ENVIRONMENTAL ASSESSMENT REGISTRATION

HAPPY VALLEY – GOOSE BAY WASTEWATER TREATMENT SYSTEM

Submitted to:

Department of Environment and Conservation
Environmental Assessment Division

October 2010

BAE ♦ NEWPLAN GROUP

ENVIRONMENTAL ASSESSMENT REGISTRATION

HAPPY VALLEY – GOOSE BAY WASTEWATER TREATMENT SYSTEM

Prepared for:
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Environmental Assessment Division
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October 2010

Project No.: 723426

Title: ENVIRONMENTAL ASSESSMENT REGISTRATION, HAPPY VALLEY – GOOSE BAY WASTEWATER TREATMENT SYSTEM

Client: TOWN OF HAPPY VALLEY – GOOSE BAY

1	2010-10-22	Environmental Registration			
Rev.	Date yyyy/mm/dd	Description	Prepared By Jennifer Strickland	Reviewed By Elaine McArthur	Approved By Elaine McArthur

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

1.0 NAME OF THE UNDERTAKING

Happy Valley – Goose Bay Wastewater Treatment System

2.0 PROPONENT

2.1 Name of Corporate Body

Town of Happy Valley – Goose Bay

2.2 Address

Town of Happy Valley – Goose Bay
212 Hamilton River Road
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2.3 Contact

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3.0 THE UNDERTAKING

3.1 Nature of the Undertaking

The proposed project is to design and construct within the town of Happy Valley – Goose Bay both a collection system to intercept the wastewater flow from two separate sewage outfalls (Birch Island Outfall and Lower Outfall), and a wastewater lagoon system to treat and disinfect the effluent before discharging it to the environment. This system will include infrastructure designed for screening and grit removal, biological treatment and ultraviolet (UV) disinfection (see Figures in Appendix A).

Population estimates from Statistics Canada have been used as a basis for determining design population, and there is flexibility in the system to accommodate growth beyond these population projections. For example, lift station pumping systems will be able to accommodate up to six (6) times the average daily flow, and the pumps are designed to be upgraded in the future as necessary. As well, new cells can be added to the lagoon as needed for future capacity.

3.2 Need for the Undertaking

Population growth in the Happy Valley – Goose Bay area continues to place increased stress on the existing outfall regime; creating the potential to be harmful to human health, the marine environment, tourism and recreation. Currently in Happy Valley – Goose Bay, untreated sewage and wastewater collected from the airport, base and the Town is collected and discharged via two (2), undiffused, open-ended outfalls into the Churchill River.

The Town has been experiencing problems with the existing system during times of low flow in the river when the untreated wastewater becomes exposed causing odour and vector problems, and thus has recognized the requirement for treatment of municipal wastewater. A study of treatment options was performed in 2001 (Blake Engineering Limited/EDM Consultants Limited, 2001; see Appendix C for Table of Contents), ultimately recommending the installation of an aerated lagoon facility as the preferred option.

4.0 DESCRIPTION OF THE UNDERTAKING

4.1 Geographic Location

The proposed location of the wastewater treatment system is north of Mudd Lake Road in the Town of Happy Valley - Goose Bay in Labrador (see Appendix A, Figure 1). This location was chosen due to the topography of the land and its proximity to the town. Having the treatment lagoon close to the town reduces both the length of pipeline needed and the size of wastewater pumps required for the lift stations. Because of the prevailing winds in the area, locating this infrastructure on the east side of the town also minimizes the risk for any odors that may be pending from the treatment facility to disperse throughout the Town.

The project property boundaries for the proposed treatment facility will require a land area of approximately 75,000 m^2. Proposed infrastructure within this area will include the treatment lagoons, an UV disinfection system and a headworks building which will contain the screening and grit removal system.

4.2 Existing Infrastructure

The land within the proposed site is previously undeveloped Crown Land. The Town of Happy Valley – Goose Bay is in the process of acquiring authorization from Crown Lands for this project.

Presently, there is no existing wastewater treatment provided for the Town's municipal wastewater. Existing outfalls are shown in Appendix A, Figure 1.

The Town has established a Town Plan with an associated zoning scheme. According to the Town Plan, a zone located near the proposed Lift Station No. 1, adjacent to Birch Island Road, is designated as a zone for Environmental Protection (EP). In addition, there is also an EP boundary along the Churchill River. According to No. 63 of the Town's Development Regulations:

> *"Within any zone the Town can permit land to be used in conjunction with the provision of public services and public utilities if the use of that land is necessary to the proper operation of the public service or public utility. Such facilities are subject to the approval of relevant provincial and federal departments and agencies. The design and location of such public services and public utilities shall take into consideration their impact on nearby land uses and persons, the environment and archaeological resources within the Town, along with other matter that the Town may deem to be significant."*

Figures showing land use zones in the region are included in Appendix B of this

document.

4.3 Overview of the Proposed Sewage Treatment Process

The proposed collection and treatment system will consist of two lift stations and forcemains to deliver the Town wastewater to the treatment plant site. Primary screening and a grit removal system are the first two components of the process for removal of large solids and heavy sediment. This will be contained in a headworks building at the inlet to the system. This building will also contain the mechanical works for the remainder of the process. Three (3) lined cells will then follow for the secondary treatment of the wastewater (see Appendix A, Figure 2). These will be configured in series to provide the longest available retention time for maximum biological treatment and sedimentation. Static tube aerators will be installed in the lagoon cells to deliver air needed for the naturally occurring bacteria to initiate and complete the treatment processes.

The treated effluent from the end of these processes will be directed to an UV disinfection system to destroy pathogenic bacteria prior to discharge. The final step is to discharge the treated, disinfected wastewater back to the environment via an infiltration trench that will be constructed to direct flow from the treatment system back to the surrounding soil and eventually to a nearby watercourse. Figure 3 in Appendix A of this document shows the process schematic for the sewage treatment system.

4.4 Physical Features of the Undertaking

Access

Access to the site of the treatment lagoons will require the construction of two driveways, each approximately 70 m long (see Appendix A. Figure 1), from Mudd Lake Road to the project site. One driveway will be the principle entrance to the main headworks building and the lagoons, and the other will be a secondary access available for vehicles to travel to the UV building. A parking lot will be included for operator vehicles and service vehicles and a driveway will be built around the around the headworks building to allow for the pickup of waste from the facility.

