PRIVILEGED & CONFIDENTIAL

DATE December 15, 2020 **Project No.** 20145943

TO Andrew Sebestyen
Stelco Inc.

CC Katie Chan (Stelco)

FROM Roy Sabino **EMAIL roy_sabino@golder.com**

ADDENDUM FOR THE ESDM REPORT INCLUDING EMISSION SUMMARY TABLE FOR STELCO INC., REFLECTING 2019 OPERATIONS AT HAMILTON WORKS FACILITY.

Stelco Inc. (Stelco) retained Golder Associates Ltd. (Golder) to provide consulting services related to updated emission rate calculations, conduct site-wide air dispersion modelling and complete the Emission Summary and Dispersion Modelling (ESDM) Report reflective of 2019 operations for its Hamilton Works (HW) facility in Hamilton, Ontario (the Facility) per the scope of work in the proposal dated September 22, 2020.

The 2019 changes to the Facility result from the closure of the iron-making and steel-making operations that have led to significant decreases in contaminants emission rates as part of normal operations at HW. Golder understands that Stelco is required to update the ESDM report in accordance with section 25 of the Ontario Regulation (O. Reg.) 419/05, hence, that the information in this memo is accurate as of December 31st in the previous year. Stelco has assigned emission rate calculations for significant sources prior to the site-wide air dispersion modelling by Golder.

An assessment of emissions of metals associated with the Facility's roadways and storage piles, was conducted using guidance from the Ministry's publication "*Guideline A-10: Procedure for Preparing an Emission Summary and Dispersion Modelling (ESDM) Report, Version 4.1*", dated March 2018.The Facility is subject to s. 20 of O. Reg. 419/05, therefore the modelled impacts of contaminant emissions were assessed against the Schedule 3 Standards using the AERMOD dispersion model, which is an approved model under O. Reg. 419/05. Dispersion modelling was conducted for the Facility using the Ministry of the Environment, Conservation and Parks (MECP) approved AERMOD Version 19191 for the atmospheric dispersion modelling of Facility contaminants, as well as the site-specific meteorological dataset provided by the MECP. The site-specific meteorological dataset used with the AERMOD dispersion modelling, contains surface and upper air data for the five-year period from 2015 to 2019. Pre-processed Profile and Surface files provided by the MECP, include upper air data from the U.S. National Weather Service's Buffalo station and surface data from the Environment and Climate Change Canada's Burlington Piers station, with cloud cover data from the Hamilton airport station.

A POI concentration for each significant contaminant emitted from the Facility was calculated based on the emission rates provided by Stelco and the output from the approved AERMOD atmospheric dispersion model presented in Appendix A - Emission Summary Table.

The Point of Impingement (POI) concentrations listed in the Emission Summary Table were compared against the applicable standards and guidelines listed as Benchmark 1 in the Air Contaminant Benchmark List, dated April

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2018 (ACB List). The predicted POI concentrations for B(a)P, SPM and Benzene were compared against their approved SSS.

Contaminants released by the Facility that do not have Benchmark 1 standards or guidelines in the ACB List are considered 'Contaminants with No MECP POI Limits'. Where applicable, predicted POI concentrations of Contaminants with No MECP POI Limits were screened against the Benchmark 2 screening levels in the ACB List or the *de minimus* limit. Predicted concentrations of Contaminants with No MECP POI Limits were found to be below the corresponding Benchmark 2 screening level or *de minimus* limit.

The AERMOD atmospheric dispersion modelling assessment for the Facility has predicted a maximum off-property POI concentration exceedence of the 1-hour averaging period sulphur dioxide (SO_2) Upper Risk Threshold (URT) listed in Schedule 6 of the O. Reg.419/05. Stelco has informed the MECP of this exceedence as per section 30 of O. Reg.419/05, and plans to control SO_2 emissions using an abatement plan that will be detailed in the Action Plan to be prepared, therefore, a frequency of exceedence analysis was not conducted for this contaminant.

