ENVIRONMENTAL ASSESSMENT REGISTRATION

GRAND FALLS – WINDSOR
WASTEWATER TREATMENT FACILITY EXPANSION

October 2018

Grand Falls·Windsor
| perfectly centered |
Prepared for:

SNC·LAVALIN
Building what matters
Prepared by:

ENVIRONMENTAL ASSESSMENT REGISTRATION

GRAND FALLS – WINDSOR
WASTEWATER TREATMENT FACILITY EXPANSION

Prepared for:
Department of Environment and Climate Change
Environmental Assessment Division
P.O. Box 8700
St. John's, NL
A1B 4J6

Prepared by:
SNC – Lavalin Inc.
1090 Topsail Road
Mount Pearl, NL
A1N 5E7

October 2018

Project No.: 656190

Title: ENVIRONMENTAL ASSESSMENT REGISTRATION,
GRAND FALLS – WINDSOR WASTEWATER TREATMENT FACILITY EXPANSION

Client: TOWN OF GRAND FALLS – WINDSOR

C01	2018-10-01	Environmental Registration	CB		A. E.
Rev.	Date yyyy/mm/dd	Description	Prepared By Cally Baxter	Reviewed By Michael Smith	Approved By Ana Esquivel

656190-0001-T-4E-REP-000-0001_C01

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

1.0 NAME OF THE UNDERTAKING

Grand Falls - Windsor Wastewater Treatment Facility Expansion

2.0 PROPONENT

2.1 Name of Corporate Body

Town of Grand Falls – Windsor

2.2 Address

Town of Grand Falls - Windsor
5 High Street
P.O. Box 439
Grand Falls - Windsor, NL, Canada, A2A 2J8

2.3 Applicants

Mr. Nelson Chatman, P.Eng.
Director of Engineering Works
Town of Grand Falls – Windsor
5 High Street
P.O. Box 439
Grand Falls - Windsor, NL, Canada, A2A 2J8
Telephone: (709) 489-0427
Fax: (709) 489 - 0465
Email: nelson.chatman@townofgfw.com

2.4 Principal Contact Person for Purposes of Environmental Registration

Ms. Ana Esquivel, M.A.Sc., P. Eng.
SNC-Lavalin Inc.
1090 Topsail Road
Mount Pearl, NL, Canada, A1N 5E7
Telephone: (709) 368-0118
Fax: (709) 368-0158
Email: ana.esquivel@snclavalin.com

3.0 THE UNDERTAKING

3.1 Name of the Undertaking

Town of Grand Falls - Windsor Wastewater Treatment Facility Expansion

3.2 Purpose / Rationale / Need for the Undertaking

The proponent is proposing an expansion of the Town of Grand Falls – Windsor's existing wastewater treatment facility (WWTF). The purpose of the project is to provide new infrastructure to address both future increase in wastewater flows requiring treatment due to population growth in the Town of Grand Falls – Windsor (the Town) as well as to improve the effluent quality in accordance with the applicable wastewater effluent regulations (i.e. the Government of Canada *Wastewater Systems Effluent Regulations* and Newfoundland and Labrador Regulation 65/03). The expansion of the facility will include the addition of a wastewater aerated pond system that would incorporate two (2) to three (3) new aerated cells, an ultraviolet (UV) disinfection treatment system and a sludge management system. The expansion will increase the hydraulic and treatment capacity of the current system.

The Town's present wastewater treatment facility has been operational since 1998 and is the only WWTF for the Town. Since the WWTF was commissioned in 1998, there has been residential and commercial growth in the Town, putting pressure on the existing infrastructure to accommodate the wastewater that is generated. The proponent is proposing the undertaking to provide infrastructure to meet the present and future demand for wastewater treatment in the Town of Grand Falls - Windsor.

In addition to increasing the capacity of the WWTF system, the proposed expansion of the WWTF will allow the Town to produce effluent that meets the applicable wastewater regulation requirements. The effluent that is treated by the WWTF is presently released into the Exploits River, which runs adjacent to the Town. The Exploits River is a cherished landmark of the Town that is enjoyed by tourists, recreational fisher's and local residents. The river is also an important passage for Atlantic salmon (*Salmo salar*) to migrate inland to spawning grounds (DFO, 2017). To date, the existing treatment facility does not consistently meet the applicable wastewater regulations.

