TERMINATION OF OPERATION, MAINTENANCE, AND MONITORING ACTIVITIES

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[1] has prepared this document to summarize the technical basis and rationale and to request approval for bringing to responsible closure the operation, maintenance, and monitoring (OM&M) of the groundwater collection and treatment system installed as part of the Operable Unit 2 Remedial Program 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 as one of the Respondents to an Order on Consent and Settlement Agreement, Index No. B9-0381-91-8 (the "Order") entered with NYSDEC.

The Operable Unit 2 collection and treatment system addresses groundwater in the central and southern portion of the Site, using the former plant storm sewers for subsurface collection and conveyance. Figure 1 is a Site plan showing the location of this system and associated Site groundwater monitoring wells.

As described in this report, the remediation goals and Remedial Action Objectives (RAOs) for groundwater have been met throughout the portion of the Site influenced by the groundwater collection and treatment system, and it is apparent from the observations and data collected throughout the 12 years of operational history that the remedial systems have achieved all potential environmental benefits. Multiple rounds of groundwater monitoring show no detectable Site-related volatile organic compounds (VOCs) in any well used in monitoring groundwater associated with this system, and metals concentrations in these wells have met RAOs. Moreover, Site data show that continued operation would be

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

counterproductive by any metric, whether it be net environmental impact, risk management, or cost-effectiveness. The only VOC-impacted water encountered at the Site is that being generated by the continued use of the former plant storm sewers for subsurface collection and conveyance.

2.0 SITE HYDROGEOLOGY

This section briefly summarizes the hydrogeology in the central and southern portions of the Site. This information and data are then applied in estimating the flow of groundwater within the area of influence of the Operable Unit 2 groundwater collection system.

2.1 SITE GEOLOGY

As described in the Remedial Investigation (RI) report (Dunn Engineering Company, 1994), the Site is underlain with glacial till consisting predominantly of a clayey silt matrix with varying quantities of embedded fine to coarse sands, gravel, and rock fragments. The till ranges in thickness from about 30 to 50 feet and uniformly overlies bedrock at the Site. The RI also identified fill materials, typically 5 to 6 feet in thickness, overlying the till in portions of the Site. Since completion of the RI, the Niagara Frontier Transportation Authority (NFTA) conducted extensive Site redevelopment for airport expansion. Those Site redevelopment activities resulted in increased fill thicknesses of 20± feet in some areas of the Site. Even with this additional fill placement, however, the fill remains discontinuous and does not extend to off-site areas. The gradation of the fill is highly variable, ranging from clayey soils to crushed concrete rubble.

Bedrock underlies the glacial till. The uppermost bedrock is comprised of light gray cherty limestone that was identified in the RI as the Moorehouse Limestone member of the Onondaga Limestone formation. The RI reported encountering limestone in on-site borings at depths ranging from 29 to 57 feet below the ground surface (ft-bgs).

2.2 GROUNDWATER HYDROLOGY

Groundwater is found in the unconsolidated materials at the Site, with typical depths to groundwater ranging from 5 to 15 ft-bgs. The variability in depth relates primarily to the thickness of fill materials.

In the central and southern portion of the Site, the hydraulic gradient is from northeast to southwest and ranges from about 0.02 to 0.05 feet per foot (ft/ft). Figure 2 shows a generalized potentiometric surface map for groundwater in the unconsolidated materials

developed using data collected during OM&M. Multiple rounds of groundwater elevation measurements over the OM&M period have shown that the groundwater flow direction and hydraulic gradient are relatively consistent throughout the year.

The very low hydraulic conductivity of the glacial till and the discontinuity of the overlying fill greatly limit potential lateral and vertical groundwater flow and contaminant transport within the unconsolidated materials at the Site. The RI reported an average (*i.e.*, geometric mean) hydraulic conductivity of the till of 2.34×10^{-6} centimeter per second (cm/sec), which, in combination with the observed average hydraulic gradient of 0.035 ft/ft, would result in a calculated groundwater (Darcian) flow velocity of 0.43 foot per year (ft/yr). This value is calculated as follows:

$$V = \frac{Ki}{\eta} \times \left(1.04 \times 10^{6}\right)$$

Where,

V = groundwater flow velocity, ft/yr;
K = hydraulic conductivity, cm/sec;
i = hydraulic gradient, ft/ft; and
η = effective porosity, dimensionless.

The factor of 1.04×10^{6} is the unit conversion between cm/sec and ft/yr. Using Site data, the groundwater velocity calculation is as follows.

$$V = \frac{\left(2.34 \times 10^{-6}\right) \times \left(0.035\right)}{\left(0.20\right)} \times \left(1.04 \times 10^{6}\right) = 0.43\, ft / yr$$

An effective porosity of 0.20 is conservatively estimated based on the observed gradation of the till (McWorter and Sunada, 1977). The RI similarly reported a similar maximum groundwater flow velocity in the southern portion of the Site of 0.47 ft/yr.

Using the (higher) RI-calculated groundwater flow velocity of 0.47 ft/yr, the natural flux of groundwater across southern portion of Site is about 670 gallons per day (gpd), which is calculated as follows:

$$Q = V \times t \times W \times \left(0.0205\right)$$

Where,

Q = total flow (flux) of groundwater across the Site, gpd;
t = saturated thickness, feet; and
W = width of contributory flow area, feet.

The saturated thickness is estimated to be 35 feet, based on an average depth to bedrock of 40 feet and a typical depth to groundwater of 5 ft-bgs. The width of the contributory flow area, measured perpendicular to flow, is estimated to be on the order of 2,000 feet (Figure 2). The factor of 0.0205 is the conversion from cubic feet per year to gpd.

$$Q = (0.47) \times (35) \times (2000) \times (0.0205) = 670\ gpd$$

This total flow across the Site of 670 gpd equates to an average groundwater flow of 0.47 gallons per minute (gpm). More fundamentally, these calculations show that there is essentially no lateral groundwater flow through the glacial till. Localized groundwater flow can occur in the discontinuous sand lenses within the clayey matrix of the till, but on a site-wide scale, such lenses are discontinuous and do not provide advective transport of Site-related contaminants over appreciable distances.

These conditions were plainly observed at the excavation of Area I during the Operable Unit 1 Site remediation where the soil excavation extended more than 20 feet below the groundwater table and was open for several weeks, yet the groundwater inflow rate was so low that no significant groundwater infiltration was observed and no construction dewatering was needed to allow heavy construction equipment to operate within this large excavation.

3.0 REMEDIAL PROGRAM

This section reviews the Remedial Program for Operable Unit 2, including the basis established by NYSDEC in its Records of Decision (RODs) for this Site and the implementation of those remediation concepts through design and construction. This section also identifies post-ROD changes made to the remedial requirements that significantly impacted subsequent OM&M activities.

3.1 RECORDS OF DECISION

NYSDEC defined the requirements for the Remedial Program at the Site in RODs issued in March 1995 (NYSDEC, 1995a) and December 1995 (NYSDEC, 1995c) for Operable Units 1 and 2, respectively. Operable Unit 1 addressed source control through excavation and on-site thermal treatment and the removal of impacted sediments from U-Crest Ditch. Operable Unit 2, which addressed groundwater remediation, called for active collection and treatment of groundwater in the central and southern portion of the Site and Site-wide groundwater monitoring. CBS completed the Operable Unit 1 remedial action and the remedial construction component of Operable Unit 2 in 2000. NYSDEC confirmed successful completion of remedial construction in accordance with the Order via letter dated June 27, 2002.[2]

3.2 REMEDIATION GOALS AND REMEDIAL ACTION OBJECTIVES

NYSDEC set forth its remediation goals in the December 1995 ROD for Operable Unit 2 (NYSDEC, 1995c) as follows:

- Prevent the further migration of contaminated groundwater/surface water from the site;
- Prevent and/or minimize direct contact and/or ingestion (drinking) of contaminated groundwater at levels that exceed NYSDEC groundwater quality standards; and

[2] Gregory P. Sutton, P.E., NYSDEC, Project Engineer, Division of Environmental Remediation, to Leo M. Brausch, June 27, 2002, "Westinghouse Site Remedial Project, Cheektowaga (T), Erie County, Site #915066.

- Remediate the contaminated groundwater/surface water in such a manner that minimizes any possible direct human or environmental contact, and treat the contaminants to levels which can meet groundwater/surface water effluent and/or cleanup objectives.

To meet these Site-specific remediation objectives, NYSDEC established numerical cleanup standards (*i.e.*, RAOs) for constituents of concern (COCs) in Site groundwater. These RAOs are listed in Table 1.

3.3 REMEDIAL ACTION PLAN

The NYSDEC-developed Proposed Remedial Action Plan (PRAP) for Operable Unit 2 called for using the existing plant storm sewer system as a collection gallery for shallow groundwater (NYSDEC, 1995b). The capability of the storm sewers to collect groundwater was to be enhanced by drilling weep holes in selected trunk lines. As defined in the PRAP as well as the subsequent December 2005 ROD, the NYSDEC remedial plan also specified the following as components of the groundwater collection system:

- Termination of all underground utility lines to prevent horizontal migration of contaminants through these lines or associated bedding materials;
- Elimination of surface water inflows (*i.e.*, via downspouts, roof leaders, catch basins, and other surface drains); and
- Utilization of the former Westinghouse building floor slab (38± acres) as a low-permeability cap "to insure that the system's ability to function is not hindered."

The groundwater collection gallery was envisioned as a passive system to intercept groundwater flow and was not intended to significantly dewater Site soils. Under the NYSDEC plan, the collected groundwater would be treated in an on-site treatment system with discharge to U-Crest Ditch.[3]

Under contract to CBS, acting on behalf of the Respondents, IT Corporation (1999) developed the remedial design and final remedial action plan consistent with the RODs and

[3] In the Operable Unit 2 PRAP and ROD, NYSDEC expressed its preference for discharge to a publicly owned treatment works following on-site pretreatment. While the discharge quantity and quality were generally acceptable to the Buffalo Sewer Authority, the Town of Cheektowaga indicated that they would not approve such discharge to Town sewers.

incorporating these same remedial components. The design was then implemented with completion of remedial construction and system startup in 2000. NYSDEC confirmed completion of remedial construction of the Operable Unit 2 components in its June 27, 2002 letter.

3.3.1 Collection and Treatment System Design

Consistent with the NYSDEC-developed PRAP and ROD, CBS modified the plant storm sewer system to provide for groundwater collection in the central and southern portion of the Site. Points of storm water inflow (*e.g.*, downspouts, roof leaders, catch basins) were sealed in an effort to isolate the piping network from surface water. Most of the work associated with sealing points of potential surface water inflow was the responsibility of NFTA contractors conducting building demolition and, later, concrete floor slab removal.[4] Sewer lines that resided above the water table were likewise plugged, and holes were drilled in the bottom of selected submerged manholes to enhance groundwater infiltration.

After these modifications, the terminal manhole on each of the three legs of the collection system was converted into a wet-well (sump) for pumping the collected water to the treatment system through newly installed conveyance (pressure) lines. These terminal manholes are referred to as Sumps 001, 002, and 003 respectively for the segments of the collection system from east to west at the Site (Figure 1). In some report documents and drawings, these pumping stations are referred to as CSMH-001, CSMH-002, and CSMH-003, respectively.

The groundwater treatment system was initially designed with the following unit processes:

- Flow equalization;
- Sanitization using an ultraviolet light;
- Suspended solids removal through the use of disposable bag filters; and
- Activated carbon adsorption for dissolved organics removal.

The design average flow was 5 gpm, which was estimated based on the lateral flux of groundwater plus an allowance for infiltration over the area potentially influenced by the

[4] As documented in Site correspondence and discussed in subsequent sections of this report, sealing of points of surface water inflow by NFTA's demolition contractor was found to be ineffective.

collection system, most of which was capped by the former Westinghouse building floor slab. Discharge from the treatment system was to U-Crest Ditch.

During and after construction, several modifications were made to the treatment process in response to changes in Site conditions related to redevelopment for airport expansion. When the treatment plant was initially started, it immediately became apparent that the concrete demolition debris used as backfill during NFTA's Site redevelopment activities was causing an elevated pH of the system influent. In response, a pH adjustment step (*i.e.*, acidification) was added to the treatment system to control the influent pH.

After system startup in 2000, other system modifications were made in an effort to improve operations. Such modifications included the addition of the following:

- Separate flow equalization tank in advance of pH adjustment;
- Mixer on pH adjustment tank for improved control of acid addition;
- Supplemental process instrumentation; and
- Increased size of first carbon adsorber to improve system hydraulics.

Other trial modifications (*e.g.*, polymer addition to improve solids removal in equalization tank, alternative particulate filter design) were attempted but found not to be workable.

