



## Transmittal

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DATE	April 20, 2006	FILE NO.	N-O 09439.0
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RE	Application for an Amendment to an Existing NWB License
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To	ATTENTION	Mr. Philippe di Pizzo
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COMPANY	Nunavut Water Board	ADDRESS	P.O. Box 119 Gjoa Haven, Nunavut X0B 1J0
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From	NAME	Michael K. O'Hara, P. Eng.
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SENT VIA	Courier
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### Enclosed items

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- |   |   |
|---|---|
| 1 | Bound document including letter dated April 19, 2006; an Application form; and all supporting documentation   |
| 1 | Bound document entitled Detailed Design Report for the Improvements to the Water Reservoir, Sewage Lagoon, and Solid Waste Disposal Facility, the Hamlet of Qikiqtarjuaq, Nunavut |
| 1 | Set of full size, sealed engineering drawings   |
| 1 | Compact Disc (CD) with electronic Portable Document Format (PDF) versions of all of the above   |

### Comments

cc: Mr. Patricio Fuentes, Regional Project Manager – Baffin Region  
Community & Government Services, Government of Nunavut (CD Only)

Mayor Lootie Toomasie & Mr. Mike Richards, SAO  
Hamlet of Qikiqtarjuaq (CD Only)



April 20, 2006

Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, Nunavut X0B 1J0

Attention: Mr. Philippe di Pizzo  
Executive Director

Re: Application for Amendment To  
Nunavut Water Board License NWB3QIK0106  
Hamlet of Qikiqtarjuaq  
File No.: N-O 09439.0

Dear Mr. di Pizzo,

On behalf of the Hamlet of Qikiqtarjuaq, Nuna Burnside Engineering and Environmental Ltd. (Nuna Burnside) is submitting an application for approval of an amendment to the Nunavut Water Board (NWB) license listed above. Please note that this NWB license is due to expire at the end of this calendar year.

Nuna Burnside has been retained as a professional engineering consultant by the Department of Community and Government Services of the Government of Nunavut. We have undertaken an assessment of the municipal services currently being utilized or required by the Hamlet. The municipal services investigated include:

- water supply, storage, and treatment facility
- sewage storage and treatment facility
- solid waste (landfill) facility including hazardous waste and bulky metals/scrap.

The application attached is based on our recommended detailed design to improve these facilities and to ensure they will have the capacity to meet the projected 20-year population for this community. The process undertaken by Nuna Burnside and detailed information regarding the proposed modifications to the facilities is included in our February 2006 Detailed Design Report and supplemented by our April 19, 2006 Technical Memorandum.

In addition to the application the following supporting documentation is attached to assist in your review and approval:

Attachment I	Supplementary Questionnaire
Attachment II	Inuktitut/English Summary of Project (to be forwarded by fax)
Attachment III	Existing Nunavut Water Board License
Attachment IV	Technical Memorandum
Attachment V	Detailed Design Report (separately bound document)

Also included are full size, sealed engineering drawings with the exception of the floor plan and electrical drawings. Please note that the \$30 application processing fee will be remitted separately directly by the Hamlet of Qikiqtarjuaq and is not included in this package.

Should you require any further information in regards to this application, please do not hesitate to contact us.

Yours truly,

Nuna Burnside Engineering and Environmental Ltd.

Michael K. O'Hara, P. Eng.  
MKO/MP/tk  
Encl.

cc: Mr. Patricio Fuentes, Regional Project Manager – Baffin Region  
Community & Government Services, Government of Nunavut

Mayor Lootie Toomasie & Mr. Mike Richards, SAO  
Hamlet of Qikiqtarjuaq



Effective January 1, 2004

P.O. Box 119  
GJOA HAVEN, NU X0E 1J0  
TEL: (867) 360-6338  
FAX: (867) 360-6369  
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NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN

## WATER LICENCE APPLICATION FORM

Application for: (check one) ☐ New ☐ Amendment ☒ Renewal ☐ Assignment

### LICENCE NO:

(for NWB use only)

#### 1. NAME AND MAILING ADDRESS OF APPLICANT/LICENSEE

Hamlet of Qikiqtarjuaq  
P.O. Box 4  
Qikiqtarjuaq, Nunavut X0A 0B0  
Ph: (867) 927-8832  
Fax: (867) 927-8120  
Attn: Mayor Lootie Toomasie

#### 2. ADDRESS OF CORPORATE OFFICE IN CANADA (if applicable)

Phone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
e-mail: \_\_\_\_\_

#### 3. LOCATION OF UNDERTAKING (describe and attach a topographical map, indicating the main components of the Undertaking)

Latitude: 67°33'N Longitude: 64°02'W NTS Map No. 25/L Scale \_\_\_\_\_

#### 4. DESCRIPTION OF UNDERTAKING (attach plans and drawings)

The undertaking consists of water use and waste disposal to be carried out within the Municipal boundaries of the Hamlet of Qikiqtarjuaq. The water storage reservoir will be upgraded (capacity increased), as will the sewage disposal and solid waste disposal facilities. These proposed upgrades are required in order to meet the 20 year design requirements of the Hamlet (Please refer to the attached Detailed Design Report and Sealed Engineering Drawings).

#### 5. TYPE OF PRIMARY UNDERTAKING (A supplementary questionnaire must be submitted with the application for undertakings listed in "bold")

- |   |  |
|---|--|
| <input type="checkbox"/> Industrial                                   | <input type="checkbox"/> Agricultural                                  |
| <input type="checkbox"/> Mining and Milling                           | <input type="checkbox"/> Conservation                                  |
| <input checked="" type="checkbox"/> Municipal (includes camps/lodges) | <input type="checkbox"/> Recreational                                  |
| <input type="checkbox"/> Power  | <input type="checkbox"/> Miscellaneous (includes exploration/drilling) |
|   | (describe): _____  |

See Schedule II of *Northwest Territories Waters Regulations* for Description of Undertakings

## 6. WATER USE

**X** To obtain water \_\_\_\_\_ To divert a watercourse  
 \_\_\_\_ To modify the bed or bank of a watercourse \_\_\_\_\_ Flood control  
 \_\_\_\_ To alter the flow of , or store, water \_\_\_\_\_ Other (describe): \_\_\_\_\_  
 \_\_\_\_ To cross a watercourse \_\_\_\_\_

**7. QUANTITY OF WATER INVOLVED** (cubic metres per day including both quantity to be used and quality to be returned to source)

**Taking from Tuluqak River (37,500 m<sup>3</sup> per year) taken over approximately 3 months. Effluent from sewage lagoon returned to environment over approximately 3 months (refer to Section 4.3 of Design Report for effluent quality criteria).**

**8. WASTE** (for each type of waste describe: composition, quantity (cubic metres per day), methods of treatment and disposal, etc.)

☒ Sewage                      \_\_\_ Waste oil  
☒ Solid Waste                \_\_\_ Greywater  
☒ Hazardous                  \_\_\_ Sludges  
☒ Bulky Items/Scrap Metal   \_\_\_ Other (describe): \_\_\_\_\_

**9. PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING** (give name, mailing address and location; attach if necessary)

## Land Use Permit

DIAND                      \_\_\_ Yes **X** No    If no, date expected \_\_\_\_\_

Regional Inuit Association         \_\_\_ Yes **X** No    If no, date expected \_\_\_\_\_

Commissioner                          \_\_\_ Yes **X** No    If no, date expected \_\_\_\_\_

## 10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES (direct, indirect, cumulative impacts, etc.)

NIRB Screening      Yes **X** No If no, date expected                                     

**The license is a Type “B” under the Nunavut Water regulations, as well as a Municipal undertaking, and accordingly not subject to NIRB screening**

**11. INUIT WATER RIGHTS**

Will the project or activity substantially affect the quality, quantity, or flow of water flowing through Inuit Owned Lands and the rights of Inuit under Article 20 of the Nunavut Land Claims Agreement?

**The activity will not substantially affect the quality, quantity, or flow of water flowing through Inuit Owned Lands**

If yes, has the applicant entered into an agreement with the Designated Inuit organization to pay compensation for any loss or damage that may be caused by the alteration. If no compensation agreement has been made, how will compensation be determined?

**12. CONTRACTORS AND SUB-CONTRACTORS** (name, address and functions)

**Nuna Burnside Engineering and Environmental Ltd.**  
**Box 175, 25 Third Avenue, Rankin Inlet, NU X0C 0C0**  
**Telephone: (867) 645-2762**  
**Fax: (867) 645-2765**

**Contractor has undertaken detailed design and managed public consultation.**

**13. STUDIES UNDERTAKEN TO DATE** (list and attach copies of studies, reports, research, etc.)

**Please refer to the attached Detailed Design Study and Sealed Detailed Design Drawings**

**14. THE FOLLOWING DOCUMENTS MUST BE INCLUDED WITH THE APPLICATION FOR THE REGULATORY PROCESS TO BEGIN**

Supplementary Questionnaire (where applicable: see section 5) ☒ Yes \_\_\_ No If no, date expected \_\_\_\_\_

Inuktitut/English Summary of Project ☒ Yes \_\_\_ No If no, date expected \_\_\_\_\_

Application fee \$30.00 (Payee Receiver General for Canada) ☒ Yes \_\_\_ No If no, date expected \_\_\_\_\_

Water Use fee (see Section 9 of the *NWT Waters Regulations*; Payee Receiver General for Canada) \_\_\_ Yes ☒ No

If no, date expected: **Not required, as this is a Municipal Undertaking,**

**15. PROPOSED TIME SCHEDULE**

\_\_\_ Annual (or) ☒ Multi Year **(5 Year term requested)**

Start Date: **June, 2006** Completion Date: **June, 2011**

**Lootie Toomasie**  
**Name (Print)**

**Mayor**  
**Title (Print)**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

**For Nunavut Water Board use only**

**APPLICATION FEE** Amount: \$ \_\_\_\_\_ Pay ID No.: \_\_\_\_\_

**WATER USE DEPOSIT** Amount: \$ \_\_\_\_\_ Pay ID No.: \_\_\_\_\_

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Attachment I  
Supplementary Questionnaire



P.O. Box 119

GJOA HAVEN, NT X0E 1J0

TEL: (867) 360-6338

FAX: (867) 360-6369

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NUNAVUT WATER BOARD

NUNAVUT IMALIRIYIN KATIMAYINGI

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**Water Licence Application  
Supplementary Questionnaire  
for Municipalities**



## I. GENERAL

1. Date: **7 April 2006**
2. Applicant: **Municipality of Qikiqtarjuaq (Baffin Region)**
3. Contacts: **Mayor Lootie Toomasie  
Hamlet of Qikiqtarjuaq  
P/O Box 4  
Qikiqtarjuaq, Nunavut X0A 0B0  
Ph: (867) 927-8832  
Fax: (867) 927-8120**
4. Community Status: ☐ Village ☐ Town ☐ City  
☒ Hamlet ☐ Settlement Corporation
5. Indicate the status of the municipality's licence on the date of the application.  
☐ New Application  
☒ Renewal - Water Licence # **NWBQIK0106**

## II. ATTACHMENTS

1. Attach current or up-to-date detailed map(s) showing the locations of the:
  - a. raw water intake;
  - b. water storage and treatment facilities;
  - c. fuel and chemical storage;
  - d. sewage treatment facilities (lagoon, honey bag pit, wetland);
  - e. wastewater treatment area and discharge outlets;
  - f. solid waste disposal areas and drainage patterns;
  - g. hazardous waste disposal area;
  - h. transportation access routes;
  - i. existing water bodies/courses and any changes to these water bodies/courses that have or may occur as a result of water use or waste disposal facilities, locations of environmental monitoring sites. (Outline drainage basin);
  - j. Traditional use areas outlined on site map and areas around the community used for recreation, camping, fishing, etc.
  - k. abandoned and/or restored water treatment, sewage, and solid waste disposal facilities.

Are maps attached? ☒ Yes ☐ No

**(Detailed Design Report, Technical Memorandum, Full Size Detailed Design Drawings)**

If no, please indicate when they will be available.

**Nuna Burnside Engineering and Environmental Ltd. has provided the various maps.**

What type of liner? **HDPE**

When was it installed? **1989 (Please note that liner will be replaced during expansion )**

### ***Water Treatment***

1. Indicate the quality of the water.

Summer:	<input checked="" type="checkbox"/> good	<input type="checkbox"/> fair	<input type="checkbox"/> poor
Fall:	<input checked="" type="checkbox"/> good	<input type="checkbox"/> fair	<input type="checkbox"/> poor
Winter:	<input checked="" type="checkbox"/> good	<input type="checkbox"/> fair	<input type="checkbox"/> poor
Spring:	<input checked="" type="checkbox"/> good	<input type="checkbox"/> fair	<input type="checkbox"/> poor

2. Describe.

**Currently, water treatment consists of chlorination prior to distribution. Filters will be installed during upgrades. (Please refer to the Detailed Design Report attached).**

3. Type of water treatment (proposed).

<input checked="" type="checkbox"/>	Filtration and chlorination
<input type="checkbox"/>	Chlorination only
<input type="checkbox"/>	None
<input type="checkbox"/>	Other _____

Description

### ***Water Use And Distribution***

1. Volume of water use:

Distribution	Estimated number of people on the system <b>A</b>	Estimated average water consumption (Litres/capita/day) <b>B</b>	Total water consumption (Litres/day) <b>A x B</b>
PIPED	N/A	N/A	N/A
TRUCKED	599	102.4	61,337 L/d
<b>TOTAL</b>			

**See Detailed Design Report for 20 year requirements**

### ***General Condition of the water supply facilities***

1. General condition of the:

a. Water Supply facility ☐ Satisfactory ☒ Unsatisfactory

If unsatisfactory, explain.

