



Construction Tender

Project No: 05-2002

**Name of Project: Water Reservoir, Sewage Lagoon and
Landfill Improvements**

Project Location: QIKIQTARJUAQ, NUNAVUT

Contract Number: BR2052002

Government of Nunavut

Revised: April 2000

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INSTRUCTIONS TO TENDERERS

1. INSTRUCTIONS

- .1 Tenders are to be sealed and should be submitted in the envelopes provided.
- .2 Tender envelopes must show the Project Name, Closing Date, Name and Address of the Tenderer on the **Exterior** of the Envelope.
- .3 Tenders must be submitted on the forms provided.
- .4 Failure by the Tenderer to comply with these Instructions to Tenderers may result in the tender submitted being disqualified. Disqualification shall be at the sole discretion of the Owner.

2. RECEIPT OF TENDERS

- .1 Tenders must be received at the Tender Address by the Owner on or before the exact time and date fixed for their receipt.
- .2 Any Tenders received after the closing time shall be rejected and returned unopened to the Tenderer. If only one Tender is received and that Tender is received late, the Tender may be accepted at the sole discretion of the Owner.
- .3 Tenders shall be opened as soon as practicable after the tender closing time in accordance with Instruction 4.4.
- .4 Tenders received by facsimile, except as permitted elsewhere in this tender, will not be accepted and if received shall be disqualified.

3. AMENDMENTS TO TENDERS

- .1 Amendments to a tender by letter, facsimile or other written means are acceptable provided that the amendment:
 - (.i) Is received on or before the exact time and date fixed, for the receipt of Phase I of the Tender (except for amendments to Appendix B-2 Substantiation of Bid Adjustment) and;
 - (.ii) Contains the tender reference, closing date, name and address of the contractor and a signature.
- .2 Amendments to tenders received by facsimile will be accepted by the Owner provided that the conditions included in Clause 3.1 are met and in addition:
 - (.i) Amendments to tenders are transmitted via the Owner's facsimile number:

(867) 899-7328 in Pond Inlet, Nunavut
 - (.ii) The Owner shall not be held liable for any claim, demand or other action should a facsimile transmission be interrupted, not received in its entirety, received after the stated closing time and date, received by another facsimile unit other than stated herein, or for any other reason over which the Owner does not have control.

- (.iii) The amendment should indicate only the applicable changes and in such a manner that the total bid is not revealed.
- .3 Verbal instructions will not be considered as a valid instruction for tender purposes, nor shall they be considered as having any bearing upon the tender submission.

4. INUIT, LOCAL AND NUNAVUT INCENTIVES and Appendices "B-1" and "B-2"

- .1 One of the priorities of the Owner is to ensure that materials, equipment, labour and other services of Local, Nunavut and Inuit businesses are used to the fullest extent practical on this project, therefore, the Owner has implemented the Nunavummi Nangminiaqtunik Ikajuuti (NNI) Policy which shall apply on this contract. Tenderers are required to comply with the requirements of the NNI Policy and to submit the required information within the deadlines stipulated. A copy of the current NNI Policy is attached as Appendix J.
- .2 The Tenderer shall show intention to not only meet the minimum levels of Inuit Labour prescribed in Appendix K of this tender, but also to use the maximum amount of Local, Nunavut and/or Inuit labour, and subcontractors and suppliers available. Failure to do so indicated by a comparison to other Tenderers may result in disqualification by the Owner as a non-responsive tender. A Contractor that for previous contracts with similar prescribed Inuit Labour had failed to meet the minimum prescribed Inuit Labour MAY be deemed "not responsible" (as defined in the Government Contract Regulations) for this tender.
- .3 For purposes of this tender, Local shall be considered to be the community in which the work is undertaken unless noted otherwise in these Tender Documents.
- .4 In order to comply with the requirements of this Tender and specifically those included in the "Instructions to Tenderers" Clause 4, the Contractor is required to complete the attached forms entitled Appendix "B-1" "General Contractors & Subcontractors Dollar Amount" and Appendix "B-2" "Substantiation of Bid Adjustment".
- .5 **Joint Ventures: If the bidder is comprised of more than one party as in the case of a joint venture, (but not a partnership) for the purposes of the application of the NNI adjustments, each party to the joint venture will be treated as a separate contractor, and the value of their respective Nunavut, Inuit, and local content will be treated in the same manner as separate contractors.**
- .6 **This Tender will close in two phases as follows:**

Phase I Tender Close: The Contractor shall complete the Tender Form and all required appendices and shall submit them no later than the time identified for the Phase I closing of Tenders. The Contractor shall indicate on the Appendix "B-1" "General Contractors & Subcontractors Dollar Amount" the bid value and names of all major businesses which will be providing goods and services to the Contractor in order to complete the Work. No further detail is required at the time of Phase I Tender closing. At the time established for the Phase I Tender closing, the Owner shall receive Tenders and shall record the names of the Contractors who have submitted Tenders. Those Tenders shall remain unopened and held in a secure place by the Owner for a period of 24 hours.

Phase II Tender Close: Within 24 hours following the Phase I Tender close, excluding holidays and weekends, the Contractor shall supply to the Owner a detailed Appendix "B-2" "Substantiation of Bid Adjustments" showing the actual amounts of Local, Nunavut, Inuit and Other content in respect to Payroll, Material, Equipment, Transportation, Accommodation and Other Costs.

This detailed Appendix "B-2" "Substantiation of Bid Adjustments" shall be submitted in a sealed envelope or by facsimile with clear identification as to the name of the Tender and the Tenderer, and shall be received prior to the Phase II Tender close which shall be 24 hours, excluding holidays and weekends, after the Phase I Tender closing. Detailed Appendix "B-2" "Substantiation of Bid Adjustments" received late may be disqualified.

Bids shall be opened after the Phase II closing.

NOTE 1: The Contractor shall only receive a bid adjustment when a completed Appendix "B-1" "General Contractors & Subcontractors Dollar Amount" and Appendix "B-2" "Substantiation of Bid Adjustments" have been submitted in accordance with the above. Tenders submitted without such a submission shall receive no bid adjustment at all.

5. SCHEDULE OF UNIT PRICES

- .1 The Tenderer shall submit a schedule of unit prices on Appendix "C" or Appendix "D" as appropriate. Unit prices shall include the cost to supply and install as appropriate, and include all statutory charges, overhead, profit and the Contractor's contingency allowance.

6. OPTIONS & SUBSTITUTIONS SPECIFIED BY THE OWNER - Appendix "E"

- .1 Tenders shall be based on the materials, methods, firms and equipment named in the Specifications and this shall constitute the base bid. Where more than one material or manufacturer is specified, any one of those specified may be selected and included in base bid.
- .2 The Owner may wish to consider options or substitutions to the base bid. When the Owner lists items in Appendix "E" Contractors should indicate the effect on the stipulated price that each item makes to the base bid. The lowest acceptable tender may be determined by adding or deducting any or all of these items to the base bid. Failure to complete this Appendix "E" when requested may result in the tender being disqualified at the sole discretion of the Owner.

7. OPTIONS PROPOSED BY THE TENDERER - Appendix "F"

- .1 Tenderers may propose their own option in Appendix "F". To be considered the following requirements shall be met:
 - (a) Total Tender amount quoted must be based on products specified and not on options.
 - (b) Options proposed shall be listed and any difference in price shown in the appropriate place on Appendix "F".
 - (c) Options proposed must allow for all changes and adjustments in other work as may be necessary to form a complete and finished job. No additional claims will be considered at a later date.
 - (d) Submissions must contain sufficient information to enable the Owner to determine the acceptability of such proposed options. Include such information as reasons for submission, manufacturing details, performance data, dimensions and clearances, effects on other work and other pertinent facts.
 - (e) The Owner reserves the right to accept or reject any option proposed by the Tenderer.
 - (f) By submitting an option on Appendix "F" the Tenderer relinquishes any proprietary right to such option. The Owner reserves the right to release the Option to other Tenderers in order to obtain competitive prices.

8. ADDENDA

- .1 Addenda issued prior to the tender closing time shall be incorporated into the tender and shall become part of this tender. Receipt of addenda shall be acknowledged on the Tender Form by the Tenderer. Failure to

acknowledge Addenda may result in the disqualification of the Tender at the sole discretion of the Owner.

9. TENDERING DOCUMENTS - Appendix "A"

- .1 Tenders shall be based on the documents listed in Appendix "A" "List of Tender Documents".

10. BID SECURITY AND INSURANCE REQUIREMENTS

.1 When Tendering

- (a) **For a Tender Less than \$100,000:** No bid security accompanies this tender.
- (b) **For a Tender \$100,000 and Over:** The Tenderer shall enclose bid security in accordance with either:
 - (i) a Bid Bond, in a form approved by the Federal Treasury Board and from a company whose bonds are acceptable to the Owner, in an amount of at least 10% of the Tender. Bonds shall be made payable to the Owner or;
 - (ii) a bid security deposit in an amount of at least 5% of the tender. The deposit must be a certified cheque, Bank Draft, a bank Irrevocable Letter of Guarantee, or such other bid security as the Owner considers acceptable. The bid security deposit must be payable to the Owner.
- (c) The bid security deposit, as indicated above, may be forfeited at the discretion of the Owner if the Tenderer refuses to enter into a contract when called upon to do so.
- (d) The Tenderer understands that if the bid security furnished is not in the approved form, as described herein, the tender is subject to disqualification at the sole discretion of the Owner

.2 Upon Award of Contract

- (a) Upon notification of acceptance of a Tender, the successful Tenderer shall furnish within 14 days of the date of the notification of acceptance:
 - (i) The security specified in Clause GC56 to GC57 inclusive of the attached contract.
 - (ii) The Insurance specified in Clause GC58 to GC 62 inclusive of the attached contract.

11. SIGNATURES

- .1 Tenders are to be properly signed and executed in accordance with the Laws of Nunavut.
- .2 The Tenderer, or the person or persons duly authorized to sign on his behalf, must initial and date each and every correction, change, erasure or alteration contained in this completed tender document.
- .3 At the sole discretion of the Owner, the failure by the Tenderer to properly sign and execute the tender may result in the disqualification of the tender.

12. GOODS AND SERVICES TAX

- .1 The Tenderer shall exclude the Goods and Services Tax from his bid shown on bid forms and appendices.
- .2 The Government of Nunavut will pay the Goods and Services Tax (GST); however, do not include the GST in your bid amounts shown on the tender form and appendices.

- .3 The successful Tenderer may invoice for Goods and Services Tax (GST).
- .4 Further information in this regard may be obtained from the Owner at the specified Tender Address.

13. WORKERS COMPENSATION ACT/COMPANIES ACT AND GENERAL COMPLIANCE WITH LAWS

- .1 Tenderers are hereby notified that the Owner will check with the appropriate agencies prior to award of a contract to ensure that the successful Tenderer complies with the Workers Compensation and Companies Acts.
- .2 The Contractor shall be required to comply, and shall require its subcontractors to comply, with all applicable laws, orders, rules and regulations; and, without limiting the generality of the foregoing, the Contractor shall at its sole expense comply with all unemployment insurance, Worker's Compensation, income tax, payroll tax, Canada Pension Plan, occupational health and safety and environmental protection legislation.

14. REQUIREMENT FOR USING HOTELS OR BED AND BREAKFAST FACILITIES

- .1 **On contracts where a Commercial Room and Board Facility (as defined below) exists within the community, the Contractor is required to use a Commercial Room and Board Facility to house and feed all workers directly employed by the Contractor and by any subcontractor or agent or any other business working on the project. The Contractor is not required to use Commercial Room and Board Facilities for workers who are Local Residents as defined in the NNI Policy.**
- .2 **The following definitions apply to this contract:**
 - a. **“Commercial Room and Board Facility” means a Hotel or a Bed and Breakfast (Tourist Home) that holds a Tourist Establishment Licence issued by the GN under the Travel and Tourism Act.**
 - b. **“Community” means the community in which the work is located as defined in the contract and includes the entire area within a 20-kilometre radius of the community.**
- .3 **The Commercial Room and Board Facility must:**
 - a. **meet the applicable requirements under the Public Health Act, and of the Eating or Drinking Place Regulations**
 - b. **meet all applicable requirements of the Public Health Act the Fire Prevention Act and applicable regulations thereunder, and any other applicable Government of Nunavut or federal legislation.**

15. STORAGE OF PROPANE CYLINDERS

- .1 The successful Tenderer is advised that they are responsible for the proper care and storage of propane cylinders on the job site in accordance with the Nunavut Fire Prevention Act. The penalty for non-compliance is up to \$10,000 fine and/or 1 year jail term.

A copy of the Nunavut Fire Prevention Act is available by contacting:
The Fire Marshall's Office
Department of Community Government and Transportation
Government of Nunavut
Tel: (867) 975-5316 Fax: (867) 975-5330

16. TRANSPORTATION

- .1 The Contractor is to comply with requirements of Appendix “H” titled “Transportation of Materials”.

17. AVAILABILITY OF OWNER STOCKPILED GRANULAR MATERIAL

- .1 Granular materials are not available from Owner's stockpiles. Tenderers are advised to make enquiries regarding the availability and cost of granular material in the community.**
- a. In many communities, purchase of granular materials including delivery and placement, is available from either the local hamlet office or from a local contractor.**
 - b. If the Contractor obtains granular material directly from the local borrow pit/quarry, they shall have all required borrow pit/quarry permit(s) in place, and shall submit a copy to the Engineer prior to obtaining the granular materials, and shall pay applicable fees.**
 - i. Contact Community Government and Transportation (CGT) Regional Office, Planning and Lands Division, to apply for borrow pit/quarry permits; certain Hamlets may be able to grant these permits.**
 - ii. Contractors are advised that:**
 - they are legally bound by the permit to adhere to conditions and requirements stipulated in the borrow pit/quarry permit, and**
 - the granting of a borrow pit/quarry permit is subject to a Nunavut Impact Review Board (NIRB) screening process, which can take a number of months for approval."**

18. ACCEPTANCE

- .1 Tenders containing qualifications other than in the manner prescribed may be disqualified at the sole discretion of the Owner.**
- .2 The submission of the lowest or any tender will not necessarily result in the award of a contract. The Owner reserves the right to cancel this tender, in whole or in part at any time and to re-tender the same for any reason whatsoever without incurring any liability, and no bidder will have any claim against the Owner as a consequence.**
- .3 The Owner reserves the right to negotiate the tendered price solely with the low bidder (after adjustments in accordance with the Nunavummi Nangminiaqtunik Ikajuuti (NNI) Policy), in order to achieve a reduced scope of work and price of up to 15%. The Owner further reserves the right to re-invite tenders from the low bidders without going to public tender in order to achieve a reduced scope of work greater than 15%, so long as the fundamental nature of the contract has not changed.**

END OF INSTRUCTIONS TO TENDERERS

TENDER FORM

1. PROJECT INFORMATION

Project Title: Water Reservoir, Sewage Lagoon and Landfill Improvements

Project Location: Oikigtarjuaq, Nunavut Project Number: 05-2002

Project Owner: The Government of Nunavut, herein the "Owner", represented by the Minister of the
Department of Community & Government Services

2. OFFER (Information to be completed by Tenderer)

Company Name

(herein the "Tenderer") offers to the Owner to furnish all necessary tools, plant, services, materials and labor to execute and complete in a careful and workmanlike manner the Work described in the Plans and Specifications for the prices as set out in Clause 4 or 5 of this Tender Form. The Tenderer hereby acknowledges receipt of Addenda No. _____ to No. _____ inclusive and hereby agrees they form part of this Tender.

3. GENERAL AGREEMENT (Information to be completed by Tenderer)

The Tenderer agrees:

- .1 To substantially perform the Work in compliance with the required completion schedule stated in the tender documents, or if no schedule is stated, to substantially perform the Work within _____ weeks from the date of notification of acceptance of the tender, or within a reasonable period of time after award;
- .2 That he has carefully examined the Work described herein; has become familiar with local conditions and the character and extent of the Work; has carefully examined every part of the proposed contract and thoroughly understands its terms and conditions; has determined the sources of supply of the materials required; has investigated labor conditions and has arranged for the continuous performance of the Work described in the Tender Documents;
- .3 That the list of Tender Documents included in Appendix "A" shall be and is the complete tender and this offer is made subject to all provisions contained therein;
- .4 That this tender supersedes and cancels all communications, negotiations, and agreements relating to the Work other than contained in the completed tender.

4. FOR A CONTRACT BASED ON A LUMP SUM (Information to be completed by Tenderer)

The Tenderer agrees that the following is the lump sum referred to in Clause 2 of this Tender Form and that this is the Tenderer's total Tender price:

_____ DOLLARS (\$_____)

An illegible submission may be disqualified at the sole discretion of the Owner. When there is a discrepancy between the written and numerical amount, the lowest version will govern.

TENDER FORM

5. FOR A CONTRACT PRICE BASED ON UNIT PRICES (Information on Appendix “D” to be completed by Tenderer)

- (a) **For a Unit Price Contract, the Contractor shall complete Appendix “D”.**
- (b) For a unit price contract, the contract value shall be the Total Estimated Contract Price shown on Appendix “D”.
- (c) When an arithmetic error is identified on Appendix “D”, the tendered Unit Price shall take precedence over the Total Estimated Contract Price and the Owner shall correct the arithmetic error as explained below.
- (d) The Total Estimated Contract Price shall equal the sum of all Extensions (Column 6) for all items listed on Appendix “D”. In the event that an arithmetic error is made in adding the individual Extensions listed in Column 6, the Owner shall correct the arithmetic error.
- (e) Each Extension shall be equal to the Estimated Quantity (Column 3) multiplied by the tendered Unit Price (Column 5). In the event that an arithmetic error is made in multiplying the Estimated Quantity (Column 3) by the tendered Unit Price (Column 5) the Owner shall correct the arithmetic error including the Extension and the Total Estimated Contract Price.
- (f) The Total Estimated Contract Price is based on estimated quantities; the final Contract amount owing to the Contractor shall be determined by taking the actual quantities that are incorporated in, or made necessary by the Work, as confirmed by count and measurement, and multiplying by the appropriate tendered Unit Price adjusted by any changes that are made in accordance with the provisions of the Contract Documents.

6. DECLARATIONS (Information to be completed by Tenderer)

The Contractor hereby declares that:

- .1 No person, firm or corporation other than the undersigned has any interest in this Tender or in the proposed Contract for which the Tender is made, except as revealed by the tender or as may be required by the terms of this Contract for which the Tender is made;
- .2 This Tender is irrevocable for a period of thirty (30) calendar days from the date of Phase I Tender Closing, as explained in Instructions to Tenderers 4.4;
- .3 The Tenderer acknowledges that the Owner may extend the above thirty (30) day period to sixty (60) days provided that notification of extension is made within fifteen (15) calendar days of Phase I Tender Closing date, and that this extension shall result in an increase or decrease to the stipulated price of:

\$_____ addition to stipulated price
or
\$_____ reduction to stipulated price

(Any increase and decrease to the stipulated price, shall not be subject to an adjustment under the Nunavummi Nangminiaqatunik Ikajuuti Policy.)

TENDER FORM

7. SIGNATURES (Information to be completed by Tenderer)

Signed, sealed and submitted for and on behalf of:

Company _____
(Full Legal Business Name)

(Street Address)

(Mailing Address)

(Community, Territory/Province and Postal Code)

Signature _____

Name & Title _____

Dated at _____ this _____ day of _____, 20

Witness _____

Dated at _____ this _____ day of _____, 20

LIST OF TENDER DOCUMENTS - APPENDIX A
(Information to be completed by OWNER)

Project Number: 05-2002

The following is the list or description of the tender documents referred to in the Tender for this Project.

Tender

1. Tender Advertisement
2. Instructions to Tenderers
3. Tender Form
4. Appendices to Tender: A, B, B-1, B-2, C, D, E, F, G, H, I, J and K
5. Addenda (issued during Tender period): Addendum# ____ to ____
(list Addenda when preparing the contract documents after award)

Contract

1. Articles of Agreement
2. Terms of Payment
3. General Conditions
4. Special Provisions:
5. Drawings (list):

AS PER LISTED IN THE SPECIFICATIONS
6. Technical or General Specifications
(list or refer to technical specification index):

Nunavummi Nangminiaqtunik Ikajuuti (NNI) Policy Forms - Appendix B

LOCAL/NUNAVUT/INUIT EMPLOYMENT AND TRAINING

Local/Nunavut/Inuit employment and training are high priorities with the Government of Nunavut (GN). General Contractors and Sub-contractors contracted for work on Government of Nunavut projects are required to hire Local and Nunavut and Inuit residents to the maximum extent possible. Information regarding available Local and Nunavut and Inuit workers can be obtained from a Federal Government Employment Centre, a Federal Government Outreach Centre, or Hamlet Office, and Education Department Career Centres of the Government of Nunavut.

Federal Government Employment Centres:

<u>Location</u>	<u>Phone Number</u>	<u>Facsimile Number</u>
Rankin Inlet	(867) 645-2853	(867) 645-2148
Iqaluit	(867) 979-6271	(867) 979-6070

Federal Government Outreach Centres or Hamlet Offices:

<u>Location</u>	<u>Phone Number</u>	<u>Facsimile Number</u>
Arviat	(867) 857-2678	(867) 857-2502
Qikiqtarjuaq (Broughton Island)	(867) 927-8832	(867) 927-8120
Cape Dorset	(867) 897-8943	(867) 897-8030
Clyde River	(867) 924-6220	(867) 924-6293
Pond Inlet	(867) 899-8935	(867) 899-8940
Cambridge Bay	(867) 983-2120	(867) 983-2570
Baker Lake	(867) 793-2517	(867) 793-2509
Taloyoak	(867) 561-6341	(867) 561-5057
Kuugaruk (Pelly Bay)	(867) 769-6281	(867) 769-6069
Kugluktuk (Coppermine)	(867) 982-4471	(867) 982-3060
Gjoa Haven	(867) 360-7141	(867) 360-6049
Igloolik	(867) 934-8830	(867) 934-8757
Pangnirtung	(867) 473-8953	(867) 473-8832

Training is encouraged on all construction projects and, in some tenders, will be made a contract requirement. Funding to offset training costs is provided through the Building and Learning strategy, the Apprenticeship Program, the Training On The Job Program and Women in Trades and Technology, and as a contract bonus pursuant to the Nunavummi Nangminiaqtunik Ikajuuti Policy, Government of Nunavut. Contractors can obtain further information from the Education Department Career Centres, Government of Nunavut.

Education Department Career Centres, Government of Nunavut:

<u>Location</u>	<u>Phone Number</u>	<u>Facsimile Number</u>
Cambridge Bay	(867) 983-7214	(867) 983-2004
Iqaluit	(867) 975-5653	(867) 975-5670
Rankin Inlet	(867) 645-5039	(867) 645-2148
Igloolik	(867) 934-8192	(867) 934-8808

EMPLOYMENT REPORT

The successful General Contractor will be required to complete an Employment Report for ALL site employees that have worked on this project. The Contractor is required to complete a standard GN employment report.

A SAMPLE of the required Employment Report is attached on the following page. This form is available from the Owner.

This information **must** be submitted with each Progress Claim on contracts over \$100,000.00 as well as with the Substantial Certificate of Completion, updated with the Final Certificate of Completion.

For projects under or equal to \$100,000.00 the Employment Report must be submitted with the substantial Certificate of Completion, updated with the Final certificate of Completion. At the sole discretion of the owner, the information may be required with each Progress Claim.

It is the General Contractor's responsibility to obtain the required information from the sub-trades and sub-sub-trades.

The successful General Contractor shall comply with the requirements of Clauses GC52, GC53, GC54 and GC55. Specifically in respect to Clause GC54, if requested to do so by the Owner, the successful General Contractor shall be responsible to obtain an "Employee Verification and Consent Form" included as Appendix "B", page 4.

EMPLOYMENT REPORT

Project Name:	Project Location: Qikiqtarjuaq, Nunavut
General Contractor:	Project No: 02-2002 Contract No:
Report Submitted by (General/Subcontractor):	Reporting Period From: To:

This Employment Report is Submitted With: *(CHECK ONE)*

☐ Progress Claim No. _____ Date:	☐ Substantial Certificate of Completion Date:	☐ Final Certificate of Completion Date:

Employee's Name	** Inuit		Employee's Address: (Street Address & Mailing if different)	Date Hired:	Date Terminated:	Hrs. Work. This Period:	Hours Worked To Date:	Gross Income This Period:	Gross Income To Date:	* Class
	Yes	No								

<u>Contractors / Subcontractors Name & Title</u> (Print)	<u>Contractors / Subcontractors Signature:</u>	<u>Date:</u>

* Classifications:

1. Superintendent	2. Carpenter	3. Carpenter Apprentice	4. Labourer	5. Mechanical	6. Mechanical Apprentice	7. Electrician	8. Electrical Apprentice	9. Drywall/ Painter	10. Drywall / Painter Apprentice	11. Other (specify)

**Beneficiary of the Nunavut Land Claim Agreement

EMPLOYEE VERIFICATION AND CONSENT FORM

TO: GOVERNMENT OF NUNAVUT (GN)

My full name is _____
(Print or Type)

My permanent home address is _____
(mailing and physical
address) _____

I am employed by _____

On _____
(Name or Description of Project)

I have lived in Nunavut for at least the past 12 months and in _____

_____ For at least the past 6 months.
(Community)

AND TO WHOM IT MAY CONCERN

I hereby authorize any Federal, Provincial or Territorial government department or agency to release particulars and/or a copy of my Nunavut Health Care Card, Nunavut Driver's License, Nunavut Motor Vehicle Registration, Nunavut General Hunting License, and Nunavut Tungavik Inc. (NTI) to release my Beneficiary number or card, or any other documentation which the GN may deem helpful or necessary in verifying my place of residence or Beneficiary status.

(Witness) _____
(Employee Signature)

Signed _____, _____
(Date) (Year)

BID ADJUSTMENT INFORMATION

- This contract shall be awarded to the Tenderer who is responsive and responsible (as defined in the Government Contract Regulations) and who has submitted a tender that, after the application of any tender adjustment permitted under the Nunavummi Nangminiaqtunik Ikajuuti (NNI) Policy, is lower than that submitted by any other responsive and responsible Tenderer. Bid and contract requirements have been developed to comply with the letter and the spirit and intent of the NNI Policy.
- If and when requested by the GN, the Tenderer shall, prior to award, provide the GN with any and all clarifications, substantiations or further explanation about the proposals made by the Tenderer in respect to Local, Nunavut, Inuit and other content contained in their bid and reflected on Appendices "B-1" and "B-2".
- Tenderers are required to identify the dollar value of Own Forces as well as to name **ALL** subcontractors/suppliers and to identify their dollar value.
- Amendments affecting the tendered price shall require the Tenderer to also amend Appendix "B-1" to reflect the change, prior to the Phase I tender closing.
- Dollar value of Own Forces/Subcontractors noted in Appendix "B-1" shall include all amounts listed in Appendix "B-2" (i.e. payroll, transportation, equipment, etc.) for the Tenderer and all subcontractors. B-2 amounts that exceed the B-1 amounts will not be considered for bid adjustment.
- Dollar value(s) for payroll on Appendix "B-2" shall include all payroll costs for all divisions of work identified as Own Forces.
- An approved Nunavut Business or Inuit Firm will only receive bid adjustments for subcontractors, suppliers, payroll, and other bid components for those parts of bid that are Own Forces, or that are subcontracted to approved Nunavut businesses and/or Inuit firms, or for payroll to Inuit or Nunavut Residents. Bid adjustments will not be given for those portions of the bid that are not Nunavut or Inuit content. The definition of "Nunavut Business", "Inuit Firm", "Inuit" and "Nunavut Resident" are to be those definitions in the NNI Policy Definitions Appendix.
- Any business that is not an approved Nunavut Business, two weeks prior to tender closing, or is not an approved Inuit Firm prior to tender close, will not receive a bid adjustment for their portion of the bid, with the exception of the Inuit and/or Nunavut Payroll components, and amounts listed on Appendix B-1 as subcontracted to Nunavut and/or Inuit firms approved by the foregoing deadlines. Payroll to Inuit and Payroll to Nunavut Residents, need not be supplied by an Inuit Firm or a Nunavut Business to receive a bid adjustment.
- A Tenderer (General Contractor) that is not a Nunavut Business or an Inuit Firm will only receive bid adjustments for Inuit and/or Nunavut Payroll amounts, and for amounts identified on Appendix B-1 as going to approved Nunavut Businesses and/or Inuit Firms. A completed Appendix B-2 for each named Nunavut Business and/or Inuit firm listed on Appendix B-1 must be submitted by the General Contractor for the Nunavut and/or Inuit subcontractor or supplier amounts to be eligible for bid adjustment.
- For companies listed as suppliers of materials, to receive the Nunavut bid adjustment, the company listed must be specifically approved by the GN for Supply of the applicable type of materials 2 weeks prior to the closing.
- to be eligible for an extra adjustment for "Local", the bid amount must first be eligible for an adjustment as a Nunavut business, or an Inuit firm.

APPENDIX B-1

General Contractors & Sub-Contractors Dollar Amount

Project Title: Water Reservoir, Sewage Lagoon and Landfill Improvements

Project Location: **Oikigtarjuag, Nunavut**

Project Number: **05-2002**

Tenderers are required to identify the dollar value of Own Forces as well as ALL Sub-Contractors that will be involved in the completion of this project. This Appendix MUST be submitted no later than the time and date set for the Phase I tender closing. If this Appendix is not submitted or is incomplete the tenderer may be disqualified. By signing this Tender, the Tenderer is certifying that the information on this Appendix is correct. Changes to this information will not be accepted after Phase I Tender Closing. The owner reserves the right to ask the tenderer for substantiation of information provided.

General Contractor: (Full Business Name)	Own Forces Amount: (\$)
	\$
Sub-Contractors: (Full Business Name)	Sub-Contract Amount: (\$)
1.	\$
2.	\$
3.	\$
4.	\$
5.	\$
6.	\$
7.	\$
8.	\$
9.	\$
10.	\$
Other(s)	Amount: (\$)
1.	\$
2.	\$
3.	\$
4.	\$
5.	\$
TOTAL	
\$	

Project Name: This Appendix must be received within 24 hours of the Phase I tender close. To receive bid adjustments, as per the Nunavutmi Nangminiaqtunik Ikajuuti (NNI) Policy, all tenderers **MUST** complete this form. The Nunavut, Local and Inuit firm status, as defined by the NNI Policy, of named companies will be verified by the owner. The owner reserves the right to request substantiation of information provided. No changes with respect to this information will be allowed without written authorization of the owner. Dollar value for payroll shall include all divisions of work identified as own forces.

Project Location:

Project Number:

General Contractor:

General Contractor (full business name):

Payroll	Local Nunavut Residents	Nunavut Res. (excl. Local)	Local Inuit Beneficiaries	Inuit Beneficiaries (excl. Local)	Total \$ Inuit Payroll (for GN use)	% Inuit of Total Payroll (for GN use)	Other Payr. - not Nunavut or Inuit	Total Payroll
Cost Components (excluding Payroll) Identify Work to be Completed by own forces or Name Subcontractor/ Supplier	*Nunavut Firms (not NTI approved Inuit)		*Nunavut & **Inuit Firms (GN & NTI approved)		**Inuit Firms (not GN approved Nunavut)		Other (not GN or NTI approved firm)	* approved by GN ** approved by NTI Total each Line
	Local & Nunavut (excluding Inuit)	Nunavut (excl. Local & Inuit)	Inuit & Local & Nunavut	Inuit & Nunavut (excluding Local)	Inuit & Local	Inuit (excluding Local)		
General Expenses:	\$	\$	\$	\$	\$	\$	\$	\$
Accommodation:	\$	\$	\$	\$	\$	\$	\$	\$
Sealift:	\$	\$	\$	\$	\$	\$	\$	\$
Other Transportation:	\$	\$	\$	\$	\$	\$	\$	\$
Sitework:	\$	\$	\$	\$	\$	\$	\$	\$
Framing/Structural:	\$	\$	\$	\$	\$	\$	\$	\$
Name the Material Supplier(s) below	Note: Business must be specifically approved by the GN for supply of applicable product to receive Nunavut bid adjustment.							
1	\$	\$	\$	\$	\$	\$	\$	\$
2	\$	\$	\$	\$	\$	\$	\$	\$
3	\$	\$	\$	\$	\$	\$	\$	\$
List Miscellaneous Expenses below	Note: The name of the applicable company, or an indication of "own forces" must be given, to be considered for bid adjustment.							
1	\$	\$	\$	\$	\$	\$	\$	\$
2	\$	\$	\$	\$	\$	\$	\$	\$
3	\$	\$	\$	\$	\$	\$	\$	\$
TOTALS: Payroll + Other Cost Components	\$	\$	\$	\$	\$	\$	\$	\$
Total \$ and % Inuit Content (for GN use):								
This section for GN use: NNI adjustments: - 14% Nunavut, -3% Local, -3% Inuit	Amount Qualified for NNI Adjustment	\$	\$	\$	\$	\$	\$	\$
	Adjustment - %	17%	14%	20%	17%	6%	3%	0%
	NNI Adjusted	\$	\$	\$	\$	\$	\$	\$

Project Name: This Appendix must be received within 24 hours of the Phase I tender close. To receive bid adjustments, as per the Nunavummi Nangminiaqtunik Ikajuuti (NN.) Policy, all tenderers **MUST** complete this form. The Nunavut, Local and Inuit firm status, as defined by the NNI Policy, of named companies will be verified by the owner. The owner reserves the right to request substantiation of information provided. No changes with respect to this information will be allowed without written authorization of the owner. Dollar value for payroll shall include all divisions of work identified as own forces.

Project Location:

Project Number:

General Contractor:

Mechanical Sub-Contractor (full business name):

Payroll	Local Nunavut Residents	Nunavut Res. (excl. Local)	Local Inuit Beneficiaries	Inuit Beneficiaries (excl. Local)	Total \$ Inuit Payroll (for GN use)	% Inuit of Total Payroll (for GN use)	Other Payr. - not Nunavut or Inuit	Total Payroll
Cost Components (excluding Payroll) Identify Work to be Completed by own forces or Name Subcontractor/ Supplier	*Nunavut Firms (not NTI approved Inuit) Local & Nunavut (excluding Inuit)	*Nunavut & **Inuit Firms (GN & NTI approved) Nunavut (excl. Local & Inuit)	**Inuit Firms (not GN approved Nunavut) Inuit & Local	**Inuit Firms (not GN approved Nunavut) Inuit (excluding Local)	Other (not GN or NTI approved firm)	* approved by GN ** approved by NTI	Total each Line	
General Expenses:	\$	\$	\$	\$	\$	\$	\$	
Accommodation:	\$	\$	\$	\$	\$	\$	\$	
Sealift:	\$	\$	\$	\$	\$	\$	\$	
Other Transportation:	\$	\$	\$	\$	\$	\$	\$	
General Plumbing:	\$	\$	\$	\$	\$	\$	\$	
Sprinklers:	\$	\$	\$	\$	\$	\$	\$	
Insulation:	\$	\$	\$	\$	\$	\$	\$	
Sheet Metal:	\$	\$	\$	\$	\$	\$	\$	
Controls:	\$	\$	\$	\$	\$	\$	\$	
List Material Supplier(s) below	Note: Business must be specifically approved by the GN for supply of applicable product to receive Nunavut bid adjustment.							
1	\$	\$	\$	\$	\$	\$	\$	
2	\$	\$	\$	\$	\$	\$	\$	
3	\$	\$	\$	\$	\$	\$	\$	
List Miscellaneous Expenses below	Note: The name of the applicable company, or an indication of "own forces" must be given, to be considered for bid adjustment.							
1	\$	\$	\$	\$	\$	\$	\$	
2	\$	\$	\$	\$	\$	\$	\$	
3	\$	\$	\$	\$	\$	\$	\$	
TOTALS: Payroll + Other Cost Components	\$	\$	\$	\$	\$	\$	\$	
Total \$ and % Inuit Content (for GN use):								
This section for GN use: NNI adjustments: -	Amount Qualified for NNI Adjustment	\$	\$	\$	\$	\$	\$	
14% Nunavut, -3% Local, -3% Inuit	Adjustment - %	17%	14%	20%	17%	6%	3%	
	NNI Adjusted	\$	\$	\$	\$	\$	\$	

Project Name: This Appendix must be received within 24 hours of the Phase I tender close. To receive bid adjustments, as per the Nunavummi Nangminiaqtunik Ikajuuti (NNI) Policy, all tenderers **MUST** complete this form. The Nunavut, Local and Inuit firm status, as defined by the NNI Policy, of named companies will be verified by the owner. The owner reserves the right to request substantiation of information provided. No changes with respect to this information will be allowed without written authorization of the owner. Dollar value for payroll shall include all divisions of work identified as own forces.

Project Location:

Project Number:

General Contractor:

Electrical Sub-Contractor (full business name):

Payroll	Local Nunavut Residents	Nunavut Res. (excl. Local)	Local Inuit Beneficiaries	Inuit Beneficiaries (excl. Local)	Total \$ Inuit Payroll (for GN use)	% Inuit of Total Payroll (for GN use)	Other Payr. - not Nunavut or Inuit	Total Payroll
Cost Components (excluding Payroll) Identify Work to be Completed by own forces or Name Subcontractor/ Supplier	*Nunavut Firms (not NTI approved Inuit)	*Nunavut & **Inuit Firms (GN & NTI approved)	**Inuit Firms (not GN approved Nunavut)	Other (not GN or NTI approved firm)	* approved by GN ** approved by NTI			
	Local & Nunavut (excluding Inuit)	Nunavut (excl. Local & Inuit)	Inuit & Local Nunavut	Inuit & Nunavut (excluding Local)	Inuit & Local	Inuit (excluding Local)		Total each Line
General Expenses:	\$	\$	\$	\$	\$	\$	\$	\$
Accommodation:	\$	\$	\$	\$	\$	\$	\$	\$
Sealift:	\$	\$	\$	\$	\$	\$	\$	\$
Other Transportation:	\$	\$	\$	\$	\$	\$	\$	\$
General Electrical:	\$	\$	\$	\$	\$	\$	\$	\$
Fire Alarm Systems:	\$	\$	\$	\$	\$	\$	\$	\$
Lighting Control Equip.:	\$	\$	\$	\$	\$	\$	\$	\$
Security System:	\$	\$	\$	\$	\$	\$	\$	\$
Controls:	\$	\$	\$	\$	\$	\$	\$	\$
List Material Supplier(s) below	Note: Business must be specifically approved by the GN for supply of applicable product to receive Nunavut bid adjustment.							
1	\$	\$	\$	\$	\$	\$	\$	\$
2	\$	\$	\$	\$	\$	\$	\$	\$
3	\$	\$	\$	\$	\$	\$	\$	\$
List Miscellaneous Expenses below	Note: The name of the applicable company, or an indication of "own forces" must be given, to be considered for bid adjustment.							
1	\$	\$	\$	\$	\$	\$	\$	\$
2	\$	\$	\$	\$	\$	\$	\$	\$
3	\$	\$	\$	\$	\$	\$	\$	\$
TOTALS: Payroll + Other Cost Components	\$	\$	\$	\$	\$	\$	\$	\$
Total \$ and % Inuit Content (for GN use):								
This section for GN use: NNI adjustments: - 14% Nunavut, -3% Local, -3% Inuit	Amount Qualified for NNI Adjustment	\$	\$	\$	\$	\$	\$	\$
	Adjustment - %	17%	14%	20%	17%	6%	3%	0%
	NNI Adjusted	\$	\$	\$	\$	\$	\$	\$

Project Name: This Appendix must be received within 24 hours of the Phase I tender close. To receive bid adjustments, as per the Nunavutmi Nangminiqagtunik Ikajuuti (NNI) Policy, all tenderers **MUST** complete this form. The Nunavut, Local and Inuit firm status, as defined by the NNI Policy, of named companies will be verified by the owner. The owner reserves the right to request substantiation of information provided. No changes with respect to this information will be allowed without written authorization of the owner. Dollar value for payroll shall include all divisions of work identified as own forces.

Project Location:

Project Number:

General Contractor:

Other Sub-Contractor (full business name):

Payroll	Local Nunavut Residents	Nunavut Res. (excl. Local)	Local Inuit Beneficiaries	Inuit Beneficiaries (excl. Local)	Total \$ Inuit Payroll (for GN use)	% Inuit of Total Payroll (for GN use)	Other Payr. - not Nunavut or Inuit	Total Payroll
	\$	\$	\$	\$			\$	\$
Cost Components (excluding Payroll)	*Nunavut Firms (not NTI approved Inuit)		*Nunavut & **Inuit Firms (GN & NTI approved)		**Inuit Firms (not GN approved Nunavut)		Other (not GN or NTI approved firm)	* approved by GN ** approved by NTI
Identify Work to be Completed by own forces or Name Subcontractor/ Supplier	Local & Nunavut (excluding Inuit)	Nunavut (excl. Local & Inuit)	Inuit & Local & Nunavut	Inuit & Nunavut (excluding Local)	Inuit & Local	Inuit (excluding Local)		Total each Line
General Expenses:	\$	\$	\$	\$	\$	\$	\$	\$
Accommodation:	\$	\$	\$	\$	\$	\$	\$	\$
Sealift:	\$	\$	\$	\$	\$	\$	\$	\$
Other Transportation:	\$	\$	\$	\$	\$	\$	\$	\$
List Material Supplier(s) below	Note: Business must be specifically approved by the GN for supply of applicable product to receive Nunavut bid adjustment.							
1	\$	\$	\$	\$	\$	\$	\$	\$
2	\$	\$	\$	\$	\$	\$	\$	\$
3	\$	\$	\$	\$	\$	\$	\$	\$
List Miscellaneous Expenses below	Note: The name of the applicable company, or an indication of "own forces" must be given, to be considered for bid adjustment.							
1	\$	\$	\$	\$	\$	\$	\$	\$
2	\$	\$	\$	\$	\$	\$	\$	\$
3	\$	\$	\$	\$	\$	\$	\$	\$
TOTALS: Payroll + Other Cost Components	\$	\$	\$	\$	\$	\$	\$	\$
Total \$ and % Inuit Content (for GN use):								
This section for GN use: NNI adjustments: - 14% Nunavut, -3% Local, -3% Inuit	Amount Qualified for NNI Adjustment	\$	\$	\$	\$	\$	\$	\$
	Adjustment - %	17%	14%	20%	17%	6%	3%	0%
	NNI Adjusted	\$	\$	\$	\$	\$	\$	\$

Note: for additional "Other Sub-contractors" use photocopies of this page

(Information to be Completed by Tenderer and Submitted with Tender)

The following are our unit prices for the units of work listed hereunder. The base price for the work is included in our tender; these unit prices apply only to variances of the estimated quantity.

TO BE COMPLETED BY THE GN			TO BE COMPLETED BY THE TENDERER	
Unit of Work			Unit Price (\$)	
Item	Description	Unit	Addition	Deletion
			\$	\$

LIST OF UNIT PRICES
UNIT PRICE CONTRACTS ONLY - APPENDIX D

(Information to be Completed by Tenderer and Submitted with Tender)

Project Number: **05-2002**

- (a) The conditions in Tender Form, Clause 5.0 apply to the completion of this Appendix.
- (b) If space for listing items is insufficient, the Owner shall annex a list and make reference to it on this form.
- (c) Type or print tendered values clearly. An illegible submission may be disqualified at the sole discretion of the Owner.

TO BE COMPLETED BY THE GN				TO BE COMPLETED BY THE TENDERER	
1. No	2. Description	3. Estimated Quantity	4. Unit	5. Unit Price	6. Estimated Total Price
	Summary of Unit Prices				
A1	Mobilization / Demobilization	1.00	LS		
A2	a) Bonding and Insurance	1.00	LS		
	b) All Risk Insurance	1.00	LS		
A3	Construction Camp	1.00	LS		
A4	Project Identification Signage	1.00	LS		
A5	Allowances:				
a)	Soils Testing Allowance	1.00	LS	\$30,000.00	\$30,000.00
b)	Survey Allowance	1.00	LS	\$50,000.00	\$50,000.00
c)	Electrical Allowance	1.00	LS	\$25,000.00	\$25,000.00
Subtotal - Schedule A					

LIST OF UNIT PRICES
UNIT PRICE CONTRACTS ONLY - APPENDIX D

(Information to be Completed by Tenderer and Submitted with Tender)

Project Number: **05-2002**

- (a) The conditions in Tender Form, Clause 5.0 apply to the completion of this Appendix.
- (b) If space for listing items is insufficient, the Owner shall annex a list and make reference to it on this form.
- (c) Type or print tendered values clearly. An illegible submission may be disqualified at the sole discretion of the Owner.

TO BE COMPLETED BY THE GN				TO BE COMPLETED BY THE TENDERER	
1. No	2. Description	3. Estimated Quantity	4. Unit	5. Unit Price	6. Estimated Total Price
	Schedule B – Water Reservoir Expansion				
	<u>Phase One</u>				
B1	Supply, Place and Compact Fill Material	1.00	LS		
B2	Site Grading and Restoration	1.00	LS		
B3	Construct Drainage Swale	100	m(l)		
Subtotal - Schedule B					

LIST OF UNIT PRICES
UNIT PRICE CONTRACTS ONLY - APPENDIX D

(Information to be Completed by Tenderer and Submitted with Tender)

Project Number: **05-2002**

- (a) The conditions in Tender Form, Clause 5.0 apply to the completion of this Appendix.
- (b) If space for listing items is insufficient, the Owner shall annex a list and make reference to it on this form.
- (c) Type or print tendered values clearly. An illegible submission may be disqualified at the sole discretion of the Owner.

TO BE COMPLETED BY THE GN				TO BE COMPLETED BY THE TENDERER	
1. No	2. Description	3. Estimated Quantity	4. Unit	5. Unit Price	6. Estimated Total Price
	Schedule B – Water Reservoir Expansion				
	<u>Phase Two</u>				
B4	Earth Excavation and Backfill	1.00	LS		
B8	Supply and Install Liner:				
a)	Non-Woven Geotextile Liner	1.00	LS		
b)	Supply and Place Crushed Stone	1.00	LS		
c)	Supply and Install Polyethylene Geomembrane Liner	1.00	LS		
		1.00	LS		
B5	Supply and Install Intake Piping	1.00	LS		
B6	Site Grading and Restoration	1.00	LS		
B7	Fencing				
	a) Supply and Place Fence	500	m(l)		
	b) Supply and Place Gate	1.00	LS		
B8	Water Pumphouse Upgrades	1.00	LS		
B9	Signage	1	LS		
Subtotal - Schedule B					

LIST OF UNIT PRICES
UNIT PRICE CONTRACTS ONLY - APPENDIX D

(Information to be Completed by Tenderer and Submitted with Tender)

Project Number: **05-2002**

- (a) The conditions in Tender Form, Clause 5.0 apply to the completion of this Appendix.
- (b) If space for listing items is insufficient, the Owner shall annex a list and make reference to it on this form.
- (c) Type or print tendered values clearly. An illegible submission may be disqualified at the sole discretion of the Owner.

TO BE COMPLETED BY THE GN				TO BE COMPLETED BY THE TENDERER	
1. No	2. Description	3. Estimated Quantity	4. Unit	5. Unit Price	6. Estimated Total Price
	Schedule C – Construct Sewage Lagoon				
C1	Earth Excavation and Backfill	1.00	LS		
C2	Supply, Place and Compact Imported Fill Material	1.00	LS		
C3	Overflow Pipe Including Rip Rap	1.00	LS		
C3	Outlet Piping including Collar and Valve	1.00	LS		
C4	Drain Piping	1.00	LS		
C5	Effluent Decant Chamber (including Headwall, Mechanical, Etc.)	1.00	LS		
C6	Construct Exfiltration Berm	1.00	LS		
C7	Construct Truck Offloading Pad	1.00	LS		
C8	Truck Discharge Flume	1.00	LS		
C9	Outlet / Perimeter Ditching	300	m(l)		
C10	Signage	1	LS		
Subtotal - Schedule C					

LIST OF UNIT PRICES
UNIT PRICE CONTRACTS ONLY - APPENDIX D

(Information to be Completed by Tenderer and Submitted with Tender)

Project Number: **05-2002**

- (a) The conditions in Tender Form, Clause 5.0 apply to the completion of this Appendix.
- (b) If space for listing items is insufficient, the Owner shall annex a list and make reference to it on this form.
- (c) Type or print tendered values clearly. An illegible submission may be disqualified at the sole discretion of the Owner.

TO BE COMPLETED BY THE GN				TO BE COMPLETED BY THE TENDERER	
1. No	2. Description	3. Estimated Quantity	4. Unit	5. Unit Price	6. Estimated Total Price
	Schedule D – Construct Landfill Site				
D1	Construction of Berms				
a)	Perimeter Berm - Landfill	1.00	LS		
b)	Intermediate Berm 1	1.00	LS		
c)	Perimeter Berm – Water Retention Area	1.00	LS		
D2	Construction of Hazardous Waste Storage Area:				
a)	Perimeter Berm	1.00	LS		
b)	Liner	1.00	LS		
c)	Gravel Overlay	1.00	LS		
D3	Fencing:				
a)	Perimeter Fence – Landfill	550	m(l)		
b)	Remove and Dispose of Existing Fencing	1.00	LS		
c)	Perimeter Fence – Hazardous Waste Storage Area	45	m(l)		
D4	Regrade Existing Slopes and Ditches	1.00	LS		
D5	Water Sampling Point	1	EA		
D6	Remove Existing Culvert and Replace with New Culvert	24	m(l)		
D7	Signage	1	LS		
Subtotal - Schedule D					

LIST OF UNIT PRICES
UNIT PRICE CONTRACTS ONLY - APPENDIX D

(Information to be Completed by Tenderer and Submitted with Tender)

Project Number: **05-2002**

- (a) The conditions in Tender Form, Clause 5.0 apply to the completion of this Appendix.
- (b) If space for listing items is insufficient, the Owner shall annex a list and make reference to it on this form.
- (c) Type or print tendered values clearly. An illegible submission may be disqualified at the sole discretion of the Owner.

TO BE COMPLETED BY THE GN				TO BE COMPLETED BY THE TENDERER	
1. No	2. Description	3. Estimated Quantity	4. Unit	5. Unit Price	6. Estimated Total Price
	Schedule E – Provisional and Contingency Items				
E1	Provisional -Supply and Install New Power Generating Unit including all associated components and removal/disposal of existing genset	1.00	LS		
E2	Excavation of Unsuitable Soil Below Grade Specified, Including Supply and Placement of Additional Granular Material and Disposal of Excavated Materials	1000	cu.m.		
E3	Labour Rates for Additional Work (This Rate Shall Include Payroll Burden, Overhead, and Profit, etc.):				
i)	Site Supervisor	80	hours		
ii)	Foreman	80	hours		
iii)	Operator	80	hours		
iv)	Labourer	80	hours		
E4	Contingency Allowance	1.00	LS	\$75,000	\$75,000
Subtotal – Schedule E					

LIST OF UNIT PRICES
UNIT PRICE CONTRACTS ONLY - APPENDIX D

(Information to be Completed by Tenderer and Submitted with Tender)

Project Number: **05-2002**

- (a) The conditions in Tender Form, Clause 5.0 apply to the completion of this Appendix.
- (b) If space for listing items is insufficient, the Owner shall annex a list and make reference to it on this form.
- (c) Type or print tendered values clearly. An illegible submission may be disqualified at the sole discretion of the Owner.

TO BE COMPLETED BY THE GN				TO BE COMPLETED BY THE TENDERER	
1. No	2. Description				6. Estimated Total Price
	Summary of Unit Prices Schedule A – Miscellaneous Items Schedule B – Water Reservoir Expansion Schedule C – Construct Sewage Lagoon Schedule D – Construct Landfill Site Schedule E – Provisional and Contingency Items				
Total Estimated Contract Price					

**LIST OF OPTIONS & SUBSTITUTIONS
SPECIFIED BY THE OWNER - APPENDIX E**

(To be Completed by Tenderer and Submitted with Tender)

Project Number: **05-2002**

In accordance with Clause 6 of the Instructions to Tenderers, indicate the effect on the stipulated price for the following options and substitutions listed by the Owner. The Tenderer further agrees that the following prices may be used in the evaluation of the submitted Tender.

All Options, Substitutions and Separate Prices shall include all work necessary for and incidental to the work described.

Description of Options & Substitutions (To be Completed by the GN)	Effect on Stipulated Price (\$) (To be Completed by Tenderer and Submitted with Tender)	
	\$ Addition to Stipulated Sum Price	\$ Reduction to Stipulated Sum Price

LIST OF OPTIONS
PROPOSED BY THE TENDERER - APPENDIX F

(Information to be Completed by Tenderer and Submitted with Tender)

Project Number: **05-2002**

In accordance with Clause 7 of the Instructions to Tenderers, the Tenderer may propose options or substitutions below. The cost of such options and substitutions are NOT included in the stipulated price.

If this form is not used, the Tenderer should draw a line through the form and initial.

Description of Options & Substitutions proposed by Tenderer	Effect on Stipulated Price (\$)	
	\$ Addition to Stipulated Sum Price	\$ Reduction to Stipulated Sum Price

PLANT AND EQUIPMENT LIST - APPENDIX G

(Information to be Completed by Tenderer and Submitted with Tender)

Project Number: 05-2002

The following list is the complete description of plant and equipment I/We propose to use in the execution of this contract. Such plant and equipment will be made available for inspection prior to the award of contract. The plant and equipment shall be moved to the project site upon direction from the Owner and shall not be removed from the site until completion of the contract without written approval from the Owner.

[illegible]

TRANSPORTATION OF MATERIALS - APPENDIX H

1. Transportation/shipping and handling of materials and all costs thereof are the responsibility of the Contractor unless otherwise noted. **Modes of transporting materials shall be decided by the Contractor unless by marine transport in which case Clause 2 shall apply.**
2. Whenever marine (water) transport is to be utilized, the Contractor shall use the Government of Nunavut specified carriers, and space should be booked directly with the carriers, as follows:

2.1 For the following communities in the Baffin Region:

South Baffin: Cape Dorset, Kimmirut, and Pangnirtung,
and

High Arctic including North Baffin:

Arctic Bay, Clyde River, Grise Fiord, Nanisivik, Pond Inlet, Qikiqtarjuaq (Broughton Island), and *Kugaaruk (Pelly Bay) (*as far as Nanisivik for furtherance), and Resolute Bay

Nunavut Eastern Arctic Shipping (NEAS),

By ships loading at the Montreal area Port of Valleyfield:

Contact: John Lepine

Phone, Toll free: (877) 225-6327

Fax: (514) 523-7875

*for transport to **Kugaaruk** beyond Nanisivik, the Carrier is:

Canada Coast Guard

Contact: John – Perry – Perrozzino

Phone: (613) 998-1585

Fax: (613) 991-9261

2.2 For the following communities in the Baffin and Kivalliq Regions:

Foxe Basin: Hall Beach, Igloolik, and Repulse Bay,
and

Iqaluit,

and

Kivalliq: Arviat, Baker Lake, Chesterfield Inlet, Coral Harbour, Rankin Inlet, Sanikiluaq, and Whale Cove (Note: shipping to Kivalliq is from Montreal area):

Nunavut Sealink and Supply (NSSI),

By ships loading at the Montreal area Port of Ste-Catherine:

Contact: Daniel Desgagnés

Phone: (450) 635-0833

Fax: (450) 635-5126

2.3 For the following communities in the Kitikmeot Region:

Kitikmeot: Cambridge Bay, Kugluktuk (Coppermine), Gjoa Haven, and Taloyoak:

Northern Transportation Company Limited (NTCL),

By barges loading at Hay River, Northwest Territories

Contact: Lynette Storoz

Phone: (867) 874-5100

Fax: (867) 874-5102

3. The annual shipping rates offered by marine carriers are dependent upon anticipated cargo quantities including the materials for construction projects; therefore, Contractors are to bid using the published sailing schedules and rates available from the above marine carriers, and also available from the Department of Community & Government Services, Finance Division, Contact: Traffic Manager at (867) 975-5437.
4. In exceptional or extraordinary circumstances, where the specified marine carrier's sailing schedule is in substantial conflict with the project schedule, the GN will review the circumstances, taking into account the adverse impact on the project and the specified marine carrier's interests, and the GN may provide authorization to allow the relevant cargo to be shipped with a marine carrier other than the specified marine carrier, depending upon the circumstances; and such authorization must be writing.
5. If a Contractor uses a marine carrier other than the GN contracted marine carrier without the GN's written authorization to do so, the Contractor shall be responsible for extra freight cost, administrative costs or any other costs, incurred by the GN which result directly or indirectly from the Contractor's failure to use the GN specified marine carrier as set out in this Appendix. The Contractor shall also be responsible to refund to the GN any monies saved by the Contractor by using a marine carrier other than the specified marine carrier as set out in this Appendix H.

CONTRACTOR'S CERTIFICATE OF INSURANCE - APPENDIX I - page 1 of 2

INSURED: _____

SCHEDULE OF MANDATORY INSURANCE			
Type of Insurance	Insurer, Policy Number	Policy Period	Limit of Liability/Amount
COMPREHENSIVE GENERAL LIABILITY INCLUDING NON- OWNED AUTOMOBILE LIABILITY		From: To:	BODILY INJURY \$ _____ Each Person \$ _____ Each Accident \$ _____ Aggregate Products PROPERTY DAMAGE \$ _____ Each Accident \$ _____ Aggregate Products Or, BODILY INJURY & PROPERTY DAMAGE \$ _____ Inclusive \$ _____ Aggregate Products
AUTOMOBILE LIABILITY (OWNED/LEASED VEHICLES)		From: To:	BODILY INJURY \$ _____ Each Person \$ _____ Each Accident PROPERTY DAMAGE \$ _____ Each Accident Or, BODILY INJURY & PROPERTY DAMAGE \$ _____ Inclusive
ADDITIONAL COVERAGES REQUIRED MARKED BY []			
[] UMBRELLA LIABILITY		From: To:	\$ _____ Limits \$ _____ S.I.R.
[] CONTRACTOR'S EQUIPMENT		From: To:	
[] OTHER			

This is to certify that policies as described above have been issued through the undersigned to the Insured named above and are in force at this time. If cancelled or changed in any manner, for any reason, during the period of coverage as stated herein so as to affect this certificate, immediate written notice will be given by the undersigned to the Department.

(Be sure to complete and sign the reverse side/2nd page of this form.)

CONTRACTOR'S CERTIFICATE OF INSURANCE - APPENDIX I - page 2 of 2

PARTICULARS OF INSURANCE	
GENERAL LIABILITY ☐ Premises Property and Operations ☐ Products and Completed Operations ☐ Blanket Contractual - All Written Agreements ☐ Occurrence Property Damage ☐ Broad Form Property Damage ☐ Contingent Employers Liability ☐ Personal Injury ☐ Employees as Additional Insureds ☐ Cross Liability - Severability Of Interests ☐ Blasting, Collapse, Underpinning ☐ Exclusions deleted as follows: ☐ ☐ ☐ Owners' & Contractors' Protective Liability	AUTOMOBILE LIABILITY ☐ S.E.F. No. 4a Explosive Endorsement ☐ S.E.F. No. 21b Blanket Fleet Endorsement ☐ ☐ AIRCRAFT LIABILITY ☐ ☐ WATERCRAFT LIABILITY ☐
REMARKS (STATE DEDUCTIBLES) IF ANY 	

THIS IS TO CERTIFY THAT INSURANCE AS DESCRIBED AS ABOVE IS IN FORCE AT THIS TIME.

Name and Address of Insurance Agent, Broker or Insurance Company

Written notice of any changes or cancellation of this policy shall be sent to the Owner at the following address:

Date _____

By _____
(Authorized Representative)



Nunavummi Nangminiqaqtunik Ikajuuti

Nunavummi Nangminiqaqtunik Ikajuuti

Prepared by

The GN / NTI Contracting Working Group

March 17, 2000

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Appendices

Appendix A: Definitions

Nunavummi Nangminiaqtunik Ikajuuti

1.0 Coming Into Effect

- 1.1 This Policy is in effect on and after April 1, 2000 for every contract initiated on or after April 1, 2000.

2.0 Replacement

- 2.1 On its coming into effect, the Policy replaces the Nunavut Contracting Procedures for the Nunavut Settlement Area and the Nunavut Business Incentive Policy. Any guidelines or directives previously issued under those two replaced policies continue in effect until otherwise modified, but shall be interpreted so as to comply with the Policy.

3.0 Authority

- 3.1 In exercising its wider responsibilities and prerogatives, the Cabinet may, on an exceptional basis, depart from the application of provisions of the Policy.

4.0 Title:

- 4.1 The Policy is entitled the "Nunavummi Nangminiaqtunik Ikajuuti" or "NNI Policy".

5.0 Application

- 5.1 Subject to sections 5.2 and 5.3, the Policy applies to the design, award, administration and interpretation of any Contract:
- (a) to which the Government of Nunavut, or any of its Public Agencies or Public Boards as described in the Financial Administration Act is a party;
 - (b) where the Government of Nunavut provides, directly more than 51% of the total Contract funds; and,
 - (c) where the Government of Nunavut provides, directly more than 51% of the annual operating funds of one of the parties.
- 5.2 The Policy does not apply to:
- (a) a contract that provides the Government of Nunavut with insurance against liability;
 - (b) a Government of Nunavut Employment Contract; or,
 - (c) a contract for the supply of emergency services,

5.3 Unless otherwise agreed by the Government of the Northwest Territories, the Policy does not apply to a contract where one of the parties is

- 1) a public body that is administered on behalf of the Government of Nunavut by the Government of the Northwest Territories; or,
- 2) a joint body of the Government of Nunavut and the Government of the Northwest Territories.

6.0 Definitions

6.1 Unless otherwise required by the context, terms used in the Policy have the meanings set out in Appendix A.

7.0 Policy Objectives

7.1 The Policy has the following objectives:

(a) Good Value and Fair Competition

To secure goods and services for the Government of Nunavut at the best value, recognizing the higher cost of doing business in Nunavut, and using a contracting process that is clear, fair and equitable.

(b) Strengthening the Nunavut Economy

To build the economy of Nunavut and its communities by strengthening business sector capacity and increasing employment.

(c) Inuit Participation

Subject to ss.16(2), to bring about a level of Inuit participation in the provision of goods and services to the Government of Nunavut that reflects the Inuit proportion of the Nunavut population.

