



December 10, 2012

Mr. Bas Cleary Director of Environmental Assessment Minister of Environment and Conservation PO Box 8700 St. John's, NL A1B 4J6

> Y/Ref.: 200.20.2131 O/Ref.: RA12-302-1

Subject: Environmental Assessment Registration Construction and Operation of a Soil Biotreatment Facility, Goose Bay, NL

Mr Cleary:

Following your letter dated December 3, 2012, please consider this document as a registration of our undertaking.

NAME OF UNDERTAKING: Construction and Operation of a Soil Biotreatment Facility, Goose Bay, NL

PROPONENT

- i. Name of Corporate Body: Sanexen Environmental Services Inc.
- ii. Address: 1471 Lionel-Boulet, Suite 32, Varennes (Quebec) J3X 1P7
- iii. Chief Executive Officer:

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Telephone: **450 652-9990** Fax: 450 652-2290 *Email: info*@sanexen.com http://www.sanexen.com iv. Principal Contact person for purposes of environmental assessment:

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THE UNDERTAKING

i. Name of the Undertaking:

Construction and Operation of a Soil Biotreatment Facility, Goose Bay, NL

ii. Purpose/Rationale/Need for the Undertaking:

Over the next 20 years, various sites at the military base in Happy Valley-Goose Bay will be cleaned up and decontaminated. Many of these sites have petroleum hydrocarbon (gasoline, diesel) contaminated soils. Other residential, commercial, institutional, and industrial sites in Goose Bay may also be impacted, currently or in the future, by petroleum hydrocarbons (the most common soil contaminant). The biological treatment of petroleum hydrocarbon impacted soils in piles is a proven and cost effective method of decontaminating soils. Furthermore, treated soils are destined for the municipal landfill where they are used, on a daily basis, as waste cover material to prevent scavengers from feeding on waste material.

DESCRIPTION OF THE UNDERTAKING

Under Sections (i), (ii), (iii) and (iv) below, the proponent shall provide complete information concerning the preferred choice of location, design, etc., together with additional information on any alternatives which may have been considered and rejected, but which may still be regarded as viable. Reasons for the rejection of those alternatives should also be included.

i. Geographical Location:

The proposed new facility, classified as a permanent commercial facility, will be located on South Branch Road, in Happy Valley-Goose Bay, Labrador, approximately 1.3 km west of Northwest River Road (route 520) (hereafter referred to as the Site). The approximate coordinates of the central point of the Site are (in decimal degrees):

- Latitude 53.3770°;
- Longitude -60.4475°.



Figures 1, 2 and 3 of Appendix A, present the Site on a regional scale while Figure 4 presents the Site on a local scale. Photos of the proposed Site are presented in Appendix B.

ii. Physical Features:

The main infrastructures onsite consist of 3 concrete pads (2 soil treatment pads 100 m x 20 m and 1 soil storage pad 46 m x 15 m). Other equipment include, an office trailer, a truck scale, three 20-foot marine containers (2 for storage and 1 for aeration equipment), two 40 yd³ roll-off containers used as water tanks and bioreactors, two 20 m³ HDPE¹ leachate/water holding tanks. A short gravel road provides access to the Site and a gravel circulation area circles the Site. Figures 5 and 6 of Appendix A, present the main features of the Site.

The Site, rectangular in shape, is approximately 100 m wide by 200 m deep.

The Site is located on land zoned for industrial use. At approximately 20 m ASL^2 , the Site is situated on a local plateau that presents a flat topography within a generally flat surrounding area. The Site slopes downwards (< 1%) towards the east-southeast as well as towards the northwest, while it slopes upwards (< 1%) towards the southwest. Figure 4 presents the topography of the Site and surrounding areas.

The Site is located in an undeveloped wooded area. The area surrounding the Site is also generally wooded and mostly undeveloped. There are no residential, institutional, or commercial buildings within a 1 km radius of the proposed facility. Industrial facilities located within a 1 km radius of the Site include:

- The municipal landfill, 200 m to the northwest;
- A peat moss production facility, 500 m to the southwest (upgradient from the Site);
- A sand and gravel quarry, 600 m to the north;
- An abandoned sawmill, 900 m to the northeast;
- A soil treatment facility (Universal Environmental), 700 m to the east.

