

POST-CLOSURE MONITORING REPORT
GROUNDWATER COLLECTION AND
TREATMENT SYSTEM

NYSDEC SITE NO. 9-15-066, OPERABLE UNIT 2
CHEEKTOWAGA, NEW YORK

PREPARED BY



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1.0 INTRODUCTION

CBS Corporation (CBS)¹ has prepared this *Post-Closure Monitoring Report* to document the groundwater and surface water monitoring conducted following closure of the groundwater collection and treatment system that was a component of Operable Unit 2 (OU2) at New York State Department of Environmental Conservation (NYSDEC) Site No. 9-15-066 in Cheektowaga, New York (the “Site”). Since 1999, CBS has managed the Remedial Program at the Site on behalf of the Respondents to the Order on Consent and Settlement Agreement, Index No. B9-0381-91-8 (the “Order”) entered with NYSDEC.

Under the OU2 Record of Decision (ROD) issued by NYSDEC in December 1995, the collection and treatment system addressed groundwater in the central and southern portion of the Site using former plant storm sewers for subsurface collection and conveyance. Figure 1 is a Site plan showing the locations of the collection system and associated post-closure sampling locations.

After operating for approximately 12 years, CBS presented the rationale for closing the Site groundwater collection and treatment system in the report *Termination of Operation, Maintenance, and Monitoring Activities* submitted to NYSDEC on September 7, 2012 and reviewed with NYSDEC in the meeting of September 12, 2012. As described in that report, the remediation goals and Remedial Action Objectives (RAOs) for volatile organic compounds (VOCs) and metals in groundwater had been met throughout the portion of the Site influenced by the collection and treatment system. On that basis, CBS proposed to NYSDEC that the collection and treatment system be closed.

CBS subsequently prepared the *Work Plan for the Final Closure of the Groundwater Collection and Treatment System* (the “Work Plan”) describing the sequence and methods to be employed in closing the collection and treatment system, the plan for post-closure monitoring, and the schedule of planned activities. The Work Plan also outlined the environmental restrictive covenants to be placed on the affected portion of the Site by the Niagara Frontier Transportation Authority (NFTA) as the property owner and a Respondent under the Order. CBS submitted the Work Plan to NYSDEC on October 10, 2012. NYSDEC reviewed the Work Plan and provided comments via correspondence dated November 27, 2012. CBS evaluated the NYSDEC comments, and responses to comments were reflected in Revision 1 to the Work Plan, which was submitted to NYSDEC on December 2, 2013.²

¹ CBS Corporation is the successor by corporate name change to Viacom Inc., which, in turn was the successor to Westinghouse Electric Corporation. For simplicity in this report, references to recent (1999 and later) actions undertaken by “CBS” include actions by its predecessors.

² Further references to the Work Plan in this report are to Revision 1 submitted on December 2, 2013.

NYSDEC approved the Work Plan on January 27, 2014. CBS subsequently completed the closure activities in accordance with the approved Work Plan and submitted the *Final Closure Report* on January 28, 2015.

2.0 OVERVIEW OF POST-CLOSURE MONITORING

In accordance with the approved Work Plan, CBS conducted eight quarterly rounds of post-closure groundwater and surface water monitoring. This quarterly monitoring, which was initiated in November 2014 and completed in September 2016, was conducted to assess the effects of closing the groundwater collection and treatment system on groundwater and local surface water associated with the NFTA storm sewer system. The post-closure monitoring period was also established to allow identification of any newly manifested discharges to surface water that may be related to the closure of the groundwater collection and treatment system. No such discharges were identified or reported.

Nine wells located in the central and southern portion of the Site (*i.e.*, wells within the area of influence of the former groundwater collection system) were monitored quarterly for two years after closure. These same wells had been routinely monitored for groundwater quality since completion of Operable Unit 1, *i.e.*, MW-2, MW-5, MW-28, MW-30, MW-31, MW-33, MW-34, MW-34D, and MW-35.³ Eight of these wells were screened in the uppermost unconsolidated aquifer, and one well (*i.e.*, MW-34D) was screened deeper in bedrock. In addition, well MW-32, situated in the northern portion of the Site and screened in the shallow aquifer, was monitored quarterly for two years. MW-32 is located outside the area of influence of the former groundwater collection system.

Coincident with the groundwater monitoring, surface water monitoring was conducted quarterly for two years at discharges from the NFTA storm sewers that collect surface water runoff and flows in shallow underdrains from those portions of the Site where the collection and treatment system had operated. Figure 1 shows these storm sewers and monitoring locations. These locations represent the furthest downstream points that are accessible for sampling and do not receive significant flows from other portions of the airport property or from Genesee Street. Flows were estimated at the time of each sample collection, and other pertinent observations regarding the discharges (*e.g.*, sheen, precipitate) were recorded. A baseline round of surface water samples was collected in June 2014, before system closure.

The post-closure monitoring program was performed in accordance with the approved Work Plan and the draft Site Management Plan (SMP) prepared by C&S Engineers, Inc. and submitted to the NYSDEC in September 2014. GHD Services, Inc. (GHD)⁴ conducted the field sampling and provided data evaluation and validation services. The TestAmerica Laboratories, Inc. facility in Pittsburgh, Pennsylvania (TestAmerica) conducted sample analysis.

³ Well MW-35 was installed in 2008.

⁴ GHD was formerly known as Conestoga-Rovers and Associates (CRA). For simplicity in this report, references to actions undertaken by GHD include actions taken by CRA.

3.0 FIELD SAMPLING METHODS

This section summarizes the methods and protocols used to implement the post-closure monitoring program, including the following:

- Measurement of groundwater levels at monitoring wells;
- Sampling of groundwater monitoring wells;
- Sampling and flow measurements of surface water from NFTA storm water collection system catch basins and manholes downgradient of the former groundwater collection system;
- Sample handling, recordkeeping, and chain-of-custody;
- Equipment cleaning; and
- Investigation-derived waste handling.

Except as specifically noted in this *Post-Closure Monitoring Report*, these protocols were consistent with the Work Plan and draft SMP. Post-closure activities were also conducted in accordance with the health and safety requirements of the *GHD Site Health and Safety Plan for Post Remediation Activities* dated September 2014. As part of this health and safety program, a tailgate safety meeting was conducted and documented before each sampling event, and proper traffic management and safety equipment were utilized as needed throughout the field activities. Access to secure areas of the airport facility was arranged through the NFTA Facilities Maintenance Department, with NFTA personnel providing an escort while field work was conducted within secure areas of the Site.

3.1 GENERAL SAMPLING PROTOCOLS

The following general sampling protocols were conducted for all sampling activities presented in this report.

- Prior to sampling, sampling instruments were calibrated per the equipment manufacturer's instructions. Calibration results were documented in the field records.
- Prior to sampling at any location, the general condition of the monitoring well, catch basin, or manhole was observed and noted, and water levels or operating conditions of the location were measured and recorded.
- Disposable gloves were worn by samplers and changed between sampling points. Additional glove changes were made as necessary.

Appendices A and B provide the field sheets for groundwater and surface water sampling, respectively.

3.2 GROUNDWATER SAMPLING

Groundwater samples were collected on a quarterly basis for two years beginning in November 2014 from monitoring wells MW-2, MW-5, MW-28, MW-30, MW-31, MW-32, MW-33, MW-34, MW-34D, and MW-35. The locations of these wells are shown in Figure 1, and Table 1 presents well construction details.

3.2.1 Water Level Measurements

Groundwater levels were obtained at each monitoring well by measuring the distance from the top of the well riser inside the protective casing to the top of the water column using an electronic water level meter. Measurements were obtained to ± 0.01 foot accuracy. Water level measuring equipment that came in contact with well water was cleaned as described in Section 3.5 to minimize potential cross-contamination.

3.2.2 Monitoring Well Purging and Groundwater Sample Collection

Groundwater sampling was conducted using low-flow purge and sampling methods. Because of the slow recovery in these wells, pumping rates of 100 milliliters per minute or less were used to limit the drawdown of the groundwater table during well purging and sampling.

