Demonstration Program
Quarterly Progress Report #3

Administrative Order #R9-4171-94-08
Olin Niagara Falls Plant
Niagara Falls, New York

Prepared for:

OLIN CORPORATION

Amec Foster Wheeler Environment &Infrastructure, Inc.
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December 12, 2016
Project 6107-16-0002

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ABBREVIATIONS AND ACRONYMS

Acronym	Definition
GWTS	Groundwater Treatment System
ARGC	Alundum Road-Gill Creek
NYSDEC	New York State Department of Environmental Compliance
VOC	volatile organic compound

1.0 INTRODUCTION

Olin is performing a one year Demonstration Program to evaluate effectiveness of groundwater capture within the Alundum Road-Gill Creek (ARGC) area by the Solvent pumping wells (PWs),PW-3B and PW-4B, located on Olin property.

The Demonstration Program is being performed in accordance with the November 6, 2015 *Demonstration Program Work Plan* (Amec Foster Wheeler, 2015) and the comments provided by New York Department of Environmental Conservation (NYSDEC) in their March 2, 2016 conditional approval letter.

The Demonstration Program commenced March 11, 2016 following shut-down of the Olin groundwater treatment system (GWTS). This report is the third quarterly progress report for the Demonstration Program and covers the period from September 12, 2016 through December 2, 2016. The progress report presents activities completed and data collected during the period as well as an evaluation of the data.

The Demonstration Program's third quarter results support that the Olin GWTS is redundant and that the Solvent GWTS provides hydraulic capture of A and B-Zone groundwater from the ARGC area without the Olin GWTS operating. These results are consistent with the first and second quarterly progress reports and the objectives of the Olin Consent Order and Remedial Plan.

2.0 SITE ACTIVITIES

Water quality samples were collected September 28-29, 2016 from the twelve wells listed in the *Demonstration Program Work Plan* plus the three additional wells requested by NYSDEC in their March 2, 2016 letter. Samples were collected using low flow sampling techniques. The samples were submitted to ALS Environmental Laboratory in Rochester, NY for analysis. The samples were analyzed for volatile organic compounds (VOCs), pesticides, and mercury in accordance with the monitoring requirements in the *Demonstration Work Plan* and the *Groundwater Treatment System Operation and Maintenance Plan* (AMEC, 2014).

Quarterly water level measurements were collected on October 5, 2016. Water level measurements were collected from the quarterly monitoring locations listed in the *Demonstration Work Plan*.

3.0 MONITORING RESULTS

This section presents the potentiometric surface and water quality results from this reporting period.

3.1 A-Zone

Figure 3.1a shows the A-Zone potentiometric surface for October 5, 2016, and Figure 3.1b shows the A-Zone ARGC area in closer detail. A-Zone groundwater in the ARGC area is effectively captured and drained to the B-Zone by the Passive Relief (PR) wells due to the natural downward vertical gradient that exists between the A-Zone and the B-Zone. Since potentiometric heads in the B-zone are below Gill Creek, the passive relief wells are effective in preventing A-Zone groundwater migration to Gill Creek.

The yellow highlighted areas represent areas that are estimated to be dewatered as defined by the bottom elevation of the A-Zone. The dewatered areas also show that the A-zone is being effectively drained to the B-Zone. In cases where the A-Zone was dewatered, the physical bottom of the fracture system was used in the interpreted potentiometric surface.

3.2 B-Zone

Figure 3.2a shows the B-Zone potentiometric surface map for October 5, 2016, and Figure 3.2b shows the B-Zone ARGC area in closer detail. The B-Zone potentiometric surface map shows hydraulic capture of the B-Zone on Olin property by the Solvent pumping wells located on Olin property (PW-3B and PW-4B). The drawdown observed in Solvent pumping well PW-3B creates a gradient that dominates local B-Zone groundwater flow direction on the Olin property. Additionally, groundwater elevations at PN-24B consistently show an inward gradient from across Buffalo Avenue towards the site.

