

# Environmental Assessment Approval

Approval Date: **AUG 23 2018**

**Pyrolysis Plant**

**Sustane Chester Inc.**

**Lunenburg County, Nova Scotia**

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The Pyrolysis Plant (the "Project"), proposed by: Sustane Chester Inc. (the "Approval Holder") in Lunenburg County, Nova Scotia is approved pursuant to Section 40 of the *Environment Act* and Section 13(1)(b) of the Environmental Assessment Regulations. This Approval is subject to the following conditions and obtaining all other necessary approvals, permits or authorizations required by municipal, provincial and federal acts, regulations and by-laws before commencing work on the Project. It is the responsibility of the Approval Holder to ensure that all such approvals, permits or authorizations are obtained before commencing work on the Project.

This Environmental Assessment Approval is based upon the review of the conceptual design, environmental baseline information, impact predictions, and mitigation presented in the Registration Document.

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## **Terms and Conditions for Environmental Assessment Approval**

### **1.0 General Approval**

- 1.1 The Environmental Assessment Approval for the Project is limited to the Project as described in the Environmental Assessment Registration Document. Any proposal by the Approval Holder for expansion, modification or relocation of any aspect of the project from that proposed in the Registration Document shall be submitted to the Environmental Assessment Branch for review and may require an environmental assessment (EA).
- 1.2 The Approval Holder shall, within 2 years of the date of issuance of this Approval, commence work on the Project unless granted a written extension by the Minister.

The Approval Holder shall notify Nova Scotia Environment (the

Department) of the commencement date of the Project at a minimum 30 days prior to the commencement, unless otherwise approved by the Department.

- 1.3 The Approval Holder shall not transfer, sell, lease, assign or otherwise dispose of this Approval without the written consent of the Minister. The sale of a controlling interest of a business or a transfer of an approval from a parent company to a subsidiary or an affiliate is deemed to be a transfer requiring consent.
- 1.4 The Approval Holder shall implement all mitigation and commitments in the Registration Document, unless otherwise approved by the Department.
- 1.5 The Approval Holder is responsible for the cost of any specialized professional or consulting services deemed necessary and contracted by the Department, to assist in the technical review of documentation submitted for review, approval, or for compliance monitoring.

## **2.0 Facility Development, Operation and Maintenance**

- 2.1 The Approval Holder shall apply for a Part V Approval under the *Environment Act* that will be issued only for three years (if approved). The Approval Holder shall within two years of issuance of the Part V Approval, submit the testing and monitoring results required in this EA Approval and the Part V Approval, to the EA Branch and the applicable regional office of the Department for further review to determine if the Part V Approval can be renewed beyond three years.
- 2.2 The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall provide raw data and summaries regarding the following from Renewlogy's pyrolysis demonstration plant in Utah, unless otherwise exempt by the Department: physical and chemical characterization of feedstock, air emission (including any data on dioxins and furans), chemical characterization of char produced from pyrolysis, and chemical characterization of fuel produced from pyrolysis.
- 2.3 The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall provide process and instrumentation diagrams, detailed engineering drawings, material and energy balances, chemical analyses of all products and detailed operating procedures regarding the pyrolysis process.
- 2.4 The Approval Holder shall process waste plastics derived from mixed solid

wastes, and not from source-separated plastics (e.g., no plastic recyclables from blue bags that have been previously separated from mixed solid wastes), unless otherwise approved by the Department.

2.5 The Approval Holder shall ensure feedstock for the pyrolysis process meets the following three feedstock criteria (as stated in Table 2.1 of the Registration Document):

a) acceptable feedstock to include: high-density polyethylene (Resin Identification Code or RIC #2), low-density polyethylene (RIC #4), polypropylene (RIC #5), or polystyrene (RIC #6);

b) unacceptable feedstock outlined here not to exceed 1% of the total feedstock by weight: moisture, cardboard, paper, organics and polyethylene terephthalate (RIC #1);

c) no prohibited materials in the feedstock which include: metals, rubber, textile, glass, aggregate, silicone based products, oxidizing agents, fertilizers, nitrates, chlorates, poisons, herbicides, pesticides, fungicides, oil based paints, as well as materials with moderate-to-high levels of nitrogen, chlorine, sulphur or bromine (e.g., polyvinyl chloride, RIC #3).

