

June 19, 2013
512091-14

Minister of Environment and Conservation
P.O. Box 8700
St. John's, NL A1B 4J6

Attention: Director of Environmental Assessment

Dear Sirs:

**Reference: Environmental Assessment Registration
Western Newfoundland Regional Waste Management
Local Waste Management and Public Drop-off Facilities**

On behalf of the Central Newfoundland Waste Management Authority, BAE-Newplan Group Limited is pleased to submit the enclosed Environmental Assessment Registration Document for the Local Waste Management Facilities under the Western Newfoundland Solid Waste Management Plan.

Included are 10 paper copies and one electronic copy, along with a cheque in the amount of \$226.00.

Please do not hesitate to contact the undersigned should you have any concerns or to request additional copies.

Yours very truly,

BAE-NEWPLAN GROUP LIMITED

Michael Smith, A.Sc.T.

/lw

cc. Don Downer – WRWM Chair
Wayne Manuel – BNG

ENVIRONMENTAL ASSESSMENT REGISTRATION

WESTERN NEWFOUNDLAND REGIONAL WASTE MANAGEMENT LOCAL WASTE MANAGEMENT AND PUBLIC DROP OFF FACILITIES

Submitted to:

Department of Environment and Conservation
Environmental Assessment Division

June 2013



ENVIRONMENTAL ASSESSMENT REGISTRATION

**WESTERN NEWFOUNDLAND REGIONAL WASTE MANAGEMENT
LOCAL WASTE MANAGEMENT AND PUBLIC DROP OFF FACILITIES**

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

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June 2013

Project No.: 512091-14

Title: ENVIRONMENTAL ASSESSMENT REGISTRATION,
WESTERN NEWFOUNDLAND LOCAL WASTE MANAGEMENT AND
PUBLIC DROP OFF FACILITIES

Client: Western Newfoundland Waste Management Authority

A	2013/06/19		Environmental Registration	JG/JP	MS	RH
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1.0 NAME OF THE UNDERTAKING

WESTERN NEWFOUNDLAND LOCAL WASTE MANAGEMENT FACILITIES

2.0 PROPONENT

2.1 *Name of Corporate Body*

Western Newfoundland Waste Management Authority

2.2 *Address*

Western Newfoundland Waste Management Authority
19-21 West Street, Suite 25
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2.3 *Contact*

Name: Don Downer
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3.0 THE UNDERTAKING

3.1 *Nature of the Undertaking*

The purpose of the proposed project is to establish suitable locations for construction of 6 local waste management facilities (LWMF) and 3 public waste drop-off locations to service communities located in the western region of Newfoundland. Public waste drop-off facilities are commonly used within areas that present geographical challenges, such as travel distances. The project team developed a detailed collection and transportation model that allowed the Western Newfoundland Waste Management Authority an opportunity to study the advantages and disadvantages of several potential local waste management facility options and locations.

The preferred system was selected based upon the objectives of the 2002 Newfoundland and Labrador Waste Management Strategy and Provincial Guidance Waste Standards

(2007), the convenience to the users, and the overall cost. Each local waste management facility will be designed to accommodate the current and projected waste volumes from the collection area in the most cost-effective manner possible. Based on extensive research and investigation, the committee decided to adopt a two-stream (wet/dry) waste collection system with local waste management facilities. An assessment of the collection and transportation requirements of the new system has resulted in selecting a collection and local waste management facility system that includes the following locations:

Table 1: LWMF Locations and Estimated Waste tonnages

Local Waste Management Facility	Annual Volume of Waste Generated
Long Range	1975 tonnes
White Bay South/Western Hills	5560 tonnes
Burgeo/Ramea	1010 tonnes
Southwest Coast*	5926 tonnes
Bay St. George*	9944 tones
Wild Cove*	21497 tonnes
Public Drop-Off Facilities	Annual Volume of Waste Generated
Long Range (Portland Creek)*	65 tonnes
Bonne Bay South*	94 tonnes
Port Au Port Peninsula (Lourdes)*	350 tonnes

*located adjacent to existing landfill site

It should be noted that estimated waste tonnage for each public drop-off facility site was based on construction/demolition and bulk/metals waste from residential sources only.

The LWMFs will consist of the following components (see Appendix A for labelled site drawings of each LWMF):

1. Access Road
2. Unattended automated weight scales
3. Enclosed Loading Area (pre-engineered structure) and Scale House
4. Construction and Demolition (C&D) and Bulk Storage Area
5. Household Hazardous Waste Area
6. White Goods and Metals Storage Area
7. Open Windrow Composting Area

The three public drop-off sites located at Long Range (Portland Creek), Bonne Bay South and on the Port au Port Peninsula (west of the isthmus) will also consist of the following components:

1. Access Road
2. Attended weight scales (when open)
3. C & D Storage Area
4. Bulk and Metals Storage Area

3.2 *Need for the Undertaking*

The undertaking will provide suitable locations for solid waste disposal to service communities located in the Western Regional Waste Boundary. Each LWMF will provide temporary storage for construction and demolition (C&D) materials and provide a temporary collection area for waste before it is transported to the Central Newfoundland Regional Waste Facility located near Norris Arm for further recycling and organic diversion efforts. The public drop-off facilities will provide suitable locations for residents located unreasonably far from a LWMF. These facilities typically include a cleared graded area where waste materials can be loaded and segregated into various waste streams.

The establishment of the proposed LWMFs is necessary for the western region to meet the objectives of the comprehensive waste management strategy¹ established by the Province of Newfoundland and Labrador. The strategy has a goal of 50% diversion of materials currently going to landfills by the year 2015. The strategy also includes a reduction in the number of disposal sites, the elimination of open burning, and the phase-out of unlined landfills.

In keeping with the goals of this strategy, the Western Newfoundland Waste Management Authority has undertaken the task to oversee the development of a Solid Waste Management Plan for the Western Newfoundland Region. The Western Newfoundland Waste Management Authority is an umbrella organization made up of representatives of the community councils within the Western Region of Newfoundland.

4.0 DESCRIPTION OF THE UNDERTAKING

4.1 *Geographic Location*

There are a total of six (6) proposed LWMFs and three (3) public drop-off facilities. During the process of developing the waste management plan, the Western Newfoundland Waste Management Authority was concerned that some residents were located greater than a one-hour drive from the nearest LWMF. The Committee therefore decided to add three drop-off sites for bulk, metals, and construction and demolition debris. For geographic locations of each LWMF, refer to Appendix A. Each LWMF and public drop-off facility location is described below:

¹ Government of Newfoundland and Labrador, Department of the Environment. *Newfoundland and Labrador Waste Management Strategy*. Revised May 2007.

LWMFs

1. The proposed location of the **Long Range Waste Management Facility** is situated approximately 2.5 km southeast of the community of Rocky Harbour along Rocky Harbour Road. The facility takes in a total area of approximately 3.3 ha and will be accessed by a road off Rocky Harbour Road.
2. The proposed location of the **White Bay South / Western Hills Waste Management Facility** is situated off Route 420, approximately 1.8 km from the Trans Canada Highway. The facility takes in a total area of approximately 4.1 ha and will be accessed by a road off Route 420.
3. The proposed location of the **Wild Cove Waste Management Facility** is situated approximately 2.5 km northeast of the city of Corner Brook at the current Wild Cove Waste Disposal Site along the North Shore Highway. The facility takes in a total area of approximately 3.5 ha and can be accessed by an existing road off the North Shore Highway.
4. The proposed location of the **Southwest Coast Waste Management Facility** is situated approximately 11.5 km northwest of the community of Port Aux Basques at the current Sub Regional Waste Disposal Site along the Trans Canada Highway. The facility takes in a total area of approximately 7.2 ha and can be accessed by an existing road off the Trans Canada Highway.
5. The proposed location of the **Bay St. George Waste Management Facility** is situated approximately 3.5 km southeast of the community of St. George's at the current St. George Waste Disposal Site along the Trans Canada Highway. The facility takes in a total area of approximately 3.0 ha and can be accessed by an existing road off the Trans Canada Highway.
6. The proposed location of the **Burgeo / Ramea Waste Management Facility** (Two Options):
 - i. is situated approximately 1.5 km northwest of the community of Burgeo at the current Burgeo Waste Disposal Site along Route 480. The facility takes in a total area of approximately 2.2 ha and can be accessed by an existing road off Route 480.
 - ii. is situated approximately 10 km north of the community of Burgeo along Route 480. The facility takes in a total area of approximately 2.6 ha and will be accessed by a road off Route 480.

Public Drop-Off Facilities

7. The proposed location of the **Long Range Public Drop-Off** is situated approximately 5 km southwest of the community of Portland Creek along Route 430 at the location of the existing Waste Disposal Site. The facility takes in a total area of approximately 3.7 ha and can be accessed by an existing road off Route 430.
8. The proposed location of the **Port au Port Public Drop-Off** (Two Options):
 - i. is situated approximately 1.3 km southwest of the community of West Bay off Route 463 at the location of the existing Waste Disposal Site. The facility takes in a total area of approximately 1.9 ha and can be accessed by an existing road off Route 463.
 - ii. is situated approximately 2.0 km northwest of the community of Lower Cove off Route 460 within the property boundaries of a former waste disposal site and adjacent to the limestone-aggregate mining operation at Lower Cove. The facility takes in a total area of approximately 1.5 ha and can be accessed by an existing road of Route 460.
9. The proposed location of the **Bonne Bay South Public Drop-Off** (Three Options):
 - i. is situated approximately 11 km east of the community of Glenburnie along Route 431 (Bonne Bay Road) at the location of the existing Waste Disposal Site. The facility takes in a total area of approximately 0.3 ha and can be accessed by an existing road off Route 431.
 - ii. is situated approximately 0.5 km northwest of the community of Shoal Brook along Route 431 (Bonne Bay Road). The facility takes in a total area of approximately 0.8 ha and will be accessed from an existing road off Route 431.
 - iii. is situated approximately 2 km east of the community of Glenburnie along Route 431 (Bonne Bay Road). The facility takes in a total area of approximately 0.9 ha and will be accessed from an existing road off Route 431.

4.2 Physical Features of the Undertaking

The development of each LWMF will include the following components:

1. Access Road
2. Unattended automated weight scales
3. Enclosed loading area (pre-engineered structure), attendant building and scale house
4. Construction and Demolition Storage Area
5. Household Hazardous Waste Storage Area
6. White Goods and Metals Storage Area

7. Open Windrow Composting Area

The development of each Public Drop-Off Site will include the following components:

1. Access Road
2. Attendant Building
3. Attended weight scales (when open)
4. Construction and Demolition Area
5. Bulk and Metals Storage Area

Site Access

Access to each site would be via a dedicated, upgraded, gravel, all-season road. If dust or mud becomes a problem, asphalt paving may be required. Roads to the existing waste disposal sites and quarries can be utilized and upgraded, with the exception of the Long Range, White Bay South/Western Hills and the Burgeo / Ramea LWMF (Option 1) sites where new access roads will be constructed.

Site Electricity and Telephone

Three-phase power would be required to service each LWMF site with single phase power required at the Public Drop Off. Telephone and electricity lines would be brought in along the site access road.

Scale

Upon entering each site, collection and transport vehicles would be directed to the scale to have incoming loads identified, weighted and directed to the appropriate disposal location. Non-haulage vehicles would bypass the scale. In addition, vehicles exiting the facility after waste disposal will again be directed to the scale to determine the amount of waste deposited at the facility, in order to charge the appropriate tipping fee.

Site Buildings

A scale house, free standing or connected to the tipping floor (pre-engineered structure), would be located adjacent to the scale. The scale house area would serve as administrative office and include a washroom. The tipping floor area of the building would contain service bays and storage. The building would be fully serviced with on-site potable water and septic system. The area around the building would contain the septic field, water well, and parking areas.

Storage Area

Vehicles carrying construction and demolition waste, white goods or metal waste would, upon leaving the inbound scale, proceed to the temporary storage area, deposit their load and then exit the site by means of the outbound scale.

Household hazardous waste would be deposited (LWMF sites only) in a self-contained unit and stored until the waste could be removed by a licensed hazardous waste hauler.

C&D, Bulk, Metals Storage Areas

Any waste identified to be C&D will be placed within the C&D, Bulk/Metals storage area, with the exception of Corner Brook LWMF; this site will serve as the Regional Landfill for C&D waste only. Bulk waste will be stored until such time that it will be transported and disposed of at the Central Regional Waste Management Facility. Metals waste will be the only waste that will not be transferred to the Regional Waste Facility as it will be collected by a licensed metals contractor under a specific collection and disposal contract.

The environmental protection system of the C&D Landfill will consist of a low permeability soil base layer and be designed to promote gravitational drainage.

Once a portion of the C & D landfill reaches its operational height, the area will be covered to reduce infiltration of precipitation and redirect the surface runoff. The final cover system will consist of a multi-layer arrangement, including a compacted soil layer to minimize infiltration and a vegetative layer to prevent erosion.

Open Windrow Composting Areas

Source-separated household organics (SSO) shall be directed to the Open Windrow Composting Area. These areas would consist of long mounds of organic refuse, typically no higher than 3 m to 4 m. SSO is to be pre-mixed with nitrogen-rich feedstock (i.e. Yard trimmings, wood chips, or sawdust), prior to being formed into windrows. Compost windrow turners or elevating faces are to be used to turn the piles to provide the required air necessary for decomposition. Turning shall occur every three days, for a period of 5 – 8 weeks, at which time the organic waste can be considered completely digested. Temperature control and oxygen level measurements will be taken by a site operator with hand-held monitoring tools. The composting area and associated receiving and tipping area shall be underlain by an impermeable pad, the surface of which shall be concrete or asphalt; all drainage from the impermeable pad shall be collected for treatment or for return to the process (MacNeil, 2010).

Each compost area shall meet the recommended separation distances as prescribed in DOEC Environmental Standards for Municipal Solid Waste Compost Facilities (GD-PPD-048.1).

Physical Features of the Proposed Locations

Based on topographic features, ground slope and the shape of the available land and surface features, the following areas have been deemed suitable for development.

LWMFs

Long Range

- The site is an undeveloped, wooded area and slopes towards the east.
- An access road is proposed to extend from Rocky Harbour Road for a distance of approximately 160 m.
- The proposed C&D storage area is approximately 260 m from Rocky Harbour Road.
- The proposed site boundary is approximately 560 m from the nearest body of water (Spirity Pond) with the C&D storage area located approximately 820 m from Spirity Pond.
- (See Appendix A, Drawing 001 and 002).

White Bay South / Western Hills

- The site is an undeveloped wooded area and slopes towards the west.
- An access road is proposed to extend from Route 420 for a distance of approximately 175 m.
- The proposed C&D storage area is approximately 100 m from Route 420.
- The proposed site boundary is approximately 100 m from the nearest body of water (small pond) with the C&D storage area located approximately 275 m from the pond.
- (See Appendix A, Drawing 003 and 004).

Corner Brook

- The proposed property boundary includes a portion of the current Wild Cove Waste Disposal Site and treed land and slopes towards the east.
- An existing access road for the current Wild Cove Waste Disposal Site extends from the North Shore Highway for a distance of approximately 230 m.
- The proposed C&D landfill is approximately 300 m from the North Shore Highway.

- The proposed site boundary is approximately 100 m from the nearest body of water (Wild Cove Brook) with the C&D Landfill located approximately 250 m from Wild Cove Brook.
- (See Appendix A, Drawing 005 and 006)

Southwest Coast

- The proposed property boundary includes the current sub waste disposal site and treed land and slopes towards the southwest.
- An access road is proposed to extend from the Trans Canada Highway for a distance of approximately 160 m.
- The proposed C&D storage area is approximately 180 m from the Trans Canada Highway.
- The proposed site boundary is approximately 80 m from the nearest body of water (Small Brook) with the C&D storage area located approximately 400 m from the brook
- (See Appendix A, Drawing 007 and 008).

Bay St. George

- The proposed property boundary includes the current St. George's Waste Disposal Site and treed land and slopes towards the south.
- An existing access road for the current St. George's Waste Disposal Site extends from the Trans Canada Highway for a distance of approximately 400 m.
- The proposed C&D storage area is approximately 650 m from the Trans Canada Highway.
- The proposed site boundary is approximately 200 m from the nearest body of water (small pond) with the C&D storage area located approximately 250 m from the pond.
- (See Appendix A, Drawing 009 and 010).

Burgeo (2 Options)

Option 1

- The site is undeveloped, consists mainly of barren land, and slopes towards the southeast.
- An access road is proposed to extend from Route 480 for a distance of approximately 300 m.
- The proposed C&D storage area is also approximately 300 m from Route 480.
- The proposed site boundary and the C&D storage area are approximately 110 m from the nearest body of water.
- (See Appendix A, Drawing 011 and 012).

Option 2

- The proposed property boundary includes the current waste disposal site and treed land and slopes towards the southwest.
- An access road extends from Route 480 for a distance of approximately 90 m.
- The proposed C&D storage area is approximately 110 m from Route 480.
- The proposed site boundary is approximately 110 m from the nearest body of water with the C&D storage area located approximately 150 m from the nearest body of water.
- (See Appendix A, Drawing 011 and 012).

Public Drop-Off Facilities

Long Range (Portland Creek)

- The proposed property boundary includes the current Portland Creek Waste Disposal Site and treed land and slopes towards the west.
- An existing access road for the current Portland Creek Waste Disposal Site extends from Route 430 for a distance of approximately 350 m.
- The proposed disposal area is approximately 300 m from Route 430.
- The proposed site boundary and waste disposal area is approximately 300 m from the nearest body of water.
- (See Appendix A, Drawing 013 and 014).

Port Au Port Peninsula (2 Options)

Option 1

- The proposed property boundary includes the current Lourdes Waste Disposal Site and treed land and slopes slightly towards the east.
- An existing access road for the current Lourdes Waste Disposal Site extends from Route 463 for a distance of approximately 1.4 km.
- The proposed disposal area is approximately 1.4 m from Route 463.
- The proposed site boundary and waste disposal area is approximately 800 m from the nearest body of water (small stream).
- (See Appendix A, Drawing 015 and 016).

Option 2

- The proposed property boundary is within the boundaries of a former waste disposal site and wooded area and slopes slightly towards the south.
- An existing access road extends from Route 460 for a distance of approximately 300 m.
- The proposed disposal area is approximately 380 m from Route 460.
- The proposed site boundary and waste disposal area is approximately 750 m from the nearest body of water (Atlantic Ocean).
- (See Appendix A, Drawing 015 and 016).

Bonne Bay South (3 Options)**Option 1**

- The proposed property boundary includes the current Bonne Bay South Waste Disposal Site and treed land and slopes towards the east.
- An existing access road for the current Bonne Bay South Waste Disposal Site extends from Route 431 for a distance of approximately 1.1 km.
- The proposed disposal area is approximately 400 m from Route 431.
- The proposed site boundary and waste disposal area is approximately 800 m from the nearest body of water (East Lomond River).
- (See Appendix A, Drawing 017 and 018).

