Site Management Plan

for the
Former Dowell Facility
3311 Walden Avenue
Depew, New York

prepared for:

Volunteers

Dowell, a Division of Schlumberger Technology Corporation
Dowell Schlumberger Incorporated
The Dow Chemical Company
(VCA INDEX NO. B9-0586-00-10)

prepared by:

URS Corporation
77 Goodell Street
Buffalo, New York 14203

May 2011

G3957L

FORMER DOWELL FACILITY

3311 WALDEN AVENUE

DEPEW, NEW YORK

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MAY 2011

Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

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1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at the Former Dowell Facility located at 3311 Walden Avenue in Depew, New York (hereinafter referred to as the "Site") under the New York State (NYS) Voluntary Cleanup Program (VCP) administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with Voluntary Cleanup Agreement (VCA) # B9-0586-00-10, Site # V-00410-9 which was executed on February 26, 2001.

1.1.1 General

Dowell, a Division of Schlumberger Technology Corporation, the Dow Chemical Company and Dowell Schlumberger Incorporated (the Volunteers) entered into a VCA with the NYSDEC to remediate a 1.78 acre property located in Depew, New York. This VCA required the Volunteers, to investigate and remediate contaminated media at the site. A figure showing the site location and boundaries of this 3.5 - acre "site" is provided in Figure 1. The boundaries of the site are more fully described in the metes and bounds site description contained in Appendix A.

After completion of the remedial work described in the Remedial Action Work Plan, some contamination was left in the subsurface at this site, which is hereafter referred to as 'remaining contamination." This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Declaration of Covenants and Restrictions (Appendix B) is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by URS Corporation – New York (URS), on behalf of the Volunteers in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May, 2010, and the guidelines

provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Declaration of Covenants and Restrictions for the site.

This SMP is intended to be a continuation of the Operations and Maintenance Plan contained in Section 7.0 of the Remedial Action Report (July, 2004).

1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Institutional Controls have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. No Engineering Controls were installed as part of the site remedy. A Declaration of Covenants and Restricitions granted to the NYSDEC, and recorded with the Erie County Clerk June 22, 2005, requires compliance with this SMP and all ICs placed on the site. The ICs place restrictions on site use, and mandate site maintenance, monitoring and reporting measures for all ICs. This SMP specifies the methods necessary to ensure compliance with all ICs required by the Declaration of Covenants and Restrictions for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Declaration of Covenants and Restrictions and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of all Institutional Controls; (2) media monitoring; and, (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports.

To address these needs, this SMP includes two plans: (1) an Institutional Control Plan for implementation and management of ICs; and, (2) a Monitoring Plan for implementation of Site Monitoring.

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Declaration of Covenants and Restrictions. Failure to properly implement the SMP is a violation of the Declaration of Covenants and Restrictions, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the VCA (Index #B9-0586-10; Site V-00410-9) for the site, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Declaration of Covenants and Restrictions for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The Former Dowell Facility is located to the east of Buffalo, New York on Walden Avenue in the Village of Depew (Figure 1). The site is situated in a mixed residential and industrial/commercial area. Properties surrounding the site include Walden Avenue to the north, a CSX railroad yard to the south, a lumber yard and supply

store (84 Lumber) to the east, and an industrial manufacturer (Buffalo Batt and Felt) to the west. A residential neighborhood is located across Walden Avenue to the north.

The site is relatively flat-lying with a gentle slope to the north – northwest toward Walden Avenue and covers approximately 1.78 acres. Maximum relief across the site (i.e., from south to north) is on the order of 4 feet. Surface water flows from south to north across the site. The site is presently inactive and all structures at the Facility have been demolished. The majority of the Facility is presently covered with gravel. The property is secured with a locking 6-foot high chain-link fence around the entire perimeter of the site.

The boundaries of the site are more fully described in Appendix A – Metes and Bounds.

1.2.2 Site History

Former activities at the Facility included servicing industrial facilities and limited oil-field related projects. Various industrial cleaning and oil-field chemicals were stored onsite and transferred into tank trucks for use at job sites. A former railroad siding, which has been removed, traversed the Facility from east to west. Structures on the site originally included: a two story office building; a one story office/maintenance shop; a large chemical storage warehouse building; an acid plant; a bulk cement plant; cement silos; an 8,000 gallon diesel AST; a 1,000 gallon gasoline UST with dispenser; a mud separator; an oil/water separator and a hydrochloric acid AST. A water meter vault is located about mid-way along the northern property line (Figure 2).