4.0 DESCRIPTION OF THE UNDERTAKING

4.1 Geographic Location

The proposed location of the WWTF expansion is adjacent to the existing WWTF, which is in the southeastern portion of Town on a property adjacent to the Exploits River. Having the expansion located adjacently to the existing facility minimizes the amount of new infrastructure needed to transport the wastewater from the Town to the Facility. In addition it should be noted that this land area was identified as part of the original concept and design in the 1990's in anticipation of this future expansion.

The location of the property is illustrated in Figure 1 of Appendix A.

The project property is bordered by Scott Avenue to the north, the Exploits Valley Cross Country Ski Club to the northeast and the Exploits River to the southeast. To the southwest of the property is Gorge Park, a municipal property that is owned by the Town and maintained by the Environment Resources Management Association (ERMA). The proposed expansion of the treatment facility will require a land area of approximately 110,500 m^2.

4.1.1 Site Considerations

This location was chosen for several reasons:

- This project site is where the existing WWTF is located, and was identified as part of the original WWTF design concept in anticipation of this future expansion;
- The proponent owns the project site property;
- There is available land for development on the project site;
- The proposed site will use the existing infrastructure in place;
- The land is properly zoned for a WWTF;
- Site access and security is already established; and
- Expanding the existing facility is cost effective.

As the existing infrastructure and available property owned by the Town met the requirements for the proposed undertaking, there were no alternatives considered for the location of the expansion. Additionally, the concept and preliminary design for the expansion were completed in the mid 1990's, however due to a lack of funding at the time, the project was not undertaken. The land use zoning map and regulations for the Town are enclosed in Appendix B.

4.2 Physical Features

4.2.1 Existing Infrastructure

There are presently two (2) buildings located on the property. The main building is the service building for the existing WWTF and has been operational since 1998. It is presently serviced with utilities including electricity and sewer. The site has a drilled well that provides water to the onsite buildings. The second building is a storage shed.

The existing facility consists of headworks and one (1) aerated cell. The treated effluent is released by an outfall into the Exploits River. The outfall is located approximately 250 m to the east of the existing sewage lagoon.

There is a main driveway for access to the existing facility located off of Scott Avenue. A secondary access driveway is located north on Scott Avenue, which will serve as the main access roadway during construction of the proposed infrastructure.

4.2.2 Proposed Infrastructure

The proposed undertaking is an expansion to the existing WWTF to improve the effluent quality and increase the capacity for wastewater treatment. The proposed site is undeveloped land that is owned by the Town. The available land area will be able to accommodate the expansion of the WWTF.

The design of the infrastructure will meet all applicable legislation and guidelines, as well as account for future population growth in the Town. Population statistics collected by Statistics Canada will be used as a basis for determining design population. A demographic projection for the next twenty-five (25) years will be calculated using past and present census data, Town zoning information and through consultation with Town staff. In addition, a flow monitoring program is being carried out to record the real time flow information and identify areas of high inflow and infiltration. All of this information will be used in the design of the expansion which will allow for the WWTF to accommodate the projected growth.

The proponent is currently using an aerated cell system and is proposing the addition of several major features including a sludge management system, two (2) or three (3) new aerated cells which will be operated in series with the existing cell and an UV disinfection system. Perimeter fencing to control access to the facility will also be put in place as part of the expansion. All components of the expansion will be constructed and operate in compliance with requirements for wastewater treatment facilities. The existing and proposed plans for the site are illustrated in Figure 2 Appendix A.

A brief description of each major component is provided below:

Sludge Management System: A sludge management system will be constructed to manage the sludge periodically removed from the aerated cells (existing and future). The system will be passive and will dewater the sludge to a solids content that allows for further disposal at an appropriate waste management facility. While the specific facility will be identified during the detailed design, at this preliminary design stage, the Central Newfoundland Waste Management (CNWM) Norris Point Site is being considered as the preferred facility. The sludge removal frequency (typically every 10 years or more) from the aerated cells will be dictated by the sludge accumulation rate and the change in aeration cell volume which has an impact on the treatment efficiency. The exact nature of the system will be confirmed during the detailed design, but at this predesign stage a geotube (specialized geotextile container) system is being considered. A conditioning agent (polymer and/or lime) may be added to the sludge to aid in the dewatering.

Aerated Cells: Two (2) or three (3) additional aerated cells will be added to the facility. The final number and configuration of the cells will be finalized during the detailed design stage. It should be noted that the number of cells will not affect the overall area covered by aerated cells. The aeration applied to the cells fulfills the function of mixing and diffusing oxygen (O_2) into the wastewater. The O_2 addition allows for the removal of biodegradable organic matter by microorganisms (bioconversion) within the treatment

cells. In the proposed system, aeration will not be applied uniformly over all the cells. The first pond (existing cell) will have the most intense aeration to fulfill the bioconversion with the subsequent cells receiving progressively reduced aeration to allow for settling of any solids. The aeration cells design will allow for the treated effluent to meet the requirements of the applicable regulations.