**The water supply facility for the Hamlet requires an expansion to meet 20 year population projections, which is proposal under consideration (Please refer to the Detailed Design Report attached)**

- b. Storage facility                      ☐ Satisfactory      ☒ Unsatisfactory

If unsatisfactory, explain.

**The water storage facility for the Hamlet requires an expansion to meet 20 year population projections, which is proposal under consideration (Please refer to the Detailed Design Report attached).**

- c. Distribution system                      ☒ Satisfactory      ☐ Unsatisfactory

If unsatisfactory, explain.

### ***Modifications***

1. Are there any changes *planned* for the water supply system?                      ☐ No      ☒ Yes

If yes, please attach a copy of the plan, or describe changes. Provide information on the implementation schedule.

**All proposed modifications to the water supply, storage and treatment facilities are outlined in the attached Technical Memorandum, drawings and Detailed Design Report. Plans include mobilization of materials to the community on the 2006 Sea Lift. This will allow for construction activities to commence in 2007.**

2. Does the community believe changes needed to the water supply, storage or treatment facilities? Describe.

**Yes, the project is supported by the Hamlet and the Detailed Design Report Recommendations have been adopted by the Hamlet.**

### ***Identification***

Are there signs identifying drinking water sources presently used by the municipality? ☒ Yes ☐ No

## **IV. SEWAGE DISPOSAL**

1. What type(s) of sewage treatment does the community have?

- ☒ Lagoon  
☐ Mechanical system  
☐ Wetland  
☐ Honey bag  
☐ Combination/Other: describe

***Lagoon (if applicable)***

1. Have there been any operating problems with the lagoon? ☐ Yes ☒ No  
If yes, describe

**While no operational problems are noted with the sewage disposal system, the facility requires expansion to meet 20 year population projections, which is proposal under consideration (Please refer to the Detailed Design Report attached).**

***Mechanical System (if applicable) – N/A***

1. Describe (type, specifications, operation and maintenance program for the mechanical wastewater treatment system).
2. Are sludges produced ? ☐ Yes ☐ No  
If yes, describe how the sludges are disposed of:

***Wetland (if applicable)***

1. Describe the Wetland wastewater treatment system.

**The current NWB license does not include the wetland treatment area. The contemplated license includes the provision of a Wetland Treatment Facility, which has been designed to produce an effluent fully compliant with Section 36(3) of the *Fisheries Act*. Anticipated effluent quality (as determined by the Alberta Wetland Model, corrected for temperature parameters) will be below 25 mg/L for both BOD and TSS. Ammonia levels are anticipated to be below those required by Environment Canada to be non-acutely-lethal to fish.**

***Honey Bag Pit***

1. Does the municipality use a honey bag pit?  
☐ Yes ☒ No  
If yes, describe the location, drainage, and operation/maintenance of the site:

***Commercial, Industrial and/or Hazardous Wastes***

1. Are there any sources of commercial or industrial *liquid* waste being discharged or deposited to the wastewater treatment system that may affect the quality of the effluent or leachate produced? *(The municipality should be aware that any commercial or industrial discharge has to be approved by the municipality)* ☐ Yes ☒ No

If yes, indicate sources, types and quantities.

### ***Sewage Discharge***

1. Are fish, shell fish and other wildlife harvested in or near the discharge area ?  
\_\_\_ Yes **X** No

If yes, indicate species harvested, and level of harvest.

### ***General Condition of the sewage treatment facilities***

1. General condition of the:

- a. Sewage collection system **X** Satisfactory \_\_\_ Unsatisfactory

If unsatisfactory, explain.

- b. Discharge control system \_\_\_ Satisfactory **X** Unsatisfactory

If unsatisfactory, explain.

Point discharge to environment does not provide adequate assimilation of effluent.

- c. Dams, diversion dykes, berms **X** Satisfactory \_\_\_ Unsatisfactory

If unsatisfactory, explain.

Not provided.

### ***Modifications***

1. Are there any changes *planned* in the sewage treatment facilities? \_\_\_ No **X** Yes  
If yes, please attach a copy of the plan, or describe changes. Provide information on the implementation schedule.

**The facility requires expansion to meet 20 year population projections, which is the proposal under consideration (see Detailed Design Report). Upgrades will include an engineered Wetland Treatment Facility, which has been designed to produce final effluent that will be fully compliant with Section 36(3) of the *Fisheries Act*. Anticipated effluent quality (as determined by the Alberta Wetland Model, corrected for temperature parameters) will be below 25 mg/L for both BOD and TSS. Ammonia levels are anticipated to be below those required by Environment Canada to be non-acutely-lethal to fish (Please refer to Detailed Design Report).**

2. Does the municipality or residents believe changes are needed at the sewage treatment facilities?

**Yes, the project is supported by the Hamlet. The Detailed Design Report recommendations have been adopted by the Hamlet.**

### ***Abandonment and Restoration***

1. List and describe abandoned or restored sewage treatment facilities.  
Refer to original attachment maps.

**Not applicable. No facilities will be abandoned during the proposed upgrades.**

***Identification***

Are there signs identifying past and present sewage disposal sites ?      **X** Yes    \_\_\_ No

**V.      SOLID WASTE DISPOSAL**

1.      Briefly describe how solid wastes are collected and delivered to the disposal area.

**Solid waste is regularly collected by Hamlet staff, and deposited to the landfill, where it is regularly burned to reduce its volume prior to being covered.**

2.      Is the solid waste site fenced?      **X** Yes    \_\_\_ No

3.      Is the fence adequate?      \_\_\_ Yes    **X** No

If no, describe

**The fence surrounding the perimeter of the landfill is not adequate. The fence will be replaced with a new higher fence during the proposed upgrades. Furthermore, berms will also be added to the Solid Waste Disposal Facility, to prevent off-site water impacts (Please refer to the Detailed Design Report attached).**

***Waste Reduction***

1.      Does the municipality burn garbage ?      **X** Yes    \_\_\_No

If yes, describe how and when this is done.

**Waste is regularly burned, by Hamlet staff, when prevailing winds are favourable, and blowing away from the Community.**

2.      Has the municipality considered measures for waste reduction such as recycling or reuse?

**X** Yes    \_\_\_ No

If yes, describe

**Active re-use of vehicle, heavy equipment and snowmobile parts occurs at the metal dump site.**

***Animal Carcasses Pit***

1.      Does the municipality have an area for the disposal of animal carcasses ?    \_\_\_ Yes    **X** No

If yes, describe the location, drainage and operation/maintenance of the site

### ***Waste Oil Pit***

1. Describe the waste oil storage area? **Not applicable, as no waste oil pit is operated.**

### ***Bulky Scrap Metal Waste Disposal Area***

1. Does the municipality have a scrap metal or bulky waste disposal area? ☒ Yes ☐ No  
If yes, briefly describe its location and operation plan.

**The bulky waste disposal area is operated adjacent to the Solid Waste Disposal Facility. Bulky waste is temporarily made available for re-use by community members, until such point as it is deemed no longer useable. At this point, it is placed in the bulky waste disposal area, compacted and covered with soil (Please refer to the Detailed Design Report attached).**

### ***Commercial, Industrial and/or Hazardous Wastes Disposal Area***

1. Are there any commercial or industrial waste being discharged or deposited in the solid waste disposal area? (The municipality should be aware that any discharge of commercial or industrial waste has to be approved by the municipality) ☐ Yes ☒ No  
If yes, please indicate sources, types and quantity.

2. Will the municipality use a hazardous waste disposal area? ☒ Yes ☐ No  
If yes, describe its:

a. Location **Please refer to the Detailed Design Report attached.**

b. Structure **Please refer to the Detailed Design Report attached.**

c. Operation and maintenance (describe special handling/disposal methods for these wastes)

**Please refer to the Detailed Design Report attached.**

### ***General Condition of the Solid Waste Disposal Area***

1. Comment on the general conditions of the:
- a. Solid waste disposal area ☐ Satisfactory ☒ Unsatisfactory  
If unsatisfactory, explain.



Repairs and height increases to the site fences are required. These fence upgrades will be undertaken during the proposed modifications. Berms will also be added to the Solid Waste Disposal Facility, to prevent off-site water impacts. From the site will be expanded to meet the projected, 20 year volume requirements (Please refer to the Detailed Design Report attached).

### ***Modifications***

1. Are there any changes planned for the solid waste disposal area?

☐ No ☒ Yes

If yes, attach a copy of the plan, or describe changes. Provide information on the implementation schedule.

### **See above**

2. Are changes needed to the solid waste disposal area? Describe.

**Please refer to the Detailed Design Report attached.**

### ***Abandonment and Restoration***

1. List and describe abandoned or restored solid waste facilities.  
Indicate their location on a map.

**Not applicable. No facilities will be abandoned during the proposed upgrades.**

### **Identification**

1. Are there signs identifying past and present solid waste disposal sites? ☒ Yes ☐ No

## **VI. INSPECTION AND MONITORING**

1. When were municipal facilities inspected by:

☒ Indian and Northern Affairs Inspector

Date: **August, 2004**

☒ Municipal and Community Affairs

Date: **March, 2006**

☐ Other:

Date: \_\_\_\_\_

2. Is there a system in place for reporting spills? ☒ Yes ☐ No  
If yes, describe.

**The Hamlet/Senior Administrative Officer (SAO) or designate reports all spills to the 24 hr Nunavut Spill Line**

3. Is there a contingency plan for clean up of spills? ☒ Yes ☐ No  
If yes, describe.

**Pleaser refer to the attached Environmental Spill Contingency Plan located in the Appendices of the Detailed Design Report.**

4. Have any spills occurred in the past five years? ☐ Yes ☒ No

If yes, describe and show on a map the locations of the spills. What action has been taken to clean the affected areas?

***Monitoring Program***

1. Is water sampling and analysis done? ☐ Yes ☒ No

If Yes, answer the questions a to e

- a. Briefly describe how samples are taken and sent to the laboratory.
- b. Briefly describe any monitoring done for wastewater effluent and leachate.
- c. Who is responsible for water sampling ?

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Telephone #: \_\_\_\_\_

Fax # : \_\_\_\_\_

Level of training: \_\_\_\_\_

- d. Recognized laboratory performing analysis of samples.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone #: \_\_\_\_\_

Fax #: \_\_\_\_\_

- e. Are any changes planned in the water quality monitoring program? ☒ Yes ☐ No

If yes, describe.

**Please refer to the attached Monitoring Plan located in the Appendices of the Detailed Design Report, which will implemented by the Hamlet in the Summer of 2006**

## VII. PUBLIC CONCERNS

1. What concerns does the municipality or residents have regarding the municipal water supply or waste disposal facilities? List the concerns and describe what steps have been taken to address those concerns.

**Please refer to the Detailed Design Report attached.**

## VIII. PUBLIC HEALTH *(Help may be obtained from the Regional Environmental Health Officer if you have difficulty with this section.)*

1. Date:
2. Municipality: **Hamlet of Qikiqtarjuaq**
3. Contact: (Environmental Health Officer Contact)  
  
Telephone #: \_\_\_\_\_  
  
Fax # : \_\_\_\_\_
4. Have there been any problems or health/environmental concerns with drinking water? \_\_\_\_ Yes **X** No  
  
If yes, describe
5. Have there been any problems or health/environmental concerns with sewage disposal/treatment?  
\_\_\_\_ Yes **X** No  
  
If yes, describe
6. Have there been any problems or health/environmental concerns with solid waste disposal?  
\_\_\_\_ Yes **X** No  
  
If yes, describe

### ***Monitoring Program***

1. Does the Regional Health Board perform water quality sampling? **X** Yes \_\_\_\_ No  
If Yes, answer questions (a) to (e)
  - a. Briefly describe the sampling methodology.

**Bacteriological and chemical water quality sampling is completed on source water. Samples are analyzed to determine compliance with the *Guidelines for Canadian Drinking Water Quality (GCDWQ)*.**

- b. Briefly describe any monitoring of wastewater effluent and leachate.

**No sampling is currently undertaken by the Hamlet. Water license compliance sampling is undertaken by Indian and Northern Affairs Canada (INAC).**

c. Who is responsible for sampling?

Name: **Jim Rogers**  
Position: **Manager, Water Resources**  
Telephone #: **(867) 975-4555**  
Fax #: **(867) 975-4585**  
Level of training:

d. Recognized laboratory performing analysis of samples.

Name: **Taiga Environmental Laboratory**  
Address: **4601 - 52nd Avenue P.O. Box 1500**  
**Yellowknife, Northwest Territories X1A 2R3**  
Telephone #: **(867) 669-2781**  
Fax #: **(867) 669-2718**

e. Are any changes planned in the water quality monitoring program? ☒ Yes \_\_\_No  
If yes, describe.

**Please refer to attached Monitoring Plan located within the Appendices of the Detailed Design Report for the proposed water quality monitoring program, which will implemented by the Hamlet in the Summer of 2006**

**IX. TECHNICAL INFORMATION** *(Assistance may be obtained from the Regional Community Government (CG&T) office if you have difficulty with this section).*

1. Date:

2. Municipality: **Hamlet of Qikiqtarjuaq**

3. Contact: **Bhabesh Roy, P. Eng (Regional Engineer-Community Government and Government Services)**

Telephone # **867-899-7413**

Fax #

4. Population (according to most recent census results): **559**

5. Estimated growth rate over next 5 years: **Please refer to Detailed Design Report attached.**

6. Have any baseline data collection and evaluation been undertaken with respect to the physical, biological, and chemical characteristics of the main water bodies in the area? ☒ Yes ☐ No

If yes, provide a summary of program details or site title, authors, cities, and dates:

**Please refer to the Detailed Design Report attached.**

If no, are such studies being planned? ☐ No ☐ Yes (If yes, when and by whom):

7. Have Elders been consulted in the collection of baseline data on main water bodies in the area? ☐ No ☒ Yes

If yes, specify. **Community meetings and Hamlet Council has been consulted during all phases of the project to date.**

8. Have any baseline data collection and evaluation been undertaken with respect to the various biophysical components of the environment potentially affected by the project? ☐ No ☒ Yes

If yes, provide details below.

