FSC File: 20100100

May 27, 2010

Mackenzie Valley Land and Water Board
7th Floor - 4810 50th Avenue
P.O. Box 2130
Yellowknife, NT
X1A 2P6

Attn: Tyree Mullaney

Re: Hamlet of Enterprise Water Licence MV2008L3-0004

Dear Ms. Mullaney

On behalf of my client, the Hamlet of Enterprise, FSC has completed the four (4) documents required by water Licence Number MV2008L3-0004.

- Operation and Maintenance Plan
- Phase 1 Environmental Site Assessment
- Interim Closure and Reclamation Plan
- Longevity Report for the Solid Waste Facility

Please find them attached.

If you have any questions please feel free to contact me.

Sincerely,
FSC ARCHITECTS & ENGINEERS

Ron Kent, P.Eng.
Environmental Engineering.

Cc: Scotty Edgerton, SAO, Hamlet of Enterprise.

Operation and Maintenance Plan for The Hamlet of Enterprise Waste Facilities

Draft Version 1.2

Created April 2010

Effective till January 2015

Project # 2010-0100

Prepared for:

Hamlet of Enterprise
526 Robin Road
Enterprise, NT.
X0E 0R1

Prepared by:

FSC Architects & Engineers
4910 53 Street
Yellowknife, NT
X1A 2P4

LISTEN. DESIGN. MANAGE.

Table of Contents

1 Introduction

The Hamlet of Enterprise, Northwest Territories is located at:
(Lat/Long)
Latitude 60° 33′ 28.65”N
Longitude 116° 08′ 27.06”W
(UTM)
Easting 547111
Northing 6713860

In August 2009 the Hamlet of Enterprise was issued Water Licence Number MV2008L3-0004, by the Mackenzie Valley Land and Water Board (MVLWB). This licence was issued for a five (5) year period commencing August 27,2009 to August 26,2014. A requirement of that licence is an Operation and Maintenance Plan for their Waste Facilities.

1.1 INFORMATION OF THE LICENCEE

Hamlet of Enterprise
526 ROBIN ROAD
Enterprise, NT.
X0E 0R1

1.2 INFORMATION OF 24 HOUR CONTACT

Mr. Scotty Edgerton
Senior Administrative Officer
Tel: (867) 984-3491
Or
Alan Kimble
Senior Operations Manager
867-875-8524

1.3 WHAT IS IN THIS PLAN

This Plan consists of Operation and Maintenance Procedures for the following facilities:

- Sewage Disposal Facility
- Solid Waste Disposal Facility

1.4 GENERAL DESCRIPTION OF THE PROPERTY

1.4.1 Sewage Treatment

Sewage is trucked to the Sewage Lagoon located 7 kilometres east of Enterprise, just east of the solid waste site. The treatment system is a combination system of an exfiltration lagoon and wetlands and has been in operation for 22 years. The lagoon has an estimated working capacity of 4500m3. The retention time of the sewage while in the treatment facility is approximately 45 days. The wetlands extend northward, from the lagoon, for at least one kilometre and are approximately 100 metres wide. The discharge

from the lagoon is continuous but seasonal during warm weather. The time the effluent is exposed to biological remediation in the wetlands depends on the amount and frequency of rainfall, the heat and humidity of the air and the winter temperatures.

1.4.2 Solid Waste Management

The solid waste facility is located approximately 6 kilometres east of Enterprise and has been in operation for approximately 22 years. Solid household waste is disposed of using the trench method. Municipal solid waste accepted at the Enterprise site mostly consists of waste from the community and the occasional waste from the surrounding campgrounds. Bulky goods (including metals, woods, and tires) are strictly limited of what is allowed to enter the solid waste site. When these materials enter they are segregated and are not disposed of in the trenches. Medical services are provided by Hay River, therefore, there no health centre wastes. Honey bags are not disposed of at the solid waste site because the community does not use them. The site is controlled by a gate and has put up a wind fence around the active trench to limit the spread of windblown debris. The estimated capacity of the disposal area is 1500 m^3. Every Wednesday the Hamlet of Enterprise picks up the solid waste from the Hamlet and brings it to the Solid Waste Disposal Area

2 Operation and Maintenance Protocols Sewage Treatment

2.1 GENERAL

The Hamlet of Enterprise operates, a sewage lagoon and a wetland (Biological Remediation Field). The sewage is trucked to the facility.