Option 2

- The site is an undeveloped, wooded area and slopes towards the east.
- An existing access road extends from Route 431 for a distance of approximately 460 m to the entrance gate of the proposed waste disposal area.
- The proposed disposal area is approximately 200 m from Route 431.
- The proposed site boundary and waste disposal area is approximately 30 m from the nearest body of water (small brook)
- (See Appendix A, Drawing 019 and 020).

Option 3

- The site is an undeveloped, wooded area and slopes towards the north.
- An existing access road extends from Route 431 for a distance of approximately 260 m to the proposed entrance gate of the waste disposal area.
- The proposed disposal area is approximately 370 m from Route 431.
- The proposed site boundary and waste disposal area is approximately 140 m from the nearest body of water (Horseback Brook)
- (See Appendix A, Drawing 019 and 020).

4.3 Construction Activities

The approximate total construction period is two years, beginning in 2014 and ending in 2016. First physical construction related activity on site is estimated to commence on September 2, 2013. Construction of each LWMF includes a pre-engineered structure and scale house, household hazardous waste building, C&D storage area, metals storage area and public drop-off area. Construction of the site will involve the removal of vegetation, grubbing, and grading of soil material for the access road, building locations, parking area and disposal area. Realizing certain areas are likely to be impacted, the proponent is committed to keeping those impacts to a minimum. During the construction and operation of the disposal 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 according to mitigation measures as per Section 4.3.2.

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. 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 area needed to meet 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 Forest Fire Regulations, Environmental Code of Practice for Open Burning, and the Permit to Burn.

Grubbing and Disposal of Related Debris

The principle concerns associated with grubbing are the potential effects of erosion on marine and freshwater ecosystems, as well as water quality. All grubbing and disposal of related debris near watercourses will adhere to relevant regulatory requirements. 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 manage 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 located near any water bodies.

Filling, Excavation, Embankments, and Grading

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

4.3.1 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.

Strict monitoring will control activities to minimize risks associated with:

- Silt and sediment
- Dust
- Construction debris
- Risk of fuel, lubricant and hydraulic fluid release
- Airborne emissions from construction equipment
- Noise pollution from construction activities

4.3.2 Mitigation Measures During Construction

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

- Silt laden runoff from construction areas will not be permitted to discharge directly into any body of water or watercourse. Runoff will be diverted to settling basins to ensure silt is settled out 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 by 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 *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 and/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 refuelled 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.
- Exhaust systems will be maintained to ensure noise levels are within the design specifications of the machinery.

4.4 Operations

Each LWMF is estimated to begin operations in 2016 and be operational for approximately a 50-year period. The following provides a summary of the operations of the facility; further information is provided in the Western Newfoundland Solid Waste Management Plan Executive Summary Report (2013) (see Appendix B for further information).

Each operational process of the LWMF begins as a material delivery vehicle enters the facility and proceeds to the weigh scale station. An employee registers the vehicle, weighs it, and directs it to the receiving area/tipping floor. Vehicles back into the building and deposit their loads directly onto the concrete tipping floor, or travel to the C&D / Bulk storage area, household hazardous waste area or metals disposal area.

Delivery vehicles carrying waste would be directed by a staff person to place the material on the tipping floor in a designated area where it would be visually inspected to ensure that wet waste and dry waste are correctly separated. The load would also be inspected

to identify the presence of material that may be deposited in another area. Once dumped, a loader would then move the waste into the appropriate trailer.

Staff would be properly trained to recognize hazardous materials and the method of handling. Hazardous materials would be segregated and stored for off-site disposal.

After discharging the material, vehicles then proceed back to the weigh scales to have the empty weight registered before leaving the site.

All operational activities will be conducted involving mitigation measures as per Section 4.4.2

4.4.1 Potential Source of Pollutants During Operations

The potential sources of pollutants during operations will consist of those associated with daily transportation and storage of waste debris. Strict monitoring and mitigation practices will control activities to minimize risks associated with:

- Silt and sediment
- Dust
- Sewage
- Risk of fuel, lubricant and hydraulic fluid release
- Airborne emissions from trucks and equipment
- Noise pollution from daily activities
- Scattered debris

4.4.2 Mitigation Measures During Operations

The operation will be conducted in a fashion which protects public health and safety, minimizes fire hazard, does not create a nuisance to adjacent areas, and will not contaminate ground or surface waters off-site. All mitigation measures implemented during construction phases for vehicle use and silt/sediment control will also apply during operation of the facility. In addition, the following mitigation measures will be implemented during operation of the site to address potential impacts:

Receiving Waste – All vehicles delivering waste to the site shall be screened to make sure they are carrying acceptable materials and, if required, weighed to determine waste quantities for accounting purposes.

Site Access – Public access to the site is to be controlled so that the general public does not have direct access to the facility unless accompanied by 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 must be in place to effectively handle the results from fire, odour, flood, power outage, spill, delivery of hazardous waste, or any other issue, which could cause a disruption to proper facility operation.

Animal, Rodent, and Vector Control Program – An active vector and rodent control program is required.

Litter Control Program – Includes the requirement for tarping of loads and regular litter collection. Also mobile litter collection fencing will be used where appropriate.

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 Forest Resources and Agri-Foods.

Groundwater / Surface Water Monitoring Program – Where required, surface water control measures will be implemented to minimize the impact on the environment from the construction activities and operation of the landfill. The basic element of surface water controls is to maintain post-development flow rates at pre-development levels and not to alter the pre-development water quality. It is important to minimize the contact between sediment and surface water by:

- constructing ditches to intercept and divert surface water from areas of sediment;
- constructing temporary measures to separate surface water from placed waste to minimize leachate generation; and
- installing a low permeability cover to limit infiltration.

C&D waste – The C&D area shall be sloped for gravity drainage to a point outside of the filled areas. The base layer of the C&D area shall be designed as per the Environmental Standards for Construction and Demolition Waste Disposal Sites.

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

4.5 Potential Valued Ecosystem Interactions and Mitigation

4.5.1 Resource Conflicts

Fish & Fish Habitat

No bodies of water were identified on the sites. Construction activities will be conducted in such a manner as to prevent the release of sediment or other deleterious materials into any nearby water bodies. These measures are discussed in previous sections.

Wildlife

Operations of each LWMF and disposal drop-off site are not expected to cause any direct wildlife conflict.

Forestry

Construction activities will be such as to minimize clearing of the forested areas.

Adjacent Areas

During operations, maintenance equipment will be confined to the areas of the site and will not be permitted in adjacent areas in order to conserve their natural state.

Human Activities

Human activities will place extra demand on the local services available; however, these activities are expected to have a positive economic impact.

There is no expected conflict with the surrounding natural environment, as site-related activities will be conducted within the boundaries of the waste management site.

5.0 OCCUPATIONS

5.1 Construction Phase

It is expected that approximately thirty-six (36) people will be employed during the construction phase of each LWMF. The Western Newfoundland Waste Management Authority offers an equal employment opportunity, free of gender-specific qualifications.

Table 2: Construction Phase Employment Details (for each LWMF)

National Occupational Classification Group Title Code	Potential Positions (# Anticipated)	Description
0711	1	Construction Managers
2152	1	Landscape Architects
2154	2	Land Surveyors
7217	8	Contractors & Supervisors, Heavy Construction Equipment Crews
7219	3	Contractors & Supervisors, Other Construction Trades, Installers, Repairs & Services
7241	2	Electricians
7244	3	Electrical Power Lines & Cable Workers
7411	2	Truck Drivers
7412	3	Heavy Equipment Operators
7611	5	Construction Trades Helpers & Labourers
2264	1	Construction Health & Safety Inspectors
7612	5	Other Trades Helpers and Labourers

5.2 *Operational Phase*

It is expected that a total of seven (7) people (1 for each facility) will be employed during the facility operational phase.

Table 3: Operational Phase Employment Details (for each LWMF)

National Occupational Classification Group Title Code	Potential Positions (# Anticipated)	Description
7421	1	Part-time Heavy Equipment Operators*

*Operator responsible for operation of site.

6.0 APPROVAL REQUIRED FOR THE UNDERTAKING

The permits, approvals, and authorizations that may be necessary for the undertaking include:

Table 4: Permits, Approvals, and Authorizations

Permit, Approval or Authorization	Issuing Agency
▪ Approval for the Undertaking	Minister of Environment and Conservation

Permit, Approval or Authorization	Issuing Agency
<ul style="list-style-type: none"> ▪ Approval under the National Building Code of Canada ▪ Approval under the National Fire Code of Canada ▪ Certificate of Approval for Septic System and Well for <4,500 L/day 	Engineering Services, Department of Government Services
<ul style="list-style-type: none"> ▪ Building Accessibility Design Registration ▪ Fuel Storage and Handling-Temporary Storage/Remote Locations 	Operations Division, Department of Government Services
<ul style="list-style-type: none"> ▪ 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
<ul style="list-style-type: none"> ▪ Permit to Burn 	Forest Fire Protection Specialist, Department of Natural Resources
<ul style="list-style-type: none"> ▪ Permit to Cut Crown Timber ▪ Operating Permit/Fire Season 	Newfoundland Forest Service, Department of Department of Natural Resources
<ul style="list-style-type: none"> ▪ Development Approvals 	Respective Municipalities

7.0 BACKGROUND INFORMATION

7.1 *Public Education Process*

During the course of the Solid Waste Management Study, the Western Regional Waste Management Corporation (WRWM) conducted several public consultation events for the general public in 2010 on work and findings completed to date. The meetings were open to the public and were designed to provide citizens with an opportunity to discuss and provide input concerning the proposed waste management facility. Through these consultations a question was posed as to the viability of integrating the Municipal Solid Waste (MSW) generated within the Western Newfoundland Waste Management Region, into the Central Newfoundland Waste Management System located in Norris Arm. From this, the committee had requested that BNG investigate this option and its environmental and financial viability.

Once all the components of the investigation were completed and reviewed, the Western Regional Waste Management Corporation decided to adopt a two-stream (wet/dry) waste collection system with local waste management facilities in six zones of the region and final processing/disposal at the Central Newfoundland Waste Management Facility located in Norris Arm.

The entire Solid Waste Management Study for Western Newfoundland consisted of two detailed phases. As a result, the Western Newfoundland Waste Management Authority issued a condensed version of the study, The Western Newfoundland Solid Waste Management Plan Executive Summary (2013) (see Appendix B for details on the

Executive Summary). The Executive Summary was designed to combine Phases I and II into one report to provide the public with an overview of the entire study. The following items from the detailed Phase I and II reports were covered in the Executive Summary:

Phase I Report

- Determination of Study Area Boundary
- Waste Generation Rates and Population Projections
- Transportation and Technology
- Waste Generation
- Analysis of Waste Management Systems
- Existing Disposal Site Evaluations
- Alternative Approaches to Engineered Landfills
- Identification of Potential Local Waste Management Facility Locations

Phase II Report

- Identification of Potential Locations for the Regional Waste Management Facility
- Preferred Local Waste Management Facility System
- Materials Recovery Facility
- Compost Facility
- Household Hazardous Waste Depot
- Construction and Demolition Materials Facility
- Landfill Facility
- Cost Overview of the System
- Closure of Existing Landfill Facilities

7.2 Project Related Documents

Please refer to the following document in Appendix B for further information:

- BAE-Newplan Group Limited, 2013. Western Newfoundland Solid Waste Management Plan Executive Summary.

7.3 Summary of Findings

A detailed collection and transportation model was developed to identify the advantages and disadvantages of several potential LWMF locations.

The collective results of these studies support an informed opinion on the suitability of the proposed locations. A brief discussion of the results of the assessment is provided below (See Appendix B, Western Newfoundland Solid Waste Management Plan Executive Summary for further information.)

Each subject property meets the size and location criteria established by the Authority for development of a local waste management facility. Each site meets the required distances outlined in the Department of Environment and Conservation's Environmental Standards for Solid Waste Transfer Stations, GD-PPD-046. The site access alternatives appear feasible and will not interfere with planned development in the area.

8.0 SCHEDULE FOR RELEASE FROM ENVIRONMENTAL ASSESSMENT

Construction of this project is scheduled to begin in the fall of 2014 and completed in 2016. The estimated start date is September 1, 2014. In order to meet this proposed scheduling, the requirements of the Environmental Assessment Act must be completed as soon as possible.

9.0 FUNDING

Financing of this project is expected from various government sources. The total estimated capital cost for the construction phase of the undertaking is approximately \$44 million. The total estimated annual cost of operation is approximately \$7.5 million, or \$163/tonne. A detailed breakdown of these costs can be found in section eight of the Western Newfoundland Solid Waste Management Plan Executive Summary, in Appendix B.

BAE-NEWPLAN GROUP LIMITED

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Project Coordinator

WESTERN NEWFOUNDLAND SOLID WASTE MANAGEMENT PLAN

Executive Summary Report

Draft Report Submitted to

Western Newfoundland Waste Management Committee

BNG PROJECT # 723073



WESTERN NEWFOUNDLAND SOLID WASTE MANAGEMENT PLAN

Draft Report Solid Waste Management Plan Executive Summary

Final Report Submitted to:

Western Regional Waste Management
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February 2013

Project No.: 723073

Title: WESTERN NEWFOUNDLAND SOLID WASTE MANAGEMENT PLAN

Draft Report – Overview of Solid Waste Management Plan

Client: Western Newfoundland Regional Waste Management

01	22/02/13		Draft Executive Summary	MS		
Rev.	Date yyyy/mm/dd	Page No.	Description	Prepared By	Reviewed By	Approved By

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1.0 OVERVIEW

The Province of Newfoundland and Labrador has developed a comprehensive waste management strategy with a goal of 50% diversion of materials currently going to landfills by the year 2020. The strategy includes a reduction in the number of disposal sites, the elimination of open burning, and the phase out of obsolete technology, including unlined landfills.

In keeping with the goals of this strategy, Western Newfoundland Waste Management (WRWM), has undertaken the task to oversee the development of a Waste Management Plan for the Western Newfoundland Region. BAE-Newplan Group (BNG) was retained to assist the committee with the development of the plan.

WRWM has a mandate to:

“Study and recommend a cost effective, environmentally acceptable solid waste management system for Western Newfoundland.”

The Waste Management Plan has been developed using a very interactive process between BNG and WRWM following the Terms of Reference provided by WRWM, as well as supplementary pieces considered necessary to fully investigate the best option for the Region.

Waste management is continually evolving and, as with any plan, has to be flexible to account for changing technology and waste composition.

The process to date to develop the waste management plan for Western Newfoundland has been a long one, which is typical. In the interest of bringing closure to this stage of the process, WRWM directed BNG to prepare a plan based on a two-stream (wet/dry) system with all waste being transported to the Central Newfoundland Regional Waste Management Facility in Norris Arm for processing (material recovery, composting, and landfilling).

Still ongoing are the following:

- Department of Municipal Affairs review of a composting plan for the province
- Western Waste Diversion Opportunities for the Dry Stream by BNG
- Proposal for transportation alternatives by Nexgen

The results of these studies may have an impact on the final recommended plan. Any impact is likely to be positive in that the adjustments will reduce operating costs.

2.0 STUDY AREA



Figure 2-1: Study Area (Area from Bellburns on the Northern Peninsula south to Harbour Le Cou and over to Burgeo and Ramea)

3.0 WASTE GENERATION RATES AND POPULATION PROJECTIONS

For the purpose of determining accurate waste generation rates for the study area, annual waste generation rates utilized in the Central Newfoundland Solid Waste Management Plan (BNG 2002), as well as 2010 scale data from the Wild Cove Waste Disposal Site, were used.

The assumed waste generation rates are 1.30 kg/person/day in rural areas and 2.51 kg/person/day in urban areas. Utilizing these waste generation rates and the population data from the Statistics Canada 2011 Census, the estimated waste generation for the study area was calculated and is presented in Table 3-1.

Table 3-1: Projected Annual Generation of Solid Waste for Western Newfoundland

Type of Community	Population	Waste Generation (tonnes/year)	
		Residential	IC&I
Urban	38,161	11,886	23,074
Rural	35,681	12,356	4,571
Total:	73,261	24,245	27,645

Total waste generated in the region is estimated to be 51,890 tonnes per year with 53% being residential and 47% industrial, commercial, and institutional (IC&I).

This is the total waste generated in the region; however, the tonnage received by the waste management system will likely be less due to the commercial sector using other methods to dispose/recycle waste other than bringing it to the WRWM. For the purpose of calculating costs, it is assumed that 50% of the urban IC&I dry stream is not received by WRWM. The total waste tonnage received by WRWM is estimated to be 45,912 tonnes. The revised tonnages are as presented in Table 3-2.

Table 3-2: Projected Annual Solid Waste Received by WRWM

Type of Community	Population	Waste Generation (tonnes/year)	
		Residential	IC&I
Urban	38,161	11,886	17,097
Rural	35,681	12,356	4,570
Total:	73,261	24,245	21,667

4.0 WASTE STREAM

The committee has decided on a two-stream (wet/dry) system to manage the waste stream.

With wet/dry collection, waste is separated into two categories: Wet materials (yard trimmings, food scraps, diapers, soiled paper, animal waste, etc); and Dry materials (glass containers, tin and steel cans, plastics, etc.). The Wet stream is composted, while the materials within the Dry stream are separated for recycling. Because Wet materials are kept separate from the rest of the waste materials, recyclables are kept relatively uncontaminated and marketable.

Some of the advantages with a Wet/Dry system include:

- Efficient single-pass collection;
- Control of recovery rates occurs at the facility instead of in the home or curb, providing the flexibility to respond to market demands;
- The production of compost;
- The stabilization of Wet waste residue; and
- The inability to hide unacceptable wastes (e.g. HHW, yard waste) in transparent bags.

Wet-Dry bags

- Use of bags reduce capital costs (in comparison to using carts or bins);
- The familiarity of bags to residents; and
- The ease of loading bags into the collection vehicles.

Some disadvantages of the Wet-Dry system include:

- Increase of plastics residue and other contaminants in compost;
- Higher screening costs;
- Greater composting capacity needed to process non-organic Wet waste;
- Medical waste such as sharps on the sorting line;
- Recyclables in the Dry stream can become tangled in clumps with waste and remain unsorted;
- The composition of waste, such as hidden medical waste or other undesirable material, can discourage sorters;
- Contamination or breakage of waste (e.g. contamination of paper with broken glass or un-rinsed containers);
- Bags may be prone to tearing or puncturing;
- Bags of waste may be torn open by dogs, raccoons, crows, seagulls, or other animals; and
- Higher consumption of plastic.

5.0 INTEGRATION OF WESTERN WASTE TO THE CENTRAL NEWFOUNDLAND WASTE FACILITY

In 2010, WRWM conducted several public consultation events for the general public on work and findings completed to date. Through these consultations, a question was posed as to the viability of integrating the Municipal Solid Waste (MSW) generated within the Western Newfoundland Waste Management Region into the Central Newfoundland Waste Management System located in Norris Arm. From this, the committee had requested that BNG undertake a preliminary investigation of this option and its environmental and financial viability.