UV Disinfection System: There will be an UV disinfection building constructed at the end of the aerated cell series to disinfect the effluent before it is released into the natural environment.

The effluent will be exposed to UV light at specific wavelength(s) which damages the nucleic acids in the DNA of pathogenic microorganisms in the effluent. This prevents the pathogenic organisms from reproducing and renders them harmless to other organisms and the natural environment without the use of disinfection chemicals.

Drainage and Storm Water Management: All storm water for the project site will be managed through a series of ditches to provide adequate site drainage.

4.2.3 Effluent Discharge

The treated wastewater effluent will be discharged back into the environment via a gravity sewer that will directly flow from the wastewater treatment system into the Exploits River. There are two proposed locations (i.e. preferred and secondary) for an effluent discharge outfall. Only one discharge point will be used and the location of this outfall will be identified during the detailed design phase of the project.

Preferred option: Use of the Existing Outfall

The preferred option for the project is the use of the existing outfall that is located approximately 220 m from the east end of existing aerated cell. The existing outfall consists of a 1200 mm concrete pressure pipe that extends approximately 10 m into the Exploits River. The use of the existing outfall will not require any modifications to the outfall infrastructure.

Secondary Option: New Outfall

If the results of the geotechnical investigation that is to be carried out during the fall of 2018, reveal the cost of earthworks needed to achieve the hydraulic grades for gravity flow to the existing outfall are too great, then the secondary option of a new outfall will be used. This option will require construction of a new outfall into the Exploits River at a location of approximately 250 m downstream of the existing outfall at the eastern corner of the last aerated cell. This may require working in the river. In the event that this is necessary, construction of the new outfall infrastructure will follow best management practices and guidelines to reduce impacts to watercourses and fisheries. The existing outfall would be abandoned in this option.

A DFO self-assessment for projects near water will be conducted to determine if a formal DFO review will be required.

4.2.4 Physical and Biological Environment

The following descriptions are of potential physical and biological environmental effects as a result of the project:

Setting: The property for the proposed expansion is located within the Northcentral Subregion of the Central Newfoundland Forest Ecoregion. This Ecoregion experiences the most continental climate in Newfoundland, with the highest summer temperatures and the lowest winter temperatures (Government of Newfoundland and Labrador, 2018).

Topography: The property is located near the Exploits River. The land gradually slopes east towards the river. The land for the proposed expansion is predominantly covered in trees and herbaceous vegetation. The Central Newfoundland Forest Ecoregion is characterized by rolling to undulating topography under 200 m.

Vegetation: This Ecoregion is characterized by its high summer temperature, low annual rainfall and high forest fire frequency, which in turn impacts the vegetation that is able to grow in this region. The Northcentral subregion is typically dominated by dense black spruce forests and aspen stands. *Kalmia angustifolia,* a dwarf shrub, is also commonly found across the landscape in areas with acidic soil conditions.

Forestry: The property is located within Zone 5 of the Newfoundland and Labrador Forest Management Zones and Districts. Based on available information, the *Crown Zone Five-Year Forest Operating Plan (2016-20)* does not have any plans for forestry in areas adjacent to the property or within the Town (Department of Fisheries and Land Resources NL, 2017).

Soil: The soils within the region are generally considered sandy loam to loam. Soils in the region tend to have low moisture and organic content. They are typically lighter in color and have a coarse texture. As a result of frequent forest fires in this region, the soils are generally acidic (Government of Newfoundland and Labrador, 2018). A geotechnical investigation will be carried out during the fall of 2018 to determine the subsurface conditions on the portion of the Site where construction is going to take place. This information will be factored into the final design. However, the geotechnical investigation will not be completed prior to the submission of this EA Registration.

Hydrology: The Exploits River runs from the west to the east, out to the Atlantic Ocean. The property is located on the northern bank of the river where the Exploits River is approximately 18 m above sea level (ASL). The property is approximately 28 m ASL, with a steep embankment on the edge of the Exploits River. Precipitation from the property drains into the Exploits River.

Geology: The property is located on the Wigwam Formation, a sedimentary formation, which is composed of mainly green to red, cross bedded, micaceous sandstone, siltstone and conglomerate (Rogers and van Staal, 2005).