2.2 TRUCKED SEWAGE COLLECTION

Sewage is trucked to the sewage lagoon by Hay River Disposals (1985) Ltd. Located at 39 Studney Dr. Hay River, NT, X0E 0R6. Sewage is collected Tuesdays and Fridays.

2.3 SEWAGE LAGOON

Sewage is trucked to the Sewage Lagoon located 7 kilometres east of Enterprise, just east of the solid waste site. The treatment system is a combination system of an exfiltration lagoon and wetland and has been in operation for 22 years. The lagoon has an estimated working capacity of 4500m3. The retention time of the sewage while in the treatment facility is approximately 45 days. The sewage lagoon operates as a primary cell. The discharge from the lagoon is continuous but seasonal during warm weather.

The wetlands extend northward from the lagoon for at least one kilometre and are approximately 100 metres wide. The wetlands are widespread and do not have a defined drainage channel or effluent discharge point.

The time the effluent is exposed to biological remediation in the wetlands depends on the amount and frequency of rainfall, the heat and humidity of the air and the winter temperatures.

2.4 FREQUENCY OF INSPECTION OF DAMS, DYKES AND DRAINAGE COURSES

The primary lagoon is inspected weekly during the snow free season. The lagoon is checked to make sure the drainage course is draining northwards into the wetlands.

2.5 REMOVAL OF FLOATING MATERIALS FROM THE SEWAGE DISPOSAL FACILITIES

The sewage disposal facility is inspected weekly during the snow free season for the presence of floating materials

Biosolids are macerated during removal from individual homes by the sewage collection truck and macerated again while being deposited into the primary lagoon by the sewage collection truck.

If floating materials are detected during inspection they are removed and disposed of in the solid waste facility.

2.6 RUNOFF AND DRAINAGE CONTROL

Any runoff that accumulates within the surrounding area of the sewage disposal facility runs into the wetlands surrounding the site and is treated. Precipitation that falls into the primary lagoon is treated as effluent and processed through the exfiltration lagoon and wetlands.

2.7 TREATMENT OF CONTAMINATED DRAINAGE

Effluent leaving the sewage disposal site when treated through the wetland is not considered contaminated drainage.

Drainage from the landfill does not flow towards the sewage disposal facility.

In the unlikelihood of failure of the berms of the sewage disposal facility the discharging effluent would still flow in a northerly direction towards the wetlands.

2.8 DETERMINATION OF SLUDGE ACCUMULATION

A consultant will be engaged to determine the amount of sludge in the lagoon, if it is affecting operation, and when it needs to be removed if at all. If sludge does need to be removed, the consultant will provide an options analysis. This work will be undertaken during the summer of 2010.

2.9 REMOVAL OF ACCUMULATED SLUDGE FROM THE LAGOON

The consultant's report will provide options for frequency of removal and methods for treatment, if necessary.

2.10 SAMPLING AND ANALYSIS REQUIRED

There are two locations of surveillance stations required by water licence MV2008L3-0004. One is located within the sewage treatment area and one is located in the solid waste facility.

Station Number	Description
2009-1	Sewage effluent from Sewage Disposal Facility
2009-4	Any visible seepage from the Soil, Liquid and Sewage Water Disposal Facilities

A/ Water at station number 2009-1 shall be sampled on the first day and monthly thereafter including prior to and during discharge and analysis for the following parameters:

- Suspended Solids
- BOD_5
- pH
- Faecal Coliform
- Ammonia Nitrogen

B/ More frequent sample collection may be required at the request of an inspector.