No water body is located within 200 m of the proposed Site. The Goose River is located over 700 m northeast of the Site, and over 900 m northwest of the Site. The river flows towards the east and discharges into the Hamilton Inlet. A string bog (wetland) is located approximately 400 m south of the Site, at approximately the same elevation as the Site itself. The bog drains towards the east into a stream which discharges into Terrington Basin.

1. High density polyethylene



^{2.} Above sea level

Underlying native soil present onsite is fine sand with some silt. Based on test pits excavated at the municipal landfill across the road, the depth of the groundwater table onsite is likely greater than 6 m.

Vegetation onsite and surrounding the Site consists mainly of fully developed coniferous and deciduous trees. Many bird species associated with this type of vegetation are likely present onsite and in the surrounding areas. No terrestrial animal surveys were conducted onsite, however, it is expected that a number of mammalian species could be observed in or near the project Site, such as black bears, red foxes, wolves, various mouse species, beavers, muskrats, river otters, and shrew species. Amphibian species, such as salamanders, frogs and toads are expected to exist at or near the project Site.

iii. Construction:

The approximate total construction period is 3 months.

The proposed date of first physical construction related activity onsite is April 2012.

Potential sources of pollutants during the construction period are listed below:

- Airborne emissions: dust from heavy equipment and vehicle traffic, exhaust gases from heavy equipment and vehicles; minimal impact from minor operation during a limited period of time;
- Liquid effluents: none expected; however, precipitation runoff from the Site might generate suspended solids in surface water runoff draining to the ditch along South Branch Road; silt fences will be installed to prevent fine soil particles from leaving the Site in precipitation runoff;
- Solid waste materials: trees from clear cutting and topsoil are considered as a valued resource, not waste. Construction waste materials (lumber, plastic tarp and piping, concrete, etc.) are all non-hazardous waste materials.

Potential causes of resource conflicts are described below:

- Clear cutting activities may disturb nesting birds depending on the period when this activity is carried out, therefore clear cutting will likely be carried out before (if not after) the bird nesting period;
- Vehicle traffic on South Branch Road will increase during the construction period from concrete trucks entering and leaving the Site, loads of topsoil and wood leaving the Site, equipment and materials for construction delivered to the Site. South Branch Road is a secondary road on the outskirts of town, used to access a limited number of industrial facilities.
- iv. Operation:

A description of how the undertaking will operate is provided below.



Contaminated soils entering the Site will be accompanied by a transport manifest approved by the treatment centre and presented by the carrier. This manifest will indicate the authorization number necessary for the acceptance of the soil, the origin of the soil, the type of contaminants, the expected level of contamination, the approximate quantity, the type of soil, the waste/debris that may be present, the sample numbers corresponding to laboratory analysis, and the identification of the carrier (and consultant if applicable).

Soils received will be placed on the storage pad and conditioned (addition of nutrient and organic amendment – peat moss, wood chips, etc.) in batches according to origin and contaminant levels. Once homogenized, the soils will be sampled and analyzed to determine the operational treatment parameters. The characterized soils will then placed on the treatment pads for processing.

Air will be withdrawn from the biopiles (contaminated soil piles) with a piping network connected to an air treatment system and a water recirculation/treatment system (air may also be pushed into the biopiles if volatile compounds do not present an issue as demonstrated by VOC¹ analysis). Air will be circulated through the soils with blowers and the piping network. The piping network will be composed of secondary aeration pipes (slotted or perforated) beneath the biopiles, and of main plain pipes that direct the fluids towards the air and water treatment systems. Air may also be heated and circulated in a closed loop to warm up the soil and allow optimal conditions for soil treatment, especially during cold weather.

The air withdrawn from the biopiles will be directed to an air/water separator. The water collected will be transferred to a holding tank where any oil present will be removed. The air, with a relative humidity close to 100%, will be directed to the air treatment system.

