



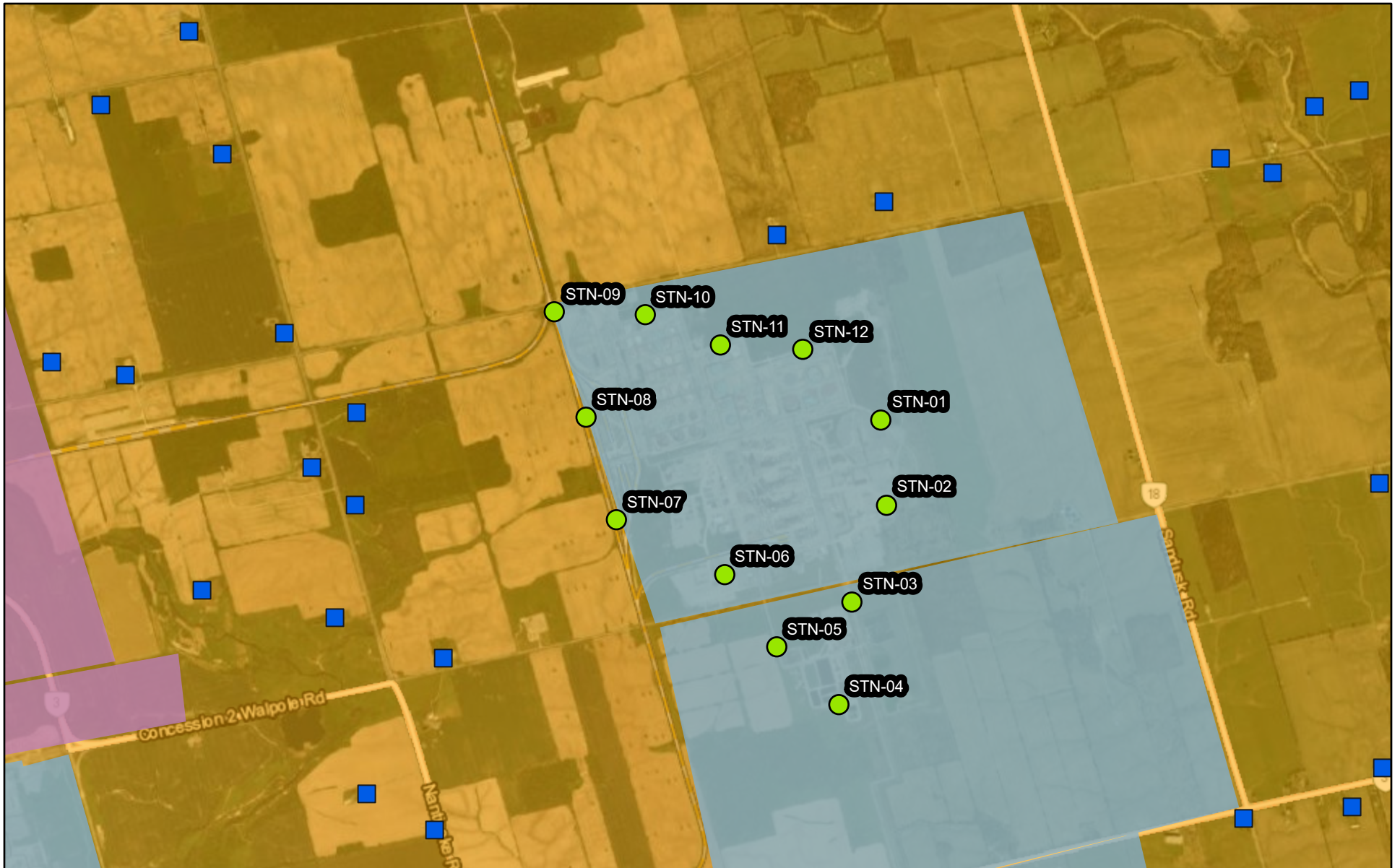
March 31, 2021

Subject: Annual Ambient Monitoring Report for Petroleum Refining – Industry Standard

As required by part X of the Petroleum Refining Industry Standard, under Ontario Regulation 419/05, Imperial's Nanticoke refinery is required to prepare and post an annual report of the fence line benzene air monitoring program.

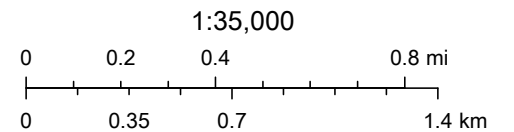
- i. The following map shows the location of each monitoring station required by subsection 60(1), the information required by clause 60(4)(d), and other topographical information including any nearby water bodies, roadways and adjacent land uses.

Nanticoke Refinery



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- Residences
- Industrial Land Use
- Monitoring Locations
- Industrial
- Heavy Industrial
- Agricultural Land Use



Esri, HERE, NRCAN, USDA FSA, GeoEye, Maxar

USDA FSA, GeoEye, Maxar | Esri, HERE, NRCAN |



i. A. Please see the table below with the benzene sampling results for the 2020 calendar year.