The 2009 partial closure of the 001 portion of the groundwater collection system is discussed in Section 4.6.

3.3.2 GROUNDWATER MONITORING

To monitor groundwater quality and serve as compliance points to determine attainment of ROD-specified RAOs and in accordance with the approved *Final Remedial Action Plan* (IT Corporation, 1999), CBS installed six groundwater monitoring wells in 2000 (*i.e.*, MW-30, MW-31, MW-32, MW-33, MW-34, and MW-34D) to complement three pre-existing (RI) wells (*i.e.*, MW-2, MW-5, MW-28). Wells MW-30, MW-31, MW-34, and MW-34D were located downgradient of the groundwater collection system, and well MW-33 was located upgradient. Well MW-32 is located in the northern portion of site (Area P). In 2009, as part of the plan to partially close the groundwater collection system, CBS installed an additional downgradient monitoring well (*i.e.*, MW-35). These well locations are show in Figures 1 and 2.

All of the monitoring wells, except well MW-32, monitor groundwater in the central and southern portion of the Site (*i.e.*, within that portion of the Site for which the groundwater collection and treatment system was designed and installed). Well MW-32 monitors groundwater at the extreme northern end of the Site, remote from the zone of influence of the groundwater collection and treatment system.

Seven wells (*i.e.*, MW-2, MW-5, MW-28, MW-30, MW-31, MW-34, and MW-35) monitor shallow groundwater along the downgradient Site perimeter (Figure 2). The results from these monitoring wells are specifically determinant of whether Site conditions achieve the NYSDEC-defined remediation goals for this Site. Well MW-33 monitors groundwater upgradient of the area of the collection system, and MW-34D is a bedrock well that forms a couplet with shallow well MW-34 along the downgradient Site boundary.

3.4 CHANGES FROM ROD/DESIGN BASIS

Subsequent to the December 1995 ROD and NYSDEC approval of the *Final Remedial Action Plan* (IT Corporation, 1999), NYSDEC approved changes to the ROD-defined remedial requirements to accommodate NFTA's redevelopment of the Site as part of the airport expansion. The impacts of these changes on the effectiveness of the remedy and OM&M are discussed in Section 4.

3.4.1 FLOOR SLAB REMOVAL

Despite concerns raised by CBS, NYSDEC agreed to allow NFTA to remove the 38± acre floor slab, that was specified in the ROD as a component of the remedy. The NYSDEC remedial plan, ROD, and the remedial design all were based on leaving the 38± acres of concrete former building floor slab in place following building demolition to serve as a low-permeability cap atop the area of groundwater recovery. In 1999, however, NYSDEC allowed NFTA to remove 985,000 square feet (*i.e.*, 22.6 acres) of this floor slab to accommodate new parking areas and access roads being constructed by NFTA as part of airport expansion. In 2002, NYSDEC subsequently allowed NFTA to remove the remaining 658,000 square feet (*i.e.*, 15.1 acres) of floor slab to accommodate NFTA's runway extension project.

Aside from the increased infiltration caused by eliminating this low-permeability cap, removing the slab effectively precluded the ability to locate and repair building roof leaders and downspouts that had been improperly sealed (or not sealed) during building demolition. As described in a NYSDEC letter of January 3, 2000,[5] the methods used by the NFTA contractor for the floor slab removal "buried all the roof leaders and drainage manholes prior to them being properly sealed" and the resulting damage "has the potential to significantly increase surface water flow into the collection and treatment system."

3.4.2 Underground Utility Installation

Contrary to the ROD-specified design basis by which all underground utilities were to be terminated, NYSDEC agreed, despite concerns raised by CBS, to allow NFTA to install subsurface utilities throughout the Site. The NFTA-installed utilities included subsurface drains that directly connect to NFTA storm sewers.

3.4.3 On-Site Concrete Rubble Disposal

In the course of Site redevelopment and airport expansion activities, NFTA disposed of up to 120,000 tons of crushed concrete from demolition of the former Westinghouse building. Surface water infiltration through this porous fill provided a source of high pH and high hardness water to the groundwater collection system.

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[5] Gregory P. Sutton, P.E., NYSDEC Hazardous Waste Remediation, Project Engineer, to Larry Martin, IT Corporation, January 3, 2000, "Westinghouse Site Remedial Project, Cheektowaga (T), Erie County, Site #915066.

4.0 OM&M EXPERIENCE

Over the past 12 years, CBS has operated and maintained the groundwater collection and treatment system and routinely collected groundwater samples from the monitoring wells. The OM&M experience and the data generated during the OM&M period are the principal bases for the conclusion that termination of OM&M is appropriate and prudent. Section 4.1 provides a brief narrative summary of operating experience, and Sections 4.2 through 4.5 provide OM&M monitoring data. Section 4.6 discusses the 2009 partial closure of the 001 portion of the groundwater collection system. Section 4.7 presents the revised conceptual Site model.

4.1 OVERVIEW OF OPERATING EXPERIENCE

As source control actions were being completed, CBS began Site-wide groundwater monitoring (May 2000) and OM&M of the installed remedial systems (August 2000). Since initiating OM&M, nearly 42 million gallons of water have been recovered from the former Site storm sewers that now function as a collection system. Over this time period, 48 rounds of treatment system influent sampling and 28 synoptic groundwater monitoring events have been conducted.

Since the inception of operations in August 2000, the groundwater collection and treatment system has been beset by OM&M difficulties. The root causes of the operational problems are twofold:

NFTA replaced the building slab with asphalt paved parking lots. The downspouts, roof leaders and catch basins were not properly closed - NYSDEC acknowledged this (1/3/00 letter from G. Sutton).

- Surface water continues to flow to the former storm sewer pipes used for groundwater collection as a result of improperly sealed downspouts, roof leaders, and catch basins. These inflows, in combination with the additional infiltration resulting from building floor slab removal, continually replenish the water volume in the collection system and hydraulically overload the system on a regular basis.

- The collected groundwater exhibits a high hardness and pH that are appear to be related to the use of crushed concrete as fill in Site redevelopment. The hardness precipitates as calcium and magnesium carbonate, and this fine precipitate rapidly plugs pumps, piping, filters, and activated carbon adsorbers.

When the groundwater treatment plant was started in August 2000, the influent pH was much higher than historically had been associated with Site groundwater or flows in storm sewers

monitored under the Site surface water permit in effect prior to building demolition. In response, the treatment train was retrofitted with a pH adjustment system. Then, in the fall and winter of 2000, as the weather in the region turned wetter, suspended solids and very high inflows became major problems with system operation, plugging filters and the carbon adsorbers and overwhelming the collection sumps.

Despite these problems, the system was kept operating, but OM&M costs were extraordinary, and it was obvious that the system was receiving excess flows and solids that could not be efficiently handled. In late 2001, a video inspection was conducted for all accessible collection sewers. This survey found large quantities of sediment present in these lines. Because downspouts, roof leaders, and catch basin that had connected to the old storm sewers had not been properly sealed, muddy water was washed into the "groundwater collection" sewers.

The ROD responsiveness summary asserted that the amount of sediment that was likely present in the old sewers wasn't significant.

Based on the results of the video inspection, the groundwater collection sewers were cleaned and identified surface water inflows were sealed off in the spring of 2002. A temporary treatment system was operated at the Site between June and November 2001 to support the collection piping dewatering needed for this cleaning, inspection, and repair. The temporary system included unit processes of acidification, filtration, and activated carbon adsorption.

Suspended solids concentrations and system flow dropped off after the 2002 repairs, and process changes (*e.g.*, adding a settling tank with polymer addition, improving process instrumentation) were made that were expected to bring the system OM&M consistent with the original plans. Despite these efforts, however, solids continued to be a major operational problem. A fine floc formed when the groundwater from the various sumps was blended together, and this floc blinded off the filters and plugs the carbon. Downtime for sump pump maintenance due to clogging with precipitate exacerbated the hydraulic overloading caused by surface water inflows.

As the OM&M period continued, observations and data indicated that the collection and treatment system were becoming less effective due to these operational problems. Pumping from the sumps to the groundwater treatment system could not keep up with the rate of inflow so that, with time, water levels in these underground reservoirs continued to rise to the

point of overtopping. Sump 001 was the first to become surcharged, and an additional pump was added in an effort to maintain water levels below the ground surface. That effort saw mixed results; during periods of high precipitation, the pumping could still not keep up. The overtopping at Sump 001 was finally resolved by the partial closure of the 001 system (Section 4.6).

Sump 002 likewise began to overtop during periods of high precipitation, and such overtopping continues. The CBS work plan for partial closure of the 002 system (Section 4.6) was designed to address this concern, but NYSDEC never authorized CBS to proceed with that portion of the approved partial closure work plan.

4.2 WATER LEVELS

Table 2 presents water level data that were collected in the spring of 2008 to assess the effects of excess inflow on the collection system and evaluate options available to address the periodic overtopping at Sumps 001 and 002. These data showed that the groundwater collection system was inundated, with water levels in manholes in the upper sections of these systems essentially identical to those at the respective collection sumps. Figure 3 shows a profile of the 002 portion of the system that illustrates water levels in comparison to the ground surface and manhole and piping depths. These 2008 water level data were used as a basis for developing the plan for partial closure of the 001 and 002 portions of the groundwater collection system (Section 4.6).

The spring 2008 water level data also allowed for comparison of groundwater elevations measured in monitoring wells to the water levels observed in nearby sumps and manholes. These data, which are presented in Table 3, showed the significant differences between the water levels in the collection system and groundwater elevations. In all cases, water levels are higher in the collection system, indicating that the collection system was not acting to drain groundwater but rather had the potential to recharge local groundwater. The differences in water levels shown in Table 3 demonstrated the hydraulic isolation between the groundwater collection piping and circulating groundwater and the fact that the water in the collection system was comprised primarily of surface water inflow. The hydraulic

isolation was maintained because of the low hydraulic conductivity of the native soils at the Site.

4.3 SYSTEM INFLUENT MONITORING

July 2008 - what's been going on more recently?

4.3.1 FLOWS

Since system startup in August 2000 through the end of July 2008, nearly 42 million gallons of water have been collected, treated, and discharged to U-Crest Ditch by the systems operating at the Site. This volume equates to an average flow rate of 9,613 gpd (6.68 gpm) over the 4,363 days of the operating period. The actual flow is about 14 times the 670 gpd predicted as the Site-wide flux of groundwater through the glacial till (Section 2.2); or, from another perspective, the groundwater flow across the Site in the uppermost water-bearing zone comprises about seven percent of the water collected and treated.

The significant increase in water treatment flow primarily results from fugitive surface water inflows from improperly sealed (or unsealed) roof leaders, downspouts, catch basins, and drains. Other sources of water being collected and treated may also include shallow, perched water found within the discontinuous pockets of more-permeable fill. Neither of these sources has the potential for advective transport of Site-related COCs to off-site areas, except to the extent that they contribute water to man-made preferential flow paths such as those associated with underground utility lines.

Check the reports for these two rounds - confirm, the 003 portion of the system is the one that requires continued treatment?

4.3.2 INFLUENT QUALITY

Table 4 summarizes data collected for the influent to the groundwater treatment system. These data include eight samples collected at system startup over the timeframe of August through October 2000 and quarterly sampling thereafter. Except for the samples collected in June 2001 and May 2006, influent samples have been collected as a composite of the water contributed by the three individual sumps.

4.3.2.1 VOCs

In contrast to groundwater in the central and southern portion of the Site (Section 4.4.1), the influent to the treatment system contains elevated concentrations of trichloroethylene (TCE)

and cis-1,2-dichloroethylene (cis-1,2-DCE). Historically, VOC concentrations have been much higher in waters collected by the 003 segment of the groundwater collection system than those associated with the 001 or 002 segments.

The data presented in Table 4 show an initial 10-fold reduction in TCE concentrations in the system influent after completing startup in the fall of 2000, but, since that time, the downward trend is less pronounced. Comparison of the data from the June 2001 to the May 2006 sampling of individual sumps shows a significant decrease in the TCE concentration at Sump 002. The TCE concentration is lower, but relatively constant, in the water collected at Sump 001. At Sump 003, the TCE and other target VOC concentrations have remained elevated.

TCE Concentrations (micrograms per liter [(µg/L)])

Location	Date of Sampling	
	June 2001	May 2006
Sump 001	37	35
Sump 002	280	65
Sump 003	1,700	1,800

Between 2006 and 2009, sampling of the treatment system influent (composite samples) showed a slight downward indication in total target VOC concentrations, but no statistically significant trend. Since 2009, the treatment system influent data has shown slight upward indication, likely due to the significant reduction in flow from Sump 001 following partial closure of the 001 system. The perceived trend since 2009 is not statistically significant.

