6 Winterize and secure camp, equipment, and vehicles at the end the construction season.
- .7 Remove camp facilities, clean up, and leave site in condition satisfactory to Departmental Representative.

1.5 Construction Camp

- .1 Carry out all work necessary to protect the environment prior to actual installation of the camp facilities.
- .2 Place all camp facilities so as not to interfere with any construction or other site activities. Obtain Departmental Representative's approval for location of construction camp.
- .3 Provide and maintain camp in good operating condition and provide adequate and suitable furnishings.
- .4 Consider the possibility of wildlife encounters when determining the layout of the camp. Refer to bear or wildlife safety literature when selecting the camp layout, facility spacing, and location of the kitchen, food storage, washroom and sleeping facilities.

- .5 Provide an alarmed trip wire around the camp to provide warning of wildlife intrusions whenever bear monitors are not patrolling. Ensure a working wildlife deterrent is provided and that a replacement will be made available within 24 hours should the primary system fail.
- .6 Incinerate all kitchen waste in order to avoid attracting wildlife.
- .7 Demobilize and remove the construction camp from the site at the completion of the Contract. Grade as necessary to match surrounding terrain and to ensure positive drainage as directed by Departmental Representative.

1.6 Site Location

- .1 Locate camp facilities at a site that provides for the safety and welfare of its residents for the duration of the Work. Contractor is responsible for the camp facilities location.
- .2 Locate camp facilities within walking distance of the Work site, if possible.
- .3 Locate camp facilities up wind of any locations in which materials may be burned.
- .4 Locate camp facilities in an area that has been previously disturbed, but outside of any remedial work areas, if possible.
- .5 Locate the medic's center in the camp facilities. Co-locate the medic's center with an office, or other facility where other workers are present.
- .6 Locate the communications center within one (1) kilometre of the Work.
- .7 Locate the communications center in the camp facilities. Co-locate the communications center with an office, or other facility where other workers are present.
- .8 Locate any temporary shelter to be used as a workshop near the Work.
- .9 Construct an access road to the selected location, as needed or as directed by Departmental Representative.

1.7 Maintenance

- .1 Maintain camp facilities in tidy and sanitary condition.
- .2 Heat camp facilities to provide environmentally controlled conditions between 20 and 22 degrees C.
- .3 Equip camp facilities with furnace sized to heat rooms and adjacent corridor spaces.
- .4 Furnace to have forced air circulation system with minimum of one hot air outlet per room in sleeper trailers. Alternatively, trailers may be heated with electric space heaters.
- .5 Clean camp facilities daily. Clean and sanitize toilets, urinals, showers, washbasins, washing machine, and laundry tubs daily.
- .6 Provide adequate bug, pest and wildlife control to all buildings, and camp facilities
- .7 Maintain camp facilities power plant, fuel storage facilities, water lines, sewage system, garbage disposal containers, heating and cooling units, appliances and furniture in neat, clean and good operating condition and make repairs as necessary.

1.8 Departmental Representative's Requirements

- .1 Provide for sole use of Departmental Representative, one room for sleeping. Space to be furnished in same manner as rooms used by Contractor's personnel.
- .2 Provide one room for sleeping for the sole use of the specialist inspectors. Provide space for up to 3 overnighting or occasional site visitors as and when required in the camp facilities.
- .3 Departmental Representative and specialist inspectors require office space. Space must also accommodate surveyors and additional specialist inspectors on a periodic basis.
- .4 Furnish office space with 2 desks with top surface not less than 150 cm (60") by 75 cm (30"), 2 desk chairs and 2 stacking type chairs, 2 4-drawer file cabinets, with locking mechanism, 1 plan table and stationary as required to support a small office.
- .5 Provide 1 remote communications device compatible with all site communications, 1 plug for computer connections. Equip with surge protectors and an UPS (uninterruptible power supply) bar. Provide access to reliable communications systems for Departmental Representative and support staff.
- .6 Provide and maintain at Departmental Representative's office two satellite phone lines or equivalent communication approved by Departmental Representative.
- .7 Provide, for the use by Departmental Representative and Departmental Representative's Authorized Personnel, two (2) mobile communication radios, complete with charging units. The radios are to allow for on-site communication between Departmental Representative, Departmental Representative's Authorized Personnel and Contractor. The radios are to have a minimum range of 5 km.
- .8 It is critically important that the communication equipment provided by Contractor for Departmental Representative's use is reliable and of the highest quality. Immediately repair or replace faulty equipment. The equipment is to be operational from the day the Work commences.
- .9 Provide for use by Departmental Representative, inspectors and support personnel 1 printer/copier/scanner/fax all-in-one type device. Provide network connections or hubs to permit Departmental Representative, inspectors and support personnel to remotely print to the device.
- .10 Sleeping quarters for Departmental Representative and his authorized personnel to be segregated from those for Contractor's staff.
- .11 It is anticipated that Departmental Representative's Work force will include both male and female personnel. Design and operate the camp facilities with due consideration of the separate and private requirements for male and female Work force.
- .12 Provide for a single facility with a minimum floor area of 6 m<sup>2</sup> for use of the Resident Departmental Representative.
- .13 Sleeping quarters for other Departmental Representative's support personnel, as indicated in this Section, to provide for maximum double occupancy with a minimum floor area of 9.2 m<sup>2</sup>.
- .14 Provide a minimum of 11 m<sup>3</sup> of air space for each occupant.

1.9 Kitchen Dining Complex

- .1 Functional design of kitchen to include all equipment necessary for food storage, preparation, cooking and serving 3 meals daily (one meal will be bagged lunch) to meet camp population requirements.
- .2 Provide dishwashing and garbage handling equipment, consistent with required function of kitchen.
- .3 Provide seating capacity of dining area to meet camp population requirements.
- .4 Store all non-perishable food supplies in adequate containers, kept in an orderly manner and under sanitary conditions, in vermin-proof enclosures.
- .5 Store all perishable food supplies in properly refrigerated indoor areas within camp facilities to preclude attraction of wildlife

1.10 Linen, Bedding and Laundry

- .1 Supply three (3) blankets, two (2) sheets, one (1) bath towel, one (1) face cloth, and two (2) pillow and one (1) pillow case for each person living in camp facilities.
- .2 Change two (2) sheets and one (1) pillow case weekly or whenever occupancy changes.
- .3 Launder sheets and pillow covers regularly to provide weekly supply of clean linen.
- .4 Provide clean blankets to all camp occupants. Clean blankets as conditions warrant.
- .5 Cooking staff to wear suitable kitchen attire. Launder kitchen attire daily.

1.11 Ablution and Latrine Facilities

- .1 Provide ablution and latrine facilities as per AHJ and codes requirements and as per camp occupancy requirements as follows:
  - .1 Flush toilets as required.
  - .2 Urinals as required.
  - .3 Wash basin of stainless steel, porcelain, with one mirror over each basin as required.
  - .4 Individual shower units with non-slip flooring together with adjacent dressing cubicles as required.
- .2 Maintain separate ablution and latrine facilities for female/male populations.
- .3 Maintain separate ablution and latrine facilities for Departmental Representative and Departmental Representative's support staff.
- .4 Clean ablution and latrine facilities daily. Supply adequate amounts of paper towels, toilet tissue, and individual drinking cups in washrooms.

1.12 Food Quality and Schedule

- .1 Groceries to be of top quality. Eggs and dairy products to be grade "A". Canned fruit and vegetables to be choice or fancy.
- .2 Beef to be Canada Grade "A", pork to be Grade "I", turkey , chicken or other fowl to be "utility" or better.

- .3 Provide choices of traditional food. Provide healthy choices in food preparation.
- .4 As a minimum, provide three meals a day. Provide casual meals or fourth meals if irregular shifts are worked or irregular travel by personnel is required.
- .5 Main courses to be served at meals are classified as follows:
  - .1 First Line: Beef steak, roast beef, roast pork, veal cutlets, baked ham, ham steak, chicken, turkey, pork chops, roast lamb, roast veal.
  - .2 Second Line: Fish, short ribs, spare ribs, stews, meat pies, liver, curried dishes, spaghetti and meatballs, sausages, Salisbury steak, Swiss steak, ground beef, corned beef, stir fries.
  - .3 Third Line: Hot dogs, omelettes, chili con carne, baked beans, chicken and turkey turnovers, dishes using leftover meats, soup and sandwiches.
- .6 Lunch is to include one second line item and a third line item. Do not repeat the same selection more than twice weekly. Provide a vegetarian option upon request.
- .7 Supper to include one first line and a choice between a second and third line. Do not repeat the same selection more than twice weekly. Beef steak to be served at least once per week. A vegetarian option to be available on request.
- .8 Breakfast to include fruit juice or fruits, coffee, tea, milk, hot and cold cereals, porridge, toast and preserves, peanut butter, hot cakes, eggs, bacon, ham and sausages.
- .9 Provide box lunches for all camp occupants who will not be in camp facilities for noon meal.
- .10 Contractor will be given 12 hours notice to serve fourth and/or casual meals to Work forces of other Contractors and Departmental Representative.
- .11 Provide "Mug Up" nightly at 2100 hours consisting of tea, coffee, hot chocolate, fruit juice and any left over pastries at cook's discretion. Make coffee available at coffee breaks.
- .12 Provide beverages and snacks at all times. A variety of snacks should be available, including snacks that are appropriate for diabetics or persons with blood sugar concerns. Snacks may consist of fresh fruit or vegetables, granola bars, cheese and crackers, bannock, or other suitable items.
- .13 Make available daily apples and oranges; serve other types of fresh fruit at least once per week. Fresh salads are to be provided daily.
- .14 Provide whole milk each day; powdered milk is not acceptable for drinking, but may be used for cooking.

#### 1.13 Service Facilities

- .1 Install, hook-up, test and make necessary repairs to sewage, water supply, heating, and electrical services.
- .2 Situate power plant in camp facilities area to minimize noise, and prevent exhaust fumes from blowing through camp facilities during prevailing winds.
- .3 Ground all buildings and electrical equipment with an approved grounding system.

#### 1.14 Recreation

- .1 Provide an area for recreation for all camp occupants.

- .2 Area to be of a size suitable for accommodating at least 50% of camp occupants, and to be suitably furnished with lounge, and stacking chairs.
- .3 Provide a TV and DVD player for use by camp occupants. Alternatively, provide a satellite system.
- .4 Provide a minimum of 20 DVD Movies and rotate these movies every two weeks or provide a TV with satellite link.
- .5 Provide an assortment of books (soft cover) and magazines for reading.

1.15 Camp Facilities Rules

- .1 Camp facilities of this size and nature in a remote location require that certain basic rules be established for mutual benefit of all camp occupants.
- .2 Prepare a set of camp facilities rules, for approval by Departmental Representative, prior to commencing operations.
- .3 In order to protect all residents, the following activities are strictly prohibited and could result in dismissal and removal from site:
  - .1 Tampering with smoke or fire detectors/alarms, any other safety equipment or electrical outlets/fixtures.
  - .2 Possession and consumption or use of alcohol or illegal drugs.
  - .3 Possession or use of firearms, ammunition or other lethal weapons.
  - .4 Fighting, physical violence, stealing, vandalism or destruction of property.
  - .5 Harassment in any form.
  - .6 The employee or visitors departure from the site for any of these reasons will be on the first available Scheduled transportation. Should this person wish to leave immediately the costs will be the responsibility of the employee.
- .4 Make all camp residents familiar with all emergency procedures, exits, signals and alarms. Keep accesses to fire equipment clear at all times, and immediately report any damaged fire or safety apparatus to your supervisor.
- .5 Use vehicles or equipment only when trained and authorized to do so.
- .6 Use, adjust and repair equipment or machinery only when authorized by the supervisor.
- .7 Vehicle/Equipment checks must be completed and the logbook updated at the beginning of every shift or when starting any vehicle or piece of equipment. Seat belts must be worn at all times in vehicles and equipment.
- .8 Keep living areas as clean as possible.
- .9 Have warm emergency clothing available at all times during the wet or cold weather.
- .10 Keep clothing or other flammable goods away from baseboard heaters.
- .11 Ensure that personal items and clothing are marked for easy identification. Provide space for workers to hang wet clothing to dry prior to next shift.
- .12 Employees must store/remove all personal effects and belongings when going off rotation or permanently off site.

- .13 No loose clothing, dangling neckwear, bracelets, rings or similar articles are to be worn where there is a risk of coming into contact with moving machinery or electrical energized equipment.
- .14 Keep workplace and equipment neat and orderly. Complete an inspection of your Work place tools and equipment prior to starting Work. Correct any hazards immediately.
- .15 Provide a copy of camp facilities rules to all camp occupants prior to or upon arrival in camp.
- .16 Enforce camp facilities rules.

1.16 Controlled Access Trailer

- .1 Provide a suitably sized trailer to house the decontamination rooms for entire construction crew, Departmental Representative, inspectors and up to five visitors to the site.
  - .1 The trailer is to have two access doorways where construction workers and field personnel can enter from the construction side, change out their PPE and field clothes, and wash up prior to entering the camp facilities or clean site of the trailer.
- .2 Provide a washer and dryer, to be incorporated into the decontamination side of the trailer.
- .3 Provide the necessary utilities and connections to operate the decontamination trailer.
- .4 Provide a designated area for all construction equipment, located in such a manner as to minimize the potential for contaminated material to enter the camp facilities.

1.17 Laundry Facilities

- .1 Within the camp, provide both personnel laundry facilities and facilities dedicated to the camp (ex: bedding, kitchen linens) separate from those in the Controlled Access Trailer.
- .2 Laundry facilities for washing of PPE (ex: coveralls and other exterior Work clothing) to be located within or adjacent to the Controlled Access Trailer.

1.18 Equipment, Tool and Materials Storage

- .1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with Work activities.

1.19 Sanitary Facilities

- .1 Washroom facilities are to be provided at, or in close proximity to, the respective camp facilities and Work areas.
- .2 Washroom facilities provided to have running hot and cold water for workers not able to return to the camp facilities for lunch.

1.20 Security

- .1 Restrict access to camp facilities. Only persons employed on Project to be allowed normal access. Unauthorized persons will be permitted on site only with approval of Departmental Representative and/or Contractor.

1.21 Access to Work

- .1 Be responsible for the transport of personnel and equipment to the various Work areas on the site.

1.22 Transportation

- .1 Provide return air transportation services for Departmental Representative and Departmental Representative's Authorized Personnel from the Contractors staging area to the site.
- .2 It is anticipated that air transport of Departmental Representative's Authorized Personnel will be Scheduled to coincide with the transport of Contractor's workforce to and from the site. Provide air transportation for Departmental Representative's personnel at a minimum frequency of one return trip per week and two additional trips per month Scheduled according to Departmental Representative's request.
- .3 Departmental Representative will advise Contractor of Departmental Representative's and Departmental Representative's personnel air transportation requirements one week in advance of trip departure.

1.23 Measurement of Payment

- .1 All costs for the supply, operation and maintenance of all camp facilities and equipment, including water treatment and sewage treatment, inspection of camp facilities and electrical facilities by officials, on-site mobile communication equipment, as well as the provision of catering, rooms, and laundry and janitorial services for the camp facilities are to be included in the lump sum payment under Item 01 54 00-1, as indicated in the Basis of Payment Schedule.
- .2 The provision of room and board and associated services for Departmental Representative and Authorized Personnel will be measured for payment by the person-day for each day that personnel reside overnight at the camp facilities. Departmental Representative's room and board will be paid under Item 01 54 00-2 in the Basis of Payment Schedule.
- .3 Provision of casual meals to visiting Departmental Representative's authorized personnel will be measured for payment by the number of meals served. Casual meals will be paid under Item 01 54 00-3 in the Basis of Payment Schedule.
- .4 The provision of air transportation from the Contractors staging area to site of Departmental Representative's Authorized Personnel will be measured for payment by the number of person return trips and will be paid Item 01 54 00-4 in the Basis of Payment Schedule.
- .5 All costs for the supply, installation and operation of satellite and/or long distance communication links for Departmental Representative and authorized personnel in the lump sum price for Communication links, Item 01 54 00-5, as indicated in the Basis of Payment Schedule.
- .6 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2      PRODUCTS

2.1          Not Used

.1          Not used.

PART 3      EXECUTION

3.1          Not Used

.1          Not used.

END OF SECTION

PART 1 GENERAL

1.1 General

- .1 Use new material and like new equipment acceptable to Departmental Representative unless otherwise specified.
- .2 No later than 20 days after contract award, submit the following information for materials and equipment proposed for supply:
  - .1 name and address of manufacturer,
  - .2 trade name, model and catalogue number,
  - .3 performance, descriptive and test data,
  - .4 manufacturer's installation or application instructions,
  - .5 evidence of arrangements to procure.
- .3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for material and equipment of same type or classification unless otherwise specified.
- .5 Provide material and equipment of specified design and quality, performing to published ratings, and for which replacement parts are readily available.

1.2 Submittals

- .1 All submittals in accordance with Section 01 33 00 - Submittal Procedures

1.3 Reference Standards

- .1 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .2 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .3 Conform to latest date of issue of referenced standards in effect except where specific date or issue is specifically noted.

1.4 Quality

- .1 Products, materials, and articles (referred to as products throughout specifications) incorporated in Work to be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

1.5 Availability

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.6 Storage, Handling and Protection

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.7 Transportation

- .1 Pay costs of transportation of products required in performance of Work.

1.8 Manufacturer's Instructions

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions.
- .2 Notify Departmental Representative in writing, of conflicts between specifications

and manufacturer's instructions, so that Departmental Representative may establish course of action.

- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.9 Quality of Work

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.10 Coordination

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.11 Measurement of Payment

- .1 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 Qualifications of Surveyor

- .1 Qualified registered surveyor, licensed to practice in Nunavut, acceptable to Departmental Representative.
- .2 Surveyor cannot be an employee of Contractor.

1.2 References

- .1 Departmental Representative's identification of existing survey control points and property limits.

1.3 Survey Reference Points

- .1 Existing base horizontal and vertical control points are designated on drawings.
- .2 Locate, confirm and protect control points prior to starting site Work. Preserve permanent reference points during construction.
- .3 Make no changes or relocations without prior written notice to Departmental Representative.
- .4 Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5 Require surveyor to replace control points in accordance with original survey control.

1.4 Survey Requirements

- .1 Establish two (2) permanent bench marks on site, referenced to established bench marks, by survey control monuments. Record locations, with horizontal and vertical data in Project Record Documents.
- .2 Establish stable temporary survey control points for use in laying out work as required to meet the survey requirements of the contract. Record locations, with horizontal and vertical data in Project Record Documents.
- .3 Establish lines and grades, locate and lay out, by instrumentation.
- .4 Prior to the commencement of remedial works prepare a topographic map of the Work sites and in particular areas where demolition, excavation, debris/waste storage, hydrocarbon treatment, drum washing and borrow Works are to take place, or as directed by Departmental Representative, to provide a baseline survey for quantity measurements.
- .5 Stake location of earthworks in the field, and prepare a record drawing showing final location and topography of the Work areas.
- .6 Stake location of Temporary Storage Area (TSA) in the field, and prepare a record drawing showing final location and contours of the TSA.
- .7 Stake location of drum washing area in the field, and prepare a record drawing showing final location and contours of the drum wash station.

- .8 Prepare drawings showing areas where remedial works were undertaken.
- .9 Stake location of any and all borrow areas in the field, and prepare a record drawings showing location and pre borrow contours and location and final contours of the borrow areas to allow for determination of the amount of borrow material recovered and used across the site to re-instate grade and/or as clean cover.
- .10 Survey locations of all environmental samples and geotechnical work as directed by Departmental Representative. Provide drawings showing all appropriate details to Departmental Representative as required.
- .11 Upon completion of the remedial works prepare a topographic survey of the respective work areas so as to determine the amount of material removed from locations where earthworks were completed and the amount of petroleum hydrocarbon materials treated or as directed by the Departmental Representative.
- .12 Maintain surveys for quantity calculations.

#### 1.5 Survey Equipment

- .1 Maintain at site, for duration of the construction period, a complete set of survey equipment for occasional use by the Departmental Representative. Shared use of Contractor's survey equipment is acceptable.
- .2 Equipment to include:
  - .1 Surveying Total Station with data recording capability, tripod, spare battery, battery charger, downloading hardware and software and all associated ancillary items (cables, hardlock, etc.). Preference to be for equipment that operates in both English and French.
  - .2 Automatic level with tripod.
  - .3 Single prism with 5 metre collapsible range pole.
  - .4 Triple prism with tripod.
  - .5 50 metre cloth tape (steel reinforced)
  - .6 5 metre collapsible level rod.
  - .7 Magnetic pin finder (high frequency).
  - .8 One 1.2 m carpenter's level.
- .3 Calibrate all equipment prior to each construction season. Submit to the Departmental Representative documentation certifying the calibration of the equipment 30 days prior to construction commencement each season.

#### 1.6 Survey Markers

- .1 Provide all survey markers and other items required to complete Work as specified, including, but not limited to:
  - .1 Pointed stakes (minimum 1.2 m in length, 12 mm thick, 38 mm wide)
  - .2 Pointed hubs (minimum 0.5 m in length, 20 mm thick, 38 mm wide)
  - .3 Nails (100 mm long), spikes (250 mm long), pins (1 m long), etc.
  - .4 Fluorescent paint, flagging, etc.
  - .5 Felt markers, chalk, wax pens, etc.
- .2 Maintain supply of survey markers for Departmental Representative's use.

1.7 Records

- .1 Maintain a complete, accurate log of control and survey Work as it progresses.

1.8 Submittals

- .1 Submit name and address of Surveyor to Departmental Representative 30 days prior to construction commencement each season.
- .2 Upon request of Departmental Representative, submit documentation to verify accuracy of field Work. Maintain accuracy to 0.01 m vertically and 0.1 m horizontally. Submit data in UTM Nad83 Datum.
- .3 Submit survey data backup for quantities claimed on Progress Claims.
- .4 Submit raw survey data in electronic form containing (at minimum):
  - .1 Date of survey.
  - .2 Name of survey (e.g. Landfill Berms – Finished grade, or Beach Area – Original Ground, etc.)
  - .3 Point numbers, Northing, Easting, elevation, description.
- .5 Submit the record survey data file as the latest as-constructed information. Submission of more than one data file as record information for each facility is not acceptable.
- .6 At completion of all Work, submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.
- .7 Submit all drawings electronically in accordance with PWGSC protocols for AutoCAD drawings, and by hard copy.
- .8 Submit to the Departmental Representative documentation certifying the calibration of the equipment thirty (30) days prior to construction commencement each season.

1.9 Measurement of Payment

- .1 Work identified in this section will be paid for in the lump sum price under Item 01 71 01 -1 Survey in the Basis of Payment Schedule. Tendered price to include all labour, equipment, materials, meals, accommodation, flights, and any other costs necessary to undertake Work required.
- .2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3      EXECUTION

3.1          Not Used

.1          Not used.

END OF SECTION

PART 1 GENERAL

1.1 Closeout Procedures

- .1 Notify Departmental Representative when Work is considered ready for substantial performance.
- .2 Accompany Departmental Representative on preliminary inspection to determine items listed for completion or correction.
- .3 Comply with Departmental Representative's instructions for correction of items of Work listed in executed Certificate of Substantial Completion.
- .4 Notify Departmental Representative of instructions for completion of items of Work determined in Departmental Representative's final inspection.

1.2 Inspection and Declaration

- .1 Contractor's Inspection: or and all Sub-Contractors to conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
  - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  - .2 Request Departmental Representative's Inspection.
- .2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
- .3 Completion: submit written certificate that following have been performed:
  - .1 Work has been completed and inspected for compliance with Contract Documents.
  - .2 Defects have been corrected and deficiencies have been completed.
  - .3 Work is complete and ready for Final Inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request reinspection.
- .5 Post-Demobilization Inspection: once demobilization is completed, Departmental representative may request a Post-Demobilization inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request reinspection.

1.3 Measurement of Payment

- .1 Costs for the Post-Demobilization Site Visit will be negotiated with Departmental Representative.
- .2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2      PRODUCTS

2.1          Not Used

.1          Not used.

PART 3      EXECUTION

3.1          Not Used

.1          Not used.

END OF SECTION

PART 1      GENERAL

1.1          Format

- .1      Organize data in the form of an instructional manual.
- .2      Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3      When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4      Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of Project and identify subject matter of contents.
- .5      Arrange content by systems under Section numbers and sequence of Table of Contents.
- .6      Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7      Text: Manufacturer's printed data, or typewritten data.
- .8      Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .9      Provide [1:1] scaled CAD files in [dxf] or [dwg] format on [CD].

1.2          Contents – Each Volume

- .1      Table of Contents: provide title of Project;
  - .1      date of submission; names,
  - .2      addresses, and telephone numbers of Contractor with name of responsible parties
  - .3      Schedule of products and systems, indexed to content of volume
  - .4      Summary of Health and Safety issues, Environmental issues and performance indicators .
- .2      For each product or system:
  - .1      list names, addresses and telephone numbers of Sub-Contractors and suppliers, including local source of supplies and replacement parts.
- .3      Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4      Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5      Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified.

1.3          Final Survey

- .1      Submit final site survey certificate in accordance with Section 01 71 01 - Survey, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.4 As-Builts

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Task Authorizations
  - .5 Change Orders and other modifications to the Contract.
  - .6 Reviewed shop drawings and product data.
  - .7 Field test records.
  - .8 Inspection certificates.
  - .9 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.5 Recording Actual Site Conditions

- .1 Record information on set of black line opaque drawings provided by Departmental Representative.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
  - .1 Field changes of dimension and detail.
  - .2 Changes made by change orders.
  - .3 Details not on original Contract Drawings.
- .5 References to related shop drawings and modifications.
  - .1 Field changes of dimension and detail.
  - .2 Changes made by Task Authorization, Change Order or Field Order.
- .6 Specifications: legibly mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Task Authorization, Addenda and change orders.
- .7 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.6 Record Drawings

- .1 Departmental Representative will provide to Contractor, two sets of white prints for record drawing purposes.
- .2 Maintain Project record drawings and record accurately deviations from Contract documents on one set of prints.
- .3 Record changes in red.
- .4 At completion of Project and prior to final inspection, neatly transfer record notations to second set of drawings and submit both sets to Departmental Representative. Forward information on completed areas at the end of the construction season.

1.7 Other Records

- .1 Prior to completion of Project, submit the following to the Departmental Representative:
  - .1 Copies of all documents and permits obtained by the Contractor.
  - .2 Results of all testing carried out by the Contractor.
  - .3 Any other pertinent information.
  - .4 Copies of all shipping documents identifying the shipper, the receiver and all carriers involved in the transport of materials.
  - .5 Information as required by the Land Use Permit.
  - .6 Information as required by the Water License.
  - .7 Information as required by the Quarry Permit.
  - .8 Information as required by all other applicable regulatory bodies and AHJ.
  - .9 Copies of all Transportation of Dangerous Goods documentation
  - .10 Copies of all Waste Manifests
  - .11 Documentation as required for hazardous material management
- .2 Consolidate the above information in one document and submit five (5) copies to the Departmental Representative.

1.8 Measurement of Payment

- .1 All direct costs for the Project Record Documents are to be included in the lump sum price for Project Record Documents, Item 01 78 00 - 1, as indicated in Basis of Payment Schedule.
- .2 Except as otherwise indicated herein, Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this Work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar GANTT) Chart.

PART 2 PRODUCTS

2.1 Not Used

- .1 Not used.

