

APPROVAL GVU1149

Pursuant to:

Greater Vancouver Regional District Air Quality Management Bylaw No. 1082, 2008
and the BC Environmental Management Act, S.B.C 2003, c.53

Issued to:

National Research Council Canada
doing business as National Research Council Canada
(the "Approval Holder")

To Authorize:

the discharge of air contaminants to the air from a
Federal Government Research Facility

Located at:

4250 Wesbrook Mall, Vancouver, BC V6T 1W5

Effective Period:

The terms and conditions set out in the Approval apply to the existing or planned works as of
July 19, 2019 and this approval will expire on October 19, 2020.

Issued: July 19, 2019


Darrell Wakelin
Assistant District Director

METRO VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT APPROVAL

SECTION 1 – AUTHORIZED EMISSION SOURCES

Authorization to discharge air contaminants from the authorized Emission Sources and Works listed below is subject to the specified terms and conditions.

Approximate locations of the emission sources are shown on the Site Plan in section 4.

EMISSION SOURCE 01: CHP Appliance discharging through a Stack(s).

MAXIMUM EMISSION FLOW RATE: 2.5 m³/min

MAXIMUM ANNUAL OPERATING HOURS: 1950 h/y

MAXIMUM PRIMARY BURNER INPUT FIRING RATE: 0.701 GJ/h

MAXIMUM EMISSION QUALITY:

1. 9 mg/m³ Combustion Volatile Organic Compound
2. 19.2 mg/m³ Methane
3. 77 mg/m³ Nitrogen Oxides
4. 13 mg/m³ Sulphur Oxides
5. 3 mg/m³ Particulate Matter
6. 5% Opacity.

WORKS AND PROCEDURES:

Volter 40 Indoor 100 kW Combined heat and power device consisting of a gasifier, boiler, electrical turbine and equipped with a Selective Catalytic Reduction. The boiler and related emission control works must be maintained and operated in the manner prescribed by the boiler and control works manufacturers. This authorization is for the use of clean uncontaminated wood chips only as the fuel source.

The Approval holder must continuously monitor and record the following baseline operating parameters for the SCR control works in a manner acceptable to Metro Vancouver District Officers:

- inlet flue gas temperature,
- pressure differential over the reactor and gas filter,
- urea injection rate.

The Approval holder must keep written records pertaining to inspection and maintenance conducted on the Volter 40 Indoor 100 kW Combined heat and power device, the NOxBuster SCR system and related appurtenances. The records must be kept on site and be made available for inspection by Metro Vancouver District Officers.

Issued: July 19, 2019


Darrell Wakelin
Assistant District Director

Approval GVU1149

METRO VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT APPROVAL

Stack Height (m): 5.1
Stack Diameter (m): 0.076
Stack Temp (c): 97
Exit Velocity (m/s): 26.7

Issued: July 19, 2019


Darrell Wakelin
Assistant District Director

Approval GVU1149

METRO VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT APPROVAL

SECTION 2 – GENERAL REQUIREMENTS AND CONDITIONS

A. AUTHORIZED WORKS, PROCEDURES AND SOURCES

Works and procedures, which this approval authorizes in order to control the discharge of air contaminants, shall be employed during all operating periods of the related sources. The Approval holder shall regularly inspect and maintain all such works, procedures and sources.

The District Director must be provided with reasonable notice of any changes to or replacement of authorized works, procedures or sources. Any changes to or replacement of authorized works, procedures or sources must be approved by the District Director in advance of operation. For certainty, this does not include routine maintenance or repair.

The discharge criteria described in Section 1 of this approval are applicable on the issued or last amended date of this approval unless specified otherwise. If a date different to the issued or last amended date is specified, the existing works, procedures and sources must be maintained in good operating condition and operated in a manner to minimize emissions.

B. NOTIFICATION OF MONITORING NON-COMPLIANCE

The District Director must be notified immediately of any emission monitoring results, whether from a continuous emissions monitor or periodic testing, which exceed the quantity or quality authorized in Section 1 of this approval. Notification shall be made to Metro Vancouver's 24-hour number: 604-436-6777, or to regulationenforcement@metrovancover.org.