(d) Nunavut Education and Training

Subject to ss.16(2), to increase the number of trained and skilled Nunavut Residents in all parts of the workforce and business community to levels that reflect the Inuit proportion of the Nunavut population.

8.0 The Bathurst Mandate

8.1 The Policy has been developed in a way consistent with the Government of Nunavut's 1999 Bathurst Mandate.

9.0 The Clyde River Protocol

9.1 The Policy has been developed in cooperation with Nunavut Tunngavik Incorporated in a way consistent with the "Protocol to Govern Working Relations Between the Government of Nunavut and Nunavut Tunngavik Incorporated" ('the Clyde River Protocol'), signed in November 1999

10.0 Relationship to Nunavut Land Claims Agreement (NLCA)

10.1 The Policy is aimed at implementing the Government of Nunavut's obligations under Article 24 of the NLCA.

10.2 The Policy shall be interpreted so as to respect to the letter and intent of the NLCA.

11.0 Evaluation Process and Bid Adjustment

11.1 The evaluation process for the award of Tenders and for the cost criteria portion of Requests for Proposals shall be as follows:

- (a) all Tenders submitted should meet minimum contract requirements specified in the request for tender or proposal and should demonstrate a capability of carrying out the work;
- (b) all Tenders meeting the requirements of 11.1.a and the cost criteria of relevant Proposals shall then be adjusted based upon Nunavut Business status, Inuit Firm status, and Local status of the proponent, general contractor, subcontractors, and suppliers, including the labour component;
 - (i) the adjustment for the labour component shall be based on estimates of payroll expenditures made by the general contractor, subcontractors and suppliers, for Nunavut, Inuit, and Local payroll expenditures that form part of the bid; and,
 - (ii) in the absence of any qualitative or contrary considerations based on quality of goods and services, conduct, past performance, or other like considerations, the lowest tender after adjustments shall be awarded the contract.
- (c) the bid adjustment values shall be as follows:
 - (i) Nunavut firm status, an adjustment of 14%;
 - (ii) Inuit firm status, an additional adjustment of 3%;
 - (iii) Local status, an additional adjustment of 3%

11.2 The evaluation process for the award of Proposals shall be as follows:

- (a) all Proposals submitted should meet minimum contract requirements specified in the Request For Proposals and should demonstrate a capability of carrying out the work;
- (b) all proposals meeting the requirements of 11.2.a will be evaluated to determine which appears to offer the best overall value to the Government of Nunavut, based on the evaluation criteria established in the RFP;
- (c) for Proposals where there is a clear cost criteria the bid adjustment values outlined in 11.1.c will be applied to that portion of the evaluation;

- (d) Inuit content criteria will be included in the evaluation criteria established for each RFP. The Inuit content values shall be, at a minimum, as follows:
- (i) for Inuit employment 10%
 - (ii) for Inuit ownership 5%
- 11.3 Details of the evaluation process shall be further described in procedures developed by the Responsible Department and made available to the public.
- 11.4 The bid adjustment values for goods contracts will be applied to the first \$100,000.00 only.
- 11.5 Evaluation criteria, consistent with the Policy Objectives contained in 7.0, and based on the Bid Adjustment Values and Content Ratings identified in this section, may be developed by the Responsible Department for specific types of professional services contracts or other distinctive sub-categories of contract.

12.0 Bonuses and Penalties

- 12.1 Contracts may provide for:
- (a) a bonus that shall be applied in the event that minimum threshold requirements set by the Contracting Authority in the request for tenders or proposals have been exceeded; or,
 - (b) a penalty that shall be applied in event that minimum threshold requirements set by the Contracting Authority in the request for tenders or proposals have not been met.
- 12.2 Where applicable, bonuses or penalties shall apply with respect to Inuit participation in employment, project management, and training.
- 12.3 Where applicable, in the area of employment, a bonus or penalty shall be calculated as 1/3 of 1% of the total labour content of the contract for each 1% of the amount by which employment either exceeds or does not meet the mandatory requirement.
- 12.4 Bonuses and penalties shall be calculated for Local Inuit Labour and/or Nunavut Inuit Labour.
- 12.5 In the area of Inuit management, a bonus or penalty in the amount of 2% of the total labour content shall be determined on the basis of whether an Inuk is employed as a Project Manager, either locally or for Nunavut. A larger bonus, but not a larger penalty, of an additional 1% shall be determined for a locally employed Inuk Project Manager than a Nunavut employed Inuk Project Manager.
- 12.6 Where applicable, a bonus or penalty shall be determined on the basis of on-going evaluation as to whether Inuit are provided training in the following areas:
- (a) entry level or support positions, involving the performance of basic tasks; and,
 - (b) apprenticeship or development positions, involving on-the-job training and classroom instruction aimed at professional skills and accreditation;

- 12.7 Bonuses and penalties shall be determined for the provision of training to both non-Local Inuit and Local Inuit.

13.0 Maximum Bonuses and Penalties

- 13.1 The maximum total bonuses and penalties to be determined for a single Contract for employment, management, and training shall not exceed 25% of the total labour price.

14.0 Monitoring and Enforcement Procedures

- 14.1 Monitoring and enforcement procedures shall be developed and applied:
- (a) generally, to ensure compliance with the Policy by Contractors;
 - (b) more specifically, to ensure that bonuses and penalties are based on actual performance;
 - (c) to ensure that the Policy is applied consistently across departments of the Government of Nunavut, the various regional and local offices of those departments, and those GN Public Agencies and Boards set out in the Financial Administration Act.

15.0 Application of Monitoring and Enforcement Procedures

- 15.1 Each Contract Authority within the Government of Nunavut is responsible for monitoring and enforcement of Contracts under which it expend funds.
- 15.2 Each Contract Authority within the Government of Nunavut shall provide monitoring and enforcement information to the Responsible Department in a manner that may be stipulated by that department.
- 15.3 The Government of Nunavut, through the Responsible Department shall provide Nunavut Tunngavik Incorporated with information in a timely manner regarding the outcomes of its monitoring and enforcement activities.

16.0 Periodic Review

- 16.1 It is recognized that achieving the objectives of the Policy will require consistent and persistent effort.
- 16.2 It is further recognized that the achievement of objectives may be most realistically and reliably secured by measured progress over time.
- 16.3 The substance and application of the Policy should therefore be reviewed and revised on a periodic basis to ensure that progress towards objectives is being made in a demonstrable and balanced way.

17.0 Review Committee

- 17.1 A Contracting Policy Review Committee, consisting of representatives appointed by the

Government of Nunavut and Nunavut Tunngavik Incorporated, shall be established to review the implementation of the Policy on a periodic basis and, in any event, at least on an annual basis.

- 17.2 As part of its mandate, the Review Committee shall develop and apply specific mechanisms for assessing progress towards objectives and making recommendations for adjustments to the Policy.
- 17.3 As part of its mandate, the Review Committee shall examine monitoring and enforcement concerns arising out of the implementation of the Policy.
- 17.4 The Review Committee will conduct a comprehensive review at the end of the first three-year period, and every five years thereafter
- 17.5 The Review Committee shall submit all of its work to the Government of Nunavut and Nunavut Tunngavik Incorporated.
- 17.6 In carrying out its work, the Review Committee shall make efforts to collect public input and to consult with interested parties. Without limiting the ability of the Committee to make other parts of its work available to the public, these annual and multi-year reviews shall in all cases be made available to the public.

18.0 Appeals and Arbitration

- 18.1 A Contractor that has submitted a proposal or Tender and that wishes to challenge an award of Tender or proposal may do so within five (5) days of the award announcement by directing the challenge to the Contracting Authority. The Contracting Authority shall have five (5) business days to respond to the challenge.
- 18.2 Any further challenge of an award shall be directed in writing to a Contracting Appeals Board.
- 18.3 An independent Contracting Appeals Board shall be formed, consisting of the representatives of three parties, appointed to terms of two years. A representative shall be appointed by each of the following :
 - i) the Government of Nunavut;
 - ii) Nunavut Tunngavik Incorporated; and,
 - iii) the Nunavut Chambers of Commerce.
- 18.4 The Board shall convene within 21 days of receiving a challenge.
- 18.5 Upon hearing a challenge, the Appeals Board may:
 - i) uphold the award; or
 - ii) recommend remedial actions.

- 18.6 The decision of the Appeals Board shall be binding and final.
- 18.7 If, in the sole opinion of the Appeals Board, a challenge of an award is frivolous or vexatious, then the Board may seek administrative costs against the party who brought the challenge.
- 18.8 An annual report, including financial statements, shall be prepared by the Appeals Board and submitted to the Government of Nunavut and to Nunavut Tunngavik Incorporated. In addition, these annual reports shall be made available to the public.
- 18.9 Notwithstanding that an appeal may be pending, the Contracting Authority may award the Contract.

19.0 Financial Resources

- 19.1 The expenditure of funds by the Government of Nunavut under the Policy is conditional on approval of such funds in the Main Estimates by the Legislative Assembly and on there being a sufficient uncommitted balance in the appropriated item for the fiscal year in which the expenditure is required, and on meeting such further requirements as may be set out in the Financial Administration Act.

20.0 Transition for Certain Businesses

- 20.1 The Government of Nunavut recognizes the contribution made to the Nunavut economy by a number of companies that have operated for many years in Nunavut that do not qualify as a Nunavut Business under this Policy. Accordingly, any business that, immediately before the coming into effect of the Policy, qualified as a Nunavut Business for the purpose of the Business Incentive Policy, shall qualify as a Nunavut Business under this Policy until the second anniversary of the coming into effect of this Policy.
- 20.2 For greater certainty, section 20.1 shall cease to have any application on the second anniversary of the coming into effect of the Policy and no business shall continue to qualify as a Nunavut Business or Inuit Firm unless it meets the definitions for those terms set out in Appendix A.

21.0 Revisions to or repeal of this Policy

- 21.1 Cabinet may make changes to this policy consistent with the obligations of the Government of Nunavut in Article 24 of the Nunavut Land Claims Agreement which requires a collaborative process with Nunavut Tunngavik Inc. in the maintenance of preferential procurement policies, procedures and approaches.

APPROVED BY CABINET

DATE:

Original is signed by the Premier

Paul Okalik, Premier

Includes Appendix A – Seven pages

APPENDIX A: DEFINITIONS

The following definitions apply to the Policy and its Procedures.

Article 23 - the Article of the Nunavut Land Claims Agreement dealing with Inuit Employment within Government.

Article 24 - the Article of the Nunavut Land Claims Agreement dealing with Government Contracts.

Bid - a tender or an offer to sell or provide goods, services, or construction that is submitted to a Contract Authority in response to a Request for Bids or Tenders.

Bid Adjustment - the amount by which the face value of a Bid is reduced in accordance with Section 6(2) of this Policy. The Bid Adjustment is used for Bid evaluation purposes only. The Bid price minus the Bid Adjustment will be referred to as the adjusted price.

Bid Security - security given by a Bidder or Proponent to guarantee entry into a Contract.

Bidder - an individual, partnership, corporation, society or co-operative who submits a Bid.

Contract - a written agreement between a Contracting Authority and another party to provide goods, perform services, construct public works, or lease real property, for consideration, and includes

- i. Contracts for the supply of goods.
- ii. construction Contracts.
- iii. Contracts for the supply of services.
- iv. leases.

Contract Authority - a Government of Nunavut Minister, a Deputy Minister, or a public officer with the duties and authorities set out in the Financial Administration Act and Regulations thereto.

Contract Price - the price or price formulated in a Contract.

Contract Security - a deposit of securities by the Contractor which the Contracting Authority may convert to carry out the Contractor's obligations under the Contract.

Contractor - a corporation, partnership or individual that has been awarded a Contract for the execution of work or services under the terms of a Contract.

DIO - Nunavut Tunngavik Incorporated or such other Inuit organizations that, from time to time, Nunavut Tunngavik Incorporated may, by notice to the Government of Nunavut, designate.

Appendix "A"
page 2 of 7

Employment Contract - a Contract which establishes an employer-employee relationship.

Financial Administration Act - the Financial Management Act, R.S.N.W.T 1990 (as adopted by Nunavut) c. F-3 and amendments thereto.

General Contractor - a Contractor who contracts to undertake an entire Contract, rather than a portion of the Contract.

Goods Contract - a Contract for the purchase of articles, commodities, equipment, goods, materials or supplies which may include installation.

Government - the Government of Nunavut.

Government of Nunavut - all Territorial Government departments and all public agencies defined by the Financial Administration Act, S.N.W.T. 1987 (1), c.16, Part IX, and Schedules A, B, and C, as amended for Nunavut pursuant to s.29 and 76.05 of the federal Nunavut Act but excluding the Northwest Territories Power Corporation.

Inuit (singular: Inuk) - a person described in Article 1.1.1 of the Nunavut Land Claims Agreement (NLCA) and who has enrolled himself or herself on the Inuit Enrolment List under Article 35 of the NLCA.

Inuit Content - the dollar value of the goods and services required by the Contract supplied by any Inuit Firm or Inuit sole proprietorship, and Inuit Labour. Inuit Content may include:

- i. goods and services supplied by an Inuit Firm or Inuit supplier acting as the General Contractor. These are referred to as "own forces";
- ii. goods and services supplied by an Inuit Firm or Inuit supplier so long as these goods and services are required for the completion of the Contract and are paid for by the Contract.
- iii. Inuit labour by an Inuit Firm or a non-Inuit Firm

Inuit Enrolment List - the list of Inuit maintained by Nunavut Tunngavik Incorporated under Article 35 of the Nunavut Land Claims Agreement.

Inuit Firm - an entity which complies with the legal requirements to carry on business in the Nunavut Settlement Area, and which is

- i. a limited company with at least 51% of the company's voting shares beneficially owned by Inuit, or
- ii. a cooperative controlled by Inuit, or
- iii. an Inuk sole proprietorship or partnership; and
- iv. able to present evidence of inclusion on NTI's Inuit Firms Registry.

Inuit Firms Registry - the list of Inuit Firms that is maintained by Nunavut Tunngavik Incorporated in accordance with Article 24.7.1 of the Nunavut Land Claims Agreement.

Nunavummi Nangminiqaqtunik Ikajuuti (N.N.I.) Policy

March 17, 2000

Inuit Labour - labour, including professional services, provided in any capacity by an Inuk or Inuit, and not necessarily through an Inuit Firm.

Inuit Training – Training of an Inuk or Inuit related to a specific Contract that has been pre-approved by the Contract Authority.

Inuk Project Manager - an Inuk [ordinarily resident in the Subject Community] who is capable of undertaking all aspects of the management of the project, and has decision-making authority over day-to-day matters affecting the project.

Invite - to call publicly for Bids.

Local Business - a Nunavut Business which has been resident in the Subject Community for the four months prior to application and in addition complies with the following criteria:

- i. maintains an approved place of business by leasing or owning office, commercial or industrial space or where applicable, residential space, in the community on a year-round basis for the primary purpose of operating the subject business, and
- ii. maintains a Local Resident Manager, and
- iii. undertakes in the Subject Community the majority of its management and administrative functions related to its operations in the Subject Community, and
- iv. has applied for and received designation as a Local Business at least two weeks prior to the Tender opening.

Local Content - the goods and services required by the Contract and supplied by any Local Business or Local Labour. Local Content may include:

- i. goods, services or labour supplied by a local business acting as the General Contractor. These are referred to as "own forces";
- ii. goods, services or labour supplied by any other Local Business or Local Supplier that are required for the completion of the Contract and are provided for by the Contract.

Local Labour - labour of Local Residents related to a Contract, not necessarily through a Local Business.

Local Resident - a Nunavut Resident who has been ordinarily resident in the subject community for the last four months.

Local Resident Manager - a Local Resident who is capable of undertaking all aspects of the management of the Local Business and has absolute decision-making authority over day to day matters affecting the Local Business. The Government of Nunavut may waive this requirement in the case of a newly appointed Local Resident Manager, on proof that within six months the Local Resident Manager will have met the residency requirements.

Local Supplier - a supplier of goods in the Subject Community, to whom the public has access and from whom the public may purchase directly from a Representative Inventory of items

offered for sale. The supplier must be and must have been a Local Resident for the four months prior to application. The Government of Nunavut may recognize as a Local Supplier a business that does not "physically" carry in inventory specific goods due to factors such as high cost/low demand, made-to-order goods, or articles of a nature that the Government is the sole requisitioner.

Nunavummi Nangminiaqtunik Ikajuuti (NNI) - the name of this Policy in Inuktitut, meaning "Assistance for Nunavut Businesses."

Nunavummi Nangminiaqtunik Ikajuuti Business Directory - the list of Nunavut Businesses that have applied and met the requirements of the NNI for Nunavut Business Status.

Nunavut Business

A business which complies with the legal requirements to carry on business in Nunavut, and meets the following criteria:

- i. is a limited company with at least 51 percent of the company's voting shares beneficially owned by Nunavut Residents, or
- ii. is a co-operative with at least 51 percent of the Residents' voting shares beneficially owned by Nunavut, or
- iii. is a sole proprietorship, the proprietor of which is a Nunavut Resident, or
- iv. is a partnership, the majority interest in which is owned by Nunavut Residents and in which the majority benefits, under the partnership agreement, accrue to Nunavut Residents and complies with :
- v. maintains a registered office in Nunavut by leasing or owning office, commercial or industrial space or in the case of service oriented businesses, residential space, in Nunavut on an annual basis for the primary purpose of operating the subject business, and
- vi. maintains a Resident Manager, and
- vii. undertakes the majority of its management and administrative functions related to its Nunavut operations in Nunavut, and
- viii. has received designation as a Nunavut Business at least two weeks prior to the Tender opening.

Nunavut Content - the goods and services required by the Contract and supplied by any Nunavut Business or Nunavut Supplier. Nunavut Content may include:

- i. goods, services or labour supplied by a Nunavut Business acting as the General Contractor. These are referred to as "Own Forces";
- ii. goods, services or labour supplied by any other Nunavut Business or Nunavut Supplier that are required for the completion of the Contract and are paid for by the Contract.

Nunavut Resident - a person who:

- i. is on the NTI Inuit Enrollment List; or has spent the last twelve months ordinarily resident in Nunavut, and
- ii. has a valid Nunavut Healthcare Card and/or other accepted proof of residency such a Nunavut General Hunting Licence, a Nunavut Driver's Licence, a lease or rental receipt, and provides a physical address where residing.

Nunavut Supplier - a Nunavut Business that is a supplier of goods to which the general public has access and from whom the general public can purchase directly from a Representative Inventory of items offered for sale.

Nunavut Land Claims Agreement (NLCA) - the Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada, signed on May 25, 1993, and any amendments thereto.

Nunavut Tunngavik Incorporated (or NTI) - the corporation incorporated under the Canada Corporations Act, and the Inuit party to the Nunavut Land Claims Agreement.

Own Forces - goods, services or labour supplied by a Nunavut Business acting as the General Contractor.

Professional Services - services such as legal, accounting or consulting services provided to the Government of Nunavut by way of a Contract by an individuals or professional service companies.

Proponent - an individual, partnership, corporation or cooperative who submits a Proposal.

Proposal - an offer, either unsolicited or in response to a Request for Proposals, to propose a solution to a problem, need or objective, under stated terms and conditions.

Public Agency - any public agency defined by the Financial Administration Act, S.N.W.T. 1987 (1), c.16, Part IX, and Schedules A, B, and C, as amended for Nunavut pursuant to s.29 and 76.05 of the federal Nunavut Act, but excluding the Northwest Territories Power Corporation.

Public Board – Those boards defined as Public Boards in the Financial Administration Act Regulations concerning Government contracts.

Public Tender - a Request for Bids made by public advertisement.

Qualification Committees - committees in the Kivalliq, Kitikmeot, and Baffin Regions chaired by the Responsible Department, and responsible for determining the eligibility of businesses to be included on the **Nunavummi Nangminiqaqtunik Ikajuuti Directory**.

Request for Bids - a document defining the minimum standards to be met by Bidders and the specific requirements for goods, services or construction, so as to permit the comparison of Bids on the basis of price.

Request for Tenders - a document defining the minimum standards to be met by Tenderers and the requirements of the Contract so as to permit the comparison of Bids on the basis of price.

Request for Proposals - a document inviting companies to propose a solution to a problem, need or objective, so as to permit the comparison of proposals on the basis of a number of factors including price.

Representative Inventory - for a company that is a supplier of goods, an inventory stored in the community where the company is located, that consists of the type of goods that the supplier deals in. The inventory volume should be large enough to generally to meet the demand of Local and Nunavut Residents and is to be re-stocked as goods are sold so that goods are usually available off the shelf.

Resident Manager - a Nunavut Resident who is capable of undertaking all aspects of the management of the Nunavut Business and has absolute decision making authority over day-to-day matters affecting the Nunavut Business. The Government of Nunavut may waive this requirement in the case of a newly appointed Resident Manager, on proof that within six months the Resident Manager will have met the residency requirements.

Responsible Department - The Department of the Government of Nunavut which holds responsibility for implementing the Nunavummi Nangminiaqtunik Ikajuuti Policy.

Security - cash, a bank draft or certified cheque payable to the Government, or such other Security specified in the Request for Tender or Contract documents.

Solicit - to request Bids from a limited number of businesses based on some form of pre-qualification.

Standing Offer Agreement - a method of supply used to provide direct access to sources of supply for goods and/or services, on an as-needed basis, for specific periods of time, at prearranged prices and delivery conditions.

Subcontractor - includes any party that does not have a direct Contract with the owner, **or** has entered into a Contract with the General Contractor to supply goods or services that will be incorporated into the entire project covered by the Contract.

Subject Community - the community or communities wherein or adjacent to where the Contract performance is undertaken. Where the work is undertaken outside the legal boundaries of a community, the Government of Nunavut may:

- i. define "community" to include that adjacent community in any case, or
- ii. define "community" to include both or all adjacent communities, where two or more communities, such as Hall Beach/Igloolik and Arctic Bay/Nanisivik, are both very close to the work site.
- iii. The name(s) of the Subject Community or Communities to be included in the term "Subject Community" for the purpose of receiving a local preference shall be specified in all Tender documents and Contracts.

Tender - a Bid or offer to sell or provide goods, services, or construction that is submitted to a Contract Authority in response to a Request for Bids or Tenders.

Tenderer - a person, partnership or corporation who submits a Tender.

Appendix "A"
page 7 of 7

Tender Adjustment - the amount by which the face value of a Tender is reduced in accordance with Section 6(2) of this Policy. The Tender Adjustment is used for Bid evaluation purposes only. The Tender price minus the Tender Adjustment will be referred to as the adjusted price.

Training - training related to a specific Contract, that has been pre-approved by the Contract Authority.

CONTRACTOR'S OBLIGATIONS TO PROVIDE INUIT CONTENT - APPENDIX K

1.0 GENERAL

This contract pertains to work in Nunavut and contains provisions regarding minimum prescribed levels of Inuit Labour that must be met or exceeded in the performance of the work. The requirements set out in this Appendix K to meet minimum prescribed levels of Inuit Labour is a fundamental term of the contract. The minimum prescribed level of Inuit Labour shall be complied with.

If the amount of Inuit Labour identified by the bidder on Appendix "B-2" of the tender is less than with the tender requirements, this would result in an obvious qualification to the tender submission by the bidder that would ordinarily cause the tender to be considered non-responsive.

For an Inuit Labour level achieved which differs from the level prescribed, a bonus or penalty will be assessed in accordance with the NNI Policy, specifically Articles 12.3 and 12.4 of the Policy. A bonus would be for exceeding the minimum prescribed Inuit Labour level, and a penalty would be for not meeting the minimum prescribed Inuit Labour level.

"Inuit Labour" and "Inuit Goods and Services" identified on the tender forms shall receive a bid adjustment in accordance with the NNI Policy and the adjustment percentages indicated on Appendix B-2 forms. "Inuit Goods and Services" means "Inuit Content" as defined in the Nunavummi Nangminiqaqtunik Ikajuuti (NNI) Policy definition appendix; the NNI Policy is attached as tender Appendix "J"

Damages as described in contract General Condition GC 55 may apply if the Inuit Labour and/or Inuit Goods and Services proposed by the Contractor on the tender Appendix B-2 forms are not met. In addition, if the minimum prescribed levels of Inuit Labour identified on page 4 of this Appendix is not met, then for future tenders where there are similar prescribed minimum levels for Inuit Labour, the Contractor may be deemed "not responsible" (as defined in the Government Contract Regulations.)

2.0 DEFINITIONS

- .1 "Inuit (singular Inuk)" means a person described in Article 1.1.1 of the Nunavut Land Claims Agreement (NLCA) and who has enrolled himself or herself on the Inuit Enrolment List under Article 35 of the NLCA.
- .2 "Inuit firm" means an entity which complies with the legal requirements to carry on business in the Nunavut Settlement Area, and which is,
 - .1 a limited company with at least 51% of the company's voting shares beneficially owned by Inuit, or
 - .2 a cooperative controlled by Inuit, or
 - .3 an Inuk sole proprietorship or partnership; and

.4 is included on Nunavut Tunngavik Inc. (NTI)'s Inuit Firms Registry

.3 "Labour"

For the purpose of this contract and specifically Appendix K, "Labour" means the Labour (including Inuit labour) used on the job in any capacity and including, for example, tradespeople, administrative staff and professional staff whether in a head office or in a site office and attributable to this project. "Inuit Labour" refers to the status of employees and may be directly provided by the general contractor or indirectly through a sub contractor, and is not necessarily through an Inuit Firm.

.4 "Goods and Services"

For the purpose of this contract and specifically Appendix K, "Goods and Services" means the entire dollar value of the Work including Labour. For further clarification "Inuit Goods and Services" includes all labour of Inuit firms attributable to and paid from the Contract. "Inuit Goods and Services" are to have the same meaning as the term "Inuit Content" used in the General Conditions of the Construction Contract.

.5 "Inuit Content"

"Inuit Content" is defined as the dollar value of the goods and services required by the Contract supplied by any Inuit Firm or Inuit sole proprietorship and Inuit Labour. Inuit Content may include:

- i. goods and services supplied by an Inuit Firm or Inuit supplier acting as the General Contractor. These are referred to as "own forces";
- ii. goods and services supplied by an Inuit Firm or Inuit supplier so long as these goods and services are required for the completion of the Contract and are paid for by the Contract.
- iii. Inuit labour by an Inuit Firm or a non-Inuit Firm.

3.0 REQUIREMENTS

- .1 The Contractor shall maximize the value of Inuit Labour and Inuit Goods and Services and shall meet or exceed the Inuit Labour minimum level identified in this appendix when bidding. In the performance of the work, the Contractor shall meet or exceed the amounts tendered on Appendix B-2.
- .2 The Contractors shall submit records on a monthly basis, or as specified, indicating the amount of Inuit Labour and Inuit Goods and Services used. No payment shall be due or payable to the Contractor if the Contractor fails to supply these reports to the Owner.

4.0 FAILURE TO ACHIEVE INUIT CONTENT REQUIREMENTS

In addition to the bonus or penalty prescribed by the Nunavummi Nangminiqatunik Ikajuuti (NNI) Policy for exceeding or not meeting the minimum prescribed Inuit Labour level set out on page 4 of this Appendix K; the following damages may apply for not meeting Inuit Labour and /or Inuit Goods and Services requirements:

- .1 There is a requirement to provide no less than the levels of Inuit Labour and Inuit Goods and Services tendered by the Contractor on Appendix B-2 of the tender. Failure to meet this requirement by achieving the levels tendered may result in the Owner applying damages described in the contract General Condition GC 55.
- .2 Additionally, if the contractor fails to meet the prescribed minimum Inuit Labour set out on page 4 of this Appendix K, then for future tenders where there are similar prescribed minimum levels for Inuit Labour the Owner may deem the Contractor to be "not responsible" (as defined in the Government Contract Regulations).
- .3 The Owner may terminate this contract prior to Final Completion if the Contractor has not demonstrated compliance with the requirement to attain the prescribed minimum levels of Inuit Labour set out on page 4 of this Appendix K.

5.0 INDEMNIFICATION

- .1 The Contractor shall indemnify the Owner against any claim brought by any person because of any failure by the Contractor to achieve the prescribed levels of Inuit Labour prescribed by this contract.

6.0 WAIVER OF INUIT CONTENT REQUIREMENTS

- .1 The prescribed level of Inuit Labour shall only be reduced when sufficient Inuit Labour is not available and the Contractor has requested and received prior approval by the Owner in writing to reduce the prescribed levels.

Inuit Labour	
It is a fundamental term of this contract that the contractor shall maximize the value of Inuit labour used to perform the Work. Therefore the GN has set a minimum percent by dollar value for the use of Inuit labour. The Inuit labour content may be provided by the general contractor or any subcontractor and may include professional or administrative staff or skilled or unskilled trades people, and not necessarily through an Inuit Firm. The minimum may only be reduced where sufficient Inuit labour is not available and the approval of the Owner has been obtained in writing.	
For the purposes of this contract the GN has prescribed that the following minimum percent of the total labour for this job by dollar value shall be provided by Inuit workers.	<u>65%</u> Prescribed minimum level of Inuit labour as a percent of total labour by dollar value.
Substantiation	
In order to substantiate the amount of Inuit Labour the general contractor shall be responsible for providing an amalgamated employment report that shall reflect the Inuit labour used by the general contractor and any other sub contractor or supplier. The general contractor shall submit this employment report with every Progress Claim. Receipt of an employment report shall be a condition precedent to the release of a progress payment, an interim payment and/or a final payment. If requested, the general contractor shall also provide a completed “Employee Verification and Consent Form” for an Inuit worker.	

**ADDENDUM**

Project No. 05-2002	Project Title: Water Reservoir, Sewage Lagoon & Landfill Improvements
Division/Region: Projects / Baffin	Client: C&GS
Community: Qikiqtarjuaq, Nunavut	Date of Issue: March 22, 2006
Contractor:	Consultant: NunaBurnside Engineering

TO ALL BIDDERS

1. General:
 - 1.1 This addendum shall be read in conjunction with the Drawings and Specification prepared for the above.
 - 1.2 Where inconsistent with the above, this addendum shall govern. This addendum forms an integral part of the Contract Documents and shall be included therein.
 - 1.3 No consideration shall be allowed for increase to the CONTRACT PRICE (extras) due to failure of the Contractor or Sub-contractor not being familiar with this addendum.
 - 1.4 The Tenderer will insert in the Tender Form the numbers of the addenda received by him during the tendering period and taken into account by him in preparing his tender.

SCOPE OF THE ADDENDUM

NUNAVUMMI NANGMINIQAQTUNIK IKAJUUTI (NNI POLICY)
FIRST COMPREHENSIVE REVIEW

The First Comprehensive Review of the NNI Policy was completed in the fall of 2003. Cabinet has approved the report and the recommendations of the NNI Review Committee.

The changes affecting this tender are outlined herein and take effect on April 1st, 2004.

1. INSTRUCTIONS TO TENDERERS**.1 Reference: Clause 4 – Inuit, Nunavut and Local Incentives and Appendices “B-1” and “B-2”**

Instruction: Tenderers are hereby reminded of the requirements to maximize the use of Nunavut, Inuit and/or Local subcontractors and suppliers available to the fullest extent practical on this project. Further to clause 4, and pursuant to the 2003 First Comprehensive Review of the NNI Policy, the GN hereby requires Tenderers to invite Nunavut, Inuit and/or Local companies to bid on subcontracts.

2. APPENDIX J - NUNAVUMMI NANGMINIQAQTUNIK IKAJUUTI (NNI POLICY)**.1 Reference: Section 7.0 – Policy Objectives**

Instruction: Insert the following paragraph at the end of Section 7.1: “These objectives are not listed in order of importance and should not be interpreted as such.”

.2 Reference: Section 11.0 – Evaluation Process and Bid Adjustment**.1 Instruction: Sub-section 11.1 (b) is hereby revised as follows:**

all Tenders meeting the requirements of 11.1.a and the cost criteria of relevant Proposals shall then be adjusted based upon the Nunavut Business status, Inuit Firm status, and Local status of the proponent, general contractor, subcontractors, and suppliers;

ADDENDUM

.2 **Instruction:** Sub-section 11.1. (b) (i) is hereby revised as follows:

the adjustment for the labour component shall be based on estimates of payroll expenditures made by the general contractor, subcontractors and suppliers, for Nunavut, Inuit, and Local payroll expenditures that form part of the bid; but no bid adjustment shall be given for estimates of Inuit payroll expenditures over and above the minimum required.

For greater clarity and certainty, the interpretation of 11.1. (b) (i) above means that no bid adjustment will be given for Inuit Labour, over and above the minimum requirement set out in Appendix “K”.

For Example: On a total payroll estimate of \$350,000 where the Inuit payroll estimate is \$200,000 and the minimum Inuit payroll requirement is 45%, the bidder shall only receive bid adjustments on the first \$157,500 of Inuit payroll (45%), even though the estimated Inuit payroll is approximately 67%.

.3 **Instruction:** **For all Tenders closing** on or after April 1, 2004:

Sub-section 11.1. (c) – Bid Adjustment Values:

- i. the bid adjustment values shall be as follows:
 - (i) Nunavut firm status, an adjustment of 7%;
 - (ii) Inuit firm status, an adjustment of 7%;
 - (iii) Local status, an adjustment of 7%.

.3 **Reference:** Section 12.0 - Bonuses and Penalties

Instruction: Replace sub-section 12.3 with the following language:

Where applicable, in the area of employment, a bonus or penalty shall be calculated as follows:

- (a) a bonus shall be calculated as 1% of the total labour content of the contract for each 1% of the amount by which employment exceeds the mandatory requirement; or
- (b) a penalty shall be calculated as 2% of the total labour content of the contract for each 1% of the amount by which employment does not meet the mandatory requirement.

For greater clarity and certainty, s.12.3 (a) means a Bonus of 1% of the Total Payroll when the Contractor exceeds the minimum Inuit Labour requirement, and s.12.3 (b) means a Penalty of 2% of the Total Payroll when the Contractor fails to meet the minimum Inuit Labour requirement.

Example 1: Where the minimum requirement for Inuit Labour is 45%, and the Contractor, at Final Completion of the Work, has actually spent 67% of his payroll dollars on Inuit Labour, the Inuit Labour Bonus is calculated as follows:

Total Payroll x Percent Exceeded* or \$350,000 x 22% = \$77,000.

*Percent Exceeded = Percent Achieved - Percent Required

**ADDENDUM**

Example 2: Where the minimum requirement for Inuit Labour is 45%, and the Contractor, at Final Completion of the Work, has actually spent 37% of his payroll dollars on Inuit Labour, the Inuit Labour Penalty is calculated as follows:

Total Payroll x Percent Not Met* or $\$350,000 \times 8\% \times 2 = \$56,000$.

*Percent Not Met = Percent Required - Percent Achieved

.4 Reference: Section 18.0 – Appeals

Instruction: Replace Section 18 of the NNI Policy with the new Section 18 (4 pages attached). An Appeals Board has now been established.

3. GENERAL CONDITIONS

.1 Reference: Clause 4 – Subcontracting by Contractor

Instruction: Add the following sentence to GC4.3: The Contractor shall invite Nunavut, Inuit and/or Local companies to bid on subcontracts where the Contractor is not already using Nunavut, Inuit and/or Local companies as subcontractors.

END OF ADDENDUM

Project Officer	<i>Barin Ugnay</i>	Date	<i>Mar 23, 2006.</i>
Project Manager	<i>P. R. K.</i>	Date	<i>March. 23. 2006.</i>
Other		Date	

NNI Policy Appeals Process
For more information
Contact Barry Cornthwaite
Government of Nunavut
NNI Policy Advisor
(867) 975-5440

Nunavummi Nangminiqagtunik Ikajuuti (NNI Policy) Appeals Process

Below is the new wording for section 18 of the NNI Policy which outlines the process to follow regarding appealing an award of a Tender or RFP.

- 18.1 Subject to 18.2, an independent Contracting Appeals Board shall be established consisting of three Commissioners and three Alternate Commissioners appointed by the Minister for a term of three years as follows:
- (a) one Commissioner and one Alternate Commissioner from nominees put forward by NTI
 - (b) one Commissioner and one Alternate Commissioner from nominees put forward by the Nunavut regional Chambers of Commerce.
 - (c) one Commissioner and one Alternate Commissioner appointed by the Minister.
- 18.2 In order to provide for continuity, the Minister shall appoint the first members of the Board to staggered terms as follows:
- (1) one Commissioner and one Alternate Commissioner for a term of 2 years;
 - (2) one Commissioner and one Alternate Commissioner for a term of 3 years; and
 - (3) one Commissioner and one Alternate Commissioner for a term of 4 years.
- 18.3 The Minister shall have regard to the importance of regional representation in making appointments to the Board.
- 18.4 If either NTI or the Chambers of Commerce do not submit nominations to the Minister within 45 days of the Minister's request for nominations, the Minister may make the necessary appointment.
- 18.5 (a) A Commissioner or Alternate Commissioner must be a Nunavut Resident as defined in the NNI Policy, that is a person who:
- (i) is on the NTI Inuit Enrolment List or who has spent the last twelve months ordinarily resident in Nunavut; and
 - (ii) has a valid Nunavut healthcare card and/or other accepted proof of residency such as a Nunavut drivers license, a lease or rental receipt, and provides a physical address where residing.
- (b) A Commissioner may not be an employee of, or contractor for:
- i) The GN Department of Public Works and Services or the Contracting Authority of the disputed contract;
 - ii) NTI or a Regional Inuit Association;
 - iii) a Chamber of Commerce in Nunavut.

- 18.6 On appointment, a Commissioner shall certify in writing that he is not an employee as defined in paragraph 18.5 (b), and that to the best of his knowledge he is not in a conflict of interest and will not sit on any appeal if a conflict of interest comes to his attention.
- 18.7 No person may serve as a Commissioner until such person has accepted the position in writing and has executed a confidentiality agreement.
- 18.8 Each year one Commissioner shall be chosen by the Commissioners to serve as Chairperson. The role of the Chairperson is to preside over meetings of the Board and to supervise the operations of the Board.
- 18.9 If a Commissioner is unable to act in a particular appeal an Alternate Commissioner shall be selected by the Chairperson to hear the appeal.
- 18.10 The Minister shall appoint a person to act as Secretary of the Board.
- 18.11 (a) A contractor who wishes to challenge an award of a tender or RFP must do so in writing within five (5) business days of the award announcement. The appeal must be directed to the Contracting Authority and copied to the GN NNI Policy Advisor, and must set out the following information.
- (i) the name, address, telephone and if available fax number and email address of the party challenging the award;
 - (ii) the tender or RFP number and/or title;
 - (iii) the issue(s) to be reviewed by the Contracting Authority; and
 - (iv) the remedy sought by the contractor.
- (b) The Contracting Authority shall have five (5) business days to respond in writing and shall copy the response to the GN NNI Policy Advisor.
- 18.12 (a) If, after a further 5 business days have elapsed, a contractor is not satisfied with the response of the Contracting Authority, or if no response has been received from the Contracting Authority, the contractor may appeal the award to the Board.
- (b) An appeal to the Board must be in writing and directed to the Contracting Authority within 15 business days of the award announcement.
- (c) The appeal must set out the following:
- (i) the name, address, telephone and if available fax number and email address of the party challenging the award;
 - (ii) the name of the Contracting Authority that issued the tender or RFP
 - (iii) the tender or RFP number and/or title
 - (iv) the issue(s) to be reviewed by the Board including the reasons why the Contractor believes the application of the NNI Policy is incorrect; and
 - (v) the remedy sought by the contractor.
- 18.13 (a) An appeal from an award by a contractor to the Contracting Appeals Board may be made on the ground that the Contracting Authority in making the award has erred in the application of the NNI Policy.

- (b) For greater certainty, there shall be no appeal to the Board from an act or omission relating to the performance of a contract that has been awarded.
 - (c) Notwithstanding (a) and (b) above, the Board has jurisdiction to consider and make recommendations on any matter relating to the application of the NNI Policy that is referred to it in writing by GN and NTI jointly.
- 18.14 Where the appeal filed with the Board does not fall within the jurisdiction of the Board the appeal may be dismissed by order of the Board without holding a hearing.
- 18.15 The Secretary of the Board shall immediately give notice of an appeal to the Board to the successful bidder, to NTI and to the Contracting Authority.
- 18.16 In addition to the appellant, the Contracting Authority, the successful bidder and NTI have the right to participate in proceedings before the Board in a particular appeal. The Board may, in its discretion, permit any other person to participate in the proceedings.
- 18.17 The Board shall hear the appeal as soon as possible and, in any event, shall hold a hearing no later than 10 business days after the appeal has been filed with the Board.
- 18.18 The Board may receive representations and evidence from the parties in writing, by conference call or in person having regard to convenience and economy. If the Board holds a hearing by conference call or by personal appearance the proceedings shall be recorded by the Board.
- 18.19 The Board shall conduct its proceedings in an informal manner and is not required to receive evidence on oath.
- 18.20 Where required in a proceeding, the Board shall provide the services of an interpreter.
- 18.21 After hearing an appeal, the Board may:
- (a) dismiss the appeal; or
 - (b) allow the appeal and recommend to the Contracting Authority that remedial action, consistent with sound procurement policy and practice, be taken by the Contracting Authority, which may include:
 - (i) requiring the contractor to undertake additional measures,
 - (ii) providing the contractor with specific information as to Inuit or Inuit firms who are available and qualified,
 - (iii) paying compensation to an unsuccessful bidder,
 - (iv) putting the proposed contract in abeyance until the dispute is resolved, except in cases of urgency,
 - (v) changing any procedure or policy followed by contracting authorities,
 - (vi) in exceptional circumstances involving long term contracts, terminating a contract in whole or in part, and a reassessment or re-issue of tenders.

- 18.22 Decisions of the Board shall be by consensus and failing consensus by a majority vote. The Board shall make a decision as soon as possible after a hearing.
- 18.23 The Board shall give written reasons for its decisions signed by the Commissioners. If there is a majority decision, the dissenting Commissioner may give reasons for the dissent.
- 18.24 The Board shall distribute copies of the decision to all parties who participated in the appeal.
- 18.25 Notwithstanding that an appeal is pending, the Contracting Authority, in its discretion, may enter into a contract with the successful bidder.
- 18.26 If the Contracting Authority does not accept the recommendations of the Board for remedial action, in whole or in part, it shall issue reasons for its decision.
- 18.27 The Board shall be given access by the Contracting Authority to the response to an RFP or tender bid of the appealing contractor and of the successful contractor for the purposes of determining an Appeal.
- 18.28 The record of proceedings before the Board, including its decision, shall be placed on a public file.
- 18.29 The proceedings of the Board shall be conducted in accordance with the language policy of the Government of Nunavut.
- 18.30 An Annual Report, including financial statements, shall be prepared by the Board at the end of each fiscal year. The Annual Report shall include a summary of appeals heard and decisions rendered.
- 18.31 The Annual Report shall be submitted to the Government of Nunavut and to Nunavut Tunngavik Incorporated and made available to the public.
- 18.32 The Government of Nunavut shall be responsible for the costs of the Board in accordance with GN Policies.

Project No. 05-2002	Project Title: Water Reservoir, Sewage Lagoon & Land Fill Improvements
Division/Region: Projects / Baffin	Client: C&GS
Community: Qikiqtarjuaq, Nunavut	Date of Issue: March 22, 2006
Contractor	Consultant Nuna Burnside Engineering

TO ALL BIDDERS

1. General:

- .1 This addendum shall be read in conjunction with the Drawings and Specification prepared for the above.
- .2 Where inconsistent with the above, this addendum shall govern. This addendum forms an integral part of the Contract Documents and shall be included therein.
- .3 No consideration shall be allowed for increases (extras) to the CONTRACT PRICE due to failure of the Contractor or Sub-contractor not being familiar with this addendum.
- .4 The Tenderer will insert in the Tender Form the numbers of the addenda received by him during the tendering period and taken into account by him in preparing his tender.

SCOPE OF THE ADDENDUM

1. Reference: Entire Document

Instruction: All references to the Department of Public Works & Services shall be read as "the Department of Community and Government Services", "CGS" or "the Owner" as applicable.

2. Reference: General Conditions 61 and 62

Instruction: Delete GC62. The Contractor will obtain and pay for course of construction insurance for this project. As a result, re-number GC61 General Insurance Conditions as GC62 and insert the following replacement clause as a new GC61:

GC61 PROPERTY INSURANCE (All "Risks" Course of Construction Insurance)

61.1 Contractor will obtain and pay for course of construction insurance for this project, as described in the following paragraphs.

61.2 **All "Risks" Course of Construction Insurance** on a very broad basis, to protect as Insureds, all those who have direct participation in the construction project, for claims which may arise as a result of loss or damage during course of construction.

61.2 **Coverage:** "All Risks" of physical loss or damage or destruction while said project is in course of construction, site preparation, reconstruction, repair, erection, fabrication, testing, and including all materials, equipment machinery, structures, property, fitting, fixtures, betterment, and supplies of any nature whatsoever to enter into and form part of the finished project while at the site of operations or elsewhere in Canada or the Continental United States or America, all the property of the Insureds or the property of others for which the insureds have assumed responsibility, or for whom the Insured are required to carry insurance, including while on a river or lake crossing ferry in connection with land transportation, and including goods in transit to the site.



ADDENDUM

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Addendum No.	TWO (2)		

- 61.3 **Term:** From the commencement of work to the date of the Substantial Completion as certified by the Owner.
- 61.5 **Limit of Liability:** The limit of liability at the project site will be for the estimated full completed value of the project including, but not limited to, owner-supplied labour or materials, reasonable profit, insurance costs, overhead, taxes, labour, administrative fees and all other expenses which are incurred as additional costs as a result of a partial or total loss.
- 61.6 **Deductible:** The Contractor shall be responsible for the deductible to a maximum of \$50,000.

END OF ADDENDUM

Project Officer:

Brian Kagan

Date: *Mar 23, 2006*

Projects Manager:

P. K.

Date: *March 23, 2006.*

Other:

Date:



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Addendum No. 3

ADDENDUM

Project No. 05-2002	Project Title: Water Reservoir, Sewage Lagoon & Landfill Improvements
Division/Region: Projects / Baffin	Client: CGS
Community: Qikiqtarjuaq, Nunavut	Date of Issue: June 1, 2006
Contractor:	Consultant: Nuna Bunside Engineering

TO ALL BIDDERS**1. General:**

- 1.1 This addendum shall be read in conjunction with the Drawings and Specification prepared for the above.
- 1.2 Where inconsistent with the above, this addendum shall govern. This addendum forms an integral part of the Contract Documents and shall be included therein.
- 1.3 No consideration shall be allowed for increased (extras) to the CONTRACT PRICE due to failure of the Contractor or Sub-contractor not being familiar with this addendum.
- 1.4 The Tenderer will insert in the Tender Form the numbers of the addenda received by him during the tendering period and taken into account by him in preparing his tender.

SCOPE OF THE ADDENDUM**1. Reference Table of Contents**

Appendix H – Transportation of Materials – August 2003 – 2 pages is hereby replaced with the following:

Appendix H – Transportation of Materials – April 2006 – 2 pages

2. Reference Appendix H – Transportation of Materials

Appendix H – Transportation of Materials dated August 2003 is hereby replaced with the Attached Revised Appendix H – Transportation of Materials dated April, 2006

Project Officer

Date

31 May 06

Project Manager

Date

May 31 2006

Other

Date

Project Number 05-2002**TRANSPORTATION OF MATERIALS - APPENDIX H**

1. Transportation/shipping and handling of materials and all costs thereof are the responsibility of the Contractor unless otherwise noted. **Modes of transporting materials shall be decided by the Contractor unless by marine transport in which case Clause 2 shall apply.**
2. Whenever marine (water) transport is to be utilized, the Contractor shall use the Government of Nunavut specified carriers, and space should be booked directly with the carriers, as follows:

2.1 For the following communities in the Baffin Region:**High Arctic including North Baffin:**

Arctic Bay, Clyde River, Grise Fiord, Nanisivik, Pond Inlet, Qikiqtarjuaq (Broughton Island), and *Kugaaruk (Pelly Bay) (*as far as Nanisivik for furtherance), and Resolute Bay

Nunavut Eastern Arctic Shipping (NEAS)

By ships loading at the Montreal area Port of Valleyfield:

Contact: John Lepine

Phone, Toll free: (877) 225-6327

Fax: (514) 523-7875

*for transport to Kugaaruk beyond Nanisivik, the Carrier is:

Canada Coast Guard

Contact: John - Perry - Perrozzino

Phone: (613) 998-1585

Fax: (613) 991-9261

Foxe Basin:

Hall Beach, Igloodik, and Repulse Bay,

and

Iqaluit:

and

South Baffin:

Cape Dorset, Kimmirut, and Pangnirtung

Nunavut Sealink and Supply Inc. (NSSI)

By ships loading at the Montreal area Port of Ste-Catherine:

Contact: Daniel Desgagnés

Phone: (450) 635-0833

Fax: (450) 635-5126

2.2 For the Kivalliq Region:

Arviat, Baker Lake, Chesterfield Inlet, Coral Harbour, Rankin Inlet, Sanikiluaq, and Whale Cove

Nunavut Sealink and Supply Inc. (NSSI) (for cargo from Montreal only):

By ships loading at the Montreal area Port of Ste-Catherine

Contact: Daniel Desgagnés

Phone: (450) 635-0833

Fax: (450) 635-5126

AND

Northern Transportation Company Limited (NTCL) (for cargo from Churchill only):

By barges loading at the Port of Churchill

Contact: Chris Cote

Phone: 1-866-505-0551 or (867) 979-6825

Fax: (867) 979-0099

Project Number 05-2002**2.3 For the following communities in the Kitikmeot Region:**

Bathurst Inlet, Cambridge Bay, Gjoa Haven, Kugluktuk (Coppermine), Taloyoak and Umingmaktok (Bay Chimo):

Northern Transportation Company Limited (NTCL)

By barges loading at Hay River, Northwest Territories

Contact: Jo-Ann Jensen

Phone: 1-877-770-6825 or (867)-874-5121

Fax: (867) 874-5155

3. The annual shipping rates offered by marine carriers are dependent upon anticipated cargo quantities including the materials for construction projects; therefore, Contractors are to bid using the published sailing schedules and rates available from the above marine carriers, and also available from the Department of Community & Government Services, Purchasing, Logistics & Contract Support Division, Contact: John Paton, Traffic Officer at (867) 975-5437.
4. In exceptional or extraordinary circumstances, where the specified marine carrier's sailing schedule is in substantial conflict with the project schedule, the GN will review the circumstances, taking into account the adverse impact on the project and the specified marine carrier's interests, and the GN may provide authorization to allow the relevant cargo to be shipped with a marine carrier other than the specified marine carrier, depending upon the circumstances; and such authorization must be writing.
5. If a Contractor uses a marine carrier other than the GN contracted marine carrier without the GN's written authorization to do so, the Contractor shall be responsible for extra freight cost, administrative costs or any other costs, incurred by the GN which result directly or indirectly from the Contractor's failure to use the GN specified marine carrier as set out in this Appendix. The Contractor shall also be responsible to refund to the GN any monies saved by the Contractor by using a marine carrier other than the specified marine carrier as set out in this Appendix H.



Page 1 of 2

Addendum No. FOUR (4)

ADDENDUM

Project No.	05-2002	Project Title:	WATER RESERVOIR, SIBUAY LAGOON LAND FILL IMPROVEMENT'S
Division/Region:	PROJETS / BAFIN	Client:	CGS
Community:	QIKISTARUAG, NU.	Date of Issue:	JUNE 1, 2006
Contractor:		Consultant:	NUNA BURNSIDE ENGINEERING

TO ALL BIDDERS

1. General:

- 1.1 This addendum shall be read in conjunction with the Drawings and Specification prepared for the above.
- 1.2 Where inconsistent with the above, this addendum shall govern. This addendum forms an integral part of the Contract Documents and shall be included therein.
- 1.3 No consideration shall be allowed for increased (extras) to the CONTRACT PRICE due to failure of the Contractor or Sub-contractor not being familiar with this addendum.
- 1.4 The Tenderer will insert in the Tender Form the numbers of the addenda received by him during the tendering period and taken into account by him in preparing his tender.

SCOPE OF THE ADDENDUM

1. Reference: Nunavummi Nangminiaqtunik Ikajuuti (NNI Policy)

The GN has made further revisions to the NNI Policy. The attached bulletin is effective as of April 20th, 2006 and applies to this Tender.

For greater certainty, any questions regarding this tender shall be directed to the Contract Authority in accordance with the Tender Advertisement contained in the Tender documents.

END OF ADDENDUM

Project Officer	<i>John D. Watson</i>	Date	31 May 06
Project Manager	<i>H.K.K.</i>	Date	May 31, 2006
Other		Date	

ARTICLES OF AGREEMENT

These Articles of Agreement, effective on the _____ day of _____, 20____.

Between

(herein the "Owner")

and

(herein the "Contractor")

witness that in consideration for the mutual promises and obligations contained in the contract, the Owner and the Contractor covenant and agree as follows:

A1 CONTRACT DOCUMENTS

- 1.1 Subject to A1.4 and A1.5, the documents forming the contract between the Owner and the Contractor, referred to herein as the contract documents are all of those documents referred to on Appendix A of the Tender and;
 - 1.1.1 any Addenda issued during the Tender period and identified in Clause 2 of the Tender Form,
 - 1.1.2 any amendment or variation of the contract documents that is made in accordance with the General Conditions,
- 1.2
 - 1.2.1 The Owner hereby designates Brian Duguay, Project Officer as the Owner's Representative for the Department of _____ of the Government of Nunavut.
 - 1.2.3 The Contractor hereby designates _____ as the Contractor's Representative.
- 1.3 In the contract;
 - 1.3.1 "Fixed Price Arrangement" means that part of the contract that prescribes a lump sum as payment for performance of the work to which it relates; and/or
 - 1.3.2 "Unit Price Arrangement" means that part of the contract that prescribes the product of a price multiplied by a number of units of measurement of a class as payment for the performance of the work to which it relates.
- 1.4 Any of the provisions of the contract that are expressly stipulated to be applicable only to a Unit Price arrangement are not applicable to any part of the work to which a Fixed Price Arrangement is applicable.
- 1.5 Any of the provisions of the contract that are expressly stipulated to be applicable only to a Fixed Price Arrangement are not applicable to any part of the work to which a Unit Price Arrangement is applicable.

A2 DATE OF COMPLETION OF WORK AND DESCRIPTION OF WORK

- 2.1 The Contractor shall, between the effective date of the Agreement and the _____ day of _____, 20____, in a careful and workmanlike manner, diligently perform and complete the following work:

_____ which work is more particularly described in the Plans and Specifications.

A3 CONTRACT AMOUNT

- 3.1 Subject to any increase, decrease, deduction, reduction, or set-off permitted under the terms of the contract, the Owner shall pay the Contractor at the times and in the manner that is set out or referred to in the Agreement;
- 3.1.1 the sum of \$ _____ in consideration for the performance of the work or the part thereof that is subject to a Fixed Price Arrangement, and/or
- 3.1.2 a sum that is equal to the aggregate of the products of the number of units of measurement of each class of labour, plant and material that is set out in a Final Certificate of Measurement referred to in GC43.7 multiplied in each case by appropriate unit price that is set out in the Unit Price Table "Appendix D" in consideration for the performance of the work or the part thereof that is subject to a Unit Price Arrangement.
- 3.2 For the information and guidance of the Contractor and the person administering the contract on behalf of the Owner, but not so as to constitute a warranty, representation or undertaking of any nature by either party, it is estimated that the total amount payable by the Owner to the Contractor for the part of the work to which a Unit Price Arrangement is applicable will not exceed \$ _____.
- 3.3 A3.1.1 is applicable only to a Fixed Price Arrangement
- 3.4 A3.1.2 and A3.2 are applicable only to a Unit Price Arrangement.

A4 UNIT PRICE TABLE

- 4.1 The Owner and the contractor agrees that Appendix "D" of the Tender is the Unit Price Table for the purposes of the Contract.
- 4.2 The Unit Price Table that is set out in A4.1 designates the part of the work to which a Unit Price Arrangement is applicable.
- 4.3 The part of the work that is not designated in the Unit Price Table referred to in A4.2 is the part of the work to which a Fixed Price Arrangement is applicable.

A5 FINANCIAL ADMINISTRATION ACT (NUNAVUT)

The attention of the Contractor is drawn to the following statutory provision. It is a condition of this Agreement that payment hereunder is subject to Section 46 of the Financial Administration Act (Nunavut) as amended or re-enacted in successor legislation during the term of this Contract. Section 46 currently provides as follows: "It is a condition of every contract made by or on behalf of the Government requiring an expenditure that an expenditure pursuant to the contract will be incurred only if there is a sufficient uncommitted balance in the appropriated item for the fiscal year in which the expenditure is required under the Contract."

A6 JOINT AND SEVERAL LIABILITY

If the Contractor is comprised of more than one party, as in the case of a joint venture or a partnership, then in that event such parties declare themselves to be bound jointly and severally with one another with

respect to the fulfilment of all the terms and conditions of this agreement and hereby renounce their benefits of division and discussion and the obligations of such parties shall be joint and several, and each party shall execute this agreement.

SIGNED, SEALED AND DELIVERED in the presence of:

Contractor: Contractor's Full Legal Business Name and Address:

_____ (Seal)

Facsimile No. _____

• _____
Signature

Name

Date

Title

• _____
Signature

Witness

Name

Name

Title

Title

Owner: Owner's Full Business Name and Address

Government of Nunavut
Department of Community & Government Services
Regional Projects Management
Baffin Region
P.O. Box 379
Pond Inlet, Nunavut, X0A 0S0

Facsimile No. (867) 899-7328

• _____
Signature

Date

Name

Witness

Title

Title

END OF ARTICLES OF AGREEMENT

TERMS OF PAYMENT

TP1 AMOUNT PAYABLE - GENERAL

- 1.1 Subject to any other provisions of the contract, the Owner, hereinafter in these Terms of Payment the "Government of Nunavut" will pay the Contractor, at the times and in the manner hereinafter set out, the amount by which the aggregate of the amounts described in TP2 exceeds the aggregate of the amounts described in TP3, and the Contractor shall accept that amount as payment in full satisfaction for everything furnished and done by the contractor in respect of the Work to which the payment relates.

TP2 AMOUNT PAYABLE TO THE CONTRACTOR

- 2.1 The amounts "payable to the Contractor" are the aggregate of:

- 2.1.1 the amounts referred to in the Articles of Agreement, and
- 2.1.2 the amounts, if any, that are payable to the Contractor pursuant to the General Conditions, and
- 2.1.3 the amounts, if any, that are a bonus for Inuit Labour achieved, as described in the Nunavummi Nangminiaqtunik Ikajuuti (NNI Policy) for the Work, and
- 2.1.4 the applicable Goods and Services Tax (GST).

TP3 AMOUNTS PAYABLE TO THE GOVERNMENT OF NUNAVUT

- 3.1 The amounts "payable to the Government of Nunavut" are the aggregate of the amounts, if any, that the Contractor is liable to pay the Government of Nunavut pursuant to the within contract, including any penalty assessed for Inuit Labour shortfalls, as described in the Nunavummi Nangminiaqtunik Ikajuuti (NNI Policy) for the Work.
- 3.2 When making any payment to the Contractor, the failure of the Government of Nunavut to deduct an amount referred to in TP3.1, from an amount referred to in TP2 shall not constitute a waiver of the right to do so, or an admission of lack of entitlement to do so in any subsequent payment to the Contractor.

TP4 TIME OF PAYMENT

- 4.1 For the purposes of this Term of Payment, "payment period" means a period of 30 consecutive days or such other interval as is agreed between the Contractor and the Government of Nunavut.
- 4.2 The Contractor shall, on the expiration of a payment period, deliver to the "Representative", as designated by the Government of Nunavut and set out in Article of Agreement A1.2.1, in respect of that payment period a written invoice for that part of the Work that has been completed with the required associated backup and a listing of material that was delivered to the Work site but not incorporated into the Work during that payment period. The Contractor's official invoice shall include, as a minimum; - a full description of the Work and materials, the Contract number, the Contractor's GST Registration Number, and the dollar values as follows: Sub-total #1 (no GST), the Holdback, Sub-total #2 (Sub-total #1 less the Holdback), and the Grand Total (Sub-total #2 plus GST).
- 4.3 The Representative, as designated by the Government of Nunavut, will, not later than ten days after receipt of the invoice referred to in TP4.2:
- 4.3.1 inspect or otherwise satisfy themselves that the part of the Work and the materials described in the invoice have been provided in a satisfactory manner (an inspection may be carried out by either a Representative designated by the Government of Nunavut, or its' consultant), and
 - 4.3.2 coordinate with the Contractor to resolve any disagreements on the content and amount of the invoice (obtaining a corrected invoice from the Contractor if changes are required), and
 - 4.3.3 complete a Request for Contact Payment (RCP), indicating on it the date that the Contractor's invoice was approved, and
 - 4.3.4 send to the Government of Nunavut, Community & Government Services Department (C&GS)'s finance section the original invoice that has been agreed upon along with a Request for Contact Payment (RCP) signed by the Representative, as designated by the Government of

Nunavut, (and C&GSs Regional Project Manager or the Regional Director depending on the signing authority of these persons) and a copy of the C&GS's Major Works Contract Payment Check List with the appropriate sections filled out. In addition, the Representative, as designated by the Government of Nunavut, will send a copy of the agreed invoice and the RCP to the Contractor.

