

CITY OF IQALUIT

OPERATION AND MAINTNANCE MANUAL
SEWAGE LAGOON

November,24, 2004

INTRODUCTION

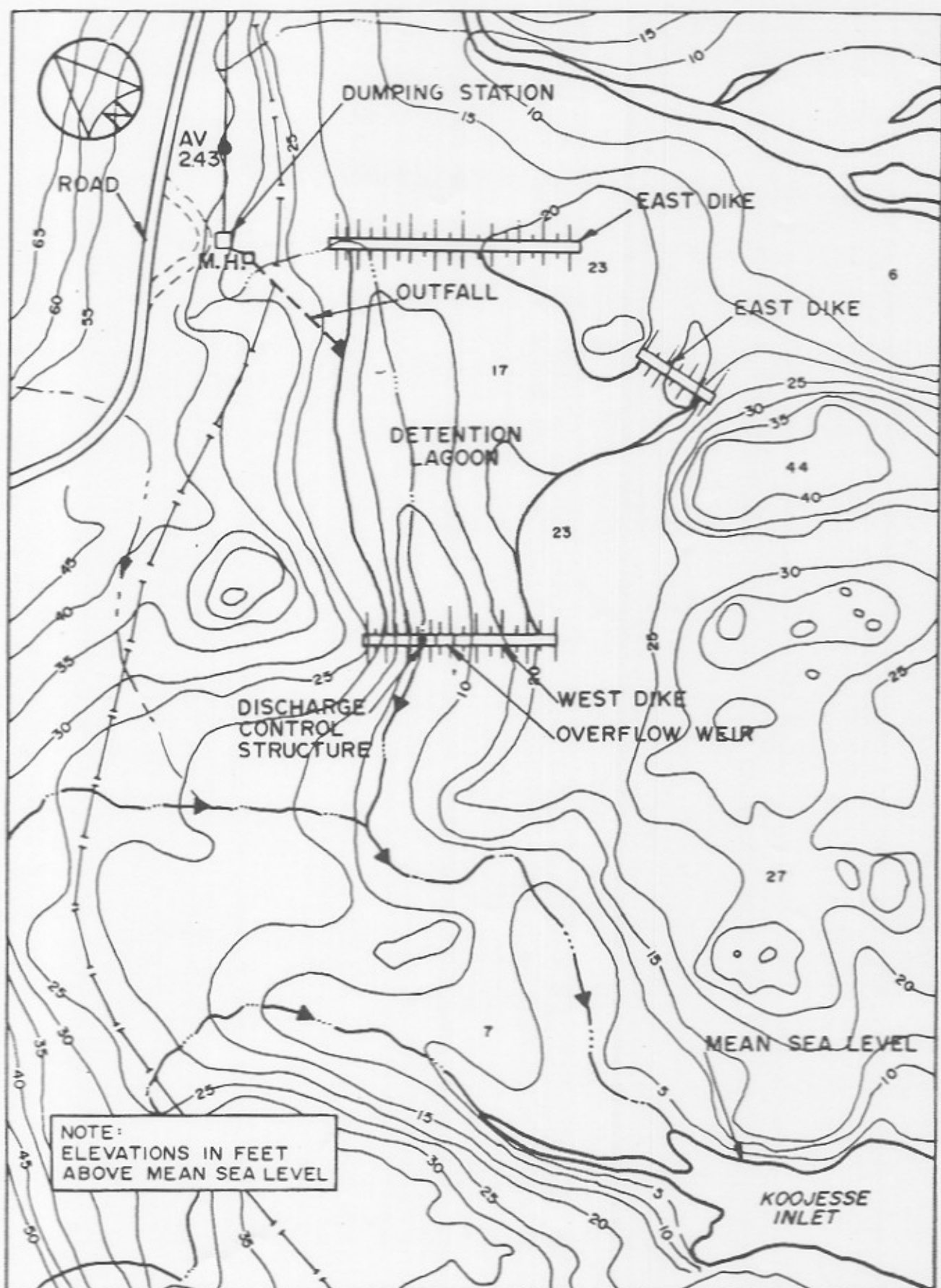
BACKGROUND

The sewage lagoon which serves the City of Iqaluit was built in 1978 on a tidal plain at the head of Koojesse Inlet (see figure 1).