C. POLLUTION NOT PERMITTED

Notwithstanding any conditions in this approval, no person shall discharge or allow or cause the discharge of any air contaminant so as to cause pollution as defined in the Greater Vancouver Regional District Air Quality Management Bylaw No. 1082, 2008 and the Environmental Management Act.

D. BYPASSES


The discharge of air contaminants that have bypassed authorized control works is prohibited unless advance approval has been obtained and confirmed in writing from the District Director.

E. EMERGENCY PROCEDURES

In the event of an emergency or condition beyond the control of the Approval holder that prevents effective operation of the authorized works or procedures or leads to unauthorized discharge, the Approval holder shall:

1. Comply with all applicable statutory requirements;
2. Immediately notify the District Director of the emergency or condition and of contingency actions invoked or planned to mitigate adverse impacts and restore compliance; Notification shall be made to Metro Vancouver's 24-hour number: 604-436-6777; and

Issued: July 19, 2019


Darrell Wakelin
Assistant District Director

Approval GVU1149

METRO VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT APPROVAL

3. Take appropriate remedial action for the prevention or mitigation of pollution.

The District Director may specify contingency actions to be implemented to protect human health and the environment while authorized works are being restored and/or corrective actions are being taken to prevent unauthorized discharges.

If an emergency situation results in a "spill" as defined in the Environmental Management Act Spill Reporting Regulation, the spill shall also be reported immediately to the Provincial Emergency Program by telephoning 1-800-663-3456.

F. AMENDMENTS

The terms and conditions of this approval may be amended, as authorized by applicable legislation. New works, procedures or sources or alterations to existing works, procedures or sources must receive authorization in advance of operation.

G. STANDARD CONDITIONS AND DEFINITIONS

Unless otherwise specified, the following applies to this approval:

1. Gaseous volumes are corrected to standard conditions of 20 degrees Celsius (°C) and 101.325 kilo Pascals (kPa) with zero percent moisture.
2. Contaminant concentrations from the combustion of specific fuel types are corrected to the following Oxygen content, unless specified otherwise:
 - 3% O₂ for natural gas and fuel oil; or
 - 8% O₂ for wood fuel
3. Where compliance testing is required, each contaminant concentration limit in this approval will be assessed for compliance based on a valid test using test methods approved by the District Director.
4. Visual opacity measurements are made at the point of maximum density, nearest the discharge point and exclude the effect of condensed, uncombined water droplets. Compliance determinations are based on a six-minute average in accordance with the United States Environmental Protection Agency (US EPA) Method 9: Visual Determination of the Opacity of Emissions from Stationary Sources. Continuous Emission Monitor System (CEMS) opacity compliance determinations are based on a one-hour average (taken from the top of each hour).
5. If authorized in Section 1 of this approval, standby fuel use is restricted to a maximum of 350 hours per year and to those periods during which the primary authorized fuel is not available. Fuel oil sulphur content shall not exceed 15 milligrams per kilogram (mg/kg) and emissions during fuel oil firing shall not exceed 10% opacity.
6. Definitions in the Environmental Management Act and Air Quality Management Bylaw apply to terminology used in this approval.
7. Threshold Limit Values (TLV) refer to the Time Weighted Average (TWA) exposure limits for substances specified in the American Conference of Governmental Industrial Hygienists Threshold Limit Values handbook, current on the latest date that this approval issuance or amendment came into effect.
8. Sulphur Oxides (SO_x) are expressed as Sulphur Dioxide.

Issued: July 19, 2019


Darrell Wakelin
Assistant District Director

Approval GVU1149

METRO VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT APPROVAL

9. Nitrogen Oxides (NO_x) are expressed as Nitrogen Dioxide.
10. The Canadian Council of Ministers of the Environment (CCME) "Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Aboveground Storage Tanks (PN1180)" shall be adhered to for all applicable tanks unless otherwise stated in this approval.
11. Authorized 'Maximum Annual Operating Hours' of 8760 hours per year for an emission source is equivalent to authorization for continuous operation of the emission source for an entire calendar year, including leap years.

H. RECORDS RETENTION

All records and supporting documentation relating to this approval must be kept for at least three years after the date of preparation or receipt thereof, and be made available for inspection within 48 hours of a request by an Officer.

