ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 9087-CNPPVX
Issue Date: February 10, 2023

Responsible Energy Inc.
1301 Brockchem Rd, No. 100
Augusta, Ontario
K0E 1P0

Site Location: 1301 Brockchem Road
Augusta Township, United Counties of Leeds and Grenville

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

- One (1) pilot research and development (R & D) gasification reactor that uses proprietary Free Radical Gasification (FRG) conversion for the thermal degradation of a maximum of up to 10 tonnes per day and 1,300 tonnes per year of Carbonaceous Feedstock and Liquid Industrial Waste to produce non-condensable hydrocarbons (syngas) and consisting of the following equipment:
  - One (1) grinder to reduce the particle size of Carbonaceous Feedstock to 12-15 millimetre;
  - One (1) plug screw feeder to feed Carbonaceous Feedstock to the sealed gasification reactor;
  - One (1) screw conveyor to supply the Carbonaceous Feedstock to the three arc zones within the gasification reactor;
  - Pressurized Nozzles to inject Liquid Industrial Waste into the gasification reactor;
  - One (1) high efficiency cyclone (Lorenz Conveying Products HEC20) for particulate removal from syngas;
  - One (1) heat exchanger to remove heat from the syngas;
  - One (1) heat exchanger to condense water from the syngas;

- One (1) packed-bed scrubber (Verantis - MS-2500) to remove hydrogen chloride from the syngas with minimum removal efficiency of 99% using weak caustic soda solution (<10% Sodium Hydroxide);

- One (1) packed-bed scrubber (Verantis - MS-2500) to remove sulphur from the syngas with a minimum removal efficiency of 99% using weak caustic soda solution (<10% Sodium Hydroxide);

- One (1) furnace, operated at sub-stoichiometric conditions and being used to combust a side stream of syngas to reduce the syngas hydrogen content to 20%;

- One (1) enclosed flare (Bekaert CEB 800) that is being operated at a minimum temperature of 1,100 degree Celsius; equipped with one (1) continuous emissions monitoring system and a natural gas fired ignitor that uses 2.83 cubic metres per minute of natural gas as a fuel for the pilot; having a maximum firing rate of up to 0.47 cubic metre per second of combined flow (that include a maximum of up to 0.36 cubic metre per second of exhaust from syngas burner and a maximum of up to 0.11 cubic metre per second of syngas), with a minimum residence time of approximately 1.5 seconds and destruction efficiency of more than 99% for volatile organic compounds; exhausting to the air at a maximum volumetric flow rate of 1.79 actual cubic metres per second at an approximate temperature of 1,100 degrees Celsius through a stack, having an exit diameter of 0.92 metre, extending 8.8 metres above grade;

all in accordance with the Application for an Approval, dated August 5, 2022 and signed by Gordon Fraser of the Company and all information and documentation associated with the application including ESDM Report prepared by Graham Houze of the Company, dated October 26, 2022, the Acoustic Assessment Report prepared by Graham Houze of the Company, dated November 2022, and additional information provided by Gordon Fraser of the Company on November 1, 2022 and November 2, 2022.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "ACB List" means the document entitled "Air Contaminants Benchmarks (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", as amended from time to time and published by the Ministry and available on a Government website;

2. "Air Standards Manager" means the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Human Toxicology and Air Standards Section, Standards Development Branch, as those duties relate to the conditions of this Approval;

3. "Approval" means this entire Environmental Compliance Approval and any Schedules to it, and including the application and supporting documentation listed above;

4. "Approval (Waste)" means Environmental Compliance Approval (Waste Disposal Site) No. 6637-CHML7Q, as amended, issued in respect of activities mentioned in subsection 27(1) of the EPA at the Facility;

5. "Carbonaceous Feedstock" means the following materials/waste; excluding source separated and any other, recyclable or reusable waste identified in a regulation or approved waste diversion program unless it is residue from the processing of recyclable or reusable waste:

    1. biomass (residual lumber residue (sawdust and woodchips), forest slash and agricultural residue);

    2. biosolids (de-watered sludge from Waste Water Treatment Plants);

    3. post recycled plastics, and

    4. unsorted municipal solid waste (MSW);

6. "CEM System" means the continuous emission monitoring system as described in this Approval and in the supporting documentation referred to herein;

7. "Company" means **Responsible Energy Inc.**, that is responsible for the construction or operation of the Facility and includes any successors and assigns;

8. "Director" means a person appointed for the purpose of section 20.3 of the EPA by the Minister pursuant to section 5 of the EPA;

9. "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Facility is geographically located;

10. "EPA" means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended;

11. "Equipment" means the one (1) pilot research and development (R & D) gasification reactor, its associated equipment and a flare as described in the Company's application, this Approval and in the supporting documentation submitted with the application, to the extent approved by this Approval;

12. "ESDM Report" means the most current Emission Summary and Dispersion Modelling Report that describes the Facility and prepared in accordance with section 26 of O. Reg. 419/05 and the Procedure Document;

13. "Facility" means the entire operation located on part of the property at 1301 Brockchem Road, Augusta Township, United Counties of Leeds and Grenville; that is being leased by the Company and identified as the East Wing of the Service Building (i.e.; Maintenance Shop of approximately 6,000 square feet) and the following surrounding areas:

    1. to North – area adjacent to the Maintenance Shop and up to Roadway ‘A’;