**Please refer to Detailed Design Report attached.**

If no, are such studies being planned? ☐ No ☐ Yes.

If yes, specify:

### ***Attachments***

1. Attach detailed plan or drawing(s) of the present *solid waste disposal area*. Include the following information:
  - a. details of pond size and elevation;
  - b. details of all retaining structures (dimensions, materials of construction, etc.);
  - c. details of the drainage basin, and existing and proposed drainage modifications;
  - d. details of all decant, siphon mechanisms etc., including sewage treatment facilities;
  - e. details regarding direction and path of wastewater flow from the area;
  - f. distance from watercourses and fish bearing waters;
  - g. location and construction of liners;
  - h. leachate and groundwater collection systems; and
  - i. control structures.
2. Attach detailed plan or drawing(s) of the present *sewage treatment system*. The drawing(s) should include the following:

- a. details of all retaining structures (dimensions, materials of construction, etc.);
  - b. details of the drainage basin, and existing and proposed drainage modifications;
  - c. details regarding direction and path of wastewater flow from the area;
  - d. indications of the distance from watercourses and fish bearing waters;
  - e. all sources of seepage presently encountered near these areas, including volumes ( $\text{m}^3/\text{day}$ ) and directions.
  - f. The volume of seepage flow ( $\text{m}^3 / \text{day}$ ); and
  - g. The direction of each flow.
3. Are drawings for the solid waste disposal area and sewage treatment system attached?  
☒ Yes ☐ No

If Yes, who has provided them?

**Nuna Burnside Engineering and Environmental Ltd.**

If no, indicate when they will be available.

### ***Hydrology***

1. Effects on surface water flow:  
Are any stream channels altered? ☐ Yes ☒ No  
Is the natural storage or water level of any lake or pond changed? ☐ Yes ☒ No  
Are there changes in water flow downstream of the project? ☐ Yes ☒ No  
Is a storage reservoir created in a natural channel? ☐ Yes ☒ No  
If yes to any of the above, briefly describe the expected change in flow or storage:
2. Drainage Area:  
What is the drainage area? \_\_\_\_\_  $\text{km}^2$   
What is the average elevation of the drainage basin? \_\_\_\_\_ meters  
Is the drainage basin outlined on an attached map? ☐ Yes ☐ No  
  
Describe the drainage basin characteristics, (vegetation, general soil type, lakes, swamps and permafrost areas, etc.)
3. Channel characteristics:  
Is the course of any channel changed? ☐ Yes ☒ No  
  
If yes, describe measures to maintain stream bed and bank stability.
4. Will the cross-section of any watercourse be changed? ☐ Yes ☒ No

If yes, describe the change and its effect on the flow capacity of the channel.

### ***Water Supply***

1. What is the rate of withdrawal from the source? **Approximately 420 m<sup>3</sup>/day.**
2. Is water drawn from the source ☒ intermittently ☐ continuously
3. If it is drawn intermittently, during what month(s) is it drawn? **July-September**
4. For what period is it drawn (days/weeks/months)? **3 Months**
5. What is the rate of flow of source (if river) or size (if lake)? **The flow rate of the river is variable (high rate of flow during periods of withdrawal, so that no significant impacts are predicted).**
6. At the intended rate of water usage, describe the effects on the river or lake from which water will be drawn. **Negligible effects on the river from which water will be drawn is expected.**

### ***Water Intake***

1. Please provide short descriptions of the following:

a. freshwater intake facility

**Please refer to the Detailed Design Report attached.**

b. operating capacity of the pumps

**Not applicable. Gravity feed intake in use and will continue to be used.**

c. intake screen size

**Mesh compliant with DFO Guidelines, and sufficiently fine so as to prevent the entrainment of fish.**

### ***Water Storage***

1. Is a dam or dyke being used to store or alter the flow of water? ☒ Yes ☐ No
2. What are the dimensions of the dam or dyke? **Please refer to the Detailed Design Report attached and the sealed, full size engineering Drawings.**

Length: \_\_\_\_\_ Width: \_\_\_\_\_ Height: \_\_\_\_\_

U/S slope: \_\_\_\_\_ D/S slope: \_\_\_\_\_

3. Does the proposed dam create a reservoir in a natural watercourse?

\_\_\_ Yes **X** No

If yes, what is the storage capacity and surface area of the reservoir?

\_\_\_\_\_ m<sup>3</sup> \_\_\_\_\_ ha.

4. Will the dam or dyke affect fish migration or movement ? \_\_\_\_\_ Yes **X** No

If yes, describe all measures for compensation of fish habitat lost due to the dam or dyke, and mitigation for fish migration or movement.

### ***Water Treatment***

1. Indicate the capacity of the treatment facility. **To be upgraded to 1000 L/min**
2. What is the capacity of the water storage facility? **To be upgraded to 31,500m<sup>3</sup>**
3. Describe the method of water treatment (i.e., backwash, flocculation, sedimentation, chemicals used), and provide the results of the most recent bacteriological and chemical analysis. Attach a diagram, if possible.

### **Membrane Filtration and Chlorination (calcium chloride) prior to filling trucks.**

4. Are there any changes planned in the water treatment facilities?  
\_\_\_ No **X** Yes  
If yes, attach a copy of the plan or indicate changes and include an implementation schedule.  
Include excerpt from MACA Capital Plan if available.

### ***Sewage Disposal***

1. Indicate the level of sewage treatment:  
\_\_\_ primary **X** secondary \_\_\_ tertiary  
Pre-treatment (if applicable): \_\_\_ screening \_\_\_ maceration  
Lagoons (if applicable): \_\_\_ anaerobic \_\_\_ aerobic **X** facultative
2. Indicate the capacity of the sewage treatment facility **38,900 m<sup>3</sup>**
3. Based on current population projections, the facility will meet the needs of the community until the year 2027, ***following proposed upgrades.***
4. Average depth of the wastewater lagoon? **4 m.**
5. What is the design freeboard? **1m.**



6. Indicate the retention time of the sewage while in the treatment facility\_\_\_\_\_ days. **Retention time is variable dependent upon when the sewage is dumped into the lagoon and when annual discharge of effluent begins.**
7. Indicate the estimated rate of discharge of wastewater **415 m<sup>3</sup>/d**
8. Indicate the location of the discharge point. **Please refer to Detailed Design Drawings attached.**
9. Is the discharge: ☒ seasonal ☐ continuous  
 If the discharge is seasonal, during what month(s) is it done? **July-September**  
 What is the duration of the discharge (days/weeks/months)? **Months**
10. Are there any changes planned in the sewage disposal facilities? ☐ No ☒ Yes  
 If yes, attach a copy of the plan or indicate changes and include an implementation schedule.

Include excerpt from MACA Capital Plan if available.

**Please refer to the Detailed Design Report attached.**

### ***Solid Waste Disposal***

1. Indicate the capacity of the disposal area **59,022 m<sup>3</sup>**. **Please refer to Detailed Design Report attached.**
2. The *average* depth of the solid waste disposal site \_\_\_\_\_ m. **See Detailed Design Report and Sealed Design Drawings attached.**
3. The current facility will meet community needs until the year **2037, following the implementation of the proposed upgrades.**
4. Do any natural watercourse enter the solid waste disposal area? What methods are used to decrease the amount of runoff water entering these areas?

**Not Applicable. There are no proposed diversions of natural watercourses.**

5. Indicate the volume of water that may enter these areas from any source(s) and attach all pertinent details of the diversions.

Source

Volume

6. Please describe any diversions of watercourses:

**Not Applicable. There are no proposed diversions of natural watercourses.**

7. Are there any changes planned in the solid waste disposal facilities? \_\_\_\_ No **X** Yes

If yes, attach a copy of the plan or indicate changes and include an implementation schedule. Include excerpt from MACA Capital Plan if available.

**Please refer to the Detailed Design Report attached.**

***Other***

1. Describe any additional details on the existing municipal facilities which should be considered by the Nunavut Water Board during its review.

**Not Applicable.**



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Attachment II  
Inuktitut/English Summary  
of Project

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Attachment III  
Existing Nunavut Water  
Board License



P.O. Box 119  
GJOA HAVEN, NT X0E 1J0

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TEL: (867) 360-6338  
FAX: (867) 360-6369

NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI

File No. NWB3QIK0106

November 28, 2000

Mr. Don Pickle  
Senior Administrative Officer  
Municipality of Qikiqtarjuaq  
P.O. Box 4  
Qikiqtarjuaq, Nunavut X0A 0B0  
Email: [pickle@nunanet.com](mailto:pickle@nunanet.com)

**RE: NWB Licence No. NWB3QIK0106**

Dear Mr. Pickle:

Please find attached Licence No. NWB3QIK0106 issued (**Motion: #2000-09-06**) by the Nunavut Water Board (NWB) pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada*. The terms and conditions of the attached Licence related to water use and waste disposal are an integral part of this approval.

Any communication with respect to this licence shall be made in writing to the attention of:

Chief Administrative Officer  
Nunavut Water Board  
P. O. Box 119  
Gjoa Haven, NU. X0B 1J0  
Telephone No: (867) 360-6338  
Fax No: (867) 360-6369

Inspection and enforcement of the terms and conditions of this licence are performed by:

Water Resources Officer  
Nunavut District Office  
Northern Affairs Program  
Department of Indian Affairs  
and Northern Development  
P. O. Box 100  
Iqaluit, NU. X0A 0H0  
Telephone No: (867) 979-4405  
Fax No: (867) 979-6445

The licensee shall submit all reports, plans and studies in quantities as required by the Chief Administrative Officer, contact the NWB for additional details.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. di Pizzo', written over the printed name.

Philippe di Pizzo  
Chief Administrative Officer

Enclosure: Licence No. NWB3QIK0106

cc: R. Beavers, Indian and Northern Affairs Canada  
P. Smith, Indian and Northern Affairs Canada  
Qikiqtani Inuit Association  
G. Joudrey, Nunavut Impact Review Board  
P. Pacholek, Environment Canada  
C. Nichols, Sustainable Development  
L. Coady, Nunavut Planning Commission  
J. deGroot, Fisheries and Oceans  
B. Segal, Baffin Health & Social Services

## DECISION

### LICENCE NUMBER: NWB3QIK0106

This is the decision of the Nunavut Water Board (NWB) with respect to an application for a Licence renewal dated April 11, 2000, made by:

#### Municipality of Qikiqtarjuaq

to allow for the use of water and disposal of waste into water for municipal undertakings by the Municipality at Qikiqtarjuaq, Nunavut.

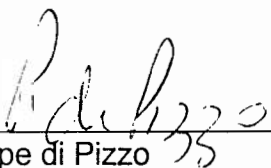
With respect to this application, the NWB gave notice to the public that the Municipality had filed an application for renewal of water licence N4L3-0640 issued by the Northwest Territories Water Board.

### DECISION

After having been satisfied that the application was exempt from the requirement for screening by the Nunavut Impact Review Board in accordance with S.12.3.2 of the NLCA, the NWB decided that the application could go through the regulatory process. After reviewing the submission of the Applicant and the written and oral comments expressed by interested parties, the NWB, having given due regard to the facts and circumstances, the merits of the submissions made to it and to the purpose, scope and intent of the Nunavut Land Claims Agreement, decided to waive the requirement to hold a public hearing and furthermore to delegate its authority to approve the application to the Chief Administrative Officer pursuant to S. 13.7.5. of the NLCA and determined that:

**Licence Number NWB3QIK0106 be issued subject to the terms and conditions contained therein. (Motion #:2000-09-06)**

SIGNED this 28th day of November 2000 at Gjoa Haven, Nunavut.

  
\_\_\_\_\_  
Philippe di Pizzo  
Chief Administrative Officer

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## **INTRODUCTION**

Following an application for licence renewal filed by the Hamlet of Qikiqtarjuaq on April 11, 2000, the Nunavut Water Board conducted an initial assessment of the Municipality's submission and verified that the application was exempt from the requirement for screening by the Nunavut Impact Review Board in accordance with S.12.3.2 of the NLCA. The Board concluded that the application was complete and could go through the regulatory process.

In accordance with Article 13 of the Nunavut Land Claims Agreement (NLCA), the Board shall conduct a public hearing before approving an application, and shall accordingly give public notice of the application. Public notice of the application was given on April 12, 2000, and the application was distributed concurrently to local, territorial, and federal organizations and agencies. Submissions were made by Environment Canada (EC), Department of Indian and Northern Affairs (DIAND), and the Department of Community Government and Transportation (CGT). However, no public concerns were expressed, and the NWB waived the requirement to hold a public hearing in accordance with Section 13.7.2 of the NLCA. The authority to approve the application was delegated to the Chief Administrative Officer of the Board pursuant to S. 13.7.5 of the NLCA. After considering the submissions of interested parties, the NWB decided to issue licence NWB3QIK0106.