I. HEATING, VENTILATION, AIR CONDITIONING AND INTERNAL COMBUSTION ENGINES

Air contaminants discharged from any natural gas-fired heating, ventilation or air conditioning system for buildings and any internal combustion engine located at the discharge site shall be maintained and operated in a manner prescribed by the manufacturer to ensure good combustion of the fuel with minimum discharge of air contaminants.

Issued: July 19, 2019


Darrell Wakelin
Assistant District Director

Approval GVU1149

METRO VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT APPROVAL

SECTION 3 – REPORTING REQUIREMENTS

A. MONITORING REQUIREMENTS AND REPORTING

Unless otherwise approved in writing by the District Director prior to any sampling or analysis, all measurements shall be performed by an independent agency in accordance with Metro Vancouver Air Emissions Sampling Program Manual of Methods and Standard Operating Procedures and the BC Ministry of Environment Field Sampling Manual, as they may be amended from time to time. Any variance from these procedures must receive prior written approval from the District Director.

A minimum of 5 working days advance notice must be given prior to taking measurements required by this Monitoring and Sampling Program. Notification must be given to the Metro Vancouver Environmental Regulation & Enforcement Division (phone 604-436-6777, Fax 604-436-6707, email regulationenforcement@metrovancover.org).

Unless otherwise specified, sampling shall be performed under operating conditions representative of the previous 90 calendar days of operation. All field data and calculations must be submitted with monitoring results and they shall be reported in the metric units which are used in this approval. These submissions shall include process data relevant to the operation of the source of the emissions and the performance of the emission control works.

The Approval holder shall conduct the following monitoring and sampling and submit electronic reports of the results to the District Director by the dates specified below using a password enabled web based application provided by Metro Vancouver.

EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	PARAMETER(S)	TEST METHOD	REPORT TYPE
01	January 31, 2020	N/A	Written report detailing the measured discharge rate and concentration of NOx, PM, SOx and THC.	Nitrogen Oxides, Particulate Matter, Sulphur		Stack

Issued: July 19, 2019


Darrell Wakelin
Assistant District Director

Approval GVU1149

METRO VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT APPROVAL

EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	PARAMETER(S)	TEST METHOD	REPORT TYPE
				Oxides		
01	January 31, 2020	On or before January 31 for each subsequent year.	Written report detailing the NOx removal efficiency of the SCR system. The report is to provide average monthly NOx removal efficiency, as obtained by the SCR NOx inlet/outlet sensors, for the previous calendar year.	Nitrogen Oxides		Monitoring - Other

Issued: July 19, 2019


 Darrell Wakelin
 Assistant District Director

Approval GVU1149

METRO VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT APPROVAL

B. INFORMATION REPORTING REQUIREMENTS

The Approval holder shall submit electronic reports containing the required information to the District Director by the dates specified below using a password enabled web based application provided by Metro Vancouver.

EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	REPORT TYPE
01	January 31, 2020	On or before January 31 for each subsequent year.	Written report providing details of the total number of hours and days operated in the preceding calendar year. Detailed records are to be maintained and made available for inspection by Metro Vancouver staff for a minimum period of three years.	Operating Period
01	January 31, 2020	On or before January 31 for each subsequent year.	Written report providing details of the types and amounts of fuel burned in the preceding calendar year.	Fuel Use

C. AMENDED OR ADDITIONAL REQUIREMENTS

Based on the results of the monitoring program, including the stack sampling results or any other information, the District Director may:

1. Amend the monitoring and reporting requirement of any of the information required by this Approval including plans, programs and studies.
2. Require additional investigations, tests, surveys or studies.