The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall develop an explicit set of feedstock standards to limit materials with moderate-to-high levels of nitrogen, chlorine, sulphur or bromine. The Approval Holder shall implement the standards once the standards are deemed acceptable by the Department, and shall dispose of the feedstock that do not meet the three criteria above in an approved facility.

2.6 The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall develop a feedstock monitoring plan to include the following:

a) demonstrate the feedstock can meet the three feedstock criteria (as outlined in Condition 2.5 above) for 14 consecutive days prior to undertaking the pyrolysis process;

b) submit chemical characterization of the feedstock collected from the initial 14-day feedstock monitoring regime (including statistical analysis from a qualified statistician acceptable to the Department), prior to undertaking the pyrolysis process;

c) develop a feedstock monitoring program based on the result of the

initial 14-day feedstock monitoring regime.

The Approval Holder shall implement the plan, once the plan is deemed acceptable by the Department.

2.7 The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall develop a plan to address the following points regarding char produced as part of the pyrolysis process:

- a) appropriate methodology to analyze the char using the following parameters: Ziegler catalysts (Ti, Zr, V, Nb, Mo, Co, and Ni), as well as other parameters outlined in the Department's Guidelines for Disposal of Contaminated Solids in Landfills, Attachment B;
- b) management and contingency measures to handle and manage the char.

The Approval Holder shall implement the plan and submit char analytical data (at a frequency required by the Department), once the plan is deemed acceptable by the Department. Based on the char analytical data, the Approval Holder shall make necessary modifications to mitigation plans and/or operations as required by the Department.

2.8 The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall develop a plan to address the following points regarding fuel produced as part of the pyrolysis process:

- a) appropriate methodology to analyze the chemical contents of the fuel produced;
- b) specifications and the level of contaminants (consistent with industry standards in North America) that the produced fuel will meet;
- c) the market where the fuel will be sold to, traded, given away or used on the Project site, be reviewed and accepted by the Department;
- d) contingency measures to manage the fuel that does not meet the fuel specifications and standards.

The Approval Holder shall implement the plan and submit fuel analytical data (at a frequency required by the Department), once the plan is deemed acceptable by the Department. Based on the fuel analytical data, the Approval Holder shall make necessary modifications to mitigation plans and/or operations as required by the Department.

2.9 The Approval Holder, as part of the application for the Part V Approval

under the *Environment Act*, shall provide detailed operational procedures and contingency measures to manage plant upsets in order to mitigate potential impacts on the environment. The Approval Holder shall implement the operating related procedures once they are deemed acceptable by the Department.

### **3.0 Air Quality**

- 3.1 The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall provide an inventory of all anticipated air contaminants including speciated volatile organic compounds, polyaromatic hydrocarbons and metals, and complete air dispersion modelling for all emissions from the Project (e.g., including but not limited to the combustion of light oil within the Advanced Municipal Solid Waste Recycling Demonstration Facility referenced in the Registration Document). The air dispersion modelling discussed above shall include the following considerations:
  - a) include all expected air contaminants and the results should be compared to the ground level maximum concentrations to Schedule A of the Department's Air Quality Regulations and other appropriate ground level standards (for air contaminants not covered by Schedule A);
  - b) be completed under the operating scenario when the highest concentration of an air contaminant at ground level would occur;
  - c) include mapping that identifies nearest receptors and predicted maximum concentrations of air contaminants.
- 3.2 The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall provide a method to validate the air dispersion modelling including an air quality monitoring plan. This plan shall include, but not be limited to, sampling locations, parameters, monitoring methods, protocols and frequency. The Approval Holder shall implement the plan once the plan is deemed acceptable by the Department. Based on the monitoring results, the Approval Holder shall make necessary modifications to mitigation plans and/or operations as required by the Department.
- 3.3 At the request of the Department, the Approval Holder shall monitor noise levels. Based on the results of the monitoring program as proposed, the Approval Holder shall make necessary modifications to mitigation plans and/or operations as required by the Department.