5.1 SUMMARY OF INTEGRATION REVIEW

The outcome of the investigation provided a preliminary look at the capital and operational costs of a stand-alone waste management system in Western Newfoundland, and the capital requirements, operational and investment costs to prepare the Region for transport of each waste stream to the Central Newfoundland Site. Estimated operating and transportation costs are identified in Table 12-1. It is estimated that \$75,000,000 in capital will be saved by integrating the western waste system with the central waste system.

Table 5-1: Estimated Operating and Transportation Costs – 1 Facility vs. 2 Facilities

Option	Facility Operations ¹	Transportation Cost ^{1,2}
Scenario 1: Two Facilities (Norris Arm and Birchy Ridge)		
Central Facility	\$4,271,000	-
Western Facility	\$4,558,000	-
NorPen Trucking	-	\$405,000
Subtotal	\$8,829,000	\$405,000
Total		\$9,234,000
Scenario 2A: One Facility (Norris Arm)³		
Central Facility	\$6,694,000	
Western Facility		\$1,631,000
NorPen Trucking	-	\$617,000
Subtotal	\$6,694,000	\$2,248,000
Total		\$8,942,000
Scenario 2B: One Facility (Norris Arm)⁴		
Central Facility	\$6,694,000	-
Western Facility		\$1,875,000
NorPen Trucking	-	\$617,000
Subtotal	\$6,694,000	\$2,492,000
Total		\$9,186,000

¹ Estimates are order of magnitude +/- 25%

² Includes current fuel surcharges and the trucking of bulk waste

³ Assumes travel from Birchy Ridge

⁴ Assumes travel from Pasadena

From the costs identified, the following conclusions can be made:

- The cost of operating two regional facilities (Western and Central), assuming that the Western location is Birchy Ridge, is approximately \$292,000 higher than operating one facility in Central;
- The cost of operating two regional facilities (Western and Central), assuming that the Western location is Pasadena, is approximately \$48,000 higher than operating one facility in Central;
- Operating costs for one facility (\$6,694,000) is \$2,135,000 lower than operating two facilities (\$8,829,000);
- Trucking costs for one facility (\$405,000) are \$1,843,000 higher than two facilities (\$2,248,000) if travelling from the Birchy Ridge location and \$2,087,000 higher if travelling from the Pasadena location (\$2,492,000); and
- The potential capital cost savings (2015 dollars) by constructing one facility in Central is approximately \$75 million (+/- 25%).

6.0 GREENHOUSE GAS EFFECTS AND COMPARISON OF TRANSPORTING WASTE TO CENTRAL NEWFOUNDLAND

A carbon life cycle assessment (LCA) was undertaken for the two potential waste management options discussed above. The LCA was designed to identify the expected climate change impacts identified in equivalent carbon dioxide emissions (eCO₂) of the two presented options and to aid in the decision making process, alongside other features of interest such as construction and operation costs.

The major difference between the two scenarios was related to greater transportation emissions for waste shipped from the Western Zone to the Central Zone RWMF in Scenario 1.

The initial LCA Impact Assessment showed that gas emissions (carbon dioxide and methane) from the landfills at the RWMFs, as well as emissions from the compost facilities, had the potential to influence the significance of the analysis outcome noted in Table 6-1. For this reason, these emission sources were brought into the comparison even though they were considered equivalent in magnitude for both scenarios.

Table 6-1: Comparison of eCO₂ Emissions

LCA Phases	Scenario 1 GHG Emissions (t eCO ₂)	Scenario 2 GHG Emissions (t eCO ₂)
Procurement of Materials	118,669	117,848
Construction - Transfer Stations	2,512	2,333
Construction - RWMFs	2,121	4,241
Operation - Collection	92,768	92,768
Operation - Transportation	96,691	31,032
Operation - Transfer Stations	21,363	19,837
Operation - RWMFs	41,776	58,659
Decommissioning - Transfer Stations	44	41
Decommissioning - RWMFs	57	114
Total	376,001	326,872

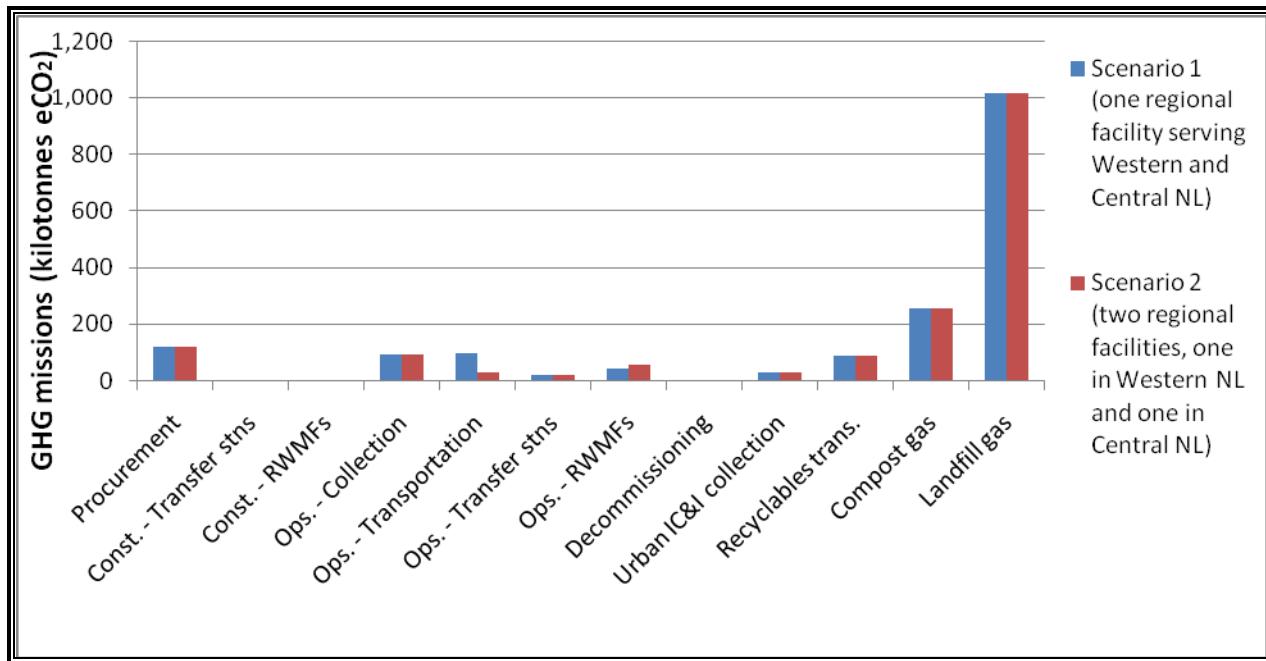


Figure 6-1: Lifetime GHG Emissions for Procurement, Construction, Operation and Decommissioning of Two Plan Scenarios, with "Best-Case" Landfill Assumptions

In terms of carbon performance, Figure 6-1 implies that Scenario 2 achieves a level of 653 kg (350 kg) eCO₂ per tonne of waste handled and Scenario 1 achieves a level of 643 kg (340 kg) eCO₂ per tonne of waste handled, for the “best case” landfill assumptions.

This comparison of the two plan scenarios implies that the difference in transportation related emissions is not large in terms of the total greenhouse gas emissions that could be attributed to the operation of the waste management systems.

To put the magnitude of these emissions into perspective, it is estimated that the difference between the scenario emissions amounts to approximately 5.5 kg eCO₂ per person per year for the residents within the Western and Central Zones. This relates to an average total residential emission level of approximately 2,400 kg per person per year according to a GHG emissions assessment completed for St. John's in 2006 or the idealized “one tonne challenge” (1,000 kg) level the Canadian federal government previously aspired to for a national average. Residential emissions in this context include home space heating as well as personal vehicle use.

The LCA found no substantial difference between the two options in terms of effective carbon emissions when the implications of landfill emissions (common to both options) are considered.

7.0 WASTE MANAGEMENT SYSTEM DESCRIPTION

The following waste management system is based on a two-stream (wet/dry) system transported to the Central Regional Facility in Norris Arm for processing and disposal.

The system consists mainly of a number of Local Waste Management Facilities, the main purpose of which is to transfer waste from smaller vehicles into larger ones to reduce the cost of transportation.

7.1 WET/DRY

Wet/dry waste collected from municipalities and businesses will be brought to the LWMF. Upon entering the LWMF, all waste will be weighed. The fee charged will be based on the type of material and tonnage brought into the facility. After being weighed, it will be dumped onto a tipping floor contained in a building. From the tipping floor, the waste will be loaded into trailers for transportation to the Central Facility. Depending upon the size of the facility, wet and dry waste may be cross-loaded in the same trailer or there may be dedicated trailers for wet and dry.

7.2 CONSTRUCTION AND DEMOLITION (C&D)

C&D waste will be weighed and then placed in a storage area at the LWMF. On an as needed basis, the C&D material will be loaded onto compacting trailers and brought to a C&D landfill at Wild Cove. It is anticipated that Wild Cove will be permitted as a C&D landfill.

7.3 BULK

Bulk waste will be weighed and then placed in a storage area at the LWMF. Bulk waste is required by the Department of Environment to be placed in a lined (or equivalent) landfill. On an as needed basis, the bulk material will be loaded onto compacting trailers and brought to the Central landfill at Norris Arm. However, there is a possibility that Wild Cove may be permitted as a landfill that could accept bulk materials. For costing purposes it is assumed the bulk material is taken to the Central landfill.

7.4 HHW

HHW waste will be weighed and then placed in drums which are stored in a HHW storage facility. On an as needed basis, the drums would be collected by a cube van and brought to the larger HHW storage facility in Wild Cove. At the Wild Cove facility, the HHW drums will be sorted and stored by classification. A licensed HHW disposal contractor would be engaged to collect the HHW drums in tractor trailer load volumes from Wild Cove and transport them to disposal facilities in Canada.

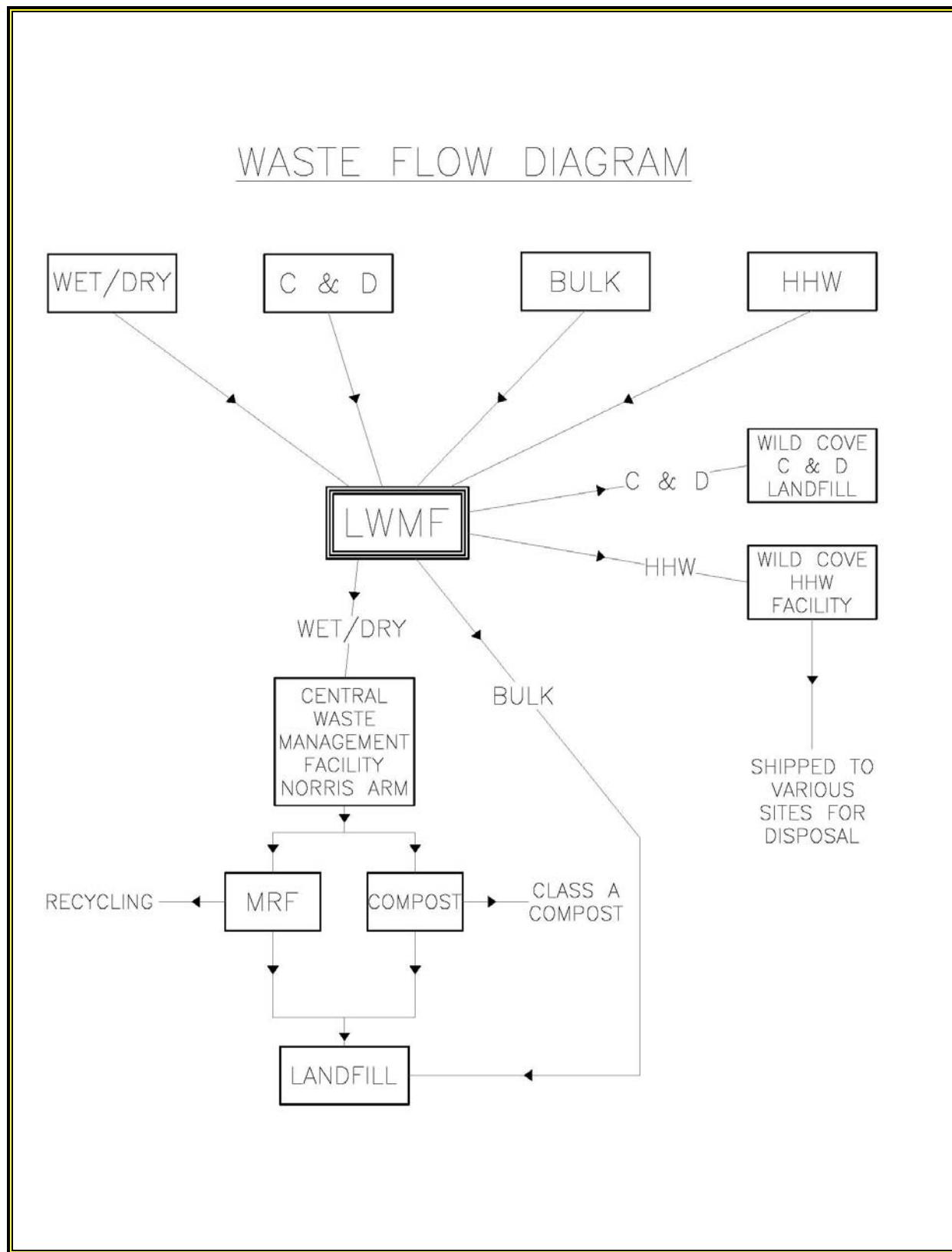


Figure 7-1: Waste Flow Diagram

7.5 LOCAL WASTE MANAGEMENT FACILITY DESCRIPTION

Based on previous consultation with the Western Newfoundland Waste Management Committee, all local waste management facilities will have the following components:

- Pre-engineered building housing a tipping floor, trailer, office, washroom
- Household Hazardous (HHW) receiving facility.
- Unattended automated weight scales
- C&D, Bulk and Metal materials storage area

Photographs of a typical LWMF are provided below.



Figure 7-2: Pre-Engineered Building Housing a Tipping Floor, Trailer, Office, and Washroom