The air treatment system will be composed of 2 biofilters and blowers for each treatment pad. The dual system is designed for redundancy for processing air from the 2 treatment pads with spare equipment if required.

The biofilters contain a bed of natural materials (e.g. peat moss, wood chips, shrimp compost, granular activated carbon, etc.) that have the capacity to absorb and biodegrade contaminants. Granulated activated carbon within the biofilters acts to polish/complete the treatment of air and ensure clean exhaust gases.



^{1.} Volatile organic compounds

An underground leachate collection catch basin is installed at the low point of each of the 3 concrete pads (2 soil treatment pads and one soil storage pad). This catch basin receives water by gravity from a 100 mm diameter pipe installed at the low side of the treatment pads and the storage pad. The catch basin is equipped with a submersible pump, activated by a float, and with a check valve at the discharge. The recovered water is directed to the holding tank for further use in the treatment of soils. A manhole cover on top provides access to remove fines that may accumulate at the bottom.

The water holding tank has a 40 m³ capacity, to be able to store water in case of major precipitation. It should be noted that, most of the time, the soil piles will be completely covered with tarps (impermeable over the storage pad and semipermeable over the treatment pads), and therefore most precipitation will be directed completely off the pads and not to the holding tank. Precipitation may end up in the holding tank if it rains during soil handling (i.e. loading/unloading of soil) when the biopiles are partially uncovered.

This soil biotreatment facility will be permanent.

Potential sources of pollutants during facility operations are listed in the following table.

Type of Pollutant	Potential Source	Mitigation Measure	
	Dust from heavy equipment and vehicle traffic on the short gravel site access road and the gravel circulation area around the Site.	During dry periods water will be sprayed on the gravel circulation areas as dust control.	
Airborne emissions	Exhaust gases from heavy equipment and vehicles.	When vehicles and heavy equipment are no running their engines will be turned off.	
	Air extracted from the biopiles.	VOCs in air are adsorbed and biodegraded by the biofilters. Exhaust gases are odourless and mainly composed of water vapour and CO2. Exhaust gases are monitored frequently to prevent discharge of VOCs and odours.	
Liquid effluents	Leachate extracted from the biopiles (water phase)	All water recovered is re-injected into the biopiles. No water from the holding tank is ever discharged from the Site. The biotreatment process runs with a deficit of water. Precipitation water may be recovered to make up for the deficit.	
	Leachate extracted from the biopiles (oily phase), typically 0 to 5 drums generated per year.	Oil transferred into steel 200-liter drums, UN approved for transport, shipped offsite, at least once a year, for disposal in an approved waste disposal facility.	

 TABLE 1:
 Potential Sources of Pollutants



Type of Pollutant	Potential Source	Mitigation Measure			
Solid waste	Treated soil	Treated soils (< 1,000 ppm TPH) are shipped offsite and disposed of at the municipal landfill to be used as daily waste cover material. A total of 20,000 m ³ is expected to be treated per year.			
materials	Spent biofilter media	Placed in the biopiles and treated with the contaminated soils.			
	Fine soil particles and sludge for tank bottom	Placed in the biopiles and treated with the contaminated soils.			

Potential causes of resource conflicts are described below.

- Vehicle traffic on South Branch Road will increase due to dump trucks travelling to and from the Site. Trucks will mostly bring in contaminated soils and take out treated soils. The expected increase in traffic is estimated at 1-2 trucks per business day. Truck loads of wood chips and peat moss transported to Site represent insignificant quantities in comparison to truck loads of soils. South Branch Road is a secondary road on the outskirts of town, used to access a limited number of industrial facilities;
- Noise from the operations will be limited to heavy equipment use, vehicle traffic and the air blowers. It should be noted that the blowers will be placed inside marine containers which muffles the sound. Also, the Site will remain surrounded by wooded areas which will also limit noise effects. Considering the adjacent land use, the noise issues related to Site operations will not likely constitute a problem;
- Considering the adjacent land use, local topography, and the fact that the Site will remain surrounded by wooded areas, the general aesthetic issues related to Site infrastructures and operations will not likely constitute a problem. Furthermore, the Site location is not part of a local or regional viewpoint of interest for the local population or tourists;
- Negative impacts of the operations on the peat moss production facility are considered negligible since the Site is located downgradient from the existing facility. Positive impacts include the fact that the Site operations will require peat moss in the biotreatment process (as soil amendment and biofilter media);
- Negative impacts of the operations on the string bog are considered negligible since the Site is not located upgradient from the bog but rather at the same elevation, and the bog is 400 m away from the Site. Also, both sites generally slope towards the east.