    2. to East – area adjacent to Maintenance Shop and up to the East Side of Road 3;

3. to South – area adjacent to Maintenance Shop and up to the Office Building South Parking Lot; and

4. road access to the leased premises, via the main access gate of the facility;

as indicated in the application and supporting documentation submitted by the Company;

14. "Liquid Industrial Waste means Waste classes 211, 212, 241, 266 and 267 as outlined in the New Ontario Waste Classes, January 1986, as amended;

15. "Manager" means the Manager, Technology Standards Section, Technical Assessment and Standards Development Branch, or any other person who represents and carries out the duties of the Manager, Technology Standards Section, Technical Assessment and Standards Development Branch, as those duties relate to the conditions of this Approval;

16. "Manual" means a document or a set of documents that provide written instructions to staff of the Company;

17. "Ministry" means the ministry of the government of Ontario responsible for the EPA and includes all officials, employees or other persons acting on its behalf;

18. "O. Reg. 419/05" means the Ontario Regulation 419/05, Air Pollution – Local Air Quality;

19. "Point of Impingement" has the same meaning as in section 2 of O. Reg. 419/05;

20. "Pre-Test Plan" means a plan for the Source Testing including the information required in Section 5 of the Source Testing Code;

21. "Procedure Document" means Ministry guidance document titled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated February 2017, as amended;

22. "Professional Engineer" means Professional Engineer as defined within the Professional Engineers Act, R.S.O. 1990, as amended;

23. "Publication NPC-300" means the Ministry Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August, 2013, as amended;

24. "Report EPS 1/PG/7" means the report titled "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation" dated December 2005 and published by Environment Canada, as amended;

25. "Source Testing" means site-specific sampling and testing to measure the rates of emissions of Test Contaminants from operation of the flare under operating conditions that will derive an emission rate that, for the relevant averaging period of the contaminant, is at least as high as the maximum emission rate that the source of contaminant is reasonably capable of, and which satisfies paragraph 1 of subsection 11(1) of O. Reg. 419/05 or as directed or agreed by the Manager;

26. "Source Testing Code" means the Ontario Source Testing Code, dated June 2010, prepared by the Ministry, as amended;

27. "Start-up Date" means the date when Carbonaceous Feedstock and/or Liquid Industrial Waste is first received at the Facility; and

28. "Test Contaminants" means contaminants identified in Schedule "B" of this Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. NOTIFICATION OF FACILITY START-UP

1. The Company shall notify the District Manager in writing the Start-up Date of the Facility not later than five (5) business days prior to the Start-up Date and confirm in writing five (5) business days after the Start-up Date.

2. PERFORMANCE REQUIREMENTS

1. The Company shall ensure that the Facility is designed and operated to comply, at all times, with the following performance requirements:

    a. The concentrations of nitrogen oxides, hydrogen chloride, sulphur dioxide, carbon monoxide, organic matter, particulate matter, mercury, cadmium, lead, and dioxins and furans and dioxin-like PCBs (Polychlorinated Biphenyls) in the undiluted gases emitted from the enclosed flare shall not be greater than the emission limits specified in Schedule "A" of this Approval. The toxic equivalent concentration of dioxins and furans shall be calculated using the toxicity equivalence factors recommended by the International Scheme as set out in Schedule "J" of this Approval.

    b. The Company shall ensure, at all times, that the noise emissions from the Facility comply with the limits set in Ministry Publication NPC-300.

3. OPERATION AND MAINTENANCE

1. The Company shall ensure that the Equipment is properly operated and maintained at all times. The Company shall:

    a. prepare, three (3) months before the Start-up Date, and update, as necessary, a Manual outlining the operating procedures and a maintenance program for the Equipment, including:

        i. routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment suppliers;

        ii. contingency plans and emergency procedures, including spill clean-up procedures;

        iii. procedures for any record keeping activities relating to operation and maintenance of the Equipment;

        iv. procedures to monitor and record the types and quantities of Carbonaceous Feedstock and Liquid Industrial Waste received in the Facility, and the types and the hourly feed rates of the Carbonaceous Feedstock and Liquid Industrial Waste to gasification reactor;

        v. all appropriate measures to minimize noise and odorous emissions from all potential sources;

        vi. the frequency of inspection for the Equipment

        vii. frequency of monitoring the emissions from the flare;

        viii. a staffing plan;

        ix. complaint handling procedures;

        x. a closure plan; and

        xi. start-up and shut-down plan.

    b. implement the recommendations of the Manual;

    c. make the Manual available for inspection by staff of the Ministry at any time upon presentation of credentials;

    d. ensure that funding, staffing, training of staff, process controls, quality assurance and quality control procedures of or in relation to the Facility are adequate to achieve compliance with this Approval;

    e. ensure that equipment, material and spare parts, of equal or better quality and specifications, are kept on hand and in good repair for immediate use in the event of:

i. a breakdown of the Equipment or any part of the Facility;

ii. any change in process parameters which may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the regulations or imposed by this Approval;

iii. any fire or explosion; and

iv. any other potential contingency,

f. ensure that staff are trained in the use of appropriate equipment, material and spare parts and in the methods and procedures to be employed upon the occurrence of any event identified in Condition No. 3(1)(e) of this Approval;

g. not process more than 50 tonnes per year of municipal solid waste (MSW);

h. not receive or process source separated and any other, recyclable or reusable waste identified in a regulation or approved waste diversion program unless it is residue from the processing of recyclable or reusable waste:

i. not process any source separated organics (SSO), putrescible or other odorous materials; and

j. install adequate instrumentation and sampling ports at each unit operation and use the Continuous Emission Monitoring for condition monitoring and to analyse the performance of each unit by comparing syngas characteristics, including but not limited to, mass and volumetric flow rates, composition, pressure and temperature.

k. not discharge the syngas exiting the gasification reactor and the exhausts from the furnace without combusting in the flare.