- 4.4 Subject to TP1, the Government of Nunavut, will pay the Contractor in accordance with the amounts stipulated hereunder. Invoices of Nunavut Contractors, as defined by the Nunavummi Nangminiaqtunik Ikajuuti (NNI Policy), will become due and payable 20 days after receipt of the invoice, provided the invoice is approved by the Representative, as designated by the Government of Nunavut, as specified in TP4.3. Invoices from other Contractors will become due and payable 30 days after approval of the invoice by the Representative, as designated by the Government of Nunavut, as specified in TP4.3:
- 4.4.1 an amount that is equal to 95% of the value that is indicated in that invoice if a labour and material payment bond has been furnished by the Contractor, or;
 - 4.4.2 an amount that is equal to 90% of the value that is indicated in that invoice if a labour and material payment bond has not been furnished by the Contractor.
- 4.5 Subject to TP1 and TP4.6, the Government of Nunavut will, not later than 20 days for Nunavut Contractors (as defined by the Nunavummi Nangminiaqtunik Ikajuuti (NNI Policy) of the GN) or 30 days for other Contractors after the date of issue of a Substantial Certificate of Completion referred to in GC43.2, pay the Contractor the amount referred to in TP1 less the aggregate of;
- 4.5.1 the sum of all payments that were made pursuant to TP4.4,
 - 4.5.2 an amount that is equal to the Government of Nunavut's estimate of the cost to the Government of Nunavut of rectifying defects described in the Substantial Certificate of Completion, and
 - 4.5.3 an amount that is equal to the Representative, as designated by the Government of Nunavut, estimate of the cost to the Government of Nunavut of completing the parts of the Work described in the Substantial Certificate of Completion other than the defects referred to in TP4.5.2
- 4.6 It is a condition precedent to the Government of Nunavut's obligation under TP4.5 that:
- 4.6.1 the Contractor has made and delivered to the Government of Nunavut's Representative a statutory declaration described in TP4.7 in respect of a Substantial Certificate of Completion referred to in GC43.2, and
 - 4.6.2 the Contractor has complied with the various requirements to provide Inuit Local and Nunavut Employment and involvement reports as set out in this contract.
- 4.7 A statutory declaration referred to in TP4.6 and TP4.9 shall be submitted on the attached form, page 4 & 5.
- 4.8 Subject to TP1 and TP4.9, the Government of Nunavut will, not later than 20 days for Nunavut Contractors (as defined by the Nunavummi Nangminiaqtunik Ikajuuti (NNI Policy) of the GN or 30 days for other Contractors after the date of issue of a Final Certificate of Completion referred to in GC43.1 and provided that the Government of Nunavut is in receipt of statutory declaration as described in TP4.7, pay the Contractor the amount referred to in TP1 less the aggregate of:
- 4.8.1 the sum of all payments that were made pursuant to TP4.4, and;
 - 4.8.2 the sum of all payments that were made pursuant to TP4.5.

TP5 PROGRESS REPORT AND PAYMENT THEREUNDER NOT BINDING ON THE GOVERNMENT OF NUNAVUT

- 5.1 Neither a RCP referred to in TP4.3 nor any payment made by the Government of Nunavut, pursuant to these Terms of Payment shall be construed as an admission by the Government of Nunavut, that the Work, material or any part thereof is complete, is satisfactory or is in accordance with the contract.

TP6 RIGHT OF SET-OFF

- 6.1 Without limiting any right of set-off or deduction given or implied by law or elsewhere in the Contract, the Government of Nunavut, may set-off any amount payable to the Government of Nunavut by the Contractor under this contract or under any current contract against any amount payable to the Contractor under this contract or under any current contract.
- 6.2 For the purposes of this Terms of Payment document, "current contract", means a contract between the Government of Nunavut and the Contractor;
- 6.2.1 under which the Contractor has an undischarged obligation to perform or supply work, labour or material, or;
- 6.2.2 in respect of which the Government of Nunavut, has, since the date on which the Articles of Agreement were made, exercised any right to take the work that is subject of the contract out of the Contractor's hands.

TP7 PAYMENT IN EVENT OF TERMINATION

- 7.1 If the contract is terminated pursuant to GC40, the Government of Nunavut, will pay the Contractor any amount that is lawfully due and payable to the Contractor as soon as is practicable under the circumstances.

Certificate of Completion
STATUTORY DECLARATION

THE MATTER OF a contract bearing

#

between the Government of Nunavut and

(Insert full name of contractor)

herein the Contractor,

for
(briefly describe the work to be performed)

dated the _____ day of _____,

and

IN THE MATTER OF the Certificate of Completion relating thereto

TO WIT:

I, _____ of _____
(print or type full name of declarant) (declarant's city of residence)

DO SOLEMNLY DECLARE:

(1) That I am _____
(print or type declarant's position or title with the Contractor or state that the declarant is the Contractor)

And as such have a personal knowledge of the said contract and of the facts and matters stated herein.

(2) That all assessments and levies under The Unemployment Insurance Act, The Workers' Compensation Act or other social or labour legislation in respect of the said contract have been fully paid:

(3) That all subcontractors, labourers and suppliers of materials and equipment whatsoever who have entered into agreements to supply goods or services which have been incorporated into the construction of this project have been fully paid except for contractual holdbacks and the further amount(s), if any, which is (are) listed below which is (are) being withheld from the subcontractor(s) listed herein, due to legitimate dispute(s) arising out of the performance, or lack of performance, of the work by the listed subcontractor(s).

Subcontractor(s)	Amount(s) in Dispute and Being Withheld
_____	_____
_____	_____
_____	_____

Certificate of Completion - STATUTORY DECLARATION
2nd page

and the following amounts, if any, which are being withheld pending payment to the Contractor by the Government of Nunavut.

Subcontractor(s)	Amount(s) Being Withheld
_____	_____
_____	_____
_____	_____

And I make this SOLEMN DECLARATION conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the LAWS OF CANADA and NUNAVUT.

DECLARED before me at _____

this _____ day of _____,

(Signature of Declarant)

(signature of person before whom declaration is made)

(print name of person before whom declaration is made)

A Notary Public, Commissioner, etc. _____

(please state clearly authority for receiving solemn declarations - notaries to affix notary seal)

NOTE 1 Where the Contractor is a corporation or a partnership, declarant's position in the corporation or partnership, and the corporation or partnership name should be clearly shown in No. 1.

NOTE 2. Where the Contractor is an individual, that person must make the declaration. Where the Contractor is a partnership the declaration must be made by one of the partners. Where the Contractor is an incorporated company, the declaration must be made by the President, Vice-President, Secretary Treasurer or a Director. If any other person makes the declaration, two copies of the by-law issued under the corporation seal, authorizing the individual to execute documents must be submitted with the first declaration of each contract.

If this declaration is not complete in every detail, it will be returned for completion and payment will be delayed.

The following section of the Criminal Code of Canada is hereby brought to the attention of the Declarant:

122. Everyone who, not being a witness in a judicial proceeding but being permitted, authorized or required by law to make a statement by affidavit, by solemn declaration or orally under oath, makes in such statement, before a person who is authorized by law to permit it to be made before him, an assertion with respect to a matter of fact, opinion, belief or knowledge, knowing that the assertion is false, is guilty of an offense and is liable to imprisonment for fourteen years.

122.1 (1) Everyone who, not being specially permitted, authorized or required by law to make a statement by affidavit, by solemn declaration or orally under oath, makes in such a statement, before a person who is authorized by law to permit it to be made before him, an assertion with respect to a matter of fact, opinion, belief or knowledge, knowing that the assertion is false, is guilty of an offense punishable on summary conviction."

GENERAL CONDITIONS

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GENERAL CONDITIONS

GC1 INTERPRETATION

- 1.1 In the contract
 - 1.1.1 where reference is made to a part of the contract by means of numbers preceded by letters, the reference shall be construed to be a reference to the particular part of the contract that is identified by that combination of letters and numbers and to any other part of the contract referred to therein.
 - 1.1.2 "contract" means the contract documents referred to in the Articles of Agreement.
 - 1.1.3 "contract security" means any security given by the Contractor to the Owner in accordance with the contract.
 - 1.1.4 "Engineer" means the officer or employee of the Owner who is designated pursuant to the Articles of Agreement and includes a person specially authorized by him to perform, on his behalf, any of his functions under the contract.
 - 1.1.5 "material" includes all commodities, articles and things required to be furnished by or for the Contractor under the contract for incorporation into the work.
 - 1.1.6 "person" includes, unless the context otherwise requires, a partnership, proprietor-ship, firm, joint venture, consortium and a corporation.
 - 1.1.7 "plant" includes all animals, tools, implements, machinery, vehicles, buildings, structures, equipment and commodities, articles and things other than material, that are necessary for the due performance of the contract.
 - 1.1.8 "subcontractor" means a person to whom the Contractor has, subject to GC4, subcontracted the whole or any part of the work.
 - 1.1.9 "substantial performance" as defined in the lien legislation applicable to the Place of Work. If such legislation is not in force, is not applicable or does not contain such definition, substantial performance shall have been reached when Work is ready for use or is being used for the purpose intended and is so certified by the Engineer.
 - 1.1.10 "superintendent" means the employee of the Contractor who is designated by the Contractor to act pursuant to GC18.
 - 1.1.11 "work" includes, subject only to any express stipulation in the contract to the contrary, everything that is necessary to be done, furnished or delivered by the Contractor to perform the contract.
- 1.2 The division into sections, the table of contents, and the headings in the contract documents, other than in the Plans and Specifications, form no part of the contract but are inserted for convenience of reference only.
- 1.3 In interpreting the contract, in the event of discrepancies or conflicts between anything in the Plans and Specifications and the General Conditions, the General Conditions govern.
- 1.4 In interpreting the Plans and Specifications, in the event of discrepancies or conflicts between
 - 1.4.1 the Plans and Specifications, the Specifications govern;
 - 1.4.2 the Plans, the Plans drawn with the largest scale govern, and
 - 1.4.3 figured dimensions and scaled dimensions, the figured dimensions govern.
- 1.5 Any reference to a statutory provision shall include any subordinate legislation made and from time-to- time amended, extended or re-enacted.
- 1.6 This Agreement shall be governed by and construed in accordance with the laws of Nunavut and the laws of Canada as applicable therein.

- 1.7 Unless otherwise indicated, all dollar amounts referred to in the Agreement are in lawful money of Canada.
- 1.8 In any provision of this Agreement is determined to be invalid or unenforceable in whole or in part, such invalidity or unenforceability shall attach only to such provision and everything else in this Agreement shall continue in full force and effect. In the event any provision of this Agreement, as amended from time to time, shall be deemed invalid or void, in whole or in part, by any court of competent jurisdiction, the remaining terms and provisions of this Agreement shall remain in full force and effect.
- 1.9 Failure by either party to exercise any of its rights, powers or remedies hereunder or its delay to do so shall not constitute a waiver of those rights, powers or remedies. The single or partial exercise of a right, power or remedy shall not prevent its subsequent exercise or the exercise of any other right, power or remedy.
- 1.10 The Contractor shall be required to comply, and shall require its subcontractors to comply, with all applicable laws, orders, rules and regulations; and, without limiting the generality of the foregoing, the Contractor shall at its sole expense comply with all unemployment insurance, Worker's Compensation, income tax, payroll tax, Canada Pension Plan, occupational health and safety and environmental protection legislation.

GC2 SUCCESSORS AND ASSIGNS

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

GC3 ASSIGNMENT OF CONTRACT

- 3.1 The contract may not be assigned by the Contractor, either in whole or in part without the written consent of the Owner.

GC4 SUBCONTRACTING BY CONTRACTOR

- 4.1 Subject to this General Condition, the Contractor may subcontract any part of the work so long as such subcontracting is consistent with the information provided on Appendix B-1 and B-2 of the Tender.
- 4.2 The Contractor shall notify the Engineer of his intention to subcontract.
- 4.3 A notification referred to in GC4.2 shall identify the part of the work, and the subcontractor with whom it is intended to subcontract.
- 4.4 The Engineer may, within six days of receipt by him of a notification referred to in GC4.2, object to the intended subcontracting.
- 4.5 If the Engineer objects to a subcontracting pursuant to GC4.4, the Contractor shall not enter into the intended subcontract.
- 4.6 The Contractor shall not, without the written consent of the Owner change a subcontractor who has been engaged by him in accordance with this General Condition and the tender form, and if any changes are made without consent, the contract may be terminated at the option of the Owner.
- 4.7 Every subcontract entered into by the Contractor shall adopt all of the terms and conditions of this contract that are of general application.
- 4.8 Neither a subcontracting nor the Engineer's consent to a subcontracting by the Contractor shall be construed to relieve the Contractor from any obligation under the contract or to impose any liability upon the Owner

GC5 AMENDMENTS

- 5.1 No amendment or change in any of the provisions of the contract shall have any force or effect until it is reduced to writing.

GC6 NO IMPLIED OBLIGATIONS

- 6.1 No implied terms or obligations of any kind by or on behalf of the Owner shall arise from anything in the contract and the express covenants and agreements therein contained and made by the Owner are the only covenants and agreements upon which any rights against the Owner are to be founded.
- 6.2 The contract supersedes all communications, negotiations and agreements, either written or oral, relating to the work that was made prior to the date of the contract.

GC7 TIME OF ESSENCE

- 7.1 Time is of the essence of the contract.

GC8 INDEMNIFICATION BY CONTRACTOR

- 8.1 The Contractor shall indemnify and save the Owner harmless from and against all claims, demands, losses, damages, actions, suits or proceedings by whomever made, brought or prosecuted and in any manner based upon, arising out of, related to, occasioned by or attributable to the activities of the Contractor, his servants, agents, and subcontractors in performing the work including an infringement or an alleged infringement of patent of invention or any kind of intellectual property.
- 8.2 For the purposes of GC8.1, "activities" includes but is not limited to any act improperly carried out, any omission to carry out an act and any delay in carrying out an act.

GC9 INDEMNIFICATION BY THE OWNER

- 9.1 The Owner shall, subject to any law that affects the Owner's rights, powers, privileges or obligations, indemnify and save the Contractor harmless from and against all claims, demands, losses, costs, damage, actions, suits or proceedings arising out of his activities under the contract that are directly attributable to
- 9.1.1 lack of or a defect in the Owner's title to the work site whether real or alleged; or
- 9.1.2 an infringement or an alleged infringement by the Contractor of any patent of invention or any other kind of intellectual property occurring while the Contractor was performing any act for the purposes of the contract employing a model, plan or design or any other thing related to the work that was supplied by the Owner to the Contractor.

GC10 NOTICES TO CONTRACTOR

- 10.1 Notices for the purposes of GC37.1.1, GC39 and GC40 shall be in writing and shall be given
- 10.1.1 by delivering the notice to the Contractor in person or, if the Contractor is a partnership, firm, joint venture consortium or corporation, to a senior administrative or executive officer thereof, or
- 10.1.2 by mailing the notice to the Contractor at his address set out in the Articles of Agreement.
- 10.2 A notice referred to in GC10.1 shall be deemed to have been received by the Contractor
- 10.2.1 if it was delivered pursuant to GC10.1.1, on the day that it was delivered, and
- 10.2.2 if it was sent by mail pursuant to GC10.1.2, on the earlier of the day it was received by the Contractor and the sixth day after it was mailed.
- 10.3 Any notice, consent, order, direction, decision, or other communication, other than a notice referred to in

GC10.1, that may be given to the Contractor pursuant to the contract may be given in any manner, but it shall be deemed to have been received by the contractor, if it is in writing.

10.3.1 on the day that it was delivered to the superintendent, or

10.3.2 on the sixth day after it was mailed to the Contractor at his address set out in the Articles of Agreement.

10.4 Where the postal service is disrupted by a strike, a notice, consent, order, direction, decision or other communication may be given to the Contractor by facsimile and shall be deemed to have been received by the Contractor twenty-four hours after it was transmitted.

GC11 MATERIAL, PLANT AND REAL PROPERTY SUPPLIED BY THE OWNER

11.1 Subject to GC11.2, the Contractor is liable to the Owner for any loss or damage to material, plant or real property that is supplied or placed in the care, custody and control of the contractor by the Owner for use in connection with the contract, whether or not that loss or damage is attributable to causes beyond the Contractor's control.

11.2 The Contractor is not liable to the Owner for any loss or damage to material, plant or real property referred to in GC11.1 if that loss or damage results from and is directly attributable to reasonable wear and tear.

11.3 The Contractor shall not use any material, plant or real property referred to in GC11.1 except for the purpose of performing this contract.

11.4 When the Contractor fails to make good any loss or damage for which he is liable under GC11.1 within a reasonable time after being required to so by the Engineer, the Engineer may cause the loss or damage to be made good at the Contractor's expense, and the Contractor shall thereupon be liable to the Owner for the cost thereof and shall, on demand, pay to the Owner an amount equal to that cost.

11.5 The Contractor shall keep such records of all material, plant and real property referred to in GC11.1 as the Engineer from time to time requires and shall satisfy the Engineer, when requested, that such material, plant and real property are at the place and in the condition in which they ought to be.

GC12 MATERIAL, PLANT AND REAL PROPERTY BECOME THE PROPERTY OF THE OWNER

12.1 All material and plant and the interest of the Contractor in all real property, licenses, powers and privileges acquired, used or provided by him for the contract shall, from the time of their acquisition, use or provision, be the property of the Owner for the purposes of the work and they shall continue to be the property of the Owner

12.1.1 in the case of material, until the Engineer indicates that he is satisfied that it will not be required for the work; and

12.1.2 in the case of plant, real property, licenses, powers and privileges, until the Engineer indicates that he is satisfied that the interest vested in the Owner therein is no longer required for the purposes of the work.

12.2 Material or plant that is the property of the Owner by virtue of GC12.1 shall not be taken away from the work site or used or disposed of except for the purposes of the work without the written consent of the Engineer.

12.3 The Owner is not liable for loss of or damage from any cause to the material or plant referred to in GC12.1 and the Contractor is liable for such loss or damage notwithstanding that the material or plant is the property of the Owner

GC13 MUNICIPAL PERMITS

13.1 The Contractor shall, within 30 days after the date of the contract, tender to a municipal authority an amount

equal to all fees and charges that would be lawfully payable to that municipal authority in respect of building permits as if the work were being performed for a person other than the Owner

- 13.2 Within 10 days of making a tender pursuant to GC13.1, the Contractor shall notify the Engineer of his action and of the amount tendered and whether or not the municipal authority has accepted that amount.
- 13.3 If the municipal authority does not accept the amount tendered pursuant to GC13.1, the Contractor shall pay that amount to the Owner within 6 days after the time stipulated in GC13.2.
- 13.4 For the purposes of GC13.1, to GC13.3, "municipal authority" means any authority that would have jurisdiction respecting permission to perform the work if the owner were not the Owner.

GC14 PERFORMANCE OF WORK UNDER DIRECTION OF ENGINEER

- 14.1 The Contractor shall

- 14.1.1 permit the Engineer to have access to the work and its site at all times during the performance of the contract;
- 14.1.2 furnish the Engineer with such information respecting the performance of the contract as he may require; and
- 14.1.3 give the Engineer every possible assistance to enable the Engineer to carry out his duty to see that the work is performed in accordance with the contract and to carry out any other duties and exercise any powers specially imposed or conferred on the Engineer under the contract.

GC15 COOPERATION WITH OTHER CONTRACTORS

- 15.1 Where, in the opinion of the Engineer, it is necessary that other contractors or workers with or without plant and material, be sent onto the work or its site, the Contractor shall, to the satisfaction of the Engineer, allow them access and cooperate with them in the carrying out of their duties and obligations.
- 15.2 The Owner shall pay the Contractor the cost calculated in accordance with GC46 to GC49, of the extra labour, plant and material that was necessarily incurred if:
 - 15.2.1 the sending onto the work or its site of other contractors or workers pursuant to GC15.1 could not have been reasonably foreseen or anticipated by the Contractor when entering into the contract;
and
 - 15.2.2 the Contractor incurs, in the opinion of the Engineer, extra expense in complying with GC15.1;
and
 - 15.2.3 the Contractor has given the Engineer written notice of his claim for the extra expense referred to in GC15.2.2 within 10 days of the date that the other contractors or workers were sent onto the work or its site.

GC16 EXAMINATION OF WORK

- 16.1 If, at any time after the commencement of the work but prior to the expiry of the warranty period, the Engineer has reason to believe that the work or any part thereof has not been performed in accordance with the contract, the Engineer may have that work examined by an expert of his choice.
- 16.2 If, as a result of an examination of the work referred to in GC16.1, it is established that the work was not performed in accordance with the contract, then, in addition to and without limiting or otherwise affecting any of the Owner's rights and remedies under the contract either at law or in equity, the Contractor shall pay the Owner, on demand, all reasonable costs and expenses that were incurred by the Owner in having that examination performed.

GC17 CLEARING OF SITE

- 17.1 The Contractor shall maintain the work and its site in a tidy condition and free from the accumulation of waste material and debris, in accordance with any directions of the Engineer.
- 17.2 Before the issue of a Certificate of Substantial Completion referred to in GC43.2, the Contractor shall remove all the plant and material not required for the performance of the remaining work, and all waste material and other debris, and shall cause the work and its site to be clean and suitable for occupancy or use by the Owner's servants, unless otherwise stipulated in the contract. The Contractor shall, as directed by the owner, take down all signs erected during construction.
- 17.3 Before the issue of a final certificate referred to in GC43.1, the Contractor shall remove from the work and its site all of the surplus plant and material and any waste material and other debris.
- 17.4 The Contractor's obligations described in GC17.1 to GC17.3 do not extend to waste material and other debris caused by the Owner's servants or contractors and workers referred to in GC15.1.

GC18 CONTRACTOR'S SUPERINTENDENT

- 18.1 The Contractor shall, forthwith upon the award of the contract, designate a Superintendent.
- 18.2 The Contractor shall forthwith notify the Engineer of the name, address and telephone number of a superintendent designated pursuant to GC18.1.
- 18.3 A superintendent designated pursuant to GC18.1 shall be in full charge of the site of the work and the operations of the Contractor, his servants, agents, and subcontractors in the performance of the work and is authorized to accept any notice, consent, order, direction, decision or other communication on behalf of the Contractor that may be given to the superintendent under the contract.
- 18.4 The Contractor shall, until the work has been completed, keep a competent superintendent at the work site during working hours.
- 18.5 The Contractor shall, upon the request of the Engineer, remove any superintendent who, in the opinion of the Engineer, is incompetent or has been conducting himself improperly and shall forthwith designate another superintendent who is acceptable to the Engineer.
- 18.6 Subject to GC18.5, the Contractor shall not substitute a superintendent without the written consent of the Engineer.
- 18.7 A breach by the Contractor of GC18.6 entitles the Engineer to refuse to issue any certificate referred to in GC43 until the superintendent has returned to the work site or another superintendent who is acceptable to the Engineer has been substituted.

GC19 NATIONAL SECURITY

- 19.1 If the Owner is of the opinion that the work is of a class or kind that involves the national security, he may order the Contractor
- 19.1.1. to provide him with any information concerning persons employed or to be employed by him for purposes of the contract; and
 - 19.1.2 to remove any person from the work and its site if, in the opinion of the Owner, that person may be a risk to the national security.
- 19.2 The Contractor shall, in all contracts with persons who are to be employed in the performance of the contract,

make provision for his performance of any obligation that may be imposed upon him under GC18 to GC20.

19.3 The Contractor shall comply with an order of the Owner under GC19.1.

GC20 UNSUITABLE WORKERS

20.1 The Contractor shall, upon the request of the Engineer, remove any person employed by him for purposes of the contract who, in the opinion of the Engineer, is incompetent or has conducted himself improperly, and the Contractor shall not permit a person who has been removed to return to the work site.

GC21 INCREASED OR DECREASED COSTS

21.1 The amount set out in the Articles of Agreement shall not be increased or decreased by reason of any increase or decrease in the cost of the work that is brought about by an increase or decrease in the cost of labour, plant or material or the wage rates set out in or prescribed pursuant to the Labour Conditions.

21.2 Notwithstanding GC21.1, and GC34, an amount set out in the Articles of Agreement shall be adjusted in the manner provided in GC21.3, if any change in a tax imposed under the Excise Act, the Excise Tax Act, the Old Age Security Act, the Customs Act or the Customs Tariff

21.2.1 occurs after the date of the submission by the Contractor of his tender for the contract.

21.2.2 applies to material, and

21.2.3 affects the cost to the Contractor of that material.

21.3 If a change referred to in GC21.2 occurs, the appropriate amount set out in the Articles of Agreement shall be increased or decreased by an amount equal to the amount that is established by an examination of the relevant records of the Contractor referred to in GC50 to be the increase or decrease in the cost incurred that is directly attributable to that change.

21.4 For the purpose of GC21.2, where a tax is changed after the date of submission of the tender but public notice of the change has been given by the Owner of Finance before that date, the change shall be deemed to have occurred before the date of submission of the tender.

GC22 LABOUR AND MATERIAL

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

GC23 PROTECTION OF WORK AND DOCUMENTS

23.1 The Contractor shall guard or otherwise protect the work and its site, and protect the contract, specifications, plans, information, material, plant and real property, whether or not they are supplied by the Owner to the Contractor, against loss or damage from any cause, and he shall not use, issue, disclose or dispose of them without the written consent of the Owner, except as may be essential for the performance of the work.

23.2 If any document or information given or disclosed to the Contractor is assigned a security rating by the person who gave or disclosed it, the Contractor shall take all measures directed by the Engineer to be taken to ensure the maintenance of the degree of security that is ascribed to that rating.

23.3 The Contractor shall provide all facilities necessary for the purpose of maintaining security, and shall assist any person authorized by the Owner to inspect or to take security measures in respect of the work and its site.

23.4 The Engineer may direct the Contractor to do such things and to perform such additional work as the Engineer considers reasonable and necessary to ensure compliance with or to remedy a breach of GC23.1 to GC23.3.

GC24 PUBLIC CEREMONIES AND SIGNS

- 24.1 The Contractor shall not permit any public ceremony in connection with the work without the prior consent of the Owner.
- 24.2 The Contractor shall not erect or permit the erection of any sign or advertising on the work or its site without the prior consent of the Engineer.

GC25 PRECAUTIONS AGAINST DAMAGE, INFRINGEMENT OF RIGHTS, FIRE AND OTHER HAZARDS

- 25.1 The Contractor shall, at his own expense, do whatever is necessary to ensure that:
- 25.1.1 no person, property, right, easement or privilege is injured, damaged or infringed by reason of the Contractor's activities in performing the contract.
 - 25.1.2 pedestrian and other traffic on any public or private road or waterway is not unduly impeded, interrupted or endangered by the performance or existence of the work or plant;
 - 25.1.3 fire hazards in or about the work or its site are eliminated and, subject to any direction that may be given by the Engineer, any fire is promptly extinguished.
 - 25.1.4 the health and safety of all persons employed in the performance of the work is not endangered by the method or means of its performance;
 - 25.1.5 adequate medical services are available to all persons employed on the work or its site at all times during the performance of the work;
 - 25.1.6 adequate sanitation measures are taken in respect of the work and its site; and
 - 25.1.7 all stakes, buoys and marks placed on the work or its site by or under the authority of the Engineer are protected and are not removed, defaced, altered or destroyed.

Without limiting any of the foregoing, the Contractor shall take all actions required or necessary to ensure compliance by all persons employed in the performance of the work or at the site of the work, including the employees of the Contractor and sub-contractors and their employees, with the *Consolidation of Safety Act*, R.S.N.W.T. 1988, c.S-1 and any regulations thereunder.

- 25.2 The Engineer may direct the Contractor to do such things and to perform such additional work as the Engineer considers reasonable and necessary to ensure compliance with or to remedy a breach of GC25.1.
- 25.3 The Contractor shall, at his own expense, comply with a direction of the Engineer made under GC25.2.

GC26 INSURANCE

- 26.1 The Contractor shall, at his own expense, maintain insurance contracts in respect of the work
- 26.1.1 with insurance companies approved by the Owner, companies must comply with the Insurance Act for Nunavut, and
 - 26.1.2 that are in a form, of the nature, in the amounts, for the periods and containing the terms and conditions, if any, specified in GC58, GC59, GC60, GC61 and GC62.

GC27 INSURANCE PROCEEDS

- 27.1 If the work or any part thereof is lost, damaged or destroyed and monies are paid to the Owner in respect of that loss, damage or destruction under an insurance contract maintained by the Contractor pursuant to GC26, the monies shall be held by the Owner for the purposes of the contract.

- 27.2 The Owner may elect to retain the monies referred to in GC27.1 and in that event the monies belong to the Owner absolutely.
- 27.3 If an election is made pursuant to GC27.2, the Owner may cause an audit to be made of the accounts of the Contractor and of the Owner in respect of the part of the work that was lost, damaged or destroyed for the purpose of establishing the difference, if any, between
- 27.3.1 the aggregate of the amount of the loss or damage suffered or sustained by the Owner, including any costs incurred in respect of the clearing and cleaning of the work and its site and any other amount that is payable by the Contractor to the Owner under the contract, minus any monies retained pursuant to GC27.2 and
- 27.3.2 the aggregate of the amounts payable by the Owner to the Contractor pursuant to the contract up to the date of the loss or damage.
- 27.4 A difference that is established pursuant to GC27.3 shall be paid forthwith by the party who is determined by the audit to be the debtor to the party who is determined by the audit to be the creditor.
- 27.5 When payment of a deficiency has been made pursuant to GC27.4, all rights and obligations of the Owner and the Contractor under the contract shall, with respect only to the part of the work that was the subject of the audit referred to in GC27.3, be deemed to have been expended and discharged.
- 27.6 If an election is not made pursuant to GC27.2, the Contractor shall, subject to GC27.7, clear and clean the work and its site and restore and replace the part of the work that was lost, damaged or destroyed at his own expense as if that part of the work had not yet been performed.
- 27.7 When the Contractor clears and cleans the work and its site and restores and replaces the work referred to in GC27.6, the Owner shall pay him out of the monies referred to in GC27.1 so far as they will thereunto extend.
- 27.8 Subject to GC27.7, payment to the Owner pursuant to GC27.7 shall be made in accordance with the contract but the amount of each payment shall be 100% of the amount claimed notwithstanding TP4.4.1 and TP4.4.2.

GC28 CONTRACT SECURITY

- 28.1 The Contractor shall obtain and deliver contract security to the Engineer in accordance with the provisions of GC56 and GC57.
- 28.2 If the whole or a part of the contract security referred to in GC28.1 is in the form of a security deposit, it shall be held and disposed of in accordance with GC42 and GC44.
- 28.3 If a part of the contract security referred to in GC28.1 is in the form of a labour and material payment bond, the Contractor shall post a copy of that bond on the work site.

GC29 CHANGES IN THE WORK

- 29.1 Subject to GC5, the Engineer may, at any time before he issues his Final Certificate of Completion:
- 29.1.1 order work or material in addition to that provided for in the Plans and Specifications; and
- 29.1.2 dispense with or change the dimensions, character, quantity, quality, description, location or position of the whole or any part of the work or material provided for in the Plans and Specifications or in any order made pursuant to GC29.1.1, if that additional work or material dispensation, or change is, in his opinion, consistent with the general intent of the original contract.
- 29.2 The Contractor shall perform the work in accordance with such order, dispensations and changes that are made

by the Engineer pursuant to GC29.1 from time to time as if they had appeared in and been part of the Plans and Specifications.

- 29.3 The Engineer shall determine whether or not anything done or omitted by the Contractor pursuant to an order, dispensation or change referred to in GC29.1 increased or decreased the cost of the work to the Contractor.
- 29.4 If the Engineer determines pursuant to GC29.3 that the cost of the work to the Contractor has been increased, the Owner shall pay the Contractor the increased cost of the labour, plant and material that he necessarily incurred calculated in accordance with GC46 to GC49.
- 29.5 If the Engineer determines pursuant to GC29.3 that the cost of the work to the Contractor has been decreased, the Owner may reduce the amount payable to the Contractor under the contract by an amount equal to the decrease in the cost of the labour, plant and material that was incurred calculated in accordance with GC46 to GC49.
- 29.6 An order, dispensation or change referred to in GC29.1 shall be in writing, signed by the Engineer and given to the Contractor in accordance with GC10.

GC30 INTERPRETATION OF CONTRACT BY ENGINEER

- 30.1 If, at any time before the Engineer has issued a Final Certificate of Completion referred to in GC43.1, any question arises between the parties about whether anything has been done as required by the contract or about what the Contractor is required by the contract to do, and, in particular but without limiting the generality of the foregoing, about
- 30.1.1 the meaning of anything in the Plans and Specifications,
 - 30.1.2 the meaning to be given to the Plans and Specifications in case of any error therein, omission therefrom, or obscurity or discrepancy in their wording or intention,
 - 30.1.3 whether or not the quality or quantity of any material or workmanship supplied or proposed to be supplied by the Contractor meets the requirements of the contract,
 - 30.1.4 whether or not the labour, plant or material provided by the Contractor for performing the work and carrying out the contract are adequate to ensure that the work will be performed in accordance with the contract and that the contract will be carried out in accordance with its terms,
 - 30.1.5 what quantity of any kind of work has been completed by the Contractor, or
 - 30.1.6 the timing and scheduling of the various phases of the performance of the work,
- the question shall be decided by the Engineer whose decision shall be final and conclusive in respect of the work.
- 30.2 The Contractor shall perform the work in accordance with any decisions of the Engineer that are made under GC30.1 and in accordance with any consequential directions given by the Engineer.

GC31 WARRANTY AND RECTIFICATION OF DEFECTS IN WORK

- 31.1 Without restricting any warranty or guarantee implied or imposed by law or contained in the contract documents, the Contractor shall, at his own expense, rectify and make good any defect or fault that appears in the work or comes to the attention of the Owner within 12 months from the date of the Substantial Completion referred to in GC43.2.
- 31.2 The Engineer may direct the Contractor to rectify and make good any defect or fault referred to in GC31.1 or covered by any other expressed or implied warranty or guarantee.
- 31.3 A direction referred to in GC31.2 shall be in writing, may include a stipulation in respect of the time within

which a defect or fault is required to be rectified and made good by the Contractor, and shall be given to the Contractor in accordance with GC10.3.

- 31.4 The Contractor shall rectify and make good any defect or fault described in a direction given pursuant to GC31.2 within the time stipulated therein.

GC32 NON-COMPLIANCE BY CONTRACTOR

- 32.1 If the Contractor fails to comply with any decision or direction given by the Engineer pursuant to GC17, GC23, GC25, GC30 or GC31, the Engineer may employ such methods as he deems advisable to do that which the Contractor failed to do.
- 32.2 The Contractor shall, on demand, pay the Owner an amount that is equal to the aggregate of all costs, expenses and damage incurred or sustained by the Owner by reason of the Contractor's failure to comply with any decision or direction referred to in GC32.1, including the cost of any methods employed by the Engineer pursuant to GC32.1.

GC33 PROTESTING ENGINEER'S DECISIONS

- 33.1 The Contractor may, within ten (10) days after the communication to him of any decision or direction referred to in GC32.1, protest that decision or direction.
- 33.2 A protest referred to in GC33.1 shall be in writing, contain full reasons for the protest, be signed by the Contractor and be given to the Owner by delivery to the Engineer.
- 33.3 If the Contractor gives a protest pursuant to GC33.2, any compliance by the Contractor with the decision or direction that was protested shall not be construed as an admission by the Contractor of the correctness of that decision or direction or prevent the Contractor from taking whatever lawful action he considers appropriate in the circumstances.
- 33.4 The giving of a protest by the Contractor pursuant to GC33.2 shall not relieve him from complying with the decision or direction that is the subject of the protest.
- 33.5 Subject to GC33.6, the Contractor shall take any action referred to in GC33.3 within three months after the date that a Final Certificate of Completion is issued under GC43.1 and not afterwards.
- 33.6 The Contractor shall take any action referred to in GC33.3, resulting from a direction under GC31 within three months after the expiry of a warranty or guarantee period and not afterwards.
- 33.7 Subject to GC33.8, if the Owner determines that the Contractor's protest is justified, the Owner shall pay the Contractor the cost of the additional labour, plant and material necessarily incurred by the Contractor in carrying out the protested decision or direction.
- 33.8 Costs referred to in GC33.7 shall be calculated in accordance with GC47 to GC49.

GC34 CHANGES IN SOIL CONDITIONS AND NEGLECT OR DELAY BY THE OWNER

- 34.1 Subject to GC34.2 no payment, other than a payment that is expressly stipulated in the contract, shall be made by the Owner to the Contractor for any extra expense or any loss or damage incurred or sustained by the Contractor.
- 34.2 If the Contractor incurs or sustains any extra expense or any loss or damage that is directly attributable to
- 34.2.1 a substantial difference between the information relating to soil conditions at the work site that is contained in the Plans and Specifications or other documents supplied to the Contractor for his use in preparing his tender or a reasonable assumption of fact based thereon made by the Contractor, and the

actual soil conditions encountered by the Contractor at the work site during the performance of the contract, or

- 34.2.2 any neglect or delay that occurs after the date of the contract on the part of the Owner in providing any information or in doing any act that the contract either expressly requires the Owner to do or that would ordinarily be done by an owner in accordance with the usage of the trade.

He shall, within ten days of the date that an event described in GC34.2.1 or GC34.2.2 occurred, give the Engineer written notice of the event and of his intention to claim for that extra expense or that loss or damage.

- 34.3 When the Contractor has given a notice referred to in GC34.2, he shall give the Engineer a written claim for extra expense or loss or damage within 30 days of the date that a Final Certificate of Completion referred to in GC43.1 is issued and not afterwards.
- 34.4 A written claim referred to in GC34.3 shall contain a sufficient description of the facts and circumstances of the occurrence that is the subject of the claim to enable the Engineer to determine whether or not the claim is justified and the Contractor shall supply such further and other information for that purpose as the Engineer requires from time to time.
- 34.5 If the Engineer determines that a claim referred to in GC34.3 is justified, the Owner may make an extra payment to the Contractor in an amount that is calculated in accordance with GC46 to GC49.
- 34.6 If, in the opinion of the Engineer, an occurrence described in GC34.2.1 results in a saving of expenditure by the Contractor in performing the contract, the amount set out in the Articles of Agreement shall, subject to the GC34.7, be reduced by an amount that is equal to the saving.
- 34.7 The amount of the saving referred to GC34.6 shall be determined in accordance with GC46 to GC49.
- 34.8 If the Contractor fails to give a notice referred to in GC34.2 and a claim referred to in GC34.3 within the times stipulated, an extra payment should not be made to him in respect of the occurrence.

GC35 EXTENSION OF TIME

- 35.1 Subject to GC35.2, the Engineer may, on the application of the Contractor made before the day fixed by the Articles of Agreement for completion of the work or before any other date previously fixed under this General Condition, extend the time for its completion by fixing a new date, if in his opinion, causes beyond the control of the Contractor have delayed its completion.
- 35.2 An application referred to in GC35.1 shall be accompanied by the written consent of the bonding company whose bond forms part of the contract security.

GC36 ASSESSMENTS AND DAMAGES FOR LATE COMPLETION

- 36.1 For the purposes of this General Condition
- 36.1.1 the work shall be deemed to be completed on the date that a Substantial Certificate of Completion referred to in GC43.2 is issued, and
- 36.1.2 "period of delay" means the number of days commencing on the day fixed by the Articles of Agreement for completion of the work and ending on the day immediately preceding the day on which the work is completed but does not include any day within a period of extension granted pursuant to GC35.1, and any other day on which, in the opinion of the Engineer, completion of the work was delayed for reasons beyond the control of the Contractor.
- 36.2 If the Contractor does not complete the work by the day fixed for its completion by the Articles of Agreement but completes it thereafter, the Contractor shall pay the Owner an amount equal to the aggregate of

- 36.2.1 all salaries, wages, and travelling expenses incurred by the Owner in respect of persons overseeing the performance of the work during the period of delay,
- 36.2.2 the cost incurred by the Owner as a result of the liability to use the completed work for the period of delay; and
- 36.2.3 all other expenses and damages incurred or sustained by the Owner during the period of delay as a result of the work not being completed by the day fixed for its completion.
- 36.3 The Owner may waive its right to the whole or any part of the amount payable by the Contractor pursuant to GC36.2 if, in the opinion of the Owner, it is in the public interest to do so.

GC37 TAKING THE WORK OUT OF THE CONTRACTOR'S HANDS

- 37.1 The Owner may, at its sole discretion, take all or any part of the work out of the Contractor's hands, and may employ such means as he sees fit to have the work completed if the Contractor
 - 37.1.1 has not, within six days after receiving notice given by the Owner or the Engineer in accordance with GC10.1, remedied any delay in the commencement or any default in the diligent performance of the work to the satisfaction of the Engineer;
 - 37.1.2 has defaulted in the completion of any part of the work within the time fixed for its completion by the contract;
 - 37.1.3 has become insolvent;
 - 37.1.4 has committed an act of bankruptcy;
 - 37.1.5 has abandoned the work;
 - 37.1.6 has made an assignment of the contract without the consent required by GC3.1; or
 - 37.1.7 has otherwise failed to observe or perform any of the provisions of the contract.
- 37.2 If the whole or any part of the work is taken out of the Contractor's hands pursuant to GC37.1;
 - 37.2.1 the Contractor's right to any further payment that is due or accruing due under the contract is, subject only to GC37.4, extinguished, and
 - 37.2.2 the Contractor is liable to pay the Owner, upon demand, an amount that is equal to the amount of all loss and damage incurred or sustained by the Owner in respect of the Contractor's failure to complete the work.
- 37.3 If the whole or any part of the work that is taken out of the Contractor's hands pursuant to GC37.1 is completed by the Owner, the Engineer shall determine the amount, if any, of a holdback or a progress claim that had accrued and was due prior to the date on which the work was taken out of the Contractor's hands and that is not required for the purposes of having the work performed or of compensating the Owner for any other loss or damage incurred or sustained by reason of the Contractor's default.
- 37.4 The Owner may pay the Contractor the amount determined not to be required pursuant to GC37.3.

GC38 EFFECT OF TAKING THE WORK OUT OF THE CONTRACTOR'S HANDS

- 38.1 The taking of the work or any part thereof out of the Contractor's hands pursuant to GC37 does not operate so as to relieve or discharge him from any obligation under the contract or imposed upon him by law except the obligation to complete the performance of that part of the work that was taken out of his hands.
- 38.2 If the work or any part thereof is taken out of the Contractor's hands pursuant to GC37, all plant and material and the interest of the Contractor in all real property, licenses, powers and privileges acquired, used or provided by the Contractor under the contract shall continue to be the property of the Owner without compensation.

- 38.3 When the Engineer certifies that any plant, material, or any interest of the Contractor referred to in GC38.2 is no longer required for the purposes of the work, or that it is not in the interests of the Owner to retain that plant, material, or interest, it shall revert to the Contractor.

GC39 SUSPENSION OF WORK

- 39.1 The Owner may, when in his opinion it is in the public interest to do so, require the Contractor to suspend performance of the work either for a specified or an unspecified period by giving a notice of suspension to the Contractor in accordance with GC10.
- 39.2 When a notice referred to in GC39.1 is received by the Contractor in accordance with GC10 he shall suspend all operations in respect of the work except those that, in the opinion of the Engineer, are necessary for the care and preservation of the work, plant and material.
- 39.3 The Contractor shall not, during a period of suspension, remove any part of the work, plant or material from its site without the consent of the Engineer.
- 39.4 If a period of suspension is 30 days or less, the Contractor shall, upon the expiration of that period resume the performance of the work and he is entitled to be paid the extra cost, calculated in accordance with GC47 to GC49, of any labour, plant and material necessarily incurred by him as a result of the suspension.
- 39.5 If, upon the expiration of a period of suspension of more than 30 days, the Owner and the Contractor agree that the performance of the work will be continued by the Contractor, the Contractor shall resume performance of the work subject to any terms and conditions agreed upon by the Owner and the Contractor.
- 39.6 If, upon the expiration of a period of suspension of more than 30 days, the Owner and the Contractor do not agree that performance of the work will be continued by the Contractor or upon the terms and conditions under which the Contractor will continue the work, the notice of suspension shall be deemed to be a notice of termination pursuant to GC40.

GC40 TERMINATION OF CONTRACT

- 40.1 The Owner may terminate the contract at any time by giving a notice of termination to the Contractor in accordance with GC10.1.
- 40.2 When a notice referred to in GC40.1 is received by the Contractor in accordance with GC10, he shall, subject to any conditions stipulated in the notice, forthwith cease all operations in performance of the contract.
- 40.3 If the contract is terminated pursuant to GC40.1, the Owner shall pay the Contractor, subject to GC40.4, an amount equal to
- 40.3.1 the cost to the Contractor of all labour, plant and material supplied by him under the contract up to the date of termination in respect of a contract or part thereof for which a Unit Price Arrangement is stipulated, in the contract, or
- 40.3.2 the lesser of
- 40.3.2.1 an amount, calculated in accordance with the Terms of Payment, that would have been payable to the Contractor had he completed the work, and
- 40.3.2.2 an amount that is determined to be due to the Contractor pursuant to GC48 in respect of a contract or part thereof for which a Fixed Price Arrangement is stipulated in the contract

less the aggregate of all amounts that were paid to the Contractor by the Owner and all amounts that are due to the Owner from the Contractor pursuant to the contract.

- 40.4 If the Owner and the Contractor are unable to agree about an amount referred to in GC40.3 that amount shall be determined by the method referred to in GC49.

GC41 CLAIMS AGAINST AND OBLIGATIONS OF THE CONTRACTOR OR SUBCONTRACTOR

- 41.1 The Owner may, in order to discharge lawful obligations of and satisfy lawful claims against the Contractor or a subcontractor arising out of the performance of the contract, pay any amount that is due and payable to the Contractor pursuant to the contract directly to the obligees of and the claimants against the Contractor or subcontractor.
- 41.2 A payment made pursuant to GC41.1, is to the extent of the payment, a discharge of the Owner's liability to the Contractor under the contract and may be deducted from an amount payable to the Contractor under the contract.
- 41.3 To the extent that the circumstances of the work being performed for the Owner permit, the Contractor shall comply with all laws in force in Nunavut relating to payment periods, mandatory holdbacks, and creation and enforcement of mechanics' liens.
- 41.4 The Contractor shall discharge all his lawful obligations and shall satisfy all lawful claims against him arising out of the performance of the work at least as often as the contract requires the Owner to pay the Contractor.
- 41.5 The Contractor shall, whenever requested to do so by the Engineer, make a statutory declaration deposing to the existence and condition of any obligations and claims referred to in GC41.4.
- 41.6 GC41.1 shall only apply to claims and obligations that have been received by the Engineer in writing before payment to the Contractor pursuant to TP4.8 and within 120 days after a claimant
- 41.6.1 should have been paid in full under his contract with the Contractor or subcontractor where the claim is for money that was lawfully required to be held back from the claimant; or
 - 41.6.2 performed the last of the service, work or labour, or furnished the last of the material pursuant to his contract with the Contractor or subcontractor, where the claim is not for money referred to in GC41.6.1.
- 41.7 No interest will be paid to the Contractor on any monies withheld pursuant to GC41 due to a Contractor or subcontractor's claim for non-payment.

GC42 SECURITY DEPOSIT - FORFEITURE OR RETURN

- 42.1 The Owner may convert the security deposit, if any, to its own use, if
- 42.1.1 the work is taken out of the Contractor's hands pursuant to GC37;
 - 42.1.2 the contract is terminated pursuant to GC40; or
 - 42.1.3 the Contractor is in breach of or in default under the contract.
- 42.2 If the Owner converts the contract security pursuant to GC42.1, the amount realized shall be deemed to be an amount due from the Owner to the Contractor under the contract.
- 42.3 Any balance of an amount referred to in GC42.2 that remains after payment of all losses, damage and claims of the Owner and other shall be paid by the Owner to the Contractor, if in the opinion of the Engineer, it is not required for the purposes of the contract.

GC43 ENGINEER'S CERTIFICATES

- 43.1 On the date that

- 43.1.1 the work has been completed, and
- 43.1.2 the Contractor has complied with the contract and all orders and directions made pursuant thereto,
- both to the satisfaction of the Engineer, he shall issue a Certificate of Final Completion to the Contractor.
- 43.2 If the Engineer is satisfied that the work is sufficiently complete to be acceptable for use by the Owner, he may, at any time before he issues a certificate referred to in GC43.1, issue a Certificate of Substantial Completion to the Contractor.
- 43.3 A Certificate of Substantial Completion referred to in GC43.2 shall describe the parts of the work not completed to the satisfaction of the Engineer and all things that must be done by the Contractor before a certificate referred to in GC43.1 will be issued.
- 43.4 The Engineer may, in addition to the parts of the work described in a Certificate of Substantial Completion referred to in GC43.2, require the Contractor to rectify any other parts of the work not completed to his satisfaction and to do any other things that are necessary for the completion of the work.
- 43.5 If the contract or a part thereof is subject to a Unit Price Arrangement, the Engineer shall measure and record the quantities of labour, plant and material, performed, used and supplied by the Contractor in performing the work and shall, at the request of the Contractor, inform him of those measurements.
- 43.6 The Contractor shall assist and co-operate with the Engineer in the performance of his duties referred to in GC43.5 and shall be entitled to inspect any record made by the Engineer pursuant to GC43.5.
- 43.7 After the Engineer has issued a Certificate of Final Completion referred to in GC43.1, he shall, if GC43.5 applies, issue a Certificate of Final Measurement.
- 43.8 A Certificate of Final Measurement referred to in GC43.7 shall
- 43.8.1 contain the aggregate of all measurements of quantities referred to in GC43.5, and
- 43.8.2 be binding upon and conclusive between the Owner and the Contractor as to the quantities referred to therein.

GC44 RETURN OF SECURITY DEPOSIT

- 44.1 After a Certificate of Substantial Completion referred to in GC43.2 has been issued, the Owner shall, if the Contractor is not in breach of or in default under the contract, return to the Contractor all or any part of the security deposit that, in the opinion of the Engineer, is not required for the purposes of the contract.
- 44.2 After a Certificate of Final Completion referred to in GC43.1 has been issued, the Owner shall return to the Contractor the remainder of any security deposit unless the contract stipulates otherwise.
- 44.3 Interest shall not be paid on security deposits.

GC45 CLARIFICATION OF TERMS IN GC46 TO GC49

- 45.1 For the purposes of GC46 to GC49,
- 45.1.1 "Unit Price Table" means the table set out in the Tender, and
- 45.1.2 "plant" does not include tools customarily provided by a tradesman in practising his trade.

GC46 ADDITIONS OR AMENDMENTS TO UNIT PRICE TABLE

- 46.1 Where a Unit Price Arrangement applies to the contract or a part thereof the Engineer and the Contractor may, by an agreement in writing
- 46.1.1 add classes of labour, plant or material, and units of measurement, prices per unit and estimated quantities to the Unit Price Table if any labour, plant or material that is to be included in a Final Certificate of Measurement referred to in GC43.7 is not included in any class of labour, plant or material set out in the Unit Price Table; or
 - 46.1.2 subject to GC46.2, amend a price per unit set out in the Unit Price Table for any class of labour, plant or material included therein if an estimated quantity is set out therein for that class of labour, plant or material and a Final Certificate of Measurement referred to in GC43.7 shows or is expected to show that the total quantity of that class of labour, plant or material actually performed, used or supplied by the Contractor in performing the work is
 - 46.1.2.1 less than 85% of that estimated quantity; or
 - 46.1.2.2 in excess of 115% of that estimated quantity.
- 46.2 An amendment that is made necessary by GC46.1.2.2 shall apply only to the quantities that are in excess of 115%.
- 46.3 If the Engineer and the Contractor do not agree as contemplated in GC46.1, the Engineer shall determine the class and the unit of measurement of the labour, plant or material and the price per unit therefore shall be determined in accordance with GC49.

GC47 DETERMINATION OF COST - UNIT PRICE TABLE

- 47.1 Whenever, for the purposes of the contract it is necessary to determine the cost of labour, plant or material, it shall be determined by multiplying the quantity of that labour, plant or material expressed in the unit set out in the Unit Price Table by the price of that unit set out in the Unit Price Table.

GC48 DETERMINATION OF COST - NEGOTIATION

- 48.1 If the method described in GC47 cannot be used because the labour, plant or material is of a kind or class that is not set out in the Unit Price Table, the cost of the labour, plant or material for the purposes of the contract shall be the amount agreed upon from time to time by the Contractor and the Engineer.
- 48.2 For the purpose of GC48.1, the Contractor, when requested by the Engineer, shall submit a detailed statement of the cost to him of the labour, plant and material referred to in GC48.1 to the Engineer.

GC49 DETERMINATION OF COST - FAILING NEGOTIATION

- 49.1 If the parties or the methods described in GC46, GC47 or GC48 fail for any reason to achieve a determination of the cost of labour, plant and material for the purposes referred to therein, that cost shall be equal to the aggregate of
- 49.1.1 all reasonable and proper amounts actually expended or legally payable by the Contractor in respect of the labour, plant or material that falls within one of the classes of expenditure described in GC49.2 that are directly attributable to the performance of the contract, and
 - 49.1.2 an allowance for profit and all other expenditures or costs, including overhead, general administration costs, financing and interest charges, and every other cost, charge and expense but not including those referred to in GC49.1.1 or of a class referred to in GC49.2, in an amount that is equal to:
 - (a) 10% of the sum of the expenses referred to in GC49.2.1;
 - (b) 20% of the sum of the expenses referred to in GC49.2.2 through GC49.2.8
- 49.2 For purposes of GC49.1.1 the classes of expenditure that may be taken into account in determining the cost of

labour, plant and material are,

- 49.2.1 payments to subcontractors;
- 49.2.2 wages, salaries and travelling expenses of employees of the Contractor while they are actually and properly engaged on the work, other than wages, salaries, bonuses, living and travelling expenses of personnel of the Contractor generally employed at the head office or at a general office of the Contractor unless they are engaged at the work site with the approval of the Engineer;
- 49.2.3 assessments payable under any statutory authority relating to worker's compensation, unemployment insurance, pension plan or holidays with pay;
- 49.2.4 rent that is paid for plant or an allowance for depreciation of plant owned by the Contractor that is necessary for and used in the performance of the work, if that rent or allowance is reasonable and use of that plant has been approved by the Engineer;
- 49.2.5 payments for maintaining and operating plant is necessary for and used in the performance of the work, and payments for effecting such repairs thereto as, in the opinion of the Engineer, are necessary for the proper performance of the contract other than payments for any repairs to the plant arising out of defects existing before its allocation to the work;
- 49.2.6 payments for material that is necessary for and incorporated in the work, or that is necessary for and consumed in the performance of the contract;
- 49.2.7 payments for preparation, delivery, handling, erection, installation, inspection, protection and removal of the plant and material necessary for and used in the performance of the contract;
- 49.2.8 any other payments made by the Contractor with the approval of the Engineer that are necessary for the performance of the contract.

GC50 RECORDS TO BE KEPT BY CONTRACTOR

- 50.1 The Contractor shall
 - 50.1.1 maintain full records of his estimated and actual costs of the work together with all tender calls, quotations, contracts, correspondence, invoices, receipts and vouchers relating thereto;
 - 50.1.2 make all records and material referred to in GC50.1.1 available to audit and inspection by the Owner and the Comptroller General of the Government of the Nunavut or by persons acting on behalf of either or both of them when requested;
 - 50.1.3 allow any of the persons referred to in GC50.1.2 to make copies of and to take extracts from any of the records and material referred to in GC50.1.1; and
 - 50.1.4 furnish any person referred to in GC50.1.2 with information he may require from time to time in connection with such records and material.
- 50.2 The records maintained by the Contractor pursuant to GC50.1.1 shall be kept intact by the Contractor until the expiration of two years after the date that a Final Certificate of Completion referred to in GC43.1 was issued or until the expiration of such other period of time as the Owner may direct.
- 50.3 The Contractor shall cause all subcontractors and all other persons directly or indirectly having control of the Contractor to comply with GC50.1 and GC50.2 as if they were the Contractor.

GC51 LITIGATION

- 51.1 This contract shall be deemed to have been made in Nunavut and shall be governed by the laws of Nunavut as far as applicable.
- 51.2 In the event of any legal action arising out of this agreement, the Contractor, if originating such action, may sue the Government of Nunavut in the name and style of "The Government of Nunavut" and the Government of

Nunavut, if originating such action, may commence the action against the Contractor in his own behalf in the name and style of "The Government of Nunavut".

GC52 REQUIREMENTS FOR INUIT, LOCAL AND NUNAVUT CONTENT

- 52.1 The Contractor shall, in the performance of the Work, employ Inuit, Local and Nunavut workers and use Inuit, Local and Nunavut content to the greatest extent possible and at a minimum, no less than the amounts tendered by the Contractor in Appendix "B-2" of the tender. Workers shall meet all levels of proficiency, qualification and expertise as dictated by the authorities having jurisdiction and/or as defined in the contract documents.
- 52.2 The Contractor shall provide a schedule indicating the anticipated total monthly value of all Inuit, Local and Nunavut content and Labour to be expended in the execution of the Work. This schedule shall provide the benchmark for ensuring compliance by the Contractor with the requirements for the use of Inuit, Local and Nunavut content during the project.
- 52.3 For the Inuit Labour bonus or penalty, as set out in the Nunavummi Nangminiqaqtunik Ikajuuti (NNI) Policy, the benchmark shall be the minimum prescribed level for Inuit Labour identified on page 4 of Appendix K of the tender.

GC53 REQUIREMENT FOR COMMUNITY MEETINGS

- 53.1 The Contractor shall arrange meetings on a monthly basis, or other basis as may be mutually agreed by the parties to this contract, to monitor the use of Inuit, Local and Nunavut Labour and Inuit, Local and Nunavut content. The Contractor shall give the owner 3 to 5 days notice of all meetings called under GC53. The Contractor shall take reasonable steps to ensure that these meetings include the following representatives:
- (a) A community representative who has been designated to speak on behalf of the community (if available),
 - (b) A community manpower representative (if available),
 - (c) The Contractor,
 - (d) The Owner's representative.
- 53.2 The Contractor shall arrange a Community Meeting prior to the start of construction and at that meeting shall:
- (a) provide a schedule referred to in GC52.2 above to the community representative, or if no community representation is designated, shall provide a copy of this schedule to the Owner's representative,
 - (b) identify specific types of workers required during the project such as plumbers, painters or electricians and how many of those workers are required and when they are required and based on information received in accordance with GC53.2 (c) maintain a list of community manpower,
 - (c) request from the community manpower representative or from the Owner if no community manpower representative has been delegated, a list of workers available in the community,
- 53.3 The Owner shall attend all community meetings organized by the Contractor in accordance with GC53.3.2(c) and when requested by the Contractor shall:
- (a) identify and contact potential community workers who may be available to be employed on the Work, identify alternate workers if those workers initially identified are not available to work, and assist in confirming the residency of local workers.
- 53.4 The Contractor shall arrange Community Meeting as required by GC53.1 and at those meetings shall:
- (a) provide employment reports identifying workers used during the past month (to substantiate information provided on Appendix B-2),

- (b) provide an amended schedule referred to in GC53.2, if necessary
- (c) provide a consolidated report at the time of substantial completion, which shall confirm the total amount of Inuit, Local and Nunavut content used. This report will identify Inuit, Local and Nunavut payroll separately. This consolidated report shall be a condition precedent to the release of payment.

GC54 MONITORING THE LEVEL OF INUIT, LOCAL AND NUNAVUT LABOUR

54.1 The contractor is responsible to insure that every worker identified as Local or Nunavut meets the qualifying requirements of being ordinarily resident in Nunavut for the past 12 months, and for Local being a Nunavut resident ordinarily residing in the subject community for the past 4 months. The contractor may be required to provide proof of residency at any time throughout the project.

54.1.1 Reasonable proof of Nunavut and Local residency shall be any of the following:

- a) is on the Nunavut Tunggavik Inc. (NTI) enrolment list and provides a physical address where residing,
- or
- b) has spent the last 12 months ordinarily resident in Nunavut and
 - i) has a valid Nunavut Health Care Card effective at least 9 months prior to start date of employment on the project;
 - and/or
 - ii) other accepted proof of residency such as: a Nunavut General Hunting License, a Nunavut Driver's Licence, a lease or rental receipt, or a certified Schedule T222 Income Tax return from the previous year or proof that Income Tax was paid in the Nunavut during the previous tax year;
 and provides a physical address where residing.
- or
- c) is included on a list of approved Local or Nunavut residents verified by the municipality of their residence.

54.1.2 The Contractor is responsible to ensure that every worker identified as Inuit is on the NTI Inuit enrolment list, or would qualify to be on the list.

54.2 If requested by the Owner to do so, the contractor shall obtain a signed consent form from a worker which verifies their residency and permits the Owner to obtain any and all information required to support the worker's claim of residency and/or Inuit status. A standard consent form is attached as page 4 of Appendix "B" of the tender. A worker does not need to comply with the requirements of this clause 54.2 if the worker meets the requirements of GC54.1.1 (c).

GC55 FAILURE TO COMPLY WITH PROPOSED INUIT, LOCAL AND NUNAVUT CONTENT

55.1 The parties to this agreement recognize the high cost of living in Nunavut, and the need to build capacity of Inuit Firms and Labour in Nunavut, which is compensated for by the Owner through the provision of bid adjustments for the use of Inuit, Local and Nunavut Labour and other Inuit, Local and Nunavut content, and the provision of bonuses under the Nunavummi Nangminiqaqtunik Ikajuuti (NNI) Policy. It is a priority of the Owner to maximize the opportunities for Inuit, Local and Nunavut workers and businesses to benefit from government contracts and the Owner may pay a premium in awarding its contracts to support this important objective.

Therefore, it is a fundamental requirement of this contract that the Contractor shall achieve, by the completion of the contract, at least the amounts tendered on Appendix B-2 of the tender, with the exception of decreasing Nunavut content with a corresponding equal or larger increase in Local content, specifically

(a) the amount of Inuit Labour,

AND

(b) (i) the amount of Local Labour and the amount of Nunavut Labour,

or

(ii) the amount of Local Labour and the total amount of Local and Nunavut Labour

which the Contractor has identified in Appendix B-2 of the Tender,

AND at least

(c) the amount of Inuit Content excluding the Labour of Inuit Firms,

AND

(d) (i) the amount of Local Content (excluding Local Labour) and the amount of Nunavut content (excluding Nunavut Labour),

or

(ii) the amount of Local Content (excluding Local Labour) and the total amount of Local and Nunavut content (excluding Local and Nunavut Labour),

which the Contractor has identified in Appendix B-2.

55.2 In the event that the amounts of Inuit, Local and Nunavut expenditures actually achieved by the Contractor are less than the amounts identified in clauses GC55.1 then the Owner MAY adopt one or more of the following remedies,

(a) withhold from any progress payment an amount equal to:

(i) the difference between the amounts identified in clause GC55.1 (a), (b)(i), or (b)(ii) and the amount identified in the Schedule referred to in GC52.2 and

(ii) the difference between the amounts identified in clause GC55.1 (c), (d)(i) or (d)(ii) and the amount identified in the Schedule referred to in GC52.2.