3.3 Water Quality Results

Tables 3.1 through 3.4 show the monitoring results for September 2016 for the following indicator parameters in the A and B-Zones for the wells in the Demonstration Program:

- 1,2,4-Trichlorobenzene – Aromatic
- Trichloroethene – Aliphatic

- Gamma-BHC – Pesticide
- Total Mercury – Mercury

Results from the first two Demonstration Program monitoring events as well as two events prior to the Demonstration Program (June 2014 and June 2015) are included on the tables for comparison. Figures 3.3a/b through 3.6a/b show the constituent distributions for the indicator parameters in the A and B-Zones. The tables and figures show that constituent concentrations and distribution are generally consistent with conditions prior to the Demonstration Program implementation. However, it is noted that the detected concentration of 1,2,4-Trichlorobenzene increased during this event in OBA-2B. The 1,2,4-Trichlorobenzene concentration increased from 37 µg/L in June 2016 to 1,700 µg/L in September 2016. Figure 3.7 shows the 1,2,4-Trichlorobenzene trend in OBA-2B since June 1998. The current concentration is within the historical range and changes in dissolved concentrations in the ARGC area are expected as the system approaches a new equilibrium. As mentioned previously, B-Zone groundwater migration in the ARGC area is controlled and captured by the Solvent GWTS.

4.0 CONCLUSIONS

The Demonstration Program's third quarter results support that the Olin GWTS is redundant and that the Solvent GWTS provides hydraulic capture of A and B-Zone groundwater from the ARGC area without the Olin GWTS operating. These results are consistent with the objectives of the Olin Consent Order and Remedial Plan.

5.0 REFERENCES

AMEC, 2014. *Groundwater Treatment System – Operations and Maintenance Plan.* Kennesaw, GA. AMEC Environment & Infrastructure, Inc. August 15, 2014.

Amec Foster Wheeler, 2015. *Demonstration Program Work Plan.* Kennesaw, GA. Amec Foster Wheeler Environment & Infrastructure, Inc. November 6, 2015

TABLES

Table 3.1: 1,2,4-Trichlorobenzene Results

1,2,4-Trichlorobenzene Concentration - ug/L										
Date	**June 2014**		**June 2015**		**April 2016**		**June 2016**		**Sep 2016**	
A-Zone Wells										
OBA-4A	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
OBA-24A	1.0	U	1.0	U	1.0	U	1.0	U	1.9	
OBA-25A	1.0	U	1.0	U	2.9		1.0	U	1.0	U
OBA-26A	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PN-20A	1.0	U	1.0	U	11		1.0	U	1.0	U
B-Zone Wells										
OBA-2B	180		170		230		37		1700	
OBA-4B	1.0	U	1.0	U	1.5		1.6		1.0	U
OBA-5B	8100		10000		8500		8000		6500	
OBA-6B	100		200		150		230		80	
OBA-24B	520		840		280		310		440	
OBA-25B	1.0	U	1.0	U	4		1.0	U	1.0	U
OBA-26B	1.0	U	3		5.0	U	10	U	31	
PN-5B	8300		8000		8300		9300		6900	
PN-20B	210		55	J	130		70		50	
PN-24B	NA		NA		7.7		1.0	U	1.6	

Notes:

U- constituent not detected- reporting limit shown
ug/L - micrograms per liter
NA - not applicable

Prepared By: B. Rhiner 11/28/2016
Checked By: T. Englund 11/28/2016

Table 3.2: Trichloroethene Results

Trichloroethene Concentration - ug/L										
Date	**June 2014**		**June 2015**		**April 2016**		**June 2016**		**Sep 2016**	
A-Zone Wells										
OBA-4A	16		12		9.9		15.0		22	
OBA-24A	26		20		15		20.0		24	
OBA-25A	22		20		16		27		24	
OBA-26A	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PN-20A	11		16		7.3		14		21	
B-Zone Wells										
OBA-2B	55		28		20		34		160	
OBA-4B	1.2		1.9		1.4		2.3		1.0	U
OBA-5B	20000		20000		10000		13000		9600	
OBA-6B	22		27		23		17		8.3	
OBA-24B	2000		7500		7400		6500		16000	
OBA-25B	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
OBA-26B	1.0	U	1.0	U	5.0	U	10	U	20	U
PN-5B	5600		8300		3400		7300		8100	
PN-20B	4900		1600		3800		1700		1300	
PN-24B	NA		NA		6.4		3.3		3.4	