1.2.3 Geologic Conditions

The site rests on a regional glacial till deposit. The till is typically comprised of unsorted clay, silt, fine sand, and fine to coarse gravel that exhibits low permeability. Underlying the till is the Marcellus and Skaneateles Shale formations (G & M, 1990). These rock formations are present throughout the southern half of the Erie-Niagara Basin and locally contain thin interbedded limestones. The overlying till ranges in thickness

from 2 to 200 feet within the basin and is approximately 30 feet thick beneath the site. The Shale formations typically produce small quantities of groundwater ranging from 10 to 15 gallons per minute. The overlying till is an insignificant source of groundwater.

The soils encountered during the remedial activities at the Facility consisted of approximately 0 to 4 feet of fill composed of poorly sorted sands, silts, clay, gravel, and cinders. Underlying the fill layer is a thick layer of glacial till predominantly consisting of red-brown clay and silt with minimal or trace amounts of fine to coarse sand and gravel.

Based on the results of groundwater level measurements and review of the site geology information developed during the Site Investigation (URS, March 2002), it appears that there are two independent groundwater units at the site. There is an upper, unconfined water surface recorded in MW-05 to MW-08 and PZ-01 and PZ-02 (Figure 3) and a deeper, confined groundwater unit in the lower part of the till/upper bedrock as recorded in MW-01 to MW-04 (Figure 4). As indicated in the figures, flow in the upper, unconfined unit is to the north-northwest, whereas flow in the deeper, confined bedrock/till unit is to the west-northwest.

1.3 SUMMARY OF SITE INVESTIGATIONS AND REMEDIAL ACTIVITIES

1.3.1 Site Investigations and Remedial Activities

Operations at the site were discontinued in the late 1980's and Dowell Schlumberger decided to close the site permanently. As such, a series of site investigations were performed to determine the nature and extent of contamination present in the soils and/or groundwater associated with the site. Additionally, a variety of remedial activities also were completed. All these investigations were performed in conjunction with NYSDEC review and/or oversight. A summary of the various investigation/remedial activities is provided below:

- In September 1989, Geraghty & Miller (G&M) removed one 1,000-gallon underground storage tank (UST) and its associated fuel dispenser, and one 8,000-gallon aboveground storage tank (AST) (Figure 5). The tanks were used for gasoline and diesel fuel storage, respectively. During this project, residual hydrocarbons were detected in fill materials surrounding the UST and beneath its dispenser. The contaminated fill material was excavated and transported offsite for disposal. There was no apparent evidence of residual hydrocarbons in the native soils surrounding the tank excavation and beneath the dispenser area. G & M installed a monitoring well in the UST excavation to allow for the future collection of groundwater samples.

- In May 1990, G & M performed a site investigation at the Facility to determine the presence of chemical constituents in site soils and groundwater, if any. The investigation results revealed that low-level concentrations of volatile organic compounds (VOCs) were present in shallow groundwater within fill materials beneath the northeast corner of the site, and in the north-central portion of the site, adjacent to the former transfer and chemical storage tank area. The shallow saturated zone occurred between depths of 0.5 feet and 2.0 feet below grade. This zone was characterized to be a thin discontinuous perched groundwater lens.

- In January 1992, G & M performed a physical/chemical evaluation of groundwater at the former UST location. No visible hydrocarbons (sheen) were present and no VOCs or total petroleum hydrocarbons (TPH) were detected in the groundwater sample.

- From September 1996 to March 1997, Radian International LLC (Radian) installed four monitoring wells (MW-01, MW-02, MW-03 and MW-04) at the site (Figure 2), conducted two rounds of groundwater sampling, and decommissioned the mud separator. Groundwater samples were analyzed for VOCs, Resource Conservation and Recovery Act (RCRA) metals and TPH. Monitoring well MW-

3 showed detected concentrations of 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), and 1,1,1-trichloroethane (1,1,1-TCA) at levels which exceed the maximum concentration levels (MCL's) presented in NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (June 1998). TPH and methylene chloride were detected in each of the four monitoring wells, but were attributed to an upgradient source. Lead was present in monitoring wells MW-02 and MW-04 at concentrations that exceeded their MCLs.