This amount may be released to the contractor if at the date of a subsequent request the difference has been eliminated.

(b) deduct from the approved contract payment at the time of substantial or final completion an amount equal to:

(i) 25% of the difference between the amounts identified in clause GC55.1 (i), GC55.1 (ii), or GC55.1 (iii) and the amount identified in Appendix B-2 and

(ii) 25% of the difference between the amounts identified in clause GC55.1 (iv), GC55.1 (v), or GC55.1 (vi) and the amount identified in Appendix B-2 of the Tender.

(c) take the contract out of the Contractor's hands, in accordance with Clause 37 and GC38.

55.3 In the event that the amount of difference identified in GC55.2 is 15% or less of the amount proposed in Appendix B-2 of the tender, the Owner, at its sole discretion, may waive the provisions of clause 55.2.

55.4 **In the event that the minimum prescribed level of Inuit Labour set out in Appendix K of the tender is not met, then for future tenders where there are similar minimum prescribed levels for Inuit Labour, the Contractor may be deemed not "responsible" as defined in the Government Contract Regulations.**

GC56 OBLIGATION TO PROVIDE CONTRACT SECURITY

- 56.1 Where the contract amount referred to in the Articles of Agreement is
- 56.1.1 less than \$100,000, the Engineer may require at the expense of the Owner the Contractor to provide contract security prescribed in GC57.
 - 56.1.2 \$100,000 or more, the Contractor shall, at his own expense, provide one or more of the forms of contract security prescribed in GC57.
- 56.2 If the Contractor is required to provide contract security pursuant to GC57, the security shall be delivered to the Engineer within 14 days after the date that the Contractor receives notice that his tender or offer was accepted by the Owner.

GC57 PRESCRIPTION OF ACCEPTABLE CONTRACT SECURITY

- 57.1 If the Contractor is required to provide contract security pursuant to GC56, the Owner shall accept from the Contractor one or more of the forms of security prescribed in GC57.2. to GC57.6.
- 57.2 A Contractor shall deliver to the Owner:
- 57.2.1 A performance bond and a labor and material payment bond each in an amount that is equal to not less than 50% of the contract amount referred to in the Articles of Agreement, or,
 - 57.2.2 **A security deposit in an amount that is equal to 10% of the contract amount referred to in the Articles of Agreement.**
- 57.3 A performance bond and a labour and material payment bond referred to in GC57.2.1 shall be in a form as approved by the Federal Treasury Board (Federal Contracts) and be issued by a bonding or surety company that is approved by the Owner.
- 57.4 A security deposit referred to in GC57.2.2, shall be in the form of
- 57.4.1 "A letter of irrevocable guarantee" in the form authorized by the contract authority payable to the Owner that is drawn on a bank to which the Bank Act or the Quebec Savings Banks Act applies;
or
 - 57.4.2 A certified cheque or bank draft from a bank acceptable to the Owner and made payable to the Owner.
- 57.5 The "letter(s) of irrevocable guarantee" referred to in GC57.4.1 shall be
- 57.5.1 Held uncashed until 14 days prior to their expiry date, unless the expiry date is extended for a further term, beyond the contract completion date stated in the Articles of Agreement.
- 57.6 The certified cheque as referred to in GC57.4.2 shall be deposited by the Owner into the Owner's bank account.

GC58 COMPREHENSIVE GENERAL LIABILITY INSURANCE REQUIRMENTS

- 58.1 Comprehensive General Liability Insurance with **limits of not less than five million dollars inclusive** per occurrence for bodily injury, death, and damage to property including loss of use thereof. This insurance shall be maintained continuously from commencement of the work until not less than twelve (12) months from the date of the Final Certification of Completion. The Owner is not to be added as an Insured under this policy. Such insurance shall include but is not limited to:
- 58.1.1 Premises, Property and Operations Liability;

- 58.1.2 Products and Completed Operations Liability;
- 58.1.3 Owners' and Contractors' Protective Liability;
- 58.1.4 Blanket Written Contractual Liability;
- 58.1.5 Non-Owned Automobile Liability;
- 58.1.6 Broad Form Property Damage Extension;
- 58.1.7 Use of explosives for blasting, shoring, excavating, underpinning, demolition, removal, pile driving and caisson work, work below ground surface, tunnelling and grading, as applicable;
- 58.1.8 Contingent Employer's Liability;
- 58.1.9 Person Injury Liability;
- 58.1.10 Employees As Additional Insureds;
- 58.1.11 Cross Liability With Respect To Additional Insureds;
- 58.1.12 Asbestos Abatement Liability, as applicable.

GC59 AUTOMOBILE LIABILITY INSURANCE REQUIREMENTS

- 59.1 Automobile Liability Insurance in respect of Contractor's owned and leased vehicles shall have limits of not less than two million dollars inclusive per occurrence for bodily injury, death, and damage to property. And when applicable:
- S.E.F. No. 4a Explosives Endorsement;
 - S.E.F. No. 21b Blanket Fleet Endorsement.

GC60 AIRCRAFT AND WATER CRAFT LIABILITY INSURANCE REQUIREMENTS

- 60.1 Aircraft and Watercraft Liability Insurance with respect to owned or non-owned aircraft and watercraft if used directly in or indirectly in the performance of the Work, including use of airport premises, with limits of not less than one million dollars inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof and limits of not less than one million dollars for Aircraft Passenger Hazard. Such insurance shall be in a form acceptable to the Owner.

GC61 GENERAL INSURANCE CONDITIONS

- 61.1 **Deductible:** Amount of deductible on any insurance provided by Contractor shall be borne in its entirety by Contractor.
- 61.2 **Waiver of Recourse:** Contractor waives all rights of recourse against the Owner for damages to Contractor's property or property of others for which Contractor is responsible and Contractor's Insurers have no right of subrogation against the Owner.
- 61.3 **Notice of Cancellation:** All required insurance shall be endorsed to provide the Owner with 30 days advance written notice of material change, cancellation or termination. Such notices shall be addressed to: The Owner (as noted on the Contractor's Certificate of Insurance).
- 61.4 **Other Insurance:** Contractor shall provide, maintain and pay for any additional insurance which is required to be provided by the Contract Documents, or by law, or which he considers necessary to cover risks not otherwise covered by insurance specified in these conditions.
- 61.5 Contractor's Certificate of Insurance: The Contractor shall complete the attached form "Contractor's Certificate

of Insurance", and shall within 14 days after the acceptance of the tender deliver this completed certificate to the Owner. Substitute certificates will not be accepted; the Contractor must use this certificate.

GC62 PROPERTY INSURANCE (All "Risks" Course of Construction Insurance)

- 62.1 Insurance has been purchased by the Owner on a very broad basis, to protect as Insureds, all those who have direct participation in the construction project, for claims which may arise as a result of loss or damage during course of construction.
- 62.2 **Coverage:** "All Risks" of physical loss or damage or destruction while said project is in course of construction, site preparation, reconstruction, repair, erection, fabrication, testing, and including all materials, equipment machinery, structures, property, fitting, fixtures, betterment, and supplies of any nature whatsoever to enter into and form part of the finished project while at the site of operations or elsewhere in Canada or the Continental United States or America, all the property of the Insureds or the property of others for which the insureds have assumed responsibility, or for whom the Insured are required to carry insurance, including while on a river or lake crossing ferry in connection with land transportation..
- 62.3 **Exclusions:** This policy does not cover goods in transit to the site. This is the contractor's risk, which he may or may not wish to insure.
- 62.3.1 This policy does not cover the following types of construction and/or maintenance contracts:
- a) Highways & Ferries;
 - b) Water & Sewer Contracts With No Buildings;
- 62.4 **Term:** From the commencement of work to the date of the Substantial Completion as certified by the Owner.
- 62.5 **Limit of Liability:** The limit of liability at the project site is the estimated full completed value of the project including, but not limited to, owner-supplied labour or materials, reasonable profit, insurance costs, overhead, taxes, labour, administrative fees and all other expenses which are incurred as additional costs as a result of a partial or total loss.
- 62.6 **Deductible:**
- 62.6.1 The Contractor shall be responsible for a deductible, which shall be equal to 5% of the considered insurable loss to a maximum of \$10,000 per occurrence.

END OF GENERAL CONDITIONS

List of Drawings

1. Existing Water Reservoir and Intake
 2. Water Reservoir and Intake Phase 1 Expansion
 3. Water Reservoir and Intake Phase 2 Expansion
 4. Water Reservoir and Intake X-Sections and Profiles Sheet 1
 5. Water Reservoir and Intake X-Sections and Profiles Sheet 2
 6. Water Reservoir and Intake X-Sections and Profiles Sheet 3
 7. Water Reservoir and Intake Details
 8. Sewage Lagoon Plan
 9. Sewage Lagoon Sections
 10. Sewage Lagoon Details
 11. Existing Solid Waste Disposal Facility (Landfill)
 12. Solid Waste Disposal Facility (Landfill) Upgrades
 13. Municipal Solid Waste Disposal Area Upgrades
 14. Bulky Metals Disposal Area Upgrades and Details
 15. Truck Fill Station Upgrades Floor Plan and X-Sections
- E-01. Electrical Modifications

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- No. 1 Qikiqtarjuaq – Community Profile
- No. 2 Schedule A
 - Rates Schedule
 - Hamlet of Qikiqtarjuaq, Nunavut
 - By-Law No. 172
- No. 3 Municipality of Qikiqtarjuaq, Photos of Existing Site Conditions
- No. 4 Municipality of Qikiqtarjuaq, Environmental Emergency Contingency Plan
- No. 5 Soils Information

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General Instructions

Section No. 01007

1.1 Tender/Contract Format

- .1 This is a Unit Price Construction tender and contract.
- .2 Include the total cost of doing all the work shown on the drawings and specified herein. The total cost shall include a fully operational system.
- .3 Include incidental costs incurred in completing the work in which the incidental cost is related.
- .4 Refer to Clause 1.40 of Section 01007 for details regarding the scope of work for this project.

1.2 Location of Work

- .1 The work to be completed under this Contract is located within the Hamlet of Qikiqtarjuaq, Nunavut, on the eastern coast of Baffin Island, on an island known as Broughton Island. The community is located approximately 470 kilometres northeast of Iqaluit.
- .2 Transportation links are by scheduled air services from Yellowknife, Ottawa and Montreal via Iqaluit and by an annual summer sealift from Montreal. Refer to Appendix H of the Tender (Transportation of Materials) for further information.
- .3 Information regarding the community of Qikiqtarjuaq is attached at the end of these specifications (Attachment 1).

1.3 Soils Investigation

- .1 A subsurface evaluation report is attached to the specifications (Attachment 5). This information is provided for the general guidance of the Contractor. No responsibility will be accepted by the Engineer for the correctness of any information given in this report.

General Instructions

Section No. 01007

1.4 Definitions

- .1 "Owner" means the Government of the Nunavut Territory as defined in the General Conditions.
- .2 "Engineer" means a representative of Nuna Bunside.
- .3 "Municipality" means the Municipality of Qikiqtarjuaq.

1.5 Examination

- .1 Contractor is held to have examined site of work and surrounding areas as well as Drawings and Specifications prior to entering into a Contract with Owner, and to have fully informed himself as to conditions and limitations under which he will be obligated to operate in performing work.
- .2 Claims for additional costs will not be entertained with respect to conditions, which could reasonably have been ascertained by an inspection of the site prior to Tender closing date.
- .3 Prior to commencement of any work, make careful examination of previously executed work, existing conditions, levels and dimensions. Promptly advise Engineer of unsatisfactory preparatory work and substrate conditions; commencement of work implies acceptance of conditions.

1.6 Transportation and Delivery of Products

- .1 Make arrangements and include for all costs for shipping from source, of products to the building site.
- .2 Products shall be securely packed, wrapped or crated where required so as to preserve their shape, profile, consistency, finish as fabricated and to allow their incorporation into the work as specified.
- .3 Deliver sufficient material to site to allow for expected field and cutting losses and normal waste.

General Instructions

Section No. 01007

1.6 Transportation and Delivery of Products – Cont'd

- .4 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays are foreseeable, notify the Engineer of such, in order that substitutions or other remedial action may be authorized to prevent delay in performance of work.

1.7 Local Labour and Equipment

- .1 The Contractor shall note the requirements associated with employment of local individuals as included in Appendix K (Including Addenda), Contractors Obligations to provide Inuit Content.
- .2 Local equipment is available for rental. Details and rates are listed on "Schedule A – Rates Schedule," appended at the back of these specifications (Attachment 2).
- .3 Contractor shall identify the local equipment he intends to utilize including the associated duration.
- .4 All equipment rented from the Municipality of Qikiqtarjuaq (Municipality) must be insured by the Contractor, for the duration of the rental period. Equipment that is operated by the Contractor shall be returned to the Municipality in the same or better condition as prior to its use by the Contractor. The Contractor shall bear all costs associated with repairing this equipment. The cost of equipment repairs required during the contract, which results from breakdown during the construction contract, will be borne by the Contractor. In case of repair due to previous wear and tear, substantiated by a qualified equipment manufacturer's representative, the cost will be borne by the Municipality.

The Contractor with a qualified person must inspect all equipment being rented at the onset of the contract and satisfy him/herself that the equipment is in good working order and/or obtain agreement from the Municipality on when the equipment will be ready for rent.

Contractor shall note that all equipment leased/rented from the Municipality is for use on this project only. Equipment shall not be used elsewhere unless the Contractor has received the consent of the Municipality.

General Instructions

Section No. 01007

1.8 Fill and Gravel

- .1 Local aggregate is available for purchase. Details and rates are listed on "Schedule A – Rates Schedule," appended at the end of these specifications (Attachment 3).
- .2 Sea-sand shall not be used when making concrete.

1.9 Work Hours

- .1 The Contractor shall comply with local by-laws regarding work hours. The successful Contractor will present his anticipated work schedule upon award of the Contract.
- .2 The Contractor will note that in the event of a death in the community, all work will stop at the time when the death is announced until the end of that day. The work may resume the next day until the day of the funeral. On the day of the funeral, work will not start until after the funeral.
- .3 The Contractor will note that there are community and cultural events and designated community holidays. These may last more than one day and will be announced from time to time. The Contractor will note that he is required to provide time off for the local workforce. The Contractor will acknowledge that the time off will be provided without pay when required by the worker.

1.10 Codes and Standards

- .1 Perform all work in accordance with the specifications and meet or exceed all codes, standards and regulations applicable to the work. Advise the Engineer of any discrepancies in the codes, standards, and regulations applicable to the work.
- .2 Codes, standards and regulations applicable to the work and which form part of the contract have been referenced in various sections of the Contract Specifications.

General Instructions

Section No. 01007

1.10 Codes and Standards – Cont'd

- .3 Additional codes, standards and regulations applicable to the work, but which are not part of the Contract Documents, shall be considered by the contractor. Non-reference of any such codes does not relieve the contractor from his responsibility to comply with such codes, standards or regulations.
- .4 In any case of conflict between the requirements specified in the codes, standards or regulations applicable to the work, the most stringent (as adopted by the Government of Nunavut) shall apply.

1.11 Existing Services

- .1 Before commencing work, contact local utilities companies and municipal representatives to establish location and extent of existing services and notify the Engineer of findings.
- .2 Whenever it is necessary to cut, interfere with, or connect to existing services of facility to do so at hours and times recommended by governing authorities and approved by the Engineer; and with minimum disturbance to occupants, pedestrian and vehicular traffic and public and private property.
- .3 Submit schedule to and obtain approval from the Engineer for each proposal shutdown of active service or facility. Adhere to approved schedule and provide notice to affected parties.
- .4 If unknown services are encountered, immediately notify the Engineer and confirm findings in writing and/or on Drawings. Obtain the Engineer's written direction if such services require cutting, capping or relocation to do work.
- .5 Should access or services be affected by the work, the notification of emergency agencies and/or affected homeowners shall be the responsibility of the Contractor.

General Instructions

Section No. 01007

1.12 Storage of Equipment and Materials

- .1 The Contractor will provide his own storage facilities to be located near the work site.
- .2 The Contractor will fence his storage area and provide 24-hour security.
- .3 The Contractor will note the requirements for temporary facilities specified under the appropriate sections.

1.13 Taxes

- .1 Refer to the Instructions for Tenderers.

1.14 Fees, Permits and Certificates

- .1 Provide authorities having jurisdiction with information requested.
- .2 Pay fees and obtain certificates and permits required.
- .3 Furnish certificates and permits when requested.
- .4 Pay customs bonds as required when transporting through the United States.

1.15 Contract Documents

- .1 Contract Drawings listed below form part of Contract Documents.
- .2 Keep one copy of contract documents and shop drawings on the site.
- .3 The Engineer will provide two additional sets of full size white prints for record drawing purposes.

1.16 As-built Record Drawing

- .1 As work progresses and as required, record significant deviations from the Contract drawings.
- .2 Obtain and record all pipe invert elevations, pipe and conduit locations.

General Instructions

Section No. 01007

1.16 As-built Record Drawing – Cont'd

- .3 Assist Engineer in recording ties to all structures etc.
- .4 Prior to Preliminary Acceptance, submit one copy of as-constructed drawings to Engineer. Holdback will not be released until drawings are furnished.

1.17 Additional Drawings

- .1 Engineer may furnish additional drawings to clarify work.
- .2 Such drawings become part of Contract documents.

1.18 Material and Equipment

- .1 Use new products unless otherwise specified.
- .2 Deliver and store material and equipment to manufacturer's instructions with manufacturer's labels and seals intact.

1.19 Concealment

- .1 Conceal pipes, ducts, conduit and wiring in finished areas unless otherwise specified.

1.20 Cutting and Remedial Work

- .1 Coordinate work to keep cutting and remedial work to a minimum.
- .2 Execute cutting and remedial work required. Obtain Engineer's approval before cutting, boring or sleeving structural members.
- .3 Use specialists in affected material to execute cutting and remedial work.
- .4 Match work to adjoining construction and finishes.
- .5 Fit components tight to adjoining surfaces.

General Instructions

Section No. 01007

1.21 Fastenings

- .1 Provide fastenings of type, size and spacing required to assure secure anchorage.
- .2 Obtain Engineer's approval before using explosive actuated fasteners.

1.22 Inspection and Testing

- .1 When initial tests and inspections reveal work not to contract requirements, pay for tests and inspections required by Engineer on corrected work.

1.23 Construction Time and Scheduling

- .1 On award of contract, submit monthly cash flow projection and bar chart construction schedule for work, indicating anticipated progress stages within time of completion. When schedule has been approved by the Engineer, take necessary measures to complete work within scheduled time. Do not change schedule without Engineer's approval.
- .2 General Contractor shall ensure that all subcontractors and suppliers are notified of construction schedule. General Contractor shall be solely responsible for liquidated damages and associated costs if the construction completion deadline is not met.
- .3 In conjunction with and in form acceptable to Engineer provide within 10 working days after contract award, schedule showing dates for:
 - .1 Submission of shop drawings, material tests and samples.
 - .2 Delivery of equipment and materials.
 - .3 Commencement and completion of work of each major component of the work.
 - .4 Filling of Reservoir.
 - .5 Final completion date within time period required by contract documents.
- .4 Interim review of work progress based on schedule submitted will be conducted as decided by Engineer and Schedule updated by Contractor in conjunction with and to approval of Engineer.

General Instructions

Section No. 01007

1.23 Construction Time and Scheduling – Cont'd

- .5 Engineer will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.24 Energy Conservation

- .1 The policy of the Owner is to effectively conserve energy and non-renewable natural resources in the design and construction of public works.
- .2 The Contractor is encouraged to employ all reasonable means at his disposal to carry out an effective energy and natural resources conservation program and use energy saving construction techniques throughout the entire construction period.
- .3 With due regard for necessary protection of the property, the safety of workmen and public, and overriding By-laws and Regulations, Contractor shall conserve energy and non-renewable natural resources, in such ways as:
 - .1 Switching off unnecessary lighting, particularly during inactive period.
 - .2 Utilizing efficient methods, controls, equipment and enclosures to conserve temporary heating.
 - .3 Any other construction activities which may result in saving of energy and natural resources.

1.25 Setting Out of Work

- .1 The Contractor is responsible for the layout of all construction works and the minimum degree of layout required is specified below.
 - § Set out works to correct lines, grades and levels.
 - § Establish control lines and levels for construction of work.
 - § Provide a minimum of three (3) consecutive reference points at a distance not exceeding fifteen (15) metres for each section of work.
 - § Provide reference points at closer spacing as required or as directed by Engineer.
 - § Control of lines and grades by use of lasers or other methods may be used if approved by Engineer.

General Instructions

Section No. 01007

1.25 Setting Out of Work – Cont'd

§ Do not lay pipe unless all reference points and levels are in place along section of work under construction.

- .2 Payment for setting out of works to be included with the applicable item for which layout is required.

1.26 Supervision

- .1 Provide the necessary supervision and qualified tradesmen to ensure the flow of materials and on-site installation compatible with the overall project schedule and progress.
- .2 No separate payment will be made under this item and the Contractor shall include this cost in the cost of the work being supervised.

1.27 Protection of Control Points and Survey Bars (if applicable)

- .1 Protect control points and survey bars from damage or displacement.
- .2 Replacement of bars within the area of work is to be included in the cost of the related work.
- .3 Replacement of bars damaged or displaced during construction and which fall outside of the area of work is to be at the Contractor's expense.
- .4 All survey bars damaged or displaced during construction are to be replaced by a Legal Surveyor prior to completion of the work.

1.28 Payment Items

- .1 Payment will be based on the lump sum or unit price bid, as listed in the Schedule of Unit Prices and as specified in herein. Contractor shall note that, where unit priced items require verification by topographic survey, payment to the contractor shall be based on a percentage of the total for the respective item as determined by the engineer and revised as required when survey data becomes available.

General Instructions

Section No. 01007

1.29 Dust Control & Clean-up During Construction

- .1 All dust control and clean-up of mud tracking on existing roads shall be deemed to be included in the Total Tender Price.

1.30 Equivalent or Approvals Equals

- .1 Where pursuant to the Specifications, the Contractor is required to supply an article or group of related articles designated by a trade or other name or an "approved equal", the tender shall be based only upon supplying the article or group of articles so designated, which shall be regarded as the standard of quality required by the Specification. After the acceptance of a tender, the Contractor may apply to the Engineer to substitute as an approved equal another article or group of related articles designated as aforesaid. The application shall be in writing and shall state the price for the proposed substitute article or group of related articles, the price for the article or group of articles designated as aforesaid and such other information as the Engineer may require.

No ruling on a proposed substitution will be made prior to the acceptance of a tender. No substitution shall be made without the prior approval of the Engineer. The approval or rejection of a proposed substitution shall be at the discretion of the Engineer and his decision shall be final.

1.31 Contractor's Use Of Premises

- .1 The Owner has arranged for easements for construction, storage and access as shown on Contract Drawings.
- .2 Make arrangements with proper owners if additional areas are required. Obtain written agreements and submit copies to Engineer.
- .3 Confine operations within easements for construction, storage and access as shown on Contract Drawings.
- .4 Install and maintain snow fencing along working and storage areas and access routes.
- .5 Do not enter upon or occupy with workers, tools or materials any lands other than public streets, roadways, rights-of-way or easements shown

General Instructions

Section No. 01007

1.31 Contractor's Use Of Premises – Cont'd

on Contract Drawings except after written consent has been received from property owner.

1.32 Project Coordination

- .1 Other Contracts may be awarded by Owner for work to be done adjacent to and/or within limits of construction as shown on Contract Drawings. Limits of work included in any such contracts are identified on Contract Drawings or elsewhere in Contract Documents.
- .2 Do not undertake any part of work without permission of Engineer.
- .3 Cooperate and make suitable working arrangements with other Contractor(s) to ensure satisfactory completion of work.
- .4 Obtain approval in writing from Engineer for all arrangements made with other Contractor(s).
- .5 Engineer will determine coordination and execution of work in the event that Contractors are unable to reach satisfactory working agreement.

1.33 Public Relations and Notices

- .1 Appoint competent representative to receive and deal with any complaints from public in regard to safety, protection of traffic, condition of road surfaces along line of work, or nuisances on account of work.
- .2 Inform Engineer, Owner and local police of name, address and telephone number of public relations representative within two (2) weeks after date of order to commence work.
- .3 Deal promptly with all complaints received and carry out remedial actions to prevent further complaints.
- 4 Give adequate notice of schedule (timing and location) of movement of materials, construction activities, maintenance and repairs to affected landowners and occupants of properties adjacent to work areas.

General Instructions

Section No. 01007

1.33 Public Relations and Notices – Cont'd

- .5 Notify Engineer immediately of any complaints of damage to property or personal injury.
- .6 Notify Engineer as soon as possible of action taken in respect to any complaints and outcome of such actions.

1.34 Abbreviations

- .1 Abbreviations used in this document:
 - AASHTO - American Association of State Highway and Transportation Officials
 - ACI - American Concrete Institute
 - AISI - American Iron and Steel Institute
 - ANSI - American National Standard Institute
 - APWA - American Public Works Association
 - ASME - American Society of Mechanical Engineers
 - ASTM - American Society for Testing and Materials
 - AWPA - American Wood Preserver's Association
 - AWWA - American Water Works Association
 - CGSB - Canadian General Standards Board
 - CSA - Canadian Standards Association
 - HEPC - Hydro Electric Power Commission
 - OPSS - Ontario Provincial Standards Specifications
 - OPSD - Ontario Provincial Standards Drawings

1.35 Project Meetings

- .1 Attend any and all project meetings scheduled by Engineer.
- .2 Pre-Construction Meeting:

Engineer will schedule meetings and notice will be given in writing at least two (2) days before date of meeting.

Location: site designated by Engineer.

Attendance:

Owner's Representative

Contractor's Superintendent

Resident Inspector

Others as appropriate

General Instructions

Section No. 01007

1.35 Project Meetings – Cont'd

.3 Progress Meetings:

Location of meeting: Engineer's field office.

Attendance:

Owner's Representative

Contractor's Superintendent

Resident Inspector

Others as appropriate

Representatives of Contractor attending meeting should be thoroughly informed and knowledgeable with respect to proposed topic of discussion and authorized to act and make commitments with respect to matters agreed to at meeting.

1.36 Quality Control

- .1 Adhere to manufacturer's recommendations with respect to handling, preparation, installation, testing, operation or protection of any product or material to be incorporated in work.
- .2 Ensure that all materials supplied are compatible with each other unless specific adjacent materials have been specified. Correct any defective work caused by non-compatibility of materials.
- .3 Where practical or desirable, tests will be conducted by Engineer on materials and equipment to be incorporated into permanent works before delivery to site.
- .4 Submit to Engineer full information on materials, equipment and related arrangements to be furnished.
- .5 Submit information in a form approved by Engineer.
- .6 Submit sufficient information to enable Engineer to determine whether proposed materials, equipment and arrangements meet contract requirements.

General Instructions

Section No. 01007

1.37 Traffic Control

- .1 Adhere to following requirements when roads are to be closed to traffic:
 - .1 Provide and maintain pedestrian access to all properties.
 - .2 Provide and maintain emergency access for fire trucks, ambulances and other vehicles for emergency services.
- .2 Provide and maintain detours for traffic where required. Mark detours as directed by Police Department, Works Department and Engineer.
- .3 Supply and place crushed stone on road shoulder to maintain traffic on road shoulders as required.

1.38 Project Identification and Signs

- .1 Three (3) project signs will be provided by the Government of Nunavut for placement. Contractor shall be responsible for all costs associated with pick-up and delivery of these signs to the project site.
- .2 Supply and erect signs at locations designated by Engineer.
- .3 Provide and erect a suitable, portable and stable framework to support each sign.
- .4 Refer to Section 01500 Temporary Facilities for details regarding Project Signage.
- .5 Payment for Project Identification Signs shall be covered under the appropriate item in Schedule A of the Schedule of Unit Prices.

1.39 Maintenance Work

- .1 Perform all maintenance work required during progress of work and period of guaranteed maintenance.
- .2 Submit to Engineer a letter setting out arrangements made for carrying out warranty work during period of guaranteed maintenance.
- .3 Include in the letter a telephone number and address for receipt of notices relating to matters requiring action by Contractor at job site.

General Instructions

Section No. 01007

1.39 Maintenance Work – Cont'd

.4 Maintenance During Construction

Keep all surfaces adjacent to and within work area clean.

Keep temporary road surfaces over backfilled excavations free from potholes.

Maintenance all surfaces in good condition.

.5 Warranty Work During Guarantee Period

Perform all warranty work required upon receipt of verbal or written notice from Engineer.

Repair or make good sinkages and defects on surfaces of backfilled trenches or excavations.

Repair all damages to structures caused by settlement of ground adjacent to or over excavations.

.6 Maintenance by Owner

The Owner will, without giving notice to Contractor, repair shrinkages or defects which are dangerous in nature and constitute an emergency.

Engineer will notify Contractor of emergency work performed by Owner.

Cost of labour, equipment and material to perform emergency work to be charged to Contractor.

1.40 Description of Work

- .1 Work to be completed under this Contract covers the improvements to the existing water storage reservoir and pumphouse, sewage lagoon and landfill site in the Municipality of Qikiqtarjuaq, Nunavut, as indicated on the Contract Drawings and specified herein. Specific work under this contract includes, but is not limited to, the following:

General Instructions

Section No. 01007

1.40 Description of Work – Cont'd

- .1 Mobilization and demobilization of all personnel, equipment, materials and support facilities required to complete the work.
- .2 **Water Storage Reservoir**
Phase One Works – Construction of containment berm including the supply, haulage, placement and compaction of local material as required to construct berm. Note: Phase One Works must be completed prior to commencing with Phase Two.

Phase Two Works – Removal of existing berm within reservoir including:

- supply and placement of lining material within entire reservoir.
- supply and installation of water intake piping.
- modifications to existing truck fill piping and
- siteworks including fencing, grading, etc.

Sewage Lagoon

- expansion of existing sewage lagoon including the supply, haulage, placement and compaction of local material as required to construct lagoon.
- construction of reinforced concrete valve chambers (effluent decant manholes).
- site works including grading etc.

Landfill Site

- expansion of existing landfill site.
- construction of lined hazardous waste storage area.
- site works including drainage and fencing etc.

Photos of existing site conditions are appended at the end of these specifications (Attachment 3).

END OF SECTION

Mobilization/Demobilization

Section No. 01050

1. General

- .1 This portion outlines the payment for construction mobilization and demobilization.
- .2 The Contractor shall note the requirements listed in Appendix H of the tender (Transportation of Materials) and shall enter a price in the Schedule of Unit Prices to cover the cost associated with mobilization and demobilization.
- .3 The price entered for this item shall be consistent with the costs involved but shall not, in any event, exceed ten percent (10%) of the total price.
- .4 If the Tenderer has entered against this item in his tender a price in excess of ten percent of the total tender price, the Owner shall, in preparing Contract Documents based upon the tender, reduce the price for the said item to an amount not exceeding ten percent of the total tender price and shall add the amount of the reduction to the price for another lump sum item so that the total tender price shall not be affected.
- .5 The lump sum price entered for this item will include the cost of transportation of all personnel, construction equipment, fuel and other items which shall not become part of the permanent works. The transportation costs of materials incorporated into the works is to be included in the unit price tendered for its related item.
- .6 Sixty percent (60%) of the price for the mobilization and demobilization item shall be considered as relating to mobilization and the balance to demobilization.
- .7 The payment for mobilization shall be included in the first Payment Certificate issued for the Contract subject to the Engineer being satisfied that full mobilization has been carried out. If the Engineer is not satisfied, he shall allow a payment which, in his opinion, reflects the degree of mobilization effected to date.

Mobilization/Demobilization

Section No. 01050

1. General - Cont'd

- .8 The payment for demobilization shall become due following Preliminary Acceptance of the works and subject to the Engineer being satisfied that full demobilization has been carried out. The Engineer may, in his discretion, allow partial payment for demobilization before full demobilization has been effected.

END OF SECTION

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Cash Allowances

Section No. 01070

PART 1 - GENERAL

1.1 Scope

- .1 This section outlines the requirements associated with the:

Contingency Allowance
Soils Testing Allowance
Survey Allowance

1.2 Contingency Allowance

- .1 The purpose of the Contingency Allowance is to cover costs associated with extras due to unforeseen circumstances. Extra work shall not commence until the Engineer agrees to the price for payment and authorizes such work in writing. In the event that none of the Contingency Allowance is used, this amount will be deducted from the total contract price.

1.3 Soils Testing Allowance

- .1 This cash allowance is intended to cover all soils testing as deemed necessary by the Engineer for this project. The Engineer will coordinate all required testing with the geotechnical consultant.
- .2 The geotechnical consultant will invoice the General Contractor, on a monthly basis, for soils and concrete testing that has been completed and approved by the Engineer.
- .3 Portions of the allowance listed will only be paid to the Contractor when there is evidence that the contractor has paid the geotechnical consultant. The Contractor shall not be eligible for any mark-up on any invoiced amounts from the geotechnical consultant.
- .4 This section shall be read in conjunction with Section 01410 - Testing Laboratory Services, where compaction and concrete testing results reveal work that is not in accordance with contract requirements, Contractor shall pay for costs associated with additional testing as required by Engineer to verify acceptability of work.

Cash Allowances

Section No. 01070

1.4 Survey Allowance

- .1 This cost allowance shall be used to cover the costs associated with topographic surveys as necessary.
- .2 This survey shall be coordinated by the Engineer.
- .3 The Survey Company (Surveyor) will invoice the General Contractor, for survey work completed and approved by the Engineer.
- .4 Portions of the allowance listed will only be paid to the Contractor when there is evidence that the Contractor has paid the survey company. The Contractor shall not be eligible for any mark-up on any invoiced amounts from the Surveyor.

END OF SECTION

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Shop Drawings, Product Data and Samples

Section No. 01340

1. General

- .1 Submit to Engineer, for review, shop drawings, product data and samples specified.
- .2 Until submission is reviewed, work involving relevant product may not proceed.
- .3 The review of the shop drawings by the Engineer is for the sole purpose of ascertaining conformance with the general design concept. The Engineer will not approve the detail design inherent in the shop drawings. The Contractor submitting the shop drawings shall be responsible for the detail design inherent in the shop drawings. The Engineer's review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of the work of all subtrades.
- .4 The Engineer **will not** provide digital copies of Contract Drawing files or base plans for shop drawing preparation.
- .5 The Engineer will review the first two shop drawing submissions for each piece of equipment at the Engineer's cost. Any subsequent review required beyond the first two submissions will be assessed against the Contractor and the related amount will be deducted from Payment Certificates.

2. Shop Drawings

- .1 Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate sections. Promotional literature and catalogue sheets (except as noted in Item 3 below) will not be accepted as shop drawings.
- .2 Identify details by reference to sheet and detail numbers shown on Contract Drawings.

Shop Drawings, Product Data and Samples

Section No. 01340

2. Shop Drawings – Cont'd

- .3 Dimension in metric (SI) units.
- .4 Maximum sheet size 860 x 1120 mm.

3. Product Data

- .1 Certain specification sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings.
- .2 Above will only be accepted if they conform to following:
 - .1 Delete information which is not applicable to project.
 - .2 Supplement standard information to provide additional Information applicable to project.
 - .3 Show dimensions and clearances required.
 - .4 Show performance characteristics and capacities.
 - .5 Show wiring diagrams (when requested) and controls.
 - .6 Information is of suitable size to permit photocopy reproduction.

4. Samples

- .1 Submit samples in sizes and quantities specified or as requested.

5. Coordination of Submissions

- .1 Check and certify as correct shop drawings, product data and samples prior to submission.
- .2 Verify:
 - .1 Field measurements.
 - .2 Field construction criteria.
 - .3 Catalogue numbers and similar data.
- .3 Coordinate each submission with requirements of work and contract documents. Individual shop drawings will not be reviewed until all related drawings are available.

Shop Drawings, Product Data and Samples

Section No. 01340

5. Coordination of Submissions - Cont'd

- .4 Notify Engineer, in writing at time of submission, of deviations from requirements of contract documents.
- .5 After Engineer review, distribute copies.

6. Submission Requirements

- .1 Issue submissions at least **28 days** before dates reviewed submissions will be needed.
- .2 Engineer will retain three (3) copies of reviewed shop drawings. Provide sufficient copies of shop drawings for Engineer's review to ensure adequate distribution.
- .3 Accompany submissions with transmittal letter in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Number of each shop drawing, product data and sample submitted.
 - .5 Other pertinent data.
- .4 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name of:
 - a) Contractor
 - b) Subcontractor
 - c) Supplier
 - d) Manufacturer
 - e) Separate detailer when pertinent
 - .4 Identification of product or material.
 - .5 Relation to adjacent structure or materials.
 - .6 Field dimensions, clearly identified as such.
 - .7 Specification section number.
 - .8 Applicable standards, such as CSA or CGSB numbers.
 - .9 Contractor's stamp, initialed or signed, certifying approval of submission, verification of field measurements and compliance with contract documents.

Shop Drawings, Product Data and Samples

Section No. 01340

6. Submission Requirements - Cont'd

- .5 Obtain and submit a list of manufacturer's recommended spare parts, lubricants and operation and maintenance equipment. List to include entire project with specific information as to manufacturer's suppliers, product names, model number, address and telephone numbers, etc.

7. Required Shop Drawings

- .1 Shop drawings to be submitted are to include, but not necessarily be limited to the following. Contractor is to notify Engineer of anticipated deviancies from Contract Drawings and Specifications, as additional shop drawings may be requested.

(*) denotes Stamp required by Registered Professional Engineer.

- .1 Reinforcing Steel:
 - Locations
 - Sizes
 - Bar List
 - Mill Reports
- .2 Concrete:
 - Design mix
 - Method of Placement
 - Sealants
 - Formwork
 - Falsework (*)
 - Hoarding Design (*)
 - Waterstop
 - Plasticizer
- .3 Other:
 - Water meter
 - All valves
 - Lining Materials
 - Pipe including jacket material

END OF SECTION

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Testing Laboratory Services

Section No. 01410

PART 1 - GENERAL

1.1 Related Requirements Specified Elsewhere

- .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Engineer are specified under various sections.
- .2 Testing of the works shall be the responsibility of the General Contractor.

1.2 Appointment and Payment

- .1 Engineer will appoint and owner will pay for services of testing laboratory except for the following:
 - .1 Inspection and testing required by-laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing and adjustment of mechanical and electrical equipment and systems.
 - .4 Tests specified to be carried out by Contractor under the supervision of Engineer.
 - .5 Additional tests specified in paragraph 1.2.
- .2 Where tests or inspections by designated testing laboratory reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspection as Engineer may require to verify acceptability of corrected work.

1.3 Contractor's Responsibilities

- .1 Furnish labour and facilities to:
 - .1 Provide access to work to be inspected and tested.
 - .2 Facilitate inspections and tests.
 - .3 Make good work disturbed by inspection and test.

Testing Laboratory Services

Section No. 01410

1.3 Contractor's Responsibilities – Cont'd

- .2 Notify Engineer sufficiently in advance of operation to allow for assignment of laboratory personnel and scheduling of tests.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Engineer.
- .5 When directed by Engineer, coordinate and pay for all costs associated with transporting concrete cylinders to the office of the soils consultant.
- .6 Minimum Quality Control Test Frequencies
 - .1 The following frequencies of testing are the minimum required. The contractor shall perform as many tests as are necessary to ensure that the work conforms to the requirements of the contract regardless of the minimum number specified
 - .2 Provide moisture/density curves for each type of material from each source of material to be compacted to a specified density
 - .3 Field densities:
 - Structures and Embankments (from excavated material) – for each 4000 m² of compacted layers
 - Subgrade Preparation – one field density for every 2000 m² of 150 mm compacted layers.

END OF SECTION

Temporary Facilities

Section No. 01500

PART 1 - GENERAL

1.1 Access

- .1 Provide and maintain adequate access to project site.
- .2 Build and maintain temporary road where directed and provide snow removal during period of work.
- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of contract and make good damage resulting from Contractor's use of roads.
- .4 Protect excavation and frost sensitive materials from freezing.

1.2 Storage Sheds

- .1 Provide adequate weathertight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.

1.3 Sanitary Facilities

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

1.4 Power

- .1 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.
- .2 Install temporary facilities for power such as pole lines and underground cables to approval of local power supply authority.
- .3 Electrical power and lighting systems installed under this contract may be used for construction requirements without prior approval of Engineer provided that guarantees are not affected. Make good damage. Replace lamps which have been used over period of the duration of the contract.

Temporary Facilities

Section No. 01500

1.5 Water Supply

- .1 Supply and install temporary water supply for work force and Engineer.

1.6 Heating and Ventilating

- .1 Pay for costs of temporary heat and ventilation used during construction, including costs of installation, fuel, operation, maintenance and removal of equipment. Use of direct-fired heaters discharging waste products into work areas will not be permitted unless prior approval is given by Engineer.
- .2 Provide temporary heat and ventilation in enclosed areas as required to :
 - .1 Facilitate progress of work.
 - .2 Protect work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .3 Maintain minimum temperature of 10 degrees C or higher where specified as soon as finishing work is commenced and maintain until acceptance of structure by Engineer.
- .4 Ventilating:
 - .1 Prevent hazardous accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

Temporary Facilities

Section No. 01500

1.6 Heating and Ventilating - Cont'd

- .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Ventilate temporary sanitary facilities.
- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful elements.
- .5 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services
 - .4 Prevent damage to finishes
 - .5 Vent direct-fired combustion units to outside.
- .6 Activate radiation system under direction of Engineer to provide temporary heat, after building is closed in.
- .7 Replace filters at time of final acceptance of work.

1.7 Project Identification Sign

- .1 Three Project Construction Signs will be supplied by the Department of Public Works and Services in 24" x 48" (600 mm x 1200 mm) modular panels.

The Contractor will be responsible for packing, freight and insurance from Great Slave Graphics in Yellowknife.

The Contractor will erect the sign within 48 hours of first materials arriving on site.

The Contractor will be responsible for ensuring that the erected sign remains plumb, vertical and upright for the duration of the project.

Temporary Facilities

Section No. 01500

1.7 Project Sign – Cont'd

- .2 Installation:
 - Project identification signs to be installed at a location designated by Project Officer.
 - Framing and foundation 4" x 4" (89 x 89 mm) select structural White Spruce, Douglas Fir or Western Red Clear dressed four sides.
 - Apply 5% pentachlorophenol solution in petroleum solvent or chromated copper arsenate water borne formulation, wood preservatives to framing members below or in contact with ground in accordance with preservative manufacturer's instructions.
- .3 Fasteners aluminum or hot dip galvanized steel nails: hot-dip galvanized or cadmium coated screws.
- .4 Paint: three coats alkyd type without silicone additives –1st coat alkyd primer – 2nd and 3rd coats – alkyd gloss, CGSB 1-CP-28M.
- .5 Colours:
 - Framing members and signboard back: Off-White: GP4598W or Benjamin Moore 16-11.
 - Signboard face (touch up only): Off-White: GP4598W or Benjamin Moore 16-11. Black: Standard black.
- .6 Set signboard, plumb and level.

1.8 Scaffolding

- .1 Construct and maintain scaffolding in rigid, secure and safe manner.
- .2 Erect scaffolding independent of walls. Remove promptly when no longer required.

1.9 Removal of Temporary Facilities

- .1 Remove temporary facilities from site when directed by Engineer.

Temporary Facilities

Section No. 01500

1.10 Fuel Storage

- .1 All fuel storage tanks shall be double-walled and shall have an earth containment berm built around them and shall be lined with a 60 mil high density polyethylene liner.
- .2 Berms shall be designed to hold 150% of the capacity of the tank they are containing.
- .3 Storage areas shall not be located within 150 m of any watercourse.
- .4 Location of fuel tanks to be in compliance with the requirements of the Municipality.

END OF SECTION

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Safety Requirements

Section No. 01545

PART 1 - GENERAL

1.1 Construction Safety Measures

- .1 Observe and enforce construction safety measures required by the latest revisions of the Canada Labour code, National Building Code of Canada, National Fire Code of Canada, Workplace Safety and Insurance Board, the applicable Occupational Health and Safety Act Regulations including the Government of Nunavut and local statutes.
- .2 In event of conflict between any provisions of above authorities the most stringent provision governs.
- .3 Provide barriers, guards and scaffolding to Government of Nunavut Industrial Safety Regulations.

1.2 Fire Safety Requirements

- .1 Comply with requirements of the latest revision of Building Construction Operations FCC No. 301-1982, issued by Fire Commissioner for Canada.
- .2 A copy of the GN Fire Prevention Act is available by contacting:

Fire Marshall
Dept. of Community Government and
Transportation, P.O. Box 800 Iqaluit, Nunavut
X0A 0H0 W. G. Brown building – 2nd Floor Phone:
(867) 975-5300.

1.3 Overloading

- .1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.4 Falsework

- .1 Design and construct falsework in accordance with the latest revision of CSA S269.1.

Safety Requirements

Section No. 01545

1.5 Scaffolding

- .1 Design and construct scaffolding in accordance with the latest revision of CSA S269.2.

1.6 Excavations

- .1 The Contractor/Sub-contractors shall be responsible for adequate fencing of all respective excavations overnight and on holidays and shall provide adequate lights and barricades as may be required in the opinion of the Engineer.

END OF SECTION

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Environmental Protection

Section No. 01560

PART 1 - GENERAL

1.1 Environmental Emergency Contingency Plan (EECP)

- .1 This Section shall be read in conjunction with the EECP document appended to the end of these specifications (Attachment 4).

1.2 Fires

- .1 Fires and burning of rubbish on site will not be permitted.
- .2 Where fires or burning permitted, prevent staining or smoke damage to structures, materials or vegetation which is to be preserved. Restore, clean and return to new condition stained or damaged work.
- .3 Provide supervision, attendance and fire protection measures as directed.
- .4 Obtain written permission from the Owner.

1.3 Drainage and Erosion Control

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
- .4 Prior to commencing excavation or site grading operations, erect siltation control fence to prevent disposal run off from carrying suspended materials from disturbed areas of stockpiles leaving the site. Acceptable product Terrafence with prepositional posts or approved equal.
- .5 Where applicable, removal of vegetation from sloped approaches to watercourses to be kept to a minimum. Excavate and stabilize temporary channel beds prior to any diversion of flow. Compact, stabilize and rip-rap banks and river beds that have been disturbed or

Environmental Protection

Section No. 01560

1.3 Drainage and Erosion Control – Cont'd

damaged during construction. Provide splash pads where water is discharged into watercourses. Removal of vegetation from slopes to be kept to a minimum.

1.4 Pollution Control

.1 Refuelling Areas

Review in detail proposed route of construction to plan access routes and fuelling areas. Establish suitable fuelling and maintenance areas and obtain approval from Engineer. Do not refuel or maintain equipment adjacent to or in watercourses. Do not fuel equipment within thirty (30) metres of any watercourse unless non-spill facilities are used.

.2 Cleaning Equipment

Do not clean equipment in streams or lakes. Clean construction equipment prior to entering roadways. Do not clean equipment in locations where debris can gain access to sewers or watercourses.

.3 Spills

Refer to the attached Environmental Emergency Contingency Plan appended at the end of this section. Be prepared at all times to intercept, clean up and dispose of any spillage that may occur whether on land or water. Keep all materials required for clean up of spillages readily accessible on site. Report immediately any spills causing damage to environment in accordance with appended Contingency Plan.

.4 Use of Herbicides and Pesticides

Coordinate use of herbicides and pesticides with land owners and occupants and Regional Pesticides Control Office of Ministry of Environment and Energy.

Environmental Protection

Section No. 01560

1.4 Pollution Control - Cont'd

.5 Sensitive Areas

Inform Engineer in writing of particular schedule of each river crossing, channelizing or other work in designated sensitive areas. Avoid encroachment on unique natural areas. Do not disturb habitats of rare or endangered species. Protect wetland sites used as feeding or breeding areas by migratory fowls or as habitats for other animals. Schedule construction in sensitive areas so that there will be minimal interference with water uses including fish migration or spawning, or disruption of incubating period of eggs. Keep removal of vegetation to a minimum. Contain and deposit on land all aquatic plants uprooted or cut prior to or during construction.

.6 Channel Diversions and Stream Crossings

Provide adequate stream flow whenever temporary dams or stream diversions are required to avoid interference with downstream water uses. Restrict number of locations where equipment is allowed to cross a watercourse. Install culverts for temporary stream crossings with minimum possible disturbance to channel. Do not restrict flows. Do not restrict or impede movement of migrating fish. Clean up stream channel upon completion of work. Clean up to include removal of any temporary structures, re-shaping of stream to an approved configuration, protection of stream banks and removal of all construction materials and debris.

.7 Disposal

- .1 Do not empty fuel, lubricants or pesticides into sewers or watercourses.
- .2 Dispose of all construction debris in an approved location.

1.5 Noise Control

- .1 Establish and maintain site procedures such that noise levels from construction areas are minimized.
- .2 Use vehicles and equipment equipped with efficient muffling devices.
- .3 Provide and use devices that will minimize noise level in construction area.

Environmental Protection

Section No. 01560

1.6 Dust Control

- .1 Prevent dust nuisance resulting from construction operations at all locations on site.
- .2 Use water, brine or calcium chloride to control dust. Minimize use of calcium and brine, particularly in close proximity to watercourses or agricultural lands. Transport dusty materials in covered haulage vehicles. Public roadways shall be kept clean and free of mud.
- .3 Payment for water Calcium Chloride or brine to be included with the applicable item for which dust control is required.

1.7 Hazardous Waste

- .1 All hazardous waste material generated as a result of construction activities (ie. Waste oil etc.) shall be transported out of the Municipality of Qikiqtarjuaq by the General Contractor. All costs associated with transportation and disposal shall be the responsibility of the General Contractor.

END OF SECTION

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Construction Camp

Section No. 01591

PART 1 - GENERAL

1.1 Requirements

- .1 The Contractor must use existing facilities at Qikiqtarjuaq for their construction camp.
- .2 Refer to Attachment 1 (appended at the end of these specifications) for a list of available accommodations etc.

1.2 Measurement for Payment

- .1 Include costs of supply, erection, maintenance and removal of construction camp in items to be paid for under the heading of Construction Camp listed in Schedule A of the Unit Price Table.

END OF SECTION

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Material and Equipment

Section No. 01600

1.1 Qualifications

- .1 The Contractor/Sub-contractors shall provide a qualified superintendent for the job who is experienced in this scale of construction. The superintendent must not be changed without notifying the General Contractor 48 hours in advance.

1.2 Protection

- .1 In the event of damage, each sub-trade will make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner. In particular, each Trade shall take the necessary precautions to minimize water penetration during construction.

1.3 Fastenings

- .1 Each trade, except where contract is for supply only, shall be responsible for all fastening required to complete work of that particular trade.
 - .1 Supply all fastenings, anchors and accessories and adhesives required for fabrication and erection of the work.
 - .2 Exposed metal fastenings and accessories shall be of same texture, colour and finish as base metal on which they occur.
 - .3 Metal flashings shall be for the same material as the metal which will not set up an electrolytic action which would cause damage to the fastening or metal component under moist conditions. In general, exterior anchors for windows, roofing sheet metal and anchors occurring on or in an exterior wall or slab wall be non-corrosive or hot dip galvanized steel.
 - .4 Anchoring and fastening devices or adhesive shall be of appropriate type and shall be used in sufficient quantity in such a manner as to provide positive permanent anchorage of the unit to be anchored in position. Install anchors at spacing to provide for required load carrying capacity.

Material and Equipment

Section No. 01600

1.3 Fastenings - Cont'd

- .5 Exposed fastenings will not be permitted without approval by the Engineer prior to use.
- .6 Supply adequate instructions and templates and, if necessary, supervise installation where fastenings or accessories are required to be built into work of other trades.
- .7 Fastenings which cause spalling or cracking of material to which anchorage is being made are not permitted.
- .8 Do not use power actuated fastening devices which are stressed in withdrawal on any part of this work without written approval from the Engineer. Take particular stringent safety precautions when using powder actuated fastenings. Only low velocity plunger-type devices are permitted.

1.4 Quality

- .1 Unless otherwise noted all materials and equipment installed on this project shall be new.

END OF SECTION

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Cleaning

Section No. 01710

1. General

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .2 Store volatile wastes in covered metal containers, and remove from premises daily.
- .3 Prevent accumulation of wastes which create hazardous conditions.
- .4 Provide adequate ventilation during use of volatile or noxious substances.

2. Materials

- .1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

3. Cleaning During Construction

- .1 Maintain project site free from accumulations of waste materials and rubbish.
- .2 Provide on-site containers for collection of waste materials and rubbish.
- .3 Remove waste materials and rubbish from site.
- .4 Vacuum clean interior building areas when ready to receive finish painting.
- .5 Schedule cleaning operations so that resulting dust and other contaminants will not fall on wet, newly painted surfaces.

Cleaning

Section No. 01710

4. Hazardous Materials

- .1 All hazardous materials generated as a result of construction activities (ie. Waste oil etc.) shall be transported out of the Municipality of Qikiqtarjuaq by the General Contractor. All costs associated with transportation and disposal shall be the responsibility of the General Contractor.

END OF SECTION

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Project Record Documents

Section No. 01720

1. Record Drawings

- .1 As work progresses, neatly record significant deviations from the contract drawings using fine, red marker on full size white prints.
- .2 Neatly print lettering and numbers in size to match original. Lines may be drawn free-hand, but shall be neat and accurate. Add at each drawing title block note: "AS BUILT RECORD". Also circle on List of Drawings each title and number of drawings marked with "as-built" records.
- .3 Record following significant deviations:
 - .1 Depths of various elements of foundation.
 - .2 Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvement and geodetic elevation.
 - .3 Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - .4 Field changes of dimensions.
 - .5 Other significant deviations which are concealed in construction and cannot be identified by visual inspection.
- .4 Turn one set of As-built Record Drawings over to Engineer within two weeks following substantial completion.
- .5 If project is completed without significant deviations from contract drawings, declare this in writing and submit to Engineer in lieu of As-Built Record Drawings.

END OF SECTION

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Commissioning and Warranty Period Inspection Requirements

Section No. 01725

1. General

- .1 This section outlines the requirements for commissioning of the new works, as well as warranty inspection requirements by equipment manufacturer's representatives.
- .2 Substantial Performance will not be granted until the commissioning process outlined below has been completed to the satisfaction of the Engineer.

2. Commissioning

- .1 Approximately two months prior to the anticipated date of commissioning the Engineer will provide the Contractor with a checklist outlining items of work that must be in final working order prior to the Engineer coming to site for equipment commissioning. The Contractor shall complete this list and submit it to the Engineer at least two weeks in advance of the date proposed for commissioning. The Engineer will not make arrangements for his attendance at on site commissioning until he is satisfied that all listed items are completed to his satisfaction.
- .2 The Engineer shall be notified at least fourteen days in advance of when commissioning is to take place. The Contractor shall ensure that **all** of his respective components are installed and operating as designed prior to scheduling the commissioning. Additional site visits required by the Engineer to commission the works as a result of the Contractor being unprepared shall be at the expense of the Contractor.
- .3 Provide the services of an authorized technician to certify that equipment is operating as intended. Technician shall instruct the Owner's operators in the operation and maintenance of the equipment provided.

Commissioning and Warranty Period Inspection Requirements

Section No. 01725

2. Commissioning - Cont'd

- .4 The equipment listed below is to be commissioned by an authorized manufacturer's representative. For the equipment listed, provide the services for the minimum duration shown. Note, each day is deemed to represent an 8-hour day (on-site).

Equipment	Commissioning No. of Days	Warranty Period No. of Days
Electrical Control Equipment	1	1
Flow Measurement Equipment	0.5	0.5
Pumps	1	1
Diesel Generator	1	1

- .5 Contractor shall provide a supply of water, pumps, etc. required to commission/test the systems and equipment.
- .6 All equipment shall be commissioned individually. The supplier's technician shall provide certification reports to the Engineer prior to substantial completion being given.
- .7 The General Contractor and applicable Subcontractors shall be on site during the equipment commissioning process.
- .8 Additional site visits required by the Engineer to successfully commission the works, as a result of the Contractor being unprepared, shall be at the expense of the Contractor.
- .9 During commissioning, the Engineer will advise the Contractor of any deficiencies or corrections to be made. The Contractor shall employ whatever means are necessary to correct these deficiencies as quickly as possible.

END OF SECTION

Operating and Maintenance Data

Section No. 01730

1. Maintenance Manual

- .1 This section outlines the requirements of operational and maintenance data to be provided for this project.
- .2 On completion of project, Contractor shall submit to Engineer 4 final copies of Operating and Maintenance Data in English made up as follows:
 - .1 Bind data in six vinyl hard covered, loose leaf binder (piano-hinged) for 215 x 280 mm size paper.
 - .2 Enclose title sheet, labelled "Operating and Maintenance Data Manual", project name, date and list of contents.
 - .3 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets.
 - .4 The Contractor shall provide two draft copies of the Operating and Maintenance Manual prior to the commencement of the start-up period described in Section 01725.
- .3 Include following information plus data specified.
 - .1 Maintenance instruction for finished surface and materials.
 - .2 Copy of hardware and paint schedules.
 - .3 Description, operation and maintenance instructions for equipment and systems, including complete list of equipment and parts list. Indicate nameplate information such as make, size, capacity, serial number.
 - .4 Names, addresses and phone numbers of sub-contractors and suppliers.
 - .5 Guarantees, warranties and bonds showing:
 - a) Name and address of projects.
 - b) Guarantee commencement date (date of Final Certificate of Completion).
 - c) Duration of guarantee.
 - d) Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
 - e) Signature and seal of appropriate Sub-contractor.
 - .6 Additional material used in project listed under various sections.

Operating and Maintenance Data

Section No. 01730

1. Maintenance Manual - Cont'd

- .3 Neatly type lists and notes. Use clear drawings, diagrams or manufacturer's literature.
- .4 Include one complete set of reviewed shop drawings (bound separately) indicating corrections and changes made during fabrication and installation.
- .5 Include a list of all manufacturer's recommended spare parts, lubricants and operation and maintenance equipment. List to be a combined list including information obtained for all equipment, neatly typed and organized by section with a detailed table of contents.

2. Maintenance Materials

- .1 Where supply of maintenance materials are specified, deliver to site as follows:
 - .1 Use unbroken cartons, or if not supplied in cartons, they shall be strongly packaged.
 - .2 Clearly mark as to content.
 - .3 If applicable give area where material used.
 - .4 Materials to be supplied for three months after preliminary acceptance.

END OF SECTION

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Geotextile

Section No. 02072

PART 1 - GENERAL

1.1 Description

- .1 This Section specifies the requirements for the non-woven geotextile at the water storage reservoir.
- .2 This Section shall be read in conjunction with Section 02075 - Containment Liner.

1.2 References

1.2.1 American Society for Testing and Materials (ASTM):

- .1 D123 – Standard Terminology Relating to Textiles
- .2 D276 – Test Method for Identification of Fibers in Textiles
- .3 D3786 – Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Non-woven Fabrics
- .4 D4354 – Practice for Sampling of Geosynthetics for Testing.
- .5 D4355 – Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
- .6 D4439 – Terminology for Geotextiles.
- .7 D4491 – Test Methods for Water Permeability of Geotextiles by Permittivity.
- .8 D4533 – Test Method for Index Trapezoid Tearing Strength of Geotextiles
- .9 D4595 – Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
- .10 D4632 – Test Method for Grab Breaking Load and Elongation of Geotextiles
- .11 D4751 – Test Method for Determining Apparent Opening Size of a Geotextile
- .12 D4759 – Practice for Determining the Specification Conformance of Geosynthetics
- .13 D4833 – Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products

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1.2 References – Cont'd

- .14 D4873 – Guide for Identification, Storage, and Handling of Geotextiles
- .15 D5141 – Test Method to Determine Filtering Efficiency and Flow Rate for Silt Fence Applications Using Site Specific Soils.
- .16 D5261 – Test Method for Measuring Mass per Unit Area of Geotextiles.

1.2.2 CAN/CGSB-4.2, Textile Test Methods.

1.2.3 CAN/CGSB 148.1, Methods of Testing Geotextiles and Geomembranes.

1.2.4 Geosynthetic Accreditation Institute (GAI) – Laboratory Accreditation Program (LAP).

1.2.5 National Transportation Product Evaluation Program (NTPEP).

1.3 Submittals

- .1 Submit the following:

Certification: The contractor shall provide to the Engineer, a certificate stating the name of the manufacturer, product name, style number, chemical composition of the filaments or yarns and other pertinent information to fully describe the geotextile.

1.4 Delivery, Storage, and Handling

- .1 Geotextiles labelling, shipment and storage shall follow ASTM D4873. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.
- .2 Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants.
- .3 During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases,

Geotextile

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1.4 Delivery, Storage, and Handling – Cont'd

flames including welding sparks, excess temperatures, and any other environmental conditions that may damage the physical property values of the geotextile.

PART 2 – PRODUCTS

2.1 Material

- .1 Geotextile: non-woven needle punched geotextile made from polypropylene staple fibre meeting the requirements listed in the following table:

TESTED PROPERTY	TEST METHOD	FREQUENCY	REQUIREMENT ¹
AASHTO M288 Class			>>>1
Mass per Unit Area, oz/yd ² (g/m ²)	ASTM D 5261	90,000 ft ²	16 (540)
Thickness	ASTM D 5199	1/90,000 ft ²	155 mil
Grab Tensile Strength, lb (N)	ASTM D 4632	90,000 ft ²	390 (1,735)
Grab Elongation, %	ASTM D 4632	90,000 ft ²	50
Puncture Strength, lb (N)	ASTM D 4833	90,000 ft ²	240 (1,055)
Trapezoidal Tear Strength, lb (N)	ASTM D 4533	90,000 ft ²	150 (665)
Apparent Opening Size, Sieve No. (mm)	ASTM D 4751	540,000 ft ²	100 (0.150)
Permittivity, sec ⁻¹	ASTM D 4491	540,000 ft ²	0.70
Permeability, cm/sec	ASTM D 4491	540,000 ft ²	0.27
Water Flow Rate, gpm/ft ² (l/min/m ²)	ASTM D 4491	540,000 ft ²	50 (2,035)
UV Resistance (% retained after 500 hours)	ASTM D 4355		70

¹ Requirements based on following roll values:

length: 91 metres
width: 4.6 metres
area: 418 square metres

- .2 Acceptable Product: GSE NW 16 or approved equal.