4.3.2.2 Metals

Cadmium and lead are also monitored in the groundwater treatment system influent. As shown in Table 4, the concentrations of these metals in the composite system influent are typically low (*i.e.*, below groundwater RAOs), except that the cadmium concentration associated with the 001 system was historically elevated at times. Since partial closure of the 001 system, cadmium levels have been lower. Lead levels are generally quite low.

4.4 GROUNDWATER MONITORING

Table 5 summarizes the results of the 28 rounds of groundwater monitoring completed at the Site for the eight wells located in the central and southern portion of the Site, *i.e.*, within the portion of the Site where the collection system is operative. The monitoring period began with the initial sampling conducted as remedial construction was being completed (May 2000) and has continued through June 2008. In accordance with the approved *Final Remedial Action Plan* (IT Corporation, 1999), groundwater monitoring has been conducted on a semi-annual basis, except in 2001 when, at the request of NYSDEC, quarterly monitoring was performed. The groundwater monitoring data for these wells show that the groundwater quality in the central and southern portion of the Site generally meets the RAOs specified in the Operable Unit 2 ROD.

June 2008? It has been continued on semi-annual basis up to June 2012. This text looks familiar - like it may have been cut and pasted from an earlier report.

4.4.1 VOCs

VOC concentrations in all eight wells near and along the boundary at the southern and southwestern limit of the Site (*i.e.*, wells MW-2, MW-5, MW-28, MW-30, MW-31, MW-34, MW-34D, and MW-35) have achieved the corresponding RAOs for VOCs in each of the past 24 rounds of groundwater sampling and, in total, 27 of the 28 rounds of groundwater monitoring. The only exception for these seven wells was the detection of 7.1 µg/L of TCE at well MW-5 in the March 29, 2001 sample, compared to the RAO for TCE of 5 µg/L.

A 1,1,1-trichloroethane (1,1,1-TCA) concentration of 35 µg/L was reported from the December 1, 2000 sample at well MW-33, which is located on the upgradient (northeastern) limit of the portion of the Site within the expected zone of influence of the collection system. No 1,1,1-TCA has been detected in any of the 17 rounds of groundwater sampling conducted at well MW-33 since December 2000, or in any other well in the central and southern portion of the Site at any other time. Also, in the December 2005 sampling, cis-1,2-DCE, TCE, and vinyl chloride concentrations of 23, 16, and 1.5 µg/L, respectively, were reported at well MW-33, but the later rounds of sampling showed no detectable concentrations of any of these VOCs. These later data support the hypothesis previously identified to NYSDEC that the December 2005 VOC concentrations at well MW-33 were the result of cross-contamination of sampling equipment. During the December 2005 monitoring event, well

MW-33 was sampled immediately after well MW-32. The cis-1,2-DCE, TCE, and vinyl chloride concentrations subsequently reported in the December 2005 sampling at well MW-33, at which none of these VOCs had been detected in the past, were each found to equal 2 percent of the corresponding concentration at well MW-32. The conclusion is that groundwater at MW-33, located upgradient of the area of the collection system, has not been impacted by the target VOCs at the Site.

4.4.2 METALS

In addition to VOCs, the Operable Unit 2 ROD (NYSDEC, 1995c) established RAOs for two metals (*i.e.*, cadmium and lead). In the 28 rounds of groundwater monitoring, only one exceedance of the RAO for cadmium (5 µg/L) was observed. This excursion was a value of 6.2 µg/L in well MW-31 in December 2007. As discussed below, this specific sample also exhibited the highest lead concentration in any well sample collected since 2000. Based on the results of follow-up sampling, it is believed that the elevated metals in the December 2007 sample at MW-31 were the results of high suspended solids in the well sample. Cadmium was not detected above the RAO at any other time in any well, including well MW-31.

Sporadic exceedances of the RAO for lead have been observed in samples in wells MW-5, MW-28, MW-30, and MW-31 beginning with the June 2004 monitoring event. In the June 2004 sampling, 44.5 and 35 µg/L of lead, respectively, were reported for wells MW-5 and MW-28. Since that time, reported lead levels have ranged to a maximum of 116 µg/L at well MW-31 in December 2007 (*i.e.*, the same sample with the sole cadmium exceedance). Lead levels have been below the RAO in 8 of the last 10 sampling rounds (6 of the past 7) with relatively minor excursions at wells MW-28 and MW-30.

It is not uncommon, especially in fine-grained soil formations, for sediment to accumulate in the bottom of groundwater monitoring wells. This sediment can be re-suspended when a bailer is lowered into the well during purging and sampling, which results in a high suspended solids and corresponding elevated metals concentrations in samples. To assess whether suspended solids in the well samples were the cause of the observed metals levels, low-flow sampling techniques, which are designed to minimize the disturbance of the well

(Puls and Barcelona, 1996), have been used in more-recent sampling at selected wells. Use of low-flow sampling techniques appears to have reduced metals levels in sampling results. Given the sporadic occurrence and lack of consistency across the Site, it is suspected that the lead detections are related to suspended solids entrainment in certain samples.

When were the low flow techniques used?

4.5 MANHOLE SAMPLING

On May 7 and 8, 2006, CBS collected samples from 22 manhole and sump locations throughout the groundwater collection network to assess whether water chemistry varied significantly and if such variations (or lack of variation) could provide further insight into subsurface flow and potential contaminant transport phenomena. Table 6 presents the concentration data from this sampling for general chemistry and metals, and Table 7 presents the concentration data for VOCs. The data are also summarized for each of the three sections of the recovery system in Figures 4 through 6.

A review of these manhole sampling results shows that VOC concentrations were present throughout the storm sewer collection system, with higher concentrations associated with the western portion of the collection system that drains to Sump 003. The lowest concentrations were associated with the eastern portion of the collection system that drained to Sump 001. Elevated cadmium and lead concentrations were manifested at only a few locations, with most manhole samples showing no detectable concentrations of these metals.

There was no relationship between VOC and metals concentrations in manholes versus those in adjacent or nearby groundwater monitoring wells. Table 8 compares VOC and metals concentration data from the water collected at manholes and sumps to those in groundwater at nearby monitoring wells. As shown in Table 8, VOC and metals concentrations observed in manholes or sumps do not correlate to those observed at nearby groundwater monitoring wells providing further evidence of the distinction between the surface water inflows to the collection system and Site groundwater.

4.5.1 PARTIAL CLOSURE

Beginning with meeting discussions held on January 21, 2003, CBS has explored with NYSDEC the basis on which the groundwater collection and treatment operations could be

terminated. Via letter dated March 19, 2003,[6] CBS proposed conducting sampling and closing those portions of the collection system where COC concentrations were below selected threshold values (*i.e.*, 10 times groundwater RAOs). In response, NYSDEC indicated, "While the Scope of Work is acceptable, a decision to discontinue collection and treatment of specific branches of the collection system should be made after Department review of the sampling data."[7] After several exchanges regarding objectives, scope, methods, and logistics, the manhole sampling referenced in the March 2003 submittal was conducted in May 2006.

From these evaluations, CBS concluded that complete closure of the groundwater collection system was in order and presented this proposal in a meeting among NYSDEC, CBS, and NFTA on June 26, 2006. CBS then submitted a comprehensive Work Plan to NYSDEC on August 3, 2006 that called for the phased shutdown of the groundwater collection and treatment system with post-shutdown monitoring to confirm that groundwater quality was not adversely affected. NYSDEC responded to CBS' proposed plan via its letter of October 30, 2006 in which NYSDEC requested additional hydraulic evaluations of the impacts of system shutdown, particularly as related to potential surface water discharges, and the sequencing and timing of this work. In that letter, NYSDEC also indicated that the closure should be limited to those collection lines draining to Sumps 001 and 002 and that collection of water from the 003 segment of the system, along with treatment of the collected water, should continue.

Were the "additional hydraulic evaluations" ever completed?

Following further evaluation and review, CBS submitted a revised work plan for partial shutdown in November 2008. In that work plan, CBS concluded, and NYSDEC concurred, that termination of the ongoing groundwater collection from the 001 and 002 portions of the system was warranted based on the data collected during the OM&M completed to date that provide a clear understanding of Site hydrogeology, groundwater interaction with the former

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[6] Leo M. Brausch, Project Coordinator/Trustee to Gregory P. Sutton, Project Engineer, NYSDEC, Division of Environmental Remediation, Region 9, March 19, 2003, "Scope of Work, Modification of Groundwater Recovery and Treatment System, NYSDEC Site No. 9-15-066, Cheektowaga, New York.

[7] Gregory P. Sutton, P.E., NYSDEC, Project Engineer, Division of Environmental Remediation, to Leo M. Brausch, April 3, 2003, "Westinghouse Site Remedial Project, Cheektowaga (T), Erie County, Site #915066.

storm sewer system, potential contaminant migration pathways, and potential human health and environmental exposures.

In accordance with the November 2008 Revised Work Plan, CBS completed partial closure of the 001 system by filling manholes MH-001-002 and MH-01-009 and grouting the bedding materials in August 2009. Despite documenting that the partial 001 system closure met its objectives, and despite several requests, NYSDEC did not authorize CBS to continue implementation of the approved work plan and the partial closure of the 002 system. NYSDEC reportedly based its decision not to authorize completion of the approved November 2008 work plan on concerns raised by NFTA regarding potential flooding of subsurface utilities installed by NFTA as part of its Site redevelopment.

4.6 Revised Conceptual Site Model

The understanding of Site conditions has grown significantly based on the knowledge and data gleaned from system OM&M over the past 12 years. This expanded Site knowledge allows for a redefinition of the conceptual Site model as compared to that developed from the RI data and used as a basis by NYSDEC for the Operable Unit 2 PRAP.

First, groundwater in the central and southern portion of the Site (*i.e.*, the portion of the Site where the collection system is operative) is not impacted by Site-related VOCs or metals. This situation, which is evident from the 28 rounds of groundwater monitoring, results from the very low hydraulic conductivity of native soils, the limited mobility of COCs in groundwater, and the fact that the extensive Operable Unit 1 soil remediation efforts eliminated the sources of RAO COCs in groundwater. Because of the low potential for constituent transport in groundwater, the Operable Unit 1 source removal effectively "mined" out the impacted groundwater at the Site.

Second, under the hydrogeologic conditions at the Site, contaminant migration is limited to man-made preferential pathways, such as those associated with underground utility lines. The water that is being collected in the "groundwater" collection system is not groundwater associated with the uppermost continuous water-bearing zone. Instead, this water is comprised of fugitive surface water inflows and, where hydraulically connected to the

collection systems via man-made pathways (*e.g.*, along manhole risers), perched groundwater found in the discontinuous pockets of more-permeable fill placed at the Site.

Third, discharges of water leaving sewers as treatment system influent contain VOCs, whereas water entering sewers does not. The VOCs detected in the system influent are not the result of impacted Site groundwater draining into these former sewer pipes; these VOCs are being leached from the bedding and fill materials immediately surrounding the underground pipes. The groundwater collection system does not collect impacted groundwater; the groundwater is clean. The influent to the treatment system becomes contaminated by contact with impacted pipe and bedding materials as water flows through the storm sewer pipes that serve as the collection system. The current remediation process is generating contaminated water.

Fourth, based on the observed water levels in manholes and those in groundwater monitoring wells, the groundwater collection system is not acting to drain groundwater. The hydraulic head levels suggest the opposite, *i.e.*, that the hydraulic gradient is outward from the "collection system" to the local shallow groundwater. The very low hydraulic conductivity of the native soils, however, minimizes the actual advective flow. This conclusion is corroborated by the data from couplets of manholes/sumps and nearby monitoring wells that show the COCs associated with bedding materials are not migrating outward into the groundwater flow regime.

So if the manholes are plugged and the collection system closed, a reservoir of contaminated water will build up in these old sewers, unless the fugitive surface water is isolated.

5.0 SUMMARY AND CONCLUSIONS

Based on the evaluation of Site data and 12 years of operating experience, the overarching conclusions regarding the Operable Unit 2 collection system are as follows:

- Due to the lack of isolation of surface water from the storm sewers (*i.e.*, collection system), surface water drains into the sewers and, as it does so, comes into contact with the bedding materials around the pipes. The bedding material is impacted by historic releases of VOCs, and the passage of this surface water through the soil into these pipes represents the process generating VOC-impacted water. It is also clear from the Site data that this passage of surface water is ineffective in eliminating VOCs from the bedding material.

- Continuing operation of the collection and treatment system will not improve groundwater quality, but no improvement is needed, as groundwater at the Site and groundwater migrating off-site to the south and southwest are not impacted.

- Leaving the collection and treatment system operating will continue to cause VOC-impacted groundwater to be generated, presents potential exposure to OM&M operators, creates a greater risk to surface water quality in U-Crest Ditch, and wastes energy and other resources.