Figure 7-3: Unattended Automated Weigh Scale



Figure 7-4: Tipping Floor



Figure 7-5: C&D, Bulk and Metals Storage Area

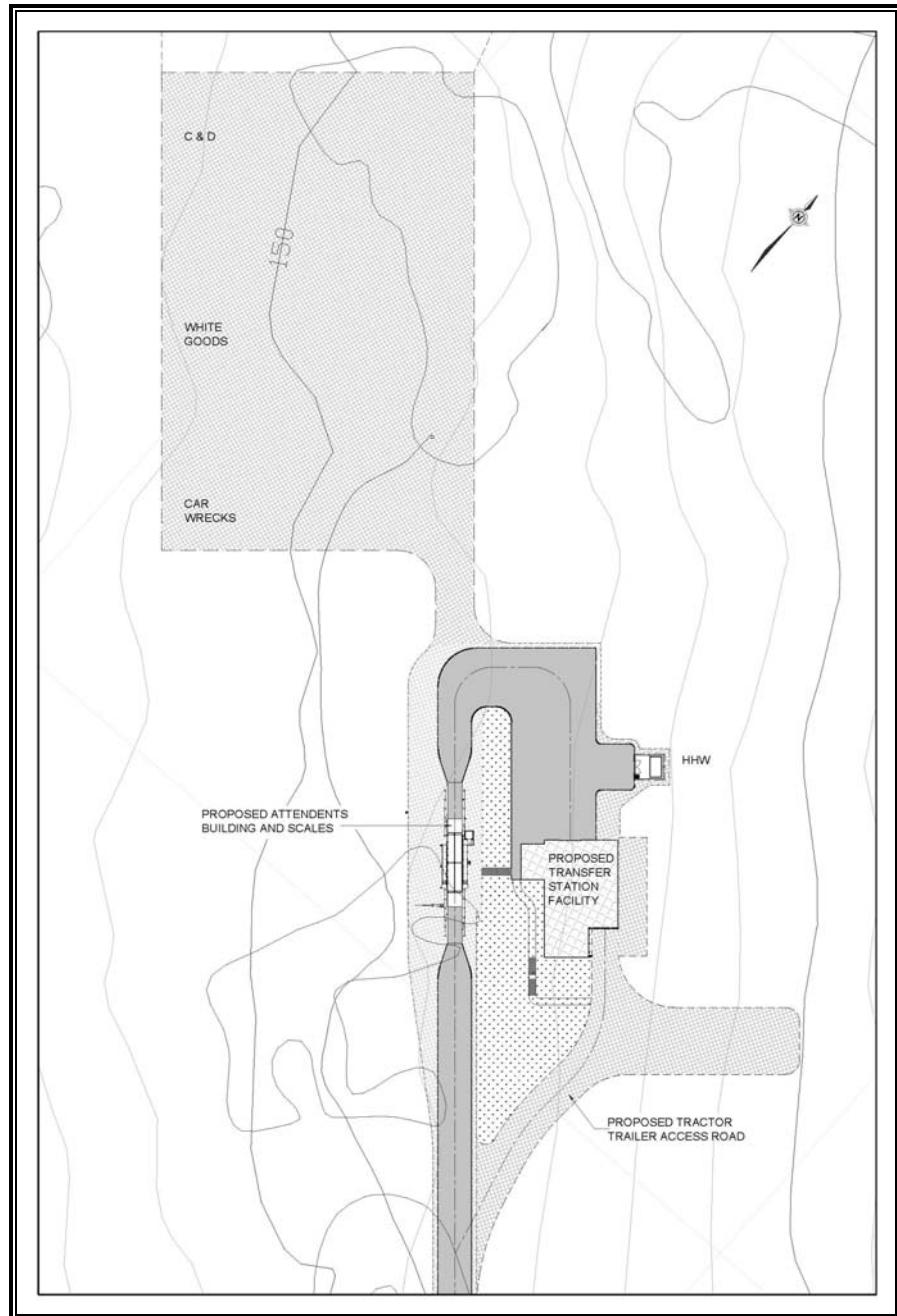


Figure 7-6: Typical LWMF Site Layout

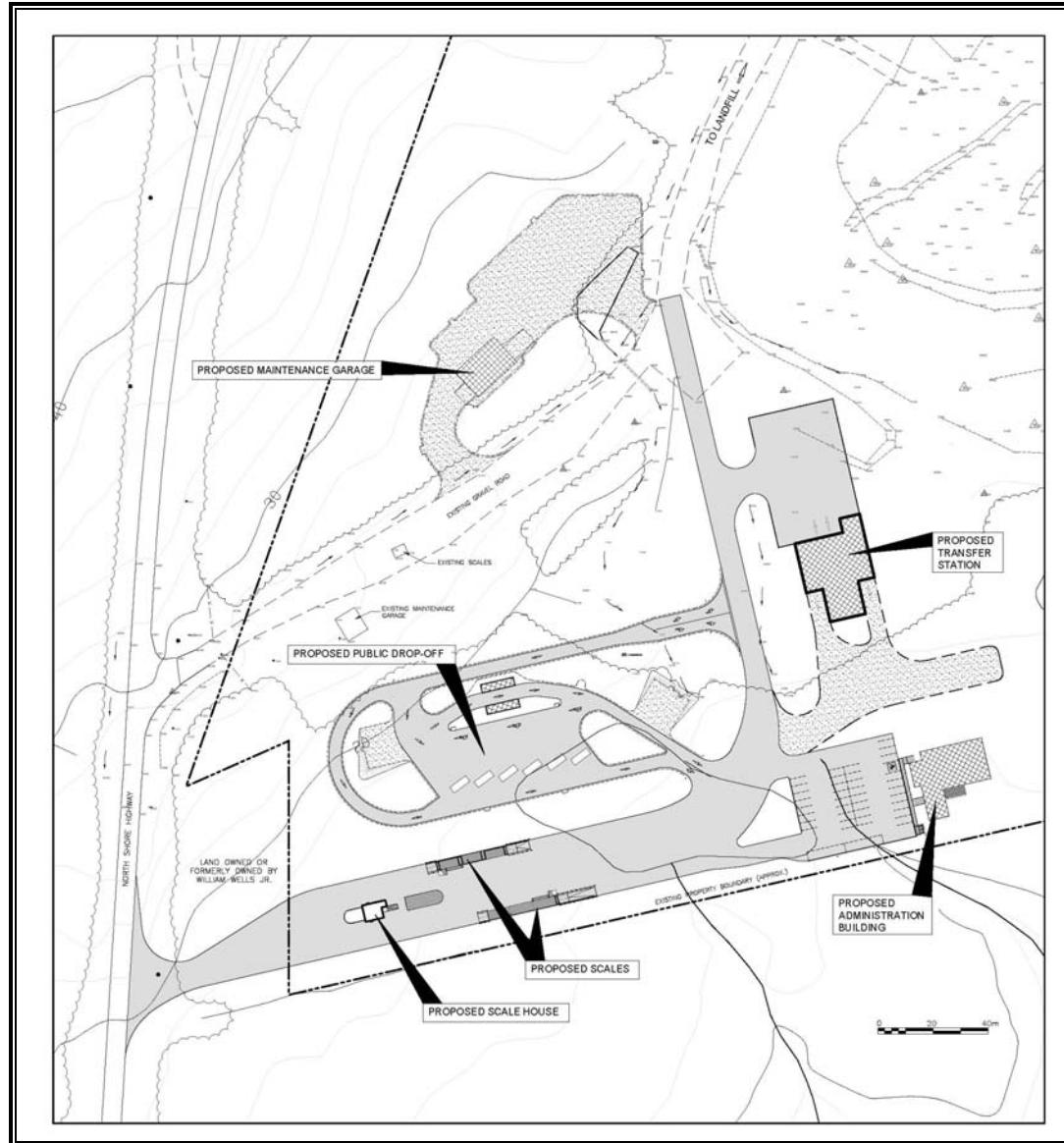


Figure 7-7: Concept Layout of Wild Cove Site

7.6 LOCAL WASTE MANAGEMENT FACILITY LOCATIONS

The project team developed a detailed and logical collection and transportation model that allowed the Committee an opportunity to study the advantages and disadvantages of several potential local waste management facility options and locations. The preferred system was selected based upon the objectives of the waste management strategy, the convenience to the users, and the overall cost.

The assessment of the collection and transportation requirements of the new system has resulted in selecting a collection and local waste management facility system that includes the following locations:

- Long Range Waste Management Facility
- White Bay South/Western Hills Waste Management Facility
- Burgeo/Ramea Waste Management Facility
- Southwest Coast Waste Management Facility
- Bay St. George Waste Management Facility
- Wild Cove Waste Management Facility

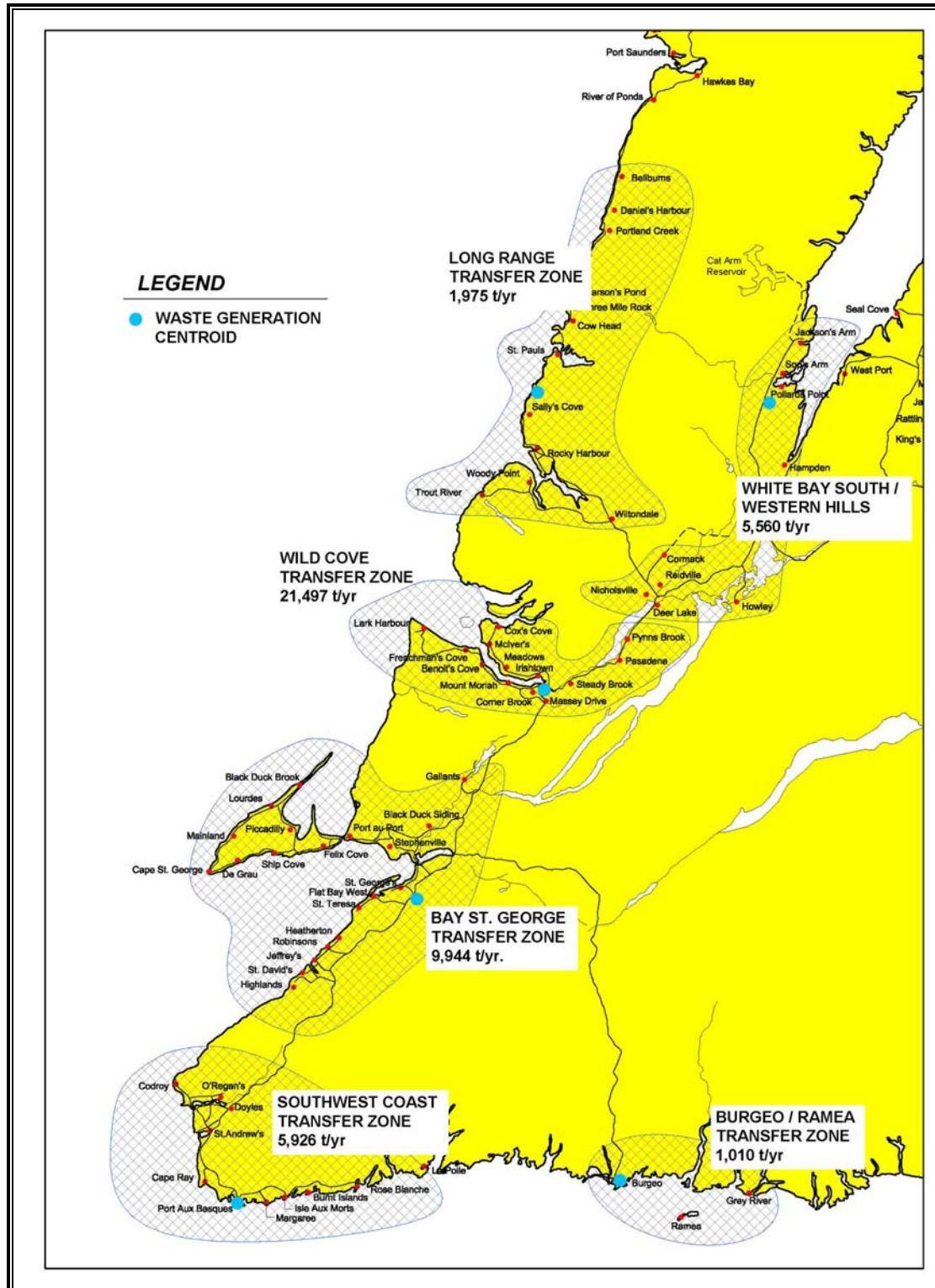


Figure 7-8: Proposed Local Waste Management Facility Locations for Western Newfoundland.

7.7 C&D, BULK & METALS DROP-OFFS

During the planning process, the Committee was concerned that some residents were greater than an hour's drive from a LWMF. The Committee, therefore, decided to add three drop-off sites for C&D, bulk and metals. These sites will be located in the general areas of:

- Port au Port Peninsula
- Bonne Bay South
- Daniel's Harbour

The drop-off sites would be staffed when open and contain a weigh scale, attendant building and storage area for C&D, bulk and metal materials.

8.0 ESTIMATED CAPITAL AND OPERATING COSTS

This section of the report provides estimated capital and operating costs associated with the Wet/Dry waste stream with processing and disposal at the Central Regional facility. The cost analysis has been completed using generally accepted costing principles. The analysis is supported by numerical models in the case of the collection and transportation components, and Central actual construction cost in the case of the capital works.

8.1 CAPITAL COSTS

8.1.1 Long Range LWMF Capital Cost Estimate

Table 8-1: Capital Cost for Long Range Local Waste Management Facility

Item	Cost (\$)
Land Purchase - Assumed Western Newfoundland Solid Waste Management Commission would not have to purchase land.	\$0
Site Development- Site grading, excavation, etc.	\$285,000
Clearing and Grubbing	\$50,000
Pre-Engineered Building - Assumed a building of approximately 360 m ² . The building would also include an office and washroom.	\$1,470,000
HHW Storage	\$27,000
Access Road – Assumed 140 m paved access road	\$82,600
Onsite Paving	\$250,000
Weigh Scales - Inbound 40 ft weigh scales	\$48,000
Unattended Scale System	\$110,000
Water Supply – A water supply will be needed for employee use, washroom facilities, and facility washdown. It was assumed you don't need large volumes of water and therefore do not require storage.	\$15,000
Power Supply - It was assumed that power is located near by	\$5,000
Septic Tank and Tile Field	\$15,000
Fencing and Gates – Assumed fencing along entrance of site with main gate.	\$15,000
Cardboard Bailer	\$30,000
Signage	\$12,000
Groundwater monitoring	\$30,000
Landscaping	\$20,000
Sub-Total	\$2,464,600
Contingency (10%)	\$123,230
HST (13%)	\$336,418
Engineering (15%)	\$438,637
Total	\$3,362,885

8.1.2 *White Bay South LWMF Capital Cost Estimate*

Table 8-2: Capital Cost for White Bay South Local Waste Management Facility

Item	Cost (\$)
Land Purchase - Assumed Western Newfoundland Solid Waste Management Commission would not have to purchase land.	\$0
Site Development- Site grading, excavation, etc.	\$285,000
Clearing and Grubbing	\$50,000
Pre-Engineered Building - Assumed a building of approximately 360 m ² . The building would also include an office and washroom.	\$1,470,000
HHW Storage	\$27,000
Access Road – Assumed 120 m paved access road	\$70,800
Onsite Paving	\$250,000
Weigh Scales - Inbound 40 ft weigh scales	\$48,000
Unattended Scale System	\$110,000
Water Supply – A water supply will be needed for employee use, washroom facilities, and facility washdown. It was assumed you don't need large volumes of water and therefore do not require storage.	\$15,000
Power Supply – Generator Power	\$200,000
Septic Tank and Tile Field	\$15,000
Fencing and Gates – Assumed fencing along entrance of site with main gate.	\$15,000
Cardboard Bailer	\$30,000
Signage	\$12,000
Groundwater monitoring	\$30,000
Landscaping	\$20,000
Sub-Total	\$2,647,800
Contingency (10%)	\$132,390
HST (13%)	\$361,425
Engineering (15%)	\$471,242
Total	\$3,612,857

8.1.3 Burgeo/Ramea LWMF Capital Cost Estimate

Table 8-3: Capital Cost for Burgeo/Ramea Waste Management Facility

Item	Cost (\$)
Land Purchase - Assumed Western Newfoundland Solid Waste Management Commission would not have to purchase land.	\$0
Site Development- Site grading, excavation, etc.	\$415,000
Clearing and Grubbing	\$5,000
Pre-Engineered Building - Assumed a building of approximately 360 m ² . The building would also include an office and washroom.	\$1,470,000
HHW Storage	\$27,000
Access Road – Assumed 140 m paved access road	\$59,000
Onsite Paving	\$250,000
Weigh Scales - Inbound 40 ft weigh scales	\$48,000
Unattended Scale System	\$110,000
Water Supply – A water supply will be needed for employee use, washroom facilities, and facility washdown. It was assumed you don't need large volumes of water and therefore do not require storage.	\$15,000
Power Supply - It was assumed that power is located near by	\$5,000
Septic Tank and Tile Field	\$15,000
Fencing and Gates – Assumed fencing along entrance of site with main gate.	\$15,000
Cardboard Bailer	\$30,000
Signage	\$12,000
Groundwater monitoring	\$30,000
Landscaping	\$20,000
Sub-Total	\$2,526,000
Contingency (10%)	\$126,300
HST (13%)	\$344,799
Engineering (15%)	\$449,565
Total	\$3,446,664

8.1.4 Southwest Coast LWMF Capital Cost Estimate

Table 8-4: Capital Cost Estimate for Southwest Coast Local Waste Management Facility

Item	Cost (\$)
Land Purchase - Assumed Western Newfoundland Solid Waste Management Commission would not have to purchase land.	\$0
Site Development- Site grading, excavation, etc.	\$415,000
Clearing and Grubbing	\$50,000
Pre-Engineered Building - Assumed a building of approximately 360 m ² . The building would also include an office and washroom.	\$1,470,000
HHW Storage	\$27,000
Access Road – Assumed 140 m paved access road	\$88,500
Turning Lane (TCH)	\$250,000
Onsite Paving	\$250,000
Weigh Scales - Inbound 40 ft weigh scales	\$48,000
Unattended Scale System	\$110,000
Water Supply – A water supply will be needed for employee use, washroom facilities, and facility washdown. It was assumed you don't need large volumes of water and therefore do not require storage.	\$15,000
Power Supply - It was assumed that power is located near by	\$5,000
Septic Tank and Tile Field	\$15,000
Fencing and Gates – Assumed fencing along entrance of site with main gate.	\$15,000
Cardboard Bailer	\$30,000
Signage	\$12,000
Groundwater monitoring	\$30,000
Landscaping	\$20,000
Sub-Total	\$2,850,500
Contingency (5%)	\$142,525
HST (13%)	\$389,093
Engineering (15%)	\$507,318
Total	\$3,889,436

8.1.5 Bay St. George LWMF Capital Cost Estimate

Table 8-5: Capital Cost Estimate for Bay St. George Local Waste Management Facility

Item	Cost (\$)
Land Purchase - Assumed Western Newfoundland Solid Waste Management Commission would not have to purchase land.	\$0
Site Development- Site grading, excavation, etc.	\$285,000
Clearing and Grubbing	\$25,000
Pre-Engineered Building - Assumed a building of approximately 670 m ² . The building would also include an office and washroom.	\$2,800,000
HHW Storage (2 units)	\$54,000
Access Road – Assumed 400 m paved access road	\$116,000
Onsite Paving	\$250,000
Relocate Weigh Scales	\$10,000
Unattended Scale System	\$110,000
Water Supply – A water supply will be needed for employee use, washroom facilities, and facility washdown. It was assumed you don't need large volumes of water and therefore do not require storage.	\$15,000
Power Supply - It was assumed that power is located near by	\$5,000
Septic Tank and Tile Field	\$15,000
Fencing and Gates – Assumed fencing along entrance of site with main gate.	\$15,000
Cardboard Bailer	\$30,000
Signage	\$12,000
Groundwater monitoring	\$30,000
Landscaping	\$20,000
Sub-Total	\$3,792,000
Contingency (5%)	\$189,600
HST (13%)	\$517,608
Engineering (15%)	\$674,881
Total	\$5,174,089

8.1.6 Wild Cove LWMF Capital Cost Estimate

Table 8-6: Capital Cost Estimate for Corner Brook Local Waste Management Facility

Item	Cost (\$)
Land Purchase - Assumed Western Newfoundland Solid Waste Management Commission would not have to purchase land.	\$0
Site Development- Site grading, excavation, etc.	\$840,000
Clearing and Grubbing	\$100,000
Pre-Engineered Building - Assumed a building of approximately 1,000 m ² .	\$4,070,000
Administration Building	\$2,700,000
Scale House	\$258,500
Maintenance Garage plus Tools	\$640,000
Fuel Storage	\$60,000
Furniture, Computers, software, telephones, etc.	210,000
Telecommunications	250,000
HHW Storage (4 units)	\$108,000
Access Road – Assumed 400 m paved access road	\$116,000
Onsite Paving	\$700,000
Relocate Weigh Scales	\$216,000
Unattended Scale System	\$220,000
Water Supply – Assume 4 wells needed	\$60,000
Power Supply - It was assumed that power is located near by	\$10,000
Septic Tank and Tile Field needed for each building	\$75,000
Fencing and Gates – Assumed fencing along entrance of site with main gate.	\$15,000
Cardboard Bailer	\$30,000
Signage	\$36,000
Groundwater monitoring	\$60,000
OHS, environmental monitoring and facility operational plans	\$250,000
Landscaping	\$50,000
Sub-Total	\$11,508,500
Contingency (5%)	\$575,425
HST (13%)	\$1,570,910
Engineering (15%)	\$2,048,225
Total	\$15,703,061

8.1.7 Public Drop Off Facilities Capital Cost

Table 8-7: Transportation Cost using 53ft Transfer Trailer or B-Train Trailer

Item	Cost
Attendant Building	\$20,000
Access Road	\$58,500
Power	\$5,000
Site Development	\$157,000
Fencing & Gate	\$15,000
Signage	\$10,000
Scales	\$48,000
Unattended Scale System	\$80,000
Landscaping	\$5,000
Sub-Total	\$398,500
Three Locations	\$1,195,500
Contingency (5%)	\$1,255,275
HST (13%)	\$214,991
ENG (15%)	\$280,315
Total	\$1,750,581

8.1.8 Capital Equipment

Table 8-8: Capital Equipment Estimate for WRWM

Item	Cost
Transfer Trailers / B-Train (17)	\$3,315,000
C&D, Bulk Handling Trailer	\$430,000
LWMF Backhoe (7)	\$980,000
Roll on/off bins (10)	\$120,000
Roll on/off Truck	\$148,000
Excavator	\$200,000
Site Loader	\$180,000
Site Pickup (2)	\$70,000
Utility Tractor/mower/snow blower	\$50,000
ATV Utility Vehicle	\$15,000
Sub-Total	\$5,508,000
Contingency (10%)	\$550,800
HST (13%)	\$787,644
ENG (15%)	\$342,322
Total	\$7,188,766

8.1.9 Estimated Capital Cost Summary of Local Waste Management Facilities

Table 8-9: Summary of LWMF Capital Cost

Item	Cost
Long Range	\$3,362,885
White Bay South	\$3,612,857
Burgeo/Ramea	\$3,446,664
Southwest Coast	\$3,889,436
Bay St. George	\$5,174,089
Wild Cove	\$15,703,061
Total	\$35,188,992

8.1.10 Western Waste Management Estimated Capital Cost Summary

Table 8-10: Summary of WRWM Capital Cost

Item	Cost
Local Waste Management Facilities	\$35,188,992
C&D, Bulk, Metals Sites	\$1,750,581
Equipment	\$7,188,766
Total	\$44,128,338

8.2 OPERATING COSTS

The operating costs are based on the description of the waste management system given in previous sections. The operating costs are annual costs in 2013 dollars and assume all capital costs are provided by other funding sources and do not require amortization. The exception is replacement of rolling stock; i.e., trailers and heavy equipment for which a capital replacement cost has been included.

