St. Marys Cement Inc. (Canada)
Bowmanville Facility

Annual Compliance Report 2023
(ECA No. 0550-CEAHMA)

Site Location:

410 Bowmanville Avenue
Bowmanville, Ontario
L1C 7B5

June 2024

INTRODUCTION

This annual compliance report has been prepared by St. Marys Cement Inc. (Canada) (SMC) in accordance with Condition 16.1 of their Environmental Compliance Approval (ECA No.0550-CEAHMA, dated September 19, 2022) for their cement plant located at 410 Bowmanville Avenue in Bowmanville, Ontario (Bowmanville Facility) for the 2023 calendar year.

Condition 16.1 of the ECA states that:

Excerpt from the ECA

"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) and (b), 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."*

This report has been divided into eight separate sections (Sections A to H) to address Conditions 16.1 a) through h), respectively, as described above.

SECTION A

This Section addresses Condition 16.1a) of the ECA described as below:

"Statement of whether the Facility was in compliance with this Approval, including compliance with the Performance Limits."

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June 30,2024

Ministry of the Environment, Conservations and Parks
Director, Client Services and Permissions Branch
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

Re: Statement of Facility Operations with Performance Limits
Environmental Compliance Approval with Limited Operational Flexibility
(ECA Number 550-CEAHMA)

This is to confirm that St Marys Cement Inc. (Canada) Bowmanville Cement Plant, located at 410 Bowmanville Avenue in Bowmanville, Ontario, during the 2023 calendar year, operated in material compliance with Section 9 of the Environmental Protection Act and with the conditions of our Environmental Compliance Approval (ECA) with Limited Operational Flexibility (LOF) including performance limits set forth in condition 4 of the ECA with exception of the following

- Exceedance of the URT and B1 of SO_2 1-Hr; and
- Exceedance of B1 of NOx 1-Hr and 24 Hr.
-

The facility is currently working with the MECP on NOx and SO_2 abatements plans

Regards

Ruben Plaza
Environmental Manager

As per discussions with Ontario Ministry of the Environment, Conservation and Parks (MECP) on May 8 and 7, 2024, St. Marys Cement Inc. (Canada)'s Bowmanville Facility has been requested to update their air modelling approach to:

- consider shoreline fumigation hours when determining compliance with Ontario Regulation 419/05 applying MECP's guidance document; and
- use a 5-year site-specific meteorological data set to be provided by MECP.

The Emission Summary and Dispersion Modelling Report (ESDM) will be updated upon receipt of MECP's guidance document and the meteorological data set.

A copy of the Condition 16.1a Letter, Condition 16.1b Emission Summary Table and Condition 16.1f letter will be provided once the ESDM update is complete.

SECTION B

This Section addresses Condition 16.1b) of the ECA described as below:

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

As per discussions with Ontario Ministry of the Environment, Conservation and Parks (MECP) on May 8 and 7, 2024, St. Marys Cement Inc. (Canada)'s Bowmanville Facility has been requested to update their air modelling approach to:

- consider shoreline fumigation hours when determining compliance with Ontario Regulation 419/05 applying MECP's guidance document; and

- use a 5-year site-specific meteorological data set to be provided by MECP.

The Emission Summary and Dispersion Modelling Report (ESDM) will be updated upon receipt of MECP's guidance document and the meteorological data set.

A copy of the Condition 16.1a Letter, Condition 16.1b Emission Summary Table and Condition 16.1f letter will be provided once the ESDM update is complete.

St. Marys Cement Inc. (Canada) Bowmanville Cement Plant

Table A1: Acoustic Assessment Summary Table, Non-Emergency Equipment

Point of Reception	Point of Reception Description	Sound Level at Point of Reception, L_{EQ} [dBA]	Performance Limit, L_{EQ} [dBA]	Compliance with Performance Limit	Acoustical Classification Area	Verified by Acoustic Audit
R1	Two storey home approx. 1450 m southeast of cement plant	42	45	Yes	Class 2	No
R3	Non-conforming single storey home approx. 350 m north of cement plant	50	50	Yes	Class 1	No
VL1	Vacant residential lot approx. 1490 m southeast of cement plant	41	45	Yes	Class 2	No

Table 2: Acoustic Assessment Summary Table, Emergency Equipment

Point of Reception	Point of Reception Description	Sound Level at Point of Reception, L_{EQ} [dBA]	Performance Limit, L_{EQ} [dBA]	Compliance with Performance Limit	Acoustical Classification Area	Verified by Acoustic Audit
R1	Two storey home approx. 1450 m southeast of cement plant	16	50	Yes	Class 2	No
R3	Non-conforming single storey home approx. 350 m north of cement plant	31	55	Yes	Class 1	No
VL1	Vacant residential lot approx. 1490 m southeast of cement plant	21	50	Yes	Class 2	No

SECTION C

This Section addresses Condition 16.1c) of the ECA described as below:

“Clinker and cement production in tonnes per year”.

SECTION D

This Section addresses Condition 16.1d) of the ECA described as below:

"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."

CEMView by Nexus Solutions Inc.

St. Mary's Cement
410 Bowmanville Ave, Bowmanville, ON, L1C 7B5

Annual Report Condition 16.1d

	Condition 7 ALCFs Weight Percentage of Total ALCF for Month							
	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	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, end rolls and cores.	**Conventional Fuel**		**ALCF**	
2023 Month					**Maximum Daily Feed Rate (tonnes)**	**Average Daily Feed Rate (tonnes)**	**Maximum Daily Feed Rate (tonnes)**	**Average Daily Feed Rate (tonnes)**
Jan	96%	4%	0%	0%	640	436	124	34
Feb	100%	0%	0%	0%	590	286	42	6
Mar	99%	1%	0%	0%	168	0[(1)]	0	0
Apr	79%	21%	0%	0%	1327	166	0	0
May	85%	15%	0%	0%	1136	460	238	92
Jun	92%	8%	0%	0%	590	375	98	17
Jul	88%	12%	0%	0%	812	343	92	11
Aug	99%	1%	0%	0%	628	512	125	39
Sep	100%	0%	0%	0%	606	524	136	22
Oct	92%	8%	0%	0%	1587	522	152	43
Nov	95%	5%	0%	0%	661	410	1	0
Dec	95%	5%	0%	0%	666	393	14[(2)]	1[(2)]

Note:

(1) Value reported as zero. The monthly end adjustment completed during a full plant shut down resulted in a negative average for March.

(2) Equipment repair and recommissioning for the ALCF feed system took place in December 2023. ALCF consumption was related to returning equipment to full operation status.

SECTION E

This Section addresses Condition 16.1e) of the ECA described as below:

“Maximum and average percent thermal replacement of Conventional Fuels by combined Alternative Low-Carbon Fuels for each month.”

St. Mary's Cement
410 Bowmanville Ave, Bowmanville, ON, L1C 7B5

Annual Report Condition 16.1e

Thermal Replacement of Conventional e. Fuels by Combined Alternative Low-Carbon Fuels (%)												
2024	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Avg. %	9%	1%	0%	0%	13%	4%	1%	4%	4%	6%	0%	0%
Max. %	26%	7%	0%	0%	32%	59%	9%	14%	30%	21%	0%	1%
Min. %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Equipment repair and recommissioning for the ALCF feed system took place in December 2023. ALCF consumption was related to returning equipment to full operation status.

SECTION F

This Section addresses Condition 16.1f) of the ECA described as below:

"A summary of data from CEM System, CPM System, Source Testing and Carbon Dioxide Emission Intensity testing described under conditions 10.3(a) and (b), 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."

A summary of data from CEM System, CPM System, Source Testing and Carbon Dioxide Emission Intensity testing described under conditions 10.3(a) and (b), 11 and 12 of the ECA is enclosed.