- In November 1997, Radian performed a supplemental investigation, which consisted of advancing three soil borings (SB-01, SB-02, and SB-03) around monitoring well MW-03 and five soil borings (SB-04 to SB-08) around the perimeter of the Former Acid Plant (Figure 6). Groundwater samples also were collected from the four existing monitoring wells. Soil samples were collected from each boring around monitoring well MW-03 for VOC analysis. Analytical results from soil samples were compared to the NYSDEC Technical and Guidance Memorandum (TAGM) 4046: *Determination of Soil Cleanup Objectives and Cleanup Levels* (January 1994). Soil sample results are shown on Figure 6.

    - Soil boring SB-01 (4' to 6') and soil boring SB-03 (16' to 18') showed no VOC detections greater than TAGM 4046 recommended soil cleanup objectives.
    - Soil boring SB-02 (6' to 8') exhibited a concentration of DCE greater than the TAGM 4046 soil cleanup objectives.
    - Soil samples collected at soil boring SB-06 (10' - 12' and 14' - 16') and soil boring SB-08 (2' - 4' and 6' - 8') contained no VOCs that exceeded the TAGM 4046 recommended soil cleanup objectives. Trichloroethene (TCE) was detected at soil boring SB-04 (8' - 10') and at soil boring SB-05 (6' - 8') at concentrations that exceeded the TAGM 4046 soil cleanup objectives. 1,1-

DCE was detected at soil boring SB-05 (6' - 8') and at SB-07 (8' - 10') at concentrations greater than its TAGM 4046 level. TCE (8' to 10' and 18' to 20') and 1,1-DCA (8' to 10') were also present at soil boring SB-07 at concentrations that exceeded the TAGM 4046 soil cleanup objectives.

- Groundwater sample results showed no VOCs detected at concentrations that exceeded MCL's at monitoring wells MW-01, MW-02 and MW-04. 1,1-DCA was present in monitoring well MW-03 at a concentration that exceeded its MCL.

- In July 1998, Radian performed several tasks including: removal of the former concrete Acid Plant revetment; excavation of previously identified contaminated subsurface soil around the Former Acid Plant; removal of the cement bulk plant; and other miscellaneous debris removal (Figure 7)

- Groundwater samples were collected from the four monitoring wells in July 1998, December 1998, July 1999, and January 2000. No VOCs were detected in MW-1, MW-2, and MW-4. 1,1-DCA and 1,1,1-TCA were detected in MW-3 at concentrations that exceeded the MCLs.

- URS became involved with the project and conducted an initial site walkover on Sept 22, 2000. Dowell Schlumberger entered into a Voluntary Cleanup Agreement (VCA) between the Volunteers and the New York State Department of Environmental Conservation (NYSDEC) (VCA Index No. B9-0586-00-10) on February 26, 2001.

- In July 2001, following Department approval, URS performed a site investigation (SI) that consisted of several tasks. The SI included the collection and analysis of soil samples along a drain line bed, sediment samples from floor drains/sumps, subsurface soil samples from Geoprobe™ soil borings around the buildings, and groundwater samples from existing and new shallow groundwater monitoring wells (MW-05, MW-06, MW-07 and MW-08) and piezometers. The SI also

included hydraulic conductivity testing in five monitoring wells, an asbestos survey in the remaining buildings at the Facility, and land surveying of all investigation locations performed during the SI and preparation of site maps. Details of the SI are presented in the *Voluntary Cleanup Program Site Investigation/Remedial Alternatives Report for the Dowell Facility Depew, New York* (March 2002). The results of the asbestos survey are presented in the *Pre-Demolition/Renovation Building Survey for Asbestos-Containing Material for the Former Dowell Facility. Depew, New York* (August 2002).