A variable-speed peristaltic pump connected to location-dedicated Teflon[®] tubing was used to pump the groundwater from the monitoring well during well purging and sample collection. The pump discharge tubing was connected to a flow-through cell (*i.e.*, Horiba U-22 or YSI Pro Series Model), and field parameters were measured using the flow-through cell during well purging, including pH, specific conductance, temperature, and oxidation-reduction potential (ORP). Turbidity was measured separately using a Hach portable nephelometer, calibrated to manufacturer-supplied secondary turbidity standard solutions. Purging flow rates and depth to groundwater were also measured during purging.

Field parameters were recorded on the sampling data sheets every five minutes during purging. Stabilization was considered to be complete after three consecutive readings were within the following limits:

- pH ± 0.1 unit;
- Temperature ± 3 percent;
- Conductivity ± 3 percent;
- ORP ± 10 units; and
- Turbidity ± 10 percent or less than 10 units.

Once stabilization occurred, the pump tubing was disconnected from the flow-through cell, and the sample containers were filled directly from the pump tubing without changing the pumping rate. The sample containers were packaged in laboratory-supplied coolers and shipped overnight via commercial courier to be analyzed at TestAmerica.

3.2.3 Quality Control Samples

Quality control samples were collected during each of the quarterly groundwater sampling rounds. For each round of sampling, one sample was submitted as a blind field duplicate sample as a check on analytical reproducibility, and one sample was collected in triplicate for use by the laboratory as internal quality control for spiked sample recovery. This sample was identified as a matrix spike/matrix spike duplicate (MS/MSD) sample on the chain-of-custody form. A trip blank was also included with each group of samples for VOC analysis.

3.3 SURFACE WATER SAMPLING

Surface water samples were collected on a quarterly basis for two years post-closure, beginning in November 2014, from NFTA manholes and catch basins in the vicinity of the three segments of storm sewer used for groundwater collection. A baseline round of surface water samples was also collected in June 2014, before system closure. The sample points are identified as locations MH-1A, MH-1B, MH-1C, MH-2A, MH-2B, MH-2C, MH-2D, MH-3A, MH-3B, and MH-3C and are shown in Figure 1. In each of these three areas, the “A” location was furthest downstream; “B,” “C,” and “D” locations were further upstream.

3.3.1 Water Level and Flow Estimates

The depth to water in each manhole or catch basin was measured, and the general condition of the location was noted prior to sampling. Water levels were obtained by measuring the distance from the top of the manhole or catch basin rim to the top of the water using an electronic water level meter. Measurements were obtained to ± 0.01 foot accuracy. Where water depths were less than 0.4 inches, chalk on a rod was used to estimate the water depth. This alternate method was necessary at locations MH-1A and MH-1B. Water level measuring equipment that came in contact with surface water was cleaned to minimize the potential for cross contamination (Section 3.5).

Flows in manholes and catch basins were estimated visually at each location based on the depth and width of the flow and flow velocity. Because of the depth and complexity of some of the manholes and catch basins (*i.e.*, multiple pipes entering and exiting), this method provided only semi-quantitative information, and reported flow rates should be considered only as relative values.

Sediment presence was noted in the manholes and in the samples as collected. In addition to the laboratory measurement, the pH was also measured in the field during sample collection using a calibrated pH meter.

3.3.2 Surface Water Sample Collection

Surface water sampling was conducted using either a polyethylene jar attached to an extendable pole or a disposable bailer submerged in the water column to collect the water from the appropriate inlet or outlet at each manhole or catch basin. The dipper jars and bailers were used at one location and disposed of after use. Surface water samples were collected as grab

samples and were slowly poured from the jar or bailer directly into the laboratory-supplied sample containers. The collected surface water samples were packaged in laboratory-supplied coolers that were shipped overnight via commercial courier to TestAmerica.

3.3.3 Quality Control Samples

Quality control samples were collected during each of the quarterly surface water sampling rounds. For each round of surface water samples submitted, one sample was submitted as a blind field duplicate sample as a check on analytical reproducibility, and one sample was collected in triplicate for use by the laboratory as internal quality control for spiked sample recovery. This sample was identified as an MS/MSD sample on the chain-of-custody form. A trip blank was included with each group of post-closure samples for VOC analysis.

3.4 SAMPLE HANDLING, RECORD KEEPING, AND CHAIN OF CUSTODY

Sample containers were provided by the analytical laboratory and were pre-preserved as needed. Labels for the sample containers were completed by the field sampling team. Sample containers were identified with a unique sample identification for each sample point during each round of sampling. This identification was in the following format:

- Sample Matrix;
- Project Number;
- Sample Date; and
- Sample Number.

The container labels also noted the analysis required, preservative, date and time of sampling, and the sampler's initials.

Upon collection, the filled sample containers were packaged in wet ice within heavy duty plastic bags inside laboratory-supplied insulated coolers. The heavy duty plastic bags were sealed before shipping of the samples to prevent water leakage. A completed chain-of-custody form was placed in a separate watertight plastic bag inside the cooler with the samples, and at least one copy of the chain-of-custody form was retained by the sampler. The collected samples remained under the control of the sampling personnel in the field until the coolers were sealed for shipment to the laboratory. The sample coolers were securely sealed using strapping ribbon or packing tape, and a custody seal was affixed to the cooler to document that the coolers were not opened before arrival at the laboratory. The coolers containing the collected samples were shipped to the laboratory via a commercial overnight courier.

Copies of field records and a field sample key showing which sample number was collected from which location were transmitted to CBS following each sample round, with the original documents retained at the GHD Niagara Falls, New York office. Copies of the groundwater and surface water sampling field records are provided in Appendices A and B, respectively.

3.5 SAMPLING EQUIPMENT CLEANING

All non-dedicated and non-disposable sampling equipment and field instruments were cleaned before use on-site and between sampling locations. This equipment included the pH meter used to measure pH of surface water samples, the dipper pole used to collect the surface water samples, the water level meters used to measure depth to water in the monitoring wells and manholes/catch basins, and the flow-through cells used to measure field parameters during purging of the monitoring wells. This equipment was cleaned by flushing and wiping the components to remove all visible sediments followed by a soapy water rinse, a tap water rinse, and a deionized water rinse.

3.6 INVESTIGATION-DERIVED WASTE HANDLING

Sampling-generated solid wastes (*e.g.*, gloves, used tubing, used bailers) were collected and sealed in plastic garbage bags. The bags were disposed to the waste dumpster at the GHD offices in Niagara Falls, New York. Waste from this dumpster is handled by Modern Disposal at its municipal solid waste landfill in Niagara Falls, New York.

Purge water from the groundwater monitoring wells was consolidated in a 55-gallon drum or in 5-gallon buckets at the former treatment building until approval for disposal was received from NFTA. The purge water was then placed into the on-site NFTA underground wetland that is used for biological treatment of the airport deicing area runoff liquids.

4.0 LABORATORY ANALYSIS

4.1 GROUNDWATER ANALYSIS

Groundwater samples were analyzed for VOCs by U.S. Environmental Protection Agency (EPA) Method 624. As described in the Work Plan, the target VOCs were those specified in the OU2 ROD:

- 1,2-Dichloroethylene;
- Toluene;
- Trichloroethylene (TCE);
- Vinyl chloride; and
- 1,1,1-trichloroethane.

In addition, the metals cadmium and lead were analyzed using EPA Method 200.7.

Initially, the laboratory only reported concentrations of the *cis* isomer of 1,2-dichloroethylene, which is the dominant form of this compound. To ensure the 1,2-dichloroethylene concentrations reflected the total concentrations of this compound, the laboratory reviewed the data and subsequently quantified concentrations of the less-common *trans* isomer. No *trans*-1,2-dichloroethylene was detected in groundwater except at well MW-32.

4.2 SURFACE WATER ANALYSIS

Surface water samples were analyzed for VOCs by EPA Method 624. As described in the Work Plan and draft SMP, the target VOCs were the following.

- 1,2-dichlorobenzene;
- *Cis*-1,2-dichloroethylene;
- Methylene chloride;
- Tetrachloroethylene (PCE);
- Toluene;
- TCE; and
- Vinyl chloride.