PART 3 EXECUTION

3.1 Not Used

- .1 Not used.

END OF SECTION



**Project No. R.057571.001  
Site Remediation – Former Weather Station  
Nottingham Island, Nunavut**

**Monthly Project Report Template**

**Annex 1 – EHS Performance Measures<sup>1</sup>**

Indicator		Month	Year-to-Date
Lost-time accidents	Number		
	Time lost (person-h)		
Days since last time-lost accident	(d)		
Total hours worked in quarter	(person-h)		
Near misses	Number		
Significant environment incidents	Number		
	Volume spilled or released (L)		
Outstanding compliance issues <sup>2</sup>	Number		
Inspections	Number performed		
	Number of non-compliances		
Audits	Number performed		
	Number of non-compliances		
Awareness training	EHS policy and procedures (person-h)		
H&S training	HAZWOPER (person-h)		
	WHMIS (person-h)		
	First Aid (person-h)		
	Wildlife safety (person-h)		
	Water safety (person-h)		
	Fire response (person-h)		
	Other (specify) (person-h)		
Environmental training	Spills response (person-h)		
	Other (specify) (person-h)		
Other corrective actions	New procedures (specify)		
	Other initiatives (specify)		

**Notes:**

<sup>1</sup> In the notes at the end of the table list the lost-time accidents, near misses and significant environmental incidents

<sup>2</sup> Violation notices by regulatory agencies



## Annex 2 – Socio-economic Performance Measures<sup>3</sup>

Indicator		Month	Year-to-Date
Total employment	Number		
	(person-h)		
Northern employment (includes Aboriginal)	Number		
	(person-h)		
Northern Aboriginal <sup>4</sup> employment	Number		
	(person-h)		
Southern Aboriginal employment	Number		
	(person-h)		
Total training	Number of persons		
	Duration (h)		
	Type (specify)		
Northern training	Number of persons		
	Duration (h)		
	Type (specify)		
Northern Aboriginal training	Number of persons		
	Duration (h)		
	Type (specify)		
Northern suppliers (includes Aboriginal)	Number		
	Value (\$)		
Northern Aboriginal suppliers	Number		
	Value (\$)		

**Notes:**

<sup>3</sup> In the notes at the end of the table add any point of clarification

<sup>4</sup> First Nation, Inuit and Métis



### Annex 3 – Aboriginal Socio-economic Performance Measures<sup>5</sup>

Indicator		Month	Year-to-Date
Total employment	Number		
	(person-hours)		
Aboriginal Employment Content	Number		
	(person-hours)		
	<b>% Aboriginal Employment Content</b>		
Total Contractors (prime & sub)	Number of companies		
	Value of contracts		
Aboriginal Content for Contracting	Number of Aboriginal companies		
	Value of Aboriginal contracts		
	<b>% Aboriginal Content for Contracting</b>		
Total Aboriginal training	Number of persons		
	Duration (h)		
	Type (specify)		

**Notes:**

If the percentages of Aboriginal employment and contracting does not meet the firm guarantees in the contract bid proposal, list corrective actions that will be taken.

<sup>5</sup> In the notes at the end of the table add any point of clarification

PART 1      GENERAL

1.1      Related Requirements

- .1      Section 02 41 23 – Debris and Miscellaneous Removal
- .2      Section 02 55 13 – Contaminated Soil
- .3      Section 02 61 33 – Hazardous Waste Material
- .4      Section 02 82 00.01 – Asbestos Abatement Minimum Precautions
- .5      Section 02 82 00.02 – Asbestos Abatement Intermediate Precautions
- .6      Section 02 82 00.03 – Asbestos Abatement Maximum Precautions

1.2      References

- .1      Definitions:
  - .1      Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or materials that endanger human health or environment if handled improperly.
  - .2      Contractor's Designated Hazardous Waste Disposal Facility: The Licensed Hazardous Waste Disposal Facility, designated by Contractor and pre-approved by Departmental Representative, for the disposal of all hazardous waste specified under the provisions of this contract. Contractor must be able to provide documentation from the Designated Hazardous Waste Disposal Facility indicating full responsibility for all hazardous waste accepted from Nottingham Island.
  - .3      Non-Hazardous Waste: Material which does not meet the definition of Hazardous Waste Materials as defined in Section 02 61 33 - Hazardous Waste Material. Asbestos that has been packaged in accordance with Federal and TDGA legislation is to be considered as Non-Hazardous Waste Material.
  - .4      Contractors Designated Non-Hazardous Waste Disposal Facility: The Non-Hazardous Waste Disposal Facility, designated by Contractor and pre-approved by Departmental Representative, for the disposal of all non-hazardous waste specified under the provisions of this contract. Contractor must be able to provide documentation from the Designated Non-hazardous Waste Disposal Facility indicating full responsibility for all non-hazardous waste accepted from Nottingham Island.
  - .5      PCB Amended Painted (PAP) Material: Material that is coated with PCB amended paint that has been analyzed and determined to contain PCB concentrations in excess of 50 ppm and therefore deemed to be Hazardous Material.
  - .6      Leachable-Lead Painted Material: that is coated with lead based paint that has been analyzed and determined to contain leachable lead concentrations in excess of 5 mg/L (as specified in TDGA regulations for TCLP test - leachable lead).
  - .7      Untreated Wood Debris: Wooden debris that is not painted or treated in any way and is suitable for on-site incineration.
- .2      Reference Standards:
  - .1      National Building Code of Canada, 2010
  - .2      SOR/2008-273, PCB Regulations
  - .3      Conduct all work in accordance with all appropriate Federal and Territorial legislation, and international conventions including:

- .1 Canadian Federal Legislation
  - .1 Canadian Environmental Protection Act.
  - .2 Transportation of Dangerous Goods Act.
  - .3 Motor Vehicle Safety Act.
  - .4 Labour Code of Canada – Part II.
- .2 Territorial Legislation
  - .1 Nunavut Safety Act
- .3 Guidelines for the packing of cargo, other than bulk cargo into or onto cargo transport units (CTU's) applicable to transport operations by all surface and water modes of transport.
- .4 Canadian Environmental Protection Act (CEPA), 1999
  - .1 CCME PN 1326-[2008], Environmental Code of Practice for Aboveground and Underground Storage Tank Systems for Petroleum Products and Allied Petroleum Products.
- .5 CSA
  - .1 CSA S350-[M1980(R2003)], Code of Practice for Safety in Demolition of Structures.
- .6 Transport Canada
  - .1 Transportation of Dangerous Goods Act (TDGA), 1992, c.
- .7 Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: NIOSH Publication No. 85-115 (EPA)
- .8 Hazardous Waste Worker Training Manual: Canadian LIUNA Contractors Training Council, 1992

### 1.3

#### Administrative Requirements

- .1 Pre-Demolition Meetings:
  - .1 Convene pre-demolition meeting 1 week prior to beginning the work of this Section with the Contractor's Representative, Departmental Representative in accordance with Section 01 31 19 - Project Meetings in order to:
    - .1 Verify project requirements.
    - .2 Verify existing site conditions adjacent to demolition work.
  - .2 Hold project meetings every week.
  - .3 Ensure that all key personnel attend.
  - .4 The Contractor must provide a written report on status of waste diversion activity at each meeting.
  - .5 The Departmental Representative will provide written notification of change to meeting schedule established upon contract award 24 hours prior to scheduled meeting.
- .2 Scheduling:
  - .1 All efforts must be made to meet project time lines without compromising specified minimum rates of material diversion.
    - .1 In event of unforeseen delay notify the Departmental Representative in writing.
- .3 Work Description:
  - .1 Demolish, remove, and dispose of all structures and utilities (and related ancillary facilities) as indicated on the Drawings and/or as indicated in the Demolition Tables in Appendix D (and related ancillary facilities) including the following:

- .1 Supply to the site of containers, bracing, dunnage, and polyethylene sheets required for the containerization of PCB-Amended Painted (PAP) Material.
- .2 Demolition, packaging/containerization and transportation to the on-site Temporary Storage Area all Non-Hazardous Waste building components, building contents, storage tanks and utility lines identified for demolition.
- .3 Removal, segregation and containerization of asbestos material in accordance with Specification Sections 02 82 00.01 and 02 82 00.02.
- .4 Removal of Hazardous Waste Material in accordance with Section 02 61 33 - Hazardous Waste Material.
- .5 Application of appropriate labeling and placards to the containers in the Temporary Storage Area.
- .6 Reshaping or regrading of all areas affected by demolition work in accordance with Section 31 22 15 - Grading.
- .7 Preparation and maintenance of an inventory of hazardous and non-hazardous waste containers and their contents.
- .8 Provision of a photographic record of the internal contents of all completed hazardous containers prior to closure.

#### 1.4 Action and Informational Submittals

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 The Contractor is responsible for fulfilment of reporting requirements.
- .3 Submit copies of certified weigh bills, bills of lading, receipts, etc from authorized disposal sites and reuse and recycling facilities for material removed from site on a upon the request of the Departmental Representative.
  - .1 Written authorization from the Departmental Representative is required to deviate from haulers, facilities and/or receiving organizations listed in the Waste Reduction Workplan specified in Section 02 61 33.
- .4 Shop Drawings: NOT REQUIRED
- .5 Sustainable Design Submittals:
  - .1 Erosion and Sedimentation Control: submit erosion and sedimentation control plan.
  - .2 Construction Waste Management:
    - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
    - .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating the percentage of construction wastes that were recycled or salvaged.

#### 1.5 Quality Assurance

- .1 Regulatory Requirements: Ensure Work is performed in compliance with applicable Provincial/Territorial and Municipal regulations.

#### 1.6 Environmental Protection

- .1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.

- .2 Ensure Work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .3 Fires and burning of waste or materials is not permitted on site except for unpainted wood debris that may be burned in a controlled fashion as described in Section 02 41 23 – Debris and Miscellaneous Removal.
- .4 Do not bury rubbish waste materials.
- .5 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses.
- .6 Ensure proper disposal procedures are maintained throughout project.
- .7 Do not pump water containing suspended materials into watercourses.
- .8 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction as directed by the Departmental Representative and/or the Consultant.
- .9 Protect trees, plants and foliage on site and the surrounding areas.
- .10 Prevent extraneous materials from contaminating air beyond the work area by providing temporary enclosures during demolition work.
- .11 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

1.7 Existing Conditions

- .1 The information presented on the Drawings and in the Specifications that describe the structures to be demolished is based upon site conditions described in the Remedial Action Plan, Former Weather Station, Nottingham Island, Nunavut, EBA, April 2013.

- .2 The information presented in the Appendices, including photographs and inventory tables, provide brief descriptions for structures and facilities to be demolished. These tables and drawings indicate only the major construction details and building systems, and are not to be construed as exact for final demolition requirements. Be responsible for all work described in this Section, which includes the complete demolition, removal and disposal or containerization of all facilities and structures designated for demolition.
- .3 The information presented in the Appendices indicates types and quantities of Hazardous Waste Materials that have been previously identified, and must be removed and disposed of in accordance with these Specifications. Should other potentially Hazardous Waste Material, other than that already identified, be encountered in the course of demolition work, stop work immediately, and notify Departmental Representative. Do not proceed until written instructions have been received from Departmental Representative.
- .4 Structures to be demolished are based on their condition at time of examination prior to tendering.
- .5 Contractor shall assume structures and utilities to be demolished based on their condition on the date that Contractor mobilizes to the site.
- .6 Contractor is advised that site buildings to be demolished have been in a coldsoaked condition, and as a result, paint flaking/chipping and mould may be extensive. Paint flakes/chips are to be removed as described in this Section.

A listing of the components of each facility is presented in Appendix D. Not all painted surfaces of facilities and structures to be demolished have been sampled and tested for PCBs, Leachable Lead, or asbestos. Further testing by Departmental Representative at the beginning of the first construction season may identify further PCB-Amended Painted (PAP) Material, leachable lead paint material, or asbestos.

## PART 2      PRODUCTS

### 2.1      Equipment

- .1 Equipment and heavy machinery:
  - .1 Off-road vehicles to: EPA CFR 86.098-10.
  - .2 Machinery should be shut down when not in use unless extreme temperatures require that equipment be left running.

## PART 3      EXECUTION

### 3.1      Preparation

- .1 Develop a Construction Waste Management Plan related to the Work of this Section
- .2 Inspect site and verify with Departmental Representative items designated for demolition.

- .3 Temporary Erosion and Sedimentation Control:
  - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways and the sediment and erosion control plan specific to site.
  - .2 Inspect, repair, and maintain erosion and sedimentation control measures during demolition.
  - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal after completion of demolition work.
- .4 Surface Preparation:
  - .1 Remove rodent and vermin as required by the Departmental Representative and/or Consultant.

### 3.2 Work

- .1 Before commencing demolition, remove all Hazardous Waste Materials and asbestos-containing products as detailed in Section 02 61 33, Section 02 82 00.01, Section 02 82 00.02, and Section 02 82 00.03. Hazardous Waste Material and asbestos removal work must be completed and accepted in writing by the Departmental Representative prior to the start of general demolition.
- .2 Before commencing demolition of fuel storage tanks, remove and dispose of remaining contents and tank sludge, and clean tanks, in accordance with Section 02 61 33 - Hazardous Waste Material.
- .3 Remove and dispose of demolition debris as specified in this Section.

### 3.3 Safety and Personal Protection

- .1 Unless otherwise specified, carry out demolition work in accordance with Section 01 11 00 - Summary of Work and Section 01 35 32 - Site Specific Health and Safety for Contaminated Sites.
- .2 Some areas designated for demolition under this contract involve materials which contain PCBs and leachable lead-based paints, as well as other contaminants which are considered hazardous to human health. PCB containing material with PCBs at concentrations in excess of 50 ppm are considered to be hazardous substances. Storage, handling, and disposal of PCBs are regulated under the Canadian Environmental Protection Act and the Federal Transportation of Dangerous Goods Act. Comply with all applicable regulations.
- .3 During the removal of PCB-amended painted materials, follow the Personnel Protection Requirements specified for the removal of asbestos materials as indicated in Section 02 82 00.02 - Asbestos Abatement - Intermediate Precautions.

- .4 When working with PCB-containing materials, leachable lead-based paints, asbestos, and other contaminants, workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial Labour Department as suitable for exposure in the work area. Follow National Institute for Occupational Safety and Health (NIOSH) guidelines in providing protection for on-site personnel including contract employees, subcontractors, Departmental Representative, Departmental Representative's staff, and other authorized personnel.
- .5 Fluorescent lamp ballasts are to be handled, and general safety precautions followed, as stated below:
  - .1 Some ballasts in the buildings to be demolished may contain PCB-filled capacitors.
  - .2 Appropriate health and safety precautions should be taken as per Contractor's SSHSP while handling ballasts.
  - .3 Refer to Environment Canada Publication, "Identification of Fluorescent Lamp Ballasts Containing PCBs".
- .6 Transformers are to be handled, and general safety precautions followed, as stated below:
  - .1 Some transformers in the buildings to be demolished may contain PCBs or PCB residues.
  - .2 Appropriate health and safety precautions should be taken as per Contractor's SSHSP while handling.

#### 3.4 Removal of Hazardous PAP and Leachable-Lead Painted Materials

- .1 Minimize the amount of Leachable-Lead Painted Material containerized from the structures to be demolished by disassembling the structures and containerizing only Hazardous Leachable-Lead Painted Material.
- .2 Prior to dismantling structures and facilities, remove all loose paint and place in a polyethylene bag. The use of heat to remove loose paint is not permitted. Place bags of loose paint materials in the Hazardous Waste Containers specified in Section 02 61 33 - Hazardous Waste Material.
- .3 During facility dismantling operations, contain paint particles and dust by the use of polyethylene sheets or other measures to seal facilities. Use drop sheets, as required, to collect paint particles that become removed from surfaces during dismantling operations. Establish a control area around these activities to provide protection to personnel from airborne paint particles. Construct control area to prevent the escape of paint chips.
- .4 The use of heat (e.g. cutting torches) to cut or dismantle facilities containing paint materials is not permitted unless the paint has been removed from the areas to be cut such that excessive heating of the remaining paint does not occur. Notify Departmental Representative prior to torching activities.
- .5 Make note of PAP asbestos locations.
- .6 Perform work required for the containerization for PCB-amended painted materials.

3.5 Demolition

- .1 Work under this section shall include the demolition, removal, and disposal of all structures, related ancillary facilities and adjacent debris as indicated on the Demolition Inventory in Appendix D.
- .2 Supply and transport to the site, containers, bracing, dunnage, and polyethylene sheets, etc, as required for the proper containerization of Hazardous and Non-Hazardous Materials.
- .3 Provide off-site disposal to a suitable Non-Hazardous Waste Landfill of all Non-Hazardous Waste building components, building contents, storage tanks, etc identified for demolition.
- .4 Provide for removal and segregation of all Hazardous Waste Material from the identified structures.
- .5 Remove and dispose all asbestos material in accordance with Specification Sections 02 82 00.01, 02 82 00.02, and 02 82 00.03.
- .6 Remove all Hazardous Waste Material in accordance with Section 02 61 33 - Hazardous Waste Material.
- .7 Establish a Temporary Storage Area for storage of waste designated to be shipped off-site.
- .8 Restore and re-grade all areas affected by demolition work in accordance with Section 31 22 15 - Grading.
- .9 Prepare an inventory list of hazardous containers and their contents.
- .10 Provide a photographic record of the internal contents of all completed hazardous containers prior to closure.
- .11 Perform on-site burning of Unpainted Wood Debris, including obtaining burn permit if required.
- .12 Blasting operations not permitted during demolition.
- .13 Crush concrete and masonry generated due to demolition of foundations and footings to size suitable for recycling as fill material at the site as directed by the Departmental Representative and/or the Consultant.
- .14 Collect all paint chips and loose paint from structures prior to demolition. Containerize all paint in accordance with Section 02 61 33 - Hazardous Waste Material.
- .15 Where cutting is required, collect all cuttings and sawdust associated with demolition of structures in accordance with Section 02 61 33 - Hazardous Waste Material. Conduct cutting operations such that toxins from paint or other building materials are not released to the atmosphere.
- .16 Remove existing equipment, services, finishes and furnishings from buildings.

- .17 Disconnect piping before tank removal and empty tanks as specified.
- .18 Remove and dispose of all piping above ground as indicated and described in Section 02 61 33 - Hazardous Waste Material.
- .19 Purge harmful and flammable vapours from fuel storage tanks in accordance with referenced standards prior to cutting tanks. Upon request, submit the Lower Explosive Limit (LEL) results of Volatile Organic Compound (VOC) testing to Departmental Representative.
- .20 Cut structural steel and bulk fuel tanks in accordance with referenced standards.
- .21 Vent non-ventilated gas cylinders in a remote and safe area acceptable to Departmental Representative. Stockpile empty and ventilated gas cylinders as Non-Hazardous Waste. Do not explode or vent cylinders known or suspected to contain any ozone depleting substance including chlorodifluoromethane (freon) or halon. Containerize these materials in accordance with TDGA packaging standards.
- .22 Structure foundations are to be included in the demolition of all structures. Remove completely or cut off all creosote-treated timber foundations at 300 millimetres below ground level. Cut off all other timber foundations at ground level.
- .23 Completely wrap the removed creosote-treated timbers in polyethylene sheeting as specified in this Section. Bind the polyethylene sheeting with tape or other materials as required. It is not necessary to wrap each timber individually.
- .24 At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling.
- .25 Demolish to minimize dusting. Keep dusty materials wetted with water only.
- .26 Demolish masonry and concrete walls in small sections. Remove and lower structural framing and other heavy or large objects in a safe manner.
- .27 Submit to Departmental Representative upon completion of demolition activities, a detailed inventory of all copper components removed from facilities to be demolished. The information is to include a description and dimensions of each copper component.
- .28 Segregate Hazardous PCB-Amended Painted (PAP) and Leachable Lead Materials and containerize in accordance with this Section and Section 02 61 33 - Hazardous Waste Material. Segregate PAP Asbestos from non-PAP Asbestos.

### 3.6 Site Grading and Restoration

- .1 Upon completion of demolition work, remove debris and leave work sites clean to a condition satisfactory to Departmental Representative.
- .2 Grade building sites and restore all areas affected by demolition work in accordance with Section 31 22 15 - Grading.

- .3 Reshape or backfill with Granular Fill in accordance with Section 31 22 15 - Grading, areas excavated to facilitate demolition requirements. Place Granular Fill in holes from which timber piles were removed.

### 3.7 Temporary Storage Area

- .1 Establish a Temporary Storage Area (TSA) for the storage of Non-Hazardous and Hazardous Waste Materials generated during demolition operations at a location approved by Departmental Representative. The Temporary Storage Area is to be located as follows:
  - .1 More than 100 metres away from any water body or drainage course.
  - .2 On stable ground not subject to flooding or seasonal saturation.
  - .3 In an area not routinely accessed or essential to Contractor's workforce or site personnel.
  - .4 More than 30 metres away from flammable materials.
- .2 Establish the location and size of the Temporary Storage Area to minimize the handling of materials, isolate materials from other work operations and to provide for the collection and removal of these materials from the site. Refer to Section 31 22 15 - Grading, for the grading requirements of the Temporary Storage Area.
- .3 Segregate materials within the TSA as follows:
  - .1 Containerized Contaminated Soil
  - .2 Containerized Hazardous Waste Materials.
  - .3 Containerized Non-Hazardous Waste Materials
- .4 Provide Departmental Representative with a detailed inventory of the Temporary Storage Area indicating the location and contents of each container, the container and assigned Environment Canada Registration numbers and packaging configuration.
- .5 Place rows of storage containers at a minimum of one (1) metre offset so that Container and Environment Canada Registration numbers remain visible.
- .6 Store sufficient sorbent materials or an approved spill kit near the Temporary Storage Area for an emergency clean up.

### 3.8 Salvage of Demolition Material

- .1 The facilities and structures to be demolished may have salvage value. Contractor will continue to be responsible for the disposal of materials for reuse/recycling.
- .2 Fuel storage tanks designated for disposal cannot be reused or salvaged, except if approved by the Departmental Representative for on-site temporary storage of wastewater or effluent.
- .3 Sign a Waiver Form provided by the Departmental Representative for any salvaged materials.

### 3.9 On-Site Burning of Untreated Wood Debris

- .1 Burn all Untreated Wooden Debris.

- .2 Provide an ash collection system capable of containing ash until it is sampled. A water-tight metal tray with sides of at least 300 millimeters high is acceptable. A tray from materials on-site is acceptable. Provide means to protect the ash from wind and water until it is sampled.
- .3 A leachate extraction test is to be carried out by Departmental Representative on the solid residual material resulting from the burning process. The leachate toxicity of the material will be determined in accordance with CEPA regulations (IMHWR and EIHWHRMR). Residual materials found to be non-hazardous must be packaged and transported to the Contractor's designated off-site Non-Hazardous Waste Disposal Facility. Dispose of materials found not to be leachate toxic, but exceeding Tier II contaminated soil criteria as described in Section 02 55 13 - Contaminated Soil. Package leachate toxic material in accordance with CEPA regulations (IMHWR and EIHWHRMR), as required, and dispose of as described in this Section and Section 02 61 33 – Hazardous Waste.
- .4 Adhere to all requirements of the Land Use Permit burning exemption.

3.10 Disposal of Demolition Materials

- .1 Dispose of Non-Hazardous, Asbestos and Hazardous Waste Materials in accordance with this Section, Sections 02 82 00.01, 02 82 00.02 and 02 82 00.03 - Asbestos Abatement and Section 02 61 33 - Hazardous Waste Material.

3.11 Qualifications

- .1 The Contractor is to be thoroughly familiar with, and knowledgeable about, existing site conditions, scope of work and requirements of the Specification.
- .2 Only Contractor's personnel capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and who can satisfy Federal and Territorial requirements will be permitted to carry out the work of this Section. Contractor's Superintendent responsible for the work of this Section is to have appropriate level of experience in the area of hazardous waste management.
- .3 Follow at all times, guidelines such as those established in Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: NIOSH Publication No. 85-115, or Hazardous Waste Worker Training Manual: Canadian LIUNA Contractors Training Council, 1992.
- .4 All activities involving the handling of hazardous materials are to be directly supervised by Contractor's personnel who have successfully completed a 40 hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other approved equivalent training courses such as the Canadian Hazardous Waste Workers Program.
- .5 Contractor's personnel trained as described above are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.
- .6 Provide workers with protection appropriate to the potential type and level of exposure. Establish specific safety protocols prior to commencing clean up activities.

- .7 Provide suitable safety clothing and equipment as required during the course of the work.
- .8 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) documentation and recording requirements.

3.12 Demolition Drawings / Approvals

- .1 Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details showing sequence of disassembly work.
- .2 Do not commence demolition work, including asbestos abatement and paint removal, until Contractor has demonstrated to Departmental Representative that all required permits to be acquired by Contractor for the work have been obtained.

3.13 Protection

- .1 Unless otherwise specified, carry out demolition work in accordance with Section 01 11 00 - Summary of Work and Section 01 35 32 - Site Specific Health and Safety Plan.
- .2 Perform work in an environmentally acceptable manner. Comply with requirements of Section 01 35 43 - Environmental Procedures, and all other applicable standards and licenses.
- .3 All personnel engaged in demolition activities are to wear and use protective clothing and equipment. Protect the environment from fugitive waste materials resulting from demolition activities.
- .4 Prevent damage and minimize stripping of natural terrain, features and vegetation. Make good all damage.
- .5 Provide safe passage of persons around area of demolition.
- .6 Do not proceed with demolition work when weather conditions constitute a hazard to the workers and site. Prevailing weather conditions and weather forecast are to be considered.
- .7 Cover and wet down dry materials, ash and rubbish to prevent blowing dust and debris. Provide dust control for existing and temporary roads.

3.14 Fires

- .1 Comply with all regulatory requirements and obtain Burn Permit, if required.
- .2 Burning of any painted materials is strictly prohibited.
- .3 Where fires or burning are permitted, prevent staining or smoke damage to structures, materials or vegetation which are to be preserved. Restore, clean and return to new condition stained or damaged work.
- .4 Provide supervision, attendance and fire protection measures in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.