While costs are given per tonne, which is typical for the industry, the average residential household produces approximately 0.8 t of waste per year.

The tipping fees for Central are based on an assumed rate of \$85.00/T.

8.2.1 Long Range LWMF Annual Operational Cost Estimate (2,452 homes and 1,975 T/yr)

Table 8-11: Operational Cost for Long Range Local Waste Management Facility

Item	Cost (\$/year)
Staffing - 24 hrs/wk @ 20.00/hr + 35% payroll burden	\$33,696
Backhoe (10 hrs/wk) fuel & misc	\$14,040
Service / Maintenance Program for Heavy Equipment	\$4,846
Power Lighting, Building Maintenance	\$7,800
Service / Maintenance Program for Weigh Scales	\$4,000
Dust control	\$500
Animal, Rodent & Vector Control Program	\$1,035
Environmental Monitoring	\$1,000
C&D Transportation Costs (285 t/yr)	\$14,560
Bulk Transportation Costs (61 t/yr)	\$4,862
Bulk Tipping Fee Central	\$5,185
Wet/Dry Transportation Costs (1527 t/yr)	\$61,080
Wet/Dry Tipping Fee Central	\$129,795
Transportation & Disposal Costs (HHW)- Approx 1.5 T @ \$500/T	\$4,367
Sub-Total	\$286,766
Contingency (5%)	\$14,338
Total	\$301,105

8.2.2 White Bay South LWMF Annual Operational Cost Estimate (3,488 homes and 5,560 T/yr)

Table 8-12: Operational Cost for White Bay South Local Waste Management Facility

Item	Cost (\$/year)
Staffing - 40 hrs/wk @ 20.00/hr + 35% payroll burden	\$56,160
Backhoe (25 hrs/wk) fuel & misc	\$35,100
Service / Maintenance Program for Heavy Equipment	\$12,116
Power Lighting, Building Maintenance	\$7,800
Service / Maintenance Program for Weigh Scales	\$4,000
Dust control	\$500
Animal, Rodent & Vector Control Program	\$1,035
Environmental Monitoring	\$1,000
C&D Transportation Costs (879 t/yr)	\$34,916
Bulk Transportation Costs (188 t/yr)	\$10,862
Bulk Tipping Fee Central	\$15,980
Wet/Dry Transportation Costs (4177 t/yr)	\$104,425
Wet/Dry Tipping Fee Central	\$355,045
Transportation & Disposal Costs (HHW)- Approx 1.5 T @ \$500/T	\$5,299
Sub-Total	\$644,238
Contingency (5%)	\$32,212
Total	\$676,450

8.2.3 Burgeo/Ramea LWMF Annual Operational Cost Estimate (921 homes and 1,010 T/yr)

Table 8-13: Operational Cost for Burgeo/Ramea Local Waste Management Facility

Item	Cost (\$/year)
Staffing - 16 hrs/wk @ 20.00/hr + 35% payroll burden	\$22,464
Backhoe (5 hrs/wk) fuel & misc	\$7,020
Service / Maintenance Program for Heavy Equipment	\$2,423
Power Lighting, Building Maintenance	\$7,800
Service / Maintenance Program for Weigh Scales	\$4,000
Dust control	\$500
Animal, Rodent & Vector Control Program	\$1,035
Environmental Monitoring	\$1,000
C&D Transportation Costs (141 t/yr)	\$12,220
Bulk Transportation Costs (30 t/yr)	\$4,008
Bulk Tipping Fee Central	\$2,550
Wet/Dry Transportation Costs (788 t/yr)	\$73,284
Wet/Dry Tipping Fee Central	\$66,980
Transportation & Disposal Costs (HHW)- Approx 1.5 T @ \$500/T	\$2,584
Sub-Total	\$207,868
Contingency (5%)	\$10,393
Total	\$218,262

8.2.4 Southwest Coast LWMF Annual Operational Cost Estimate (4,277 homes and 5,926 T/yr)

Table 8-14: Operational Cost for Southwest Coast Local Waste Management Facility

Item	Cost (\$/year)
Staffing - 40 hrs/wk @ 20.00/hr + 35% payroll burden	\$56,160
Backhoe (27 hrs/wk) fuel & misc	\$37,908
Service / Maintenance Program for Heavy Equipment	\$13,085
Power Lighting, Building Maintenance	\$7,800
Service / Maintenance Program for Weigh Scales	\$4,000
Dust control	\$500
Animal, Rodent & Vector Control Program	\$1,035
Environmental Monitoring	\$1,000
C&D Transportation Costs (914 t/yr)	\$59,410
Bulk Transportation Costs (196 t/yr)	\$21,233
Bulk Tipping Fee Central	\$16,660
Wet/Dry Transportation Costs (4490 t/yr)	\$269,400
Wet/Dry Tipping Fee Central	\$381,650
Transportation & Disposal Costs (HHW)- Approx 1.5 T @ \$500/T	\$9,249
Sub-Total	\$879,091
Contingency (5%)	\$43,955
Total	\$923,045

8.2.5 Bay St. George LWMF Annual Operational Cost Estimate (7,271 homes and 9,944 T/yr)

Table 8-15: Operational Cost for Bay St. George Local Waste Management Facility

Item	Cost (\$/year)
Staffing - 50 hrs/wk X 2 @ 20.00/hr + 35% payroll burden	\$140,400
Backhoe (45 hrs/wk) fuel & misc	\$63,180
Service / Maintenance Program for Heavy Equipment	\$21,809
Power Lighting, Building Maintenance	\$11,700
Service / Maintenance Program for Weigh Scales	\$4,000
Dust control	\$500
Animal, Rodent & Vector Control Program	\$1,035
Environmental Monitoring	\$1,000
C&D Transportation Costs (1529 t/yr)	\$66,257
Bulk Transportation Costs (327 t/yr)	\$28,340
Bulk Tipping Fee Central	\$27,795
Wet/Dry Transportation Costs (6541 t/yr)	\$294,345
Wet/Dry Tipping Fee Central	\$555,985
Transportation & Disposal Costs (HHW)- Approx 1.5 T @ \$500/T	\$11,404
Sub-Total	\$1,227,749
Contingency (5%)	\$61,387
Total	\$1,289,137

8.2.6 Wild Cove LWMF Annual Operational Cost Estimate (13,086 homes and 21,467 T/yr)

Table 8-16: Operational Cost for Wild Cove Local Waste Management Facility

Item	Cost (\$/year)
Staffing	\$766,800
Administration	\$67,000
Backhoe 2 ea (80 hrs/wk) fuel & misc	\$112,320
Excavator C&D Site 30 hr/wk fuel	\$46,800
Site Loader 30 hrs/wk fuel	\$51,480
Service / Maintenance Program for Heavy Equipment	\$48,719
Site Pickups	\$20,000
Transfer Trailer Maintenance	\$49,000
Power Lighting, Building Maintenance LWMF+ Garage	\$31,200
Service / Maintenance Program for Weigh Scales	\$8,000
Dust control	\$1,000
Animal, Rodent & Vector Control Program	\$2,070
Environmental Monitoring	\$20,000
Public Drop Off	\$72,800
C&D Transportation Costs (3443 t/yr)	\$0
Bulk Transportation Costs (737 t/yr)	\$55,889
Bulk Tipping Fee Central	\$62,645
Wet/Dry Transportation Costs (16,089 t/yr)	\$603,338
Wet/Dry Tipping Fee Central	\$1,367,565
Transportation & Disposal Costs (HHW)- Approx 1.5 T @ \$500/T	\$11,777
Sub-Total	\$3,398,403
Contingency (5%)	\$169,920
Total	\$3,568,323

8.2.7 Estimated Amortization Costs for Capital Equipment

Table 8-17: Estimate Amortization Costs for Capital Equipment

Item	Capital Cost	Life Span	Salvage Value	Annual Cost
Transfer Trailers / B-Train (17)	\$3,315,000	15	\$331,500	\$198,900
C&D, Bulk Handling Trailer	\$430,000	15	\$43,000	\$25,800
LWMF Backhoe (7)	\$980,000	15	\$315,000	\$133,000
Roll on/off bins (10)	\$120,000	15	\$0	\$8,000
Roll on/off Truck	\$148,000	5	\$14,800	\$8,880
Excavator	\$200,000	5	\$65,000	\$27,000
Site Loader	\$180,000	5	\$70,000	\$22,000
Site Pickup (2)	\$70,000	5	\$14,000	\$11,200
Utility Tractor/mower/snow blower	\$50,000	5	\$12,500,	\$7,500
ATV Utility Vehicle	\$15,000	15	\$1,500	\$2,700
Weight Scales LWMF (6)	\$336,000	15	\$33,600	\$20,160
Weight Scales Regional Site (6)	\$216,000		\$21,600	\$12,960
Sub-Total	\$5,630,000			\$478,100

Note: Assuming 4% interest on earnings. 4% is the difference between inflation and actual interest rate.
At 4% real earning rate the annual amount to be deposited would be: \$398,209

8.2.8 Estimated Annual Operating Costs for C&D, Bulk and Metals Drop Off Sites

Table 8-18: Operational Cost for C&D, Bulk and Metals Facilities

Item	Cost (\$/year)
Staffing - 16 hrs/wk X 2 @ 20.00/hr + 35% payroll burden	\$67,392
Power, Lighting, Building Maintenance	14,400
Service/Maintenance Program for Weigh Scales	12,000
Environmental Monitoring	\$1,500
C&D Additional Transportation Costs (237 T/yr)	\$1,712
Bulk Additional Transportation Costs (52 T/yr)	\$376
Sub-Total	\$97,379
Contingency (5%)	\$4,869
Total	\$102,248

8.2.9 *Estimated Annual Operating Costs*

Table 8-19: Summary of Estimated Annual Operating Cost

Location	Cost	Cost/Tonne
Long Range	\$301,105	\$6.56
White Bay South/Western Hills	\$676,450	\$14.73
Burgeo/Ramea	\$218,262	\$4.75
Southwest Coast	\$92,3045	\$20.10
Bay. St. George	\$1,289,137	\$28.08
Wild Cove	\$3,568,323	\$77.72
Capital Replacement	\$418,120	\$9.11
C&D, Bulk, Metals Drop Offs	\$102,248	\$2.23
Totals	\$7,474,127	\$163.28

Note: Total Waste Tonnage 45,912

8.2.10 *Summary of Line Items*

Table 8-20: Summary of Line Items

Item	Cost	Cost/Tonne
Staffing	\$114,3072	\$24.90
Administration	\$67,000	\$1.46
Backhoe fuel and misc.	\$269,568	\$5.87
Excavator for C&D Site Fuel	\$46,800	\$1.02
Site Loader Fuel	\$51,480	\$1.12
Service/Maintenance Program for Heavy Equipment	\$102,999	\$2.24
Site Pickups	\$20,000	\$0.44
Transfer Trailer Maintenance	\$49,000	\$1.07
Power Lighting, Building Maintenance LWMF + Garage	\$88,500	\$1.93
Service Maintenance Program for Weigh Scales	\$40,000	\$0.87
Dust Control	\$3,500	\$0.08
Animal, Rodent and Vector Control Program	\$7,245	\$0.16
Environmental Monitoring	\$26,500	\$0.58
Public Drop Off	\$72,800	\$1.59
C&D Transportation Costs	\$189,074	\$4.12
Bulk Transportation Costs	\$125,571	\$2.74
Bulk Tipping Fee (Central Facility)	\$130,815	\$2.85
Wet/Transportation Costs	\$1,405,872	\$30.62
Wet/Dry Tipping Fee (Central Facility)	\$2,857,020	\$62.23
Transportation and Disposal Costs for HHW	\$44,681	\$0.97
Capital Replacement	\$398,209	\$8.67
Sub-Total	\$7,139,705	\$155.51
Contingency (5%)	\$356,985	\$7.78
Total	\$7,496,690	\$163.28

Note: Total Waste Tonnage 45,912

8.3 STAFFING REQUIREMENTS

The Western Waste Management strategy will result in the direct creation of approximately 18 new jobs. These do not include contracted services such as curb side collection, trucking from LWMF to Central, and disposal of HHW. The opportunities associated with the management and recovery of recyclable materials will also result in the creation of many indirect private sector opportunities.

The waste management system employment projections are summarized below:

Western Waste Management Direct Hires

Manager
Operations Supervisor
Administration (4)
Mechanic
Scale House Operator
Equipment Operators (9)
Laborer

9.0 IMPLEMENTATION OF WASTE MANAGEMENT SYSTEM

9.1 REQUIREMENTS

The implementation of the Western Waste Management System will require Government assistance to develop appropriate legislation to ensure mandatory compliance of the system and to set up a Regional Service Board to govern and monitor the day-to-day operations of the system. The establishment of the Western Regional Service Board is in progress. The committee is also recommending that the capital works for the waste system be 100% funded by the Government to reduce the cost of waste disposal to the Regional Service Board and the residents of the study area. Existing waste disposal site closeout costs are not included in the tipping fees. The implementation schedule will also require consideration of the schedule detailed in the Provincial Waste Management Strategy.

9.2 IMPLEMENTATION SCHEDULE

The following are the steps to be taken to implement the waste management plan:

- Register each site (LWMF and Drop Off) under the *Environmental Assessment Act*. (three months);
- Acquire the lands necessary for the LWMF and drop-off sites. Note: Crown Land cannot be acquired until sites have been released under the *Environmental Assessment Act*. (12 months);
- Secure funding for capital works;
- Design LWMF (six months);
- Call tenders and award construction LWMFs (three months);
- Construct LWMFs and drop-offs (18 months);
- Purchase and delivery of Equipment (12 months).

For scheduling purposes, 12 months should be allotted to acquire the lands and 24 months for design and construction of the facilities.

10.0 BASIS FOR SIZING AND POTENTIAL EXPANSION

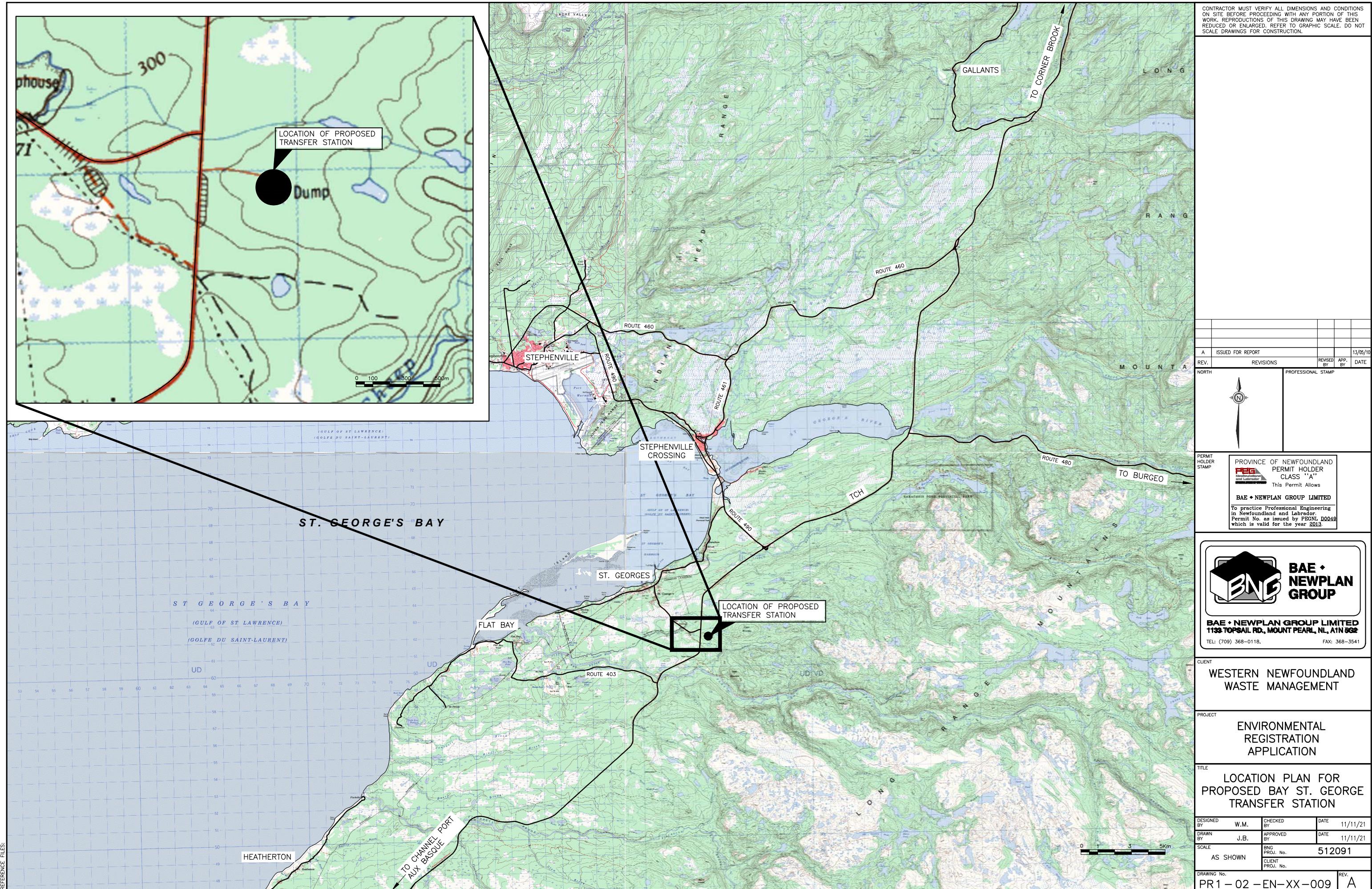
The basis for sizing of the waste management system was developed from actual waste generation data from the region. Where data for specific waste streams were not available, the project team utilized a considerable reference database generated from other jurisdictions. Considerable work has been undertaken by other firms and organizations on the development of municipal waste management systems, and the Western Newfoundland Region has benefited from this experience. As a result, the sizing for each component of the system was based upon proven models and experience.