The prudent and responsible action at this time is to close the former storm sewer system in its entirety, as previously proposed and discussed, thereby isolating the residual materials that have the potential for producing VOC-impacted water. Such closure of the system will complete active Site remediation. Site groundwater is not impacted and has no potential to become impacted if contact with storm sewer pipes and bedding materials is eliminated.

CBS understands that NFTA has expressed concerns that continued operation of the Operable Unit 2 recovery and treatment system is needed to protect NFTA-installed subsurface structures and utilities, even though CBS has apprised NFTA in correspondence dating to 2001 (*i.e.*, prior to much of the Site redevelopment) that the groundwater collection system will not significantly dewater Site soil.[8] As NYSDEC is aware, foundation or utility dewatering is not the purpose of the Operable Unit 2 remedy. CBS has apprised NFTA of its intent to transition operation of the system to NFTA and has offered to provide training to

[8] Letter from L. M. Brausch to Harold W. Matuszak, September 1, 2000, "Groundwater Recovery and Treatment Issues, NYSDEC Hazardous Waste Site 9-15-066, Cheektowaga, New York."

NFTA personnel and otherwise coordinate that transition with NFTA to address its concern about protection of its installed subsurface structures.

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TABLES

Table 1
Remedial Action Objectives for Site Groundwater
NYSDEC Site No. 9-15-066

Constituent	Remedial Action Objective in Groundwater (µg/L)
1,2-dichloroethylene (total)	5
Toluene	5
1,1,1-Trichloroethane	5
Trichloroethylene	5
Vinyl chloride	2
Cadmium	5
Lead	25

Table 2
Summary of Water Level Measurement Data
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Location/Descriptor		Elevation (ft-msl)		24-Apr-08		5-Jun-08		13-Jun-08	
		Rim	Ground Surface	Depth to Water (ft-bgs)	Water Elevation (ft-msl)	Depth to Water (ft-bgs)	Water Elevation (ft-msl)	Depth to Water (ft-bgs)	Water Elevation (ft-msl)
001 System Manholes	CSMH-001	701.34	701.2	0.4	700.9	NM	NM	NM	NM
	001-01	701.95	701.8	0.9	701.1	NM	NM	NM	NM
	001-06	708.20	708.2	7.3	700.9	NM	NM	NM	NM
	001-09	709.01	709.1	8.2	700.8	NM	NM	NM	NM
	001-10	708.51	708.5	7.6	700.9	NM	NM	NM	NM
	001-13	704.43	704.3	4.6	699.8	NM	NM	NM	NM
	001-14	704.36	704.3	3.2	701.2	NM	NM	NM	NM
002 System Manholes	CSMH-002	688.97	688.9	0.0	689.0	0.00	688.97	0.09	688.88
	002-02	690.84	690.8	NM	NM	1.78	689.06	1.88	688.96
	002-03	691.64	691.6	2.6	689.0	NM	NM	NM	NM
	002-06	691.91	691.9	3.0	688.9	2.97	688.94	3.05	688.86
	002-09	695.71	695.8	6.8	688.9	6.71	689.00	6.82	688.89
	002-10	698.71	698.8	9.7	689.0	9.72	688.99	9.80	688.91
	002-12	704.10	703.5	15.0	689.1	NM	NM	NM	NM
	002-13	704.88	704.9	16.0	688.9	NM	NM	NM	NM
	002-15	690.82	690.7	1.9	688.9	NM	NM	NM	NM

Table 2
Summary of Water Level Measurement Data
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Location/Descriptor		Elevation (ft-msl)		24-Apr-08		5-Jun-08		13-Jun-08	
		Rim	Ground Surface	Depth to Water (ft-bgs)	Water Elevation (ft-msl)	Depth to Water (ft-bgs)	Water Elevation (ft-msl)	Depth to Water (ft-bgs)	Water Elevation (ft-msl)
003 System Manholes	CSMH-003	688.49	688.5	4.5	684.0	NM	NM	NM	NM
	003-01	688.88	688.9	4.9	684.0	NM	NM	NM	NM
	003-02	688.14	688.1	4.1	684.0	NM	NM	NM	NM
	003-03	689.62	689.7	5.6	684.0	NM	NM	NM	NM
	003-04	690.64	690.7	6.4	684.2	NM	NM	NM	NM
	003-07	694.59	691.7	10.6	684.0	NM	NM	NM	NM
	Access	688.80	689.0	4.9	683.9	NM	NM	NM	NM
NFTA Tunnel Manhole		702.49	701.9	15.6	686.9	NM	NM	NM	NM
Location/Descriptor		**Elevation (ft-msl)**		**24-Apr-08**		**5-Jun-08**		**13-Jun-08**	
		Top of Casing	**Outer Casing**	**Depth to Water (ft-bgs)**	**Water Elevation (ft-msl)**	**Depth to Water (ft-bgs)**	**Water Elevation (ft-msl)**	**Depth to Water (ft-bgs)**	**Water Elevation (ft-msl)**
Selected Groundwater Wells	MW-5	685.75	688.00	2.91	682.84	NM	NM	NM	NM
	MW-28	688.07	689.30	5.94	682.13	NM	NM	NM	NM
	MW-30	694.65	695.30	5.33	689.32	NM	NM	NM	NM
	MW-31	NA	688.25	3.18	685.07	2.85	685.40	2.74	685.51
	MW-34	702.81	703.80	3.51	699.30	NM	NM	NM	NM
	MW-34D	701.64	703.00	5.40	696.24	NM	NM	NM	NM

Notes:

1. *"NM" indicates not measured.*
2. *"NA" indicates top of casing elevation not available. Groundwater measurements made from top of outer casing.*

Table 3
Water Level Comparisons
Monitoring Wells Located Proximal to Sumps or Manholes
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Sump or Manhole	Nearest Groundwater Monitoring Well	Distance Apart (feet)	Water Elevation Difference (feet)		
			24-Apr-08	5-Jun-08	13-Jun-08
CSMH-001	MW-30	280	11.62	NM	NM
	MW-34	250	1.64	NM	NM
	MW-34D	250	4.70	NM	NM
001-14	MW-34	43	1.86	NM	NM
	MW-34D	64	4.92	NM	NM
CSMH-002	MW-31	87	3.90	3.57	3.37
CSMH-003	MW-5	77	1.15	NM	NM
003-02	MW-28	320	1.91	NM	NM

Notes:
1. Water Elevation Difference = (Sump or Manhole Water Elevation) - (Nearest Monitoring Well Groundwater Elevation)
2. "NM" indicates not measured.

Table 4
Summary of Treatment System Influent Monitoring Data
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Date of Sampling	Outfall	Constituent Concentration (ug/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
08/21/00	Composite	200 U	200 U	200 U	**3,100**	200 U	**1.5**	NA
08/29/00	Composite	200 U	200 U	200 U	**8,500**	200 U	**0.7**	NA
09/06/00	Composite	200 U	200 U	200 U	**4,100**	200 U	0.7 U	NA
09/13/00	Composite	400 U	400 U	400 U	**9,600**	400 U	**1.6**	NA
09/20/00	Composite	**54 J**	100 U	100 U	**2,500**	100 U	0.6 U	NA
09/27/00	Composite	100 U	100 U	100 U	**2,200**	100 U	**0.68 J**	NA
10/04/00	Composite	**60 J**	100 U	100 U	**2,500**	100 U	**0.69 J**	NA
10/10/00	Composite	**23 J**	25 U	25 U	**430**	25 U	0.5 U	NA
03/29/01	Composite	**9.1 J**	10 U	**1.4 J**	**16**	10 U	**1.5**	2.5 U
06/26/01	001	**25**	4.5 U	**0.9 J**	**37**	4.5 U	**448**	NA
06/26/01	002	**16**	4.5 U	**2.3 J**	**280**	4.5 U	3.0 U	NA
06/26/01	003	**510**	4.5 U	**4.5 J**	**1,700**	4.5 U	3.0 U	NA
09/29/01	Comp - Perm	**18**	25 U	**4 J**	**8.3 J**	10 U	0.25 U	**7.4**
09/29/01	Comp - Temp	**14 J**	25 U	25 U	**350**	25 U	0.25 U	**8.7**
12/21/01	Composite	**14**	10 U	10 U	**130**	10 U	**1.7**	4.1 U
03/14/02	Composite	**18**	10 U	10 U	**130**	10 U	**0.29**	**4.5**
10/15/02	Composite	**11.3**	**530**	**9.0**	**990**	**16**	5 U	NA
12/15/02	Composite	**7.3**	**19**	**0.16**	**46**	**1.3**	**8.4**	50 U
03/15/03	Composite	**7.8**	**14**	**1.0**	**29**	NA	**21**	3 U
06/11/03	Composite	**11.0**	**130**	**64**	**570**	25 U	**4.2**	**5.5**
09/09/03	Composite	**8.6**	**290**	25 U	**620**	**15**	**3.0**	**3.5**
12/10/03	Composite	**8.6**	**54**	25 U	**430**	25 U	**2.5**	**3.0**
03/12/04	Composite	**7.7**	**51**	2.0 U	**3.9**	2.0 U	**1.4**	**1.6**
06/09/04	Composite	**8.3**	**54**	40 U	**650**	40 U	**1.8**	**6.8**

Table 4
Summary of Treatment System Influent Monitoring Data
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Date of Sampling	Outfall	Constituent Concentration (ug/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
09/13/04	Composite	**10.3**	**98**	10 U	**250**	10 U	**1.8**	**2.2**
12/13/04	Composite	**140**	**4.4 J**	20 U	**470**	20 U	**0.81 J**	**1.6 J**
03/23/05	Composite	**46**	15 U	15 U	**250**	15 U	**2.1 J**	1.5 U
06/09/05	Composite	**100**	15 U	15 U	**1,200**	**5.4 J**	**1.2 J**	3.0 U
10/03/05	Composite	**26**	1.0 U	**2.0**	**8.6**	**11**	5.0 U	3.0 U
12/16/05	Composite	**34**	5.0 U	5.0 U	**140**	**3.5 J**	**0.68 J**	3.0 U
03/13/06	Composite	**36**	10 U	10 U	**190**	**2.6 J**	**0.95 J**	**2.0 J**
05/09/06	Composite	**87**	10 U	10 U	**710**	**5.6 J**	**1.0 J**	3.0 U
06/12/06	Composite	**72**	3.3 U	3.3 U	**190**	**4.0 J**	**0.72 J**	3.0 U
09/11/06	Composite	**16**	5.0 U	5.0 U	**85**	5 U	**0.47 J**	**2.0 J**
12/11/06	Composite	**14**	5.0 U	5.0 U	**71**	**1.8 J**	5.0 U	3.0 U
03/22/07	Composite	**32**	5.0 U	**2.7 J**	**130**	**4.6 J**	**1.2 J**	3.0 U
06/20/07	Composite	**31**	**0.45 J**	**0.76 J**	**210**	**1.7 J**	**0.44 J**	3.0 U
09/17/07	Composite	**89**	20 U	20 U	**730**	**7.0 J**	5.0 U	3.0 U
12/18/07	Composite	**18**	2.0 U	2.0 U	**90**	**1.5 J**	5.0 U	3.0 U
03/19/08	Composite	**12**	**0.38 J**	**1.0 J**	**120**	**1.2 J**	5.0 U	3.0 U
06/17/08	Composite	**20**	4.0 U	4.0 U	**190**	**2.3 J**	5.0 U	3.0 U
09/18/08	Composite	**20**	2.0 U	2.0 U	**180**	**4.4**	5.0 U	3.0 U
12/18/08	Composite	**19**	**0.17 J**	2.0 U	**98**	**2.8**	5.0 U	3.0 U
03/30/09	Composite	**5.2**	1.0 U	1.0 U	**73**	**1.6**	5.0 U	3.0 U
06/12/09	Composite	**18**	5.0 U	**1.1 J**	**180**	**2.5 J**	5.0 U	3.0 U
09/30/09	Composite (002 & 003)	**43**	10 U	10 U	**310**	**4.4 J**	**0.85 J**	3.0 U
12/29/09	Composite (002 & 003)	**19**	2.0 U	**0.51 J**	**120**	**1.1 J**	**0.56 J**	**1.9 J**

Table 4
Summary of Treatment System Influent Monitoring Data
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Date of Sampling	Outfall	Constituent Concentration (ug/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
03/17/10	Composite (002 & 003)	**13**	**0.29 J**	**0.56 J**	**93**	**2.2**	5.0 U	**1.8 J**
06/30/10	Composite (002 & 003)	**24**	3.3 U	3.3 U	**310**	**1.2 J**	5.0 U	5.0 U
09/28/10	Composite (002 & 003)	**18**	2.0 U	2.0 U	**140**	**0.77 J**	5.0 U	5.0 U
01/19/11	Composite (002 & 003)	**79**	5.0 U	5.0 U	**340**	**6.3**	5.0 U	3.0 U
03/30/11	Composite (002 & 003)	**76**	5.0 U	5.0 U	**180**	**3.7 J**	5.0 U	15 U
06/09/11	Composite (002 & 003)	**37**	13 U	13 U	**230**	13 U	5.0 U	3.0 U
09/15/11	Composite (002 & 003)	**160**	**110**	13 U	**460**	**13 J**	5.0 U	3.0 U
12/12/11	Composite (002 & 003)	**56**	10 U	10 U	**200**	10 U	5.0 U	**1.3 J**
03/14/12	Composite (002 & 003)	**15**	10 U	10 U	**120**	10 U	5.0 U	3.0 U
06/12/12	Composite (002 & 003)	**20**	10 U	10 U	**170**	10 U	**2.0 J**	3.0 U

Data Legend :

"NA" - indicates not analyzed

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

Data qualifiers:

U - not detected at indicated detection limit

J - estimated concentration below reporting limit but above minimum detection limit.

