

**Public Works and Government Services Canada**

**Construction Specifications for the  
Environmental Site Remediation at  
Lot 512, Iqaluit, Nunavut**

**Project No.: R.120950.002**

Prepared by: Stantec Consulting Ltd.

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## **Part 1            General**

### **1.1                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    Public Services and Procurement Canada (PSPC)/Public Works and Government Services Canada (PWGSC) Construction Representative (PCR): Within the context of these Specifications, the PSPC/PWGSC Construction Representative (PCR) refers to personnel appointed by Departmental Representative or authorized on site by Departmental Representative. PCRs provide recommendations/technical guidance to Departmental Representative as required, for the enforcement of these specifications.
- .3    Authorities Having Jurisdiction (AHJ): Government agency or sub-agency that regulates the codes and standards that are to be met during the remediation processes.
- .4    Contractor: Principle Contractor as defined by the AHJs, retained to undertake the work as defined within the context of these specifications. The Contractor is the Prime Contractor, responsible for full discretion oversight and holds all liability.
- .5    Contractor's Site Superintendent: Contractor's resident site representative, who is authorized to make decisions on behalf of Contractor.
- .6    Provide: supply and install, operate, submit or any other procedure necessary to complete the work as intended.
- .7    Sub-contractor: A contractor under contract to Principle Contractor and subject to the same contract requirements as the Principle Contractor.

### **1.2                WORK COVERED BY CONTRACT DOCUMENTS**

- .1    Work of this Contract comprises site remediation of the property identified as Lot 512, located at the intersection of Al Woodhouse Street and Iglulik Drive in Iqaluit, Nunavut; and further identified as the "Site". Work includes, but is not limited to, the following:
  - .1    Prepare and maintain project schedule.
  - .2    Prepare required Health and Safety documents.
  - .3    Complete a utility locates program.
  - .4    Mobilize equipment to the Site.
  - .5    Complete a remedial excavation.
  - .6    Disposal of contaminated soil and water in compliance with applicable regulations and municipal/territorial requirements.
  - .7    Install an impermeable liner at the excavation perimeter.
  - .8    Backfill the excavation to original grade.
  - .9    Demobilize equipment from the Site.

### **1.3 BACKGROUND INFORMATION**

- .1 A Limited Phase II Environmental Site Assessment, dated November 9, 2018, was completed by Stantec Consulting Ltd. to determine the presence and extent of petroleum hydrocarbon (PHC) impacts at the Site. A total of 11 test pits were advanced at the Site. In 7 of the 11 test pits completed, concentrations of PHC fractions F1, F2, and/or, F3 (PHC F1, F2, and/or F3) exceeded Canadian Council of Ministers of Environment (CCME) guidelines for a residential/parkland land use. The total estimated volume of impacted soil to be removed is 1,145 cubic metres.
- .2 A Remedial Action Plan dated September 12, 2019 was prepared by Stantec Consulting Ltd. which recommended the excavation of impacted soils and the placement of an impermeable liner on the excavation perimeter.

### **1.4 CONTRACT METHOD**

- .1 Complete work under unit price contract.

### **1.5 CONTRACTOR USE OF SITE**

- .1 Contractor use of Site is restricted to the terms and conditions of the issued permits, and all applicable guidelines and regulations.
- .2 Co-ordinate use of Site under direction of Departmental Representative or PCR.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Use of the Site will comply with the environmental requirements of Section 01.35.43 – Environmental Procedures.
- .5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative or PCR.
- .7 Commencement of demobilization will not occur without completion of Final Inspection and acceptance by Departmental Representative.

### **1.6 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy of each document as follows:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 List of Outstanding Shop Drawings.
  - .5 Change Orders.
  - .6 Other Modifications to Contract.
  - .7 Copy of Approved Work Schedule.

- .8 Manufacturers installation and application instructions
- .9 Site-Specific Health and Safety Plan and Other Safety Related Documents.
- .10 Environmental Protection Plan (and all associated sections/plans)
- .11 Water Licence (if applicable).
- .12 All applicable Territorial permits and licences.
- .13 All applicable Federal permits and licences.
- .14 Copies of manifests and bills of lading.
- .15 Workers' Safety & Compensation Commission (WSCC) Notification of Project.
- .16 Letter of Good Standing with WSCC.
- .17 Other documents as specified.

**1.7 SCHEDULE**

- .1 Provide and maintain Work Schedule.
- .2 Keep the Departmental Representative and PCR advised of planned work activities.

**1.8 PERMITS AND LICENCES**

- .1 Register, obtain and pay for all required licences and permits for individual tradesmen employed for work as referenced in the various Sections of the Contract Specifications.
- .2 Obtain and pay for any other licences or permits required to perform the activities required on Site, if required.
- .3 Provide supplemental information to the regulators for any necessary licence amendments or reporting requirements.
- .4 Pay all costs associated with complying with the requirements for the permits and licences noted in the above clauses.

----- END SECTION -----

**Part 1            General**

**1.1                ADMINISTRATIVE**

- .1    Responsibility of PSPC/PWGSC Construction Representative (PCR):
  - .1        Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
  - .2        Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and affected parties not in attendance.
- .2    Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

**1.2                PROJECT STARTUP TELECONFERENCE**

- .1    Within 10 days after award of Contract, Departmental Representative to request a meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities.
- .2    Departmental Representative, PCR, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3    Department Representative to establish time of meeting and notify parties concerned minimum 5 days before meeting.
- .4    Agenda to include:
  - .1        Appointment of official representative of participants in the work.
  - .2        Schedule of Work.
  - .3        Schedule of submission of submittals.
  - .4        Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .5        Monthly progress claims, administrative procedures, photographs, hold backs.
  - .6        Appointment of inspection and testing agencies or firms.
  - .7        Insurances, transcript of policies.

**1.3                PROGRESS MEETINGS**

- .1    During course of work schedule weekly progress meetings.
- .2    Contractor, major Subcontractors involved in work, Departmental Representative and PCR are to be in attendance.
- .3    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        Corrective measures and procedures to regain projected schedule.

- .6 Revision to construction schedule.
- .7 Progress schedule, during succeeding work period.
- .8 Review submittal schedules: expedite as required.
- .9 Maintenance of quality standards.
- .10 Correspondence from AHJ or expected visits from AHJ.
- .11 Review proposed changes for effect on construction schedule and on completion date.
- .12 Other business.

#### **1.4 SAFETY MEETINGS**

- .1 Daily Safety Meetings will be held on-site daily during the construction period and to include Contractor, all on-site staff, and on-site PCR.
  - .1 The Daily Safety Meeting may be split into task or crew specific meetings as required.
  - .2 Contractor to record attendance and discussion topic(s) for daily safety meeting(s) and make available to PCR.

#### **1.5 POST CONSTRUCTION MEETING**

- .1 Within 30 days after completion of construction, attend a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities. The meeting will be a meeting between all parties via teleconference.
- .2 Departmental Representative, PCR, Contractor, major Sub-Contractors, field representatives and supervisors will be in attendance.
- .3 PCR to establish time and contact information for the meeting and notify parties concerned minimum 10 days before meeting.
- .4 PCR will chair the meeting and take minutes. Meeting will be informal and agenda to include, but is not limited to:
  - .1 Outstanding contractual issues.
  - .2 Holdback release.
  - .3 Lessons learned.
  - .4 Outstanding submittals.
  - .5 Outstanding reporting requirements.

#### **1.6 CONTRACT CLOSEOUT MEETING**

- .1 Attend a meeting of parties in contract to discuss closing the contract and addressing any items identified as outstanding during the Post Construction Meeting.
- .2 PCR, Contractor, major Sub-Contractor, field inspectors, and supervisors will be in attendance.
- .3 PCR to establish time and contact information of meeting and notify parties concerned a minimum of 10 days before meeting.

- .4 PCR will chair the meeting and take minutes. Meeting will be informal and agenda to include, but is not limited to:
  - .1 Summary of Site remediation activities.
  - .2 Confirmation of quantities.
  - .3 Health, Safety, and Security issues.
  - .4 Summary of all interactions with AHJ.
  - .5 Lessons learned.

----- END SECTION -----

**Part 1            General**

**1.1                PROJECT SCHEDULE**

- .1    Develop detailed Project Schedule which includes as minimum milestone and activity types as follows:
  - .1    Award.
  - .2    Shop Drawings, Samples.
  - .3    Permits.
  - .4    Mobilization.
  - .5    Excavation.
  - .6    Contaminated Soil/Water Disposal.
  - .7    Backfill.
  - .8    Demobilization.
- .2    Schedule to be provided to Departmental Representative and PSPC/PWGSC Construction Representative (PCR) within 7 days of award.