Furthermore, Stelco along with other members of the Ontario integrated steel sector are in discussions with the MECP to develop a Technical Standard that would focus on the implementation of the best available control technology and ongoing monitoring. If HW registers under the Technical Standard, then an ESDM in accordance with s. 26 of O. Reg. 419/05 may not be required.

The information provided in these electronic files could be used to derive proprietary information on Stelco, as well as production numbers at the facility. This information is thus considered to be a trade secret and of a proprietary nature by Stelco. It is therefore requested that it be held in confidence and not released to anyone outside of the review procedure without prior consent of Stelco.

We trust that this letter meets your current needs. If you have any questions, or if we may be of further assistance, please do not hesitate to contact the undersigned.

Golder Associates Ltd.

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RS/FSC/

https://golderassociates.sharepoint.com/sites/131532/project files/6 deliverables/esdm package/memo dec2020/20145943-tm-reva stelco hw 2019 esdm est 15december2020.docx

APPENDIX A

EMISSION SUMMARY TABLE (2019 operations)

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Max POI Concentration [µg/m³]	Averaging Period	MECP POI Limit [µg/m³]	Limiting Effect	Sch.	Source	Benchmark	Percentage of MECP Limit [%]
1,3 Butadiene	106-99-0	3.1E-01	AERMOD (v. 19191)	3.6E-02	Annual	2	Health	Sch. 3	Standard	B1	2%
1,3 Butadiene	106-99-0	3.1E-01	AERMOD (v. 19191)	2.7E-01	24-hour	300	—	Sch. 6	URT	—	Below URT
1,3 Butadiene	106-99-0	3.1E-01	AERMOD (v. 19191)	3.6E-02	Annual	20	—	—	AAV	—	0.2%
Aluminum	7429-90-5	1.7E-02	AERMOD (v. 19191)	5.8E-01	24-hour	12	Health	Sch. 3	SL-JSL	B2	Below B2
Ammonia	7664-41-7	1.7E-01	AERMOD (v. 19191)	5.8E+00	24-hour	100	Health	Sch. 3	Standard	B1	6%
Ammonia	7664-41-7	1.7E-01	AERMOD (v. 19191)	5.8E+00	24-hour	1000	—	Sch. 6	URT	—	Below URT
Benzene	71-43-2	9.0E-01	AERMOD (v. 19191)	2.7E+00	Annual	3.9	Health	—	SSS	—	70%
Benzene	71-43-2	9.2E-01	AERMOD (v. 19191)	2.1E+01	24-hour	100	—	Sch. 6	URT	—	Below URT
Benzene	71-43-2	9.2E-01	AERMOD (v. 19191)	2.8E+00	Annual	4.5	—	—	AAV	—	62%
Benzo[a]pyrene	50-32-8	2.3E-03	AERMOD (v. 19191)	4.1E-03	Annual	4.7E-03	Health	—	SSS	—	86%
Benzo[a]pyrene	50-32-8	2.3E-03	AERMOD (v. 19191)	3.0E-02	24-hour	5.0E-03	—	Sch. 6	URT	—	Above URT
Benzo[a]pyrene	50-32-8	2.3E-03	AERMOD (v. 19191)	4.1E-03	Annual	1.0E-04	—	—	AAV	—	Above AAV
Cadmium	7440-43-9	2.0E-05	AERMOD (v. 19191)	8.9E-04	24-hour	0.03	Health	Sch. 3	Standard	B1	4%
Cadmium	7440-43-9	2.0E-05	AERMOD (v. 19191)	8.9E-04	24-hour	0.25	—	Sch. 6	URT	—	Below URT
Carbon monoxide	630-08-0	2.2E+01	AERMOD (v. 19191)	1.7E+03	1/2-hour	6000	Health	Sch. 3	Standard	B1	28%
Chromium	7440-47-3	9.9E-04	AERMOD (v. 19191)	4.7E-02	24-hour	0.5	Health	Sch. 3	Standard	B1	9%
Chromium	7440-47-3	9.9E-04	AERMOD (v. 19191)	4.7E-02	24-hour	5	—	Sch. 6	URT	—	Below URT
Cobalt	7440-48-4	1.9E-05	AERMOD (v. 19191)	9.1E-04	24-hour	0.10	Health	Sch. 3	Guideline	B1	<1%
Ethylene	74-85-1	2.7E-01	AERMOD (v. 19191)	2.6E+00	24-hour	40	Vegetation	Sch. 3	Guideline	B1	7%
Ferric oxide	1309-37-1	3.7E-01	AERMOD (v. 19191)	1.7E+01	24-hour	25	Soiling	Sch. 3	Standard	B1	69%
Hydrogen Sulphide	7783-06-4	1.6E+00	AERMOD (v. 19191)	2.6E+01	24-hour	70	—	Sch. 6	URT	—	Below URT
Lead	7439-92-1	1.7E-04	AERMOD (v. 19191)	8.1E-03	24-hour	0.5	Health	Sch. 3	Standard	B1	2%
Lead	7439-92-1	1.7E-04	AERMOD (v. 19191)	3.1E-03	30-day	0.2	Health	Sch. 3	Standard	B1	2%
Lead	7439-92-1	1.7E-04	AERMOD (v. 19191)	8.1E-03	24-hour	2	—	Sch. 6	URT	—	Below URT
Magnesium	7439-95-4	1.0E-01	AERMOD (v. 19191)	5.6E+00	24-hour	72	Health	Sch. 3	SL-MD	B2	Below B2
Molybdenum	7439-98-7	2.3E-05	AERMOD (v. 19191)	1.0E-03	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%
Napthalene	91-20-3	3.9E-02	AERMOD (v. 19191)	1.0E+00	24-hour	23	Health	Sch. 3	Guideline	B1	4%
Napthalene	91-20-3	7.5E-02	AERMOD (v. 19191)	1.5E+01	10-minute	50	Odour	Sch. 3	Guideline	B1	30%
Nickel	7440-02-0	7.1E-05	AERMOD (v. 19191)	1.1E-03	Annual	0.04	Health	Sch. 3	Standard	B1	3%