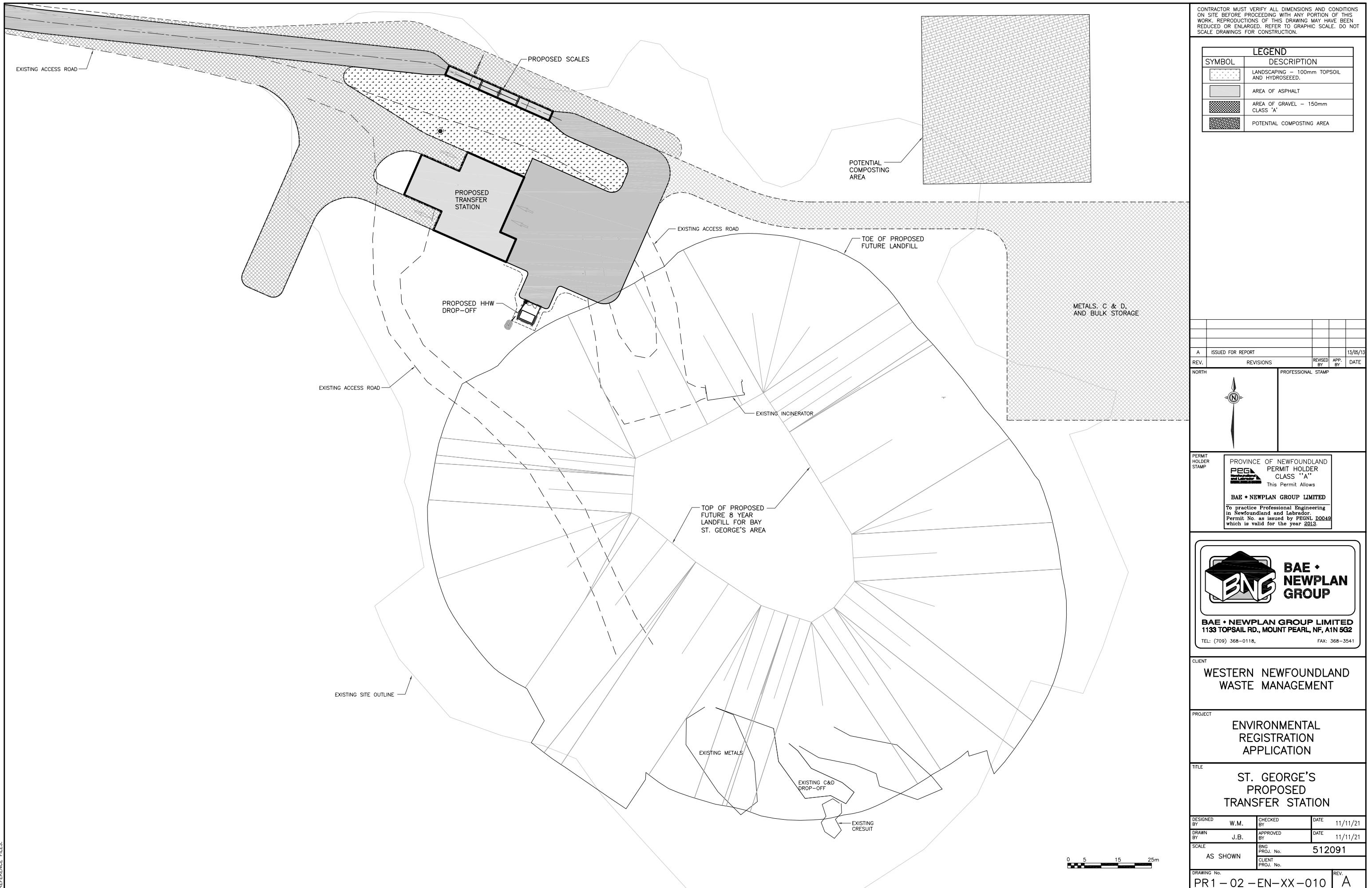
The key consideration in the design of the Western Waste Management System has been the focus on **flexibility**. The collection, transportation, transfer, and processing system components have all been designed to allow a maximum in flexibility. For example, a bag collection system will accommodate any changes to at-source separation requirements; the wet/dry collection system supports the ability of current collection contractors to use existing equipment; and the selection of a dry/wet stream integrates well with the Central processing system as they also use a wet/dry stream.

11.0 CONCLUSIONS

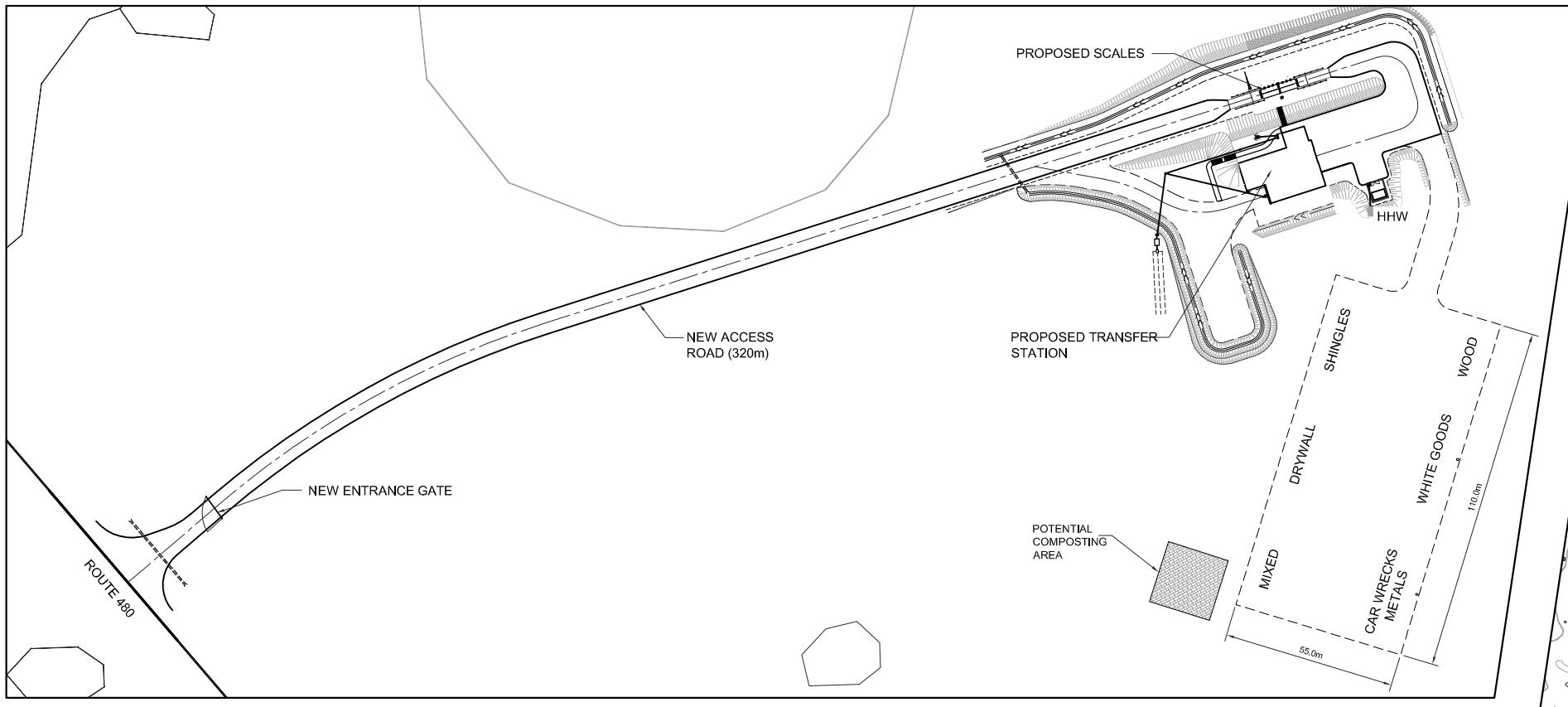
The Western Waste Management System selected by the WRMW consists of the following major components:

- The analysis of the waste management system alternatives resulted in the wet/dry system (two-stream) being the preferred option.
- The wet/dry system requires the user to separate the waste into two streams (residents will use bags): a wet bag for organic and other wet (soiled) material and a dry bag for recyclables and paper. The wet and dry bags are then kept separate during collection and transportation.
- The Central Regional Waste Management Facility (MRF, compost and landfill) will be utilized as part of the Western Regional Waste Management System.
- Areas will be served by Local Waste Management Facilities (LWMFs). LWMFs will be located at Rocky Harbour in the Long Range Transfer Region, off Route 420 approximately 3 kms from the Hampden Junction in the White Bay South/Western Hills Transfer Region, in the vicinity of Burgeo in the Burgeo/Ramea Transfer Region, adjacent to the current Port aux Basque Waste Disposal Site in the Southwest Coast Transfer Region, with the property of the current St. George's Waste Disposal Site in the Bay St. George Transfer Region and within the Wild Cove Waste Disposal Site in the Corner Brook Transfer Region.
- The LWMFs will accept waste from communities where it will then be placed into large specially designed transfer vehicles for transportation of wastes to Central. The LWMF will also accept construction and demolition materials, white metals, bulk materials, and HHW. Construction and demolition materials will be landfilled at the Wild Cove C&D landfill.
- All waste being delivered to the LWMF will be weighed and a tipping fee charged.
- The Region will see the inclusion of Public Drop-Off Facilities in areas located outside of the one hour travel time radius of a transfer station. Three facilities are planned; Daniel's Harbor area, Bonne Bay South area and Port au Port peninsula area.
- Total capital costs are estimated at \$44 million.
- Annual Operating costs are estimated at \$7.5 million or \$163/t.



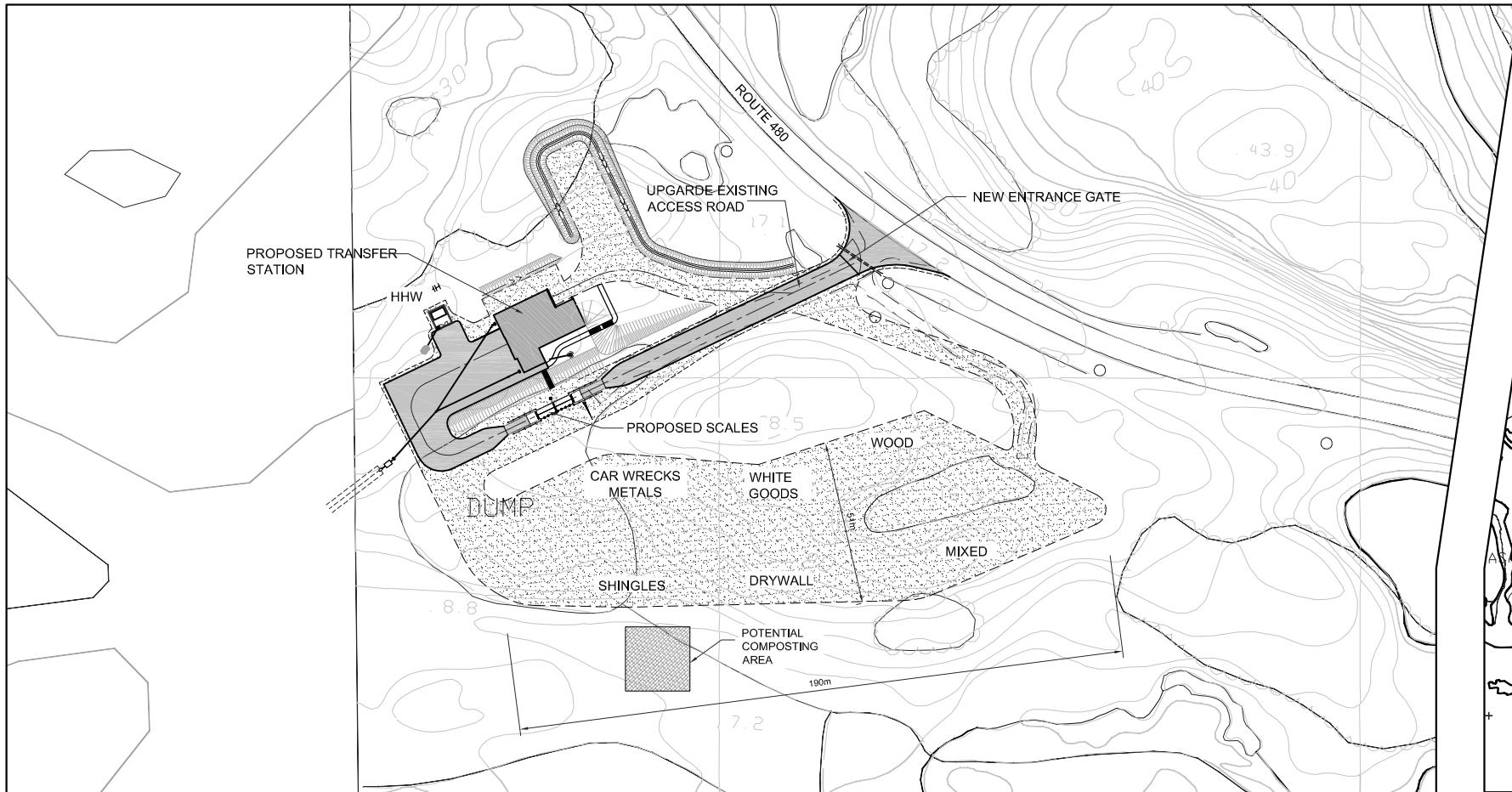


CONTRACTOR MUST VERIFY ALL DIMENSIONS AND CONDITIONS ON SITE BEFORE PROCEEDING WITH ANY PORTION OF THIS WORK. REPRODUCTIONS OF THIS DRAWING MAY HAVE BEEN REDUCED OR ENLARGED. REFER TO GRAPHIC SCALE. DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



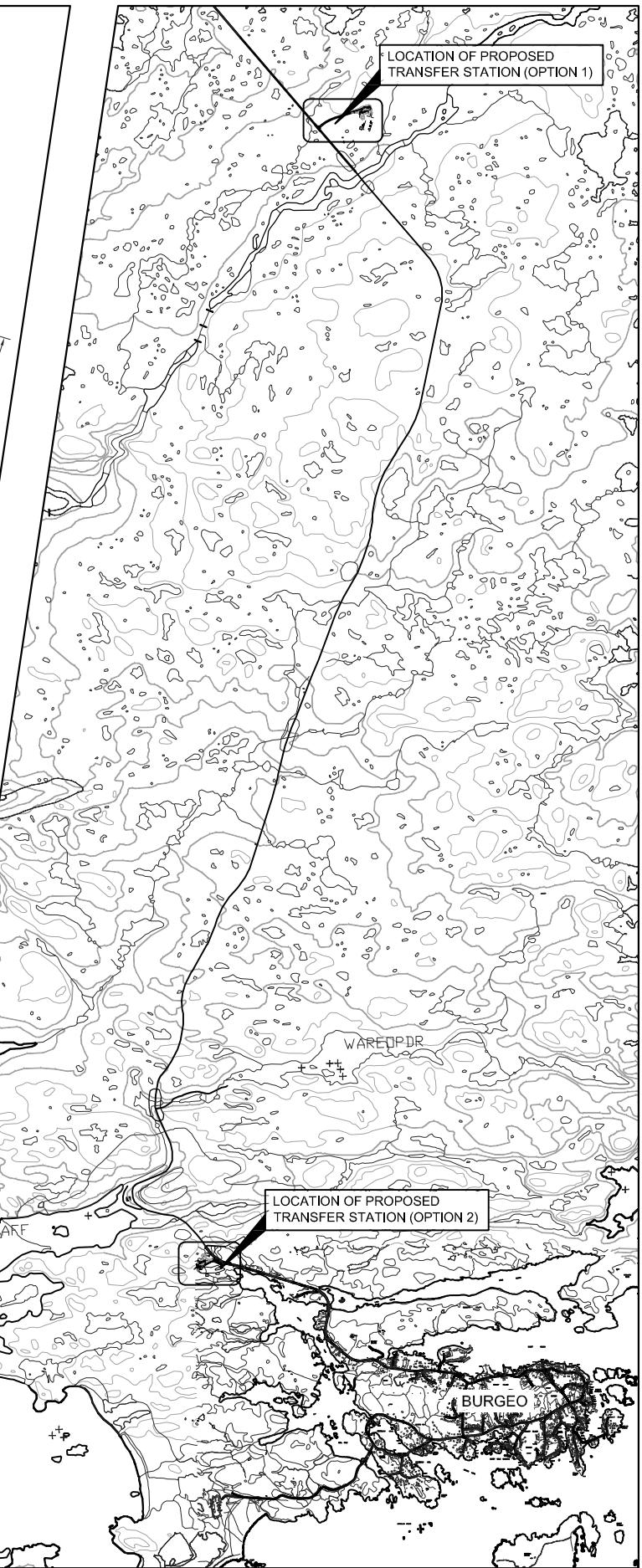
SITE PLAN - OPTION 1

0 10 30 50m



SITE PLAN - OPTION 2

0 10 30 50m



LOCATION PLAN

LEGEND	
SYMBOL	DESCRIPTION
Light Gray	AREA OF ASPHALT
Shaded	POTENTIAL COMPOSTING AREA

A	ISSUED FOR REPORT	13/05/13
REV.	REVISIONS	REVISED BY APP. BY DATE
NORTH		PROFESSIONAL STAMP



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 Permit No. as issued by PNL D0049
 which is valid for the year 2013.