#### **4.0 Water Resources**

- 4.1 The Approval Holder shall not conduct any Project activities, or removal of vegetation within 30 metres of a watercourse and/or a wetland unless otherwise authorized in writing by the Department.
- 4.2 The Approval Holder, as part of the application for the Part V Approval under the Environment Act, shall submit a groundwater monitoring plan including the proposed location of monitoring wells (minimum of three wells), monitoring parameters, and monitoring frequency to the Department for review and acceptance. This plan shall be designed to determine groundwater flow conditions and evaluate potential impacts to groundwater quality. The Approval Holder shall implement the plan once the plan is deemed acceptable by the Department.

#### **5.0 Flora and Fauna**

- 5.1 Prior to commencement of the Project, the Approval Holder shall provide Nova Scotia Department of Lands and Forestry (DLF), Wildlife Division with digital way points and/or shape files revealing precise locations for all S1, S2 and S3 listed species (under the Atlantic Canada Conservation Data Center), identified during field work within the area of the Project. The date of the above noted field data shall also be provided to DLF. The Approval Holder shall report to the Department that the files have been provided to DLF.
- 5.2 Prior to commencement of the Project, the Approval Holder shall develop wildlife management and monitoring measures in consultation with DLF, Wildlife Division, as well as Environment and Climate Change Canada to mitigate potential Project impacts of flaring and lighting on birds. The measures shall include seasonally sensitive operational procedures and monitoring to avoid and/or reduce the incidence of bird mortality especially during spring and fall migration periods. The Approval Holder shall implement the plan, once the plan is deemed acceptable by the Department.
- 5.3 The Approval Holder shall clear vegetation outside of the breeding season for most bird species (April 15 to August 15), unless otherwise approved by the Department. Vegetation clearing shall be recorded in a daily log that shall be available for review by the Department indicating the date and time of the clearing operation and the contractor.

#### **6.0 Archaeological and Heritage Resources**

- 6.1 The Approval Holder shall cease work and contact the Special Places Coordinator, Nova Scotia Department of Communities, Culture and Heritage (CCH) immediately upon discovery of an archaeological site or artifact unearthed during any phase of the Project. If the find is of certain or possible Mi'kmaq origin, the Approval Holder shall also contact the appropriate Mi'kmaq representatives as advised by CCH.

## **7.0 Public Engagement**

- 7.1 The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall develop and implement a complaint resolution plan to address all concerns associated with the Project. As part of the plan, the Approval Holder shall appoint a contact person designated to deal with complaints, and shall provide the contact information to the Department.
- 7.2 At the request of the Department, the Approval Holder shall develop and implement a plan for the formation and operation of a Community Liaison Committee (CLC) including terms of reference, which meets the Department's Guide for the Formation and Operation of a Community Liaison Committee. The Approval Holder(s) shall operate the CLC for the duration of the Project or until released in writing by the Department.

## **8.0 Engagement with the Mi'kmaq of Nova Scotia**

- 8.1 Prior to commencement of the Project, the Approval Holder shall develop and implement a Mi'kmaq Communication Plan for the Project, which will include a process for communicating Project details and seeking input from the Mi'kmaq community.

## **9.0 Contingency Plan**

- 9.1 Prior to commencement of the Project, the Approval Holder shall develop a contingency plan which meets the Department's Contingency Planning Guidelines. The plan shall address accidental occurrences including but not limited to: spills of hydrocarbons or other hazardous materials, fires, and vehicular collisions. The Approval Holder shall implement the plan once deemed acceptable by the Department, over the lifetime of the Project.

## **10. Rehabilitation**

- 10.1 The Approval Holder, as part of the application for the Part V Approval under the *Environment Act*, shall provide for review and approval a

preliminary reclamation and closure plan.

- 10.2 Project operations shall be completed and reclaimed to the satisfaction of the Department and other appropriate regulatory departments.



Margaret Miller, MLA  
Minister of Environment