Table 5
Summary of Groundwater Monitoring Data
Wells in Central and Southern Portion of Site
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5	5	5	5	5	5	25
MW-2	05/04/00	5 U	5 U	5 U	5 U	**1.6 J**	**1.3**	**3.0 J**
	11/30/00	5 U	5 U	5 U	5 U	5 U	1 U	10 U
	03/29/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/21/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	09/13/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/13/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	03/14/02	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/31/02	NA	10 U	10 U	10 U	10 U	5 U	**2.0 J**
	06/17/03	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/22/03	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/15/04	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/17/04	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/22/05	10 U	10 U	10 U	10 U	10 U	5 U	**4.1**
	12/15/05	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/13/06	10 U	10 U	10 U	10 U	10 U	5 U	**2.4 J**
	12/12/06	10 U	10 U	10 U	10 U	10 U	5 U	**4.3**
	06/26/07	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/19/07	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/26/08	10 U	10 U	10 U	10 U	10 U	5 U	**5.6**
	12/11/08	10 U	10 U	10 U	10 U	10 U	5 U	**3.2**
	06/22/09	10 U	10 U	10 U	10 U	10 U	5 U	**1.7 J**
	12/07/09	10 U	10 U	10 U	10 U	10 U	5 U	**1.5 J**
	06/14/10	10 U	10 U	10 U	10 U	10 U	5 U	**4.7**
	12/21/10	10 U	10 U	10 U	10 U	10 U	5 U	**3.2**
	06/14/11	5 U	5 U	5 U	5 U	5 U	5 U	**2.0 J**
	12/16/11	5 U	5 U	5 U	5 U	5 U	**0.22 J**	**6.3**
	06/19/12	5 U	5 U	5 U	5 U	5 U	5 U	**14**

Table 5
Summary of Groundwater Monitoring Data
Wells in Central and Southern Portion of Site
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5	5	5	5	5	5	25
MW-5	05/11/00	5 U	5 U	5 U	**5.0**	5 U	1 U	**18**
	11/30/00	NA	5 U	5 U	5 U	5 U	1 U	10 U
	03/29/01	10 U	10 U	10 U	**7.1 J**	10 U	**1.1**	**14**
	06/21/01	10 U	10 U	10 U	**4.1 J**	10 U	5 U	3 U
	09/13/01	10 U	10 U	10 U	**1.5 J**	10 U	**1.2**	**15**
	12/13/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	03/14/02	10 U	10 U	10 U	10 U	10 U	**0.29 J**	3 U
	12/31/02	10 U	NA	10 U	10 U	10 U	**0.57 J**	**5.0**
	06/17/03	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/22/03	10 U	10 U	10 U	10 U	10 U	5 U	**6.1**
	06/30/04	10 U	10 U	10 U	10 U	10 U	**1.0 J**	**45**
	12/17/04	10 U	10 U	10 U	10 U	10 U	**0.43 J**	**17**
	06/22/05	10 U	10 U	10 U	**1.1 J**	10 U	**0.23 J**	**35**
	12/14/05	10 U	10 U	10 U	10 U	10 U	5 U	**9.4**
	06/13/06	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/12/06	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/26/07	10 U	10 U	10 U	10 U	10 U	5 U	**1.8 J**
	12/19/07	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/26/08	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/11/08	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/22/09	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/07/09	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/14/10	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/14/10 (dup)	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/21/10	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/21/10 (dup)	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/14/11	5 U	5 U	5 U	**0.9 J**	5 U	5 U	3 U
	12/16/11	5 U	5 U	5 U	5 U	5 U	5 U	3 U
	06/19/12	5 U	5 U	5 U	5 U	5 U	5 U	3 U

Table 5
Summary of Groundwater Monitoring Data
Wells in Central and Southern Portion of Site
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5	5	5	5	5	5	25
MW-28	05/04/00	5 U	5 U	5 U	5 U	5 U	**1.5**	**3.1 J**
	03/29/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/21/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	09/13/01	10 U	10 U	10 U	10 U	10 U	5 U	**7.0**
	12/12/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	03/14/02	10 U	10 U	10 U	10 U	10 U	5 U	**8.8**
	12/31/02	10 U	NA	10 U	10 U	10 U	5 U	**4.7 J**
	06/17/03	10 U	10 U	10 U	10 U	10 U	5 U	**1.4 J**
	12/22/03	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/15/04	10 U	10 U	10 U	10 U	10 U	5 U	**35**
	12/17/04	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/22/05	10 U	10 U	10 U	10 U	10 U	5 U	**37**
	12/15/05	10 U	10 U	10 U	10 U	10 U	5 U	**12**
	06/13/06	10 U	10 U	10 U	10 U	10 U	5 U	**37**
	12/12/06	10 U	10 U	10 U	10 U	10 U	5 U	**43**
	06/26/07	10 U	10 U	10 U	10 U	10 U	5 U	**59**
	12/19/07	10 U	10 U	10 U	10 U	10 U	**0.72 J**	**65**
	06/26/08	10 U	10 U	10 U	10 U	10 U	5 U	**8.2**
	12/11/08	10 U	10 U	10 U	10 U	10 U	5 U	**4.6**
	06/22/09	10 U	10 U	10 U	10 U	10 U	5 U	**4.6**
	12/07/09	10 U	10 U	10 U	10 U	10 U	5 U	**19**
	06/14/10	10 U	10 U	10 U	10 U	10 U	**1.1 J**	**68**
	12/21/10	10 U	10 U	10 U	10 U	10 U	5 U	**17**
	06/14/11	5 U	5 U	5 U	5 U	5 U	5 U	**5.1**
	06/14/11 (dup)	5 U	5 U	5 U	5 U	5 U	5 U	**6.8**
	12/16/11	5 U	5 U	5 U	5 U	5 U	**0.13 J**	**6.4**
	12/16/11 (dup)	5 U	5 U	5 U	5 U	5 U	5 U	**6.0**
	06/19/12	5 U	5 U	5 U	5 U	5 U	5 U	6 U

Table 5
Summary of Groundwater Monitoring Data
Wells in Central and Southern Portion of Site
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5	5	5	5	5	5	25
MW-30	05/04/00	5 U	5 U	5 U	5 U	5 U	**3.0**	**12**
	11/30/00	NA	5 U	5 U	5 U	5 U	1.0 U	10 U
	03/29/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/21/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	09/13/01	10 U	10 U	10 U	10 U	10 U	**0.60 J**	**2.7 J**
	12/13/01	10 U	NA	10 U	10 U	10 U	5 U	3 U
	03/14/02	10 U	10 U	10 U	10 U	10 U	**0.59 J**	**3.7**
	12/31/02	10 U	10 U	10 U	10 U	10 U	**1.6 J**	**9.4**
	06/18/03	10 U	10 U	10 U	10 U	10 U	**0.47 J**	**4.3**
	12/22/03	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/15/04	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	01/05/05	10 U	10 U	10 U	10 U	10 U	5 U	**2.8 J**
	06/22/05	10 U	10 U	10 U	10 U	10 U	**2.4 J**	**28**
	12/14/05	10 U	10 U	10 U	10 U	10 U	**0.90 J**	**5.9**
	06/13/06	10 U	10 U	10 U	10 U	10 U	**1.9 J**	**15**
	12/12/06	10 U	10 U	10 U	10 U	10 U	**0.91 J**	**12**
	06/26/07	10 U	10 U	10 U	10 U	10 U	**1.7 J**	**18**
	12/19/07	10 U	10 U	10 U	10 U	10 U	**0.65 J**	**15**
	06/26/08	10 U	10 U	10 U	10 U	10 U	**1.4 J**	**15**
	12/11/08	10 U	10 U	**1.1 J**	10 U	10 U	**0.55 J**	**12**
	06/22/09	10 U	10 U	10 U	10 U	10 U	**2.6 J**	**30**
	09/10/09	10 U	10 U	10 U	10 U	10 U	**0.63 J**	**10**
	12/07/09	10 U	10 U	10 U	10 U	10 U	**1.4 J**	**14**
	06/14/10	10 U	10 U	10 U	10 U	10 U	**3.0 J**	**37**
	12/21/10	10 U	10 U	10 U	10 U	10 U	**1.3 J**	**13**
	06/14/11	5 U	5 U	5 U	5 U	5 U	**2.0 J**	**21**
	12/16/11	5 U	5 U	5 U	5 U	5 U	**1.7 J**	**14**
	06/19/12	5 U	5 U	5 U	5 U	5 U	**1.6 J**	**16**

Table 5
Summary of Groundwater Monitoring Data
Wells in Central and Southern Portion of Site
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5	5	5	5	5	5	25
MW-31	05/09/00	5 U	5 U	5 U	5 U	5 U	1 U	3 U
	11/30/00	NA	5 U	5 U	5 U	5 U	1 U	10 U
	03/29/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/21/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	09/13/01	10 U	10 U	10 U	10 U	10 U	**0.27 J**	3 U
	12/13/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	03/14/02	10 U	10 U	10 U	10 U	10 U	**0.55 J**	**3.4**
	12/31/02	10 U	NA	10 U	10 U	10 U	5 U	**2.9 J**
	06/17/03	10 U	10 U	10 U	10 U	10 U	5 U	**8.1**
	12/22/03	10 U	10 U	10 U	10 U	10 U	5 U	**13**
	06/30/04	10 U	10 U	10 U	10 U	10 U	**0.38 J**	**11**
	12/17/04	10 U	10 U	10 U	10 U	10 U	5 U	**2.0 J**
	06/22/05	10 U	10 U	10 U	10 U	10 U	**1.1 J**	**38.2**
	12/15/05	10 U	10 U	10 U	10 U	10 U	**0.58 J**	**3.9**
	06/13/06	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/12/06	10 U	10 U	10 U	10 U	10 U	5 U	**2.4 J**
	06/26/07	10 U	10 U	10 U	10 U	10 U	**1.1 J**	**23.1**
	12/19/07	10 U	10 U	10 U	10 U	10 U	**6.2**	**116**
	06/27/08	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/11/08	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/22/09	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	09/10/09	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/07/09	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/14/10	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/21/10	10 U	10 U	10 U	10 U	10 U	5 U	**2.3 J**
	06/14/11	5 U	5 U	5 U	5 U	5 U	5 U	3 U
	12/16/11	5 U	5 U	5 U	5 U	5 U	5 U	3 U
	06/19/12	5 U	5 U	5 U	5 U	5 U	5 U	15 U

Table 5
Summary of Groundwater Monitoring Data
Wells in Central and Southern Portion of Site
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5	5	5	5	5	5	25
MW-33	05/11/00	NA	5 U	**1.3 J**	5 U	5 U	**1.3**	3 U
	12/01/00	NA	5 U	**35**	5 U	5 U	1 U	10 U
	03/28/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/21/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	09/13/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/13/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	03/14/02	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/31/02	10 U	NA	10 U	10 U	10 U	5 U	3 U
	06/18/03	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/22/03	10 U	10 U	10 U	10 U	10 U	**1.2 J**	**15**
	06/15/04	10 U	10 U	10 U	10 U	10 U	5 U	**7.4**
	12/17/04	10 U	10 U	10 U	10 U	10 U	5 U	**2.5 J**
	06/22/05	10 U	10 U	10 U	10 U	10 U	5 U	**1.9 J**
	12/14/05	**23**	10 U	10 U	**16**	**1.5 J**	5 U	3 U
	06/13/06	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/12/06	10 U	10 U	10 U	10 U	10 U	5 U	**2.7 J**
	06/26/07	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/19/07	10 U	10 U	10 U	10 U	10 U	5 U	**2.6 J**
	06/26/08	10 U	10 U	10 U	10 U	10 U	5 U	**2.3 J**
	12/11/08	10 U	10 U	10 U	10 U	10 U	5 U	**3.2**
	06/22/09	10 U	10 U	10 U	10 U	10 U	5 U	**4.5**
	12/07/09	10 U	10 U	10 U	10 U	10 U	5 U	**2.3 J**
	06/14/10	10 U	10 U	10 U	10 U	10 U	5 U	**3.2**
	12/21/10	10 U	10 U	10 U	10 U	10 U	5 U	**3.9**
	06/14/11	5 U	5 U	5 U	5 U	5 U	5 U	**5.5**
	12/16/11	5 U	5 U	5 U	5 U	5 U	5 U	**3.1**
	06/19/12	5 U	5 U	5 U	5 U	5 U	5 U	**2.4**