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PART 3 - EXECUTION

3.1 Quality Assurance

- .1 The engineer shall examine the geotextile rolls upon delivery to the site and report any deviations from project specifications to the contractor.
- .2 The engineer may decide to arrange conformance testing of the rolls delivered to the job site. For this purpose, the engineer shall take a sample three feet (along roll length) by roll width according to ASTM Practice D4354. The sample shall be properly marked, wrapped and sent to an independent laboratory for conformance testing.
- .3 The pass or fail of the conformance test results shall be determined according to ASTM Practice D 4759.

3.2 Installation

- .1 Installation of geotextile and HDPE Liner shall be completed by the same installer.
- .2 The geotextile shall be handled in such a manner as to ensure that it is not damaged in any way. Should the contractor damage the geotextile to the extent that it is no longer usable as determined by these specifications or by the engineer, the contractor shall replace the geotextile at his own cost.
- .3 The geotextile shall be installed to the lines and grades as shown on the contract drawings and as described herein.
- .4 The geotextile shall be rolled down the slope in such a manner as to continuously keep the geotextile in tension by self weight. The geotextile shall be securely anchored in an anchor trench where applicable, or by other approved or specified methods.
- .5 In the presence of wind, all geotextiles shall be weighted by sandbags or approved equivalent. Such anchors shall be installed during placement and shall remain in place until replaced with cover material.
- .6 The contractor shall take necessary precautions to prevent damage to adjacent or underlying materials during placement of the geotextile. Should damage to such material occur due to the fault of the

Geotextile

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contractor, the latter shall repair the damaged materials at his own cost and to the satisfaction of the engineer.

3.2 Installation – Cont'd

- .7 During placement of the geotextile, care shall be taken not to entrap soil, stones or excessive moisture that could hamper subsequent seaming of the geotextile as judged by the engineer.
- .8 The geotextile shall not be exposed to precipitation prior to being installed and shall not be exposed to direct sunlight for more than 15 days after installation.
- .9 The geotextile shall be seamed using heat seaming or stitching methods as recommended by the manufacturer and approved by the engineer. Sewn seams shall be made using polymeric thread with chemical resistance equal to or exceeding that of the geotextile. All sewn seams shall be continuous. Seams shall be oriented down slopes perpendicular to grading contours unless otherwise specified. For heat seaming, fusion welding techniques recommended by the manufacturer shall be used.
- .10 The contractor shall not use heavy equipment to traffic above the geotextile without approved protection.
- .11 The geotextile shall be covered as soon as possible after installation and approval. Installed geotextile shall not be left exposed for more than 15 days.
- .12 Material overlying the geotextile shall be carefully placed to avoid wrinkling or damage to the geotextile.

END OF SECTION

HDPE Liner

Section No. 02075

PART 1 - GENERAL

1.1 Description

- .1 This section specifies the requirements for the high density polyethylene (HDPE) lining systems at the water storage reservoir and the hazardous waste storage area at the landfill site.
- .2 This section shall be read in conjunction with section 02072 Geotextile.

1.2 References

- .1 American Society for Testing and Materials (ASTM)

ASTM D638	Test Method for Tensile Properties of Plastics
ASTM D751	Method of Testing Coated Fabrics
ASTM D1004	Test Method for Initial Tear Resistance of Plastic Film and Sheeting
ASTM D1204	Test Method for Linear Dimensional Changes of Non-rigid Thermoplastic Sheeting or Film at Elevated Temperature
ASTM D1238	Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
ASTM D1505	Test Method for Density of Plastics by the Density Gradient Technique
ASTM D1603	Test Method for Carbon Black in Olefin Plastics
ASTM D1693	Test Method for Environmental Stress-Cracking of Ethylene Plastics
ASTM D3015	Practice for Microscopical Examination of Pigment Dispersion In Plastic Compounds
ASTM D4437	Practice for Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Membranes
ASTM D4833	Test Method for Index Puncture-Resistance of Geotextiles, Geomembranes, and Related Products.

1.3 Qualifications

- .1 Installer shall have a minimum of 5 years experience in the installation of HDPE geomembranes, and shall provide quality control services during subgrade preparation, liner layout, seaming and testing.

HDPE Liner

Section No. 02075

1.3 Qualifications – Cont'd

- .2 Installer shall be an approved installer by the geomembrane manufacturer.
- .3 An authorized Quality Control Supervisor must be on site to certify installation in accordance with manufacturers requirements.

1.4 Submittals

.1 Resin Manufacturer's Certificates

- .1 Written certification that the product delivered was extruded from the specified resin including the following information:

- .1 The origin of the resin: Resin Supplier's name, resin production plant, brand name, number and production date of the resin;
- .2 A copy of the quality control certificate issued by the Resin Supplier; and

.2 Geomembrane Manufacturer's Certificates

- .1 Geomembrane manufacturer's certificates for each shift's production of geomembrane. Quality control certificates shall be signed by responsible parties employed by the Manufacturer. No geomembrane will be permitted to be delivered until the Engineer has in his possession the following information:

- .1 Roll numbers and identification;
- .2 Sampling procedures and results to quality control tests; and
- .3 Extrusion pellets or rod shall be certified by the Manufacturer that it is made of the same resin as the parent geomembrane supplied.

.3 Installation and erection data and schedule.

.4 Manufacturer's standard warranty.

HDPE Liner

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1.4 Submittals – Cont'd

.5 Shop Drawings showing the following:

- .1 Proposed Panel Layout. The Installer shall produce drawings showing proposed placement of panels and seams prior to installation, and their proposed numbered sequence, as well as areas for adding material for proposed thermal compensation. Included shall be drawings and detailed descriptions of all methods of welding and patching the membrane, anchoring details, sealing at all penetrations and structures shown on the approved plans.
- .2 Record Drawings. The Installer shall provide final “as recorded” layout drawings to scale to reflect any changes from the proposed panel layout and details. As-built drawings shall include the numbered identification and location of all seams, panels, and patches.

1.5 Delivery, Storage and Handling

- .1 Liner shall be labeled, shipped and stored in accordance with ASTM D4873. Product labels shall clearly indicate the manufacturer or supplier name, product name and roll number.
- .2 Liner shall be wrapped in material to protect the liner from damage due to shipment, water, sunlight and contaminants.
- .3 During storage, liner rolls shall be elevated above ground and adequately covered to protect from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals containing strong acids or strong bases, flames and any other environmental conditions that may damage the physical property values of the lining material.

1.6 Payment

- .1 Payment shall be based on a lump sum price basis for the complete installation and testing of the liner as approved by the engineer.

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PART 2 – PRODUCTS

2.1 Material

- .1 Lining material shall be a smooth high density polyethylene geomembrane meeting the following requirements:

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM VALUE
Thickness, (minimum average mil (mm))	ASTM D5199	Every roll	80 (2.00)
Lowest individual reading (-10%)			72 (1.80)
Density, g/cm ³	ASTM D1505	200,000 lb	0.94
Tensile Properties (each direction)	ASTM D6693, Type IV	20,000 lb	
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 ipm		304 (53)
Strength at Yield, lb/in-width (N/mm)			168 (29)
Elongation at Break, %	G.L. 2.0 in (51 mm)		700
Elongation at Yield, %	G.L. 1.3 in (33 mm)		12
Tear Resistance, lb (N)	ASTM D1004	45,000 lb	56 (249)
Puncture Resistance, lb (N)	ASTM D4833	45,000 lb	144 (640)
Carbon Black Content, %	ASTM D1603	20,000 lb	2.0
Carbon Black Dispersion	ASTM D5596	45,000 lb	+Note 1
Notched Constant Tensile Load, hr	ASTM D5397, Appendix	200,000	300
REFERENCE PROPERTY	TEST METHOD	FREQUENCY	NOMINAL VALUE
Oxidative Induction Time, min	ASTM D3895, 200°C; O ₂ , 1 atm	200,000 lb	>100
Roll Length ⁽¹⁾ (approximate),ft (m)			430 (131)
Roll Width ⁽¹⁾ , ft (m)			22.5 (6.9)
Roll Area, ft ² (m ²)			9,675 (899)

Notes:

+Note 1: Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.

HDPE Liner

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2.1 Materials – Cont'd

- .2 Lining material at water storage reservoir must be suitable for installation in potable water applications and shall be certified in accordance with NSF 61.
- .3 Acceptable Product: GSE HDE 080 or approved equal.
- .4 Note – Liner at Hazardous Waste site shall be Arctic Grade as listed on Drawings.

PART 3 – EXECUTION

3.1 Seaming Methods – Equipment

- .1 Approved processes for seaming include double wedge fusion welding for general seaming and extrusion welding for patching. Proposed alternatives must be submitted to the Engineer for approval.
- .2 Fusion Welding. The seam shall be produced by self propelled wedge welding apparatus. The apparatus shall be equipped with gauges to monitor weld temperature. Weld temperature and machine speed shall be varied according to ambient conditions in order to maintain and demonstrate a consistent acceptable weld. All welding surfaces shall be kept clean and dry.
- .3 Extrusion Welding. The seam shall be produced by extruding molten resin at the edge of two overlapped sheets of geomembrane to affect a homogeneous bond. The extrusion apparatus shall be equipped with gauges to monitor extrudate temperature. Temperature and flow rate shall be varied according to ambient conditions to maintain and demonstrate a consistent acceptable weld. The extruder shall be purged of all heat degraded or cooled extrudate prior to the commencement of each seaming sequence.
- .4 The Installer shall maintain at least one spare operable seaming unit of each type onsite at all times.

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3.2 Panel Deployment

- .1 Compensation for thermal contraction of the geomembrane shall be provided as necessary during the liner installation as determined by the quality control supervisor/inspector.
- .2 For safety reasons, no panel deployment can take place in the presence of high winds or wind gusts. (In excess of 20 mph).

3.3 Seaming

- .1 Where conditions warrant, the Installer shall be allowed to use a temporary support surface between the geomembrane and the underlying geotextile to achieve proper support during the seaming operation.
- .2 Seaming shall be a continuous process with a minimum of interruptions along any given seam.
- .3 Prior to seaming, the geomembrane shall be overlapped a minimum of 75 millimeters for extrusion welding and 100 to 150 millimeters for fusion welding.
- .4 Any geomembrane area showing injury due to excessive scuffing, puncture, or distress from any cause shall, at the discretion of the installer's onsite supervisor, be repaired or replaced with an additional piece of geomembrane.
- .5 Fusion Welding. The membrane shall have an overlap of approximately 150mm. The area shall be prepared by wiping the area with a clean dry cloth to remove any foreign matter. The welder shall be inserted at one end of the seam, then the pressure rollers are to be clamped down and the wedge engaged and drive motor turned on. If the welder is interrupted during the seaming process, the area affected shall be marked and repaired.
- .6 Extrusion Welding. The weld area shall be prepared by sanding or grinding to a depth of less than .02 mm in the sheet surface area to be seamed. Grinding required along a seam shall be done concurrent with or within twenty minutes of the seaming operation and shall not

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3.3 Seaming – Cont'd

damage the geomembrane. Membrane shall be overlapped a minimum of 75 millimeters prior to seaming. The weld area shall be kept clean and dry during this process.

Installer shall determine when preheating of the area to be seamed is required.

Artificially induced cooling of extrusion welds, by water or any other means, shall not be allowed. Care shall be taken during vacuum testing that extrusion welds being vacuum tested are at ambient temperatures.

- .7 Cross-seams. The top and bottom excess overlap shall be removed and the top and bottom edge of the cross seam shall be ground to a smooth transition prior to seaming. If the cross seam is welded by means of fusion apparatus, the cross seams shall still be cut back to the edge of the fusion weld and have a bead of extrusion applied 100 millimeters in all directions from the confluence of the two seams to form a "T".

- .8 Seams shall run parallel to the slope.

3.4 Cold Weather Seaming

- .1 Welding can be completed in colder temperatures provided some additional guidelines are followed and the trial welds be performed in the same environment as the main production seams. The trial welds are very important, as they will verify that the welding equipment has been properly set to meet the site conditions. Below are some of additional guidelines to follow for the various temperature ranges. The onsite superintendent shall also have the experience to determine whether or not satisfactory seams can be achieved given the weather and site conditions and what steps need to be taken in order to obtain a satisfactory seam.

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3.4 Cold Weather Seaming – Cont'd

- .2 Temperatures between 0°C and -10°C: The welding procedure is the same as warm weather procedures other than making slight adjustments to the welding units temperature and/or speed. When the weather is clear and sunny and the wind is minimal, only very slight adjustments are required, but when it is cloudy, windy and cooler considerable adjustments may be required.
- .3 Temperatures between -10°C and -20°C: Additional care must be taken to ensure that the welding units are operating properly in the cold and that the welding temperatures and speeds are adjusted to accommodate the colder temperatures. During the seaming operation, the technician will monitor the welding unit to ensure that the set welding speeds and temperatures are maintained throughout the length of the seam. Depending on the weather conditions (cloudy, windy, frosty, etc.) the seam area may require preheating, with space heaters or hot air guns, to ensure a satisfactory weld is obtained.
- .4 Temperatures below -20°C: When welding in temperatures below minus 20°C it is recommended that the welds be completed with the use of portable shelters and space heaters to help preheat the liner material. This will also provide a comfortable environment for the welding technician. Welding without shelters or space heaters can be completed on small projects and repairs, provided the trial welds are shown to be satisfactory.
- .5 No welding can take place with it is raining, sleeting, snowing or moisture of any type is present. Extra care must be taken when working on a wet, icy or snowy liner, as the liner becomes very slippery under these conditions. Removal of snow & ice can be completed using rubber tired snow blowers and plastic shovels.

PART 4 – QUALITY CONTROL

4.1 Quality Control During Installation

- .1 Site Test Equipment
The Installer shall maintain onsite, in good working order, the following items:

HDPE Liner

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4.1 Quality Control During Installation – Cont'd

- .1 Field Tensiometer – The tensiometer shall be a load certified motor driven unit and have jaws capable of traveling at a measured rate of 50 millimeters/min. The tensiometer shall be equipped with a gauge which measures units of force exerted between the jaws. Certification of the unit shall have been performed within twelve months of the installation date.
- .2 Vacuum Box – The vacuum box shall consist of a rigid housing with a transparent viewing window on top and a soft, closed-cell neoprene gasket attached to the bottom of the housing. The housing shall be equipped with a bleed valve and a vacuum gauge capable of reading in tenths of a bar. A separate vacuum source shall be connected to the vacuum box such that a negative pressure can be created and maintained inside the box. A sudsy solution consisting of soap and water shall be dispensed on the seam immediately ahead of the vacuum box.
- .3 Air Pressure Test Equipment – This method shall apply only when the split hot wedge seaming method is used. Equipment shall consist of an air pump capable of generating and maintaining a positive pressure of between 1.5 to 2.0 bars. A manometer capable of reading up to 2.0 bar attached to a needle or nipple shall be used to pressurize the air channel in the seam.

.2 Non-Destructive Testing

- .1 Test Seams (Start-up) – Test seams shall be made to verify that adequate conditions exist for field seaming to proceed. Each seaming apparatus shall produce a test seam at the beginning of each shift. In addition, if a seaming operation has been suspended for more than four hours or if a breakdown of the seaming equipment occurs, a test seam shall be produced prior to resumption of seaming operation.

Test seams shall be made in the field on pieces of the approved geomembrane. Each test seam shall be at least 1.5 m long by 300 millimeters wide for extrusion and 3 m long by 300 millimeters wide for fusion, with sufficient overlap for peel testing in the field tensiometer.

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4.1 Quality Control During Installation – Cont'd

Two samples 25 millimeters wide shall be taken from each end of the test seam using an approved template. The samples shall be tested in the field tensiometer, one from each end in peel and shear respectively. Samples tested in peel shall not fail in the seam. All test samples shall exhibit film tear bond and strength as defined under seam properties shown on page 11, table 1 and table 2.

If the seam fails, the seaming apparatus shall not be used for field seaming until any deficiencies have been corrected. This shall be verified by the production and successful testing of another test seam.

.2 Vacuum Testing – All extrusion welded seams and “T” Seams shall be evaluated using vacuum box testing.

A sudsy soap solution shall be applied to the test section and the vacuum box placed over the section. The bleed valve is the closed and the vacuum valve opened. The vacuum box shall maintain at least 0.2 bar vacuum during the test. Once a tight seal has been established, the test section shall be visually examined for a period of not less than 10 seconds to determine whether bubbling of the soapy solution at the seam is occurring. The vacuum box is then moved and the process is repeated on the next adjacent section. A minimum of 25 millimeters overlap shall be provided between all test sections.

All locations where bubbling of the sudsy solution is observed shall be clearly marked for repairs with a high visibility marker and recorded by number on field test reports. Any failed portion of seam shall be repaired and retested.

.3 Air Pressure testing – Double wedge welded seams shall be sealed off at both ends. If the end of a seam will be an integral part of the geomembrane, the sealing shall be done in such a way that it does not harm the function of the geomembrane. The pressure feed device shall be inserted into the air channel at one end of the seam and pressurized to a minimum 2.0 bars. The feed valve shall be closed and the pressure sustained for a period of not less than 60 seconds. The pressure shall then be

HDPE Liner

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4.1 Quality Control During Installation – Cont'd

released by slitting the air channel at the opposite end of the seam. The Inspector shall observe the drop in pressure on the manometer to verify the continuity of the air channel.

If a pressure loss of greater than 0.2 bar is observed or if the required pressure cannot be reached, then the seam shall be rejected, and shall be either reconstructed in its entirety or the leak located and patched. The entire seam shall then be retested according to the procedure outlined above.

- .4 All seams shall be non-destructively tested by the Installer over their full length to verify the integrity of the seam. Non-destructive testing shall be performed concurrently with field seaming. All non-destructive testing shall be observed and documented by the Inspector.
- .5 Approved non-destructive testing procedure is as above. Alternate procedures shall be submitted for approval to the Owner or his Representative prior to the commencement of non-destructive testing.

.3 Destructive Testing

- .1 Destructive testing of field seam shall be performed at selected locations in order to verify seaming properties. All sampling and testing shall be done concurrently with field seaming so that verification of field seam properties is made as the work progresses and corrective action implemented, if necessary.
- .2 Test samples shall be taken at an average frequency of one test location per 150 meters of seam. Sample locations shall be determined by the Inspector taking into consideration the difficulty of subsequent repair and testing. The Installer shall not be informed in advance of the locations where the seam samples will be taken.
- .3 Samples shall be cut by the Installer under the direction of the Quality Control Supervisor. Each sample shall be indelibly numbered and identified. The sample number and location shall be recorded by the Inspector.

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4.1 Quality Control During Installation – Cont'd

- .4 The Engineer or Supervisor may decrease or increase the amount of destructive testing based on the results of previous testing. Additional samples may also be required when the Engineer or Inspector have reason to suspect the presence of excess crystallinity, contamination, faulty seam quality.
- .5 The test sample shall measure approximately 300 millimeters wide by 1.0 meter long with seam entered lengthwise along the sample. Ten 2.5 cm wide sample strips shall be tested in the presence of the Engineer in the inspector tensiometer, 5 in peel and 5 in shear and shall meet the criteria listed below. The remainder of the sample and all test strips shall remain the property of the Owner.

Table 1 – Seam Peel Acceptance Chart

	<u>40</u>	<u>60</u>	<u>80</u>
Less than 25% weld separation	yes	yes	yes
Peel Strength, % of material minimum yield strength	60	60	60

Table 2 – Seam Shear Strength Acceptance Chart

	<u>40</u>	<u>60</u>	<u>80</u>
Average Strength for 5 Specimens, % of material minimum yield strength	90	90	90
Individual specimen strength, % of material minimum yield strength	75	75	75
Elongation at break, %	>200	>200	>200

The Owner, at his option, may send the remaining sample to a lab of his choice for further destructive testing and approval. In any event, the samples shall not be considered to pass the test until the Engineer and Inspector are satisfied that they meet the seam pass/fail criteria of film tear bond and minimum seam properties.

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4.1 Quality Control During Installation – Cont'd

- .6 The area from which the destructive test sample was taken shall be repaired without delay and shall be non-destructively tested by vacuum box as described in Section 4.1.2.2.

.4 Inspection and Acceptance

- .1 As the work progresses, the Inspector shall document all locations requiring repair work and shall verify and document that all repairs have been successfully made by the Installer. No work on the liner shall be allowed if the inspector is not present. This is to include start-up tests, general seaming and patching, and any work at penetrations or structures.
- .2 Seams are only considered to be accepted after they have passed the specified non-destructive and destructive tests, and the equipment used to produce the seams have passed the required start-up tests. If a seam fails the above criteria, the Installer must reconstruct the seam.
- .3 The entire geomembrane surface shall be examined by the Inspector to confirm that it is free of any defects, holes, blisters, non dispersed raw materials, or contamination by foreign matter. The geomembrane surface shall be cleaned by the Installer, if required, so that it is free of dust, mud, debris, or any other material which may inhibit a thorough examination of the surface. Any suspect areas shall be clearly marked by the Inspector and non-destructively tested according to the appropriate specified testing procedure.

HDPE Liner

Section No. 02075

PART 5 – COMPLETION OF WORK

5.1 Requirements

- .1 The installation of the geomembrane shall be considered totally complete when all required deployment, seaming, repairs, testing and site clean-up, including sand bags have been completed by the Installer; the Installer has submitted all the required certifications to the Owner; and the Owner and/or his Representative is satisfied that the geomembrane has been installed in accordance with the above Specifications, including Section 4.1.4.

5.2 Installation Warranty

- .1 The Installer shall guarantee the HDPE membrane against defects in installation and workmanship for the period of one year commencing with the date of final acceptance of the liner system.

5.3 Material Warranty

- .1 The HDPE membrane manufacturer shall warrant the membrane against manufacturing defects for a period of 10 years from the date of installation. The manufacturer shall furnish the Owner with a written pro-rated warranty covering the requirements of this paragraph.

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END OF SECTION

Site Grading

Section No. 02210

PART 1 - GENERAL

1.1 General Requirements

- .1 In general site grading including clearing and grubbing and topsoil stripping and stockpiling shall be completed in accordance with all relevant OPS Specifications and as supplemented by this section.
- .2 Conform to Sections of Division 1 as applicable.

1.2 Site Conditions

- .1 Where applicable, the Contractor shall be responsible for obtaining a stakeout of buried utilities from the company involved.

1.3 Protection

- .1 Prevent damage to landscaping, existing pavement, surface or underground utility lines which are to remain. Make good any damage.
- .2 The provisions of the Provincial "Guidelines on Erosion and Sediment Control for Urban Construction Sites" shall apply to this Contract. Necessary measures shall include, but not be limited to, the supply and installation of silt fence in disturbed areas made vulnerable to sediment transport.

PART 2 - PRODUCTS

2.1 Materials

- .1 Fill material: Type 1 in accordance with Section 02220.
- .2 Obtain approval from Consultant of excavated or graded material used as fill for grading work. Protect approved material from contamination.

Site Grading

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PART 3 - EXECUTION

3.1 Clearing and Grubbing

- .1 The cutting and removal of all trees that need to be cleared for all work under this Contract is the responsibility of the Contractor. The Contractor shall also be responsible for grubbing of tree stumps, bushes, debris, obstructions, etc.

3.2 Removal of Topsoil

- .1 Strip topsoil when dry enough to prevent contamination of subgrade material. Surplus topsoil is to be disposed of in an onsite location and in a manner acceptable to the Engineer.
- .2 Stockpile topsoil on site where directed in a neat and orderly manner acceptable to the Engineer.

3.3 Grading

- .1 Rough grade to levels, profiles and contours allowing for surface treatment as indicated.
- .2 Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Moisture content of fill and existing surface to be approximately the same to facilitate bonding.
- .3 Compact filled and disturbed areas to Standard Proctor density to the latest revision of ASTM D698-78.
- .4 The Contractor shall be required to trim or build slopes at site boundaries to a grade not steeper than 3H:1V, unless specified otherwise on Contract Drawings.

3.4 Testing

- .1 Inspection and testing of soil compaction will be carried out by designated testing laboratory.
- .2 Costs of test will be paid by the Contractor and recovered under The Soil Testing Allowance listed in Schedule A of The Schedule of Unit Prices. Refer to Section 01070 Cash Allowances for further information.

Site Grading

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3.5 Surplus

- .1 Surplus or unsuitable fill is to be disposed of by the Contractor at a location approved of by the Owner.

END OF SECTION

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General Excavation, Dewatering & Backfilling

Section No. 02220

1. General

- .1 General excavation, dewatering and backfilling shall be completed in accordance with the following (or latest revision thereof) and as supplemented by this Section.
 - ASTM C 117-95, Test Method for Material Finer Than: 0.075 mm Sieve in Mineral Aggregates by Washing.
 - ASTM C 136-96a, Method for Sieve Analysis of Fine and Coarse Aggregates.
 - ASTM D 698-91 (1998), Test Methods for Moisture Density Relations of Soils and Soil Aggregate Mixtures using 2.49 kg Rammer and 304.8 mm Drop.
 - ASTM D 1557-91, Test Methods for Moisture Density Relations of Soils and Soil-Aggregate Mixtures Using 4.54 kg Rammer and 457 mm Drop.
 - CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .2 Conform to Sections of Division 1 as applicable.
- .3 Trenches and other excavations under this Contract shall conform to the requirements of (or the latest revision thereof) the Occupational Health and Safety Act and Regulations for Construction Projects, Regulations 213/91 and 714/82.
- .4 **The Contractor shall note that large boulders, rock and frozen material will be encountered during excavation activities. There shall be no additional cost to the contract as a result of the additional efforts required to excavate, haul and backfill these materials. The Contractor must include all costs associated with the work in the Total Tender Price.**
- .5 Specifications for aggregates and soils and the compaction of aggregates and soils refer to ASTM Sieve Analyses and ASTM Tests.
- .6 Other materials are specified with reference to CGSB Standards, CSA Standards, ASTM Standards and ASCII Standards.

2. Methods of Excavation

- .1 Excavation shall be carried out by methods approved by the Engineer.

General Excavation, Dewatering & Backfilling

Section No. 02220

3. Topsoil

- .1 Where applicable, topsoil shall be stripped from areas where excavation or filling is to be done. Care shall be taken in removing topsoil to avoid mixing it with the underlying clay, gravel, or other material.
- .2 Topsoil approved by the Engineer for re-use shall be stockpiled on the site of the work, as directed by the Engineer. Unsuitable surface material or topsoil shall be disposed of as provided herein.

4. Slides & Cave-Ins

- .1 Slides and cave-ins shall be rectified at the cost of the Contractor; he shall refill all such with suitable materials.

5. Boulders

- .1 The Contractor can expect to encounter boulders and cobbles of varying size during excavation operations. The costs associated with the removal and disposal of boulders shall be included in the price bid for applicable excavation.
- .2 Boulders shall be disposed of off-site at a location chosen by the Contractor and approved by the Engineer.

6. Surplus Excavation

- .1 The Owner has first right of refusal on surplus excavated material, after which it will be the property of the Contractor. The Contractor shall dispose of the material off-site in an area(s) approved by the Owner.

7. Open Excavation Protection

- .1 Whenever it is necessary to have excavation left open for any period while the construction crew is not working in the immediate area, or a watchman is not posted, the excavation shall be pumped out immediately after every storm, inspected twice daily for accumulation of water, and adequately barricaded with snow fences or equal, completely around the excavation, equipped with sufficient warning lights, as required by the Engineer. Costs for the above shall be the Contractors responsibility.

General Excavation, Dewatering & Backfilling

Section No. 02220

8. Excavation Open For A Prolonged Time

- .1 If the work is stopped in the whole or any part of an excavation and the same is left open for what is, in the opinion of the Engineer, an unreasonable length of time, because of non-delivery of material, tests or for any other reasons, the Contractor shall, when so directed by the Engineer, refill such excavation or part thereof until he is ready to proceed with construction.

If the Contractor refuses, neglects or fails to completely refill such excavation within 48 hours after the receipt of a notice in writing to do so, the Engineer shall be entitled to refill the excavation and all the cost and expense thereof shall be charged to the Contractor, and the Owner may retain the amount of such cost and expense out of any monies due or to become due the Contractor. Any re-excavation costs made necessary by the above will be borne by the Contractor.

9. Tunneling

- .1 Tunneling not shown on the Drawings will not be allowed without the approval of the Engineer. The method of tunneling and the location of all shaft, portals, and mechanical plant used in the tunneling operations shall also be subject to the approval of the Engineer.

10. Support of Excavations

- .1 Material for sheet piling, sheeting and bracing shall be furnished and driven or set in place by the Contractor where necessary or wherever ordered by the Engineer.
- .2 The Contractor shall sheet and brace an excavation in Accordance to the Occupational Health and Safety Act and Regulations for Construction Projects, Regulation 213/91 and 714/82 where necessary in order to prevent injury to workmen, damage to gas pipes, water pipes, sewers, service pipes, or other structures and to prevent movement which could in any way disturb or weaken the supporting material below or beside the works.

General Excavation, Dewatering & Backfilling

Section No. 02220

11. Qualified Personnel

- .1 Lumber in foundations and sheeting and shoring on the work shall be driven or placed and moved by personnel especially skilled in such work.

12. Shoring Methods

- .1 Shoring shall be installed in such a manner as to prevent movement of the soil adjacent to the excavation and adjacent property.
- .2 Sheeting, shoring and bracing shall be withdrawn and removed as the excavation is backfilled except where and to such extent as removal will injure or cause settlement of the works and adjacent structures, pavement or property.
- .3 Where it may be withdrawn from an excavation, all shoring and sheeting shall be so arranged that it may be withdrawn as the excavation is backfilled, without injury to or settlement of the works and adjacent structures, pavements and property.
- .4 Sheeting against which concrete is placed shall not be removed. Such sheeting will not be paid extra. Sheeting may be cut off above concrete.
- .5 When sheeting is left in place, all cavities behind such sheeting shall be solidly filled as directed.

13. Sheeting Materials

- .1 All planks used for sheeting or sheet piling, all timber used for braces, shore and stringers or walings shall be sound, straight and of dimensions satisfactory to the Engineer throughout. Planks shall be tongued and grooved if so required by the Engineer. Where, in the opinion of the Engineer, infiltration into the excavation or other conditions warrant, special sheeting and shoring or steel sheeting and other materials shall be used.

General Excavation, Dewatering & Backfilling

Section No. 02220

14. Foundation Timber

- .1 Cedar, Georgia Pine, Hemlock, or other approved timber shall be furnished, and laid in foundations where required; all timber shall be sound, straight, free from cracks or shakes or large or loose knots and squared to the dimensions required throughout its entire length.
- .2 When, in the opinion of the Engineer, it is necessary to lay a timber platform for foundations, the planks used shall be of a kind and quality above described and cut and laid in the manner designated. They shall be firmly spiked, nailed or bolted to the sills in the manner and to the extent required by the Engineer.

15. Backfilling Rock, Boulders and Frozen Material Excavation

- .1 Backfilling for rock, boulders and/or frozen material excavation may be carried out under the following conditions:
 - a) Backfilling with Rock, Boulders and/or Frozen Material
Material no greater than 500 mm diameter in any direction may be placed in the trench for backfill. When this is used as trench backfill, it shall be combined with suitable approved fill material. In general, after each 1.2 m lift of this material is placed, fill material shall be placed over top of the material and compacted prior to the next lift of this material being placed. The Contractor must place 600 mm of compacted granular material over the pipe before backfilling with this material.
 - b) Backfilling with Suitable Imported Select Fill
The Contractor shall backfill the complete trench with suitable imported select fill if excavated rock is greater than 500 mm diameter in any direction. Prior to backfilling with suitable select fill, the Contractor must place 300 mm of granular material over the pipe as shown on the contract drawings.

16. Dewatering

- .1 The Contractor shall remove such water as may be necessary to properly do the work and shall receive no extra payment for this measure.

General Excavation, Dewatering & Backfilling

Section No. 02220

16. Dewatering – Cont'd

- .2 The Contractor shall keep any excavation and ground adjacent to excavation if necessary, free from water during construction progress. He shall build dams and do other work necessary for this purpose and provide and keep in operation necessary pumps of sufficient capacity to keep the bottom of the excavation dry and free from water at all times. He shall provide for the disposal of the water removed from the excavation in such a manner to ensure that it shall not be injurious to health, property, any portion of the work completed or under construction either by him or by any other contractor. Water removed from the excavation shall be discharged to the surface of the streets to ensure that it shall not be a nuisance to the public traversing the street.

17. Backfilling General

- .1 Backfilling comprises providing acceptable excavated materials approved by the Engineer, or fill materials procured from approved sources, transporting them to the required location, placing, spreading, compacting and grading them to the levels and profiles shown on the drawings or designated by the Engineer. The Contractor shall dry out all materials of suitable gradation before backfilling to obtain specified Proctor Density.

18. Cut to Fill Balance

- .1 The Contractor shall perform his own calculations to determine the cut to fill deficit/excess. If a deficit exists, he shall import suitable backfill material necessary to balance the earthwork. If an excess exists, the surplus material shall be removed from the site to a suitable location approved by the Engineer. The costs of importing/removing material necessary to balance the cut to fill quantity is it be included in the applicable item listed in the Schedule of Unit Prices.
- .2 The Contractor shall note that payment for all earthworks on this project shall be paid on a lump sum basis. Contractor shall be responsible for the complete cost of all cost to fill activities including granular berm construction.

General Excavation, Dewatering & Backfilling

Section No. 02220

19. Fill Materials

.1 Type 1 and Type 2 fill:

- Crushed, pit run or screened stone, gravel or sand consisting of hard durable particles free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
- Gradations to be within limits specified when tested to ASTM C 136-96a and ASTM C 117-95. Sieve sizes to CAN/CGSB-8.1-88.

<u>Sieve Designation</u>	<u>Type 1</u>	<u>% Passing</u>	<u>Type 2</u>
75 mm			100
50 mm			
37.5 mm			
25 mm	100		
19 mm	75-100		
12.5 mm			
9.5 mm	50-100		
4.75 mm	30-70		22-85
2.00 mm	20-45		
0.425 mm	10-25		5-30
0.180 mm			
0.075 mm	3-8		0-10

- #### .2 Type 3 fill: selected material from excavation or other sources, approved by Consultant for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.

- #### .3 Type 4 fill: Clean sand.

General Excavation, Dewatering & Backfilling

Section No. 02220

19. Fill Materials – Cont'd

.4 Type 5 fill: 25 mm Crush.

<u>Sieve Designation</u>	<u>% Passing</u>
25 mm	100
20 mm	95-100
10 mm	60-80
4.75 mm	40-60
2.36 mm	28-48
600 micro m	13-29
300 micro m	9-21
150 micro m	6-15
75 micro m	4-10

.5 Type 6 fill: 75 mm Minus Screened Gravel.

<u>Sieve Designation</u>	<u>% Passing</u>
75 mm	100
40 mm	60-80
20 mm	40-66
10 mm	25-54
4.75 mm	15-43
2.36 mm	10-35
600 micro m	5-23
150 micro m	3-12
75 micro m	2-10

6. Sand shall comply with the following gradation. It shall be native, clean, salt free, well graded, organic free, rounded or angular pieces containing no more than 4% particles smaller than the No. 200 sieve.

General Excavation, Dewatering & Backfilling

Section No. 02220

19. Fill Materials – Cont'd

<u>Sieve Size</u>	<u>Percent Passing</u>
10 mm	100
No. 4	80-100
No. 16	50-75
No. 50	15-75
No. 100	2-8

Sand shall be used as topping material below and above membranes and where otherwise called for on the drawings.

20. Common Fill

- .1 Shall be native material found on site or imported, and free of stones larger than 100 mm in size, of frozen matter, of rubbish and organics or vegetation.

21. Rip Rap

- .1 Use class 1 Nominal Size 300 mm hand placed rock rip rap.
- .2 Rip Rap shall be:
 - 100% smaller than 450 mm or 136 kg
 - 20 % larger than 350 mm or 68 kg
 - 50% larger than 300 mm or 36 kg
 - 80% larger than 200 mm or 11 kg

22. Compacting

- .1 Backfill shall be compacted to achieve a density of not less than 95% Standard Proctor Density unless otherwise specified or as directed by the Engineer, or as detailed on the Contract Drawings.
- .2 Bedding material around the pipe and backfill material immediately over the pipe shall be placed carefully so as not to damage the pipe and shall be compacted using approved mechanical compaction equipment satisfactory for this application.

General Excavation, Dewatering & Backfilling

Section No. 02220

22. Compacting – Cont'd

- .3 The following mechanical compaction equipment shall be used with corresponding lifts of backfill. Backhoes, loaders, dozers, etc. shall not be used for compacting.

NORMAL COMPACTED THICKNESS OF LIFTS

<u>EQUIPMENT TYPE</u>	<u>COHESIVE SOIL</u>	<u>NON-COHESIVE SOIL</u>
Vibratory Sheepsfoot Packer	300 mm	300 mm
Sheepsfoot Packer	200 mm	--
Pneumatic Roller	200 mm	200 mm
Vibratory Roller (work width less than 760 mm)	150 mm	300 mm
Vibratory Roller (work width greater than 760 mm) Double vibrating drums with transverse 25 mm cleats every 100 mm the circumference of one drum	150 mm	300 mm
Pneumatic Tamper Driven by Compressor	100 mm	100 mm
Mechanical Tamper (diesel or gas) (Jumping Jack)	150 mm	150 mm

23. Compaction Tests

- .1 The cost of compaction tests will be borne by the Owner, but where re-testing is required due to unsatisfactory results such re-testing shall be paid for by the Contractor.

General Excavation, Dewatering & Backfilling

Section No. 02220

24. Unshrinkable Fill

.1 Scope

The work included in this specification is the supply of all material, labour and equipment necessary for the production and placing of a Portland cement stabilized granular backfill known as Unshrinkable Fill in all underground service and utility trenches, and around in-ground structures where specifically shown on the Contract Drawings.

.2 Materials

All materials shall conform to OPS No. 1359 providing a maximum 28 day compressive strength of 0.4 MPa:

Admixtures shall conform to OPS No. 1303. Calcium chloride or pozzolanic mineral admixtures shall not be used. Air entraining admixtures may be added if desired by the Contractor.

.3 Mix Proportions

Mix proportions shall be selected in accordance with the latest revision of Section 14 of C.S.A. specification CAN 3-A23.1-M77 where applicable.

Prior to the production of unshrinkable fill for use, the Contractor shall provide to the Engineer, a certificate from an Independent Testing Company stating that the Unshrinkable Fill to be supplied conforms with the above requirements.

.4 Placing

The unshrinkable fill material shall be placed at a slump between 150 and 200 mm. The material shall flow into the excavation so that it fills the entire space. Care shall be taken to ensure that no air is entrapped beneath horizontal projections or in other locations within the excavation. Where bracing, shoring and/or sheeting is used to support the sides of the excavation or to prevent movements that could damage other services or adjacent pavements, this support system shall be removed as backfilling proceeds.

If the excavation is within the travelled portion of the roadway, it shall be covered for at least 24 hours with steel plate of sufficient strength to support traffic during this period. Where road traffic is not to be accommodated, the backfilled excavation shall be covered with

General Excavation, Dewatering & Backfilling

Section No. 02220

24. Unshrinkable Fill – Cont'd

wooden planking or other protection for users of the road allowance
until the Unshrinkable Fill will support the weight of an adult person.

END OF SECTION

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Pipe

Section No. 02238

PART 1 - SCOPE OF WORK

Note: This section refers to all exterior piping installed on this project including, but not limited to the following:

- § Raw water intake pipe from river
 - § Raw water intake pipe from water reservoir
 - § Overflow pipe at sewage lagoon
 - § Discharge and Drain pipe at sewage lagoon
 - § Exfiltration pipe at sewage lagoon.
- .1 In general, all piping shall be supplied and installed in accordance with OPSS No. 701 and as supplemented by this Section.
 - .2 Conform to Sections of Division 1 as applicable.
 - .3 The supply and installation of all piping and appurtenances shall be as detailed by these specifications and shown on the Contract Drawings.
 - .4 The complete supply and installation of piping shall include necessary fittings, bends, tees, any necessary cutting, bedding, sand cover, insulation and backfilling.

PART 2 - MATERIALS

- .1 **All piping and appurtenances shall be supplied in the size and type as shown on the Contract Drawings.**
- .2 The Engineer may order tests of any materials delivered to the site and may reject materials pending the result of the tests. Costs of all tests and inspections after delivery to the site will be borne by the Contractor only if material is faulty. Pipe shall bear the date of manufacture clearly stenciled or impressed on each pipe.
- .3 The Contractor is warned that any pipe or fittings found to be defective in manufacture, or damaged before or after acceptance from the carrier, will be rejected by the Engineer and the Contractor shall promptly remove such defective material from the site.

Pipe

Section No. 02238

PART 2 – MATERIALS – Cont'd

- .4 The Contractor shall be required to submit to the Engineer for his approval shop drawings for all piping details including the following:
 - .1 Jointing methods
 - .2 Adaptors
 - .3 Bends, tees and other fittings
 - .4 Other special details as required.

2.1 Type of Pipe

The entire length of each pipeline shall be constructed from one of the alternative materials specified below (**except as specified on the Drawings**), namely, ductile iron, polyvinyl chloride, polyethylene and concrete pressure pipe.

.1 Polyethylene

- .1 The pipe and fittings shall be polyethylene pressure pipe series of the series or DR rating shown on the Contract Drawings in accordance with standard specification CSA B137.0 and B137.1, ASTM D3035 and D3350, and CGSB41-GP-25 m.
- .2 The pipe shall be CSA certified where certificate programs are available and shall contain ingredients, which are approved by the National Sanitation Foundation.
- .3 The pipe shall be supplied in maximum lengths of 12 metres or in coils for pipe up to 75 mm diameter.
- .4 All fittings (elbows, tees, crosses, etc.) for polyethylene pipe shall be cast iron or ductile iron compatible with the size of the pipe and shall conform to AWWA C110 flanged.
- .5 Polyethylene pipe jointing method shall be Thermal Butt Fusion.
- .6 Where specified, pre-insulated piping shall be installed and shall be in accordance with the following:
 - .1 Pre-insulation shall be factory applied, polyurethane insulation to thickness specified on Contract Drawings.

Pipe

Section No. 02238

2.1 Type of Pipe – Cont'd

- .2 Density 35 to 48 kg/m³ per ASTM D 1622.
- .3 Outer Jacket: Within Water Storage Reservoir – 1.27 mm thick factory applied polyethylene jacket.
Outside Reservoir and Buried Pipe – 22 Gauge galvanized steel lock seam outer jacket.
- .7 Couplings
 - .1 Couplings for raw water intake pipe shall be galvanized with gaskets suitable for use in potable water applications.
 - .2 Acceptable Product: Victaulic or approved equal.
- .2 Polyvinyl Chloride
 - .1 Unless noted otherwise, the pipe shall be polyvinyl chloride of the DR or pressure rating noted on the Contract Drawings meeting the requirements of AWWA C-900.
 - .2 The pipe shall be CSA certified and ULC labeled where certificate programs are available, and shall contain ingredients, which are approved by the National Sanitation Foundation.
 - .3 The pipe shall be supplied in maximum length of 12 m.
 - .4 All fittings (elbows, tees, crosses, etc.) for PVC pipe shall be cast iron or ductile iron compatible with the size of pipe and shall conform with AWWA C110.
 - .5 PVC or fiberglass fittings may be used upon the written approval of the Engineer.
 - .6 PVC jointing method shall be Bell and spigot with rubber rings to ASTM D3139.

Pipe

Section No. 02238

2.2 Gate Valves

- .1 Gate valves shall be iron body, bronze mounted inside screw double disc parallel seat with 'O' rings and shall conform to AWWA Specification C500. They shall open to the left and have a standard 50 mm square operating nut.
- .2 Gate valves shall be Concord-Daigle Incorporated Compression 2000 Resilient Seat.
- .3 Torque tube – Schedule 40 steel epoxy coated inside and out meeting the requirements of Pro AWWA C550. Tube to be watertight. Provide watertight seal between tube, extension stem and top of valve. Provide galvanized wall brackets for tube support.

PART 3 - INSTALLATION OF PIPING

3.1 Foundation and Bedding

- .1 Foundation and bedding shall be as shown on the Contract Drawings. Minimum bedding shall consist of 150 mm of Granular A compacted to 100% SPD.

3.2 Cover Material

- .1 Cover material shall be as shown on the Contract Drawings. Minimum cover shall consist of 300 mm of sand compacted to 100% SPD.

3.3 Trench

- .1 Conditions in the pipe trench shall be such that pipe jointing can be accomplished without getting mud, silt or other foreign material into the joint. In general this means that the trench shall be adequately dewatered with a firm bottom free of mud.

3.4 Alignment and Grade

- .1 The pipe shall be laid to the alignment and grade (where applicable) shown on the drawings.

Pipe

Section No. 02238

3.4 Alignment and Grade – Cont'd

- .2 The Contractor shall carry out explorations where necessary to establish or discover the location of existing pipe, conduits or other buried objects.

3.5 Lowering and Laying

- .1 Pipe and fittings shall be carefully lowered into the trench with proper appliances. Before lowering and while suspended, the pipe shall be inspected for defects.
- .2 Foreign matter shall be removed from the inside of the pipe and fittings. The trench shall be kept dry and free from water, no pipe being laid in water except by permission of the Engineer. No water shall be allowed to run through installation during construction. No pipe shall be laid until the preceding pipe joint has been completed and the pipe carefully embedded and secured in place.
- .3 Installation shall be kept thoroughly clean throughout and during the progress of the work and until the completion and final acceptance thereof. They shall be left clean on the completion of the work.

3.6 Pull-Up Pressure

- .1 Sufficient pressure shall be applied in making the joint to assure that the joint is "home" as defined in the Standard Installation Instructions provided by the pipe manufacturer. Sufficient restraint shall be applied to the line to assure that joints, once "home" are held so by tamping fill material under and alongside the pipe, or otherwise. At the end of a day's work the last pipe shall be blocked in such a manner as may be required to prevent creep during "down time".

3.7 Manufacturer's Instructions

- .1 Pipe and fittings shall be installed strictly in accordance with the manufacturer's instructions. A copy of the manufacturer's manual of instructions shall be kept on the job site.

Pipe

Section No. 02238

3.8 Bedding and Encasement

- .1 Pipes shall be laid to conform to their respective bedding or encasement as detailed on the Contract Drawings.
- .2 The depth of trench excavations shall be sufficient to allow for the bedding required below the pipe bottom.
- .3 The Contractor shall excavate for and provide at least 150 mm of approved and compacted granular material in the trench to support the pipe as described above, including the requirements shown on the Contract Drawings.
- .4 Selected material from the excavations, as allowed by the Engineer, shall then be carefully consolidated over the pipe and backfilling shall proceed as described under excavation.

3.9 Jointing Pipe

- .1 Where a concrete cradle or surround is to be provided, the trench bottom shall be carefully trimmed to receive it and the pipe shall be supported upon bricks or concrete blocks and hardwood wedges and securely retained at the requisite line and level. After jointing of the pipes, the surround or cradle shall be poured and worked around and under the pipe to fully support the pipe.
- .2 Installation of push-on joint watermain pipe and mechanical joint fittings shall conform strictly to the manufacturer's instructions.

3.10 Valves and Fittings

- .1 Valves and boxes shall be installed plumb at the locations and in the manner shown on the drawings.
- .2 Bends, crosses, tees and other fittings shall be installed where shown and shall be anchored and supported by concrete thrust blocks.

END OF SECTION

Pipe Culverts

Section No. 02723

PART 1 - GENERAL

1.1 Scope of Work

- .1 This section outlines the requirements for the supply and installation of pipe culverts shown on the Contract Drawings.

1.2 Reference Standards

- .1 OPSS Nos. 421 and 1801.
- .2 Conform to Sections of Division 1 as applicable.

PART 2 - MATERIALS

2.1 Pipe

- .1 The culverts shall be corrugated steel pipe conforming to the requirements of OPSS No. 1801. Material shall be compacted to 100% SPD.

2.2 Bedding

- .1 Bedding material shall be 150 mm of Granular A conforming to the requirements of Section 02220. Material shall be compacted to 100% SPD.

2.3 Cover Material

- .1 Cover material extending to 300 mm above the top of the pipe shall be sand.

2.4 Truck Discharge Flume

- .1 3000 mm diameter smooth wall culvert cut in half and placed as shown on Contract Drawings.
- .2 6 mm thick steel plate to be welded to culvert end at top of berm to act as a 'backsplash.'

Pipe Culverts

Section No. 02723

2.4 Truck Discharge Flume – Cont'd

- .3 Culvert shall be smooth walled steel pipe (9.5 mm wall thickness) meeting the requirements of ASTM Specification A252 Grade2.
- .4 Payment for truck discharge flume shall be on a lump sum price basis.

PART 3 - EXECUTION

3.1 General

- .1 To OPSS No. 421.

3.2 Measurement for Payment

- .1 To be included with appropriate work for which pipe culverts are required.

END OF SECTION

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Concrete Formwork

Section No. 03100

PART 1 - GENERAL

1.1 Related Work

- .1 Concrete Reinforcement: Section 03201
- .2 General Concrete: Section 03305
- .3 Applicable Sections of Division 1

1.2 Reference Standards

- .1 Do concrete formwork in accordance with CSA/CAN-A23.1-94.

1.3 Shop Drawings

- .1 Submit shop drawings in accordance with Section 01340 for falsework associated with walls and deck. All shop drawings shall be stamped by a Professional Engineer registered in the Province of Ontario and experienced in falsework design.

1.4 Measurement for Payment

- .1 No measurement for payment will be made under this section. Include costs in items of work for which concrete formwork is required.

PART 2 - PRODUCTS

2.1 Materials

- .1 Formwork materials: to CSA/CAN-A23.1-94.
- .2 Form release agent: chemically active release agents containing compounds that react with free lime present in concrete to provide water insoluble soaps, preventing set of film of concrete in contact with form. Acceptable product: Mineral Oil.

Concrete Formwork

Section No. 03100

2.1 Materials (Cont'd)

- .3 Form ties: Adjustable metal, designed to act as spreaders. When removed the remaining holes shall not be closer than 25 mm to the concrete surface. In water retaining walls, DO NOT use formwork ties or spacers that leave holes through the concrete and require grouting later. Snap ties are unacceptable.

PART 3 - EXECUTION

3.1 Execution

- .1 Verify lines and levels before proceeding with formwork and ensure dimensions agree with drawings.
- .2 Construct forms to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1-94.
- .3 Obtain Engineer's approval for use of earth forms.
- .4 All exposed edges and corners shall be chamfered 20 mm x 20 mm unless otherwise shown on the drawings. All inside edges and corners shall be chamfered.
- .5 Hand-trim sides and bottoms and remove loose earth from earth forms before placing concrete.
- .6 Align form joints and make watertight. Keep form joints to minimum.
- .7 Leave formwork in place for following minimum periods of time after placing concrete.

Concrete Formwork

Section No. 03100

3.1 Execution - Cont'd

Period from Pouring to Stripping for Portland Cement Concrete

	Cold Weather (3°C)	Normal Weather (above 18°C)
<u>Forms for Part of Structure</u>	<u>Days</u>	<u>Days</u>
Beam sides, walls and columns	1	1
Slabs (props left under)	10	7
Beam supports (props left under)	14	7
Removal of props to slabs	28	28
Removal of props to beams	28	28

- .8 Re-use of formwork and falsework subject to requirements of
CAN/CSA-A23.1-00, Clause 11.9.

END OF SECTION

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Concrete Reinforcement

Section No. 03201

PART 1 - GENERAL

1.1 Related Works

- .1 Concrete Formwork: Section 03100
- .2 General Concrete: Section 03305
- .3 Applicable Sections of Division 1

1.2 Reference Standards

- .1 Do concrete reinforcement work in accordance with OPSS 905, except where specified otherwise.
- .2 Do general work for concrete in accordance with OPSS 905. Detailed work relating to the proper placement, securing, supporting and bending of reinforcement to follow CSA/CAN-A23.3-94.
- .3 Supply reinforcing steel in accordance with CSA G30.18-M92.

1.3 Shop Drawings

- .1 Submit shop drawings in accordance with Section 01340.
- .2 Clearly indicate bar sizes, spacing, location and quantities of reinforcement, mesh, chairs, spacers and hangers with identifying code marks to permit correct placement without reference to structural drawings; to ACI Manual of Standard Practice for Detailing Reinforced Concrete Structures.
- .3 Detail placement of reinforcing where special conditions occur.

1.4 Measurement for Payment

- .1 No measurement will be made under this section. Include costs in items of work for which reinforcement is required.

Concrete Reinforcement

Section No. 03201

PART 2 - PRODUCTS

2.1 Materials

- .1 Reinforcing steel: to OPSS 1440 billet steel grade 400, deformed bars.
- .2 Supports: to OPSS 1440.

2.2 Fabrication

- .1 Fabricate reinforcing steel to OPSS 1440.

PART 3 - EXECUTION

3.1 Field Bending

- .1 Do not field bend reinforcement except where indicated or authorized by Engineer.
- .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .3 Replace bars which develop cracks or splits.

3.2 Placing

- .1 Accurately place reinforcing steel in positions indicated and hold firmly during placing, compacting and setting of concrete.
- .2 Tie reinforcement where spacing in each direction is:
 - .1 Less than 300 mm: tie at alternate intersections.
 - .2 300 mm or more: tie at each intersection.
- .3 Alternate bars to have lap splices staggered 1500 mm in each face and opposite faces.

3.3 Cleaning

- .1 Clean reinforcing before placing concrete.

Concrete Reinforcement

Section No. 03201

- .2 Reinforcing steel to be clean of rust, mud, oil, laitance, concrete scale which could potentially reduce the concrete bond. Corrective action is to be taken prior to placing fresh concrete.

3.4 Inspection

- .1 Do not place concrete until Engineer has inspected and approved reinforcement work in place.

END OF SECTION

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General Concrete

Section No. 03305

PART 1 - GENERAL

1.1 Related Work

.1	Concrete Formwork:	Section 03100
.2	Concrete Reinforcement:	Section 03201
.3	Applicable Sections of Division 1	

1.2 Reference Standards

- .1 Do Concrete Materials and Methods of Concrete Construction in accordance with CAN/CSA - A23.1-94.
- .2 Do testing of concrete in accordance with CAN/CSA A23.2-94, Methods of Test for Concrete.
- .3 Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete, ACI 211.1-89.

1.3 Measurement for Payment

- .1 No measurement will be made under this section. Include costs in items of work for which concrete work is required.

PART 2 - PRODUCTS

2.1 Materials

- .1 Cement: to CAN3-A5-M93, Type 10.
- .2 Aggregates: to CAN3-5-A23.1-94 or as otherwise specified. The maximum size shall be 25 mm. Actual size shall be determined by availability, thickness of concrete and reinforcement spacing. Use maximum aggregate size in all cases. To minimize shrinkage cracks, a mix design using 40 mm diameter coarse aggregate may be employed. Proportion mix design in accordance with ACI 211.1-89. Trial mix samples shall be submitted to the Engineer for testing prior to pouring any concrete. The Contractor is to confirm that the source of aggregate and the aggregate itself does not exhibit or have a history of Alkali-Aggregate reactivity. Samples are to be submitted for testing. Note: "sea-sand" shall not be used for concrete.

General Concrete

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2.1 Materials - Cont'd

- .3 Concrete formwork to Section 03100.
- .4 Concrete reinforcement to Section 03201.
- .5 Curing Compound: to CAN3-A23.1-00, white chlorinated rubber.
- .6 Admixtures:
 - .1 Air entraining admixtures: to latest revision of ASTM Standard C260.
 - .2 Water reducing agent: to latest revision of ASTM Standard C494 Types A and F.
 - .3 Pozzolanic admixtures: to CAN/CSA-A23.5 M86 (R1992).
 - .4 Engineer to approve accelerating or set retarding admixtures during cold and hot weather placing.
 - .5 Granulated Slag: To CAN/CSA A23.5 – M86(R1992) Type G.
- .7 Joint filler: to be premolded fibre joint filler. Acceptable product: "Rodofill" by Sternson Ltd. or approved equal.
- .8 Grout: unless noted otherwise grout shall be non metallic, non shrink, premixed with Type 20 cement, minimum strength 40 MPa @ 28 days.
- .9 Concrete:
 - .1 Mix design will be reviewed by Engineer.
 - .2 Except where indicated or specified otherwise, provide concrete mix as follows:
Minimum 28 day compressive strength 30 MPa.
 - .3 Slump: 75 mm $\pm$ 15 mm
 - .4 All concrete shall be air entrained. Air entrainment shall be 6% + 2%, -0.5% which shall result in an air void system with the following characteristics:

Spacing Factor:
less than 230 micro metres (average test)
less than 260 micro metres (any single test)

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Specific Surface Area:
greater than $24 \text{ mm}^2/\text{mm}^3$.

Voids per 25 mm:
n equal to 1.5 to 2.0 times % air.

- .5 The maximum water/cement ratio shall be 0.52. The Engineer will consider the use of high range water reducers (i.e. Superplasticiser).
- .6 Minimum cement content for 25 MPa concrete shall be 340 kg/m^3 .

For concrete exposed to sewage the cement/slag blend ratio will be 75:25.

PART 3 - EXECUTION

3.1 Fillets and Chambers

- .1 The edges and re-entrant angles of all concrete exposed to view shall be bevelled to a 20 mm x 20 mm fillet or chamfer unless large fillets or chamfers are indicated on the drawings.

3.2 Build In

- .1 Wherever practicable, fittings and pipework to be built-in shall be installed at the time of pouring of the concrete structure, and boxing out will be done only with sanction and to the satisfaction of the Engineer. Forms shall be neatly fitted around the items built-in so as to prevent any leakage of mortar. **All pipes passing through floors or through concrete walls retaining liquids shall have wall flanges cast in situ.**

3.3 Anchor Bolts

- .1 Wherever practical and approved, anchor bolts and securing bolts shall be built into the concrete as the work proceeds but when this is impracticable or undesirable, suitable pockets shall be left to receive the bolts which shall be securely grouted in after installation.

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In hardened concrete, core and grout anchors with 40 MPa non-shrink grout. Authorization to be obtained from the Engineer prior to using mechanical anchors cored into hardened concrete. Torque all nuts on anchor bolts to manufacturer's recommendations. When requested by Engineer torque nuts using a torque wrench in presence of Engineer.

3.4 Construction Joints

- .1 Provide construction joints where specified or shown on the drawings. Locate and make other joints so as not to impair the strength, water tightness and appearance of the structure. Wall construction joints shall be staggered from those locations in roof and floor slabs. No intermediate horizontal expansion joints shall be used in walls of water-containing basins except where shown on the drawings. Joints are subject to the approval of the Engineer.
- .2 Construct construction joints with an approved waterstop, properly anchored against displacement during the placement of the concrete and properly sealed at all of the intersections. Join splices and intersections of waterstop by heat fusion in accordance with approved manufacturer's instructions. Delete waterstop at joints inside structures between dry areas unless specified on the drawings.
- .3 Unless otherwise shown, maximum distances between construction joints are:
Walls - 10 m
Base slabs and slabs on grade - 11 m.
Suspended slabs greater than 100 mm thick and super-structure beams and girders - 16 m.

No construction joints to be located within 2 m of wall corners unless specified on drawings.
- .4 The pouring of the base slab may be sequenced in either a linear or check-board pattern provided the maximum construction joint distances are maintained. The walls are to be poured in a linear rather than check-board fashion. Further, the pouring of the wall sections where applicable, must be scheduled to minimize the time delay between the slab and wall pours. A pouring sequence and proposed schedule must be submitted to the Engineer at least 14 days prior to the commencing of the work.

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- .5 Beams, girders, brackets, column capitals, haunches and drop panels shall be placed with slabs.
- .6 In general, locate joints near middle spans of slabs, beams and girders unless a beam intersects a girder at this point, in which the girder joint shall be offset twice the beam width and additional shear reinforcement provided to the approval of the Engineer. Joints in slabs supported by walls or steel beams are preferably located over the support unless the beam acts compositively with the slab.
- .7 Provide a bulkhead at all construction joints.
- .8 All steel as shown on drawings is to be continuous through construction joints. Extend reinforcing through all construction joints. Add dowels, if necessary, to make total steel passing through bulkhead at least the equivalent of 15 M @ 300 centres each face. Dowels shall be embedded at least 900 on each side of joint.
- .9 Before placing new concrete, remove all dirt, loose aggregate and laitance from face of existing concrete. This shall be accomplished by sandblasting, power washing or other method acceptable to the Engineer.
- .10 Allow adequate curing time to the satisfaction of the Engineer between placing adjacent sections separated by construction joints. Place concrete in alternate sections if necessary and place closing sections after alternate sections have cured.
- .11 All construction joints shall have a row of form ties located at a distance of approximately 150 mm from the joint to permit aligning and tightening of the forms for subsequent sections.
- .12 Curing compound not to be used on construction joints.

3.5 Waterstops

- .1 Horizontal and vertical construction joints in water tight construction shall have suitable waterstops as shown on the drawings.

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3.6 Testing

- .1 Tests shall be made throughout the progress of the work to determine whether the concrete is of the strength specified. Test cylinder shall be made by and at the expense of the Owner. At least one set of cylinders for each 50 m³ of concrete used shall be made unless specifically approved otherwise.
- .2 Where 7 day strength is less than 70% of specified 28 day strength, provide additional curing and make changes to mix proportions when directed by the Engineer.

3.7 Slump

- .1 The slump shall be 75 +\ - 15 mm and tests shall be in conformity with CSA Specification A 23.2. The slump may be increased with the addition of a "super plasticizer" as noted in Section 2.1.

3.8 Placing and Compacting

- .1 Mixing and placing equipment shall be such that when concreting has started, the depositing of concrete shall be carried on as a continuous operation until the placing of the panel or section is completed. Concreting shall be carried out at such a rate that the concrete is at all times sufficiently plastic to ensure proper bonding of the successive layers. Sufficient equipment shall be assigned to the job for a specific pour to ensure that the time interval between batches being placed does not exceed 20 minutes.
- .2 In walls or deep sections, when the Engineer permits the use of removable separators or spreaders, they shall not be removed until the concrete has reached their level. Suitable tools shall be provided for their removal and recovery. Wood spreaders shall not be used in any concrete wall.
- .3 Do not place concrete in water.
- .4 Before placing new concrete against existing concrete which is at a lower temperature than the new concrete, the area must be enclosed and heated until the concrete temperature rises to within 5°C of the temperature of the new concrete. However, at no time shall concrete

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be poured against frozen surfaces or any surface which is colder than 5°C.