**1.2                PROJECT SCHEDULE REPORTING**

- .1    Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress and provide to Departmental Representative and PCR.
- .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.

**1.3                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.

----- END SECTION -----

## **Part 1            General**

### **1.1                Administrative**

- .1        Submit to Departmental Representative submittals listed for review. Contractor to provide submittals including but not limited to those listed in Submittal Table 01 33 00-1. Submit promptly and in orderly sequence to not cause delay in work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2        Submit and process substitutions through the Departmental Representative.
- .3        Do not proceed with work affected by submittal until review is complete.
- .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 considered rejected.
- .5        Present product data in SI Metric units. Where items or information is not produced in SI Metric units, converted values are acceptable.
- .6        For submittals required by applicable permits, Contractor is to meet submission standards and guidelines referenced by the associated regulatory body.
- .7        For submittals containing deviations from the requirements of the Contract Documents, Contractor is responsible for notifying Departmental Representative, in writing at the time of submission, of any deviations and the reasons for such deviations.
- .8        Verify field measurements and affected adjacent work are coordinated.
- .9        Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .10      Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .11      Keep one reviewed copy of each submission on site.

### **1.2                Photographic Documentation**

- .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 must be made available to the Departmental Representative for download electronically.
- .4        Identification: Photographic log in portable document format (.pdf) to be included with each submission. Cover page to include project name and number. Present each photograph 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. Description to include:

- .1 Digital photograph file name.
- .2 Name and description of feature.
- .3 View direction.
- .4 Date and time of exposure.
- .5 GPS location.
- .5 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 construction activity.
- .6 Viewpoint locations for final digital photographs to be determined by Departmental Representative.
- .7 Provide “Before” and “After” photographs of the Site showing key areas before and after construction activities from the same photographic viewpoint. Plot the viewpoint locations on the record drawing mark-up.
- .8 Submit progress photographs weekly with last weekly report or as directed by the Departmental Representative.
- .9 Submit final photographs prior to final progress payment request.

**1.3 Measurement for Payment**

- .1 All direct costs for the submittal of the site photographs are to be included in the lump sum price for Submittals, Item 01 33 00, as indicated in Basis of Payment Schedule.
- .2 Except as indicated above, work under this section will not be measured. Include all costs in Item BOP-1, Balance of Project Costs, in the Basis of Payment Schedule

**Part 2 Products**

**2.1 Not Used**

**Part 3 Execution**

**3.1 Not Used**

<b>TABLE 01 33 00-1 CONTRACTOR SUBMITTAL SCHEDULE</b>		
<b>Section</b>	<b>Description</b>	<b>Date</b>
01 31 19	Minutes of Weekly Safety Meetings	Weekly, within 3 days of meeting
01 32 16.19	Project Schedule	7 days after Contract Award
	Weekly Progress Schedule and Site Construction/Remediation Activities Reporting	Weekly during work
01 33 00	Progress Photographs	Weekly during Weekly Reporting or as directed by Departmental Representative
	Final Photographs	Prior to final progress payment request
01 35 13.43	Execution Plan Detailing Excavation and Replacement of Site Soil	14 days prior to mobilization
	Site Layout Drawings	7 days after Contract Award
	Licensed Disposal Facility Information	7 days prior to mobilization
01 35 29.13	Draft Site-Specific Health and Safety Plan (HASP) as Described in 1.2.1	Within 14 days after Contract Award
	Final Site-Specific HASP	Within 5 days after receipt of comment from Departmental Representative
	On-Site Contingency and Emergency Response Plan	As part of Site-Specific HASP
01 35 43	Contractor Submittals Under Regulatory Permits/Licenses (if required)	14 days prior to mobilization
	Environmental Protection Plan	14 days prior to mobilization
	Spill Control Plan	As part of Environmental Protection Plan
	Erosion and Sediment Control Plan (ESCP)	14 days prior to mobilization
01 41 00	WHMIS Safety Data Sheets	Upon delivery of materials to the Site
01 45 00	Inspection and Testing Reports	As received
01 52 00	Construction Facilities and Access Site Plan	7 days prior to mobilization
01 55 26	City of Iqaluit Permits for Traffic Management	14 days prior to mobilization
01 71 00	Surveyor Information	14 days prior to mobilization
	Topographic Survey of Pre-work Conditions	7 days following start of work
	Survey Drawings	14 days following completion of work
	Raw Survey Data	7 days following completion of work
01 78 00	Supplied Products Information	As required
	Contaminated Soil/Water Disposal Waste Manifests and Waybills	As requested
	Signed Certificate of Conformance/Non-conformance to Contract Documents	7 days prior to requested final inspection

<b>TABLE 01 33 00-1 CONTRACTOR SUBMITTAL SCHEDULE</b>		
<b>Section</b>	<b>Description</b>	<b>Date</b>
02 55 13	Written Notice of Excavation Start Date	7 days prior to start of work
	Written Notice of Limits of Excavation Reached	As required
31 23 33.01	Existing Conditions Survey	7 days prior to start of work
	Major Equipment List	7 days prior to start of work
	Underground Utility Locate Records	15 days prior to start of work
	Testing results	Upon Departmental Representative's request
31 32 19.17	Geomembrane Product Data	7 days prior to start of work

----- END SECTION -----

## **Part 1 General**

### **1.1 REFERENCE STANDARDS**

- .1 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-51.34-M86, Polyethylene Vapour Barrier.
- .2 Transportation and Dangerous Goods Act (1999).
- .3 Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines (CEQG) for the Protection of Environmental and Human Health for residential land use, online summary.
- .4 CCME Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHCs) (2008).

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit, prior to start of work, plan detailing execution of excavation and replacement of site soil.
- .2 Site Layout: within 7 days after date of Notice to Proceed and prior to mobilization to site, submit site layout drawings showing existing conditions and facilities, construction facilities and temporary controls including following:
  - .1 Equipment and personnel decontamination areas.
  - .2 Means of ingress, egress and temporary traffic control facilities.
  - .3 Equipment and material staging areas.
  - .4 Zones specified in Contractor's site-specific Health and Safety Plan.

### **1.3 REGULATORY REQUIREMENTS**

- .1 Comply with federal, territorial, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.
- .2 Work to meet or exceed minimum requirements established by federal, territorial, and local laws and regulations which are applicable.
  - .1 Contractor: responsible for complying with amendments as they become effective.
- .3 In event that compliance exceeds scope of work or conflicts with specific requirements of contract notify Departmental Representative immediately.

### **1.4 SEQUENCING AND SCHEDULING**

- .1 Do not commence work involving contact with potentially contaminated materials, as defined in Section 02 55 13, until decontamination procedures accepted by PSPC/PWGSC Construction Representative (PCR).

### **1.5 SOIL STOCKPILING FACILITIES**

- .1 Provide, maintain, and operate storage/stockpiling facilities as required.

- .2 Install polyethylene liner below proposed stockpile locations to prevent contact between stockpile material and ground. Equip facility with polyethylene liner capable of covering stockpiled material until PCR advises Contractor to dispose of material off site.
- .3 Segregate all contaminated soil, as defined in Section 02 55 13, from non-contaminated soil in separate stockpiles.

## **1.6 VEHICULAR ACCESS AND PARKING**

- .1 Maintenance and Use:
  - .1 Prevent contamination of access roads. Immediately scrape up debris or material on access roads which is suspected to be contaminated as determined by PCR; transport and dispose of in appropriate off-site disposal facility. Clean access roads at least once per shift.
  - .2 PCR may collect soil samples for chemical analyses from traveling surfaces of constructed and existing access routes prior to, during, and upon completion of work. Excavate and dispose of clean soil contaminated by Contractor's activities at no additional cost.

## **1.7 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 immediately during construction and in accordance with all applicable regulations and standards during work and in accordance with Section 01 35 43 – Environmental Procedures.
- .3 Provide positive means to prevent airborne dust from dispersing into atmosphere. Use potable water for dust and particulate control.
- .4 As minimum, use appropriate covers on trucks hauling fine or dusty material. Use watertight vehicles to haul wet materials.
- .5 Prevent dust from spreading to adjacent property sites.
- .6 PCR will stop work at any time when Contractor's control of dusts and particulates is inadequate for wind conditions present at site, or when air quality monitoring indicates that release of fugitive dusts and particulates into atmosphere equals or exceeds specified levels.
- .7 If Contractor's dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, stop work. Contractor must discuss procedures that Contractor proposes to resolve problem. Make necessary changes to operations prior to resuming excavation, handling, processing, or other work that may cause release of dusts or particulates.