3.15 Measurement for Payment

- .1 Include all direct costs for the following work items in the lump sum prices for Demolition, Items 02 41 16-1 to 02 41 16-14 for each facility to be demolished as indicated in the Basis of Payment Schedule. Work indicated under each lump sum item includes, but is not limited to:
  - .1 Removal, segregation, and packaging of asbestos materials.
  - .2 Demolition, removal, segregation and disposal of Non-Hazardous Waste demolition debris.
  - .3 Demolition, removal, and segregation of Total Lead and Leachable Lead Painted Materials.
  - .4 Removal and containerization of fluorescent lamp ballasts.
  - .5 Supply and placement of on-site borrow material, as required by Departmental Representative, to backfill areas excavated to facilitate demolition requirements.
  - .6 General site grading of areas disturbed by demolition operations.
  - .7 Demolition, removal, segregation, and containerization of PCB-Amended Painted Materials, including provisions for containment of paint chips.  
Containerization of Hazardous Waste is to meet all the requirements of the TDG Act and Regulation, CEPA regulations including Interprovincial Movement of Hazardous Waste Regulations (IMHWR) and EIHWHRRMR and all other applicable regulations.
  - .8 Demolition, removal, segregation, and containerization of Leachable-Lead Painted Materials, including provisions for containment of paint chips.  
Containerization of Hazardous Waste is to meet all the requirements of the TDG Act, CEPA regulations (IMHWR and EIHWHRRMR) and all other applicable regulations.
  - .9 Removal and containerization of all other hazardous waste items, including, but not limited to, fluorescent lamp ballasts, mercury thermostats, switches and batteries.
  - .10 The demolition, removal and containerization, as required, including supply of containers, of sewage and sewage sludge from sewage tanks and sewage lines to be demolished, including line supports, marker posts and barrels.
  - .11 Demolition, removal, segregation, and packaging of non-hazardous demolition debris.
  - .12 The above work items will not be measured for payment.
  - .13 The lump sum price Items 02 41 16-1 to 02 41 16-14 are itemized as follows:
    - .1 Item 02 41 16-1, Demolition: Storage Shed 01
    - .2 Item 02 41 16-2, Demolition: Old Kitchen
    - .3 Item 02 41 16-3, Demolition: New Radio Bldg & Small Shed
    - .4 Item 02 41 16-4, Demolition: Old Radio Building
    - .5 Item 02 41 16-5, Demolition: Outhouse
    - .6 Item 02 41 16-6, Demolition: Storage Shed 02
    - .7 Item 02 41 16-7, Demolition: Storage Building
    - .8 Item 02 41 16-8, Demolition: Chicken Coop, Caged Area
    - .9 Item 02 41 16-9, Demolition: Bunkhouse
    - .10 Item 02 41 16-10, Demolition: Generator Building
    - .11 Item 02 41 16-11, Demolition: House and Garage

- .12 Item 02 41 16-12, Demolition: Shed
  - .13 Item 02 41 16-13, Demolition: House
  - .14 Item 0241 16-14, Demolition: Building & 4 Wood Poles
- .2 Containerization and on-site transport to the temporary storage area of Hazardous Waste Materials resulting from demolition activities will not be considered for payment under this section, but will instead be measured and paid under item 02 61 33-4 Containerization of Hazardous Waste Materials.
- .3 All indirect costs associated with the work described in this Section including supervision, overhead, profit, etc. are to be included in Item BOPC-1, Balance of Project Costs.
- .4 The off-site transport and disposal of all containerized Hazardous Waste Material to Contractor's Designated Hazardous Waste Disposal Facility is to be provided as indicated in Section 02 61 33 - Hazardous Waste Material.
- .5 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.
- .6 Include all direct costs for the Supply of Packaging Materials/Containers for the securing of non-hazardous waste for transport over land and water in the lump sum price for Supply of Non-Hazardous Waste Packaging Materials/Containers, Item 02 41 16-15. The packaging materials/containers supplied are to be suitable for non-hazardous waste derived from Structure Demolition (as described in this section), Debris and Miscellaneous removal (as described in Section 02 41 23), and Buried Debris Excavation (as described in Section 31 23 11).
- .7 The off-site transportation and disposal of all non-hazardous waste including, but not limited to items related to structure demolition (including ash from burning untreated wood), debris removal, and buried debris excavation at the Contractor's Designated Non-Hazardous Waste Disposal Facility will be paid under Item 02 41 16-16.
- .8 Construction of Temporary Storage Areas will not be included for payment under this section, but is to be provided as indicated in Section 01 52 00 – Construction Facilities.
- .9 Regrading of concrete foundation pads will not be included for payment under this section, but will be paid for as indicated in Section 31 22 15 – Grading.
- .10 Handling and containerization of transformers will not be considered for payment under Section 02 41 16 - Structure Demolition, but will be negotiated with Departmental Representative using the Labour and Materials rates provided in the Potential Additional Work section of the Basis of Payment Schedule.

**END OF SECTION**

PART 1

GENERAL

1.1

Related Requirements

- .1 Section 02 41 16 – Structure Demolition
- .2 Section 02 55 13 – Contaminated Soil
- .3 Section 02 61 33 – Hazardous Waste Material
- .4 Section 02 82 00.01 – Asbestos Abatement Minimum Precautions
- .5 Section 02 82 00.02 – Asbestos Abatement Intermediate Precautions
- .6 Section 02 82 00.03 – Asbestos Abatement Maximum Precautions

1.2

Description

- .1 This Section specifies the requirements for the removal, sorting, handling and disposal, incineration, off-site disposal or off-site transport and disposal of partially buried and scattered debris at the Nottingham Island site.
- .2 An inventory of the known debris, including estimated un-crushed volumes, at the Nottingham Island Site is provided in Appendix E.

1.3

Definitions

- .1 Known Debris: Scattered visible debris on the existing ground surface, including open storage areas, or visible, partially buried debris within 0.5 metres of the existing ground surface or debris located within a two (2) metre depth of water (less than 10 metres from low water line) and consisting of hazardous and non-hazardous material, and that:
  - .1 Has been identified in Appendices and/or Drawings as to be removed; or
  - .2 Is located approximately within 50 metres of any access road or water course on the site.
  - .3 Is located within a water body, within 10 metres of shore.
- .2 Unknown Debris: Scattered debris on the existing ground surface and/or partially buried debris consisting of hazardous and non-hazardous material other than the Known Debris described above.
- .3 Untreated Wooden Debris: Wooden debris that is free of painted coatings. These materials are to be either incinerated on-site if the Land Use Permit allows for on-site burning or containerized and shipped off-site for disposal if burning is not permitted. If these materials are burned, the residual burn material and ash are to be collected containerized and shipped off-site for disposal.
- .4 Hazardous Waste Materials: Waste materials that are designated as hazardous under Territorial or Federal Legislation or as dangerous goods under the TDGA or CEPA (See Section 02 61 33 - Hazardous Materials).
- .5 Non-Hazardous Waste Materials: Waste materials that are not designated as hazardous under Territorial or Federal Legislation.

- .6 Non-Hazardous Waste Container: Containers suitable for shipping non-hazardous contaminated soil or debris.
- .7 Lead-Painted Materials: materials painted with lead amended paint that contains leachable lead levels below 5 mg/L but total lead concentrations above 600 ppm.

#### 1.4 Measurement for Payment

- .1 Include all direct costs for the collection, sorting, stockpiling, dismantling or size reduction, and packaging/containerization of known debris in the lump sum price for Known Debris Removal, Item 02 41 23-1 in the Basis of Payment Schedule.
- .2 The scope of work for payment Item 02 41 23-1, known Debris Removal, is to include, but is not limited to:
  - .1 Collection, segregation, and consolidation of known Debris from the Nottingham Island Site.
  - .2 Segregation of hazardous and non-hazardous waste prior to containerization.
  - .3 On-site transport of containers to the Temporary Storage Area.
  - .4 On-site transport of barrels or Unknown Hazardous Waste items to the Hazardous Waste Material Processing Area as described in Section 02 61 33 - Hazardous Waste Materials.
  - .5 Burning of untreated wooden surface debris including, but not limited to:
    - .1 Provision of an ash collection system;
    - .2 Collection, sorting and on-site transportation of all untreated wood to the burning location.
  - .6 Processing of barrels and barrel contents as described in Section 02 61 33 - Hazardous Waste Materials.
  - .7 Provision and operation of a barrel crusher on site, including provision of all sorbent materials required to contain spills and/or contaminated run-off. Excavation and disposal of contaminated soils produced from the barrel crushing operations will be at Contractor's cost.
- .3 Off-site transport and proper off-site disposal of all non-hazardous known Debris and ash from burning unpainted wood debris will be paid under Item 0241 61-16.
- .4 All costs for the collection and disposal of unknown non-hazardous surface debris will not be considered for payment under Section 02 41 23 - Debris and Miscellaneous Removals, but will be negotiated with Departmental Representative using the Labour and Materials rates provided in the Potential Additional Work section of the Basis of Payment Schedule.
- .5 The burning of all untreated Wooden Debris will be will be paid for as a lump sum under Item 02 42 23-2.
- .6 The scope of work for Payment Item 02 41 23-2 (Burning of Unpainted Wood Debris) is to include, but not limited to:
  - .1 Obtaining necessary burn permits from Authorities Having Jurisdiction.
  - .2 Provision of an ash collection system capable of containing ash until it is sampled. A water-tight metal tray with sides of at least 300 millimetres high is acceptable. A tray salvaged from materials on-site is acceptable. Provide means to protect the ash from wind and water until it is sampled.

- .3 Collection, sorting and onsite transport of all untreated wood to the burning location.
- .7 The collection off-site transportation and disposal of vehicles (except those classified as Hazardous Waste Material) will not be measured. Payment will be included under Item 02 16 16-16, Known Debris Removal, as indicated in the Basis of Payment Schedule.
- .8 Collection and disposal of liquids from within vehicles to be disposed of will be negotiated with the Departmental Representative using the Labour and Materials rates provided in the Potential Additional Work section of the Basis of Payment Schedule.
- .9 The following work items will be incidental to the work described in this Section, and will not be measured separately:
  - .1 Collection and sorting, as required of all Non-Hazardous Waste debris.
  - .2 Cutting, crushing and placement of this material in preparation for off-site removal and disposal.
  - .3 Reshaping associated with the removal of debris.
- .10 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2      PRODUCTS

2.1      Materials

- .1 Hazardous Waste Containers for hazardous waste materials to be in accordance with Section 02 61 33 - Hazardous Waste Material.

PART 3      EXECUTION

3.1      Protection

- .1 When excavating in the vicinity of a drainage course or a body of water, erect silt fences and/or floating silt curtains to prevent the release of sediment or deleterious materials into the water.
- .2 Environmental protection measures, including containment of ash from burning of unpainted wood, are to be in accordance with the requirements specified in Section 01 35 43 - Environmental Procedures.
- .3 Remove oil, fuel, antifreeze and brake fluid from vehicles and equipment to be disposed of.

3.2      Removal and Sorting

- .1 Examine the area(s) to assess the material type and nature of the debris.

- .2 Proceed with the collection and removal of debris if, based on the visual assessment, the debris is determined to be non-hazardous.
- .3 Contractor's Hazardous Materials Specialist to continuously monitor the operation to identify potentially hazardous material.
- .4 Immediately suspend the operation if suspected Hazardous Waste Material or debris is encountered and allow visual confirmation of the nature of the material or debris to be established.
- .5 Store suspicious material in a secured area in secured containers. If the nature of the material or debris can't be confirmed, notify Departmental Representative about the findings. Testing for classification of hazardous products will be carried out and paid for by Departmental Representative.
- .6 Completely remove partially buried debris unless otherwise directed by Departmental Representative.
- .7 Advise Departmental Representative of any stained soils encountered during debris removal operations. If authorized by Departmental Representative, excavate stained and contaminated soil areas, identified during debris removal operations, in accordance with the requirements of Section 02 55 13 - Contaminated Soil. Testing for classification and confirmatory testing will be carried out and paid for by Departmental Representative.
- .8 Clean empty barrels in accordance with the requirements of Section 02 61 33 - Hazardous Waste Material. Crush the clean empty barrels in a manner to reduce the total original barrel volume by a minimum of 75 percent.

### 3.3 On-Site Burning of Untreated Wood Debris

- .1 Contain and collect all ash generated from any burning activities and dispose of as described in this Section.
- .2 A burning Permit is required for on-site burning of untreated wooden debris and must be adhered to at all times.
- .3 A leachate extraction test is to be carried out by Departmental Representative on the solid residual material resulting from the burning process. The leachate toxicity of the material will be determined in accordance with Appendix 4 of Part 2 of the TDGA. Dispose of non-leachate toxic materials found not to exceed Tier II contaminated soil criteria as Non-Hazardous Waste in a licensed off-site facility. Dispose of materials found not to be leachate toxic, but exceeding Tier II contaminated soil criteria as described in Section 02 55 13 – Contaminated Soil. Package leachate toxic material in accordance with TDGA regulations, as required, and dispose of as described in Section 02 61 33 Hazardous Waste Material.

**END OF SECTION**

PART 1

GENERAL

1.1

Related Requirements

- .1 Section 02 41 16 – Structure Demolition
- .2 Section 02 41 23 – Debris and Miscellaneous Removal
- .3 Section 02 61 33 – Hazardous Waste Material
- .4 Section 02 82 00.01 – Asbestos Abatement Minimum Precautions
- .5 Section 02 82 00.02 – Asbestos Abatement Intermediate Precautions
- .6 Section 02 82 00.03 – Asbestos Abatement Maximum Precautions
- .7 Section 31 22 15 – Grading

1.2

Description

- .1 This Section specifies the requirements for the excavation, on-site transport, containerization, off-site transport and off-site disposal of all contaminated soils from the site areas.
  - .1 Tier I, Tier II, Type A and Hazardous Contaminated Soils:
    - .1 Excavation and containerization of the contaminated soil.
    - .2 On-site transport of containerized contaminated soil to the Temporary Storage Area.
  - .2 Type B PHC Contaminated Soil:
    - .1 Excavation and on-site transport.

1.3

References

- .1 Definitions:
  - .1 Hazardous Contaminated Soil: Contaminated soil classified as hazardous in accordance with the Transportation of Dangerous Goods Act and Regulations (including CEPA and leachable soil).
  - .2 Petroleum Hydrocarbons (PHC): Hydrocarbon products described by laboratory analyses as lubricating oil and grease, fuel oil, diesel and/or gasoline.
  - .3 F1/F2 Hydrocarbon Contaminated Soil: Soil exceeding the concentration within hydrocarbon fractions F1, F2 and F3 as defined in the INAC 2009 Abandoned Military Site Remediation Protocol for PHC in Soil.
  - .4 F3/F4 Hydrocarbon Contaminated Soil: Soil exceeding the concentration within hydrocarbon fractions F3 and F4 as defined in the INAC 2009 Abandoned Military Site Remediation Protocol for PHC in Soil.
  - .5 Free Product: The presence of a layer of separated phase liquid petroleum hydrocarbon product.

- .6 Clean Soil: Soil that has been sampled, analyzed, and determined to have contaminant concentrations below those outlined in Clause 3.3 of this section.
- .7 Contaminated Soil Containers: Lined Intermediate Containers consisting of either collapsible wooden containers with an interior volume of 2.3 cubic metres or one (1) cubic metre contaminated soil plastic bags.
- .8 Contaminated Soil: includes the following contaminated soil which are defined further in this section:
  - .1 Tier I Contaminated Soil
  - .2 Tier II Contaminated Soil
  - .3 Type A PHC Contaminated Soil
  - .4 Type B PHC Contaminated Soil
  - .5 Hazardous Contaminated Soil
- .9 Tier I Contaminated Soil: Soils containing concentrations of any or all of the contaminants listed as follows:
  - Lead - >200 ppm; <500 ppm
  - PCBs - >1 ppm; <5 ppm
- .10 Tier II Contaminated Soil: Soils containing concentrations of any or all of the contaminants listed as follows:
  - Arsenic - > 30 ppm
  - Cadmium - > 5 ppm
  - Chromium - > 250 ppm
  - Cobalt - > 50 ppm
  - Copper - > 100 ppm
  - Lead - > 500 ppm
  - Mercury - > 2 ppm
  - Nickel - > 107 ppm (site specific criteria)
  - Zinc - > 500 ppm
  - PCBs - > 5 ppm; < 50 ppm
- .11 Type A PHC Contaminated Soil: Soil exceeding the concentration within PHC fractions F3 and F4 as defined in the INAC 2009 Abandoned Military Site Remediation Protocol for PHC in Soil.
- .12 Type B PHC Contaminated Soil: Soil exceeding the concentration within PHC fractions F1, F2 and F3 as defined in the INAC 2009 Abandoned Military Site Remediation Protocol for PHC in Soil.
  - Near Shore Criteria (<30 metres from a water body)
    - F1 Fraction - 1,290 ppm
    - F2 Fraction - 330 ppm
  - Far Shore Criteria (>30 metres from a water body)
    - TPH (F1+F2+F3 Fractions) - 2,500 ppm
- .13 Hazardous Contaminated Soil: Contaminated soil classified as hazardous in accordance with the Canadian Environmental Protection Act (CEPA), including CEPA PCB Contaminated Soil, and Leachable Soil.

- .14 CEPA PCB Contaminated Soil: Soil containing concentrations of PCBs equal to or in excess of 50 parts per million. Materials contaminated with PCBs at concentration levels equal to or in excess of 50 parts per million (mg/kg) are legislated as hazardous materials. Storage, handling, and disposal of PCBs are regulated under the Canadian Environmental Protection Act and the Federal Transportation of Dangerous Goods Act. Comply with all applicable regulations.
- .15 Leachable Soil: Soil containing contaminants that when subject to the Toxicity Characteristic Leaching Procedure (TCLP) analysis, leach contaminants at concentrations in excess of those specified in CEPA regulations EIHWHRRM and IMHWR.

1.4

Qualifications

- .1 Be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the Specification.
- .2 Only Contractor's personnel capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and who can satisfy Federal and Territorial requirements will be permitted to carry out the work of this Section. Contractor's Superintendent responsible for the work of this Section is to have appropriate level of experience in the area of hazardous waste management.
- .3 Follow at all times, guidelines such as those established in Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: NIOSH Publication No. 85-115, or Hazardous Waste Worker Training Manual: Canadian LIUNA Contractors Training Council, 1992.
- .4 All activities involving the handling of hazardous materials, are to be directly supervised by Contractor's personnel who have successfully completed a 40 hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other approved equivalent training courses such as the Canadian Hazardous Waste Workers Program.
- .5 Contractor's personnel trained as described in this Section are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.
- .6 Provide workers, Department Representative and Department Representative's staff when required with protection appropriate to the potential type and level of exposure. Establish specific safety protocols in the Site Specific Health and Safety Plan.
- .7 Provide suitable safety clothing and equipment as required during the course of the work.
- .8 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) and Interprovincial Movement of Hazardous Waste Regulation (IMHWR) documentation and recording requirements.

1.5 Site Conditions

- .1 Suspend operations whenever climatic conditions are unsatisfactory for excavating or backfilling to conform with this Specification.
- .2 After occurrence of heavy rains, do not operate equipment in designated areas until the material has dried sufficiently to prevent excessive rutting.
- .3 Contractor is advised that the ground in low-lying areas may often be saturated. Dewater saturated ground and ponded areas as required, complying with this Section.
- .4 Prior to the commencement of the work, remove debris, snow, ice and standing water from areas to be excavated and backfilled.
- .5 During excavation of contaminated soil, maintain a stable excavation and dewater as required or as directed by the Department Representative.

1.6 Protection

- .1 Environmental protection measures are to be in accordance with the requirements specified in Section 01 35 43 - Environmental Procedures.
- .2 The release of all water resulting from the dewatering of ponded contaminated soil areas and the decontamination of equipment is to conform to the Wastewater Discharge Criteria outlined in Section 01 35 43 - Environmental Procedures and Section 01 35 15 - Special Project Procedures for Contaminated Sites.

1.7 Personal Protection

- .1 Some areas designated for cleanup under this contract involve soils and hazardous materials which contain inorganic elements, hydrocarbons, and other contaminants which are considered hazardous to human health.
- .2 Materials containing polychlorinated biphenyls (PCBs) at concentrations equal to or in excess of 50 ppm are considered to be hazardous substances. Storage, handling and disposal of PCBs are regulated under the Canadian Environmental Protection Act and the Federal Transportation of Dangerous Goods Act. Comply with all applicable regulations.
- .3 When working with inorganic elements, PCB containing materials, hydrocarbons, and other contaminants, workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial Labour Department as suitable for exposure in the work area. Follow National Institute for Occupational Safety and Health (NIOSH) guidelines in providing protection for on-site personnel including contract employees and subcontractor, Department Representative and other authorized site personnel. Provide details of protective clothing and equipment required for each work area in the Site Specific Health and Safety Plan as required by Section 01 35 32 – Site Specific Health and Safety Plan.
- .4 Supply sufficient quantities of designated protection equipment to fit all site personnel including Department Representative and authorized visitors. Educate workers as to risks, and train in safe work practices.

1.8 Submittals

None

1.9 Measurement for Payment

- .1 The excavation and containerization of Contaminated Soil to be shipped off-site, excluding buried debris areas, will be measured for payment by the cubic metre of contaminated soil as determined from surveyed measurements of the excavation and/or as placed in the Contaminated Soil Container. Excavation and Containerization of Contaminated Soil will be paid under Item 02 55 13-1 of the Basis of Payment Schedule.
- .2 The scope of work under Item 02 55 13-1, Excavation of Contaminated Soil, includes the initial excavation of soil and backfilling (including supply and placement of fill).
- .3 The scope of work for Payment Item 02 55 13-1 Excavation and Containerization of Contaminated Soils for off-site disposal is to include the containerization and on-site transport to the Temporary Storage Area (as defined in Section 02 61 33 – Hazardous Waste Material).
- .4 The off-site transport of containerized Contaminated Soils will be measured for payment by the cubic metre as placed in the Contaminated Soil Container as described in this Specification, and paid under Item 02 55 13-2 - Off-Site Transportation of Containerized Contaminated Soils from known contaminated soil areas of the Basis of Payment Schedule.
- .5 The scope of work for Payment Item 02 55 13-2 - Off-Site Transportation of Containerized Contaminated Soils is to include handling and transport of containerized soil from the Nottingham Island site to Contractor's Designated Contaminated Soil Disposal Facilities. Item 02 55 13 -2 also includes, but is not limited to:
  - .1 Preparation and submission to Departmental Representative of waste transport manifests to meet all requirements relative to the TDGA Regulations.
  - .2 Provision of transportation for the containerized soil to Contractor's Designated Contaminated Soil Disposal Facilities.
  - .3 Preparation and management of temporary storage area as required during transportation activities.
  - .4 Permitting, transport and off-loading of the containerized hazardous waste at the Contractor's Designated Contaminated Soil Disposal Facility.
- .6 The supply and transport to the site of intermediate containers for contaminated soil will be considered for payment under Item 02 61 33-2 Supply of Intermediate Soil Containers - Contaminated Soils.
- .7 The off-site disposal of containerized Contaminated Soils will be paid for by the cubic metre as placed in the Contaminated Soil Container as described in this Specification under Item 02 55 13-3 in the Basis of Payment Schedule.

- .8 The scope of work for Payment Item 02 55 13-3 Off-Site Disposal of Containerized Contaminated Soil is to include all costs of Disposal of soil at Contractor's Designated Contaminated Soil Facility.
- .9 No extra payment will be made for soil removed from beyond the specified limits of excavation, unless such removal has been specifically directed by Departmental Representative. The volume of contaminated soil excavation beyond the specified limits that have been approved by Departmental Representative will be determined by survey.
- .10 All costs associated with the cleanup or treatment of contamination of areas within or surrounding the contaminated soil handling areas due to the migration of contaminants from those areas as a result of Contractor's actions or inactions are to become the responsibility of Contractor. These costs are to include all costs of investigation to determine the extent of contamination migration, as well as soil excavation and treatment costs.
- .11 Grading of the Temporary Storage Area at Nottingham Island, including the supply, placement, and compaction of granular fill, as required, will be measured for payment as described in Section 31 22 15 - Grading.
- .12 The following activities are considered incidental to the work identified by Items 02 55 13-1 through 02 55 13-3 in the Basis of Payment and will not be measured separately:
  - .1 Preparation of container inventory summarizing the contents of the Assembly of Contaminated Soil Containers.
  - .2 Installation of monitoring equipment as required to confirm and/or calibrate process requirements, as applicable
  - .3 Testing for the disposal and disposal of wastewater or other process effluents, as applicable
  - .4 Provision of signage at the Contaminated Soil Handling Area
  - .5 Provision of all necessary safety equipment and clothing.
  - .6 Any necessary excavation to facilitate testing of contaminated soils
  - .7 Equipment decontamination including preparation and operation of the equipment decontamination area.
  - .8 Provision of all necessary safety equipment and clothing, as specified in Section 01 35 32-Site Specific Health and Safety Plan.
  - .9 On-site transport of containerized soil to the transport staging area.
  - .10 Any requirements of permits.
  - .11 Grading of backfilled excavations to prevent ponding and blend in with the surrounding terrain, as directed by Departmental Representative.
  - .12 Excavation of contaminated soils within permafrost-affected zones.
- .13 Costs for the dewatering of excavations will not be measured for payment. Include all costs for collection of wastewater from contaminated soil areas and associated storage, treatment and discharge in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule.
- .14 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2      PRODUCTS

2.1      Environmental Protection Supplies

- .1      Environmental Protection Supplies: as per Section 01 35 43 - Environmental Procedures.

2.2      Contaminated Soil Containers

- .1      Contaminated Soil Containers as per Section 02 61 33 - Hazardous Waste Material.
- .2      Typical interior volume of Contaminated Soil Containers will be determined by Departmental Representative by averaging a minimum of three (3) measurements of the interior length, height and width for each type of Contaminated Soil Container.

PART 3      EXECUTION

3.1      Excavation of Contaminated Soil and Backfilling

- .1      Lay out and excavate areas of contaminated soil to the limits as indicated. All layouts are to be field verified by Department Representative prior to excavation.
- .2      Remove all surface debris prior to excavation. Remove all debris from excavated soil, sort, and containerize appropriately.
- .3      Suppress dust generated during excavation operations with a water spray. Prevent surface water from entering the excavated area.
- .4      Dewater ponded contaminated soil areas, as required. Manage and treat Wastewater as indicated in Section 01 35 43 - Environmental Procedures and Section 01 35 15 – Special Project Procedure to Contaminated Sites.
- .5      When excavating in the vicinity of a drainage course or a body of water, erect silt fences, floating silt curtains and/or containment berms to prevent the release of sediment and deleterious materials into the water.
- .6      Clean the excavating equipment including the bucket, tracks, etc., of soil lumps and particles prior to mobilizing to the next contaminated soil area. Collect and dispose of the removed material in accordance with the contaminated soil designation. Take special precautions to mitigate the tracking of contaminated soil over the site area.
- .7      The Department Representative will collect confirmatory soil samples after reaching the contaminated soil excavation depths indicated on Drawings. No further excavation of the soil will proceed until the results of confirmatory samples are assessed by the Departmental Representative.
- .8      Do not operate equipment in contaminated soil areas that have been excavated until Department Representative has confirmed, based on the results of confirmatory testing, that no further excavation of contaminated soil in the area is required.

.9 As directed by the Department Representative, supply Granular Fill to backfill excavation areas as specified in Section 31 22 15 – Grading.

3.2 Erosion, Sediment and Drainage Controls

- .1 Conduct Excavation and backfilling operations in accordance with Section 01 35 43 Environmental Protection.
- .2 Erosion, sediment and drainage controls are to be maintained during all stages of work.
- .3 At the completion of contaminated soil excavation, remove the erosion, sediment and drainage controls, as directed by Departmental Representative. Dispose of all nongranular erosion, sediment and drainage control materials off-site.

3.3 Equipment Decontamination

- .1 Decontaminate equipment which comes into direct contact with the contaminated soils by steam cleaning or other means acceptable to Department Representative in a secure area capable of containing the waste water generated by the washing operation.
- .2 Collect and dispose of any contaminated soil that leaks, spills or otherwise leaves the piece of equipment during transport from the area of work to the decontamination area.
- .3 Filter liquid waste resulting from the decontamination operation through an oil-absorbent material. The disposal requirements for the oil-absorbent material are dependent on the results of testing to be carried out by Contractor. If test results indicate:
  - PCBs < 2 ppm;
  - Chlorine < 1,000 ppm;
  - Cadmium < 2 ppm;
  - Chromium < 10 ppm; and
  - Lead < 100 ppm,Then incinerate the oil-absorbent material on-site. Package oil-absorbent material containing contaminants in excess of the above criteria in accordance with TDGA and dispose off-site at a licensed disposal facility.
- .4 Dispose of liquid waste in accordance with the Wastewater Discharge Criteria outlined in Section 01 35 43 – Environmental Procedures.
- .5 Treat any waste soil resulting from the decontamination procedure as contaminated or hydrocarbon contaminated soil, depending on the source of the material, and handle accordingly.