In 1983 the dykes were upgraded which included lining the exterior slopes with filter cloth and rip-rap, constructing an overflow in the west dyke, adding a new section to the south end of the east dyke, and raising the west dyke by 1.5m. The exterior slopes were lined with filter cloth and rip-rap to prevent the dyke from tidal erosion.

In 1986 a manhole was installed in the west dyke to accommodate the installation of a control valve to regulate the continuous effluent discharge flow.

In 1991 a drainage channel was built adjacent to the lagoon in order to divert spring run off from entering the lagoon.



NOTE:
ELEVATIONS IN FEET
ABOVE MEAN SEA LEVEL

LAGOON SITE PLAN IQALUIT N.W.T.

SCALE: 1"=200'

Figure 1

CITY OF IQALUIT CONTACT LIST

	CELL#	WORK#
DISPATCH	N/A	979- 5650
Director of Public Works	975-1877	975-8509
Operations Superintendent of Public Works	975-1774	979-5653
Utilidor Foreman	975-1443 Pager# 32	979-5648
	HOME #	WORK#
Utilidor Maintainer	979-6573	979-5648
Utilidor Technician	979-5821	979-5648
Utilidor Tech. Asst.	979-7742	979-5648
Utilidor Tech. Asst.	979-0346	979-5648

After hour calls will be dispatched through the Iqaluit Fire Department dispatch to the Public Works Utilidor Crew through and on call schedule posted at the Dispatch Office. The Utilidor crew is required to have one individual on call for after hour's emergencies.

OPERATIONS AND MAINTENANCE

The City sewage lagoon is monitored by the City of Iqaluit Utilidor crew. The crew consists of a Foreman and five other staff with various levels of training and experience.

The Utilidor crew monitors the Sewage Lagoon daily and records on there daily check sheet any activities that they are required to perform. (**Attached daily check sheet**)

DAILY CHECK

*Monitor and control sewage lagoon level through the regulating of a control valve located in manhole at the west end dyke (**Attached, Safety, Confined Space Entry Procedures**)

MONTHLY CHECK

* Perform a walk around inspection of lagoon checking all dykes for damage and seepage which might be early signs of a possible dyke breach. Staff are required to write any problems identified on the daily check sheet and bring it immediately to the attention of there supervisor.

YEARLY CHECK

*Assure that clearing of all snow from the drainage channel adjacent the sewage lagoon is performed prior to spring run off.

SEWAGE LAGOON SPILL

If the sewage lagoon were to breach and a spill were to occur the City of Iqaluit spill contingency plan would be put in to action (**See attached City of Iqaluit Spill Contingency Plan**) .

QUALITY MUNICIPAL WORKS CHECKLIST WEEK ENDING

LOCATION	FUNCTION	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Sewage Plant						
A.V. 208	FLOW # 1					
	FLOW # 2					
	TEMP. # 1					
	TEMP. # 2					
A.V. 207	FLOW					
LIFT STATION # 1	PUMP # 1					
	PUMP # 2					
A.V. 404	FLOW					
REHEAT # 222	SUPPLY TEMP.					
	RETURN TEMP.					
LIFT STATION # 2	PUMP # 1					
	PUMP # 2					
A.V. 223	FLOW # 1					
	FLOW # 2					
A.V. 224	FLOW					
A.V. 225	FLOW					
A.V. 226	FLOW					
A.V. 234	FLOW					
A.V. 500	FLOW					
BOOSTER STATION						
HAPPY VALLEY	SUPPLY TEMP.					
	RETURN TEMP.					
ASTRO HILL	SUPPLY TEMP.					
	RETURN TEMP.					
W.T.P.	BOILERS					
TRIGRAM	SUPPLY TEMP.					
	RETURN TEMP.					