Wildlife: Mammals that are likely to be present at or around the property include moose, snowshoe hare, artic hare, fox, muskrat, otter, mink, black bear, beaver, lynx, coyotes and other small mammals (Government of Newfoundland and Labrador, 2018). There are many types of songbirds and predatory birds in this area. In addition, the Exploits River is well known for its population of Atlantic salmon and other fish species.

Species of Concern: There are several species of concern that may potentially be present at or in the immediate area around the site. Information regarding species of concern was collected from the Species at Risk page operated by the Newfoundland and Labrador Department of Fisheries and Land Resources (2018). According to the NL *Endangered Species Act*, the *Canadian Species at Risk Act* and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) the following species are of concern:

- American eel (*Anguilla rostrata*);
- Gray-cheeked Thrush (*Catharus minimus miminus*);
- Olive-sided Flycatcher (*Contopus cooperi*);
- Red Crossbill (*Loxia curvirostra percna*); and
- Rusty Blackbird (*Euphagus carolinus*).

Protected Areas: There are no Provincial protected areas or Federal parks/reserves on or near the property.

4.3 Construction Phase

Construction of the sewage treatment facility expansion is scheduled to begin during the Spring of 2019 and is anticipated to be fully commissioned by years end 2020. Construction of the expansion will involve several activities including modest removal of vegetation, grubbing and earthworks. The existing WWTF will continue to operate while construction is ongoing.

4.3.1 Construction Activities

The following high level activities are required for site preparation and construction of the new infrastructure:

- Site clearing and grubbing;
- Site earthworks;
- Construction of onsite infrastructure;
- Installation of perimeter fencing (as required);
- Storm water management;
- Erosion and sediment management; and
- Reinstatement.

4.3.2 Environmental Impacts during Construction

During the construction of the project site, all efforts will be made to conserve the natural environment. The proponent is committed to keeping environmental impacts to a

minimum. Where possible, vegetation will be maintained to provide natural buffer zones and any exposed slopes will be stabilized with natural vegetation or an engineered alternative. All construction activities will implement mitigation measures as per Section 4.3.4 to minimize risk and potential environmental impacts. Potential environmental impacts that have been identified include:

- Removal of vegetation;
- Disruption of wildlife;
- Removal of habitat;
- Silt and sediment runoff;
- Generation of airborne particulate matter;
- Smoke from brush burning (if applicable);
- Release of chemicals (fuel, lubricant's, hydraulic fluid);
- Airborne emissions from machinery;
- Noise; and
- Vibration.

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 in watercourses. All vegetation clearing and associated activities will adhere to all applicable acts, regulations, and permits. Mitigation measures will be implemented to reduce the potential effects of vegetation removal. Tree removal will be limited 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. 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* in the event that burning is deemed as acceptable.

Grubbing and Disposal of Related Debris: The primary concern associated with grubbing activities is the potential for erosion of surface materials and the subsequent impact on water quality and freshwater ecosystems. All grubbing and disposal of related debris near watercourses will adhere to relevant regulatory requirements. Grubbing activities shall be minimized where possible. 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 and exposed overburden. Grubbed materials will be stockpiled for use in areas of the site that are not adjacent to any water bodies.

Earthworks: Excavation, filling and grading will only be completed upon conclusion of grubbing and stripping. Where engineering requirements do not require grubbing, filling

shall occur without any disturbance to the vegetation or upper soil horizons. Earthworks shall be carried out in a manner which ensures that runoff and erosion do not impact watercourses in the area.

4.3.3 Potential Source of Pollutants during Construction

The potential sources of pollutants are generally those associated with land disturbance 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 earthworks process. Strict monitoring and sound construction practices will be used to control activities and 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.*

4.3.4 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 either the existing WWTF or to an engineered sedimentation prevention measure to ensure silt is settled or removed from the run-off prior to release into the Exploits River. The measures may include but are not limited to: natural vegetation buffer, stone rip rap, wire mesh, settling ponds, the use of filter fabric 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 industry accepted dust control measures. Any application of calcium chloride, to prevent ice formation, 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 held in appropriate containers on site for disposal at the CNWM Norris Point 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*. 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 kits 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.

4.3.5 Potential Causes of Resource Conflict during Construction

The following are potential causes of resource conflict that are anticipated for the construction phase of this undertaking as well as mitigation measure:

Adjacent Areas: Construction equipment will not be permitted to operate outside of the construction zone, in order to prevent congestion of local vehicular traffic and damage to non-work areas. Following these practices, no conflicts are expected.