- .5 Before placing floor slabs on subgrade which is below 3°C enclose and heat the surrounding space until the subgrade is at least 10°C.
- .6 Before depositing new concrete on concrete that has set, the form ties shall be tightened, the surface of the set concrete suitably roughened, thoroughly cleaned of foreign matter and laitance, and saturated with water in advance of concreting. The first 15 cm layer of new concrete placed on hardened concrete should contain an excess of mortar to ensure bond. This may be obtained by first placing concrete of the quality specified for the work but from which 30 to 50 percent of the course aggregate has been omitted. The quality of this concrete and its method of distribution in the forms shall be as determined by the Engineer.

3.9 Vibrators

- .1 The use of mechanical vibrators is required. Vibrators shall be sturdy construction, adequately powered and capable of transmitting to the concrete not less than 3500 impulses per minute. A sufficient number of vibrators shall be employed so that at the required rate of placement vibration throughout the entire volume of each layer of concrete and complete compaction are secured. At least one extra gasoline powered vibrator shall be on hand for emergency use.
- .2 Vibration shall not be continued in any one spot to the extent that pools of grout are formed. Care shall be taken to avoid any but slight disturbance to concrete which has become too stiff to regain plasticity when vibrated. Vibration shall not be applied directly to steel which extends into partially hardened concrete. In wall pours vibration of concrete is to work from the toe of sloped concrete upwards to the top of the pour.

3.10 Summer Concreting

- .1 The contractor must prepare the curing procedures to suit the environmental conditions. Shrinkage cracks are caused by rapid drying of the concrete and by thermal effects which include heat during curing, ambient conditions and shape considerations. The following

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requirements are designed to minimize those effects and thereby minimize the cracking of the concrete.

- .2 The maximum temperature of the concrete must be maintained at or below 24°C.
- .3 The maximum water/cement ratio is 0.40 and shall not exceed this value.
- .4 The concrete shall be air entrained.
- .5 The forms for walls shall be released within 24 hours of the pour and the concrete wetted down thoroughly.
- .6 The surface of slabs against which new concrete is poured shall be cooled using intermittent wetting techniques and the temperature shall not be more than 5°C greater than the new concrete at the time of pouring.
- .7 During periods of hot weather, the slabs and walls of structures shall be continuously cooled using wetted burlap or fog spraying with polyethylene sheets if the structure cannot be shaded. Windbreaks are to be erected when the above measures do not reduce the rate of allowable evaporation.
- .8 The concrete shall be "wet cured" for at least 14 days during hot weather above 30°C and 7 days for weather between 18°C and 30°C.
- .9 The use of curing compounds will be considered for conditions where the concrete will be shaded or otherwise protected from the sun and where the surface of the concrete will not be in contact with potable water under service conditions. The curing compound shall conform to the requirements of CGSB 90 GP1a, "Liquid Membrane-Forming Compounds for Curing Concrete".

3.11 Winter Concreting

- .1 Between September 1st and May 30th of the following year and at any time when the temperature is below 3°C, place concrete in accordance with the requirements of CSA-A23.1-00, "Cold Weather Requirements", or when in the opinion of the Engineer there is a probability of temperatures falling to that limit during the placing period,

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the temperature of the concrete, when deposited, shall be not less than 10° C nor more than 24°C. To accomplish this, the mixing water and if necessary the aggregates, shall be heated. Aggregates shall not be heated above 85°C.

- .2 The temperature difference as noted in section 3.8.4 is of primary importance during winter concreting. However, during the actual pouring and for 24 hours after the pour, the temperature within the enclosure shall not exceed 18°C and shall not drop below 5°C.
- .3 Means shall be provided to humidify the air within the enclosed space and to keep the concrete and formwork continuously moist if dry heat is used. Combustion type heaters may be used but they shall be constructed and placed so that their combustion gases shall not come in contact with surfaces of green concrete. Concrete shall be kept at 10°C or above for a minimum period of seven days after placing.
- .4 The temperature shall be gradually reduced at the end of the period of protection at a rate not greater than 10°C per day until the outside air temperature is reached.

3.12 Repairing Concrete Surfaces

- .1 As soon as face forms are removed, the surfaces shall be thoroughly washed with clean water under pressure, and all fins, projections and off-sets smoothed off. Metal ties shall be cut and any defective areas, permitted by the Engineer to be patched shall be repaired at once before the concrete is thoroughly dry.
- .2 At the discretion of the Engineer, defective areas shall be chipped away to a minimum depth of 25 mm or to solid concrete, whichever is greater, with edges perpendicular to the surface. The area to be patched and a 150 mm wide band around it shall be thoroughly wetted. A grout of equal parts cement and sand shall then be brushed into the surface followed by a mortar of the same mix as the unit being repaired except for the absence of coarse aggregate.
- .3 The patch shall be left slightly higher than the surrounding area and allowed to reach initial shrinkage before the final screening.
- .4 Patches shall be cured continuously for a period of 10 days. Bonding of patch work to parent concrete and the curing of the completed repair

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work will require special attention. Filling shall be free from shrinkage cracks or dummy areas after the fillings have been cured and dried. The concrete constituents shall be mixed so as to avoid colour variations in surface finishes.

- .5 **Any visible cracks caused as the result of the Contractor's failure to comply with these specifications shall be repaired at the Contractor's expense using a method/materials approved by the Engineer.**

3.13 Finishes for Formed Concrete

- .1 Type 1 - Unexposed or buried surfaces
- .1 Such surfaces require no treatment after form removal other than such repair of defective concrete, tie holes and associated specified curing. Undressed lumber may be used for forming.
- .2 Type 2 - Exposed surfaces
- .1 This finish applies to all permanently exposed formed surfaces such as interiors of buildings. After the surface has been repaired and is sufficiently hard, it shall be ground with carborundum stone and water until even and smooth.
- .3 After curing of all patches, their surfaces shall be finished as follows:

A sack-rubbed finish is to be used to give a uniform colour and appearance to a smooth surface. After defects have been repaired, the surface shall be saturated thoroughly with water and kept wet at least 1 hour before finishing operations begin. A grout of 1 part cement, 1-1/2 to 2 parts of fine sand passing a 630 um sieve, and sufficient water for a thick, creamy consistency should be applied. It should be preshrunk by mixing at least 1 hour before it is used and then remixed without the addition of water and applied uniformly by brush, plasterer's trowel, or rubbed float to completely fill air bubbles and holes.

The surface should be vigorously floated with a wood, sponge-rubber, or cork float immediately after applying the grout to fill any small air holes (bugholes) that are left and to remove some excess grout. The remaining excess grout should be scraped off with a sponge-rubber float. If the float pulls grout from holes, a sawing motion of the tool should correct the difficulty. The grout remaining on the surface should

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be allowed to stand undisturbed until it loses some of its plasticity but not its damp appearance. Then the surface should be rubbed with clean, dry burlap to remove all excess grout. All air holes should remain filled, but no visible film of grout should remain after the rubbing. Any section being cleaned with grout must be completed in one day, since grout remaining on the surface overnight is too difficult to remove.

If possible, work should be done in the shade and preferably during cool, damper weather. During hot or dry weather, the concrete can be kept moist with a fine fog spray.

The completed surface should be moist-cured by keeping the area wet for 36 hours following the cleandown. When completely dry, the surface should have a uniform colour and texture.

3.14 Finishes for Unformed Concrete

- .1 Screeding: This finish shall apply to all surfaces to be covered by concrete or fill material. It is also the first step in other finishes and shall include sufficient levelling and screening to produce even, uniform surfaces at the elevation or slopes indicated.
- .2 Floated: This finish shall apply to unformed surfaces not permanently concealed by fill material or concrete where a trowelled or special finish is not indicated. It is also the second step where further finishing is specified. Floating may be performed by the use of hand or power-driven equipment, and shall be started as soon as the screened surface has stiffened sufficiently to permit floating without drawing water or excess fines to the surface.
- .3 Trowelled: Where surfaces are to be finished without a topping or are to receive paint, tile or similar applications, they shall be finished by trowelling as follows:
 - a) Slabs: Concrete shall be screened, tamped and floated to the correct elevation and compacted with a rotary discing machine. After the concrete has hardened sufficiently (not less than 30 minutes after placing), the surface shall be power trowelled to a hard, smooth surface and then protected from damage.

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Slabs exposed to the weather (where hardening is not specified) shall be screened, floated and spin-trowelled using a finishing machine to produce a smooth, dense, non-slip surface.

- b) Top of Walls: The tops of walls and other locations unsuited for machine trowelling, shall be given a smooth steel trowel finish applied by hand. The concrete shall be screened and wood floated by hand to straight, level and even lines and then allowed to stand until all weather sheen has disappeared before trowelling. Final trowelling shall be done manually, employing a steel trowel (in a circular motion) after the concrete has hardened to the point that no mortar accumulates on the trowel and a ringing sound is produced as the trowel is drawn over the surface.

On thin walls, a stainless steel finishing tool to leave 10 mm radius on the edge shall be used.

- c) Roof Slabs: Roof slabs on buildings shall be carefully screeded and wood floated followed by a light spin trowelling (or Pinch Finish) sufficient to produce a smooth, dense finish. Trowelling as in a) above or steel trowelling by hand as in b) shall not be allowed.

3.15 Defective Work

- .1 Concrete is defective when:
 - .1 Failing to meet all requirements of this specification.
 - .2 Concrete contains excessive honeycombing or embedded debris.
 - .3 28 day average strength in any defined area is less than 95% of specified minimum strength.

END OF SECTION

Painting & Finishing

Section No. 09915

PART 1 - GENERAL

1.1 Work Included

- .1 Supply and install:
 - .1 painting to new exposed mechanical and electrical equipment in pumphouse
 - .2 painting to new pipe

1.2 Related Work Specified Elsewhere

- .1 Mechanical: Section 15010
- .2 Plumbing and Drainage Systems: Section 15020
- .3 Process Piping and Control Devices: Section 15400

1.3 Reference Standards

- .1 Do work in accordance with CGSB 51-GP-39M and the Canadian Painting Contractors Association "Architectural Painting Specification Manual.

1.4 Submittals

- .1 Submit colour samples and product data sheets for approval.

1.5 Additional Materials

- .1 Leave on the premises for touch up a sufficient quantity of all colours and paint types. In any case not less than 1 litre.
- .2 Containers shall be full, tightly sealed and clearly labelled for identification.

1.6 Measurement for Payment

- .1 Payment for surface preparation and painting will not be made directly but shall be included in the lump sum price bid.

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PART 2 - PRODUCTS

- 2.1 Piping, Valves and Related Mechanical and Electrical Equipment in Pumphouse
- .1 Galvanized pipe:
Two coats 182 Series Coronado Direct to Metal Acrylic Enamel 4-5 mils wet, 1.6 to 2 mils dry per coat.
 - .2 Ferrous metal surfaces:
One coat 180-11 Coronado High Performance Rust Inhibiting Primer 4-5 mils wet, 1.6 to 2 mils dry. Two coats 182 Series Coronado Direct to Metal Acrylic Enamel 4-5 mils wet, 1.6 to 2 mils dry per coat.
 - .3 Ductile iron pipe and bituminous coated fittings:
One coat 142-11 Amine Adduct Water Based Epoxy Primer 3.5 mils wet, 1.5 mils dry.
One coat 142 Amine Adduct Water Based Epoxy 4 mils wet, 1.8 mils dry.
 - .4 Piping in potable water reservoirs to be painted with non-toxic paint suitable for use with potable water meeting the requirements of NSF-61.
- 2.2 Colour Code
- .1 Water Pipes-As specified in 3.11

PART 3 - EXECUTION

- 3.1 General
- .1 Paint all building surfaces, piping, tanks and equipment.
 - .2 Touch up shop applied finishes damaged during installation.
 - .3 Apply finish coats to shop primed equipment.

Painting & Finishing

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3.2 Preparation of Equipment, Piping, Valves and Tanks

- .1 Commercial blast cleaning.
- .2 Drain water from vessels to prevent condensation whenever possible.

3.3 Protection of Surfaces

- .1 Protect surfaces not to be painted and if damaged, clean and restore such surfaces as directed.
- .2 Apply primer, paint, or pretreatment as soon possible after surface has been cleaned and before deterioration of surface occurs.
- .3 If rusting occurs after completion of surface preparation, clean surfaces again.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats of paint. Remove contaminants from surface and apply paint immediately.
- .5 Protect cleaned and freshly painted surfaces from excessive dust.

3.4 Mixing Paint

- .1 Do not dilute or thin paint for brush application; use as received from manufacturer.
- .2 Mix ingredients in container before use and ensure breaking up of lumps, complete dispersion of settled pigment, and a uniform composition.
- .3 Mix paint often enough during application to keep pigment in suspension and composition uniform.
- .4 Do not mix or keep paint in suspension by means of air bubbling through paint
- .5 Thin paint for spraying according to manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide a copy of instructions to Engineer.

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3.5 Applying Paint

- .1 Apply paint by brushing, spraying or a combination of both. Use sheepskins or daubers only when no other method is practical in places of difficult access.
- .2 Use dipping or roller coating method of application only when specifically authorized by Engineer in writing.
- .3 Caulk open seams at contact surfaces of built up members with red lead paste, or other approved material. Apply second coat of primer to caulked areas.
- .4 Where surface to be painted is not under cover, do not apply paint when:
 - .1 Air temperature is below 5°C or when temperature is expected to drop to 0°C before paint has dried.
 - .2 Temperature of surface is over 50°C unless paint is specifically formulated for application at high temperatures.
 - .3 Fog or mist occur at site; it is raining or snowing; there is a danger of rain or snow; relative humidity is above 85%.
 - .4 Surface to be painted is wet, damp or frosted.
 - .5 Previous coats are not dry.
- .5 When paint must be applied in damp or cold weather apply paint under cover. Protect, shelter, or heat surface and surrounding air to comply with temperature and humidity conditions specified in 3.9.4. Protect until paint is dry or until weather conditions permit.
- .6 Permit drying of applied paint which has been exposed to freezing, excess humidity, rain, snow or condensation. Remove paint from damaged areas, prepare surface again and repaint same as undamaged areas.
- .7 Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .8 Brush application:
 - .1 Work paint into cracks, crevices and corners and paint surfaces not accessible to brushes by spray, daubers or sheepskins.
 - .2 Brush out runs and sags.

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3.5 Applying Paint – Cont'd

- .3 Leave a minimum of brush marks in finished paint surfaces.
- .4 Remove runs and sags from finished work and repaint.
- .9 Spray Application:
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Provide traps or separators to remove oil and water from compressed air and drain periodically during operations.
 - .3 Keep paint ingredients properly mixed in spray pots or containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
 - .4 Apply paint in a uniform layer, with overlapping at edges of spray pattern.
 - .5 Brush out immediately all runs and sags.
 - .6 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray. In areas not accessible to spray gun, use brushes, daubers or sheepskins.
 - .7 Remove runs and sags from finished work and repaint.
- .10 Shop painting:
 - .1 Do shop painting after fabrication and before any damage to surface occurs from weather or other exposure.
 - .2 Spray paint contact surfaces of field assembled, bolted, friction type joints with primer coat only. Do not brush primer after spraying.
 - .3 Do not paint metal surfaces which will be embedded in concrete.
 - .4 Paint metal surfaces to be in contact with wood with either full paint coats specified or three shop coats of specified primer.
 - .5 Do not paint metal within 50 mm of edge to be welded. Give unprotected steel one coat of boiled linseed oil or other approved protective coating after shop fabrication is completed.
 - .6 Remove weld spatter before painting. Remove weld slag and flux.

Painting & Finishing

Section No. 09915

3.5 Applying Paint – Cont'd

.11 Field Painting:

- .1 Paint steel structures as soon as possible.
- .2 Touch up metal which has been shop coated with same type of paint and to same thickness as shop coat. This touch-up to include cleaning and painting of field connections, welds, rivets, nuts, washers, bolts and damaged or defective paint and rusted areas.
- .3 Field paint surfaces (other than joint contact surfaces) which are accessible before erection but which will not be accessible after erection.
- .4 If possible do not apply final coat of paint until concrete work is completed. If concreting or other operations damage any paint, clean and repaint damaged area. Remove concrete spatter and droppings before paint is applied.
- .5 Where painting does not meet with requirements of specifications, and when so directed by Engineer, remove all defective paint, thoroughly clean affected surfaces and repaint in accordance with these specifications.

3.6 Pipe Identification System

All piping shall be identified and painted in accordance with the following requirements:

- .1 Flammable: For piping systems containing flammable gases or liquids - gasoline, fuel oil, digester gas, acetylene, propane, etc.

Colour: Yellow-Orange; Canadian General Standards Board (CGSB) 508-103, plus identification labels consisting of black lettering and arrows on a yellow-orange background.

Method: Complete painting of all piping, valves and fittings plus labelling every linear 3 meters maximum identifying the contents and the direction of flow (comply with Occupational Health and Safety Act (OHSA) 66(1)(a), (b) and (c);

- .2 Firefighting: For piping system containing firefighting substances - water, carbon dioxide, etc.

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3.6 Pipe Identification System – Cont'd

Colour: Red; CGSB 509-102 plus identification labels consisting of white lettering and arrows on a red background.

Method: Identical to piping systems containing flammable gases or liquids.

- .3 Dangerous Substances: For other piping systems containing dangerous (highly hazardous) substances - chlorine gas, fluosilicic acid, other concentrated acids or caustics, etc. - i.e. - strongly corrosive, strongly toxic, temperature greater than 80°C (175°F) including steam, pressure greater than 700 kPa (100 psi).

Colour: Yellow; CGSB 505-110 plus identification labels consisting of black lettering and arrows on a yellow background.

Method: Identical to piping systems containing flammable gases or liquids.

- .4 Other Chemical Substances: For other piping systems containing chemical substances (not highly dangerous) - chlorine solutions, sodium hypochlorite, alum, polyelectrdolytes, lime solutions, fluoride solutions, etc. - i.e. - mildly corrosive, mildly toxic, temperature less than 80°C (175°F), pressure less than 700 kPa (100 psi).

Colour: Neutral or Background (colour of wall); identification labels consisting of black lettering and arrows on a white background.

Method: Label every 10 meters maximum identifying the contents and the direction of flow (comply with OHSA 66(1)(a), (b) and (c) - i.e. - colour coded painting or banding not required, only labelling to identify contents and direction.

- .5 Process & Drainage: For process and drainage, etc. piping systems, one colour for water being protected, one for sludges and one for other water and drainage systems. Within each group colour gradations to reflect the degree of contamination, as follows:

Painting & Finishing

Section No. 09915

3.6 Pipe Identification System – Cont'd

<u>Description of Contents</u>	<u>Colour</u>	<u>CGSB Code</u>
Raw Water	Dark Blue	502-103
Settled Water	Mid Blue	502-208
Finished or Potable Water	Light Blue	502-106
Raw Sewage, Sanitary Waste	Mid Grey	501-103
Non-potable Water (heating system), drainage, effluent water, final effluent	Light Grey	501-108
WTP Sludges	Dark Brown	504-102
WTP settled backwash	Light Brown	505-206

Method: Identical to piping systems containing flammable gases and liquids except labelling should occur at 10 meter rather than 3 meter intervals and should consist of white lettering and arrows on a background colour which matches the colour code for the pipe.

- .6 Identification Labels: For simplicity, identification labels can be purchased with the standard CGSB background colours and paint can be purchased locally to match a sample of the identification label (see Appendix I - Paint Specifications and Samples).

There are several types of identification label materials available. The pipe size, material of pipe and/or insulation surface, working temperature range and environment (indoors, outdoors, etc.) lettering and arrow size should be specified when ordering labels.

Painting & Finishing

Section No. 09915

3.6 Pipe Identification System – Cont'd

Pipe/Label Letter Sizes

<u>Outside Pipe Diameter</u>	<u>Letter Size</u>
Less than or equal to 25 mm	12 mm
Greater than 25 mm - less than 100 mm	25 mm
Equal or greater than 100 mm	50 mm

It is suggested that lettering and arrows be on separate labels.

Examples of identification labels available are:

- a) Vinyl Cloth - General purpose pressure sensitive adhesive of high tensile strength - service temperature -40°C to 60°C.
- b) Perma-Code Markers - for problem pipes - insulated or rough surface - pressure sensitive - thin film - conformable - temperature -40° to 100°C.
- c) Pressure Sensitive Film - printed with weather resistant inks for outdoor durability - temperature -40° to 80°C.

The above identification labels are available from W.H. Brady Inc. (labels from other suppliers should be of equal quality).

END OF SECTION

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Manufactured Specialties

Section No. 10999

PART 1 – GENERAL

1.1 Supply and Install signage at the following locations:

- § Water Reservoir
- § Sewage Lagoon
- § Landfill Site

1.2 Submittals

- .1 Submit detailed shop drawings for all signs supplied on this project.

1.3 Requirements of all signs shall read as follows:

- .1 Sign shall read as follows:

Hamlet of Qikiqtarjuaq (*insert name of facility i.e. water reservoir, sewage lagoon or landfill site*)
Trespassing Prohibited
Emergency Contact Information (*to be provided by Municipality*)

- .2 Text shall read in Inuktitut and English and shall include the logo of the Hamlet and the Government of Nunavut.
- .3 Signs shall be placed in a location as directed by the Engineer.
- .4 Provide one sign at each facility (total 3 signs).
- .5 Installation details shall be the same as for the Project Identification Signs – refer to Section 01500 Temporary Facilities for further information.
- .6 Each sign shall be constructed in accordance with the Government of Nunavut Visual Identity Standards. Contractor shall not construct signs until shop drawings have been approved.
- .7 Payment shall be on a lump sum basis and covered under the signage item listed in Schedules B, C and D of the Schedule of Unit Prices.

Mechanical General Provisions

Section No. 15010

1.1 General

- .1 This section covers general clauses pertaining to mechanical equipment, pipework, plumbing, drainage, heating and ventilation and process equipment and control devices.

1.2 Related Work Specified Elsewhere

- .1 Applicable Sections of Division 1.
- .2 Applicable Sections of Division 15.
- .3 Specifications listed on Electrical Drawing.

1.3 NSF Certifications

- .1 All materials in contract with potable water systems must be certified to NSF 61 standards.

2. Equipment Requirements and Installation

- .1 Drawings:
Indicate only the general location of mechanical work. Except where definite locating dimensions are given, Contractor shall be responsible for the layout of all mechanical work to ensure a fully operational system.
- .2 Prior to any installation which may interfere with structural, architectural or electrical units, consult Engineer to obtain detailed drawings for exact locations. Make any changes required to mechanical work in order to accommodate structural conditions.
- .3 Install all mechanical work to conserve head room and to interfere as little as possible with free working area.
- .4 Permit equipment maintenance and disassembly by use of unions, mechanical couplings or flanges to minimize disturbance to connecting piping and duct systems and without interference from building structure or other equipment.

Mechanical General Provisions

Section No. 15010

- .5 Provide accessible means for lubricating equipment including permanent lubricated "lifetime" bearings.
 - .6 Mount base mounted equipment on chamfered edge housekeeping pads a minimum of 100 mm high and 50 mm larger than equipment dimensions all around or as otherwise dimensioned on drawings.
 - .7 Pipe drain lines to drains.
 - .8 Line-up equipment, rectangular clean-outs and similar items with building walls wherever possible.
 - .9 Unions or other plain end pipe connectors are indicated where necessary. Additional unions may be used to facilitate installation.
 - .10 Supply anchor bolts and templates for installation by other divisions.
 - .11 Shop drawings are to be submitted for the process pipework layouts and location and details of pipe supports.
3. Responsibility for Trial Usage
- .1 Obtain written permission to start and test permanent equipment and systems prior to acceptance by Engineer.
 - .2 Engineer may use equipment and systems for test purposes prior to acceptance. Supply labour, material and instruments required for testing. All equipment will be tested.
 - .3 Protect equipment and systems openings from dirt, dust and other foreign materials during test usage.
4. Belt Drives
- .1 Fit reinforced belts in sheave matched to drive. Multiple belts on unit to be matched set.
 - .2 Use cast iron or steel sheaves secured to shafts with removable keys, unless otherwise specified.

Mechanical General Provisions

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4. Belt Drives - Cont'd

- .3 For motors under 7.5 kW: standard adjustable pitch drive sheaves, having plus or minus 10% range. Use mid-position of range for specified r/min.
- .4 For motors 7.5 kW and over: sheave with split tapered bushing and keyway having fixed pitch unless specifically required for item concerned. Size to suit balancing.
- .5 Minimum drive rating: 1.5 times nameplate rating on motor. Keep overhung loads within manufacturer's design requirements on prime mover shafts.

5. Pipe Hangers Supports and Thrust Blocks

- .1 Shop drawings are to be submitted for the location and type of all pipe hangers, braces, supports and thrust blocks.
- .2 Pipe hangers, supports, braces and thrust blocks shall be sized such that no unnecessary strain is taken by pipes and fittings and that all stresses within the pipework are safely restrained.
- .3 Pipe hangers, support braces and thrust blocks shall be provided at:
 - 1.5 m for metal lines 25 mm and smaller
 - 2.5 m for larger metal piping
 - 1 m for plastic piping
 - or as recommended by manufacturer.
- .4 Hangers, Supports and Braces:
 - .1 Equipment supports not supplied by equipment manufacturer to be fabricated from structural steel meeting the requirements of Section 05500. Submit structural calculations with shop drawings.
 - .2 Hangers, saddle supports, wall bracket supports and attachments are to be galvanized.
 - .3 All air pipe supports to be adjustable yoke, roll type spaced appropriately.

Mechanical General Provisions

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5. Pipe Hangers Supports and Thrust Blocks - Cont'd

- .4 On uninsulated copper piping use copper hangers.
- .5 Hangers:
 - .1 Hangers are to be suspended from ceiling support members using Clevis Hangers and zinc or cad plated threaded rod.
 - .2 Where structural bearings do not exist or inserts are not in suitable locations, suspend hangers from steel channels or angles. Provide supplementary structural members. Submit anchorage system for review if it is not specified.
 - .3 Acceptable product: Grinnel or approved equal.
- .6 Supports:
 - .1 Saddle supports are to be complete with necessary anchor bolts and floor flanges.
 - .2 Anchor bolts shall be stainless steel.
 - .3 Acceptable product: Grinnel or approved equal.
- .7 Wall Bracket Supports:
 - .1 Wall bracket supports shall consist of heavy duty pipe anchor chain equal to Myatt 312 for pipes 100 mm dia. and larger and Figure 310 for pipes 100 mm and smaller.
 - .2 Wall brackets shall be equal to Myatt Figure 321/22.
- .8 Thrust Blocks:
 - .1 Thrust blocks are to be made of reinforced concrete in accordance with Sections 03100, 03201 and 03305.
 - .2 Contractor shall design thrust blocks and submit design details to Engineer for review.
 - .3 Dowels for floor mounted thrust blocks shall extend 150 mm into floor unless otherwise noted.
- .4 Anchor dowel to floor with approved two part epoxy anchoring system: Hilti - C-100, Ucan, Set-45 or approved equal.

6. Guards

- .1 Provide guards for exposed drives.
- .2 Guards for drives shall have:
 - .1 Expanded metal screen welded to 25 mm steel angle frame.

Mechanical General Provisions

Section No. 15010

- .2 1.2 mm thick galvanized sheet metal tops and bottoms.
 - .3 38 mm dia. holes on shaft centre for insertion of tachometer.
 - .4 Removable for servicing.
- .3 Provide means to permit lubrication and use of test instruments with guards in place.
- .4 Install belt guards to permit movement of motors for adjusting belt tension.
- .5 Guard for flexible coupling:
 - .1 "U" shaped, minimum 1.6 mm thick galvanized mild steel.
 - .2 Securely fasten in place.
 - .3 Removable for servicing.
- .6 Unprotected fan inlets or outlets:
 - .1 Wire or expanded metal screen, galvanized, 19mm mesh.
 - .2 Net free area of guard: not less than 80% of fan openings.
 - .3 Securely fasten in place.
 - .4 Removable for servicing.
- 7. Sleeves
 - .1 Pipe sleeves: at points where pipes pass through masonry, concrete or fire rated assemblies and as indicated.
 - .2 Construct sleeves of Schedule 40 steel pipe.
 - .3 Provide sleeves with annular puddle flange continuously welded at midpoint for all pipes passing:
 - .1 Through foundation walls.
 - .2 Where sleeve extends above finished floor.
 - .4 Sizes: minimum 6 mm clearance all around, between sleeve and uninsulated pipe or between sleeve and insulation.
 - .5 Terminate sleeves flush with surface of concrete and masonry walls, concrete floors on grade and 25 mm above other floors.
 - .6 Fill voids around pipes:
 - .1 Caulk between sleeve and pipe in foundation walls and below grade floors with waterproof fire retardant non-hardening mastic.

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- .2 Where sleeves pass through walls or floors, provide space for firestopping. Where pipes/ducts pass through fire rated walls, floors and partitions, maintain fire rating integrity.
 - .3 Ensure no contact between copper tube or pipe and ferrous sleeve.
 - .4 Fill future-use sleeves with lime plaster or other easily removable filler.
 - .5 Coat exposed surfaces of ferrous sleeves with heavy application of zinc rich paint.
8. Escutcheons and Plates
- .1 Provide on pipes passing through finished walls, partitions, floors and ceilings in finished areas.
 - .2 Use chrome or nickel plated brass or Type 302 stainless steel, one piece type with set screws.
 - .3 Inside diameter shall fit around finished pipe. Outside diameter shall cover opening or sleeve.
 - .4 Where sleeve extends above finished floor, escutcheons or plates shall clear sleeve extension.
 - .5 Secure to pipe or finished surface but not insulation.
9. Tests
- .1 Provide the following supplementary requirements to tests specified:
 - .1 Give written 24 h notice of date when tests will be made.
 - .2 Where possible, do not insulate or conceal work until tested and approved. Follow construction schedule and arrange for tests.
 - .3 Conduct tests in presence of Engineer.
 - .4 Bear costs including retesting and making good. Bear costs of manufacturer's representatives of specialists required to complete tests.
 - .5 Piping:
 - .1 General: maintain test pressure without loss for 4 h unless otherwise specified.
 - .2 Test natural gas systems to CAN1-B149.1-M86 and requirements of authorities having jurisdiction.

Mechanical General Provisions

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- .3 Test drainage, waste and vent piping to National Building Code and authorities having jurisdiction.
- .4 Test domestic hot, cold and recirculation water piping at 1-1/2 times system operating pressure or minimum 860 kPa, whichever is greater.
- .5 Test fire systems in accordance NFPA 20 (1993) with authorities having jurisdiction and as specified elsewhere.
- .6 Test process piping at 1034 kPa or as directed by Engineer.
- .6 Equipment: test as specified in relevant sections.
- .7 Prior to tests, isolate all equipment or other parts which are not designed to withstand test pressures or test medium.

10. Painting

- .1 Paint all equipment, supports, piping, valves, ductwork, etc., with finish painting system as specified in the painting section of these specifications.
- .2 Apply at least one coat of corrosion resistant primer paint to ferrous supports and site fabricated work.
- .3 Prime and touch up marred finished paint work to match original.
- .4 Restore to new condition, finishes which have been damaged too extensively to be merely primed and touched up.

11. Special Tools and Spare Parts

- .1 Furnish spare parts as follows:
 - .1 One set of packing for each pump.
 - .2 One glass for each type or gauge installed.
 - .3 One set of belts for each piece of machinery.
 - .4 One filter cartridge or set of filter media for each filter bank installed in addition to final operating set.
- .2 Identify spare parts containers as to contents and replacement parts number.

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- .3 Provide one set of special tools required to service equipment as recommended by manufacturers.
- .4 Furnish one grease gun and adaptors to suit different types of grease and grease fittings.
- .5 Upon completion of project and immediately before hand-over, replace all filters.

12. Dielectric Couplings

- .1 Provide wherever pipes of dissimilar metals are joined. This includes ductile iron or cast iron to stainless steel and galvanized piping to bronze fittings.
- .2 To be compatible with and to suit pressure rating of piping system, valves and equipment.
- .3 Install where piping is connected to valves or equipment and the materials of construction of the two are dissimilar.
- .4 Pipes NPS 2 and under: isolating unions.
- .5 Pipes NPS 2½ and over: isolating flanges.
- .6 Acceptable materials: Watts Series 3000, Emco or equal.

13. Excavation and Backfill

- .1 Excavation and backfilling for mechanical work is specified in OPSS.
- .2 Ensure that excavation for underground mechanical services is in location and at depth indicated. Provide protective materials around and over services and be present at all times during excavation and backfilling to supervise work.

14. Cutting and Remedial Work

- .1 Cutting and remedial work is specified in OPSS.
- .2 Set sleeves and mark openings in concrete forms and in masonry before placing of concrete and erection of masonry. Assume full

Mechanical General Provisions

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responsibility for laying out mechanical work and for any damage caused by incorrectly located equipment and mechanical services. Verify that sleeve locations and size shown on drawings are suitable for equipment supplied.

15. Puddle Flanges

- .1 Where piping passes from water retaining structures into dry areas, puddle flanges, integral with the piping shall be cast into the wall. Puddle flanges shall consist of an annular fin continuously welded on both sides of the pipe passing through the wall. Puddle flange shall be of same material as connecting pipe.
- .2 Locate puddle flange at midpoint of wall.

16. Expansion and Contraction Allowance

- .1 Ensure adequate allowance for expansion and contraction movements of all piping. If sufficient allowance is not inherent in specified joints, provide special expansion joints. A temperature difference of 10°C is to be accommodated in all process piping.

17. Flexible Couplings

- .1 Flexible couplings shall be Dresser, Rockwell or approved equal.

18. Fittings and Joints

- .1 Fittings, couplings, valves, etc. are to be installed at locations shown on drawings. Special couplings such as Dresser or Victaulic are to be provided where dismantling of piping is required for removal of equipment.
- .2 Flexible couplings shall be installed on all piping where it exists a structure underground. Coupling shall be located 0.3 m away from exterior face of structure or as detailed on drawings.

19. Welding

- .1 All welding shall be done by welders certified by the Canadian Welding Bureau. Welding is to be performed in accordance with ASMA Boiler

Mechanical General Provisions

Section No. 15010

and Pressure Vessel Code for unfired pressure vessels and to the requirements of CSA Spec. W47.1.

20. Nuts and Bolts

- .1 All nuts and bolts, unless otherwise noted, shall be hex head machined to ASTM A307-78 American Heavy Series.
- .2 All nuts and bolts, unless otherwise noted, shall be grade 2 U.N.C. zinc or cad plated.

21. Pressure Gauges

- .1 Locate gauges as shown on the Contract Drawings for convenient reading.
- .2 Gauge shall be 115 mm dia. liquid filled, stem mounted, dial type to CGSB 91-GP-1, Type A, Grade A.
- .3 On piping downstream of pumps gauge dial range shall be from 0 - 2069 kPa (300 psi) unless noted otherwise.
- .4 On piping upstream of pumps gauge dial shall range from 762 mm (30") of mercury to 413 kPa (60 psi) unless noted otherwise.
- .5 Gauge dials to read in both kPa and psi.
- .6 Provide stainless steel pressure snubbers and needle valve at every gauge.
- .7 Provide isolating diaphragm for gauges installed on lines carrying sewage or slurries.
- .8 Acceptable Product: Ashcroft, Terice or approved equal.

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22. Equipment Identification

- .1 For all equipment supplied under this Division containing a transmitter or motor provide lamicaid identification labels.
- .2 Labels shall be installed after all painting has been completed and shall be secured with self-tapping screws or adhesive.
- .3 Ensure that all stamped, etched or engraved lettering on plates is perfectly legible. Do not paint over namplates and where apparatus is to be concealed, attach the nameplate in an approved location on the equipment support or frame.
- .4 Identify all equipment with the corresponding remote controls.
- .5 Identify equipment with nameplates as follows:
 - .1 Namplates:
 - .1 Lamicaid 3 mm thick plastic engraving sheet, black face, white core, self adhesive or mechanically attached unless specified otherwise.

Nameplate Sizes		
Size 1	10 x 50 mm	1 line 3 mm high letters
Size 2	12 x 70 mm	1 line 5 mm high letters
Size 3	12 x 70 mm	2 lines 3 mm high letters
Size 4	20 x 90 mm	1 line 8 mm high letters
Size 5	20 x 90 mm	2 lines 5 mm high letters
Size 6	25 x 100 mm	1 line 12 mm high letters
Size 7	25 x 100 mm	2 lines 6 mm high letters

- .2 Wording on nameplates to be approved by Engineer prior to manufacture.
- .3 Allow for average of twenty-five (25) letters per nameplate.
- .4 Identification to be English.

Mechanical General Provisions

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23. Filtration Equipment

- .1 Supply and install raw water filtration equipment as shown on the Contract Drawings.
- .2 Each filter housing shall be 304 stainless steel c/w brass wing-nuts at access covers.
- .3 Inlet and outlet piping shall be integral to filter housing.
- .4 Provide pressure gauges to monitor pressure differential (one inlet and one outlet – per housing).
- .5 Acceptable Product: Harmsco Hurricane Filter Housing model HUR-170-1).
- .6 Provide 12 spare filter cartridges for each filter (total 24 cartridges). Filters shall be 1 micron (nominal) (PP-HC-170-1).

END OF SECTION

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Plumbing and Drainage Systems

Section No. 15020

PART 1 - GENERAL

1.1 References

- .1 National Plumbing Code

1.2 Product Data

- .1 Submit data for all items specified in this section, including:
 - .1 Valves
 - .2 Mechanical Joints

1.3 Maintenance Data

- .1 Provide maintenance data in accordance with Section 01730 for incorporation into manual specified in the Mechanical General Provisions Section of this Specification.

1.4 Related Work Specified Elsewhere

- .1 Applicable Sections of Division 1.
- .2 Applicable Sections of Division 15.
- .3 Specifications listed on Electrical Drawing.

1.5 NSF Certification

- .1 All materials that come in contact with potable water must be certified to NSF-61 standards.

1.6 This specification applies specifically to the truck fill drain pipe extending from the solenoid valve to the intake carrier pipe. Drain pipe shall be wall mounted and discharge to the 'void' between the carrier pipe and pump discharge piping, as shown on the Contract Drawings.

PART 2 – PRODUCTS (Note: Some items listed may not apply to this project)

2.1 Copper Piping

- .1 Domestic hot and cold water systems, within building.
 - .1 Above ground: copper tube, hard drawn, type L: to ASTM B88M.
 - .2 Buried and embedded: copper tube, soft annealed, Type K: to ASTM B88M, in long lengths and with no buried joints.
 - .3 Fittings: Wrought copper and copper alloy, solder type to ANSI B16.22.

Plumbing and Drainage Systems

Section No. 15020

2.1 Copper Piping – Cont'd

- .1 Solder/brazing: to contain less than 0.2% lead to suit application.
- .2 Above ground sanitary and vent Type DWV to: ASTM B306.
 - .1 Fittings.
 - .1 Cast brass: to CAN/CSA B125.
 - .2 Wrought copper: to CAN/CSA B125.
 - .2 Solder: tin-lead, 50:50, to ASTM B32, type 50A.
 - .3 Fuel oil supply and return lines between fuel tank and diesel engine, copper tube, soft annealed, Type K to ASTM B88M, in long lengths and with no joints.
 - .1 Fittings: wrought copper and copper alloy, solder type to ANSI B16.22. Minimum melting point of solder must exceed 537°C.

2.2 Cast Iron Piping and Fittings

- .1 Buried storm, sanitary and vent minimum NPS 4, to: CAN 3-B70, with one layer of protective coating.
 - .1 Joints.
 - .1 Mechanical joints.
 - .1 Neoprene or butyl rubber compression gaskets: to ASTM C564 or CAN 3-B70.
 - .2 Stainless steel clamps.
 - .2 Hub and spigot.
 - .1 Caulking lead: to CSA B67.
 - .2 Cold caulking compounds.
 - .2 Above ground storm/roof drain, sanitary and vent: to CAN 3-B70.
 - .1 Joints.

Plumbing and Drainage Systems

Section No. 15020

2.2 Cast Iron Piping and Fittings – Cont'd.

- .1 Hub and spigot.
- .1 Caulking lead: to CSA B67.
- .2 Mechanical joints.
 - .1 Neoprene or butyl rubber compression gaskets with stainless steel clamps.
- .3 Cast iron couplings.
 - .1 Complete with neoprene gaskets and stainless steel bolts and nuts.

2.3 Plastic Piping and Fittings

- .1 For buried applications DWV piping to:
 - .1 ABS Piping: CAN 3-B181.1.
 - .2 PVC Piping: CAN/CSA-B181.2.
 - .3 Plastic Drain & Sewer Pipe: CAN/CSA-B182.1.
- .2 Joints:
 - .1 Solvent weld for PVC: to ASTM D2564.
 - .2 Solvent weld for ABS: to ASTM D2235.
- .3 Do not install plastic piping on any systems that penetrate a fire separation.

2.5 Stainless Steel Piping

- .1 Sample piping: Schedule 10S welded, seamless, stainless steel pipe to ASTM A312.
 - .1 Material: Grade 304L stainless steel.
 - .2 Fittings: Grade 304L stainless steel, screwed, flanged or welded, Schedule 10S.
 - .3 Flanges: Class 150 dimensions.

2.6 Gate Valves

- .1 NPS 2.5 and under, soldered or threaded:
 - .1 Rising stem Class 125, 860 kPa, bronze body, screw-in bonnet, solid wedge disc.
 - .2 Acceptable material: Jenkins Fig. 313 or Fig. 315, Crane or approved equal.

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2.6 Gate Valves (Cont'd)

- .2 NPS 3 and over, non-ferrous flanged:
 - .1 Rising stem: Class 125, 860 kPa, bronze body, OS&Y, solid wedge disc.
 - .2 Acceptable material: Jenkins Fig. 677-A, Crane or approved equal.
- .3 NPS 3 and over, ferrous flanged:
 - .1 Rising stem: Class 125, 860 kPa, bronze body, OS&Y, solid wedge disc.
 - .2 Acceptable material: Jenkins Fig. 454, Crane or approved equal.

2.7 Globe Valves

- .1 Soldered or threaded:
 - .1 Class 125, 860 kPa, bronze body, renewable composition disc, screwed over bonnet.
 - .2 Lockshield handles: as indicated.
 - .3 Acceptable material: Jenkins, Fig. 106-BP or Fig. 106-B, Crane or approved equal.

2.8 Swing Check Valves

- .1 NPS 2.5 and under, soldered or threaded:
 - .1 Class 150, 860 kPa, bronze body, bronze swing disc, screw in cap, regrindable seat.
 - .2 Acceptable material: Jenkins Fig. 4093 or Fig. 4092, Crane or approved equal.
- .2 NPS 3 and over, flanged:
 - .1 Class 125, 860 kPa, iron body, bronze swing disc, bolted cap, regrindable seat.
 - .2 Acceptable material: Jenkins Fig. 588 or Fig. 4092, Crane or approved equal.

2.9 Hose Bibs

- .1 Threaded:
 - .1 Class 125, 860 kPa, bronze body, renewable composition disc, screwed over bonnet.
 - .2 Outlet threaded for 13mm hose connection, and complete with cap and chain.
 - .3 Fit hose bibs in chemical feed area and pump room with vacuum breakers as specified.

Plumbing and Drainage Systems

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2.9 Hose Bibs – Cont'd.

- .4 Acceptable material: Jenkins Fig. 314, Crane or approved equal.

2.10 Smooth Nose Sample Taps

- .1 To be Boshart Model No. 0874-05 or approved equal.

2.11 Insulation

- .1 Fire And Smoke Rating: In accordance with CAN/ULC• S102.
 - .1 Maximum flame spread rating: 25.
 - .2 Maximum smoke developed rating: 50.
- .2 Insulation: Mineral fibre specified includes glass fibre, rock wool, slag wool. Thermal conductivity ("k" factor) not to exceed specified values at 24 degrees C mean temperature when tested in accordance with ASTM C335.
- .3 Hot Lines: TIAC Code A• 1: rigid moulded mineral fibre without factory applied vapour retarder jacket.
Mineral fibre: to CAN/ULC• S702.
Maximum "k" factor: to CAN/ULC• S702.
- .4 Cold Lines: TIAC Code A• 3: rigid moulded mineral fibre with factory applied vapour retarder jacket.
Mineral fibre: to [CAN/ULC• S702] [ASTM C547].
Jacket: to CGSB 51• GP• 52Ma.
Maximum "k" factor: to [CAN/ULC• S702] [ASTM C547].

Plumbing and Drainage Systems

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2.11 Insulation – (Cont'd)

- .6 Insulation Securement:
 - .1 Tape: self-adhesive, aluminum, reinforced, 50 mm wide minimum.
 - .2 Contact adhesive: quick setting.
 - .3 Tie wire: 1.5 mm diameter stainless steel.
 - .4 Bands: stainless steel, 19 mm wide, 0.5 mm thick.
- .7 Cement: Thermal insulating and finishing cement: Air drying on mineral wool, to ASTM C449/C449M.
- .8 Jackets
 - .1 Indoor Cold Lines: Polyvinyl Chloride (PVC): One-piece moulded type to CAN/CGSB-51.53 with pre-formed shapes as required. Colours: to match adjacent finish paint.
 - .1 Service temp.: -20 degrees C (min), 65 degrees C (max).
 - .2 Max. vapour transmission: 0.02 perm.
 - .3 Fastenings: Use solvent weld adhesive compatible with insulation to seal laps and joints.
 - .4 Tacks: Pressure sensitive vinyl tape of matching colour.
 - .2 Indoor Hot Lines: Canvas: 220 gm/m² cotton, plain weave, treated with dilute fire retardant lagging adhesive to ASTM C921. Vapour retardant layer and Lagging adhesive: compatible with insulation.
 - .3 Outdoor Cold Lines: ABS Plastic: One-piece moulded type with pre-formed shapes as required. Colours: to match adjacent finish paint.
 - .1 Service temp.: -40 degrees C (min), 82 degrees C (max).
 - .2 Max. vapour transmission: 0.012 perm.
 - .3 Fastenings: Solvent weld adhesive compatible with insulation to seal laps and joints.
 - .4 Tacks: Pressure sensitive vinyl tape of matching colour.

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2.11 Insulation – (Cont'd)

- .4 All Outdoor Insulation: Aluminum To ASTM B209.
Thickness: 0.50mm sheet.
 - .1 Finish: smooth.
 - .2 Joining: longitudinal and circumferential slip joints with 50 mm laps.
 - .3 Fittings: 0.5 mm thick die-shaped fitting covers with factory-attached protective liner.
 - .4 Metal jacket banding and mechanical seals: stainless steel, 19 mm wide, 0.5 mm thick at 300 mm spacing.
 - .5 Caulking to: Section 07 92 10 - Joint Sealing.

2.12 Solenoid Valve

- .1 Refer to Section 15400.

PART 3 - EXECUTION

3.1 General

- .1 Install in accordance with National Plumbing Code of Canada and local authority having jurisdiction except where specified otherwise.

3.2 Piping

- .1 Cut square, ream and clean tubing and tube ends, clean recesses of fittings and assemble without binding.
- .2 Assemble all piping using fittings manufactured to ANSI standards.
- .3 Install ABS drain, waste and vent pipe and pipe fittings in accordance with CSA B181.11.
- .4 Install PVC drain, waste and vent pipe and pipe fittings in accordance with CSA B181.12.
- .5 Install tubing close to building structure to minimize furring, conserve headroom and space. Group exposed piping and run parallel to walls.
- .6 Connect to fixtures and equipment in accordance with manufacturer's instructions, unless otherwise indicated.

Plumbing and Drainage Systems

Section No. 15020

3.2 Piping – Cont'd.

.7 Buried Piping:

- .1 Lay in well compacted washed sand in accordance with AWWA Class B bedding.
- .2 Bend tubing without crimping or constriction. Minimize use of fittings.
- .3 All lines outside building walls require burial below frost depth or protective insulation and heat tracing.

.8 Copper Pipe Encased In Concrete:

- .1 Where copper piped is embedded in concrete it shall be wrapped in 6 mil polyethylene sheeting to prevent contact between the copper pipe and concrete.

3.3 Valves

- .1 Isolate equipment, fixtures and branches with gate valves.

3.4 Disinfection

- .1 Disinfect all tanks, pumps, fixtures and piping with high strength chlorine solution (minimum 12% chlorine) for 24 hours prior to use. Follow instructions of owner's representative prior to starting disinfection.

3.5 Fixture Installation

- .1 Connect fixtures complete with supplies and drains, trapped, supported level and square hot water faucets shall be on left. Fixtures on outside walls to have supplies from floor; other fixtures to be served from wall. Wall hung fixtures to be securely and firmly mounted.
- .2 Mounting heights for wall hung fixtures and showers measured from finished floor:
 - .1 Standard: to comply with manufacturer's roughing-in details unless otherwise indicated or specified.

Plumbing and Drainage Systems

Section No. 15020

3.6 Pipe Insulation

- .1 Insulate all water piping, valves and fittings inside the building.
- .2 Do not apply insulation until all tests are complete.
- .3 Use high density insulation between pipe and hangers. Maintain integrity of vapour barrier over full length of pipeline without interruption at sleeves, fittings and supports.
- .4 Install in accordance with NFPA 90A and NFPA 90B.

END OF SECTION

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Process Piping and Control Devices

Section No. 15400

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

.1	Mechanical General Provisions	Section 15010
.2	Plumbing and Drainage	Section 15020
.3	Pumps	Section 15418
.4	Applicable Sections of Division 1	
.5	Specifications listed on Electrical Drawings	

1.2 Maintenance Data and Shop Drawings

- .1 Provide maintenance data in English for all valves, including pressure sustaining, control and pressure relief valves, chlorinators, analyzers, flow meters and controls for incorporation into maintenance manual specified in Section 01730.
- .2 Provide shop drawings in accordance with Section 01340.

1.3 Responsibility

- .1 Solenoid controlled valves to be provided under Division 15 and wired in accordance with the specification and requirements listed on the Electrical Drawing.

1.4 NSF Certification

- .1 All materials that came in contact with potable water must be certified to NSF-61 standards.

1.5 This Section applies specifically to the truck fill piping and associated appurtenances within the building. All existing truck fill piping and associated components shall be removed and disposed of by the Contractor. Contractor shall note that this work shall be completed at a time convenient to the Municipality and shall not interfere with water delivery activities. General Contractor shall provide details regarding how the proposed work will be completed while still ensuring uninterrupted water supply. Methodology must be approved by Municipality and Engineer.

1.6 Specifications pertaining to filters are included in Section 15010 Mechanical General Provisions.

Process Piping and Control Devices

Section No. 15400

PART 2 - PRODUCTS (Note: Some items listed may not apply to this project) **Piping and fittings shall be of the type listed on the Contract Drawings**

2.1 Process Piping

2.1.1 Ductile Iron Pipe (D.I.)

- .1 Manufacture: to AWWA C150, Pressure Class 350.
- .2 Cement lining to AWWA C104/A21.4.
- .3 Joints:
 - .1 Buried - Tyton or mechanical joint to AWWA C111.
 - .2 Nonburied - (in buildings and chambers)
Flanged to AWWA C110 or grooved to C606.
- .4 Flanged joints shall be completed using 3 mm thick preformed synthetic full face red rubber gaskets.
- .5 Fittings: Cast iron or ductile iron to:
Buried - AWWA C111
Non-buried - AWWA C110

Where fitting is buried attached 11 kg zinc anode to fitting by means of CAD welding. Also supply and install sacrificial zinc washers on every other bolt.

2.1.2 Copper

- .1 Manufacture: Type L, hard drawn manufactured to ASTM B88M.
- .2 Joints: Solder/brazing: to contain less than two percent lead.
- .3 Fittings: Sweat wrought copper to ANSI B16.22 except where compression fittings are required.

Process Piping and Control Devices

Section No. 15400

2.1 Process Piping - Cont'd

2.1.3 Stainless Steel

.1 Manufacture to ASTM A240

.2 Joints

- Welded to ASME Standards for Stainless Steel and Part 9 of the ASME Boiler and Pressure Vessels Code A-240 specifications
- Welded joints shall include at each location a full circumferential joint weld designed to be watertight and to transfer the full design thrust generated by the test pressure plus appropriate safety factors. Unless otherwise noted on Contract Drawings, provide Procedure Qualification Reports (PQR's) stamped and signed by TSSA for all shop welded joints. All welding work either in the shop or field shall be done in accordance with Part 9 of ASME Boiler and Pressure Vessels Code. Welders shall be qualified under CSA W-47 by the Canadian Welding Bureau and welding must be carried out to the requirements of CSA W59.1
- Flanged using angled (butt weld or slip on) collars and galvanized backing flanges to ASME B16.5 capable of withstanding 1035 kPa working pressure and a full vacuum. Flanged joints to be completed using 3 mm thick performed synthetic full face rubber gasket.
- Grooved to fit AWWA Victaulic Style or 44 or 77 couplings

.3 Piping: Type 316 I.P.S. Schedule 10s to ASTM A-778 specifications.

.4 Fittings: Type 316 I.P.S. Schedule 10s to ASTM A774 specifications. All fittings shall be of thickness to meet a minimum working pressure of 1034 kPa and a full vacuum. Fabricator shall provide a list of working pressures for all fittings at time of shop drawing submission. Reducers, reducing elbows, mitred reducing elbows, tees, laterals and special fittings must be designed and stamped by a Professional Engineer to criteria established in ASME B31.1 to confirm that these fittings can handle 1035 kPa working pressure and a full vacuum at 40 degrees Celsius. Schedule 10s Pipe and 90 degree elbows already have this capability and do not require

Process Piping and Control Devices

Section No. 15400

2.1 Process Piping - Cont'd

any special design. Where shown on Contract Drawings, mitred 90 degree elbows shall have at least 5 sections.

- .5 Stainless steel piping less than 75 mm dia. shall be Type 316, Schedule 40 complete with welded, grooved or threaded joints.

The following shall be from stainless steel tubing:

- .1 Instrument connections
 - .2 Combination air valve piping from process to air valve base.
- .6 Provide neoprene bearing pad between process piping and concrete supports.

2.1.4 Galvanized Schedule 40 Steel

- .1 Manufacture to: CSA B-63-1966 galvanized to ANSI B-63-1966 and B2.1.
- .2 Joints: threaded.
- .3 Fittings: 1030 kPa threaded, standard weight, malleable iron, galvanized to ANSI B16.3 and B2.1.

2.1.5 Schedule 80 PVC

- .1 Manufacture to CSA B137.3 M1981. Note: Exposed piping located on the exterior buildings and structures must be either copper, stainless steel or galvanized steel.
- .2 Joints: socket, threaded, flanged or socket fusion. Socket fusion shall not be allowed where pipe is supporting a mechanical device. Where socket fusion is used provide additional unions for ease of dismantling.
- .3 Fittings: Schedule 80 PVC threaded flanged or socket. Where socket fusion fittings are installed provide additional unions for ease of dismantling equipment. Fittings shall be compatible with pipe material manufactured to ASTM D2464, D2466 or D2467.

Process Piping and Control Devices

Section No. 15400

2.1.6 Steel Piping

- .1 Steel piping shall be used for fire pump discharge piping in accordance with NFPA requirements.

2.2 Miscellaneous Couplings and Unions

- .1 Uni-Flange: Only to be used in non-buried applications on ductile iron pipe. Flange to be secured to pipe with set screws tightened to torque recommended by manufacturer. "Uni-Flange" type flanges are only to be used where shown on the Contract Drawings or unless specifically approved in writing by the Engineer.
- .2 Plain pipe couplings, "Dresser type".
Full circle, to suit outside diameter of pipe to be joined. Carbon steel sleeve, ductile iron follower, high strength low alloy steel bolts with hexagon nuts to AWWA C111 shop coat enamel finish, rubber gaskets suitable for use with potable water. Acceptable products are Rockwell, Smith Blair, Dresser.

Dresser type couplings shall be installed on all pipes exiting structure to allow for differential settlement. Couplings shall be located not more than 1 m away from structures and shall have 11 kg zinc anodes, CAD welded to the casting.

Dresser type couplings shall only be installed where shown on the Contract Drawings or where specifically approved in writing by the Engineer.

- .3 Rodded Reinforcement: In Buildings and Chambers Only: Wherever couplings such as "Uni-Flange" and "Dresser" are used, reinforce joint by installing threaded rod across coupling to nearest flange by flange joint. Threaded rod shall be galvanized and of same size as connecting flange bolt holes. Number of rods:

200 mm dia. and less - two
250 mm dia. and greater - four

- .4 Victaulic Couplings: to suit type of pipe being joined. Collar material, if required, shall be the same material as the adjoining pipe. For steel, stainless steel or ductile iron pipe: Style 31 galvanized for pipe sizes to 600 mm dia. Or Style 44 galvanized for larger piping. Gaskets provided shall be for portable water use. Victaulic couplings shall be

Process Piping and Control Devices

Section No. 15400

2.2 Miscellaneous Couplings and Unions – Cont'd.

galvanized. All components of Victaulic system must be rated for a minimum working pressure of 1035 kPa.

5 Pipe Supports

- .1 Floor type: adjustable with matching saddle.
- .2 Hangers: adjustable, clevis type, sized to suit.
- .3 All supports to be ITT Grinnell or approved equal.

.6 Nuts and Bolts

- .1 Hex head of length required ASTM A307-78 heavy series zinc or cad plated.

2.3 Valves

.1 Butterfly Valves (Lug Wafer Type)

.1 NPS 75 mm dia. And greater – cast iron body, epoxy coated inside and out meeting the requirements of AWWA C550, (ASTM A126) lug type, manual gear activated c/w handwheel unless noted otherwise, anti friction coated, stainless steel shaft (and extension stem where required) with self regulating nylon or Teflon bearings, floating seat, replaceable 'BUNA-N' seats, adjustable watertight packings, stainless steel or bronze discs suitable for mounting with ANSI flanges, 1034 kPa CWP.

Valve and valve coating to be suitable for use in potable water.

All isolation valves to be c/w lug body suitable for dead end service with downstream flange removed.

Acceptable Products: Pratt, Keystone, Centre Line, Contromatics Watts or approved equal.

- .2 Torque tube - 75 mm dia. Schedule 40 steel epoxy coated inside and out meeting the requirements of AWWA C550 Tube to be watertight. Provide watertight seal between tube, extension stem and top of butterfly valve. Provide galvanized wall brackets for tube support. Gear box and handwheel to be located as shown on Contract

Process Piping and Control Devices

Section No. 15400

Valves - Cont'd

Drawings. Extension stem diameter as recommended by manufacturer for seating/unseating torques.

- .2 Butterfly Valves (AWWA Type)
 - .1 Butterfly valves shall be of the short body rubber seated type, conforming to the latest revision of AWWA C504. Valves shall be bubble tight at the rated pressure and shall be suitable for both throttling and on/off isolation service.
 - .2 Valve body shall be of cast iron construction to ASTM A126 Class B.
 - .3 Valve discs shall be of ductile iron, A536 Grade 65-45-12.
 - .4 Valves shall be flanged. Flanged drillings shall be to ANSI B16.1 Class 125.
 - .5 Valve shafts shall be of solid 304 stainless steel, corresponding to the design requirements of the latest revision of AWWA C504. The shafts shall be fastened to the disc by a means designed to provide vibration-proof connection.
 - .6 Butterfly valves shall be provided with resilient seat on the valve body or seat on disc. The seat shall be mechanically retained, field adjustable and replaceable. All products used for field adjustment shall be NSF 60/61 pre and post cured. Mating seal surfaces shall be stainless steel to ASTM A276 T304.
 - .7 Seats and shaft packaging shall be of Buna-N V-Packing.
 - .8 Seats to be fully adjustable in all sizes, with locking bolts passing through the seat.

Process Piping and Control Devices

Section No. 15400

Valves – Cont'd

- .9 Shaft bearings shall be of the self-lubricating corrosion resistant sleeve type designed for both horizontal and vertical shaft loading.
- .10 Valves shall be hydrostatically tested for bubble tight shut off, in accordance with the latest revision of AWWA C504.
- .11 All materials, coatings and lubricants to be suitable for potable water applications.
- .12 Valve to be interior/exterior epoxy coated with NSF-61 Epoxy per AWWA C550.
- .13 Valve to be NSF-61 Certified.
- .14 Unless otherwise indicated, valves shall be provided with handwheel operated manual gear actuators, suitably selected for the torque requirements of AWWA valve class.
- .15 Provide chain operators with cadmium plated chains for all valves having a distance from the valve centre to the floor greater than 2.0 m.
- .16 Cast an arrow with the word OPEN in a prominent location, readily visible to the operator, indicating the correct rotation of the crank to open (counter clockwise).
- .17 Provide properly sized handwheels to suit the size of the valve, having a diameter not less than 250 mm in diameter. Provide for larger handwheels on valves greater than 1050 mm in diameter.
- .18 Gear to have external adjustable stops – open/close.
- .19 Provide gear ratios in the operators so that the force exerted on the rim of the wheel does not exceed 175N, except for seating and unseating the butterfly valve.

Process Piping and Control Devices

Section No. 15400

Valves – Cont'd

- .20 Provide lubricants that are suitable for potable water.
- .21 Acceptable suppliers – Valmatic-American, Mueller, Pratt, DeZurik, Clow M & H, or approved equal.
- .3 Gate Valves (interior)
 - .1 Copper pipe: bronze body, solder joint, 1.4 MPa CWP, rising stem, solid wedge disc. Acceptable product: Crane or approved equal.
 - .2 Galvanized and Stainless Steel Pipe: NPS 75 mm and under, bronze body, threaded, 1.0 MPa, CWP, rising stem, solid wedge disc. Acceptable product: Crane, AVK or approved equal.
 - .3 Ductile Iron and Stainless Steel Piping: NPS 100 mm and greater, iron body, epoxy coated inside and out meeting the requirements of AWWA C550, bronze trim, flanged, 1.4 MPa CWP, rising stem, solid wedge disc, OS and Y. Underwriters and FM approved. Acceptable product: Darling, Kennedy, AVK or approved equal.
- .4 Globe Valve
 - .1 Copper Pipe, bronze body, solder joint, crew-over bonnet, 2.0 MPa, CWP.
Acceptable product: Crane or approved equal.
 - .2 Galvanized Steel Pipe: NPS 75 mm and under, bronze body, threaded, screw-over bonnet, stay-on disc holder, 1.0 MPa, CWP Acceptable product: Crane or approved equal.
 - .3 Ductile Iron or Stainless Steel Piping: NPS 100 mm and greater, iron body, epoxy coated inside and out meeting the requirements of AWWA C550, bronze trim, flanged, renewable composition disc, O, S and Y renewable bronze seat ring, 1.7 MPa, CWP Acceptable product: Crane or approved equal.