## **1.8 POLLUTION CONTROL**

- .1 Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious toxic substances and pollutants produced by construction operations.

- .2 Be prepared to intercept, clean up, and dispose of spills or releases that may occur whether on land or water. Maintain materials and equipment required for cleanup of spills or releases readily accessible on site.
- .3 Promptly report spills and releases potentially causing damage to environment to:
  - .1 Authority having jurisdiction or interest in spill or release including conservation authority, water supply authorities, drainage authority, road authority, and fire department.
  - .2 Owner of pollutant, if known.
  - .3 Person having control over pollutant, if known.
  - .4 Departmental Representative and PCR.
- .4 Contact manufacturer of pollutant if known and ascertain hazards involved, precautions required, and measures used in cleanup or mitigating action.
- .5 Take immediate action using available resources to contain and mitigate effects on environment and persons from spill or release.
- .6 Provide spill response materials including, containers, adsorbent, shovels, and personal protective equipment. Make spill response materials available at all times in which hazardous materials or wastes are being handled or transported. Spill response materials: compatible with type of material being handled.

## **1.9 EQUIPMENT DECONTAMINATION**

- .1 Commence work involving equipment contact with potentially contaminated material only after Equipment Decontamination procedures accepted by PCR.
- .2 Decontaminate equipment after working in potentially contaminated work areas and prior to subsequent work or travel on clean areas.
- .3 Perform equipment decontamination on-Site.
- .4 At minimum, perform following steps during equipment decontamination: mechanically remove packed dirt, grit, and debris by scraping and brushing without using steam or high-pressure water. Pay particular attention to tire treads, equipment tracks, springs, joints, sprockets, and undercarriages. Scrub surfaces with long handle scrub brushes. Perform assessment as directed by PCR to determine effectiveness of decontamination.
- .5 Maintain inspection record on site which includes: equipment descriptions with identification numbers; time and date decontaminated; and name of inspector with comment stating that decontamination was performed and completed.
- .6 Each piece of equipment will be inspected by PCR after decontamination and prior to removal from site and/or travel on clean areas.
- .7 Take appropriate measures necessary to minimize drift of dust and debris during decontamination including provision of wind screens.
- .8 Collect decontamination sediments for off-site disposal as contaminated soil. Transfer sediments to disposal transport vehicle or drums.

- .9 Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, and face shields.

#### **1.10 WATER CONTROL**

- .1 Maintain excavations free of water.
- .2 Prevent surface water runoff from leaving work areas.
- .3 Do not discharge decontaminated water, or surface water runoff, or groundwater which may have come in contact with potentially contaminated soil without testing and confirmation it meets applicable guidelines for discharge and acceptance has been provided by PCR and Authorities Having Jurisdiction (AHJ).
- .4 Prevent precipitation from infiltrating or from directly running off stockpiled materials. Cover stockpiled materials with a polyethylene liner during periods of work stoppage including at end of each working day and as directed by PCR.
- .5 Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.
- .6 Control surface drainage including ensuring that drainage paths are kept open, water is not directed across or over roads or pathways except through approved pipes or properly constructed troughs, and runoff from unstabilized areas is intercepted and diverted to suitable outlet.
- .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 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.
- .10 Contain and collect wastewaters and transfer such collected wastewaters to Contractor - supplied drums for offsite disposal.

#### **1.11 PROGRESS CLEANING**

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

#### **1.12 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 PCR. PCR will direct Contractor to perform additional decontamination if required.

**1.13 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 or bury rubbish and waste materials on site.
- .4 Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
- .5 Do not discharge wastes into streams or waterways.
- .6 Dispose of following materials at appropriate off-site facility identified by Contractor and accepted by PCR:
  - .1 Debris including excess construction material.
  - .2 Non-contaminated litter and rubbish.
  - .3 Disposable PPE worn during final cleaning.
- .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
- .8 Provide detailed information on disposal facility licensed to accept contaminated soil and water to Departmental Representative and PCR.
- .9 Dispose of contaminated soil (and water, if applicable) at licensed disposal facility following acceptance by Departmental Representative and PCR.

**1.14 RECORD KEEPING**

- .1 Maintain bills of lading for minimum of 375 days from date of shipment or longer period required by applicable law or regulation.

----- END SECTION -----

**Part 1            General**

**1.1                REFERENCE STANDARDS**

- .1        Occupational Health and Safety Regulations, NU Reg 003-2016.
- .2        Canada Labour Code, Canada Occupational Safety and Health Regulations, SOR/86-304.

**1.2                ACTION AND INFORMATIONAL SUBMITTALS**

- .1        Submit site-specific Health and Safety Plan (HASP), within 14 days after date of Notice to Proceed and prior to mobilization to site. The HASP will address the following items/sections:
  - .1        A Statement of Contractor's Safety Policy.
  - .2        Safety Responsibilities of all on-site personnel.
  - .3        Requirements for safety meetings and documentation.
  - .4        Anti-Harassment Policy.
  - .5        Fit for Duty Policy.
  - .6        Safety and health risk or hazard analysis for each site task and operation.
  - .7        Develop checklist for items to be inspected on a daily basis. Document actions taken.
  - .8        Personnel training requirements including:
    - .1        Names of personnel and alternates responsible for site safety and health, hazards present on site, and use of personal protective equipment.
    - .2        Work practices by which personnel can minimize risks from hazards, safe use of engineering controls and equipment on site, medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards, and elements of HASP.
  - .9        Personal protective equipment (PPE) program addressing:
    - .1        Donning and doffing procedures.
    - .2        PPE selection based upon site hazards.
    - .3        PPE use and limitations of equipment.
    - .4        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.
  - .10      Site control measures employed at site including site map, site work zones, use of 'buddy system', site communications including site security, alerting means for emergencies, standard operating procedures or safe work practices, and identification of nearest medical assistance.
  - .11      Decontamination procedures for both personnel and equipment.

- .12 Emergency response requirements addressing: pre-emergency planning, personnel roles, lines of authority and communication, emergency recognition and prevention, safe distances and places of refuge, site security and control, evacuation routes and procedures, decontamination procedures not covered under decontamination section, emergency medical treatment and first aid, emergency alerting and response procedures, critique of response and follow-up, PPE and emergency equipment, site topography, layout, prevailing weather conditions, and procedures for reporting incidents to local, provincial, or federal agencies.
- .13 Procedures dealing with heat and/or cold stress.
- .14 Spill containment program if drummed waste material is generated, excavated, stored, or managed on site.
- .15 List of emergency contacts including but not limited to Contractor's corporate Safety Officer and on-site Safety Representative, medivac, and helicopter/aircraft companies.
- .16 Safe Work Practices and/or Job Procedures appropriate to the tasks workers will be performing and the environment workers will be exposed to (including but not limited to cold weather survival, heat stress, remote work, hazardous materials awareness and handling, lockout/tagout, buddy system, procedures for working alone, personnel hygiene and decontamination).
- .17 First Aid Locations.
- .18 Workplace Hazardous Materials Information System (WHMIS) and Safety Data Sheet (SDS) records.
- .2 Departmental Representative will review Contractor's HASP and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.
- .3 As required, the Authorities Having Jurisdiction (AHJ) shall be notified of excavation activities by the contractor prior to their commencement to ensure all applicable requirements of Nunavut Occupational Health and Safety regulations are addressed.
- .4 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

### **1.3 REGULATORY REQUIREMENTS**

- .1 Comply with specified standards and regulations to ensure safe operations at site containing hazardous or toxic materials.
- .2 All equipment brought to the site must meet Nunavut Health and Safety Regulations.

### **1.4 GENERAL REQUIREMENTS**

- .1 Develop written HASP prior to commencing site work and continue to implement, maintain, and enforce plan until final demobilization from site. HASP must address project specifications.

- .2 Ensure Health and Safety guidelines provide for safe and minimal risk working environment for site personnel and minimize impact of activities involving contact with hazardous materials or hazardous wastes on general public and surrounding environment.
- .3 Relief from or substitution for portion or provision of minimum Health and Safety Guidelines specified or reviewed site-specific HASP must submitted to Departmental Representative in writing. Departmental Representative will respond in writing, either accepting or requesting improvements.

## **1.5 RESPONSIBILITY**

- .1 Be responsible for safety of persons and property on site and for protection of persons off site and environment to extent that they may be affected by conduct of work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with site-specific HASP.