Issued: July 19, 2019


Darrell Wakelin
Assistant District Director

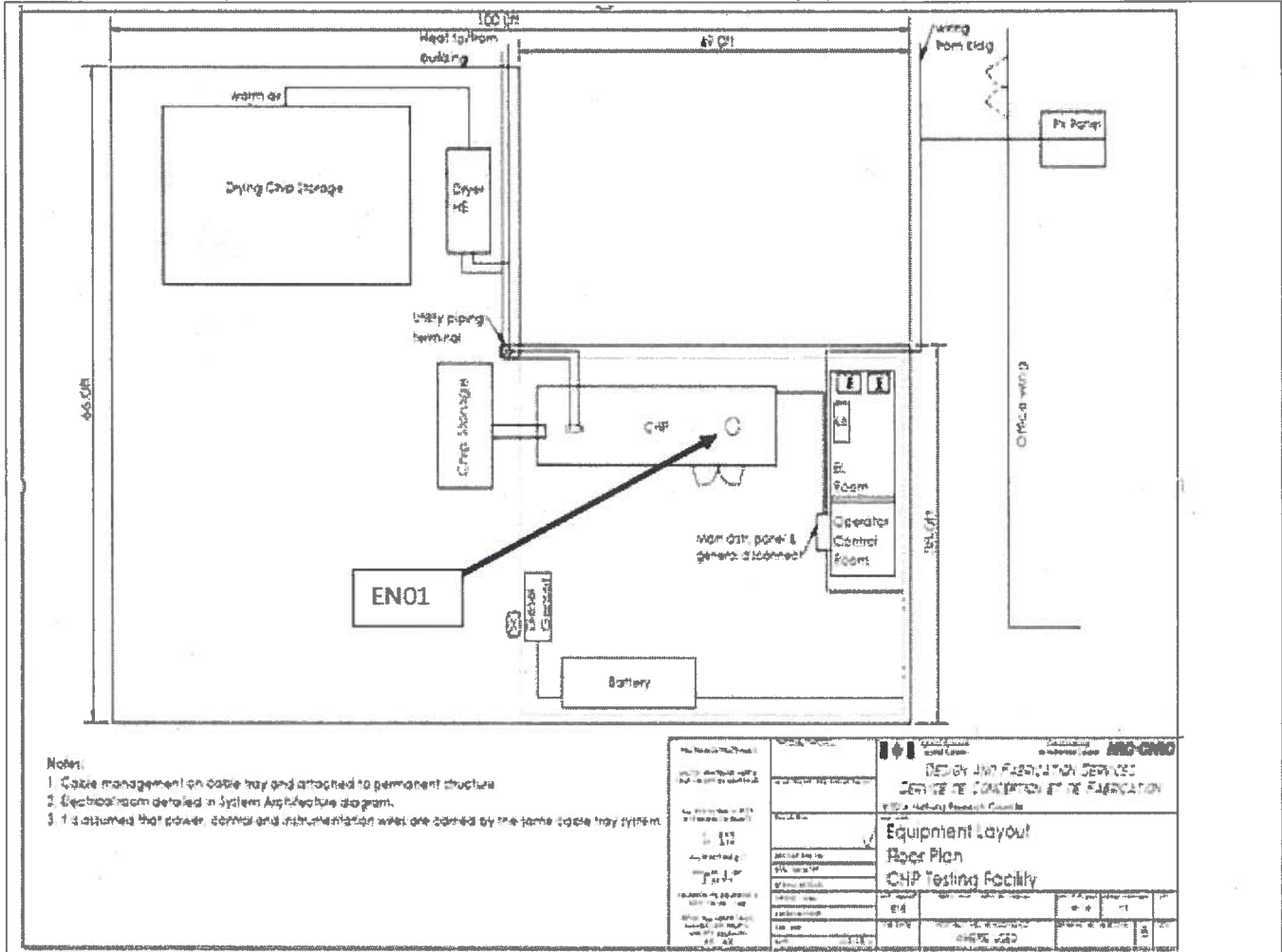
Approval GVU1149

METRO VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT APPROVAL

SECTION 4 – SITE PLAN

LEGAL DESCRIPTION OF DISCHARGE SITE: DISTRICT LOT 6494 GROUP 1 NEW WESTMINSTER DISTRICT EXCEPT PARTS IN PLANS 11345, 18645, 21966, BCP5864, BCP23588, BCP26848, 20570BCP 30252 AND BCP45808

The following site plan is not to scale and the locations of the discharge points are approximate.



Issued: July 19, 2019

Darrell Wakelin
 Darrell Wakelin
 Assistant District Director

Approval GVU1149