In addition, the metals cadmium, chromium, and lead were analyzed using EPA Method 200.7; pH (Standard Method 4500 H+ B) and total suspended solids (TSS) (Standard Method 2540D) were also determined for the surface water samples.

The Work Plan and draft SMP had identified EPA SW-846 methods for VOCs and metals. In implementing the post-closure monitoring, however, the EPA methods more appropriate for surface water discharges (*i.e.*, Method 624 [VOCs] and Method 200.7 [metals]) were

substituted.⁵ These methods provide equivalent analytical accuracy and precision and equal or lower reporting limits.

In addition to the target VOCs, the laboratory quantified all target compound list VOCs for the sampling conducted in November 2014, September 2015, and September 2016. No other VOCs were detected at elevated concentrations.

4.3 DATA VALIDATION

GHD conducted data reviews and limited validation of the post-closure quarterly data provided by TestAmerica to confirm the usability of the analytical results. Although some reported data needed to be qualified based on these assessments, none of the analytical data was rejected. Copies of the data validation reports are provided in Appendix C. Note that additional VOCs were requested from the laboratory subsequent to the data validation process. These data are presented in the laboratory reports along with the target VOCs in Appendix D.

⁵ The Work Plan did not specify methods for VOCs or metals analysis for groundwater samples. Methods 624 (VOCs) and 200.7 (metals) were used for consistency with the surface water samples.

5.0 GROUNDWATER RESULTS

5.1 GROUNDWATER LEVELS

Table 2 presents groundwater elevations measured over the course of post-closure groundwater monitoring. Where available, pre-closure data from April 2008 and June 2011 are also included in this table for reference.

Examination of the water-level data presented in Table 2 indicates that closure of the groundwater recovery and treatment system had little to no effect on groundwater elevations in the central and southern portion of the Site. In the eight wells located in this portion of the Site and screened in the shallow zone (*i.e.*, MW-2, MW-5, MW-28, MW-30, MW-31, MW-33, MW-34, and MW-35), average water levels over the eight quarters of monitoring were within 0.2 feet of water levels recorded in the June 14, 2011 baseline sampling, and no trends in elevation were discernible in any wells over the eight rounds of post-closure monitoring. The groundwater level in deeper (bedrock) well MW-34D was higher during the post-closure monitoring than pre-closure monitoring, but the reason for this change is not known. The data for MW-34D show no trend, and water level fluctuations at this well have exceeded five feet over the eight rounds of post-closure monitoring. Well MW-32, which is not within the zone of influence of the former groundwater collection and treatment system, showed a minor increase over the June 14, 2011 baseline, but again, no trend was evident over the eight rounds of post-closure monitoring.

5.2 GROUNDWATER ANALYTICAL DATA

Table 3 summarizes the results of the groundwater analyses over the course of post-closure monitoring. The analytical data have been routinely uploaded to the NYSDEC EQuIS database, and copies of the laboratory reports, along with an index of laboratory report numbers and sample numbers, are provided in Appendix D. Monitoring well locations are shown in Figure 1.

5.2.1 VOCs

As shown in Table 3, the monitored VOCs were only sporadically detected at low levels in the nine wells located in the central and southern portion of the Site (*i.e.*, MW-2, MW-5, MW-28, MW-30, MW-31, MW-33, MW-34, MW-34D, and MW-35), and no VOCs were detected above their respective RAOs in any sample in any of these wells.

Vinyl chloride and 1,2-dichloroethylene were detected in groundwater at monitoring well MW-32 at concentrations above their RAOs. MW-32 is located at the northern portion of the Site outside the zone of influence of the former groundwater collection system. Well MW-32 historically exhibited elevated VOC concentrations, and groundwater at this location was the focus of an *in situ* chemical oxidation treatment program that resulted in substantial decreases in VOC concentrations.

5.2.2 **Cadmium and Lead**

Except for an elevated lead concentration in one sample (*i.e.*, MW-5 in June 2015), cadmium and lead were only sporadically detected at low levels in Site groundwater, and all such detections were below their respective RAOs. The reason for the lead concentration detected in the June 2015 sample from MW-5 is not known. Lead was not detected at this well in the five subsequent sampling rounds.

6.0 SURFACE WATER RESULTS

6.1 SURFACE WATER ANALYTICAL DATA

Tables 4 through 6 summarize the results of the eight rounds of post-closure monitoring of the surface water sampled from the NFTA storm sewer system. These tables present the data associated with the 001, 002, and 003 segments of the former groundwater collection system, respectively. These tables also include the baseline sampling data collected in December 2008 and April 2009 as part of the partial closure of the 001 system and the pre-closure baseline sampling collected in July 2014. NYSDEC has not established discharge limits applicable to these surface water flows.

The analytical data have been routinely uploaded to the NYSDEC EQuIS database, and copies of the laboratory reports, along with an index of laboratory report numbers and sample numbers, are provided in Appendix D. Manhole and catch basin sampling locations are shown in Figure 1.

6.1.1 VOCs

As indicated in Tables 4 through 6, low constituent concentrations of target VOCs are evident in the area of the 001 segment of the former collection system (*i.e.*, Manholes MH-1A, MH-1B, and MH-1C) and in the western portion of the 003 segment (*i.e.*, Manholes MH-3B and MH-3C). The monitored VOCs were only sporadically detected at low levels in these manholes.

Higher VOC concentrations are present in the area of the 002 segment (*i.e.*, Manholes MH-2A through MH-2D) and the eastern portion of the 003 segment of the former groundwater collection system (*i.e.*, Manhole MH-3A). VOCs found at elevated concentrations were primarily PCE; TCE; *cis*-1,2-dichloroethylene; and vinyl chloride.

Table 7 presents the results of the evaluation of other (non-target) VOCs from the November 2014, September 2015, and September 2016 monitoring rounds. As shown in this table, a number of VOCs were at times detected in various manhole samples. Some of these constituents (*e.g.*, acetone) may be laboratory contaminants. In all cases, concentrations are considered low, and the data do not suggest any upward trends in concentration.

6.1.2 Metals

Concentrations of the monitored metals (*i.e.*, cadmium, chromium, and lead) were generally low or were not detected, although periodically higher concentrations were detected, primarily associated with samples showing high levels of TSS.

6.2 COMPARISONS TO PRE-CLOSURE CONDITIONS AND TRENDS

The approved Work Plan specifies that the results of the post-closure surface water monitoring is to be compared to the baseline sampling data collected in 2008 and 2009, and if VOC and

metals concentrations decrease or remain consistent with the 2008/2009 data, this two-year monitoring period will complete post-remedial surface water monitoring. If VOC or metals concentrations show a statistically significant increase or upward trend, NYSDEC would be consulted.

Mann Kendall statistical analysis was employed for this trend evaluation. Use of the Mann Kendall methodology was expedited using a web-based tool kit,⁶ and multiple evaluations were conducted to fully explore possible trends. For VOCs, data were analyzed for the total sum of chlorinated alkenes (*i.e.*, PCE, TCE, *cis*-1,2-dichloroethylene, and vinyl chloride [collectively referred to as total VOCs]) in both nanomoles per liter (nm/L) and micrograms per liter (µg/L). Manhole locations where the total number of detections of these constituents was greater than 50 percent were included in the total VOCs analysis. In manholes where the total number of detections was less than or equal to 50 percent, but the number of detections of one of the individual constituents was greater than 50 percent, that constituent alone was analyzed. PCE and TCE alone (in µg/L) were also analyzed for each manhole with greater than 50 percent detections of PCE or TCE, respectively.

For metals, the data were first examined for identification of potential increasing or decreasing trends. Cadmium in MH-1A, chromium in MH-2B, MH-3B, and MH-3C, and lead in MH-1A were identified as having potential trends. Each of these constituents in each identified manhole was included in the analysis. For all other locations, it was readily clear that no trends were present due to the sporadic detections and preponderance of values reported as “non-detect.”