4. MONITORING

1. The Company shall monitor the emissions and operation of the Facility as follows:

   a. The Company shall install and maintain operational an CEM System before commencement of operation of the flare to continuously monitor and record the temperature and concentrations of oxygen, nitrogen oxides, carbon monoxide, hydrogen chloride, sulphur dioxide and organic matter in the undiluted flue gases leaving the flare stack. The locations and specifications of the CEM sample probes, calibration ports and temperature instruments shall be in accordance with the requirements of Report EPS 1/PG/7 and as outlined in Schedule "C" to Schedule "J" of this Approval or as specified by the Manager.

b. The Company shall conduct RATA tests on the CEM System within three (3) months from the Start-up Date for the emissions in the undiluted gases leaving the flare stack and notify the Manager of any impending RATA testing.

c. The Company shall perform concentration study (expanded stratification study) under normal process conditions to determine appropriate CEM System probe location prior to RATA tests on the CEM System. The concentration study shall follow the protocols defined in the Source Testing Code to identify the number of sampling points required across the Flare. The concentration study shall also confirm that the measured concentration from the Flare are representative of the actual emissions in the undiluted gases leaving the enclosed flare stack. The Company shall include the results from the concentration study in the RATA report.

d. The Company shall submit the RATA report to the Manager for approval of the test results, with a copy submitted to the District Manager within two (2) months of the RATA tests.

e. The Company shall retain an external auditor to perform an independent audit of the CEM System and associated QA/QC program within three (3) months from the Start-up Date in accordance with the provisions in section 6.5.2 of Report EPS 1/PG/7.

f. If the Director does not accept the results of the RATA tests on the CEM System, the Director may require the Company to repeat the RATA tests on the CEM System.

5. SOURCE TESTING

1. The Company shall perform Source Testing to determine the rates of emission of the Test Contaminants from the flare.

2. The Company shall submit, not later than two (2) months after Facility Start-up Date to the Manager a test protocol, including the Pre-Test Information for the Source Testing required by this Approval. The Company shall finalize the test protocol in consultation with the Manager.

3. The Company shall not perform Source Testing required under this Approval until the Manager has accepted the test protocol.

4. The Company shall complete the Source Testing not later than two (2) months after acceptance of the test protocol by the Manager, or within a period as directed or agreed by the Manager, in consultation with the District Manager.

5. The Company shall repeat the Source Testing once every six (6) months after the first Source Testing or as directed or agreed by the District Manager.

6. The Company shall notify the Director, the District Manager and the Manager in writing of the location, date and time of any impending Source Testing required by this Approval, at least fifteen (15) days prior to the Source Testing.

7. The Company shall submit a report (electronic format), whenever Source Testing is completed, on the Source Testing to the Director, the District Manager and the Manager not later than three (3) months after completing the Source Testing. The report shall be in the format described in the Source Testing Code, and shall include, but not be limited to:

    a. an executive summary;

    b. an identification of the applicable North American Industry Classification System code (NAICS) for the Facility;

    c. records of weather conditions such as ambient temperature and relative humidity, wind speed and direction, and any environmental complaints if received, at the time of the Source Testing;

    d. all operating conditions of the Facility, including but not limited to the quantity of Carbonaceous Feedstock and Liquid Industrial Waste, the type and feed rate of Carbonaceous Feedstock and Liquid Industrial Waste fed to the gasification reactor, operating conditions of the Equipment, average and maximum mass and volumetric flow rate of Syngas from each unit operation, natural gas and combustion air flow rate;

    e. results of the Source Testing;

    f. the results of dispersion calculations, taking into account for all other sources at the Facility that are not tested in the Source Testing, indicating the maximum concentrations of the Test Contaminants at the Point of Impingement; and their comparison with the respective performance limit contained in the ACB List.

    g. a summary of all the records of the CEM System for the enclosed flare stack at the time of the Source Testing, and

    h. a summary table that compares the results of the Source Testing and the records obtained by the CEM System during the times of the Source Testing to the performance limit contained in Schedule "A" of this Approval.

    i. The Director may not accept the results of the Source Testing if:

        i. the Source Testing Code or the requirements of the Manager were not followed; or

        ii. the Company did not notify the Director, the District Manager and the Manager of the Source Testing; or

        iii. the Company failed to provide a complete report on the Source Testing.

j. If the Director does not accept the results of the Source Testing, the Director may require re-testing. If re-testing is required, the Pre-Test Plan need to be revised and submitted to the Manager for approval. The actions taken to minimize the possibility of the Source Testing results not being accepted by the Director must be noted in the revision.

k. The Company shall update their ESDM Report in accordance with Section 26 of O. Reg. 419/05 and the Procedure Document with the results from the Source Testing if any of the calculated emission factors or calculated emission rates are higher than the predicted rates in the ESDM report, not later than three (3) months after the submission of the Source Testing report and make these records available for review by staff of the Ministry upon request. The updated Emission Summary Table from the updated ESDM Report shall be submitted with the report on the Source Testing.

l. If the results of dispersion calculations conducted in any report on the Source Testing indicate non-compliance with respective performance limit contained in the ACB List, the Company shall include in the report of the Source Testing an action plan to investigate the cause(s) of the non-compliance and an implementation schedule of the remedial action(s) identified to bring the Facility back into compliance. The Company shall repeat the Source Testing within one (1) month after completion of remedial action(s).