## **II. GENERAL CONSIDERATIONS**

### **Term of the Licence**

Consistent with the powers of the Northwest Territories Water Board under the Northern Inland Waters Act, the NWB may issue a licence for a term not exceeding twenty-five years. The Municipality requested a 10-year licence from the Board, whereas the Department of CGT suggested that issuing a shorter-term licence would allow the Hamlet and CGT to undertake the various studies and provide a plan of action to upgrade municipal facilities. The Board agrees with CGT, and furthermore believes that a shorter-term licence will allow the Municipality to establish a consistent compliance record. Consequently, the Board decides to issue a 5-year licence, which will allow the licensee to properly carry out the terms and conditions of the licence and to ensure that sufficient time is given to permit the licensee to develop, submit, and implement the plans required under the licence to the satisfaction of the NWB.

### **Annual Report**

The requirements imposed on the licensee in this licence are for the purpose of ensuring that the NWB has an accurate annual update of municipal activities during a calendar year. This information is maintained on the public registry and is available to any interested parties upon request.

## **Operation and Maintenance Manual (O&M)**

Under the previous water licence (N4L3-0640), the Municipality was required to submit for Board approval an Operation and Maintenance plan for waste disposal operations. At the time of application, the Board's Public Registry indicated that the Municipality had not complied with this licence condition.

The purpose of an Operation and Maintenance Manual is to assist the Municipality's staff in the proper operation and maintenance of the waste disposal facilities. The manual should demonstrate to the Nunavut Water Board that the Municipality is capable of operating and maintaining all waste disposal sites adequately. The Board decides to maintain the requirement for the submission of an Operation and Maintenance plan for all Sewage and Solid Waste Disposal Facilities. The plan shall be in accordance with the *"Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories, October 1996"*

## **Abandonment and Restoration (A&R)**

Under the previous water licence (N4L3-0640) the Municipality was required to submit for Board approval an abandonment and restoration plan for the abandoned Waste Disposal Facility. At the time of application, the Board's Public Registry indicated that the Municipality had not complied with this licence condition. However, the Board's Public Registry contains evidence that some reclamation of the site was undertaken in accordance with the "Sanitary Site Clean Up Broughton Island, NWT Report"<sup>1</sup>. In its submission to the Board, Environment Canada noted that the Municipality's application indicated that erosion is beginning to expose the old dumpsite again. The Board accepts this evidence and orders the Municipality to ensure that sufficient cover is placed on the site and that erosion control measures will be implemented as required.

The Board also notes that based on population growth estimates and the remaining capacity of the current waste disposal site, planning for a new facility may be required within the term of this licence. In this event, the planning study shall also contemplate the reclamation of the current facility, and accordingly the NWB decides to include in this licence a requirement to include in such a study a separate section on the Abandonment and Restoration Plan for the current site.

## **Surveillance Network Program**

The Surveillance Network Program is a monitoring program established to collect data on water quality to assess the effectiveness of waste treatment and detect any impact of waste disposal activities on water.

---

<sup>1</sup> Sanitary Site Clean Up, Broughton Island, NWT Report. Prepared by M.M. Dillon Limited for the Government of the Northwest Territories, Municipal and Community Affairs. December 1993.

The Board notes that there is a stream located between the solid waste disposal facility and the Sewage Disposal Facilities, and that runoff from the solid waste site may enter water. To ensure the protection of water, the Board requests the establishment of a SNP station (SNP Station 0640-8) in the stream above the waste disposal facilities and another (SNP Station 0640-9) in the stream below the waste disposal facilities.

The Board notes that this application does not include the disposal of tannery effluent to the Sewage Disposal Facilities and consequently removes from SNP station 0640-4 parameters normally associated with tannery effluents.

The application states that discharge from the lagoon occurs once per year for a short period. The Board requests that the licensee take three samples, one at the beginning, one midway through and one near the end of the discharge of effluent from the sewage lagoon. These samples shall be taken at SNP station 0640-6 and SNP station 0640-6A.

## **Studies**

In their submission to the Board, the Department of Community Government and Transportation states that both the water reservoir and the Sewage Disposal Facilities would seem to be approaching their useful life and will require improvements to meet the needs of the community for the next 20 years. The Board accepts this evidence and decides to order the Municipality to submit for Board approval the Terms of Reference for conducting an assessment of the water reservoir and sewage disposal facility. The planning study results shall be submitted for Board approval at least 8 months prior to the expiration of this licence.

**III. LICENCE NWB3QIK0106**

Pursuant to the *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*, the Nunavut Water Board, hereinafter referred to as the Board, hereby grants to

**MUNICIPALITY OF QIKIQTARJUAQ**

---

(Licensee)

of

**QIKIQTARJUAQ, NUNAVUT, X0A 0B0**

---

(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water for a period subject to restrictions and conditions contained within this licence:

Licence Number

**NWB3QIK0106**

---

Water Management Area

**04**

---

Location

**QIKIQTARJUAQ, NUNAVUT**

---

Purpose

**WATER USE AND WASTE DISPOSAL**

---

Description

**MUNICIPAL UNDERTAKINGS**

---

Quantity of Water Not to be Exceeded

**35,000 CUBIC METRES ANNUALLY**

---

Date of Licence

**January 1, 2001**

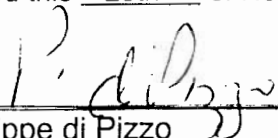
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Expiry Date of Licence

**December 31, 2006**

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Dated this 28th of November 2000 at Gjoa Haven, Nunavut.

  
Philippe di Pizzo  
Chief Administrative Officer

**PART A: SCOPE, ENFORCEMENT & DEFINITIONS****1. Scope**

- a. This Licence allows for the use of water and the disposal of waste into water for municipal undertakings at the Municipality of Qikiqtarjuaq, Nunavut (67°33'N, 64°02'W);
- b. This Licence is issued subject to the conditions contained herein with respect to the taking of water and the depositing of waste of any type in any waters or in any place under any conditions where such waste or any other waste that results from the deposits of such waste may enter any waters. Whenever new Regulations are amended by the Governor in Council under a future Nunavut Waters Act, or other statutes imposing more stringent conditions relating to the quantity or type of waste that may be so deposited or under which any such waste may be so deposited this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations; and
- c. Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

**2. Enforcement**

- a. Subject to Part A, item 2 (d), failure to comply with this licence will be a violation of the *Northwest Territories Waters Act*, exposing the licensee to the enforcement measures and the penalties provided for in the Act.
- b. Subject to Part A, Item 2 (d), all inspection and enforcement services regarding this licence will be provided by inspectors appointed under the *Northwest Territories Waters Act*.
- c. Subject to Part A, Item 2 (d), inspectors appointed under the *Northwest Territories Waters Act* enjoy - with respect to this licence, and for the purpose of enforcing this licence, and with respect to the use of water and deposit or discharge of waste by the licensee - all powers, privileges and protections that are conferred upon them by the *Northwest Territories Waters Act* or by other applicable law.
- d. To the extent that the *Northwest Territories Waters Act* is, subsequent to the issuance of this licence, replaced with respect to water management in Nunavut by other federal legislation (including, without limitation, a regulation or order referred to in Section 10.10.2 of the *Nunavut Land Claims Agreement*), and to the extent that the other federal legislation is

consistent with the *Nunavut Land Claims Agreement*, the other federal legislation shall apply with respect to this licence and the *Northwest Territories Waters Act* shall cease to apply with respect to this licence.

### 3. Definitions

In this Licence: **NWB3QIK0106**

**"Amendment"** means a change to original terms and conditions of this licence requiring correction, addition or deletion of specific terms and conditions of the licence: medications inconsistent with the terms and conditions of this licence;

**"Average Concentration"** means the arithmetic mean of any four consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the "Surveillance Network Program";

**"Average Concentration For Faecal Coliform"** means the running geometric mean of any four consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the "Surveillance Network Program";

**"Board"** means the Nunavut Water Board established under the Nunavut Land Claims Agreement;

**"Commercial Waste Water"** means water and associated waste generated by the operation of a commercial enterprise, but does not include toilet wastes or greywater;

**"Freeboard"** means the vertical distance between water line and crest on a dam or dyke's upstream slope;

**"Grab Sample"** means a single water or wastewater sample taken at a time and place representative of the total discharge;

**"Greywater"** means all liquid wastes from showers, baths, sinks, kitchens and domestic washing facilities, but does not include toilet wastes;

**"Honey Bags"** A plastic or heavy paper bag that fits into a bucket toilet used to contain toilet waste.

**"Inspector"** means an Inspector designated by the Minister of Indian and Northern Affairs Canada in a manner consistent the *Northwest Territories Waters Act*;

**"Licensee"** means the holder of this Licence;

**"Modification"** means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion; changes to the operating system that are consistent with the terms of this Licence and do not require amendment;

**"Nunavut Land Claims Agreement" (NLCA)** means the "Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada," including its preamble and schedules, and any amendments to that agreement made pursuant to it;

**"Pumpout Sewage"** means all toilet wastes and/or greywater collected by means of a vacuum truck for disposal at an approved facility;

**"Sewage"** means all toilet wastes and greywater;

**"Sewage Disposal Facilities"** comprises the area and engineered structures designed to contain sewage;

**"Solid Waste Disposal Facilities"** comprises the area and associated structures designed to contain solid wastes;

**"Toilet Wastes"** means all human excreta and associated products, but does not include greywater;

**"Waste"** means any substance that, by itself or in combination with other substances found in water, would have the effect of altering the quality of any water to which the substance is added to an extent that is detrimental to its use by people or by any animal, fish or plant, or any water that would have that effect because of the quantity or concentration of the substance contained in it or because it has been treated or changed, by heat or other means;

**"Waste Disposal Facilities"** means all facilities designated for the disposal of waste, and includes the Sewage Disposal Facilities, Solid Waste Disposal Facilities, and Bagged Toilet Wastes Disposal Facilities; and

**"Water Supply Facilities"** comprises the area and associated intake infrastructure at the Municipality's reservoir and primary source, the Tulugak River.

## **PART B: GENERAL CONDITIONS**

1. The Licensee shall file an Annual Report with the Board no later than March 31st of the year following the calendar year reported which shall contain the following information:

- a. tabular summaries of all data generated under the "Surveillance Network Program";
  - b. the monthly and annual quantities in cubic metres of fresh water obtained from all sources;
  - c. the monthly and annual quantities in cubic metres of each and all waste discharged;
  - d. the monthly and annual quantities of Sewage Solids removed from the Sewage Disposal Facilities for disposal;
  - e. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;
  - f. a list of unauthorized discharges and summary of follow-up action taken;
  - g. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
  - h. a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;
  - i. updates or revisions to the approved Operation and Maintenance Plans; and
  - j. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported.
2. The Licensee shall comply with the "Surveillance Network Program" annexed to this Licence, and any amendment to the said "Surveillance Network Program" as may be made from time to time, pursuant to the conditions of this Licence.
3. The "Surveillance Network Program" and compliance dates specified in the Licence may be modified at the discretion of the NWB Chief Administrative Officer.
4. Meters, devices or other such methods used for measuring the volumes of water used and waste discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.



5. The Licensee shall by September 1, 2001, post the necessary signs, where possible, to identify the stations of the "Surveillance Network Program." All postings shall be located and maintained to the satisfaction of an Inspector.
6. The Licensee shall by September 1, 2001, post signs in the appropriate areas to inform the public of the location of the Water Supply and Waste Disposal Facilities. All postings shall be located and maintained to the satisfaction of an Inspector.
7. The Licensee shall immediately report to the 24-Hour Spill Report Line (867-920-8130) any spills of Waste, which are reported to or observed by the Licensee, within the municipal boundaries or in the areas of the Water Supply or Waste Disposal Facilities.
8. The Licensee shall ensure a copy of this Licence is maintained at the municipal office at all times.

#### **PART C: CONDITIONS APPLYING TO WATER USE**

1. The Licensee shall obtain all fresh water from the Water Supply Facilities or as otherwise approved by the Board.
2. The annual quantity of water used for all purposes shall not exceed 35,000 cubic metres.
3. The Licensee shall maintain the Water Supply Facilities to the satisfaction of the Inspector.
4. The water intake hose used on the water pumps shall be equipped with a screen with a mesh size sufficient to ensure no entrainment of fish.

#### **PART D: CONDITIONS APPLYING TO WASTE DISPOSAL**

1. The Licensee shall direct Sewage to the Sewage Disposal Facilities or as otherwise approved by the Board.
2. All Sewage effluent discharged from the Sewage Disposal Facilities at "Surveillance Network Program" Station Number 0640-6 shall meet the following effluent quality standards:

Parameter	Maximum Average Concentration
Faecal Coliforms	$1 \times 10^4$ CFU/100 ml
BOD <sub>5</sub>	120 mg/L
Total Suspended Solids	180 mg/L

The Waste discharged shall have a pH between 6 and 9, and no visible sheen of oil and grease.

3. A Freeboard limit of 1.0 metre, or as recommended by a qualified geotechnical engineer and as approved by the Board, shall be maintained at all dykes and earthfill structures.
4. All honey bags shall be disposed of to the satisfaction of an Inspector.
5. The Licensee shall advise an Inspector at least ten (10) days prior to initiating the decant of the Sewage Disposal Facilities.
6. The Sewage Disposal Facilities shall be maintained and operated in such a manner as to prevent structural failure.
7. The Licensee shall maintain the Sewage Disposal Facilities to the satisfaction of an Inspector.
8. The Licensee shall dispose of and contain all solid wastes at the Solid Waste Disposal Facilities or as otherwise approved by the Board.