As per discussions with Ontario Ministry of the Environment, Conservation and Parks (MECP) on May 8 and 7, 2024, St. Marys Cement Inc. (Canada)'s Bowmanville Facility has been requested to update their air modelling approach to:

- consider shoreline fumigation hours when determining compliance with Ontario Regulation 419/05 applying MECP's guidance document; and

- use a 5-year site-specific meteorological data set to be provided by MECP.

The Emission Summary and Dispersion Modelling Report (ESDM) will be updated upon receipt of MECP's guidance document and the meteorological data set.

A copy of the Condition 16.1a Letter, Condition 16.1b Emission Summary Table and Condition 16.1f letter will be provided once the ESDM update is complete.

CEM Data Summary

CEMView
by Nexus Solutions Inc.

St. Mary's Cement
410 Bowmanville Ave, Bowmanville, ON, L1C 7B5

Annual Report Condition 16.1F-Summary of CEM Data

2023	TPM @ 11% O2, Daily				NOx, Daily				SO2, Daily			
	Average	Minimum	Maximum	Availability	Average	Minimum	Maximum	Availability	Average	Minimum	Maximum	Availability
	mg/Nm³			%	ppmv			%	ppmv			%
January	42	16	93	99	139	83	352	100	221	2	354	100
February	18	10	52	96	275	111	405	99	60	5	173	99
March	16	15	17	100	132	46	262	100	43	5	148	100
April	14	10	20	100	104	1	174	100	58	0	166	100
May	21	11	49	93	155	40	294	96	25	4	80	96
June	47	24	86	83	132	24	346	94	54	2	203	95
July	32	15	61	92	100	3	217	94	46	2	164	94
August	21	12	32	8	93	57	131	8	25	25	25	8
September	36	21	56	87	101	8	155	95	28	0	72	95
October	49	20	109	92	117	38	154	95	61	9	267	95
November	56	16	92	93	126	5	177	96	12	0	30	96
December	41	11	131	97	124	68	177	98	10	3	54	98

Note:
Due to a company wide server incident, CEM direct feed data was compromised in August 2023. The analyzer data had a direct feed into the Operational Control system (PI). Given the PI system data source was direct from the analyzer, it was considered reliable and representative. As such it was used to backfill the CEM data. Data availability after backfilling is 100% for August.

CPM Data Summary

CEMView
by Nexus Solutions Inc.

St. Mary's Cement
410 Bowmanville Ave, Bowmanville, ON, L1C 7B5

Annual Report Condition 16.1F-Summary of CPM Data

2023	Residual O2, Backend of Kiln				Residual O2, Calciner Downcomer Duct				CO, Backend of Kiln				CO, Calciner Downcomer Duct			
	Average	Minimum	Maximum	Availability	Average	Minimum	Maximum	Availability	Average	Minimum	Maximum	Availability	Average	Minimum	Maximum	Availability
	%			%	%			%	ppm			%	ppm			%
January	13	4	21	100	4	2	6	100	2.38E-05	0.00E00	2.90E-05	100	923	449	1773	100
February	6	1	19	100	8	5	12	100	1.65E-05	0.00E00	2.90E-05	100	545	388	1017	100
March	1	1	1	99	5	3	6	100	2.00E-05	2.00E-05	2.00E-05	99	688	641	720	100
April	15	1	21	100	9	5	20	100	2.54E-05	2.00E-05	2.90E-05	100	468	32	687	100
May	11	6	21	100	4	3	5	100	2.90E-05	2.90E-05	2.90E-05	100	650	513	831	100
June	11	3	22	100	4	3	7	100	2.72E-05	2.00E-05	2.90E-05	100	817	655	1089	100
July	16	4	22	100	5	3	7	100	2.22E-05	2.00E-05	2.90E-05	100	783	561	1516	100
August	11	4	21	100	4	0	20	100	1.72E-03	1.95E-05	5.00E-01	100	919	475	1444	100
September	5	3	14	100	4	0	23	100	2.61E-04	2.56E-04	2.64E-04	100	763	390	892	100
October	10	4	20	100	3	3	4	100	2.94E-04	2.90E-05	6.45E-04	100	971	343	1277	78
November	12	4	21	100	4	1	10	100	2.90E-05	2.90E-05	2.90E-05	100				0 (2)
December	12	3	21	100	4	4	4	92	2.90E-05	2.90E-05	2.90E-05	100				0 (2)

2023	Temperature, K5				Temperature, C5				THC			
	Average	Minimum	Maximum	Availability	Average	Minimum	Maximum	Availability	Average	Minimum	Maximum	Availability
	°C			%	°C			%	ppmv			%
January	800	582	826	100	892	877	895	100	112	13	155	100
February	813	751	829	100	891	866	897	100	51	5	115	100
March	715	471	827	99	888	880	894	100	18	8	26	100
April	672	69	820	100	894	892	895	100	65	8	114	100
May	803	613	824	100	893	890	895	100	101	24	136	100
June	785	477	824	100	894	883	895	100	90	11	143	98
July	720	63	827	100	894	888	895	100	73	4	120	99
August	807	787	824	100	906	858	912	100	131	60	174	100
September	809	762	824	100	896	680	915	100	108	55	153	100
October	805	531	824	100	893	891	895	100	119	34	159	95
November	781	275	820	100	895	890	895	100	101	3	137	99
December	804	749	822	100	894	893	895	100	105	49	141	99

(1) Equipment repair and recommissioning for the ALCF feed system took place in December 2023. Minimal ALCF consumption was related to returning equipment to full operation status.

(2) Analyzer failure.

Compliance Source Testing Data Summary

REPORT

ST MARYS CEMENT INC. (CANADA)

BOWMANVILLE, ONTARIO

2022 COMPLIANCE SOURCE TESTING PROGRAM
ECA #0550-CEAHMA

RWDI #2300516

January 23, 2024

SUBMITTED TO

Ministry of the Environment, and Climate Change
Technology Standards Section
6th Floor
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Table 1 - Sampling Parameters and Methods

Main Stack

Source Location	No. of Tests	Sampling Parameter	Sampling Method
Main Stack	6	Velocity, Temperature and Flow Rate	OSTC [1] Methods 1-4
	3	Particulate Matter	OSTC [1] Method 5
	3	Metals	U.S. EPA [2] Method 29
	3	SVOC's, Dioxins and Furans	Environment Canada Method RM/2
	3	Acrolein and Aldehydes	CARB[3] Method 430 (modified)
	3	HCl, Ammonia and Chlorine	U.S. EPA[2] Method 26A (isokinetic)
	3	Methanol & Phenol	NCASI[4] Method 98.01
	3	Volatile Organic Matter	U.S. EPA[2] SW 846 0030 VOST
	3	Oxygen	US EPA[2] Method 3A
	3	Carbon Dioxide	US EPA[2] Method 3A
	3	Carbon Monoxide	US EPA[2] Method 10

Notes:

[1] OSTC - Ontario Source Testing Code - Version 3

[2] U.S. EPA - United States Environmental Protection Agency

[3] CARB - California Air Resources Board

[4] NCASI - National Council for Air and Stream Improvement

Table 2: Sampling Summary and Sample Log

Main Stack

Source and Test #	Sampling Date	Start Time	End Time	Filter ID / Trap ID	Lab Sample ID
Velocity / Metals / Mercury					
Test #1	31-May-23	1:32 PM	7:21 PM	23050442	WBF083
Test #2	05-Jun-23	2:05 PM	6:51 PM	23050449	WBF084
Test #3	08-Jun-23	11:52 AM	4:00 PM	23050444	WBF086
Velocity / Dioxins and Furans					
Test #1	31-May-23	1:32 PM	7:21 PM	Trap 5	WBC568
Test #2	05-Jun-23	2:05 PM	6:51 PM	Trap 1	WBC569
Test #3	08-Jun-23	11:52 AM	4:00 PM	Trap 4	WBC570
Methanol and Phenol					
Test #1	31-May-23	2:07 PM	3:07 PM	-	231141-45465
Test #2	05-Jun-23	2:06 PM	3:06 PM	-	231141-45466
Test #3	08-Jun-23	11:55 AM	12:55 PM	-	231141-45467
Acrolein					
Test #1	31-May-23	4:57 PM	7:19 PM	-	WBC283
Test #2	05-Jun-23	4:20 PM	6:20 PM	-	WBC284
Test #3	08-Jun-23	3:05 PM	5:05 PM	-	WBC285
HCl and Ammonia					
Test #1	22-Aug-23	10:07 AM	12:44 PM	-	WUD604/WUD664
Test #2	22-Aug-23	2:07 PM	5:18 PM	-	WUD650/WUD665
Test #3	23-Aug-23	11:51 AM	4:18 PM	-	WUD652/WUD666
VOST					
Test #1	05-Jun-23	4:12 PM	5:12 PM	Pair #4	N/A
Test #2	08-Jun-23	12:57 PM	1:57 PM	Pair #3	WBE986
Test #3	08-Jun-23	2:00 PM	3:00 PM	Pair #5	WBE987/WBL472