6. REPORTING REQUIREMENTS

1. The Company shall retain a Professional Engineer to prepare the following reports:

   a. quarterly progress reports, prepared in accordance with the requirement of the Approval (Waste) and submitted to the District Manager within thirty (30) business days after the end of each quarter starting from the month of the Start-up Date. The quarterly report shall summarize the activities that have been undertaken in that quarter and the emissions from the Facility. The quarterly report shall include the information as required by the Approval (Waste) and the following:

      i. an executive summary;

      ii. average and maximum daily quantity and the total quantity of Carbonaceous Feedstock and Liquid Industrial Waste received and processed by the Facility in that quarter;

      iii. mass and volumetric flow rate of the Syngas fed to the flare on a daily basis in that quarter;

      iv. a summary of the results of the CEM System, indicating the maximum concentration monitored and recorded for each contaminant in that quarter;

      v. date(s) and time(s) and the results if available of any Source Testing if conducted in that quarter; and

vi. details of planned maintenance or failure of equipment in the Facility.

b. semi-annual reports, prepared and submitted to the District Manager in accordance with the requirement of the Approval (Waste), for each six-month period after the Start-up Date of the Facility, on how the operation of the Facility complied with requirements of EPA and the terms and conditions of this Approval in that period.

c. final assessment report, prepared in accordance with the requirement of the Approval (Waste) and submitted to the Director and the District Manager not later than three (3) months after Carbonaceous Feedstock and Liquid Industrial Waste is last processed in the Facility, including all the information as required by the Approval (Waste).

d. an annual Compliance Report, prepared and submitted to the District Manager before March 01, every year for the previous calendar year detailing:

i. compliance with all terms and conditions of this Approval, Approval (Waste) and EPA;

ii. a detailed description of the measures taken to ensure compliance with all terms and conditions of this Approval, Approval (Waste) and EPA;

iii. a detailed description of:

I. non-compliance with any terms and conditions of this Approval, Approval (Waste) and EPA and;

II. how and when any non-compliance was corrected;

2. The Company shall ensure that copies of the Compliance Report are available for inspection at the Facility by any member of the public during normal business hours without charge.

7. COMPLAINTS RESPONSE PROCEDURE

1. A designated representative of the Company shall be available to receive public complaints caused by the operations at the Facility twenty-four (24) hours per day, seven (7) days per week.

2. If at any time, the Company receives any environmental complaints from the public regarding the operation of the Facility, the Company shall respond to these complaints according to the following procedures:

a. The Company shall record and number each complaint in a computerized tracking system. The information to be recorded shall include the following:

i. the name, address and the telephone number of the complainant, if the complainant provide this information;

ii. the time and date of the complaint; and

iii. details of the complaint.

b. After the complaint has been received by the Company, the Company shall immediately report, either to the District Manager by phone during office hours or to the Ministry's Spills Action Centre at 1-800-268-6060 off office hours, on the receipt of the complaint. The Company shall immediately initiate investigation of the complaint. The investigation shall include, as a minimum, the following:

i. determination of the activities undertaken in the Facility at the time of the complaint;

ii. meteorological conditions including, but not limited to the ambient temperature,

iii. approximate wind speed and its direction;

iv. determination of all the possible cause(s) of the complaint;

v. determination of the remedial action(s) to address the cause(s) of the complaint, and implementation of the remedial action(s) to eliminate the cause(s) of the complaint as soon as practicably possible.

c. The Company shall document the response provided to the complainant, if known, and shall make the document(s) available for inspection by staff of the Ministry upon request. The response shall include the results of the investigation of the complaint, the action(s) taken or planned to be taken to address the cause(s) of the complaint, and if follow-up response(s) would be provided.

d. The Company shall, within one (1) week, submit a report to the District Manager on that complaint, and all proposed action(s) to prevent recurrence of the complaint in the future.

e. All the information collected and action(s) taken in this step have to be recorded in the computerized tracking system.

3. If the District Manager deems the remedial measures taken as per condition No. 18(2) to be unsuitable, insufficient or ineffective, the District Manager may direct the Company, in writing, to take further measures to address the noted failure, upset or malfunction pursuant to the remedial order section (s.17) or the preventative measures order section (s.18) of the EPA requiring a reduction in the feed rate of Carbonaceous Feedstock and Liquid Industrial Waste to the gasification reactor, cessation of the receipt of the Carbonaceous Feedstock and Liquid Industrial Waste, removal and off-Facility disposal of the Carbonaceous Feedstock and Liquid Industrial Waste as well as making repairs or modifications to Equipment or processes at the Facility.

8. RECORD RETENTION

1. The Company shall retain, for a minimum of two (2) years from the date of their creation, all records and information related to or resulting from the recording activities required by this Approval, and make these records available for review by staff of the Ministry upon request. The Company shall retain:

    a. all records on the maintenance, repair and inspection of the Equipment; and

    b. all records of any environmental complaints, including:

        i. a description, time and date of each incident to which the complaint relates;

        ii. wind direction at the time of the incident to which the complaint relates; and

        iii. a description of the measures taken to address the cause of the incident to which the complaint relates and to prevent a similar occurrence in the future.