C/ All sampling, sample preservation and analyses will be conducted in accordance with methods prescribed in the current edition of "Standards Methods for the Examination of Water and Wastewater"

D/ All analyses will be performed in a laboratory approved by an Analyst

E/ Station number 2009-4 will be sampled every seven days during periods of flow and analyzed for the following parameters

PH	Sodium
Suspended Solids	Total Phosphate
Magnesium	Sulphate
Potassium	Total Arsenic
Fecal Coliforms	Total Lead
BOD_5	Total Nickel
Total Organic Carbon	Total Chromium
Nitrate and Nitrogen	Total Cadmium
Ammonia Nitrogen	Total Iron
Oil and Grease	Total Mercury
Total Phenols	Total Zinc

Conductivity
Calcium

Total Copper

2.11 QUALITY ASSURANCE/QUALITY CONTROL PLAN

The Surveillance Network Program sampling as outlined in the attachment to Licence MV2008L3-0004 issued to the Hamlet of Enterprise with an expiry date of August 26, 2014 and any subsequent renewals will be followed with the results included in subsequent yearend reporting.

The Hamlet of Enterprise operations staff will take all samples necessary to satisfy water licence MV2008L3-0004 All sampling, sample preservation will be conducted in accordance with methods prescribed in the current edition of “Standards Methods for the Examination of Water and Wastewater”

Sample analysis is conducted by Maxxam analytics Inc, accredited by the Canadian Association of Environmental Analytical Laboratories (CAEAL) as a testing laboratory for specific test registered with CAEAL. Routine methods of sampling and analysis are based on recognized procedures such as Standard Methods for the Examination of Water and Wastewater APHA, AWWA, WEF, Environmental Canada, USEPA.

2.12 O&M SUMMARY

As Required	- Remove floating material -
Weekly	- Inspect primary lagoon - Sample Station 2009-4
Monthly (Seasonal)	- Sample Station 2009-1

3 Operation and Maintenance Protocols Garbage Disposal

3.1 GENERAL OPERATION

Solid waste is accepted by the facility during its hours of operation, which are Tuesdays and Friday's 8:30 am to 6:00 pm

The site is operated as a modified trench method, as defined in "Guidelines for the Planning, Design, Operation and Maintenance of Solid Waste Modified Landfill Sites" prepared by Municipal and Community Affairs (MACA).

Waste not disposed of in trenches includes car bodies, bulky metals, wood, tires, white goods, and household hazardous waste. Separate areas have been designed for the disposal of these items.

Wastes are deposited to trenches and periodically compacted with heavy equipment. As weather permits, the compacted layer is covered with native soil. When a trench has been completed, a final cover of 0.6 m of native soil is used to prevent the dispersion of litter and encourage the shedding of water.

3.2 RECYCLING

All beverage containers can be taken by the producer to 237 Robin Road, and delivered to Armella Mercredi (867) 984-3000

All other recyclable material is taken by the producer to Hay River and disposed of at Tri R Recycling located at 36 Industrial Drive in Hay River.

3.3 SCAVENGING

The solid waste facility in Enterprise does not have a full time attendant so scavenging happens when the gate is open during operational hours. Scavenging of the large bulky wastes is encouraged.

3.4 WINDBLOWN MATERIAL

Windblown material is reduced by the placement of 0.6 m of native soil over the waste in the compacted trench.

The active trench is fenced by snow fence to limit windblown debris. The fence acts as a barrier to any windblown material.

3.5 SITE MAINTENANCE

The Hamlet of Enterprise contracts out large maintenance duties of the Solid Waste Facility. Hamlet operations personnel run day-to-day operations of the facility.

3.6 BURNING

Open burning of municipal solid waste is not acceptable or permitted in the Solid Waste facility. Only clean wood and organic wood like materials will be considered suitable for burning)[1]. Burning is not

[1] As per Guidelines for the Planning, Design, Operations and Maintenance Of Modified Landfill Sites in the NWT. Prepared for The Department of Municipal and Community Affairs Government of the Northwest Territories, prepared by FSC Architects and Engineers April 23, 2003. .

permitted during the closed season (May 1, September 30). Burning permits must be applied for from ENR Forest Division prior to burning

3.7 HAZARDOUS WASTE

The solid waste facility does not accept Hazardous Waste and does not have a separate area to contain Hazardous Waste. At no time in the future does the Solid Waste Facility intend to accept Hazardous Material.