Geo-membrane Lined Cells

The three lagoon cells will be located adjacent to one another. The elevation of the top of the berm in lagoon cell 1 is 13.0 m; the elevations of the berm top of lagoon cell 2 are 13.0 m and 12.7 m; and the elevations of the sides of lagoon cell 3 are 12.0 m and 12.4 m. The bottom (cell floor) elevation for lagoon cells 1, 2 and 3 are 7.50 m, 7.20 m and 6.90 m, respectively. The wastewater depth in each lagoon cell is 4.5 m.

Each of the three cells will measure 35 m by 162 m and will have side slopes of 3H:1V. The interior of each of the cells will be covered with a perforated high-density polyethylene

(HDPE) geomembrane liner system to prevent wastewater from seeping into the ground. The top of each cell slope will be lined with a rock filled, HDPE geogrid system to 1 m below the water level to protect from erosion and to provide a slip proof surface above the water level.

Lift Stations

Two (2) lift stations are required for this project. The Birch Island lift station will occupy a footprint of approximately 6.6 m x 3.1 m and will have a triplex pump system to pump the wastewater the second lift station at lower outfall. The lower outfall lift station will consist of a buried sump occupying approximately 8.8 m x 7.3 m with a triplex arrangement of submersible pumps to pump the entirety of the Town's wastewater to the treatment facility. The Birch Island lift stations will be at an approximate elevation of 5.5 m and the lower outfall lift station will have a top elevation of approximately 6.03 m. Each lift station will be equipped with a building structure to house the lift station controls and to provide for all-weather access to the pump hatches.

Sewer Mains / Forcemains

The forcemain for this project will be in two sections, the first of which will run from the first lift station at Birch Island to the lift station at Lower Outfall. The second section will run from the Lower Outfall lift station to the treatment site. The forcemain will consist of fused HDPE pipe with 400 mm and 450 mm diameter. Because of the number of services in the forcemain route, the pipe will have a shallower bury than typically used in an effort to avoid conflict with existing pipe. The depth of frost in Happy Valley – Goose Bay requires that an insulated pipe be used for this shallower bury and the pipe for the project will be pre-insulated to provide the required frost protection.

HDPE pipes will also be used to deliver wastewater by gravity to and from each of the lagoon cells. These will be fused, 600 mm diameter pipe.

Drainage and Stormwater Management

All stormwater for the project site will be managed through a series of ditches and culverts to provide adequate site drainage.

Building Structures

A headworks service building will be constructed adjacent to the lagoon suite and will contain the screening and grit removal system. The screening process will consist of bar screens to remove any large debris coming into the facility. The grit removal will consist of a mechanical separator designed to remove finer sediment to keep it out of the treatment cells. These two steps are intended to reduce the accumulation of solid materials from the lagoon cells, thus allowing more volume for retention of organic sludge during operations.

Solid materials resulting from the screening and grit separation will go through a dewatering process and then the dewatered solids will be transferred to a hopper inside the Headworks building. Periodically, this hopper will be emptied and the screenings will be transported for disposal at the local landfill.

The headworks building will contain the office and laboratory for facility operations. It will also house the blower equipment for aeration of the lagoon cells and all controls, equipment and monitoring systems for the entire facility.

Because of the topography of the site, a second, smaller building will be required to allow for gravity flow into the final disinfection process. The disinfection system will consist of an in-channel, ultraviolet light treatment system.

As is experienced will all municipal wastewater streams, the inflow into the treatment system will vary according to usage and infiltration. The headworks building will be designed for a finite inflow to provide for the majority of flow conditions. To protect the primary infrastructure from damage from high inflow a bypass directly into the first cell will be included for extreme peak flows. This wastewater will undergo the same treatment with only the removal of large solids being excluded from the process during extreme peak flows. The lagoon cells will provide significant balancing of flows to eliminate the diurnal variation and short term peak flow rates in the effluent, however, sufficient disinfection capacity will also be included to account for extended period of high flow that may be a result of precipitation or snow melt events.

Effluent Discharge

Treated wastewater will be discharged back into the environment via an infiltration trench that will direct flow from the treatment system back to the surrounding soil, and eventually to the Churchill River. The discharge pipe will be approximately 75 m in length and will consist of a 650 mm diameter, perforated HDPE pipe. This pipe will be placed in a trench excavated toward the natural drainage structure adjacent to the treatment facility. This trench will be rock lined to prevent the migration of native soils due to the flow from the pipe, and it will be backfilled with a stone matrix over the pipe to prevent unauthorized access to the pipe and to provide protection for the pipe from snow and ice build-up. The treated effluent will flow from the treatment facility into this pipe where it will be gradually discharged over its length back to the soil via the perforations in the pipe. The native soil is free draining sand, so the treated effluent will migrate down through the trench bottom and sides.

Utilities

Electrical: Three-phase electrical power will be supplied to the treatment facility to provide electricity for operations.

Sewer: Wastewater generated in the facility will be directed on the influent end of the process for treatment in the system.

Water: Potable water will be supplied to the project from the Town's municipal water supply.

5.0 CONSTRUCTION ACTIVITIES

Construction of the sewage treatment system is proposed to begin in June of 2011 and is anticipated to be fully commissioned for operations in December 2012. Construction of the system will involve the removal of moderate vegetation, grubbing, and grading of soil material at the location of the treatment system/lagoons. The proponent is committed to keeping environmental impacts to a minimum.

During the construction and operation of the project site, all efforts will be made to preserve and conserve the natural environment. Vegetation will be maintained to provide natural buffer zones and any exposed slopes will be stabilized with natural vegetation where possible. All construction activities will be conducted involving mitigation measures as per Section 5.2. Major activities that may have effects on the environment during construction are discussed below.

Vegetation Clearing

Potential concerns associated with vegetation clearing include loss of habitat, as well as sedimentation of watercourses. All vegetation clearing and associated activities will adhere to all applicable acts, regulations, and permits. Also, mitigation measures will be implemented to reduce the potential effects of vegetation removal. Tree removal will be limited to the project footprint and a cutting permit will be obtained prior to the start of any site clearing. Clearing and removal of trees will be restricted to the minimum areas needed for the site requirements and will not be outside the permitted limits. Limits of clearing will be shown on all drawings “Issued for Construction”.

Disposal of cleared timber and slash will be in compliance with the *Forest Fire Regulations, Environmental Code of Practice for Open Burning, and the Permit to Burn*.

Grubbing and Disposal of Related Debris

The principal concerns associated with grubbing are the potential effects of erosion on water quality and freshwater ecosystems. All grubbing and disposal of related debris near watercourses will adhere to relevant regulatory requirements, including permits from the Department of Environment and the formal “Letters of Advice” and Authorizations for Works and Undertakings Affecting Fish Habitat from the Department of Fisheries and Oceans. Grubbing activities shall be minimized where possible and limits of stripping shall be placed on all drawings “Issued for Construction”.

