Mink Oil Production Plant

Registration and

Environmental Assessment

September 2013

Spec Environmental Solutions Inc.

Prepared by:

P.G. Buxton, P.Eng

Submitted by:

Spec Environmental Solutions Inc.

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Registration of the Mink Oil Production Plant

This document represents formal registration of the Mink Oil Production Plant (the Project) by Spec Environmental Solutions Inc. (Spec) to meet the requirements of the Nova Scotia Environmental Assessment Regulations as set out in Section 9 (Registration) of the Regulations as amended September 15th, 2009.

I) Name of the Proposed Undertaking

Mink Oil Production Plant

II) Location of the Proposed Undertaking

2429 Patrice Road, Concession, Digby County, Nova Scotia

III) Proponent

Spec Environmental Solutions Inc
1777 Patrice Road
Concession, Nova Scotia
Digby County

Mailing:

Spec Environmental Solutions Inc
P.O. Box 149
Church Point, Nova Scotia
Digby County
B0W 1M0

IV) Contact Person

Mr. Mike Quinn
Spec Environmental Solutions Inc
1777 Patrice Road
Concession, Nova Scotia
Digby County
902-769-2777

V) Chief Executive Officer

Mr. Hubert LeBlanc, President

Signing Officer

Mr. Hubert LeBlanc

Signature of Signing Officer
Date: August 2013

VI) Details of the Nature and Sensitivity of the Area Surrounding the Proposed Undertaking

A) General Description

The project site is located on PID # 30317929 outlined on Map 1 with access by a gravel road from Patrice Road. Aerial photo #1 shows the location of the site in relationship to roads, other industrial operations, lakes and watercourses.

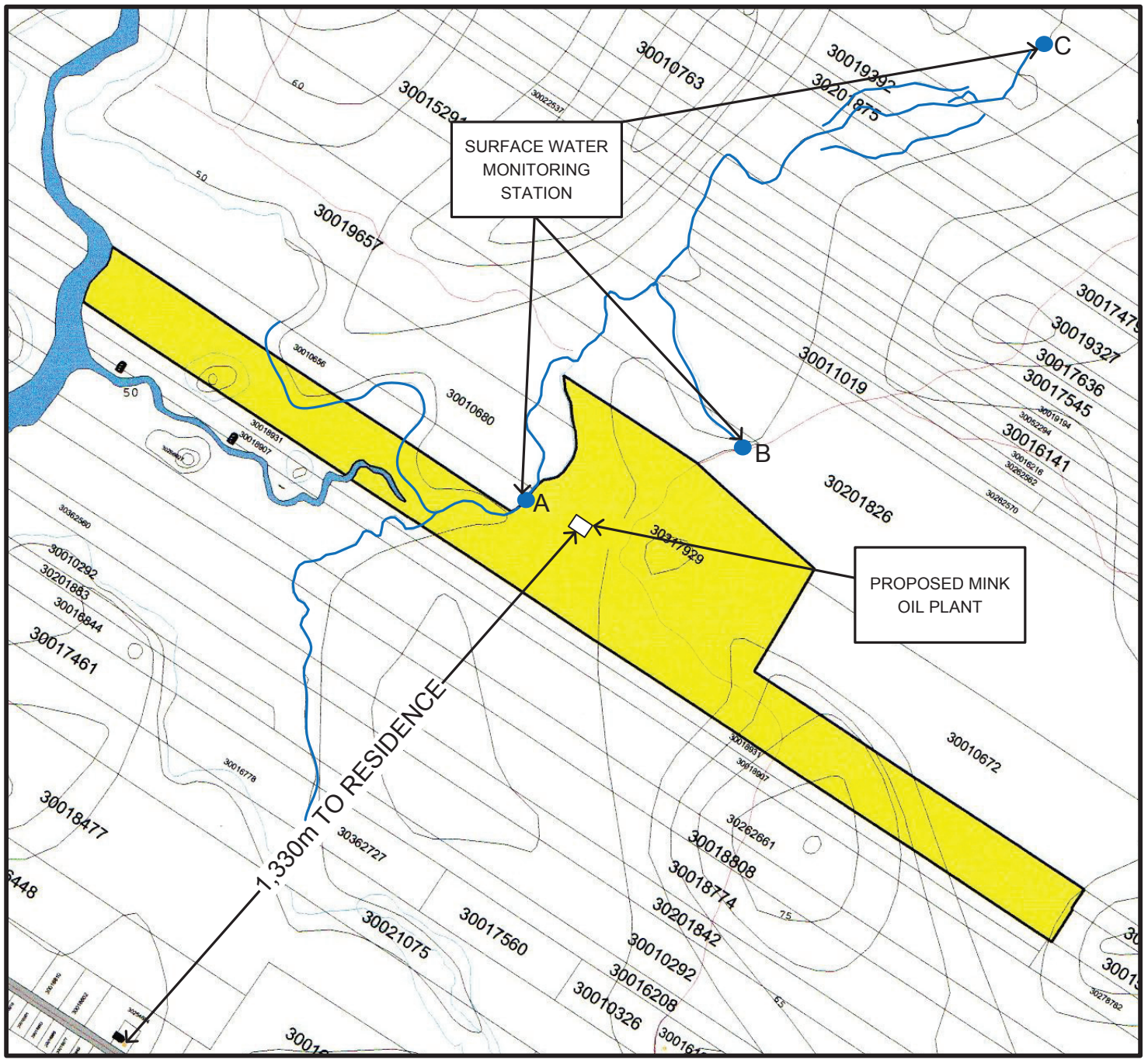
Spec Environmental Solutions Inc. currently operates an approved composting facility under Approval No. 2009-069102-A01 (Appendix 1) on this site. The Municipality of Clare's letter of May 27th, 2011 indicates that the composting facility is compliant with their municipal zoning by-laws (Appendix 2).

In 2011 the 2009 Approval for the composting facility was amended to include the processing of mink feed waste and liquid mink manure. Facility upgrades were started in 2012 and finished in 2013 including:

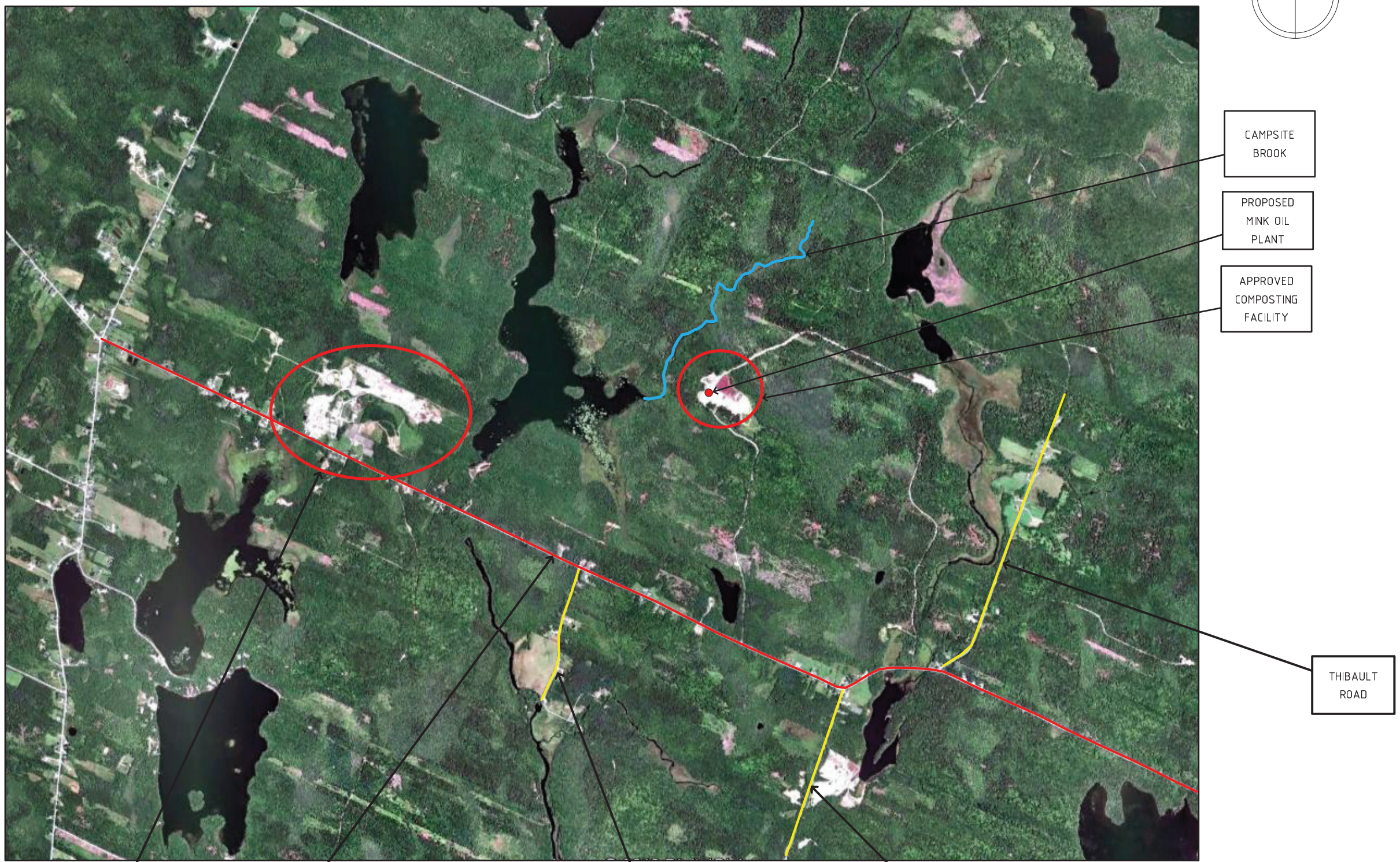
- The construction of a new wood chip processing and storage area.
- A new compost windrow temporary storage area.
- A dewatering system.
- A waste treatment system consisting of a multi-year phase development of sediment ponds, primary and secondary cells, bio-retention cells and disposal fields.
- Additional monitoring wells.

See Plan 1 for the layout of the Composting Facility.

The proposed Mink Oil Plant will be located immediately west of the Composting Facility and will be operated by Spec Environmental Solutions staff.


SURFACE WATER MONITORING STATION
PROPOSED MINK OIL PLANT
1,330m TO RESIDENCE
A
B
C

MAP 1



AERIAL PHOTO 1

B) Environmental Resources

A resource study of the overall site was carried out in 2011 in conjunction with the amendment to the Composting Facility Approval.

i) Geology

Bedrock geology of the general area is Cambrian age metasediments of the Meguma Group. The area east of the Meteghan River and Campsite Brook is underlain by the Goldenville Formation which consists of greywacke, quartzite, slate, schist and gneiss. Pleistocene geology in the regional area of the compost site is an ablation till which is generally thin and mantled over bedrock topography. This till unit is described as a sandy matrix with rounded and angular clasts, sand inclusions and beds. Thickness of the materials range from 2 – 10 meters, averaging approximately 5 meters. One on-site test hole was dug at approximately surface elevation of 55 meters above mean sea level (msl). The following characteristics of undisturbed surficial soils was determined in the field.

Soil Stratum	Depth of Soil (mm)	Density	Moisture
Organic layer	175	Loose	Moist
Redish fine sand	200	Loose	Moist
Yellowish silty sand	530	Loose	Moist
Fine silty gravel	360	Compact	Moist
Coarse sandy gravel	1,135	Compact	Moist
	2,400		

Neither bedrock nor water table were encountered in the test hole at the 2.4 meter depth. The location of the test hole is shown on **Plan 1**. Bore holes drilled for the groundwater monitoring wells encountered bedrock at depths between 3.4 to 3.6 meters below ground surface (AMEC 2001).

PARTS LIST

No.	QTY.	MATL	SIZE	DESCRIPTION
1				

INTERMITTENT STREAM

MONITORING STATION B

TO BAYO PIT

swamp

CAMPSITE BROOK

M.W.1

GATE

WOOD CHIP PROCESSING

WOOD CHIP STOCKPILE

M.W.3 & 4

GATE

PROPOSED COMPOST BUILDING

ACCESS ROAD

CARCASSES

COMPOST BUILDING 1 (MIXING)

COMPOST BUILDING 2 (CURING)

DEWATERING BUILDING

ACCESS ROAD

400 FT

SCREENING PAD

WASTE TO ENERGY FUTURE SITE

5000 GAL TANK

FUTURE BIO OIL PLANT

111m

DRAIN

DRAIN

SHUT OFF VALVE

COMPOST CURRING PAD WITH LINER

300 FT

SEPTIC TANK

WOODEN BRIDGE

MONITORING SITE - A

SLOPE

M.W.2

ACCESS ROAD

300 FT

100 FT

PRIMARY CELL # 1

184 FT

100 FT SECONDARY CELL

265 FT

BIO RETENTION CELL # 1

100 FT DEEP ZONE

272 FT

BIO RETENTION CELL # 2

DEEP ZONE

100 FT

272 FT

BIO RETENTION CELL # 3

DEEP ZONE

100 FT

GATE

90 M DISPOSAL FIELD #2

SLOPE

SLOPE

TEST HOLE

C1 DISPOSAL FIELD # 1

PUMP CHAMBER

SEPTIC TANK

ENVIRO PIT

M.W.5

226m

SPEC DRIVE

BUB ROAD

TO ST JOSEPH MAIN ROAD

74m

TO SPEC RESOURCES

M.W.6

100 ft 200 ft 300 ft 400 ft 500 ft

Client:	SPEC ENVIRO
Project:	PHASE 1 COMPOST PLANT
Title:	SITE PLAN
Drawn By:	D.LEWIS
Date:	06/04/2011
Checked By:	-
Scale:	1"=200'-0"
Rev:	0
Approvals	
Client:	
Date:	
Field:	
File No.:	-
DWG NO:	PLAN -1
Sht No:	1 of 1

ii) Hydrology

Hydrologic conditions on-site are evidenced by groundwater levels in the three original monitoring wells. The locations of the monitoring wells are shown on **Plan 1** . All of the monitoring wells are located at approximately 55 meters msl. Monitoring well 3 is comprised of a deep and shallow well. Depth of bore hole and groundwater levels below ground surface are indicated below.

Monitoring Well Depth and Water Level (2001)

M.W. 1		M.W. 2		M.W. 3 (deep)		M.W. 3 (shallow)	
Depth	W.E.	Depth	W.E.	Depth	W.E.	Depth	W.E. 4m
2.21m	4m	2.25m	7 – 7.9m	3.92m	3 – 4.6m	4.13m	

Groundwater flow and direction based on the above data is to the west toward Campsite Brook with a hydraulic gradient of 0.023 (AMEC 2001).

Baseline groundwater quality data including biological, chemical, metals and volatile organic compounds was obtained from samples taken July 6, 2010. Analysis of groundwater samples was performed by AGAT Laboratories. Results of the baseline data analysis is contained in **Appendix 3** of this report together with laboratory certificates of analysis**.**

iii) Surface Water

Surface water resources in the region consist of numerous lakes, streams, rivers, and wetlands. The compost facility site and the mink oil plant lie within the Meteghan River watershed. Surface water features within or adjacent to the facility consist of a perennial stream (Campsite Brook), swamp and intermittent watercourse. Baseline surface water sampling was conducted April 13, 2011 in the perennial stream. Three sampling stations were established. Stations A, B, and C are located on **Map 1**. Baseline surface water data including biological, chemical, metals and volatile organic compounds were obtained from samples taken April 13th, 2011 with laboratory analysis performed by AGAT Laboratories and Nova West Laboratories. Results of the analysis are presented in **Appendix 3** of this report together with certificates of analysis.

iv) Biological Features

The specific site for the construction of the mink oil plant on the composting facility is shown on Plan 1. During the construction operations for the composting facility the ground on and around this specific site has been cleared, grubbed and stripped with the result that there is no remaining vegetation and no habitat remaining (see Flora and Fauna under XII Environmental Impact Evaluation).

Baseline water sampling for sampling station "A" downstream from the compost facility and mink oil plant includes metals, nutrients, volatile organics and physical parameters. It should be noted that baseline Total Suspended Solids (TSS) were only 2 ppm at the downstream sampling station "A" and 0 ppm at station "B" which is closest to the active compost area. The completed compost facility upgrades include relocation of the windrow compost area which increases the separation distance from a watercourse. Controlled runoff from the windrow area, and construction of treatment facilities (primary and secondary cells, bio-retention cells, and disposal fields) further ensured the biological community in Campsite Brook would not be at risk. However, if surface water monitoring indicates potential harmful changes to the benthic community may occur, adaptive management measures will be initiated.

VII) The Purpose and Need for the Proposed Undertaking

The mink pelting season generally runs from September through January and during that period the mink carcasses are collected daily and trucked to the Patrice Road compost facility where they are composted. In the past, the subcutaneous fat was also collected and composted, which over the years has proved to be a major hindrance to the composting process due to its characteristics. This was the primary reason that a pilot project for mink oil production was carried out.

In 2010 Spec Environmental Solutions Inc received a grant from Agri-Futures (CAAP) and the National Research Council (IRAP) to perform the pilot project on mink oil and bio-diesel production. Federal and Provincial Environmental Assessments were performed as conditions for the CAAP grant.

The pilot project commenced in the 2010/11 pelting season and was completed in the 2011/12 pelting season under an Approval from Nova Scotia Environment (**Appendix 4**). Upon

completion it was determined that the pilot project was a success in reference to the mink oil production and deemed feasible to continue on a commercial scale.

Mink oil is a source of palmitoleic acid which possesses physical properties similar to human sebum. Due to this characteristic mink oil is used in both pharmaceutical and cosmetic products. In addition it is used for treating and conditioning most kinds of leather. Mink oil and its fatty acids are unique among animal derived fats and oils. The total unsaturated fatty acids in mink oil account for more than 75% of the fatty acid content but the oil has greater oxidative stability (resistance to rancidity) than other animal or vegetable oils.

For various reasons including feasibility it was decided that the bio-diesel part of the project would not move forward.

Potential customers were contacted and samples of the mink oil were shipped to them for their internal analysis. All reported back with positive reviews and purchased multiple bulk tanker loads.

All the oil produced in this pilot project was sold; in excess of 300,000 litres. The customers have since contacted Spec Environmental Solutions Inc. expressing interest for more mink oil in 2013.

It is estimated that mink oil production has the potential of being increased by a further thirty percent once a commercial operation is in place. This will potentially remove some 300 Tonnes of fat from the composting operation.

The prime purpose and need for the project is therefore to remove a serious impediment to the mink carcass composting operation and by doing so create a viable, profitable operation to supply an in-demand export product.

VIII) The Proposed Construction and Operation Schedules for the Undertaking

The building used for the mink oil pilot project was an existing structure that was available at that time at Spec Resources Inc at 1777 Patrice Road however as the pilot project progressed the building proved to be too small and of the wrong configuration to work efficiently.

For this reason a larger building is planned to be built at the compost facility at 2429 Patrice Road allowing Spec to configure the equipment to be more efficient. Also by having the mink oil operation at the compost and water treatment facility site it will increase efficiencies in the total operation.

The mink oil plant will operate during normal working hours for a five month period between September and January.