For all of the analyses, concentrations reported as “non-detect” were included at a concentration of 20 percent of the reporting limit. Detections that were qualified as estimated (“J”) values were included as the estimated value, and the results of duplicate sample analyses were averaged. Each analysis was conducted using: 1) all available data since 2008; and 2)-only the post-closure quarterly data beginning in November 2014.

Table 8 presents the results of the Mann-Kendall analyses. Individual analysis results are provided on the worksheets included as Appendix E. As shown Table 8, VOC concentrations are not increasing, and statistically significant downward trends are indicated at manholes MH-2B and MH-3A. At other manholes, VOC concentrations are stable or show no trend.

With respect to metals, chromium in MH-2B, MH-3B, and MH-3C, and lead in MH-1A, concentrations are not increasing and are stable to decreasing. Cadmium shows an increase at manhole MH-1A, but, to put this trend in perspective, the highest concentration (estimated value of 3.8 µg/L) is consistent with ambient water quality criteria.⁷

⁶ <http://www.gsi-net.com/en/software/free-software/gsi-mann-kendall-toolkit.html>

⁷ The New York State ambient water quality standards for dissolved cadmium are 2.9 µg/L and 6.1 µg/L for Class C and Class D waters respectively, based on an assumed hardness of 150 milligrams per liter (6 NYCRR 703.5).

7.0 SUMMARY AND CONCLUSIONS

In accordance with the approved Work Plan, the required eight rounds of quarterly groundwater and surface water monitoring have been completed in accordance with the approved Work Plan. Procedures used in sample collection and analysis followed those specified in the Work Plan and draft SMP, except as described in Section 4.2. Analytical data were validated and confirmed to be usable.

Conclusions from these data are the following:

- No seeps or other surface manifestations of groundwater impact have been identified following closure of the groundwater collection system.
- Groundwater level measurements indicate that closure of the groundwater collection and treatment system did not have a significant effect on shallow groundwater elevations within the zone of influence of the former groundwater collection system.
- Low levels of VOCs have been only sporadically detected in wells situated within the zone of influence of the former groundwater collection system, and none of these detections are above RAOs.⁸
- Except for a one-time lead detection in one well above the RAO, cadmium and lead have been detected in groundwater only sporadically at levels lower than RAOs.
- Target VOCs were detected only sporadically at low levels in NFTA storm sewers downgradient of the 001 segment of the former groundwater collection system (*i.e.*, MH-1A through MH-1C) and the western end of the 003 segment (*i.e.*, MH-3B and MH-3C).
- Target VOCs were detected in NFTA storm sewers downgradient of the 002 segment of the former groundwater collection system (*i.e.*, MH-2A through MH-2D) and the eastern end of the 003 segment (*i.e.*, MH-3A). In all cases, however, analysis of the data shows that the VOC concentrations show no statistically significant upward trends and in some instances show statistically significant downward trends.
- Other (non-target) VOCs were detected at low concentrations at some NFTA storm sewer sampling locations.
- Metals (*i.e.*, cadmium, chromium, and lead) were detected in NFTA storm sewers at variable concentrations. The metals data generally show no trends except for cadmium

⁸ Well MW-32 is located Area P situated in the northern portion of the Site outside the area of influence of the former OU2 groundwater recovery and treatment system. Remediation of groundwater in Area P was not addressed by OU2 but rather the focus of a separate *in situ* chemical oxidation treatment program and restrictive covenants negotiated between NYSDEC and NFTA.

at MH-1A, where an increasing trend was identified. The maximum detected cadmium levels at that location remain very low.

On this basis, the Respondents conclude that closure of the groundwater collection and treatment system has been successfully completed and that this *Post-Closure Monitoring Report* comprises the Respondents' final termination notice.⁹ The Respondents request from NYSDEC written confirmation that no further action under the Order is required at the Site.

⁹ NFTA has provided NYSDEC proof of filing of the land use restrictions for the Site with the Erie County Recorder of Deeds.

REFERENCES

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TABLES

Table 1
Monitoring Well Summary
Site No. 9-15-066, Cheektowaga, New York

Well Number	Well Location (ft)		Ground Elevation (ft-msl)	Well Riser Elevation (ft-msl)	Riser Diameter (inches)	Well Condition
	Northing	Easting				
MW-2	1069009.41	1109549.37	692.16	691.81	2	Good
MW-5	1068724.32	1110121.23	688.21	685.93	2	Good
MW-28	1068886.73	1109522.21	689.26	688.27	2	Fair
MW-30	1069042.32	1111369.94	695.54	694.81	2	Good
MW-31	1068844.34	1110710.31	688.46	687.22	2	Good
MW-32	1071284.60	1110644.80	711.37	710.71	2	Good
MW-33	1070266.23	1111810.27	713.34	712.50	2	Good
MW-34S	1069319.02	1111862.87	703.81	702.93	2	Good
MW-34D	1069295.12	1111850.96	703.23	701.79	4	Good
MW-35	1069123.81	1111642.32	698.86	698.46	2	Good

Notes:

1. Well elevations and locations surveyed by GHD on 05/19/15.
2. Well conditions observed and noted by GHD on 05/19/15

Table 2
Groundwater Elevations
Site No. 9-15-066, Cheektowaga, New York

Date of Measurement	MW-2	MW-5	MW-28	MW-30	MW-31	MW-32	MW-33	MW-34	MW-34D	MW-35
Depth to Groundwater (ft-TOC)										
04/24/08	NM	2.91	5.94	5.33	3.18	NM	NM	3.51	5.4	NM
06/14/11	7.10	2.81	5.86	4.82	4.05	1.60	5.04	3.78	6.23	13.29
11/24/14	6.28	1.90	5.50	5.17	3.46	0.25	5.11	3.37	0.25	12.91
04/01/15	6.87	2.59	5.85	3.92	5.01	0.44	5.18	2.65	0.06	12.22
06/18/15	6.70	2.30	5.76	3.32	3.32	0.96	5.02	2.90	3.38	12.90
09/10/15	7.34	2.60	5.89	5.82	3.88	1.48	5.22	3.80	5.22	13.69
12/10/15	7.50	2.67	5.95	5.74	5.39	1.37	5.40	3.77	5.18	13.62
03/17/16	6.64	2.39	5.77	4.42	3.51	0.55	4.89	2.97	2.40	12.68
06/23/16	7.40	3.52	5.94	6.53	2.71	0.93	5.31	3.90	3.11	13.81
09/20/16	6.70	2.38	5.83	0.78	3.59	0.90	5.11	3.36	2.11	14.81
Groundwater Elevation (ft-msl)										
04/24/08	NA	683.02	682.33	689.48	684.04	NA	NA	699.42	696.39	NA
06/14/11	684.71	683.12	682.41	689.99	683.17	709.11	707.46	699.15	695.56	685.17
11/24/14	685.53	684.03	682.77	689.64	683.76	710.46	707.39	699.56	701.54	685.55
04/01/15	684.94	683.34	682.42	690.89	682.21	710.27	707.32	700.28	701.73	686.24
06/18/15	685.11	683.63	682.51	691.49	683.90	709.75	707.48	700.03	698.41	685.56
09/10/15	684.47	683.33	682.38	688.99	683.34	709.23	707.28	699.13	696.57	684.77
12/10/15	684.31	683.26	682.32	689.07	681.83	709.34	707.10	699.16	696.61	684.84
03/17/16	685.17	683.54	682.50	690.39	683.71	710.16	707.61	699.96	699.39	685.78
06/23/16	684.41	682.41	682.33	688.28	684.51	709.78	707.19	699.03	698.68	684.65
09/20/16	685.11	683.55	682.44	694.03	683.63	709.81	707.39	699.57	699.68	683.65

Notes:

1. "NM" indicates water level not measured.
2. "NA" indicates groundwater elevation data not available.