3.4 Containerization and Off-Site Disposal Of Contaminated Soil

- .1 Assemble, load and secure Contaminated Soil Containers according to manufacturers recommendations. Do not exceed containers specified load limit.

- .2 Do not transport off-site loaded containers that have suffered structural damage during handling or on-site transport. Repair or replace damaged containers prior to off-site shipment.
- .3 Provide a numbering system and maintain an inventory of all contaminated soil containers with contaminated soil to be transported and disposed of off-site.
- .4 Label all containers, using spray paint or other means, with the container number and contents (e.g. Tier I Soil, Type A Soil, Tier II Soil, Haz Soil, etc.)
- .5 Submit to Departmental Representative a copy of the inventory of the contents of each container.
- .6 Supply the Departmental Representative with acceptance and disposal manifests for all Contaminated Soil delivered to the Contractor's Designated Waste Disposal Facility.

**END OF SECTION**

PART 1

GENERAL

1.1

Related Requirements

- .1 Section 02 41 16 – Structure Demolition
- .2 Section 02 41 23 – Debris and Miscellaneous Removal
- .3 Section 02 55 13 – Contaminated Soil
- .4 Section 02 82 00.01 – Asbestos Abatement Minimum Precautions
- .5 Section 02 82 00.02 – Asbestos Abatement Intermediate Precautions
- .6 Section 02 82 00.03 – Asbestos Abatement Maximum Precautions
- .7 Section 31 22 15 – Grading

1.2

Scope:

- .1 This section specifies the requirements for the collection, containerization, transport and disposal of hazardous waste.
- .2 An inventory of known Hazardous Waste Materials is provided in the Demolition Inventory and Debris Inventory tables in Appendix D and E.

1.3

References

.1 Definitions:

- .2 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or materials that endanger human health or environment if handled improperly. Hazardous Wastes are those that are designated as “hazardous” under Territorial or Federal legislation or guidelines; or as “dangerous goods” under the TDGA. The following items, typical of remote arctic sites, have been specifically identified as Hazardous Waste at the project site:

- .1 Asbestos Waste
- .2 Organic Liquid Wastes in Above-Ground Storage Tanks (AST’s)
- .3 Aqueous Liquid Wastes in Drums
- .4 Total Lead and Leachable Lead Paint on Waste
- .5 Total Lead Paint on Above-Ground Storage Tanks (AST’s)
- .6 Total Lead and Leachable Lead Paint on Asbestos Panels
- .7 Compressed Gas Cylinders
- .8 Fire Extinguishers
- .9 Creosote Treated Wood
- .10 Contaminated (Petroleum Hydrocarbon-Impacted) Soils
- .11 Mercury switches and thermostats
- .12 Petroleum, Oil, or Lubricating (POL) materials not meeting incineration criteria, as defined in clause 3.6.6 of this Section.
- .13 Tank Sludge.
- .14 Hazardous PCB-Amended Painted Material, as defined in Section 02 41 16 - Structure Demolition.
- .15 Leachable Lead painted material.
- .16 Soils and paint chips containing PCBs at concentrations in excess of 50 ppm (mg/kg) and/or leachable lead in excess of 5 mg/L.
- .17 Materials, including wastewater, groundwater and surface water, identified to be hazardous as the result of testing.
- .18 Other Hazardous Waste:
  - .1 Batteries (acids and lead)
  - .2 Fluorescent Lights (mercury vapour)

- 
- .3 Light Ballasts (PCB's)
  - .4 Electrical Parts (including but not limited to items like capacitors, transformers, etc that may contain PCB's, Tantalum, lead and mercury solder, etc)
  - .5 Liquids (Anti-freeze, oils, fuels and other vehicle fluids)
- 
- .3 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from the Waste Audit (WA).
  - .4 Processing: The sampling, testing, packaging and containerization of Hazardous and suspected Hazardous Wastes Materials
  - .5 Hazardous Liquid Waste Containers: The intermediate container necessary to contain liquid from Hazardous Waste Material, as required by the TDGA.
  - .6 Contaminated Soil Containers: The intermediate container necessary to contain the hazardous soil placed in it as required by the TDGA.
  - .7 Marine Shipping Container: The container into which the intermediates containers are placed for purposes of shipping to a disposal facility.
  - .8 Temporary Storage Area: The designated area, approved by the Departmental Representative, for the storage of packaging and/or shipping containers prior to transport off-site. Requirements for the Temporary Storage Area are outlined in this Section.
  - .9 Contaminated Groundwater: The groundwater encountered during contaminated soil, debris or landfill excavation that contains free product or does not conform to the Wastewater Discharge Criteria outlined in Section 01 35 15 - Special Project Procedures for Contaminated Soils.
  - .10 Contractor's Designated Hazardous Waste Disposal Facilities: The Licensed Hazardous Waste Disposal Facilities designated by Contractor and pre-approved by Departmental Representative, for the disposal of all hazardous waste specified under the provisions of this contract. Contractor must be able to provide documentation from the Designated Hazardous Waste Disposal Facilities indicating full responsibility for all hazardous waste accepted from Nottingham Island.
- 1.4 Action and Informational Submittals
- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 The Contractor is responsible for fulfilment of reporting requirements.
  - .3 Submit copies of certified weigh bills, bills of lading, receipts, etc from authorized disposal sites and reuse and recycling facilities for material removed from site upon the request of the Departmental Representative.
    - .1 Written authorization from the Departmental Representative is required to deviate from haulers, facilities and/or receiving organizations listed in the Waste Reduction Workplan.
  - .4 Sustainable Design Submittals:
    - .1 Erosion and Sedimentation Control: submit erosion and sedimentation control plan. Construction Waste Management:
      - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.

- .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating the percentage of construction wastes that were recycled or salvaged.
- .3 Reporting requirements:
  - .1 Submit waste transport manifests, chain of custody documentation and transport documentation to the Departmental Representative and to other AHJ, prior to shipment off-site, in accordance with applicable regulations.
  - .2 In the event of an environmental incident or damage to waste containers, notify the Departmental Representative and applicable AHJ.

1.5 Quality Assurance

- .1 Regulatory Requirements: Ensure Work is performed in compliance with applicable Provincial/Territorial and Municipal regulations.

1.6 Environmental Protection

- .1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.
- .2 Ensure Work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .3 Fires and burning of waste or materials is not permitted on site except for controlled burning of untreated wood materials as described in Section 02 41 23.
- .4 Do not bury rubbish waste materials.
- .5 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
  - .1 Ensure proper disposal procedures are maintained throughout project.
- .6 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
- .7 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction as directed by the Departmental Representative.
- .8 Protect trees, plants and foliage on site and adjacent properties where indicated.
- .9 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
- .10 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

1.7 Existing Conditions

- .1 If material resembling spray or trowel applied asbestos or other designated substance listed as hazardous are encountered in course of demolition, stop work, take preventative measures, and notify the Departmental Representative immediately. Proceed only after receipt of written instructions have been received from the Departmental Representative.

- .2 Structures to be demolished are based on their condition at time of examination prior to tendering.
- .3 Remove, protect and store salvaged items as directed by the Departmental Representative.

1.8 Qualifications and Personal Protection

- .1 Be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the Specification.
- .2 Only Contractor's personnel capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and can satisfy Federal and Territorial requirements will be permitted to supervise and direct the work of this Section. Contractor's Superintendent responsible for the work of this Section is to have appropriate level of experience in the area of hazardous waste management.
- .3 Follow at all times, guidelines such as those established in Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: NIOSH Publication No. 85-115, or Hazardous Waste Worker Training Manual: Canadian LIUNA - Contractors Training Council, 1992.
- .4 All activities involving the handling of hazardous materials are to be directly supervised by Contractor's personnel who have successfully completed a 40 hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other approved equivalent training courses such as the Canadian Hazardous Waste Workers Program. Contractor's key personnel responsible for the removal of leachable lead coatings are to demonstrate appropriate level of experience in the lead control, removal and abatement industry.
- .5 Contractor's personnel trained as described in this Section are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.
- .6 Provide workers with protection appropriate to the potential type and level of exposure. Establish specific safety protocols prior to commencing cleanup activities.
- .7 Provide suitable safety clothing and equipment as required during the course of the work. Supply sufficient quantities of protection equipment to fit all site personnel including Departmental Representative, Departmental Representative's staff, and site visitors.
- .8 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) documentation and recording requirements.
- .9 Transformers are to be handled, and general safety precautions followed, as stated below:
  - .1 Transformers may be present as Unknown Hazardous Debris in Dumps or Buried Debris Areas.
  - .2 Appropriate health and safety precautions should be taken as per Contractor's SSHSP while handling.

1.9

Measurement for Payment

- .1 The supply and transport to the site of Marine Shipping Containers for the containerization of Hazardous Waste Materials will be measured for payment by the number of containers supplied and transported to the site. Supply of Marine Shipping Containers - Hazardous Waste Materials will be paid under Item 02 61 33-1, as indicated in the Basis of Payment Schedule. Payment of this Item includes identification labels, signage and materials to be placed within the base of the barge containers to serve as a means for containing materials within the container (drip trays), and all bracing, locks, dunnage and strapping.
- .2 The supply and transport to the site of intermediate containers for the containerization of Contaminated Soils will be measured for payment by the cubic meters of containers supplied and transported to the site and will be paid under Item 02 61 33-2, as indicated in the Basis of Payment Schedule.
- .3 The supply and transport to the site of containers for hazardous liquid waste will be measured for payment by the cubic metre based on the volume of Hazardous Waste Material liquid placed in the container. Supply of Hazardous Liquid Waste Containers to site will be paid under Item 02 61 33-3 in the Basis of Payment Schedule.
- .4 The containerization of Hazardous Waste Materials, from the Nottingham Island site, will be measured for payment by cubic metre, as placed in the container. Containerization of Hazardous Waste Materials includes the placement of hazardous materials in containers and the on-site transport of containers to the temporary storage area. Containerization of Hazardous Waste Materials will be paid under Item 02 61 33-4 as indicated in the Basis of Payment Schedule.
- .5 The off-site transport of containerized Hazardous Waste Materials to the Contractor's Designated Hazardous Waste Disposal Facilities will be measured for payment by cubic metre, as placed in the container and will be paid under Item 02 61 33-5 in the Basis of Payment Schedule.
- .6 The scope of work for payment item 02 61 33-5 (Off-site Transport of Containerized Hazardous Waste Material to Contractor's Designated Hazardous Waste Disposal Facilities) is to include, but is not limited to:
  - .1 Preparation and submission to Departmental Representative of waste transport manifests to meet all requirements of the TDG Regulations.
  - .2 Provision of transportation for the containerized Hazardous Waste Materials to Contractor's Designated Hazardous Waste Disposal Facility.
  - .3 Preparation and management of temporary hazardous materials storage area as required during transportation activities.
  - .4 Permitting, transport, off-loading and disposal of the containerized Hazardous Waste Material at Contractor's Designated Hazardous Waste Disposal Facilities.
- .7 The off-site disposal of containerized Hazardous Waste Material to the Contractors designated hazardous waste disposal facility will be paid as a provisional cost sum under Item 02 61 33-6 as indicated in the Basis of Payment Schedule.
- .8 Be responsible for all costs associated with any repackaging of container contents resulting from the failure by Contractor to properly pack and secure the container and/or contents.

- .9 The development of the Temporary Storage Area, including signs and barricades, will not be measured for payment. Include all costs for signs and barricades in Item BOPC-1, Balance of Project Costs.
- .10 The development of the Hazardous Materials Processing Area, including signs and barricades, will not be measured for payment. Include all costs for the Hazardous Materials Processing Areas, including signs and barricades in Item BOPC-1, Balance of Project Costs.
- .11 Costs for the collection and containerization of Unknown Hazardous Waste Material will be negotiated with Departmental Representative using Contractor's Labour and Equipment Rates provided in the Potential Additional Work Schedule. The scope of work for the Collection and Containerization of Unknown Hazardous Waste Material includes, but is not limited to the following:
  - .1 Supply and transport of containers to the site for Unknown Hazardous Waste Materials.
  - .2 Equipment and labour for the containerization and on-site transportation of Unknown Hazardous Waste Materials to the Temporary Storage Area.
  - .3 Collection, sorting, and classification of Unknown Hazardous Waste Materials for disposal requirements.
  - .4 Supply and transport to the site of detergents and solvent, required for barrel processing.
  - .5 On-site transport of Unknown Hazardous Waste Materials following their confirmation as Hazardous Waste Material by Departmental Representative.
  - .6 Containerization and transport of Unknown Hazardous Waste Materials to the on-site Temporary Storage Area.
  - .7 Processing of barrel contents from Unknown Hazardous Waste Materials.
  - .8 Disposal of empty barrels resulting from the collection and consolidation of Unknown Hazardous Waste Materials.
  - .9 Off-site Transport and disposal of Unknown Hazardous Waste Material to Contractor's Designated Hazardous Waste Disposal Facility.
- .12 Costs for the collection and on-site incineration of POL fluids meeting the incineration criteria will be based on the unit rate provided in the Potential Additional Work Schedule.
- .13 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2  
2.1

PRODUCTS  
Equipment

- .1 Equipment and heavy machinery:
  - .1 Off-road vehicles to: EPA CFR 86.098-10
- .2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

## 2.2 Hazardous Waste Material Containers

- .1 Hazardous Waste Containers:
  - .1 Containers are to satisfy the requirements of the latest edition of the Transportation of Dangerous Goods (TDG) Act and Regulations, and in particular, the requirements for Intermediate Bulk Containers for marine transport of hazardous materials.
  - .2 Submit details of the containers to Departmental Representative for review prior to commencement of the work. These details are to include written confirmation from Transport Canada that Contractor's proposed containers satisfy TDGA regulatory requirements for marine transport.
  - .3 Containers are to include all necessary liners to satisfy the TDGA requirements for marine transport.
- .2 For packaging and containerization requirements of Hazardous Waste Materials, all requirements of the TDG Act and Regulations must be met.
- .3 Polyethylene sheeting:
  - .1 6 mil (0.15 millimetre) minimum thickness for containing PAP material, paint particles, and wrapping of creosote timbers.
- .4 Intermediate Containers for the storage of Hazardous Waste Materials and Containers for the storage of Contaminated Soils:
  - .1 New wooden TDG-approved containers, with dimensions of 1.2 metres (4 feet) by 1.2 metres (4 feet) by 1.83 metres (6 feet).
  - .2 Provide approval from Transport Canada for the use of containers for the transportation of Leachable-Lead Painted Materials.
- .5 Marine Shipping containers for the Storage of hazardous waste materials must conform to the following:
  - .1 Containers are to be of steel plate construction, with sufficient support to withstand the vertical and lateral pressures exerted by the materials placed in them. The containers are to be leakproof, of sufficient durability to prevent the contents from being affected by the weather and suitable for transport by sea barge, ship, semi-trailer roadway vehicles, and rail, and for international shipment requirements.
  - .2 Containers are to be in new condition, with dimensions of 8 feet by 8 feet by 20 feet (2.44 metres by 2.44 metres by 6.10 metres).
  - .3 Containers are to include sufficient lashing fittings, attached to the frame members or panels, in order to secure cargo.
  - .4 Containers are to have drip trays composed of metal or polyethylene with plywood protection as described previously in this section.
  - .5 Submit documented approval from Transport Canada for the use of marine shipping containers for the transportation of hazardous materials forty-five (45) days prior to mobilization
  - .6 Containers are to be designed to support full gross weight for bottom lift by forklift or equivalent.
  - .7 Containers are to be end-loading type. Seal opening to prevent the escape of paint chips, flakes, and/or dust upon opening of the container.

- .8 Submit details of the containers to Departmental Representative for review, including all required approvals, as well as a description of the type, volume and number of containers, prior to commencement of the work.
  - .9 The containers are to maintain a current Transport Canada inspection certification.
  - .10 Securely affix to the entrance of the container, a black and white weatherproof label measuring 150 millimetres by 150 millimetres in accordance with TDGA requirements (specific to the type of material containerized).
  - .11 Securely affix to a visible side of the container, a black and white weatherproof label measuring 76 millimetres by 76 millimetres bearing the unique Environment Canada Registration number. Do not obstruct the view of the barge container number or Environment Canada Registration number. Environment Canada PCB labels to be provided by Departmental Representative.
  - .12 These containers remain the property of Contractor.
- 
- .6 Provide drip tray material for all on-site Marine Shipping containers consisting of 60 mil high-density polyethylene (HDPE) or 6 mil (0.15 millimetre) polyethylene with minimum 12.5 millimetres thick plywood for protection.
  - .7 Provide dunnage, locks, and bracing material for securing material placed in MarineShipping containers.
  - .8 Contain asbestos in accordance with Sections 02 82 00.01 Asbestos Abatement–Minimum Precautions, Section 02 82 00.02 Asbestos Abatement-Intermediate Precautions and Section 02 82 00.03 Asbestos Abatement-Maximum Precautions.
  - .9 For transport by cargo vehicle or vessel, package liquids containing PCBs at concentrations greater than 50 ppm in accordance with TDG Act and Regulations in a combination packaging where the inner package is made of earthenware, plastic or metal, and is leak-proof, and the outer packaging is a drum or box made of steel, aluminium, plywood, fibre or plastic. Provide sufficient absorbent material between the inner and outer packaging to prevent any liquid from escaping the outer packaging. There is no quantity limit per package for cargo vehicle or vessel transport.
  - .10 Provide access for Departmental Representative to inspect all Hazardous Waste Material Packaging as directed by Departmental Representative.
  - .11 Rigid Intermediate Bulk Containers: for the containerization of PCB-Amended Painted Materials (>50 ppm PCBs) and Leachable Lead Painted Materials (>5.0 mg/L in TCLP test). Submit documented approval from Transport Canada for the use of Rigid Intermediate Bulk Containers for the transportation of PCB-Amended Painted Materials and/or Leachable Lead Painted Materials forty-five (45) days prior to mobilization.

## 2.3

### Solvent (Barrel Rinse)

- .1 Minimum flash point: 60 degrees Celsius. Prior to shipment to the site, submit to Departmental Representative Material Safety Data Sheets (MSDS). The solvent shipped to the site is to remain the property of Contractor.

PART 3 EXECUTION

3.1 General Requirements

- .1 Conduct all work in accordance with all appropriate Federal, Territorial and Provincial legislation, and international conventions.
- .2 Individuals shipping and receiving hazardous waste materials are to be licensed under the TDGA and Regulations, and appropriate territorial environmental Acts and regulations.
- .3 Only trained individuals or individuals working under the direct supervision of trained persons are to handle or transport dangerous goods.
- .4 Establish a Hazardous Material Processing Area for the placement of potentially hazardous waste materials for inspection, testing, classification and packaging, as well as for the consolidation and packaging of barrel liquids and sediments, and for the cleaning of barrels. Provide measures to mitigate release of contaminants to the environment including, but not limited to liners, silt fences, sorbent materials, ditching and grading, etc.
- .5 Establish a Temporary Storage Area, subject to approval by Departmental Representative, to provide a secure area for Hazardous Waste Material prior to shipment for disposal as described in this Section.
- .6 Develop a Construction Waste Management Plan related to Work of this Section.

3.2 Protection

- .1 Perform work in an environmentally acceptable manner. Comply with requirements of Section 01 35 43 - Environmental Procedures.
- .2 Avoid releasing any Hazardous Waste Materials into the environment during handling.
- .3 In the event of a spill, invoke the emergency response plan and take appropriate action.
- .4 Provide a full range of cleanup and protective equipment at the site to contain and cleanup spills, and protect personnel, as required. The cleanup equipment is to include booms (sorbent and containment), sorbents for cleanup, fire extinguishers for A-B-C fires, overpacks for contaminated soils, pumps, hand shovels, picks and containment barriers, such as plastic sheeting. Personnel protective equipment is to include clothing, protective suits, respirators, etc. to comply with potential emergency conditions and in accordance with NIOSH guidelines.
- .5 When working with PCB-containing materials, leachable lead-based paints, asbestos, and other contaminants, workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial Labour Department as suitable for exposure in the work area. Follow National Institute for Occupational Safety and Health (NIOSH) guidelines in providing protection for on-site personnel including contract employees, subcontractors, Departmental Representative, Departmental Representative's staff, and other authorized personnel.

- .6 Handle materials containing asbestos in accordance with Section 02 82 00.01 Asbestos Abatement-Minimum Precautions, Section 02 82 00.02 Asbestos Abatement-Intermediate Precautions and Section 02 82 00.03 Asbestos Abatement-Maximum Precautions.
- .7 The release of all water resulting from the cleaning of fuel tanks, pipelines and barrels is to conform to the Wastewater Discharge Criteria outlined in Section 01 35 43 - Environmental Procedures. Treat wash water to conform to the Wastewater Discharge Criteria, outlined in Section 01 35 15 Special Project Procedures, or dispose of any liquid effluent not conforming to the guidelines or Water License as Hazardous Waste Material at Contractor's own cost, in accordance with the requirements of this Section.
- .8 Departmental Representative is to carry out baseline soil sampling and analyses of the Temporary Storage Area and Hazardous Materials Processing Area prior to commencing work, and confirmatory sampling following the decommissioning of this area. The Contractor is responsible for any soil contamination resulting from the improper storage and handling of hazardous materials, including removal storage, handling and disposal, over the duration of site remediation activities. In the event of such contamination, the Contractor is to submit to Departmental Representative a plan for site remediation in accordance with all Federal and Territorial Regulations to be enacted upon immediately following approval by Departmental Representative. All cleanup costs, including but not limited to excavation and disposal, will be borne by Contractor.
- .9 Have available, a full range of cleanup and protective equipment at the site of debris removal to contain and cleanup spills, and protect personnel as required. The cleanup is to include booms (sorbent and containment), sorbents for cleanup, overpacks for barrels and contaminated soils, pumps, hand shovels, and picks.
- .10 Personnel protective equipment, as per Section 01 35 32, Site Specific Health and Safety Plan, is to include clothing, protective suits, respirators, etc. in accordance with NIOSH Guidelines and to comply with anticipated and potential emergency conditions.
- .11 Site personnel in the vicinity of the debris removal operations or handling Hazardous Waste Material are required to wear environmental protection equipment in accordance with NIOSH guidelines.

### 3.3 Hazardous Waste Material Processing Area

- .1 Establish a Hazardous Waste Material Processing Area for the purpose of:
  - .1 Sorting, packaging, sampling, and processing Hazardous Waste Materials;
  - .2 Processing of barrels and barrel contents, including consolidation of compatible liquids and sediments, packaging for shipment, and cleaning of barrels.
- .2 Establish the Hazardous Waste Material Processing Area to:
  - .1 Be of sufficient size and capacity to accommodate the volume of material and number of barrels to be processed at any one time.

- .2 Provide for the sampling, testing, and packaging of Hazardous Waste Materials, barrel contents and wash water:
  - .3 Minimize the handling of Hazardous Waste Materials:
  - .4 Isolate hazardous materials, barrel contents and wash water from other work operations:
  - .5 Provide access for consolidation, packaging, cleaning of barrels, and transporting containers to the Temporary Storage Area:
  - .6 Be leak-proof and to contain all runoff water, spills, and leaks so as not to contaminate the environment.
  - .7 Provide safe working conditions for personnel working in and around these areas.
  - .8 Meet requirements of AHJ's.
- .3 Immediately clean up any spills, leaks, or other releases of liquid or sediment from this area using appropriate techniques.
  - .4 Submit details of the Hazardous Waste Material Processing Area to Departmental Representative for review and approval prior to commencing remediation activities.
  - .5 The Hazardous Waste Material Processing Areas are to be located as follows:
    - .1 More than 30 metres away from any water body or drainage course.
    - .2 On stable ground not subject to flooding or seasonal saturation.
    - .3 In a previously disturbed area if possible.
    - .4 In a location that will not impede other work required.
  - .6 Do not use the Hazardous Waste Material Processing Areas until baseline sampling has been completed by the Departmental Representative.

#### 3.4 Removal and Sorting of Suspected Hazardous Waste Materials

- .1 Continually monitor the remediation operation to identify potentially hazardous material.
- .2 Immediately suspend the work component of operation if suspected hazardous material or debris is identified and allow visual confirmation of the nature of the material or debris to be established.
- .3 Store suspicious material in a secured area or secured containers, if the nature of the material or debris can not be confirmed. Advise Departmental Representative about the findings. Material needs to be seized until the nature of the material is confirmed by Departmental Representative. Testing for classification will be carried out and paid for by Departmental Representative.
- .4 Submit details of the containers for handling and disposal of hazardous waste materials to Departmental Representative for review prior to commencement of site remediation activities. Include all required approvals, as well as a description of the type, volume and weight of containers.

#### 3.5 Containerization of Hazardous PCB – Amended and Leachable-Lead Painted Materials

- .1 Place dismantled Hazardous PCB-Amended Painted and Leachable Lead Painted Materials in the containers described in this section, in a manner to minimize voids within the container. Sort and provide separate containers for the various components coated with PCB amended paint and/or Leachable-Lead painted materials as follows:

- .1 Segregation and placement Leachable- Lead painted materials into Intermediate containers:
  - .1 Segregate and place materials into separate intermediate containers designated for that type of waste
  - .2 Place into intermediate containers all material that is sized or that can be easily sized to fit within the lined intermediate containers
  - .3 Place the material in the intermediate container such that no movement of the material will occur during normal conditions of transport
  - .4 Place loaded and closed intermediate containers into Marine Shipping Container.
- .2 Placement of Leachable-Lead Painted Materials into Marine Shipping Containers:
  - .1 Prior to loading materials into barge containers, place a drip tray into the bottom of the container to serve as a drip tray. The drip tray is to extend a distance of at least 400 millimetres up the sides of the container.
  - .2 Place neatly into the barge containers, all filled Intermediate containers and larger demolition materials that cannot fit within the intermediate containers.
  - .3 Construct a wooden frame at the rear and front of the container to prevent the movement of materials within the container and to prevent pressure on the door. Anchor the bracing material to the structural frame of the container
  - .4 Distribute the weight of the material evenly over the floor of the container. Where cargo items of a varying weight are to be packaged into a container or where a container will not be full, arrange the material so that the centre of gravity of the cargo is close to the mid-length of the container. Do not concentrate heavy loads on small areas of the container floor.
  - .5 Position materials within the container so that the centre of gravity is below the half-height of the container.
  - .6 Position materials within the container such that lateral bracing for the load is NOT provided by the sidewalls of the container. Provide and use wood bracing material or strapping to ensure that the material does not move during transport. Anchor the strapping material to the fastening loops built into the frame of the containers. Anchor the bracing material to the structural frame of the container
  - .7 Do not leave any gaps between Intermediate containers, larger materials and front or side walls of the barge containers that would allow cargo shifting
- .2 Provide a photographic record of the interior of all completed Marine Shipping containers prior to closing. Submit the photographic record to Departmental Representative together with the corresponding inventory of each container upon completion of work. Trained and certified Contractor personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) and Regulations documentation and recording requirements. Departmental Representative will represent the generator of the waste and will sign all documentation as required.
- .3 Clearly mark on all containers the contents in accordance with the requirements of the Canadian Environmental Protection Act for the Storage of PCB Materials (SOR/92-507), and with the Transportation of Dangerous Goods Regulations.