Table 3: Sampling Summary - Flow Characteristics

Main Stack

Stack Gas Parameter		Test No. 1			Test No. 2			Test No. 3			TOTAL AVERAGE
		Metals	D and F [1]	Average	Metals	D and F [1]	Average	Metals	D and F [1]	Average	Average
Testing Date											-
Stack Temperature	°F	113	114	113	112	112	112	112	113	113	**113**
	°C	45	45	45	44	45	44	45	45	45	**45**
Moisture	%	10.3%	10.20%	10.26%	9.83%	9.55%	9.69%	10.3%	10.02%	10.14%	**10.03%**
Velocity	ft/s	54.7	55.3	55.0	52.5	56.5	54.5	55.3	59.0	57.2	**55.6**
	m/s	16.7	16.9	16.8	16.0	17.2	16.6	16.9	18.0	17.4	**16.9**
Actual Flow Rate	CFM	835,742	844,441	840,092	802,267	862,004	832,135	844,719	901,332	873,025	**848,417**
Referenced Flow Rate[2]	CFM	697,565	705,335	701,450	676,841	728,905	702,873	709,307	758,873	734,090	**712,804**
	m^3/s	329	333	331	319	344	332	335	358	346	**336**
Sampling Isokinetic Rate	%	102	102	102	101	106	104	101	104	103	**103**

Notes *:*

[1] D and F = Dioxins, Furans, and Dioxin-like PCBs

[2] Referenced flow rate expressed as dry at 101.3 kPa, 25°C, and Actual Oxygen

Detailed sampling results including individual test results can be found in Appendix A and B

Table 4: PM, Metals and Mercury[1] - Averaged Results

Main Stack

Parameter	Concentration [2]	Concentration @ 11% O_2 [3]	Concentration @ 0°C, 10% O_2 [4]	Emission Rate
Particulate	**(mg/m^3)**	**(mg/m^3)**	**(mg/m^3)**	**(mg/s)**
Particulate Matter	25.1	48.7	49.1	8160
Metals	**($\mu g/m^3$)**	**($\mu g/m^3$)**	**($\mu g/m^3$)**	**(mg/s)**
Combined Train Arsenic (As)	< 0.148	< 0.288	< 0.29	< 0.0485
Combined Train Barium (Ba)	6.26	12.2	12.3	2.04
Combined Train Beryllium (Be)	< 0.0343	< 0.0665	< 0.0671	< 0.0112
Combined Train Cadmium (Cd)	0.0737	0.143	0.144	0.024
Combined Train Chromium (Cr)	2.6	5.05	5.09	0.847
Combined Train Cobalt (Co)	0.285	0.553	0.557	0.0926
Combined Train Copper (Cu)	1.55	3.01	3.03	0.504
Combined Train Lead (Pb)	1.99	3.87	3.9	0.646
Combined Train Manganese (Mn)	17.8	34.5	34.8	5.85
Combined Train Molybdenum (Mo)	1.81	3.51	3.54	0.591
Combined Train Nickel (Ni)	3.55	6.89	6.95	1.15
Combined Train Selenium (Se)	< 0.371	< 0.72	< 0.726	< 0.121
Combined Train Silver (Ag)	0.0609	0.118	0.119	0.0198
Combined Train Thallium (Tl)	0.142	0.275	0.277	0.046
Combined Train Vanadium (V)	1.25	2.42	2.44	0.405
Combined Train Zinc (Zn)	12.2	23.6	23.8	3.96
Mercury	**($\mu g/m^3$)**	**($\mu g/m^3$)**	**($\mu g/m^3$)**	**(mg/s)**
Total Mercury	< 0.504	< 0.978	< 0.986	< 0.166

Notes:

[1] Sampling followed OSTC Method 5 (PM) and U.S. EPA Method 29 (Metals)

[2] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C, actual oxygen

[3] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C, at 11% O_2

- Average of Tests 2 and 3, Test 1 was removed due to irregular operating conditions

- When laboratory analysis was below the detection limit, the Reportable Detection Limit (RDL) was used to calculate the concentration and

Detailed sampling results including individual test results can be found in Appendix A

Table 5: Dioxins and Furans - Averaged Results[1]

Main Stack

	Average Concentration [2]	Average Concentration @25°C and 11% O_2 [3]	Reg 419 Toxic Equivalency Factors		
			TEF	TEF Concentration @ 25°C and 11% O_2	TEF Emission Rate
Parameter	**(pg/m^3)**	**(pg/m^3)**		**(pg TEQ/m^3)**	**(pg/s)**
2,3,7,8-Tetra CDD *	< 0.779	< 1.51	1	< 1.51	< 267
1,2,3,7,8-Penta CDD *	< 0.676	< 1.31	1	< 1.31	< 232
1,2,3,4,7,8-Hexa CDD *	< 0.644	< 1.25	0.1	< 0.125	< 22.1
1,2,3,6,7,8-Hexa CDD *	< 0.709	< 1.38	0.1	< 0.138	< 24.3
1,2,3,7,8,9-Hexa CDD *	< 0.714	< 1.39	0.1	< 0.139	< 24.5
1,2,3,4,6,7,8-Hepta CDD *	2.33	4.52	0.01	0.0452	7.98
1,2,3,4,6,7,8,9-Octa CDD *	4.13	8.01	0.0003	0.0024	0.424
2,3,7,8-Tetra CDF **	< 3.23	< 6.27	0.1	< 0.627	< 111
1,2,3,7,8-Penta CDF **	< 0.906	< 1.76	0.03	< 0.0527	< 9.31
2,3,4,7,8-Penta CDF **	< 0.809	< 1.57	0.3	< 0.471	< 83.1
1,2,3,4,7,8-Hexa CDF **	< 1.03	< 2	0.1	< 0.2	< 35.3
1,2,3,6,7,8-Hexa CDF **	< 0.661	< 1.28	0.1	< 0.128	< 22.6
2,3,4,6,7,8-Hexa CDF **	< 0.707	< 1.37	0.1	< 0.137	< 24.2
1,2,3,7,8,9-Hexa CDF **	< 0.741	< 1.44	0.1	< 0.144	< 25.4
1,2,3,4,6,7,8-Hepta CDF **	1.15	2.23	0.01	0.0223	3.94
1,2,3,4,7,8,9-Hepta CDF **	< 0.621	< 1.21	0.01	< 0.0121	< 2.13
1,2,3,4,6,7,8,9-Octa CDF **	1.11	2.15	0.0003	0.000646	0.114
Parameter	**(ng/m^3)**	**(ng/m^3)**		**(pg TEQ/m^3)**	**(pg/s)**
33'44'-TetraCB-(77)	0.459	0.891	0.0001	0.0891	15.7
344'5-TetraCB-(81)	< 0.086	< 0.167	0.0003	< 0.0501	< 8.84
233'44'-PentaCB-(105)	1.52	2.95	0.00003	0.0885	15.6
2344'5-PentaCB-(114)	< 0.115	< 0.223	0.00003	< 0.0067	< 1.18
23'44'5-PentaCB-(118)	4.47	8.67	0.00003	0.26	45.9
23'44'5'-PentaCB-(123)	< 0.126	< 0.245	0.00003	< 0.00734	< 1.29
33'44'5-PentaCB-(126)	< 0.106	< 0.206	0.1	< 20.6	< 3630
HexaCB-(156)+(157)	0.403	0.782	0.00003	0.0235	4.14
23'44'55'-HexaCB-(167)	< 0.129	< 0.25	0.00003	< 0.00751	< 1.33
33'44'55'-HexaCB-(169)	< 0.132	< 0.256	0.03	< 7.69	< 1360
233'44'55'-HeptaCB-(189)	< 0.139	< 0.27	0.00003	< 0.00809	< 1.43
			Total Toxic Equivalency	**< 33.9**	**< 5980**