## **1.6 HAZARD COMMUNICATION REQUIREMENTS**

- .1 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations, Part X - Hazardous Substances.
- .2 Provide Departmental Representative with WHMIS SDSs and documentation on any hazardous chemical that Contractor or Contractor Representatives plan to bring onto site.

## **1.7 WORK STOPPAGE**

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for work.
- .2 Assign responsibility and obligation to Health and Safety Officer where required to stop or start work when, at Health and Safety Officer's discretion, it is necessary or advisable for reasons of health or safety. PSPC/PWGSC Contractor Representative (PCR) may also stop work for health and safety considerations.

## **1.8 UNFORESEEN HAZARDS**

- .1 Should unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of work, stop work and immediately advise PCR verbally and in writing.

## **1.9 PERSONNEL HEALTH, SAFETY, AND HYGIENE**

- .1 Training: ensure personnel entering site are trained in accordance with specified personnel training requirements. Training session must be completed by Health and Safety Officer.
- .2 Levels of Protection: establish levels of protection for the work based on planned activity and location of activity. Minimum PPE required for each level of protection as follows:
  - .1 Head, Eye, Ear Protection: earmuffs or plugs, hard hat, safety glasses with sideshields.

- .2 Clothing: standard work uniform and reflective vest.
- .3 Personal Protective Equipment:
  - .1 Furnish site personnel with appropriate PPE as specified above. Ensure that safety equipment and protective clothing is kept clean and maintained.
- .4 Develop protective equipment usage procedures and ensure that procedures are strictly followed by site personnel; include following procedures as minimum:
  - .1 Ensure prescription eyeglasses worn are safety glasses and do not permit contact lenses on site within work zones.
  - .2 Ensure footwear is steel-toed safety shoes or boots and is 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 Heat Stress/Cold Stress: implement cold stress and heat stress monitoring program as applicable and include in site-specific HASP.
- .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.
- .7 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; two 9 kg ABC type dry chemical fire extinguishers.
- .8 Site Communications:
  - .1 Post emergency numbers near site telephones.
  - .2 Ensure personnel use of buddy system and develop hand signal system appropriate for site activities.
  - .3 Provide employee alarm system to notify employees of site emergency situations or to stop work activities if necessary.
  - .4 Safety Meetings: 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 as-needed basis.
- .9 Vehicle Safety:
  - .1 Seatbelts must be worn at all times when vehicle or equipment is in operation.
  - .2 Speed limits must be obeyed.
  - .3 If road conditions are unsafe or marginally unsafe, maintain roads to acceptable standards. Do not risk property damage or injury.

**1.10 FUEL MANAGEMENT**

- .1 All vehicle and equipment refuelling must be performed by appropriately trained personnel using the appropriate PPE 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 Canada Standards Associated (CSA) containers with the notification and consent of site safety personnel.

**1.11 CONTINGENCY AND EMERGENCY RESPONSE**

- .1 Meet specified requirements.
- .2 Include contact details in HASP that includes appropriate authorities including City, Fire, Hospital, Royal Canadian Mounted Police (RCMP), Department of Economic Development and Transportation, Department of Health, and City of Iqaluit Emergency Services Department.

----- END 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 humans; or degrade environment aesthetically, culturally and/or historically.
- .2   Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

### **1.2               REFERENCE STANDARDS**

- .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 acceptance obtained from Departmental Representative to conduct the work.
- .3   Pay specific attention to the Land Use Permits, Water License, and Access to Commissioner's or Inuit-Owned Land (IOL) Permits (if required).

### **1.3               ACTION AND INFORMATIONAL SUBMITTALS**

- .1   Submit all required Contractor submittals to satisfy environmental requirements to the responsible agency and Authorities Having Jurisdiction (AHJ).
- .2   Submit 1 complete copy of all submittals and agency acceptance to Departmental Representative.

### **1.4               FIRES**

- .1   Fires and burning of rubbish on site are not permitted.

### **1.5               DRAINAGE**

- .1   Ensure that the Erosion and Sediment Control Plan (ESCP) measures are provided and that its recommendations are followed on site at all times during construction.
- .2   Provide temporary drainage and pumping as required to keep excavations on site free of standing water.
  - .1   Obtain PSPC/PWGSC Construction Representative (PCR) acceptance before pumping standing water, which is free of suspended materials, into water trucks for offsite disposal.

### **1.6               POLLUTION CONTROL**

- .1   Maintain temporary erosion and pollution control features installed under this Contract in accordance with site-specific Environmental Protection Plan (including a Spill Control Plan).

- .2 Control emissions from equipment in accordance with local authorities' emission requirements. Check with local authorities for any environmental compliance requirements.

### **1.7 DUST AND PARTICULATE CONTROL**

- .1 Execute work using methods to minimize raising dust from construction operations. Implement and maintain dust and particulate control measures as determined necessary by applicable regulations and standards during work and in accordance with AHJ.

### **1.8 ENVIRONMENTAL PROTECTION SUPPLIES**

- .1 Supply, transport, install and maintain erosion, sediment and drainage controls necessary to complete all work in accordance with the requirements of PCR.

### **1.9 STOCKPILING**

- .1 If required, soil placed in stockpiles for temporary storage prior to hauling to disposal facility will be placed on a polyethylene material and covered with polyethylene material to reduce the potential for contact with clean surface soil and with precipitation.

### **1.10 NOTIFICATION**

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Territorial environmental laws and regulations or Municipal environmental bylaws, permits, and other elements of site-specific plans as applicable.
- .2 Contractor after receipt of such notice, shall inform Departmental Representative of proposed corrective action and take such action to obtain the acceptance of Departmental Representative.
  - .1 Take action only after receipt of written acceptance by Departmental Representative.
- .3 PCR 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.

## **Part 2 Products**

### **2.1 HYDROPHOBIC SORBENT BOOM**

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

### **2.2 POLYETHYLENE SHEETING**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34-M86, Polyethylene Vapour Barrier.

**Part 3            Execution**

**3.1                EROSION AND SEDIMENT 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 other erosion control methods as directed by PCR.

----- END SECTION -----

**Part 1            General**

**1.1                DESCRIPTION**

- .1        This Section references laws, by laws, ordinances, rules, regulations, codes, orders of Authority Having Jurisdiction (AHJ), and other legally enforceable requirements applicable to work and that are; or become, in force during performance of work.

**1.2                REFERENCES TO REGULATORY REQUIREMENTS - FEDERAL**

- .1        Meet or exceed the most current issue of governing codes, standards and guidelines, and regulations applicable to work and issued under the authority of the Government of Canada including, but not limited to the following:
  - .1        Canada Labour Code Part II-Occupational Health and Safety (R.S. 1985, c.L-2).
  - .2        National Fire Code of Canada, 1995 a. 2002.
  - .3        Canada Occupational Health and Safety Regulations (SOR/86-304), including:
    - .1        Part X – Hazardous Substances.
  - .4        Canadian Environmental Protection Act, 1999, including:
    - .1        Ozone Depleting Substances Regulations, 1998 (SOR/99-7).
    - .2        PCB Regulations (SOR/2008-273).
    - .3        PCB Waste Export Regulations, 1996 (SOR/97-109).
    - .4        Federal Mobile PCB Treatment and Destruction Regulations (SOR/90-5).
    - .5        Storage Tank System for Petroleum Products & Allied Petroleum Products Regulations (SOR / 2008-197).
    - .6        Export and Import of Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149)
    - .7        Inter-Provincial Movement of Hazardous Waste Regulations (SOR/2002-301).
  - .5        Fisheries Act (R.S.C., 1985, c. F-14), including:
    - .1        Wastewater Systems Effluent Regulations (SOR/2012-139).
  - .6        Species at Risk Act (S.C. 2002, c.29).
  - .7        Migratory Birds Convention Act, 1994 (S.C. 1994, c.22).
  - .8        Arctic Waters Pollution Prevention Act (R.S.C., 1985, c. A-12), including:
    - .1        Arctic Waters Pollution Prevention Regulations (C.R.C., c. 354)
  - .9        Hazardous Products Act (R.S.C., 1985, c. H-3), including:
    - .1        Controlled Products Regulations (SOR/88-66), and amendment SOR/2001-254.
  - .10      Transportation of Dangerous Goods Act, 1992 (S.C. 1992, c.34) a.1999, c.31. including:
    - .1        Transportation of Dangerous Goods Regulations (SOR/2001-286) a.SOR/2011-60

- .11 Territorial Lands Act (R.S.C., 1985, c T-7), including:
  - .1 Territorial Land Use Regulations (C.R.C., c.1524) a.98-430.
- .12 Nunavut Land Claim Agreement Act (S.C. 1993, c. 29).
- .13 Canadian Council of Ministers of the Environment (CCME) Guidelines, Objectives, Codes of Practice including:
  - .1 Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (CCME, 2003).
  - .2 Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 1999).
  - .3 Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME, 1999).
  - .4 Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil (CCME, 2008).
- .14 Health Canada, Guidelines for Canadian Drinking Water Quality, March 2020.
- .15 Department of Fisheries and Oceans including:
  - .1 Nunavut Operational Statement: Snow Fills and Ice Bridges (2007).
  - .2 Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut (2010).
  - .3 Fish Screen Design Criteria for Flood and Water Truck Pumps (2011).
- .16 Treasury Board Policy on Management of Real Property (TB, 2006).
- .17 A Federal Approach to Contaminated Sites, Contaminated Sites Management Working Group (CSMWG), 2002.
- .18 Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments, April 1976.
- .19 Environment Canada Technical Document for Batch Waste Incineration, EC, 2010.
- .20 Construction Project Safety Management Guide, 5th Edition (PWGSC, 2008).