Measures will be implemented to minimize and control runoff of sediment-laden water during grubbing, and the re-spreading of the grubbed material. Erosion control measures will be implemented in areas prone to soil loss.

Grubbed materials will be stockpiled for use in other areas of the project. Areas used for stockpiling will not be adjacent to any water bodies.

Filling, Excavation, Embankments, and Grading

Excavation, embankment, and grading will only be completed upon conclusion of grubbing and stripping. Where engineering requirements do not require grubbing and stripping, filling shall occur without any disturbance to the vegetation or upper soil horizons. Excavation, embankment, and grading shall be done in a manner which ensures that erosion and sedimentation will not impact watercourses in the area.

5.1 Potential Source of Pollutants during Construction

The potential sources of pollutants are generally those associated with land development and construction. Adherence to permit conditions and application of sound construction practices will protect against the release of pollutants into the surrounding environment.

The majority of effects from construction will be related to dust, silt and sediment created through the earth excavation process. Strict monitoring and sound construction practices will control activities to minimize risks associated with these activities as well as the following: construction debris; release of fuel, lubricant and/or hydraulic fluid; airborne emissions from construction equipment; and noise pollution from construction activities. Any storage or handling of petroleum products will be in accordance with the *Storage and Handling of Gasoline and Associated Products Regulations,* as listed under Section 111 of the Newfoundland and Labrador *Environmental Protection Act.*

5.2 Mitigation Measures during Construction

Mitigation measures to reduce the environmental concerns associated with construction activities include the following:

- Silt-laden runoff from construction areas will not be discharged directly into any water body or watercourse. Runoff will be diverted to settling basins to ensure silt is settled prior to release into the water. Silt fence construction of filter fabric will be used where necessary to preclude release of construction water directly into any body of water. The measures will include natural vegetation buffer, stone rip rap, wire mesh, settling ponds, and drainage channels;

- Efforts will be made to minimize dust generation during the construction phase of the project. Dust from construction activities will be controlled using the frequent application of water. Any application of calcium chloride will be in accordance with applicable guidelines from the Department of Transportation and Works;

- Solid waste disposal practices will be in compliance with the Newfoundland and Labrador *Environmental Protection Act* and associated regulations. Any construction debris generated during the course of the project will not be permitted to be disposed of on site, but will be contained in steel boxes on site for disposal at a municipal solid waste disposal facility. Where possible, construction waste will be recycled;

- All machinery will be inspected for leakage of lubricants or fuel and must be in good working order. Any accidental spills or leaks will be promptly contained, cleaned up, and reported to the 24-hour environmental emergencies report system (1-800-563-2444);

- All fuel handling and storage will be in compliance with the *Storage and Handling of Gasoline and Associated Products Regulations*. Also, to minimize the risk of fuel, lubricant or hydrocarbon release, construction equipment will not be permitted to be re-fuelled within 30 m of any water body. If fuel storage is necessary, it will be stored only in approved containers with all necessary permits in place. Basic petroleum spill clean-up equipment will be on-site and made accessible to all contractors and/or employees;

- Equipment exhaust systems will be maintained to provide emissions meeting the standards designed for the equipment by the manufacturer; and

- Exhaust systems will be maintained to ensure noise levels are within the design specifications of the machinery.

5.3 Potential Causes of Resource Conflict

Fish and Fish Habitat

The project site will be located approximately 300 m north of Churchill River (see Appendix A, Figure 1). Although a fish survey has not been conducted, Churchill River is likely to contain fish bearing habitat and is expected to be habitat for salmonids and various other fish species.

Construction activities will be conducted in such a manner as to prevent the release of sediment or other deleterious materials into water bodies. These measures have been discussed in previous sections.

Wildlife

The location of the proposed treatment facilities is adjacent to the Town of Happy Valley – Goose Bay, therefore; conflicts with wildlife are not anticipated. However, it is possible that some mammal species that could pose a threat to workers may be encountered;

specifically the Black bear. If a Black bear is encountered on site, appropriate procedures in accordance with the *Newfoundland and Labrador Wildlife Act*, RSNL c.W-8, Wildlife Regulations will be implemented to ensure the safety of workers. If necessary, the proponent will obtain a Permit to Control Nuisance Wildlife through the Provincial Department of Natural Resources.

Forestry

Construction activities will be such as to minimize the clearing of forested areas. Buffer zones will be established between the treatment facility and the natural environment and residential areas.

Adjacent Areas

Construction equipment will not be permitted to operate outside the construction zone, in order to prevent damage to non-work areas.

Human Activities

The sewage treatment system is near a residential area; however, the undertaking is not expected to impact everyday human activity given the secluded location of the site and the nature of the system. In addition, to reduce concerns with the accessibility of the site, it will be enclosed with chain link fencing to prevent unauthorized access.

6.0 OPERATIONS ACTIVITIES

The Happy Valley - Goose Bay wastewater treatment facility will operate year round. The proposed treatment system is scheduled to be in operation by January 2013. This technology makes use of an aerated lagoon system for wastewater treatment. The process begins by passing the untreated effluent through a screening and grit removal system to remove any debris and heavier sediment from the wastewater flow before it enters the lagoon. These separated solids will then be dewatered and stored in hoppers until it can be taken for landfilling. All solid waste generated at the site will be collected and disposed of regularly.

The remaining screened liquid separated from the solid waste will enter back into the wastewater stream where it will begin biological treatment by passing through the first of three lined lagoon cells. To reduce treatment time, a series of three ponds will be used rather than a single large one. After entering the first pond, the wastewater will receive oxygen through a number of static tube aerators. These aerators receive the oxygen from a central blower system located in the screening building that will force the air through a network of distribution tubing placed on the bottom of the lagoon. The wastewater from the first pond will then flow into the second pond and then gradually into the third pond. As the effluent passes through each successive pond, it will receive more oxygen to help improve the treatment.

The final stage in the process is to destroy the pathogenic bacteria that are present in the treated lagoon effluent so that it can be discharged to the environment. To accomplish this, the wastewater will pass through a UV disinfection system where UV radiation will destroy the bacteria instantly, allowing the effluent to be released into the Churchill River immediately.

Wet weather periods will cause an increase in the volume of infiltration into the sewage collection system. To reduce the impact, bypasses will be designed for both lift stations and the treatment system headworks to prevent from overwhelming these system components. No bypass will be required for the lagoon as it is designed to accommodate large variations in influent volume.