9. APPROVAL EXPIRY DATE

1. This Approval shall expire on the 365th day following the Start-up Date of the Facility.

SCHEDULE "A" - MAXIMUM LIMITS

Contaminant	Maximum Limit	Comments
Nitrogen oxides	105 ppmdv(198 mg/Rm^3)	Calculated as the rolling arithmetic average of 24 hours of data from a continuous emission monitoring system that provides data at least once every fifteen minutes and expressed as NO_2 equivalent.
Hydrogen chloride	10 ppmdv (17 mg/Rm^3)	Calculated as the rolling arithmetic average of 24 hours of data from a continuous emission monitoring system that provides data at least once every fifteen minutes
Sulphur dioxide	21 ppmdv (56 mg/Rm^3)	Calculated as the rolling arithmetic average of 24 hours of data from a continuous emission monitoring system that provides data at least once every fifteen minutes
Carbon monoxide	30 ppmdv (35 mg/Rm^3)	Calculated as the rolling arithmetic average of four (4) hours of data from a continuous emission monitoring system that provides data at least once every fifteen minutes
Organic matter	50 ppmwv	Calculated as the rolling arithmetic average of 10-minute of data from monitoring undiluted gas stream where combustion of the thermal treatment of the waste is completed, using a continuous emission monitoring system that provides data at least once every minute and expressed as equivalent methane
Particulate matter	14 mg/Rm^3	Calculated as the arithmetic average of 3 stack tests conducted in accordance with standard methods
Mercury	20 ug/Rm^3	Calculated as the arithmetic average of 3 stack tests conducted in accordance with standard methods
Cadmium	7 ug/Rm^3	Calculated as the arithmetic average of 3 stack tests conducted in accordance with standard methods
Lead	49 ug/Rm^3	Calculated as the arithmetic average of 3 stack tests conducted in accordance with standard methods
Dioxins, Furans and Dioxin-like PCBs (Polychlorinated Biphenyls)	80 pg(TEQ)/Rm^3	Calculated as the arithmetic average of 3 stack tests conducted in accordance with standard methods, and expressed as toxicity equivalent to 2,3,7,8 tetrachlorodibenzo-p-dioxin (calculated in accordance with Schedule "J" of this Approval)
Opacity	5%	Calculated as the rolling arithmetic average of six (6) minutes of data measured by a continuous emission monitoring system that provides data at least once every minute

Notes:

1. R means reference conditions defined as: temperature of 25 degrees Celsius, a reference pressure of
2. 101.3 kilopascals, oxygen content of 11% and dry conditions (water content nil).
3. ppmdv means parts per million by volume on a dry basis. ppmdv has been set at standard conditions and reflecting 11% oxygen environment.
4. ppmwv means parts per million by volume on a wet basis.

SCHEDULE "B"

TEST CONTAMINANTS

- Oxides of nitrogen expressed as Nitrogen Dioxide
- Hydrogen chloride
- Sulphur dioxide
- Carbon monoxide
- Organic matter
- Particulate matter
- Mercury
- Cadmium
- Lead
- Dioxins, Furans and Dioxin-like PCBs (Polychlorinated Biphenyls)
- Opacity

POLYCYCLIC ORGANIC MATTER

- Benzo(a)pyrene
- Naphthalene

VOLATILE ORGANIC MATTER

- Acetaldehyde
- acetone
- acrolein
- benzene
- bromodichloromethane
- bromoform
- bromomethane
- butadiene, 1,3 -
- Butanone, 2 -
- Carbon tetrachloride
- chloroform
- cumene
- dibromochloromethane
- dichlorodifluoromethane
- dichloroethane, 1,2 -
- Dichloroethene, trans - 1,2 -
- Dichloroethene, 1,1 -
- Dichloropropane, 1,2 -
- Ethylbenzene
- ethylene dibromide
- formaldehyde
- mesitylene
- methylene chloride
- styrene
- tetrachloroethene
- toluene
- trichloroethane, 1,1,1 -
- Trichloroethene
- trichloroethylene, 1,1,2 -
- Trichlorofluoromethane
- trichlorotrifluoroethane
- vinyl chloride
- xylenes, m-, p- and o-

SCHEDULE "C"

PARAMETER: Temperature

LOCATION:

The sample point for the continuous temperature monitoring and recording system shall be installed in accordance with the requirements of *Report EPS 1/PG/7* at a location where the measurements are representative of the minimum temperature of the undiluted gases leaving the flare stack.

PERFORMANCE:

The Continuous Temperature Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETER	SPECIFICATION
Type:	shielded "K" type thermocouple or equivalent
Accuracy:	± 1.5 percent of the minimum gas temperature
Response Time (95%):	60 sec. (max)
Operating Range (Full Scale):	1.5 times approval limit
Standard Tolerance:	±2.2 ºC or ±0.75%
Resolution:	0.1 ºC
Calibration:	Per manufacturer's recommendations

RECORDER:
The recorder must be capable of registering continuously the measurement of the monitor without a significant loss of accuracy and with a time resolution of 5 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

SCHEDULE "D"

PARAMETER: Oxygen

INSTALLATION:

The Continuous Oxygen Monitor shall be installed in accordance with the requirements of *Report EPS 1/PG/7* at an accessible location where the measurements are representative of the actual concentration of oxygen in the undiluted gases leaving the flare stack and shall meet the following installation specifications.