Air Quality: It is anticipated that the machinery used on site for construction will generate emissions. Measures will be taken to prevent pollution that includes dust and airborne particulate matter. All construction activities will be completed within proposed working hours. Machinery and equipment will only be used in good working condition to reduce noise and air emissions. Workers will be educated on the impacts that idling vehicles have on air quality. Following these practices, no conflicts are expected.

Fish and Fish Habitat: The project site will be located approximately 30 m north west of the Exploits River. Although a fish survey has not been conducted, the Exploits River is known to contain fish bearing habitat and is expected to be habitat for salmonids and various other fish species. Large efforts have been made to increase the population's numbers of Atlantic salmon in the Exploits River since the 1980's, with the ERMA playing a significant role in this effort. Man-made sluice have been installed to help guide the salmon safety upstream, to spawning grounds.

Construction activities will be conducted in a manner to mitigate the release of sediment or other deleterious materials into water bodies to ensure that fish habitat is not negatively impacted. In the event that work in and around water is needed for the construction of a new outfall infrastructure, best management practices and guidelines to reduce impacts to fish and fish habitat will be used.

Human Activities: The wastewater 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 fencing to prevent unauthorized access.

Land Disturbance: Construction equipment will not be permitted to operate outside the construction zone, in order to prevent damage to non-work areas. As land disturbance is necessary on the property for the construction of the project the measures discussed in Section 4.3.4 will be implemented. Following those practices, no conflict is expected.

Vegetation Removal: During construction, the removal of vegetation will be kept to the area of work and will be minimized wherever possible. Efforts will be made to establish buffer zones on the perimeter of the property.

Wildlife: The location of the proposed treatment facilities is adjacent to the Town of Grand Falls – Windsor, 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; more specifically black bears and coyotes. If a black bear or a coyote 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.

Water Resources: During construction activities, there is the potential for increased sedimentation in surface water. Temporary erosion and sediment control practices will be utilized to mitigate potential sediment laded runoff. Additionally, there is the potential for excavating activities to interact with groundwater. It is not anticipated that the work will interfere with the groundwater flow or quality; however extreme caution will be taken to mitigate potential sources of contamination coming into contact with the groundwater.

4.4 Operational Phase

The Grand Falls – Windsor WWTF will operate year round. The proposed expansion on the treatment system is scheduled to be operational by December 31, 2020. It is anticipated that the expansion will allow for the facility to operate and accommodate demand for the next 25 years. The WWTF is being designed to best meet the needs of the Town and to improve the quality of the treated effluent to meet legislative requirements. A detailed description of the proposed wastewater treatment process is provided in section 4.4.1.

4.4.1 Overview of the Wastewater Treatment Process

The process begins by passing the untreated effluent through a screening and grit removal system to remove larger debris and sand as well as heavier sediment from the wastewater flow before it enters the aerated cells. These separated solids are stored in hoppers until they can be disposed of at the CNWM Norris Point Facility. All solid waste

generated at the site will be collected and disposed of regularly. No liquid effluent is produced by these headwork processes. It should be noted that the expansion project will not impact the existing headworks.

Following this pre-treatment, the effluent will flow into the aerated cells that will be operated in series to achieve secondary biological treatment. Using multiple cells allows for improved aeration and sedimentation. Once in the aerated cells, the wastewater will receive oxygen through a number of static aerators. These aerators receive the oxygen from a central blower system located in the main building that will force the air through a network of distribution tubing placed on the bottom of the lagoon. As the effluent passes through each successive cell, it will receive less oxygen to allow for settling.

The final stage in the process is to inactivate the pathogenic microorganisms that are present in the treated effluent so that it can be discharged to the environment. To accomplish this, the wastewater will pass through a UV disinfection system. The effluent will then be released into the Exploits River via an outfall.

Wet weather periods will cause an increase in the volume of infiltration into the sewage collection system. No bypass of the aerated cells will be required as they are designed for hydraulic retention times of several days and can accommodate large variations in influent volume.

When operating properly, very few odours will be produced from the system due to the aerobic nature of the treatment. Therefore, odour production is not considered a concern. The nearest residential development is approximately 150 m from the site.

4.4.2 Environmental Impacts during Operation

The WWTF is not expected to have significant environmental impacts throughout the operational stage. The expansion will be designed to handle large influxes of wastewater and hydraulic shock. Operations will be carried out in a manner that minimizes risk and potential environmental impacts. The following are the potential environmental impacts that may occur during operation:

- Controlled/uncontrolled release of treated effluent (liquid or odour);
- Noise pollution from operational activities; and
- Uncontrolled release of untreated wastewater.