Notes:

U- constituent not detected- reporting limit shown
ug/L - micrograms per liter
NA - not applicable

Prepared By: B. Rhiner 11/28/2016
Checked By: T. Englund 11/28/2016

Table 3.3: Gamma-BHC Results

Gamma-BHC Concentration - ug/L										
Date	**June 2014**		**June 2015**		**April 2016**		**June 2016**		**Sep 2016**	
A-Zone Wells										
OBA-4A	0.047	U	0.047	U	0.047	U	0.1		0.047	U
OBA-24A	0.047	U	0.047	U	0.047	U	0.047	U	0.23	
OBA-25A	0.047	U	0.047	U	0.13		0.047	U	0.047	
OBA-26A	0.047	U	0.047	U	0.047	U	0.047	U	0.047	
PN-20A	0.047	U	0.047	U	0.047	U	0.068		0.047	
B-Zone Wells										
OBA-2B	0.051		0.047	U	0.048		0.047	U	2.4	
OBA-4B	0.047	U	0.047	U	0.047	U	0.22		0.047	U
OBA-5B	630		460		200		320		290	
OBA-6B	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
OBA-24B	59		78		21		18		49	
OBA-25B	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
OBA-26B	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
PN-5B	1100		1300		1000		1700		1300	
PN-20B	0.27		0.23		0.34		0.31		0.30	
PN-24B	NA		NA		0.047	U	0.047	U	0.062	

Notes:

U- constituent not detected- reporting limit shown
ug/L - micrograms per liter
NA - not applicable

Prepared By: B. Rhiner 11/28/2016
Checked By: T. Englund 11/28/2016

Table 3.4: Total Mercury Results

Total Mercury Concentration - ug/L										
Date	**June 2014**		**June 2015**		**April 2016**		**June 2016**		**Sep 2016**	
A-Zone Wells										
OBA-4A	0.2	U	0.2	U	0.2	U	0.33		0.20	U
OBA-24A	0.2	U	0.2	U	0.2	U	0.2	U	0.20	U
OBA-25A	0.2	U	5.01		4.87		2.02		0.94	
OBA-26A	0.2	U	0.2	U	0.2	U	0.2	U	0.20	U
PN-20A	0.2	U	0.26		0.2	U	0.2	U	0.20	U
B-Zone Wells										
OBA-2B	0.2	U	0.2	U	0.2	U	0.2	U	0.25	
OBA-4B	0.2	U	0.2	U	0.2	U	0.2	U	0.20	U
OBA-5B	0.2	U	0.2	U	0.34		0.2	U	0.20	U
OBA-6B	3.37		1.92		0.2	U	0.2	U	0.20	U
OBA-24B	0.2	U	0	U	0.2	U	0.2	U	0.20	U
OBA-25B	0.2	U	0.2	U	0.2	U	0.2	U	0.20	U
OBA-26B	0.2	U	0.2	U	0.2	U	0.2	U	0.20	U
PN-5B	0.2	U	1.62		0.2	U	1.83		0.37	
PN-20B	0.2	U	0.2	U	0.2	U	0.2	U	0.20	U
PN-24B	NA		NA		0.2	U	0.22		0.20	U

Notes:
U- constituent not detected- reporting limit shown
ug/L - micrograms per liter
NA - not applicable

Prepared By: B. Rhiner 11/28/2016
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FIGURES