PARAMETER	SPECIFICATION
Range (percentage):	0 - 20 or 0 - 25
Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Oxygen Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETER	SPECIFICATION
Span Value (percentage):	40% - 75% of Full Scale
Relative Accuracy:	$\leq$ the greater of 10 percent of the mean value of the Reference method test data or 0.5% average absolute difference
Calibration Error:	0.25 percent O2
System Bias:	$\leq$ the greater of 5 percent of the FS value or 0.5% average absolute difference
Procedure for Zero and Span Calibration Check:	All system components checked
Zero Calibration Drift (24-hour):	$\leq$ 0.5 percent O2
Span Calibration Drift (24-hour):	$\leq$ 0.5 percent O2
Response Time (90 percent response to a step change):	$\leq$ 200 seconds
Operational Test Period:	$\geq$ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of *Report EPS 1/PG/7.*

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

SCHEDULE "E"

PARAMETER: Nitrogen Oxides

INSTALLATION:

The Continuous Nitrogen Oxides Monitor shall be installed in accordance with the requirements of *Report EPS 1/PG/7* at an accessible location where the measurements are representative of the actual concentration of nitrogen oxides in the undiluted gases leaving the flare stack and shall meet the following installation specifications.

PARAMETER	SPECIFICATION
Range (ppm):	0 to 200 (Low) and 0 to 2,000 (High)
Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Nitrogen Oxides Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETER	SPECIFICATION
Span Value (ppm):	40% - 75% of Full Scale
Relative Accuracy:	$\leq$ the greater of 10 percent of the mean value of the reference method test data or 8 ppm average absolute difference
Calibration Error:	$\leq$ 2 percent of actual concentration
System Bias:	$\leq$ the greater of 5 percent of the FS value or 5 ppm average absolute difference
Procedure for Zero and Span Calibration Check:	All system components checked
Zero Calibration Drift (24-hour):	$\leq$ 2.5 percent of FS or 2.5 ppm average absolute difference
Span Calibration Drift (24-hour):	$\leq$ 2.5 percent of FS or 2.5 ppm average absolute difference
Response Time (90 percent response to a step change):	$\leq$ 200 seconds
Operational Test Period:	$\geq$ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor shall be performed and recorded in accordance with the requirements of *Report EPS 1/PG/7.*

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

SCHEDULE "F"

PARAMETER: Carbon Monoxide

INSTALLATION:

The Continuous Carbon Monoxide Monitor shall be installed in accordance with the requirements of *Report EPS 1/PG/7* at an accessible location where the measurements are representative of the actual concentration of carbon monoxide in the undiluted gases leaving the flare stack and shall meet the following installation specifications.

PARAMETER	SPECIFICATION
Range (ppm):	0 to 100 (Low) and 0 to 2,000 (High)
Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Carbon Monoxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETER	SPECIFICATION
Span Value (ppm):	40% - 75% of Full Scale
Relative Accuracy:	≤ the greater of 10 percent of the mean value of the reference method test data or 8 ppm average absolute difference
Calibration Error:	≤ 2 percent of actual concentration
System Bias:	≤ the greater of 5 percent of FS value or 5 ppm average absolute difference
Procedure for Zero and Span Calibration Check:	All system components checked
Zero Calibration Drift (24-hour):	≤ 2.5 percent of FS or 2.5 ppm average absolute difference
Span Calibration Drift (24-hour):	≤ 2.5 percent of FS or 2.5 ppm average absolute difference
Response Time (90 percent response to a step change):	≤ 200 seconds
Operational Test Period:	≥ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor low range shall be performed and recorded in accordance with the requirements of *Report EPS 1/PG/7.* The monitor high range shall be calibrated once per week in accordance with the drift limits specified above.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

SCHEDULE "G"

PARAMETER: Hydrogen Chloride

INSTALLATION:

The Continuous Hydrogen Chloride Monitor shall be installed in accordance with the requirements of *Report EPS 1/PG/7* at an accessible location where the measurements are representative of the actual concentration of hydrogen chloride in the undiluted gases leaving the flare stack and shall meet the following installation specifications.

PARAMETER	SPECIFICATION
Range (ppm):	0 to 100
Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Hydrogen Chloride Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETER	SPECIFICATION
Span Value (ppm):	40% - 75% of Full Scale
Relative Accuracy:	$\leq$ the greater of 20 percent of the mean value of the reference method test data or 8 ppm average absolute difference
Calibration Error:	$\leq$ 2.5 percent of actual concentration
System Bias:	$\leq$ the greater of 5 percent of the FS value or 5 ppm average absolute difference
Procedure for Zero and Span Calibration Check:	All system components checked
Zero Calibration Drift (24-hour):	$\leq$ 2.5 percent of FS or 2.5 ppm average absolute difference
Span Calibration Drift (24-hour):	$\leq$ 2.5 percent of FS or 2.5 ppm average absolute difference
Response Time (90 percent response to a step change):	$\leq$ 200 seconds
Operational Test Period:	$\geq$ 168 hours without corrective maintenance

CALIBRATION:

The monitor shall be calibrated daily at the sample point, to ensure that it meets the drift limits specified above, during the periods of operation of the flare. The results of the calibrations shall be recorded at the time of the calibration.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 5 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

SCHEDULE "H"

PARAMETER: Sulphur Dioxide

INSTALLATION:

The Continuous Sulphur Dioxide Monitor shall be installed in accordance with the requirements of *Report EPS 1/PG/7* at an accessible location where the measurements are representative of the actual concentration of sulphur dioxide in the undiluted gases leaving the flare stack and shall meet the following installation specifications.