### **1.3 REFERENCES TO REGULATORY REQUIREMENTS - TERRITORIAL**

- .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 and the Northwest Territories as follows:
  - .1 Nunavut Environmental Protection Act (R.S.N.W.T. 1988, c. E-7) a. 1998, c.21, c.24, and related Department of Environment, Government of Nunavut Environmental Guidelines for:
    - .1 Ambient Air Quality (2011).
    - .2 Burning and Incineration of Solid Waste (2012).
    - .3 Contaminated Site Remediation (2010).
    - .4 Dust Suppression on Unpaved Roads (2014).
    - .5 General Management of Hazardous Waste (2010).

- .6 Industrial Waste Discharges into Municipal Waste and Sewage Treatment Facilities (2011).
- .7 Mercury Containing Products and Waste Mercury (2010).
- .8 Ozone Depleting Substances (2011).
- .9 Used Oil and Waste Fuel (2012).
- .10 Waste Antifreeze (2011).
- .11 Waste Asbestos (2011).
- .12 Waste Batteries (2011).
- .13 Waste Lead and Lead Paint (2014).
- .14 Waste Paint (2010).
- .15 Waste Solvent (2011).
- .2 Nunavut Archaeological and Palaeontological Sites Regulations (SOR/2001-220).
- .3 Commissioner's Lands Act (R.S.N.W.T. 1988, c.C-11).
- .4 Used Oil and Waste Fuel Management Regulations, 2003.
- .5 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.
- .6 Public Health Act, R.S.N.W.T. 1988, c.P-12.
- .7 Safety Act (R.S.N.W.T. 1988, c.S-1), including:
  - .1 General Safety Regulations (R.R.N.W.T. 1990, c.S-1).
  - .2 Work Site Hazardous Materials Information System Regulations.
- .8 Transportation of Dangerous Goods (R.S.N.W.T. 1988, c.81).
- .9 Spill Contingency Planning and Reporting Regulations R-068-93.
- .10 Fire Prevention Act, R.S.N.W.T. 1988, c.F-6.
- .11 Transportation of Dangerous Goods Act (1990 S.N.W.T. 1990, c.36).
- .12 Nunavut Waters and Surface Rights Tribunal Act (2002).

#### **1.4 HAZARDOUS MATERIAL DISCOVERY**

- .1 Stop work immediately and notify Departmental Representative upon discovery of following materials that are not identified on the Drawings during course of work:
  - .1 Designated substances such as PCBs, asbestos, and mercury.
  - .2 Unknown and/or potentially hazardous substances.
  - .3 Items that may have archaeological, cultural or scientific significance.
- .2 Work at site may involve contact with:
  - .1 Petroleum Hydrocarbon (PHC) impacted soil.

#### **1.5 PERMITS AND LICENCES**

- .1 The following permits and licenses will be provided to the Contractor when received by Transport Canada:

- .1 Water License, granted by the Nunavut Water Board in accordance with the Nunavut Waters Act.
- .2 The Contractor is responsible for acquiring other permits, authorizations, and/or licenses required to complete the work.
- .3 Any deviations from the current remediation plan may require permit or license amendments or field authorizations. Notify the PSPC/PWGSC Construction Representative (PCR) of any proposed deviations so Transport Canada can contact the appropriate agency to obtain approval for the deviation. Approval may take 45 to 90 days from the time of submission.

#### **1.6 QUALITY ASSURANCE**

- .1 Regulatory Requirements: Except as otherwise specified, Contractor shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:
  - .1 Regulatory requirements and fees in force on date of Bid submission, and
  - .2 A change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission

#### **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 Submit copies of Safety Data Sheet (SDS) to PCR upon delivery of materials to site.

----- END SECTION -----

**Part 1            General**

**1.1                INSPECTION**

- .1      Allow PSPC/PWGSC Construction Representative (PCR) 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 acceptances 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 acceptance before such is made, uncover such work, have inspections or tests satisfactorily completed and make good such work.
- .4      Departmental Representative will order 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.

**1.2                ACCESS TO WORK**

- .1      Allow inspection/testing agencies access to work.

**1.3                PROCEDURES**

- .1      Notify Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

**1.4                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, Owner will 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.

**1.5                REPORTS**

- .1      Submit 4 copies of inspection and test reports to Departmental Representative.
- .2      Provide copies to manufacturer or fabricator of material being inspected or tested.

----- END SECTION -----

**Part 1            General**

**1.1                REFERENCE STANDARDS**

- .1        PWGSC Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.
- .2        United States Environmental Protection Agency (EPA)/Office of Water
  - .1        EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

**1.2                INSTALLATION AND REMOVAL**

- .1        Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2        Identify areas which have to be gravelled to prevent tracking of mud.
- .3        Indicate use of supplemental or other staging area.
- .4        Provide construction facilities in order to execute work expeditiously.
- .5        Remove from site all such work after use.

**1.3                CONSTRUCTION PARKING**

- .1        Parking will be permitted on site provided it does not disrupt performance of Work.
- .2        Provide and maintain adequate access to project site.

**1.4                SECURITY**

- .1        Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays if necessary. PSPC and Transport Canada are not responsible for stolen or damaged equipment.

**1.5                SANITARY FACILITIES**

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

**1.6                CONSTRUCTION SIGNAGE**

- .1        Provide and erect project sign, within 3 weeks of signing Contract, in a location designated by PSPC/PWGSC Construction Representative (PCR).
- .2        Maintain accepted signs, in good condition, for duration of work and dispose of off-site on completion of project, or earlier, if directed by Departmental Representative.
- .3        Indicate on sign, name of Owner and Contractor.

- .4 No other signs or advertisements, other than warning signs, are permitted on site.

**1.7 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by PCR.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor responsible for repair of damage to roads caused by construction operations.
- .7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .8 Dust control: adequate to ensure safe operation at all times.
- .9 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .10 Provide snow removal during period of work, if necessary.

**1.8 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.

----- END SECTION -----

**Part 1            General**

**1.1                PROTECTION OF PUBLIC TRAFFIC**

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out work or haul materials or equipment.
- .2 Obtain all permits required to operate on roadway (including but not limited to those required by City of Iqaluit).
- .3 Follow City of Iqaluit traffic management requirements.
- .4 When working on travelled way:
  - .1 Place equipment in position to minimize interference and hazard to travelling public.
  - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
  - .3 Do not leave equipment on travelled way overnight.
- .5 Coordinate with City of Iqaluit to close lanes of road, if required.
  - .1 Before re-routing traffic erect suitable signs and devices.
- .6 Keep travelled way graded, free from potholes and of sufficient width for required number of lanes of traffic.
  - .1 Provide 7 m wide minimum temporary roadway for traffic in two-way sections through work and on detours.
  - .2 Provide 5 m wide minimum temporary roadway for traffic in one-way sections through work and on detours.
- .7 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, except where other means of road access exist, that meet City of Iqaluit's traffic management requirements.

**1.2                INFORMATIONAL AND WARNING DEVICES**

- .1 Provide and maintain signs, and other devices required to indicate construction activities or other temporary and unusual conditions resulting from work which requires road user response.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices.
- .3 Meet with PSPC/PWGSC Construction Representative (PCR) prior to commencement of work to prepare list of signs and other devices required for project. If situation on site changes, revise list to acceptance of PCR.
- .4 Continually maintain traffic control devices in use:
  - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.

- .2 Remove or cover signs which do not apply to conditions existing from day to day.

**1.3 CONTROL OF PUBLIC TRAFFIC**

- .1 Provide competent flag personnel trained in accordance with, and properly equipped for, traffic management requirements from City of Iqaluit.