Station ID		1-FLARE	2-SPHERE	3-WWTP	4-WWTP	5-WWTP	6-FIREHALL	7-RAIL	8-RAIL	9-TERMINAL	10-TANKS	11-TANKS	12-TANKS
Location (Lat, Long)													
Date of Deployment/ Date of Retrieval/ Results (ug/m3)													
27 December 2019	09 January 2020	4.6	2.2	1.1	0.75	0.78	1.2	1.6	1.3	0.63	1.7	2.1	1.8
09 January 2020	23 January 2020	3.0	2.1	1.4	1.2	1.0	1.3	1.7	1.5	0.70	1.0	2.2	2.0
23 January 2020	07 February 2020	1.5	1.0	0.8	2.0	1.0	1.5	2.1	1.8	0.60	1.0	1.3	1.1
07 February 2020	20 February 2020	3.1	1.9	1.1	1.1	0.87	1.0	1.2	1.2	0.68	1.8	2.1	1.8
20 February 2020	05 March 2020	2.5	1.0	1.1	0.75	0.82	0.88	1.3	1.1	0.67	2.0	2.6	2.1
05 March 2020	19 March 2020	1.2	0.78	0.83	1.9	0.93	0.99	1.6	2.0	0.58	2.0	1.6	1.2
19 March 2020	02 April 2020	0.90	0.80	0.92	1.0	0.86	0.80	1.7	2.0	0.57	1.4	1.2	1.0
02 April 2020	16 April 2020	1.5	1.0	0.94	0.79	0.78	0.83	0.86	1.1	0.64	1.6	1.6	*
16 April 2020	30 April 2020	1.1	0.82	0.81	0.96	0.81	0.82	1.3	1.5	0.52	1.1	1.2	1.4
30 April 2020	14 May 2020	1.2	0.96	0.99	1.0	0.68	0.66	0.72	0.94	0.35	1.1	1.3	1.4
14 May 2020	28 May 2020	0.52	0.57	1.3	0.56	1.7	1.1	1.7	2.0	0.80	2.6	1.7	1.3
28 May 2020	11 June 2020	1.1	1.1	2.2	0.66	0.77	0.72	1.2	1.0	0.48	3.6	2.7	3.2
11 June 2020	25 June 2020	1.0	0.73	1.5	0.71	1.0	0.75	1.4	2.3	0.39	2.5	1.8	2.1
25 June 2020	9 July 2020	1.1	0.96	2.7	1.9	1.1	1.5	1.3	1.4	0.37	2.7	1.9	2.6
9 July 2020	23 July 2020	1.2	1.1	2.1	1.1	1.7	1.7	1.0	1.4	0.74	3.4	2.7	2.1
23 July 2020	6 August 2020	1.3	0.92	3.6	3.1	1.3	1.0	1.4	2.2	0.40	2.8	2.3	1.7
6 August 2020	20 August 2020	1.0	1.6	5.2	3.1	1.5	1.3	1.1	1.6	0.41	2.6	1.8	1.4
20 August 2020	3 September 2020	1.6	1.8	5.3	1.4	1.5	1.4	0.85	1.1	0.60	3.7	3.0	2.9
3 September 2020	17 September 2020	0.89	0.72	0.97	1.6	0.73	0.74	1.0	1.3	0.42	1.8	1.4	1.8
17 September 2020	1 October 2020	0.93	0.71	1.5	1.2	1.0	1.3	1.6	1.8	0.50	3.0	2.0	2.0
1 October 2020	15 October 2020	1.2	1.0	0.77	0.72	0.54	0.79	1.0	0.96	0.47	1.6	1.6	2.5
15 October 2020	29 October 2020	0.95	0.81	0.95	2.8	0.64	0.76	1.1	1.8	0.36	1.3	1.2	1.8
29 October 2020	12 November 2020	1.3	1.1	1.6	1.8	1.4	1.6	1.6	1.6	0.82	3.1	1.8	2.3
12 November 2020	26 November 2020**	1.6	1.4	1.2	1.2	0.9	1.3	1.4	1.7	0.73	1.6	2.1	2.6
26 November 2020	10 December 2020	1.4	0.79	0.61	1.2	0.53	0.77	0.66	0.58	0.43	1.0	1.7	1.7
10 December 2020	24 December 2020	1.1	0.76	0.83	0.70	0.58	0.63	1.3	1.6	0.58	2.2	1.5	1.5

*Sample tube was damaged. No sample taken.

**Samples analyzed outside method specified 30 day hold time due to issue with transit to lab

B. As per Section 61(1) of the standard, please see the below table for showing the 3-year benzene measurement baseline:

Baseline Square of STD (S1):	1-FLARE	2-SPHERE	3-WWTP	4-WWTP	5-WWTP	6-FIREHALL	7-RAIL	8-RAIL	9-TERMINAL	10-TANKS	11-TANKS	12-TANKS
	0.22	0.13	0.24	0.20	0.14	0.10	0.12	0.08	0.12	0.20	0.09	0.14

C. Please see the table below for a summary showing the annual average benzene concentration results from the time that the monitor was first required by subsection 60(1).

Year/Results (ug/m3)	1-FLARE	2-SPHERE	3-WWTP	4-WWTP	5-WWTP	6-FIREHALL	7-RAIL	8-RAIL	9-TERMINAL	10-TANKS	11-TANKS	12-TANKS
2018	1.5	1.1	2.0	1.9	1.3	1.3	2.0	1.7	0.8	1.6	2.0	2.0
2019	1.6	1.3	1.8	1.3	1.2	1.2	1.8	1.7	0.7	1.9	2.0	2.1
2020	1.5	1.1	1.6	1.4	1.0	1.1	1.3	1.5	0.6	2.1	1.9	1.9

As per Section 62(3) of the standard, a statistical analysis of the benzene concentrations have not been completed as the program has not been in operation for four full calendar years.