#### **PART E: CONDITIONS APPLYING TO MODIFICATIONS**

1. The Licensee may, without written approval from the Board, carry out modifications to the Water Supply and Waste Disposal Facilities provided that such modifications are consistent with the terms of this Licence and the following requirements are met:
  - a. the Licensee has notified the Board in writing of such proposed modifications at least sixty (60) days prior to beginning the modifications;
  - b. such modifications do not place the Licensee in contravention of the Licence;

- c. the Board has not, during the sixty (60) days following notification of the proposed modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
  - d. the Board has not rejected the proposed modifications.
2. Modifications for which all of the conditions referred to in Part E, Item 1, have not been met may be carried out only with written approval from the Board.
  3. The Licensee shall provide to the Board site plans of the modifications referred to in this Licence within ninety (90) days of completion of the modifications.

#### **PART F: CONDITIONS APPLYING TO CONSTRUCTION**

1. Prior to construction of any dams, dykes or structures intended to contain, withhold, divert or retain water or wastes, the Licensee shall submit to the Board for review design drawings stamped by a qualified Engineer registered in Nunavut

#### **PART G: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE**

1. The Licensee shall, within six (6) months of the issuance of this Licence, submit to the Board for approval, a plan for the Operation and Maintenance of the Sewage and Solid Waste Disposal Facilities in accordance with *"Guidelines for preparing an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities"* October 1996.
2. The Licensee shall implement the plan specified in Part G, Item 1 as and when approved by the Board.
3. If, during the period of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:
  - a. employ the appropriate contingency plan as provided for in the Operation and Maintenance Plan;
  - b. report the incident immediately via the 24-Hour Spill Reporting Line, (867) 920-8130; and
  - c. submit to an Inspector a detailed report on each occurrence not later than thirty (30) days after initially reporting the event.

**PART H: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION**

1. The Licensee shall submit to the Board for approval an Abandonment and Restoration Plan at least six (6) months prior to abandoning any facilities, including but not limited to:
  - a. the water intake facilities;
  - b. the water treatment and waste disposal sites and facilities;
  - c. the petroleum and chemical storage areas;
  - d. any site affected by waste spills;

An Abandonment Plan shall include, among other things:

- i. measures to address leachate, if any;
  - ii. an implementation schedule;
  - iii. maps delineating all disturbed areas and site facilities;
  - iv. consideration of altered drainage patterns;
  - v. type and source of cover materials;
  - vi. future area use;
  - vii. hazardous wastes; and
  - viii. a proposal identifying measures by which restoration costs will be financed by the Licensee upon abandonment.
3. The Licensee shall implement the plan specified in Part H, Item 1 as and when approved by the Board.
4. The Licensee shall revise the Plan referred to in Part H, Item 1 if not approved. The revised Plan shall be submitted to the Board for approval within six (6) months of receiving notification of the Board's decision.
5. The Licensee shall complete the restoration work within the time schedule specified in the Plan, or as subsequently revised and approved by the Board.

**PART I: CONDITIONS APPLYING TO STUDIES**

1. The Licensee shall submit to the Board for approval, the terms of reference for a planning study to address long-term needs of the community with respect to the Water Supply and Waste Disposal Facilities.
2. The Licensee shall, 8 months prior to expiry of the licence, submit to the Board for approval the planning study prepared in accordance with the terms of reference approved by the Board pursuant to Part I, Item 1.
3. The proposal described in Part I, Item 3 shall be implemented as and when approved by the Board.

# **SCHEDULE I: SURVEILLANCE NETWORK PROGRAM**

## **A. Location, Description, Sampling and Analysis Requirements**

<b>Station</b>	<b>Description</b>	<b>Sampling Requirements</b>	<b>Analysis Requirements</b>
0640-1	Raw Water Supply intake at the Tulugak River	Not required	Not required
0640-2	Raw Water Supply intake at the Reservoir truck fill station	Not required	Not required
0640-3	Raw Sewage from pump-out truck	Not required	Not required
0640-4	Runoff below the abandoned Sewage disposal area prior to discharge to ocean	Not required	Not required
0640-5	Ocean water 5 metres from point where effluent enters ocean (abandoned site)	Not required	Not required
0640-6	Discharge from the Sewage Disposal Facilities at the point of discharge following treatment	Once at the beginning, middle and end of discharge	BOD Total Suspended Solids Conductivity Oil and Grease Magnesium Sodium Chloride Total Hardness Ammonia Nitrogen Total Cadmium Total Cobalt Total Chromium Total Copper Total Aluminum Faecal Coliform PH Nitrate-Nitrite Total Phenols Calcium Potassium Sulphate Total Alkalinity Total Zinc Total Iron Total Manganese Total Nickel Total Lead
0640-6A	Current Sewage Disposal Facilities effluent 5 meters prior to entering the ocean	Once at the beginning, middle and end of discharge	Same as STN 0640-6

Station	Description	Sampling Requirements	Analysis Requirements
0640-7	Runoff from the Solid Waste Disposal Facility	Annually during periods of open water	<p>pH</p> <p>Total Suspended Solids</p> <p>Nitrate-Nitrite</p> <p>Total Phenols</p> <p>Sodium</p> <p>Magnesium</p> <p>Total Arsenic</p> <p>Total Copper</p> <p>Total Iron</p> <p>Total Mercury</p> <p>Total Zinc</p> <p>Conductivity</p> <p>Ammonia Nitrogen</p> <p>Oil and Grease (Visual)</p> <p>Sulphate</p> <p>Potassium</p> <p>Calcium</p> <p>Total Cadmium</p> <p>Total Chromium</p> <p>Total Lead</p> <p>Total Nickel</p> <p>Total Organic Carbon</p>
0640-8	Unnamed stream located between the Sewage Disposal Facilities and Solid Waste Disposal Facilities; sample site above the facilities	Annually during periods of open water	Same as STN 0640-7
0640-9	Unnamed stream located between the Sewage Disposal Facilities and Solid Waste Disposal Facilities; sample site below the facilities	Annually during periods of open water	Same as STN 0640-7
0640-10	Runoff below reclaimed Solid Waste Disposal Facility	Annually	Same as STN 0640-7

**B. General Requirements**

1. The exact location of Surveillance Network Program stations can be developed with the assistance of the Inspector.
2. Additional sampling and analysis may be requested by an Inspector.
3. All sampling, sample preservation and analyses shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater", or by such other methods approved by the Board.
4. All analyses shall be performed in a laboratory approved by the Board.

**C. Flow and Volume Measurement Requirements**

1. The monthly and annual quantities of water pumped from Surveillance Network Program Station Number 0640-2 shall be measured and recorded in cubic metres.
2. The annual quantities of sewage solids removed from the Sewage Disposal Facilities shall be measured and recorded.

**D. Reports**

1. The Licensee shall, unless otherwise requested by an Inspector, include all of the data and information required by the Surveillance Network Program in the Licensee's Annual Report, which Report shall be submitted to the Board on or before March 31st of the year following the calendar year being reported.

**E. Modifications To The Surveillance Network Program**

1. Modifications to the Surveillance Network Program may be made only upon written approval of the Chief Administrative Officer of the Board.



**FIGURE 1 - Municipality of Qikiqtarjuaq Surveillance Network Program Stations**  
(To be provided following first inspection)

## **APPENDIX I CORRESPONDENCE**

- i. Letter received April 14 from the Municipality of Qikiqtarjuaq to the Nunavut Water Board, enclosing an application and supplemental questionnaire dated March 27, 2000 for the renewal of a municipal water licence for the Municipality of Qikiqtarjuaq.
- ii. Letter dated April 12, 2000 from NWB to the Municipality of Qikiqtarjuaq, acknowledging receipt of the application for licence renewal.
- iii. Letter dated April 18, 2000 from NWB to the Municipality of Qikiqtarjuaq, acknowledging receipt of additional information for the application for licence renewal.
- iv. Letter dated April 12, 2000 from the NWB to the Distribution List, providing notice of the application for licence renewal in English and Inuktitut.
- v. Letter dated May 29, 2000, from the Department of CGT, to the NWB, received May 30, 2000 regarding comments on the application for licence renewal in consideration for the proposed pilot project for a tannery in Qikiqtarjuaq.
- vi. Letter dated/received May 30, 2000, from the Department of CGT to the NWB, regarding comments on the application for licence renewal.
- vii. Letter dated May 29, 2000, from Environment Canada, to the NWB, received June 6, 2000, regarding comments on the application for licence renewal.
- viii. Email dated June 5, 2000, from Indian and Northern Affairs Canada to the NWB, regarding comments on the application for licence renewal.



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Attachment IV  
Technical Memorandum



## Memorandum

DATE	April 18, 2006	FILE NO.	N-O 09439.0
RE	Technical Update to the Detailed Design Report for the Improvements To the Water Reservoir, Sewage Lagoon, and Solid Waste Disposal Facility The Hamlet of Qikiqtarjuaq, Nunavut		
To	ATTENTION	Mr. Patricio Fuentes Regional Project Manager	
	COMPANY	Project Management Division Department of Community & Government Services Baffin Region	
From	NAME	Michael K. O'Hara, P. Eng.	

### Comments

Nuna Burnside Engineering and Environmental Ltd. (Nuna Burnside) issued a Detailed Design Report to Mr. Brian Duguay, Project Officer, Community and Government Services – Baffin Region, Government of Nunavut (CGS-GN) on February 10, 2006. Since this time, Nuna Burnside has been working in cooperation with Mr. Duguay to refine the detailed design. This technical memorandum is intended to supplement the design report and incorporate the changes discussed. The attached 11" x 17" figures (Attachment A) are intended to replace those in the design report. The full size drawing package is completely replaced with the attached drawings.

### Section 3.3.1 – Liner System

The liner system will consist of 300 mm of crushed stone placed along the excavated walls of the reservoir. A non-woven, 12 ounce geocomposite liner will be placed over the stone and along the bottom of the reservoir. An 80 mil high density polyethylene (HDPE), potable grade, geomembrane liner that is able to withstand the cold temperatures and resistant to ultraviolet (UV) degradation will be installed on top of the non-woven fabric. The purpose of the liner system is to assist in decreasing the risk of any leakage that may occur over the winter so there is an adequate water supply available to service the needs of the Hamlet.

### Section 3.3.4 – Miscellaneous Items

The following items will be completed in addition to those listed in this section of the report:

- electrical upgrades as identified by the A.D. Williams report (Appendix F) as well as upgrading the truck fill station to operate using hydroelectric power that will be extended to the site by the Nunavut Power Corporation (NPC)
- replacement of the existing fence and extension to surround the perimeter of the entire reservoir
- the addition of five micron filters prior to chlorination. The purpose of filtration is to remove any suspended particles thereby reducing observed turbidity measurements.

### Section 4.0 – Sewage Storage and Treatment Facility

There have been no major changes to the treatment or storage design for the sewage lagoon. The exfiltration berm has been adjusted to follow the contours in the area. Furthermore, the outlet structure has been redesigned to utilize a concrete structure as per discussions with Mr. Duguay and Mr. Bhabesh Roy of the GN. This structure is presented on the attached full size drawings.

### Section 6.0 – Capital Cost Estimates

To incorporate all the changes discussed with the GN, the capital cost estimate from the Detailed Design Report had to be refined. The following cost estimate presents the cost estimate sent to Mr. Duguay February 27, 2006:

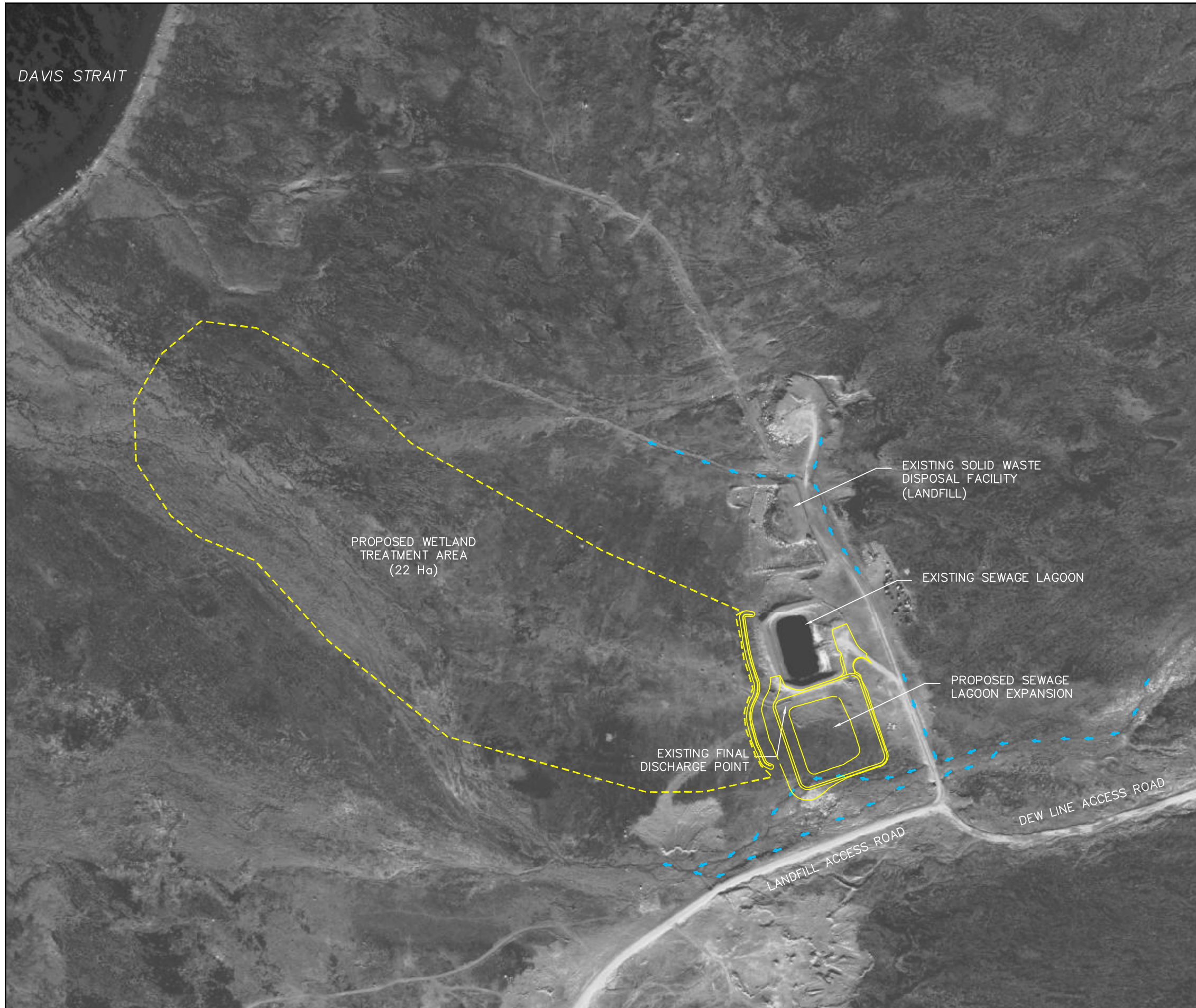
	Capital Cost Estimate
Schedule A - Miscellaneous	\$380,000.00
Schedule B – Water Storage & Treatment Facility	\$2,413,250.00
Schedule C – Sewage Storage & Treatment Facility	\$607,100.00
Schedule D – Solid Waste Disposal Facility	\$199,250.00
Soil Clean-up (Allowance – subject to change pending further investigation)	\$30,000.00
<b>TOTAL (Rounded)</b>	<b>\$3,630,000.00</b>

Detailed schedules to replace those within Appendix I of the report are presented as Attachment B.