PARAMETER	SPECIFICATION
Range (ppm):	0 to 30 (Low) and 0 to 500 (High)
Calibration Gas Ports:	close to the sample point

PERFORMANCE:

The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETER	SPECIFICATION
Span Value (ppm):	40% - 75% of Full Scale
Relative Accuracy:	$\leq$ the greater of 10 percent of the mean value of the reference method test data or 8 ppm average absolute difference
Calibration Error:	$\leq$ 2 percent of actual concentration
System Bias:	$\leq$ the greater of 5 percent of the FS value or 5 ppm average absolute difference
Procedure for Zero and Span Calibration Check:	All system components checked
Zero Calibration Drift (24-hour):	$\leq$ 2.5 percent of FS or 2.5 ppm average absolute difference
Span Calibration Drift (24-hour):	$\leq$ 2.5 percent of FS or 2.5 ppm average absolute difference
Response Time (90 percent response to a step change):	$\leq$ 200 seconds
Operational Test Period:	$\geq$ 168 hours without corrective maintenance

CALIBRATION:

Daily calibration drift checks on the monitor low range shall be performed and recorded in accordance with the requirements of *Report EPS 1/PG/7*. The monitor high range shall be calibrated once per week in accordance with the drift limits specified above.

DATA RECORDER:

The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:

The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

SCHEDULE "I"

PARAMETER: Total Hydrocarbons (Organic Matter)

INSTALLATION:

The Total Hydrocarbons Monitor shall be installed in accordance with the requirements of *Report EPS 1/PG/7* at an accessible location where the measurements are representative of the undiluted hydrocarbon concentrations of the undiluted gases leaving the flare stack and shall meet the following installation specifications.

PARAMETER	SPECIFICATION
Detector Type:	Flame Ionization
Detector Type:	Per manufacturer's recommendations
Flame Temperature:	Per manufacturer's recommendations
Range (ppm - methane basis):	0 to 100
Calibration Gas:	propane in nitrogen
Calibration Gas Ports:	close to the sample point

PERFORMANCE:
The Continuous Total Hydrocarbons Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETER	SPECIFICATION
Span Value (nearest ppm equivalent):	2 times the average normal concentration of the source
Relative Accuracy:	$\leq$ the greater of 10 percent of the mean value of the reference method test data or 8 ppm average absolute difference
System Bias:	$\leq$ the greater of 5 percent of the FS value or 5 ppm average absolute difference
Noise:	$\leq$ 1 percent of span value on most sensitive range
Repeatability:	$\pm$ 1 percent of FS
Linearity (response with propane in air):	$\pm$ 2 percent of span value over all ranges
Calibration Error:	$\leq$ 2 percent of actual concentration
Procedure for Zero and Span Check:	All system components checked
Zero Calibration Drift (24-hour):	$\leq$ 2.5 percent of FS or 2.5 ppm average absolute difference
Span Calibration Drift (24-hours):	$\leq$ 2.5 percent of FS or 2.5 ppm average absolute difference
Response Time (90 percent response to a step change):	$\leq$ 200 seconds
Operational Test Period:	$\geq$ 168 hours without corrective maintenance

CALIBRATION:
Daily calibration drift checks on the monitor low range shall be performed and recorded in accordance with the requirements of *Report EPS 1/PG/7.*

DATA RECORDER:
The data recorder must be capable of registering continuously the measurement of the monitor with an accuracy of 0.5 percent of a full scale reading or better and with a time resolution of 2 minutes or better.

RELIABILITY:
The monitor shall be operated and maintained so that accurate data is obtained during a minimum of 90 percent

of the time for each calendar quarter during the first full year of operation, and 95 percent, thereafter.

SCHEDULE "J"

Dioxins, Furans and Dioxin-like PCBs (Polychlorinated Biphenyls)

Toxicity equivalency factors (TEFs) are applied to 29 isomers of dioxins, furans and dioxin-like PCBs to convert them into 2,3,7,8-CDD (tetrachlorodibenzo-p-dioxin) toxicity equivalents. The conversion involves multiplying the concentration of each isomer by the appropriate TEF to yield the TEQ for this isomer. Summing the individual TEQ values for each of the isomers provides the total toxicity equivalent level for the sample mixture.A table listing the 29 isomers and their TEFs can be found in the ACB list.