----- END SECTION -----

**Part 1            General**

**1.1                INSTALLATION AND REMOVAL**

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

**1.2                FENCING**

- .1    Provide fencing to protect public from damage by equipment and construction procedures.

**1.3                BARRICADES**

- .1    Provide as required by governing authorities.

**1.4                ACCESS TO SITE**

- .1    Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

**1.5                PUBLIC TRAFFIC FLOW**

- .1    Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform work and protect public.

**1.6                FIRE ROUTES**

- .1    Maintain access to property including overhead clearances for use by emergency response vehicles.

**1.7                PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

- .1    Protect surrounding private and public property from damage during performance of work.
- .2    Be responsible for damage incurred.
- .3    Be responsible for damage incurred due to lack of or improper protection.

----- END SECTION -----

**Part 1            General**

**1.1                QUALIFICATIONS OF SURVEYOR**

- .1        Qualified registered land surveyor, licensed to practise in Nunavut with a minimum of 5 years of surveying experience, acceptable to PSPC/PWGSC Construction Representative (PCR).

**1.2                SURVEY REQUIREMENTS**

- .1        Establish 1 permanent benchmark on site, referenced to established benchmarks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
- .2        Establish lines and levels, locate and lay out, by instrumentation.
- .3        Prepare a topographic map of work sites prior to excavation work to provide a baseline survey for quantity measurements.
- .4        Maintain surveys for quantity calculations.
- .5        Survey locations of all environmental samples as directed by PCR. Provide drawings showing all appropriate details to PCR as required.
- .6        Prepare drawings showing areas where repairs were undertaken.

**1.3                RECORDS**

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

**1.4                ACTION AND INFORMATIONAL SUBMITTALS**

- .1        Submit name and address of Surveyor to PCR.
- .2        Submit documentation to verify accuracy of field engineering 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        Point numbers, Northing, Easting, elevation, description.
- .5        Submit the record survey data file as the latest as-constructed information.

----- END SECTION -----

**Part 1            General**

**1.1                ACTION AND INFORMATIONAL SUBMITTALS**

- .1    Provide evidence, if requested, for type, source and quality of products supplied.
- .2    Provide evidence of disposal of contaminated soil at licenced facility including waybills and waste manifests, as provided by the licenced facility.

**1.2                FINAL SURVEY**

- .1    Submit final site survey certificate certifying that elevations and locations of completed work are in conformance, or non-conformance with Contract Documents.

----- END SECTION -----

## **Part 1            General**

### **1.1                DESCRIPTION**

- .1        This Section specifies the requirements for the excavation, handling, transport and disposal of impacted soil requiring remediation at the Site including supply, placement and compaction of granular fill to replace the excavated impacted soil to original grade and reshaping of the area. Location of contaminated soil requiring excavation is indicated on Figure No. 2 in Appendix A. Excavation and disposal requirements for impacted soil include excavation and disposal at an accepted off-site location. Excavation is to be completed to property boundary shown as Approximate Site Boundary on Figure No. 2 in Appendix A.

### **1.2                DEFINITIONS**

- .1        Contaminated Soil: includes the following contaminated soils which are defined by the Canadian Council of Ministers of Environment (CCME):
  - .1        CCME. Canadian Environmental Quality Guidelines (CEQG) for the Protection of Environmental and Human Health for residential land use, online summary.
  - .2        CCME, Canada Wide Standards (CWS) for PHCs, January 2008.
- .2        Clean Soil: Soil that has been sampled, analyzed, and determined to have contaminant concentrations below the appropriate CCME guideline levels.

### **1.3                SUBMITTALS**

- .1        Quality Control in accordance with Section 01 45 00 – Quality Control.
- .2        Submit survey of existing conditions as described in Article 3.1.2 of this Section.
- .3        Submit to PSPC/PWGSC Construction Representative (PCR) written notice at least seven (7) days prior to excavation work, to ensure cross sections are taken.
- .4        Submit to PCR written notice when limits of excavation are reached (i.e., bottom and sides).

### **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.
- .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 Contaminated Soil, 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 accepted equivalent training courses such as the Canadian Hazardous Waste Workers Program. Equivalent courses to be accepted by Departmental Representative.
- .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, PCR, and other authorized personnel, 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 (HASP).
- .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 The Contractor is advised that the ground in low-lying areas can be saturated. Dewater saturated ground and ponded areas as required, complying with this Section.
- .4 Prior to commencing excavation 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 PCR.

## **1.6 ENVIRONMENTAL PROTECTION**

- .1 Environmental protection measures are to be in accordance with the requirements specified in Section 01 35 43 - Environmental Procedures.
- .2 Protect natural and man-made features required to remain undisturbed including but not limited to benchmarks, existing buildings, surface and underground service and utility lines not designated for demolition, and instrumentation excavations.
- .3 The release of all water resulting from the dewatering of ponded contaminated soil areas, is to conform with Section 01 35 43 - Environmental Procedures.

## **1.7 PERSONNEL PROTECTION**

- .1 Some areas designated for cleanup under this contract involve soils which contain PHCs which are considered hazardous to human health.

- .2 When working with PHCs, 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 Subcontractors, PCR, and other authorized site personnel. Provide details of protective clothing and equipment required for each work area in the site-specific HASP as required by Section 01 35 29.13 - Health, Safety and Emergency Response Procedures for Contaminated Sites.
- .3 Supply sufficient quantities of designated protection equipment to fit all site personnel including PCR and authorized visitors. Educate workers as to risks, and train in safe work practices.

## **1.8 WASTE MANAGEMENT AND DISPOSAL**

- .1 Dispose of all PHC impacted soil at a disposal facility permitted to accept PHC impacted soil.

## **1.9 EXISTING CONDITIONS**

- .1 Examine Phase II Environmental Site Assessment and Remedial Action Plan reports available.
- .2 Existing buildings and surface features:
  - .1 Conduct, with PCR, condition survey of the natural ecosystem which may be affected by the work.
  - .2 As much as possible, protect the natural ecosystem from damage while work is in progress. In event of damage, immediately make repair as directed by PCR.

## **Part 2 Products**

### **2.1 ENVIRONMENTAL PROTECTION SUPPLIES**

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

### **2.2 MATERIALS**

- .1 Backfill aggregate as described in Section 31 23 33.01 Excavating, Trenching and Backfilling.

## **Part 3 Execution**

### **3.1 PREPARATION**

- .1 Protection:
  - .1 Keep excavation site water free throughout work and manage recovered water according to contamination level and territory regulations
  - .2 Protect excavation from rainwater.
  - .3 Provide temporary structures to divert flow of surface waters from excavation.

- .4 Provide safety measures to ensure worker and public safety.
- .5 Consult Departmental Representative regarding potential Site-Specific geotechnical considerations.
- .2 Contractor to initiate and complete topographic survey in advance of excavation operations to quantify soil removed during the excavation.
- .3 Remove any surface debris prior to excavation.
- .4 Prior to excavation of impacted areas, remove all surface snow/ice and direct surface water run-off around the excavation.

### **3.2 EXCAVATION OF CONTAMINATED SOIL**

- .1 Layout and excavate areas of contaminated soil to the limits as indicated in Figure No. 2 in Appendix A. All layouts are to be field verified by PCR prior to excavation.
- .2 Remove all debris from excavated soil (if present), sort, and report to PCR.
- .3 Stockpiling contaminated soil is not expected. If required, soil will be stockpiled in areas designated by PCR including the use of liners, below stockpiled soil. Cover impacted materials from precipitation to reduce leachate pending transportation to disposal area. Place stockpiles of contaminated soil at a distance from the excavation equal to the depth of the excavation. Stockpile height not to exceed 2 metres.
- .4 Transport PHC Contaminated Soils in a manner such that no soil or liquid will be spilled during transport to the disposal facility.
- .5 During excavation, remove all boulders and rocks greater than 200 mm in maximum dimension. Boulders and rocks shall be used as backfill in the excavation.
- .6 During transportation, if transport vehicle shows any evidence of leakage, remove the contents from the vehicle and re-containerize in a leakproof container, as required.
- .7 Use a volatile organic compound (VOC) instrument to continuously measure the concentrations of VOC during contaminated soil excavation operations. When the concentrations of VOC exceed 20% LEL, temporarily halt work until ventilation (natural or induced) reduces the concentration levels to a safe working level.
- .8 Suppress dust generated during excavation operations with a water spray. Prevent surface water from entering the excavated area.
- .9 Dewater ponded contaminated soil areas, as required. Maintain soil excavations free of standing water during soil removal, and confirmatory sampling activities. Comply with the requirements of Section 01 35 43 - Environmental Procedures.
- .10 No damage to permafrost during the excavation. Provide permafrost protection measures while excavation remains open and document in the Environmental Protection Plan as per Section 01 35 43 - Environmental Procedures.
- .11 Decontaminate the equipment used for the excavation of Contaminated Soil before demobilizing equipment.
- .12 Notify Departmental Representative when the bottom of excavation is reached. The PCR will collect confirmatory soil samples after reaching the contaminated soil excavation limits indicated on Drawing No. 2 in Appendix A.