When operating properly, very few odours will be produced from the lagoon and UV disinfection unit due to the aerobic nature of the treatment. All other treatment processes will be contained to the headworks building. Therefore, odour production is not considered a concern. The nearest residential development is approximately 350 m from the site.

The system requires minimal operation and maintenance and can have an operational life of up to 50 years.

6.1 Potential Source of Pollutants during Operations

The operation of this system is designed to be environmentally friendly and is not expected to impact the surrounding environment. The site will be strictly monitored and sampled throughout operations to ensure that treated effluent discharged into the adjacent environment will meet applicable environmental regulations and guidelines (*Environmental Control Water and Sewerage Regulations,* as listed under Section 64 of the Newfoundland and Labrador *Water Resources Act*).

Sources of potential pollutants during operations include solid waste, dewatered solids, odours, sewage, dust, noise pollution and spills of chemicals or petroleum products.

6.2 Mitigation Measures during Operations

Operations will be conducted in a manner to protect public health and safety, minimize fire hazards, will not create a nuisance to adjacent areas, and will not contaminate ground or surface waters off-site. All mitigation measures for vehicle use and silt/sediment controls that were implemented during the construction phases will also apply during operation of the treatment facility. Mitigation measures for potential pollutants mentioned in the previous section are discussed below.

Solid Waste – All solid waste generated during operations of the facility will be collected and disposed of at an applicable landfill on a regular schedule;

Dewatered Solids – Dewatered solids will be removed from cells when deemed necessary and will be disposed of at the local landfill in accordance with the Newfoundland and Labrador *Environmental Protection Act* and other associated regulations;

Odours – The location of the treatment facility has been chosen based on prevailing winds moving away from residential areas. The closest residential area is approximately 350 m from the project site, however; very few odours will be produced from the lagoon and UV disinfection unit due to the aerobic nature of the treatment;

Sewage – Any wastewater produced at the treatment facility will be directed into the effluent stream and treated prior to discharge;

Nose Pollution – Limited noise pollution will be generated during operations; and

Storage and Handling of Chemicals – The transport and handling of any hazardous chemicals will be done in accordance with the *Transportation of*

Dangerous Goods Act. All persons involved will be trained as required under government regulations. Chemical cylinders will be stored inside in a dedicated area and access will be limited.

In addition, the following mitigation measures will be implemented during operation of the facilities to address potential impacts:

Site Access – Public access to the site will be controlled by perimeter fencing so that the general public does not have direct access to the facility unless accompanied by authorized staff members;

Hazardous Waste – Any hazardous waste received at the site shall be properly segregated, stored, and removed from the site on a regular basis by an approved licensed contractor;

Contingency Plans – Up-to-date contingency plans will be in place to effectively handle fire, odour, spills of petroleum products or chemicals, flooding, power outage, delivery of hazardous waste, or any other issue which could cause a disruption to proper facility operation. The treatment system will also provide protection in the event that there is an accidental spill of material into the wastewater collection system. In the existing system, if a contaminant were to get into the wastewater stream, it could not be intercepted and would end up being discharged directly, untreated, into the Churchill River. With the proposed treatment system, all wastewater from the Town will be collected and transported to the lagoons and once there will be evaluated for contaminants. The lagoons can be used to intercept and hold the wastewater until such time that any unusual parameters could be accommodated prior to discharge of the final effluent to the environment;

Power Outage - The treatment plant relies on electricity for the system that intercepts the wastewater and transports it to the plant site. In the event of a disaster that impedes the availability of electricity, the lift stations would not function without emergency power generation and switch mechanisms will be included in the design to accommodate emergency generators. They are designed to have emergency overflows in the event of power outages, extreme flow events, etc., so as not to overwhelm the pumps and other system components. The screening and grit removal processes similarly rely on electricity for operation and will also have a by-pass so that wastewater can discharge directly into the lagoon cells. The cells are also dependent upon electricity to operate the aeration blowers; however, periods of power outages will not damage the systems. They are also sized with a buffer capacity to be able to accommodate the wastewater for a longer period of time while waiting for treatment systems to be restored.

Dust Control Program – Roads shall be properly maintained and dust control programs implemented as required;

Fire Safety Program – Develop fire safety program in consultation with the local fire department and, where required, the Department of Natural Resources; and

Reporting Requirements – An annual report summarizing the operation of the site is required.

6.3 Potential Causes of Resource Conflict

Fish and Fish Habitat

The project site will be located approximately 300 m north of Churchill River (see Appendix A, Figure 1). Although a fish survey has not been conducted, Churchill River is likely to contain fish bearing habitat and is expected to be habitat for salmonids and various other fish species.

The treated effluent from the system which will discharge to an absorption trench will meet environmental regulations pertaining to the federal *Fisheries Act* and the Provincial Department of Environment and Conservation's *Guidelines for the Discharge of Municipal Wastewater*. The site will be strictly monitored and sampled throughout operations to ensure that treated effluents discharged into the adjacent environment will meet applicable environmental regulations and guidelines.

Wildlife

Operations of the sewage treatment system are not expected to cause any direct wildlife conflict.

Forestry

The existing tree line will remain in place to provide a buffer zone between the treatment facility and the neighbouring community.

Adjacent Areas

Effects on adjacent areas during operations are not anticipated, as maintenance equipment will be confined to the areas of the site and will not be permitted in adjacent areas in order to preserve their natural state.

Human Activities

The sewage treatment system is over 450 m from the nearest residential area; however, the undertaking is not expected to impact everyday human activity given the secluded location of the site and the nature of the system. In addition, to reduce concerns with the

accessibility of the site, it will be enclosed with chain link fencing to prevent unauthorized access.

7.0 OCCUPATIONS

7.1 Construction Phase

It is expected that approximately eighty-nine (89) people will be employed during the construction phase of the project. Table 7-1 displays the approximate anticipated number of positions during construction and their associated National Occupational Classification (NOC) codes.