Buffalo Avenue

OBA-11A 559.83
OBA-18A 560.27
OBA-19A 560.77
OBA-8A 561.1
OBA-1A 565.99
OBA-7A 564.29
OBA-6A 565.19
OBA-5A 564.31
OBA-2A 561.32
PN-10A 561.35
PN-9A 560.19
PN-20A 561.59
PR-2 561.17
PN-2A 561.41
RW-2-PZ 559.03
PR-3 557.65
OBA-23A 561.3
RW-1-PZ 560.93
PN-18A 562.23
OBA-16A 562.25
PN-3A 562.38
RW-3-PZ 557.01
PN-19A 563.29
PN-1A 563
PN-4A 561.29
PN-16A DRY
PR-4-PZ 557.14
PR-1 563.03
PN-17A 564.04
PR-13 559.15
PN-5A 561.72
OBA-4A 559.53
PN-15A 563.04
PR-6 559.35
RW-4-PZ 557.16
PN-14A 564.45
PR-14 560.94
PR-7 560.49
PN-6A 561.45
PN-13A 564.3
PR-8 558.91
PR-5 558.47
PR-9 560.65
PR-10 560.55
PN-7A 561.63
RW-5-PZ 557.37
PN-12A 564.92
PR-11 563.33
PN-21A 564.51
PN-11A 562.75
OBA-24A 562.15
OBA-25A 561.53
OBA-26A 561.66
PN-8A 563.47
OBA-9A 562.36
PR-12 559.87
OBA-10A 562.5
OBA-9AR 561.21
Gill Creek - Stilling Well 562.83
OBA-15A 557.67
OW-21A DRY
OBA-3A 556.87
OW-22A DRY
OW-5A DRY
OW-20A DRY
OW-6A 561
OBA-14A 557.36

560 560.5 561 561.5 562 562.5 563 563.5 564 564.5 565 565.5

Note:
Yellow Highlighted wells are dry or have water level elevations below the bottom of the A-Zone. Bottom of A-Zone elevation used in contouring for these wells.

0 150 300 Feet

Legend

- Olin Monitoring Well
- Olin Passive Relief Well
- Olin Recovery Well
- Olin Surface Water Monitoring Location
- Solvent Monitoring Well
- Potentiometric Surface Contour
- Interpreted Zone A Dewatered Area (WL < 0 feet)
- Gill Creek
- Approximate Olin Boundary

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Olin Chemicals Plant Niagara Falls, NY

October 5, 2016 A-Zone Potentiometric Surface – Site-Wide

Prepared By-Date: CLS - 11/30/2016	amec foster wheeler	**Figure: 3.1a**
Checked By-Date: AWE - 11/30/2016		
Project Number: 6107160002		

Buffalo Avenue

OBA-2A 561.32
PN-10A 561.35
OBA-23A 561.3
PR-2 561.17
PN-2A 561.41
RW-2-PZ 559.03
PN-9A 560.19
PN-20A 561.59
PR-3 557.65
RW-1-PZ 560.93
PN-19A 563.29
PN-18A 562.23
OBA-16A 562.25
PN-3A 562.38
RW-3-PZ 557.01
PN-1A 563
PR-1 563.03
PN-17A 564.04
PN-16A DRY
PN-4A 561.29
PR-4-PZ 557.14
PR-13 559.15
PN-5A 561.72
PN-15A 563.04
PR-6 559.35
RW-4-PZ 557.16
PR-7 560.49
PN-14A 564.45
OBA-6A 565.19
PR-14 560.94
PN-6A 561.45
PR-8 558.91
PR-5 558.47
PN-13A 564.3
PR-9 560.65
PN-7A 561.63
PN-12A 564.92
PR-10 560.55
RW-5-PZ 557.37
PR-11 563.33
PN-21A 564.51
PN-8A 563.47
OBA-9A 562.36
OBA-5A 564.31
PR-12 559.87
PN-11A 562.75
OBA-9AR 561.21
Gill Creek - Stilling Well 562.83
OBA-10A 562.5
OBA-4A 559.53
OBA-24A 562.15
OBA-15A 557.67
OW-21A DRY
OBA-3A 556.87
OW-22A DRY
OW-5A DRY
OW-20A DRY
OW-6A 561
OBA-25A 561.53
OBA-14A 557.36
OBA-26A 561.66

563 562.5 562 561.5 561 560.5 560 559.5 559 558.5 557.5 557 563.5 564 564.5 565

Legend

- Olin Monitoring Well
- Olin Passive Relief Well
- Olin Recovery Well
- Olin Surface Water Monitoring Location
- Solvent Monitoring Well
- Potentiometric Surface Contour
- Gill Creek
- Approximate Olin Boundary
- Interpreted Zone A Dewatered Area (WL < 0 feet)

Note:
Yellow Highlighted wells are dry or have water level elevations below the bottom of the A-Zone. Bottom of A-Zone elevation used in contouring for these wells.