3.8 SEGREGATION OF WASTE MATERIALS

The solid Waste Facility has designated areas for different type of waste. For location of these areas see maps in appendix A. Solid waste is separated based on classification and type of waste. Household waste is stored in a pit on the east side of the solid waste facility. Municipal and large commercial is stored in a mound on the north side of the facility. Organics, Wood and metals are separated and stored individually.

3.9 FENCING

The fence around the active trench should be inspected monthly for deficiencies during warm weather. Windblown materials that collect on the fence should be removed and deposited back in the active trench.

3.10 FREQUENCY OF INSPECTION

The solid waste facility is inspected weekly for unauthorized use, problems with operation and unauthorized dumping.

3.11 RUNOFF AND DRAINAGE CONTROL

The Solid Waste Facility was designed with positive drainage in mind. Any standing water will be identified and measures will be taken to reestablish positive drainage. This will entail regarding as required. Water generally drains to the North off the site into the woodlands. A drainage trench was dug at some time in the past and most of the water on site collects into this trench. The drainage trench has been identified on map SK-1 in appendix A.

3.12 SAMPLING AND ANALYSIS REQUIRED

There are two locations of surveillance stations required by water licence MV2008L3-0004. One is located within the sewage treatment area and one is located in the solid waste facility.

Station Number	Description
2009-4	Any visible seepage from the Soil, Liquid and Sewage Disposal Facilities

Station number 2009-4 will be sampled every seven days during periods of flow and analyzed for the following parameters

PH	Sodium
Suspended Solids	Total Phosphate
Magnesium	Sulphate
Potassium	Total Arsenic
Fecal Coliforms	Total Lead
BOD_5	Total Nickel

Total Organic Carbon	Total Chromium
Nitrate and Nitrogen	Total Cadmium
Ammonia Nitrogen	Total Iron
Oil and Grease	Total Mercury
Total Phenols	Total Zinc
Conductivity	Total Copper
Calcium	