4.4.3 Potential Source of Pollutants during Operation

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 to ensure that potential sources of pollutants are properly managed to mitigate negative impacts to the natural environment.

Sources of potential pollutants during operations include:

- Solid waste;
- Dewatered solids;
- Odours;
- Untreated wastewater;
- Pathogenic microorganisms in wastewater;
- Noise pollution from operational activities; and
- Spills of chemicals or petroleum products.

4.4.4 Mitigation Measures during Operation

The site will be strictly monitored throughout operations to ensure that treated effluent discharged into the adjacent environment will meet applicable regulations and guidelines (*Environmental Control Water and Sewage Regulations,* as listed under Section 64 of the Newfoundland and Labrador *Water Resources Act* and the *Government of Canada's Wastewater Systems Effluent Regulations* under the *Fisheries Act*). Testing and reporting will be carried out as per the requirements under the regulations.

Operations will be conducted in a manner to prioritize public health and safety and minimize environmental impacts including, fire hazards, nuisance to adjacent areas, and contamination in ground or surface waters on and 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 as needed. 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 the CNWM Norris Point Site on a regular schedule.
- **Dewatered Solids**: Sludge will be removed from cells when deemed necessary and dewatered and stabilized as required. The waste will then be transported and disposed of at an approved disposal facility as discussed in section 4.2.2 in accordance with the Newfoundland and Labrador *Environmental Protection Act* and other associated regulations.
- **Odours**: From available Canadian Climate Normals data, the prevailing winds for the region are westerly/south-westerly. Based on this, the location of the treatment facility is not presumed to create odour issues. The closest residential area is approximately 150 m from the project site, however; very few odours are expected from the wastewater treatment system due to the aerobic nature of process. Additionally, berms are built around the lagoons to minimize odours from traveling towards residential neighbourhoods. The sludge conditioning agents (polymer and/or lime) that will be added prior to the sludge dewatering will help reduce odours from the sludge management system. In addition, the geotube system being considered at this predesign stage also allows for the application of odor neutralizing agents to be applied over the geotextile containers in the event that odour issues are not satisfactorily mitigated by the conditioning agents.
- **Sewage**: Any wastewater produced at the treatment facility will be directed into the

system influent stream and treated prior to discharge.

- **Noise Pollution:** Limited noise pollution will be generated during operations. In addition all mechanical equipment is housed inside the main building.
- **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. No chemical agents will be used in the treatment process with the possible exception of a polymer agent to help in the sludge dewatering. Any chemicals will be handled and stored as per manufacturer materials safety data sheets (MSDS).

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

- **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 and in accordance with the applicable guidelines and regulations.
- **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 a certain level of protection in the event that there is an accidental spill of material into the wastewater collection system by virtue of the hydraulic retention time the aerated cells provide.
- **Power Outage:** The proposed aerated cells are dependent upon electricity to operate the blowers; however, periods of power outages will not damage the systems. The aerated cell system will be sized with a hydraulic capacity to be able to accommodate the wastewater for a period of time in the order of magnitude of days, buffering the effects of a short outage. A cost/benefit analysis for the inclusion of a backup diesel generator as part of the WWTF expansion will be carried out as part of the detailed design.
- **Erosion and Sediment Control Program**: Roads shall be properly maintained and dust control programs implemented as required. The berms of the cell will be protected from erosion with topsoil and seeding.
- **Environmental Emergency Plan:** An environmental emergency plan will be created and implemented for the operational phase of the WWTF. This plan will outline pollution prevention measures, and detailed procedures for emergencies. All applicable authorities will be provided with an up-to-date Environmental Emergency Plan.
- **Fire Safety Program**: A fire safety program will be developed in consultation with the

local fire department and, where required, the Department of Natural Resources.

4.4.5 Potential Causes of Resource Conflict during Operation

The following are potential causes of resource conflict that anticipated for the operational phase of this undertaking:

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.

Air Quality: The technology that is being utilized for the treatment of the wastewater is anticipated to have very minimal impacts on the air quality including emissions and odour. Odour protection is not considered a concern as the wastewater treatment operations will either be in an aerobic environment or contained within the headwork's building and sludge conditioning agents and/or odour neutralizing agents will be used in the sludge management system operation as described in section 4.4.4.

As the facility is located at a distance from residential neighborhoods it is not expected to impact human activity. No additional conflict is expected.

Fish and Fish Habitat: The project site will be located approximately 30 to 100m north of Exploits River. The Exploits River is known to contain fish bearing habitat and is an important passage for migrating Atlantic salmon.