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

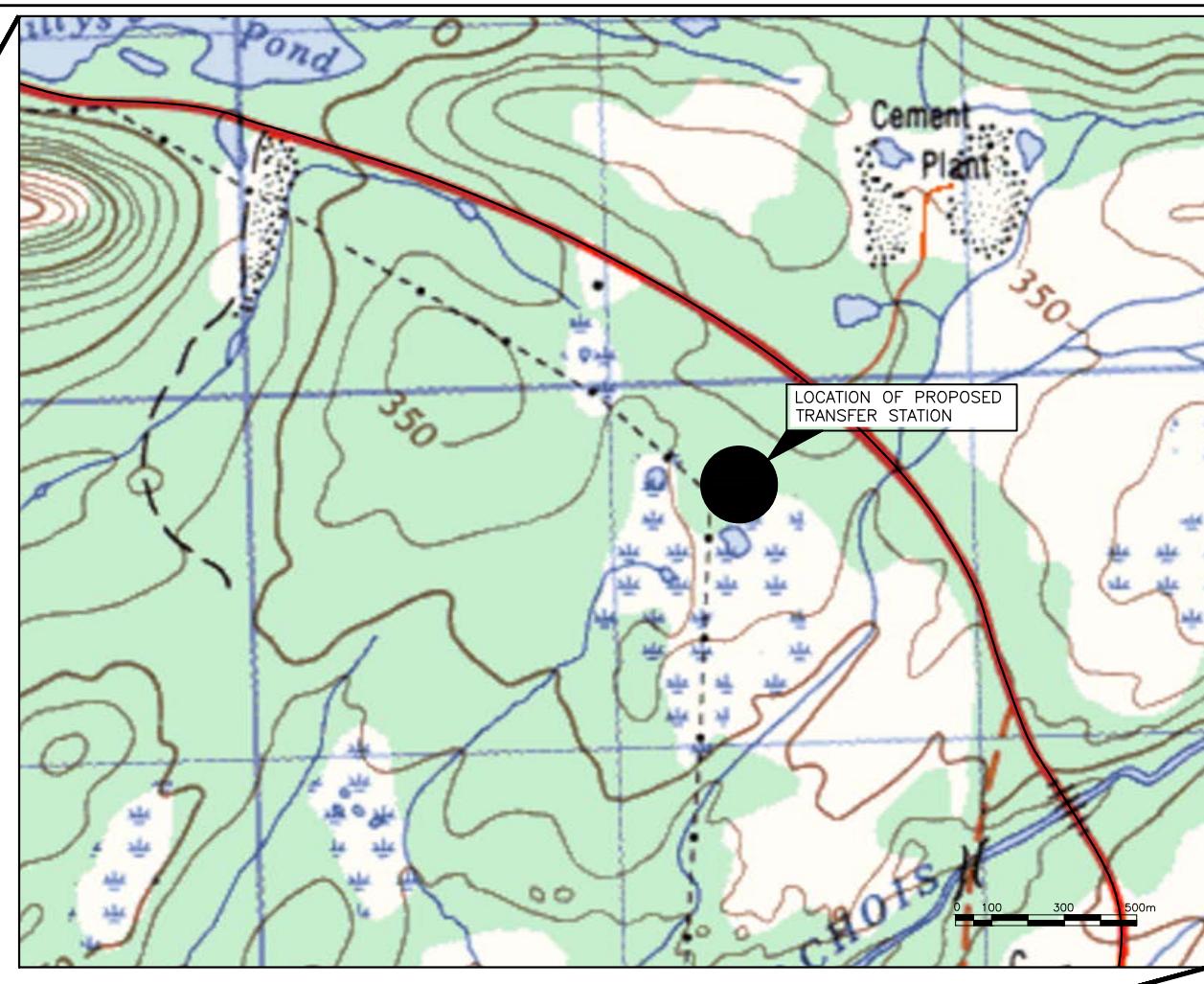
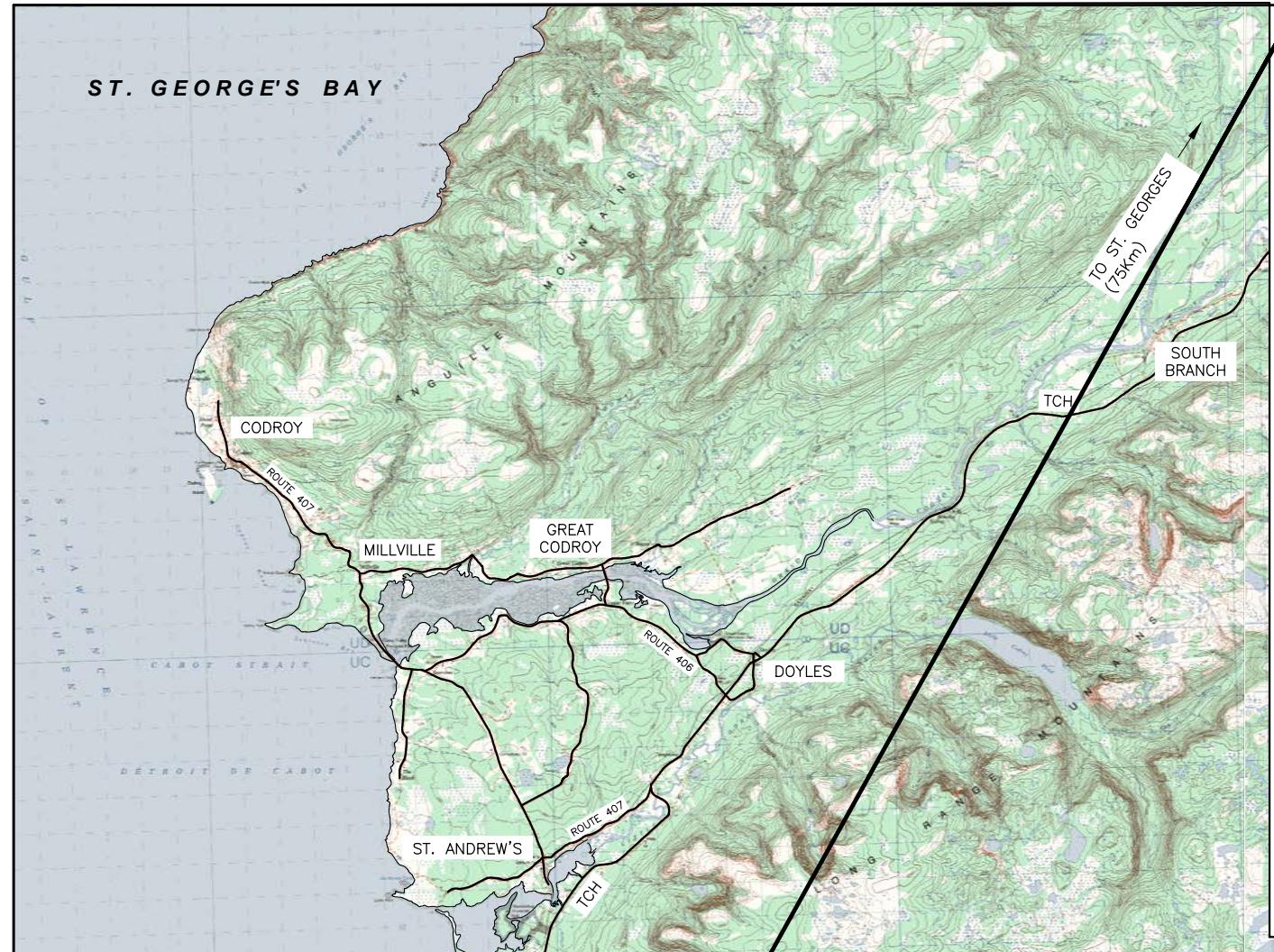
CLIENT
WESTERN NEWFOUNDLAND
WASTE MANAGEMENT

PROJECT
ENVIRONMENTAL
REGISTRATION
APPLICATION

TITLE
PROPOSED
BURGEO
TRANSFER STATION

DESIGNED BY	M.S.	CHECKED BY	DATE
DRAWN BY	J.B.	APPROVED BY	DATE
SCALE	BNG PROJ. No.	512091	
AS SHOWN	CLIENT PROJ. No.		

DRAWING NO.
PR 1 - 01 - EN-XX-012 REV. **A**

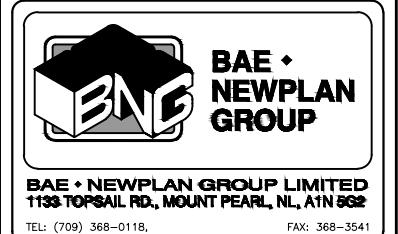


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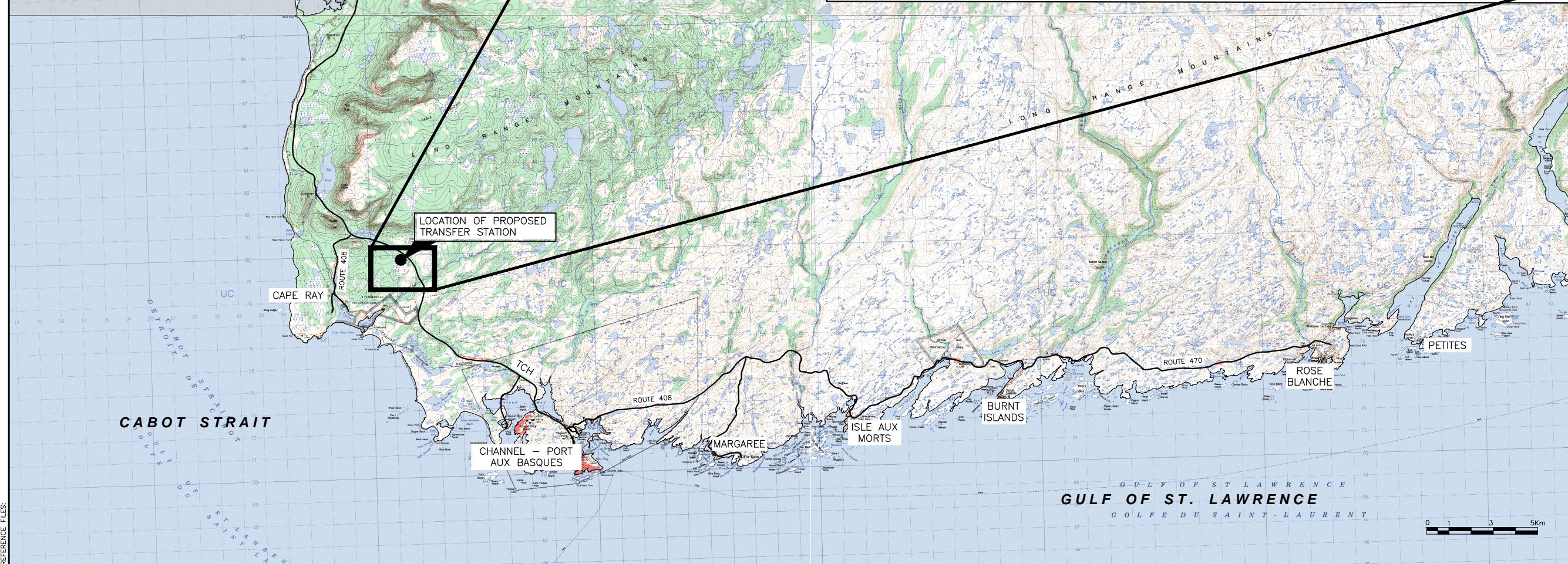
CLIENT
WESTERN NEWFOUNDLAND
WASTE MANAGEMENT

PROJECT
ENVIRONMENTAL
REGISTRATION
APPLICATION

TITLE
LOCATION PLAN FOR
PROPOSED TRANSFER STATION
PORT AUX BASQUE

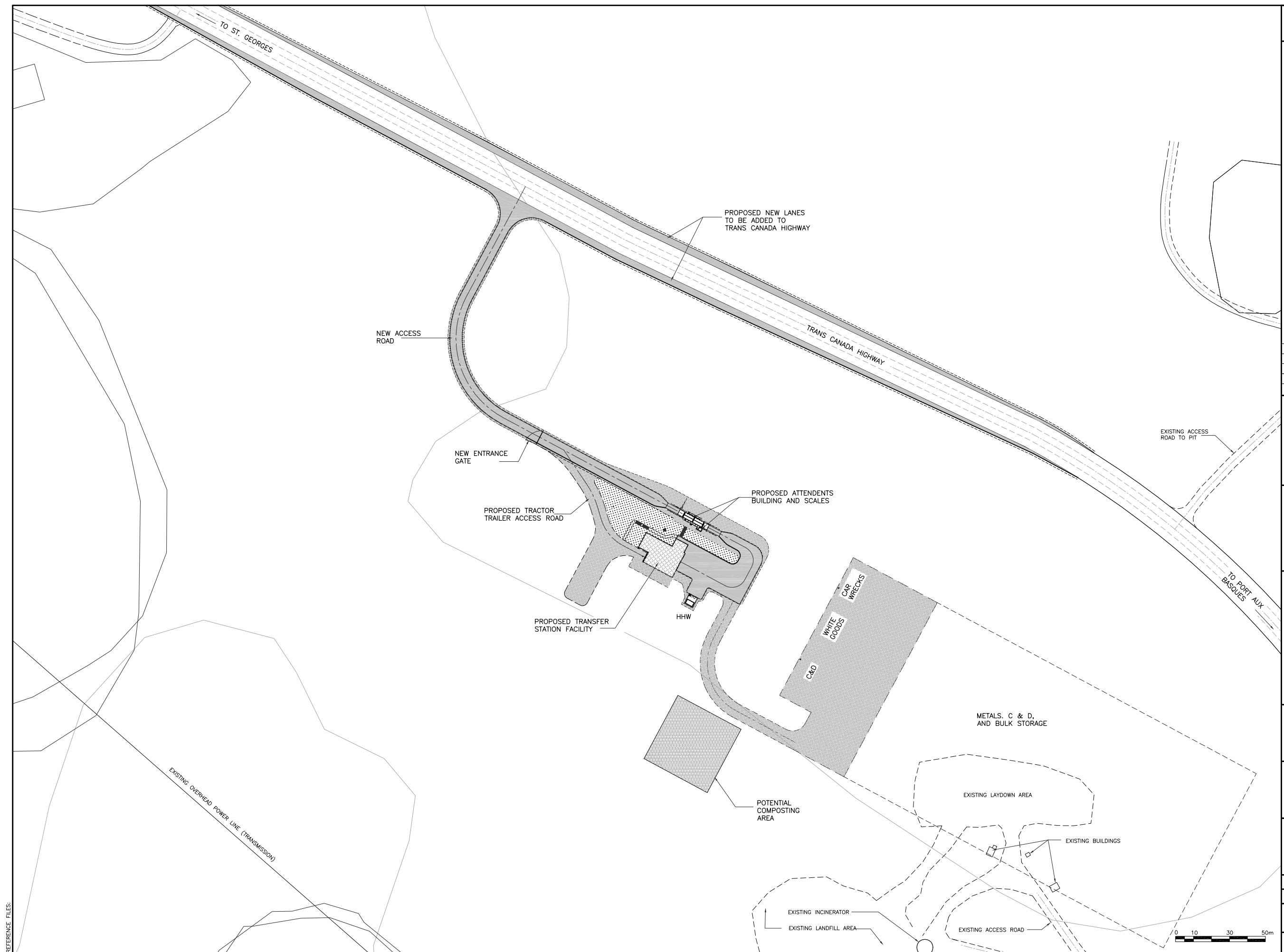
DESIGNED BY W.M. CHECKED BY DATE 11/11/21
DRAWN BY J.B. APPROVED BY DATE 11/11/21
SCALE BNG PROJ. No. 512091
AS SHOWN CLIENT PROJ. No.

DRAWING No. PR1-02-EN-XX-007 REV. A



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LEGEND	
SYMBOL	DESCRIPTION
[Dotted Pattern]	LANDSCAPING - 100mm TOPSOIL AND HYDROSEED.
[Solid Gray]	AREA OF ASPHALT
[Cross-hatch]	AREA OF GRAVEL - 150mm CLASS 'A'
[Dashed Pattern]	POTENTIAL COMPOSTING AREA



