## EXECUTIVE SUMMARY AND EMISSION SUMMARY TABLE

This Emission Summary and Dispersion Modelling (ESDM) Report was prepared in accordance with s.26 of O. Reg. 419/05. Additionally, guidance in the ministry publication "Procedure for Preparing an Emission Summary and Dispersion Modelling Report", Version 4.1 dated March 2018 (ESDM Procedure Document) PIBS 3614e04.1 was followed as appropriate.

The Signature facility is located on the north side of Clements Road approximately 550 meters east of Brock Road. The adjacent land use zoning surrounding the Signature facility is manufacturing extending for at least 800 meters in all directions.

The Signature facility consists of two buildings; the south building used for the casting of aluminum billets has a maximum height of 15 meters and a footprint of approximately 6,200 square meters (66,800 square feet) and the north building used for the extrusion of aluminum components which has a maximum height of 15 meter and a footprint of approximately 19,900 square meters (214,600 square feet). The Signature facility occupies an approximately rectangular property approximately 15.9 acres (6.4 hectares) in size.

The closest residential properties to the Signature facility are four (4) residential dwellings located on the north side of Bayly Street approximately 600 meters to the north-west of the Signature property (as measured property line to property line). These residences are located on Manufacturing Zoned (M1) lands.

Signature is a manufacturer of aluminum billet and extruded aluminum components. The main manufacturing processes at the facility include the melting of primary and recycled aluminum and the casting of the melted aluminum into aluminum billet with these activities taking place in the casting building (south building). These aluminum billets are either shipped off site to various customers or are transferred to the extrusion building where they are processed through extrusion presses into various shaped aluminum components.

The North American Industry Classification System (NAICS) code that applies to this Facility is 331317-\_Aluminum rolling, drawing, extruding and alloying.

This Emission Summary and Dispersion Modelling (ESDM) report was prepared in accordance with S.26 of O.Reg. 419/05. In addition, guidance in the ministry publication "Procedure for Preparing an Emission Summary and Dispersion Modelling report", Version 4.1 dated March 2018 (ESDM Procedure Document) PIBS 3614e04.1 was followed as appropriate.

Section 20 of O. Regulation 419/05 currently applies to the facility and the modelled impact to 10 minute, 1 or 24 hour Point of Impingement (POI) criteria can be assessed using AERMOD. The resultant concentrations have been compared to Schedule 3 Standards.

The assessment of compliance with Schedule 3 Standards was carried out using Lakes Environmental AERMOD View, Version 11.2.0. The Lakes program is a user interface using the United States Environmental protection Agency AERMOD Version 22112 as the underlying dispersion model.

Additionally, the emission rates correspond to the operating scenario where the significant sources are operating at their maximum rates of production. With all sources and the majority of the contaminants having data quality ratings of Above Average or Average it is highly unlikely that the emission rate estimates listed in Table 2 for these contaminants are a significant underestimate of the facilities actual emission rates.

The POI concentrations listed in Table 4 of the ESDM report were compared against criteria listed in the publication "Air Contaminants Benchmarks (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants" (version 3.0 - April 2023) [list of Ministry POI Limits].

Of the twenty-five contaminants listed in Table 4, all but two have limits in the List of "Air Contaminants Benchmarks (ACB) List: Standard, guidelines and screening levels for assessing point of impingement concentrations of air contaminants" dated April 2023 and all predicted concentrations for these contaminants are below the corresponding limits; for example the 1 Hr.-POI concentration of Nitrogen Oxide is 379.31 ug/m<sup>3</sup> at 94.8 % of the 1-hour limit of 400 ug/m<sup>3</sup>. At 94.8%, Nitrogen Oxide has the highest concentration relative to the corresponding MECP Limit. The next highest contaminant is Nitrogen Oxides at 88.5% of the 24-hour limit of 200 ug/m<sup>3</sup>.

This ESDM report demonstrates that the Signature Facility can operate in compliance with O. Reg. 419/05.