Notes:

[1] Sampling followed Environment Canada Method RM/2 (Dioxin and Furans)

[2] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C

[3] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C, at 11% O_2

Average of three tests

- When laboratory analysis was below the detection limit, the detection limit was used to calculate the concentration and emission rate.

**CCD = Chloro Dibenzo-p-Dioxin,*

***CDF = chlorodibenzo-p-furan*

****CB = chlorobenzene*

Detailed sampling results including individual test results can be found in Appendix B

Table 6 - Polycyclic Aromatic Hydrocarbons (PAH's)

Main Stack

Parameter	Concentration [1]	Concentration @ 11% O_2 [2]	Emission Rate
PAH	**(µg/m³)**	**(µg/m³)**	**(µg/s)**
1-Methylnaphthalene	36.1	70.1	12500
1-Methylphenanthrene	0.2	0.388	68.9
2-Chloronaphthalene	< 0.209	< 0.406	< 71.4
2-Methylanthracene	< 0.0338	< 0.0656	< 11.7
2-Methylnaphthalene	55.1	107	19000
3-Methylcholanthrene	< 0.0338	< 0.0656	< 11.7
7,12-Dimethylbenzo(a)anthracene	< 0.135	< 0.262	< 46.6
9,10-Dimethylanthracene	< 0.0338	< 0.0656	< 11.7
9-Methylphenanthrene	0.418	0.811	144
Acenaphthene	< 0.307	< 0.596	< 107
Acenaphthylene	< 0.327	< 0.635	< 113
Anthracene	0.0563	0.109	19.6
Benzo(a)anthracene	< 0.0338	< 0.0656	< 11.7
Benzo(a)fluorene	< 0.0338	< 0.0656	< 11.7
Benzo(a)pyrene	< 0.0338	< 0.0656	< 11.7
Benzo(b)fluoranthene	< 0.0338	< 0.0656	< 11.7
Benzo(b)fluorene	< 0.0338	< 0.0656	< 11.7
Benzo(e)pyrene	< 0.0338	< 0.0656	< 11.7
Benzo(g,h,i)perylene	< 0.0338	< 0.0656	< 11.7
Benzo(k)fluoranthene	< 0.0338	< 0.0656	< 11.7
Chrysene	< 0.0338	< 0.0656	< 11.7
Coronene	< 0.0338	< 0.0656	< 11.7
Dibenzo(a,c)anthracene	< 0.0338	< 0.0656	< 11.7
Fluoranthene	0.0404	0.0784	14
Fluorene	0.317	0.615	110
Indeno(1,2,3-cd)pyrene	< 0.0338	< 0.0656	< 11.7
Naphthalene	67.5	131	23200
Perylene	< 0.0338	< 0.0656	< 11.7
Phenanthrene	2.13	4.13	732
Picene	< 0.0338	< 0.0656	< 11.7
Pyrene	< 0.0338	< 0.0656	< 11.7
Tetralin	26	50.5	8950
Triphenylene	< 0.0338	< 0.0656	< 11.7

Notes:

[1] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C

[2] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C, at 11% O_2

Average of three tests

- When laboratory analysis was below the detection limit, the detection limit was used to calculate the

Detailed sampling results including individual test results can be found in Appendix B

Table 7: HCl, Ammonia and Chlorine - Averaged Results

Main Stack

Parameter	Concentration [1]	Concentration @ 11% O_2 [2]	Emission Rate
	(mg/m^3)	(mg/m^3)	(mg/s)
Hydrochloric Acid	2.08	4.04	738
Chlorine (Cl)	< 0.794	< 1.54	< 281
Ammonia (NH_3)	5.28	10.2	1880

Notes:

[1] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C

[2] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C, at 11% O_2

Average of three tests

Lab results for Ammonium converted to ammonia used molecular wts (17/18)

'<' indicates that the laboratory results were less than the Reportable Detection Limit (RDL). The RDL was u

Detailed sampling results including individual test results can be found in Appendix C

Table 8 - Volatile Organic Compounds

Main Stack

Parameter	Concentration [1]	Concentration @ 11% O_2 [2]	Emission Rate
	(µg/m^3)	(µg/m^3)	(mg/s)
Dichlorodifluoromethane (FREON 12)	< 48	< 93.1	< 16.2
Vinyl Chloride	< 49.3	< 95.6	< 16.6
Bromomethane	< 48	< 93.1	< 16.2
Trichlorofluoromethane (FREON 11)	< 48	< 93.1	< 16.2
Acetone (2-Propanone)	< 65.4	< 127	< 22.2
1,1-Dichloroethylene	< 48	< 93.1	< 16.2
Methylene Chloride(Dichloromethane)	< 48	< 93.1	< 16.2
trans-1,2-Dichloroethylene	< 48	< 93.1	< 16.2
Chloroform	< 48	< 93.1	< 16.2
1,2-Dichloroethane	< 48	< 93.1	< 16.2
Methyl Ethyl Ketone (2-Butanone)	< 65.1	< 126	< 22.1
1,1,1-Trichloroethane	< 48	< 93.1	< 16.2
Carbon Tetrachloride	< 48	< 93.1	< 16.2
Benzene	678	1320	229
1,2-Dichloropropane	< 48.6	< 94.3	< 16.4
Trichloroethylene	< 48	< 93.1	< 16.2
Bromodichloromethane	< 48	< 93.1	< 16.2
Dibromochloromethane	< 48	< 93.1	< 16.2
Toluene	451	874	152
Ethylene Dibromide	< 48	< 93.1	< 16.2
Tetrachloroethylene	< 48.2	< 93.6	< 16.2
Ethylbenzene	131	253	44.2
m / p-Xylene	465	902	157
Styrene	97.2	189	33
o-Xylene	200	387	67.5
Bromoform	< 48	< 93.1	< 16.2

Notes:

[1] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C

[2] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C, at 11% O_2

Average of two tests. Test 1 was ommitted from the results due the samples being saturated with hydrocarbo

'<' indicates that the laboratory results were less than the Reportable Detection Limit (RDL). The RDL was

Flow rate from isokinetic tests were used to calculate the emission rate

Detailed sampling results including individual test results can be found in Appendix D

Table 9: Aldehydes - Averaged Results

Main Stack

Parameter	Concentration [1]	Concentration @ 11% O_2 [2]	Emission Rate
	(mg/m^3)	(mg/m^3)	(mg/s)
Acetaldehyde (Ethanal)	0.995	1.93	335
Acrolein	< 0.0525	< 0.102	< 17.7
Propionaldehyde (Propanal)	0.166	0.322	55.8

Notes:

[1] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C

[2] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C, at 11% O_2

Average of three tests

When laboratory analysis was below the detection limit, the Reportable Detection Limit (RDL) was used

Flow rate from isokinetic tests were used to calculate the emission rate

Detailed sampling results including individual test results can be found in Appendix E