### **3.3 RESTORATION**

- .1 Do not proceed with backfilling operations until completion of the following:
  - .1 Survey of the ground profile upon completion of the final excavation limits and PCR has inspected and accepted final excavation limits.
  - .2 Areas to be backfilled to be free from debris, snow, ice, and water. Do not use backfill material which is frozen or contains ice, snow or debris.
- .2 Place granular backfill material in uniform layers not exceeding 250 mm compacted thickness up to 0.3 meters above original grade to account for settlement, prevent ponding and blend into the surrounding terrain. Compact each layer to 95% Standard Proctor maximum dry density (ASTM D698) before placing succeeding layer.
- .3 Re-instate surface grading to give site same appearance as before remediation work.
- .4 Clean access roads of contamination resulting from project activity at request of PCR.

### **3.4 EQUIPMENT DECONTAMINATION**

- .1 Decontaminate equipment used in treatment process and remove from site at end of treatment activities.

----- END SECTION -----

**Part 1            General**

**1.1                DESCRIPTION**

- .1        This Section specifies the excavating, trenching, and backfilling that is required for earthworks associated with backfilling the excavated area.

**1.2                DEFINITIONS**

- .1        Waste material: excavated material unsuitable for use in work or surplus to requirements.
- .2        Borrow material: material obtained from locations outside area to be graded and to be used as backfill.
- .3        Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .4        Unsuitable materials:
  - .1        Weak, chemically unstable, and compressible materials.
  - .2        Frost susceptible materials.
- .5        Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

**1.3                MEASUREMENT PROCEDURES**

- .1        Excavated materials will be measured in cubic metres by actual volume removed within following limits:
  - .1        Width for trench excavation as indicated.
  - .2        Width for excavation for structures as indicated.
  - .3        Depth from ground elevation immediately prior to excavation, to elevation as directed by PSPC/PWGSC Construction Representative (PCR).
- .2        Backfilling to authorized excavation limits will be measured in cubic metres compacted in place.

**1.4                REFERENCE STANDARDS**

- .1        ASTM International (ASTM)
  - .1        ASTM C136-19, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .2        ASTM D7928-17, Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis.
  - .3        ASTM D698-12, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>) (600 kN-m/m<sup>3</sup>).

## **1.5 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Quality Control: in accordance with Section 01 45 00 - Quality Control:
  - .1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.
  - .2 Submit to PCR written notice at least 7 days prior to excavation work, to ensure cross sections are taken.
  - .3 Submit to PCR written notice when bottom of excavation is reached.
  - .4 Submit to PCR results as required in PART 3 of this Section.
- .2 Preconstruction Submittals:
  - .1 Submit construction equipment list for major equipment to be used in this section prior to start of work.
  - .2 Submit records of underground utility locates, indicating clearance record from utility authority 15 days prior to work.
- .3 Samples:
  - .1 Contractor will provide samples and sieve analysis for backfill materials 2 weeks prior to use. Backfill materials to be accepted by PCR prior to use by the Contractor.

## **1.6 QUALITY ASSURANCE**

- .1 Do not use soil material until written report of soil test results are accepted by PCR.
- .2 Health and Safety Requirements:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.13 - Health, Safety and Emergency Response Procedures for Contaminated Sites.

## **1.7 WASTE MANAGEMENT AND DISPOSAL**

- .1 Divert PHC Contaminated Soil to disposal facility in accordance with Section 02 55 13 – Contaminated Soil.

## **1.8 EXISTING CONDITIONS**

- .1 Examine Limited Phase II Environmental Site Assessment and Remedial Action Plan reports available.
- .2 Buried services:
  - .1 Before commencing work verify location of buried services on and adjacent to site.
  - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
  - .3 Location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
  - .4 Prior to beginning excavation work, establish location and state of use of buried utilities and structures.

- .5 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
- .6 Where utility lines or structures exist in area of excavation, obtain direction of utility company before disturbing.
- .3 Existing buildings and surface features:
  - .1 Conduct, with PCR, condition survey of existing buildings, service poles, wires, survey benchmarks and monuments which may be affected by work.
  - .2 Protect existing buildings and surface features from damage while work is in progress. In event of damage, immediately make repair as directed by PCR.

## **Part 2 Products**

### **2.1 MATERIALS**

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

## **Part 3 Execution**

### **3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

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

### **3.2 SITE PREPARATION**

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

### **3.3 PREPARATION/PROTECTION**

- .1 Keep excavations clean, free of standing water, and loose soil.
- .2 Where soil is subject to significant volume change due to change in moisture content, cover and protect to PCR acceptance.
- .3 Protect natural and man-made features required to remain undisturbed.
- .4 Environmental protection measures are to be in accordance with the Environmental Protection Plan and as specified in Section 01 35 43 – Environmental Procedures.
- .5 Protect buried services that are required to remain undisturbed.

### **3.4 STOCKPILING**

- .1 Stockpile backfill materials in areas accepted by the PCR.
- .2 Protect fill materials from contamination.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

### **3.5 DEWATERING AND HEAVE PREVENTION**

- .1 Keep excavations free of water while work is in progress.
- .2 Avoid excavation below groundwater table if quick condition or heave is likely to occur.
- .3 Protect open excavations against flooding and damage due to surface run-off.
- .4 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures in manner not detrimental to public and private property, or portion of work completed or under construction.
  - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

### **3.6 EXCAVATION**

- .1 Contractor to initiate and complete topographic survey in advance of excavation operations to prepare initial cross section.
- .2 Excavate to lines, grades, elevations and dimensions as directed by PCR. Note that excavation boundaries should be sloped at a minimum 1:1 angle if vertical walls cannot be maintained naturally.
- .3 Excavation activities and associated sequencing should consider the protection of permafrost to maintain its integrity (e.g., small strip excavations by sections, short excavation turnaround with instantaneous backfilling, completing the excavation during weather conditions that would protect permafrost, etc.).
- .4 Keep excavated and stockpiled materials safe distance away from edge of excavation as directed by PCR.
- .5 Restrict vehicle operations directly adjacent to open trenches.
- .6 Do not obstruct flow of surface drainage or natural watercourses.
- .7 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .8 Notify PCR when bottom of excavation is reached.
- .9 Obtain PCR acceptance of completed excavation.
- .10 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by PCR.
- .11 Correct unauthorized over-excavation as identified in Section 3.7 below.
- .12 Hand trim, make firm and remove loose material and debris from excavations.
  - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

### **3.7 GEOMEMBRANE**

- .1 Install geomembrane in accordance with Section 31 32 19.17 – Geomembranes.

### **3.8 BACKFILLING**

- .1 Do not proceed with backfilling operations until completion of following:
  - .1 PCR has inspected and accepted final excavation limits.
  - .2 The confirmatory soil results indicate that soils along the final excavation limits meet the applicable guidelines and confirmed by PCR.
- .2 Areas to be backfilled to be free from debris, snow, loose ice, and water.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Backfill aggregate material will be non-plastic granular pit-run material, with no more than 20% passing an 80 µm sieve.
- .5 Place backfill material in uniform layers not exceeding 250 mm compacted thickness up to 0.3 metres above original grade to account for settlement. Compact each layer to 95% Standard Proctor maximum dry density (ASTM D698) before placing succeeding layer.

### **3.9 RESTORATION**

- .1 Clean and reinstate areas affected by work as directed by PCR.
- .2 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

----- END SECTION -----

**Part 1            General**

**1.1                DESCRIPTION**

- .1        This Section specifies the requirements for the supply and installation of the low-density polyethylene (LDPE) Geomembrane at the perimeter of the excavation.

**1.2                MEASUREMENT AND PAYMENT**

- .1        Measure geomembrane in square metres of surface covered by material. No allowance will be made for seams and overlaps.