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Attachment A  
Revised Figures





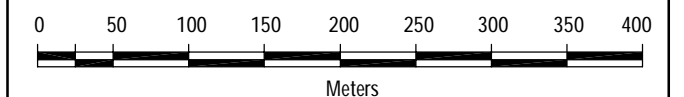
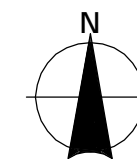
**FIGURE 8 (REVISED)**  
**THE HAMLET OF QIKIQTARJUAQ**  
*DETAILED DESIGN*

## PROPOSED SEWAGE TREATMENT FACILITY DESIGN

### 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

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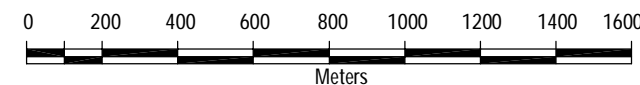
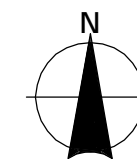




**FIGURE 2 (REVISED)**  
**THE HAMLET OF QIKIQTARJUAQ**  
***WATER STORAGE***  
***& TREATMENT FACILITY***  
***O&M PLAN***

**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

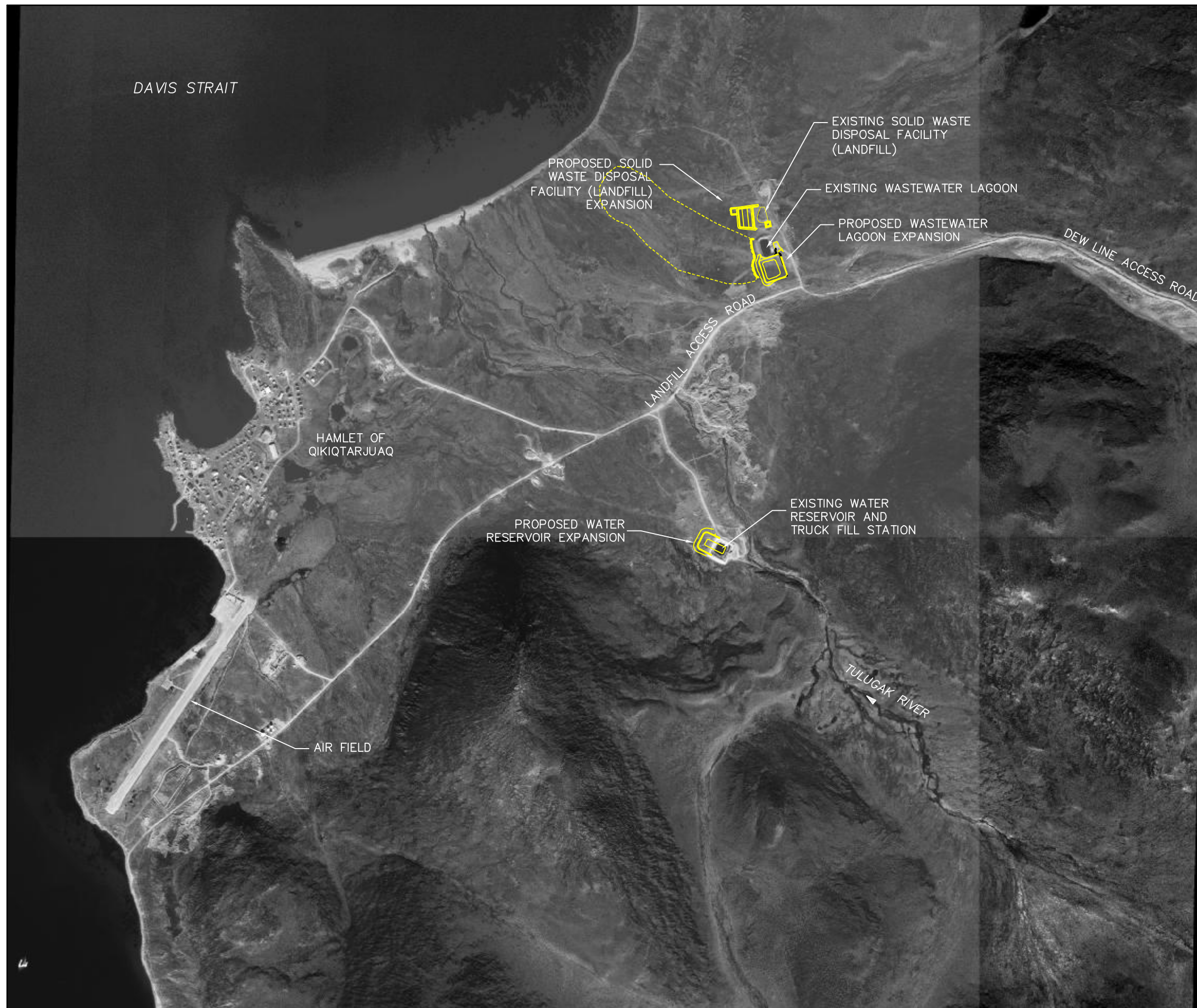
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 Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar



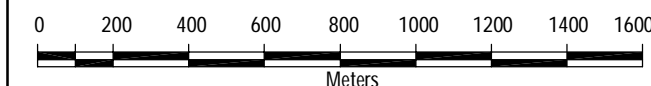
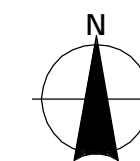




**FIGURE 2 (REVISED)**  
**THE HAMLET OF QIKIQTARJUAQ**  
**ENVIRONMENTAL EMERGENCY**  
**CONTINGENCY PLAN**

## 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

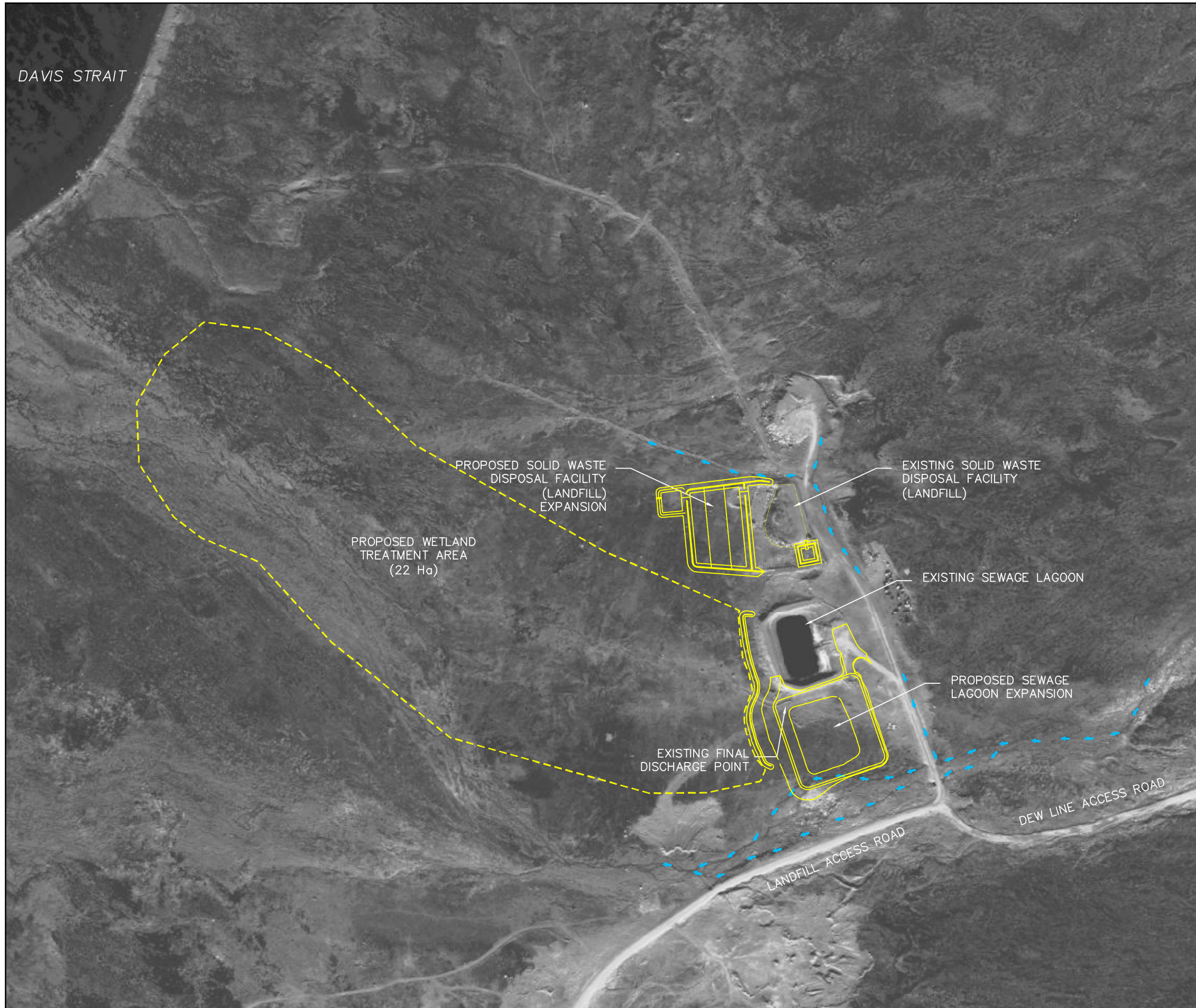
Projection: UTM Zone 20  
 Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar

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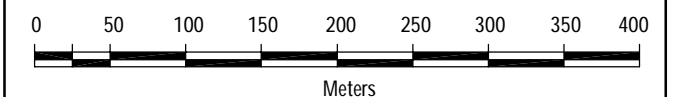
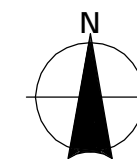
**FIGURE 4 (REVISED)**  
**THE HAMLET OF QIKIQTARJUAQ**  
**ENVIRONMENTAL EMERGENCY**  
**CONTINGENCY PLAN**

**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 (REVISED)

## THE HAMLET OF QIKIQTARJUAQ

### ENVIRONMENTAL EMERGENCY

### CONTINGENCY PLAN

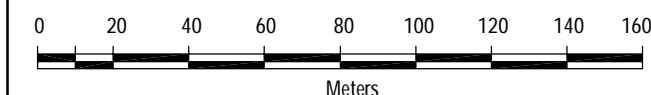
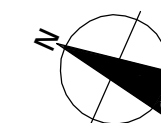
## SOLID WASTE DISPOSAL

## FACILITY (LANDFILL)

### Legend

- → EXISTING SURFACE WATER FLOW DIRECTION
- → PROPOSED SURFACE WATER FLOW DIRECTION

Satellite Imagery Source:  
September 2004 Satellite Image obtained from DigitalGlobe Inc.