- .4 Securely affix to the entrance of the Marine Shipping container, a black and white weatherproof label measuring 150 millimetres by 150 millimetres (Specific to the type of material containerized).
- .5 Securely affix to a visible side of the Marine Shipping container with hazardous waste material, a black and white weatherproof label measuring 76 millimetres by 76 millimetres bearing the unique Environment Canada Registration number. Environment Canada PCB Registration labels to be provided by Departmental Representative.
- .6 Lock or place Marine Shipping containers within the Temporary Storage Area in a manner that prevents access to the contents by unauthorized personnel.
- .7 Remove contamination from clothing before leaving work areas containing PCB-amended or leachable lead painted materials before leaving work area, and place in polyethylene bags. Remove outer clothing before leaving work area and place in doubled polyethylene bags. Place bags in Hazardous Waste Material Containers specified in this Section.
- .8 Decontaminate all equipment that comes into direct contact with PCB-amended and leachable lead based paint. Place all rags or cloths used during the equipment decontamination in polyethylene bags. Place bags in the Hazardous Waste Material Containers specified in this Section.
- .9 Prior to their removal from the facility, spray or dampen with water all drop cloths placed to collect paint particles that become removed during dismantling operations. Place the drop cloths in polyethylene bags, and place the bags in the Hazardous Waste Material Containers specified in this Section.

### 3.6 Barrel Processing

- .1 A flow diagram for the methodology for the processing, cleanup and disposal of barrels is shown on the figure at the end of this Section.
- .2 Inspection:
  - .1 All barrels are to be inspected by Departmental Representative and Contractor. The purpose of the inspection is to identify the process for opening, sampling, testing and handling of the barrels. The inspection is to address the following items as a minimum:
    - .1 Symbols, words, or other marks on the barrel that identify its contents, and/or that its contents are hazardous; e.g. radioactive, explosive, corrosive, toxic, flammable.
    - .2 Symbols, words, or other marks on the barrel that indicate that it contains discarded laboratory chemicals, reagents, or other potentially dangerous materials in small-volume containers.
    - .3 Signs of deterioration such as corrosion, rust, or leaks at seams, rims, and V grooves.
    - .4 Evidence of spills or other contamination on the top and sides of the barrel.
    - .5 Signs that the barrel is under pressure such as bulging and swelling.

- .3 Test areas around barrels that show evidence of holes, rust points, or openings using a Volatile Organic Compound (VOC) instrument prior to movement. If levels exceed 20 percent Lower Explosive Limit (LEL) as measured by the VOC, conduct all handling, storage, and transportation operations in accordance with the appropriate sections of the National Institute for Occupational Safety and Health (NIOSH) guidelines, National Fire Code of Canada, and the TDGA for flammable and combustible materials.
- .4 Barrel opening:
  - .1 Pressurized barrels are extremely hazardous. Open with extreme caution. Use only non-sparking equipment to open barrels. Provide all personnel responsible for opening barrels with appropriate safety equipment and clothing. Open barrels in accordance with the procedures outlined in the Occupational Safety and Health Administration (OSHA) Code of Federal Regulations Title 29, Part 1910, Section 120 (29 CFR 1910.120) Hazardous Waste Operations and Emergency Response (HAZWOPER)
  - .2 If the bungs of a barrel can be readily moved, then open the barrel slowly, allowing time for any pressure in the barrel to be released before the bungs are fully removed.
  - .3 If the bungs of a barrel cannot be readily moved, or if barrel inspection suggests that opening of the barrel may present a special hazard, vent the barrels remotely to relieve any internal pressure that may be present prior to opening. Conduct remote barrel venting using a suitable device such as a sharp weighted spear dropped from an appropriate height or released from a tube housing a spring to penetrate the barrel. Drive the spear into the barrel such that the barrel pressure is vented.
  - .4 Conduct the remote venting operation at a safe distance from other site operations, and from behind suitable walls or barricades.
  - .5 All barrels are to be clearly numbered and cross-referenced to sample numbers.
  - .6 Do not transport barrels until it has been displayed that they are not pressurized, do not leak, and are sufficiently sound for transport.
- .5 Sampling and testing of barrel contents:
  - .1 Samples of the contents of barrels are to be extracted by Departmental Representative.
  - .2 Combine barrel contents as directed by Departmental Representative.
  - .3 Consolidate barrel contents in the Hazardous Waste Material Processing Area.
  - .4 Do not consolidate barrel contents consisting of black oil.
  - .5 Liquid samples are to be inspected and classified by Departmental Representative as containing water or organic materials.
  - .6 Based on the results of the analysis by Departmental Representative, treat barrel contents in accordance with the requirements detailed in Figure 02090-1.

- .6 Disposal of barrel contents:
- .1 Dispose of barrels containing rust and sediment as empty barrels as described below.
  - .2 For small volumes, agitation with oil-absorbent material to remove any organic material, is acceptable.
  - .3 Collect wastewater for treatment and discharge in accordance with wastewater discharge criteria, Section 01 35 43 - Environmental Procedures.
  - .4 Test used oil-absorbent material to determine treatment and disposal requirements. Incinerate oil-absorbent material meeting the following criteria on-site (in accordance with site permit requirements) or package for disposal off-site at a licensed disposal facility:
    - .1 PCBs < 2 ppm
    - .2 Chlorine < 1000 ppm
    - .3 Cadmium < 2 ppm
    - .4 Chromium < 10 ppm
    - .5 Lead < 100 ppm

Package oil-absorbent material containing contaminants in excess of the above criteria in accordance with TDGA regulations, as required, and package for disposal off-site at a licensed disposal facility.

- .5 Incinerate the contents of barrels containing water with <2% glycol and/or alcohol and meeting the criteria indicated above, on-site.
- .6 Package the contents of barrels containing >2% glycol and/or alcohol or materials in excess of the concentrations indicated above, in accordance with TDGA regulations, as required, for disposal at an off-site licensed disposal facility. Contents may be combined with compatible materials for shipping purposes in accordance with TDGA regulations, as required.
- .7 A leachate extraction test is to be carried out by Departmental Representative on the solid residual material resulting from the incineration process. The leachate toxicity of the material will be determined in accordance with Appendix 4 of Part 2 of the TDGA. Dispose of materials found not to be leachate toxic as Tier II contaminated soil as described in Section 02 55 13 - Contaminated Soil. Package leachate toxic material in accordance with TDGA regulations, as required.

.7 Cleaning and disposal of barrels:

- .1 Steam clean empty barrels resulting from the consolidation of barrel contents. Clean to remove oil, sludge, wax, tar and other fuel residue adhering to the surface.
- .2 If residue remains, apply a manual cleaning method. For heavily oil-soaked surfaces, a second application may be required. Steam clean barrels after detergent application.
- .3 Only in the event that two-time detergent application proves ineffective, utilize an appropriate solvent rinse for residue removal. Solvent rinsate material is to be tested by Departmental Representative to determine disposal requirements. If the solvent rinsate meets the criteria indicated above, incinerate the material on site. If the solvent rinsate is in excess of the criteria, package the material in accordance with TDGA regulations, as required, for disposal off-site at a licensed disposal facility.

- .4 Recycling of steam cleaning rinsate is permitted. Direct steam cleaning rinsate to an oil-water separator. Removal of oily waste residue by agitation with oil-absorbent material to remove any organic material is permitted.
- .5 The resulting rinsate is to be tested by Departmental Representative for the Wastewater Discharge Criteria - Section 01 35 15 - Special Project Procedures for Contaminated Soils. If the concentrations of these elements are greater than the indicated levels, then package the rinsate in accordance with TDGA regulations, as required, for disposal off-site at a licensed disposal facility.
- .6 Dispose of the used oil-absorbent material and/or oily liquid waste in excess of the concentrations indicated in this section.
- .7 Crush all empty barrels prior to containerization. Crush the barrels in a manner to reduce the total original barrel volume by a minimum of 75 percent. Containerize empty barrels as non-hazardous waste in accordance with Section 02 41 23 – Debris and Miscellaneous Removals.

### 3.7 Cleaning of Fuel Tanks and Pipelines

- .1 The Contractor is advised that debris to be containerized at this site may consist of fuel tanks and pipelines which may contain fuel.
- .2 Prior to the demolition and removal of fuel tanks and pipelines:
  - .1 Drain and flush all products in connected piping in a manner as to prevent spillage.
  - .2 After initial draining, remove all residual fuel by passing a "Teflon Ring Pig" through the line.
  - .3 Isolate the line to prevent the passage of vapours using a standard plumber's plug on the end of a tee handle.
  - .4 Cut the pipe for eventual disposal in a container.
  - .5 Incinerate all liquids contained in the tank. Incinerate in a container to prevent ground or water contamination, in an oxygen-rich environment to promote complete combustion, and in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.
  - .6 Rinse tanks with water to remove any residual product. Filter the wash water through an oil-absorbent material.
  - .7 Test the used oil-absorbent material to determine disposal requirements. Incinerate oil-absorbent material meeting the following criteria on-site or package for disposal off-site at a licensed disposal facility:
    - .1 PCBs < 2 ppm
    - .2 Chlorine < 1000 ppm
    - .3 Cadmium < 2 ppm
    - .4 Chromium < 10 ppm
    - .5 Lead < 100 ppmTreat and Discharge remaining waste wash water in accordance with the Wastewater Discharge Criteria outlined in Section 01 35 15 - Special Project Procedures for Contaminated Sites.
  - .8 Package oil-absorbent material containing contaminants in excess of the above criteria in accordance with TDGA regulations, as required, for disposal off-site at a licensed disposal facility.

- .9 Degas all tanks in accordance with the requirements of Report 88-5 (December 1988) of the Petroleum Association for Conservation of the Canadian Environment (PACE). Use nitrogen for degassing, as required, if ventilation and purging methods fail. Monitor area surrounding tanks and pipelines for vapour build up during degassing.
- .10 Following degassing, interior explosive vapour concentrations are to be less than 20 percent LEL prior to demolition.

### 3.8 Inventory of Containers

- .1 Provide a numbering system and maintain an inventory of all containers to be transported and disposed of off-site.
- .2 Label all containers, using spray paint or other means, with the Container number and contents (e.g. Haz Soil, Haz Debris, etc.).
- .3 Submit to Departmental Representative, a copy of the inventory of the contents of each container.

### 3.9 Packaging, Labelling and Inventory

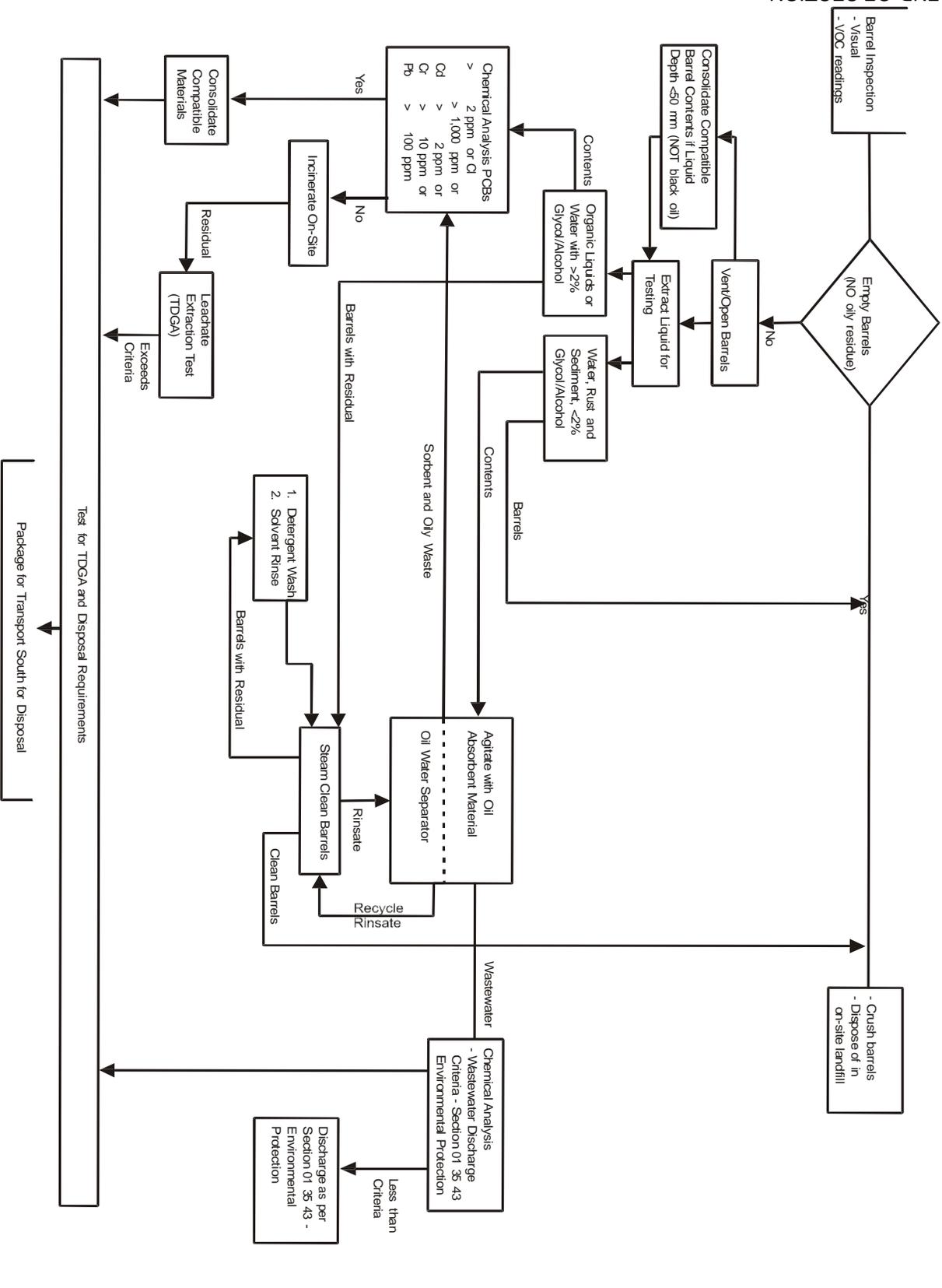
- .1 Provide a numbering system and maintain an inventory of all containers with Hazardous Waste Materials to be transported and disposed of off-site.
- .2 Package and label each "hazardous material" in accordance with the "Class" and "Packaging Group" as per the TDGA.
- .3 Submit to Departmental Representative, a copy of the inventory of the contents of each container

### 3.10 Temporary Storage Area

- .1 Establish the location and size of the Temporary Storage Area to minimize the handling of materials, isolate materials from other work operations and to provide for the collection and removal of these materials from the site.
- .2 Segregate materials within the Temporary Storage Area as follows:
  - .1 Hydrocarbon Contaminated Soil (refer to Section 02 55 13 – Contaminated Soil)
  - .2 Metal Contaminated Soil (refer to Section 02 55 13 – Contaminated Soil)
  - .3 Containerized Barrel Contents
  - .4 Other Containerized Hazardous Waste Materials.
- .3 For storage of Hazardous Waste Material, no stacking of Marine Shipping containers will be allowed.
- .4 In accordance with Section 01 78 00 - Closeout Submittals, submit to Departmental Representative a detailed inventory of the Temporary Storage Area indicating the location and contents of each container and assigned Environment Canada Registration numbers (as required) and packaging configuration.

**END OF SECTION**

END OF SECTION



Hazardous Waste  
 Material

PART 1 GENERAL

1.1 Description

- .1 Comply with requirements of this Section when performing following work:
  - .1 Removing wall panels, duct cloth, flue stack covering and vinyl floor tiles containing asbestos as listed in Appendix C.
  - .2 Cut, shape, grind, drill, scrape or abrade materials mentioned above using hand powered tools, or using power tools equipped with a HEPA filter.

1.2 References

- .1 Environment Canada (EC).
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .2 Transport Canada (TC).
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.3 Definitions

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
- .2 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.
- .3 Asbestos-Containing Materials (ACMs): materials identified under Existing Conditions including fallen materials and settled dust.
- .4 Asbestos Work Area: area where work takes place which will, or may, disturb ACMs.
- .5 Authorized Visitors: Department Representative or designated representatives, and representatives of regulatory agencies.
- .6 Friable Material: material that when dry can be crumbled, pulverized or powdered by hand pressure.
- .7 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.
- .8 Occupied Area: any area of the building or work site that is outside Asbestos Work Area.
- .9 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.
- .10 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.

1.4 Submittals

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit proof satisfactory to Department Representative that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.
- .3 Submit Provincial/Territorial and/or local requirements for Notice of Project Form.
- .4 Submit proof of Contractor's Asbestos Liability Insurance.
- .5 Submit to Department Representative necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.

1.5 Quality Assurance

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.
- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.
  - .2 Safety Requirements: worker protection.
    - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:
      - .1 Non-powered reusable or replaceable filter-type respirator equipped with HEPA filter cartridges, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Territorial/Provincial Authority having jurisdiction.
      - .2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.
    - .2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
    - .3 Before leaving Asbestos Work Area, dispose of protective clothing as contaminated waste as specified.
    - .4 Ensure workers wash hands and face when leaving Asbestos Work Area. Facilities for washing are to be located adjacent to the work areas.
    - .5 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

1.6 ACM Disposal

- .1 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 0.15 millimetre thick bags or leak proof drums. Label containers with appropriate warning labels.

1.7 Existing Conditions

- .1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of during this project are available upon request as indicated in Appendix C Asbestos Inventory.
- .2 Notify Department Representative of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Department Representative.

1.8 Instructions

- .1 Before beginning Work , provide Department Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.
- .2 Instruction and training related to respirators includes, following minimum requirements:
  - .1 Fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.
  - .4 Limitations of equipment.
- .3 Instruction and training must be provided by a competent, qualified person.

1.9 Signs

- .1 Signage: Display signs in all work areas where access to a contaminated area is possible. The sign is to read:

CAUTION, ASBESTOS HAZARD AREA.  
UNAUTHORIZED ENTRY PROHIBITED.  
WEAR PROTECTIVE EQUIPMENT.
- .2 Sign letters: all lettering is to be HELVETICA Medium font. The letter size is to be:

Caution, Asbestos Hazard Area.	25 millimetres
Unauthorized entry prohibited:	19 millimetres
Wear Protective Equipment	19 millimetres

1.10 Measurement For Payment

- .1 The removal, separation, packaging and containerization of known asbestos debris will not be measured for payment and should be included in the price for Known Debris Removal, Item 02 41 23-1 in the Basis of Payment, including, but not limited to the following:
  - .1 Supply of all materials, labour, and equipment necessary to perform the work in accordance with these specifications, including the supply and transport to the site of asbestos waste containers.
  - .2 Construction of temporary enclosures.
  - .3 Handling, separation and disposal of asbestos materials coated with PCB-amended paint.
  - .4 Preparation of asbestos inventory.
- .2 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 PRODUCTS

2.1 Materials

- .1 Drop Sheets:
  - .1 Polyethylene: 0.15 millimetres thick.
  - .2 Flame Retardent (FR) polyethylene: 0.15 millimetres thick woven fibre reinforced fabric bonded both sides with polyethylene.
- .2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in a concentration to provide thorough wetting of asbestos-containing material.
- .3 Waste Containers: contain waste in two separate containers.
  - .1 Inner container: 0.15 millimetre thick sealable polyethylene waste bag.
  - .2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 millimetre thick sealable polyethylene bag.
  - .3 Labelling requirements: affix preprinted cautionary asbestos warning in both official languages that is visible when ready for removal to disposal site.

PART 3 EXECUTION

3.1 Procedures

- .1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.

- .2 Before beginning Work, isolate and prepare the Asbestos Work Area as follows:
  - .1 Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work.
  - .2 Use HEPA vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate. .3 Do not use compressed air to clean up or remove dust from any surface.
- .3 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.
  - .1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in Asbestos Work Area where dust and contamination cannot otherwise be safely contained.
- .4 Wet materials containing asbestos to be cut, ground, abraded, scraped, drilled, or otherwise disturbed unless wetting creates hazard or causes damage.
  - .1 Use garden reservoir type low - velocity fine - mist sprayer.
  - .2 Perform Work to reduce dust creation to lowest levels practicable.
  - .3 Work will be subject to visual inspection and air monitoring.
  - .4 Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.
- .5 Clean-Up:
  - .1 Frequently during Work and immediately after completion of Work, clean up dust and asbestos-containing waste using HEPA vacuum or by damp mopping.
  - .2 Place dust and asbestos-containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste; wet and fold these items to contain dust, and then place in plastic bags.
  - .3 Clean exterior of each waste-filled bag using damp cloths or HEPA vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.
  - .4 Seal waste bags and remove from site. Dispose of in accordance with requirements of Provincial/Territorial and Federal Authority having jurisdiction.
  - .5 Perform final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA vacuum.

END OF SECTION

PART 1

GENERAL

1.1

Section Includes

- .1 Requirements and procedures for asbestos abatement of minor amounts of chrysotile asbestos-containing materials of the type describe within.

1.2

References

- .1 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-1.205-94, Sealer for Application of Asbestos-Fibre Releasing Materials.
- .2 Environment Canada (EC)
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .4 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .5 Underwriters' Laboratories of Canada (ULC).

1.3

Definitions

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any dimension at 99.97% efficiency.
- .2 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.
- .3 Asbestos-Containing Materials (ACMs): materials identified under Existing Conditions, including fallen materials and settled dust.
- .4 Minor Amounts of ACMs: less than or equal to 0.1 square metres of friable material containing chrysotile asbestos.
- .5 Asbestos Work Area: area where work takes place which will, or may disturb ACMs.
- .6 Authorized Visitors: Department Representative, or designated representatives, and representatives of regulatory agencies.
- .7 Friable Material: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.
- .8 Occupied Area: any area of building or work site that is outside Asbestos Work Area.

- .9 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.
- .10 Glove Bag: prefabricated glove bag as follows:
  - .1 Minimum thickness 0.25 millimetre (10 mil) polyvinyl-chloride bag.
  - .2 Integral 0.25 millimetre (10 mil) thick polyvinyl-chloride gloves and elastic ports.
  - .3 Equipped with reversible double-pull double throw zipper on top and at approximately mid-section of the bag.
  - .4 Straps for sealing ends around pipe.
  - .5 Must incorporate internal closure strip if it is to be moved or used in more than one specific location.
- .11 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for scope of work.

#### 1.4

##### Submittals

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit proof satisfactory to Department Representative that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.
- .3 Submit Provincial/Territorial and/or local requirements for Notice of Project Form.
- .4 Submit proof of Contractor's Asbestos Liability Insurance.
- .5 Submit to Department Representative necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.
- .6 Submit proof satisfactory to Department Representative that employees have had instruction on hazards of asbestos exposure, respirator use, dress, entry and exit from Asbestos Work Area, and aspects of work procedures and protective measures.
- .7 Submit proof that supervisory personnel have attended asbestos abatement course, of not less than two days duration, approved by Department Representative. Minimum of one supervisor for every ten workers.
- .8 Submit Worker's Compensation Board status and transcription of insurance.
- .9 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:
  - .1 encapsulants;
  - .2 amended water;
  - .3 slow-drying sealer.

1.5 Quality Assurance

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time work is performed.
- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.
  - .2 Safety Requirements: worker and visitor protection.
    - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:
      - .1 Non-powered reusable or replaceable filter-type respirator equipped with HEPA filter cartridges, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction.
      - .2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.
    - .2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
    - .3 Before leaving Asbestos Work Area, dispose of protective clothing as contaminated waste as specified.
    - .4 Ensure workers wash hands and face when leaving Asbestos Work Area. Facilities for washing to be located adjacent to work areas.
    - .5 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.
  - .3 Visitor Protection:
    - .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.
    - .2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.
    - .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.6 ACM Waste Management

- .1 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial/Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 0.6 mm thick bags or leak proof drums. Label containers with appropriate warning labels.

1.7 Existing Conditions

- .1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of during this project are available for review as indicated in Appendix C Asbestos Inventory.
- .2 Notify Department Representative of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Department Representative.

1.8 Instructions

- .1 Before beginning Work , provide Department Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.
- .2 Instruction and training related to respirators includes, at minimum:
  - .1 Fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.
  - .4 Limitations of equipment.
- .3 Instruction and training must be provided by competent, qualified person.

1.9 Measurement For Payment

- .1 The removal, separation, packaging and containerization of known asbestos debris will not be measured for payment and should be included in the price for Known Debris Removal, Item 02 41 23-1 in the Basis of Payment, including, but not limited to the following:
  - .1 Supply of all materials, labour, and equipment necessary to perform the work in accordance with these specifications, including the supply and transport to the site of asbestos waste containers.
  - .2 Construction of temporary enclosures.
  - .3 Handling, separation and disposal of asbestos materials coated with PCB- amended paint.
  - .4 Preparation of asbestos inventory.
- .2 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar (GANTT) Chart.

PART 2

PRODUCTS

2.1

Materials

- .1 Drop and Enclosure Sheets.
  - .1 Polyethylene: 0.15 millimetres thick.
  - .2 FR polyethylene: 0.15 millimetre thick woven fibre reinforced fabric bonded both sides with polyethylene.
- .2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in concentration to provide thorough wetting of asbestos-containing material.
- .3 Waste Containers: contain waste in two separate containers.
  - .1 Inner container: 0.15 millimetre thick sealable polyethylene bag or where glove bag method is used, glove bag itself.
  - .2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 millimetre thick sealable polyethylene bag.
  - .3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site.
- .4 Glove bag:
  - .1 Acceptable materials: safe-T-Strip products in configuration suitable for Work.
  - .2 Glove bags intended for use in more than one location must be equipped with reversible, double-pull, double-throw zipper on top and at approximately mid-section of bag.
- .5 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.
- .6 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.
  - .1 Sealer: flame spread and smoke developed rating less than 50.

PART 3

EXECUTION

3.1

Supervision

- .1 Minimum of one (1) Supervisor for every 10 workers is required.
- .2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos-containing materials.

3.2

Disposal

- .1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety for Contaminated Sites.

## PRECAUTIONS

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- .2 Before beginning Work, at each access to Asbestos Work Area, install warning signs in both official languages in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used: 'CAUTION ASBESTOS HAZARD AREA (25 millimetres) / NO UNAUTHORIZED ENTRY (19 millimetres) / WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 millimetres) / BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 millimetres)'.
- .3 Before beginning Work remove visible dust from surfaces in work area where dust is likely to be disturbed during course of work.
  - .1 Use HEPA vacuum or damp cloths where damp cleaning does not create hazard and is otherwise appropriate.
  - .2 Do not use compressed air to clean up or remove dust from any surface.
- .4 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.
  - .1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in work areas where dust or contamination cannot otherwise be safely contained.
  - .2 When removing asbestos containing material from piping or equipment and "glove-bag" method is not used erect enclosure of polyethylene sheeting around work area, shut off mechanical ventilation system serving work area and seal ventilation ducts to and from work area.
- .5 Before removing suspended ceilings, remove friable material on upper surfaces using HEPA vacuum equipment.
  - .1 Remove and clean surfaces of ceiling panels using HEPA vacuum, wrap clean panels in 0.10 millimetre thick polyethylene, and store in building as directed by Department Representative.
  - .2 Clean "T" grid suspension system, disconnect, wrap in 0.10 millimetre thick polyethylene, and store in building as directed by Department Representative.
- .6 Remove loose material by HEPA vacuum; thoroughly wet friable material containing asbestos to be removed or disturbed before and during Work unless wetting creates hazard or causes damage.
  - .1 Use garden reservoir type low - velocity sprayer or airless spray equipment capable of producing mist or fine spray.
  - .2 Perform Work in a manner to reduce dust creation to lowest levels practicable.
- .7 Pipe Insulation Removal Using Glove Bag:
  - .1 Place tools necessary to remove insulation in tool pouch. Wrap bag around pipe and close zippers. Seal bag to pipe with cloth straps.
  - .2 Place hands in gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag.
  - .3 Insert nozzle of garden reservoir type sprayer into bag through valve and wash down pipe and interior of bag thoroughly. Wet surface of insulation in lower section of bag.