No.	Dioxins, Furans, and Dioxin-like PCBs	CASRN	WHO_{2005} Toxic Equivalency Factors [TEFs]
1	2,3,7,8-Tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD]	1746-01-6	1
2	1,2,3,7,8-Pentachlorodibenzo-p-dioxin [1,2,3,7,8-PeCDD]	40321-76-4	1
3	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin [1,2,3,4,7,8-HxCDD]	39227-28-6	0.1
4	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin [1,2,3,6,7,8-HxCDD]	57653-85-7	0.1
5	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin [1,2,3,7,8,9-HxCDD]	19408-74-3	0.1
6	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin [1,2,3,4,6,7,8-HpCDD]	35822-46-9	0.01
7	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin [1,2,3,4,6,7,8,9-OCDD]	3268-87-9	0.0003
8	2,3,7,8-Tetrachlorodibenzofuran [2,3,7,8-TCDF]	51207-31-9	0.1
9	1,2,3,7,8-Pentachlorodibenzofuran [1,2,3,7,8-PeCDF]	57117-41-6	0.03
10	2,3,4,7,8-Pentachlorodibenzofuran [2,3,4,7,8-PeCDF]	57117-31-4	0.3
11	1,2,3,4,7,8-Hexachlorodibenzofuran [1,2,3,4,7,8-HxCDF]	70648-26-9	0.1
12	1,2,3,6,7,8-Hexachlorodibenzofuran [1,2,3,6,7,8-HxCDF]	57117-44-9	0.1
13	1,2,3,7,8,9-Hexachlorodibenzofuran [1,2,3,7,8,9-HxCDF]	72918-21-9	0.1
14	2,3,4,6,7,8-Hexachlorodibenzofuran [2,3,4,6,7,8-HxCDF]	60851-34-5	0.1
15	1,2,3,4,6,7,8-Heptachlorodibenzofuran [1,2,3,4,6,7,8-HpCDF]	67562-39-4	0.01
16	1,2,3,4,7,8,9-Heptachlorodibenzofuran [1,2,3,4,7,8,9-HpCDF]	55673-89-7	0.01
17	1,2,3,4,6,7,8,9-Octachlorodibenzofuran [1,2,3,4,6,7,8,9-OCDF]	39001-02-0	0.0003
18	3,3',4,4'-Tetrachlorobiphenyl [3,3',4,4'-tetraCB (PCB 77)]	32598-13-3	0.0001
19	3,4,4',5- Tetrachlorobiphenyl [3,4,4',5-tetraCB (PCB 81)]	70362-50-4	0.0003
20	3,3',4,4',5- Pentachlorobiphenyl (PCB 126) [3,3',4,4',5-pentaCB (PCB 126)]	57465-28-8	0.1
21	3,3',4,4',5,5'- Hexachlorobiphenyl [3,3',4,4',5,5'-hexaCB (PCB 169)]	32774-16-6	0.03
22	2,3,3',4,4'- Pentachlorobiphenyl [2,3,3',4,4'-pentaCB (PCB 105)]	32598-14-4	0.00003
23	2,3,4,4',5- Pentachlorobiphenyl [2,3,4,4',5-pentaCB (PCB 114)]	74472-37-0	0.00003
24	2,3',4,4',5- Pentachlorobiphenyl [2,3',4,4',5-pentaCB (PCB 118)]	31508-00-6	0.00003
25	2',3,4,4',5- Pentachlorobiphenyl [2',3,4,4',5-pentaCB (PCB 123)]	65510-44-3	0.00003
26	2,3,3',4,4',5- Hexachlorobiphenyl [2,3,3',4,4',5-hexaCB (PCB 156)]	38380-08-4	0.00003
27	2,3,3',4,4',5'- Hexachlorobiphenyl [2,3,3',4,4',5'-hexaCB (PCB 157)]	69782-90-7	0.00003
28	2,3',4,4',5,5'- Hexachlorobiphenyl [2,3',4,4',5,5'-hexaCB (PCB 167)]	52663-72-6	0.00003
29	2,3,3',4,4',5,5'- Heptachlorobiphenyl [2,3,3',4,4',5,5'-heptaCB (PCB 189)]	39635-31-9	0.00003

NOTE:

* Sum of toxicity equivalents of individual isomers

The TEF scheme is intended to be used with isomer specific analytical results. In cases where results are reported by congener group only, staff at Ministry's Technology Standards Section, Technical Assessment and Standards Development Branch shall be contacted for appropriate procedures to convert non-isomer specific data to TEQs.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition No. 1 is included to require the Company to notify staff of the Ministry so as to assist the Ministry with the review of the Facility's compliance with the EPA, the regulations and this Approval.

2. Condition No. 2 is included to outline the minimum performance requirements considered necessary to prevent an adverse effect resulting from the operation of the Facility.

3. Condition No. 3 is included to emphasize that the Facility and the Equipment must be operated and maintained according to a procedure that will result in compliance with the EPA, the regulations and this Approval.

4. Conditions No. 4 and 5 are included to require the Company to gather accurate information so that the environmental impact and subsequent compliance with the EPA, the regulations and this Approval can be verified.

5. Condition No. 6 is included to require the Company to prepare records to provide information to the Ministry so that the environmental impact and subsequent compliance with the EPA, the regulations and this Approval can be verified.

6. Conditions No. 7 is included to require the Company to gather accurate information so that compliance with the EPA, the regulations and this Approval can be verified.

7. Condition No. 8 is included to require the Company to retain records and provide information to the Ministry so that compliance with the EPA, the regulations and this Approval can be verified.

8. Condition No. 9 is included to require the Company to operate the Facility and complete the works in accordance with the requirements of this Approval on or before the date specified in the condition.

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing shall ("the Notice") state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

and

The Director appointed for the purposes of
Part II.1 of the *Environmental Protection Act*
Ministry of the Environment,
Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act.*

DATED AT TORONTO this 10th day of February, 2023

Nancy E Orpana, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

MS/
c: District Manager, MECP Kingston - District
Graham Houze, Responsible Energy Inc.