Table 5
Summary of Groundwater Monitoring Data
Wells in Central and Southern Portion of Site
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5	5	5	5	5	5	25
MW-34	05/06/00	5 U	5 U	10 U	5 U	5 U	**1.2**	**3.8 J**
	11/30/00	5 U	5 U	35 U	5 U	5 U	**2.1**	10 U
	03/28/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/21/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	09/13/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/13/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	03/14/02	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/31/02	10 U	NA	10 U	10 U	10 U	5 U	**2.8 J**
	06/18/03	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/22/03	10 U	10 U	10 U	10 U	10 U	5 U	**2.3 J**
	06/15/04	10 U	10 U	10 U	10 U	10 U	**0.29 J**	**4.1**
	01/05/05	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/22/05	10 U	10 U	10 U	10 U	10 U	5 U	**5.4**
	12/14/05	10 U	10 U	10 U	10 U	10 U	**0.41 J**	**6.5**
	06/13/06	10 U	10 U	10 U	10 U	10 U	5 U	**2.7 J**
	12/12/06	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/26/07	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/19/07	10 U	10 U	10 U	10 U	10 U	5 U	**4.3**
	06/26/08	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/11/08	10 U	10 U	10 U	10 U	10 U	5 U	**3.2**
	06/22/09	10 U	10 U	10 U	10 U	10 U	5 U	**1.9 J**
	09/10/09	10 U	10 U	10 U	10 U	10 U	5 U	**3.1**
	12/07/09	10 U	10 U	10 U	10 U	10 U	5 U	**1.4 J**
	06/14/10	10 U	10 U	10 U	10 U	10 U	5 U	**3.2**
	12/21/10	10 U	10 U	10 U	10 U	10 U	5 U	**0.96 J**
	06/14/11	5 U	5 U	5 U	5 U	5 U	5 U	3 U
	12/16/11	5 U	5 U	5 U	5 U	5 U	**0.20 J**	3 U
	06/19/12	5 U	5 U	5 U	5 U	5 U	5 U	3 U

Table 5
Summary of Groundwater Monitoring Data
Wells in Central and Southern Portion of Site
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5	5	5	5	5	5	25
MW-34D	05/06/00	5 U	5 U	5 U	5 U	5 U	**1.2**	**3.1 J**
	11/30/00	5 U	5 U	5 U	5 U	5 U	1 U	10 U
	03/28/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	06/21/01	10 U	**2.2 J**	10 U	**1.1 J**	10 U	5 U	3 U
	09/13/01	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/13/01	10 U	10 U	10 U	10 U	10 U	5 U	4 U
	03/14/02	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/31/02	10 U	NA	10 U	10 U	10 U	5 U	**2.3 J**
	06/18/03	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/22/03	10 U	10 U	10 U	10 U	10 U	5 U	**13**
	06/15/04	10 U	10 U	10 U	10 U	10 U	5 U	**3.9**
	01/05/05	10 U	10 U	10 U	10 U	10 U	5 U	**1.7 J**
	06/22/05	10 U	10 U	10 U	10 U	10 U	5 U	**9.8**
	12/14/05	10 U	10 U	10 U	10 U	10 U	5 U	**2.6 J**
	06/13/06	10 U	10 U	10 U	10 U	10 U	**1.7 J**	3 U
	12/12/06	10 U	10 U	10 U	10 U	10 U	5 U	**7.0**
	06/26/07	10 U	10 U	10 U	10 U	10 U	**0.47 J**	3 U
	06/26/07	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/19/07	10 U	10 U	10 U	10 U	10 U	**0.31 J**	**2.4 J**
	06/26/08	10 U	10 U	10 U	10 U	10 U	5 U	3 U
	12/11/08	10 U	10 U	10 U	10 U	10 U	**0.23 J**	**2.4 J**
	06/22/09	10 U	10 U	10 U	10 U	10 U	**0.37 J**	3 U
	09/10/09	10 U	10 U	10 U	10 U	10 U	**0.16 J**	3 U
	12/07/09	10 U	10 U	10 U	10 U	10 U	**0.38 J**	3 U
	06/14/10	10 U	10 U	10 U	10 U	10 U	**0.53 J**	3 U
	12/21/10	10 U	10 U	10 U	10 U	10 U	**0.57 J**	**1.3 J**
	06/14/11	5 U	5 U	5 U	5 U	5 U	**0.26 J**	3 U
	12/16/11	5 U	5 U	5 U	5 U	5 U	**0.70 J**	**1.8 J**
	06/19/12	5 U	5 U	5 U	5 U	5 U	**0.59 J**	**2.0 J**

Table 5
Summary of Groundwater Monitoring Data
Wells in Central and Southern Portion of Site
NYSDEC Site No. 9-15-066, Cheektowaga, New York

Well Number	Date of Sampling	Constituent Concentration (µg/L)						
		cis-1,2-dichloroethylene	Toluene	1,1,1-trichloroethane	Trichloroethylene	Vinyl Chloride	Cadmium	Lead
Remedial Action Objective		5	5	5	5	5	5	25
MW-35	09/10/09	10 U	10 U	10 U	10 U	10 U	5 U	**2.1 J**
	12/07/09	10 U	10 U	10 U	10 U	10 U	5 U	**2.0 J**
	06/14/10	10 U	10 U	10 U	10 U	10 U	5 U	**8.2**
	12/21/10	10 U	10 U	10 U	10 U	10 U	5 U	**14**
	06/14/11	5 U	5 U	5 U	5 U	5 U	5 U	**4.6**
	12/16/11	5 U	5 U	5 U	5 U	5 U	5 U	**1.4 J**
	06/19/12	5 U	5 U	5 U	5 U	5 U	5 U	**9.1**

Data Legend:
"NA" - indicates not analyzed
*Detections and estimated values are in **bold-face** type.*
Concentrations above Remedial Action Objectives are highlighted in yellow.
Data qualifiers:
U - not detected at indicated reporting limit (RL)
J - estimated concentration above minimum detection limit (MDL), but below RL.

Table 6
Summary of Manhole Sampling Data - May 2006
General Chemistry and Metals

Manhole or Sump Number	Concentration									
	pH (s.u.)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Cadmium (ug/L)	Calcium (mg/L)	Chromium (ug/L)	Iron (ug/L)	Lead (ug/L)	Magnesium (mg/L)	Manganese (ug/L)
001-02	**8.30**	**4.8**	**141**	**2.0 B**	**150**	5 U	**124**	3 U	**28.8**	**409**
001-06	**8.00**	4 U	**120**	**0.55 B**	**101**	5 U	**198**	3 U	**22.9**	**273**
001-09	**7.90**	4 U	**151**	**1.0 B**	**172**	5 U	**208**	3 U	**35.0**	**368**
001-10	**10.80**	4 U	**74.3**	5 U	**119**	**1.6 B**	**38.9 B**	3 U	**1.34 B**	**11.2 B**
001-13	**8.30**	4 U	**139**	5 U	**113**	5 U	**286**	3 U	**24.9**	**534**
001-14	**8.90**	**1,030**	**54.3**	**28.8**	**390**	**3.1 B**	**1,680**	**7.9**	**22.3**	**1,150**
002-02	**9.90**	**12,000**	**104**	**11.9**	**914 J**	**27.1**	**5,310 J**	**58.0**	**120**	**742 J**
002-03	**8.70**	**5,190**	**71.0**	**3.4 B**	**504**	**7.0**	**4,080**	**15.1**	**27.6**	**555**
002-06	**9.20**	4 U	**49.5**	5 U	**59.5 J**	**0.86 B**	100 U	3 U	**13.3**	**4.5 B J**
002-07	**10.40**	**3.6 B**	**29.1**	5 U	**45.1 J**	**1.0 B**	**524 J**	3 U	**4.22 B**	**5.2 B J**
002-09	**9.50**	4 U	**35.3**	5 U	**69.2 J**	5 U	**54.9 B J**	3 U	**12.5**	**6.4 B J**
002-09 (dup)	NA	4 U	NA	NA	NA	NA	NA	NA	NA	NA
002-10	**10.10**	**1,320**	**16.0**	5 U	**85.6**	**0.96 B**	**69.5 B**	3 U	**12.3**	**8.3 B**
002-10 (dup)	NA	NA	**17.6**	NA	NA	NA	NA	NA	NA	NA
002-12	**9.10**	**4.4**	**34.6**	5 U	**66.4**	**1.1 B**	**50.8 B**	3 U	**13.2**	**2.3 B**
002-12 (dup)	**9.20**	**4.4**	**34.9**	NA	NA	NA	NA	NA	NA	NA
002-13	**7.90**	**1,950**	**172**	**2.2 B**	**466**	**25.6**	**21,100**	**59.4**	**69.0**	**1,550**
002-15	**11.50**	**3.6 B**	**122**	5 U	**41.6 J**	**2.0 B**	**84.4 B J**	3 U	**3.48 B**	**0.88 B J**
002-15 (dup)	NA	NA	**126**	NA	NA	NA	NA	NA	NA	NA
003-02	**11.00**	4 U	**79.7**	5 U	**219**	**14.2**	**33.4 B**	3 U	**5.06**	**0.94 B**
003-03	**11.60**	**20.4**	**280**	**1.4 B**	**164**	**12.6**	**521**	**4.4**	**1.01 B**	**16.2**
003-04	**11.20**	4 U	**120**	5 U	**233**	**24.0**	**89.6 B**	3 U	**6.91**	**2.0 B**
003-07	**11.20**	**5.2**	**132**	5 U	**237**	**19.5**	**198**	**2.9 B**	**8.46**	**8.9 B**
Sump 001	**8.30**	4 U	**164**	**1.2 B**	**216 J**	5 U	**198 J**	3 U	**39.8**	**763 J**
Sump 002	**7.90**	**26.4**	**126**	**1.3 B**	**219 J**	**1.2 B**	**427 J**	3 U	**40.8**	**399 J**
Sump 003	**11.40**	**4.0**	**145**	5 U	**235 J**	**16.4**	100 U	3 U	**2.51 B**	**0.49 B J**

Data Legend:
"NA" - indicates not analyzed
*Detections and estimated values are in **bold-face** type.*
Inorganic Data Qualifiers:
U - not detected at indicated reporting limit (RL).
B - estimated concentration above minimum detection limit (MDL), but below reporting limit (RL).
J - analyte detected in method blank.

Table 7
Summary of Manhole Sampling Data - May 2006
Volatile Organic Compounds

Manhole or Sump Number	Concentration (ug/L)							
	cis-1,2-Dichloroethylene	1,2-Dichlorobenzene	Methylene chloride	Toluene	1,1,1-Trichloroethane	Trichloroethylene	Tetrachloroethylene	Vinyl Chloride
001-02	**7.0**	1 U	2 U	1 U	1 U	**14**	1 U	**1.3**
001-06	**12**	1 U	2 U	1 U	1 U	**17**	1 U	**3.4**
001-09	**26**	1 U	2 U	1 U	1 U	**45**	1 U	**5.1**
001-10	**6.3**	1 U	2 U	1 U	**5.6**	**2.2**	**4.0**	**1.8**
001-13	**89**	2 U	4 U	2 U	2 U	**2.7**	**2.7**	**130**
001-14	**1.2**	1 U	2 U	1 U	1 U	**2.4**	1 U	1 U
002-02	**68**	4 U	8 U	4 U	4 U	**220**	4 U	**5.7**
002-03	**100**	1.7 U	3 U	1.7 U	1.7 U	**65**	1.7 U	**21**
002-06	**42**	1.7 U	3 U	1.7 U	1.7 U	**83**	**1.9**	**6.3**
002-07	**14**	1 U	2 U	1 U	1 U	**23**	**2.7**	**1.3**
002-09	**27**	2 U	4 U	2 U	2 U	**120**	**4.8**	**1.5 J**
002-10	**17**	1 U	2 U	1 U	1 U	**38**	**1.3**	**1.6**
002-12	**15**	1 U	2 U	1 U	1 U	**34**	**1.0**	**1.6**
002-13	**12**	1.7 U	3 U	1.7 U	**76**	**11**	1.7 U	**3.3**
002-15	**37**	1 U	2 U	1 U	1 U	**31**	**5.7**	**1.8**
003-02	**130**	25 U	50 U	25 U	25 U	**1,800**	25 U	25 U
003-03	**19**	2 U	4 U	2 U	2 U	**120**	2 U	**15**
003-04	**240**	33 U	67 U	33 U	33 U	**2,200**	33 U	33 U
003-07	**190**	25 U	50 U	25 U	25 U	**1,600**	25 U	25 U
Sump 001	**21**	1 U	2 U	1 U	1 U	**35**	1 U	**3.2**
Sump 002	**24**	2.5 U	5 U	2.5 U	2.5 U	**140**	2.5 U	2.5 U
Sump 003	**200**	25 U	50 U	25 U	25 U	**1,800**	25 U	25 U

Data Legend:

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

Organic Data Qualifiers:

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

J - estimated concentration above minimum detection limit (MDL), but below reporting limit (RL).

Table 8
Comparison of Groundwater Versus Manhole and Sump Water Chemistry
NYSDEC Site No. 9-15-066

Date	Couplet	Constituent Concentration (ug/L)				
		Cis-1,2-DCE	TCE	Vinyl Chloride	Cadmium	Lead
June 2001	Sump 002	**16**	**280**	5 U	3 U	NA
	MW-31	10 U	10 U	10 U	0.85 U	1.21 U
	Sump 003	**510**	**1,700**	5 U	3 U	NA
	MW-5	10 U	**4.1 J**	10 U	0.85 U	1.21 U
May 2006	Sump 002	**24**	**140**	2.5 U	**1.3 B**	3 U
	MW-31	1 U	1 U	1 U	5.0 U	3.0 U
	Sump 003	**200**	**1,800**	25 U	5 U	3 U
	MW-5	1 U	1 U	1 U	5 U	3 U
	MH-001-14	**1.2**	**2.4**	1 U	**28.8**	**7.9**
	MW-34	1 U	1 U	1 U	5.0 U	**2.7 B**
	MH-001-14	**1.2**	**2.4**	1 U	**28.8**	**7.9**
	MW-34A	1 U	1 U	1 U	**1.7 B**	3.0 U

Data Legend:
"NA" - indicates not analyzed
Detections and estimated values are in ***bold-face*** *type.*
Organic data qualifiers:
U - not detected at indicated minimum detection limit (MDL)
J - estimated concentration above MDL, but below reporting limit (RL)
Inorganic data qualifiers:
U - not detected at indicated RL
B - detected concentration above MDL, but below RL.

FIGURES

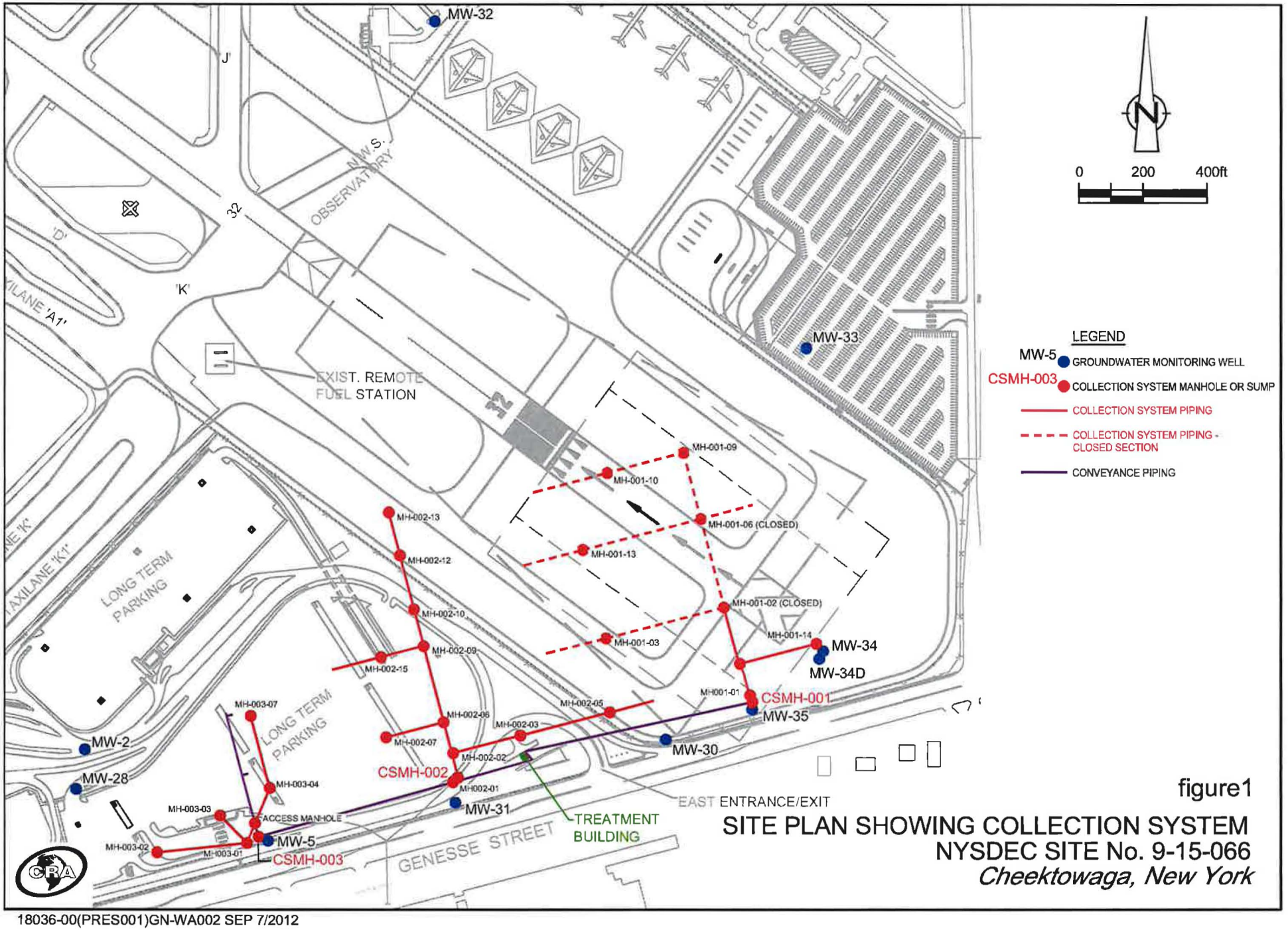


figure1

SITE PLAN SHOWING COLLECTION SYSTEM
NYSDEC SITE No. 9-15-066
Cheektowaga, New York

18036-00(PRES001)GN-WA002 SEP 7/2012

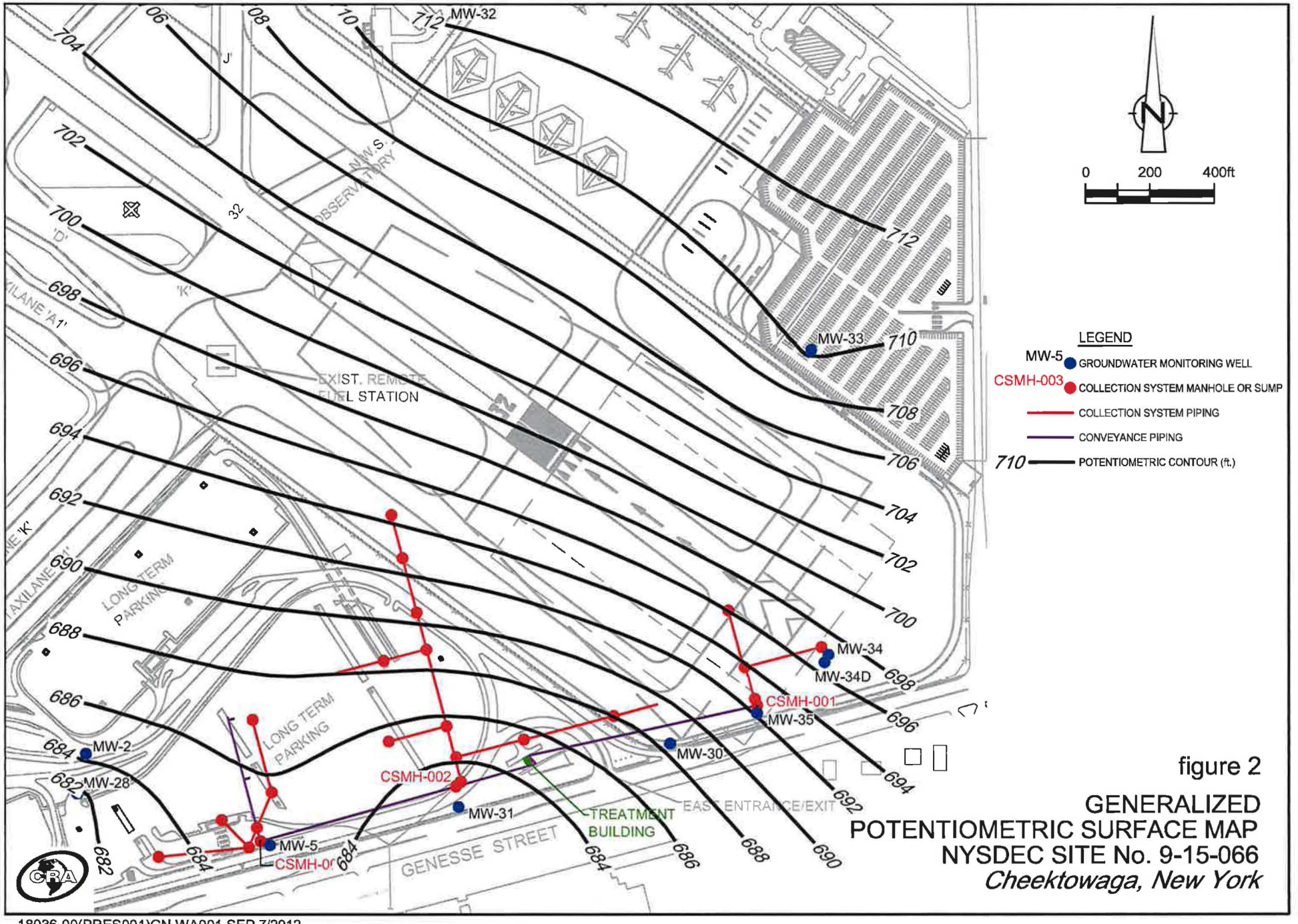
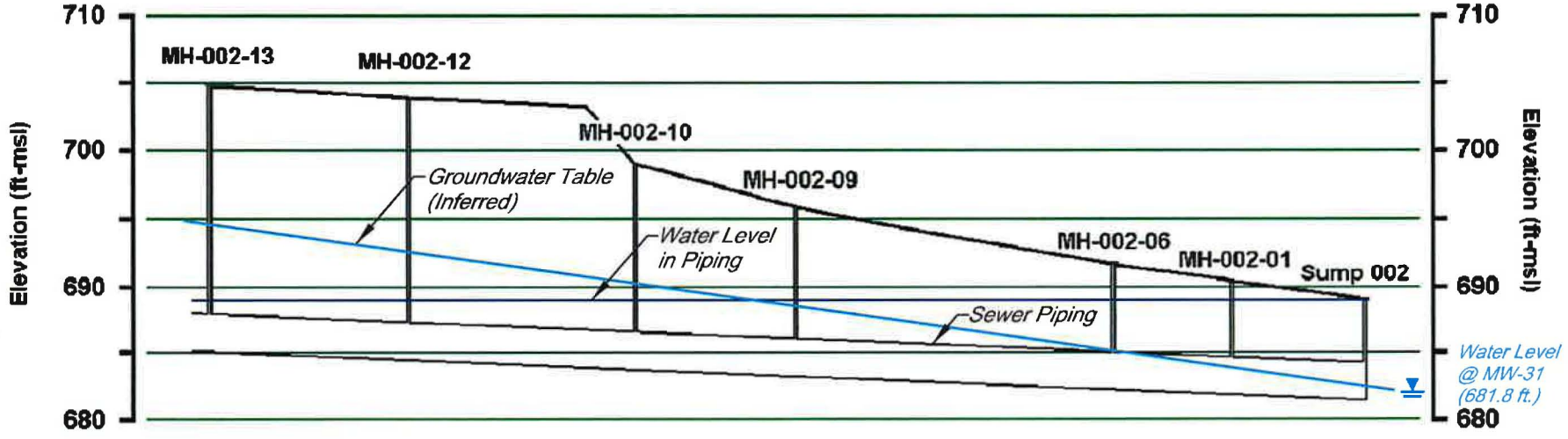


figure 2

GENERALIZED
POTENTIOMETRIC SURFACE MAP
NYSDEC SITE No. 9-15-066
Cheektowaga, New York

18036-00(PRES001)GN-WA001 SEP 7/2012



PROFILE – 002 SYSTEM

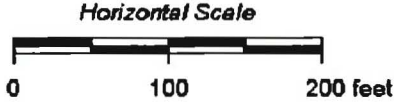


figure 3

PROFILE OF THE 002 SEGMENT
OF THE GROUNDWATER COLLECTION SYSTEM
NYSDEC SITE No. 9-15-066
Cheektowaga, New York

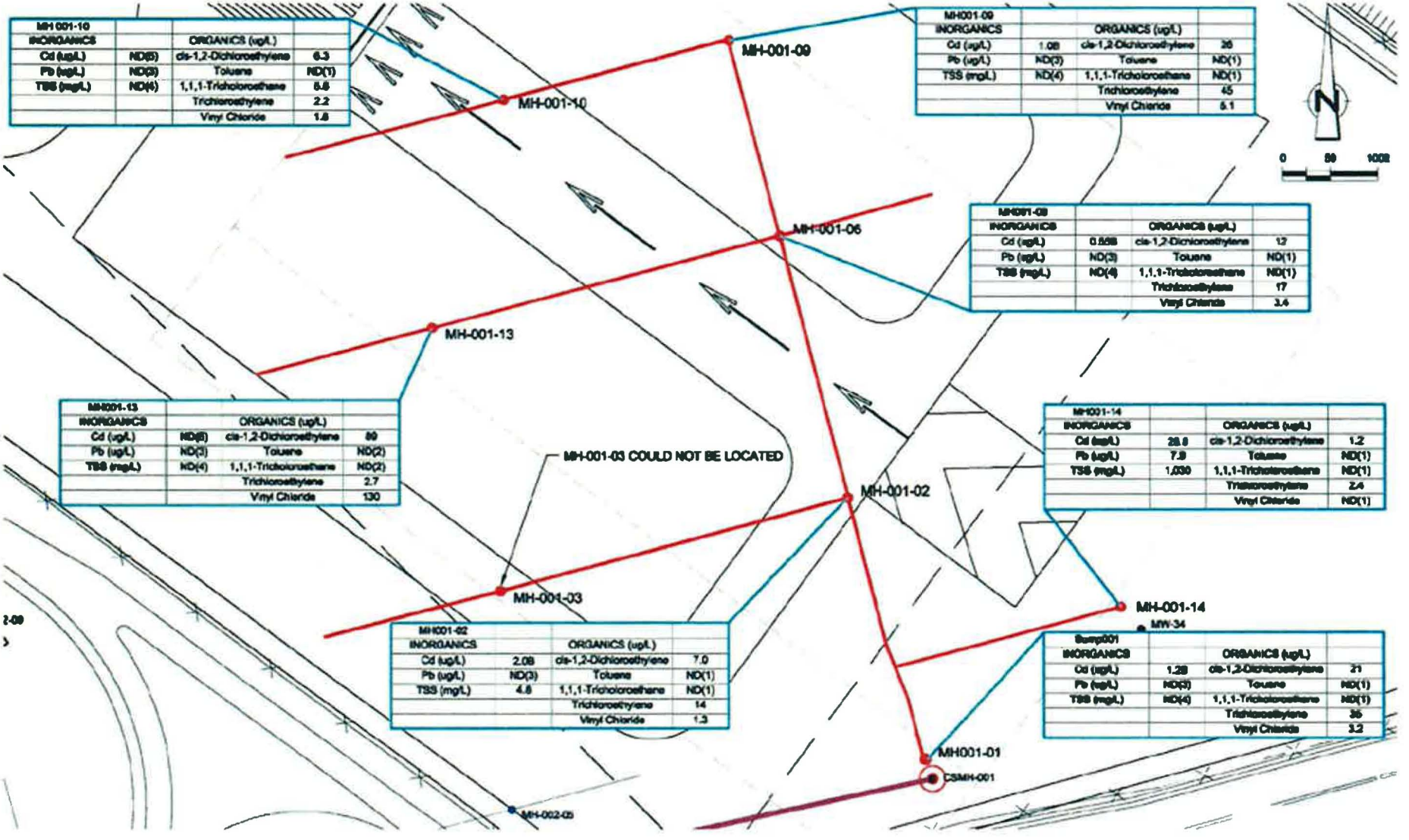


figure 4

SUMMARY OF MANHOLE SAMPLING DATA - 001 SYSTEM
NYSDEC SITE No. 9-15-066
Cheektowaga, New York

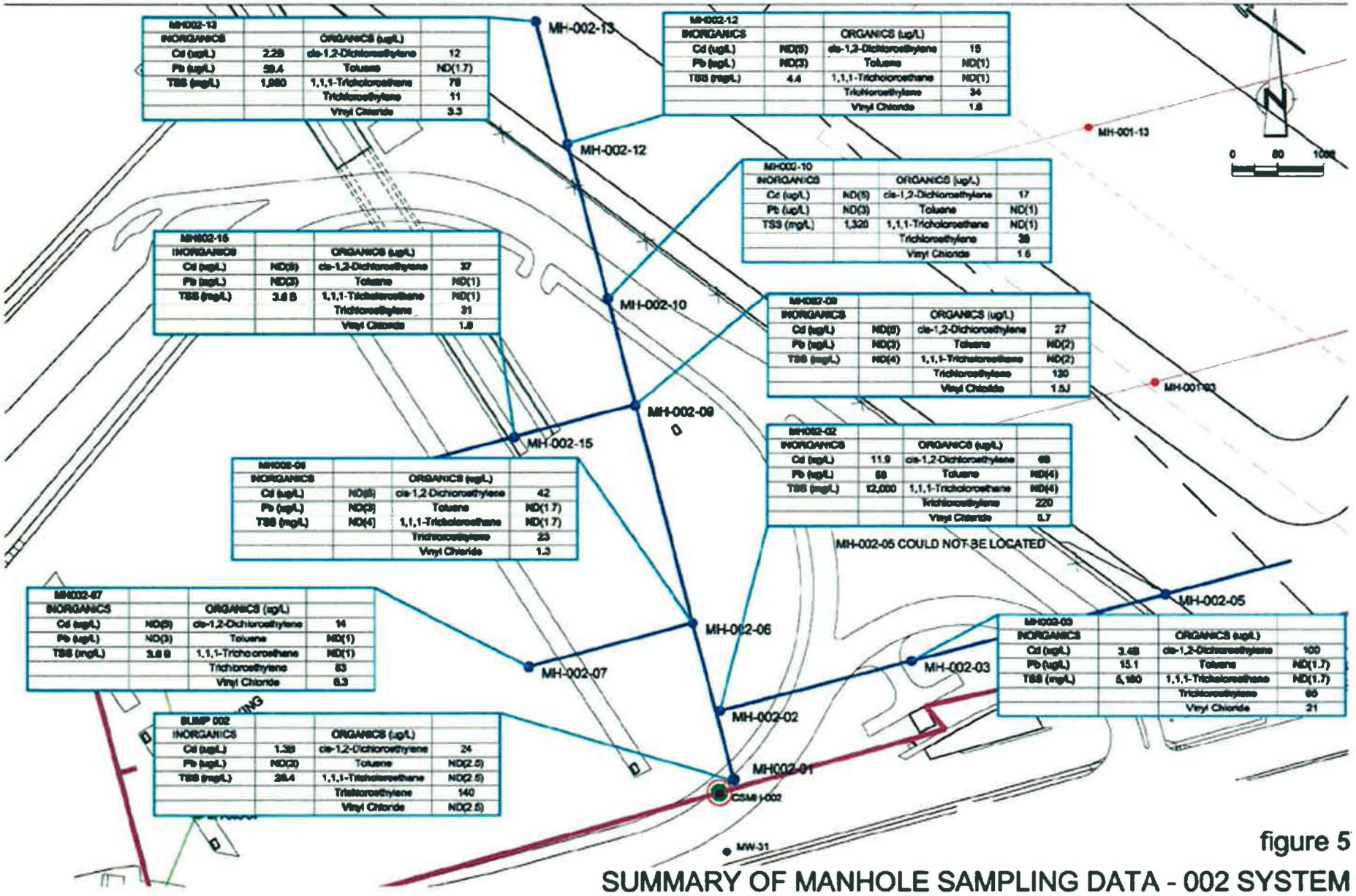


figure 5

SUMMARY OF MANHOLE SAMPLING DATA - 002 SYSTEM
NYSDEC SITE No. 9-15-066
Cheektowaga, New York

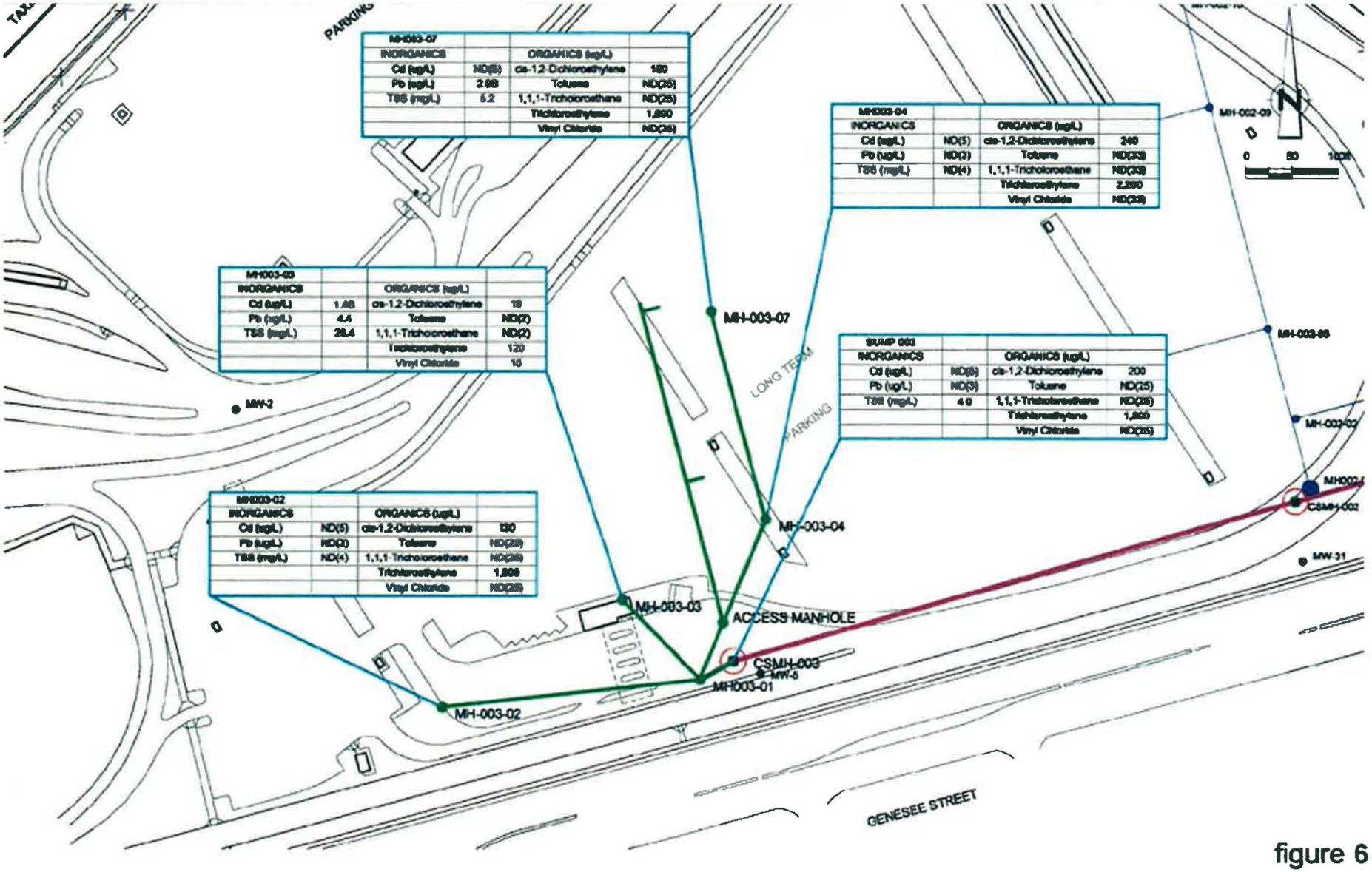


figure 6

SUMMARY OF MANHOLE SAMPLING DATA - 003 SYSTEM
NYSDEC SITE No. 9-15-066
Cheektowaga, New York