- .4 When glove bags are intended for use at more than one location: after wash-down and application of sealer, seal off waste in lower section of bag using zipper at mid-section of bag. Remove air from top section of bag through elasticized valve using HEPA vacuum. Remove bag from pipe, reinstall in new location, and reseal to pipe prior to opening lower section of bag. Repeat stripping operation.
  - .5 If bag is to be moved along pipe, first remove air from top section through elasticized valve using HEPA vacuum. Next loosen straps, move bag, re-seal to pipe using double-pull zipper to pass hangers. Repeat stripping operation.
  - .6 To remove bag after completion of stripping, wash top section and tools thoroughly. Remove air from top section through elasticized valve using a HEPA vacuum. Pull polyethylene waste container over glove bag before removing from pipe. Release one (1) strap and remove freshly washed tools. Place tools in water. Remove second strap and zipper. Fold over into waste container and seal.
  - .7 After removal of bag ensure that pipe is free of residue. Remove residue using HEPA vacuum or wet cloths. Ensure that surfaces are free of sludge which after drying could release asbestos dust into atmosphere. Seal exposed surfaces of pipe and ends of insulation with slow-drying sealer to seal in any residual fibres.
  - .8 Upon completion of Work shift, cover exposed ends of remaining pipe insulation with polyethylene taped in place.
- .8 Work is subject to visual inspection and air monitoring. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.
- .9 Clean-up:
- .1 Frequently during Work and immediately after completion of work, clean up dust and asbestos-containing waste using HEPA vacuum or by damp mopping.
  - .2 Place dust and asbestos-containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.
  - .3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.
  - .4 Seal and remove double-bagged waste from site. Dispose of in accordance with requirements of Provincial/Territorial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.
  - .5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA vacuum.

### 3.3 Final Cleanup And Demobilization

- .1 From beginning of Work until completion of cleaning operations, Department Representative to take air samples on daily basis outside of Asbestos Work Area enclosures in accordance with Health Canada recommendations.

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- .1 Contractor will be responsible for monitoring inside enclosure in accordance with applicable Provincial/Territorial Occupational Health and Safety Regulations.
- .2 If air monitoring shows that areas outside Asbestos Work Area enclosures are contaminated, enclose, maintain and clean these areas in same manner as that applicable to Asbestos Work Area.
- .3 Ensure that respiratory safety factors are not exceeded.

END OF SECTION

PART 1            GENERAL

1.1            Section Includes

- .1            Removal (other than defined minor amounts) of friable materials containing asbestos.
- .2            Removal of amosite or crocidolite asbestos-containing materials.
- .3            Use of power tools that are fitted with dust collectors equipped with HEPA filter to cut, shape, grind, drill, scrape, or abrade manufactured products containing asbestos.
- .4            Cleaning, maintaining, or removal of air-handling equipment in buildings where sprayed fireproofing materials containing asbestos have been applied.

1.2            References

- .1            Canadian General Standards Board (CGSB).
  - .1            CAN/CGSB-1.205-94, Sealer for Application to Asbestos-Fibre-Releasing Materials.
- .2            Canadian Standards Association (CSA).
- .3            Environment Canada (EC).
  - .1            Canadian Environmental Protection Act (CEPA), 1999.
- .4            Health Canada/Workplace Hazardous Materials Information System (WHMIS).
  - .1            Material Safety Data Sheets (MSDS).
- .5            Transport Canada (TC).
  - .1            Transportation of Dangerous Goods Act, 1992 (TDGA).
- .6            Underwriters' Laboratories of Canada (ULC).
- .7            U.S. Department of Health and Human Services/Centers for Disease Control and Prevention (CDC)/National Institute for Occupational Safety and Health (NIOSH).
  - .1            NIOSH 94-113-August 1994, NIOSH Manual of Analytical Methods (NMAM), 4th Edition.
- .8            U.S. Department of Labour - Occupational Safety and Health Administration - Toxic and Hazardous Substances
  - .1            29 CFR 1910.1001-2001, Asbestos Regulations.

1.3            Definitions

- .1            HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
- .2            Amended Water: water with a non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

- .3 Asbestos-Containing Materials (ACMs): materials identified under Existing Conditions, including fallen materials and settled dust.
- .4 Asbestos Work Area: Area where actual removal of spray or trowel-applied asbestos- containing materials takes place.
- .5 Authorized Visitors: Department Representative or designated representatives, and representatives of regulatory agencies.
- .6 Friable Material: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.
- .7 Occupied Area: any area of building or work site that is outside Asbestos Work Area.
- .8 Polyethylene sheeting sealed with tape: Polyethylene sheeting of type and thickness specified sealed with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through sheeting into clean area.
- .9 Glove Bag: prefabricated glove bag as follows:
  - .1 Minimum thickness 0.25 mm polyvinyl-chloride bag.
  - .2 Integral 0.25 mm thick polyvinyl-chloride gloves and elastic ports.
  - .3 Equipped with reversible double-pull double throw zipper on top.
  - .4 Straps for sealing ends around pipe.
  - .5 Must incorporate internal closure strip if it is to be moved or used in more than one specific location.
- .10 DOP Test: testing method used to determine integrity of Negative Pressure unit using dioctyl phthalate (DOP) HEPA-filter leak test.
- .11 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
- .12 Negative pressure: system that extracts air directly from work area, filters such extracted air through High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building.
  - .1 System to maintain minimum pressure differential of 5 Pa relative to adjacent areas outside of work areas, be equipped with alarm to warn of system breakdown, and be equipped with instrument to continuously monitor and automatically record pressure differences.
- .13 Airlock: system for permitting ingress or egress without permitting air movement between contaminated area and uncontaminated area, typically consisting of two curtained doorways at least 2 m apart.
- .14 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:

- .1 Place two overlapping sheets of polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.
- .2 Reinforce free edges of polyethylene with duct tape and weight bottom edge to ensure proper closing.
- .3 Overlap each polyethylene sheet at openings not less than 1.5 m on each side.

#### 1.4

##### Submittals

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Before beginning work:
  - .1 Obtain from appropriate agency and submit to Department Representative necessary permits for transportation and disposal of asbestos waste. Ensure that dump operator is fully aware of hazardous nature of material being dumped, and proper methods of disposal. Submit proof satisfactory to Department Representative that suitable arrangements have been made to receive and properly dispose of asbestos waste.
  - .2 Submit proof satisfactory to Department Representative that employees have had instruction on hazards of asbestos exposure, respirator use, dress, use of showers, entry and exit from work areas, and aspects of work procedures and protective measures. Ensure supervisory personnel have attended asbestos abatement course, of not less than two days duration, approved by Department Representative. Submit proof of attendance in form of certificate. Minimum of one Supervisor for every ten workers.
  - .3 Submit layout of proposed enclosures and decontamination facilities to Department Representative for review.
  - .4 Submit Provincial/Territorial and/or local requirements for Notice of Project Form.
  - .5 Submit proof of Contractor's Asbestos Liability Insurance.
  - .6 Submit proof satisfactory to Department Representative that employees have respirator fitting and testing. Workers must be fit-tested (irritant smoke test) with respirator that is personally issued.
  - .7 Submit Worker's Compensation Board status and transcription of insurance.
  - .8 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including but not limited to following:
    - .1 encapsulants;
    - .2 amended water;
    - .3 slow-drying sealer.

#### 1.5

##### Quality Assurance

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to asbestos, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.

- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.
  - .2 Safety Requirements: worker and visitor protection.
    - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area includes:
      - .1 Respirator equipped with HEPA filter cartridges or supplied- air type, personally issued to worker and marked as to efficiency and purpose, and acceptable to Authority having jurisdiction as suitable for type of asbestos and level of asbestos exposure in Asbestos Work Area. If disposable type filters are used, provide sufficient filters so that workers can install new filters following disposal of used filters and before re-entering contaminated areas.
      - .2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.
    - .2 Requirements for each worker:
      - .1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters that have been tested as satisfactory, clean coveralls and head covers before entering Equipment and Access Rooms or Asbestos Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.
      - .2 Remove gross contamination from clothing before leaving work area then proceed to Equipment and Access Room and remove clothing except respirators. Place contaminated worksuits in receptacles for disposal with other asbestos - contaminated materials. Leave reusable items except respirator in Equipment and Access Room. Still wearing the respirator proceed naked to showers. Using soap and water wash body and hair thoroughly. Clean outside of respirator with soap and water while showering; remove respirator; remove filters and wet them and dispose of filters in container provided for purpose; and wash and rinse inside of respirator. When not in use in work area, store work footwear in Equipment and Access Room. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.
      - .3 After showering and drying off, proceed to clean change room and dress in street clothes at end of each day's work, or in clean coveralls before eating, smoking, or drinking. If re- entering work area, follow procedures outlined in paragraphs above.

- .4 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers must not use this system as means to leave or enter work area.
- .3 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
- .4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual asbestos abatement.
- .5 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.
- .6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.
- .7 Visitor Protection:
  - .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.
  - .2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.
  - .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

#### 1.6 ACM Waste Management and Disposal

- .1 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels.

#### 1.7 Existing Conditions

- .1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of during this project are available for review as indicated in Appendix C Asbestos Inventory.

#### 1.8 Scheduling

- .1 Not later than ten (10) days before beginning Work on this Project notify following in writing:
  - .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
  - .2 Regional Office of Labour Canada.
  - .3 Provincial/Territorial, Department of Labour.
  - .4 Disposal Authority.
- .2 Inform sub-trades of presence of friable asbestos-containing materials identified in Existing Conditions.
- .3 Submit to Department Representative copy of notifications prior to start of Work.

1.9

Instructions

- .1 Before beginning Work, provide to Department Representative satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene including dress and showers, in entry and exit from Asbestos Work Area, in aspects of work procedures including glove bag procedures, and in use, cleaning, and disposal of respirators and protective clothing.
- .2 Instruction and training related to respirators includes, at minimum:
  - .1 Proper fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.
  - .4 Limitations of equipment.
- .3 Instruction and training must be provided by competent, qualified person.
- .4 Supervisory personnel to complete required training.

1.10

Signs

- .1 Signage: Display signs in all work areas where access to a contaminated area is possible. The signs i to read:  
  
CAUTION, ASBESTOS HAZARD AREA.  
UNAUTHORIZED ENTRY PROHIBITED.  
WEAR PROTECTIVE EQUIPMENT.
- .2 Sign letters: all lettering is to be HELVETICA Medium font. The letter size is to be:

Caution, Asbestos Hazard Area.	25 mm
Unauthorized entry prohibited:	19 mm
Wear Protective Equipment	19 mm

1.11

Measurement for Payment

- .1 The removal, separation, packaging and disposal of asbestos from buildings, structures and facilities to be demolished will not be measured for payment and should be included in the price for demolition of the structures, Items 02 41 16-1 to 02 41 16-13, as described as described in Section 02 41 16 – Structure Demolition, including, but not limited to:
  - .1 Supply of all materials, labour, and equipment necessary to perform the work in accordance with these specifications, including the supply and transport to the site of asbestos waste containers.
  - .2 Construction of temporary enclosures.
  - .3 Handling, separation and disposal of asbestos materials coated with PCB- amended paint.
  - .4 Preparation of asbestos inventory.
- .2 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 -Construction Progress Schedules – Bar (GANTT) Chart.

PART 2            PRODUCTS

2.1                Materials

- .1 Polyethylene: minimum 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.
- .2 FR polyethylene: minimum 0.15 mm thick, woven fibre reinforced fabric bonded both sides with polyethylene.
- .3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.
- .4 Wetting agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether, or other material approved by Department Representative, mixed with water in concentration to provide adequate penetration and wetting of asbestos-containing material.
- .5 Asbestos waste containers: Metal or fibre - type acceptable to dump operator with tightly fitting covers and 0.15 mm minimum thickness sealable polyethylene liners.
  - .1 Label containers in accordance with Asbestos Regulations 29 CFR 1910.1001. Label in both official languages.
- .6 Glove bag: acceptable materials include safe-T-strip products in configuration suitable for Work, or alternative material approved by addendum during tendering period in accordance with Instructions to Tenderers.
  - .1 Equip glove bags intended for use in more than one location with reversible, double-pull, double-throw zipper on top and at approximately mid-section of bag.

PART 3            EXECUTION

3.1                Preparation

- .1 Do construction occupational health and safety in accordance with Section [01 35 32 – Site Specific Health and Safety for Contaminated Sites.
- .2 Work Areas:
  - .1 Shut off and isolate air handling and ventilation systems to prevent fibre dispersal to other building areas during work phase. Conduct smoke tests to ensure that duct work is airtight. Seal and caulk joints and seams of active return air ducts within Asbestos Work Area.
  - .2 Preclean moveable furniture and carpeting within proposed work areas using HEPA vacuum and containerize for disposal off-site.
  - .3 Preclean fixed casework, plant, and equipment within proposed work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.
  - .4 Clean proposed work area using, where practicable, HEPA vacuum cleaning equipment. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum equipment.
  - .5 Put negative pressure system in operation and operate continuously from time first polyethylene is installed to seal openings until final completion

- of work including final cleanup. Provide continuous monitoring of pressure difference using automatic recording instrument.
- .6 Seal off openings such as corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.
  - .7 Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Cover floors first so that polyethylene extends at least 300 mm up walls then cover walls to overlap floor sheeting.
  - .8 Build airlocks at entrances to and exits from work areas so that work areas are always closed off by one curtained doorway when workers enter or exit.
  - .9 After work area isolation, remove heating, ventilating, and air conditioning filters, pack in sealed plastic bags 0.15 mm minimum thick and treat as contaminated asbestos waste. Remove ceiling - mounted objects such as lights, partitions, other fixtures not previously sealed off, and other objects that interfere with asbestos removal, as directed by Department Representative. Use localized water spraying during fixture removal to reduce fibre dispersal.
  - .10 Maintain emergency and fire exits from work area[s], or establish alternative exits satisfactory to Authority having jurisdiction.
  - .11 Where application of water is required for wetting asbestos-containing materials, shut off electrical power, provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
  - .12 After preparation of work areas and Decontamination Enclosure Systems, remove ceiling panels and tiles within work areas progressively and carefully, clean using HEPA vacuum and damp sponge, wrap clean panels in 0.10 mm minimum thick polyethylene, and store in building as directed by Department Representative. Clean "T" grid suspension system within work areas using wet sponge, disconnect grid from hangers, wrap grid members in 0.10 mm minimum thick polyethylene and store in building as directed by Department Representative.
- .3 Worker Decontamination Enclosure System:
- .1 Worker Decontamination Enclosure System includes Equipment and Access Room, Shower Room, and Clean Room, as follows:
    - .1 Equipment and Access Room: build Equipment and Access Room between Shower Room and work areas, with two curtained doorways, one to Shower Room and one to work areas. Install portable toilet, waste receptor, and storage facilities for workers' shoes and protective clothing to be re-worn in work areas. Build Equipment and Access Room large enough to accommodate specified facilities, other equipment needed, and at least one worker allowing him /her sufficient space to undress comfortably.
    - .2 Shower Room: build Shower Room between Clean Room and Equipment and Access Room, with two curtained doorways, one to Clean Room and one to Equipment and Access Room. Provide one shower for every five workers. Provide constant supply of hot and cold or warm water. Provide piping and connect to water sources and drains. Pump waste water through 5 micrometre filter system acceptable to Department Representative before directing into drains. Provide soap, clean towels, and appropriate containers for disposal of used respirator filters.
    - .3 Clean Room: build Clean Room between Shower Room and

clean areas outside of enclosures, with two curtained doorways, one to outside of enclosures and one to Shower Room. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.

- .4 Container and Equipment Decontamination Enclosure System:
  - .1 Container and Equipment Decontamination Enclosure System consists of Staging Area within work area, Washroom, Holding Room, and Unloading Room. Purpose of system is to provide means to decontaminate waste containers, scaffolding, waste and material containers, vacuum and spray equipment, and other tools and equipment for which Worker Decontamination Enclosure System is not suitable.
    - .1 Staging Area: designate Staging Area in work area for gross removal of dust and debris from waste containers and equipment, labeling and sealing of waste containers, and temporary storage pending removal to Washroom. Equip Staging Area with curtained doorway to Washroom.
    - .2 Washroom: build Washroom between Staging Area and Holding Room with two curtained doorways, one to Staging Area and one to Holding Room. Provide high - pressure low - volume sprays for washing of waste containers and equipment. Pump waste water through 5 micrometre filter system before directing into drains. Provide piping and connect to water sources and drains.
    - .3 Holding Room: build Holding Room between Washroom and Unloading Room, with two curtained doorways, one to Washroom and one to Unloading Room. Build Holding Room sized to accommodate at least two waste containers and largest item of equipment used.
    - .4 Unloading Room: build Unloading Room between Holding Room and outside, with two curtained doorways, one to Holding Room and one to outside.
- .5 Construction of Decontamination Enclosures:
  - .1 Build suitable framing for enclosures or use existing rooms where convenient and line with polyethylene sheeting sealed with tape. Use one two layers of FR polyethylene on floors.
  - .2 Build curtained doorways between enclosures so that when people move through or when waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.
- .6 Maintenance of Enclosures:
  - .1 Maintain enclosures in tidy condition.
  - .2 Ensure that barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.
  - .3 Visually inspect enclosures at beginning of each working period.
  - .4 Use smoke methods to test effectiveness of barriers when directed by Department Representative.

- .7 Do not begin Asbestos Abatement work until:
  - .1 Arrangements have been made for disposal of waste.
  - .2 For wet stripping techniques, arrangements have been made for containing, filtering, and disposal of waste water.
  - .3 Work areas and decontamination are effectively segregated.
  - .4 Tools, equipment, and materials waste containers are on hand.
  - .5 Arrangements have been made for building security.
  - .6 Warning signs are displayed where access to contaminated areas is possible.
  - .7 Notifications have been completed and other preparatory steps have been taken.

### 3.2 Supervision

- .1 Minimum of one Supervisor for every ten workers is required.
- .2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos-containing materials.

### 3.3 Asbestos Removal

- .1 Before removing asbestos:
  - .1 Prepare site.
  - .2 Spray asbestos material with water containing specified wetting agent, using airless spray equipment capable of providing "mist" application to prevent release of fibres. Saturate asbestos material sufficiently to wet it to substrate without causing excess dripping. Spray asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.
- .2 Remove saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed pack material in sealable plastic bags 0.15 mm minimum thick and place in labeled containers for transport.
- .3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure that containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .4 After completion of stripping work, wire brushed and wet-sponged surfaces from which asbestos has been removed to remove visible material. During this work keep surfaces wet.

### 3.4 Pipe Removal Using Glove Bag Method

- .1 Place tools necessary to remove insulation in tool pouch. Wrap bag around pipe and close zippers. Seal bag to pipe with cloth straps.
- .2 Place hands in gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag.

- .3 Insert nozzle of garden reservoir type sprayer into bag through valve and wash down pipe and interior of bag thoroughly. Wet surface of insulation in lower section of bag.
- .4 When glove bags are intended for use at more than one location: after wash-down and application of sealer, seal off waste in lower section of bag using zipper at mid-section of bag. Remove air from top section of bag through elasticized valve using HEPA vacuum. Remove bag from pipe, reinstall in new location, and reseal to pipe prior to opening lower section of bag. Repeat stripping operation.
- .5 If bag is to be moved along pipe, first remove air from top section through elasticized valve using HEPA vacuum. Next loosen straps, move bag, re-seal to pipe using double- pull zipper to pass hangers. Repeat stripping operation.
- .6 To remove bag after completion of stripping, wash top section and tools thoroughly. Remove air from top section through elasticized valve using HEPA vacuum. Pull polyethylene waste container over glove bag before removing from pipe. Release one strap and remove freshly washed tools. Place tools in water. Remove second strap and zipper. Fold over into waste container and seal.
- .7 After removal of bag ensure that pipe is free of residue. Remove residue using HEPA vacuum or wet cloths. Ensure that surfaces are free of sludge which after drying could release asbestos dust into atmosphere. Seal exposed surfaces of pipe and ends of insulation with slow-drying sealer to seal in any residual fibres.
- .8 Upon completion of work shift, cover exposed ends of remaining pipe insulation with polyethylene taped in place.

### 3.5

#### Final Cleanup

- .1 Following cleaning specified above, and when air sampling shows that asbestos levels on both sides of seals do not exceed 0.01 fibres/cc as determined by membrane filter method at 400-500X magnification phase contrast illumination, as described in NIOSH 94-113 or equivalent, proceed with final cleanup.
- .2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible asbestos-containing particles observed during cleanup, immediately, using HEPA vacuum equipment.
- .3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .4 Include in clean-up Work areas, Equipment and Access Room, Washroom, Shower Room, and other contaminated enclosures.
- .5 Include in clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.
- .6 Conduct final check to ensure that no dust or debris remains on surfaces as result of dismantling operations and carry out air-monitoring again to ensure that asbestos levels in building do not exceed 0.01 fibres/cc. Repeat cleaning using HEPA vacuum equipment, or wet cleaning methods where feasible, in conjunction with sampling until levels meet this criteria.

- .7 As work progresses, and to prevent exceeding available storage capacity on site, remove sealed and labeled containers containing asbestos waste and dispose of to authorized disposal area in accordance with requirements of disposal authority. Ensure that each shipment of containers transported to dump is accompanied by Contractor's representative to ensure that dumping is done in accordance with governing regulations.

### 3.6 Inspection

- .1 Perform inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviations from these requirements that have not been approved in writing by Department Representative may result in Work stoppage, at no cost to Owner.
- .2 Department Representative will inspect Work for:
  - .1 Adherence to specific procedures and materials.
  - .2 Final cleanliness and completion.
  - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .3 When asbestos leakage from Asbestos Work Area has occurred or is likely to occur Department Representative may order Work shutdown.
  - .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

END OF SECTION

PART 1      GENERAL

1.1      Related Requirements

- .1      Section 02 41 23 – Debris and Miscellaneous Removal
- .2      Section 02 55 13 – Contaminated Soil
- .3      Section 02 61 33 – Hazardous Waste Material
- .4      Section 31 22 15 – Grading

1.2      Description

- .1      This Section specifies general requirements for the processing of aggregates to be incorporated into the work as granular fill.
- .2      It is anticipated that there will be no requirement for crushing of granular materials to satisfy gradation specifications. There may be requirements to moisture condition, select, blend, and/or screen granular materials to satisfy specifications as indicated in this Section.

1.3      Source Approval

- .1      Source of materials to be incorporated into work requires approval by the Departmental Representative.
- .2      Defined borrow areas and stockpiles are to be used. Approval to excavate borrow material from new areas will be granted by Departmental Representative based on areas that do not require new access roads, areas that have minimal ice-rich permafrost and areas located away from water bodies.
- .3      Inform Departmental Representative of proposed source of aggregates at least seven days prior to commencing production. Departmental Representative will conduct confirmatory testing of borrow material, if required, to determine if any contamination is present.
- .4      If in the opinion of Departmental Representative, materials from the proposed source do not meet, or cannot reasonably be processed to meet specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
- .5      Should a change of material source be proposed during work, advise Departmental Representative one week in advance of proposed change to allow sampling and testing.
- .6      Acceptance of a material at source does not preclude future rejection if it is subsequently found to lack uniformity, or if it fails to conform to requirements specified, or if its field performance is found to be unsatisfactory.
- .7      Geotechnical information, including a borrow assessment and the results of laboratory analyses of soil samples obtained from the site, are included in the EBA, *Phase III Environmental Site Assessment, Former Weather Station, Nottingham Island, Nunavut, dated 2012*. This report will be provided as described in Section 01 11 00 - Summary of Work.
- .8      Abide by conditions of the Land Use Permit, Water Licence, Quarry Permit, Inuit

Owned Lands Exemption Certificate, Inuit Quarry Permit and/or other requirements of Authorities Having Jurisdiction (AHJ).

1.4 Measurement for Payment

- .1 Development of aggregate sources including stripping, processing, handling, stockpiling, replacement of organics, and any necessary restoration will be incidental to the work of this Section.
- .2 Work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 PRODUCTS

2.1 Materials

.1 Granular Fill:

- .1 Granular Fill consists of granular pit-run material, with a maximum particle size of 200 mm, from identified borrow sources at the project site and is generally used for:

- .1 regrading low areas as indicated;
- .2 backfill for contaminated soil excavations;
- .3 general site grading requirements.

.2 Materials classified as unsuitable will include:

- .1 Non-uniform material of widely varying moisture density characteristics.
- .2 Soils with moisture content exceeding optimum moisture by 5 percent or more.
- .3 Soils containing organic material, snow, ice or other deleterious material.

PART 3 EXECUTION

3.1 Development of Aggregate Sources

- .1 Remove any debris (known or unknown) from the area, as described in Section 02 41 23 – Debris and Miscellaneous Removals, prior to excavating borrow materials.
- .2 Any significant deposits of organic material, as determined by Departmental Representative, are to be avoided and left undisturbed during development of an aggregate source.
- .3 Strip an area ahead of excavating operation sufficient to prevent contamination of aggregate by deleterious materials.
- .4 When excavation is completed, dress sides of excavation to achieve gentle slopes, maximum of 5H:1V, which fit local topography, and provide swales or ditches as required to prevent surface standing water.
- .5 Trim off and dress slopes of waste material piles and leave site in neat condition.

- .6 Trim, backblade and restore borrow areas to a condition acceptable to Departmental Representative.

3.2 Handling

- .1 Handle and transport aggregates to avoid segregation, contamination and degradation.

3.3 Stockpiling

- .1 If required, stockpile aggregates on site in locations indicated or designated by Departmental Representative. Stockpiles are to not be located on undisturbed tundra.
- .2 Stockpiling sites are to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
- 3 Reject intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within 48 hours of rejection.
- .4 During snowy conditions, prevent ice and snow from becoming mixed into stockpile.

3.4 Stockpile Cleanup

- .1 Leave stockpile site in a tidy, well drained condition, free of standing surface water to satisfaction of Departmental Representative.
- .2 Leave any unused aggregates in neat compact stockpiles or as directed by Departmental Representative.

**END OF SECTION**

PART 1      GENERAL

1.1      Related Requirements

- .1      Section 02 41 23 – Debris and Miscellaneous Removal
- .2      Section 02 55 13 – Contaminated Soil
- .3      Section 02 61 33 – Hazardous Waste Material
- .4      Section 31 05 17 – Aggregates

1.2      Description

This section specifies requirements for:

- .1      The grading of designated areas including granular borrow areas, site debris areas, depressions created by the removal of debris and contaminated soil, and general site areas requiring regrading and reshaping;
- .2      The supply and placement of granular fill materials; and,
- .3      Maintenance and upgrading of site roads, trails, loading/offloading areas, storage areas, helicopter landing pad, etc.