The treated effluent from the system which will discharge to an outfall will meet environmental regulations pertaining to the federal *Fisheries Act* and the Provincial *Water Resources Act*. The site will be strictly and regularly monitored and reported throughout operations to ensure that treated effluents discharged into the adjacent environment will meet applicable environmental regulations and guidelines.

Human Activities: The sewage treatment system is over 150 m from the nearest residential area and is not expected to impact everyday human activity given the secluded location of the site and the nature of the system. The existing tree line will remain in place to provide a buffer zone between the treatment facility and the neighbouring community. In addition, to reduce concerns with the accessibility of the site, it will be enclosed with fencing to prevent unauthorized access.

Wildlife: The WWTF will have a perimeter fence around the operational area to deter wildlife from entering the premises. The perimeter fence will not be able to keep birds out of the operational area and it is possible that birds will land and swim in the aerated cells. Operations are not expected to cause any direct wildlife conflict.

Water Resources*:* Surface water is not expected to be impacted by the release of the

effluent into the Exploits River. The treated effluent will be strictly monitored to ensure that it meets or is below the applicable wastewater effluent regulation requirements. The proposed expansion will not increase the amount of effluent being discharged into the River and will improve the quality of the effluent. Following these requirements, no conflicts are expected for surface water resources.

To manage groundwater resources, the aerated cells will be lined with an impermeable geomembrane liner. Following these requirements, no conflicts are expected.

4.5 Occupations

The Contractor who is successfully awarded the tender by the proponent will control the number and type of employees to hire for the construction of the WWTF expansion capital project. Anticipated project employment estimates have been provided below, in Table 4-1 and Table 4-2 .

The Town of Grand Falls –Windsor and its team recognize that diversity is an important element in the workforce that can provide a valuable benefit to all stakeholders. This project will be carried out to promote equity and fairness and, where possible, establish a workplace that is free of barriers.

4.5.1 Occupations: Construction Phase

It is anticipated that a tender for construction services will be awarded to a contractor in the spring 2019. Construction is expected to commence in spring 2019. The facility will be commissioned by December 31, 2020.

It is expected that approximately forty-eight (48) people will be employed during the construction phase of the project. Table 4-1 displays the estimated anticipated number of positions during construction and their associated National Occupational Classification (NOC) codes.

Table 4-1: Anticipated Occupations during Construction Phase

National Occupational Classification Group Title Code	Potential Positions (# Anticipated)	Description
0711	1	Construction Manager
7611	4	Construction Trades Helpers & Laborers
2154	2	Land Surveyors
7217	6	Contractors & Supervisors, Heavy Construction Equipment Crews
7219	6	Contractors and Supervisors, Other Construction Trades, Installers, Repairs and Services

National Occupational Classification Group Title Code	Potential Positions (# Anticipated)	Description
2264	1	Construction Inspectors
7241	2	Electricians
7412	4	Heavy Equipment Operators
7271	8	Carpenters
7281	4	Bricklayers
7411	4	Truck Drivers
7612	6	Other Trades Helpers and Laborers

4.5.2 Occupations: Operational Phase

The system requires regular operation and maintenance. The Town of Grand Falls - Windsor will be responsible for the system once the expansion becomes operational. It is expected that the maintenance employee that presently looks after the operation and maintenance at the current Town WWTF will handle daily operations and any maintenance at the expanded facility. Table 4 -2 displays the approximate anticipated number of positions during operations and their associated National Occupational Classification (NOC) codes.

Table 4-2: Anticipated Occupations during Operations Phase

National Occupational Classification Group Title Code	Potential Positions (# Anticipated)	Description
0912	1	Town Maintenance Employee

4.6 Project Related Documents

The following resources were used for the preparation of this registration document.

Department of Fisheries and Land Resources Newfoundland & Labrador (2017). Registration Form. Amendment to Forest Management Zone 5 2016 – 2020 Five Year Operating Plan: New operation area CC12034 Victoria River South and access roads. Online: https://www.mae.gov.nl.ca/env_assessment/projects/Y2017/1938/index.html

Department of Fisheries and Oceans Canada (2018). Canadian Science Advisory Secretariat Science Advisory Report 2018/034. *Newfoundland and Labrador Region – Stock Assessment of Newfoundland and Labrador Atlantic Salmon 2017.* Online: http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2018/2018_034-eng.pdf

Department of Fisheries and Oceans Canada (2018). Projects Near Water. Project Activities and Criteria where DFO review is not required. Online: http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html