Table 7-1: Anticipated Occupations during Construction Phase

National Occupational Classification Group Title Code	Potential Positions (# Anticipated)	Description
0711	1	Construction Manager
7611	10	Construction Trades Helpers & Laborers
2154	4	Land Surveyors
7217	20	Contractors & Supervisors, Heavy Construction Equipment Crews
7219	10	Contractors and Supervisors, Other Construction Trades, Installers, Repairs and Services
2264	4	Construction Inspectors
7241	2	Electricians
7412	8	Heavy Equipment Operators
7271	2	Carpenters
7281	2	Bricklayers
7411	15	Truck Drivers
2152	1	Landscape Architects
7612	10	Other Trades Helpers and Laborers

7.2 Operational Phase

The system requires regular operation and maintenance. The Town of Happy Valley - Goose Bay will be responsible for the system once it has been commissioned. It is expected that the current town forces will handle daily operations and any maintenance at the site. Table 7-2 displays the approximate anticipated number of positions during operations and their associated National Occupational Classification (NOC) codes.

Table 7-2: Anticipated Occupations during Operations Phase

National Occupational Classification Group Title Code	Potential Positions (# Anticipated)	Description
0912	1	Utilities Manager

8.0 APPROVAL REQUIRED FOR THE UNDERTAKING

The permits, approvals, and authorizations that may be necessary for the undertaking include (but are not limited to) those listed in Table 8-1.

Table 8-1: Potential Permits, Approvals, and Authorizations Required for the Project

Permit, Approval or Authorization	Issuing Agency
▪ Approval for the Undertaking	Minister of Environment and Conservation
▪ Construction (site drainage), Certificate of Approval ▪ Certificate of Approval – Sewage treatment Plant ▪ Certificate of Approval – Water and Sewer Distribution System ▪ Culvert Installation, Certificate of Approval	Water Resources Division, Department of Environment and Conservation
▪ Crown Lands Applications/Licenses ▪ Develop Land – Protected Road Zoning and Development Control Regulations – Preliminary Application to Develop Land ▪ Electrical Permit	Customer Services, Department of Government Services
▪ Permit to Cut Crown Timber ▪ Operating Permit/Fire Season ▪ Permit to Control Nuisance Wildlife	Newfoundland Forest Service, Department of Department of Natural Resources
▪ Approval under the National Building Code of Canada ▪ Approval under the National Fire Code of Canada	Engineering Services, Department of Government Services
▪ Building Accessibility Design Registration ▪ Fuel Storage and Handling – Temporary Storage ▪ Approval to dispose of solids in local landfill	Operations Division, Department of Government Services

9.0 PROJECT RELATED DOCUMENTS

Please refer to the following documents for further information:

- Appendix A – Figures;
- Appendix B – Land use zoning maps for the Town of Happy Valley – Goose Bay; and
- Appendix C – Table of Contents for the "*Study of Sewage Treatment and Disposal Options, Town of Goose Bay, Final Report*", Blake Engineering Limited/EDM Consultants Limited, August 2001.

10.0 PROJECT SCHEDULE

Construction of this project is scheduled to begin in June 2011 with a completion date of December 2012, upon which time operations activities will commence. In order to meet this proposed scheduling, the requirements of the *Environmental Assessment Act* must be completed as soon as possible.

11.0 FUNDING

The estimated project capital cost for the design and establishment of the Happy Valley – Goose Bay Wastewater Treatment System is $16.6 M. The annual cost of operations is estimated at approximately $85,000/year.

Funding is being obtained through the Canadian Strategic Infrastructure Fund (CSIF), a federal funding initiative under Infrastructure Canada. With successful award of funding for 33% of the project costs under this fund, the Province and the Town would contribute the balance of the project costs. This will allow the Town to address their issues pertaining to wastewater management and institute an appropriate solution without undue delay.

Elaine McArthur, P. Eng.
BAE-Newplan Group Limited

22 Oct. 2010
Date

APPENDIX A

Figures

APPENDIX B

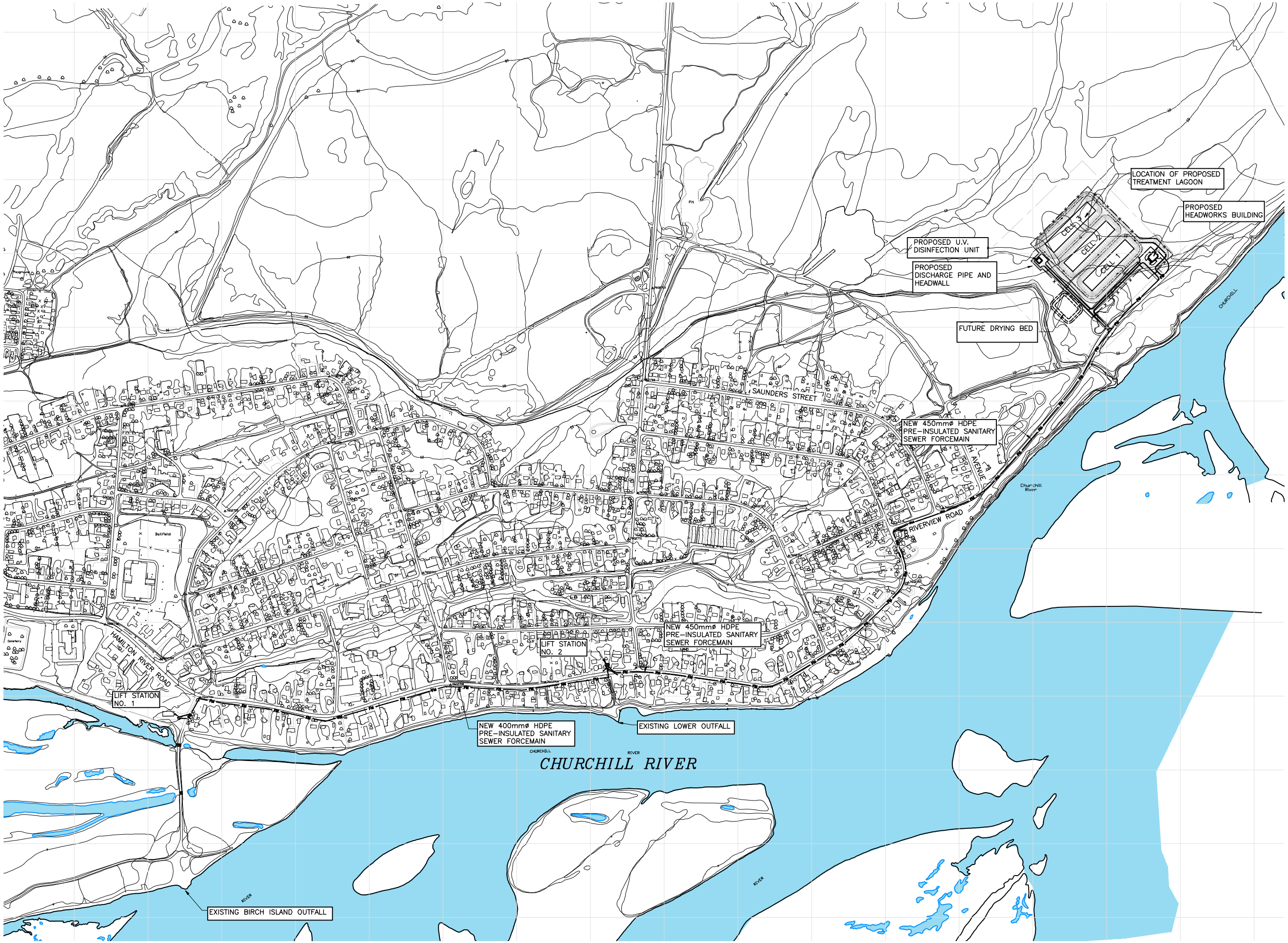
Land Use Zoning Maps from the Town of Happy Valley – Goose Bay