Contaminant Emission Summary Table

Contaminant	CAS	Total Facility Emission Rate (g/s)	Disersion Model Used	Max POI Concentration (ug/m <sup>3</sup> )	Averaging Period	MOE Criteria (ug/m <sup>3</sup> )	Limiting Effect	Criteria Type	Percentage of MOE POI Limit
Apotio Apid	64 10 7	2.025.06		0.0016	24 Ur	2500	Odour	Sahad 2	0.00019/
	7420.00.5	3.03E-00		0.0016		2000	Udour	Sched 3	0.0001%
Antimony	7429-90-0	2.30E-02		4.44		12	Health	Sched 3	37.00%
Anumony	7440-30-0	0.11E-00		0.001				Scried, S	0.004%
Argoni	7440-37-1	2.97E+00		933.4			NA Haalth	NA Schod 2	
	7440-38-2	3.69E-05	AERMOD	0.00707	24 Hr	0.3	Health	Sched. 3	2.30%
Barium	7440-39-3	5.46E-04	AERMOD	0.11	24 Hr	10	Health	Sched. 3	1.10%
Beryllium	7440-41-7	9.77E-07	AERMOD	0.00019	24 Hr	0.01	Health	Sched. 3	1.90%
Cadmium	7440-43-9	3.82E-05	AERMOD	0.0075	24 Hr	0.25	Health		3.00%
					24 Hr	0.025		Sched. 3	30.00%
Chromium	7440-47-3	2.26E-05	AERMOD	0.0043	24 Hr	5	Health		0.09%
					24 Hr	0.5		Sched. 3	0.86%
Cobalt	7440-48-4	2.63E-05	AERMOD	0.0054	24 Hr	0.1	Health	Sched. 3	5.40%
Copper	7440-50-8	2.40E-04	AERMOD	0.045	24 Hr	50	Health	Sched. 3	0.09%
Hydrogen	1333-74-0	3.80E-03	AERMOD	1.19	24 Hr	NA	NA	NA	NA
Hvdrogen Chloride	7647-01-0	7.64E-02	AERMOD	5.78	24 Hr	20	Health	Sched. 3	28.90%
, , ,					24 Hr	200		URT	2.89%
Iron**	7439-89-6	5.59E-04	AERMOD	0.19	24 Hr	4	Health/Soiling	Sched. 3	4.75%
Lead	7439-92-1	8.78E-04	AERMOD	0.161	24 Hr	0.5	Health	Sched. 3	32.20%
					24 Hr	2		URT	8.05%
				0.063	30 Day	0.2	Health	Sched 3	32%
Magnesium	7439-95-4	3.54E-03	AERMOD	1.13	24 Hr	72	Health	Sched. 3	1.57%
Manganese	7439-96-5	1.38E-04	AERMOD	0.027	24 Hr	0.4	Health	Sched. 3	6.75%
					24 Hr	2		URT	1.35%
Nickel	7440-02-0	5.18E-05	AERMOD	0.01198	24 Hr	2	Health	URT/DAV	0.60%
				0.00216	Annual	0.04		Sched. 3	5.40%
					AAV	0.4		AAV	0.54%
Selenium	7782-49-2	1.14E-03	AERMOD	0.22	24 Hr	10	Health	Sched. 3	2.20%
Silver	7440-22-4	5.28E-05	AERMOD	0.01078	24 Hr	1	Health	Sched. 3	1.08%
Thallium	7440-28-0	4.02E-06	AERMOD	0.00078	24 Hr	0.5	Health	Sched. 3	0.16%
Zinc	7440-66-6	9.08E-03	AERMOD	1.74	24 Hr	120	Particulate	Sched. 3	1.45%
Nitrogen Oxides	10102-44-0	3.29E+00	AERMOD	176.99	24 Hr	200	Health	Sched. 3	88.50%
				379.31	1 Hr	400	Health	Sched. 3	94.83%
Sodium Hydroxide	1310-73-2	9.58E-03	AERMOD	4.62	24 Hr	10	Corrosion	Sched. 3	46.20%
Suspended Particulate	-	1.16E-01	AERMOD	9.59	24Hr	120	Visibility	Sched. 3	7.99%

\* Compared to 'Barium - Total Water Soluble' \*\* Compared to 'Iron (Metallic)'