Government of Canada , Environment and Natural Resources – Climate Normals & Averages: Canadian Climate Normals 1981 – 2010 Station Data – Gander International Airport Newfoundland, Available: http://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnProv&lstProvince=NL&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=6633&dispBack=0
Accessed: October 1st, 2018

Government of Canada. Justice Laws Website. Wastewater Systems Effluent Regulations (2012). Available: http://laws-lois.justice.gc.ca/eng/regulations/SOR-2012-139/FullText.html Accessed: October 1st 2018

Government of Newfoundland and Labrador (2018). Department of Fisheries, Forestry, and Agrifoods – Ecoregions of Newfoundland. Online: http://www.faa.gov.nl.ca/forestry/maps/central_eco.html. Accessed: August 31, 2018

Government of Newfoundland and Labrador, Department of Fisheries and Land Resources – Species at Risk, Available: https://www.flr.gov.nl.ca/wildlife/endangeredspecies/index.html Accessed: September 4th, 2018

Government of Newfoundland and Labrador, Regulation 65/03: Environmental Control Water and Sewage Regulations, 2003, under the Water Resources Act. Available: https://www.assembly.nl.ca/legislation/sr/regulations/rc030065.htm. Accessed: October 1st 2018

Rogers, N and van Staal, C.R. Geology, Grand Falls, Newfoundland and Labrador: Geological Survey of Canada, Open File 4545, scale 1:50,000. 2005.

4.6.1 Additional Documents

Please refer to the following documents for further information:

- Appendix A – Figures;
- Appendix B – Land Use Zoning Maps; and
- Appendix C – Employment Equity Polices;
- Appendix D - Infrastructure Canada Letter (February 2017)

5.0 APPROVAL REQUIRED FOR THE UNDERTAKING

The proposed expansion of the WWTF relies on obtaining permits, licences, approvals and authorizations from several authorities. The permits, approvals, and authorizations that may be necessary for the undertaking include (but are not limited to) those listed in Table 5-1.

Table 5-1: Potential Permits, Approvals, and Authorizations Required for the Project

Permit, Approval or Authorization	Issuing Agency
> Approval for the Undertaking	Minister of Environment and Climate Change
> Construction (site drainage), Certificate of Approval > Certificate of Approval – Sewage Treatment Plant > Permit to Construct Wastewater Infrastructure	Water Resources Division, Department of Environment and Climate Change
> Waste Management Certificate of Approval > Electrical Permit > Fire and Life Safety Plan Review	Customer Services, Department of Government Services
> Operating Permit/ Fire Season > Commercial Cutting Permit > Permit to Control Nuisance Wildlife	Forest Branch and Wildlife Division of the Department of Fisheries and Land 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 Registration > Fuel Storage and Handling – Temporary > Approval to Dispose of Biosolids Sludge in local landfill	Operations Division, Department of Government Services

Please refer to Appendix D for the Infrastructure Canada Letter, dated February 17, 2017 that states that it is the opinion of Infrastructure Canada (INFC), there are no requirements for the WWTF Expansion project under the Canadian Environmental Assessment Act, 2012 (CEAA 2012).

6.0 PROJECT SCHEDULE

The design work is scheduled to be completed by March 2019. Upon receipt of all required approvals and authorizations, construction of the project is scheduled to begin spring 2019 with a completion date by end of year 2020, upon which time operational activities will commence. Meeting the proposed scheduling for the project is dependent on the environmental assessment registration process. Any required actions or comments made by the Minister will be immediately addressed to keep the proposed undertaking on schedule.

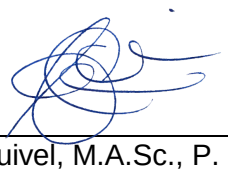
7.0 FUNDING

The estimated project capital cost for the design, construction and commissioning of the Grand Falls – Windsor WWTF Expansion is $9.76M. The annual cost of maintenance and operations is estimated at approximately $150,000 per year (in 2018 CAD dollars).

All three levels of government, Federal, Provincial and Municipal are contributing to the funding of this project. The breakdown is as follows:

Federal: $3.58M
Provincial: $3.25M
Municipal: $2.93M

The Federal Government is providing funding for 33% of the project costs; the Province of Newfoundland and Labrador is providing 37% of the funding towards and the project; and the Town of Grand Falls – Windsor will contribute the balance, at 30% 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.



Ana Esquivel, M.A.Sc., P. Eng.
SNC - Lavalin Inc.

2018/10/01
Date