APPENDIX C

Table of Contents: "*Study of Sewage Treatment and Disposal Options, Town of Goose Bay, Final Report*", Blake Engineering Limited/EDM Consultants Limited, August 2001

APPENDIX A

Figures



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LEGEND

SYMBOL	DESCRIPTION
	MONUMENT
	NEW GATE VALVE
	EXISTING GATE VALVE
	NEW REDUCER
	EXISTING REDUCER
	NEW COUPLER
	EXISTING COUPLER
	NEW FIRE HYDRANT
	EXISTING FIRE HYDRANT
	POLE
	CURB STOP
	STUB WITH END CAP
	CORPORATION STOP
	NEW CULVERT
	EXISTING CULVERT
	WATERMAIN TEE
	WATERMAIN BEND
	SLOPED EMBANKMENT
	DITCH
	ROAD SIGNS
	EXISTING WATERMAIN
	NEW WATERMAIN
x — x — x	FENCE
*	NEW MARKER POST

REV.	REVISIONS	REVISED BY	APP. BY	DATE
A	ISSUED FOR ENVIRONMENTAL REGISTRATION			10/08/11

NORTH

PROFESSIONAL STAMP

PERMIT HOLDER STAMP

BAE • NEWPLAN GROUP

BAE • NEWPLAN GROUP LIMITED
1133 TOPSAIL RD., MOUNT PEARL, NL, A1N 5G2
TEL: (709) 368-0118, FAX: 368-3541

CLIENT

TOWN OF
HAPPY VALLEY – GOOSE BAY
NEWFOUNDLAND & LABRADOR

PROJECT

WASTEWATER
TREATMENT SYSTEM

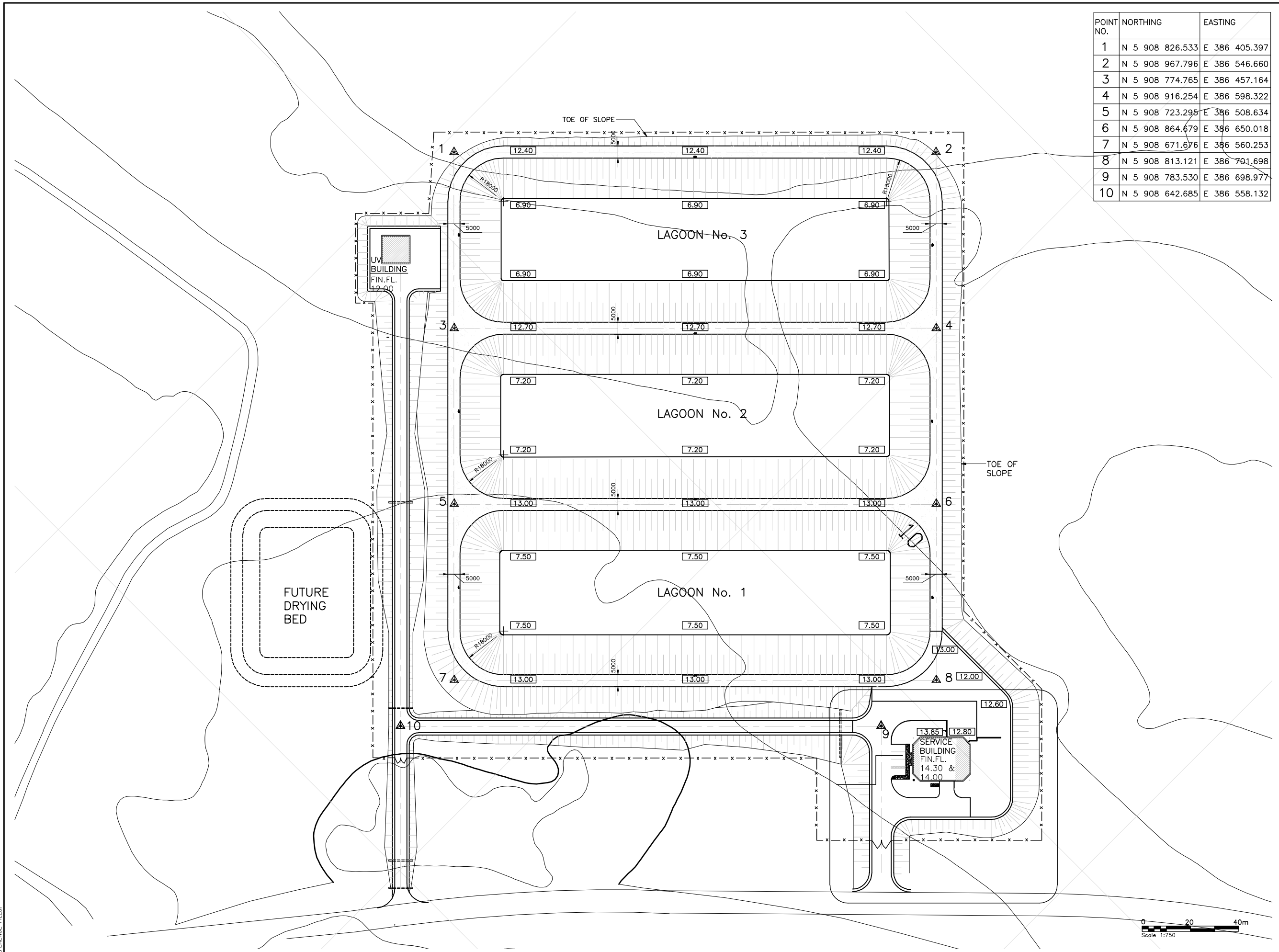
TITLE

SITE PLAN
FIGURE 1

DESIGNED BY	E.M.	CHECKED BY	E.M.	DATE	10/08/11
DRAWN BY	J.J.B.	APPROVED BY	E.M.	DATE	10/08/11
SCALE	AS SHOWN	BNG PROJ. No.	723426		
		CLIENT PROJ. No.			