0 100 200 Feet

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Olin Chemicals Plant Niagara Falls, NY

October 5, 2016 A-Zone Potentiometric Surface – ARGC Area

Prepared By-Date: JRM - 11/30/2016	amec foster wheeler	**Figure: 3.1b**
Checked By-Date: AWE - 11/30/2016		
Project Number: 6107160002		

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Buffalo Avenue

OBA-11B 556.52
OBA-1B 558.12
OBA-2B 557.12
OBA-8B 557.83
OBA-23B 558.01
OBA-16B 557.19
OBA-4B 557.44
OBA-14B 556.93
OBA-26B 557.41
OBA-25B 556.84
OBA-24B 557.34
OBA-5B 559.96

PN-24B 557.37
PN-10B 557.91
PN-2B 557.13
PN-9B 557.11
PN-20B 556.04
PN-3B 557.97
PN-19B 560.81*
PN-1B 558.15
PN-18B 558.31
PN-4B 557.19
PN-17B 558.03
PN-15B 557.5
PN-5B 557.12
PN-13B 557.69
PN-6B 557.13
PN-7B 557.5
PN-12B 557.65
PN-21B 558.44
PN-11B 557.53
PN-8B 557.22

RW-2-PZ 557.13
RW-3-PZ 557.01
RW-1-PZ 558.05
PR-4-PZ 557.14
RW-4-PZ 557.16
RW-5-PZ 557.37
PR-12 559.87

OW-32B 557.37
OW-15B 557.37
OW-31B 557.4
OW-14B 556.72
OW-22B 557.09
OW-25B 556.98
OW-24B 557.2
OW-33B 557.2
PW-3B 554.4
OW-4B 557.42
PW-4B 556.43
OW-23B 556.93

556.6 556.8 557 557.2 557.4 557.6 557.8 558 558.2 558.4 558.6 558.8 559 559.2 559.4 559.6 559.8

Legend

- Olin Monitoring Well
- Olin Recovery Well
- Solvent Monitoring Well
- Solvent Recovery Well
- Potentiometric Surface Contour
- Gill Creek
- Approximate Olin Boundary

Notes:
*** - Not used in contouring - inconsistent with historical data**

0 100 200 Feet

Demonstration Program Quarterly Report #3

Olin Chemicals Plant Niagara Falls, NY

October 5, 2016 B-Zone Potentiometric Surface - Site Wide

Prepared By-Date: JRM - 12/9/2016	amec foster wheeler	**Figure: 3.2a**
Checked By-Date: AWE - 12/9/2016		
Project Number: 6107160002		

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Buffalo Avenue

PN-24B 557.37
OBA-2B 557.12
PN-10B 557.91
OBA-23B 558.01
PN-19B 560.89*
RW-1-PZ 558.05
PN-1B 558.15
PN-17B 558.03
PN-2B 557.13
RW-2-PZ 557.13
PN-18B 558.31
OBA-16B 557.19
PN-9B 557.11
PN-20B 556.04
PN-3B 557.97
RW-3-PZ 557.01
PN-4B 557.19
PR-4-PZ 557.14
PN-5B 557.12
PN-15B 557.5
RW-4-PZ 557.16
PN-6B 557.13
PN-13B 557.69
PN-12B 557.65
PN-7B 557.5
RW-5-PZ 557.37
PN-21B 558.44
PN-11B 557.53
OBA-5B 559.96
PN-8B 557.22
PR-12 559.87
OW-14B 556.72
OW-31B 557.4
OW-32B 557.37
OW-22B 557.09
OW-15B 557.37
OW-25B 556.98
OW-24B 557.2
OW-33B 557.2
PW-3B 554.4
OW-4B 557.42
OW-23B 556.93
PW-4B 556.43
OBA-4B 557.44
OBA-14B 556.93
OBA-26B 557.41
OBA-24B 557.34
OBA-25B 556.84

