

APPROVAL GVU1189

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:

Corix Utilities Inc
(the "Approval Holder")

To Authorize:

the discharge of air contaminants to the air from
a district heating facility

Located at:

8500 South Campus Road, Burnaby, BC

Effective Period:

The terms and conditions set out in the Approval apply to the existing or planned works as of
October 09, 2020 and this Approval will expire on February 12, 2021.

Issued: October 09, 2020



R.H. (Ray) Robb, P. Eng.
District Director

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: Biomass boiler discharging through a Stack(s).

MAXIMUM EMISSION FLOW RATE: **572** m³/min
MAXIMUM ANNUAL OPERATING HOURS: **2920** h/y
MAXIMUM PRIMARY BURNER INPUT FIRING RATE: **73.3** GJ/h

MAXIMUM EMISSION QUALITY:

1. 240 mg/m³ Carbon Monoxide
2. 15 mg/m³ Combustion Condensable Particulate Matter
3. 240 mg/m³ Nitrogen Oxides
4. 20 mg/m³ Total Volatile Organic Compounds
5. 10 mg/m³ Particulate Matter
6. 10% Opacity.

WORKS AND PROCEDURES:


Wellons 13.5 MW biomass boiler, multicyclone dust collector, and Wellons three-electrical-field dry electrostatic precipitator (ESP) model 2W-091-1922 complete with high-frequency power supplies (HFPS) and good operating practices. Emissions are required to be continuously monitored for NO_x, CO, O₂ and Opacity.

Stack height (m) = 23.8
Stack diameter (m) = 1.27
Minimum exhaust gas temperature (°C) = 75.8
Exit velocity (m/s) = 13.44

EMISSION SOURCE 02: Low NO_x natural gas boiler #1 discharging through a Stack(s).

MAXIMUM EMISSION FLOW RATE: **62** m³/min
MAXIMUM ANNUAL OPERATING HOURS: **2920** h/y
MAXIMUM PRIMARY BURNER INPUT FIRING RATE: **13.7** GJ/h

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MAXIMUM EMISSION QUALITY:

1. 8.3 mg/m³ Combustion Volatile Organic Compound
2. 60 mg/m³ Nitrogen Oxides
3. 21.9 mg/m³ Sulphur Oxides
4. 12 mg/m³ Particulate Matter
5. 10% Opacity.

WORKS AND PROCEDURES:

Thermogenics HG300HWNAX low-NOx boiler complete with flue gas recirculation (FGR), low NOx burners and good operating practices.

Stack height (m) = 15

Stack diameter (m) = 0.5

Minimum exhaust gas temperature (°C) = 135

Exit velocity (m/s) = 10.11

EMISSION SOURCE 03: Low NO_x natural gas boiler #2 discharging through a Stack(s).

MAXIMUM EMISSION FLOW RATE: 62 m³/min

MAXIMUM ANNUAL OPERATING HOURS: 2920 h/y

MAXIMUM PRIMARY BURNER INPUT FIRING RATE: 11.7 GJ/h

MAXIMUM EMISSION QUALITY:

1. 8.3 mg/m³ Combustion Volatile Organic Compound
2. 60 mg/m³ Nitrogen Oxides
3. 2.9 mg/m³ Sulphur Oxides
4. 12 mg/m³ Particulate Matter
5. 10% Opacity.

WORKS AND PROCEDURES:

Thermogenics HG300HWNAX low-NOx boiler complete with flue gas recirculation (FGR), low NOx burners and good operating practices.

Stack height (m) = 15

Stack diameter (m) = 0.5

Minimum exhaust gas temperature (°C) = 135

Exit velocity (m/s) = 10.11

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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;

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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
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.

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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.
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.

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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 must 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 must 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 must be reported in the metric units that are used in this Approval. These submissions must include process data relevant to the operation of the source of the emissions and the performance of the emission control works.

Unless otherwise specified or approved in writing by the District Director, stack sampling must not occur more than 120 calendar days prior to the due dates specified below.

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

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EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	PARAMETER(S)	TEST METHOD	REPORT TYPE
01	January 31, 2021	N/A	Submit a written report detailing the measured rate and concentration of filterable particulate matter, carbon monoxide, nitrogen oxides, and total volatile organic compounds. Testing is to be conducted by independent consultants experienced in performing such tests and must be completed within three months of commencing operation of the boiler. All testing must be in accordance with Section 31 of Bylaw 1087, 2008	Nitrogen Oxides, Particulate Matter, Total Volatile Organic Compounds, Carbon Monoxide		Stack

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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
Facility	January 31, 2021	N/A	<p>Outline for Ambient Air Quality Monitoring Station Data Report</p> <p>Submit for written approval by the District Director a plan detailing the contents of the quarterly and annual ambient air quality monitoring station data reports that includes but is not limited to:</p> <ul style="list-style-type: none"> •Format for the reporting of data quality assurance, calibration, and maintenance summaries •Seasonal and annual pollutant roses for each air contaminant •Maximum, minimum, mean 1-minute and 1-hour values for each meteorological parameter for each season and year •1-hour maximum, minimum, mean, 98th percentile and 99th percentile value for each pollutant for each month and year •% calms (i.e., less than stall speed of anemometer) •% data completeness for each parameter •Example tables and figures •Format for the reporting of data quality assurance, calibration, inspection, and maintenance summaries 	Information - Other

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EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	REPORT TYPE
Facility	March 31, 2021	On or before March 31 for each subsequent year.	<p>Ambient Air Quality Monitoring Station Data Report</p> <p>Submit a written report, as per an approved ambient air quality monitoring station data report outline, summarizing NO₂ concentrations from the approved ambient NO₂ monitoring stations for the previous 12-month period or part thereof.</p> <p>Monitoring must be conducted as per a monitoring plan approved in writing by the District Director.</p> <p>Until such time as the ambient NO₂ monitoring stations are established, this report can consist of a progress report on establishing the stations.</p>	Information - Other
Facility	November 30, 2020	N/A	<p>Nitrogen Dioxide Exposure Mitigation Plan</p> <p>Submit a plan for written approval by the District Director to mitigate potential exposure if elevated nitrogen dioxide concentrations are measured by the NO₂ monitoring stations. The plan should include actions related to windows that can be opened, accessible balconies and HVAC intakes at buildings where exceedances of Metro Vancouver’s ambient NO₂ objectives were predicted using the modelling methodology approved by Metro Vancouver. The plan should be clear what will be considered an “elevated level” and potentially could have different actions at different concentration levels.</p>	Information - Other

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EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	REPORT TYPE
Facility	February 01, 2021	N/A	<p>Human Health Risk Assessment Report</p> <p>Submit for review by the Fraser Health Authority and approval by the District Director a written report of the methodology, assumptions, results and conclusions of a human health risk/impact assessment completed in accordance with the Human Health Risk Assessment Plan approved by the District Director.</p>	Information - Other
Facility	November 15, 2020	N/A	<p>Ambient Air Quality Monitoring Plan</p> <p>Submit for written approval by the District Director an ambient air quality monitoring plan that includes at least one ambient nitrogen dioxide monitor that is a continuous US EPA Federal Equivalent Method (FEM) monitor. The monitors are to be located in areas of predicted exceedances of Metro Vancouver's ambient objective for NO₂ using the Metro Vancouver approved modelling methodology.</p> <p>Proposed instrumentation must be specified in the monitoring plan and must include:</p> <ol style="list-style-type: none"> 1. a description of the proposed station(s) (tower, data logger, modem, and instrumentation) and equipment (including make/model and relevant specifications, measurement height) to continuously monitor NO₂) 2. a description of other proposed NO₂ monitoring equipment 3. the coordinates and photographs of the proposed locations 4. a discussion of the relative merits of the proposed locations 	Information - Other

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EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	REPORT TYPE
			<ol style="list-style-type: none"> 5. rationale for the recommended locations 6. an orthophoto (plan view map) figure centered on the proposed station locations with a scale of 1:560 7. an elevation view diagram of the station(s) and instrumentation indicating relevant measurement heights and surrounding obstacles (if any) 8. a schedule for commissioning and installation of the equipment 9. a description of how each parameter will be sampled (i.e., sample rate and averaging) and logged (i.e., averaging period) 10. a description of how Metro Vancouver will be provided continuous on-line access to real-time data and the ability to download historical data 11. a sample of the proposed website layout <p>Factors to consider for instrument selection include:</p> <ol style="list-style-type: none"> 1. the use of instruments certified by the US EPA as Federal Equivalent Methods (FEM) or comparable monitoring equipment 2. the National Air Pollution Surveillance program's (Environment and Climate Change Canada) most recent guidance on air monitoring (i.e., performance specifications) 3. the most recent guidance in the British Columbia Field Sampling Manual: Part B1 4. comparability to instruments used in the Metro Vancouver air quality monitoring network 5. the most recent US EPA guidance documents for ambient air 	

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EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	REPORT TYPE
			<p align="center">measurement systems</p> <p>The plan must have a section on the proposed quality assurance program that includes:</p> <ol style="list-style-type: none"> 1. schedule and description of routine operations and maintenance activities 2. verification and calibration 3. validation 	
Facility	November 15, 2020	N/A	<p>Human Health Risk Assessment Plan</p> <p>Submit for review by the Fraser Health Authority and written approval by the District Director a plan for a detailed human health risk/impact assessment by a qualified professional to determine whether the predicted exceedances (based on modelling methodology approved by Metro Vancouver) of Metro Vancouver's ambient air quality objective and the 2025 Canadian Ambient Air Quality Standard for 1-hour NO₂ may be of concern for public health in the area of potential impact from this facility. The detailed HHRA should include all potentially impacted SFU buildings as well as residential communities outside the SFU campus grounds. Other potential air contaminants of concern which may be attributed to air emissions from this facility should be included in the scope. The plan should address:</p> <ul style="list-style-type: none"> •the nature of the potential adverse health effect(s); • the relevant conditions (location, frequency, meteorological conditions, operational conditions, receptor behaviors, project phase, 	Information - Other

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EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	REPORT TYPE
			etc.) under which potential health effects are predicted; <ul style="list-style-type: none"> • the groups or locations that could be affected under both present and future scenarios; • the contribution to overall risk from each exposure pathway; • the controls, mitigation measures, or monitoring programs that can be implemented to prevent or address the potential effects; and • the residual impacts to human health (if any) with the implementation of these mitigation measures. 	
01, 02, 03	February 28, 2021	N/A	Written report providing details of the types and amounts of fuel burned during the approval period.	Fuel Use
01, 02, 03	March 15, 2021	N/A	Written report providing details of the total number of hours and days operated during the approval period. 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	November 15, 2020	N/A	Emissions Test Plan A written sampling test plan for the analysis of filterable particulate matter, carbon monoxide, nitrogen oxides, and total volatile organic compounds,	Information - Other

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EMISSION SOURCE	INITIAL DUE DATE	SUBSEQUENT DUE DATES	REQUIREMENT	REPORT TYPE
			including proposed methodologies. Must be submitted for written approval by Metro Vancouver 60 days prior to commencing testing.	
01	February 01, 2021	N/A	<p>CEMs Performance Evaluation</p> <p>Submit a written report for the approval period detailing the results of the CEMs performance evaluations. The report shall include, where applicable:</p> <ol style="list-style-type: none"> 1. Periods, magnitudes and causes of exceedances of approval limit restrictions; 2. Systems and analyzer availability; 3. Summary of daily drift of the analyzer using a control chart format; 4. Results of relative accuracy and bias test conducted during the approval period; 6. Summary of all corrective actions taken when the CEMS or analyzer(s) were found to be out of control; 7. System evaluation findings, observations and recommendations; 8. Copies of raw test data and calculations. 	Information - Other

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.

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SECTION 4 – SITE PLAN

LEGAL DESCRIPTION OF DISCHARGE SITE: Parcel Identifier: 028-300-131

Legal Description:

LOT 1 DISTRICT LOTS 31, 101, 102, 141, 144, 147, 209, 210 AND 211

GROUP 1 NEW WESTMINSTER DISTRICT PLAN BCP45523

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