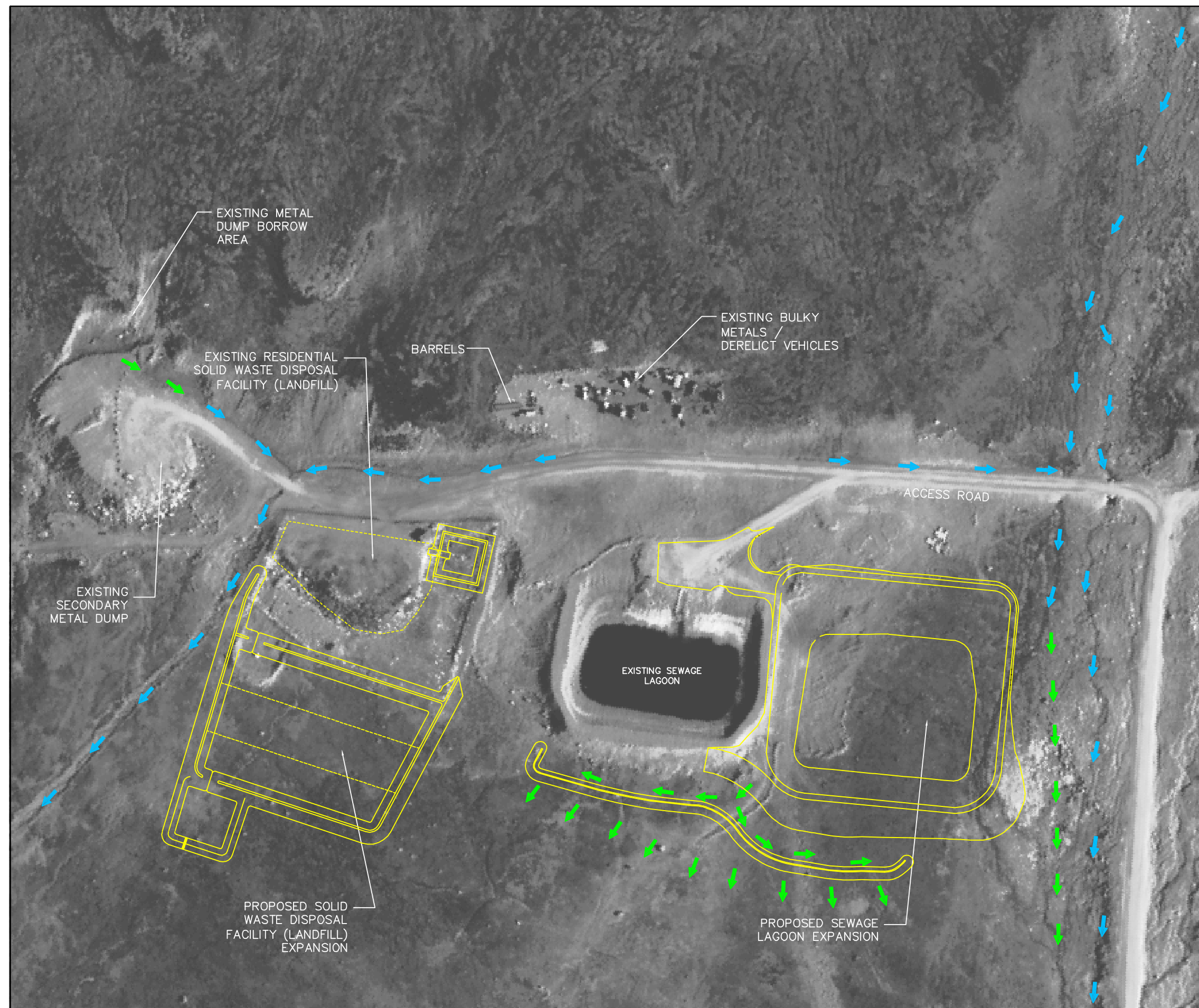
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January 2006  
Project Number: N-O 09439.0

Projection: UTM Zone 20  
Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar

**Burnside**







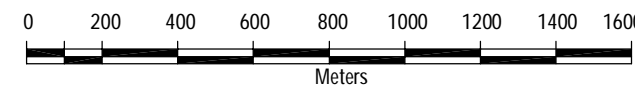
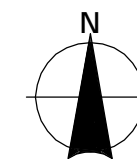
**FIGURE 2 (REVISED)**  
**THE HAMLET OF QIKIQTARJUAQ**  
**QUALITY ASSURANCE/QUALITY CONTROL**  
**PLAN**

## SATELLITE IMAGERY OF ENTIRE COMMUNITY AND INFRASTRUCTURE

### Legend

X QIK - 1 SAMPLING STATION LOCATION

Satellite Imagery Source:  
 September 2004 Satellite Image obtained from DigitalGlobe Inc.



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 January 2006  
 Project Number: N-O 09439.0

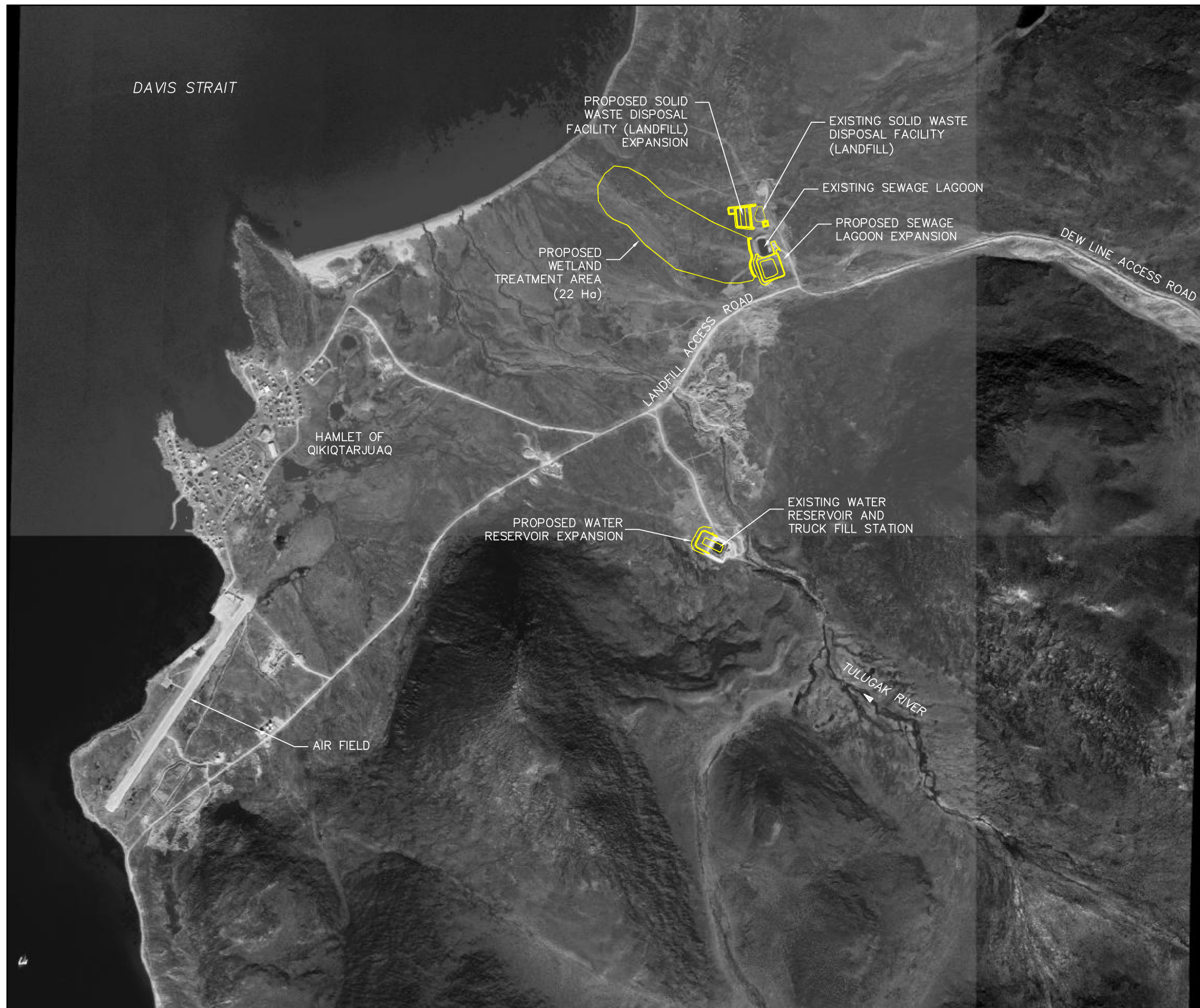
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 Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar

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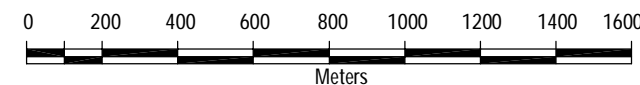
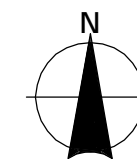




**FIGURE 2 (REVISED)**  
**THE HAMLET OF QIKIQTARJUAQ**  
**SEWAGE TREATMENT FACILITY**  
**O&M PLAN**

**SATELLITE IMAGERY OF**  
**ENTIRE COMMUNITY**  
**AND INFRASTRUCTURE**

Satellite Imagery Source:  
 September 2004 Satellite Image obtained from DigitalGlobe Inc.



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 Project Number: N-O 09439.0

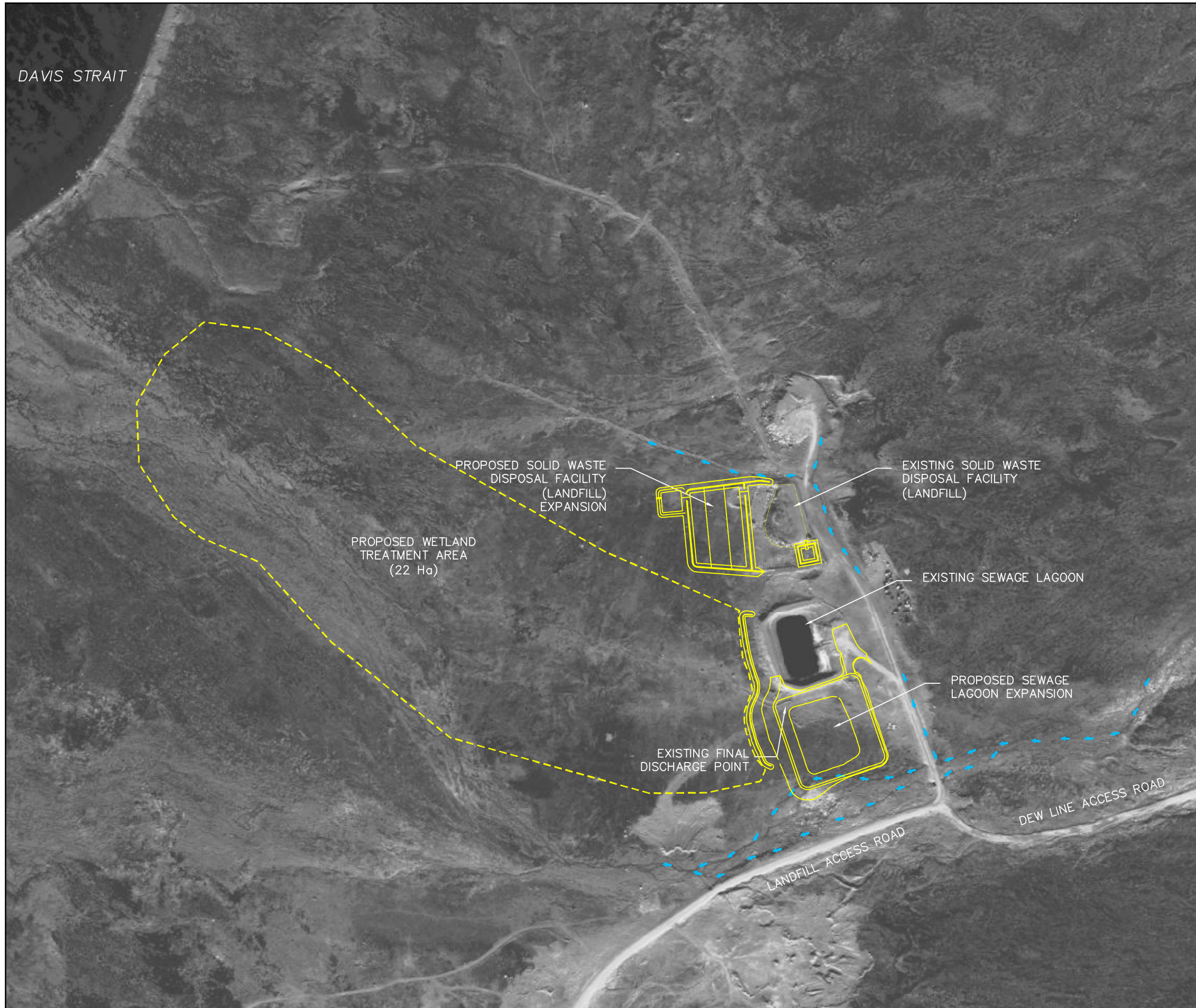
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 Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar







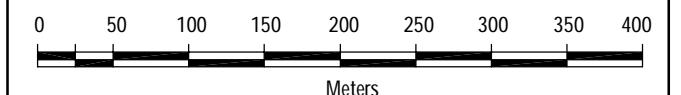
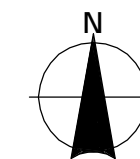
**FIGURE 3 (REVISED)**  
**THE HAMLET OF QIKIQTARJUAQ**  
**SEWAGE TREATMENT FACILITY**  
**O&M PLAN**

**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

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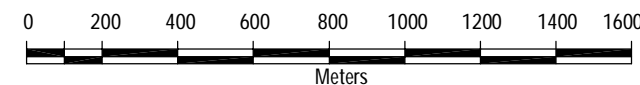
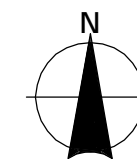




FIGURE 2 (REVISED)  
THE HAMLET OF QIKIQTARJUAQ  
*SOLID WASTE  
DISPOSAL FACILITY  
O&M PLAN*

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





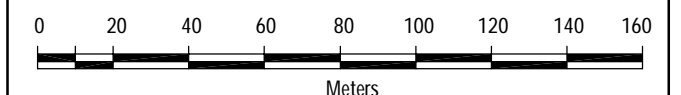
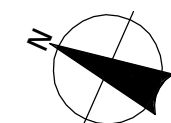
FIGURE 3 (REVISED)  
THE HAMLET OF QIKIQTARJUAQ  
*SOLID WASTE  
DISPOSAL FACILITY  
O&M PLAN*

SOLID WASTE DISPOSAL  
FACILITY (LANDFILL)

Legend

→ → INTERPRETED SURFACE WATER FLOW DIRECTION

Satellite Imagery Source:  
September 2004 Satellite Image obtained from DigitalGlobe Inc.