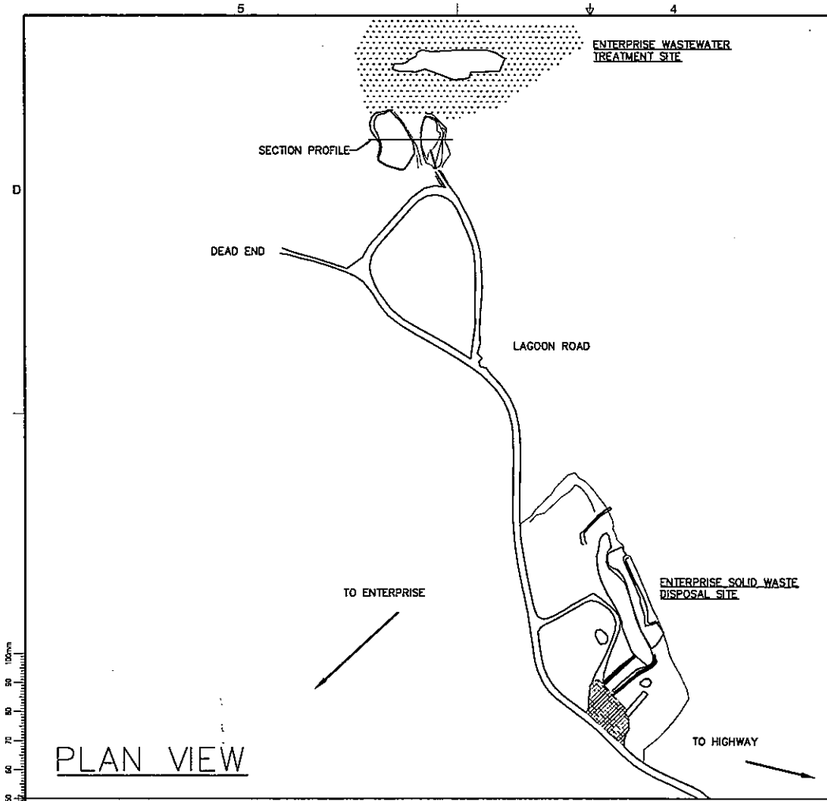
3.13 MAPS

Can be found in Appendix A

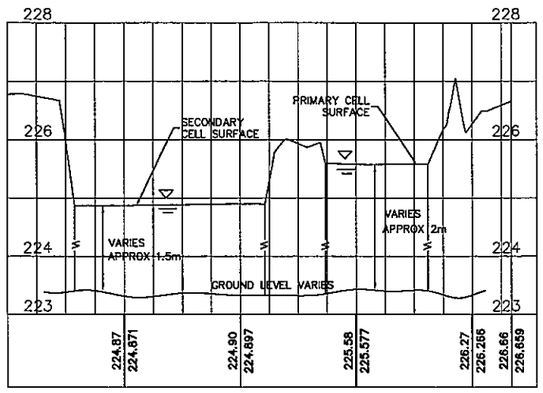
3.14 O&M SUMMARY

As Required	Positive grading
Weekly	Inspection for unauthorized use, problems with operation and unauthorized dumping Sample 2009-4
Monthly (Seasonal)	Segregate materials Compact solid waste with tracked equipment. Inspect fencing
Semi-Annually	Place 0.6m of cover over deposited material