v. Occupations:

The following table presents information related to occupations.

Number	Occupation	Direct hire / Contract	National Occupational	
			Classification 2011	
Construct	ion phase			
3	Technician	Direct hire	2231	
1	Civil Engineer	Direct hire	2131	
3	Heavy Equipment Operator	Direct hire	7521	
2	Labourers	Direct hire	7611	
1	Concrete Truck Driver	Contract	7511	
2	Geomembrane Technician	Contract	2231	
1	Electrician	Contract	7241	
Operation	phase			
1	Office Clerk	Direct hire	1241	
1	Heavy Equipment Operator	Direct hire	7521	
3	Labourers	Direct hire	7611	
1	Technician / Site Supervisor	Direct hire	2231	

TABLE 2: Occupations

Sanexen uses and applies its employment equity policy and program in all its offices and on all its projects to address employment equity, relative but limited to age and gender. Sanexen engages in proactive employment practices to increase the representation of four designated groups: women, people with disabilities, Aboriginal peoples, and visible minorities. Sanexen has instituted positive policies and practices for the hiring, training, retention and promotion of members of the designated groups. Positive policies include good hiring practices, for example, asking all job candidates the same interview questions, or advertising a job widely and in places where it is likely to reach female or minority applicants.

vi. Project Related Documents:

The only project-related document already generated by or for the proponent is entitled: *"Application for a WMS Certificate of Approval - Construction and Operation of a Soil Biotreatment Facility, Goose Bay, NL"*, presented to the Waste Management Section, Department of Environment and Conservation, Government of Newfoundland and Labrador, by Hickey Construction and Sanexen, November 2012.



No reports on environmental work already performed by or for the proponent exist for this Site and project.

APPROVAL OF THE UNDERTAKING

The main permit required for the undertaking is a Waste Management System Certificate-of-Approval issued by Waste Management Section, Department of Environment and Conservation, Government of Newfoundland and Labrador. A business licence from the municipal council, Happy Valley – Goose Bay is also required.

SCHEDULE

The earliest date when project construction could commence is April 2013. The reasons for the selection of this date include:

- Clear cutting of trees before bird nesting season;
- Biotreatment operations would start in the summer, when environmental clean-up projects are at their peak, and the demand for our facility would be optimal.

The latest date when project construction could commence is August 2013. The main reason for the selection of this date is that clear cutting of trees would be carried out after bird nesting season.

FUNDING

This project does not depend upon a grant or loan of capital funds from a government agency.

The estimated capital cost of the project is \$850,000.

2012-12-07

Signature of Chief Executive Officer



Date

APPENDIX A

FIGURES









Scale:	Conception date:		Revision date:	
As shown	2012-12-06		2012-12-06	
Drawn by:	Verified by:		Approved by:	
J. Bergeron	K. Côté		J. Halde	
Project no.:	Drawing no.:	Layout: :	Geodetic reference	e:
RA12-302-1	RA12-302-1-02	A	None	None
		1 m		
SA	NE	$\mathbf{\nabla}$	EN	
SA	NE	X	EN	













APPENDIX B

Рнотоз

Photo 1: Proposed site - Southern view from South Branch Road.



Photo 2: Proposed site - Southern view from South Branch Road.



Photo 3: Proposed site - Southern view from South Branch Road.



Photo 4: South Branch Road, adjacent to proposed site - Eastern view.



Photo 5: South Branch Road, adjacent to proposed site - Western view.



Photo 6: Peat moss production site on nearby property.