557.8 557.6 557.4 557.2 558 558.2 558.4 558.6 558.8 559 559.2 559.4 559.6 559.8 556.2 556 555.8 555.6 555.4 555.2 557 556.8 556.6 556.4

Legend

- Olin Monitoring Well
- Olin Recovery Well
- Solvent Monitoring Well
- Solvent Recovery Well
- Potentiometric Surface Contour
- Gill Creek
- Approximate Olin Boundary

Notes:
*** - Not used in contouring - inconsistent with historical data**

0 100 200 Feet

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Olin Chemicals Plant Niagara Falls, NY

October 5, 2016 B-Zone Potentiometric Surface - ARGC Area

Prepared By-Date: JRM - 12/9/2016	amec foster wheeler	**Figure: 3.2b**
Checked By-Date: AWE - 12/9/2016		
Project Number: 6107160002		

Buffalo Avenue

PN-20A
1.0U

OBA-4A
1.0U

OBA-26A
1.0U

OBA-24A
1.9

OBA-25A
1.0U

0 100 200 Feet

Legend

1,2,4-Trichlorobenzene (µg/L)

- 0.5 - 5
- 5 - 50
- 50 - 500
- 500 - 5000
- 5000 - 50000
- Gill Creek
- Approximate Olin Boundary

Notes:
U - Not Detected

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Olin Chemicals Plant Niagara Falls, NY

1,2,4-Trichlorobenzene Concentrations - A-Zone September 2016

Prepared By-Date: CLS - 12/13/2016	amec foster wheeler	**Figure: 3.3a**
Checked By-Date: AWE - 12/13/2016		
Project Number: 6107160002		

PN-24B
1.6

OBA-2B
1700

PN-20B
50

Buffalo Avenue

PN-5B
6900

OBA-4B
1.0U

OBA-6B
80

OBA-26B
31

OBA-5B
6500

OBA-24B
440

OBA-25B
1.0U

Legend

1,2,4 - Trichlorobenzene (µg/L)

- 0.5 - 5
- 5 - 50
- 50 - 500
- 500 - 5000
- 5000 - 50000
- Gill Creek
- Approximate Olin Boundary

Notes:
U - Not Detected

0 100 200 Feet

Path: G:\olin_niagra\November 2016 Constituent Figures\MXD\B_Zone_trichlorobenzene.mxd

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Olin Chemicals Plant Niagara Falls, NY

1,2,4-Trichlorobenzene Concentrations - B-Zone
September 2016

Prepared By-Date: CLS - 12/13/2016	amec foster wheeler	**Figure: 3.3b**
Checked By-Date: AWE - 12/13/2016		
Project Number: 6107160002		

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PN-20A
21

OBA-4A
22

OBA-26A
1.0U

OBA-24A
24

OBA-25A
24

Buffalo Avenue

Legend

Trichloroethene (µg/L)

- 0.5 - 5
- 5 - 50
- 50 - 500
- Gill Creek
- Approximate Olin Boundary

Notes:
U - Not Detected

0 100 200 Feet

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Olin Chemicals Plant Niagara Falls, NY

Trichloroethene Concentrations - A-Zone
September 2016

Prepared By-Date: CLS - 12/13/2016	amec foster wheeler	**Figure: 3.4a**
Checked By-Date: AWE - 12/13/2016		
Project Number: 6107160002		

PN-24B
3.4

OBA-2B
160

PN-20B
1300

Buffalo Avenue

PN-5B
8100

OBA-4B
1.0U

OBA-6B
8.3

OBA-26B
20U

OBA-5B
9600

OBA-24B
16000

OBA-25B
1.0U

Legend

Trichloroethene (µg/L)

- 0.5 - 5
- 5 - 50
- 50 - 500
- 500 - 5000
- 5000 - 50000
- Gill Creek
- Approximate Olin Boundary

Notes:
U - Not Detected

0 100 200 Feet

Path: G:\olin_niagra\November 2016 Constituent Figures\MXD\B_Zone_trichloroethene.mxd