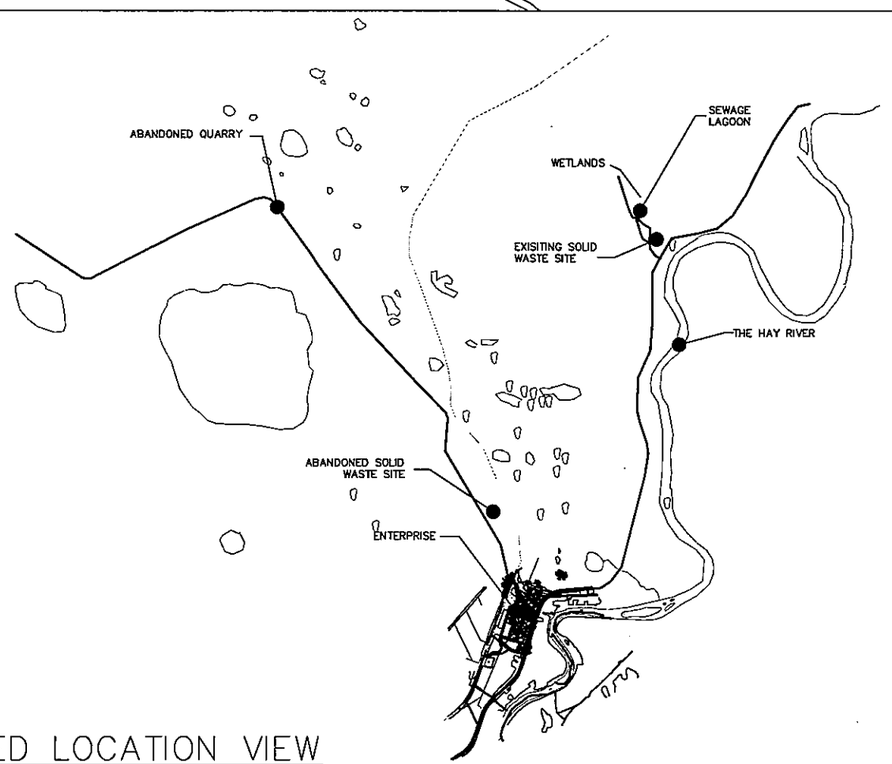
Appendix A: Maps



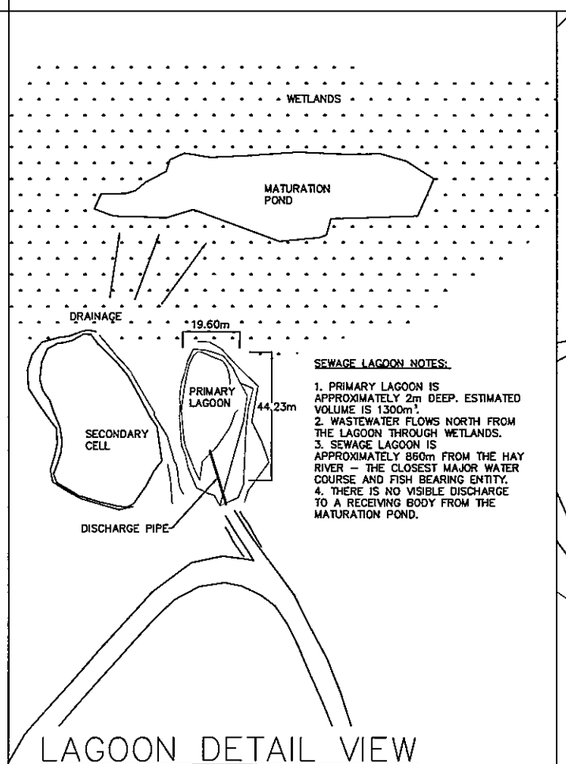
PLAN VIEW



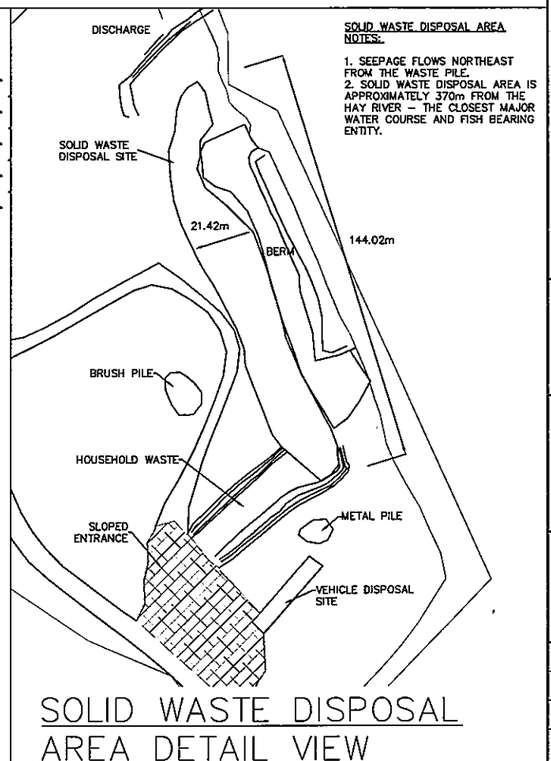
PROFILE VIEW



DETAILED LOCATION VIEW



LAGOON DETAIL VIEW



SOLID WASTE DISPOSAL AREA DETAIL VIEW

REGISTERED PROFESSIONAL ENGINEER R. KENT N.W.T.

PERMIT TO PRACTICE
FSC ARCHITECTS AND ENGINEERS
(5107 NWT LTD.)
Signature
Date 07 July 2009
PERMIT NUMBER: P0457
The Association of Professional Engineers, Geologists and Geophysicists of the NWT / NU

NO.	REVISION DESCRIPTION	DATE ISSUED
00	ISSUED FOR INFORMATION	

PROFESSIONAL SEAL / PERMIT TO PRACTICE

AS-BUILT

FSC
ARCHITECTS & ENGINEERS
4910 - 53rd Street, P.O. Box 1777
Yellowknife, NT. X1A 2P4, Canada
T 867.920.2882 | F 867.920.4319

PROJECT TITLE
HAMLET OF ENTERPRISE WATER LICENSE APPLICATION

LOCATION
ENTERPRISE, NT

DRAWING TITLE
PLAN & PROFILE VIEWS OF THE SEWAGE AND SOLID WASTE DISPOSAL SITES

DRAWN BY	SCALE
LM	VARIES
CHECKED BY	CLIENT PROJECT NO.
RK	-
FSC PROJECT NO.	
2008-1130	
DRAWING NO.	
E01	

OF 1

FSC – ANSI-D – 22x34