Table 3
Summary of Post-Closure Groundwater Monitoring Data
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)							
		cis-1,2-dichloroethylene	trans-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5		5	5	5	2	5	25
MW-2	11/24/14	0.47 J	1 U	1 U	1 U	1 U	0.54 J	5 U	3.6 J
	04/01/15	0.32 J	1 U	1 U	1 U	1 U	1 U	0.52 J	10 U
	06/18/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/10/15	0.32 J	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	12/10/15	0.75 J	1 U	1 U	1 U	1 U	0.76 J	5 U	20 U
	03/17/16	0.32 J	1 U	1 U	1 U	1 U	1 U	0.27 J	20 U
	06/23/16	0.51 J	1 U	1 U	1 U	1 U	0.66 J	5 U	5.2 J
	09/20/16	0.35 J	1 U	1 U	1 U	1 U	1 U	5 U	50 U
MW-5	11/24/14	1 U	1 U	1 U	1 U	0.71 J	1 U	5 U	2.6 J
	11/24/14 (dup)	1 U	1 U	1 U	1 U	0.66 J	1 U	5 U	2.6 J
	04/01/15	1 U	1 U	1 U	1 U	0.88 J	1 U	0.21 J	10 U
	06/18/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	120
	09/10/15	1 U	1 U	1 U	1 U	0.80 J	1 U	5 U	10 U
	12/10/15	1 U	1 U	1 U	1 U	1.3	1 U	5 U	10 U
	03/17/16	1 U	1 U	1 U	1 U	1.1	1 U	5 U	10 U
	06/23/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	20 U
	09/20/16	1 U	1 U	1 U	1 U	0.99 J	1 U	5 U	10 U
MW-28	11/24/14	1 U	1 U	1 U	1 U	1 U	1 U	5 U	11 J
	04/01/15	1 U	1 U	1 U	1 U	1 U	1 U	0.55 J	17 B
	06/18/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	3.4 J
	09/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	4.9 J
	12/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	5.3 J
	03/17/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	4.8 J
	06/23/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	20 U
	09/20/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	8.6 J

Table 3
Summary of Post-Closure Groundwater Monitoring Data
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)							
		cis-1,2-dichloroethylene	trans-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5		5	5	5	2	5	25
MW-30	11/24/14	1 U	1 U	1 U	1 U	0.23 J	1 U	5 U	1.5 J
	04/01/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	06/18/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	12/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	03/17/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	06/23/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/20/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
MW-31	11/24/14	1 U	1 U	1 U	1 U	1 U	1 U	5 U	6.0 J
	04/01/15	1 U	1 U	1 U	1 U	1 U	1 U	0.43 J	20 U
	06/18/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	20 U
	12/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	20 U
	03/17/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	20 U
	06/23/16	1 U	1 U	1 U	1 U	0.77 J	1 U	5 U	10 U
	09/20/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	20 U
MW-32	11/24/14	1.9	0.30 J	1 U	1 U	1.1	1.0	5 U	1.6 J
	04/01/15	5.2	0.55 J	1 U	1 U	0.66 J	6.0	0.17 J	10 U
	06/18/15	0.45 J	0.17 J	1 U	1 U	1 U	1 U	5 U	10 U
	09/10/15	4.5	1.3	1 U	1 U	0.65 J	7.4	5 U	10 U
	09/10/15 (dup)	4.5	1.5	1 U	1 U	0.61 J	6.4	5 U	10 U
	12/10/15	4.5	1.1	1 U	1 U	0.49 J	4.3	5 U	10 U
	12/10/15 (dup)	4.6	0.99 J	1 U	1 U	0.49 J	4.1	5 U	10 U
	03/17/16	3.5	0.3	1 U	1 U	0.30 J	5.6	5 U	10 U
	06/23/16	3.1	1.9	1 U	1 U	0.32 J	2.2	5 U	10 U
	06/23/16 (dup)	3.2	1.9	1 U	1 U	0.33 J	2.2	5 U	10 U
	09/20/16	7.0	2.8	1 U	1 U	0.36 J	9.8	5 U	3.5 J

Table 3
Summary of Post-Closure Groundwater Monitoring Data
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)							
		cis-1,2-dichloroethylene	trans-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5		5	5	5	2	5	25
MW-33	11/24/14	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1.6 J
	04/01/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	06/18/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/10/15	1 U	1 U	1 U	1 U	0.18 J	1 U	5 U	10 U
	12/10/15	1 U	1 U	1 U	1 U	0.18 J	1 U	5 U	10 U
	03/17/16	1 U	1 U	1 U	1 U	0.20 J	1 U	5 U	10 U
	06/23/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/20/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
MW-34	11/24/14	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1.2 J
	04/01/15	1 U	1 U	1 U	1 U	1 U	1 U	0.23 J	10 U
	06/18/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1.8 J
	09/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	2.0 J
	12/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	03/17/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	06/23/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/20/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
MW-34D	12/02/14	1 U	1 U	1 U	1 U	1 U	1 U	0.13 J	10 U
	04/01/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	06/18/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	12/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	03/17/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	06/23/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/20/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U

Table 3
Summary of Post-Closure Groundwater Monitoring Data
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)							
		cis-1,2-dichloroethylene	trans-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5		5	5	5	2	5	25
MW-35	11/24/14	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	04/01/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	04/01/15 (dup)	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	06/18/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	06/18/15 (dup)	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	12/10/15	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	03/17/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	03/17/16 (dup)	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	06/23/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	09/20/16	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U
	9/20/16 (dup)	1 U	1 U	1 U	1 U	1 U	1 U	5 U	10 U

Data Legend :

The RAO of 5 µg/L is for total 1,2-DCE (i.e., the sum of the cis- and trans- isomer concentrations).

"NA" - indicates not analyzed

Concentrations above Remedial Action Objectives are highlighted in yellow.

Data qualifiers:

U - not detected at indicated reporting limit (RL)

J - estimated concentration.

B - analyte detected in corresponding blank sample.

Table 4
NFTA Storm Sewer Sampling Results - 001 System Area
Site No. 9-15-066, Cheektowaga, New York

Manhole Designation	Date of Sampling	pH (s.u.)	Total Suspended Solids (mg/L)	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	1,2-dichlorobenzene (µg/L)	cis-1,2-dichloroethylene (µg/L)	Methylene Chloride (µg/L)	Toluene (µg/L)	Tetrachloroethylene (µg/L)	Trichloroethylene (µg/L)	Vinyl Chloride (µg/L)
MH-1A	12/18/08	NA	NA	NA	NA	NA	1 U	1 U	1 U	0.21 J	0.71 J	1 U	NA
	04/16/09	NA	NA	1.3 J	3.0 J	6.1	1 U	1 U	1 U	0.20 J	0.94 J	1 U	1 U
	07/14/14	7.90 J	2.4	0.61 J	1.4 J	NA	1 U	1 U	1 U	1 U	1.9	1 U	NA
	11/24/14	7.64 J	46	0.54 J	3.8 J	3.1 J	1 U	1 U	1 U	1 U	0.25 J	0.22 J	1 U
	04/01/15	8.01 J	13 J	1.1 J	1.9 J	10 U	1 U	0.24 J	1 U	1 U	1.2	0.25 J	1 U
	06/18/15	7.71 J	3.2	2.3 J	5 U	10 U	1 U	1 U	1 U	1 U	2.4	0.25 J	1 U
	09/10/15	7.90 J	3.6	1.3 J	5 U	2.2 J	1 U	1 U	1 U	1 U	1.0	1 U	1 U
	12/10/15	7.64 J	6.3	3.8 J	1.5 J	2.0 J	1 U	1 U	1 U	1 U	1.7	0.20 J	1 U
	03/17/16	7.91 J	7.7	1.5 J	1.0 J	10 U	1 U	1 U	1 U	1 U	1.3	0.17 J	1 U
	06/23/16	7.84 J	350	2.6 J	5.7	9.2 J	1 U	1 U	1 U	1 U	0.98 J	1 U	1 U
	09/20/16	7.60 J	7.0	2.0 J	0.80 J	10 U	1 U	1 U	1 U	1 U	1.7	1 U	1 U
MH-1B	04/16/09	NA	NA	1.3 J	5 U	3 U	1 U	1 U	1 U	0.26 J	1 U	0.23 J	1 U
	07/14/14	8.06 J	7.6	5 U	5 U	NA	1 U	1 U	1 U	1 U	1 U	1 U	NA
	11/24/14	7.69 J	5.6	5 U	1.1 J	1.6 J	1 U	1 U	1 U	1 U	1 U	0.20 J	1 U
	04/01/15	7.96 J	66	0.97 J	3.7 J	50 U	1 U	0.32 J	1 U	1 U	1 U	0.53 J	1 U
	06/18/15	8.12 J	0.5	5 U	5 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	09/10/15	8.16 J	1.1	5 U	5 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	12/10/15	7.90 J	1.2	5 U	5 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	03/17/16	8.08 J	0.8	5 U	1.1 J	10 U	1 U	0.66 J	1 U	1 U	1 U	0.45 J	1 U
	06/23/16	8.13 J	4.0	5 U	0.84 J	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	09/20/16	8.20 J	1.0	5 U	5 U	3.9 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Table 4
NFTA Storm Sewer Sampling Results - 001 System Area
Site No. 9-15-066, Cheektowaga, New York

Manhole Designation	Date of Sampling	pH (s.u.)	Total Suspended Solids (mg/L)	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	1,2-dichlorobenzene (µg/L)	cis-1,2-dichloroethylene (µg/L)	Methylene Chloride (µg/L)	Toluene (µg/L)	Tetrachloroethylene (µg/L)	Trichloroethylene (µg/L)	Vinyl Chloride (µg/L)
MH-1C	04/16/09	NA	NA	5 U	5 U	3 U	1 U	1 U	1 U	0.20 J	1 U	1 U	1 U
	07/14/14	8.18 J	8.0	5 U	5 U	NA	1 U	1 U	1 U	1 U	1 U	1 U	NA
	11/24/14	7.82 J	8.0	5 U	0.78 J	10 U	1 U	1 U	1 U	1 U	1 U	0.24 J	1 U
	04/01/15	8.10 J	41	0.18 J	5 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	06/18/15	8.08 J	7.3	5 U	5 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	09/10/15	8.29 J	1.5	5 U	5 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	12/10/15	8.19 J	54	5 U	5 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	03/17/16	8.25 J	180	5 U	5 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	06/23/16	8.06 J	13	0.20 J	1.4 J	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	09/20/16	8.20 J	0.7	5 U	5 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Notes:

1. For manhole locations, see Figure 1.
2. "NA" indicates not available.
3. Data Legend :

Detections and estimated values are in **bold-face** type.

Data Qualifiers:

U - not detected at indicated reporting limit (RL).

J - estimated concentration.

Table 5
NFTA Storm Sewer Sampling Results - 002 System Area
Site No. 9-15-066, Cheektowaga, New York

Manhole Designation	Date of Sampling	pH (s.u.)	Total Suspended Solids (mg/L)	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	1,2-dichlorobenzene (µg/L)	cis-1,2-dichloroethylene (µg/L)	Methylene Chloride (µg/L)	Toluene (µg/L)	Tetrachloroethylene (µg/L)	Trichloroethylene (µg/L)	Vinyl Chloride (µg/L)
MH-2A	12/18/08	NA	NA	NA	NA	NA	1 U	30	1 U	1 U	0.88 J	42	NA
	04/16/09	NA	NA	5 U	5 U	3 U	1 U	20	1 U	1 U	1 U	49	1 U
	07/11/14	8.69 J	30	5 U	2.2 J	NA	1 U	2.3	0.50 JB	1 U	1 U	18	NA
	11/24/14	8.32 J	2 U	0.21 J	3.0 J	10 U	1 U	21	4.9 JB	1 U	0.98 J	120	1.6
	04/01/15	8.33 J	3.5	5 U	3.2 J	1.2 J	5 U	19	5 U	5 U	1.0 J	70	5 U
	06/18/15	8.36 J	0.5	5 U	1.9 J	1.2 J	1 U	11	1 U	1 U	1.2	74	1 U
	09/10/15	8.29 J	1.2	5 U	5 U	2.6 J	1 U	4.0	1 U	1 U	0.55 J	16	1 U
	12/10/15	7.89 J	2.9	5 U	1.5 J	2.2 J	1 U	13	1 U	1 U	2.7	25	1 U
	03/17/16	8.25 J	0.5 U	5 U	2.5 J	10 U	5 U	18	5 U	5 U	5 U	93	5 U
	06/23/16	8.09 J	1.4	5 U	1.7 J	10 U	5 U	2.6 J	2.1 J	5 U	5 U	11	5 U
	09/20/16	8.10 J	1.3	5 U	1.2 J	3.4 J	1 U	3.1	1 U	1 U	1 U	20	1 U
MH-2B	12/18/08	NA	NA	NA	NA	NA	1 U	36	1 U	0.36 J	15	75	NA
	04/16/09	NA	NA	5 U	5.3	4.8	1 U	52	1 U	0.39 J	19	150	1 U
	07/11/14	11.7 J	6.4	5 U	5.7	NA	2 U	25	1.4 JB	2 U	5.7	41	NA
	11/24/14	10.4 J	97	5 U	7.1	10 U	2 U	27	2 U	2 U	7.9	44	1.6 J
	04/01/15	11.2 J	160	0.21 J	7.1	50 U	5 U	23	1 U	5 U	7.0	82	1.7 J
	06/18/15	11.4 J	36	5 U	5.5	10 U	1 U	31	1 U	0.16 J	10	57	1.1
	09/10/15	11.6 J	39	5 U	5.0	11	2 U	29	1 U	2 U	9.4	59	1.0 J
	12/10/15	11.6 J	57	5 U	5.2	8.4 J	5 U	33	5 U	5 U	8.6	58	5 U
	03/17/16	11.0 J	100	5 U	6.6	2.2 J	3 U	26	3 U	3 U	7.5	52	0.84 J
	06/23/16	11.2 J	260	5 U	7.3	18	3 U	18	1.3 J	3 U	4.7	28	3 U
	09/20/16	11.5 J	540	5 U	6.3	6.6 J	1 U	23	1 U	1 U	7.2	38	0.63 J
	09/20/16 (dup)	11.5 J	840	5 U	6.6	8.0 J	1 U	22	1 U	1 U	6.3	34	1 U

Table 5
NFTA Storm Sewer Sampling Results - 002 System Area
Site No. 9-15-066, Cheektowaga, New York

Manhole Designation	Date of Sampling	pH (s.u.)	Total Suspended Solids (mg/L)	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	1,2-dichlorobenzene (µg/L)	cis-1,2-dichloroethylene (µg/L)	Methylene Chloride (µg/L)	Toluene (µg/L)	Tetrachloroethylene (µg/L)	Trichloroethylene (µg/L)	Vinyl Chloride (µg/L)
MH-2C	04/16/09	NA	NA	5 U	3.2 J	3 U	1 U	12	1 U	1 U	5.4	34	1 U
	07/11/14	9.14 J	310	5 U	6.0	NA	2 U	25	1.2 JB	2 U	6.6	46	NA
	11/24/14	9.17 J	150	0.34 J	15	9.5 J	1 U	18 J	1 U	1 U	6.3 J	30 J	1.4
	04/01/15	10.6 J	170	0.41 J	9.0	7.4 J	1 U	29 J	0.18 J	0.26 J	15	66 J	3.1
	06/18/15	11.5 J	18	5 U	5.3	1.9 J	1 U	32	1 U	0.16 J	12	55	1.2
	09/10/15	11.7 J	22	5 U	2.6 J	6.6 J	1 U	25	1 U	1 U	8.9	56	0.77 J
	09/10/15	11.7 J	20	5 U	2.5 J	6.4 J	1 U	25	1 U	1 U	8.8	56	0.76 J
	12/10/15	11.7 J	11	5 U	3.2 J	3.6 J	3 U	37	3 U	3 U	9.2	69	1.1 J
	12/10/15	11.6 J	6.8	5 U	2.7 J	4.6 J	3 U	36	3 U	3 U	9.5	68	1.1 J
	03/17/16	11.0 J	55	5 U	6.5	10 U	1 U	19 J	1 U	1 U	6.8	37 J	1.1
	06/23/16	11.6 J	18	5 U	4.6 J	4.4 J	5 U	23	1.8 J	5 U	5.4	50	5 U
	06/23/16	11.6 J	18	5 U	0.96 J	20 U	2 U	38	2 U	2 U	8.6	61	1.1 J
	09/20/16	11.3 J	27	5 U	4.0 J	10 U	1 U	21	1 U	1 U	8.3	36	0.63 J
MH-2D	04/16/09	NA	NA	0.52 J	29	52	1 U	20	1 U	0.15 J	1 U	71	1 U
	07/11/14	8.80 J	62	5 U	4.0 J	NA	1 U	2.9	0.51 JB	1 U	0.2 J	20	NA
	11/24/14	8.76 J	22	5 U	5.0	10 U	1 U	53	2.5 JB	1 U	1.0	130	4.9
	04/01/15	8.29 J	50	0.26 J	6.2	7.2 J	1 U	28	1 U	1 U	2.3	100	1.3
	06/18/15	7.93 J	1.2	5 U	0.88 J	1.3 J	1 U	73	1 U	1 U	0.87 J	1,300	0.44 J
	09/10/15	8.14 J	24	5 U	5 U	10 U	1 U	5.7	1 U	1 U	0.75 J	24	1 U
	12/10/15	7.85 J	120	5 U	3.2 J	2.1 J	1 U	25	1 U	1 U	4.4	46	0.26 J
	03/17/16	8.34 J	1,300	0.41 J	35	49	5 U	23	5 U	5 U	5 U	130	5 U
	06/23/16	8.13 J	81	0.080 J	4.0 J	5.6 J	1 U	4.4	1 U	1 U	1 U	19	1 U
	09/20/16	8.00 J	5.0	5 U	1.4 J	2.8 J	1 U	4.9	1 U	1 U	1 U	30	1 U

See notes on following page.

Table 5
NFTA Storm Sewer Sampling Results - 002 System Area
Site No. 9-15-066, Cheektowaga, New York

Notes:

1. *For manhole locations, see Figure 1.*
2. *"NA" indicates not available.*
3. Data Legend:

*Detections and estimated values are in **bold-face** type.*

Data Qualifiers:

U - not detected at indicated reporting limit (RL).

J - estimated concentration.

B - constituent detected in corresponding blank sample.

Table 6
NFTA Storm Sewer Sampling Results - 003 System Area
Site No. 9-15-066, Cheektowaga, New York

Manhole Designation	Date of Sampling	pH (s.u.)	Total Suspended Solids (mg/L)	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	1,2-dichlorobenzene (µg/L)	cis-1,2-dichloroethylene (µg/L)	Methylene Chloride (µg/L)	Toluene (µg/L)	Tetrachloroethylene (µg/L)	Trichloroethylene (µg/L)	Vinyl Chloride (µg/L)
MH-3A	12/18/08	NA	NA	NA	NA	NA	2.5 U	37	3 U	3 U	1.2 J	160	NA
	04/16/09	NA	NA	5 U	11.5	3 U	12 U	63	12 U	12 U	12 U	450	12 U
	07/11/14	9.56 J	2.4	5 U	5.6	NA	25 U	52	16 JB	25 U	25 U	370	NA
	11/24/14	8.84 J	25	5 U	4.2 J	10 U	3 U	30	3 U	3 U	3 U	110	0.84 J
	04/01/15	9.03 J	1.4	0.25 J	10	50 U	10 U	15	10 U	10 U	10 U	71	10 U
	06/18/15	8.96 J	33	5 U	5.6	1.7 J	1 U	16	1 U	1 U	0.91 J	110	1 U
	06/18/15	8.94 J	24	5 U	5.8	2.8 J	1 U	16	1 U	1 U	0.96 J	110	0.90 J
	09/10/15	9.55 J	19	5 U	2.7 J	4.5 J	2 U	16	1 U	2 U	2.0	64	1.6 J
	12/10/15	9.44 J	64	5 U	3.5 J	4.8 J	5 U	30	5 U	5 U	1.7 J	84	1.5 J
	03/17/16	8.94 J	330	5 U	13	6.5 J	5 U	20	5 U	5 U	5 U	77	5 U
	06/23/16	9.47 J	17	5 U	4.0 J	10 U	3 U	22	3 U	3 U	2.0 J	67	1.2 J
	09/20/16	9.1 J	9.1	5 U	4.8 J	10 U	5 U	20	5 U	5 U	5 U	51	5 U
MH-3B	07/11/14	8.88 J	13	5 U	1.4 J	NA	1 U	1 U	0.48 JB	1 U	1 U	0.95 J	NA
	11/24/14	8.05 J	150	0.31 J	13	43	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	11/24/14	8.01 J	160	0.20 J	15	48	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	04/01/15	8.89 J	7.3	0.21 J	13	50 U	1 U	1 U	1 U	1 U	1 U	0.54 J	1 U
	06/18/15	7.81 J	4.0	5 U	7.5	1.2 J	1 U	1 U	1 U	1 U	1 U	0.60 J	1 U
	09/10/15	7.52 J	150	5 U	4.6 J	3.7 J	1 U	1 U	1 U	1 U	1 U	1.7	1 U
	12/10/15	7.22 J	14	5 U	1.6 J	2.1 J	1 U	1 U	1 U	1 U	1 U	0.22 J	1 U
	03/17/16	8.20 J	11	5 U	5.2	4.7 J	1 U	1 U	1 U	1 U	1 U	0.21 J	1 U
	06/23/16	7.72 J	23	5 U	17	10 U	5 U	5 U	1.8 J	5 U	5 U	5 U	5 U
	09/20/16	7.80 J	76	5 U	4.1 J	10 U	5 U	5 U	5 U	5 U	5 U	1.4 J	5 U

Table 6
NFTA Storm Sewer Sampling Results - 003 System Area
Site No. 9-15-066, Cheektowaga, New York

Manhole Designation	Date of Sampling	pH (s.u.)	Total Suspended Solids (mg/L)	Cadmium (µg/L)	Chromium (µg/L)	Lead (µg/L)	1,2-dichlorobenzene (µg/L)	cis-1,2-dichloroethylene (µg/L)	Methylene Chloride (µg/L)	Toluene (µg/L)	Tetrachloroethylene (µg/L)	Trichloroethylene (µg/L)	Vinyl Chloride (µg/L)
MH-3C	07/11/14	8.67 J	160	5 U	3.1 J	NA	1 U	1 U	0.48 JB	1 U	1 U	1 U	NA
	11/24/14	7.84 J	260	0.50 J	21	25	1 U	1 U	1 U	1 U	1 U	1.8	1 U
	04/01/15	7.70 J	1,300 J	8.9 J	27	100	1 U	1 U	1 U	0.39 J	1 U	0.62 J	1 U
	04/01/15	7.57 J	750	5.4 J	31	91	1 U	1 U	1 U	0.63 J	1 U	0.62 J	1 U
	06/18/15	7.68 J	330	5 U	3.9 J	2.3 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	09/10/15	7.62 J	320	5 U	9.0	9.9 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	12/10/15	7.14 J	72	5 U	1.9 J	3.3 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	03/17/16	8.10 J	170 J	5 U	13	15	1 U	1 U	1 U	0.18 J	1 U	0.18 J	1 U
	03/17/16	7.84 J	660 J	0.32 J	16	21	1 U	1 U	1 U	0.16 J	1 U	0.14 J	1 U
	06/23/16	7.44 J	240	5 U	14	9.5 J	5 U	5 U	3.0 J	5 U	5 U	5 U	5 U
	09/20/16	7.90 J	6.8	5 U	1.9 J	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Notes:

1. For manhole locations, see Figure 1.
2. Manhole MH-3A was labelled MH-3 in the 2008 and 2009 sampling.
3. "NA" indicates not available.
4. Data Legend :

Detections and estimated values are in **bold-face** type.

Data Qualifiers:

U - not detected at indicated reporting limit (RL).

J - estimated concentration.

B - constituent detected in corresponding blank sample.

Table 7
NFTA Storm Sewer Sampling Results - Other VOCs
Site No. 9-15-066, Cheektowaga, New York

Manhole Designation	Date of Sampling	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Acetone (µg/L)	Chloroform (µg/L)	Methyl Ethyl Ketone (µg/L)	Methyl Isobutyl Ketone (µg/L)	trans-1,2- dichloroethylene (µg/L)
MH-1A	12/18/08	NA	NA	NA	1 U		1 U	0.21 J
	04/16/09	1.3 J	3.0 J	6.1	1 U		1 U	0.20 J
MH-1A	11/24/14	1 U	1 U	9.0	1 U	1 U	1 U	1 U
	09/10/15	1 U	1 U	5 U	1 U	1 U	1 U	1 U
	09/20/16	1 U	1 U	5 U	1 U	1 U	1 U	1 U
MH-1B	11/24/14	1 U	1 U	5 U	1 U	1 U	1 U	1 U
	09/10/15	1 U	1 U	5 U	1 U	1 U	1 U	1 U
	09/20/16	1 U	1 U	5 U	1 U	1 U	1 U	1 U
MH-1C	11/24/14	1 U	1 U	5 U	1 U	1 U	1 U	1 U
	09/10/15	1 U	1 U	5 U	1 U	1 U	1 U	1 U
	09/20/16	1 U	1 U	5 U	1 U	1 U	1 U	1 U
MH-2A	11/24/14	1 U	1 U	5 U	1.8	1 U	1 U	1 U
	11/24/14	0.69 J	0.31 J	2.8 J	0.21 J	1 U	1 U	0.29 J
	09/10/15	1 U	1 U	5 U	0.21 J	1 U	1 U	1 U
	09/20/16	1 U	1 U	5 U	0.21 J	1 U	1 U	1 U
MH-2B	11/24/14	1 U	1 U	13	0.90 J	1 U	1 U	1 U
	09/10/15	1 U	1 U	5 U	1.9	1 U	1 U	1 U
	09/20/16	1 U	1 U	2.7 J	12	1 U	1 U	1 U
	09/20/16	1 U	1 U	2.7 J	13	1 U	1 U	1 U
MH-2C	11/24/14	1 U	1 U	13	0.48 J	1 U	1 U	0.17 J
	09/10/15	1 U	1 U	1 U	1.8	1 U	1 U	1 U
	09/10/15	1 U	1 U	3.0 J	1.7	1 U	1 U	0.27 J
	09/20/16	1 U	1 U	5 U	1.1	1 U	1 U	1 U
MH-2D	11/24/14	0.38 J	1 U	5 U	0.22 J	1 U	1 U	0.53 J
	09/10/15	1 U	1 U	5 U	0.29 J	1 U	1 U	1 U
	09/20/16	1 U	1 U	5 U	0.21 J	1 U	1 U	1 U

Table 7
NFTA Storm Sewer Sampling Results - Other VOCs
Site No. 9-15-066, Cheektowaga, New York

Manhole Designation	Date of Sampling	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Acetone (µg/L)	Chloroform (µg/L)	Methyl Ethyl Ketone (µg/L)	Methyl Isobutyl Ketone (µg/L)	trans-1,2-dichloroethylene (µg/L)
MH-3A	11/24/14	1 U	1 U	5 U	1 U	1 U	1 U	1 U
	09/10/15	1 U	1 U	5.0 J	0.98 J	1 U	1 U	1 U
	09/20/16	1 U	1 U	5 U	0.44 J	1 U	1 U	1 U
MH-3B	11/24/14	1 U	1 U	26	1 U	2.3 J	1.9 J	1 U
	11/24/14	1 U	1 U	25	1 U	2.2 J	1.8 J	1 U
	09/10/15	1 U	1 U	10	1 U	1 U	1.7 J	1 U
MH-3C	11/24/14	1 U	1 U	27	1 U	2.2 J	2.0 J	1 U
	09/10/15	2 U	2 U	7.4	2 U	1 U	1.5 J	2 U
	09/20/16	1 U	1 U	5 U	1 U	1 U	0.71 J	1 U

Notes:

1. For manhole locations, see Figure 1.
2. "NA" indicates not available.
3. Data Legend:

Detections and estimated values are in **bold-face** type.

Data Qualifiers:

U - not detected at indicated reporting limit (RL).

J - estimated concentration.

Table 8
Results of Mann-Kendall Trend Analysis of Storm Sewer Data
Site No. 9-15-066, Cheektowaga, New York

Data Set		Trend and Confidence in Trend				
		MH-1A	MH-1B	MH-1C	MH-2A	MH-2B
Total VOCs (nmol/L)	All Data				Stable 77.7	Decreasing 97.0
	Post-Closure				Stable 76.2	Stable 76.2
Total VOCs (µg/L)	All Data				Stable 77.7	Decreasing 97.0
	Post-Closure				Stable 76.2	Stable 76.2
TCE	All Data	Stable 67.6			Stable 72.9	Decreasing 95.7
	Post-Closure	Stable 84.6			Stable 76.2	Stable 76.2
PCE	All Data	No Trend 84.0			No Trend 82.1	Decreasing 95.7
	Post-Closure	Stable 50.0			No Trend 61.9	Stable 69.4
Cadmium	All Data	Increasing 97.1				
	Post-Closure	Increasing 97.8				
Chromium	All Data	Prob Dec 90.7				No Trend 66.8
	Post-Closure	Stable 84.6				No Trend 50.0
Lead	All Data	Stable 76.2				
	Post-Closure	Stable 54.8				

Table 8
Results of Mann-Kendall Trend Analysis of Storm Sewer Data
Site No. 9-15-066, Cheektowaga, New York

Data Set		Trend and Confidence in Trend				
		MH-2C	MH-2D	MH-3A	MH-3B	MH-3C
Total VOCs (nmol/L)	All Data	No Trend 75.8	No Trend 63.6	Decreasing 99.8		
	Post-Closure	Stable 46.0	No Trend 61.9	Decreasing 98.8		
Total VOCs (µg/L)	All Data	No Trend 75.8	No Trend 63.6	Decreasing 99.8		
	Post-Closure	Stable 46.0	No Trend 61.9	Decreasing 98.8		
TCE	All Data	No Trend 70.0	No Trend 66.8	Decreasing 99.9	No Trend 76.2*	
	Post-Closure	Stable 46.0	No Trend 65.7	Decreasing 99.1	No Trend 76.2*	
PCE	All Data	No Trend 75.8	No Trend 45.6			
	Post-Closure	Stable 46.0	No Trend 69.4			
Cadmium	All Data					
	Post-Closure					
Chromium	All Data				Stable 60.3	Stable 70.3
	Post-Closure				Stable 89.0	Stable 79.2
Lead	All Data					
	Post-Closure					

See notes on following page.

Table 8
Results of Mann-Kendall Trend Analysis of Storm Sewer Data
Site No. 9-15-066, Cheektowaga, New York

Notes :

1. Evaluation performed using GSI Mann Kendall Tool Kit, available at:
<http://www.gsi-net.com/en/software/free-software/gsi-mann-kendall-toolkit.html>.
2. Analysis methodology based on Aziz, et al., 2003. "MAROS: A Decision Support System for Optimizing
3. Cell entries are the trends determined from the Mann-Kendall statistical analysis. Confidence in trend = confidence that constituent concentration is increasing ($S > 0$) or decreasing ($S < 0$):
 $>95\%$ = Increasing or decreasing;
 $\geq 90\%$ = Probably increasing or probably decreasing;
 $<90\%$ and $S > 0$ = No trend;
 $<90\%$, $S \leq 0$, and coefficient of variance (COV) ≥ 1 = No trend; and
 $<90\%$, $S \leq 0$, and $COV < 1$ = Stable.
4. Shaded cell indicates that parameter did not survive screening for the data at that manhole, i.e., there were 50% or more results reported as "non detect." See Section 6.1 for discussions of the rules applied for handling non-detect results, estimated values, and results of duplicate analyses.
5. "*" - No data are available for MH-3B prior to the commencement of post-closure monitoring in 2014, therefore, the "all data" and "monitoring" analyses were for the same data set.

FIGURE