Table 10: Phenol and Methanol - Averaged Results

Main Stack

Parameter	Concentration [1]	Concentration @ 11% O_2 [2]	Emission Rate
	(mg/m^3)	(mg/m^3)	(mg/s)
Phenol	< 0.56	< 1.09	< 188
Methanol	< 0.56	< 1.09	< 188

Notes:

[1] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C

[2] Referenced concentration values are expressed at 101.3kPa, 25 ^{o} C, at 11% O_2

Average of three tests

When laboratory analysis was below the detection limit, the Reportable Detection Limit (RDL) was used

Flow rate from isokinetic tests were used to calculate the emission rate

Detailed sampling results including individual test results can be found in Appendix F

Table 11: O_2 , CO_2 , and CO[1] - Averaged Results

Main Stack

Parameter	Concentration									Average			Emission Rate[3] (g/s)
	Test 1			Test 2			Test 3						
	(ppm)	mg/m^3	@ 11%O_2 (mg/m^3)[2]	(ppm)	mg/m^3	@ 11%O_2 (mg/m^3)[2]	(ppm)	mg/m^3	@ 11%O_2 (mg/m^3)[2]	(ppm)	Actual O_2 (mg/m^3)	@ 11%O_2 (mg/m^3)[2]	
Carbon Monoxide (CO)	153	175	343	228	261	495	172	197	386	184	211	408	70.9
	(%)			**(%)**			**(%)**			**(%)**			
Oxygen (O_2)	15.9	-	-	15.7	-	-	15.9	-	-	15.8	-	-	-
Carbon Dioxide (CO_2)	8.48	-	-	8.86	-	-	8.62	-	-	8.65	-	-	-

Notes:

[1] Sampling followed Method 3A (O_2 and CO_2) and Method 10 (CO)

[2] Mass concentration values are expressed at 101.3 kPa, 25°C, and at 11% oxygen.

[3] Emission rate was calculated using average flow rate of all the isokinetic tests

Detailed sampling results including individual test results can be found in Appendix G

Table 12: Results Comparison

Main Stack

Parameter	Stack Testing Results [1][3]	ECA Limit [2]
Limits in Schedule B of the C of A (0550-CEAHMA)		
Particulate Matter	48.7 mg/Rm^3	50 mg/Rm^3
Cadmium	0.143 $\mu g/Rm^3$	7 $\mu g/Rm^3$
Lead	3.87 $\mu g/Rm^3$	60 $\mu g/Rm^3$
Mercury	< 0.978 $\mu g/Rm^3$	20 $\mu g/Rm^3$
Dioxins and Furans	< 33.9 pg/Rm^3	80 pg/Rm^3 ITEQ
Hydrochloric Acid	4.04 mg/Rm^3	27 mg/Rm^3

Notes:

[1] - Concentration referenced to dry conditions at 25°C, 101.3kPa, and 11% oxygen

[2] – Schedule B of ECA referenced to dry conditions at 25°C, 101.3kPa, and 11% oxygen

[3] Value for Particulate Matter is Test 2 and 3 only, Test 1 was removed due to irregular process conditions

Table 13: Summary of Operating Conditions

Main Stack

Source and Test #	Sampling Date	Start Time	End Time	Clinker Production (tonnes/hr)	Conventional Fuel Rate Kiln (tonnes/hr)	Conventional Fuel Rate Calciner (tonnes/hr)	Alt Fuel Rate to Kiln (tonnes/hr)	Alt Fuel Rate to Calciner (tonnes/hr)	Fuel Adjunct Materials (tonnes/day)	Industrial By-Product Materials (tonnes/day)	Oxygen at back of Kiln (%)	Oxygen at Calciner Down Comer (%)	Carbon Monoxide at back of Kiln (ppm)	Carbon Monoxide at Calciner Down Comer (ppm)	Temperature of gas leaving Kiln (°C)	Temperature of gas leaving Calciner (°C)	CEM NO_x (ppm)	CEM SO_2 (ppm)	CEM THC (ppm)	CEM TPM (mg/Nm^3) at 11% O_2
Test #1	31-May-23	1:32 PM	7:21 PM	218.40	6.37	10.9	11.3	11.3	No data	no data	no data	2.99	0	932	808	893	95	8.5	117	37.36
Test #2	05-Jun-23	2:05 PM	6:51 PM	216.20	6.81	12.2	13.01	13.01	72	34.77	5.44	2.53	0	1143	802	893	79	41.2	144	37.70
Test #3	08-Jun-23	11:52 AM	4:00 PM	217.80	6.31	10.6	13.02	13.02	72	69.44	8.88	2.91	0	740	798	893	109	8	144	34.06
HCl/Ammonia T1	22-Aug-23	10:07 AM	12:44 PM	232.91	7.01	10.7	11.98	11.98	130	42.261	3.09	No data	0	824	815	891	84	16	156	29.13
HCl/Ammonia T2	22-Aug-23	2:07 PM	5:18 PM	228.31	7.08	10.19	11.44	11.44	79	42.47	3.54	No data	0	1037	812	890	85	6	141	35.53
HCl/Ammonia T3	23-Aug-23	11:51 AM	4:18 PM	227.24	7.19	11.5	8.07	8.07	73	34.24	6.45	No data	0	1070	808	893	52	6	60	54.71

Carbon Dioxide Intensity Testing Data Summary

REPORT

Carbon Dioxide Emission Intensity Report

Votorantim Cimentos North America - Bowmanville Cement

Submitted to:

St Marys Cement, a Company of Votorantim Cimentos North America

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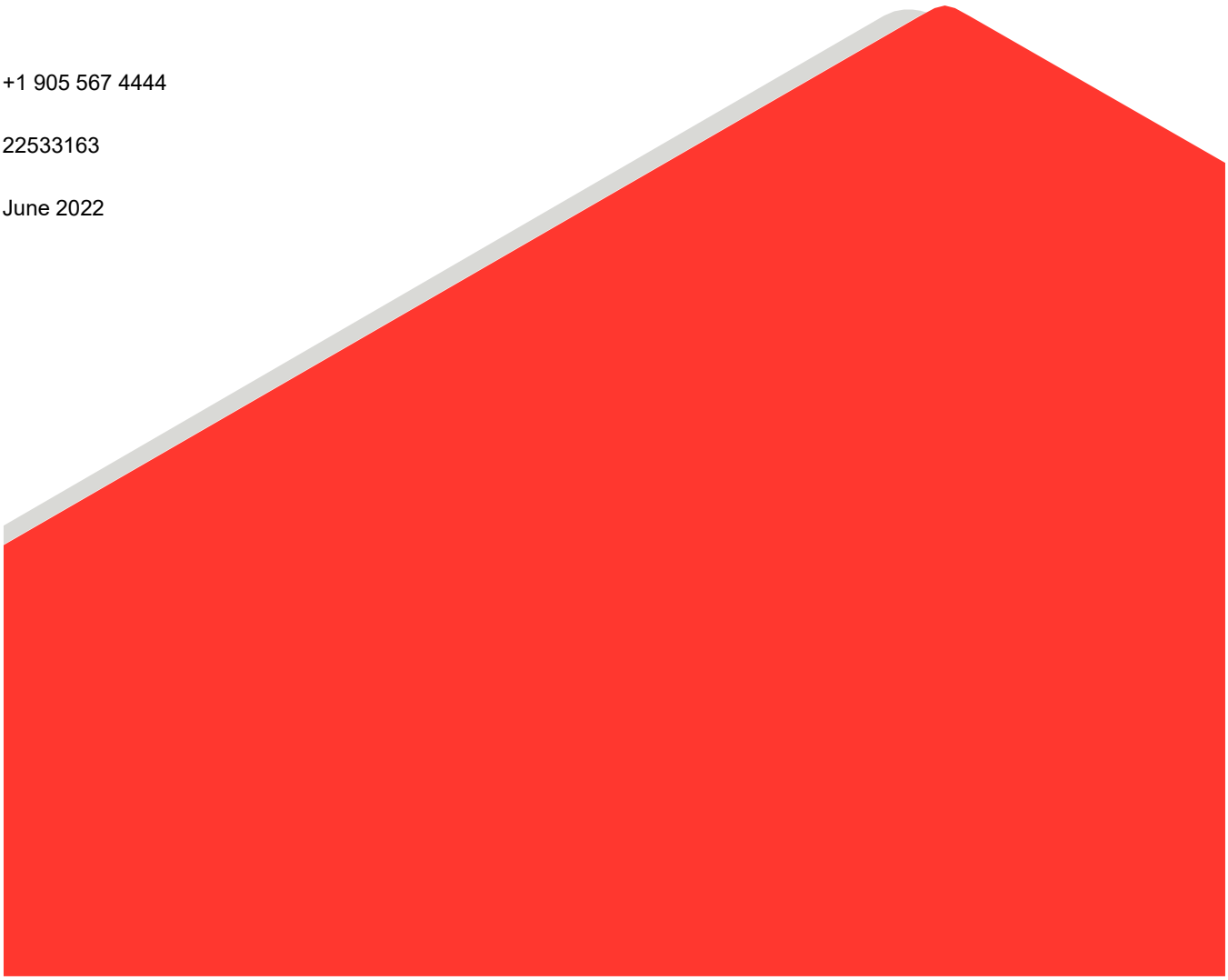
June 2022