Demonstration Program Quarterly Report #3

Olin Chemicals Plant Niagara Falls, NY

Trichloroethene Concentrations - B-Zone
September 2016

Prepared By-Date: JRM - 12/13/2016	amec foster wheeler	**Figure: 3.4b**
Checked By-Date: AWE - 12/13/2016		
Project Number: 6107160002		

Buffalo Avenue

PN-20A
0.047U

OBA-4A
0.047U

OBA-26A
0.047U

OBA-24A
0.23

OBA-25A
0.047U

Legend

Gamma BHC (µg/L)

- 0.005 - 0.05
- 0.05 - 0.5
- 0.5 - 5
- 5 - 50
- 50 - 500
- Gill Creek
- Approximate Olin Boundary

Notes:
U - Not Detected

0 100 200 Feet

Path: G:\olin_niagra\November 2016 Constituent Figures\MXD\A_Zone_Gamma.mxd

Demonstration Program Quarterly Report #3

Olin Chemicals Plant Niagara Falls, NY

Gamma-BHC Concentrations - A-Zone
September 2016

Prepared By-Date: CLS - 12/13/2016	amec foster wheeler
Checked By-Date: AWE - 12/13/2016	
Project Number: 6107160002	

Figure: 3.5a

PN-24B
0.062

OBA-2B
2.4

PN-20B
0.30

Buffalo Avenue

PN-5B
1300

OBA-4B
0.047U

OBA-6B
0.047U

OBA-26B
0.047U

OBA-5B
290

OBA-24B
49

OBA-25B
0.047U

Legend

Gamma BHC (µg/L)

- 0.005 - 0.05
- 0.05 - 0.5
- 0.5 - 5
- 5 - 50
- 50 - 500
- 500 - 5000
- Gill Creek
- Approximate Olin Boundary

Notes:
U - Not Detected

0 100 200 Feet

Path: G:\olin_niagra\November 2016 Constituent Figures\MXD\B_Zone_Gamma.mxd

Demonstration Program Quarterly Report #3

Olin Chemicals Plant Niagara Falls, NY

Gamma-BHC Concentrations - B-Zone
September 2016

Prepared By-Date: JRM - 12/13/2016	amec foster wheeler	**Figure: 3.5b**
Checked By-Date: AWE - 12/13/2016		
Project Number: 6107160002		

Buffalo Avenue

PN-20A
0.2U

OBA-4A
0.2U

OBA-26A
0.2U

OBA-24A
0.2U

OBA-25A
0.94

Legend

Total Mercury (µg/L)

- 0.2 - 2
- 2 - 20
- 20 - 200
- 200 - 2000
- Gill Creek
- Approximate Olin Boundary

Notes:
U - Not Detected

0 100 200 Feet

Path: G:\olin_niagra\November 2016 Constituent Figures\MXD\A_Zone_Mercury.mxd

Demonstration Program Quarterly Report #3

Olin Chemicals Plant Niagara Falls, NY

Total Mercury Concentrations - A-Zone
September 2016

Prepared By-Date: CLS - 12/13/2016	amec foster wheeler	**Figure: 3.6a**
Checked By-Date: AWE - 12/13/2016		
Project Number: 6107160002		

PN-24B
0.20U

OBA-2B
0.25

PN-20B
0.20U

Buffalo Avenue

PN-5B
0.37

OBA-4B
0.20U

OBA-6B
0.20U

OBA-26B
0.20U

OBA-5B
0.20U

OBA-24B
0.20U

OBA-25B
0.20U

Legend

Total Mercury (µg/L)

- 0.2 - 2
- 2 - 20
- 20 - 200
- Gill Creek
- Approximate Olin Boundary

Notes:
U - Not Detected

0 100 200 Feet

Path: G:\olin_niagra\November 2016 Constituent Figures\MXD\B_Zone_Mercury.mxd

Demonstration Program Quarterly Report #3

Olin Chemicals Plant Niagara Falls, NY

Total Mercury Concentrations - B-Zone
September 2016

Prepared By-Date: CLS - 12/13/2016	amec foster wheeler	**Figure: 3.6b**
Checked By-Date: AWE - 12/13/2016		
Project Number: 6107160002		

Figure 3.7
OBA-2B - 1,2,4-Trichlorobenzene Trend