IQALUIT MUNICIPAL WORKS CHECKLIST WEEK ENDING

APR 23

2004

LOCATION	FUNCTION	19 MONDAY	20 TUESDAY	21 WEDNESDAY	22 THURSDAY	23 FRIDAY
Sewage PUMP		OK	OK	OK	OK	OK
A.V. 208	FLOW #1	5	5	4	4	2
	FLOW #2	50	50	50	50	50
Beach WHITE Row	TEMP. #1	OK	OK	OK	OK	OK
Middle Jeanie School	TEMP. #2	OK	OK	OK	OK	OK
A.V. 207	FLOW	3	2.5	2	3	3
LIFT STATION #1	PUMP #1	OK	OK	OK	OK	OK
	PUMP #2	OK	OK	OK	OK	OK
221 271	FLOW	OK	OK	OK	OK	OK
REHEAT #222	SUPPLY TEMP.	9/54	8/54	9/55	9/54	9/56
	RETURN TEMP.	9	12	9	9	9
LIFT STATION #2	PUMP #1	17126	17128	17130	17132	17135
	PUMP #2	OK	OK	OK	OK	OK
A.V. 223	FLOW #1	3	3	3	3	3
	FLOW #2	30	30	30	30	30
A.V. 522 523	FLOW	OK	OK	OK	OK	OK
A.V. 508 509	FLOW	OK	OK	OK	OK	OK
A.V. 508 509	FLOW	OK	OK	OK	OK	OK
A.V. 509 510	FLOW	OK	OK	OK	OK	OK
A.V. 500	FLOW					
BOOSTER STATION		OK	OK	OK	OK	OK
HAPPY VALLEY	SUPPLY TEMP.	18/33	17/33	18/34	17/34	18/33
	RETURN TEMP.	9	9	10	10	9
ASTRO HILL	SUPPLY TEMP.	20/24	20/24	20/25	19/24	20/23
	RETURN TEMP.	9	9	10	9	9
1552 1552	BOILERS	OK	OK	OK	OK	OK
TRIGRAM	SUPPLY TEMP.	8	8	9	9	8
	RETURN TEMP.	18	18	18	17	17

Confined Entry Permit
Hot Applications
(post at all Entrances to Confined Space)

Permit # _____

Nature of Work

- ☐ Welding
- ☐ Soldering
- ☐ Cutting
- ☐ Grinding
- ☐ Scraping
- ☐ Painting
- ☐ Unacceptable Air Monitoring Levels



Special Entry
Procedure
Checklists
Forms
II and III

- Utilidor Foreman to Determine Appropriate Procedure Checklists to be Performed During Discussion of Job Work.

Personal Protective Equipment Require:
(Job Specific Determined by Utilidor Foreman)

Location and Description of Confined Space

Details of Work to be Performed:

Foreman in Charge of Work.

Additional Checklist to be Complete

Authorized Entrants

All Personal

Adequately Trained

Yes ☐

No ☐

Yes ☐

No ☐

Yes ☐

No ☐

Atmospheric Monitoring

Instrument Used

Calibrated

Yes ☐

No ☐

Suction Test Yes ☐

No ☐

Time Date	Oxygen Must be 19.5%- 23.5%	H2S 10PPM	CO 30PPM	CH4 10%Lev
Prior to Venting				
1.				
2.				
3.				