Process Piping and Control Devices

Section No. 15400

2.3 Valves – Cont'd

.5 Ball Valves

- .1 Copper Pipe: bronze body, solder joint compact pattern, teflon seats and packing, 2.7 CWP Acceptable product: Crane, Kitz, Contromatics Watts or approved equal.
- .2 Copper or Galvanized Steel Pipe: NPS 50 mm and under, bronze body threaded, compact pattern teflon seats and packing, 2.7 MPa CWP Acceptable product: Crane, Kitz, Contromatics Watts or approved equal.
- .3 PVC ball valves shall be used only on PVC piping. Valve shall have union ends, be of thermoplastic construction, have teflon seats and EDPM O rings, CWP 1034 kPa. Acceptable product: Chemline or approved equal.
- .4 Stainless Steel and Ductile Iron Pipe (and for use on instruments, pressure gauges and combination air valves): NPS 63 mm and under, threaded, 316 stainless steel body, compact Teflon seats and packing, 2.7 MPa CWP stainless steel handle. Acceptable product: Crane, Contromatic, Watts, Apollo, Worchester or approved equal

.6 Silent Check Valve

- .1 Wafer type NPS 50 mm and greater, silent operating type, centre guided spring loaded poppet, Buna N seat, F.M. approved, cast iron body epoxy coated inside and out meeting the requirements of AWWA C550, suitable for mounting with ANSI flanges, .87 MPa, CWP Acceptable product: Apco, Valmatic or approved equal.
- .2 Globe Type: NPS 63 mm and greater, silent operating type, double guided disc, centre guided spring loaded poppet, Buna N seat, ULC listed and labelled approved, cast iron body epoxy coated inside and out meeting the requirements of AWWA C550, flanged 0.87 MPa, CWP Acceptable product: Apco, Valmatic or approved equal.

Process Piping and Control Devices

Section No. 15400

2.3 Valves – Cont'd

.7 Swing Check Valve

- .1 Wafer type NPS 50 mm and greater, carbon steel or cast iron body, driptight shutoff, stainless steel disc, EPDM seat, 0.87 MPa Class working pressure. Acceptable product: Moygro (M & G), Checkrite, Kennedy or approved equal.
- .2 AWWA C508 NPS 75 and greater. Swing check valve shall have iron body, bolted cover and clapper assembly shall be ductile or cast iron with bronze face. Disc shall be cast iron with bronze rings.

Valve shall conform to AWWA C508, have adjustable lever and counterweight, be suitable for installation in vertical or horizontal position, be rated for 1.2 MPa CWP, suitable for sewage application.

Check valve to be constructed to permit external entry for the complete removal of the internal components without removing the maincase from the line.

Acceptable product: Kennedy, Mueller or approved equal.

.8 Solenoid Valve

- .1 Normally closed forged brass, resilient seating of voltage shown on drawings. 2.1 MPa CWP.
- .2 Pipe discharge as shown on Contract Drawings.
- .3 Acceptable Product: Refer to Contract Drawings.

.9 Hose Bib (Stainless Steel)

- .1 Stainless steel body, replaceable composition disc, threaded spout, complete with hand wheel and 19 mm dia. male threaded spout, 1.0 MPa, CWP

Process Piping and Control Devices

Section No. 15400

PART 3 - EXECUTION

3.1 Piping Installation

.1 General

- .1 Install straight, parallel and close to walls and ceilings, with specified pitch. Use standard fittings for direction changes.
- .2 Install groups of piping parallel to each other; spaced to permit application of insulation, identification, and services access, on trapeze hangers.
- .3 Install eccentric reducers in horizontal piping to permit drainage and eliminate air pockets.
- .4 Where pipe sizes differ from connection sizes of equipment, install reducing fittings close to equipment.
- .5 Brass and copper pipe and tubing shall be free from surface damage. Replace damaged pipe or tubing.
- .6 Ream ends of pipes and tubes before installation.
- .7 Lay copper tubing so that it is not in contact with dissimilar metal and will not be kinked or collapsed.
- .8 Where copper pipe is embedded in concrete wrap copper pipe in 6 mil polyethylene sheeting to prevent copper from contacting concrete.
- .9 Use non-corrosive lubricant or teflon tape applied to male thread.
- .10 Grooved pipe end - cut square, seating surface clean and free from indent and score marks.
- .11 Install flanges or unions to permit removal of equipment without disturbing piping systems.
- .12 Clean ends of pipes or tubing and recesses of fittings to be brazed or soldered. Assemble joints without binding.
- .13 Install approved Dielectric couplings where pipes and/or fittings of dissimilar metal are joined.
- .14 Install all piping valves and fittings on downstream side of fire pumps in accordance with NFPA 20 (1993).

.2 Equipment drainage

- .1 Install drain valves at low points.
- .2 Extend equipment drain piping to discharge into floor or hub drain.

Process Piping and Control Devices

Section No. 15400

3.1 Piping Installation – Cont'd

.3 Interior buried piping

- .1 Lay pipe on compacted bedding of clean, coarse sand free from clay, snow or ice, organic matter or stones.
- .2 Do not lay pipe in water or when in opinion of Engineer conditions are unsuitable.
- .3 Run buried drains minimum 200 mm clear below grade.

.4 Water Piping

- .1 Provide hose bibs at locations specified.
- .2 Water piping to be flushed, cleaned and pressure tested prior to being placed in service.

3.3 Testing

- .1 Testing of piping shall be completed in accordance with Section 01715.
- .2 Testing to be done in presence of Engineer.

3.4 Commissioning

- .1 Equipment: make tests to demonstrate capabilities and general operating characteristics of equipment, as instructed by Engineer.

3.5 Clean Up

- .1 Leave systems operating with work areas clean to satisfaction of Engineer.

3.6 Painting

- .1 To Section 09915.

END OF SECTION

Flow Measurement Equipment

Section No. 15402

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

- .1 Applicable Sections of Division 1
- .2 Applicable Sections of Division 15
- .3 Electrical Specifications as listed on Electrical Drawing.

1.2 Shop Drawings and Maintenance Data

- .1 Submit shop drawings for flow meters and associated equipment in accordance with Section 01340.
- .2 Submit Operating and Maintenance data in accordance with Section 01730.

1.3 Responsibility

- .1 Flow meters and associated equipment to be supplied under Division 15 and wired as indicated on the Electrical Drawing.

1.4 NSF Certification

- .1 All materials that come in contact with potable water must be certified to NSF-61 standards.

PART 2 - PRODUCTS

2.1 Water Meter

- .1 Operating Features: propeller type, magnetic drive, rated at 1030 kPa, suitable for use with potable water.
- .2 Materials: Impeller shaft, bearing spaces, seal sleeve, ball bearings, race, cage and shield to be stainless steel, carbon steel body, epoxy coated c/w straightening vanes.
- .3 Connections: 1034 kPa flanged.
- .4 Meter recorder: sealed register with instantaneous flow rate indicator and totalizer. Calibrated to record in cubic metres.

Flow Measurement Equipment

Section No. 15402

- .5 Transmitter assembly: 2-wire, 4 - 20 mA output, 24 volt input.
- .6 Acceptable product: McCrometer Model MW500 of the size shown on the Contract Drawings.
- .7 Meters and accessories to be provided under Division 15 and wired as specified on the Electrical Drawing.

PART 3 - EXECUTION

3.1 General

- .1 All equipment for metering, signal processing and recording to be supplied and installed in accordance with manufacturers recommendations and to be fully compatible and operational for this application.
- .2 Contractor shall ensure that the required upstream and downstream clearances, regarding meter installation are provided.
- .3 All equipment to be fully calibrated and commissioned on site by an authorized technician.

END OF SECTION

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Submersible Water Pumps

Section No. 15414

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

- .1 Process Piping and Control Devices Section 15400
- .2 Applicable Sections of Division 1
- .3 Electrical Specifications listed on Electrical Drawing

1.2 Shop Drawings

- .1 Submit drawings in accordance with Section 01340.

1.3 Measurement for Payment

- .1 Payment for pumps and connections to piping will be on a lump sum basis under the appropriate item in the Schedule of Items and Prices.

1.5 Supply

- .1 All pumps to be provided under Division 15 and wired in accordance with the specifications listed on the Contract Drawing.
- .2 **The pump/motor combination shall be supplied by an authorized representative of the pump manufacturer who shall provide written confirmation in this regard.**
- .3 The electrical power supply control devices and wiring associated with this pump have been based on the horsepower requirements shown on the electrical drawings. The Contractor shall be responsible for coordinating the correct sizing of electrical devices and shall pay all costs if necessary to ensure that the electrical devices are compatible with the pump supplied.

Submersible Water Pumps

Section No. 15414

PART 2 - PRODUCTS

2.1 Submersible Water Pumps

- .1 The pump shall be a submersible pump and motor assembly designated for continuous submerged operation. The pump/motor combination including adapters shall be of all stainless steel construction.
- .2 The pump units shall meet the rated capacities as listed on the Contract Drawings.
- .3 Pump and motor shall be performance tested at the factory after assembly. Test reports shall be made available (if requested).
- .4 Test data shall demonstrate that the performance of the pump conforms to the design performance within plus or minus 5%.
- .5 All pumps shall be provided with non-overloading motors. Motor shall be sized based on a 1.00 service factor and shall be designed for continuous operation at the specified design point. The nominal KW rating shall not be exceeded at any point on the head capacity curve. The pump supplier shall provide written confirmation in this regard.
- .6 Pump stage casings, suction and discharge housings to be of pore-free, close-grained cast iron or stainless steel.
- .7 Shaft sleeves and coupling of stainless steel.
- .8 Guide bearings of bronze or cutlass rubber.
- .9 Impellers of stainless steel, machined and statically and dynamically balanced.
- .10 Impellers shall be keyed to pump shaft. Neither friction nor set screw fittings will be acceptable.
- .11 Pump discharge shall include a built-in check valve.
- .12 The motor shall be a squirrel cage induction motor designed for water-filling, water-cooling and water-lubrication. Oil or grease lubricated motors are not acceptable.

Submersible Water Pumps

Section No. 15414

2.1 Submersible Water Pumps – Cont'd.

- .13 The stator windings shall be directly immersible in water. The winding wire insulation shall consist of a water-proof, non-aging material and high dielectric strength. The winding insulation shall be reinforced by a nylon cover. Hermetically sealed or resin encased stators are not acceptable.
- .14 The stator windings shall be tested at a potential of not less than 2500 volts while submerged in water. The insulation resistance shall be not less than 100 Megohms.
- .15 Pump motors shall have built-in thermistor protection on all three phases.
- .16 The rotor shall be statically and dynamically balanced. The rotor shaft shall be fitted with stainless steel sleeves.
- .17 Guide bearings shall be of a lead bronze or a graphite compound. There shall be a minimum of four guide bearings supporting the rotor.
- .18 The thrust bearing shall be of the two-piece type of stainless steel and graphite construction and shall be self-aligning.
- .19 The original water filling shall be retained in the motor by means of an expansion bellows in the motor base. The motor shall be equipped with a double spring loaded lip seal.
- .20 Pumps to be provided under Division 15.
- .21 Pumps to be controlled and powered as indicated on drawings.
- .22 The motor shall be equipped with a pressure relief valve, drain plug and filling device.
- .23 Motor speed shall not exceed 3500 RPM.
- .24 Acceptable product: Grundfos model SP 95-1-A

END OF SECTION



Attachment No. 1

Qikiqtarjuaq – Community Profile

QIKIQTARJUAK

Inuktitut name "Qikiqtarjuak" means : "the big island"

Community Profile

QIKIQTARJUAK

An island 16 km long by 12 km wide just off the east coast of Central Baffin Island some 96 km north of the Arctic Circle, Approximately 87°31' Lat and 64°4' Lon

POPULATION

Stats Can Projected for Year 2004 582

Hamlet Records

AREA OF HAMLET

10.5 Sq km

LENGTH OF ROADS

14730 M

LENGTH OF AIRSTRIP

1158.24 M Gravel

MARINE FACILITIES

Breakwater, Barge Landing Site - Beach, Offshore Anchorage for Bulk Fuel

RECREATIONAL FACILITIES

2 Playground, 1 Ball Field, 1 Gym, 1 Arena, 1 Hall

MOBILE FLEET

2 Fire Trucks, Tracted Dozer, 4 Wheel Loaders, 3 Dump Trucks, 2 Snow Plows, Compactor, Flat Bed Welding Rig, Garbage Truck, 4 Water Trucks, 3 Sewage Trucks, Boom Truck

WATER SUPPLY AND WASTE MANAGEMENT

SOLID WASTE

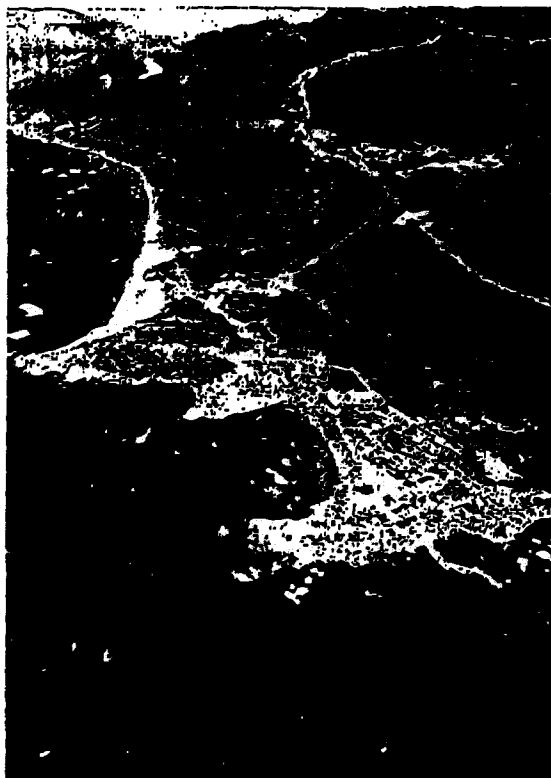
Collection is done by the Hamlet and dumped at the 10,000 m2 fenced solid waste disposal site located approximately 4 km east of the community adjacent to the lagoon. Domestic waste is regularly burned and buried. There is a separate bulky waste cell adjacent the waste disposal site. There is also a hazardous waste area at this site.

WATER SUPPLY

Water is trucked from a bermed reservoir c/w liner located approximately 2.5 km east of the community, with a capacity of 21,400 m3 and is replenished annually from the Tulugak River. The water is pumped from the reservoir via a truckfill station and is treated by hypochlorination as the delivery trucks are being filled.

SEWAGE

Collection by Hamlet sewage trucks. Trucks dump into a 20,000 m3 lagoon located 4 km east of the community that naturally exfiltrates thru a 800 m wetlands section into the Broughton Channel.



Qikiqtarjuaq

Updated February 2001

Accommodation and Dining

Akulliq Coffee Shop and Pool Hall
PH: 867-927-8469
Hamburgers, meals and snacks

Siku Hotel
PH: 867-927-8469
Hotel, meals available on request

Tuniq Sheler
PH: 867-927-8055
FX: 867-927-8404
Hotel

Tulugak Co-op Hotel/Inns North
PH: 867-927-8874
FX: 867-927-8124
Hotel and restaurant, satellite TV

Retail

G and J Mini Mart
PH: 867-927-8503
Pop, chips and candies

LEELIE Souvenir and Gift Shop
PH: 867-927-8002
FX: 867-927-8003
E-mail: leelie@nunanet.com
Carvings, gift ideas

Northern Store
PH: 867-927-8917
FX: 867-927-8070
*General retail and groceries, hardware/tools,
light banking services.*

Sijjaniut Store
PH: 867-927-8102
FX: 867-927-8404
E-mail: icebound@nunanet.com
Convenience store

Tulugak Co-op
PH: 867-927-8061
FX: 867-927-8044
*General retail and groceries, hardware/tools,
fuel supply*

Transportation and Shipping

Enterprise Ltd.
PH: 867-927-8002, 927-8009
FX: 867-927-8003
E-mail: lgclie@nunanet.com
Exporting

First Air
PH: 867-927-8873
*Scheduled and Charter air service, cargo and
arrival information*

Ken Borek Air
PH: 867-927-8179
FX: 867-927-8922
Scheduled and Charter air service

Tuugaq Taxi
PH: 867-927-8804
Cash only

**For a list of all airlines that service Nunavut:
www.arctic-travel.com/chapters/flypage.html*

Expediting, Contracting and Equipment Supply

Angnako Cartage
PH: 867-927-8895
Truck rentals

Boat Rentals
PH: 867-927-8276
Aluminum, 22 foot boat rental

Fox Contracting
PH: 867-927-8054
General contracting

Metuq Truck Rental
PH: 867-927-8625
Truck rentals

Qilaut
PH: 867-927-8832 (Hamlet Office)
Carpentry, oil burners and heating

Sangnya Contracting
PH: 867-927-8527
Locksmith, carpentry, plumbing, small motor repairs, etc.

Tourism and Culture

Auyuktuq National Park
PARKS CANADA
PH: 867-927-8834
FX: 867-927-8454
Summer season only

***Iceberg Outfitting**
PH: 867-927-8457
FX: 867-927-8296
Eco-adventure wildlife tours, dog sledding and ski-doo tours

***LEELIE Outfitting Services**
PH: 867-927-8002/8009
FX: 867-927-8003
E-mail: leelie@nunanet.com
Eco-adventure cultural wildlife tours via 26 foot boat, snow machine tours

LEELIE Souvenir and Gift Shop
PH: 867-927-8002
FX: 867-927-8003
E-mail: leelie@nunanet.com
Carvings, gift ideas

***Nanaq Outfitting**
PH: 867-927-8011
Eco-adventure summer wildlife tours via canoe

***Nattivak Hunters and Trappers Organization and Papiruaq Fisheries**
PH: 867-927-8836
FX: 867-927-8525
Local information about the land, country foods, fisheries, local outfitters (Reservations through Canada North Outfitting Inc. 613-256-4057)

Pikahyak Outfitting Services
PH: 867-927-8055
FX: 867-927-8404
E-mail: icebound@nunanet.com
Eco-adventure cultural wildlife tours via 39 foot boat, snow machine and dog sledding

Minnguq Sewing Group
PH: 867-927-8885
FX: 867-927-8318
E-mail: minnguq@nunanet.com
Custom sealskin products, traditional clothing

Independent Sewers

Keemaliq
PH: 867-927-8039

Quajutik
PH: 867-927-8477

Tikik
PH: 867-927-8324

Technical and Communications

Gertrude Troy
PH: 867-927-8053
Accounting, bookkeeping, consulting

LEELIE Enterprise Ltd.
PH: 867-927-8002, 927-8009
FX: 867-927-8003
E-mail: leelie@nunanet.com
Consulting

Ropak
PH: 867-927-8028
FX: 867-927-8218
Consulting

Radio Station (FM 107.1)
PH: 867-927-8855 or 927-8971
Public announcement broadcasts

Nikujuk Translations
PH: 867-927-8029

Tukivut Translations
PH: 867-927-8621

Uqqanktaq Translations
PH: 867-927-8832 (Hamlet Office)

Other Services

Commercial Divers:

Stevie Audlaskiak
PH: 867-927-8457
FX: 867-927-8296

Davidee Koonnellinsie
PH: 867-927-8744

Charlie Aliqatuktuk
Noah Keeyookta
PH: 867-927-8832 (Hamlet Office)

Inuit Associations, Development Corporations and Government

Community Economic Development Office
PH: 867-927-8832
FX: 867-927-8120

Hamlet Office
PH: 867-927-8832
FX: 867-927-8120
E-mail: pickle@nunamet.com

Department of Sustainable Development
PH: 867-927-8966
FX: 867-927-8525
Wildlife officer
Regional Office:
PH: 867-899-7339
FX: 867-899-7348
Headquarters-Iqaluit
PH: 867-975-5900
FX: 867-975-5980
*Wildlife, Environmental Protection, Community
Economic Development, Parks and Tourism,
Mineral Oil and Gas, Policy and Legislation,
Corporate Services*

Nunavut Development Corporation
PH: 867-645-3169
FX: 867-645-3755
*Creates employment and income opportunities
for residents of Nunavut, to stimulate the growth
of businesses and to promote economic
diversification. Focus on value added
exportable products such as arts and crafts, meat
and fish products*

Qikiqtani Inuit Association (QIA)
PH: 867-979-5391
FX: 867-979-0006
E-mail: qia.office.manager@nunamet.com
Web: www.qikiqtani.nu.ca
*Mandate: To safeguard, administer and
advance the rights of the Inuit of the Baffin
Region and to promote the Inuit language and
traditions, Inuit environmental values, self-
sufficiency, economic, social and cultural well
being*

Qikiqtaaluk Corporation (QC)
PH: 867-979-8400
FX: 867-979-8444
E-mail: qc@nunamet.com
Web: www.qikiqtaalukcorp.nu.ca
*Manages economic development on behalf of the
QIA. QC is involved in fishing, airport
management, DEW line cleanups, environmental
services, mineral development activities,
helicopter operations, heavy equipment sales
and services, petroleum distribution, real estate
construction management activities.*

Kakivak Association (KA)
PH: 867-979-0911
Toll free: 1-800-561-0911
FX: 867-979-3707
*QIA's Community Economic Development
Organization and Small Business Arm. It
provides training, employment assistance,
business development and financial
assistance/services for beneficiaries*

For more information about businesses in
Qikiqtaaluk contact:
Canada-Nunavut Business Service Centre
PH: 867-979-6210 Toll Free: 1-877-433-6122
FX: 867-979-6220 Toll Free: 1-877-433-5289
E-mail:
Visit the Website at:



Attachment No. 2

Schedule A

Rates Schedule

Hamlet of Qikiqtarjuaq, Nunavut

By-Law No. 172

HAMLET OF QIKIQTARJUAQ, NUNAVUT
BY-LAW NUMBER 172
"SCHEDULE A - RATES SCHEDULE"

GENERAL GOVERNMENT SERVICES

BUILDING RENTALS

Council Chambers - Local	\$ 172.50 PER MEETING
Council Chambers - Non-Local	\$ 345.00 PER MEETING
Community Hall (Avviuq) - Local	\$ 57.50 PER HOUR
Community Hall (Avviuq) - Non-Local	\$ 115.00 PER HOUR
Community Hall (Avviuq) - Setup & Cleaning	\$ 172.50 PER RENTAL
Gymnasium - Local	\$ 115.00 PER HOUR
Gymnasium - Non-Local	\$ 230.00 PER HOUR
Gymnasium - Setup & Cleaning	\$ 172.50 PER RENTAL
Pool - Local	\$ 57.50 PER HOUR
Pool - Non-Local	\$ 115.00 PER HOUR
Arena - Local	\$ 115.00 PER HOUR
Arena - Non-Local	\$ 230.00 PER HOUR
Office Rental	\$1,150.00 PER MONTH

Translation/Interpreting Services	\$ 115.00 PER HOUR
Photocopies	\$ 0.85 PER PAGE
fax - Outgoing	\$ 2.90 PER PAGE
fax - Incoming	\$ 1.15 PER PAGE
Steel Pins - Hamlet Logo	\$ 9.00 EACH <i>5-28</i>
Municipal Flags	\$ 172.50 EACH
Base Compliance Letters	\$ 25.00 EACH
Community Maps	\$ 28.75 EACH
	\$ 57.50 EACH

TRANSPORTATION AND PUBLIC WORKS

VEHICLE RENTALS

220 Komatsu Excavator - 8:30am - 5:00pm MON - FRI	\$ 287.50 PER HOUR
220 Komatsu Excavator - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 345.00 PER HOUR
Boom Truck - 35' Deck, Ford 8000 - 8:30am - 5:00pm MON - FRI	\$ 345.00 PER HOUR
Boom Truck - 35' Deck, Ford 8000 - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 402.50 PER HOUR
D6 Cat Dozer - 8:30am - 5:00pm MON - FRI	\$ 230.00 PER HOUR
D6 Cat Dozer - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 287.50 PER HOUR
TD15 IHC Dozer - 8:30am - 5:00pm MON - FRI	\$ 230.00 PER HOUR
TD15 IHC Dozer - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 287.50 PER HOUR
644H John Deere Loader - 8:30am - 5:00pm MON - FRI	\$ 230.00 PER HOUR
644H John Deere Loader - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 287.50 PER HOUR
950B Cat Loader - 8:30am - 5:00pm MON - FRI	\$ 230.00 PER HOUR
950B Cat Loader - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 287.50 PER HOUR
580D Case Backhoe Loader - 8:30am - 5:00pm MON - FRI	\$ 160.00 PER HOUR
580D Case Backhoe Loader - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 218.50 PER HOUR
510B Dresser Loader - 8:30am - 5:00pm MON - FRI	\$ 185.00 PER HOUR
510B Dresser Loader - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 241.50 PER HOUR
Dump Truck - Ford 9 cm - 8:30am - 5:00pm MON - FRI	\$ 185.00 PER HOUR
Dump Truck - Ford 9 cm - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 241.50 PER HOUR
Dump Truck - IHC - 7.5 cm - 8:30am-5:00pm MON - FRI	\$ 160.00 PER HOUR
Dump Truck - IHC - 7.5 cm - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 218.50 PER HOUR
Passenger Vehicle Rental	\$ 45.00 PER HOUR
	\$ 287.50 PER DAY

Note: Passenger Vehicle Rentals must show required Operators' Licences and current rental vehicle insurance coverage from renters insurance company for any and all persons operating vehicles. All vehicles must be filled with fuel prior to return or renter will be billed (additional fuel + 15%)

WAREHOUSE SERVICES

Vehicle Services - Labour - 8:30am to 5:00pm MON - FRI	\$ 115.00 PER HOUR
Vehicle Services - Labour - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 172.50 PER HOUR
Vehicle Parts	COST + FREIGHT + 30%
Tire Repairs (Personal Vehicles)	\$ 45.00 EACH TIRE
Tire Repairs (Business Vehicles)	\$ 92.00 EACH TIRE
Tire Plug	\$ 15.00 EACH TIRE
Towing (Personal Vehicles) - 8:30am - 5:00pm MON - FRI	\$ 40.25 EACH TOW
Towing (Personal Vehicles) - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 57.50 EACH TOW
Towing (Business Vehicles) - 8:30am - 5:00pm MON - FRI	\$ 80.50 EACH TOW
Towing - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 115.00 EACH TOW
Battery Charging	\$ 23.00 PER CHARGE
Welding/Cutter in Shop	\$ 5.75 PER MINUTE
Welding/Cutter on Truck	\$ 11.50 PER MINUTE
Welding Rods	\$ 8.55 EACH
Generator - Honda	\$ 50.00 PER HOUR
	\$ 460.00 PER DAY
Cement Mixer	\$ 50.00 PER HOUR
	\$ 460.00 PER DAY

	Various Power Tools	\$ 28.75 PER DAY
	Various Small Tools	\$ 11.50 PER DAY
	Herman Nelson Heaters	\$ 25.00 PER HOUR
		\$ 230.00 PER DAY
	Wash - Cars, Pickup Trucks	\$ 34.50 EACH
	Wash - Large Vehicles	\$ 69.00 EACH
	Wash - ATVs, Snowmobiles, Boats	\$ 23.00 EACH
PARKING SPACE	Personal Vehicles	\$ 57.50 PER DAY
	Business Vehicles	\$ 115.00 PER DAY
	ATVs/Snowmobiles/boats - 5:00pm - 8:30am	\$ 34.50 OVERNIGHT
	ATVs/Snowmobiles/boats - 8:30am - 5:00pm	\$ 5.75 PER HOUR
BUILDING SERVICES	Maintenance - Labour - 8:30am-5:00pm MON - FRI	\$ 92.00 PER HOUR
	Maintenance - Labour - AFTER 5:00pm & WEEKENDS & HOLIDAYS	\$ 138.00 PER HOUR
	Building Materials	COST + FREIGHT + 30%
	Electrical/Plumbing/Heating Materials	COST + FREIGHT + 30%
MOVING	Moving Small Buildings - in community	\$ 28.75 EACH MOVE
	Moving Small Buildings - to/from dewline beach	HOURLY RATES
	Moving Canoes - in community	\$ 28.75 EACH MOVE
	Moving Canoes - to/from dewline beach	HOURLY RATES
	Moving Boats - in community	\$ 57.50 EACH MOVE
	Moving Boats - to/from dewline beach	HOURLY RATES
	Moving Sealift - in community (EACH REVENUE TONNE)	\$ 115.00 PER TONNE
	Moving Sealift - to/from dewline beach	HOURLY RATES
	Moving (SeaCans - empty) in community	\$ 230.00 PER SEACAN
	Moving (SeaCans - empty) to/from dewline beach	HOURLY RATES
	Road Maintenance Fee for dragged items	HOURLY RATES
		+ \$2.00 PER METRE
LOW CLEARING	Residential (except for Municipal Services Access)	\$ 25.00 EACH
	Commercial - EACH TIME	HOURLY RATES
	Commercial - UNDER AGREEMENT	\$ 400.00 PER MONTH
	Government - EACH TIME	HOURLY RATES
	Government - UNDER AGREEMENT	\$ 500.00 PER MONTH
Various other commodities and products available for sale to the public will be charged at Cost + Freight + 30% only if and when those commodities and products are available. Contact Office or Hamlet Foreman for current pricing.		
ENVIRONMENTAL HEALTH SERVICES		
GARBAGE PICKUP	Private Residential - HOUSEHOLD GARBAGE	\$ 28.75 PER MONTH
	Private Residential - NON-HOUSEHOLD GARBAGE	\$ 57.50 EACH PICKUP
	Housing Units - HOUSEHOLD GARBAGE	\$ 34.50 PER MONTH
	Housing Units - NON-HOUSEHOLD GARBAGE	\$ 57.50 EACH PICKUP
	Commercial - GARBAGE	\$ 115.00 PER MONTH
	Commercial - NON-LOCAL GARBAGE	\$ 345.00 PER MONTH
	Government - GARBAGE	\$ 345.00 PER MONTH
Garbage rates will be charged as a dumping fee for those who choose to pickup and dump their garbage at the dump.		
AIRPORT CALLOUT FEES		
	Airport Callout - less than 4 hours	\$ 300.00 EACH
	Airport Callout - additional hours over 4 hours	\$ 100.00 PER HOUR
	Electrical Plug-ins	\$ 35.00 EACH
MATERIAL AGGREGATE FEES	Pitrun Gravel (UNSCREENED)	\$ 34.50 PER CUBIC METRE
	Rock Gravel (BIG ROCK REMOVED)	\$ 40.25 PER CUBIC METRE
	Sand	\$ 57.50 PER CUBIC METRE
	Screened Gravel	\$ 92.00 PER CUBIC METRE
	Crushed Gravel	\$ 138.00 PER CUBIC METRE
Aggregate Fees include delivery of product - Spreading and shaping is as per Vehicle Rental Rates		

List of Equipment for Water & Sewer Projects.

- (1.) Unit # 23-01 - Ford 8000, 50' Boom, with 5th wheel + Low bed.
- (2.) " # 23-04 - Cat D6 Dozer
- (3.) " # 67-04 - INT. TD15 Dozer.
- (4.) " # 23-05 - INT. Dump Truck tandem with 7.5 m³ Box
- (5.) " # 23-06 - INT. Dump Truck tandem with 7.5 m³ Box
- (6.) " # 23-15 - LT 8000 Dump Truck tandem with 9 m³ Box
- (7.) " # 23-08 - Pette-Bone Compactor 6 ton
- (8.) " # 23-09 - 580 Case Rubber tire Backhoe
- (9.) " # 23-14 - Komatsu LT220 Excavator ?
- (10.) " # 23-07 - Cat 950 B Loader
- (11.) " # 23-19 - John Deere 644 H Loader
- (12.) " # 23-11 - Dresser 510 B Loader
- (13.) " # 23-13 - 4x4 Chev Suburban
- (14.) " # 23-20 - 4x4 F250 Ford Pickup
- (15.) " # 23-23 - Cruiser
- (16.) " # 23-24 - Screening Screening plant.



Attachment No. 3

Municipality of Qikiqtarjuaq

Photos of Existing Site Conditions



Municipality of Qikiqtarjuaq



Municipality of Qikiqtarjuaq



Diesel Generator (1 of 2)



Electrical



Truck Fill Piping with Existing Pumphouse



Truck fill Piping within existing Pumphouse



Intake Pipe Entering Existing Pumphouse



Winch for Reservoir Pump Removal



Water Storage Reservoir





Water Intake Pipe - Reservoir



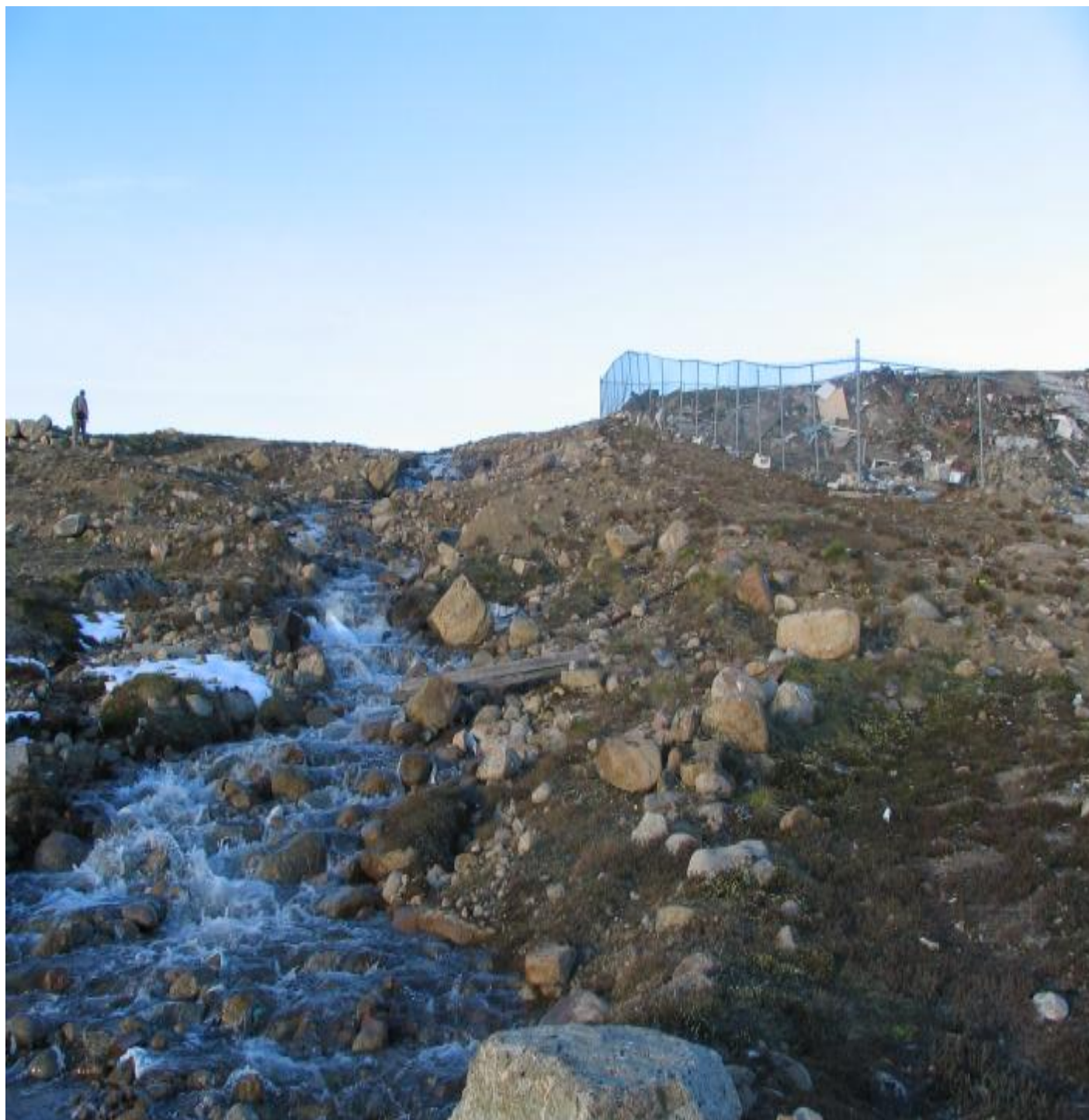
Water Intake Pipe - Reservoir



Water Intake Pipe - Reservoir



Water Pumphouse



Landfill Site



Landfill Site



View Northeast of Landfill Site



Landfill Site



Raw Water Intake Pipe



Attachment No. 4

Municipality of Qikiqtarjuaq

Environmental Emergency Contingency Plan



Environmental Emergency Contingency Plan for Water, Sewage, and Solid Waste Operations in the Hamlet of Qikiqtarjuaq, Nunavut

Prepared for

The Hamlet of Qikiqtarjuaq
P.O. Box 4, Qikiqtarjuaq NU X0A 0B0 Canada

Prepared by

Nuna Burnside Engineering and Environmental Ltd.
Box 175, 25 Third Avenue Rankin Inlet NU X0C 0G0 Canada
15 Townline Orangeville ON L9W 3R4 Canada

Revision Date

February 2006

File No: N-O 09439.0

The material in this report reflects best judgement in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Nuna Burnside accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Environmental Emergency Contingency Plan for
Water, Sewage, and Solid Waste Operations in the
Hamlet of Qikiqtarjuaq, Nunavut

February 2006

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Environmental Emergency Contingency Plan for
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- A Contact Information
- B NWT Spill Report

Environmental Emergency Contingency Plan for
Water, Sewage, and Solid Waste Operations in the
Hamlet of Qikiqtarjuaq, Nunavut

February 2006

Preamble

This Environmental Emergency Contingency Plan relating to the collection, transportation, storage, and treatment operations of sewage for the Hamlet of Qikiqtarjuaq, Nunavut, is effective from *BEGINNING DATE OF WATER LICENSE until EXPIRY DATE OF NEW WATER LICENSE*. This plan applies to all operations and spill events relating to sewage and petroleum, oil, and lubricating (POL) products in the Hamlet of Qikiqtarjuaq, Nunavut (formerly known as Broughton Island).

The following formal distribution will be made after this document receives approval:

- Hamlet of Qikiqtarjuaq:
 - Mayor and Council
 - Senior Administrative Officer (SAO)
 - Hamlet Operations Staff
 - Fire Department
 - Community Health Centre
 - RCMP Detachment.
- Nunavut Water Board.

Additional copies and updates of this plan may be obtained by writing to:

Hamlet of Qikiqtarjuaq
Senior Administrative Officer (SAO)
P.O. Box 4
Qikiqtarjuaq, NU X0A 0B0

Environmental Emergency Contingency Plan for
Water, Sewage, and Solid Waste Operations in the
Hamlet of Qikiqtarjuaq, Nunavut

February 2006

1.0 Introduction

1.1 Purpose of Plan

The impacts of spills can be catastrophic and may threaten or damage the environment, especially water resources. As such, the Government of Nunavut (GN) requires contingency plans to be written and fully implemented. The purpose of this *Environmental Emergency Contingency Plan* is to provide a plan of action for all spills of sewage, solid waste, and petroleum products that may occur as a result of water supply and distribution, sewage collection and treatment, and solid waste collection and disposal operations undertaken within the Hamlet of Qikiqtarjuaq, Nunavut.

This *Environmental Emergency Contingency Plan* will assist in implementing corrective options quickly to minimize environmental damage. Furthermore, it defines the responsibilities of key personnel and outlines procedures to effectively and efficiently contain and recover spills of sewage, solid waste, and petroleum products arising from water, sewage, and solid waste; collection, transportation, storage, and treatment operations. It will assist the Hamlet in meeting the regulatory requirements related to reporting events to the appropriate authorities within the prescribed time period.

Sewage, solid waste, and petroleum, oil and lubricating (POL) products that currently, or potentially, fall within the Scope of this *Environmental Emergency Contingency Plan* are as follows:

- Sewage (as defined in the Nunavut Water Board (NWB) water license)
- Solid waste (as defined in the Nunavut Water Board (NWB) water license)
- Gasoline
- Diesel fuel
- Hydraulic fluid
- Lubricating oil.

1.2 Objectives

The objectives of this Emergency Spill Contingency Plan are to:

- Provide a plan including procedures so that the Hamlet and their Incident Spill Response Team can rapidly respond to a spill situation and minimize injury to individuals and environmental damage
- Comply with all existing regulations
- Cooperate with other groups and agencies

Environmental Emergency Contingency Plan for
Water, Sewage, and Solid Waste Operations in the
Hamlet of Qikiqtarjuaq, Nunavut

February 2006

- Be prepared and able to provide an integrated team approach with all involved departments and agencies
- Keep staff, government officials, and Hamlet residents informed.

1.3 Hamlet of Qikiqtarjuaq Environmental Policy

It is the policy of the Hamlet of Qikiqtarjuaq to fully comply with all applicable legislation to ensure the protection of the environment of the territory of Nunavut. The legislation includes, but is not limited to, the:

- Environmental Protection Act, Section 34 – Spill Contingency Planning and Reporting Regulations
- Nunavut Waters and Nunavut Surface Rights Tribunal Act.

The Hamlet will cooperate with other groups committed to protecting the environment and shall ensure that Hamlet employees, regulatory authorities, and the public are informed on the policies and procedures developed to help protect the environment and the citizens of the Hamlet of Qikiqtarjuaq.

February 2006

2.0 Site Description

2.1 General Site Description

This *Environmental Emergency Contingency Plan* is to be implemented within the Municipal boundaries of the Hamlet of Qikiqtarjuaq, Nunavut.

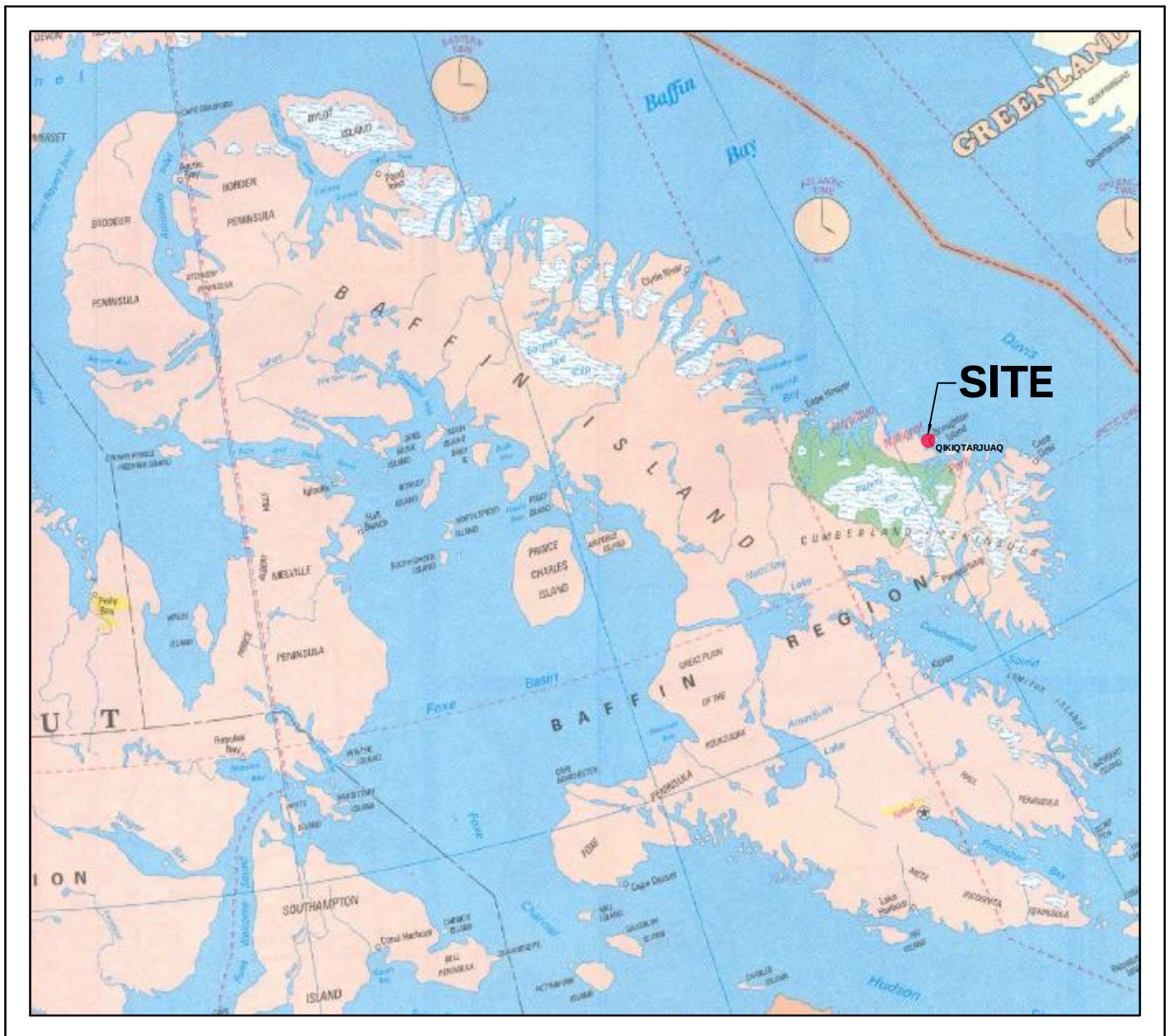
The Hamlet of Qikiqtarjuaq (meaning “big island”), is a Community of approximately 599 people located on the eastern coast of Baffin Island and on an island known as Broughton Island in the territory of Nunavut. As illustrated in Figure 1, the Hamlet is located approximately 470 kilometers northeast of the Capital City of Iqaluit, a distance that is covered by plane in about one hour. The geographic coordinates for the Hamlet of Qikiqtarjuaq are 67°33’ north latitude and 64°02’ west longitude. As indicated on Figure 2, the community is situated on the northwest portion of Broughton Island.

2.2 Sewage Collection, Water Supply, Treatment and Distribution, and Storage

The Hamlet provides trucked water service for the community. Historically, water is drawn from the Tulugak River during the summer, and from the lined earthen reservoir (Figure 3) for the remainder of the year. The water is chlorinated as it is pumped into the tanker delivery trucks through the truck fill station. The truck fill station operates by diesel generator and has an above ground storage (AST) tank on-site.

Sewage is collected in the Hamlet of Qikiqtarjuaq by vacuum truck, and transported to the Sewage Treatment Facility (Figure 4) operated by the Hamlet of Qikiqtarjuaq located approximately 2.3 km from the Hamlet. Wastewater is collected from customer holding tanks and discharged to the wastewater lagoon located to the east of the community north of the DEW Line Access Road.

The Hamlet of Qikiqtarjuaq provides regular solid waste pickup for the Community’s residents, businesses, and institutions. Collection occurs on a daily basis throughout the Hamlet, to minimize the potential for attraction of foxes and polar bears. Solid waste is trucked to the Hamlet’s Solid Waste Disposal facility (Figure 5), which is currently permitted by the Nunavut Water Board (NWB). The current Facility is located adjacent to the sewage lagoon.



Map Reference:
Map of Canada
Published by the CAA

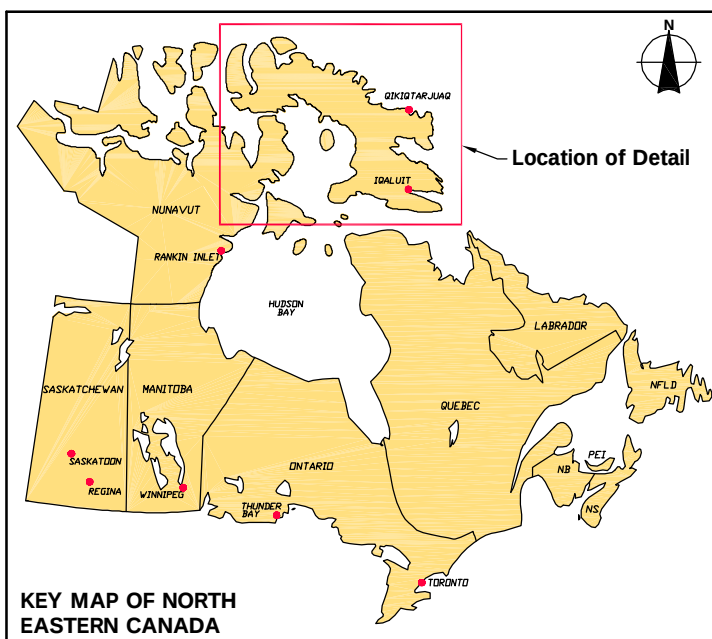


FIGURE 1 - SITE LOCATION MAP

THE HAMLET OF QIKIQTARJUAQ, NUNAVUT

ENVIRONMENTAL EMERGENCY CONTINGENCY PLAN

January 2006
Project Number: N-O 09439.0

Prepared by: K. Pridham

Verified by: M. Paznar

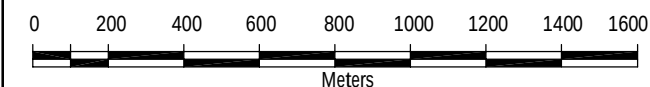
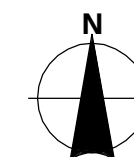
Burnside



FIGURE 2
THE HAMLET OF QIKIQTARJUAQ
ENVIRONMENTAL EMERGENCY
CONTINGENCY PLAN

SATELLITE IMAGERY OF
ENTIRE COMMUNITY
AND INFRASTRUCTURE

Satellite Imagery Source:
September 2004 Satellite Image obtained from DigitalGlobe Inc.



1:20,000
January 2006
Project Number: N-O 09439.0

Projection: UTM Zone 20
Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar

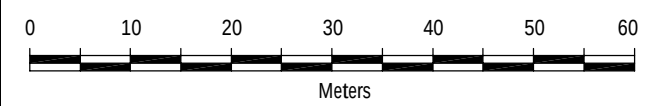
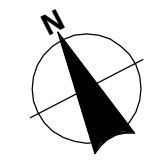




FIGURE 3
THE HAMLET OF QIKIQTARJUAQ
ENVIRONMENTAL EMERGENCY
CONTINGENCY PLAN

WATER RESERVOIR SITE

Satellite Imagery Source:
September 2004 Satellite Image obtained from DigitalGlobe Inc.



1:750
January 2006
Project Number: N-O 09439.0

Projection: UTM Zone 20
Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar





FIGURE 4

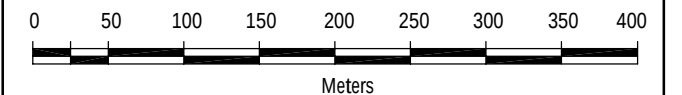
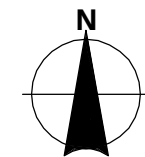
THE HAMLET OF QIKIQTARJUAQ
ENVIRONMENTAL EMERGENCY
CONTINGENCY PLAN

REGIONAL VIEW OF
SEWAGE LAGOON & SOLID
WASTE DISPOSAL FACILITY
(LANDFILL)

Legend

→ → → → INTERPRETED EXISTING SURFACE WATER
FLOW DIRECTION

Satellite Imagery Source:
September 2004 Satellite Image obtained from DigitalGlobe Inc.



1:5,000
January 2006
Project Number: N-O 09439.0

Projection: UTM Zone 20
Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar

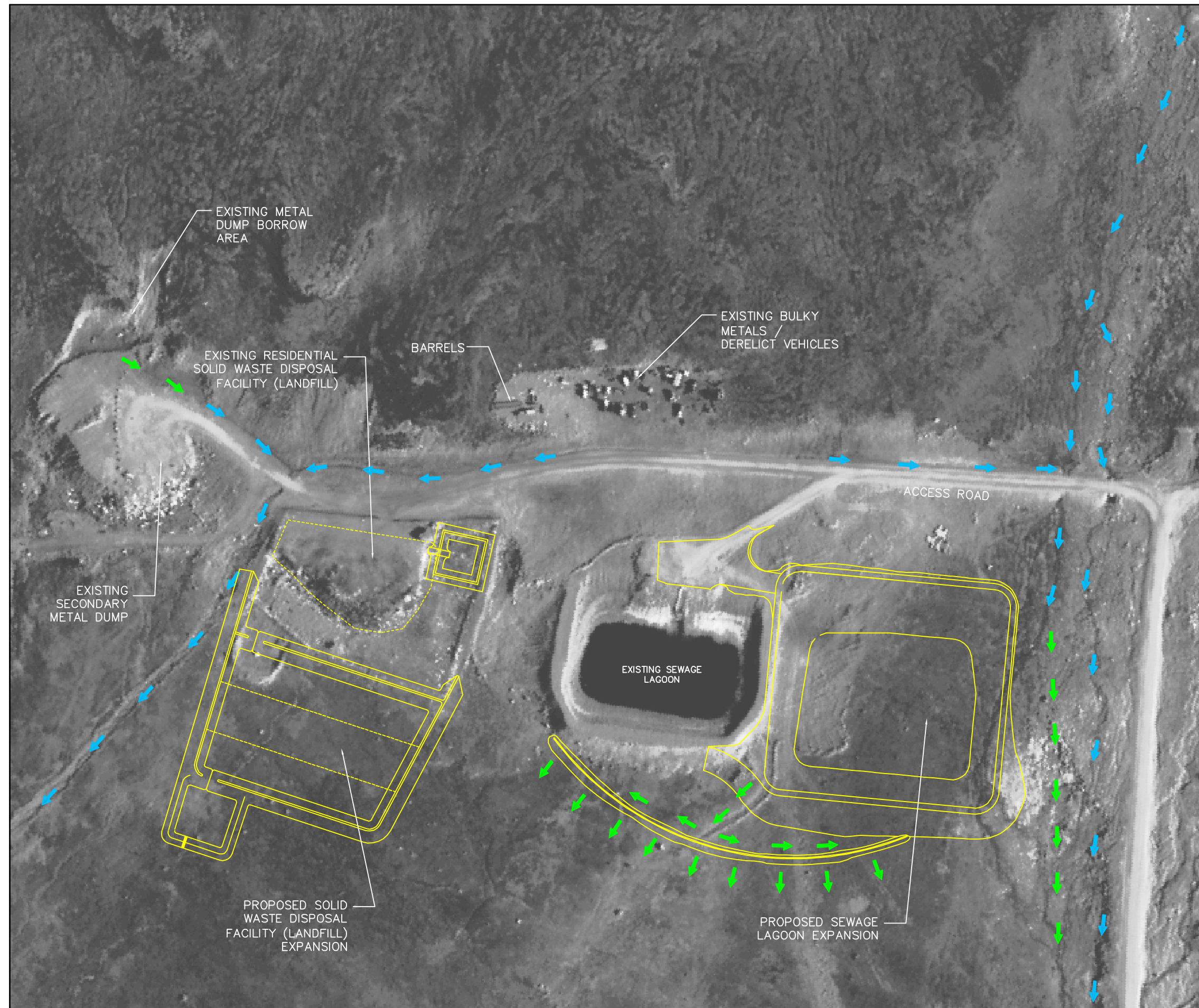


FIGURE 5

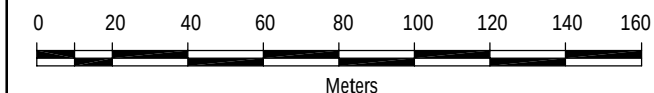
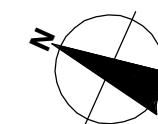
THE HAMLET OF QIKIQTARJUAQ
ENVIRONMENTAL EMERGENCY
CONTINGENCY PLAN

SOLID WASTE DISPOSAL
FACILITY (LANDFILL)

Legend

- → EXISTING SURFACE WATER FLOW DIRECTION
- → PROPOSED SURFACE WATER FLOW DIRECTION

Satellite Imagery Source:
September 2004 Satellite Image obtained from DigitalGlobe Inc.



1:2,000
January 2006
Project Number: N-O 09439.0

Projection: UTM Zone 20
Datum: NAD83

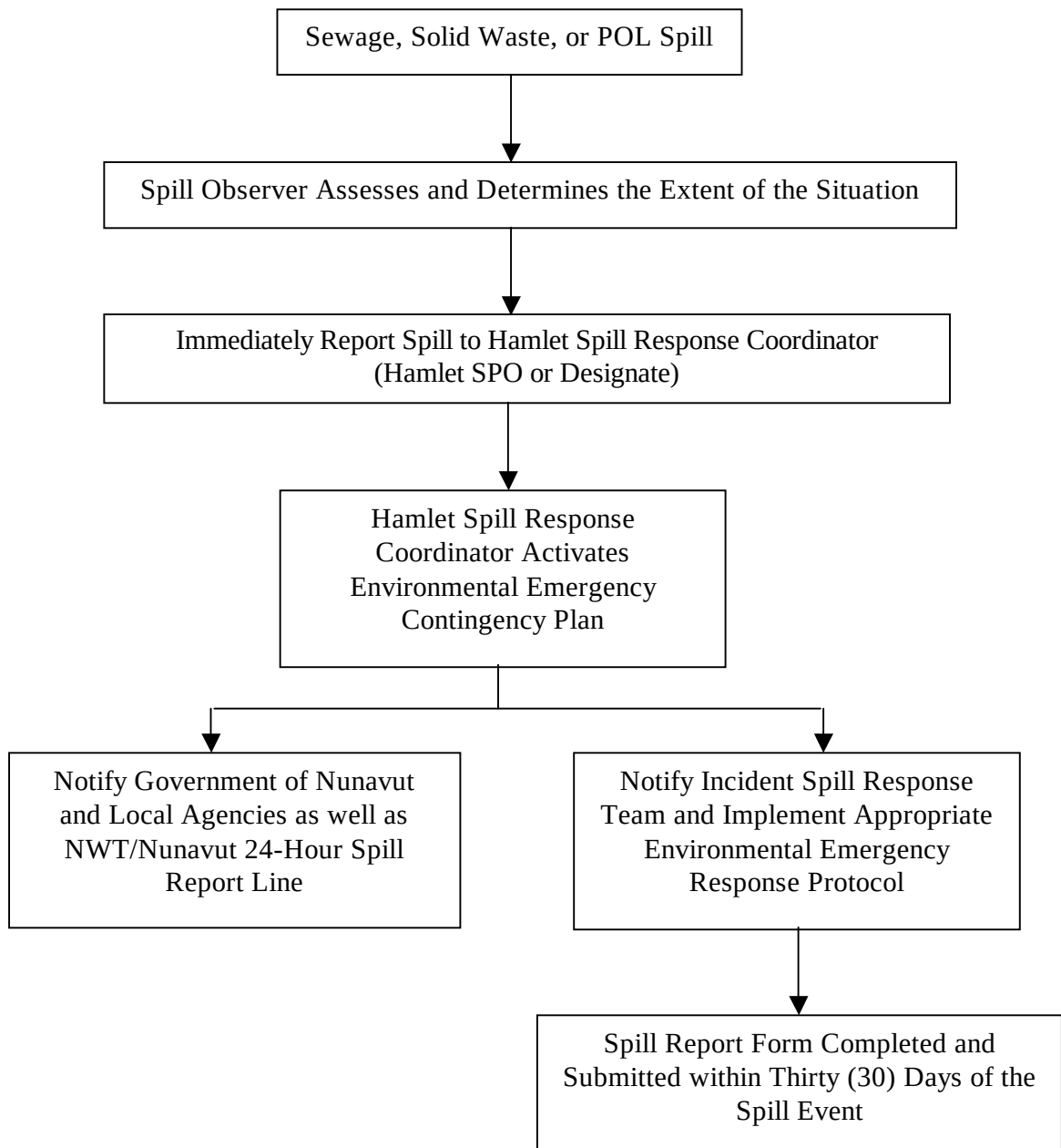
Prepared by: C. Sheppard

Verified by: M. Paznar

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3.0 Spill Response Organization

The following is a flow chart to illustrate the sequence of events that must be followed in the event of a sewage, solid waste, or POL spill occurring during supply, distribution, collection, transportation, storage, and treatment operations:



Emergency Response Flow Chart

February 2006

3.1 Incident Spill Response Team

The Hamlet Senior Administrative Officer (SAO) or his/her Designate will serve as the Spill Response Coordinator for the Hamlet in the event of a sewage or POL spill during collection and transport operations. The SAO of the Hamlet of Qikiqtarjuaq will appoint and train appropriate personnel to make up the Incident Spill Response Team, which normally consist of the following personnel:

- Spill Response Coordinator Hamlet SAO (or Designate)
- Hamlet Works Personnel Will generally vary from 3-7 people throughout the year

The responsibilities of the Spill Response Coordinator are as follows:

1. Assume complete authority over the spill scene and coordinate all personnel involved
2. Evaluate the spill situation and develop overall plan of action
3. Activate the *Environmental Emergency Contingency Plan* for the Hamlet of Qikiqtarjuaq
4. Immediately report the spill to the NWT/Nunavut 24-Hour Spill Report Line at (867) 920-8130, and other applicable regulatory or assistance agencies
5. Provide regulatory agencies with information regarding the status of the clean-up activities
6. Act as a spokesperson on behalf of the Hamlet of Qikiqtarjuaq with regulatory agencies, the public, and the media
7. Prepare and submit a report on the spill incident to regulatory agencies within 30 days of the event.

3.2 Contact Information

A complete listing of contact information, including telephone numbers of standard regulatory agencies, Hamlet personnel, and assistance agencies who may be contacted to supply resources, expertise, and advise needed to deal with a spill emergency is included in Appendix A.

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4.0 Spill Reporting Procedure

The Spill Response Coordinator must be notified immediately by any individual who is aware of any spill either by phone, radio, or in person.

The following is the incident reporting procedures once the Spill Response Coordinator activates this Environmental Emergency Spill Contingency Plan:

1. Report spill immediately to the 24-Hour NWT/Nunavut Spill Report Line Phone (867) 920-8130 (Section 4.1)
2. Report immediately to the INAC Manager, Water Resources in Iqaluit at (867) 975-4550
3. Notify Hamlet of Qikiqtarjuaq Fire Department
4. Fill out the NWT/Nunavut Spill Report Form (Appendix B) within thirty (30) days of the spill event occurring.