Carbon dioxide emission intensity $\left[\frac{\mathbf{kg\ CO_2}}{\mathbf{MJ}}\right]$

$= \text{Non} - \text{biological carbon content}\ [\%] \times \text{C to } CO_2 \text{ conversion}\ \left[\frac{\text{kg } CO_2}{\text{kg C}}\right] \div \text{High heat value}\ \left[\frac{\text{MJ}}{\text{kg fuel}}\right]$

Where:

Non − biological carbon content $[\%] = \text{Total carbon content}\ [\%] \times (100\% - \text{Biological carbon content}\ [\%])$

Total carbon content $= 56.45\%$ (value from chemical analysis result for sample EFSPL − 01)

Biological carbon content $= 10\%$ (value from chemical analysis result for sample EFSPL– 01)

C to CO_2 conversion $= 3.67$

High heat value $= 28.281\ \frac{\text{MJ}}{\text{kg}}$ value from chemical analysis result for sample EFSPL − 01)

Therefore:

$\text{Non} - \text{biological carbon content} = 56.45\% \times (100\% - 10\%)$

$\text{Non} - \text{biological carbon content} = 51\%$

And,

$$\text{Carbon dioxide emission intensity} = 51\% \times 3.67\ \frac{\text{kg } CO_2}{\text{kg C}} \times \frac{1}{28.281}\ \frac{\text{kg fuel}}{\text{MJ}}$$

$$\text{Carbon dioxide emission intensity} = 0.0659\ \frac{\text{kg } CO_2}{\text{MJ}}$$

5.3 Carbon Dioxide Emission Intensity Summary

CO_2 emission intensity values were calculated for each set of conventional fuel and ALCF sampling results, as presented in Table 3. Detailed sample calculations are provided in Appendix B.

Table 3: CO_2 Emission Intensity

Parameter	Coal	Petcoke	Fluidcoke	Wood	Plastic
Sample ID	**17085-1**	**17085-2**	**17085-3**	**GFL-01**	**EFSPL-01**
Fuel HHV [MJ/kg]	27.11	33.72	32.45	17.57	28.28
CO_2 Intensity [kg CO2/MJ]	0.0946	0.0906	0.0951	0.0000	0.0659

The calculated CO_2 emission intensity values in Table 3 show that the ALCF materials had a lower CO_2 emission intensity than the conventional fuels used during the Source Testing event.

5.4 Carbon Dioxide Emissions During Source Testing

To better demonstrate the reduction in CO_2 emissions that occur when ALCF materials are part of the fuel mix at SMCB, CO_2 emissions were calculated for several scenarios, including each Source Testing Event and also for a day where only conventional fuels were used, as summarized in Table 4 below.

Table 4: Daily CO_2 Emissions

Scenario	Parameter	Coal	Petcoke	Fluidcoke	Wood	Plastic	Daily CO_2 Emissions
November 30 Source Testing	Fuel Usage [tonne/day]	365	93	120	189	50	—
	CO_2 Emissions [tonne/day]	936	284	370	0	93	1684
December 1 Source Testing	Fuel Usage [tonne/day]	339	29	157	98	66	—
	CO_2 Emissions [tonne/day]	870	89	484	0	123	1566
December 2 Source Testing	Fuel Usage [tonne/day]	360	38	164	164	29	—
	CO_2 Emissions [tonne/day]	924	116	506	0	54	1600
December 9 Source Testing	Fuel Usage [tonne/day]	300	33	164	187	26	—
	CO_2 Emissions [tonne/day]	770	101	506	0	48	1425
December 27 Conventional Fuel Only	Fuel Usage [tonne/day]	487	81	135	0	0	—
	CO_2 Emissions [tonne/day]	1249	248	417	0	0	1913

The calculated daily CO_2 emissions for each Source Testing event where ALCF materials are part of the fuel mix are shown to be lower than the daily CO_2 emissions when only conventional fuels are used.

6.0 CONCLUSION

This report was prepared in accordance with the requirements outlined in Section 11 of O. Reg. 79/15.

As per Condition 12.1 of the ECA, fuel samples taken on November 30, 2021, are representative of the conventional fuels and ALCF used during Source Testing events completed on November 30, November 30, December 1-2 and December 9, 2021.

Fuel sample analysis and calculation of CO_2 emission intensity values for the conventional fuels and ALCF used during Source Testing events were completed using the methodologies described in Sections 9 and 10 of O. Reg. 79/15. It should be noted that the only fuels tested were those used during the Source Testing events.

The results of the CO_2 emission intensity calculations summarized in Section 5.3 demonstrate that the CO_2 emission intensity of the ALCFs are less than the CO_2 emission intensity of the conventional fuels in the place of which the ALCFs were combusted.

SECTION G

This Section addresses Condition 16.1g) of the ECA described as below:

"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,"

St. Marys Cement - Bowmanville Plant
ECA Condition 16.1g: Reportable Operational Events - 2023
(ECA #0550-CEAHMA)