4.				
----	--	--	--	--

Name and Signature of Tester _____
Print

_____ Sign
Date _____

Permit Expires at Date and Time _____

Work Completion

Utilidor Foreman _____ Date _____

Entrant _____ Date _____

Stand By _____ Date _____

Stand By Entrant _____ Date _____

Entry Procedures I
Confined Space

Permit # _____

Check When Completed

- ☐ Obtain Entry Permit Utilidor Foreman 975-1443
- ☐ All Persons to Enter AV/MH Confined Space must be Trained in Confined Space Access and in Use of Equipment
- ☐ Stand By Person Must Be Trained in Confined Space Entry and be Aware of the Emergency Procedures
- ☐ Entrants and Stand By Person to be Briefed About Job to be Completed

Lock Out and Isolation

Electrical Energy	<input type="checkbox"/>	Lock Out	
Mechanical	<input type="checkbox"/>	Stops	<input type="checkbox"/> Disconnect
Piping	<input type="checkbox"/>	Blank/Blind	<input type="checkbox"/> Block/Bleed
Hydraulic	<input type="checkbox"/>	Lock out	<input type="checkbox"/> Disconnect
Pneumatic	<input type="checkbox"/>	Lock out	<input type="checkbox"/> Disconnect
Gravity	<input type="checkbox"/>	Stops	

- ☐ Secure Area Around A.V./M.H. Confined Space by Installing Barricades
- ☐ Ensure no Vehicle Exhaust can Enter A.V./M.H. Confined Space When Opened * No Exhaust Near Fan Intake
- ☐ Calibrate and Zero Air Monitoring Equipment (Enter Data on Entry Permit)
- ☐ Test for Vacuum on Air Monitoring Equipment (Enter Data on Entry Permit)
- ☐ Use Air Monitoring Equipment to Test Around the Opening of A.V./M.H. Confined Space Prior to Opening
 - ☐ Test Results Negative Enter Data on Entry Permit and Continue with Entry Procedures
 - ☐ Air Monitoring Equipment Shows Press H₂S, CO or Oxygen (Enter Data on Entry)
 - ☐ Divert Traffic and Clear Area of Passer By's
 - ☐ Ventilate Area Until Air Monitor Levels Normal enter Data on Entry Permit
 - ☐ Proceed with Entry Procedures

- ☐ Unable to Obtain Acceptable Air Levels Contact Utilidor Forman (Hot Entry Permit Required)
- ☐ Barricade Off Area

- ☐ Put Mechanical Winch and Tri-Pod in Place
- ☐ Un Lock and Open Confined Space
- ☐ Ventilate Confined Space for 20 Minutes Extend Vent to Bottom of Space
 - ☐ Ensure Air Intake Away From any Contaminating Source
- ☐ Lower Air Monitoring Equipment to Test for Acceptable Levels of O₂, H₂S CO and CH₄ Perform Air Testing at Different Levels Over Entire Depth of Space and Enter Data on Entry Permit
 - ☐ If Air Levels Not Acceptable Continue to Ventilate and Test Air quality Until within Acceptable Levels
 - ☐ Unable to Obtain Acceptable Levels Contact Utilidor Foreman

(Hot Permit Required)

- ☐ Barricade OFF Area
- ☐ Re-Lock Confined space or put cover on M.H.

- ☐ Unable to Obtain Acceptable Air Levels Contact Utilidor Forman (Hot Entry Permit Required)
- ☐ Barricade Off Area

- ☐ Put Mechanical Winch and Tri-Pod in Place
- ☐ Un Lock and Open Confined Space
- ☐ Ventilate Confined Space for 20 Minutes Extend Vent to Bottom of Space
 - ☐ Ensure Air Intake Away From any Contaminating Source
- ☐ Lower Air Monitoring Equipment to Test for Acceptable Levels of O₂, H₂S CO and CH₄ Perform Air Testing at Different Levels Over Entire Depth of Space and Enter Data on Entry Permit
 - ☐ If Air Levels Not Acceptable Continue to Ventilate and Test Air quality Until within Acceptable Levels
 - ☐ Unable to Obtain Acceptable Levels Contact Utilidor Foreman

(Hot Permit Required)

- ☐ Barricade OFF Area
- ☐ Re-Lock Confined space or put cover on M.H.