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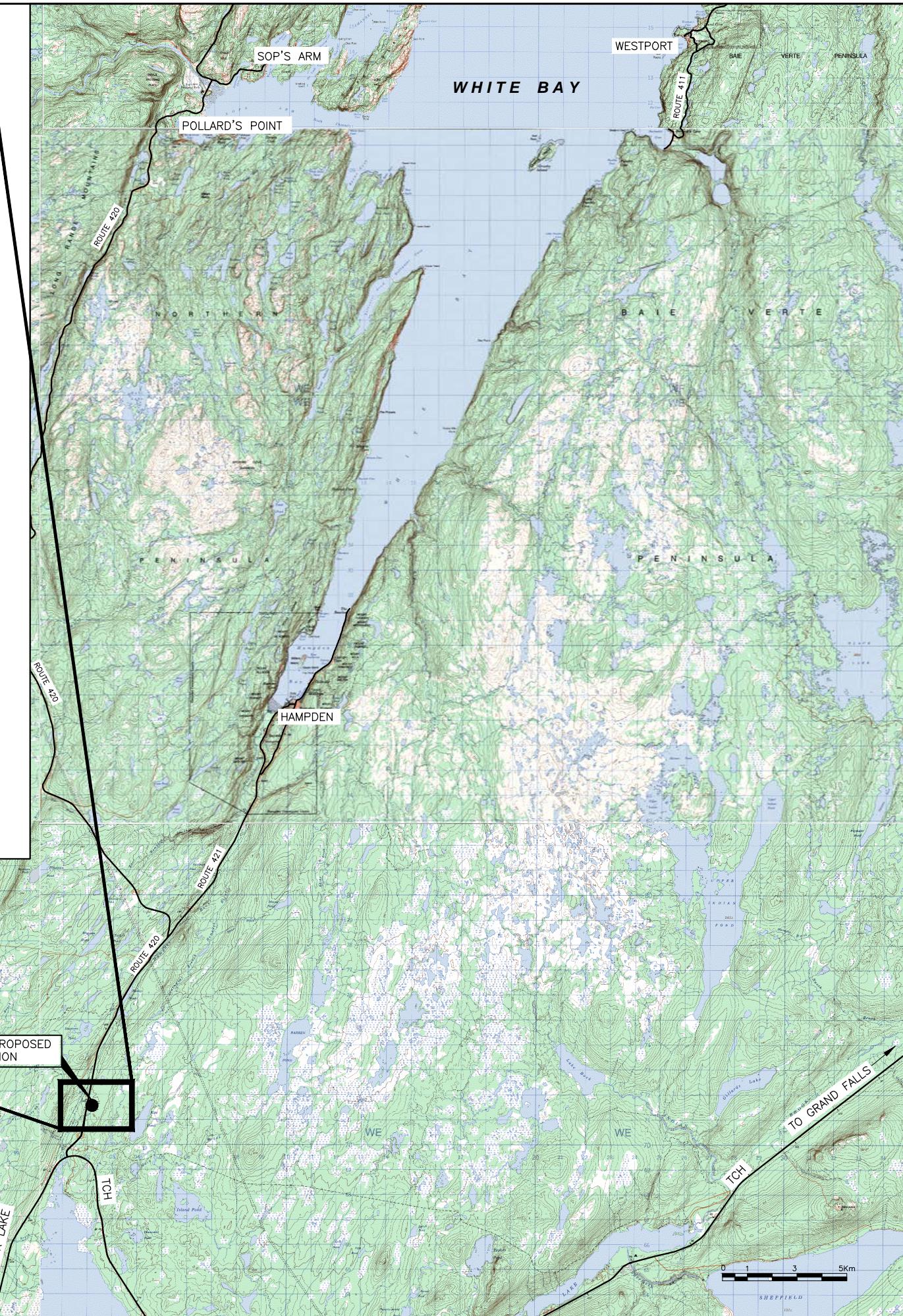
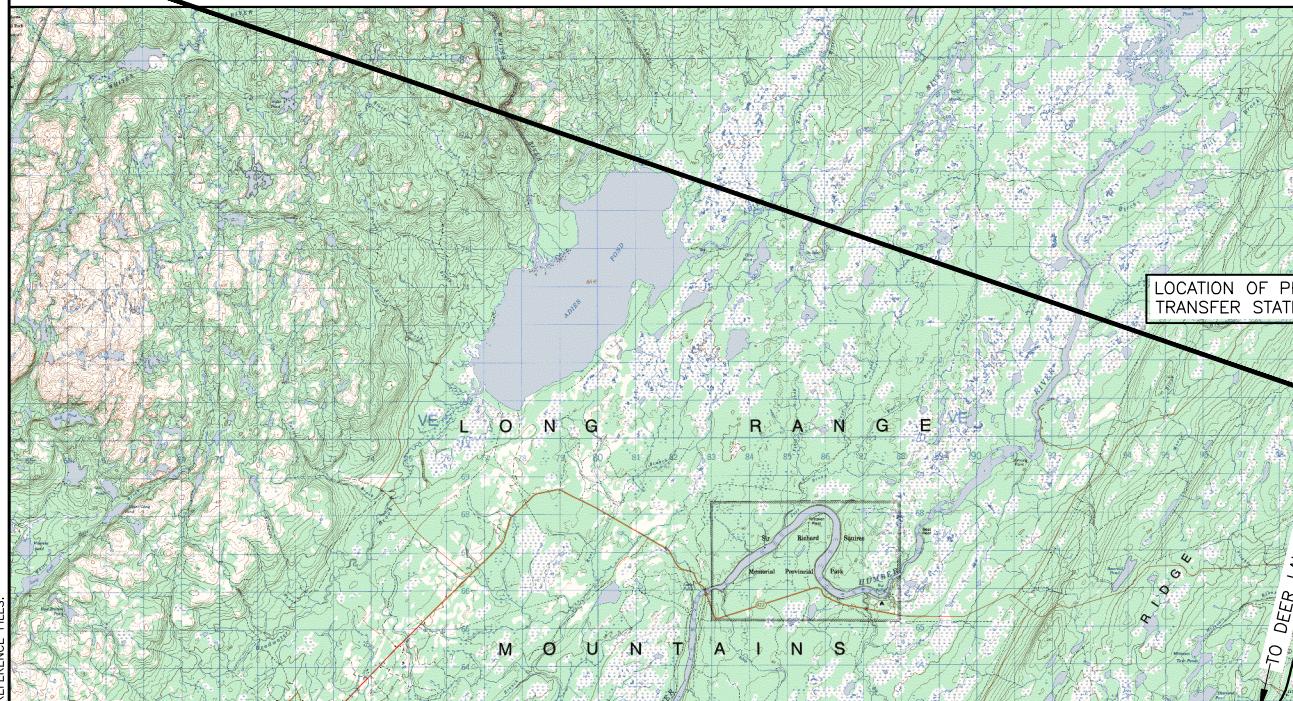
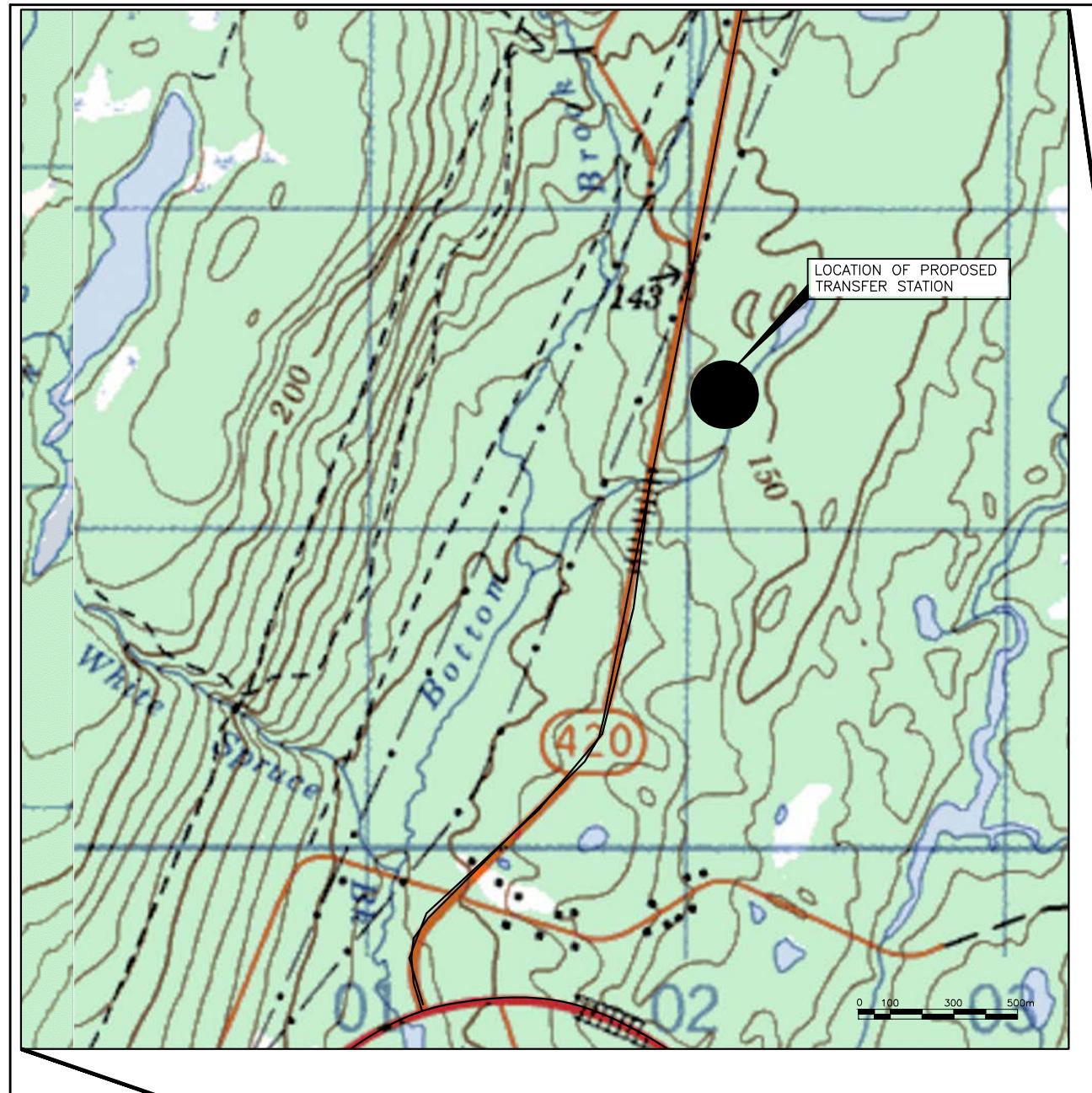
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CLIENT
WESTERN NEWFOUNDLAND
WASTE MANAGEMENT

PROJECT
ENVIRONMENTAL
REGISTRATION
APPLICATION

TITLE
PORT AUX BASQUES
PROPOSED
TRANSFER STATION

DESIGNED BY	W.M.	CHECKED BY	DATE	11/11/21
DRAWN BY	J.B.	APPROVED BY	DATE	11/11/21
SCALE	EBC PROJ. No.	512091		
AS SHOWN	CLIENT PROJ. No.			
DRAWING No.	PR1 - 02 - EN-XX-008	REV.		A



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REV.	REVISIONS	REVISED BY
NORTH		PROFESSIONAL STAMP

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CLIENT
WESTERN NEWFOUNDLAND
WASTE MANAGEMENT

PROJECT
ENVIRONMENTAL
REGISTRATION
APPLICATION

TITLE
LOCATION PLAN FOR
PROPOSED TRANSFER STATION
WHITE BAY SOUTH /
WESTERN HILLS

DESIGNED BY W.M. CHECKED BY DATE 13/01/22
DRAWN BY J.B. APPROVED BY DATE 13/01/22
SCALE BNG PROJ. No. 512190
AS SHOWN CLIENT PROJ. No.

DRAWING No. PR1-02-EN-XX-003 REV. A

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LEGEND	
SYMBOL	DESCRIPTION
	LANDSCAPING - 100mm TOPSOIL AND HYDROSEEDED.
	AREA OF ASPHALT
	AREA OF GRAVEL - 150mm CLASS 'A'
	POTENTIAL COMPOSTING AREA

A	ISSUED FOR REPORT	13/05/13
REV.	REVISIONS	REVISED BY APP. BY DATE
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**WESTERN NEWFOUNDLAND
WASTE MANAGEMENT**

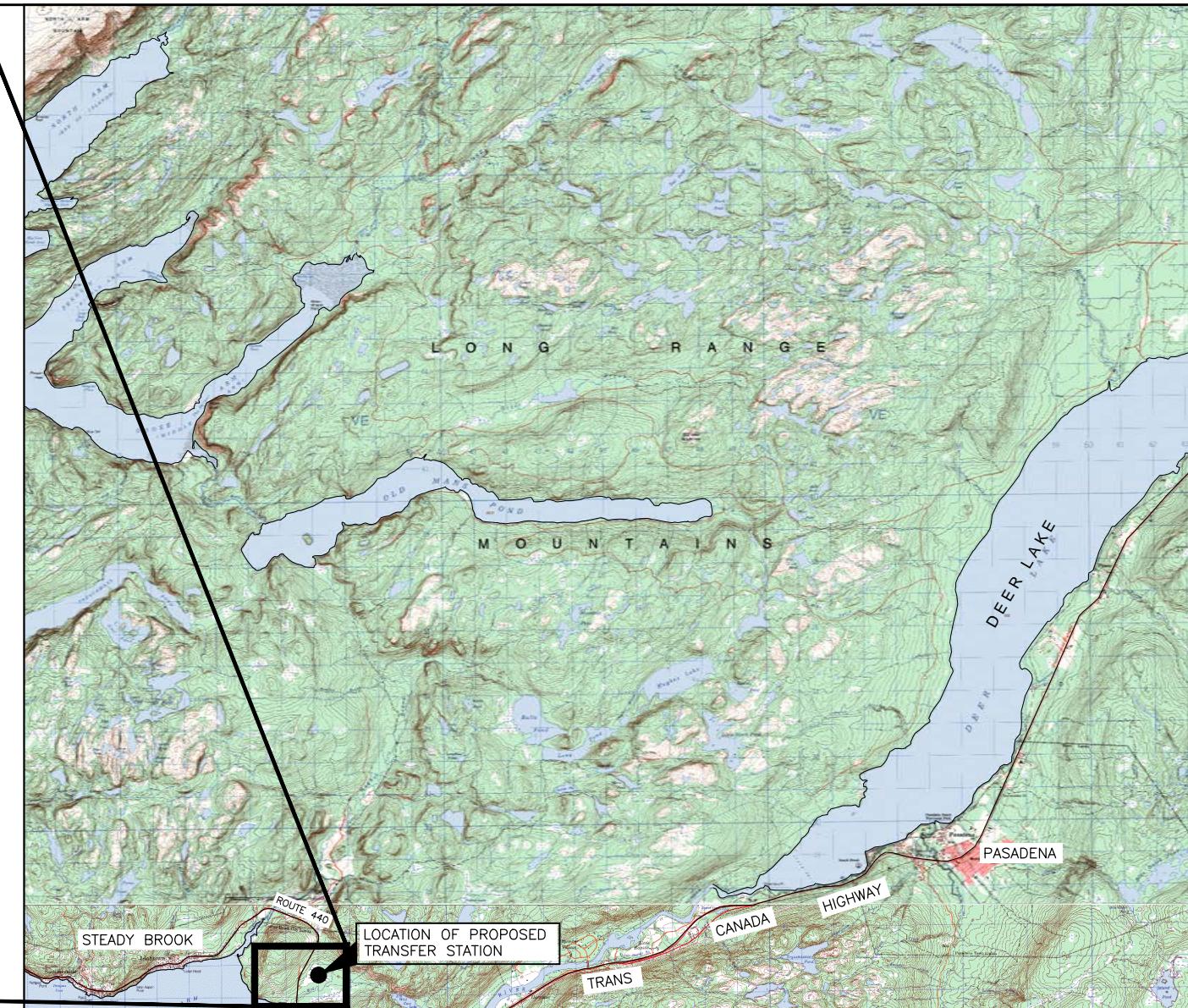
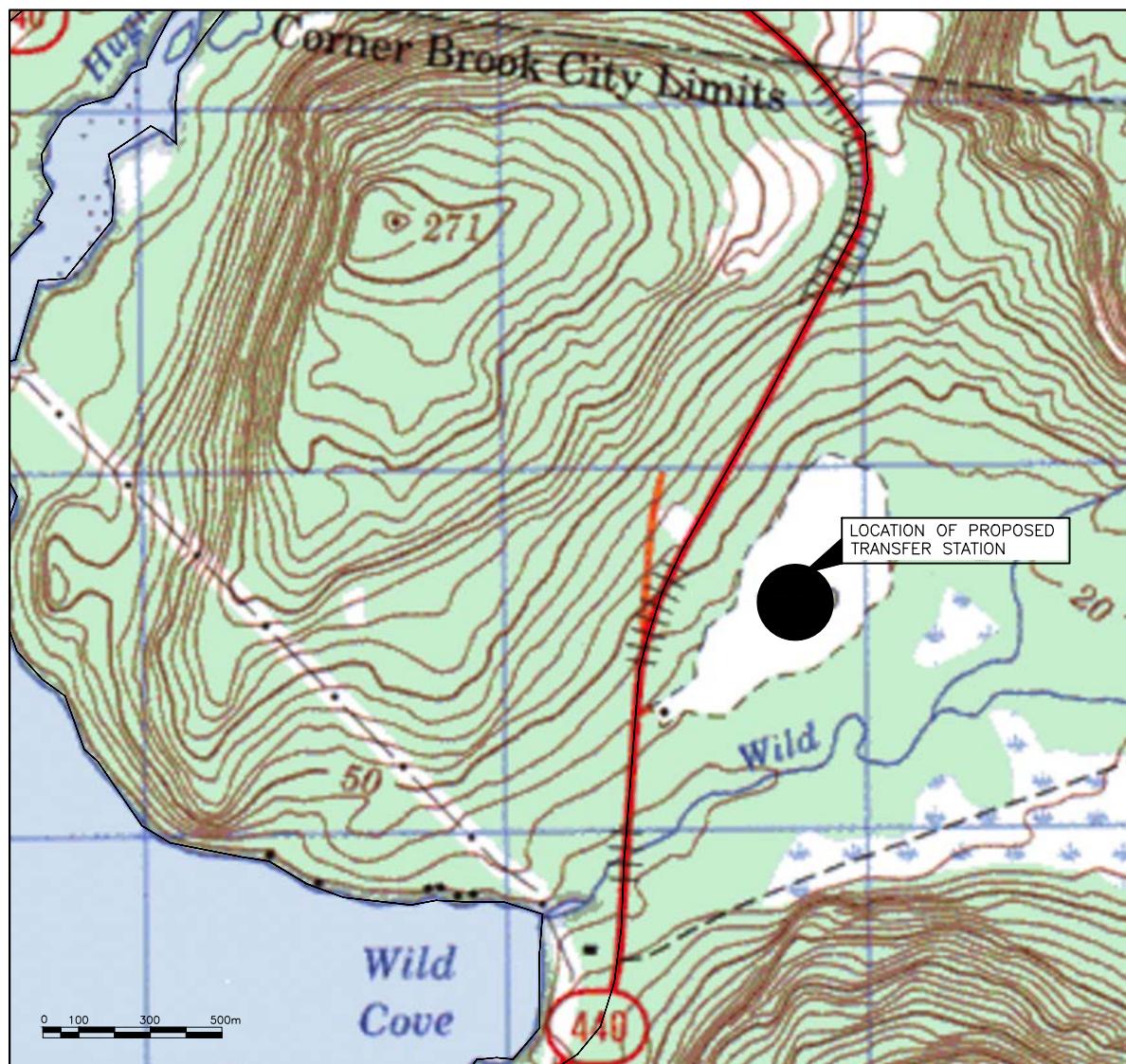
PROJECT
**ENVIRONMENTAL
REGISTRATION APPLICATION
MANAGEMENT STUDY**

TITLE
**WHITE BAY SOUTH /
WESTERN HILLS PROPOSED
TRANSFER STATION**

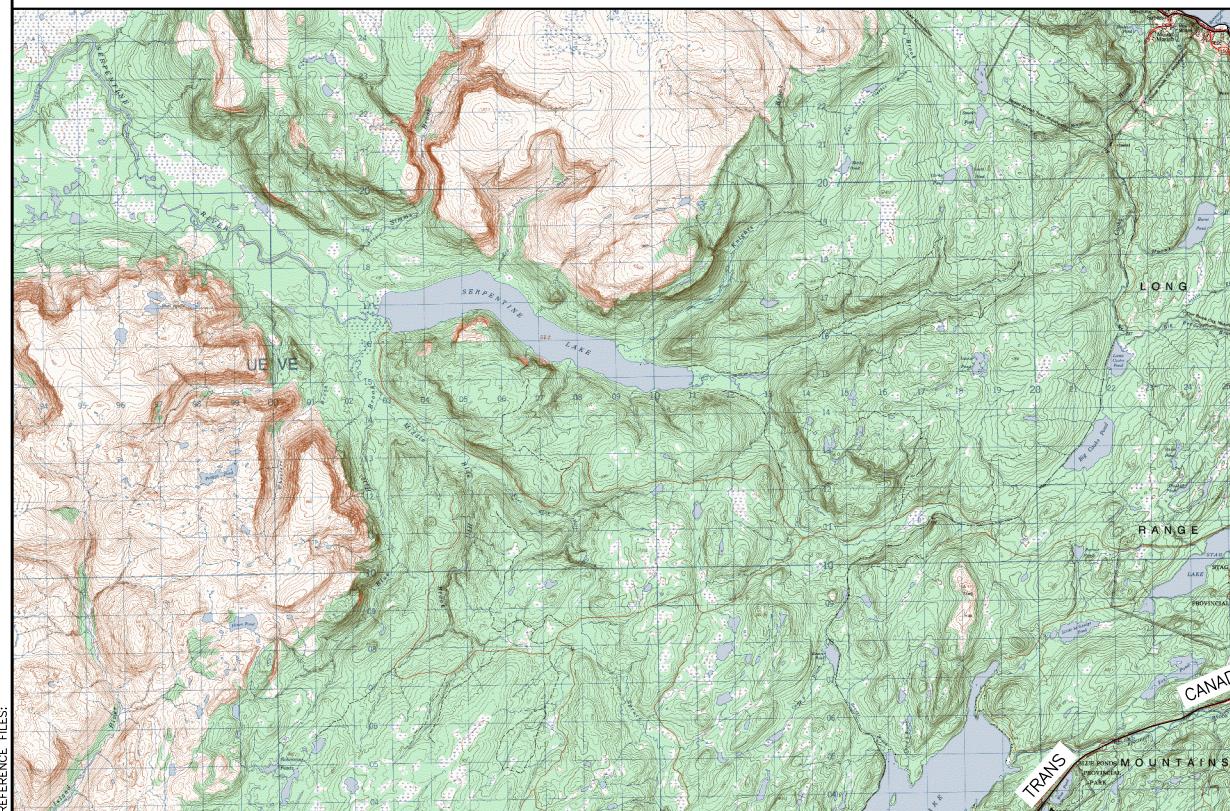
DESIGNED BY	W.M.	CHECKED BY	DATE
DRAWN BY	J.B.	APPROVED BY	DATE
SCALE	BNG PROJ. No.	512091	
AS SHOWN	CLIENT PROJ. No.		

DRAWING No. **PR1 - XX - EN - XX - 004** REV. **A**





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PROJECT
ENVIRONMENTAL
REGISTRATION
APPLICATION

LOCATION PLAN FOR
PROPOSED TRANSFER STATION
WILD COVE

DESIGNED Y	W.M.	CHECKED BY	DATE	13/01/23
RAWN Y	J.B.	APPROVED BY	DATE	13/01/23
CALE	BNG PRJQ. No.		512091	
AS SHOWN	SHEET		1	

PROJ. No.	
DRAWING No.	
PR1 - 02 - EN-XX-005	REV. A

REFERENCE FILES:

