**AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL**
NUMBER 0550-CEAHMA
Issue Date: September 19, 2022

St. Marys Cement Inc. (Canada)
410 Bowmanville Avenue, Bowmanville
Clarington, Ontario
L1C 3K3

**Site Location:** St. Marys Cement (Canada) Inc.
410 Bowmanville Avenue, Bowmanville
Clarington Municipality, Regional Municipality of Durham
L1C 7B5

*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:*

# Description Section

A cement manufacturing facility, consisting of the following processes and support units:

- Quarry operations - limestone extraction, processing and shipping;
- Raw material delivery, storage, processing and transfers;
- Conventional Fuels processing, storage and handling;
- Alternative Low-Carbon Fuels processing, storage and handling;
- Clinker production- Cement Kiln operations;
- Clinker storage and transfer; and
- Cement production including ball mills, cement storage and shipping;

including the Equipment and any other ancillary and support processes and activities, operating at a Facility Production Limit of up to a **clinker production rate of 2.4 million tonnes per year,** discharging to the air as described in the Original ESDM Report.

*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. "Acceptable Point of Impingement Concentration" means a concentration accepted by the Ministry as not likely to cause an adverse effect for a Compound of Concern that,
    a. is not identified in the ACB list, or
    b. is identified in the ACB list as belonging to the category “Benchmark 2” and has a concentration at a Point of Impingement that exceeds the concentration set out for the contaminant in that document.
    With respect to the Original ESDM Report, the Acceptable Point of Impingement Concentration for a Compound of Concern mentioned above is the concentration set out in the Original ESDM Report;
3. "Acoustic Assessment Report" means the report, prepared in accordance with Publication NPC-233 and Appendix A of the Basic Comprehensive User Guide, by Corey Kinart, P.Eng. / HGC Engineering, dated September 29, 2020, submitted in support of the application, that documents all sources of noise emissions and Noise Control Measures present at the Facility, as updated in accordance with Condition 5 of this Approval;
4. "Acoustic Assessment Summary Table" means a table prepared in accordance with the Basic Comprehensive User Guide summarising the results of the Acoustic Assessment Report, as updated in accordance with Condition 5 of this Approval;
5. "Agricultural Waste" has the same meaning as defined in O. Reg. 347;
6. "Alternative Low-Carbon Fuels" means a fuel as defined in O. Reg. 79/15 and includes the material approved under Condition 7 of this Approval;
7. "Approval" means this entire Environmental Compliance Approval and any Schedules to it;
8. "Basic Comprehensive User Guide" means the Ministry document titled "Basic Comprehensive Certificates of Approval (Air) User Guide" dated March 2011, as amended;
9. "Best Management Practices Plan" means the document titled "St. Marys Cement Inc., Cement Plant Operations - Bowmanville Site, Best Management Practices Plan for the Control of Fugitive Dust Emissions" Revision 7, dated February, 2020, as amended;
10. "CAEAL" means the Canadian Association for Environmental Analytical Laboratories;
11. "Carbon Dioxide Emission Intensity" has the same meaning as defined under O.

Reg. 79/15;

12. "Cement Kiln" means the cement kiln and the calciner, using Conventional Fuels, Alternative Low-Carbon Fuels, hydrogen and oxygen generated from an Electrolysis System, and Fuel Adjunct Material, described in the ESDM Report, this Approval, and in the supporting documentation referred to herein;
13. "CEM System" means the continuous monitoring and recording system used to measure the emissions from the Cement Kiln stack;
14. "CPM System" means the continuous monitoring and recording system used to measure the operational parameters of the Cement Kiln;
15. "Company" means St. Marys Cement Inc. (Canada) that is responsible for the construction or operation of the Facility and includes any successors and assigns in accordance with section 19 of the EPA;
16. "Compound of Concern" means a contaminant described in paragraph 4 subsection 26 (1) of O. Reg. 419/05, namely, a contaminant that is discharged from the Facility in an amount that is not negligible;
17. "Conventional Fuels" means solid fuels including petroleum coke and coal for regular firing and also includes diesel, propane and natural gas for preheating during start-up;
18. "Description Section" means the section on page one of this Approval describing the Company's operations and the Equipment located at the Facility and specifying the Facility Production Limit for the Facility;
19. "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;
20. "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Facility is geographically located;
21. "Electrolysis System" means the Ultimate Cell Continuous Combustion (UC3) system described in the Original ESDM Report, or an equivalent system, where up to 30 normal cubic meters per hour of hydrogen and up to 15 normal cubic meters per hour of oxygen are generated and introduced each into the fuel injection ports of the cement kiln and the calciner.
22. "Emission Summary Table" means a table described in paragraph 14 of subsection 26 (1) of O. Reg. 419/05;
23. "Environmental Assessment Act" means the Environmental Assessment Act, R.S.O. 1990, c.E.18;
24. "EPA" means the Environmental Protection Act, R.S.O. 1990, c.E.19;
25. "Equipment" means equipment or processes described in the ESDM Report, this

Approval and in the Schedules referred to herein and any other equipment or processes;

26. "Equipment with Specific Operational Limits" means the Cement Kiln (except the fuel feed system feeding Alternative Low-Carbon Fuels and Conventional Fuels to the Cement Kiln), and any other Equipment related to the thermal oxidation of waste or waste derived fuels, fume incinerators or any other Equipment that is specifically referenced in any published Ministry document that outlines specific operational guidance that must be considered by the Director in issuing an Approval;
27. "ESDM Report" means the most current Emission Summary and Dispersion Modelling Report that describes the Facility. The ESDM Report is based on the Original ESDM Report and is updated after the issuance of this Approval in accordance with section 26 of O. Reg. 419/05 and the Procedure Document;
28. "Facility" means the entire operation located on the property where the Equipment is located;
29. "Facility Production Limit" means the production limit placed by the Director on the main product(s) or raw materials used by the Facility;
30. "Fuel Adjunct Materials" means solid fuel, wholly used at the Facility, as supplementary fuels to coal and petroleum coke for firing the Cement Kiln, such as but not limited to carbon dust, metallurgical coke and carbon black, but which does not include Alternative Low-Carbon Fuels;
31. "Industrial By-Product Materials" means industrial by-product materials such as but not limited to iron slag from smelting industry, fly ash from coal fired generating plants, ash from waste water treatment plants and foundry sand used in casting processes, wholly used at the Facility as substitute raw material sources of calcium oxide, silica, iron oxide and alumina required for the ongoing cement manufacturing process and which do not serve as fuel for the Cement Kiln;
32. "Log" means a document that contains a record of each change that is required to be made to the ESDM Report and Acoustic Assessment Report, including the date on which the change occurred. For example, a record would have to be made of a more accurate emission rate for a source of contaminant, more accurate meteorological data, a more accurate value of a parameter that is related to a source of contaminant, a change to a Point of Impingement and all changes to information associated with a Modification to the Facility that satisfies Condition 2;
33. "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;

34. "Minister" means the Minister of the Environment, Conservation and Parks or such other member of the Executive Council as may be assigned the administration of the EPA under the Executive Council Act;
35. "Ministry" means the ministry of the Minister;
36. "Modification" means any construction, alteration, extension or replacement of any plant, structure, equipment, apparatus, mechanism or thing, or alteration of a process or rate of production at the Facility that may discharge or alter the rate or manner of discharge of a Compound of Concern to the air or discharge or alter noise or vibration emissions from the Facility;
37. "Noise Control Measures" means measures to reduce the noise emissions from the Facility and/or Equipment including, but not limited to, silencers, acoustic louvres, enclosures, absorptive treatment, plenums and barriers;
38. "O. Reg. 79/15" means Ontario Regulation 79/15: Alternative Low-Carbon Fuels; as amended;
39. “O. Reg. 347” means Ontario Regulation 347: General – Waste Management; as amended;
40. "O. Reg. 419/05" means Ontario Regulation 419/05: Air Pollution – Local Air Quality; as amended;
41. "Original ESDM Report" means the Emission Summary and Dispersion Modelling Report which was prepared in accordance with section 26 of O. Reg. 419/05 and the Procedure Document by BCX Environmental Consulting and dated February 18, 2021 submitted in support of the application, and includes any changes to the report made up to the date of issuance of this Approval;
42. "Point of Impingement" has the same meaning as in section 2 of O. Reg. 419/05;
43. "Point of Reception" means Point of Reception as defined by Publication NPC-300;
44. "Pre-Test Plan" means a plan for the Source Testing including the information required in Section 5 of the Source Testing Code;
45. "Procedure Document" means Ministry guidance document titled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated March 2018, as amended;
46. "Processes with Significant Environmental Aspects" means the Equipment which, during regular operation, would discharge one or more contaminants into the air in an amount which is not considered as negligible in accordance with section 26 (1) 4 of O. Reg. 419/05 and the Procedure Document;

47. "Publication NPC-207" means the Ministry draft technical publication "Impulse Vibration in Residential Buildings", November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, published by the Ministry, August 1978, as amended;
48. "Publication NPC-233" means the Ministry Publication NPC-233, "Information to be Submitted for Approval of Stationary Sources of Sound", October, 1995, as amended;
49. "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;
50. "Report EPS1/PG/7" means means the document published by Environment Canada entitled “Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation";
51. "Schedules" means the following schedules attached to this Approval and forming part of this Approval namely:
    Schedule A - Supporting Documentation
    Schedule B - Performance Requirements - In-Stack Emission Limits
    Schedule C - Process Dust Control Equipment Operational Requirements
    Schedule D - Material Analysis Contaminants
    Schedule E - Alternative Low-Carbon Fuels Operational Requirements
    Schedule F - Procedure for Source Testing
    Schedule G - Test Sources and Test Contaminants - Source Testing
52. "Source Testing" means sampling and testing to measure emissions resulting from operating the test sources under conditions which yield the worst case emissions within the approved operating range of the test sources which satisfies paragraph 1 of subsection 11(1) of O. Reg. 419/05;
53. "Source Testing Code" means the Ontario Source Testing Code, dated June 2010, prepared by the Ministry, as amended;
54. "Toxicologist" means a qualified professional currently active in the field of risk assessment and toxicology that has a combination of formal university education, training and experience necessary to assess contaminants;
55. "Woodwaste" has the same meaning as defined in O. Reg 347; and
56. "Written Summary Form" means the electronic questionnaire form, available on the Ministry website, and supporting documentation, that documents the activities undertaken at the Facility in the previous calendar year.

*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. **GENERAL**
    1. Except as otherwise provided by this Approval, the Facility shall be designed, developed, built, operated and maintained in accordance with the terms and conditions of this Approval and in accordance with the following Schedules attached hereto:
        - Schedule A - Supporting Documentation
        - Schedule B - Performance Requirements - In-Stack Emission Limits
        - Schedule C - Process Dust Control Equipment Operational Requirements
        - Schedule D - Material Analysis Contaminants
        - Schedule E - Alternative Low-Carbon Fuels Operational Requirements
        - Schedule F - Procedure for Source Testing
        - Schedule G - Test Sources and Test Contaminants - Source Testing
    2. The use of Alternative Low-Carbon Fuels is approved at the Facility under the requirements of O. Reg. 79/15, and pursuant to Section 3 of O. Reg. 79/15, section 27 of the EPA does not apply to the Facility.
2. **LIMITED OPERATIONAL FLEXIBILITY**
    1. Pursuant to section 20.6 (1) of the EPA and subject to Conditions 2.2 and 2.3 of this Approval, future construction, alterations, extensions or replacements are approved in this Approval if the future construction, alterations, extensions or replacements are Modifications to the Facility that:
        a. are within the scope of the operations of the Facility as described in the Description Section of this Approval;
        b. do not result in an increase of the Facility Production Limit above the level specified in the Description Section of this Approval;
        c. result in compliance with the performance limits as specified in Condition 4.
    2. Condition 2.1 does not apply to,
        a. the addition of any new Equipment with Specific Operational Limits or to the Modification of any existing Equipment with Specific Operational Limits at the Facility;
        b. alteration of the Alternative Low-Carbon Fuels and the increase in the quantity of Alternative Low-Carbon Fuels specified in Condition 7 of this Approval; and

c. modification to the Facility that would be subject to the Environmental Assessment Act.

3. Condition 2.1 of this Approval shall expire on March 31, 2031, unless this Approval is revoked prior to the expiry date. The Company may apply for renewal of Condition 2.1 of this Approval by including an ESDM Report and an Acoustic Assessment Report that describes the Facility as of the date of the renewal application.

3. **REQUIREMENT TO REQUEST AN ACCEPTABLE POINT OF IMPINGEMENT CONCENTRATION**

1. Prior to making a Modification to the Facility that satisfies Condition 2.1.a. and 2.1.b., the Company shall prepare a proposed update to the ESDM Report to reflect the proposed Modification.
2. The Company shall request approval of an Acceptable Point of Impingement Concentration for a Compound of Concern if the Compound of Concern is not identified in the ACB list as belonging to the category "Benchmark 1" and a proposed update to an ESDM Report indicates that one of the following changes with respect to the concentration of the Compound of Concern may occur:
   a. The Compound of Concern was not a Compound of Concern in the previous version of the ESDM Report and
      i. the concentration of the Compound of Concern exceeds the concentration set out for the contaminant in the ACB list; or
      ii. the Compound of Concern is not identified in the ACB list; or
   b. The concentration of the Compound of Concern in the updated ESDM Report exceeds the higher of,
      i. the most recent Acceptable Point of Impingement Concentration, and
      ii. the concentration set out for the contaminant in the ACB list,if the contaminant is identified in that document.
3. The request required by Condition 3.2 shall propose a concentration for the Compound of Concern and shall contain an assessment, performed by a Toxicologist, of the likelihood of the proposed concentration causing an adverse effect at Points of Impingement.
4. If the request required by Condition 3.2 is a result of a proposed Modification described in Condition 3.1, the Company shall submit the request, in writing, to the Director at least 30 days prior to commencing to make the Modification. The Director shall provide written confirmation of receipt of this request to

the Company.

5. If a request is required to be made under Condition 3.2 in respect of a proposed Modification described in Condition 3.1, the Company shall not make the Modification mentioned in Condition 3.1 unless the request is approved in writing by the Director.
6. If the Director notifies the Company in writing that the Director does not approve the request, the Company shall,
    a. revise and resubmit the request; or
    b. notify the Director that it will not be making the Modification.
7. The re-submission mentioned in Condition 3.6 shall be deemed a new submission under Condition 3.2.
8. If the Director approves the request, the Company shall update the ESDM Report to reflect the Modification.
9. Condition 3 does not apply if Condition 2.1 has expired.

4. **PERFORMANCE LIMITS**
    1. Subject to Condition 4.2, the Company shall not discharge or cause or permit the discharge of a Compound of Concern into the air if,
        a. the Compound of Concern is identified in the ACB list as belonging to the category "Benchmark 1" and the discharge results in the concentration at a Point of Impingement exceeding the Benchmark 1 concentration; or
        b. the Compound of Concern is not identified in the ACB list as belonging to the category "Benchmark 1" and the discharge results in the concentration at a Point of Impingement exceeding the higher of,
            i. if an Acceptable Point of Impingement Concentration exists, the most recent Acceptable Point of Impingement Concentration, and
            ii. the concentration set out for the contaminant in the ACB list, if the contaminant is identified in that document.
    2. Condition 4.1 does not apply if the benchmark set out in the ACB list has a 10-minute averaging period and no ambient monitor indicates an exceedance at a Point of Impingement where human activities regularly occur at a time when those activities regularly occur.
    3. The Company shall, at all times, ensure that the noise emissions from the Facility comply with the limits set out in Ministry Publication NPC-300.
    4. The Company shall, at all times, ensure that the vibration emissions from the Facility comply with the limits set out in Ministry Publication NPC-207.

5. The Company shall operate any Equipment with Specific Operational Limits approved by this Approval in accordance with the Original ESDM Report.
6. The Company shall ensure that at all times when Alternative Low-Carbon Fuels are co-fired with Conventional Fuels in the Cement Kiln, the discharge from the Cement Kiln complies with the performance requirements specified in **Schedule B** of this Approval.

5. **DOCUMENTATION REQUIREMENTS**
    1. The Company shall maintain an up-to-date Log.
    2. No later than June 30 in each year, the Company shall update the Acoustic Assessment Report and shall update the ESDM Report in accordance with section 26 of O. Reg. 419/05 so that the information in the reports is accurate as of December 31 in the previous year.
    3. The Company shall make the Emission Summary Table (see section 27 of O. Reg. 419/05) and Acoustic Assessment Summary Table available for examination by any person, without charge, by posting it on a Company website and by making it available during regular business hours at the Facility.
    4. The Company shall, within three (3) months after the expiry of Condition 2.1 of this Approval, update the ESDM Report and the Acoustic Assessment Report such that the information in the reports is accurate as of the date that Condition 2.1 of this Approval expired.
    5. Conditions 5.1 and 5.2 do not apply if Condition 2.1 has expired.

6. **REPORTING REQUIREMENTS**
    1. Subject to Condition 6.2, the Company shall provide the Director no later than June 30 of each year, a Written Summary Form to be submitted through the Ministry's website that shall include the following:
        a. a declaration of whether the Facility was in compliance with section 9 of the EPA, O. Reg. 419/05 and the conditions of this Approval;
        b. a summary of each Modification satisfying Condition 2.1.a. and 2.1.b. that took place in the previous calendar year that resulted in a change in the previously calculated concentration at a Point of Impingement for any Compound of Concern or resulted in a change in the sound levels reported in the Acoustic Assessment Summary Table at any Point of Reception.
    2. Condition 6.1 does not apply if Condition 2.1 has expired.

7. **APPROVED ALTERNATIVE LOW-CARBON FUELS**

1. The following Alternative Low-Carbon Fuels are approved for use as a fuel in the Cement Kiln at the Facility:
    a. Material that is biomass fuel derived from harvested plant and forest sources, end of life agricultural sources, Woodwaste or Agricultural Waste, and includes but is not limited to sawdust, wood chips, wood, miscanthus grass, millet, sorghum, hemp, switch grass, and maize;
    b. Material that is comprised of non-recyclable plastics, including but not limited to manufacturing rejects, material resource recovery facility rejects, plastics bags and packaging;
    c. Material that is comprised of construction, renovation & demolition waste, including but not limited to scrap wood, treated lumber, carpets, textiles, sawdust, floor laminates and asphalt shingles; and
    d. Material that is comprised of non-recyclable paper fiber/wood/plastic composites, including but not limited to single-serve coffee pods, printed papers, paper towels, rejects and trimmings from paper recycling facilities such as ragger tails (residue including plastic trimmings, staples, paper fibre and metal wire), end rolls and cores.
2. Notwithstanding Condition 7.1 of this Approval, the Company shall ensure that the Alternative Low-Carbon Fuels are not derived from or composed of any material set out in Schedule 1 of O. Reg. 79/15.
3. The combined amount of Alternative Low-Carbon Fuels approved under Condition 7.1 of this Approval, subjected to thermal processing in the Cement Kiln shall not exceed 400 tonnes per day.

8. **OPERATION AND MAINTENANCE**
    1. The Company shall prepare and implement, not later than three (3) months from the date of this Approval, operating procedures and maintenance programs for all Processes with Significant Environmental Aspects, which shall specify as a minimum:
        a. frequency of inspections and scheduled preventative maintenance;
        b. procedures to prevent upset conditions;
        c. procedures to minimize all fugitive emissions;
        d. procedures to prevent and/or minimize odorous emissions;
        e. procedures to prevent and/or minimize noise emissions;
        f. procedures for record keeping activities relating to the operation and maintenance programs;
        g. acceptable range of the static pressure drop for the process dust control

equipment listed in **Schedule C** of this Approval;

h. program to monitor and record the pressure differential across each of the primary dust collectors as specified in **Schedule C** of this Approval and any other applicable primary dust control equipment, including the frequency of measurement and procedures to investigate and correct the cause of any anomalous measurements of the static pressure drop;

i. list of management and supervisory personnel responsible for the operation and maintenance of process dust control equipment specified in **Schedule C** of this Approval and any other applicable process dust control equipment.

2. The Company shall maintain and update to keep current, a list of all process dust control equipment, including the following details:
Source identification; Production building/area served; Process/location served; Stack gas flow rate; Filter area; Stack diameter and Stack height above grade.

3. The Company shall ensure that all Processes with Significant Environmental Aspects are operated and maintained in accordance with this Approval, the operating procedures and maintenance programs.

4. The Company shall prepare, update as necessary and implement, not later than three (3) months from the date of this Approval, procedures for the handling, processing and combustion in the Cement Kiln of Alternative Low-Carbon Fuels, including but not limited to:
    a. operating and maintenance procedures in accordance with good engineering practices and as recommended by the equipment suppliers;
    b. start-up, shut-down and emergency measures;
    c. procedures for handling, storage, maintenance and conveyance of Alternative Low-Carbon Fuels and the inspection of such facilities in accordance with the requirements set out in O. Reg. 79/15;
    d. procedures for record keeping activities, including but not limited to the record keeping requirements for Alternative Low-Carbon Fuels facility inspection, and Alternative Low-Carbon Fuels use and transport, in accordance with the requirements set out in O. Reg. 79/15;

5. The Company shall ensure that the Facility/Equipment is properly designed and operated at all times while firing Alternative Low-Carbon Fuels and comply with the operational requirements set out in **Schedule E** of this Approval.

6. Alternative Low-Carbon Fuels shall be fired in accordance with the operating

procedures and shall only be fired once the Cement Kiln has achieved normal operation, temperatures and production and shall be introduced directly into the Cement Kiln to maintain the requirements set out in **Schedule E** of this Approval**.**

7. The introduction of Alternative Low-Carbon Fuels in the Cement Kiln shall be stopped (following appropriate procedures) if:
    a. the temperature, residual oxygen or pressure as measured by the CPM System do not meet the operational requirements outlined in **Schedule E** of this Approval for more than four (4) consecutive hours; or
    b. the CPM System for one or more of the parameters specified in condition 8.7 (a) are down or malfunctioning for more than four (4) consecutive hours.

8. The Company shall comply with the following Alternative Low-Carbon Fuels storage requirements:
    a. the Alternative Low-Carbon Fuels shall be stored indoors or in enclosed containers, and the storage location shall be secure;
    b. the maximum amount of Alternative Low-Carbon Fuels stored and the maximum time periods for which the Alternative Low-Carbon Fuels can be stored shall be in accordance with the requirements set out in O. Reg. 79/15; and
    c. the Alternative Low-Carbon Fuels stored shall be combusted in the Cement Kiln.

9. The Company shall record the following data during Cement Kiln operation:
    a. daily combined raw feed in the Cement Kiln in tonnes per day;
    b. daily Alternative Low-Carbon Fuels fired in the Cement Kiln in tonnes per day, recorded separately for the kiln and the calciner, for each category of Alternative Low-Carbon Fuels approved under condition 7 of this Approval;
    c. daily Conventional Fuels fired in the Cement Kiln in tonnes per day, recorded separately for the kiln and the calciner;
    d. hours of operation of each of the Electrolysis System units in hours per day and the amount of hydrogen and oxygen produced by each of the Electrolysis System units and introduced in the cement kiln and calciner in normal cubic meters per hour.
    e. daily Fuel Adjunct Material and Industrial By-Product Material in tonnes per day used in the Cement Kiln;

f. daily clinker production in tonnes per day;

g. records of any incidents specified in Condition 8.7 of this Approval, and

h. any start-up, shut-down and malfunction incidents.

9. **MATERIAL ANALYSIS AND CRITERIA FOR ACCEPTANCE - ALTERNATIVE LOW-CARBON FUELS, INDUSTRIAL BY-PRODUCT AND FUEL ADJUNCT MATERIAL**

1. The Company shall ensure that a material analysis program and criteria for acceptance for Alternative Low-Carbon Fuels is implemented as follows:

a. A protocol for Alternative Low-Carbon Fuels vendor screening, sampling and analysis shall be immediately implemented in accordance with the document "Alternative Low-Carbon Fuels Handling Procedures and Testing Manual, St. Marys Cement Inc. (Canada)- Bowmanville Cement Plant, Version 1.0- March 5, 2021 revision, as amended. At a minimum, the Alternative Low-Carbon Fuels analysis parameters shall comply with the criteria specified in Table 1 and Table 2 of this document. Any change in the criteria specified in Table 1 and Table 2 shall be finalized in consultation with the District Manager.

b. If the analysis results of the Alternative Low-Carbon Fuels indicate that the emission rates of contaminants from the Cement Kiln are higher than the maximum emission rates identified in the maximum emission scenario outlined in the ESDM Report, the Company shall update the ESDM Report with the emission rates derived from this analysis in accordance with he document "Alternative Low-Carbon Fuels Handling Procedures and Testing Manual, St. Marys Cement Inc. (Canada)- Bowmanville Cement Plant, Version 1.0- March 5 2021, as amended.

2. The Company shall ensure that a material analysis program to measure and record the concentration of contaminants for Industrial By-Product Material and Fuel Adjunct Material is implemented as follows:

a. For each material used as Fuel Adjunct Materials, the Company shall obtain a metals/metal hydrides scan, including at a minimum the contaminants listed in **Schedule D** on a quarterly or Lot basis, as applicable. The Company shall ensure that the standard sampling methods outlined in the document "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, Ontario Ministry of the Environment and Energy, Standards Development Branch, December, 1996" are used, and that the samples are submitted to a CAEAL certified laboratory for analysis.

b. For each material used as Industrial By-Product Materials, the Company

shall obtain a metals/metal hydrides scan, including at a minimum the contaminants listed in **Schedule D**, on a quarterly or Lot basis, as applicable. The Company shall ensure that the standard sampling methods outlined in the document "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, Ontario Ministry of the Environment and Energy, Standards Development Branch, December, 1996" are used, and that the samples are submitted to a CAEAL certified laboratory for analysis.

c. At any time, should the Company either independently or through other sources reasonably expect other metal/metal hydrides not outlined under **Schedule D** to be present in any material at greater than the trace concentrations, the Company shall obtain the appropriate analysis forthwith.

d. Upon receipt of the analysis, the Company shall ensure that the Point of Impingement concentrations of metal/metal hydrides do not exceed the respective performance limits based on the maximum emissions scenario outlined in the ESDM Report.

e. The Company shall limit the accumulation of Industrial By-Product Materials and other raw materials in exterior storage piles to amounts which may reasonably be expected to be necessary for use in the cement manufacturing processes.

f. The Company shall ensure that any Industrial By-Product Material stored at the Facility which the Company determines cannot be utilized in ongoing cement manufacturing processes, is managed in accordance with applicable waste management regulations, and, where an Industrial By-Product Material becomes unusable, the Company shall advise the District Manager in writing, of the type and quantity of such material, the reasons why it cannot be used and the specific manner in which the material is to be managed as a waste.

10. **CONTINUOUS MONITORING**

1. **Continuous Emissions Monitoring in the Kiln Stack**

a. The Company shall ensure that the CEM System continuously monitors the following parameters in the exhaust gas stream from the Cement Kiln stack:

i. Nitrogen Oxides

ii. Sulphur Dioxide

iii. Total Particulate Matter

b. The CEM System for nitrogen oxides and sulphur dioxide shall be installed, operated, maintained and quality assurance conducted and reported in accordance with the requirements set out in Report EPS1/PG/7. The CEM System for total particulate matter shall follow the guidance on design and quality assurance outlined in the document USEPA 40CFR60 Performance Specification 11, and the guidance on the ongoing operation and maintenance on the particulate matter CEM System outlined in the document USEPA Procedure 2: Quality Assurance Requirements for Particulate Matter Continuous Emission Monitoring Systems at Stationary Sources, as amended. The annual Relative Accuracy Test Audit (RATA) report, including the required production data during the testing shall be submitted to the Manager and District Manager by June 30 of each year, for the previous calendar year. The quarterly cylinder gas audit reports shall be made available to the Ministry upon request.

2. **Continuous Monitoring of Process Conditions**
   a. The Company shall install, operate and maintain a CPM System to continuously monitor:
      i. the concentration of residual oxygen and carbon monoxide in the backend of the kiln and calciner down comer duct;
      ii. the temperatures of gases leaving the kiln at the K5 cyclone upstream of the kiln, where the gas temperature reaches a minimum of 800 degree Celsius, which corresponds to a kiln gas outlet temperature of a minimum of 1,000 degree Celsius for a period of not less than 6 seconds;
      iii. the temperatures of gases leaving the calciner at a point where the gas temperature reaches a minimum of 850 degree Celsius for not less than 3 seconds; and
      iv. Total Hydrocarbon (as methane) in the gases leaving the Cement Kiln stack.

   b. The CPM System specified in condition 10.2.a shall be designed, operated and maintained in accordance with an approved continuous monitoring plan, complete with specifications based on manufacturer's specifications and manuals. In this regard, the continuous monitoring plan shall be revised to assure proper calibration, maintenance and operation of the CPM System, in order to establish its performance on a continuous basis. The revised continuous monitoring plan shall be provided to the Manager for approval within three (3) months of the date of issuance of this Approval.

3. **Continuous Monitoring Documentation**
    a. The Company shall prepare monthly reports by the end of the following month, including the data monitored during the preceding month by the CEM System and CPM System, summarizing the following as a minimum:
        i. the daily minimum, maximum and average readings for the parameters specified in condition 10 of this Approval;
        ii. the percent availability of the CEM System and CPM System for the parameters specified in condition 10 of this Approval on a monthly basis; and
        iii. daily operational status (on/off) of the raw mill and the fuel mill.
    b. After one (1) month of the date of commencement of operation of the Electrolysis System, the Company shall prepare monthly reports by the end of the following month, including the data monitored during the preceding month, for the following parameters as a minimum:
        i. the hourly average readings for the parameters specified in conditions 10.1, 10.2 and 8.9.d of this Approval, maintained electronically in a spreadsheet format;
        ii. the parameters specified in conditions 8.9.a, 8.9.b, 8.9.c, 8.9.e and 8.9.f of this Approval.
    c. The Company shall retain the monthly reports included in Conditions 10.3.a and 10.3.b of this Approval at the Facility, and when requested provide these to the District Manager and the Manager within 15 days of the date of the request.
    d. The District Manager may relax the frequency and/or scope of the reports required under Condition 10.3 of this Approval, if the data is observed to be within the performance requirements of this Approval on a consistent basis.
    e. The Company shall establish the normal operating concentration range for total hydrocarbon for baseline conditions (operating conditions which include the use of Conventional Fuel, Fuel Adjunct Materials and Industrial By-Product Materials in the Cement Kiln) based on CPM System data. The Company shall, at a minimum on a quarterly basis, review the CPM System data and identify and investigate any anomalous total hydrocarbon concentrations when using Alternative Low-Carbon Fuels. An investigations report shall be prepared and retained on site.

f. The Company shall retain on site, all raw data generated by the CEM System and CPM System for a minimum of five (5) years from the date of their creation.

11. **SOURCE TESTING**

1. The Company shall perform Source Testing in accordance with the procedure in **Schedule F** to determine the rate of emission of the test contaminants from the sources specified in **Schedule G**. Source Testing shall be conducted not later than twelve (12) months from the date of commencement of operation of the Alternative Low-Carbon Fuels feed equipment which permits expanding the use of higher quantity of Alternative Low-Carbon Fuels up to 400 tonnes per day, or within a time frame as directed or agreed to in writing by the District Manager.
2. The Company shall notify the District Manager in writing of the details of the installed equipment, date of installation and date of commencement of operation of the Alternative Low-Carbon Fuels feed equipment which permits expanding the use of higher quantity of Alternative Low-Carbon Fuels up to 400 tonnes per day within two (2) weeks of the installation and the commencement of operation.
3. In addition to Source Testing required under Conditions 11.1 of this Approval, Source Testing shall be repeated once every calendar year in accordance with the procedure in **Schedule F** to determine the rate of emission of the test contaminants from the sources specified in **Schedule G**. Annual Source Testing is not required to be conducted in the year in which Source Testing required under Condition 11.1 was conducted.
4. The Source Testing required under Conditions 11.1 and 11.3 of this Approval shall include, as a minimum, the rates of emissions of the test contaminants from the Cement Kiln stack, when the Cement Kiln is co-fired with Conventional Fuels and Alternative Low-Carbon Fuels, at an Alternative Low-Carbon Fuels maximum approved firing rate of 400 tonnes per day, or at a firing rate agreed to in writing by the Manager, subject to the condition that operational checks of the Cement Kiln are accepted by the Company. The Alternative Low-Carbon Fuels used during the Source Testing shall contain a representative blend of the Alternative Low-Carbon Fuels approved under Condition 7 of this Approval, with considerations of the market availability of Alternative Low-Carbon Fuels types and quantities at the time of Source Testing. The blend (s) of Alternative Low-Carbon Fuels and quantity proposed to be used for the Source Testing shall be submitted along with the Pre-Test Plan to the Manager and the Director for approval, along with the details regarding the process for selection of the Alternative Low-Carbon

Fuels blend (s) and quantity for Source Testing.

5. The Company shall perform Source Testing in accordance with the procedure in **Schedule F** to determine the rate of emission of the test contaminants from the sources specified in **Schedule G** during the regular operation of the Electrolysis System. Source Testing shall be conducted not later than (6) six months from the date of commencement of operation of the Electrolysis System and shall be conducted while Conventional Fuels and Alternative Low-Carbon Fuels are used as required for Source Testing in condition 11.4 of this Approval.
6. The Company shall notify the District Manager in writing of the date of installation and the date of commencement of operation of the Electrolysis System within two (2) weeks of the installation and the commencement of operation.
7. The District Manager may relax the frequency and/or scope of the annual Source Testing required under Condition 11.3 of this Approval, if the results of the annual Source Testing program indicate that the emissions and Point of Impingement concentrations of Compounds of Concern are consistently recorded as insignificant when substituting a portion of Conventional Fuels with Alternative Low-Carbon Fuels.

12. **CARBON DIOXIDE EMISSION INTENSITY TESTING**
    1. The Company shall perform Carbon-Dioxide Emission Intensity testing of the representative samples of the Alternative Low-Carbon Fuels and Conventional Fuels at all times when Source Testing is carried out under Condition 11 of this Approval. Representative samples of the Alternative Low-Carbon Fuels and Conventional Fuels used during the Source Testing events shall be used for performing Carbon-Dioxide Emission Intensity testing. The Carbon-Dioxide Emission Intensity testing shall be carried out in accordance with the requirements set out in O. Reg. 79/15.
    2. The Company shall prepare a Carbon-Dioxide Emission Intensity report in respect of the Alternative Low-Carbon Fuels combusted at the site, in accordance with the requirements set out in O. Reg. 79/15, that includes a statement that the Carbon-Dioxide Emission Intensity of the Alternative Low-carbon Fuels are less than the Carbon Dioxide Emission Intensity of the Conventional Fuels in the place of which the Alternative Low-Carbon Fuels are proposed to be combusted.
    3. The Company shall submit the Carbon-Dioxide Emission Intensity report along with the Source Testing report to the District Manager.

13. **FUGITIVE EMISSIONS CONTROL**

1. The Company shall update as necessary and implement the Best Management Practices Plan for the control of fugitive dust emissions.
2. The Company shall:
    a. review and evaluate the Best Management Practices Plan on an annual basis;
    b. record the results of each annual review and update as required the Best Management Practices Plan within two (2) months of the completion of the annual review;
    c. maintain the updated Best Management Practices Plan at the Facility;
    d. implement, at all times, the most recent version of the Best Management Practices Plan.
3. The Company shall record and retain such records, each time a specific preventative and control measure described in the Best Management Practices Plans is implemented. The Company shall record, as a minimum:
    a. the date when each emission control measure is implemented, including a description of the control measure;
    b. the date when each new preventative measure or operating procedure to minimize emissions is implemented, including a description of the preventative measure or operating procedure; and
    c. the date, time of commencement, and time of completion of each periodic activity conducted to minimize emissions, including a description of the preventative measure/procedure and the name of the individual performing the periodic activity.

14. **COMPLAINTS RECORDING AND REPORTING**
    1. If at any time, the Company receives an environmental complaint from the public regarding the operation of the Equipment approved by this Approval, the Company shall take the following steps:
        a. Record and number each complaint, either electronically or in a log book. The record shall include the following information: the time and date of the complaint and incident to which the complaint relates, the nature of the complaint, wind direction at the time and date of the incident to which the complaint relates and, if known, the address of the complainant.
        b. Notify the District Manager of the complaint within two (2) business days after the complaint is received, or in a manner acceptable to the District Manager.

c. Initiate appropriate steps to determine all possible causes of the complaint, and take the necessary actions to appropriately deal with the cause of the subject matter of the complaint attributable to the operations of the Facility.

d. Complete and retain on-site a report written within five (5) business days of the complaint date. The report shall list the actions taken to appropriately deal with the cause of the complaint and set out steps to be taken to avoid the recurrence of similar incidents.

15. **RECORD KEEPING REQUIREMENTS**

1. Any information requested by any employee in or agent of the Ministry concerning the Facility and its operation under this Approval, including, but not limited to, any records required to be kept by this Approval, shall be provided to the employee in or agent of the Ministry, upon request**,** in a timely manner.
2. Unless otherwise specified in this Approval, the Company shall retain, for a minimum of five (5) years from the date of their creation all reports, records and information described in this Approval, including,
   a. a copy of the Original ESDM Report and each updated version;
   b. a copy of each version of the Acoustic Assessment Report;
   c. supporting information used in the emission rate calculations performed in the ESDM Reports and Acoustic Assessment Reports;
   d. the records in the Log;
   e. copies of each Written Summary Form provided to the Ministry under Condition 6.1 of this Approval;
   f. records of maintenance, repair and inspection of Equipment related to all Processes with Significant Environmental Aspects;
   g. records related to environmental complaints made by the public, as required under conditions on "Complaints Recording and Reporting" of this Approval.
   h. records related to Source Testing events, as required under conditions on "Source Testing" of this Approval;
   i. records related to the operation of the CEM System and CPM System, as required under conditions on “Continuous Monitoring” of this Approval;
   j. records related to the preventative and control measures implemented, as required under conditions on "Fugitive Emissions Control" of this

Approval;

k. records related to sampling and analysis, as required under conditions on "Material Analysis and Criteria of Acceptance - Alternative Low-Carbon Fuels, Industrial By-Product and Fuel Adjunct Material" and "Operation and Maintenance" of this Approval; and

l. records related to Carbon Dioxide Emission Intensity testing, as required under conditions on "Carbon Dioxide Emission Intensity Testing" of this Approval.

16. **COMPLIANCE REPORTING**

1. The Company shall prepare and submit by June 30 of each year to the District Manager, an Annual Report summarizing the operation of the Facility, covering the previous calendar year. The Annual Report shall include, as a minimum, the following information:

a. a statement of whether the Facility was in compliance with this Approval, including compliance with the Performance Limits;

b. the Emission Summary Table and Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;

c. clinker and cement production in tonnes per year;

d. maximum daily feed rate and average daily feed rate of Alternative Low-Carbon Fuels and Conventional Fuels in the Cement Kiln for each month of the preceding calendar year, and the weight percentage of each category of Alternative Low-Carbon Fuels approved under Condition 7 of this Approval, of the total monthly Alternative Low-Carbon Fuel used.

e. maximum and average percent thermal replacement of Conventional Fuels by combined Alternative Low-Carbon Fuels for each month;

f. a summary of data from CEM System, CPM System, Source Testing and Carbon Dioxide Emission Intensity testing described under conditions 10.3(a), 11 and 12 of this Approval, and a description of the status of compliance with the Performance Limits, Alternative Low-Carbon Fuel definition under this Approval and Alternative Low-Carbon Fuels operational requirements described in **Schedule E** of this Approval;

g. a summary of dates, duration and reasons for any operational events including but not limited to events described in condition 8.7 of this Approval that may have negatively impacted the quality of the

environment and corrective measures taken to address these impacts;

h. details of environmental complaints including a summary of complaints received, causes of complaints and action taken to avoid the recurrence of similar incidents, as described in condition 14 of this Approval.

2. The Company shall make the Annual Report available for examination by any person by posting it on a Company website and making it available without charge during regular business hours at the Facility, immediately after it is submitted to the Ministry.

17. **REVOCATION OF PREVIOUS APPROVALS**
    1. This Approval replaces and revokes all Certificates of Approval (Air) issued under section 9 EPA and Environmental Compliance Approvals issued under Part II.1 EPA to the Facility in regards to the activities mentioned in subsection 9(1) of the EPA and dated prior to the date of this Approval.

# SCHEDULE A

**Supporting Documentation**

1. Environmental Compliance Approval amendment application, dated August 11, 2021, signed by Ruben Plaza and submitted by the Company;
2. Updated Emission Summary and Dispersion Modelling Report, prepared by BCX Environmental Consulting and dated August 11, 2021;
3. Additional information on the UC3 system provided by BCX Environmental Consulting dated February 18, 2022 and April 21, 2022;
4. Environmental Compliance Approval Application, dated March 26, 2020, signed by Ruben Plaza and submitted by the Company;
5. Emission Summary and Dispersion Modelling Report, prepared by BCX Environmental Consulting and dated February 18, 2021;
6. Carbon Dioxide Emission Intensity Report, Votorantim Cimentos North America - Prepared by Golder Associates Ltd., January 2020;
7. Air Quality Study and Cumulative Effects Assessment in Support of an Application under Alternative Low-Carbon Fuels regulation (O. Reg 79/15), St. Marys Cement Inc. (Canada), Bowmanville Facility - Prepared by BCX Environmental Consulting, January 2020;
8. Alternative Low Carbon Fuel Use at St. Marys Cement Bowmanville Plant - Consultation Report - Prepared by Golder Associates Ltd., March 2020;
9. Alternative Low Carbon Fuel Handling Procedures and Testing Manual- St. Marys

Cement Inc. (Canada) - Bowmanville Cement Plant, Version 1.0, revised on March 5, 2021;

10. Alternative Fuel Demonstration Project, Summary Waste Report, St. Marys Cement Inc. (Canada), Bowmanville Cement Plant- ECA 1255-7QVJ2N, Condition 53, Prepared by HDR Consultants, May 2019;
11. Alternative Fuel Demonstration Project, Summary Report, St. Marys Cement Inc. (Canada), Bowmanville Cement Plant- ECA 4614-826K9W - Prepared by BCX Environmental Consulting, May 2019;
12. Additional air emissions and AERMOD dispersion modelling related information provided by BCX Environmental Consulting dated November 27, 2020 and February 11, 2021;
13. Final CALMET files provided by BCX Environmental Consulting on February 20, 2021 for CALPUFF Air Dispersion Modelling;
14. Tiered Approach for Merging Modelling Results - prepared by BCX Environmental Consulting for post-processing of AERMOD and CALPUFF dispersion modelling results and attached as Appendix K of Emission Summary and Dispersion Modelling Report dated February 18, 2021; and
15. Acoustic Assessment Report, prepared by HGC Engineering, dated September 29, 2020 and signed by Corey Kinart, P.Eng.

# SCHEDULE B

# PERFORMANCE REQUIREMENTS - IN-STACK EMISSION LIMITS

| Parameter | Cement Kiln Stack Emission Limit | Verification of Compliance |
|---|---|---|
| Particulate Matter (PM) | 50 mg/Rm$^3$ | Results from compliance source testing |
| Cadmium (Cd) | 7 µg/Rm3 | Results from compliance source testing |
| Lead (Pb) | 60 µg/Rm3 | Results from compliance source testing |

| | | |
|---|---|---|
| Mercury (Hg) | 20 µg/Rm3 | Results from compliance source testing |
| Dioxins and Furans | 80 pg/$Rm^3$ as ITEQ | Results from compliance source testing; results expressed as I-TEQ. |
| Hydrochloric Acid (HCl) | 27 mg/$Rm^3$ | Results from compliance source testing |

**Notes:**

- R : Reference flue gas conditions, defined as follows:
  - Temperature 25 °C
  - Pressure 101.3 kPa
  - Oxygen content 11%
  - Water content nil (dry conditions)
- mg/Rm3 : milligrams per cubic metre of gas at Reference conditions.
- µg/Rm3 : micrograms per cubic metre of gas at Reference conditions.
- pg/Rm3 : picograms per cubic metre of gas at Reference conditions.
- I-TEQ : a toxicity equivalent concentration calculated using the toxic equivalency factors (I-TEFs) derived for each dioxin and furan congener by comparing its toxicity to the toxicity of 2,3,7,8 tetrachloro dibenzo-p-dioxin, recommended by the World Health Organization (WHO) dioxin toxicity equivalence factors (TEFs) in 2005, and adopted by Ontario in April 2012.

# SCHEDULE C

## PROCESS DUST EQUIPMENT OPERATIONAL REQUIREMENTS

### Primary Dust Control Equipment

Primary dust control equipment includes the Cement Kiln Baghouse; Bypass Baghouse, Fuel Mill Baghouse; Cooler Baghouse, Finish Mill Baghouses.

The static pressure drop across the primary dust control equipment filter bag compartments shall be measured and recorded continuously by the Facility’s automated control system.

### Secondary Dust Control Equipment

Secondary dust control equipment includes all other fabric filter dust collectors which are not primary dust control equipment.

The static pressure drop across the secondary dust control equipment filter bag compartments shall be measured and recorded at least quarterly.

Where applicable, the static pressure drop must be referenced to the value recorded during previous testing.  In the absence of previous testing values, the parameter must be referenced to the value or normal range representing normal operation, recorded as soon as possible.

# SCHEDULE D

# MATERIAL ANALYSIS CONTAMINANTS

1. Antimony
2. Arsenic
3. Barium
4. Beryllium
5. Cadmium
6. Chromium
7. Cobalt
8. Iron
9. Lead
10. Manganese
11. Mercury
12. Nickel
13. Selenium
14. Silver
15. Tin
16. Vanadium
17. Total Halogens

# SCHEDULE E

# ALTERNATIVE LOW-CARBON FUELS OPERATIONAL

# REQUIREMENTS

| Parameter | Limits | Measurement |
|---|---|---|
| Total Quantity of Alternative Low-Carbon Fuels combusted in the Cement Kiln. | 400 tonnes per day | Measured continuously and summed daily. |
| Temperature in the Cement Kiln | Greater than 1000 Deg. C at a gas residence time of more than 6 seconds in the kiln.<br><br>Greater than 850 Deg. C at a gas residence time of more than 3 seconds in the calciner. | As demonstrated by the CPM System measuring the temperature of the gases at the K5 cyclone upstream of the kiln where the gas temperature reaches a minimum of 800 Deg C.<br>As demonstrated by the CPM System<br>Calculated as a rolling 1-hour arithmetic average measured by the CPM System. |
| Residual oxygen | >1% residual oxygen at the backend (raw material feed end) of the kiln.<br><br>>3% residual oxygen at the calciner down comer duct (raw material feed end of the calciner) | Measured by the CPM System and calculated by volume on a dry basis in the undiluted gases leaving the kiln and calciner.<br>Calculated as a rolling 1-hour arithmetic average measured by the CPM System. |
| Pressure Control | Kiln, Calciner, Preheater tower and Raw Mill must be operated under negative pressure at all times. | Measured at the top of the preheater towers and in Raw Mill by continuous monitor. |
| Start-Up, Shut-down and Upset Operating Conditions | No Alternative Low-Carbon Fuels shall be used. | - |

# SCHEDULE F

# PROCEDURE FOR SOURCE TESTING

1. The Company shall submit, not later than three (3) months prior to the Source Testing required under Conditions 11.1 and 11.5 of this Approval, a Pre-Test Plan for

the Source Testing required under this Approval to the Manager and the Director. In addition to the required information, the Pre-Test plan shall also include applicable information on the following. The Company shall finalize the Pre-Test Plan in consultation with the Manager and the Director:

2. the blend (s) of Alternative Low-Carbon Fuels and quantity proposed to be used for the Source Testing along with details regarding the process for selection of the Alternative Low-Carbon Fuels blend (s) and quantity for Source Testing.

3. operational details of the Electrolysis System.

4. The Company shall not commence the Source Testing until the Manager has accepted the Pre-Test Plan.

5. For subsequent Source Testing under Condition 11.3 of this Approval:

6. The Company shall submit either a written notification of intent to use a previously approved Pre-Test Plan (with version reference if there were more than one (1) previously approved Pre-Test Plan), or a new Pre-Test Plan, to the Manager and Director not later than three (3) months of the planned date of the Source Testing for approval. The written notification or the new Pre-Test Plan shall also include information on the blend (s) of Alternative Low-Carbon Fuel and the quantity proposed to be used for the Source Testing, along with details regarding the process for selection of the blend (s) for Source Testing for its finalization in consultation with the Manager and the Director.

7. If the Company submitted a written notification of intent to use a previously approved Pre-Test Plan, the Manager may either accept the use of a previously approved Pre-Test Plan, or request the submission of a new Pre-Test Plan for approval. The Company shall submit the requested new Pre-Test Plan within two (2) months after the Manager requested the submission.

8. The Company shall complete the subsequent Source Testing no later than three (3) months after the Manager has either agreed with the written notification or approved the new Pre-Test Plan.

9. The Company shall notify the District Manager, the Manager and the Director 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.

10. The Company shall submit a report (hardcopy and electronic format) on the Source Testing to the Manager and the District Manager not later than four (4) months after completing the Source Testing, or not later than a time frame agreed in writing with the

Manager. The report shall be in the format described in the Source Testing Code, and shall also include, but not be limited to:

11. an executive summary;

12. results of Source Testing, including the emission rate, emission concentration and relevant emission factor of the Test Contaminants;

13. records of operating conditions at the time of Source Testing and other information including but not limited to:

a. an executive summary
b. a summary of records specified in condition 8.9 of this Approval and records of operating conditions at the time of Source Testing, including but not limited to:
    i. Clinker production rate in tonnes/hour
    ii. Conventional Fuels fired in the Cement Kiln in tonnes/hour
    iii. Each category of the Alternative Low-Carbon Fuels described in condition 7.1 of the Approval fired in the Cement Kiln in tonnes/day;
    iv. Fuel Adjunct Material and Industrial By-Product Material input into the Cement Kiln in tonnes/day;
    v. Operating condition of Electrolysis System units including hours of operation, amount of hydrogen and oxygen produced by each of the units and introduced in the Cement Kiln in normal cubic meters per hour.
c. any other records that may affect the Source Testing results.

14. A summary of all records of the CEM System and CPM System for the parameters specified in Condition 10 of this Approval at the time of Source Testing;

15. A summary table that compares the Source Testing results to the emission estimates described in the Company's application, the ESDM Report and the Performance Limits;

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

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

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

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

20. 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 strategies 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.

21. If the Source Testing results are higher than the emission estimates in the Company's ESDM Report, the Company shall update their ESDM Report in accordance with Section 26 of O. Reg. 419/05 with the results from 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.

22. The Company shall ensure that the above mentioned Source Testing report is made available and easily accessible for review by the public at the Facility immediately after the document is submitted to the Ministry.

# SCHEDULE G

### TEST CONTAMINANTS AND SOURCES

### TEST SOURCES: Cement Kiln Stack

### TEST CONTAMINANTS

- Total Suspended Particulate Matter
- Hydrogen Chloride
- Ammonia
- Carbon Monoxide

**List of Metals:**

- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Copper
- Lead

- Mercury
- Manganese
- Molybdenum
- Nickel
- Selenium
- Silver
- Thallium
- Vanadium
- Zinc

# SCHEDULE G

| Volatile Organic Matter | List of Polycyclic Organic Matter |
|---|---|
| • Acetaldehyde<br>• Acetone<br>• Acrolein<br>• Benzene<br>• Bromodichloromethane<br>• Bromoform<br>• Bromomethane<br>• Butadiene, 1,3 -<br>• Butanone, 2 -<br>• Carbon Tetrachloride<br>• Chloroform<br>• Cumene<br>• Dibromochloromethane<br>• Dichlorodifluoromethane<br>• Dichloroethane, 1,2 -<br>• Dichloroethene, Trans - 1,2<br>• Dichloroethene, 1,1 -<br>• Dichloropropane, 1,2 -<br>• Ethylbenzene<br>• Ethylene Dibromide<br>• Mesitylene<br>• Methanol | • Acenaphthylene<br>• Acenaphthene<br>• Anthracene<br>• Benzo(a)anthracene<br>• Benzo(b)fluoranthene<br>• Benzo(k)fluoranthene<br>• Benzo(a)fluorene<br>• Benzo(b)fluorene<br>• Benzo(ghi)perylene<br>• Benzo(a)pyrene<br>• Benzo(e)pyrene<br>• 2-Chloronaphthalene<br>• Chrysene<br>• Coronene<br>• Dibenzo(a,c)anthracene<br>• 9,10-Dimethylanthracene<br>• 7,12-Dimethylbenzo(a)anthracene<br>• Fluoranthene<br>• Fluorene<br>• Indeno(1,2,3-cd)pyrene<br>• 2-Methylanthracene<br>• 3-Methylcholanthrene |

| | |
|---|---|
| • Methylene Chloride<br>• Phenol<br>• Propionaldehyde<br>• Styrene<br>• Tetrachloroethene<br>• Toluene<br>• Trichloroethane, 1,1,1 -<br>• Trichloroethene<br>• Trichloroethylene, 1,1,2 -<br>• Trichlorotrifluoroethane<br>• Trichlorofluoromethane<br>• Xylenes, M-, P- and O<br>• Vinyl Chloride | • 1-Methylnaphthalene<br>• 2-Methylnaphthalene<br>• 1-Methylphenanthrene<br>• 9-Methylphenanthrene<br>• Naphthalene<br>• Perylene<br>• Phenanthrene<br>• Picene<br>• Pyrene<br>• Tetralin<br>• Triphenylene |

# SCHEDULE G

**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 (TEQ). 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 isomers and their TEFs can be found in the Ministry publication titled “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.

| 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 |

# SCHEDULE G

| No. | Dioxins, Furans, and Dioxin-like PCBs | CASRN | WHO $_{2005}$ Toxic Equivalency Factors [TEFs] |
|---|---|---|---|
| 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 |

# SCHEDULE G

**NOTE:**

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 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. **GENERAL**
   Condition No. 1 is included to require the Approval holder to build, operate and maintain the Facility in accordance with the Supporting Documentation in Schedule A considered by the Director in issuing this Approval.
2. **LIMITED OPERATIONAL FLEXIBILITY, REQUIREMENT TO REQUEST AN ACCEPTABLE POINT OF IMPINGEMENT CONCENTRATION AND PERFORMANCE LIMITS**
   Conditions No. 2, 3 and 4 are included to limit and define the Modifications permitted by this Approval, and to set out the circumstances in which the Company shall request approval of an Acceptable Point of Impingement Concentration prior to making Modifications. The holder of the Approval is approved for operational flexibility for the Facility that is consistent with the description of the operations included with the application up to the Facility Production Limit. In return for the operational flexibility, the Approval places performance based limits that cannot be exceeded under the terms of this Approval. Approval holders will still have to obtain other relevant approvals required to operate the Facility, including requirements under other environmental legislation such as the Environmental Assessment Act.
3. **DOCUMENTATION REQUIREMENTS**
   Condition No. 5 is included to require the Company to maintain ongoing documentation that demonstrates compliance with the performance limits as specified in Condition 4 of this Approval and allows the Ministry to monitor on-going compliance with these performance limits. The Company is required to have an up to date ESDM Report and Acoustic Assessment Report that describe the Facility at all times and make the Emission Summary Table and Acoustic Assessment Summary Table from these reports available to the public on an ongoing basis in order to maintain public communication with regard to the emissions from the Facility.

4. **REPORTING REQUIREMENTS**
   Condition No. 6 is included to require the Company to provide a yearly Written Summary Form to the Ministry, to assist the Ministry with the review of the site's compliance with the EPA, the regulations and this Approval.
5. **APPROVED ALTERNATIVE LOW-CARBON FUELS**
   Condition No. 7 is included to define Alternative Low-Carbon Fuels in this Approval.
6. **OPERATION AND MAINTENANCE**
   Condition No. 8 is included to require the Company to properly operate and maintain the Processes with Significant Environmental Aspects to minimize the impact to the environment from these processes.
7. **MONITORING AND TESTING**
   Condition Nos. 9, 10, 11 and 12 are included to require the Company to gather and retain accurate information so that compliance with the EPA, O. Reg. 419/05, O. Reg. 79/15 and this Approval may be verified.
8. **FUGITIVE EMISSIONS CONTROL**
   Condition No. 13 is included to emphasize that the Equipment and Facility must be maintained and operated in accordance with a procedure that will result in compliance with the EPA, Regulation 419/05 and this Approval and to require the Company to keep records and to provide information to staff of the Ministry so that compliance with the EPA, Regulation 419/05 and this Approval may be verified.
9. **COMPLAINTS RECORDING AND REPORTING PROCEDURE**
   Condition No. 14 is included to require the Company to respond to any environmental complaints regarding the operation of the Equipment, according to a procedure that includes methods for preventing recurrence of similar incidents and a requirement to prepare and retain a written report.
10. **RECORD KEEPING REQUIREMENTS**
    Condition No. 15 is included to require the Company to retain all documentation related to this Approval and provide access to employees in or agents of the Ministry, upon request, so that the Ministry can determine if a more detailed review of compliance with the Performance Limits as specified in Condition 4 of this Approval is necessary.
11. **COMPLIANCE REPORTING**
    Condition No. 16 is included to require the Company to provide an Annual Report to the Ministry and the public, to assist the Ministry with the review of the site's compliance with the EPA, the regulations and this Approval and to ensure that the public has access to information on the environmental impacts of the Facility.
12. **REVOCATION OF PREVIOUS APPROVALS**
    Condition No. 17 is included to identify that this Approval replaces all Section 9

Certificate(s) of Approval and Part II.1 Approvals in regards to the activities mentioned in subsection 9(1) of the EPA and dated prior to the date of this Approval.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 6729-BYRJEP issued on March 31, 2021**

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me, the Ontario Land Tribunal and in accordance with Section 47 of the *Environmental Bill of Rights,* 1993, the Minister of the Environment, Conservation and Parks, within 15 days after receipt of this notice, require a hearing by the Tribunal. The Minister of the Environment, Conservation and Parks will place notice of your appeal on the Environmental Registry. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall 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.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

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
OLT.Registrar@ontario.ca

and

The Minister of the Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto, Ontario
M7A 2J3

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

This instrument is subject to Section 38 of the *Environmental Bill of Rights,* 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at https://ero.ontario.ca/, you can determine when the leave to appeal period ends.

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

DATED AT TORONTO this 19th day of September, 2022

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

SA/
c: District Manager, MECP York-Durham
Xiaoxi (Winnie) Song, BCX Environmental Consulting