DRAWING No. PR1 – 01 – CV – XX – 001 REV. A

POINT NO.	NORTHING	EASTING
1	N 5 908 826.533	E 386 405.397
2	N 5 908 967.796	E 386 546.660
3	N 5 908 774.765	E 386 457.164
4	N 5 908 916.254	E 386 598.322
5	N 5 908 723.295	E 386 508.634
6	N 5 908 864.679	E 386 650.018
7	N 5 908 671.676	E 386 560.253
8	N 5 908 813.121	E 386 701.698
9	N 5 908 783.530	E 386 698.977
10	N 5 908 642.685	E 386 558.132



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REV.	REVISIONS	REVISED BY	APP. BY	DATE
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TOWN OF
HAPPY VALLEY – GOOSE BAY
NEWFOUNDLAND & LABRADOR

PROJECT

PROPOSED
SEWAGE TREATMENT
SYSTEM

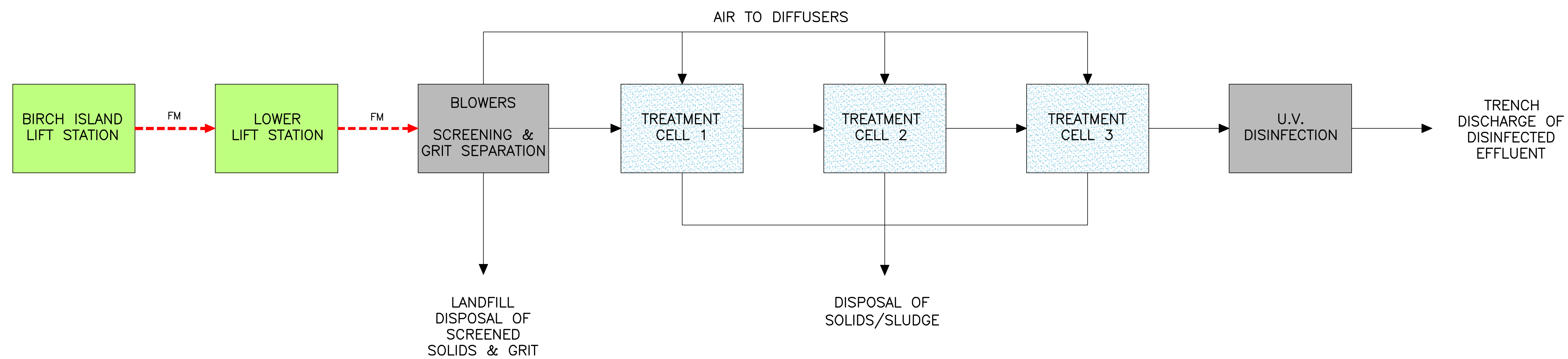
TITLE

SITE PLAN
FIGURE 2

DESIGNED BY E.M.	CHECKED BY E.M.	DATE 10/08/11
DRAWN BY J.J.B.	APPROVED BY E.M.	DATE 10/08/11
SCALE AS SHOWN	BNG PROJ. No. 723426	
	CLIENT PROJ. No.	

DRAWING No. PR1-02-CV-XX-002 REV. A

File name: 723426PR102CVXX002.DWG Date: 2010/10/22 @ 13:19
REFERENCE FILES:



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REV.	REVISIONS	REVISED BY	APP. BY	DATE
A	ISSUED FOR ENVIRONMENTAL REGISTRATION	E.M.	E.M.	10/10/20

NORTH

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CLIENT
TOWN OF
HAPPY VALLEY – GOOSE BAY
NEWFOUNDLAND & LABRADOR

PROJECT
PROPOSED
SEWAGE TREATMENT
SYSTEM

TITLE
SYSTEM SCHEMATIC
FIGURE 3

DESIGNED BY	E.M.	CHECKED BY	E.M.	DATE	10/10/20
DRAWN BY	J.J.B.	APPROVED BY	E.M.	DATE	10/10/20
SCALE	AS SHOWN	BNG PROJ. No.	723426		
		CLIENT PROJ. No.			
DRAWING No.	PR1 – 02 –CV–XX–003	REV.	A		

REFERENCE FILES:

APPENDIX B

Land Use Zoning Maps from the Town of Happy Valley – Goose Bay

Town of HAPPY VALLEY-GOOSE BAY

Development Regulations 2008-2018
Land Use Zoning - Map 1

COM	Commercial
AD	Airport and Defence
IND	Industrial
RU	Rural
SR	Seasonal Residential
A	Agriculture
ROS	Recreational Open Space
EP	Environmental Protection
EP-MU	Environmental Protection-Management Unit

- Potential Water Supply Protection Area (PWSPA) (1.0km Buffer)
- Solid Waste Disposal Buffer (1.6km Buffer)
- Well-Field Protection Area (WFPA)
- Municipal and Planning Area Boundary
- Planning Area Boundary
- NEF 30 Noise Exposure Forecast(NEF) Contours

Grid North

Scale Bar

Scale 1:50,000

Dated at Happy Valley-Goose Bay, Newfoundland and Labrador

This ____ day of _____, 2008

_____
Leo Abbass, Mayor

_____
Valerie Sheppard, Town Clerk

I certify that this Development Regulations for the Town of Happy Valley-Goose Bay has been prepared in accordance with the requirements of the Urban and Rural Planning Act.

_____
Arvo McMillan, MCIP

Date: Mar/12/2008

Happy Valley-Goose Bay Municipal and Planning Area Boundary

North West River Road

Gosling Lake

Melville Lake

Goose Bay Narrows

Terrington Basin

Mud Lake

CHURCHILL RIVER

Trans Labrador Highway

PWSPA

WFPA

See Map 2

RU AD SR EP EP-MU A ROS COM IND

Town of HAPPY VALLEY-GOOSE BAY

Development Regulations 2008-2018
Land Use Zoning Map 2

RLD	Residential Low Density
RS	Residential Special
RMD	Residential Medium Density
RMH	Residential Mobile Home
MD	Mixed Development
COM	Commercial
PUB	Public
AD	Airport and Defence
IC	Industrial Commercial
IC-NS	Industrial Commercial-North Side
IND	Industrial
RU	Rural
ROS	Recreational Open Space
EP	Environmental Protection
EP-MU	Environmental Protection-Management Unit
PU	Public Utility

- - - - Municipal and Planning Area Boundary

Grid North

Scale Bar:
0 500 1000 meters
1:7,500

Dated at Happy Valley - Goose Bay, Newfoundland and Labrador

This _____ day of _____, 2008

_____
Leo Abbass, Mayor

_____
Valerie Sheppard, Town Clerk

I certify that this Development Regulations for the Town of Happy Valley-Goose Bay has been prepared in accordance with the requirements of the Urban and Rural Planning Act.