1.3      Definitions

- .1      Reshaping: The levelling and grading, to a maximum depth of 600 millimetres, including the movement of boulders, of designated areas to blend in with the natural terrain and provide positive drainage. Reshaping does not require the supply and placement of additional granular fill material. Excavation of the terrain to a depth greater than 600 millimetres during reshaping operations is to be considered as unclassified excavation.
- .2      Regrading: The supply and placement of granular fill in designated areas.
- .3      Unclassified Excavations: Excavation of materials of whatever nature encountered in the work to a depth greater than 600 millimetres.
- .4      Granular Fill: Material as specified in Section 31 05 17 - Aggregate Materials used for regrading low areas and to replace excavated contaminated soil.
- .5      Waste Material: Excavated material unsuitable for use in work or surplus to requirements.
- .6      Borrow Material: Material obtained from approved areas and required for Work.

1.4      Site Conditions

- .1      Suspend grading operations whenever climatic conditions are unsatisfactory for grading Work to conform with this Specification.
- .2      Do not operate equipment in Work areas until the material has dried sufficiently to prevent excessive rutting.
- .3      Areas to be graded are to be free from debris and excessive snow, ice or standing water prior to grading work beginning.

- .4 Contractor is advised that soft ground conditions may be prevalent at the site during periods of maximum thaw of the permafrost. Schedule and carry out work to minimize disturbance to permafrost soils.
- .5 Contractor is advised that existing access roads and trails to be used during construction activities may require repair and upgrading.

1.5 Protection

- .1 Prevent damage to benchmarks and immediately replace benchmarks in the event of damage, at no cost to Departmental Representative.
- .2 Protect archaeological sites from construction and construction traffic.
- .3 Protect unanticipated archaeological resources encountered during construction, suspend all activities in that area and notify Departmental Representative immediately.
- .4 Protect monitoring wells and survey monuments. Repair or replace, at no cost to the Departmental Representative, any monitoring wells or survey monuments damaged by the Contractor's operations.
- .5 Protect and do not disturb spawning beds and breeding grounds during construction.
- .6 Environmental protection measures are to be in accordance with the requirements specified in Section 01 35 43 - Environmental Procedures. Follow the approved Erosion, Sediment and Drainage Control Plan submitted in accordance with Section 01 35 43 - Environmental Procedures.

1.6 Submittals

- .1 None

1.7 Measurement for Payment

- .1 For items to be measured for payment by survey, survey the area to receive granular fill either by cross section or by grid, following removal/stripping (if required) of surface material. Survey significant breaks in the original ground surface grade, incorporating at minimum the cross section locations indicated on the Drawings. The maximum distance between cross sections or grid points is to not exceed 20 metres unless otherwise indicated by Departmental Representative. Survey measurements are to be to the nearest 0.01 metre. Following placement of granular fill material, Contractor is to resurvey the cross sections or grid points. The volume measurement of granular material for payment will be determined by digital terrain model or average end area method, as Departmental Representative deems appropriate for the survey information provided. Preference is to be for quantity determination by digital terrain model.

- .2 The unit of measurement for reshaping within designated areas indicated and to limits authorized by Departmental Representative will be by the square metre as measured by survey. Reshaping associated with earthworks, including, but not limited to, placement of granular materials, regrading or levelling of areas prior to construction, is not to be measured as part of reshaping, but is to be considered incidental to the unit price bid for such earthworks. Areas on the drawings requiring levelling prior to construction will not be considered for payment under reshaping, unless explicitly noted on the Drawings, or authorized by the Departmental Representative. Reshaping will be paid under Item 31 22 15-1 of the Basis of Payment Schedule.
- .3 The supply, placement and compaction of Granular Fill for general regrading operations will be measured for payment by the cubic metre as determined by survey methods. Granular Fill will be paid under Item 31 22 15-2 in the Basis of Payment Schedule.
- 4 Excavation required for the following work items will be measured for payment by the cubic metre as determined by survey measurement, and paid under Item 31 22 15-3, Unclassified Excavation in the Basis of Payment Schedule:
  - .1 Excavation of the terrain to a depth greater than 600 millimetres during reshaping operations as directed by the Departmental Representative.
  - .2 Excavation as specifically indicated or as directed by the Departmental Representative.
  - .3 Excavation of clean soils over contaminated soils.
- .5 Upgrading, construction and maintenance of site accesses, including site roads, trails and helicopter landing pad will be paid as a lump sum under Item 31 22 15-4 Road and Access Construction and Maintenance in the Basis of Payment Schedule.
- .6 The following work items will be incidental to the work described in this Section, and will not be measured separately:
  - .1 Stripping, stockpiling and replacement or placement to a new location of organic material from the borrow areas as directed by Departmental Representative, and where required from construction areas upon where granular material is to be placed.
  - .2 Disposal of waste material from the borrow areas.
  - .3 Removal of surficial boulders over 300 millimetres in diameter from construction areas.
  - .4 Excavating and stockpiling of borrow materials.
  - .5 Reshaping of areas with ponded water (standing water covering over five (5) square metres and more than 0.2 metres deep) and rutting (ruts more than 0.1 metres deep) caused by contractor's construction activities.
  - .6 Grading of borrow areas to approximate the before-construction condition upon completion.
  - .7 Loading, hauling and haul road construction, maintenance and rehabilitation.
  - .8 Water for moisture conditioning, compaction and dust control.
  - .9 All construction surveying, including layout of facilities, slope staking, and supply and installation of witness grade stakes to monitor the depth of granular material placement.

- .10 Surveying and calculation of granular material quantities for progress payment purposes.
  - .11 Reshaping and regrading of Contractor's laydown areas including the supply, placement and compaction of granular material.
  - .12 Draining of wet areas prior to regrading operations.
  - .13 Removal and disposal or burial of abandoned utility lines exposed by Contractor during the excavation of granular materials.
  - .14 Work undertaken to drain borrow areas prior to excavation.
- .7 No measurement for payment will be made for:
- .1 Rejected material.
  - .2 Surplus material.
  - .3 Excavation, and stripping and replacement of organic material beyond specified limits.
  - .4 Excavation to prove borrow sources.
  - .5 Placement of granular fill beyond the limits and depths specified, unless specifically authorized by Departmental Representative.
- .8 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule. Indicate the cost of this work as a separate line item in the cost breakdown specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

## PART 2      PRODUCTS

### 2.1      Materials

- .1      Granular fill materials in accordance with Section 31 05 17 - Aggregate Materials

## PART 3      EXECUTION

### 3.1      Site Preparation

- .1      Borrow Excavation:
  - .1      Obtain from potential borrow areas as indicated, or provide from own sources, all required granular fill material.
  - .2      The existing operational pads, helicopter pad, and roadways at the site are not to be used as granular material borrow sources unless specifically authorized by Departmental Representative.
  - .3      Advise Departmental Representative of selected borrow areas seven days in advance of excavation operations for appropriate testing to be performed.
  - .4      Notify Departmental Representative whenever unsuitable materials are encountered in borrow areas.
  - .5      Borrow material cannot be obtained from existing granular pads beneath facilities to be demolished, unless authorized in writing by Departmental Representative.
  - .6      Remove and dispose of any abandoned utility lines in these areas in accordance with Section 02 41 16 - Structure Demolition
  - .7      Stripping, stockpiling and replacement or placement to a new location of organic material and stripping and disposal of waste material found when excavating existing granular material to be as directed by Departmental Representative.

- .8 Final grading of borrow area upon completion to be tidy, well drained, free of standing water all to the satisfaction of Departmental Representative.
- .9 Upon completion of final grading, leave all slopes in a stable condition and spread all stripped organics.
- .10 Transport aggregate from borrow areas to the work areas via existing access routes where available. Maintain and provide for dust control on the access route between the borrow area and the work areas.

### 3.2 Placement, Moisture Conditioning And Compaction Of Granular Fill Material

- .1 Set grades and lay out work in detail from control points in areas of granular fill placement. Verify the original ground topography by survey.
- .2 Haul granular fill material from borrow sites to designated areas.
- .3 Place granular fill material to the lines, grades, elevations and dimensions indicated, or agreed to with Departmental Representative.
- .4 Do not place granular fill on snow or surface ice.
- .5 Maintain natural drainage patterns, unless otherwise directed, and fill depressions to avoid any ponding of water adjacent to embankments.
- .6 All granular fill material are to be placed in an unfrozen state. Granular fill material to be free from debris, snow and ice. Do not place granular fill if the outside air temperature is below zero degrees Celsius, unless otherwise directed by Departmental Representative.
- .7 Maintain a crowned surface during construction to ensure ready runoff of surface water. Do not place material in free standing water. Drain low areas, before placing material.
- .8 Do not dump granular fill material over the side slopes of berms.
- .9 Place and compact granular fill material in horizontal lifts.
- .10 For fill depths greater than 500 millimetres, place granular material in lifts not exceeding 250 mm in loose thickness. For fill depths greater than 200 millimetres and less than 500 millimetres, place material in two lifts of equal depth. For fill depths less than 200 millimetres, place material in one lift.
- .11 Shape finished surface to required cross-section and grade, or as directed by Departmental Representative.

### 3.3 Regrading

- .1 Supply, place, blade and trim granular fill material to elevation, grades, and cross-section dimensions indicated or directed by Departmental Representative.

### 3.4 Reshaping

- .1 Obtain authorization from Departmental Representative prior to beginning reshaping operations.

- .2 Blade and trim material to elevation, grades, and cross-section dimensions indicated or directed by Departmental Representative. Obtain Department Representative's approval before reshaping any area.
- .3 Make use of material within the area designated for reshaping to provide a surface that is smooth and compact with firm slopes.
- .4 Remove or cover debris exposed during reshaping with a minimum depth of granular fill as directed by Departmental Representative.
- .5 Blend the final reshaped surface with the natural terrain and provide positive drainage.

### 3.5 Excavating

- .1 Lay out work in detail from control points in areas of excavation. Verify the original ground topography by survey. If survey verification is not completed, original ground is to be as shown on the Drawings.
- .2 Excavate to lines, grades, elevations and dimensions as indicated on the Drawings or designated by Departmental Representative.
- .3 Keep excavations free of water while work is in progress. Protect open excavations against flooding and damage due to surface run-on. Dispose of water in a manner not detrimental to work completed or under construction. The release of all water resulting from the dewatering of open excavations is to conform to the Wastewater Discharge Criteria outlined in Section 01 35 15 - Special Project Procedures for Contaminated Sites, and may require temporary storage or treatment prior to discharge.
- .4 Where required due to unauthorized over-excavation, fill areas with Type 1 or Type 2 Granular Fill, as directed by Departmental Representative.

### 3.6 Backfilling

- .1 Do not proceed with backfilling operations until Departmental Representative has inspected and approved excavation.
- .2 Areas to be backfilled are to be free from debris, snow, ice and water.
- .3 Commence backfilling of excavated soil areas within 1 day of receipt of confirmatory sampling results indicating no further excavation in the area is required. Costs for any extra work caused as a result of leaving excavations open longer will be the responsibility of Contractor.
- .4 Place specified backfill material in uniform horizontal layers in depths to grades indicated. Compact each layer before placing succeeding layer.
- .5 No trenches or excavations are to be left open during the winter.

### 3.7 Temporary Storage Area

- .1 Develop a Temporary Storage Area for the storage of containerized Hazardous Waste Materials and contaminated soil.

- .2 Prepare the Temporary Storage Area to comply with the following:
  - .1 Provide easy access to the off-site transport equipment.
  - .2 Allow the containers to be level and distribute the weight of the containers evenly to the supporting surface.
  - .3 The area is to be free of standing water.
  - .4 Surface water run-on to the area must be minimized. The area must not be subject to flooding, excessive snow drifting, and/or seasonal saturation.
  - .5 Sufficiently compact the area so as to prevent the containers from settling into the soil. Supply, place and compact additional granular fill as required.
  - .6 Locate at least 100 metres from any body of water.
  - .7 Locate in an area not routinely accessed or essential to Contractor's workforce or site personnel.
  - .8 Locate more than 30 metres away from flammable materials.
- .3 Confirm the location of the Temporary Storage Area with Departmental Representative at least one (1) week prior to commencing operations to allow for baseline sampling by Departmental Representative.
- .4 Within the Temporary Storage Areas, segregate the various types of containerized materials as described in Section 02 61 33 - Hazardous Materials.
- .5 Provide signage for Temporary Storage Area in accordance with Section 02 61 33 - Hazardous Waste Materials.

### 3.8 Testing

- .1 Testing of materials will be carried out and paid for by Departmental Representative.
- .2 Frequency of testing will be determined by Departmental Representative.

### 3.9 Finishing And Tolerances

- .1 All areas to be covered with granular material are to be uniform without projections or depressions exceeding 100 millimetres in three (3) metres.
- .2 Granular fill surfaces to be within 100 millimetres of design elevations but not uniformly high or low.
- .3 Finished surfaces are to be graded to promote positive drainage and minimize standing water.

### 3.9 Maintenance

- .1 Maintain finished surfaces in a condition in accordance with this Section until succeeding material is applied or until acceptance.

**END OF SECTION**

**DRAWINGS**

**(Provided in a separate attachment)**

**APPENDIX A**  
**AANDC TRACKING FORMS**

## Aboriginal Affairs and Northern Development Canada Template

Project Statistics							
EHS PERFORMANCE							
Safety		Q1	Q2	Q3	Q4	TOTAL TO DATE	EVIDENCE/EXPLANATION
<b>Major Incident</b>	#					0	
<b>Moderate Incident</b>	#					0	
<b>Minor Incident</b>	#					0	
<b>Near misses</b>	#					0	
Incidents, Inspections and Audits		Q1	Q2	Q3	Q4	TOTAL TO DATE	EVIDENCE/EXPLANATION
<b>Environment Incidents</b>	#					0	
	Volume (L) spilled					0.0	
<b>Inspections/Audits (external)</b>	# performed					0	
	# non-compliances					0	
<b>Inspections/Audits (internal)</b>	# performed					0	
	# non-compliances					0	
EHS Training (p-hrs)		Q1	Q2	Q3	Q4	TOTAL TO DATE	EVIDENCE/EXPLANATION
<b>Awareness training</b>	EHS policy & procedures					0	
<b>H&amp;S training</b>	HAZWOPER					0	
	WHMIS					0	
	First Aid					0	
	Wildlife safety					0	
	Water safety					0	
	Fire response					0	
<b>Environmental training</b>	Other					0	
	Spills response					0	
<b>Other corrective actions</b>	Other					0	
	New procedures					0	
	Other initiatives					0	
SOCIO-ECONOMIC PERFORMANCE							
Employment		Q1	Q2	Q3	Q4	TOTAL TO DATE	EVIDENCE/EXPLANATION
<b>Total Employment</b>	# persons					0	
	p-hrs					0	
<b>Employment - Northern</b>	# persons					0	
	p-hrs					0	
<b>Employment - Aboriginal</b>	# persons					0	
	p-hrs					0	
<b>Employment - AOC</b>	# persons					0	
	p-hrs					0	
<b>Employment - Women</b>	# persons					0	
	p-hrs					0	
Workforce Training		Q1	Q2	Q3	Q4	TOTAL TO DATE	EVIDENCE/EXPLANATION
<b>Total Training</b>	# persons					0	
	p-hrs					0	
<b>Training - Northern</b>	# persons					0	
	p-hrs					0	
<b>Training - Aboriginal</b>	# persons					0	
	p-hrs					0	
<b>Training - AOC</b>	# persons					0	
	p-hrs					0	
<b>Training - Women</b>	# persons					0	
	p-hrs					0	
Purchase of Goods and Services		Q1	Q2	Q3	Q4	TOTAL TO DATE	EVIDENCE/EXPLANATION
<b>Total Suppliers</b>	# suppliers					0	
	Value (\$)					\$0	
<b>Suppliers - Northern</b>	# suppliers					0	
	Value (\$)					\$0	
<b>Suppliers - Aboriginal</b>	# suppliers					0	
	Value (\$)					\$0	
<b>Suppliers - AOC</b>	# suppliers					0	
	Value (\$)					\$0	
STAKEHOLDER ENGAGEMENT							
Communication Activities						TOTAL TO DATE	EVIDENCE/EXPLANATION
<b>Community Consultation Events</b>	#					0	
	# persons					0	
<b>Media Events</b>	#					0	



## Aboriginal Affairs and Northern Development Canada Template

WATER SOURCES UTILIZED						
Source Description	GPS Coordinates					
	Latitude			Longitude		
	Deg	Min	Sec	Deg	Min	Sec

WASTEWATER DISCHARGE AREAS (Effluent meeting Discharge Criteria)						
Source Description	GPS Coordinates					
	Latitude			Longitude		
	Deg	Min	Sec	Deg	Min	Sec

WASTE DISPOSAL AREAS						
Source Description	GPS Coordinates					
	Latitude			Longitude		
	Deg	Min	Sec	Deg	Min	Sec

UNAUTHORIZED DISCHARGES (Wastewater, fuel, oil, etc.)							
Date	Description	Summary of Follow-up Actions Taken	GPS Coordinates				
			Latitude			Longitude	
			Deg	Min	Sec	Deg	Min

# Aboriginal Affairs and Northern Development Canada Template

DAILY WATER USAGE LOG			
WATER SOURCE:			
Month	Day	Volume (L)	Use
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
<b>TOTAL (L)</b>		<b>0</b>	
<b>AVERAGE PER DAY</b>			



## Aboriginal Affairs and Northern Development Canada Template

DAILY WASTE DISPOSAL INTO NHWL		
Month	Day	Volume Disposed of (m3)
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
	16	
	17	
	18	
	19	
	20	
	21	
	22	
	23	
	24	
	25	
	26	
	27	
	28	
	29	
	30	
	31	
<b>TOTAL (m3)</b>		<b>0</b>
<b>AVERAGE PER DAY</b>		







# QUARTERLY REPORT

## -Site Statistics Cheat Sheet-

### Environment, Health and Safety (EHS) Performance

#### **Safety:**

**Major Incident** – Report the number of major incidents, defined as severe irreversible disability, impairment, injury or fatality to one or more people.

**Moderate Incident** – Report the number of moderate incidents defined as moderate irreversible disability, impairment or injury requiring offsite medical treatment.

**Minor Incident** – Report number of minor incidents, defined as objective but reversible disability, impairment and/or injury. Onsite medical treatment required not requiring lost time.

**Near Miss** – Report the number of near misses, defined as an unplanned incident that occurred in the work place which did not result in any injury or disease but had the potential to do so.

#### **Incidents, Inspections and Audits:**

**Environmental Incidents** – Report the number of environmental incidents, and volume (in Litres) spilled, as required under applicable legislation, licenses and/or permits. Examples include the Canadian Environmental Assessment Act, the Environmental Protection Act (NWT), the Environmental Protection Act (Yukon) and the Environmental Protection Act (Nunavut).

**Inspections/Audits (external)** – Report the number of inspections and/or audits completed and the number of non-compliances issued by third parties not under contract with INAC.

**Inspections/Audits (internal)** – Report the number of inspections and/or audits completed and the number of non-compliances issued by INAC, PWGSC and/or third parties under contract with INAC.

### Socio-Economic Performance

#### **Employment:**

**Total Employment** – Report the number and time (in person-hours) of staff that worked on the project, including on and off site personnel and information reported in the sub-categories listed below. The INAC project manager is responsible for including all internal project staff, PWGSC and Contractor/Consultant staff in the total reported to Headquarters.

**Employment (Northern)** – Report the number and time (in person-hours) of Northern staff that worked on the project, including on and off site personnel. Northern is defined as a person with permanent residence of greater than six months in any of the three territories. The INAC project manager is responsible for including all internal, PWGSC and Contractor/Consultant staff in the total reported to Headquarters.

**Employment (Aboriginal)** – Report the number and time (in person-hours) of Aboriginal staff that worked on the project, including on and off site personnel. Aboriginal is defined as a First Nation, Inuit and/or Métis person. The INAC project manager is responsible for including all internal, PWGSC and Contractor/Consultant staff in the total reported to Headquarters.

**Employment (AOC)** – For projects in which an Aboriginal Opportunity Consideration (AOC) is in place, report the number and time (in person-hours) of staff identified under the AOC report that worked on the project, including on and off site personnel. The INAC project manager is responsible for including all internal, PWGSC and Contractor/Consultant staff in the total

reported to Headquarters. Include the commitments of the AOC in the explanation/details section to confirm that they are on target against their commitments.

**Employment (Women)** – Report the number and time (in person-hours) of women staff that worked on the project, including on and off site personnel. The INAC project manager is responsible for including all internal, PWGSC and Contractor/Consultant staff in the total reported to Headquarters.

### **Workforce Training:**

**Total Training** – Report the number and time (in person-hours) of staff that were trained, including all information reported in the sub-categories listed below. The INAC project manager is responsible for including all internal, PWGSC and Contractor/Consultant staff in the total reported to Headquarters. The types of training should be listed in the evidence/explanation section.

**Training (Northern)** – Report the number and time (in person-hours) of Northern staff that received training. Northern is defined as a person with permanent residence in any of the three territories. The INAC project manager is responsible for including all internal, PWGSC and Contractor/Consultant staff in the total reported to Headquarters. The types of training should be listed in the evidence/explanation section.

**Training (Aboriginal)** – Report the number and time (in person-hours) of Aboriginal staff that received training. Aboriginal is defined as a First Nation, Inuit and/or Métis person. The INAC project manager is responsible for including all internal, PWGSC and Contractor/Consultant staff in the total reported to Headquarters. The types of training should be listed in the evidence/explanation section.

**Training (AOC)** – For projects in which an Aboriginal Opportunity Consideration (AOC) is in place, report the number and time (in person-hours) of staff identified under the AOC report that received training. The INAC project manager is responsible for including all internal, PWGSC and Contractor/Consultant staff in the total reported to Headquarters. The types of training should be listed in the evidence/explanation section.

**Training (Women)** – Report the number and time (in person-hours) of women staff that were trained. The INAC project manager is responsible for including all internal, PWGSC and Contractor/Consultant staff in the total reported to Headquarters. The types of training should be listed in the evidence/explanation section.

### **Purchase of Goods and Services:**

**Total Suppliers** – Report the number and value (in dollars) of sub-contractors and/or suppliers of goods and/or services that worked on the project, including all information reported in the sub-categories listed below. The portion of the contract that remains with the General Contractor should also be included in this metric.

**Suppliers (Northern)** – Report the number value (in dollars) of Northern sub-contractors and/or suppliers of goods and/or services that worked on the project. Northern is defined as a company with a head office in any of the three territories. The portion of the contract that remains with the General Contractor, if they are considered a Northern company, should also be included in this metric. The names of the Northern sub-contractors and/or suppliers should be listed in the evidence/explanation section.

**Suppliers (Aboriginal)** – Report the number and value (in dollars) of Aboriginal sub-contractors and/or suppliers of goods and/or services that worked on the project. Aboriginal is defined as a

**APPENDIX B**  
**PWGSC AOC BENEFITS TRACKING**





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Name

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Signature

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Title

**APPENDIX C**

**QUALITY OF POTENTIAL WATER SUPPLIES**

TABLE 3  
DETAILS IN NON-DRINKING WATER SOURCES  
NOTTINGHAM SLAKE - FRESH WATER (18 & 19) & MINORS, MINAUVIT

Sample ID	Potential or Occurrence	Date	Parameter (1)																													
			Aluminum (µg/L)	Ammony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Berillium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Calcium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)	Magnesium (µg/L)	Manganese (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Phosphorus (µg/L)	Potassium (µg/L)	Selenium (µg/L)	Silver (µg/L)	Sodium (µg/L)	Strontium (µg/L)	Sulfur (µg/L)	Tellurium (µg/L)	Tin (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
NOTT-SW-004	Lake 4	19-Aug-13	0.08	<0.01	<0.03	0.08	<0.03	<0.00317	24	<0.01	<0.003	2.0	<0.2	<0.01	3.7	<0.05	<0.05	<0.05	<0.05	<1	1.1	<0.01	<0.001	14	0.12	3.1	<0.008	<0.05	<0.05	<0.01	<0.03	<0.05
NOTT-SW-006	Lake 4	19-Aug-13	<0.050	<0.01	<0.03	0.03	<0.03	<0.00317	24	<0.01	<0.003	2.0	<0.2	<0.01	3.8	<0.05	<0.05	<0.05	<0.05	<1	1.3	<0.01	<0.001	14	0.12	3.5	<0.008	<0.05	<0.05	<0.01	<0.03	<0.05
NOTT-SW-007	Lake 2	19-Aug-13	<0.050	<0.01	<0.03	0.05	<0.03	<0.00317	27	<0.01	<0.003	<0.002	<0.2	<0.01	6.2	<0.05	<0.05	<0.05	<0.05	<1	2.8	<0.01	<0.001	39	0.24	5.4	<0.008	<0.05	<0.05	<0.01	<0.03	<0.05
NOTT-SW-008	Lake 2	19-Aug-13	0.1	<0.01	<0.03	0.08	<0.03	<0.00317	28	<0.01	<0.003	0.002	<0.2	<0.01	5.7	<0.05	<0.05	<0.05	<0.05	<1	2.4	<0.01	<0.001	43	0.22	5.5	<0.008	<0.05	<0.05	<0.01	<0.03	<0.05
NOTT-SW-010	Lake 2	19-Aug-13	<0.050	<0.01	<0.03	0.05	<0.03	<0.00317	27	<0.01	<0.003	<0.002	<0.2	<0.01	6.2	<0.05	<0.05	<0.05	<0.05	<1	2.8	<0.01	<0.001	39	0.24	5.3	<0.008	<0.05	<0.05	<0.01	<0.03	<0.05
NOTT-SW-010 (lab. duplicate)	Lake 2	19-Aug-13	<0.050	<0.01	<0.03	0.05	<0.03	<0.00317	28	<0.01	<0.003	<0.002	<0.2	<0.01	6.2	<0.05	<0.05	<0.05	<0.05	<1	2.8	<0.01	<0.001	39	0.24	5.3	<0.008	<0.05	<0.05	<0.01	<0.03	<0.05
HC-CW-010	Drinking Water		0.1-0.2 <sup>10</sup>	0.006	0.030	0.10	1.0	5.0 (MAC)	0.05	0.05	1.0	0.3	0.010	-	0.05	-	-	-	-	-	0.01	200	-	-	-	-	-	-	0.05 (MAC)	-	5 (AO)	
HC-CW-011	Drinking Water		0.005-0.1 <sup>10</sup>	-	0.035	-	-	10 <sup>11</sup> 1.5 <sup>11</sup>	0.008 (RL)	0.001 (V)	0.1	0.3	0.010	-	0.073	0.01	0.001	-	-	-	0.008	-	-	-	-	-	-	-	0.033 <sup>10</sup> 0.015 <sup>10</sup>	-	0.03	

Notes:

1. All values are expressed in milligrams per litre (mg/L).

2. MAC - Maximum Acceptable Concentration

AO - Aesthetic Objective

OC - Operational Guidelines

3. Guidelines for Canadian Drinking Water Quality

4. This is an operational guidance of use, designed to apply only to drinking water treatment plants using aluminum-based coagulants.

5. The operational guidance value of 0.1 mg/L applies to conventional treatment plants and 0.2 mg/L applies to other types of treatment systems.

6. The concentration of total aluminum should not exceed 0.1 mg/L in waters with a pH greater or equal to 6.5.

7. Short term exposure (24 to 96 hours) concentrations which indicate potential for severe effects during variance events (spill events to aquatic receiving environments and effluent releases of acute/chronic-persistent substances).