Date of Reportable Event	MECP Event ID	Report Filed to	Details of Event	Investigation	Final Response Given
5/6/2023	1-3G3V29	Spill Action Centre	MECP received an odour complaint about "acid smell" at 11:45am. Complainant name or contact were not provided. Compliant location is near Abernathy Crescent in Bowmanville.	Wind was blowing from 197 to 234 degrees and wind speed was low (4-8km/hr) at the time . The plant did not have any upsets. The potential impact is expected to be very localized. There are no residents within 2km of the stack in that direction.	Called SAC at 1:58pm to report wind direction, wind speed and no system upsets. No further actions required.
6/1/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	Construction (earth moving) activities took place at the OPG Darlington station near SMC1 during this period which caused the exceedance.	No further action is required.
6/6/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitors SMC1 and SMC2. MECP was notified.	Regional background air quality data for the period reviewed was elevated due to forest fires. Onsite PM10 readings were elevated when wind was blowing from the north (i.e. forest fire sources). The exceedances were a result of the elevated regional background, not onsite operations.	No further action is required.
6/7/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	Reviewed the regional background data for the period which was elevated due to forest fires. Onsite PM10 readings were elevated when wind was blowing from the north (i.e. forest fire sources). The exceedances were a result of the elevated regional background, not onsite operations.	No further action is required.
6/17/2023	1-3JVICZ	Spill Action Centre/MECP District	Reportable dust event during Kiln Feed Baghouse (KFBH) start-up at 8:34am. Issue was resolved by, and reported to SAC at, 8:59am.	The plant was unable to maintain negative pressure in the system which resulted in dust blowing out near base of stack. Wind was blowing from the north which resulted in dust blowing to the lake.	Reported the dust event and resolution to SAC. Emailed MECP District Office.
6/22/2023	1-3KF0JL	Spill Action Centre/MECP District	Reportable dust event during a system upset at the raw mill at 6:54am. Issue was resolved in 20min and MECP was notified.	The plant could not maintain negative pressure due to the temporary loss of a compressor. Dust was generated from the raw mill area as a result.	The compressor was replaced which resolved in the issue in 20min. MECP was notified.
6/27/2023	1-3L09T	Spill Action Centre/MECP District	Reportable the dust event during a system upset at the raw mill at 5:25pm. Issue was resolved in 1 hour and MECP was notified.	The raw mill could not maintain negative pressure due to repair work taking place on the equipment. Dust was generated from the raw mill area as a result.	The issue was resolved within the hour after the system was closed. MECP was notified.
6/27/2023	1-3L4KZZ	MECP District	Reportable blasting event which raised concerned by the community east of the site by Lake Ontario.	An investigation was conducted for the blasting event which identified that vertical ejection of stemmings in 6 of 54 holes (rifling) and the levels of the blast (upper levels) may have resulted in impact in the community east of the plant.	The site continues to use hole plugs in conjunction with crushed aggregate stemmings to minimize rifling. The site will review the blast design with Dyno Nobel to further reduce vibration levels.
6/28/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitors SMC1 and SMC2. MECP was notified.	Reviewed the regional background data for the period which was elevated due to forest fires. Onsite PM10 readings were elevated when wind was blowing from the north (i.e. forest fire sources). The exceedances were a result of the elevated regional background, not onsite operations.	No further action is required.
7/3/2023	1-3LETHZ	Spill Action Centre/MECP District	Reportable dust event during a system upset at the KFBH at 8:08am. Dust was blowing towards OPG Darlington Property and then to north property line through plant buildings. Issue was resolved within an hour as soon as negative air pressure was re-established.	The KFBH could not maintain negative pressure. Dust was generated from the KFBH as a result.	The issued was resolved and MECP was notified
7/6/2023	1-3LW3O8	MECP District	The municipality of Clarington received an odour complaint during blasting. MECP was notified immediately.	Followed up with the City regarding the sulphur odour complaint. Based on the review of the wind direction and speed at the time the complaint, it is possible that the blasting resulted in the odour. However the location of the blast was near the bottom of the quarry which could contain emissions. Followed up with the blasting team. and identified it was a blasting anomaly.	The blasting team modified the blasting procedure to prevent future occurrence. MECP was notified.
7/7/2023	1-3L1EM	MECP District	Reportable dust event due to a system upset at the transfer tower at 6:25am. The issue was resolved in 15min and MECP was notified.	Wind speed and direction were reviewed. The upset was a result of a cooler fan overheating. The issue was resolved in 15 min.	The issued was resolved and MECP was notified
7/7/2023	1-3LZQTN	MECP District	Reportable dust event due to a system upset at the cooler baghouse. The issue was resolved in 3 min and MECP was notified.	Cooler baghouse hatch was open which resulted in significant dust plume. The issue was resolved after the hatch door was closed and powder was cleaned up.	The issue was resolved and MECP was notified.
7/26/2023	1-3O7YZF	Spill Action Centre	Reportable dust event due to an over heated compressor at 6:43am. The plant was shut down. The issue was resolved in 15min after the system stabilized and MECP was notified.	The plant compressor was overheating which resulted in the loss of negative pressure and dust emissions. Wind direction and speed were reviewed. The dust did not leave the site.	No further action is required.
7/26/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitors SMC1 and SMC2. MECP was notified.	Reviewed the regional background data for the period which was elevated due to forest fires. Onsite PM10 readings were elevated when wind was blowing from the north (i.e. forest fire sources). The exceedances were a result of the elevated regional background, not onsite operations.	No further action is required.
8/7/2023	N/A	MECP District	SO2 URT was potentially exceeded based on in-stack concentration concept limit calculated based on air dispersion modelling. MECP was notified.	Air modelling was completed to confirm exceedance and an abatement action plan was submitted to the MECP. Investigation concludes that slurry pump was working and the exceedance was caused by slurry material feed failure.	The site continues to work with MECP on implementing the abatement action plan.

St. Marys Cement - Bowmanville Plant
ECA Condition 16.1g: Reportable Operational Events - 2023
(ECA #0550-CEAHMA)

Date of Reportable Event	MECP Event ID	Report Filed to	Details of Event	Investigation	Final Response Given
8/9/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	Construction (earth moving) activities took place at the OPG Darlington station near SMC1 during this period which caused the exceedance.	No further action is required.
8/14/2023	1-3QGAEU	MECP District	MECP received an odour complaint about "acid smell" on August 14 and notified SMC via email on August 23. Complainant name or contact were not provided. Compliant location is near Abernathy Crescent in Bowmanville.	MECP Emailed SMC August23, 2023 4:41pm about this complaint they received on August 14, 2023 at 15:32. SMC responded Aug 24 to MECP that an investigation and response will be forthcoming The investigation included a review of the wind direction, plume direction, stack emissions and plant conditions during the complaint period which confirmed that no issues were identified onsite. Followed up with MECP with the investigation result.	No further action is required.
8/17/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	PM10 spike was observed between 2pm and 6pm during which winds were blowing from 240 degrees/west at approximately 4 to 6 km/hr. During this time, construction (earth moving) activities took place at the OPG Darlington Station upwind of SMC1 which caused the exceedance.	No further action is required.
8/17/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	PM10 spike was observed between 11am and 6pm during which winds were blowing from west/northwest. During this time, construction (earth moving) activities took place at the OPG Darlington Station, upwind of SMC1 which caused the exceedance.	No further action is required.
8/19/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	PM10 spike was observed between 11am and 6pm during which winds were blowing from west/northwest. During this time, construction (earth moving) activities took place at the OPG Darlington Station, upwind of SMC1 which caused the exceedance.	No further action is required.
8/21/2023	N/A	MECP District	Reportable dust event during a system upset at the raw mill at 8:56am. Issue was resolved in 6min and MECP was notified.	Cold air dampers were opened following the stop of the raw mill to avoid over heating. This lead to a loss of negative pressure and dust escaping the system.	No further action is required.
8/22/2023	N/A	MECP District	Reportable PM10 exceedance at SMC1 ambient air detector. MECP was notified.	Exceedance was due to OPG soil pile works source.	No further action is required.
8/24/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	Investigation of the exceedance showed it was related to wind direction at the time and earth moving at construction site within 100 m of SMC1.	No further action is required.
9/5/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	Investigation of the exceedance showed it was related to wind direction at the time and earth moving at construction site within 100 m of SMC1.	No further action is required.
10/3/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	Investigation of the exceedance showed it was related to wind direction at the time and earth moving at construction site within 100 m of SMC1.	No further action is required.
10/4/2023	N/A	MECP District	SO2 URT was potentially exceeded based on in-stack concentration concept limit calculated based on air dispersion modelling. MECP was notified.	Rotary feed of the lime slurry tank failed which resulted in system failure of the wet scrubber. Since the in-stack concentration did not exceed the concentration on August 7, 2024, modelling is not required as confirmed by MECP.	The site continues to work with MECP on implementing the abatement action plan.
10/10/2023	1-3X4EQD	MECP District	Reportable blasting event as a result of a trial shot designed by Orica.	Orica was conducting a trial blast using modified techniques to reduce noise and vibration which was not effective.	Drilling method has been modified.
10/13/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	It was observed the OPG soil pile immediately adjacent to the west side of SMC1 had increased in size.	No further action is required.
10/20/2023	1-3Y2VQ1	Spill Action Centre	Reportable dust event to due a system upset/safety stop of the raw mill. The dust plume did not leave the site and stopped in 9 min. MECP was notified.	The rapid safety stop of the raw mill caused loss of negative pressure. Dust was generated from the upset. The dust emission was observed leaving the building but did not leave the site.	No further action is required.
10/31/2023	N/A	MECP District	SO2 URT was potentially exceeded based on in-stack concentration concept limit calculated based on air dispersion modelling. MECP was notified.	The site ran out of lime for the scrubber and delivery was not available on that day. Since the in-stack concentration did not exceed the concentration on August 7, 2024, modelling is not required as confirmed by MECP.	The site continues to work with MECP on implementing the abatement action plan.
11/20/2023	N/A	MECP District	NOx 1-Hr POI Limit (B1) was potentially exceeded for a period of 1 hour based on the in-stack concentration concept limit calculated based on air dispersion modelling. MECP was notified.	Modelling was completed for the potential event which confirmed that NOx POI limits were not exceeded.	No further action is required.
11/21/2023	N/A	MECP District	NOx 1-Hr POI Limit (B1) was potentially exceeded for a period of 1 hour based on the in-stack concentration concept limit calculated based on air dispersion modelling. MECP was notified.	Modelling was completed for this potential event which confirmed that NOx POI limits were not exceeded.	No further action is required.
11/21/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC1. MECP was notified.	A short spike of increased dust was experienced from around 7-8am due to the rock conveyor water spray not covering the rock and allowing dust to escape.	No further action is required.
11/22/2023	N/A	MECP District	NOx 1-Hr POI Limit (B1) was potentially exceeded for a period of 1 hour based on the in-stack concentration concept limit calculated based on air dispersion modelling. MECP was notified.	NOx concentration increased during start up as a result of increased fuel consumption. The SNCR wad delayed in responding to the NOx increase which resulted in this temporary exceedance. Modelling was completed for this potential event which confirmed that NOx 1-hour POI limit (B1) was exceeded. A formal notification letter and abatement action plan was submitted to the MECP.	The site continues to work with MECP on implementing the abatement action plan.