_____
Arvo McMillan, MCIP

APPENDIX C

Table of Contents: "*Study of Sewage Treatment and Disposal Options, Town of Goose Bay, Final Report*", Blake Engineering Limited/EDM Consultants Limited, August 2001

Aerated Lagoon

Sequential Batch Reactor

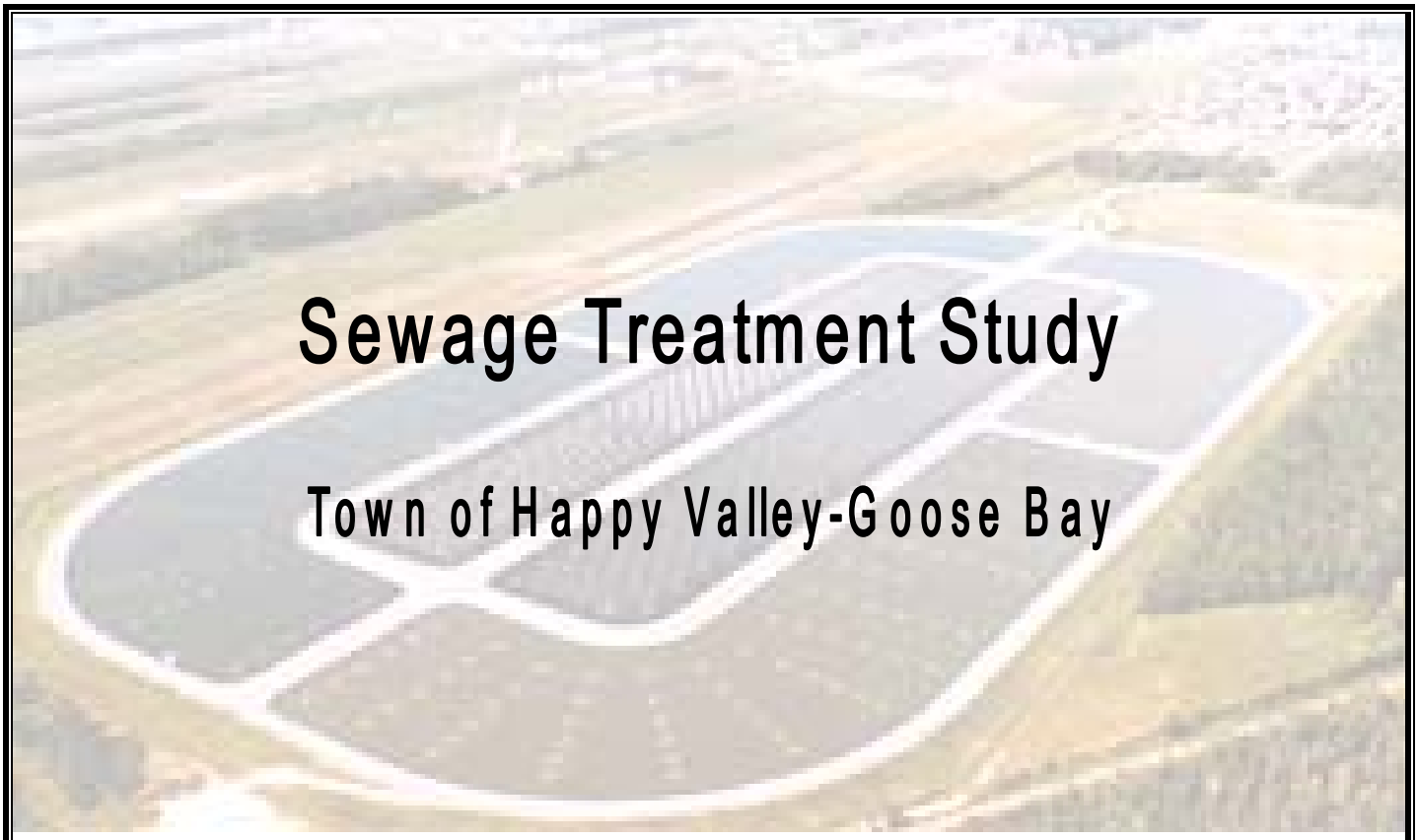
Study of Sewage Treatment And Disposal Options

Town of Happy Valley-Goose Bay

FINAL REPORT

"Snowfluent"

Activated Sludge System



Sewage Treatment Study

Town of Happy Valley-Goose Bay

Presented To: **The Town of Happy Valley-Goose Bay**
P.O. Box 40, Station B
Happy Valley-Goose Bay, Labrador
A0P 1E0

Presented By: **Blake Engineering Limited/EDM Consultants Limited**
15 King Crescent, P.O. Box 1014
Happy Valley-Goose Bay, Labrador
A0P 1C0

Date: **August 2001**

Blake

EDM CONSULTANTS LIMITED
Architects and Engineers

TABLE OF CONTENTS

Appendices:

Appendix "A" – Goose Bay Sewage Lagoon
- Schedule of Quantities & Prices
- Annual Operating Costs

Appendix "B" – Wastewater Design Parameters
- Wastewater Design Parameters Chart
- Water Production and Consumption
- Total Suspended Solids (TSS) Chart
- Total Kjeldahl Nitrogen (TKN) Chart
- Biochemical Oxygen Demand (BOD_5) Chart

Appendix "C" – Environmental Control Water and Sewage Regulations

Appendix "D" – Design Report for Aerated Lagoons

Appendix "E" – Northern Watertek Corporation – Snowfluent Proposal

Appendix "F" – Minutes of Meetings
- Town Council meeting
- Public Consultation Session

LIST OF DRAWINGS

Description	Drawing #
Location Plan	C-01
Proposed Aerated Lagoon Layout	C-02
Lagoon Sections	C-03
Pre-Treatment Fine Screening System	C-04
Proposed Outfall Pier	C-05
Process Flow Diagram	M-01
Proposed Aerated Lagoon - Aeration Piping	M-02