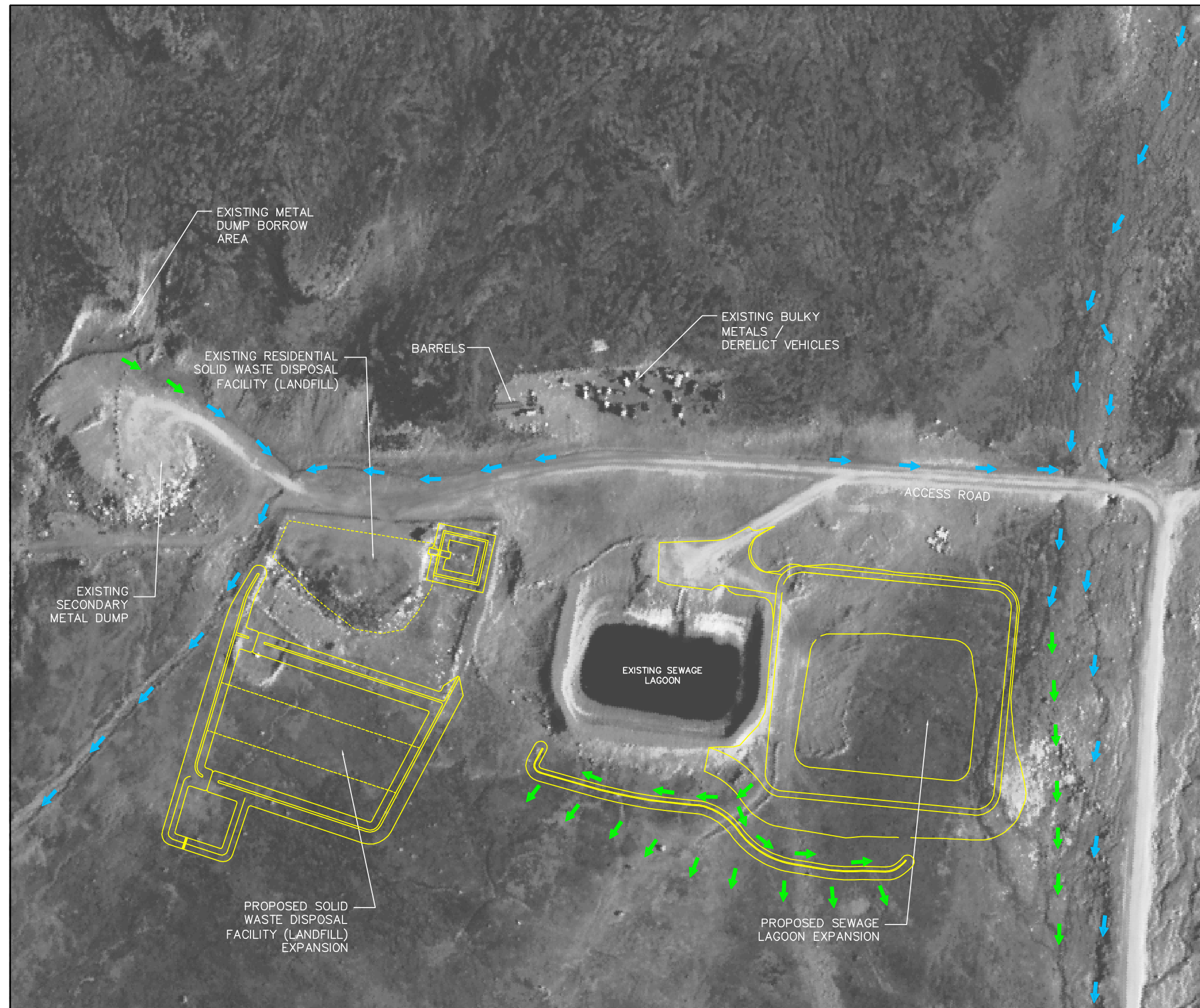
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January 2006  
Project Number: N-O 09439.0

Projection: UTM Zone 20  
Datum: NAD83

Prepared by: C. Sheppard

Verified by: M. Paznar

**Burnside**







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Attachment B  
Revised Projected Capital  
Costs

## PROJECTED CAPITAL COSTS SUMMARY

Nuna Burnside Engineering and Environmental Ltd.

**Project No.** N-O 09439.0  
**Certificate No.** 1  
**Notes**

**Contractor:**  
**Address:** Hamlet of Qikiqtarjuaq  
**Contract Title:** Improvements to the Water Reservoir, Sewage Lagoon & Solid Waste

PAGE	DESCRIPTION	ORIGINAL CONTRACT TOTAL
1	SCHEDULE A - MISCELLANEOUS ITEMS	\$380,000.00
2	Schedule B - Water Reservoir	\$2,413,250.00
3	SCHEDULE C - SEWAGE LAGOONS	\$607,100.00
4	SCHEDULE D - SOLID WASTE	\$92,950.00
5	SCHEDULE D - SOLID WASTE (CONTINUED)	\$106,300.00
	Soil Clean-Up ( <i>Allowance - may change depending on further investigation</i> )	\$30,000.00
	<b>TOTALS:</b>	<b>\$3,629,600.00</b>

## SCHEDULE OF UNIT PRICES

Nuna Burnside Engineering and Environmental Ltd.

**Project No.** N-O 09439.0

**Page No.** 1

**Contractor:**

**Address:**

Hamlet of Qikiqtarjuaq

**Contract Title:**

Improvements to the Water Reservoir, Sewage Lagoon & Solid Waste

### SCHEDULE A - MISCELLANEOUS ITEMS

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CLASS B COST TOTAL
1	Mobilization/Demobilization (assume equipment is available within the Hamlet)	1	LS	\$150,000.00	\$150,000.00
2	Bonding & Insurance	1	LS	\$30,000.00	\$30,000.00
3	Construction Camp	1	LS	\$200,000.00	\$200,000.00
				<b>SUBTOTAL:</b>	<b>\$380,000.00</b>

## SCHEDULE OF UNIT PRICES

Nuna Burnside Engineering and Environmental Ltd.

**Project No.** N-O 09439.0

**Page No.** 2

**Contractor:**

**Address:**

Hamlet of Qikiqtarjuaq

**Contract Title:**

Improvements to the Water Reservoir, Sewage Lagoon & Solid Waste

### Schedule B - Water Reservoir

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CLASS B COST TOTAL
	<b><u>PHASE 1</u></b>				
1	A. Electrical upgrades	1	LS	\$27,000.00	\$27,000.00
	B. Replacement generator	1	LS	\$50,000.00	\$50,000.00
2	Supply liners	20,000	m <sup>2</sup>	\$25.00	\$500,000.00
3	Replace river intake pipe	300	m(l)	\$200.00	\$60,000.00
4	Construct Berm (assumed borrow area within 50 m)	30,000	m <sup>3</sup>	\$20.00	\$600,000.00
	<b><u>PHASE 2</u></b>				
5	Excavate & dispose of internal berm	15,000	m <sup>3</sup>	\$20.00	\$300,000.00
6	Supply & place screened gravel	4,500	m <sup>3</sup>	\$90.00	\$405,000.00
7	Place liners	20,000.00	m <sup>2</sup>	\$15.00	\$300,000.00
9	Replace reservoir intake pipe	1	EA	\$50,000.00	\$50,000.00
10	Mechanical upgrades	1.00	LS	\$50,000.00	\$50,000.00
11	Replace truck fill pumps	2	Ea	\$10,000.00	\$20,000.00
12	Supply & place fencing	610	m(l)	\$75.00	\$45,750.00
13	Replace & relocate gate	1	LS	\$2,500.00	\$2,500.00
14	Signage	1	LS	\$3,000.00	\$3,000.00
				<b>SUBTOTAL:</b>	<b>\$2,413,250.00</b>

## SCHEDULE OF UNIT PRICES

Nuna Burnside Engineering and Environmental Ltd.

**Project No.** N-O 09439.0

**Page No.** 3

**Contractor:**

**Address:**

Hamlet of Qikiqtarjuaq

**Contract Title:**

Improvements to the Water Reservoir, Sewage Lagoon & Solid Waste

### SCHEDULE C - SEWAGE LAGOONS

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CLASS B COST TOTAL
1	Granular 'A' for truck pad	40	m <sup>3</sup>	\$100.00	\$4,000.00
2	Supply & place discharge flume	1	LS	\$10,000.00	\$10,000.00
3	Supply & place effluent discharge piping				
	i). Valves with sealed tube (200 mm) operators and concrete structures	1	LS	\$50,000.00	\$50,000.00
	ii). Piping (200 mm)	230	m(l)	\$150.00	\$34,500.00
4	Supply & place signage	1	LS	\$5,000.00	\$5,000.00
5	Exfiltration berm	180	m(l)	\$20.00	\$3,600.00
6	Berm construction (balance cut/fill)	25,000	m <sup>3</sup>	\$20.00	\$500,000.00
				<b>SUBTOTAL:</b>	<b>\$607,100.00</b>

Revised: April 2006

## SCHEDULE OF UNIT PRICES

Nuna Burnside Engineering and Environmental Ltd.

Project No. N-O 09439.0

Page No. 4

**Contractor:**

**Address:**

Hamlet of Qikiqtarjuaq

**Contract Title:**

Improvements to the Water Reservoir, Sewage Lagoon & Solid Waste

### SCHEDULE D - SOLID WASTE

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CLASS B COST TOTAL
<b><u>PART 1: HOUSEHOLD HAZARDOUS WASTE DEPOT</u></b>					
1	40 mil HDPE Arctic Liner installed	350	m <sup>2</sup>	\$40.00	\$14,000.00
2	Signage	2	Ea	\$2,000.00	\$4,000.00
3	Berm construction ( 1m high with 3:1 slopes) and surface preparation	225	m(l)	\$30.00	\$6,750.00
4	Fencing (1.8 m frost fence with poles) on berm	68	m(l)	\$50.00	\$3,400.00
5	Swing gates (1.8 m high fence to provide 3 m wide opening)	1	LS	\$1,000.00	\$1,000.00
6	Rehabilitate 10 m shipping container with liner and spill barrier (2 m x 10 m) installed	20	m <sup>2</sup>	\$40.00	\$800.00
7	Shelving and vents for shipping container	1	Ea	\$1,000.00	\$1,000.00
8	Spill kit, fire extinguisher, emergency kit and tools	1	Ea	\$1,000.00	\$1,000.00
<b><u>PART 2: BULKY METALS DISPOSAL AREA</u></b>					
9	Signage	1	Ea	\$1,000.00	\$1,000.00
10	Compact and cover exposed metals, contour area to promote drainage (final cover to 600 mm, interim cover to 200 mm)	2,000	m <sup>2</sup>	\$30.00	\$60,000.00
<b><u>Assumptions:</u></b> up slope ditching is part of landfill costing  Cover material extracted from borrow area upslope of the disposal area					
				<b>SUBTOTAL:</b>	<b>\$92,950.00</b>

## SCHEDULE OF UNIT PRICES

Nuna Burnside Engineering and Environmental Ltd.

Project No. N-O 09439.0

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**Contractor:**

**Address:**

Hamlet of Qikiqtarjuaq

**Contract Title:**

Improvements to the Water Reservoir, Sewage Lagoon & Solid Waste

### SCHEDULE D - SOLID WASTE (CONTINUED)

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CLASS B COST TOTAL
<b><u>PART 3: MUNICIPAL SOLID WASTE DISPOSAL SITE</u></b>					
11	Fencing (1.8 m post and wire) installed on berms (install 330 m and repair 110 m)	300	m(l)	\$50.00	\$15,000.00
12	Fencing (3 m post and wire) installed on down wind berm	100	m(l)	\$75.00	\$7,500.00
13	Sliding gate (1.8 m high fencing)	1	Ea	\$3,000.00	\$3,000.00
14	Signage	3	Ea	\$1,000.00	\$3,000.00
15	Ditching and swale to control run off up gradient of landfill and bulky metals disposal area (1.5 m deep with 3:1 slopes)	800	m(l)	\$40.00	\$32,000.00
16	Supply and install 1200 mm culvert under access road with appropriate bedding and cover	1	LS	\$20,000.00	\$20,000.00
17	Deepen existing swale on east side of access road	1	LS	\$2,000.00	\$2,000.00
18	Deepen existing swale on south side of landfill	1	LS	\$2,000.00	\$2,000.00
19	Cut and fill tipping face of landfill to grades shown on plan such that slopes do not exceed 3:1	1	LS	\$2,000.00	\$2,000.00
20	Create landfill perimeter berm using native soils around outside of landfill	330	m(l)	\$20.00	\$6,600.00
21	Create intermediate berm using native soils within the landfill cell	110	m(l)	\$20.00	\$2,200.00
22	Construct 625 m <sup>2</sup> by 1.5 m deep bermed water retention area	1	LS	\$10,000.00	\$10,000.00
	<b><u>Assumptions:</u></b> Spill kit and emergency kit costed as part of household hazardous waste depot				
<b><u>PART 4: DERELICT VEHICLE/RECYCLING AREA</u></b>					
23	Signage	1	Ea	\$1,000.00	\$1,000.00
				<b>SUBTOTAL:</b>	<b>\$106,300.00</b>



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Attachment V  
Detailed Design Report