4.1 NWT/Nunavut Spill Report Line

All spills as defined in this document must be reported immediately to the 24-hour NWT/Nunavut Spill Report Line. Gather the following information prior to making the call:

- Date and time of spill (if known)
- Location and map coordinates (if known) and direction of flow of spill materials if moving
- Party responsible for spill
- Product/material spilled and estimate of the quantity
- Cause of spill
- If the spill has been stopped or if it is continuing
- Extent of contaminated area
- Factors affecting spill or recovery, such as weather conditions or terrain
- If containment of spill is available
- Action taken or proposed
- If assistance is required
- Possible hazards to person, property or environment (e.g. fire, drinking water, fish, wildlife, etc.).

The information collected should be brief, and quick estimates made so the Spill Report Line and the Spill Response Coordinator can assess the situation. The information is similar to that required in boxes B, D, E, F, G, H, I, J, K, L, M, N, O, and P on the spill report form that must be completely fill out in thirty days, and available in Appendix B.

February 2006

5.0 Action Plans

5.1 Initial Action

The instructions to be followed by the first person on the spill scene are as follows:

1. Always be alert and consider your safety first
2. If possible, estimate the volume of material that has been spilled
3. Assess the hazard of people in the vicinity of the spill
4. If possible, and safety permits, attempt to stop the release of product to minimize potential for environmental impacts
5. Immediately report the spill to the Spill Response Coordinator
6. Resume any effective action to contain, mitigate, or terminate the flow of the spilled material.

5.2 Environmental Health Protection and Mitigation Measures

The environmental protection and mitigation measures outlined in the following sections are to be taken by all personnel responding to a spill event and to reduce the chance of environmental impairment and health hazards due to spill, release, or other incident.

5.2.1 General Procedures

The following general clean-up procedures shall apply for all spill areas within the Hamlet:

- Always wear personnel protective equipment (PPE)
- Smoking is prohibited during all spill response activities
- Eliminate all ignition sources
- Contain spills on soil or rock by construction of earthen dykes using available material. If soil is not available, place sorbent materials or a boom in the path of the spill. As the sorbent barrier becomes saturated, continually replace it. Fuel or other liquids lying in pools, or trenches are to be removed with pumps, buckets, or skimmers
- If the ground is snow covered, create snow dykes, and line with a chemically-compatible liner for containment and recover of liquid
- For fuels on water, deploy containment booms, and recovery as much fuel as possible with a work boat and skimmer if the area has less than 1/10th ice cover. If the area is ice infested, burn any fuel spills using igniters
- Apply sorbets, if necessary
- Assess potential for disturbance of wildlife, fish, and archaeological sites by spill or clean-up operations

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Water, Sewage, and Solid Waste Operations in the
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- Notify environmental authorities to discuss available and feasible disposal and clean-up options
- Conduct required clean-up operations
- Assess and appropriately treat any areas disturbed by clean-up activities with laboratory testing
- Ensure the site has been completely restored and cease operations, only when all work is finalized and laboratory testing confirmed.

Specific procedures relating to mitigating measures for specific contaminants following below:

5.3 Mitigative Measures: Sewage, Gasoline, Diesel Fuel, Hydraulic Fluid, Lubricating Oil and Aviation Fuel

If possible, and safety permits, stop the flow of product, which is occurring, and eliminate all ignition sources. ***Smoking is prohibited during all spill response activities.***

5.3.1 POL Spill on Soil, Gravel, Rock, or Vegetation

- Build a containment berm using soil material or snow and place a plastic tarp at the foot of the berm for easy capture of the spill after all vapors have dissipated
- Remove the spill by using absorbent pads or excavating the soil, gravel or snow
- Remove spill splashed on vegetation using particulate absorbent material
- If soil, gravel, or vegetation are to be removed from the site, the Hamlet shall contact regulatory agencies for approval before commencing with the removal.

5.3.2 POL Spill On Water

- Use containment boom to capture spill for recovery after vapors have dissipated
- Use absorbent pads to capture small spills
- Use a petroleum skimmer for larger spills.

5.3.3 POL Spill on Ice and Snow

- Build a containment berm around spill using snow
- Remove spill using absorbent pads or particulate sorbent material
- The contaminated ice and snow must be scraped and shoveled into plastic buckets with lids, 205 litre drums, and/or polypropylene bags.

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5.3.4 POL-Contaminated Material Storage and Transfer

All contaminated water, ice, snow, soil, and clean up supplies will be stored in closed, labeled containers. All containers will be stored in a well ventilated area away from incompatible materials.

5.3.5 Disposal

Contact Federal and Territorial regulatory agencies to identify appropriate disposal methods before disposing of contaminated material. ***No contaminated material is to be disposed of in any Facility operated by the Hamlet of Qikiqtarjuaq without the express written consent of the Nunavut Water Board.***

5.4 Mitigative Measures: Ethylene Glycol Antifreeze

If possible, and safety permits, stop the flow of product, which is occurring.

5.4.1 Ethylene Glycol Spill on Soil, Gravel, Rock, or Vegetation

- Build a containment berm using soil material or snow and place a plastic tarp at the foot of the berm for easy capture of the spill
- Remove the spill by using absorbent pads or excavating the soil, gravel, or snow
- Remove spill splashed on vegetation using particulate absorbent material
- If soil, gravel, and/or vegetation must be removed from the spill site, the Hamlet shall contact the appropriate regulatory agencies for approval before commencing with the removal.

5.4.2 Ethylene Glycol Spill On Water

Use containment boom to capture spill, and pump contaminated water into 205 L drums.

5.4.3 Ethylene Glycol Spill On Ice and Snow

- Build a containment berm around spill using snow
- Remove spill using particulate sorbent material
- The contaminated sorbent material, ice and snow must be scraped and shoveled into plastic buckets with lids, 205 litre drums, and/or polypropylene bags.

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5.4.4 Ethylene Glycol Storage and Transfer

All contaminated water, ice, snow, soil, and clean up supplies will be stored in closed, labeled containers. All containers will be stored in a well ventilated area away from incompatible materials.

5.4.5 Disposal

Contact Federal and Territorial regulatory agencies to identify appropriate disposal methods before disposing of contaminated material. ***No contaminated material is to be disposed of in any Facility operated by the Hamlet of Qikiqtarjuaq without the express written consent of the Nunavut Water Board.***

5.5 Mitigative Measures: Sewage

If possible, and safety permits, stop the flow of product, which is occurring.

5.5.1 Sewage Spill on Soil, Gravel, Rock, or Vegetation

- Build a containment berm using soil material or snow and place a plastic tarp at the foot of the berm for easy capture of the spill, and to prevent sewage from entering any water body
- Remove the spill by using vacuum trucks or excavating the soil, gravel, or snow
- If soil, gravel, and/or vegetation must be removed from the spill site, the Hamlet shall contact the appropriate regulatory agencies for approval before commencing with the removal.

5.5.2 Sewage Spill into Water

- Use containment boom to capture spill, and pump contaminated water into vacuum trucks
- Deposit contaminated water to the Hamlet sewage lagoon
- Monitor the affected water body sampling at a minimum for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS), ammonia (NH₃), and faecal coliforms (FC).

5.5.3 Sewage Spill on Ice and Snow

- Build a containment berm around spill using snow
- Remove spilled sewage and contaminated snow and ice to the Hamlet sewage lagoon.

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5.5.4 Sewage Storage and Transfer

All contaminated water, ice, snow, soil, and clean-up supplies will be deposited to the Hamlet sewage lagoon or landfill facility, as appropriate.

5.6 Mitigative Measures: Solid Waste

5.6.1 Solid Waste Spill on Soil, Gravel, Rock, or Vegetation

- Physically remove the spilled solid waste from the waste, and deposit to the approved Hamlet Solid Waste Disposal Facility
- If soil, gravel, or vegetation are to be removed from the site, the Hamlet shall contact regulatory agencies for approval before commencing with the removal.

5.6.2 Solid Waste Spill into Water

- Use containment boom to capture soil for recovery
- Physically remove the spilled solid waste from the water, and deposit to the approved Hamlet Solid Waste Disposal Facility
- Capture any sheen from the water using absorbent pads or skimmer, and deposit any used absorbent pads to the approved Hamlet Solid waste Disposal facility.

5.6.3 Solid Waste Spill on Ice and Snow

- Build a containment berm around spill using snow
- Physically remove the spilled solid waste and deposit to the approved Hamlet Solid Waste Disposal Facility
- If soil, gravel, or vegetation are to be removed from the site, the Hamlet shall contact regulatory agencies for approval before commencing with the removal.

5.6.4 Disposal

Any solid waste shall be removed to the approved Hamlet Solid Waste Disposal Facility.

5.7 Spill Recovery Assessment

In order to determine whether a spill has been successfully remediated, samples of the soil and/or water within the spill containment area and surrounding the area, are to be collected and sent to an accredited Canadian Association of Environmental Analytic Laboratories (CAEAL) laboratory to be analyzed for the chemical parameters contained in the spill material. If concentrations of the spill chemicals are not detected, or are at

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concentrations below the applicable Territorial, Federal, or CCME regulations/criteria, the spill clean-up will be determined a success. Clean-up operations may then cease.

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6.0 Spill Response Resource Inventory

6.1 Additional Personnel Available

In addition to Hamlet staff, approximately 10 people are available from the Qikiqtarjuaq Fire Department, to assist in spill response and clean-up activities. Personnel from the local RCMP Detachment will be available for securing the site from unauthorized individuals, closing roads, etc. The Community Health Centre have personnel to assist in the treatment of anyone injured during the emergency.

6.2 Spill Response Equipment Inventory

Equipment available within the community to assist in responding to a hazardous materials spill includes heavy equipment (i.e. vacuum trucks, dozer, front end loader, and grader), as well as various hand held tools including shovels. In addition, three spill kits should be available on site during spill incident response operations. Each spill kit should contain the following supplies.

Composition of Spill Kit

	Quantity
• 360 litre polyethylene over pack drum	1
• oil sorbent booms (5" X 10')	6
• oil sorbent sheets (16.5" X 20" X 3/8")	100
• drain cover (36" X 36" X 1/16")	1
• Caution tape (3" X 500')	1
• 1 lb plugging compound	1
• Nitrile gloves (pair)	4
• Safety goggles (pair)	4
• Tyvek coveralls (pair)	4
• instruction booklet	1
• printed disposable bags (24" X 48")	10

Sorbent capacity of each spill kit is 240 litres.

All equipment is generally stored at the Hamlet Operations Yard/Garage. Some equipment may be stored in other areas throughout the community while being used to complete tasks.

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7.0 Training

All employees working for the Hamlet of Qikiqtarjuaq should be trained in the safe operation of all machinery and tools to help prevent sewage and hazardous material spills. All employees on site should also be trained for initial spill incident response. Annual refresher exercises should be conducted to review the procedures of this *Environmental Emergency Contingency Plan*, with all individuals involved in the Incident Spill Response Team, including members of the local volunteer fire department, RCMP Detachment, and Community Health Centre.

Incident Spill Response Team training should include the following aspects:

- Spill awareness and prevention
- Methods of detection
- Types of spills and seasonal considerations
- Reporting procedures and initial responses
- Spill response kit familiarization
- Clean-up and site remediation methods
- Occupational health and safety including proper selection and use of PPE's.

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8.0 Annual Review of this Environmental Emergency Contingency Plan

As part of the preparation of the Annual Report to the Nunavut Water Board for the Water License, the Hamlet should review and update the information contained within this plan. The purpose of the update is to ensure all changes to regulations are incorporated into this plan, along with the use of any new technology or method advances, to prevent or stop a spill and to mitigate and/or remediate a spill. This ensures that the plan adapts as the Hamlet grows, to ensure the community is properly prepared in the event of an incident.

Finally, it is recommended that annual refresher training of personnel be completed after any revisions to this document have been approved. This will familiarize personnel with the updated plan, and to provide a rapid and coordinated response.

Environmental Emergency Contingency Plan for
Water, Sewage, and Solid Waste Operations in the
Hamlet of Qikiqtarjuaq, Nunavut

February 2006

9.0 References

Nunavut Water Board, September 2000. *Hamlet of Qikiqtarjuaq Water License NWB3Q1K0106*. Goja Haven, Nunavut.

Nunavut Water Board, November 2004. *Guidelines for Spill Contingency Planning*. Goja Haven, Nunavut.

Northwest Territories, Date Unknown. *Contingency Planning and Spill Reporting in the NWT: A Guide to the New Regulations*, Yellowknife, Northwest Territories.

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Attachment No. 5
Soils Information



Geotechnical Evaluation of
Options for Improvements to the
Water Reservoir, Wastewater Lagoon, and
Solid Waste Disposal Facility
Supplement to the Schematic Design Report
(September 2005)
The Hamlet of Qikiqtarjuaq, Nunavut

Prepared by

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November 2005

File No: N-O 09439

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C	Soil Testing Results

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Supplement to the Schematic Design Report (September 2005)
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1.0 Introduction

Nuna Burnside Engineering and Environmental Ltd. (Nuna Burnside) was retained by the Government of Nunavut (GN), to conduct a design for improvement to the water reservoir, wastewater lagoon, and solid waste disposal facilities for the Hamlet of Qikiqtarjuaq, Nunavut. In order to evaluate the various options for expansion/rehabilitation or relocation of the facilities, a geotechnical evaluation was undertaken.

The geotechnical evaluation outlined in this report is presented as a supplement to the report entitled “Schematic Design for the Improvements to the Water Reservoir, Wastewater Lagoons, and Solid Waste Disposal Facility, the Hamlet of Qikiqtarjuaq”, dated September 2005.

The geotechnical evaluation focused on the existing sites and the optional sites outlined in the Schematic Design Report, to assist in evaluating the viability and potential construction/rehabilitation costs for the various options.

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2.0 Background

The original proposal for this study submitted to the Government of Nunavut (GN) dated May 2005, included a Geotechnical Analysis as a supplement to the Schematic Design Phase.

Nuna Burnside staff conducted an initial site investigation of all three facilities during a field visit July 7th to 11th, 2005.

The information obtained during the fieldwork and background review were evaluated, and potential options for each facility were prepared. The results were documented in a report entitled “Schematic Design for the Improvements of the Water Reservoir, Wastewater Lagoon, and Solid Waste Disposal facility, the Hamlet of Qikiqtarjuaq, Nunavut” by Nuna Burnside dated September 2005.

The geotechnical evaluation was conducted to support the Schematic Design Report and to assist with the evaluation of the options presented.

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3.0 Current Work Program

During the period of September 13th through 17th, 2005, Nuna Burnside staff visited the Hamlet of Qikiqtarjuaq. The following work was conducted:

- Presentation of the Schematic Design Report to the Hamlet of Qikiqtarjuaq administration staff and GN staff
- Field reconnaissance of the facilities
- Geotechnical studies and acquisition of surficial and subsurface rock and soil samples
- Terrain mapping
- Arrangements for detailed topographic surveying of the sites
- Submission of representative soil samples for laboratory analysis
- Evaluation of background data and collection of samples from drums of liquid waste relating to the former tannery facility.

The findings of the liquid waste evaluation are presented in a separate document.

November 2005

4.0 Geotechnical Evaluation

4.1 Overview

The Schematic Design Report identified potential options to rehabilitate or relocate the existing facilities. The potential feasibility and costs for each option is partially dependent on the physical characteristics of the site. Each facility has specific siting requirements and will need specific quantities of construction materials. The geotechnical evaluation focused on the suitability of the site for the proposed facility and the availability of the required construction materials.

4.2 Bedrock Geology

The Hamlet is located on the east side of Broughton Island as shown on Figure 1.

The area lies within the Churchill Province of the Canadian Shield. The east side of Broughton Island is predominately underlain by the Middle Paleo-Proterozoic (Precambrian) Age intrusive sequences of the Cumberland Batholith. Locally, as shown on Figure 2, the area has been mapped as charnockite within a unit of felsic and mafic plutonic rocks. An older unit of migmatite has also been mapped within the plutonic rocks. Field examination of hand specimens found predominately medium to coarse-grained reddish brown quartz and feldspar rich rocks matching the description of the mapped charnockite.

Very little outcrop was observed in the immediate vicinity of the existing facilities being evaluated and in the optional areas for relocation as outlined in the Schematic Design Report (Figure 2).

Excavation through the overburden was restricted to approximately 2.0 m by permafrost. Bedrock was not encountered in the test-pitting program.

4.3 Surficial Geology

The available surficial geology mapping is displayed on Figure 3. The mapping was conducted at a coarse scale and provides only a broad overview of the surficial conditions. In general, the surficial geology in the areas of interest consists of tightly spaced cobbles and boulders armoring the surface underlain by mixed medium to coarse sand and gravel with varying amounts and of sizes of cobbles and boulders. An increasing amount of silt was noted near the permafrost contact (at approximately 2.0 m) in several areas.

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4.4 Quarry Area

Several areas northwest of the Hamlet have been used as a quarry for sand and gravel resources for the community. Quarry areas are visible as surfacial disturbances and excavations in the tundra on Figures 2 and 3. Excavations are also evident in the immediate vicinity of the wastewater lagoon (Figure 4), landfill (Figure 5), and water reservoir (Figure 6).

Currently an area north of the water reservoir (quarry site) is being used for excavation, sorting, and stockpiling of sand and gravel resources for various road and construction requirements.

The quarry has been excavated sufficiently to create vertical excavation faces exceeding 2.0 m, which can be excavated easily as water drains and the permafrost melts back. See photographs in Appendix B.

Screening equipment, an excavator, a loader, and a dump truck were noted in operation at the quarry site.

The quarry site has sufficient available resources to supply the Hamlet for the foreseeable future.

November 2005

5.0 Existing Wastewater Lagoon

Figure 4 displays the existing wastewater lagoon and surrounding area. The existing lagoon currently operates by discharging from an outfall through the berm in the late summer. The discharge is confined to a meandering stream and shows strong green vegetation growth around its course.

The Schematic Design Report indicates the wastewater lagoon capacity needs to be increased. This could be accomplished at the existing site or a new site. A potential location for constructing additional capacity south of the existing lagoon is displayed on Figure 4.

A geotechnical investigation in the area of the existing site was undertaken to determine the potential depth below surface to which a new lagoon could be excavated and the availability of suitable on site construction materials.

The entire area was traversed on foot and features examined. The surface is typically covered with scattered boulders and cobbles. An examination of the topography and slope faces identified several meters of poorly sorted glacially deposited coarse sand and gravel with abundant cobbles and boulders.

Two test pits were excavated using a rubber-tired backhoe as shown on Figure 4. Test pit logs are included in Appendix A. The test pits revealed poorly sorted medium to coarse sand and gravel, with cobbles and small boulders to approximately 2.0 m where digging was halted by permafrost. Photographs are included in Appendix B. The results of the laboratory analysis for a representative soil sample (Soil 2) are included in Appendix C.

Surficial material in the area south of the existing wastewater lagoon appears to be very similar to the material used to construct the existing lagoon. Sufficient resources of overburden material are available on site to create a second similar sized lagoon using a similar construction technique.

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6.0 Existing Landfill Site

A description of the landfill site and solid waste management is included in the Schematic Design Report.

The landfill and area around the landfill was traversed, and the soil and topography mapped. See Figure 5 for site details and Appendix B for photographs.

The site is operated in two parts. The putrescible waste disposal area is enclosed by a fence, and an open bulky metals disposal area is located immediately to the north of the fenced area. This results in two active fill faces. Both areas operate by filling outwards on a down slope on top of the original ground surface.

The landfill currently has operational issues with exposed waste and steep tipping faces. The landfill site and the surrounding area consists of boulder and cobble armored tundra surface, underlain by a poorly sorted till consisting of medium to coarse sand and gravel, with abundant cobbles and small boulders.

The excavated slope face east of the bulky metal waste disposal area was examined. This area has been excavated into the hillside to acquire cover material for the landfill. An estimated 2.0 m of overburden is able to be quarried above the permafrost line. Excavation into the hillside indicates the soil is coarse and well drained. It appears the permafrost retreats as the excavation advances. Although the material is coarse with many boulders, it is easily excavated and is suitable for landfill cover. There appears to be an abundant amount of available cover material, as the hillside can be excavated eastwards for many hundreds of meters. The results of the laboratory analysis of a representative soil sample (Soil 1) is included in Appendix C.

Within the landfill enclosure, the unfilled areas on the south side and the west side (in front of the waste face) are the original ground surface. Based on local test pitting, these areas could be excavated to approximately 2.0 m to the top of the permafrost. Excavation of a fill footprint below surface would greatly increase the vertical thickness of deposited waste without creating a steep slope face.

From a geotechnical point, the site can be rehabilitated fairly easily as there are no significant land availability and cover availability constraints.

The landfill site area is on a long slope, which tends to be well drained. The upgradient slope to the east was observed to be covered with sheet flow during spring run off. This requires effective ditching to control the flow around the landfill rather than across it.

An examination of the existing ditching and surface water flow indicates that interception and diversion of the upgradient overland flow can be accomplished.

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Sufficient excavatable material is available on site to create berms to better enclose the fill area and reduce problems such as:

- Blown litter
- Steep tipping face
- Expanding footprint of the waste
- Visual appearance.

The fencing could be established on top of the berms to increase the height of the fence and achieve better capture of wind blown litter.

From the geotechnical view point the site can be effectively redeveloped and managed to serve the long-term needs of the Hamlet.

If keeping the landfill and bulky metals disposal area in its current location is the option selected by the Hamlet, there are a number of different layout and operational scenarios, which could be developed. These would be evaluated in concert with the Hamlet during the Detailed Design stages. The Operations and Development Plan will be created as part of the Detailed Design, and will need to be vetted by the Hamlet's public works and landfill operations staff, to ensure the proposed operational methodology and layout is suitable of the equipment, staff, and budget that is available

November 2005

7.0 Existing Water Reservoir

7.1 Reservoir

Figure 6 displays the existing water reservoir and surrounding area. The Schematic Design Report outlines three potential viable options to address the need for expanded reservoir capacity. All of the options involve developing increased storage capacity at the existing site. Regardless of whether the existing reservoir is expanded in some fashion or if an entire new reservoir is constructed, berm material and a suitable base is required.

The area around the reservoir was traversed and the soil and bedrock mapped.

The existing reservoir was created by excavation of the footprint area to obtain maximum depth and the creation of berms using the excavated material and bulldozing material from the surrounding tundra. The area north west of the existing lagoon was examined. Test pits and bulldozed piles of overburden from previous quarrying activities indicates the availability of up to 2 m of poorly sorted medium to coarse grained sand and gravel, with varying amounts of cobbles and small boulders.

The area slopes towards the northwest away from the existing reservoir. Sufficient area exists to place another similar sized reservoir next to the existing reservoir. An examination of the soil around the potential new reservoir identified sufficient suitable overburden material to create the berms, and provide the raw material that could be crushed and sorted to provide the needed sand and gravel. The laboratory results of the analysis of a representative soil sample (Soil-3) are included in Appendix C.

Geotechnical conditions are favourable for the construction of a second reservoir at the site using the same techniques as was used to construct the first reservoir.

7.2 Water Supply to the Reservoir

Currently the reservoir is filled during the summer by laying pipe over the ground up hill to the Tulugak River as shown on Figure 6. Filling was observed underway September 15, 2005, however the flow in the river and resulting flow through the pipe was low. Hamlet staff indicated the river should continue to flow sufficiently to fill the reservoir until early October.

Discussions were held with Government of Nunavut staff and Hamlet staff regarding the filling process. The following were discussed:

- Continue using the current method of filling

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- Establish a reservoir or filling area in the stream itself with a permanent intake in a created pool. This was considered difficult due to the violence of spring run-off with rafted ice moving down hill.

Possible modifications to the filling procedure will be addressed further as part of the detailed design phase of the project.

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8.0 Alternative Locations for the Wastewater Lagoon and Landfill

The Schematic Design Report identified one new potential site for relocating the wastewater lagoon, and three potential sites for relocating the landfill (A, B, and C) as shown on Figures 2 and 3.

A potential new wastewater lagoon site is located in the same area as Potential Landfill Site A. This location is on the south side of the Dew Line site access road.

The area was traversed and examined. On the surface the tundra is covered with abundant moderate to large boulders and bedrock float. The large float is derived from a steep ridge of bedrock to the southeast. The site is sloped to a similar degree as the existing landfill and wastewater lagoon site. The underlying overburden could not be examined in detail due to the rough boulder covered surface. What could be determined from field examination and traverse, was that this area would be very difficult to work with heavy equipment due to the preponderance of boulders and large bedrock float. Construction would be difficult, and Operation and Maintenance (O&M) costs for the landfill would be high due to the difficulty of excavating cover material.

This site is geotechnically less favourable than the existing site and still within sight of the community.

Potential Landfill Site B is located approximately 1.7 km further up the Dew Line site access road than the existing landfill site.

Although the area is mapped as bedrock on Figure 3, Potential Site B consists of overburden above permafrost. Depth to bedrock is unknown. The area slopes to the northwest, and is constrained to the south by a northeast trending ridge and a boulder choked run off channel at the base of the slope. Site B is the only potential location examined that is out of sight of the community.

The area is covered with cobbles and small boulders. The underlying overburden is predominately coarse grained sand and gravel with poorly sorted cobbles and boulders.

The site is sufficiently large enough to host a landfill.

Geotechnically there is sufficient area and available cover material to create and operate a landfill. There are concerns with spring runoff at the base of the ridge, and overland flow from up gradient. This could be controlled with ditching.

From an O&M cost perspective, the site requires traveling a further 1.7 km from the existing landfill access road and up a significant grade. See topographic contours on

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Figure 3. While the site may be geotechnically possible, the economics and O&M issues make it less suitable than the existing site.

Potential Landfill Site C is located north of the Dew Line site access road. The site is not visible to the community and would require the construction of approximately 1 km of new access road.

The site is located on a shallow slope with boulder-covered tundra. Access was not possible with test pitting equipment at the time of the fieldwork due to the distance from the existing road network.

Development of a landfill site in this location appears geotechnically feasible, however the capital and O&M costs would be much higher than for the other sites, with no significant advantages.

In summary, based on the geotechnical evaluation the most suitable option for the landfill site is the rehabilitation of the existing site. The most suitable option for the wastewater lagoon is adding additional lagoon capacity at the existing location through construction of another lagoon.

Maintaining the wastewater lagoon and landfill in their current locations in close proximity to each other, minimizes the need for additional roads and minimizes the land area required for infrastructure development, and minimizes the footprint of environmental impacts.

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9.0 Summary

The geotechnical evaluation found the existing wastewater lagoon site, landfill site, and water reservoir site to be suitable for rehabilitation and/or expansion.

No compelling geotechnical reasons were found to relocate the landfill or wastewater lagoons. A qualitative evaluation of capital costs and O&M indicates the current locations are the most favourable, due to:

- No new access road needed
- No new site development needed
- No new disturbance of the natural tundra required other than in the immediate vicinity of existing disturbed areas
- Sufficient construction material resources have been identified at each location for the type of construction that is planned..

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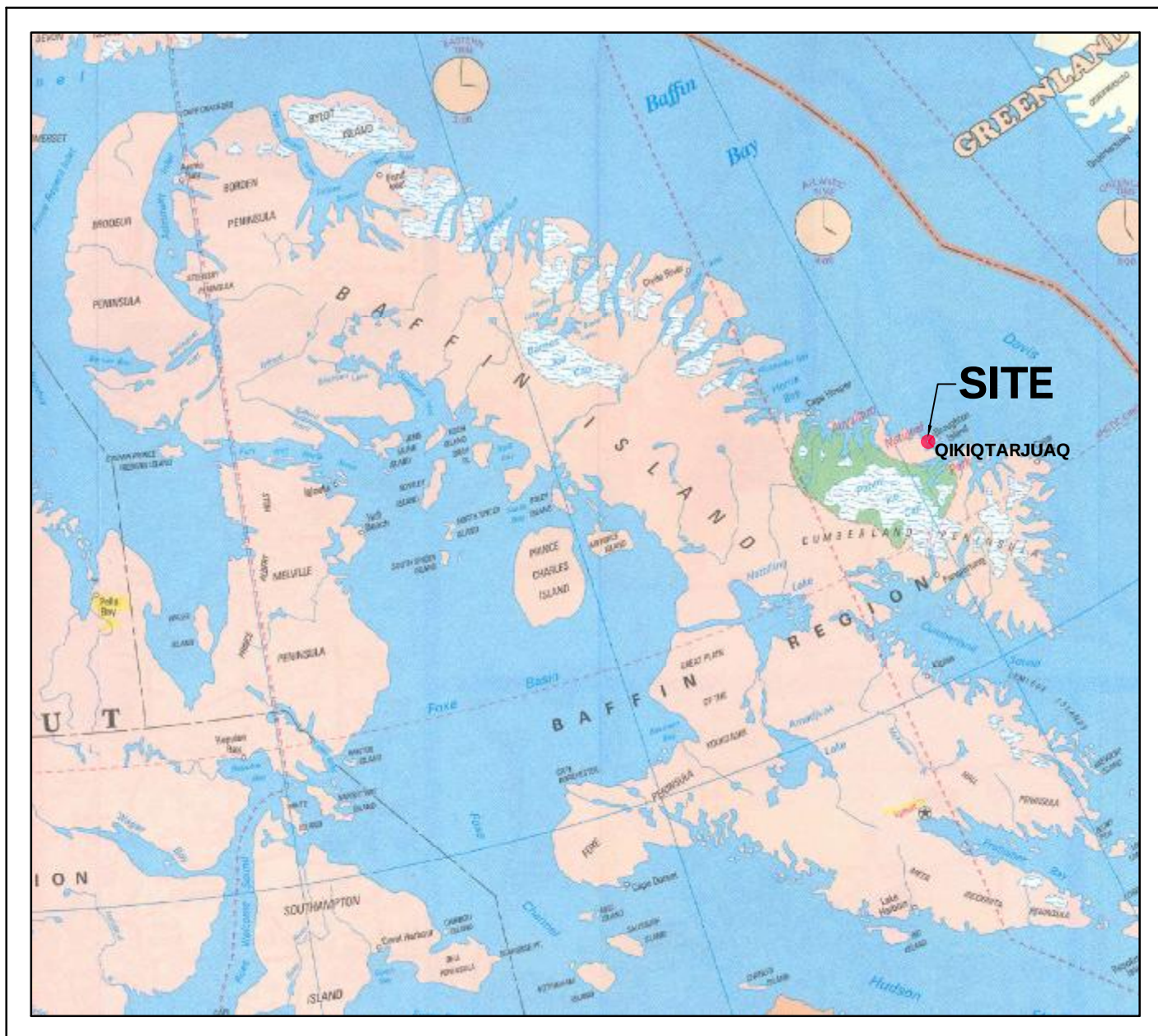
November 2005

10.0 Recommendations

1. No further geotechnical study is required at this time.
2. Detailed topographic contours are required for the areas selected for rehabilitation/expansion in order to develop the Detailed Designs and Operation and Maintenance Plans.

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Figures



Map Reference:
Map of Canada
Published by the CAA

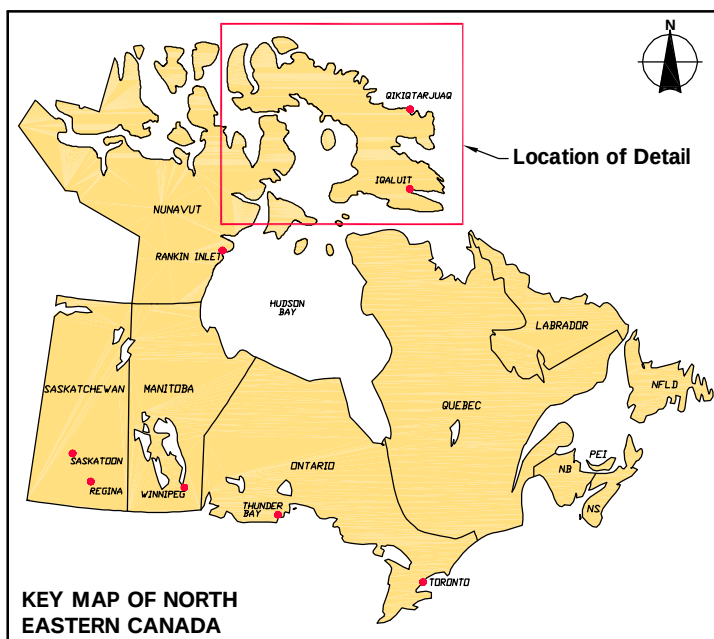


FIGURE 1 - SITE LOCATION MAP

THE HAMLET OF QIKIQTARJUAQ, NUNAVUT

GEOTECHNICAL EVALUATION

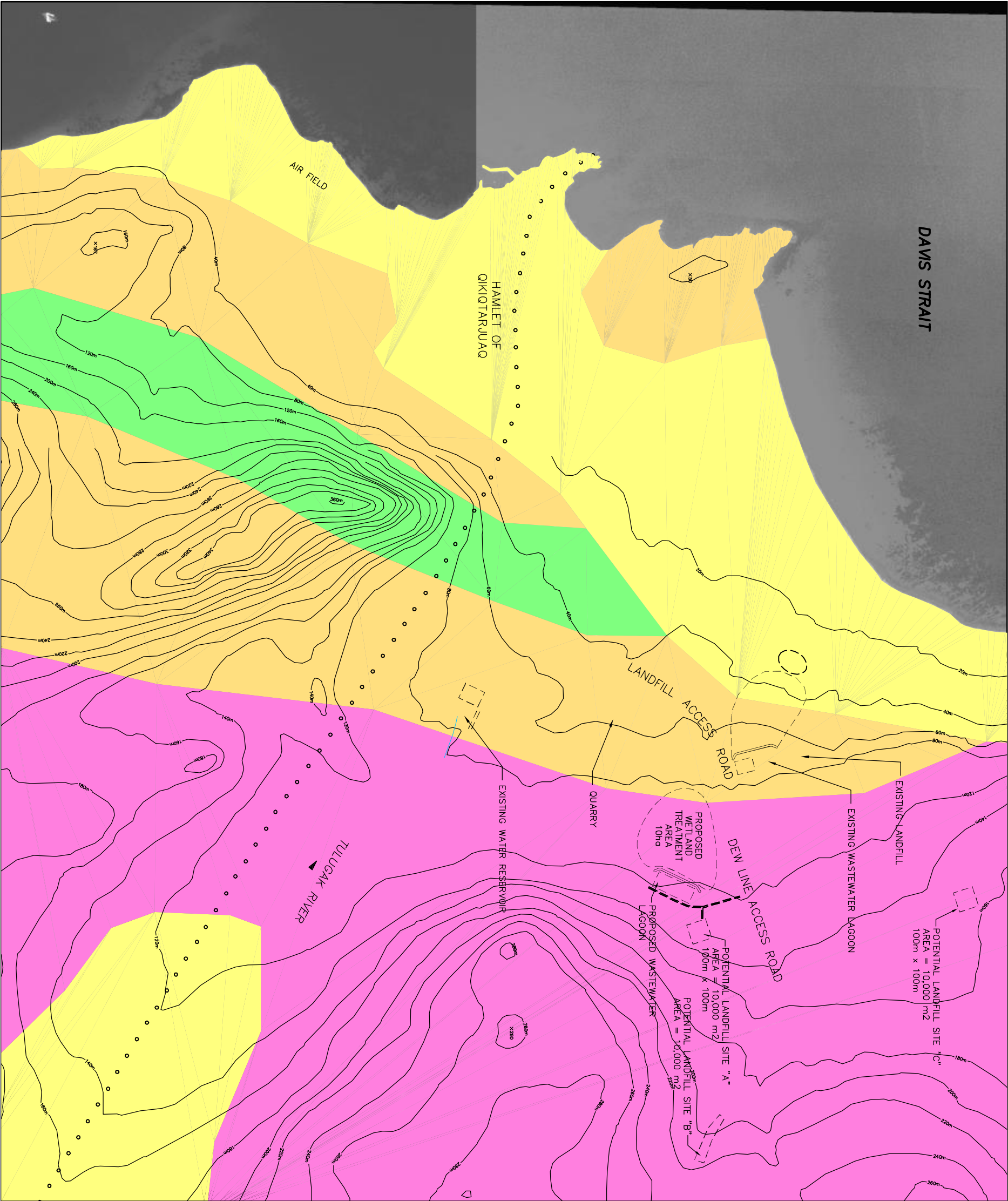
September 2005
Project Number: N-O 09439.0

Prepared by: C. Sheppard

Verified by: J. Walls



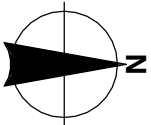
FIGURE 2
THE HAMLET OF QIKIQTARJUAQ
GEOTECHNICAL EVALUATION
SATELLITE IMAGERY OF
ENTIRE COMMUNITY AND
BEDROCK GEOLOGY



- Legend**
- CHARNOCKITE
 - FELSIC & RARE MAFIC PLUTONIC ROCKS
 - MIGMATITE
 - CLAY TO COARSE GRAVEL & BOULDERS
 - DIP
 - LINEAMENT
 - DYKE

Satellite Imagery Source:
September 2004 Satellite Image obtained from DigitalGlobe Inc.

Geology:
Bedrock Geology data obtained from Jackson, G.D., 1998, Okaa Bay - Padloping Island Area, District of Franklin, Northwest Territories, Geological Survey of Canada, Open File 3532, Scale 1:250,000



1:20,000
September 2005
Project Number: N-0 09439.0
Projection: UTM Zone 20
Datum: NAD83

Prepared by: C. Sheppard
Verified by: J. Walls

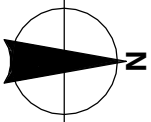


FIGURE 3
THE HAMLET OF QIKIQTARJUAQ
GEOTECHNICAL EVALUATION
SATELLITE IMAGERY OF
ENTIRE COMMUNITY AND
SURFICIAL GEOLOGY

- Legend**
- EMERGED MARINE SEDIMENT
 - TILL
 - BEDROCK
 - RESIDUUM

Satellite imagery Source:
September 2004 Satellite Image obtained from DigitalGlobe Inc.

Geology
Surficial Geology data obtained from Geological Survey of Canada, Surficial Materials and Landforms, Cumberland Peninsula, Bathin Island, Map 1536A.

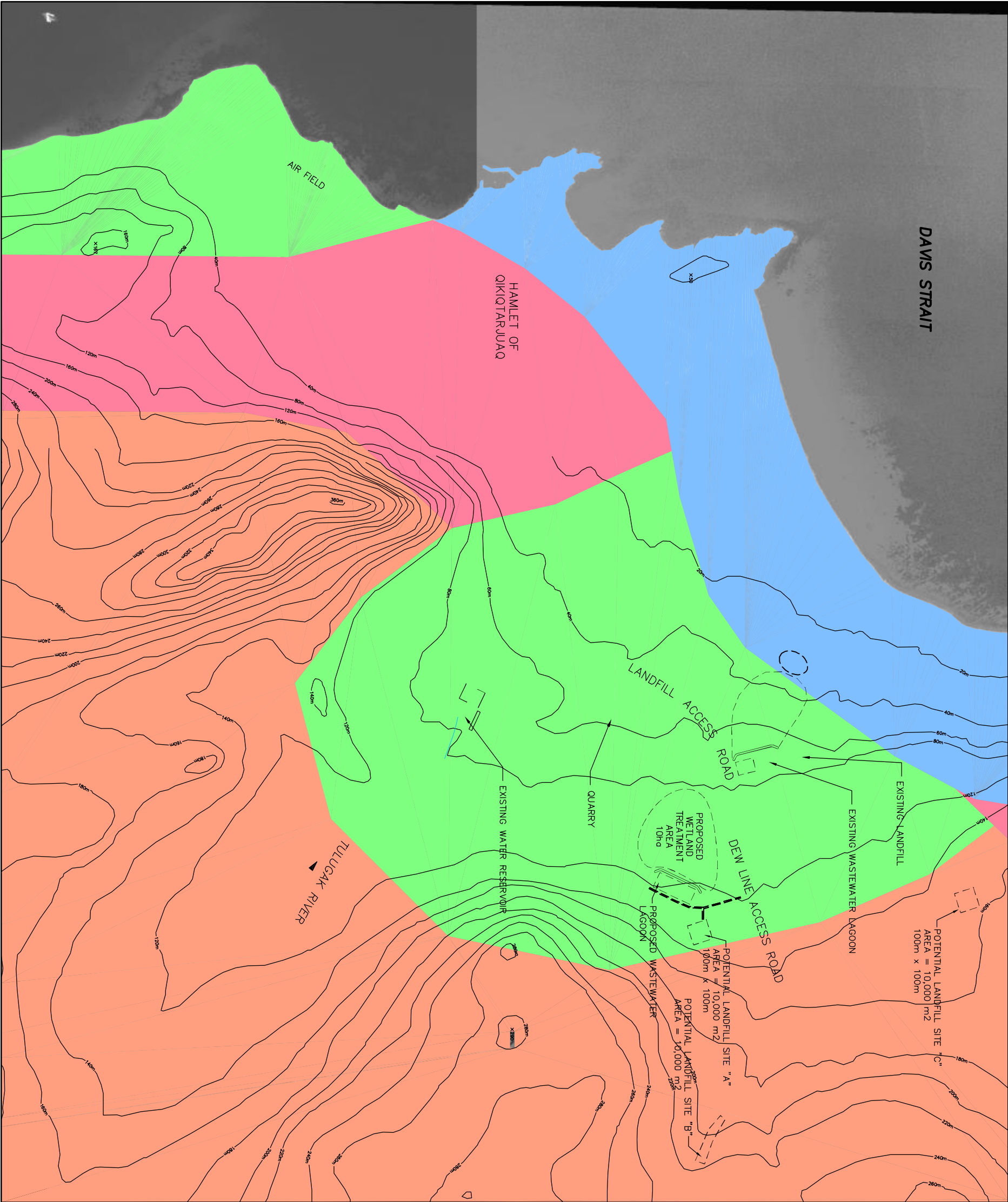


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September 2005
Project Number: N-O 09439.0

Projection: UTM Zone 20
Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar



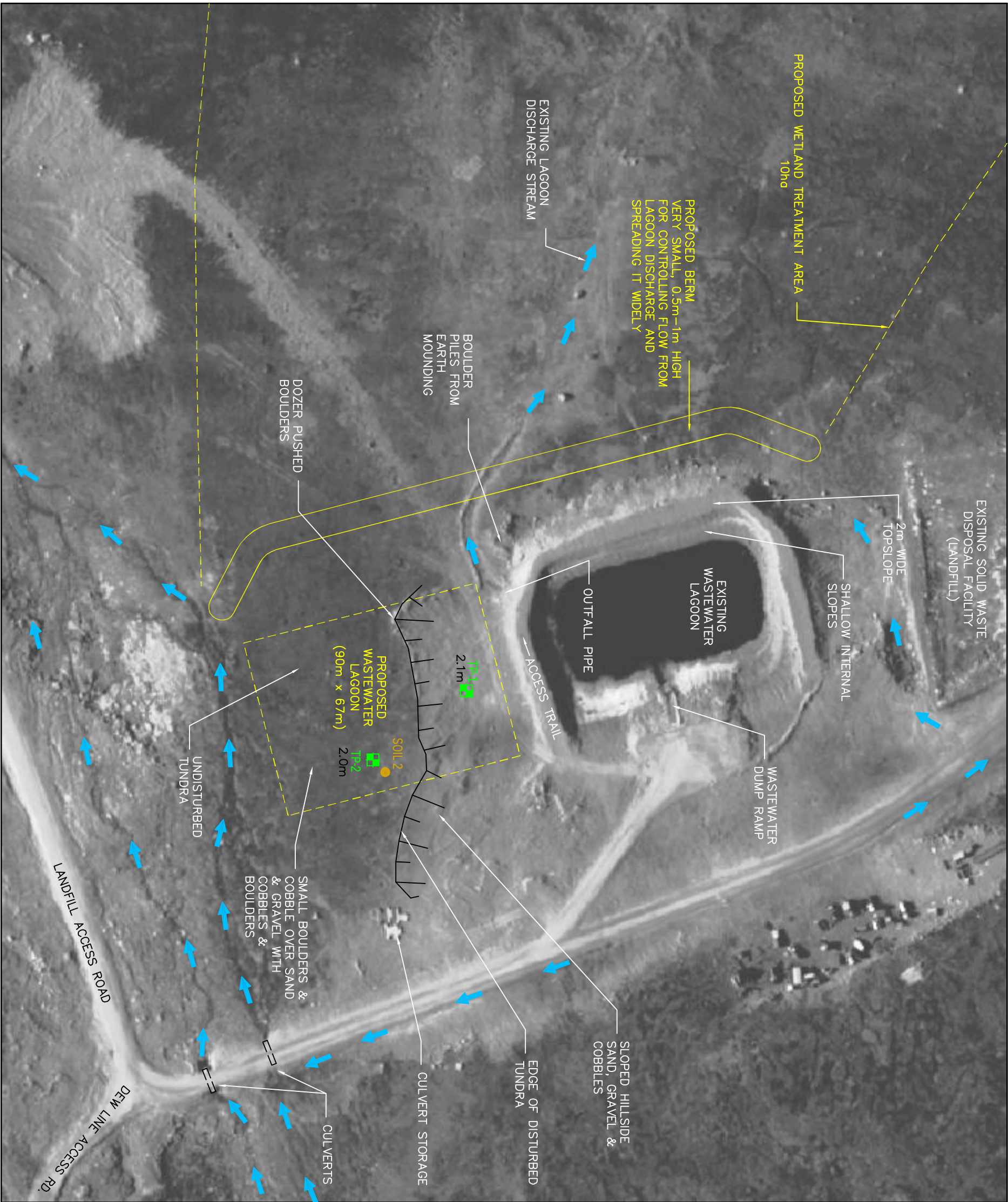


FIGURE 4
THE HAMLET OF QIKIQTARJUAQ
GEOTECHNICAL EVALUATION
EXISTING WASTEWATER
LAGOON

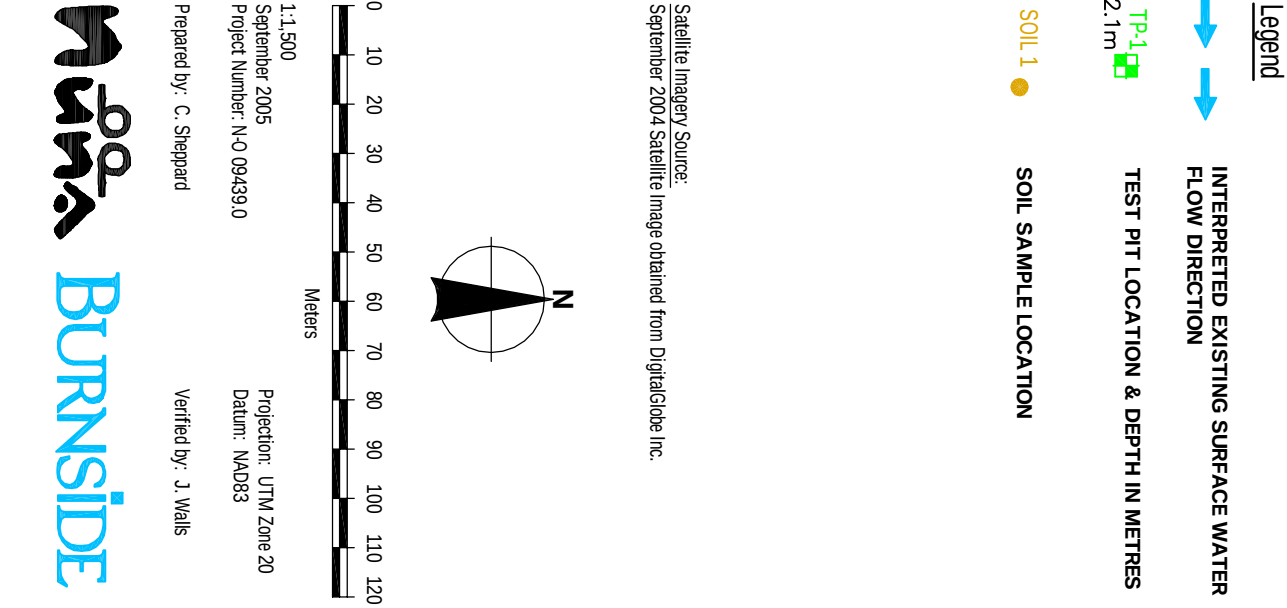
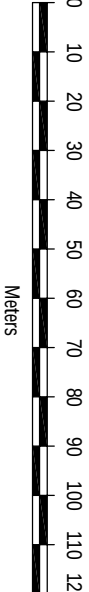
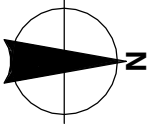


FIGURE 5
THE HAMLET OF QIKIQTARJUAQ
GEOTECHNICAL EVALUATION
EXISTING LANDFILL



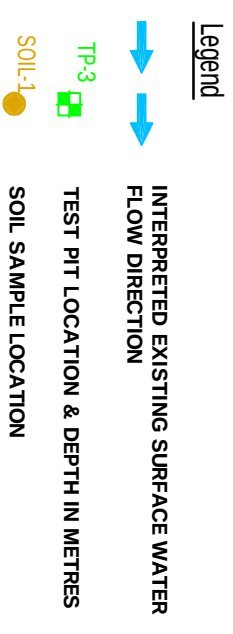
- Legend**
- INTERPRETED EXISTING SURFACE WATER FLOW DIRECTION
 - SOIL-1 SOIL SAMPLE LOCATION

Satellite Imagery Source:
September 2004 Satellite Image obtained from DigitalGlobe Inc.



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September 2005
Project Number: N-0 09439.0
Projection: UTM Zone 20
Datum: NAD83
Prepared by: C. Sheppard
Verified by: J. Walls

**DISTURBED AREA
SOILS USED FOR
CONSTRUCTED
PROJECTS**



Verified by: J. Walls



Appendix A
Test Pit Logs

Appendix A

Test Pit Logs

FOE 08983
Field Program September 13 – 16, 2005
Qikiqtarjuaq, Nunavut

Test Pit 1 – next to sewage lagoon

Tundra surface covered with cobble and small boulders.

0 – 1.0 m	Sand, medium to coarse grained with scattered gravel, cobbles, and small boulders. Loose, damp, poorly sorted. Hard digging for backhoe.
1.0 – 2.1 m	Sand, medium to coarse grained with various sized gravel and cobbles. Less cobbles and boulders. Loose, damp easier digging with backhoe.
2.1 m	Refusal – Perma Frost. Slightly more silty near perma frost contact. Wet and frozen hard. Unable to dig with backhoe.

Embankment Face in Quarry

Cobble and boulder armored surface of tundra.

0 – 0.2 m	Topsoil and humic horizon with boulders. Band dark black with roots.
0.2 – 2.0 m	Sand and gravel with cobbles and boulders. Medium brown, loose, damp, poorly sorted mixture. Some angular fragments of weathered bedrock float.
2.0 m	Bedrock – weathered charnockite. Medium to coarse grained, quartz, feldspar and pyroxene. Weathers readily to coarse sand and gravel.

Test Pit 2 – proposed waste water lagoon

Cobble and boulder tundra surface.

0 – 0.5 m	cobbles and small boulders. Dry loose, fines have been winnowed away.
0.5 – 2.0 m	Sand and gravel with scattered cobbles and small boulders. Poorly sorted, loose, dark brown, damp. Small amount of silty 1.8 – 2.0 m. Water seeping into hole at approximately 1.8 m and poorly.
2.0 – 2.1 m	Refusal on permafrost.

Test Pit 3 – in area of proposed water reservoir

Tundra surface armoured with cobbles and small boulders. Some local disturbance caused by bulldozing for water reservoir.

0 – 2.0 m	Medium to coarse grained sand and gravel with various sized cobbles and odd small boulder. Medium brown, poorly sorted, loose, damp.
2.0 m	Refusal – permafrost – water seepage into hole just above contact with permafrost.

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Appendix B
Photographs



Photo 1 Overburden stockpiled in quarry area.



Photo 2 Close up of broken bedrock float weathering to sand and gravel at the quarry site.



Photo 3 Screening equipment at the quarry site.



Photo 4 Typical excavation face at the quarry site.
Permafrost at approximately 2.0 m below surface.



Photo 5 Test Pit #1 near existing
wastewater lagoon.



Photo 6 Face of borrow area behind landfill.



Photo 7 South side of landfill site.



Photo 8 South side of landfill site.



Photo 9 Looking south across tipping face of landfill.



Photo 10 Dry leachate collection pond at base of landfill.



Photo 11 South side of wastewater lagoon.



Photo 12 Bull dozed surface and test pits west of the water reservoir.
Approximately 2.0 m of overburden to permafrost.



Photo 13 Looking west from wastewater lagoon across disturbed area of overburden from which existing lagoon berms were constructed.



Appendix C
Soil Testing Results

alston associates inc.
consulting engineers

EMAIL

Fax to : Jim Walls,
R.J. Burnside & Associates
Limited

Fax Number : (519) 941-8120

From : Jonathan Bond

Date : 3 November 2005

Ref. No. : 05-090

Page 1 of 4

Subject : Laboratory Results
Burnside File No. FEO 09439
Qikiqtarjuaq

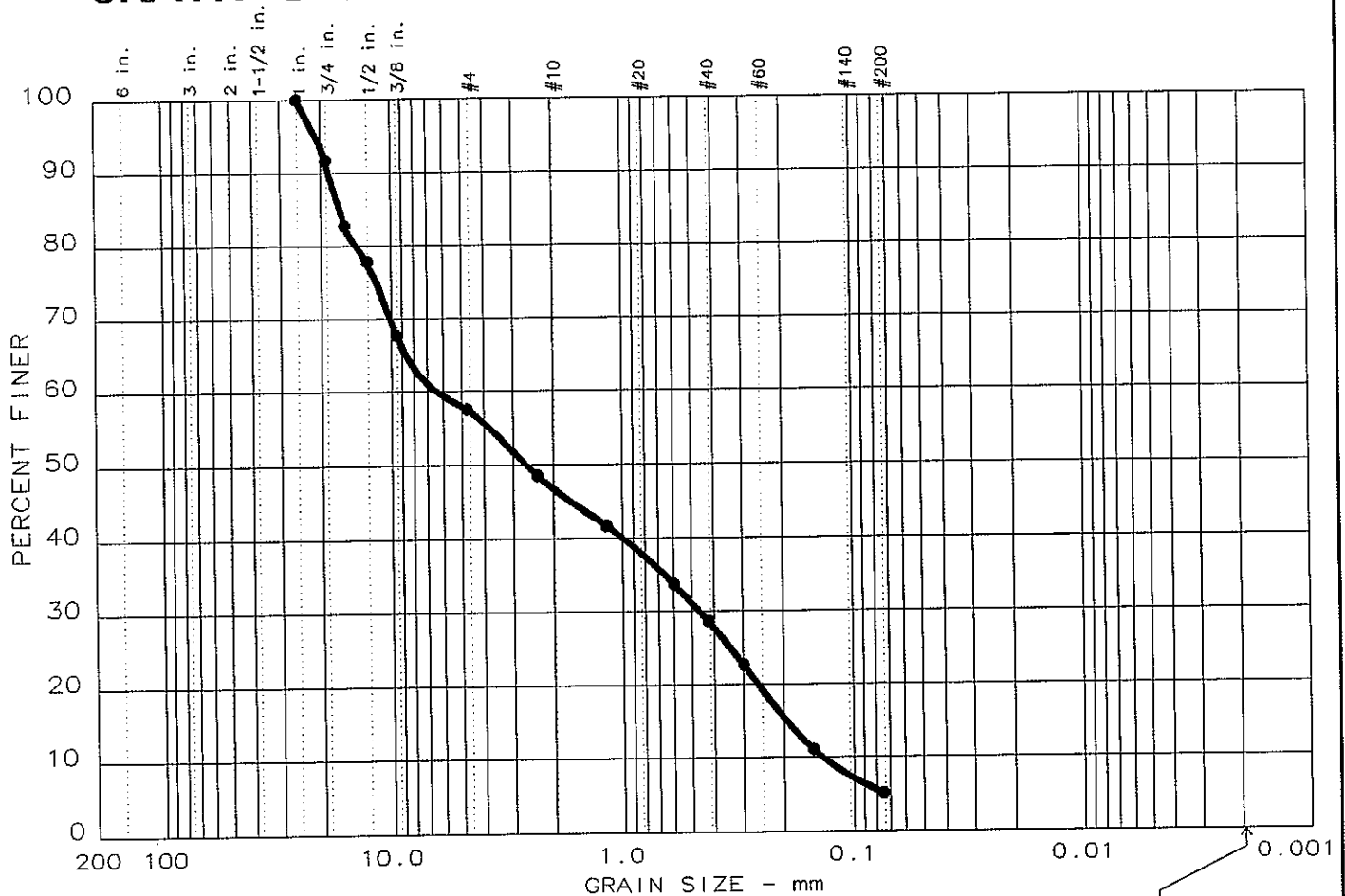
We enclose the Grain Size Distribution Test Reports for the samples received in our office on 17 October 2005. Originals will follow by mail.

If you have any questions please do not hesitate to contact our office.

Regards



GRAIN SIZE DISTRIBUTION TEST REPORT



Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
● 5	0.0	42.5	52.4	5.1	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
●		16.71	6.43	2.62	0.460	0.1941	0.1358	0.24	47.3

MATERIAL DESCRIPTION	USCS	AASHTO
● SAND and GRAVEL, trace silt	SP-SM	

Project No.: 05-090
 Project: Burnside File FEO 09439 Qikiqtarjuaq
 ● Location: Soil 1

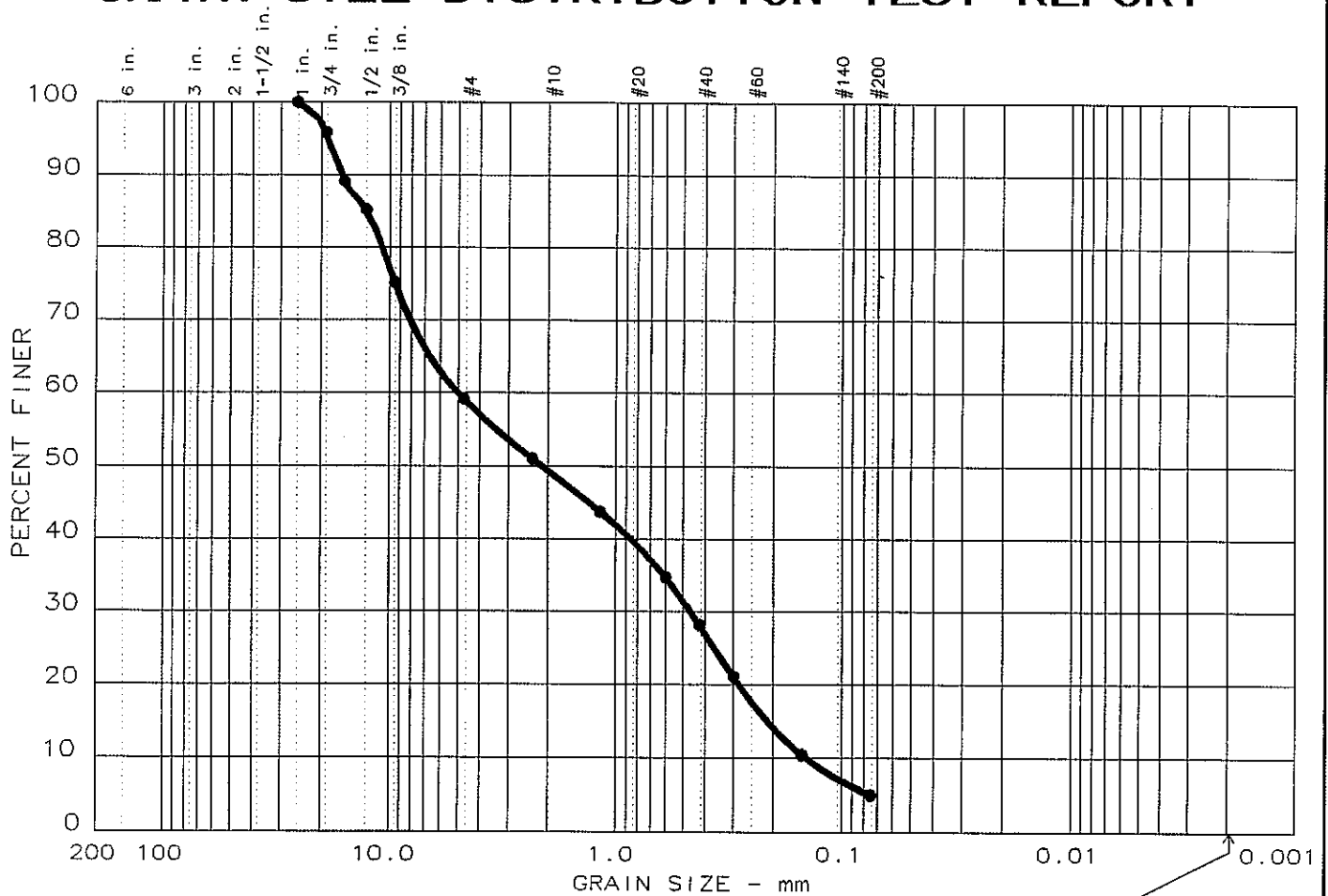
Date: 3 November 2005

GRAIN SIZE DISTRIBUTION TEST REPORT
alston associates inc.

Remarks:
 Prepared for:
 Burnside

Figure No. 1

GRAIN SIZE DISTRIBUTION TEST REPORT



The graph shows a grain size distribution curve for a soil sample. The y-axis represents 'PERCENT FINER' from 0 to 100. The x-axis represents 'GRAIN SIZE - mm' on a logarithmic scale from 200 to 0.001. The curve starts at 100% finer for 4.75 mm and ends at approximately 4% finer for 0.075 mm. The soil is classified as well-graded based on the shape of the curve.

Grain Size (mm)	Percent Finer (%)
4.75	100
2.0	85
1.0	78
0.6	70
0.425	60
0.3	50
0.25	48
0.2	43
0.15	35
0.106	28
0.075	21
0.05	10
0.0425	8
0.03	4

Figure No. 3