St. Marys Cement - Bowmanville Plant
ECA Condition 16.1g: Reportable Operational Events - 2023
(ECA #0550-CEAHMA)

Date of Reportable Event	MECP Event ID	Report Filed to	Details of Event	Investigation	Final Response Given
11/29/2023	N/A	MECP District	Reportable PM10 exceedances at SMC ambient monitors SMC1 and SMC2. MECP was notified.	Wind speeds were observed to be very high (>50km/hr) at SMC1 and winds were blowing from the west, downwind from the OPG construction activities. Elevated readings at SMC2 was likely caused by onsite dust emissions being blown under high wind conditions.	Onsite roads and stockpile areas were watered the next day.
12/15/2023	N/A	MECP District	Reportable PM10 exceedance at SMC ambient monitor SMC2. MECP was notified although no complaints were received.	Wind and PM data were reviewed. The elevated reading was a result of wind erosion under dry near freezing weather conditions when watering is not feasible.	No further action is required.
12/16/2023	N/A	MECP District	NOx 1-Hr POI Limit (B1) was potentially exceeded based on the in-stack concentration concept limit calculated based on air dispersion modelling. MECP was notified.	Modelling was completed for this potential event which confirmed that NOx POI limits were not exceeded.	No further action is required.

SECTION H

This Section addresses Condition 16.1h) of the ECA described as below:

"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."

ECA Condition 16. 1h: Community Concerns Log - 2023

(ECA #0550-CEAHMA)

Date of Complaint	Nature of Complaint	Summary of Complaint	Response Actions Taken and Conclusions
1/14/2023	Blasting	Phone message received from concerned individual about the plant exceeding blasting criteria and shaking homes. The individual indicated they are a certified blaster.	Reviewed blasting reports for 2022 and January 2023 and confirmed that blasting criteria were not exceeded. Notified MECP on Jan 16, 2023.
1/15/2023	Odour	Received an email from the Mayor's office regarding a resident's complaint about odour and plume appearance and inquiry about provision for better air pollution control device (i.e. scrubber), administrative controls, if potential health impacts of the plume from the plant have been assessed.	Reviewed the site operations and stack emissions on the same day and confirmed no limits were exceeded and the operation was normal. Responded to MECP via email and called the complainant directly on the same day.
1/15/2023	Opacity/Plume appearance	Email received by the corporation from a resident concerned about the levels of smog and odour in the area they were walking through near the plant and corresponding environmental and health impacts.	Notified MECP on Jan 16, 2023. No follow up required.
3/1/2023	Dust	MECP District Office received a detailed complaint on secondary stack emissions/dust and baghouses and followed up with a site air inspection on March 3.	MECP issued an air inspection report on Mar. 9, 2023 stating no actions were required based on the findings during the inspection.
4/6/2023	Blasting	Received an email from the Municipality of Clarington Legislative Services Department about concerns a resident with a background in sound engineering had about a blast occurring that shook windows/walls and disturbed their neighbours.	Met with the resident and shared data to show no exceedances occurred during the specific blast referenced. Extended offer to have the resident and their neighbours meet with a blasting specialist.
5/10/2023	Blasting	Received an email from the Municipality of Clarington Legislative Services Department regarding an email complaint from resident expressing concerns about damage being caused to their house due to the shaking resulting from some blasts.	Spoke with the resident and followed up on blasting data review and options to mitigate impact.
5/18/2023	Blasting	Received a text message from a resident expressing a concern similar to a concern they expressed via email on May 10, 2023 about damage to their house due to blasting.	Reviewed data and video from the time of blasting which confirmed that vibration limits were not exceeded. Followed up with the resident and MECP.
6/9/2023	Blasting	Emailed received from resident concerned about the increased strength of the blasts on June 9, 2023 compared to usual blasts.	Reviewed data and video from the time of blasting which confirmed that vibration limits were not exceeded. Followed up with the resident and MECP.
6/20/2023	Blasting	Complaint received by Mayor's office on Oct. 25, 2022 from a resident concerned about increased strength and frequency of the blasts on that same day. SMC received the complaint via email on June 20, 2023.	Responded via email on June 20, 2023 offering to talk to the resident. Notified MECP on June 21, 2023.
8/16/2023	Plume Appearance	MECP received a complaint on Aug. 9 from a resident with concerns about what is contained in the droplet emissions from the kiln stack that they said are leaving yellow stains on machinery and vehicles around the plant. The resident stated they had been waiting on answers to their concerns for over 6 months.	Responded to MECP on Aug. 17 after being notified of the complaint on Aug. 16 stating that an investigation and response will be forthcoming. Followed up with the MECP with the investigation result on the same day. The yellow stain is a combination of the scrubber moisture and rust from the kiln stack which drop off quickly around onsite buildings. SMC continues to evaluate and monitor weather and stack conditions which may cause "yellow stain".
10/10/2023	Blasting	Complaint received from resident about the violence of a blast and requested a call back with findings from an investigation of the blast.	Resident was notified that the blast was conducted in the Level 4 NE corner and was a trial shot designed by Orica. Followed up with both the resident and MECP.
10/10/2023	Blasting	Complaint received from a resident about the intensity of a blast.	Resident was notified that the blast was conducted in the Level 4 NE corner and was a trial shot designed by Orica. Followed up with both the resident and MECP.
12/5/2023	Blasting	Complaint received via telephone from a resident expressing concerns about the noise and vibration resulting from a blast and stated they would follow up with an email.	Reviewed data and video from the time of blasting which confirmed that vibration limits were not exceeded. Followed up with the resident and MECP.
12/21/2023	Blasting	Emailed received from resident concerned about the intensity of a blast.	Reviewed data and video from the time of blasting which confirmed that vibration limits were not exceeded. Followed up with the resident and MECP.
12/21/2023	Blasting	Complaint received via telephone from a resident concerned with the violence of a blast compared to usual blasts.	Reviewed data and video from the time of blasting which confirmed that vibration limits were not exceeded. Followed up with the resident and MECP.