IX) Description of the Proposed Undertaking

i) Background

In the fall of 2000 the rendering plant that had traditionally handled the local mink industry's waste from the pelting operation announced that they would no longer receive their product.

At that time Spec Environmental Solutions Inc. did not operate a compost facility so in the interim Spec transported the waste for the mink industry to the local municipal composting facility. It soon became apparent, however, that the Municipal facility could not handle this product efficiently because it could not be incorporated into their composting technology.

In 2001 an Approval to Operate an Industrial Composting Facility was applied for and granted by the Nova Scotia Environment and construction was completed in time for the fall pelting season. This composting facility was constructed primarily to service the mink industry's waste stream and that first pelting season 411,000 carcasses were composted.

Since then the mink industry has grown steadily and at the end of the pelting season of 2011/12 approximately 1.5 million carcasses and associated organic matter, in the vicinity of 6,600 metric tonnes, will have been composted.

As noted earlier the subcutaneous fat was collected and composted with the mink carcass causing significant issues with the composting procedure. The completion of the mink oil facility will greatly decrease odour issues at the composting operation.

ii) Proposed Mink Oil Plant

General

A purpose built building (See **Appendix 5** for building plans) will be erected on the 2429 Patrice Road site in the location shown on Plan 1. The existing mink oil pilot project building at 1777 Patrice Road will not be demolished. It will be cleaned and used for other purposes. Once the new building is complete, the processing equipment from the pilot project building will be transferred to the new building. The equipment to be transferred is shown on the Floor Plan and Details.
Over the course of the pelting season (September- January) the subcutaneous fat from approximately 1,500,000 mink will be collected on a daily basis by a vacuum truck from the mink pelting plant and transported to the mink oil facility.

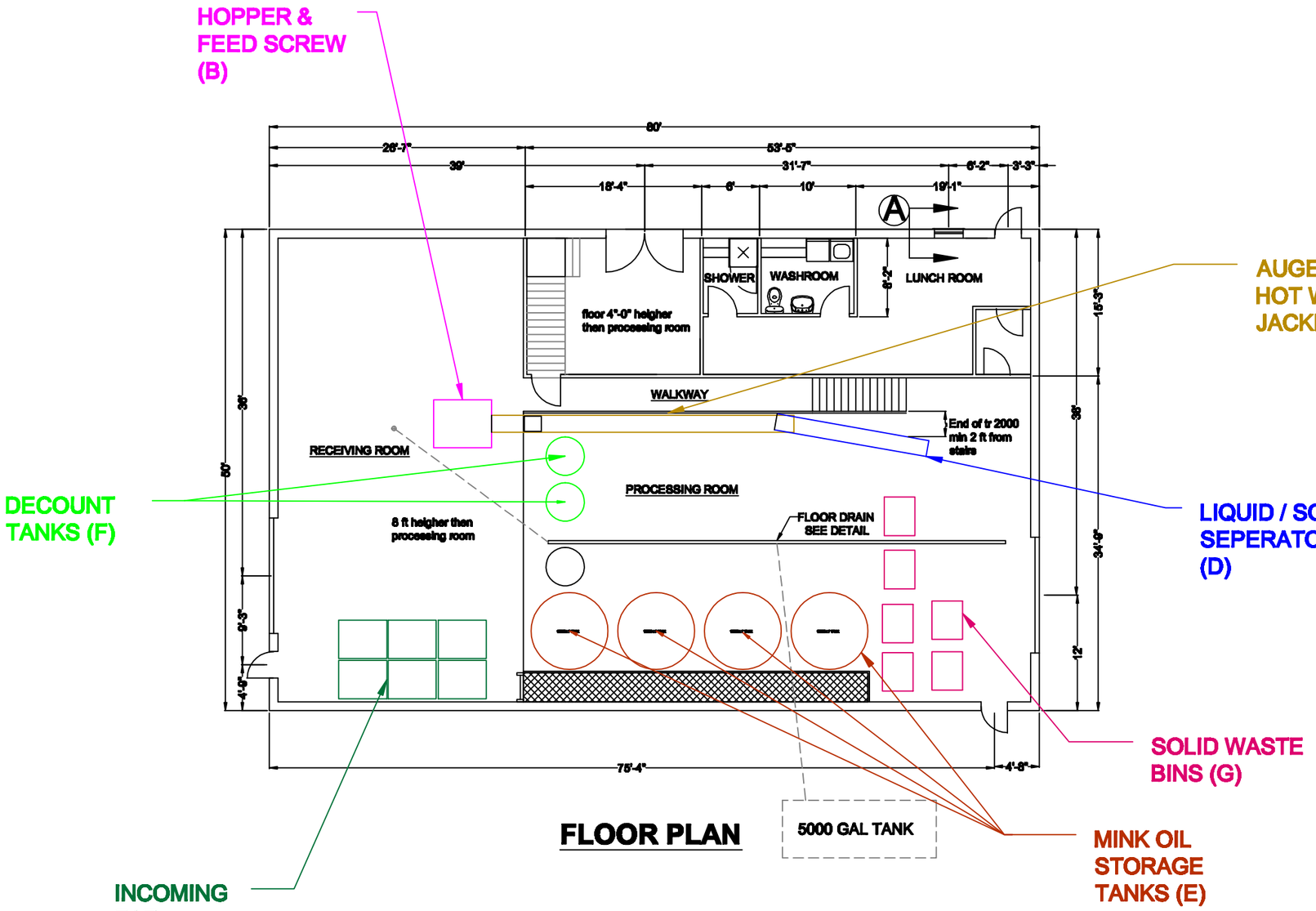
The fat is stored in bins inside the building (A) ready for immediate processing. No fat will be stored outside the building.

The fat is poured into the hopper and fed from the hopper via a feed screw (B) and augured through a water heated jacket (C) where the combination of controlled volume, heat and time causes the fat to liquefy and separate from the connective tissue. After leaving the heated water jacket the material passes on a liquid/solid separator (D), the resulting mink oil is then fed through a series of micro filters to remove any remaining tissue or other foreign material. From there the oil is pumped into storage tanks (E) located inside the plant ready for shipping..
The remaining solids are fed to decanting bins (F) where any remaining oil can drain into totes and added to the processing line prior to filtering. The remaining solids are stored in bins inside the plant ready for disposal (G).
Once sold the mink oil is pumped into a commercial tanker truck and transported to the customer.

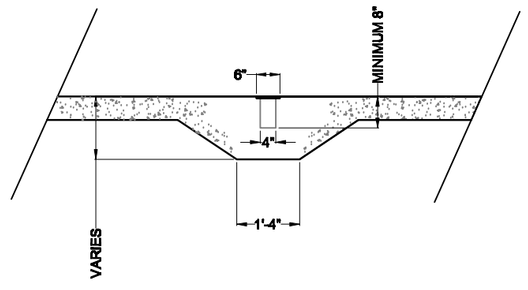
ii) Chemical Use

No chemicals are used in any part of this operation.

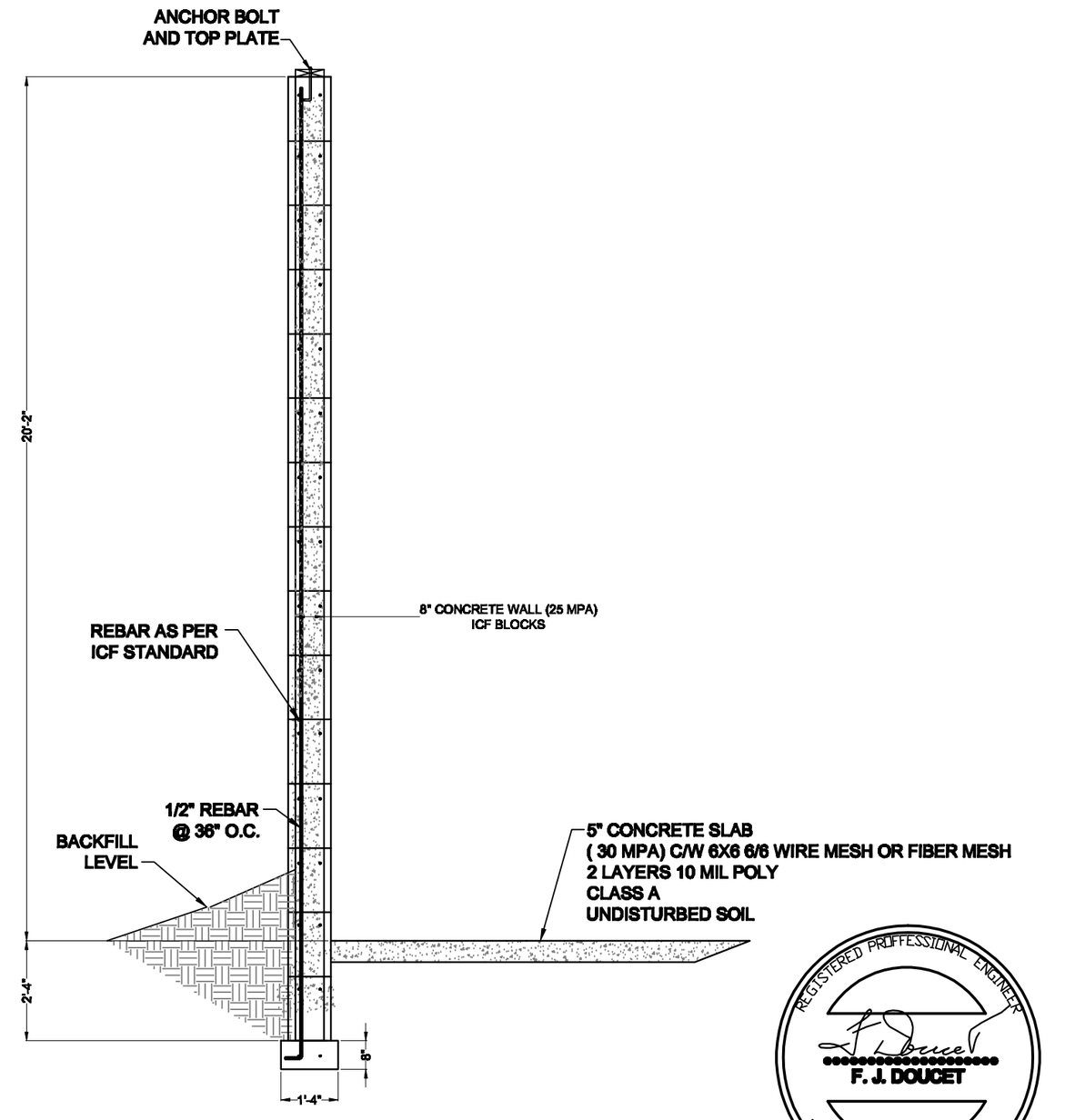
PARTS LIST				
No.	QTY	MAT'L	SIZE	DESCRIPTION
1	-	-	-	-



FLOOR PLAN



FLOOR DRAIN DETAIL



A-TYP WALL CROSS SECTION

SCALE = 1"-0"

REGISTERED PROFFESSIONAL ENGINEER
F. J. DOUCET
PROVINCE OF NOVA SCOTIA

Client:	SPEC ENVIRO
Project:	MINK OIL PROCESSING
Title:	FLOOR PLAN AND DETAILS
Drawn By: D.LEWIS	Date: MAY 29 2012
Checked By: -	Scale:1 1/2" =1'-0" Rev: 1
Approvals	
Client:	DWG NO: -
Class:	
Flag:	
File No.: -	Sht No: 2 of 2

Sheet Size = ANSI "D"

Liquid Effluent

No water is used in the processing of the mink oil. However, water will be used for the wash down and clean up. Volumes are anticipated to be approximately 100 L/D for a six day week over a five month period- September through January.

Floor drains throughout the building will be plumbed to an underground containment tank which will be pumped out as required and the water treated in the waste water treatment plant located on site.

The washroom facility inside the building will be plumbed to a septic tank and an Approved on-site sewage disposal system(**See Plan 1**).

iii) Solid Waste Management

All remaining connective tissue and other organic debris recovered from the micro filtering process will be incorporated into the on-site composting facility.

iv) Storage Capacity

Storage tanks within the building will be designed to hold approximately 34,000 litres. It is anticipated that all product will be presold and shipping will take place on a scheduled basis immediately a load is available in the storage tanks.

v) Dangerous Goods

There are no dangerous goods relating to this operation as all materials used are organic (animal origin) and there are no additives of any kind involved in the process.

X) Environmental Baseline Data

Baseline data was collected in 2011 from the monitoring wells and monitoring stations in Campsite Brook and these are shown in **Appendix 3**.

XI) List of Licenses, Certificates, Permits, Approvals and Other Forms of Authorization

The following approvals and other forms of authorization are anticipated for the project:

- Municipal Development/ Building permit, Municipality of the District of Clare **(Appendix 1)**
- Construction inspection, Municipality of the District of Clare
- Occupancy Permit, Municipality of the District of Clare
- Approval for the installation of an on-site sewage disposal system, Nova Scotia Department of Environment
- Industrial Approval, Nova Scotia Department of Environment including compliance with conditions attached to Approval.

XII) Sources of Public Funding for Proposed Undertaking

No public funds have been applied for with respect to the construction and operation of this facility.

It should be noted that Spec Environmental Solutions Inc. received a grant from Agri-Futures (CAAP) and the National Research Council (IRAP) with respect to the pilot project for mink oil production. The pilot project commenced in the 2010/11 pelting season and was completed in the 2011/12 pelting season.

XIII) Steps Taken by the Proponent to Indentify the Concerns of the Public and Aboriginal People about the Adverse Effects or the Environmental Effects of the Proposed Undertaking

Issues scoping was carried out by:

- Reviewing applicable Provincial and Federal Environmental Laws and Regulations
- Meeting with Provincial and Municipal Regulatory Agencies
- Consulting with business owners in the vicinity of the project
- Consulting with residents in the vicinity of the project
- Reviewing the experience with the operation of the composting facility over the past 10 years

XIV) Concerns Expressed by the Public and Aboriginal People about the Adverse Effects or the Environmental Effects of the Proposed Undertaking

The only issue of concern identified and addressed in the attached EA was odour. Neighbouring residents have noted an increase in odour during late 2012 from the composting operation and expressed concern that the mink oil operation may also contribute to an increase in odour. Other potential issues such as air quality, traffic, noise and accidents and malfunctions were not identified as issues of concern.
A list of contacts made and concerns expressed is set out in **Appendix 8**.

XV) Steps Taken or Proposed to be Taken by the Proponent to Address Concerns of the Public and Aboriginal People Indentified in XIV Above

A) As noted under XIV above, potential odour from the proposed undertaking was the only concern expressed.

The concern about potential odour has arisen since the composting facility site which will host the proposed undertaking has recently experienced problems with odour after more than ten years with no issues in this regard.

In 2012 Spec Environmental Solutions Inc. acting in accordance with an amendment to its Approval commenced taking waste feed and mink manure in addition to the mink carcasses it had been handling exclusively to that point. An imbalance of input volume necessitated more frequent compost turning and the placement of compost in the temporary storage yard at shorter intervals than previously.

There is little question that the procedural change and unusual weather conditions increased the odour from the site to the extent that it generated several inquiries or complaints from residents in the area.

Spec Environmental Solutions Inc. immediately addressed the issue and has modified its procedures to alleviate the odour problem. The company met with many residents and hand delivered a letter to all neighbouring residents and neighbouring businesses which explained the circumstances and apologized for the inconvenience caused. The situation is being closely

monitored by the company and the problem appears to have been solved by the addition of additional carbon and bulking agents and the installation of a mixer grinder for the feed stock.

The proposed undertaking has been tested with the pilot project which was conducted in the neighbourhood and no odour was detected outside of the building housing the pilot project. There was a faint, not unpleasant odour inside the building which became more noticeable within ten feet of the warmed fat.

The experience with the pilot project clearly indicates that there will be no odour issues with the proposed mink oil operation. However, it is clear that the odour from the composting operation in 2012 has raised public concern about odour in general.

B) Other issues which are typically of concern such as traffic, noise and air quality were not raised by the public but were addressed by the Proponent.

i) Traffic

Increased traffic due to the mink oil plant will be negligible. Prior to the brief operation of the mink oil pilot project carcasses and subcutaneous fat was shipped together to the composting facility. Both carcasses and subcutaneous fat will still be shipped to the same location but will have been separated at the pelting plant and will be shipped separately. This new procedure will produce a minimal increase in truck journeys.

The shipment of finished mink oil will be in approximately 22,000 litre increments resulting in a net increase of approximately 12 trucks per year using Patrice Road.

ii) Noise

Since the operating equipment for the mink oil plant is contained in a purpose built building there will be no change in noise levels from the site as a whole other than from the trucks picking up the mink oil.

iii) Air Quality

The subcutaneous fat is heated in a water jacket to approximately 60°C which is sufficient to release the mink oil. No air borne particulates are generated in the process and since there is little increase in traffic on the gravel access road there will be a minimal increase in dust levels from traffic.

XVI) Contingency Plan

Since the proposed mink oil plant will be located on the site of the existing approved compost facility and operated by the operators of the composting facility, Spec Environmental Solutions Inc., it will be operated in accordance with the contingency plan established for the composting facility and set out in **Appendix 6.**

XVII) Decommissioning, Closure and Abandonment

Equipment installed at the facility has an expected service life of 20 years. If circumstances arise, such as lack of raw product or lack of markets for the finished product, which necessitate the closure of the facility the processing equipment will be dismantled and removed and the building utilized for other purposes.

XVIII) Environmental Impact Evaluation

a) Neighbourhood Consultation

A list of contacts made and issues or concerns noted is set out in **Appendix 8.** As noted the only concern expressed was the issue of odour.

b) Settings and Boundaries

The area considered in this assessment, between Second Division Road, Patrice Road, Thibault Road and Isadore Thibault Road, includes developed lots, lakes, streams, wetlands and forested areas (see **Aerial Photo # 1**).

The general setting is rural with some industry including the Spec Resources Concrete Plant on Patrice Road.

c) Temporal Boundaries

These boundaries encompass construction, operation, maintenance, monitoring and decommissioning and are set at the life expectancy of the equipment i.e. 20 years.

d) Regulatory Boundaries

The regulatory boundaries of the Project are the laws and regulations of the Province of Nova Scotia, of Canada and the by-laws of the Municipality of the District of Clare.

XIX) Issue Scoping

This element in the EA process is to identify issues of concern to stakeholders and reference to Section XIII sets out the steps taken by the proponent to carry out this process.
It should be noted that the specific site location of the proposed mink oil plant on the same property as the composting facility made the scoping process more difficult as the composting plant has had short term issues which have now been resolved.

XX) Impact Significance

Significance is based on an analysis of various criteria and is determined after mitigation has been considered.

Criteria considered are set out below:

Criteria for Determination of Significance of Effects

Magnitude	Magnitude, in general terms, may vary among Issues, but is a factor that accounts for size, intensity, concentration, importance, volume and social or monetary value. It is rated as compared with background conditions, protective standards or normal variability.	
	Small	Small, relative to natural or background levels
	Moderate	Moderate, relative to natural or background levels
	Large	Large, relative to natural or background levels
Reversibility	Reversible	Effect can be reversed
	Irreversible	Effects are permanent
Nature	Positive	Net benefit
	Negative	Net loss or adverse effect
Extent	Immediate	Confined to the easement
	Local	Effects extent beyond the easement but less than regional
	Regional	Effects on a wide scale
Duration	Short Term	Between 0 and I year duration
	Medium Term	Between I and 7 year duration
	Long Term	Beyond 7 years duration
Confidence in Prediction	Low	Based on limited understanding of cause and effect relationships and/or incomplete data
	Moderate	Based on a good understanding of cause and effect relationships using data from similar cases, or moderately understood cause and effect relationships and good site-specific information
	High	Based on a good understanding of cause and effect relationships and good site specific information

XXI) Issues of Concern

VEC	**Issue**	**Effect**	**Included or Excluded from Impact evaluation**
Noise and Vibration	Increase in noise level	Increased noise during construction or operation	Excluded. Distance to nearest structure 1330 m. Noise during construction is temporary and operational level is ± 65 dBA within the building
Traffic	Effect of additional traffic in area	Increased traffic on Patrice Road	Excluded. Traffic will amount to approximately 12 additional trucks per year. Patrice Road is the primary road between Concession and St. Joseph and has a significant traffic flow
Air Emissions	Effects from combustion, dust on air quality	-Dust during construction -Truck operation	Included in Impact Evaluation. -minimal dust during construction -minimal truck traffic -nearest residence 1330 m
Water Quality	Effects on surface water or groundwater	-Contaminated surface water -Impact on groundwater quality	Included in Impact Evaluation. -Campsite Brook down stream from mink oil plant -Processing takes place within building, minimal potential for surface or groundwater contamination -Septic discharges to approved on-site sewage disposal system -No chemicals used in process
Heritage Resources	Loss or disturbance	Archeological	Excluded.

	or archeological, historical, paleontological or architectural resources	resources	This site has been extensively used and upper level soils removed
Odour	Increase in odour	Elevated odour during mink oil plant operation	Included in Impact Evaluation. -Issue raised as concern by neighbouring residents -Minimal odour from mink oil plant -Odour issue from composting facility on same site
Flora and Fauna	Disturbance of habitat or wetlands, impact to species at risk or migratory birds	-Effects on fish habitat or fish -Species at risk -Habitat loss	Included in Impact Evaluation. -Site cleared -Site disturbed -No natural habitat in place -Water course down slope of mink oil plant
Land Use	Effects on land use	Impact on use of surrounding land	Excluded. Land is zoned for commercial/industrial purposes and surrounding land use is compatible
Cumulative Effects	Effects of project combined with effects of other projects	Effects of project in combination with other projects may impact the environment	Excluded. No other projects are planned in the spatial boundaries of he project
Malfunctions or Accidents	Accidents during operation or shipping	Release of oil during loading/unloading or final shipping	Included in Impact Evaluation. -Contingency plan in place

XXII) Environmental Impact Evaluation

Air Emissions

There will be minimal dust during the construction of the facility. During operations emissions will be produced from the oil fired boiler and these emissions are not expected to exceed maximum acceptable ground level concentrations specified in the Nova Scotia Air Quality Regulations due to the boiler capacity (450,000BTU). The nearest resident receptor is 1330 m.

Magnitude	Small	
Reversibility	Irreversible	Emissions negligible
Nature	Negative	Emissions negligible
Extent	Local	Local and ambient air quality objectives will not be exceeded
Duration	Long Term	Emissions negligible
Confidence in Prediction	High	

Significance- Not significant
Residual Impact Statement- No residual long-term impacts on air quality are expected for the project.

Water Quality

Delivery and processing of the subcutaneous fat takes place within the building and storage of the mink oil produced is also within the building. Floor drains plumbed to an underground containment tank which will be pumped out as required and the water treated in the waste water treatment plant located on-site.
The washroom facility in the building will be plumbed to a septic tank and an approved on-site sewage disposal system.

No chemicals are used in the processing operation.

Campsite brook is located over 100 metres from the proposed mink oil operation and is down slope of the facility. Two monitoring stations were established in Campsite Brook and one on a tributary stream in 2011 and baseline data recorded for surface water. A monitoring program

was established under the Approval for the compost facility for both surface water and groundwater and has been implemented. Due to the proximity of the mink oil plant to the composting operation the existing monitoring program will also serve the mink oil plant.

Magnitude	Small	No chemicals used Approved septic system Containment system
Reversibility	Reversible	No discharge expected. If discharge detected operation shut down and corrective measures taken
Nature	Negative	No discharge expected
Extent	Regional	No discharge expected
Duration	Short term	If discharge detected corrective measures taken
Confidence in Prediction	High	Monitoring will confirm

Significance- Not significant.

Residual Impact Statement- No residual long term impacts on water quality are expected for the project.

Odour

There is negligible odour generated by the mink oil plant as the fat is not heated above 60°C. During the operation of the pilot project no odour was detectable outside the building.

The adjacent composting plant however, does generate significant odour and operating procedures in 2012, due to the addition of water feed and mink manure to the composting process, have caused some issues with neighbouring residents. Spec Environmental Solutions has made the necessary adjustments to their operating procedures to eliminate this issue.

Magnitude	Small	Undetectable outside the building
Reversibility	Reversible	If odour detected remedial measure taken
Nature	Negative	If odour detected remedial measure taken
Extent	Local	If odour detected remedial measure taken
Duration	Short term	If odour detected remedial measure taken
Confidence in Prediction	High	If odour detected remedial measure taken

Significance- Not significant. Odour from the mink oil plant is negligible on a local scale

Residual Impact Statement- No long-term impacts from odour are expected from this project.

Flora and Fauna

The site of the mink oil plant has been disturbed and there is no habitat remaining. However, Campsite Brook is a productive habitat requiring protection and a monitoring program is already in place to monitor changes in this habitat.

Magnitude	Small	
Reversibility	Reversible	Should contamination result from a spill remediation can be implemented
Nature	Negative	Little likelihood of oil spill reaching the brook
Extent	Local	Little likelihood of oil spill reaching the brook
Duration	Long-term	Little likelihood of oil spill reaching the brook
Confidence in Prediction	High	Little likelihood of oil spill reaching the brook

Significance- Not significant.

Residual Impact Statement-No residual long-term impacts on flora and fauna are expected for the project.

Malfunctions and Accidents

Malfunctions and accidents may occur during the operation of the mink oil plant. Campsite Brook is a productive fish habitat located over 100 metres from the plant.

To minimize the likelihood of a spill or other accident during operations Spec Environmental Solutions Inc. will implement a rigorous training program for staff responsible for fat and oil handling and transportation.

In the event of a spill Spec. Environmental Solutions Inc. will follow the procedures set out in the contingency plan set out in **Appendix 6.**

Magnitude	Small	
Reversibility	Reversible	Spills can be cleaned up
Nature	Negative	Impacts likely to be negligible
Extent	Local	Impacts likely to be negligible
Duration	Short-term	Adherence to the response plans will enable a return to normal operations in a short period of time
Confidence in Prediction	High	

Significance- Not significant if contingency plan is followed.

Residual Impact Statement-No residual long-term impacts are expected for the project.

Impact Assessment Summary

Impacts are assessed following mitigation

VEC	Magnitude	Reversibility	Nature	Extent	Duration	Confidence
Air Quality	S	Irreversible	Negative	Local	Long term	High
Water quality	S	Reversible	Negative	Regional	Short term	High
Odour	S	Reversible	Negative	Local	Short term	High
Flora/Fauna	S	Reversible	Negative	Local	Long term	High
Malfunctions and accidents	S	Reversible	Negative	Local	Short term	High

XXIII Monitoring

As noted in the Environmental Assessment the mink oil operation will share the same site as the compost facility and be located close to the compost plant. Since this is the case no additional monitoring is proposed and the monitoring program approved for the compost facility is set out in **Appendix 9.**

References

Environmental Assessment Regulations 277/2009 (Sept 15, 2009)

Concession Compost Facility Approval Amendment Application- Buxton 2011

APPENDIX 1

NOVA SCOTIA
Environment
Environmental Monitoring and Compliance

13 First Street
Yarmouth, Nova Scotia
Canada B5A 1S9

902 742-8985 T
902 742-7796 F
www.gov.ns.ca

Our File Number: 92100-30

September 23, 2011

Mr. Hubert LeBlanc
Spec Environmental Solutions Inc.
1777 Patrice Rd
PO Box 149
Church Point, NS
B0W 1M0

Dear Mr. LeBlanc:

RE: Approval to Operate - Industrial Composting Facility
Approval No. 2009-069102-A01, PID # 30317929

Enclosed please find Approval # 2009-069102-A01 to operate the Compost Facility at Patrice Road, St. Joseph, Digby County, Nova Scotia. This approval replaces previous approval # 2009-069102-R01 which is now null and void.

This Approval is issued as an amendment to the previous Approval. Please familiarize yourself with the new the terms and conditions as they have changed from the previous Approval .

Despite the issuance of this Approval, the Approval Holder is still responsible for obtaining any other authorization which may be required to carry out the activity, including those which may be necessary under provincial, federal or municipal law.

Should you have any questions, please contact Adam d'Entremont, P. Eng., Western Region, Yarmouth Office at (902) 742-8985.

Yours Truly

Anthony Shand
A/ District Manager

Eimas #: 2009-069102-A01

NOVA SCOTIA
Environment

APPROVAL

Province of Nova Scotia
***Environment Act*, S.N.S. 1994-95, c.1**

APPROVAL HOLDER: Spec Environmental Solutions Inc.

SITE PID: 30317929

APPROVAL NO: 2009-069102-A01

EXPIRY DATE: July 21, 2021

Pursuant to Part V of the *Environment Act*, S.N.S. 1994-95, c.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Construction and operation of a Compost Facility, and associated works, at or near St. Joseph, Digby County in the Province of Nova Scotia.

Administrator _____

Date Signed _____

TERMS AND CONDITIONS OF APPROVAL

Nova Scotia Environment

Approval Holder: Spec Environmental Solutions Inc.
Project: Industrial Composting Facility
Site: 2429 Patrice Road,
St. Joseph, Digby County

Approval No: 2009-069102-A01

File No: 92100-30

Reference Documents:

- Letter of Authorization signed by Hubert LeBlanc dated July 3/2011
- Letter of no objection from Municipality of Clare, dated May 27, 2011, signed by Connie Saulnier
- Application for amendment signed by P.Buxton, dated August 19, 2011, and attachments
- Prior approval number 2009-069102-R01
- Letter dated September 19, 2011from Paul G. Buxton P.Eng
- Report entitled " Concession Compost Facility Approval Amendment Application " dated July 29, 2011 by Paul G. Buxton, PEng.

1. Definitions

a) "Act" means the *Environment Act* S.N.S. 1994-1995, c.1 and includes all regulations made pursuant to the Act.

b) "Biosolids" means organic materials which originated as settled matter in facilities treating municipal or industrial liquid wastes and may be used as feedstock for composting operations.

c) "Compostable organic material" means food processing waste, paper waste, vegetative matter, kitchen scraps, feed processing wastes, landscaping waste, garden waste, and horticultural waste.

d) "Department" means the Western Region, Yarmouth Office, Nova Scotia Environment located at the following address:

Nova Scotia Environment
Environmental Monitoring and Compliance Division
Western Region, Yarmouth Office
13 First St.
Yarmouth, NS B5A 1S9

Phone: (902) 742-8985
Fax: (902) 742-7796

e) "Facility" means the Compost Facility and associated works.

f) "Leaf and yard waste" means vegetative matter resulting from gardening, horticulture, landscaping, or land clearing operation, including material such as tree and shrub trimmings, plant remains, grass clippings, leaves, trees and stumps, but excludes construction and demolition debris or contaminated organic matter.

g) "Minister" means the Minister of Nova Scotia Environment.

h) "NSE" means Nova Scotia Environment.

2. Scope of Approval

a) This Approval (the "Approval") relates to the Approval Holder and their application and supporting documentation, as listed in the reference documents above, to construct and operate the Facility, situated at or near St. Joseph, Digby County (the "Site").

b) The Facility shall be constructed and operated as outlined in the application for amendment to the industrial approval dated August 19, 2011 and supporting documentation.

c) This Approval supercedes previous approval number 2009-069102-R01 which is now null and void.

3. General Terms and Conditions

a) The Approval Holder shall construct, operate and reclaim its Facility in accordance with provisions of the:

i) *Environment Act* S.N.S. 1994-1995, c.1;
ii) Regulations pursuant to the above Act;
iii) Any future amendments to the Act and regulations
iv) The Nova Scotia Department of the Environment, Composting Facility Guidelines, September 2010, or as amended from time to time. Where the Composting Guidelines and terms and conditions of this Approval conflict, the terms and conditions of this Approval shall govern.

b) No authority is granted by this Approval to enable the Approval Holder to construct the Facility on lands which are not in the control or ownership of the Approval Holder. It is the responsibility of the Approval Holder to ensure that such a contravention does not occur.

c) If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.

d) Any request for renewal or extension of this Approval is to be made in writing, to the Department, at least ninety (90) days prior to the Approval expiry.

e) The Minister or Administrator may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 of the Act.

f) This Approval is not transferable without the consent of the Minister or Administrator.

g) (i) If the Minister or Administrator determines that there has been non-compliance with any or all of the terms and conditions contained in this Approval, the Minister or Administrator may cancel or suspend the Approval pursuant to subsections

58(2)(b) and 58(4) of the Act, until such time as the Minister or Administrator is satisfied that all terms and conditions have been met.

(ii) Despite a cancellation or suspension of this Approval, the Approval Holder remains subject to the penalty provisions of the Act and regulations.

h) The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including process changes or waste disposal practices which are not granted under this Approval. An amendment to this Approval will be required before implementing any change. Extensions or modifications to the Facility may be subject to the *Environmental Assessment Regulations.*

i) Pursuant to Section 60 of the *Act*, the Approval Holder shall submit to the Administrator any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.

j) The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.

k) The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this Approval.

l) Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analysed, by qualified personnel, in accordance with recognized industry standards and procedures.

m) Unless written approval is received otherwise from the Administrator, all samples required by this Approval shall be analysed by a laboratory that is:

(i) Accredited by the Standards Council of Canada; or

(ii) Accredited by another agency recognised by Nova Scotia Environment to be equivalent to the Standards Council of Canada; or

(iii) Maintaining an acceptable standard in a proficiency testing program conducted by the Canadian Association for Environmental Analytical Laboratories for all parameters being reported; or

(iv) Maintaining an acceptable standard in a proficiency or performance testing in another program considered acceptable to Nova Scotia Environment for all parameters being reported.

n) The Approval Holder shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, All monitoring results shall be submitted within 30 days following the month of monitoring.

o) The Approval Holder shall ensure that this Approval, or a copy, is kept on Site at all times and that personnel directly involved in the Facility operation are made fully aware of the terms and conditions which pertain to this Approval.

p) The Approval Holder shall inspect the Facility and Site daily, maintain good housekeeping practices and take appropriate action to reduce odour generation, leachate losses and vector problems.

q) The composting Facility shall have security to prevent illegal dumping and vandalism.

r) The composting Facility shall have constant supervision during the normal daily operating hours that the Facility is open (8:00 am until 4:30 pm).

4. Composting

a) The Approval Holder shall only compost by the windrow method, the following types of feedstocks:

(i) Mink carcasses, mink and animal manure, waste mink feed.
(ii) Mink feed and/or components of mink feed from feed production facilities (feed kitchens).
(iii) Food grade fish products from fish processing facilities in the event of spoilage.
(iv) Yard waste and sawdust.
(vi) Industrial, Commercial, Institutional, and Domestic food waste
(vii) Wastes and/or biosolids originating from municipal operations and treatment processes shall receive separate approval from the Department prior to acceptance at the Site for composting.
(viii) Any other organic wastes shall require separate approval by the Department.

b) The Approval Holder shall ensure that the compost product contains less than 1% foreign matter (by weight) that is not readily decomposed such as, metals, glass, plastic, rubber, leather, excluding mineral soils, woody material and rocks.

c) The Approval Holder shall not receive for composting in excess of 15,000 tonnes of feedstock annually as defined in condition 4(a) unless given approval by the Department.

d) The Approval Holder shall not store in excess of 12,000 tonnes of compost product on Site, at any one time, unless given approval by the Department.

e) Stockpiles of unprocessed feedstocks shall be minimized at the Facility by introducing feedstocks to the active compost as soon as possible.

f) All putrescible organic feedstocks must be incorporated into the composting process within 24 hours of being delivered to the Facility.

g) (i) Any rejected, residual or by-product materials including uncompostable materials and ferrous rejects shall be segregated from the compost feedstock and stored for ultimate disposal in a manner which prevents odour, vector and aesthetic problems. These rejected materials shall be removed from the Site on a weekly basis.

(ii) All dangerous goods and waste dangerous goods including household dangerous products shall be sorted from the feedstock and stored in a manner which is approved by the Department.

(iii) Dangerous goods and waste dangerous goods which have been rejected from the feedstock shall be removed from the Facility, on at least a monthly basis, and disposed in a manner approved by the Department.

h) The only feedstocks and compost which are permitted to be temporarily stockpiled outside the cover of the Facility composting or curing buildings include:

(i) finished/cured compost which is in the process of being screened or bagged,
(ii) bulking agents used in the composting process such as untreated wood, wood chips, bark, sawdust, straw, hay mulch, dry leaves, dry cardboard, etc.

i) All cured compost, chipped wood, chipped bark, dry leaves and sawdust which are stored outside the Facility buildings and on the Site as specified in condition 4(h) shall remain covered from the weather elements by tarpaulins or equivalent while in temporary storage.

j) The Approval Holder shall ensure that the finished compost is adequately matured in accordance with the requirements of the CCME Guidelines for Compost Quality, March 1996, and shall in addition be at least 6 months old, from initially being incorporated into windrows, and not reheat more than 10 degrees Celsius above ambient temperatures when piled outside.

5. Sound Levels

a) Sound levels measured at the Site property boundaries shall not exceed the following equivalent sound levels (Leq):

Leq 65 dBA 0700-1900 hours (Days)
60 dBA 1900-2300 hours (Evenings)
55 dBA 2300-0700 hours (Nights)

b) Monitoring of sound levels shall be conducted at the request of the Department. The location of the monitoring station(s) for sound will be established by the Administrator and may include point(s) beyond the property boundary.

6. Air Emissions

a) The Approval Holder must ensure that air emissions from the Facility do not exceed the maximum permissible ground level concentrations specified in Schedule "A" (attached) of the *Air Quality Regulations*.

b) Where it is the opinion of the Department that the Approval Holder is contributing to exceeding Schedule "A" concentrations, the Approval Holder will be required to implement a corrective action plan which may include ambient air monitoring and / or atmospheric modeling.

c) Total suspended particulate shall not exceed the following limits at any monitoring station designated by the Department which is situated at or beyond the property boundary:

Annual Geometric Mean	70 $\mu g/m^3$
Daily Average	120 $\mu g/m^3$

d) The Approval Holder shall operate the Facility in a manner which stabilizes putrescible organic compostable materials and destroys pathogens.

e) The Approval Holder shall have standard procedures to address odour complaints associated with the Facility which would include:

(i) Immediately investigate the cause of the complaint and undertake immediate and appropriate action, if necessary, to correct the problem.

(ii) The Approval Holder shall record all odour complaints and document the date, time, name, address and telephone number of the individual lodging the complaint. The record shall also state any cause of the odour and the action taken to correct the problem.

(iii) Records referenced in condition 5(e)(ii) shall be made available to the Department upon request.

f) The Approval Holder shall be required to reduce or cease composting or be required to limit storage of leachate, feedstock or compost if odour generation is deemed excessive by the Department.

g) The Approval Holder shall install mechanical ventilation and filtering as necessary to maintain negative pressures within the buildings and to control odours outside the buildings in the event that odours are deemed by the Department to be excessive. Such installation shall be designed and constructed only with approval from the Department.

7. Wastewater Management

a) All wastewater , process liquid, leachate and site runoff shall be collected onsite and piped or channeled to the bio-retention cells as outlined in the Concession Compost Facility Approval Amendment Application dated July 29, 2011.

b) The Approval Holder shall not discharge untreaded process liquid effluent or leachate from the Facility. All contaminated process wastewater/leachate shall be collected for reuse or disposed in accordance with an approved plan.

c) The floor surface of the receiving and the active composting area of the Facility shall be sloped to collect contaminated wastewater/leachate and be constructed of sealed concrete.

d) The Facility shall be constructed to retain a minimum combined volume of 4,500 litres of untreated process wastewater in each building.

8. Surface Water Management (Construction)

a) All erosion and sedimentation controls are to be in place prior to construction at this Facility. The Nova Scotia Department of the Environment " Erosion and Sedimentation Control Handbook For Construction Sites" shall serve as the reference document for all erosion control measures. These measures are minimum requirements and additional controls shall be implemented if Site runoff exceeds the discharge limits contained herein.

b) All erosion and sedimentation controls are to be maintained and remain in place until the disturbed areas are stabilized.

c) The Approval Holder shall sample for the parameters and at the frequency indicated to ensure the following liquid effluent levels from any discharge from the Site are met:

Liquid Effluent Discharge Limits During Construction

Parameters	Maximum in a Grab Sample	Monthly Arithmetic Mean	Monitoring Frequency
Total Suspended Solids	50 mg/l	25 mg/l	weekly/rain event
pH	5 - 9	5 - 9	weekly/rain event

d) Non-compliance of the effluent discharge limits noted in clause (c) shall be immediately reported to the Department.

e) All areas exposed during construction and temporary diversion, or control structures such as berms, ditches, etc., shall be stabilized immediately.

9. Monitoring Program (Surface Water, Groundwater & Leachate)

a) The Approval Holder shall implement the following monitoring program as outlined in the *Concession Compost Facility Approval Amendment Application* and *Composting Facility Guidelines*:

i) leachate will be sampled pre and post treatment semi-annually in accordance with column 3 of schedule 1.The system shall record total and instantaneous flows.
ii) surface water will be sampled at 2 location on Campsite Brook semi annually in accordance with column 3 of schedule 1 and quarterly in accordance with column 4 of schedule 1
iii) groundwater monitoring wells shall be sampled annually in accordance with column 1 schedule 1 and quarterly in accordance with column 2 schedule 1

b) Adverse impacts on water quality or quantity which are attributable to the operation of the Facility or activities occurring on the Site shall be remediated to the satisfaction of the Department by the Approval Holder.

c) Despite condition a , the monitoring program shall conform to the Composting Facility Guideline, September 21, 2010 as amended from time to time. The Department may modify or impose additional monitoring requirements at their discretion.

10. Operation and Maintenance Manual

a) An Operation and Maintenance Manual shall be maintained and updated as required by the Approval Holder. The manual shall be maintained on Site and include the following:

(i) Up-to-date as-built drawings and specifications for the Facility;
(ii) a copy of the most recent Approval for the Facility including the Terms and Conditions;
(iii) a complete description of the standard operating procedures for the Facility;
(iv) a copy of the most recent contingency plan.

b) The Operation and Maintenance Manual shall be available on-site for inspection by Department staff.

11. Litter Control

Any litter is to be contained on Site and periodically removed for disposal. Any off-Site litter caused by the Facility shall be collected immediately for storage on-Site or disposal.

12. Vector Control

The Approval Holder shall provide effective means of vector control. If vector control measures employed by the Approval Holder are deemed to be inadequate by the Department additional control measures or changes to the operation of the Facility may be requested for implementation.

13. Separation Distances

A minimum of 30 metre buffer zone shall be maintained on the property between the active composting operations , including the composting and curing buildings, and the property boundary.

14. Monitoring, Classification and Use of Compost

a) This Approval does not cover any liability that may be associated with the sale and/or use of the compost products.

b) (i) The Approval Holder shall classify, label and use the product compost in accordance with the CCME "Guidelines for Compost Quality", March 2005 (as amended from time to time).

(ii) Compost product shall be analysed for the parameters listed in Table 1. Additional parameters may be required as specified by the Department.

(iii) The sampling and testing protocol shall comply with the Section 4 of the CCME "Guidelines for Compost Quality", March 2005 (as amended from time to time).

c) Monitoring frequency shall be set at every 1000 tonnes of cured compost or every three months and before any finished compost may leave the Site.

15. Composting

All composting in the above Facility shall be done in accordance with the operations manual and the Nova Scotia Department of the Environment Composting Facility Guidelines, September 2010 (or latest version).

16. Reports and Records

The Approval Holder shall submit to the Department an annual report which shall include the following information:

a) A summary of the feedstocks received at the Site including.

(i) Types of materials received at the Site during the period,
(ii) Quantities of each specific feedstock received at the Site during the period,
(iii) Quantities of feedstocks composted,
(iv) Quantities of feedstocks rejected and sent for disposal

b) Compost quality testing results.

c) Results of the monitoring program identified in section 9 a of this Approval.

d) A discussion of the leachate pre and post treatment. The results shall include comments on the adequacy of the treatment and recommendations for any modifications to the treatment system

e) Updates to the operation and maintenance manual , emergency response plan and contingency plan

f) A record of all complaints received by the facility.

g) A record of all upset conditions observed at the facility, including qualities of incompletely treated or untreated effluent leaving the site.

h) A progress summary of the facility upgrades including any variations to the plan outlined in the *Concession Compost Facility Approval Amendment Application.*

i) The reporting period shall be from April 1 til March 31 of the following year.

j) The annual report shall be submitted to the department on or before **May 31** for the previous year's reporting period.

17. Site Specific Terms and Conditions

a) The Approval holder shall install two (2) additional monitoring wells as outlined in the application and supporting documents. The location and style of these wells shall be confirmed by the Department prior to installation. The wells shall be installed on or before May 31, 2012. Please forward the certificate of installation to the Department's Yarmouth office .

b) The Approval holder shall not direct any human waste to the bio-retention pond system. No authority is granted through this Approval for the installation of an On-Site Sewage Disposal System.

Table 1

Product	**Unit**
Moisture	%
Total Nitrogen	% dry weight
Total Phosphorus	% dry weight
Total Potassium	% dry weight
Organic Matter	% dry weight
Salinity (EC)	MS cm^{-1}
pH	Standard Units
Foreign Matter	%
Arsenic	mg/kg dry weight
Cadmium	mg/kg dry weight
Chromium	mg/kg dry weight
Cobalt	mg/kg dry weight
Copper	mg/kg dry weight
Lead	mg/kg dry weight
Mercury	mg/kg dry weight
Molybdenum	mg/kg dry weight
Nickel	mg/kg dry weight
Selenium	mg/kg dry weight
Zinc	mg/kg dry weight
Faecal Coliform	faecal units/gram dry weight

SCHEDULE "A"

MAXIMUM PERMISSIBLE GROUND LEVEL CONCENTRATIONS

CONTAMINANT	AVERAGING PERIOD	MAXIMUM PERMISSIBLE GROUND LEVEL CONCENTRATION	
		ug/m^3	pphm
Carbon Monoxide (CO)	1 hour	34 600	3000
	8 hours	12 700	1100
Hydrogen Sulphide (H_2S)	1 hour	42	3
	24 hours	8	0.6
Nitrogen Dioxide (NO_2)	1 hour	400	21
	Annual	100	5
Ozone (O_3)	1 hour	160	8.2
Sulphur Dioxide (SO_2)	1 hour	900	34
	24 hours	300	11
	Annual	60	2
Total Suspended Particulate (TSP)	24 hours	120	-
	Annual	70*	-

* - Geometric mean
ug/m^3 - micrograms per cubic metre
pphm - parts per hundred million

APPENDIX 2

Municipalité de Clare
C.P. 458
Petit-Ruisseau, N.-É.
B0W 1Z0
Tél : (902) 769-2031
Fax : (902) 769-3773
Courriel : council@municipality.clare.ns.ca
Siteweb : www.baiesaintemarie.com

Municipality of Clare
P.O. Box 458
Little Brook, N.S.
B0W 1Z0
Tel: (902) 769-2031
Fax: (902) 769-3773
Email: council@municipality.clare.ns.ca
Website: www.clarenovascotia.com

May 27th, 2011

Nova Scotia Department of Environment
13 First Street
Yarmouth, NS
B5A 1S9

Re: Renewal of 10 Year Operating Permit

To whom it may concern:

It is our understanding that Spec Environmental Solutions Inc. is preparing documentation for Nova Scotia Department of Environment to request permission to renew a ten (10) year operating permit for their composting facility in St. Joseph.

This letter is to advise that the Municipality of Clare has no objection to the renewal of the operating permit as the compost site is compliant with our municipal zoning by-laws.

Should you require any additional information, please do not hesitate to contact me at your convenience.

Sincerely,

Connie Saulnier
Chief Administration Officer

APPENDIX 3

11 Morris Drive, Unit 122
Dartmouth, Nova Scotia
CANADA B3B 1M2
TEL (902)468-8718
FAX (902)468-8924
http://www.agatlabs.com

AGAT Laboratories

CLIENT NAME: SPEC ENVIRONMENTAL SOLUTIONS
1777 PATRICE ROAD
CONFESSION, NS B0W1M0

ATTENTION TO: Mike Quinn

PROJECT NO:

AGAT WORK ORDER: 10X417308

TRACE ORGANICS REVIEWED BY: Kelly Hogue, Senior Organic Chemist

WATER ANALYSIS REVIEWED BY: Jason Coughtrey, Inorganic Supervisor

DATE REPORTED: Jul 19, 2010

PAGES (INCLUDING COVER): 6

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718, or at 1-888-468-8718

*NOTES
VERSION 1: Samples Received at 18°C.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

11 Morris Drive, Unit 123
Dartmouth, Nova Scotia
CANADA B3B 1M2
TEL (902)468-8718
FAX (902)468-8924
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 10X417398

PROJECT NO:

CLIENT NAME: SPEC ENVIRONMENTAL SOLUTIONS

ATTENTION TO: Mike Quinn

Column 1 Organics - Comprehensive List for Groundwater and Leachate

DATE SAMPLED: Jul 06, 2010 | **DATE RECEIVED: Jul 07, 2010** | **DATE REPORTED: Jul 19, 2010** | **SAMPLE TYPE: Water**

Parameter	Unit	G / S	RDL	MW-1 1660243	MW-2 1660257	MW-3-Deep 1660270	MW-3-Shallow 1660281
Benzene	ug/L		1	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L		1	<1	<1	<1	<1
Methylene Chloride (Dichloromethane)	ug/L		2	<2	<2	<2	<2
Toluene	ug/L		2	<2	<2	<2	<2
Vinyl Chloride	ug/L		0.6	<0.6	<0.6	<0.6	<0.6
Surrogate	**Unit**	**Acceptable Limits**					
Toluene-d8	%	60-130		95	99	97	99

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
Samples Received at 16°C

Certified By: Kelly Hogue

AGAT Laboratories

11 Morris Drive, Unit 123
Dartmouth, Nova Scotia
CANADA B3B 1M2
TEL (902)468-8718
FAX (902)468-8924
www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 10X417308
PROJECT NO:

CLIENT NAME: SPEC ENVIRONMENTAL SOLUTIONS

ATTENTION TO: Mike Quinn

Column 1 Inorganics - Comprehensive List for Groundwater and Leachate.

DATE SAMPLED: Jul 06, 2010 | DATE RECEIVED: Jul 07, 2010 | DATE REPORTED: Jul 19, 2010 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW-1 1860249	MW-1 1860257	MW-3-Deep 1860270	MW-3-Shallow 1860281
Alkalinity as CaCO3	mg/L		5	<5	39	124	<5
Ammonia as N	mg/L		0.05	0.31	<0.05	1.37	13.0
Dissolved Arsenic	ug/L		2	<2	<2	<2	<2
Dissolved Barium	ug/L		5	192	13	19	191
Dissolved Boron	ug/L		5	12	8	9	9
Dissolved Cadmium	ug/L		0.3	0.6	<0.3	<0.3	1.1
Dissolved Calcium	mg/L		0.1	3.6	7.7	38.1	12.9
Chloride	mg/L		1	33	11	9	7
Dissolved Chromium	ug/L		2	3	<2	<2	<2
Electrical Conductivity	umho/cm		1	315	165	325	498
Dissolved Copper	ug/L		2	<2	<2	<2	75
Dissolved Iron	ug/L		50	<50	<50	<50	<50
Dissolved Lead	ug/L		0.5	1.5	1.0	0.9	2.0
Dissolved Magnesium	mg/L		0.1	4.8	2.8	4.4	3.3
Dissolved Manganese	ug/L		2	1740	3500	135	1210
Mercury	ug/L		0.05	0.15	<0.05	<0.05	0.10
Nitrate as N	mg/L		0.05	11.0	0.11	1.96	46.1
Nitrite as N	mg/L		0.05	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen as N	mg/L		0.4	3.4	1.3	4.6	18.6
pH				8.3	6.7	7.9	4.6
Total Phosphorous as P	mg/L		0.03	0.35	1.20	1.31	3.09
Dissolved Potassium	mg/L		0.1	3.4	3.1	2.9	25.3
Dissolved Sodium	mg/L		0.1	24.0	9.1	16.8	17.3
Total Suspended Solids	mg/L		5	7400	1090	374	4050
Total Dissolved Solids	mg/L		5	142	92	194	252
Sulphate	mg/L		2	7	20	19	11
Dissolved Zinc	ug/L		5	13	<5	<5	41
Chemical Oxygen Demand	mg/L		3	41	3	10	18
Dissolved Organic Carbon	mg/L		0.5	4.3	3.0	3.7	5.3
Total Phenolics	mg/L		0.001	<0.001	<0.001	<0.001	<0.001

Comments: RDL - Reported Detection Limit G / S - Guideline / Standard
Samples Received at 18°C

1860249-1860281 *Metal Scan performed on filtered sample.

Certified By:

AGAT Laboratories

11 Morris Drive, Unit 122
Dartmouth, Nova Scotia
CANADA B3B 1M2
TEL (902)468-8718
FAX (902)468-8924
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: SPEC ENVIRONMENTAL SOLUTIONS

AGAT WORK ORDER: 19X417309

PROJECT NO:

ATTENTION TO: Mike Quinn

Trace Organics Analysis

RPT Date: Jul 10, 2019

PARAMETER	Batch	Sample Id	DUPLICATE Dup #1	Dup #2	RPD	Method Blank	REFERENCE MATERIAL Measured Value	Acceptable Limits Lower	Upper	METHOD BLANK SPIKE Recovery	Acceptable Limits Lower	Upper	MATRIX SPIKE Recovery	Acceptable Limits Lower	Upper
Column 1 Organics - Comprehensive List for Groundwater and Leachate															
Benzene	1	1860270	< 1	< 1	0.0%	< 1	91%	60%	140%	93%	60%	140%	94%	60%	140%
1,4-Dichlorobenzene	1	1860270	< 1	< 1	0.0%	< 1	128%	60%	140%	98%	60%	140%	101%	60%	140%
Methylene Chloride (Dichloromethane)	1	1860270	< 2	< 2	0.0%	< 2	103%	60%	140%	122%	60%	140%	102%	60%	140%
Toluene	1	1860270	< 2	< 2	0.0%	< 2	93%	60%	140%	109%	60%	140%	112%	60%	140%
Vinyl Chloride	1	1860270	< 0.6	< 0.6	0.0%	< 0.6	NA	60%	140%	120%	60%	140%	100%	60%	140%

Certified By: Kelly Hague

AGAT Laboratories

11 Morris Drive, Unit 122
Dartmouth, Nova Scotia
CANADA B3B 1M2
TEL (902)468-8718
FAX (902)468-8924
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: SPEC ENVIRONMENTAL SOLUTIONS

AGAT WORK ORDER: 10X487309

PROJECT NO:

ATTENTION TO: Mike Quinn

Water Analysis

RPT Date: Jul 19, 2010

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Column 1 Inorganics - Comprehensive List for Groundwater and Leachate.															
Alkalinity as CaCO3	1	1860028	8	5	46.2%	< 5	100%	80%	120%		80%	120%	94%	80%	120%
Ammonia as N	1	1860721	<0.05	<0.05	0.0%	< 0.05	103%	80%	120%		90%	120%	106%	80%	120%
Dissolved Arsenic	71310	1858983	< 2	< 2	0.0%	< 2	97%	80%	110%	93%	90%	110%	97%	80%	120%
Dissolved Barium	71310	1858983	8	8	0.0%	< 5	99%	80%	110%	103%	90%	110%	90%	80%	120%
Dissolved Boron	71310	1858983	10	8	22.2%	< 6	100%	80%	110%	93%	90%	110%	88%	80%	120%
Dissolved Cadmium	71310	1858983	< 0.3	< 0.3	0.0%	< 0.3	98%	80%	110%	101%	90%	110%	80%	80%	120%
Dissolved Calcium	71310	1858983	1.6	1.6	0.0%	< 0.1	101%	80%	110%	98%	90%	110%	82%	80%	120%
Chloride	1	1858726	8	8	0.0%	< 1	99%	80%	120%		90%	120%	102%	80%	120%
Dissolved Chromium	71310	1858983	< 2	< 2	0.0%	< 2	102%	80%	110%	100%	90%	110%	80%	80%	120%
Electrical Conductivity	1	1860036	111	112	0.9%	< 1	98%	80%	120%		80%	120%		80%	120%
Dissolved Copper	71310	1858983	< 2	< 2	0.0%	< 2	104%	80%	110%	102%	90%	110%	92%	80%	120%
Dissolved Iron	71310	1858983	513	521	1.5%	< 50	98%	80%	110%	99%	90%	110%	89%	80%	120%
Dissolved Lead	71310	1858983	2.6	2.3	4.3%	< 0.5	97%	80%	110%	97%	90%	110%	95%	80%	120%
Dissolved Magnesium	71310	1858983	0.6	0.6	0.0%	< 0.1	97%	80%	110%	101%	90%	110%	88%	80%	120%
Dissolved Manganese	71310	1858983	33	33	0.0%	< 2	96%	80%	110%	96%	90%	110%	97%	80%	120%
Mercury	1	1857822	<0.05	<0.05	0.0%	< 0.05	108%	80%	120%		80%	120%	88%	80%	120%
Nitrate as N	1	1858728	< 0.05	< 0.05	0.0%	< 0.05	94%	80%	120%		80%	120%	118%	80%	120%
Nitrite as N	1	1858728	< 0.05	< 0.05	0.0%	< 0.05	105%	80%	120%		80%	120%	91%	80%	120%
Total Kjeldahl Nitrogen as N	1	1860249	3.4	3.4	0.0%	< 0.4	108%	80%	120%		90%	120%	108%	80%	120%
pH	1	1860036	7.4	7.4	0.0%	<	100%	80%	120%		80%	120%		80%	120%
Total Phosphorous as P	1	1860249	0.07	0.07	0.0%	< 0.03	98%	80%	120%		80%	120%	109%	80%	120%
Dissolved Potassium	71310	1858983	0.8	0.8	0.0%	< 0.1	103%	80%	110%	99%	90%	110%	91%	80%	120%
Dissolved Sodium	71310	1858983	3.7	3.7	0.0%	< 0.1	103%	80%	110%	99%	90%	110%	90%	80%	120%
Total Suspended Solids	1	1858346	<5	<5	0.0%	< 5	101%	80%	120%		80%	120%	101%	80%	120%
Total Dissolved Solids	1	1859296	<5	<5	0.0%	< 5	98%	80%	120%		80%	120%		80%	120%
Sulphate	1	1858728	3	3	0.0%	< 2	95%	80%	120%		90%	120%	100%	80%	120%
Dissolved Zinc	71310	1858983	8	8	0.0%	5	99%	80%	110%	97%	70%	130%	85%	70%	130%
Chemical Oxygen Demand	1	1860270	10	8	22.2%	< 3	100%	80%	120%		80%	120%	90%	80%	120%
Dissolved Organic Carbon	1	1860036	3.5	3.1	12.1%	< 0.5	103%	80%	120%		80%	120%	104%	80%	120%
Total Phenolics	1	1860281	< 0.001	< 0.001	0.0%	< 0.001	101%	90%	110%	99%	90%	110%	95%	70%	130%

Certified By:

AGAT Laboratories

11 Morris Drive, Unit 122
Dartmouth, Nova Scotia
CANADA B3B 1M2
TEL (902)468-8718
FAX (902)468-8924
http://www.agatlabs.com

Method Summary

CLIENT NAME: SPEC ENVIRONMENTAL SOLUTIONS

AGAT WORK ORDER: 10X417308

PROJECT NO:

ATTENTION TO: Mike Quinn

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	VOL-120-6001	EPA SW846 5230B/8260	GC/MS
1,4-Dichlorobenzene	VOL-120-6001	EPA SW846 5230B/8260	GC/MS
Methylene Chloride (Dichloromethane)	VOL-120-6001	EPA SW846 5230B/8260	GC/MS
Toluene	VOL-120-6001	EPA SW846 5230B/8260	GC/MS
Vinyl Chloride	VOL-120-6001	EPA SW846 5230B/8260	GC/MS
Toluene-d8	VOL-120-6001	EPA SW846 5230B/8260	GC/MS
Water Analysis			
Alkalinity as CaCO3	INORG-121-6001	SM 2320 B	
Ammonia as N	INORG-121-6003	SM 4500-NH3 G	COLORIMETER
Dissolved Arsenic	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Dissolved Barium	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Dissolved Boron	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Dissolved Cadmium	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Dissolved Calcium	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Chloride	INORG-121-6005	SM 4110 B	IC
Dissolved Chromium	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Electical Conductivity	INOR-121-6001	SM 2310 B	
Dissolved Copper	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Dissolved Iron	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Dissolved Lead	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Dissolved Magnesium	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Dissolved Manganese	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Mercury	INOR-121-6100 & INOR-121-6107	SM 3112 B	CV/AA
Nitrate as N	INOR-121-6005	SM 4110 B	
Nitrite as N	INOR-121-6005	SM 4110 B	
Total Kjeldahl Nitrogen as N	INOR-121-6020	SM 4500 NORG D	COLORIMETER
pH	INOR-121-6001	SM 4500 H+B	
Total Phosphorous as P	INORG-121-6009	SM 365.2	COLORIMETER
Dissolved Potassium	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Dissolved Sodium	MET121-6104 & MET-121-6105	SM 3125	ICP/MS
Total Suspended Solids	INOR-121-6024, 6025	SM 2540C, D	GRAVIMETRIC
Total Dissolved Solids	INOR-121-6024, 6025	SM 2540C, D	GRAVIMETRIC
Sulphate	INORG-121-6005	SM 4110 B	IC
Dissolved Zinc	MET-121-6021	EPA SW-846 6020 & 200.8	ICP/MS
Chemical Oxygen Demand	INORG-121-6013	SM 5220 B	SPECTROPHOTOMETER
Dissolved Organic Carbon	INORG-121-6026	SM 5310 B	TOC ANALYZER
Total Phenolics	INOR 1050	MOE ROPHEN-E 3179 & SM 5530 D	TECHNICON AUTO ANALYZER

CERTIFICATE OF ANALYSIS

AGAT WORK ORDER: 10X417308
PROJECT NO:
CLIENT NAME: SPEC ENVIRONMENTAL SOLUTIONS
ATTENTION TO: Mike Quinn
DATE RECEIVED: Jul 07, 2010
DATE SAMPLED: Jul 06, 2010
DATE REPORTED: Jul 19, 2010

PACKAGE INFORMATION:

Work Sheet Name	Sample Ty	Guideline / Standard	Package Name
X01	Water		Column 1 Organics - Comprehensive List for Groundwater and Leachate
X02	Water		Column 1 Inorganics - Comprehensive List for Groundwater and Leachate

Please store sample at < 10 °C (do not freeze) and deliver within 24 hours.

NOVA SCOTIA
Transportation and Infrastructure Renewal

email

Drinking Water Sample Submission Form

407

NOVA WEST LABORATORY Ltd.

Laboratoire Nova Ouest Ltée.
46 Schoolhouse Rd.
Grosses Coques, Digby Co., NS
(PO Box 39 Saulnierville, NS, B0W 2Z0)
Tel: (902) 837-5143 Fax: (902) 837-7456

Sample ID: A2 Downstream CSB.

Mike Quinn | Facility Name: SPEC Environmental Solutions

Phone: 769-2777 | Fax: 769-0906

☐ Approved ☐ Registered (Reg #) ☐ Commercial ☐ Residential ☐ Government

☐ Municipal ☐ Drilled Well ☐ Dug Well ☐ Lake ☐ Reservoir ☐ Spring ☐ Cistern ☐ Watercourse ☐ Other:

☐ Indoor pool ☐ Outdoor pool ☐ Spa ☐ Beach ☐ Wastewater System: effluent / sewage

☐ Other: Water Course.

Sample Collection Location

☑ Raw ☐ Treated

Chlorine Residual: ____ mg/L free / total pH: ____

Sampled by: M Quinn.

Date and time of collection: 13/Apr/11

☐ Total Coliform Presence/Absence
☐ E.coli Presence/Absence (Fecal Coliform)
☑ Total Coliform Count
☑ E.coli Count (Fecal Coliform)
☑ Other: BOD, TSS, TDS, PH.
For chemical analysis packages refer to outside lab (see back of form)

Sample Receipt Comments

Total Coliform: ☑ Present ☐ Absent Count: 393 /100ml
Method: Colisure
E.coli: ☑ Present ☐ Absent Count: 17 /100ml
Method: Colisure pH 5.12
Other: BOD = 3ppm TSS = 2ppm TDS = 41ppm
Lab Tech Signature:
Date/Time: 15/Apr/11 1100

Reported By:
Method: Fax / Phone / Mail / Email
Date / Time:
To NSDEL:
NSDEL Contact:
Method: Fax / Phone / Mail / Email
Date / Time:

Signature of Recipient/Contact Person: M Quinn 13/Apr/11.
Signature of Sample Collector:
Signature of Lab upon Receipt of Sample: BS 13/Apr/11

Comments (on sampling): 11:16

Refer to the back of the form for submission and sampling instructions.

Form No: 159811

Please store sample at < 10 °C (do not freeze) and deliver within 24 hours.

NOVA SCOTIA
Transportation and Infrastructure Renewal

Drinking Water Sample Submission Form

408

Sample ID: B2 - Culvert

NOVA WEST LABORATORY Ltd.
Laboratoire Nova Ouest Ltée.
40 Schoolhouse Rd.
Grosses Coques, Digby Co., NS
(PO Box 39 Saulnierville, NS, B0W 2Z0)
Tel: (902) 837-5143 Fax: (902) 837-7456

Owner Name: [illegible]
Mailing Address:
Phone | Fax | Email Address

Consultant / Company: [illegible] Remediation Solutions
Mailing Address:
Locality | Postal Code
Phone: 757-2777 | Fax: [illegible] | Email Address

☐ Approved ☐ Registered (Reg #) ____
☐ Commercial ☐ Residential ☐ Government

☐ Municipal ☐ Drilled Well ☐ Dug Well ☐ Lake
☐ Reservoir ☐ Spring ☐ Cistern ☐ Watercourse
☐ Other ____

☐ Indoor pool ☐ Outdoor pool ☐ Spa ☐ Beach (salt/fresh water)
☐ Wastewater System effluent / sewage (etc.)
☐ Other: [illegible]

Sample collection location (e.g. kitchen tap):
☐ Raw ☐ Treated (type) ____
Chlorine Residual: ____ mg/L free / total (circle) pH: ____
Sample collected by (name): [illegible]
Date and time sample collected (dd/mm/yyyy hh:mm): [illegible]

Contact Name:
Mailing Address:
Phone | Fax | Email Address
Contact (Lab) Address | Account #
Mailing Address:
Phone | Fax | Email Address

☐ Total Coliform Presence/Absence
☐ E.coli Presence/Absence (Fecal Coliform)
☐ Total Coliform Count
☐ E.coli Count (Fecal Coliform)
☑ Other: BOD, TSS, TDS, pH
For chemical analysis packages refer to specific lab (see back of form)

Date and time sample received (lab use):
Total Coliform: ☐ Present ☐ Absent Count: >2419 /100ml
Method: Colilert
E.coli: ☐ Present ☐ Absent Count: 49 /100ml
Method: Colilert MPN 2.72
Other: BOD = 44ppm, TSS = [illegible]ppm, TDS = [illegible]ppm
Lab Tech Signature: [illegible]
Date/Time: (dd/mm/yyyy hh:mm) [illegible]

Reported By: (name)
Method (circle) Fax / Phone / Mail / Email
Date / Time: (dd/mm/yyyy hh:mm)
NSHEL:
NSHEL Contact:
Method (circle) Fax / Phone / Mail / Email
Date / Time: (dd/mm/yyyy hh:mm)

Signature of Sample Collector: [illegible] | [illegible]
Signature of Lab Receiving: [illegible] | Date / time: [illegible]

COMMENTS (on sampling):
11:15

Refer to the back of the form for submission and sampling instructions.

Form No: 159812

Please store sample at < 10 °C (do not freeze) and deliver within 24 hours.

NOVA SCOTIA
Transportation and Infrastructure Renewal

Drinking Water Sample Submission Form

409

NOVA WEST LABORATORY Ltd.
Laboratoire Nova Ouest Ltée.
40 Schoolhouse Rd.
Grosses Coques, Digby Co., NS
(PO Box 39 Saulnierville, NS, B0W 2Z0)
Tel: (902) 837-5143 Fax: (902) 837-7456

Sample ID: C2 upstream CSB.

SUBMITTED BY:

CONTACT NAME: MIKE QUINN
FACILITY NAME (if applicable): SPRC ENVIRONMENTAL SOLUTIONS
MAILING ADDRESS:
CIVIC ADDRESS:
COUNTY:
POSTAL CODE:
PHONE: 769-2777 FAX: 769-0906
EMAIL ADDRESS:

OWNER:

☐ Approved ☐ Registered (Reg #) ☐ Commercial ☐ Residential ☐ Government

CONTACT NAME:
MAILING ADDRESS:
PHONE FAX EMAIL ADDRESS

SOURCE:

☐ Municipal ☐ Drilled Well ☐ Dug Well ☐ Lake
☐ Reservoir ☐ Spring ☐ Cistern ☐ Watercourse
☐ Other:

CONTACT NAME (if different): ACCOUNT #:
MAILING ADDRESS:
PHONE FAX EMAIL ADDRESS

TYPE:

☐ Indoor pool ☐ Outdoor pool ☐ Spa ☐ Beach: salt / fresh (circle)
☐ Wastewater System: effluent / sewage (circle)
☐ Other: WATERCOURSE

SAMPLE:

SAMPLE COLLECTION LOCATION (e.g. kitchen tap):
☑ Raw ☐ Treated (type):
(if available) Chlorine Residual: _____ mg/L free / total (circle) pH: _____
SAMPLE COLLECTED BY (print): MIKE QUINN
DATE AND TIME OF COLLECTION (dd / mm / yyyy hh:mm): 13/APR/11

ANALYSIS REQUESTED:

☐ Total Coliform Presence/Absence
☐ E.coli Presence/Absence (Fecal Coliform)
☑ Total Coliform Count
☑ E.coli Count (Fecal Coliform)
☑ Other: BOD, TSS, TDS pH
For chemical analysis packages refer to specific lab (see back of form)

LAB USE:

SAMPLE RECEIPT COMMENTS (e.g. time, temperature):
Total Coliform: ☑ Present ☐ Absent Count: 1563 /100ml
Method: Colisure
E.coli: ☑ Present ☐ Absent Count: 2 /100ml
Method: Colisure pH=5.27
Other: BOD=3ppm TSS=0ppm TDS=34ppm AA
Lab Tech Signature: Paulette Layton
Date/Time: (dd / mm / yyyy hh:mm) 15/04/11 1100

Reported By: (print)
TO RESIDENT / CONTACT PERSON:
Method: (circle) Fax / Phone / Mail / Email
Date / Time: (dd / mm / yyyy hh:mm)
TO NSDEL:
NSDEL Contact:
Method: (circle) Fax / Phone / Mail / Email
Date / Time: (dd / mm / yyyy hh:mm)

SIGNATURE OF RESIDENT/CONTACT PERSON: MQuinn 13/Apr/11
SIGNATURE OF SAMPLE COLLECTOR: DATE/TIME (dd/mm/yyyy hh:mm) 13/04/11
SIGNATURE OF LAB USER ON RECEIPT OF SAMPLE: DATE/TIME (dd/mm/yyyy hh:mm)

COMMENTS (on sampling): 11:15 TS

Refer to the back of the form for submission and sampling instructions.

Form No: 159813

Form 9787 (REV. 30/10/07) Original: Lab (Results Reporting) Copy 1: Lab Copy 2: Collector Copy 3: Resident / Contact Person

Please store sample at < 10 °C (do not freeze) and deliver within 24 hours.

NOVA SCOTIA
Transportation and Infrastructure Renewal

Drinking Water Sample Submission Form

4/0

NOVA WEST LABORATORY Ltd.
Laboratoire Nova Ouest Ltée.
40 Schoolhouse Rd.
Grosses Coques, Digby Co., NS
(PO Box 39 Saulnierville, NS, B0W 2Z0)
Tel: (902) 837-8143 Fax: (902) 837-7456

Sample ID: DZ upstream MRS.

Mike Quinn

Spec Environmental Solutions

[illegible] 277 [illegible]

☐ Municipal ☐ Drilled Well ☐ Dug Well ☐ Lake
☐ Reservoir ☐ Spring ☐ Cistern ☐ Watercourse
☐ Other ______

☐ Indoor pool ☐ Outdoor pool ☐ Spa ☐ Beach
☐ Wastewater System: effluent / sewage
☐ Other: Water Course

☐ Raw ☐ Treated
Chlorine Residual ______ mg/L free / total pH ______

Mike Quinn

13/Apr/11

☐ Total Coliform Presence/Absence
☐ E.coli Presence/Absence (Fecal Coliform)
☐ Total Coliform Count
☐ E.coli Count (Fecal Coliform)
☐ Other: BOD, TSS, TDS, pH

For chemical analysis packages refer to specific list (see back of form)

Total Coliform: ☐ Present ☐ Absent Count: 1414 /100ml
Method: Colilert
E.coli: ☐ Present ☐ Absent Count: 1 /100ml
Method: Colilert pH=8.15
Other: BOD=3ppm TSS=1ppm TDS=32ppm
Lab Tech Signature: [signature]
Date/Time: 15/Apr/11 1100

Reported By: ______
Method: Fax / Phone / Mail / Email
Date / Time: ______
NSDEL Contact: ______
Method: Fax / Phone / Mail / Email
Date / Time: ______

COMMENTS (on sampling):

13/Apr/11.

13/Apr/11

11:15 TP

Refer to the back of the form for submission and sampling instructions.

Form No: 159814

Please store sample at < 10 °C (do not freeze) and deliver within 24 hours.

NOVA SCOTIA
Transportation and Infrastructure Renewal

Drinking Water Sample Submission Form

4/1

NOVA WEST LABORATORY Ltd.

Laboratoire Nova Ouest Ltée.
40 Schoolhouse Rd.
Gressos Coques, Digby Co., NS
(PO Box 39 Saulnierville, NS, B0W 2Z0)
Tel: (902) 837-5143 Fax: (902) 837-7456

Sample ID: E2 Downstream MRS.

Contact Name: Mike Quinn	Facility Name: SPEC Environmental Solutions.
Mailing Address:	Civic Address:
	County: / Postal Code:
Phone: / Fax: / Email Address:	Phone: 769-2777 / Fax: 769-0906 / Email Address:

☐ Approved ☐ Registered (Reg #) ______
☐ Commercial ☐ Residential ☐ Government

Contact Name:
Mailing Address:
Phone: / Fax: / Email Address:

☐ Municipal ☐ Drilled Well ☐ Dug Well ☐ Lake
☐ Reservoir ☐ Spring ☐ Cistern ☐ Watercourse
☐ Other: ______

Contact Name / Account #
Mailing Address:
Phone: / Fax: / Email Address:

☐ Indoor pool ☐ Outdoor pool ☐ Spa ☐ Beach: salt / fresh (circle)
☐ Wastewater System: effluent / sewage (circle)
☐ Other: Watercourse.

Sample Collection Location (e.g. kitchen tap):
☑ Raw ☐ Treated (specify) ______
(if applicable)
Chlorine Residual: ______ mg/L (free / total) (circle) pH: ______
Sample Collected By: Mike Quinn
Date and Time of Collection (dd/mm/yyyy hh:mm): 13/April/11

☐ Total Coliform Presence/Absence
☐ E.coli Presence/Absence (Fecal Coliform)
☑ Total Coliform Count
☐ E.coli Count (Fecal Coliform)
☑ Other: BOD, TSS, TDS, pH
For chemical analysis packages refer to specific lab (see back of form)

Sample Receipt Condition (e.g. temp, integrity):
Total Coliform: ☑ Present ☐ Absent Count: 5(?) /100ml
Method: Colisure
E.coli: ☐ Present ☑ Absent Count: 0 /100ml
Method: Colisure pH=5.10
Other: BOD=3ppm TSS=1ppm TDS=35ppm
Lab Tech Signature: Paulette Saulnier
Date/Time: (dd/mm/yyyy hh:mm) 15/04/11 1100

Reported By: (print) ______
To Resident / Contact Person:
Method: (circle) Fax / Phone / Mail / Email
Date / Time: (dd / mm / yyyy hh:mm) ______
To NSDEL:
NSDEL Contact: ______
Method: (circle) Fax / Phone / Mail / Email
Date / Time: (dd / mm / yyyy hh:mm) ______

Signature of Resident/Contact Person: [signature]
Signature of Sample Collector: 13/April/11 — Date/Time (dd/mm/yyyy hh:mm): 05. May/11 11:15 TP9
Signature of DS upon receipt of sample — Date/Time (dd/mm/yyyy hh:mm)

COMMENTS (on sampling):

Refer to the back of the form for submission and sampling instructions.

Form No: 159815

Form 0707 (REV. 2010/07) Original: Lab (Results Reporting) Copy 1: Lab Copy 2: Collector Copy 3: Resident / Contact Person

TABLE 3

Surface Water Baseline (April 13, 2011)

Spec Environmental Compost Facility

Parameter	Units	Station A2 Downstream	Station B2 Culvert	Station C2 Upstream
Total Coliform	Count/100ml	397	>2419	1553
e-coli	Count/100ml	17	49	2
CBOD5	ppm	3	<4	3
Total suspended solids	ppm	2	0	0
Total disolved solids	ppm	41	52	34
Conductivity	umho/cm	46	59	41
Alkalinity	ug/L	<5	<5	<5
Chloride	mg/L	10	10	9
Sulphate	mg/L	2	3	2
pH		5.12	3.92	5.27
Arsenic	ug/L	<2	<2	<2
Barium	ug/L	<5	<5	<5
Boron	ug/L	5	5	<5
Cadmium	ug/L	0.036	0.058	0.047
Chromium	ug/L	<1	2	<1
Copper	ug/L	<2	<2	<2
Iron	ug/L	175	362	113
Lead	ug/L	<0.5	1.1	<0.5
Mercury	ug/L	<0.026	<0.026	<0.026
Zinc	ug/L	8	6	<5
Ammonia (as N)	ug/L	0.36	<0.05	0.04
Nitrate	ug/L	0.09	<0.05	<0.07
Nitrate	ug/L	<0.05	0.8	<0.05
Total Kjeldahl Nitrogen	ug/L	0.8	<0.03	<0.4
Total Phosporus	ug/L	0.04		<0.03
Benzene	ug/L	<1	<1	<1
1,4 Dichlorbenzene	ug/L	<1	<1	<1
Dichlormethane	ug/L	<2	<2	<2
Toluene	ug/L	<2	<2	<2

TABLE 2

Groundwater Baseline (July 6, 2010)

Spec Environmental Compost Facility

				(deep)	(shallow)
Parameter	**Units**	**M.W. 1**	**M.W.2**	**M.W.3**	**M.W.4**
e-coli	Count/100ml	NS	NS	NS	NS
CBOD5	ppm	NS	NS	NS	NS
Total suspended solids	mg/L	7400	1080	374	4050
Total disolved solids	mg/L	142	92	194	252
Conductivity	umho/cm	245	155	325	458
Alkalinity	mg/L	<5	39	124	<5
Chloride	mg/L	33	11	9	7
Sulphate	mg/L	7	20	19	11
Calcium	mg/L	6.6	7.7	38.1	12.9
Magnesium	mg/L	4.8	2.8	4.4	3.3
Sodium	mg/L	24	8.1	15.8	17.3
pH	ug/L	5.3	6.7	7.9	4.6
Arsenic	ug/L	<2	<2	<2	<2
Barium	ug/L	192	13	19	191
Boron	ug/L	12	8	9	9
Cadmium	ug/L	0.6	<0.3	<0.3	1.1
Chromium	ug/L	3	<2	<2	<2
Copper	ug/L	<2	<2	<2	75
Iron	ug/L	<50	<50	<50	<50
Lead	ug/L	1.5	1	0.9	2
Manganese	ug/L	1740	3500	135	1210
Mercury	ug/L	0.15	<0.05	<0.05	0.1
Zinc	ug/L	13	<5	<5	41
Ammonia (as N)	mg/L	0.31	<0.5	1.37	13
Nitrate	mg/L	11	0.11	1.56	46.1
Nitrate	mg/L	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	3.4	1.3	4.6	18.6
Total Phosporus	mg/L	3.35	1.2	1.31	3.09
Potassium	mg/L	3.4	3.1	2.9	26.3
Benzene	mg/L	<1	<1	<1	<1
1,4 Dichlorbenzene	mg/L	<1	<1	<1	<1
Dichlormethane	mg/L	<2	<2	<2	<2
Toluene	mg/L	<2	<2	<2	<2
Vinyl Cholride	mg/L	<0.6	<0.6	<0.6	<0.6

Ground Water Elevations (June 2011)

M.W. 1	M.W. 2	M.W. 3
1.57m (62")	.96m (38")	1.45m (57")

It should be noted that concentrations of manganese in the water quality analysis (AMEC 2001) in M.W. 1 and M.W. 2 exceeded Health Canada's Drinking Water Guideline criteria of 50 ug/L. The Guideline criteria continues to be exceeded as evidence by the 2010 analysis.

APPENDIX 4

NOVA SCOTIA
Environment
Environmental Monitoring and Compliance

2nd Floor
136 Exhibition Street
Kentville, Nova Scotia
Canada B4N 4E5

902 679-6086 t
902 679-6186 f
www.gov.ns.ca

Our File Number: 94400-30

Mr. Sean Fredericks
Spec Resources Inc.
1777 Patrice Road
PO Box 149
RR#1
Concession, NS
B0W 1M0

December 8 , 2011

Dear: Mr. Fredericks:

RE: Approval to Construct and Operate - Rendering Plant - Pilot Project for the production of Mink Oil and Bio-Diesel
Approval No. 2010-073940-R01; PID # 30282719

Enclosed please find Approval # 2010-073940-R01 issued to Spec Environmental Solutions Inc. to construct and operate the Rendering Plant - Pilot Project at 1777 Patrice Road, Concession, Digby County, Nova Scotia. This Approval replaces the previous Approval, 2010-073940, which is now null and void. Please ensure that you forward the original Approval to Spec Environmental Solutions Inc.

Strict adherence to the attached terms and conditions is imperative in order to validate this approval.

Despite the issuance of this Approval, the Approval Holder is still responsible for obtaining any other authorization which may be required to carry out the activity, including those which may be necessary under provincial, federal or municipal law.

Should you have any questions, please contact Adam d'Entremont P. Eng., Western Region, Yarmouth Office at (902) 742-8985.

Yours Truly

Anthony Shand
A/ District Manager

Eimas #: 2010-073940-R01

Report

File No: 92100-30

Application No: 2010-073940-R01

Project: **Spec Environmental Solutions Inc.**
Rendering Plant - Pilot Project
1777 Patrice Road
Concession, Digby County

Purpose: To evaluate the potential environmental effects associated with the operation by Spec Environmental Solutions Inc. of a Rendering Plant - Pilot Project at 1777 Patrice Road, Concession, Digby County.

Introduction: The proposed rendering plant - pilot project is located at E0256329 N4507839, PID #30282719.

Discussion:

SPEC Resources of Digby County previously received an Approval to operate a rendering plant as a pilot project on September 29, 2010. Due to the nature of the funding structure the equipment was not operational until late November 2010, leaving only three weeks of carcasses to render for the trial. SPEC has made application to extend the trial period for an additional year so that they may render a representative sample of the mink oil during the entire pelting season. This is the only proposed extension to date of the pilot project.

The rendering method previously approved in 2010 has not changed, however, they have added an augur system to maximize oil production. The augur will squeeze the connective tissue ensuring maximum oil is recovered. This oil will now flow by gravity to the next process, thus eliminating a large amount of manual labour.

A report titled, "Bio-diesel pilot project, Environmental Assessment Screening Report, Spec Environmental Solutions Inc. NS-0302, 10-01-55934", dated August 20, 2010, created under the Canadian Environmental Assessment Act, was submitted in draft form to the Department with the original application. The report was prepared by Charlie Salisbury, Environmental Specialist, Agriculture and Agri-Food Canada. An operating approval from NSE was required to complete the funding for this project. Information submitted in this report has been used in the discussion below.

Spec Environmental Solutions Inc. currently composts mink fat (NSE approval 2009-069102). The proposed pilot project involves the production of refined mink oil and bio-diesel from mink fat. Benefits from this project are indicated as the reduction of pathogens resulting in Aleutian Disease, improving compost process efficiency, and reducing the company's reliance on diesel fuels. The project is anticipated to be conducted in 3 phases.

The scope of this approval relates to phase 1 only. The Approval Holder will be required to conduct an Environmental Assessment, as a rending plant is considered a Class I Undertaking under the *Environmental Assessment Regulations*, prior to commencing phase 2.

The project involved modifying an existing building. The equipment consists of fat storage drums, feed hoppers, fat extractor/screw press, oil and solid storage and a bio-diesel plant. The bio-diesel plant is a self-contained unit which includes a 80 gallon preheat tank, 130 gallon settlement tank, 75 gallon spill containment pallet and dry wash tower. The fat is rendered (heated to 60C for 10-20 minutes) to produce raw mink oil. Waste products (connective tissue) from the rendering process will be composted.

The mink oil is mixed with methanol and potassium hydroxide (KOH) and heated to 60C for 1 hour per batch. The mixture is separated into glycerine and bio-diesel. Methanol in the glycerine is removed by single-stage distillation and recovered for reuse. Glycerine is biodegradable and composted. Methanol, soaps and KOH in the bio-diesel are removed by dry wash absorption. Wood flour, synthetic absorbent and hardwood shavings with aluminum silicates are used in this system and can be composted after use.

The production is estimated to be 1,800 litres of fuel per day. Quantity of pilot scale production is expected to be between 50 - 150,000 L/yr, all of which will be used to fuel company trucks.

All feedstock, bio-diesel and methanol shall be stored as per the Report, which indicates that storage tanks and operations areas (internal and external) are to be set within containment dikes or to have secondary containment. Material safety data sheets have been provided for the chemicals involved with the process. Dangerous Goods shall be handled and disposed of according to the *Dangerous Goods Management Regulations*. An emergency response plan for the facility is on file.

Water for the process comes from a dug well 800 feet away from biodiesel site. There are five (5) other wells on the property, none any closer than this well. Process wastewater through floor drains (wash water from cleaning) will be stored in a 15,000 gallon tank by the building. It will be transported to the composting site on an as needed basis and sprayed on the compost.

Construction debris will be disposed of according to Departmental regulations (i.e. C&D site, landfill, etc.)

There will be a small increase in greenhouse gas emissions through methanol vapour release, as part of the operation process.

Odours are expected to be minimal, as the heating temperature from the rendering process is low and should not produce steam. A mink farm is currently located next to the proposed site. A site inspection was conducted by Steve Doucette, Inspector Specialist, on September 2, 2010, with recommendation to monitor to ensure no release of substance to the environment.

Surface runoff should be minimal as the land is relatively level. Water should absorb into the ground or into the existing hog lagoons on the property. The distance to the nearest watercourse is 290 metres, and nearest lake is 570 metres.

This is a temporary approval issued under the Nova Scotia Environment Policy Respecting the Issuance of Special Temporary Approvals for Pilot Plants and Demonstration Projects, revised June 12, 2007. There is no fee structure indicated in this Policy, however the rendering plant process does fall under the Activities Designation Regulations as a Category II Industrial Approval, and the corresponding fee was charged. The renewal of the approval will be issued for one (1) year.

Reporting

Due to the lack of oil produced no annual report was produced for the 2010-11 permitting year. This Approval requires a report to be provided listing :

- a summary of the monthly status reports, including future plans for the project
- any changes in the operating procedures or plans
- any issues encountered at the plant and corresponding action plans
- any complaints received and corresponding action plans to correct
- updates to Emergency Response Plan, if applicable
- viability of the project and review of the technology used
- environmental impacts from the project during phase 1 and the mitigation measures taken during the project
- potential environmental impacts for future phases and proposed future mitigation
- status of Environmental Assessment, if/when it is to proceed

Rehabilitation:

As per the submitted report, if the pilot project is not successful all equipment will be drained and cleaned, unused chemicals will be removed from the site as per Transportation of Dangerous Goods Act and transported to an approved waste disposal facility, and the remaining infrastructure will be abandoned. The requirement for immediate rehabilitation of the plant has been included in the approval.

Recommendation:

It is therefore recommended that Spec Environmental Solutions Inc. application for the operation of a Rendering Plant - Pilot Project at 1777 Patrice Road, Concession, Digby County, be approved subject to the appended terms and conditions.

Adam d'Entremont, P.Eng.
Regional Engineer

NOVA SCOTIA
Environment

APPROVAL

Province of Nova Scotia
***Environment Act*, S.N.S. 1994-95, c.1**

APPROVAL HOLDER:	**Spec Environmental Solutions Inc.**
SITE PID:	**30282719**
APPROVAL NO:	**2010-073940-R01**
EXPIRY DATE:	**November 18, 2012**

Pursuant to Part V of the *Environment Act*, S.N.S. 1994-95, c.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Construction and operation of a Rendering Plant - Pilot Project, and associated works, at or near 1777 Patrice Road, Concession, Digby County in the Province of Nova Scotia.

Administrator _____

Effective Date Nov. 25/11

TERMS AND CONDITIONS OF APPROVAL

Nova Scotia Environment

Approval Holder: Spec Environmental Solutions Inc.
Project: Rendering Plant - Pilot Project
Site: 1777 Patrice Road
Concession, Digby County
PID # 30282719

Approval No: 2010-073940-R01

File No: 92100-30

Grid Reference: E0256329 N4507839

Reference Documents:

- Application dated July 18, 2011 and attachments
- Previous Approval 2010-073940 and attachments
- Bio-diesel pilot project, Environmental Assessment Screening Report, Spec Environmental Solutions Inc, NS-0302, 10-01-55934, dated August 20, 2010, Environmental Assessment Documentation *Canadian Environmental Assessment Act (CEAA)*
- Letter Re: Final Report Extension from Sean Fredericks to Adam d'Entremont, dated September 10, 2011

1. **Definitions**

a) "Act" means the *Environment Act* S.N.S. 1994-1995, c.1 and includes all regulations made pursuant to the Act.

b) "Associated works" means any building, structure, processing facility, pollution abatement system or stockpiles of feedstock.

c) "Department" means the Western Region, Yarmouth Office, of Nova Scotia Environment located at the following address:

Nova Scotia Environment
Environmental Monitoring and Compliance Division
Western Region, Yarmouth Office
13 First Street

Yarmouth, NS B5A 1S9

Phone: (902) 742-8985
Fax: (902) 742-7796

d) "Facility" means the Rendering Plant - Pilot Project and associated works.

e) "Minister" means the Minister of Nova Scotia Environment.

f) "Rehabilitation" means restorative work performed or to be performed in accordance with the rehabilitation plan.

2. Scope of Approval

a) This Approval (the "Approval") relates to the Approval Holder and their application and supporting documentation, as listed in the reference documents above, to construct and operate the Facility, situated at or near 1777 Patrice Road, Concession, Digby County (the "Site").

b) The Facility shall be constructed and operated as outlined in the application for industrial approval dated August 24, 2010 and supporting documentation.

c) The Site shall not exceed the area as outlined in the application and supporting documentation.

d) Should the work authorized by this Approval not be commenced within a year, this Approval shall automatically be null and void, unless extended in writing by an Administrator.

3. General Terms and Conditions

a) The Approval Holder shall construct, operate and reclaim its Facility in accordance with provisions of the:

i) *Environment Act* S.N.S. 1994-1995, c.1, as amended from time to time;
ii) Regulations, as amended from time to time, pursuant to the above Act;
iii) *Dangerous Goods Management Regulations, latest revision*
iv) *Emergency Spill Regulations, latest revision*
v) *Solid Waste-Resource Management Regulations, latest revision*

b) The Approval Holder is responsible for ensuring that they operate the Facility on lands which they own or have a lease or written agreement with the landowner or occupier. The Approval Holder shall be responsible for ensuring

that the Department has, at all times, a copy of the most recent lease or written agreement with the landowner or occupier. Breach of this condition may result in cancellation or suspension of the Approval.

c) If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.

d) The Minister or Administrator may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 of the Act.

e) This Approval is not transferable without the consent of the Minister or Administrator.

f) (i) If the Minister or Administrator determines that there has been non-compliance with any or all of the terms and conditions contained in this Approval, the Minister or Administrator may cancel or suspend the Approval pursuant to subsections 58(2)(b) and 58(4) of the Act, until such time as the Minister or Administrator is satisfied that all terms and conditions have been met.

(ii) Despite a cancellation or suspension of this Approval, the Approval Holder remains subject to the penalty provisions of the Act and regulations.

g) The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including the active area, process changes or waste disposal practices which are not granted under this Approval. An amendment to this Approval will be required before implementing any change. Extensions or modifications to the Facility may be subject to the Environmental Assessment Regulations.

h) Pursuant to Section 60 of the *Act*, the Approval Holder shall submit to the Administrator any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.

i) The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.

j) The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this Approval.

k) Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analysed, by qualified personnel, in accordance with recognized industry standards and procedures.

l) Unless written approval is received otherwise from the Administrator, all samples required by this Approval shall be analysed by a laboratory that meets the requirements of the Department's "Policy on Acceptable Certification of Laboratories" as amended from time to time.

m) The Approval Holder shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, All monitoring results shall be submitted within 30 days following the month of monitoring.

n) The Approval Holder shall ensure that this Approval, or a copy, is kept on Site at all times and that personnel directly involved in the Facility operation are made fully aware of the terms and conditions which pertain to this Approval.

4. Construction of Facility

a) Erosion and sedimentation controls are to be in place prior to construction at this facility. Additional controls shall be implemented if Site runoff exceeds the discharge limits contained herein.

b) Erosion and sedimentation controls are to be maintained and remain in place until the disturbed areas are stabilized.

c) The Approval Holder shall ensure that the following discharge limits are met for any water which is discharged from the Site to a watercourse or wetland:

Clear Flows (Normal Background Conditions):

i) Maximum increase of 25 mg/l from background levels for any short term exposure (24 hours of less)
ii) Maximum average increase of 5 mg/l from background levels for longer term exposure (inputs lasting between 24 and 30 days)

High Flow (Spring Freshets and Storm Events)

i) Maximum increase of 25 mg/l from background levels at any time when background levels are between 25 mg/l and 250 mg/l
ii) Shall not increase more than 10% over background levels when background is > 250 mg/l

d) Signage including emergency telephone numbers and contacts are to be posted at the entrance to the Facility.

5. **Sound Levels**

a) Sound levels measured at the Site property boundaries shall not exceed the following equivalent sound levels (Leq):

Leq 65 dBA 0700-1900 hours (Days)
60 dBA 1900-2300 hours (Evenings)
55 dBA 2300-0700 hours (Nights)

b) Monitoring of sound levels shall be conducted at the request of the Department. The location of the monitoring station(s) for sound will be established by a qualified person retained by the Approval Holder and submitted to the Department for approval, this may include point(s) beyond the property boundary of the Site.

6. **Particulate Emissions (Dust)**

a) Particulate emissions shall not exceed the following limits at or beyond the Site property boundaries:

Annual Geometric Mean	70 $\mu g/m^3$
Daily Average (24 hr.)	120 $\mu g/m^3$

b) The use of used oil as a dust suppressant is strictly prohibited. The generation of dust from the Site shall be suppressed as required.

c) Monitoring of particulate emissions shall be conducted at the request of the Department. The location of the monitoring station(s) for particulate will be established by a qualified person retained by the Approval Holder and submitted to the Department for approval, this may include point(s) beyond the property boundary of the Site.

d) When requested, suspended particulate matter shall be measured by the EPA standard; EPA/625/R-96/010a; Sampling of Ambient Air for Total Suspended Particulate Matter (SPM) and PM_{10}. Using High Volume (HV) Sampler.

7. **Air Emissions**

a) The Approval Holder must ensure that air emissions from the Facility do not exceed the maximum permissible ground level concentrations specified in Schedule "A" (attached) of the *Air Quality Regulations*.

b) Where it is the opinion of the Department that the Approval Holder is contributing to exceeding Schedule "A" concentrations, the Approval Holder will be required to implement a corrective action plan which may include ambient air monitoring.

8. **Odour Control**

a) The Approval Holder shall be required to reduce or cease operation if odour generation is deemed excessive by the Department. This reduction or cession of operations will continue until the Approval Holder has installed additional odour control measures.

b) The Approval Holder shall have standard procedures to address odour complaints associated with the Facility which shall include:

i. An immediate investigation of the cause of the complaint and the undertaking of immediate and appropriate action, if necessary, to correct the problem.
ii. A record or description of operations at the time of the complaint, including weather conditions, wind direction, smoke plumes, etc.
iii. A record of all odour complaints and documentation of the date, time, name, address and telephone number of the individual lodging the complaint. The record shall also state any cause of the odour and the action taken to correct the problem.
iv. Records referenced in condition 8(b)(ii) and (iii) shall be made available to the Department upon request.

9. **Spill or Releases**

a) All spills or releases shall be reported to the Department in accordance with the Act (Part VI) and the *Emergency Spill Regulations*.

b) Spills or releases shall be cleaned up immediately using methodologies and disposal practices that are acceptable to the Department.

c) Spill/release response material is to be maintained on Site at all times.

10. **Dangerous/Waste Dangerous Goods Storage and Disposal**

a) The storage of dangerous/waste dangerous goods shall be in accordance with the *Dangerous Goods Management Regulations* as amended from time to time.

b) All floors in the loading/unloading and storage areas for dangerous/waste dangerous goods shall be constructed of impervious material.

c) All containers or tanks holding liquid dangerous/waste dangerous goods with a volume greater than 20 litres shall be completely surrounded by secondary containment sized to contain 110% of the volume of the largest tank or container in the specifically contained area or 100% of the volume of the largest tank or container plus 10% of the aggregate capacity of all other containers or tanks in the contained area, whichever is greater.

d) Dangerous / waste dangerous goods shall be segregated to prevent contact between incompatible materials.

e) The storage areas for the dangerous / waste dangerous goods shall have no open floor drains.

f) All storage racks, vehicles, ventilation ducts, containers and tanks associated with flammable dangerous / waste dangerous goods shall be electrically grounded to prevent build up of static electric charges.

g) All dangerous / waste dangerous goods that are handled by the Facility shall be stored in drums, containers or tanks composed of materials which are compatible with the goods stored therein.

h) All containers of dangerous / waste dangerous goods shall be stored in an upright position and/or in accordance with the manufacturers specifications. Drums shall be stacked no higher than two drums in height.

i) Sufficient space shall be provided between the drums/containers to allow the unobstructed movement of persons, transfer equipment, fire protection equipment, spill control equipment, and decontamination equipment.

j) The Approval Holder shall ensure that all storage areas, containers and tanks containing products and dangerous / waste dangerous goods are labelled to clearly identify their contents.

k) The Approval Holder shall ensure that the storage area for the dangerous / waste dangerous goods is secured from public access.

l) Only personnel trained to respond to emergencies with respect to the handling of waste dangerous goods shall be utilized for the handling/processing of the dangerous / waste dangerous goods.

11. **Surface Water**

a) The site shall be developed and maintained to prevent siltation of the surface water which is discharged from the property boundaries into the nearest watercourse or beyond the property boundary. Additional controls shall be implemented if site runoff exceeds the discharge limits contained herein.

b) No authority is granted by this Approval to enable the Approval Holder to discharge surface water beyond the property boundary and onto adjoining lands without the authorization of the affected landowner(s). It is the responsibility of the Approval Holder to ensure that the authorization of said landowner(s) is current and valid. Failure to maintain said authorization will result in this Approval being null and void. The Approval Holder shall provide, to the Department, proof of the continued authorization of the adjoining landowner(s) when the current agreement has expired.

c) Erosion and sedimentation control devices shall be installed prior to any excavation of material.

d) The Approval Holder shall ensure the following liquid effluent levels are met and that the effluent is monitoring at the frequency and locations indicated.

i) <u>Total Suspended Solids</u>

Clear Flows (Normal Background Conditions):

1) Maximum increase of 25 Mg/L from background levels for any short term exposure (24 hour or less)
2) Maximum average increase of 5 Mg/L from background levels for longer term exposure (inputs lasting between 24 hours and 30 days)

High Flow (Spring Freshets and Storm Events):

1) Maximum increase of 25 Mg/L from background levels at any time when background levels are between 25 Mg/L and 250 Mg/L
2) Shall not increase more than 10% over background levels when background is > 250 Mg/L

ii) <u>pH</u>

1) Maximum 5 to 9 in grab sample
2) Maximum 6 to 9 as a Monthly Arithmetic Mean

iii) **Monitoring Locations**

1) The Approval Holder shall sample at the following locations: as requested by the Department

iv) **Sampling Frequency**

1) The Approval Holder shall sample at the following frequency: as requested by the Department

e) If it becomes necessary to drain the Site, the wastewater shall be treated to meet the suspended solids limits outlined in this Approval.

f) Additional monitoring stations for liquid effluent may be specified as required by the Department.

12. **Groundwater**

a) The Approval Holder shall replace at their expense any water supply which has been lost or damaged as a result of the facility operation.

13. **Solid Waste**

a) The Approval Holder shall ensure that all solid wastes, including organics, be disposed of in a manner approved by the Department.

14. **Rehabilitation**

a) The Proponent shall submit a rehabilitation plan to the Department for approval within 60 days of final abandonment of the Facility.

b) The Proponent shall rehabilitate the Facility within six (6) months of abandonment and in accordance with the approved rehabilitation plan or other terms as specified by the Department.

15. **Site Specific Requirements**

a) A monthly status report, (including project analysis, quantities of products and waste streams, summary of monitoring results, etc.) shall be maintained on site, and made available to the Department, upon request.

b) The Approval Holder shall submit a final report to the Department, by **September 1, 2012**. This annual report shall include:
- summary of the monthly status reports, including future plans for the project
- any changes in the operating procedures or plans
- any issues encountered at the plant and corresponding action plans
- any complaints received and corresponding action plans to correct
- updates to Emergency Response Plan, if applicable
- viability of the project and review of the technology used
- environmental impacts from the project during phase 1 and the mitigation measures taken during the project
- potential environmental impacts for future phases and proposed future mitigation
- status of Environmental Assessment, if/when it is to proceed

c) The Approval Holder shall conduct an Environmental Assessment prior to commencing Phase 2 of this project, as a rendering plant is considered a Class I Undertaking under the *Environmental Assessment Regulations*.

d) The Regional Director, in the area where the project is located, shall have the authority to suspend or cancel this temporary approval, in the event of an upset or threat to human health or the environment.

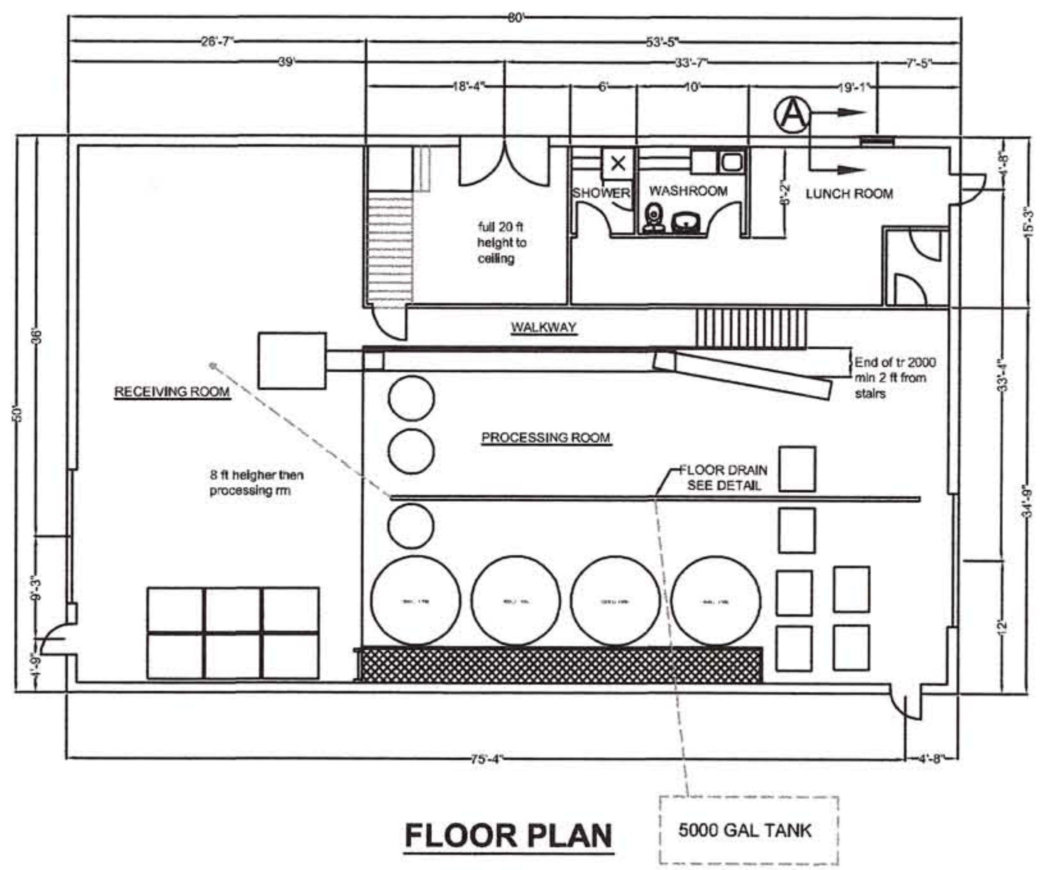
SCHEDULE "A"

MAXIMUM PERMISSIBLE GROUND LEVEL CONCENTRATIONS

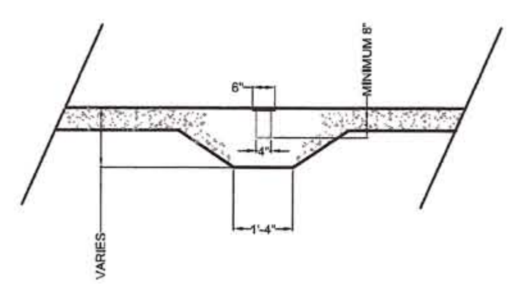
CONTAMINANT	AVERAGING PERIOD	MAXIMUM PERMISSIBLE GROUND LEVEL CONCENTRATION	
		ug/m³	pphm
Carbon Monoxide (CO)	1 hour	34 600	3000
	8 hours	12 700	1100
Hydrogen Sulphide (H_2S)	1 hour	42	3
	24 hours	8	0.6
Nitrogen Dioxide (NO_2)	1 hour	400	21
	Annual	100	5
Ozone (O_3)	1 hour	160	8.2
Sulphur Dioxide (SO_2)	1 hour	900	34
	24 hours	300	11
	Annual	60	2
Total Suspended Particulate (TSP)	24 hours	120	-
	Annual	70*	-

* - Geometric mean
ug/m³ - micrograms per cubic metre
pphm - parts per hundred million

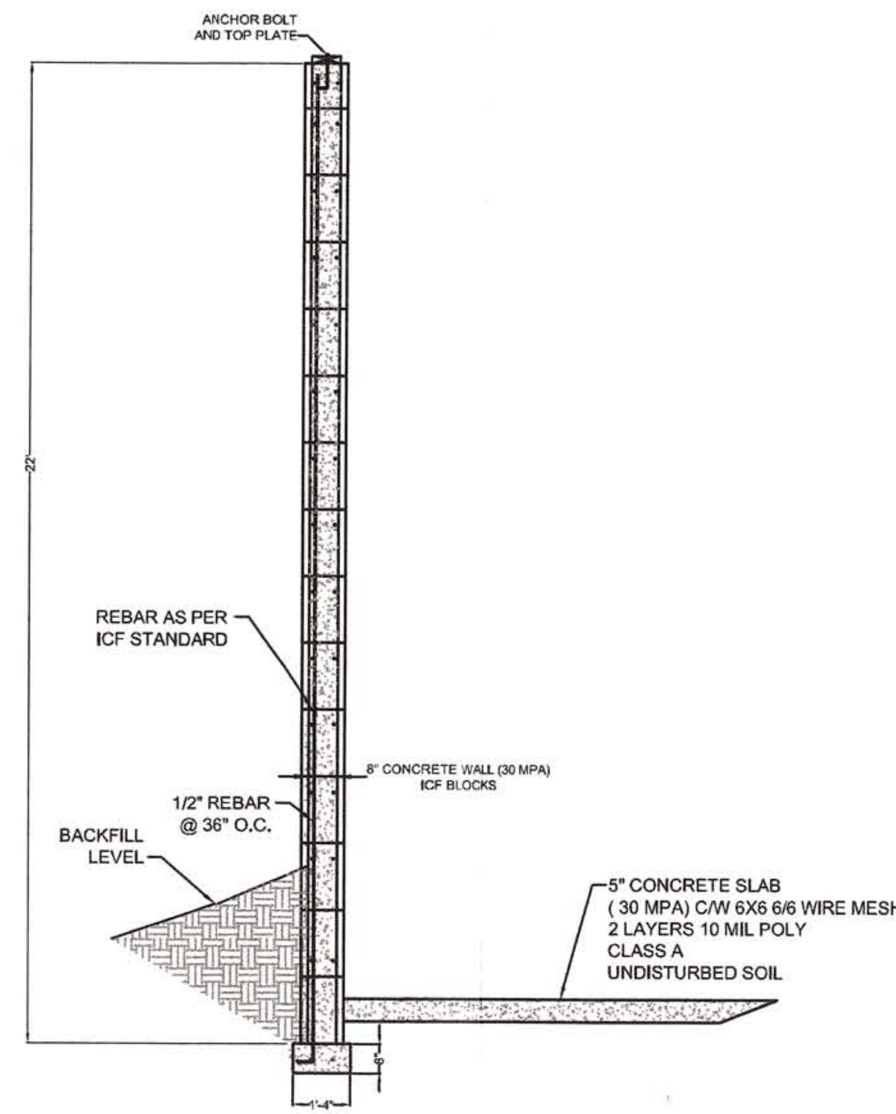
APPENDIX 5



FLOOR PLAN



FLOOR DRAIN DETAIL



A-TYP WALL CROSS SECTION

SCALE = 1"-0"

PARTS LIST				
No.	QTY	MAT'L	SIZE	DESCRIPTION
1	-	-	-	-

Client: SPEC ENVIRO	
Project: BIO OIL PLANT	
Title: FLOOR PLAN AND DETAILS	
Drawn By: D.LEWIS	Date: MAY 29 2012
Checked By: -	Scale: 1 1/2" =1'-0" Rev: 1
Approvals	
Client:	DWG NO: -
Class:	
Flag:	
File No.: -	Sht No: 2 of 2

PARTS LIST				
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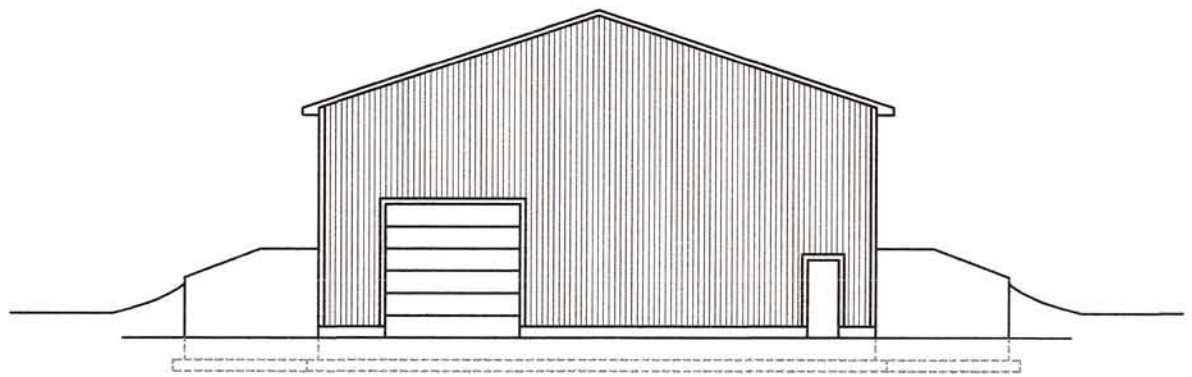
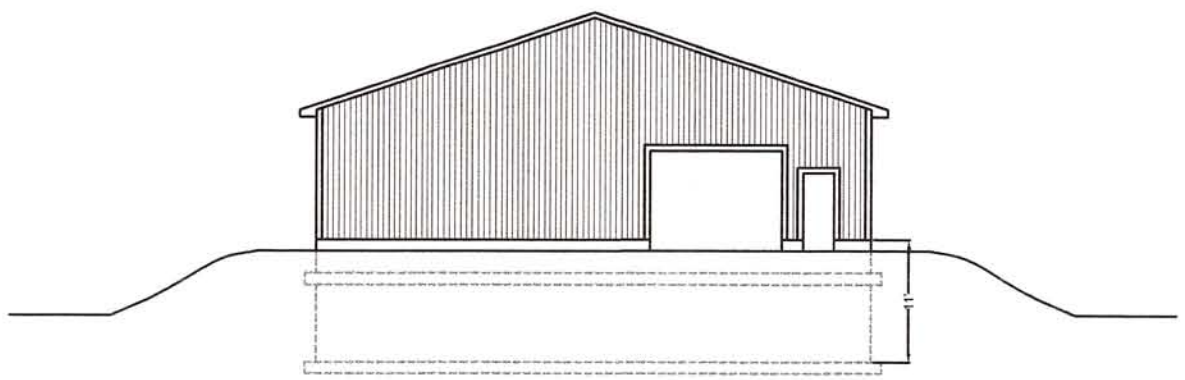
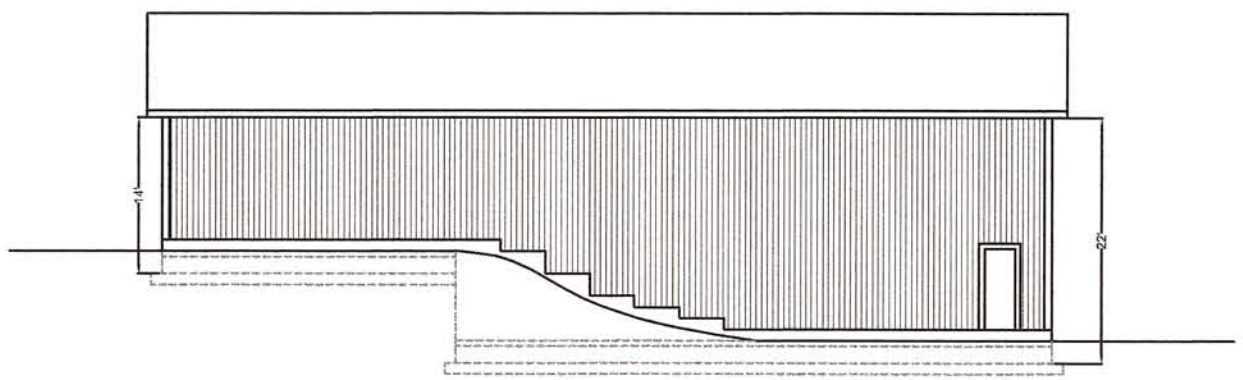


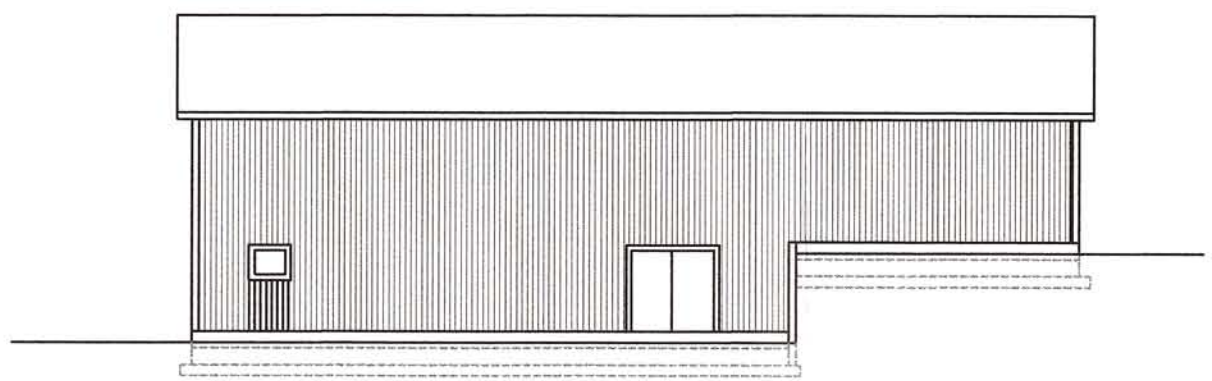
NORTH WEST face



SOUTH EAST face



NORTH EAST face



SOUTH WEST face

Client:	SPEC ENVIRO
Project:	BIO OIL PLANT
Title:	ELEVATIONS -
Drawn By: D.LEWIS	Date: MAY 29 2012
Checked By: -	Scale: 1/4" =1'-0" Rev: 1
Approvals	
Client:	DWG NO: -
Class:	
Flag:	
File No.: -	Sht No: 1 of 2

THIRD ANGLE

Sheet Size = ANSI D

APPENDIX 6

Contingency Plan

Hazardous Materials:

Hazardous materials are handled in the following manner.

- The material is identified.
- Staff dresses in the appropriate protective clothing.
- Material is collected, contained and labelled.
- Material is transported to an approved facility for disposal.
- If the surrounding area of the hazardous material has been contaminated it is collected and disposed of in the approved manner.
- All procedures are in compliance with the Environment Act.
- The activity is recorded in the Operations Log along with documentation.

Emergency Spills:

Emergency Spills are handled in the following manner.

- Spill is identified (non-organic-organic)
- Staff dresses in the appropriate protective clothing.

Non-Organic Spills:

- Spill is contained using on-site spill kits.
- Spill is vacuumed into containers and labelled.
- Material is transported to an approved facility for disposal.
- If the surrounding area of the spill has been contaminated it is collected and disposed of in the approved manner.
- All procedures are in compliance with the Environment Act.
- The activity is recorded in the Operations Log along with documentation.

Organic Spills:

- Spill is contained using on-site spill kits if necessary.
- Determine whether or not the spill can be composted.
- If not, use the procedure for *non-organic spills*.
- If yes, incorporate into composting operation.
- If the surrounding area of the spill has been contaminated it is collected and disposed of in the approved manner.
- All procedures are in compliance with the Environment Act.
- The activity is recorded in the Operations Log along with documentation.

Leachate Management:

- The primary and secondary composting buildings have a leachate collection system via floor drains and a storage tank. The leachate is routinely introduced back onto the piles to regulate the moisture content of the compost. In the event of a discharge of leachate into the surrounding area then the '*compostable organic spill procedure*' is implemented as described above.
- All procedures are in compliance with the Environment Act.
- The activity is recorded in the Operations Log.

Excessive Vectors:

- The compost facility is routinely inspected for excessive vectors and kept to a minimum by 'good housekeeping practises'—no litter or exposed feedstocks and proper building maintenance. If there is an occurrence then the source of attraction is identified and rectified. Rodents are trapped; flies and birds dissipate when feed source is eliminated.
- The activity is recorded in the Operations Log.

Fires & Explosions:

- In the event of a fire or explosion, staff would immediately retreat to a safe area and be accounted for.
- An assessment is made how best to handle the event in a safe manner, whether the situation can be brought under control with the equipment and manpower on-site or if 9-1-1 should be contacted for assistance.
- After the fact, the source of the fire/explosion is analysed and corrective measures implemented to reduce a repeat occurrence.
- The activity is recorded in the Operations Log

APPENDIX 7

Municipalité de Clare
Département des immeubles /
Inspections des incendies
C.P. 458, Petit-Ruisseau
Cté Digby, N.-É. B0W 1Z0
Téléphone : (902) 769-3655
Télécopieur : (902) 769-3713
Courriel : building@municipality.clare.ns.ca

Municipality of Clare
Building Department /
Fire Inspections
P.O. Box 458, Little Brook
Digby Co., N.S. B0W 1Z0
Telephone: (902) 769-3655
Fax: (902) 769-3713
E-mail: building@municipality.clare.ns.ca

January 18, 2012

Spec. Environmental Solutions Inc.
P.O. Box 1149
Church Point
Digby Co., NS
B0W 1M0

ATTN: Hubert Leblanc

RE: Zoning Municipality of Clare

Dear Mr. Leblanc;

In response to your request for information on zoning requirements for a proposed new Mink oil processing operation in the Municipality of the District of Clare.

The Municipality at this time has only one General Development Zone which permits any type of Commercial, Industrial operation provided it meets the setback requirements found in our Land Use By-Law.

The new Mink oil processing operation as proposed would be permitted at this location provided it meet the setback requirements to adjacent property boundaries which would be shown on the site plan to be provided to the Development Officer.

I am familiar with the location of the land parcel for this proposed new operation and the setbacks could easily be met.
If you have any questions please do not hesitate to contact me at 769-3655.

Yours truly,

Arnold Comeau
Development Officer

Mink Oil Production Plant EA

11/January /2013

Danny Hill, district counsellor

I phoned Danny Hill our district counsellor, to inform him of our intention of establishing a mink oil production plant at our compost facilities in St Joseph. He thanked me for calling and said that he would now be better prepared for the eventuality of receiving calls from the public.
He also commented on how well Spec Environmental Solutions handled the recent oudor issues at the compost site by sending a letter to the affected neighbourhood apologizing and explaining the circumstances and how Spec intended to rectify the problem and were taking measures to reduce the likelihood of a reoccurrence. He also noted that in the letter the public were encouraged to call the Spec if they had further oudor issues. Furthermore he said he fully supported the efforts that Spec Environmental Solutions was making in assisting the local mink industry handle their waste stream and reducing the risk of polluting the watersheds.

.....

11/January /2013

We composed a letter to the municipal clerk for the Municipality of Clare, Connie Saulnier informing her of the mink oil production plant project at the compost facility. The letter was also for the municipality to confirm that we were in compliance with the current zoning by-laws.
I hand delivered the letter to the municipal office.

23/January/2013

We received confirmation of zoning compliance letter from the Municipality by mail. (Attached)

.....

06/February/2013

We composed a letter to the residence of St Joseph informing them of the mink oil production plant being built at the compost site with a brief explanation of the process. (Attached)
The letter was taken to the post office for distribution to the residents of the following roads:

- Patrice Road
- F Comeau Road
- Thibault Road
- Lower mill Road

There are three residents that do not have rural delivery so the letter was mailed to their post office box.
The residents would have received the letter on or about 07/January/2013.

As of now we have not received any responses from the residents.

APPENDIX 8

Public Consultation

1- Municipal Councillor

Mr. Michael Quinn of Spec Environmental Solution Inc. spoke with Mr. Danny Hill the councilor for the subject are to inform him of Spec's intention to establish a mink oil production plant at their composting facility in St. Joseph. The following are Mike Quinn's notes from the call:

"*He thanked me for calling and said that he would now be better prepared for the eventuality of receiving calls from the public. He also commented on how well Spec Environmental Solutions handled the recent odour issues at the compost site by sending a letter to the affected neighbourhood apologizing and explaining the circumstances and how Spec intended to rectify the problem and were taking measures to reduce the likelihood of a reoccurrence. He also noted that in the letter the public were encouraged to call the Spec if they had further odour issues. Furthermore he said he fully supported the efforts that Spec Environmental Solutions was making in assisting the local mink industry handle their waste stream and reducing the risk of polluting the watersheds*"

2- General Public & Local Businesses

The letter signed by Mr. Leblanc and included in this Appendix was to all residences and businesses on:

- Patrice Road
- F. Comeau Road
- Thibault Road and
- Lower Mill Road

Distribution to all but three residences was handled by the post office. The three residents that do not have rural delivery were contacted by mail to their post office box.

Letters were received on or about February 7th, 2013.

As of March 15th, 2013 no response has been received by Spec Environmental.

Spec Environmental Solutions Inc
1777 Patrice Road, Concession (Civic)
Box 149 Church Point (Mail)
Digby Co., NS BOW 1M0
Phone: 902-769-2777
Fax: 902-769-0906

February/6/2013

Residence of St. Joseph

Spec Environmental Solutions Inc. has operated the Composting Facility at 2429 Patrice Road since 2002. As you know at the end of 2012 we encountered some problems with odour due to procedural difficulties with the composting mixing process. This has temporary been corrected and we are working on several scenarios to control the problem to ensure that it will not occur in the future. As stated before if you encounter an odor please give us a call.

Spec Environmental Solutions has also operated a mink oil pilot project for the past two years at the Spec Resources property (concrete plant) with great success. We are intending to move the pilot plant to the composting facility this year following the submission of our Environmental Assessment to the Nova Scotia Department of Environment. A new small purpose built plant would be erected and the plant would operate from September to January each year.

During the operation of the pilot project no odour was detected outside of the building housing the mink oil plant and we do not expect any odour from the purpose built building. However, if you have any concerns about the mink oil operation we would very much appreciate your input.

The operation of the mink oil plant is very simple and consists of heating the mink fat to a temperature of approximately 60°C in a water jacket (much less than boiling) and then filtering the resultant oil which will be shipped to customers. Please also note that a copy of the Environmental Assessment will be available for your review at a later date.

We would also like to point out that the operation of the mink oil plant will very much improve the efficiency of the composting operation since the mink fat, which is a hindrance to composting, will no longer go to the composting plant.

Your concerns or comments are of great interest to us.

Yours sincerely,

Hubert LeBlanc
President

APPENDIX 9

July 29, 2011

MONITORING PROGRAM

Spec Environmental Compost Facility

1. **Introduction.** Spec Environmental presently operates an Industrial Composting Facility and associated works at St. Joseph, Digby County, Nova Scotia. Spec Environmental is planning to expand and upgrade the existing facility and apply to Nova Scotia Environment (NSE) for renewal of its operating Approval. The renewal will follow the NSE's "Composting Facility Guidelines" September 21, 2010 and CCME "Guidelines for Compost Quality" October 2005.

2. **Hydrogeologic Assessment.** A general regional description of the geologic and hydrogeologic conditions occurring at the site are included in the body of this report. More detailed hydrogeologic investigations were performed by AMEC Earth & Environmental Limited, "128 Campsite Environment Inc. Hydrogeology Report(s)", January 3, 2001. Further on-site soil investigations including depth to water table were recently conducted and are contained in the body of this report. Also, baseline surface water and groundwater quality laboratory analysis were carried out with results contained in the body of this report. The site design proposed for the expansion of the facility contains plans and design details for the proposed treatment of the leachate.

3. **Surface Water Assessment.** Local surface water features on-site and on adjacent properties are shown on **Map** 1. Campsite Brook is the major perennial watercourse in the area. Surface and groundwater generally flow downslope from the site in to Campsite Brook. Wetlands and intermittent watercourses also transport surface runoff from the watershed into Campsite Brook. Three surface water monitoring stations were established. Station A is located downstream of the facility, Station B at the facility and Station C upstream of the facility. Baseline surface water quality for these three sample stations is presented in the body of this report with laboratory certificates of analysis. No specific surface water uses were identified in addition to the aquatic environments. A series of surface primary, secondary, and bio-retention cells and subsurface disposal fields are proposed to provide treatment of the leachate.

4. **Proposed Monitoring Program.**

a. **Leachate.** Leachate monitoring will be conducted pre and post treatment. Effluent flowing from the de-watering process and from the last bio-retention cell will be sampled to determine the effectiveness of treatment.

Location – de-watering outflow and bio-retention cell outfall
Frequency – semi-annually
Parameters – Column 3 of Schedule 1 (attached)

- Flow at de-watering outflow and bio-retention cell outfall

b. **Surface Water.** Surface water monitoring will be conducted at sample Stations A (downstream) and C (upstream) of the compost facility – see **Map 1**.

Location – Campsite Brook sample stations A and C
Frequency – semi-annually and quarterly
Parameters – Column 3 of Schedule 1 – attached (semi-annually)
- Column 4 of Schedule 1 – attached (quarterly)

c. **Groundwater.** Groundwater sampling will be conducted at the three existing monitoring wells (1 – 3) and at the two proposed monitoring wells (4 and 5) – see **Map 1**.

Location – groundwater monitoring wells 1 – 5
Frequency – annually and quarterly
Parameters – Column 1 of Schedule 1 – attached (annually)
- Column 2 of Schedule 1 – attached (quarterly)

d. **Compost.** Compost quality testing will be conducted for every 1,000 tonnes of compost produced or every three months. Compost will be classified in accordance with the criteria identified in the Canadian Council of Ministers of the Environment (CCME) document "Guidelines for Compost Quality" Section 4, October 2005. The concentration of trace elements in compost for Category A and B shall meet the values presented in Schedule B (attached).

Location – Windrow compost storage area
Frequency – quarterly
Parameters – Schedule B

5. Reporting. Results, analysis and assessment of the monitoring programs including leachate, surface water, groundwater and compost shall be submitted to NSE in an annual report. If the assessment indicates a significant increase in contaminant concentrations, NSE should be notified within 60 days of obtaining the sample and 5 days of making the assessment. Proposed amendments to the monitoring program shall be submitted to NSE for approval.

Schedule "B"

Concentrations of trace elements in compost*:

	CATEGORY A	CATEGORY B
Trace Elements	**Maximum Concentration within Product (mg/kg dry weight)**	**Maximum Concentration within Product (mg/kg dry weight)**
Arsenic (As)	13	75
Cadmium (Cd)	3	20
Cobalt (Co)	34	150
Chromium (Cr)	210	1060**
Copper (Cu)	400	760**
Mercury (Hg)	0.8	5
Molybdenum (Mo)	5	20
Nickel (Ni)	62	180
Lead (Pb)	150	500
Selenium (Se)	2	14
Zinc (Zn)	700	1850

*See CCME Guideline for maximum cumulative additions to soil.
** See CCME Guideline for further description of these values.

Schedule 1
Groundwater, Leachate and Surface Water Monitoring Parameters

Parameter				
Parameter Group	Column 1	Column 2	Column 3	Column 4
	Comprehensive List for Groundwater and Leachate	Indicator List for Groundwater and Leachate	Comprehensive List for Surface Water	Indicator List for Surface Water
	Alkalinity	Alkalinity	Alkalinity	Alkalinity
	Ammonia		Ammonia	Ammonia
	Arsenic		Arsenic	
	Barium		Barium	
	Boron		Boron	
	Cadmium	Cadmium	Cadmium	
	Calcium	Calcium		
	Chloride	Chloride	Chloride	Chloride
	Chromium		Chromium	
	Conductivity	Conductivity	Conductivity	Conductivity
	Copper		Copper	
	Iron	Iron	Iron	
	Lead	Lead	Lead	
	Magnesium	Magnesium		
	Manganese			
	Mercury		Mercury	
	Nitrate	Nitrate	Nitrate	Nitrate

Parameter				
Parameter Group	Column 1	Column 2	Column 3	Column 4
	Comprehensive List for Groundwater and Leachate	Indicator List for Groundwater and Leachate	Comprehensive List for Surface Water	Indicator List for Surface Water
	Nitrite		Nitrite	Nitrite
	Total Kjeldahl Nitrogen		Total Kjeldahl Nitrogen	Total Kjeldahl Nitrogen
	pH	pH	pH	pH
	Total Phosphorus		Total Phosphorus	Total Phosphorus
	Potassium	Potassium		
	Sodium	Sodium		
	Suspended Solids	Suspended Solids	Suspended Solids	Suspended Solids
	Total Dissolved Solids	Total Dissolved Solids	Total Dissolved Solids	Total Dissolved Solids
	Sulphate	Sulphate	Sulphate	Sulphate
	Zinc		Zinc	
Volatile Organics				
	Benzene		Benzene	
	1, 4 Dichlorobenzene		1, 4 Dichlorobenzene	
	Dichloromethane		Dichloromethane	
	Toluene		Toluene	
	Vinyl Chloride			

Parameter				
Parameter Group	Column 1	Column 2	Column 3	Column 4
	Comprehensive List for Groundwater and Leachate	Indicator List for Groundwater and Leachate	Comprehensive List for Surface Water	Indicator List for Surface Water
Other Organics				
			Biochemical Oxygen Demand (BOD_5)	Biochemical Oxygen Demand (BOD_5)
	Chemical Oxygen Demand	Chemical Oxygen Demand	Chemical Oxygen Demand	Chemical Oxygen Demand
	Dissolved Organic Carbon	Dissolved Organic Carbon	Total Organic Carbon	
	Phenol		Phenol	Phenol
			Tannins/Lignins	
Field Parameters				
			Temperature	Temperature
	pH	pH	pH	pH
	Conductivity	Conductivity	Conductivity	Conductivity
			Dissolved Oxygen	Dissolved Oxygen
			Flow	Flow