8. For the following equations, hardness is expressed as CaCO<sub>3</sub> in mg/L and the guideline is in µg/L. Cadmium Guideline =  $0.70 \sqrt{\text{hardness}}$ ; 1.46 µg/L. Chromium Guideline =  $0.70 \sqrt{\text{hardness}}$ ; 1.46 µg/L. Lead Guideline =  $0.17 \sqrt{\text{hardness}}$ ; 0.32 µg/L. Nickel Guideline =  $0.17 \sqrt{\text{hardness}}$ ; 0.32 µg/L.

9. If trigger ranges for lead phosphorus are exceeded, the potential exists for an environmental impact. If trigger ranges for arsenic but TP is more than 50% above baseline values, the potential exists for an environmental impact.

Trigger ranges (µg/L):

ultra-oligotrophic <4 mass-oligotrophic 20-35

oligo-trophic 4-10 mass-oligotrophic 35-100

eutrophic

4-10 eutrophic 35-100

**APPENDIX D**  
**DEMOLITION INVENTORY**

**APPENDIX D  
DEMOLITION INVENTORY**

<b>AEC #<sup>(1)</sup></b>	<b>Structure Designation</b>	<b>Material Type</b>	<b>Material Description</b>	<b>Estimated Uncrushed Volume (m<sup>3</sup>)<sup>(2)</sup></b>
<b>1</b>	Storage Shed 01 (18.5 x 9 x 2.4 m)	Non-Hazardous	Unpainted wood	101
			Other waste	14.5
			Drums (205 L)	1 drum
		Ast (900 L)	0.5	
		Hazardous	Asbestos waste (attic insulation and interior ceiling paneling)	99
	Total and leachable lead paint on wood	10		
<b>2</b>	Old Kitchen (8.7 x 17.8 x 3.4 m)	Non-Hazardous	Unpainted wood	41
			Other waste	25.5
		Hazardous	Total and leachable lead paint on wood	45

AEC # <sup>(1)</sup>	Structure Designation	Material Type	Material Description	Estimated Uncrushed Volume (m <sup>3</sup> ) <sup>(2)</sup>
3	New Radio Building (2.5 x 15.2 m) & Small Shed (3.4 x 2.5 x 2.1m)	Non-Hazardous	Unpainted wood	101
			Other waste	13.5
			AST (900 L)	0.5
		Hazardous	Asbestos waste	63.5
		Asbestos, total lead and leachable lead containing on panels.	11	
		Total and leachable paint on metal	6	
		Total and leachable paint on wood	5	
Other hazardous waste	2			
Unpainted wood	5			
Other waste	4.2			
4	Old Radio Building (2.5 x 2.1 x 4.0 m)	Non -Hazardous	Total lead paint on particulate board and wood	8
			Total lead and leachable lead on metal	1
			Other hazardous waste	0.6

AEC # <sup>(1)</sup>	Structure Designation	Material Type	Material Description	Estimated Uncrushed Volume (m <sup>3</sup> ) <sup>(2)</sup>		
5	Outhouse (1.3 x 1.8 x 2.7 m)	Non-Hazardous	Unpainted wood	1		
			Other waste	1.1		
		Hazardous	Asbestos waste	0.2		
		Total and leachable lead paint on wood	2			
6	Storage Shed 02 (2.8 x 2.2 x 2.6 m)	Non-Hazardous	Unpainted wood	4		
			Other waste	4		
		Hazardous	Asbestos waste	0.5		
7	Storage Building (4.9 x 6.4 x 3.0 m) 4.5 m is peak height and Small Shed (1.6 x 1.6 x 2.2 m)	Non-Hazardous	Unpainted wood	31		
			Other waste	3.6		
		Hazardous	Drum (205 L)	1 drum		
			Asbestos waste	28		
			Total and leachable lead paint on wood	1		
					AST (900 L)	0.5
					Organic content in AST (900 L)	0.675
Other hazardous waste	1					

AEC # <sup>(1)</sup>	Structure Designation	Material Type	Material Description	Estimated Uncrushed Volume (m <sup>3</sup> ) <sup>(2)</sup>
8	Chicken Coop (10 x 3.8 x 3.2 m), Caged Area (3.7 x 3.8 x 2.1 m)	Non-Hazardous	Unpainted wood	20
			Other waste	1.5
			Drum (205 L)	1 drum
			Asbestos waste	6.7
			Fire Extinguisher	0.1
			AST (900 L)	0.5
			Organic content in AST (900 L)	0.675
			Total and leachable lead paint on particulate board and wood	3.2
			Unpainted wood	300
			Other waste	178.8
9	Bunkhouse (31 x 9.2 x 3.2 m)	Non-Hazardous	AST (900 L)	1
			Asbestos waste	0.1
			Total and leachable lead paint on asbestos panels	25
			Total and leachable lead paint on wood	7
			Total and leachable lead interior painted metal	18
9		Hazardous	Organic contents in AST (900 L)	0.05
			Other hazardous waste	1.8

AEC # <sup>(1)</sup>	Structure Designation	Material Type	Material Description	Estimated Uncrushed Volume (m <sup>3</sup> ) <sup>(2)</sup>
10	Generator Building (14 x 6.8 x 3.2 m)	Non-Hazardous	Unpainted wood	60
			Other waste	69.1
			Drum (205 L)	3 drums
			Asbestos waste	1
			Aqueous content in drum (205 L)	0.2
		Hazardous	Total lead painted generators	3
			Total and leachable lead paint on wood	40
			Total and leachable lead paint on asbestos panels	12.5
			Total and leachable lead interior paint on metal	10
			Equipment contents	0.5L
Non-Hazardous	Debris Adjacent to Building.	Other waste	2.26	
		Unpainted wood	6	
		Other waste	3	

AEC # <sup>(1)</sup>	Structure Designation	Material Type	Material Description	Estimated Uncrushed Volume (m <sup>3</sup> ) <sup>(2)</sup>
11	House and Garage (15 x 8 x 2.4 m)	Non-Hazardous	Unpainted wood	115
			Other waste	11
			Drum (205 L)	3 drums
		Hazardous	Asbestos waste	62
			Total and leachable lead paint on wood	10
			Other waste	0.6
		AST (900 L)	0.5	
		Non-Hazardous	Unpainted wood	4
			Other waste	6.5
			Creosote treated wood	0.5
Non-Hazardous	Shed (6.5 x 6.5 x 2.9 m)	Unpainted wood	10	
		Other waste	12	
		Total and leachable paint on equipment	8	
Hazardous	Shed (6.5 x 6.5 x 2.9 m)	Equipment contents	0.001	
		Asbestos waste	2	

AEC # <sup>(1)</sup>	Structure Designation	Material Type	Material Description	Estimated Uncrushed Volume (m <sup>3</sup> ) <sup>(2)</sup>	
13	House (9.6 x 8.8 x 2.9 m)	Non-Hazardous	Unpainted wood	46	
			Other waste	12.5	
			Drum (205 L)	3 drums	
			Hazardous	Asbestos waste	20
			Total and leachable lead paint on wood	14	
			Total and leachable paint on particulate board	3	
			Total and leachable lead paint on metal	3	
AST (900 L)	0.5				
Total and leachable lead paint on equipment	16				
Other hazardous waste	0.02				
Total and leachable lead paint on wood (building)	15.6				
27	Building (~2.5 x 2.5x 2.5 m)	Hazardous			

(1) AEC = Area of Environmental Concern.

(2) Does not include drums and liquid.

(3) Reference: Remedial Action Plan. Former Weather Station Nottingham Island, Nunavut. April 2013. EBA, A Tetra Tech Company.

**APPENDIX E**  
**DEBRIS INVENTORY**

**APPENDIX E  
DEBRIS INVENTORY**

<b>AEC #<sup>(1)</sup></b>	<b>Structure/Site Debris Designation</b>	<b>Material Type</b>	<b>Material Description</b>	<b>Approximate Liquid Volume (L)</b>	<b>Approximate Number of Drums</b>	<b>Estimated Uncrushed Volume (m<sup>3</sup>)<sup>(2)</sup></b>
<b>14</b>	AST Farm	Non-Hazardous	Other waste	-	-	20
			Drum (205 L)	-	1 drum	-
		Hazardous	Aqueous content in drum (205 L) Total lead paint on ASTs (73,000 L each)	20	-	-
<b>15</b>	Food Cache Storage	Non-Hazardous	Unpainted wood	-	-	5
		Hazardous	Other hazardous waste	-	-	0.02
<b>16</b>	Debris Area 01 - Located 10 m north of Hudson Strait (burned building)	Non-Hazardous	Unpainted wood	-	-	5
			Other waste	-	-	2
<b>17</b>	Debris Area 02 – Located south of the AST tank farm and west of the Generator Building and Bunkhouse					

Inventory listed in other AECs

<b>AEC #<sup>(1)</sup></b>	<b>Structure/Site Debris Designation</b>	<b>Material Type</b>	<b>Material Description</b>	<b>Approximate Liquid Volume (L)</b>	<b>Approximate Number of Drums</b>	<b>Estimated Uncrushed Volume (m<sup>3</sup>)<sup>(2)</sup></b>	
18	Debris Area 03 – Located northeast of the AST, west of the Food Cache, northeast of Storage Shed 01 and Southeast of Old Kitchen.	Non-Hazardous	Unpainted wood	-	-	5	
			Other waste	-	-	2	
			Hazardous	Other hazardous waste	-	-	0.02
19	Debris Area 04 – Located to the southeast of the site next to Hudson Strait	Non-Hazardous	Unpainted wood	-	-	1	
			Other waste	-	-	4	
			Hazardous	Other hazardous waste	-	-	0.06
20	Debris Area 05 - Located east of the Main Site	Non-Hazardous	Unpainted wood	-	-	16.5	
			Other waste	-	-	1.5	
			Total and leachable paint on wood		-	-	4
			Creosote treated wood		-	-	2
21	Debris Area 06 – Located northeast of the Storage Building	Non-Hazardous	Unpainted wood	-	-	1	
			Other waste	-	-	0.5	
			None		-	-	-
22	Road to East of Site	None	None	-	-	-	
23	Offsite Communication Tower	N/A	Tower	-	-	-	

AEC # <sup>(1)</sup>	Structure/Site Debris Designation	Material Type	Material Description	Approximate Liquid Volume (L)	Approximate Number of Drums	Estimated Uncrushed Volume (m <sup>3</sup> ) <sup>(2)</sup>
24	Lake 01	N/A	N/A	-	-	-
25	Lake 02	N/A	N/A	-	-	-
26	Hudson Strait (shoreline)	Non-Hazardous	Unpainted wood	-	-	2
			Other waste	-	-	1
			Drums (205 L)	-	20	-
			Compressed gas cylinder	50	-	-
			Total and leachable lead painted equipment	-	-	4
			Other hazardous waste	-	-	0.02
27	4 Wood Poles	Hazardous	Creosote treated wood	-	-	32
N/A	Drums from the ASTs (73,000 L) to the Hudson Strait	Non-Hazardous	Drums (205 L)	-	44	-
			Aqueous content in Drum (205 L)	400	-	-
			Compressed gas cylinder	50	-	-
N/A	Various Debris (throughout and adjacent to Site)	Non-Hazardous	Unpainted wood	-	-	17.5
			Other waste	-	-	17
			Creosote treated wood	-	-	2.5

(1) AEC = Area of Environmental Concern.

(2) Does not include drums and liquid.

(3) Reference: Remedial Action Plan. Former Weather Station Nottingham Island, Nunavut. April 2013. EBA, A Tetra Tech Company.

**APPENDIX F**  
**ASBESTOS INVENTORY**

**APPENDIX F  
ASBESTOS INVENTORY**

AEC # <sup>(1)</sup>	Structure/Site Debris Designation	Material Description	Estimated Uncrushed Volume (m <sup>3</sup> ) <sup>(2)</sup>
1	Storage Shed 01	Asbestos waste (attic insulation and interior ceiling paneling)	99
3	New Radio Building	Asbestos waste	63.5
		Total lead and leachable lead paint on asbestos panels	11
5	Outhouse	Asbestos waste	0.2
6	Storage Shed 02	Asbestos waste	0.5
7	Storage Building & Small Shed	Asbestos waste	28
8	Chicken Coop & Caged Area	Asbestos waste	6.7
9	Bunkhouse	Asbestos waste	0.1
		Total and leachable lead paint on asbestos panels	25
10	Generator Building	Asbestos waste	1
		Total and leachable lead paint on asbestos panels	12.5
		Asbestos waste	62
11	House & Garage	Asbestos waste	62
12	Shed	Asbestos waste	2
13	House	Asbestos waste	20

<sup>(1)</sup> AEC = Area of Environmental Concern.

<sup>(2)</sup> Reference: Remedial Action Plan. Former Weather Station Nottingham Island, Nunavut. April 2013. EBA, A Tetra Tech Company.

**APPENDIX G**  
**IMPACTED SOIL INVENTORY**

**APPENDIX G  
IMPACTED SOIL INVENTORY**

<b>AEC # <sup>(1)</sup></b>	<b>Structure/Site Debris Designation</b>	<b>Exceedances</b>	<b>Location of Exceedances</b>	<b>Estimated Volume of PHC Impacted Soil (m<sup>3</sup>)</b>	<b>Estimated Volume of Metal Impacted Soil (m<sup>3</sup>)</b>	<b>Estimated Volume of Co-Contaminated Soil (m<sup>3</sup>) <sup>(2)</sup></b>
<b>1</b>	Storage Shed 01	Cadmium	Southwest corner & along south side of building.	-	59	-
		Cadmium and Tin	Southeast corner & along south side of building.			
<b>3</b>	New Radio Building & Small Shed	PHC Fractions F1, F2 and F3; Copper, Tin, Lead, Selenium and Zinc.	Southwest corner of the building.	65	-	21
		PHC Fractions F1, F2 and F3; Ethylbenzene; Copper.	South of southwest corner of the building.			
		PHC Fractions F1, F2 and F3.	South of building.			
<b>4</b>	Old Radio Building	PHC Fractions F1, F2 and F3; Selenium	East of building.	14.5	14	11.5
		PHC Fractions F1, F2 and F3; Barium, Copper, Tin, Lead, Selenium and Zinc.	West side of building.			
		Selenium	Northeast of building, on the trail.			
<b>6</b>	Storage Shed 02	Selenium	South of southeast corner of the building.	-	1	-

AEC # <sup>(1)</sup>	Structure/Site Debris Designation	Exceedances	Location of Exceedances	Estimated Volume of PHC Impacted Soil (m <sup>3</sup> )	Estimated Volume of Metal Impacted Soil (m <sup>3</sup> )	Estimated Volume of Co-Contaminated Soil (m <sup>3</sup> ) <sup>(3)</sup>
9	Bunkhouse	PHC Fractions F1, F2 and F3	North of building; northwest of tanks.	4	25	-
		Tin	North of building and northeast corner of building.			
		Copper and Tin	East of building.			
10	Generator Building	Tin	North of northwest corner of building.	-	3	-
11/12	House and Garage Building Foundation Shed	PHC Fractions F1, F2 and F3	West and northwest of House & Garage along the Former Fuel Distribution Line. Southwest of House & Garage.	1898		176
		PHC Fractions F1, F2 and F3	Southwest of House & Garage; southwest of Shed and north of northwest corner of Shed.			
		PHC Fractions F1, F2 and F3; Benzene, Toluene and Ethylbenzene.	South of House & Garage.			
		Lead, Zinc and PHC Fractions F1, F2 and F3.	North of House & Garage along the Pipeline (Former Fuel Distribution Line).			
		PHC Fractions F1, F2 and F3; Benzene, Toluene, Ethylbenzene; Lead, Selenium and Zinc.	Southwest and southeast of House & Garage.			
Benzene, Tin, Lead and Selenium.	West of Shed.					

AEC # <sup>(1)</sup>	Structure/Site Debris Designation	Exceedances	Location of Exceedances	Estimated Volume of PHC Impacted Soil (m <sup>3</sup> )	Estimated Volume of Metal Impacted Soil (m <sup>3</sup> )	Estimated Volume of Co-Contaminated Soil (m <sup>3</sup> ) <sup>(3)</sup>
11/12	House and Garage Building Foundation Shed	Benzene, Toluene and Ethylbenzene	Southeast corner of House & Garage.	1,898		176
		Benzene	West of Shed.			
13	House	Tin, Lead	Southwest of House.	9.5	15	7
		Tin and Benzene	West of House & Tank			
		Lead, Selenium and Tin	Northwest of House			
14	AST Farm	PHC Fractions F1, F2 and F3	West, north and northeast of Helipad.	54	-	-
16	Debris Area 01	Lead and Tin	South and northeast part of area	-	20	-
		Barium and Tin	South part of area	-	1	-
Total Volume of Impacted Soil				2,045	143	216
<i>Total Volume of Impacted Soil with 15% Contingency</i>				<b>2,352</b>	<b>165</b>	<b>248</b>

<sup>(1)</sup> AEC = Area of Environmental Concern

<sup>(2)</sup> Co-contaminated soil = metal and petroleum hydrocarbon (PHC) impacted soil.

<sup>(3)</sup> Reference: Remedial Action Plan. Former Weather Station Nottingham Island, Nunavut. April 2013. EBA, A Tetra Tech Company.

**APPENDIX H**  
**SITE PHOTOGRAPHS**



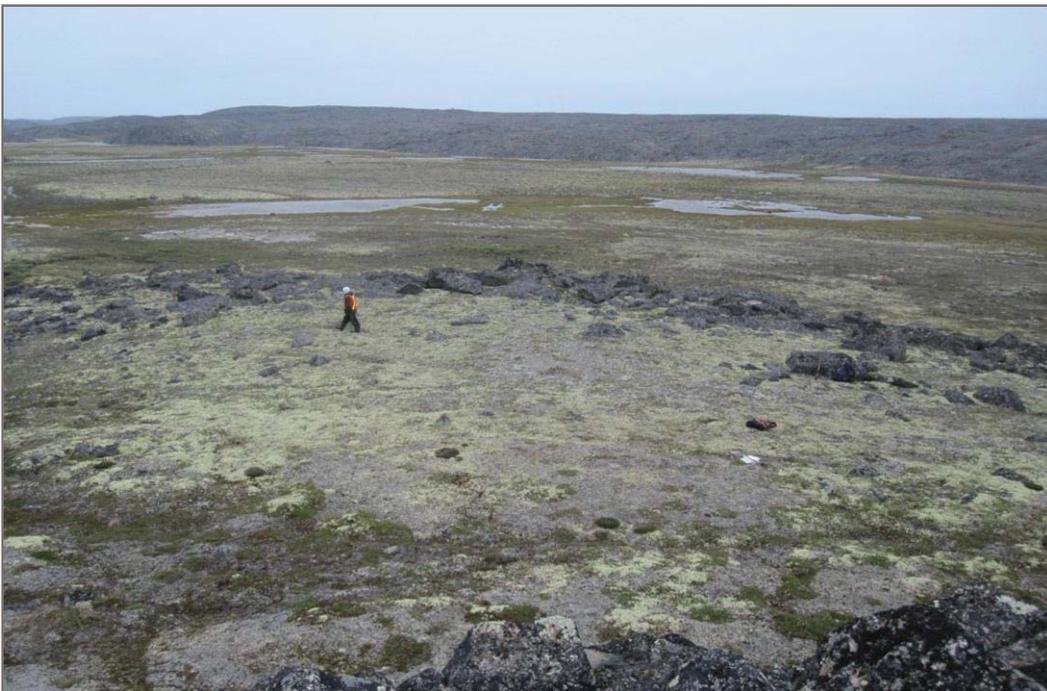
**Photo G1:** Borrow A, looking southwest



**Photo G2:** Borrow A, looking south



**Photo G3:** Borrow B in the mid-ground, looking south



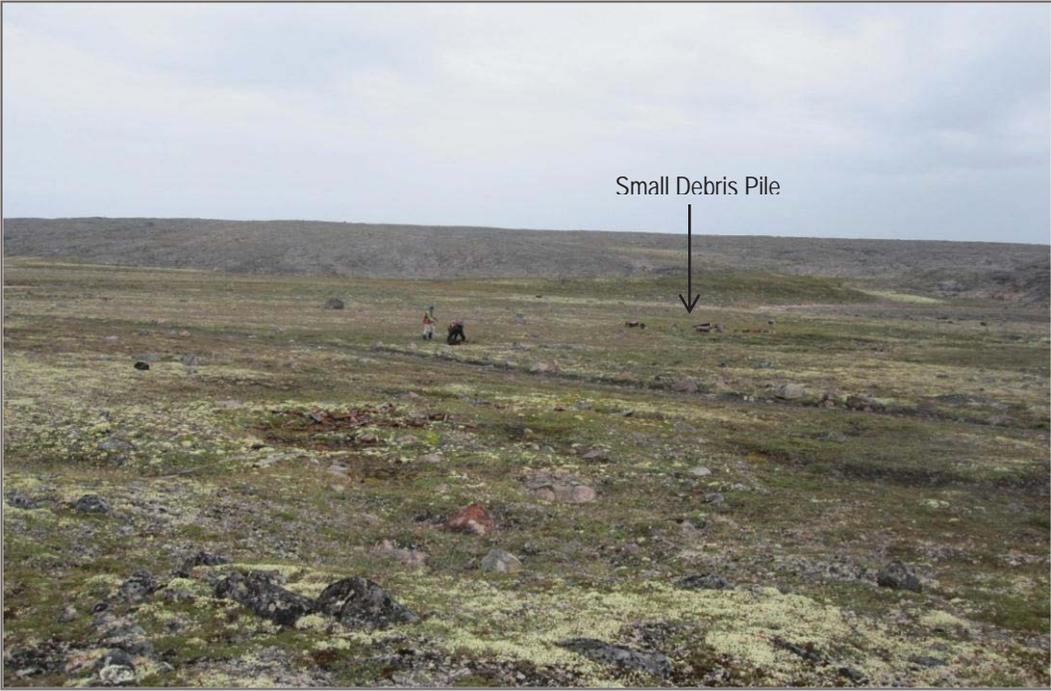
**Photo G4:** Borrow B in the foreground, looking southeast



**Photo G5:** Gravelly sand with a trace of fines and 30-40% calcareous material at Borrow B



**Photo G6:** Trail and Landfarm B to the right of the trail, looking east N/A



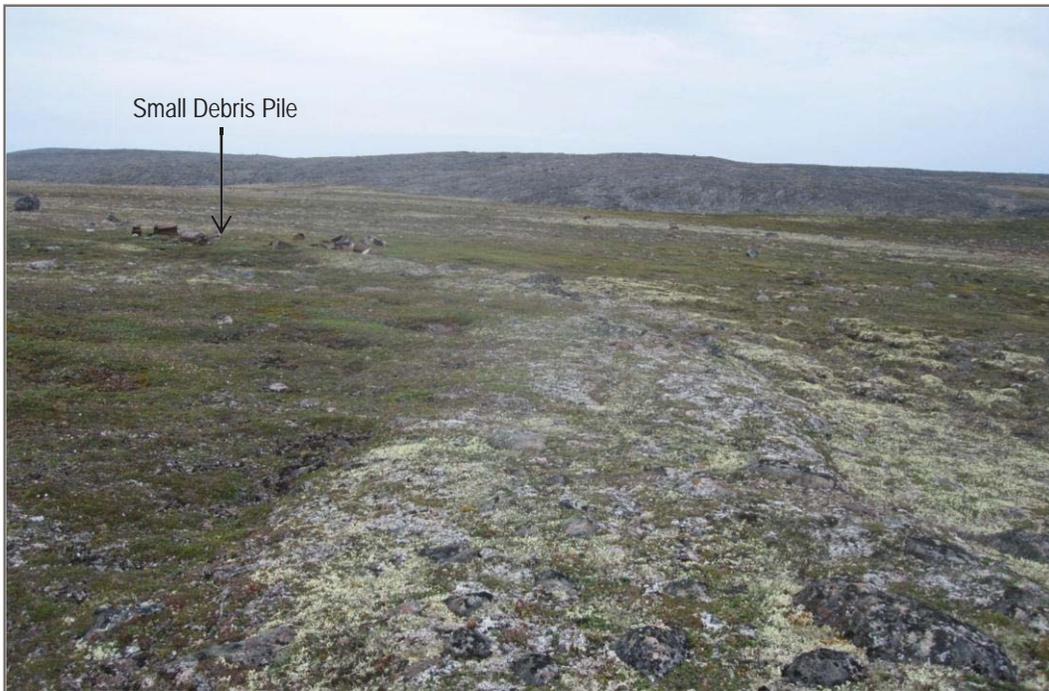
**Photo G7:** Landfarm B, looking southeast N/A



**Photo G8:** Landfarm B, looking northeast from TP16 N/A



**Photo G9:** Landfarm B, looking east from TP16 N/A



**Photo G10:** Landfarm B, looking southeast from TP16 N/A



**Photo A1:** The site, looking east



**Photo A2:** The site, looking west



**Photo A3:** The shoreline, looking east



**Photo H-1:** Example of exterior ACM siding and total and leachable lead paint on wood (APEC 1 - Storage Shed 01 shown)



**Photo H-2:** Example of ACM attic insulation and fiberglass wall insulation is ACM contaminated from the attic (APEC 1 - Storage Shed 01 shown)



**Photo H-3:** Example of total and leachable lead paint on exterior and some interior wood (APEC 2 - Old Kitchen)



**Photo H-4:** APEC 2 - Old Kitchen - Interior debris - Unstable structures



**Photo H-5:** Example of mercury, PCBs and lead solder in electrical components, and total and leachable lead paint on metal (APEC 3 - New Radio Building shown)



**Photo H-6:** Total and leachable lead paint on fallen metal pole adjacent to the New Radio Building, various poles were found on-site



**Photo H-7:** APEC 4 - Old Radio Building Interior - Lead acid batteries and total lead painted particulate board



**Photo H-8:** Example of ACM green shingles on walls and roof (APEC 6 - Storage Shed 02)



**Photo H-9:** Example of metal debris found on-site



**Photo H-10:** With organic content [APEC 7 - AST (900L)]



**Photo H-11:** Example of ACM shingles and total and leachable lead painted wood (APEC 8 - Chicken Coop shown)



**Photo H-12:** Example of ASTs with organic liquid found on-site



**Photo H-13:** Example of total and leachable lead painted ACM panels and wood (APEC 9 - Bunkhouse shown)



**Photo H-14:** APEC 10 - Generator Building – Mercury, PCBs and lead in electrical components, PCBs in light ballasts and mercury vapor in fluorescent lights



**Photo H-15:** APEC 10 - Generator Building - Total lead painted generators and equipment contents in three generators, lead acid batteries and total and leachable lead painted ACM panels



**Photo H-16:** APEC 13 - House - Total and leachable lead painted equipment adjacent to House



**Photo H-17:** APEC 14 - AST Tank Farm - Total lead painted ASTs



**Photo H-18:** APEC 15 - Food Cache Storage - Unstable structures



**Photo H-19:** APEC 16 - Debris Area 01 - Burnt building



**Photo H-20:** APEC 18 - Debris Area 03 - Concrete cubes



**Photo H-21:** APEC 19 - Debris Area 04 - Main dump area contains lead acid batteries



**Photo H-22:** APEC 20 - Debris Area 05 - Total and leachable lead painted wood on building and creosote soaked wood on bottom of wood poles



**Photo H-23:** APEC 26 - Hudson Strait - Debris



**Photo H-24:** Various debris throughout site, unpainted wood staircase