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Nickel	7440-02-0	7.1E-05	AERMOD (v. 19191)	3.7E-03	24-hour	2	—	Sch. 6	URT	—	Below URT
Nickel	7440-02-0	7.1E-05	AERMOD (v. 19191)	1.1E-03	Annual	0.4	—	—	AAV	—	Below AAV
Nitrogen oxides	10102-44-0	5.9E+01	AERMOD (v. 19191)	2.0E+02	1-hour	400	Health	Sch. 3	Standard	B1	50%
Nitrogen oxides	10102-44-0	5.8E+01	AERMOD (v. 19191)	1.1E+02	24-hour	200	Health	Sch. 3	Standard	B1	56%
Phosphorus	N/A	1.3E-03	AERMOD (v. 19191)	5.5E-02	24-hour	0.1	—	—	De Minimus	—	Below De Minimus
Selenium	7782-49-2	4.9E-06	AERMOD (v. 19191)	2.2E-04	24-hour	10	Health	Sch. 3	Guideline	B1	<1%
Sulfur dioxide	7446-09-5	1.1E+02	AERMOD (v. 19191)	2.0E+03	1-hour	690	Health & Vegetation	Sch. 3	Standard	B1	295%
Sulfur dioxide	7446-09-5	1.1E+02	AERMOD (v. 19191)	2.0E+03	1-hour	690	—	Sch. 6	URT	—	Above URT
Sulfur dioxide	7446-09-5	1.1E+02	AERMOD (v. 19191)	1.2E+03	24-hour	275	Health & Vegetation	Sch. 3	Standard	B1	425%
Suspended particulate matter (< 44 µm diameter)	N/A	2.6E+00	AERMOD (v. 19191)	1.4E+02	24-hour	313	Visibility	SSS	Standard	—	45%
Vanadium	7440-62-2	4.5E-04	AERMOD (v. 19191)	2.2E-02	24-hour	2	Health	Sch. 3	Standard	B1	1%
Zinc	7440-66-6	9.1E-04	AERMOD (v. 19191)	5.1E-02	24-hour	120	Particulate	Sch. 3	Standard	B1	<1%