Completion and Reporting Procedures

- ☐ Remove all Equipment Once Work Completed
- ☐ Re-Lock A.V. or Confined Space Re Install Cover on M.H.
- ☐ Notify Utilidor Foreman Upon Completion of Confined Space Entry
- ☐ Complete Entry Permit Form and Checklists. Deliver a Copy of the Permit and Checklist to Utilidor Foreman to be Files (3-5 Years Keep Files)

Entrant	_____	Date	_____
Stand By/Entrant	_____	Date	_____
Stand By	_____	Date	_____

Entry Procedure II
Confined Space (Hot Application)

Permit # _____

Nature of Work to be Done

- ☐ Welding
- ☐ Soldering
- ☐ Cutting
- ☐ Grinding
- ☐ Scrapping
- ☐ Painting

(Check When Completed)

- ☐ Obtain Entry Permit (Hot Application)
- ☐ Completed Entry Procedures I

Check List

Additional Procedures

- ☐ Installation of an Extractor Fan With Hoses will be Installed to Remove Fumes From the Confined Space
- ☐ Locate Fan as Close to Practical to Activity Being Performed
- ☐ Stand By Person will have Available Fire Extinguishers Type

Note:

Supply Air Hoses Welding Hoses/Cables will be Removed
at Every Break

If Confined Space is Vacant for Longer than 20 Minutes
Confined Space Must Be Retested for Air Quality.

Completion and Reporting

- ☐ Remove all Equipment Once Work Completed
- ☐ Re-Lock A.V. or Confined Space. Install Cover on M.H.
- ☐ Notify Utilidor Foreman Upon Completion
- ☐ Complete Entry Permit Form and Checklists, Deliver a Copy
of the Permit and Checklist to Utilidor Foreman to be Filed.
(3-5 Years Keep Files)

Entrant	_____	Date	_____
Stand By/Entrant	_____	Date	_____
Stand By	_____	Date	_____

**Entry Procedures III
Confine Space
Self Contained Breathing Apparatus
Or Airline Entry.**

Permit # _____

Check When Completed

- ☐ Obtain Hot Confined Space Entry Permit Utilidor Foreman
975-1443

If Clean Air Cannot Be Assured in an A.V./M.H. or Confined Space the Following Procedures will be Followed.

- ☐ Notify Rescue Service Response of Location of Confined Space Access 979-5650
- ☐ Install Tri-Pod and Mechanical Winch

Entrant will Wear Following Protective Equipment

- ☐ Full Body Harness With Life Line
- ☐ Self Contained Breathing Apparatus (Respirator)
- ☐ Airline Mask, with 5 Min Escape Bottle and Body Harness for System
- ☐ Mechanical Ventilation will be Installed to Produce Atmospheric Hazards. Ensure Air Intake is Away from any Contaminating Source.

- ☐ Ensure Airline Compressor is Away from any Engine Exhaust to Prevent Contamination of Air Supply.
- ☐ All Sources of Ignition Eliminated or Controlled

Note: Stand By Person Will Hold Rope and Remain in Communication With Entrant Until Work is Completed

In Case of Emergency Stand by Person Will Start Rescue Service Response. He/She May attempt to Winch Entrant out of Confined Space. He will Not Enter Confined Space Under Any Circumstances.

Completion and Reporting

- ☐ Remove All Equipment Once Work Complete
- ☐ Re-Lock A.V. or Confined Space Install Cover on M.H.
- ☐ Notify Utilidor Foreman Upon Completion as well as Rescue Service Response.
- ☐ Complete Entry Permit Form and Check List Deliver a Copy of the Entry Permit and Check List to Utilidor Forman to be Filed (3-5 Years)

Entrant	_____	Date	_____
Stand By/Entrant	_____	Date	_____
Stand By	_____	Date	_____