**1.3                REFERENCE STANDARDS**

- .1        All references to this Specifications, Standards, or Methods shall be understood to refer to the latest adopted revision, including all amendments.
- .2        American Society for Testing and Materials International (ASTM)
  - .1        ASTM D 413-98(2002) e1, Standard Test Methods for Rubber Property-Adhesion to Flexible Substrate.
  - .2        ASTM D 638-02a, Standard Test Method for Tensile Properties of Plastics.
  - .3        ASTM D 746-98e1, Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
  - .4        ASTM D 792-00, Standard Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
  - .5        ASTM D 1004-94a (2003), Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
  - .6        ASTM D 1204-02, Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature.
  - .7        ASTM D 1238-01e1, Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
  - .8        ASTM D 1593-99, Standard Specification for Nonrigid Vinyl Chloride Plastic Film and Sheeting.
  - .9        ASTM D 1603-14, Standard Test Method for Carbon Black Content in Olefin Plastics.
  - .10       ASTM D 1693-01, Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.
  - .11       ASTM D 882-02, Standard Test Methods for Tensile Properties of Thin Plastic Sheeting.
  - .12       ASTM D 1203-94 (1999) e1, Standard Test Methods for Volatile Loss from Plastics Using Activated Carbon Methods.
  - .13       ASTM D 1790-02, Standard Test Method for Brittleness Temperature of Plastic Sheeting by Impact.
  - .14       ASTM D5199, Standard Test Method for Measuring the Nominal Thickness of Geosynthetics.

- .15 ASTM D6693 – 01, Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.
- .16 ASTM D4833 / D4833M - 07(2013) e1, Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Obtain written acceptance from Departmental Representative for geomembrane before installation of material.
- .2 Product Data:
  - .1 Provide manufacturer's instructions, printed product literature and data sheets for geomembrane and include product characteristics, performance criteria, physical size, finish and limitations.

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Storage and Handling Requirements:
  - .1 Store materials off ground, indoors, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect geotextiles from direct sunlight and UV rays.
  - .3 Replace defective or damaged materials with new.

**Part 2 Products**

**2.1 MATERIAL**

- .1 LDPE Geomembrane:

The physical properties of the LDPE Geomembrane shall be in accordance with ASTM D5199 where applicable. The material shall have the minimum properties specified as follows:

Thickness – Typical (ASTME D5199)	Nominal - 20
Tensile Strength – Stress at Break (ASTM D6693)	76 kN/m
Elongation at Break (ASTM D6693)	500%
Puncture Resistance (ASTM D4833)	36 N
Carbon Black Content (ASTM D1603 - 14)	2%

- .1 The LDPE geomembrane shall be consisted of approximately 98% polyethylene, 2.0% carbon black, and trace amounts of antioxidants and heat stabilizers.
- .2 The LDPE geomembrane shall be capable of being heat sealed or solvent welded for making field splices, seams, and repairs should it be required.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geomembrane material installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of PSPC/PWGSC Construction Representative (PCR).
  - .2 Inform PCR of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied.

**3.2 PREPARATION**

- .1 Complete excavation to property boundaries.
- .2 Install geomembrane upon acceptance by PCR.

**3.3 INSTALLATION**

- .1 Place geomembrane material and cut to field fit the excavation sidewalls.
- .2 When overlapping cut pieces of geomembrane, the minimum overlap should be 0.6 m.
- .3 Seaming the geomembrane will not be a requirement for this Work.

**3.4 PROTECTION**

- .1 Protect geomembrane from excessive damage after installation and during backfilling.

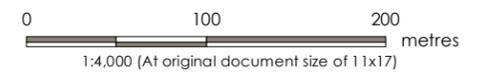
----- END SECTION -----

# **APPENDIX A**

## **Supporting Documents**



- Legend
- Site Location
  - Minor Road
  - Local Road



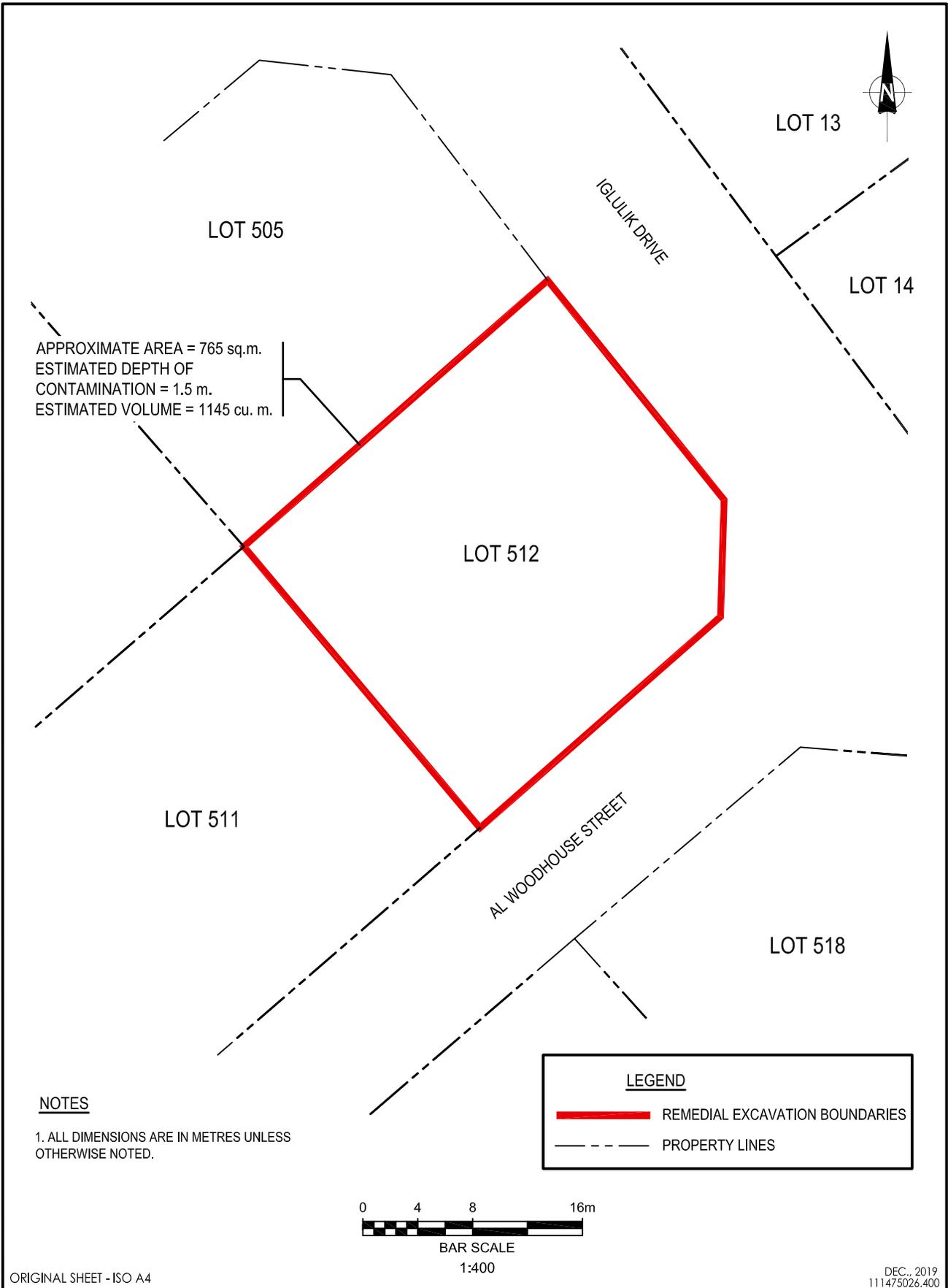
- Notes
1. Coordinate System: NAD 1983 UTM Zone 19N
  2. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation



Project Location: Iqaluit, NU 111475026  
 Prepared by ACampigotto on 2019-08-08  
 Technical Review by LBou-Karam on 2019-08-08

Client/Project: PUBLIC SERVICES AND PROCUREMENT CANADA  
 LOT 512 REMEDIATION  
 IGLULIK DRIVE, IQALUIT, NUNAVUT

Figure No.: 1  
 Title: SITE LOCATION PLAN



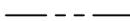
APPROXIMATE AREA = 765 sq.m.  
 ESTIMATED DEPTH OF CONTAMINATION = 1.5 m.  
 ESTIMATED VOLUME = 1145 cu. m.

**NOTES**

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.

**LEGEND**

 REMEDIAL EXCAVATION BOUNDARIES

 PROPERTY LINES



ORIGINAL SHEET - ISO A4

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 PUBLIC SERVICES AND PROCUREMENT CANADA  
 LOT 512 REMEDIATION  
 IGLULIK DRIVE, IQALUIT, NUNAVUT  
 Figure No.  
2  
 Title  
 REMEDIAL EXCAVATION DETAILS