Analytical results showed that the sediments in the sumps in the Former Maintenance Shop are contaminated with VOCs consisting of 1,1,1-TCA, 1,1-DCA, and tetrachloroethene (PCE). Subsurface soil samples collected from the Former Acid Plant and Former Chemical Storage Building area showed elevated levels of VOCs (1,1,1-TCA and trans-1,2-DCE). Soil/sediment analytical results are shown on Figure 8.

Groundwater samples showed elevated levels of VOCs, consisting primarily of 1,1,1-TCA and 1,1-DCA in MW-03 and MW-06 and TCE, cis-1,2-DCE, and vinyl chloride in PZ-02. The contaminants present in groundwater at MW-03 and MW-06 are similar to contaminants found in the sump sediments in the Former Maintenance Shop. Also, the primary contaminants present in PZ-02 were not present in the downgradient wells MW-03 and MW-06. Groundwater analytical results are shown on Figure 9.

Asbestos containing material (ACM) was identified in several of the buildings and consisted primarily of floor tiles, cove base molding, roofing materials, pipe insulation and caulking materials.

- Commencing in October 2003, URS performed a remedial action at the site that included asbestos abatement, building/structure demolition, contaminated soil excavation/disposal, monitoring well removal/installation and site restoration.

This work was performed in accordance with the NYSDEC-approved "*Remedial Action Work Plan for the Former Dowell Facility Depew, New York*" (URS, April 2003, Revised May 2003) (RAWP). During the remedial activities, MW-03 was removed during contaminated soil excavation, MW-05 was destroyed and MW-6D was installed as a replacement for MW-03.

The remedial activities were performed by Marcor Remediation, Inc. of Rochester, New York under contract to Dowell. URS provided onsite oversight as required. The work was initiated on September 30, 2003 and was substantially completed on April 20, 2004. The final site inspection was performed on May 7, 2004.

A summary of asbestos abatement and building demolition activities is presented in Section 1.4.1. A summary of contaminated soil excavation, handling, and disposal activities is presented in Sections 1.4.2. The limits of contaminated soil excavation are shown on Figure 10.

- In accordance with the RAWP, a new monitoring well (MW-7D) was installed on October 28, 2005, adjacent to MW-7S when VOCs were detected in MW-6D at concentrations exceeding 1,000 mg/L.

- In April 2008, an investigation was performed to determine if contaminants had migrated offsite. Groundwater samples were collected from three temporary piezometers (i.e. BH-01, BH-02 and BH-03) installed on the north (downgradient) side of Walden Avenue (Figure 11) and analyzed for Target Compound List (TCL) VOCs. No VOCs were detected.

- Based on the analytical data from May 2004 through the end of 2008 (Table 1), it was concluded that there was likely a localized residual source of chlorinated

solvents in the soils and/or groundwater in the immediate vicinity of monitoring wells MW-06S and MW-06D

During the period of June 2-4, 2009, six injection wells were installed in an arc approximately five feet up-gradient of monitoring wells MW-06S and MW-06D (Figure 12). Three of the injection wells (IW-01S, IW-02S, and IW-03S) were screened in the 5.0- to 20.0-foot interval (the upper water-bearing zone) and three of the injection wells (IW-04D, IW-05D, and IW-06D) were screened in the 20.0- to 30.0-foot interval (the deep water-bearing zone).

Following installation of the injection wells, a program to routinely purge monitoring wells MW-06S and MW-06D and concurrently inject a solution of eight percent (8%) hydrogen peroxide and sodium persulfate into the six injection wells was implemented. During the period from August 6, 2009 to November 24, 2009 a total of 376.55 gallons of hydrogen peroxide/persulfate was introduced into the injection wells, 241.40 gallons of purge water was removed from monitoring well MW-06S, and 238.75 gallons of purge water was removed from monitoring well MW-06D. Injections typically were conducted 2 - 3 times per week during this period. As agreed with the Department, the injections were discontinued effective November 25, 2009. The remaining peroxide (estimated to be 100 - 120 gallons) was poured into wells RW-01/RW-02 located in the former excavated area to polish low levels of VOCs observed in the groundwater in these wells.

1.3.2 Groundwater Monitoring

Following completion of the remedial action in May 2004, a long-term monitoring program was instituted in accordance with the RAWP, and included quarterly groundwater sampling of the on-site monitoring wells and the collection of groundwater elevations from the monitoring wells and piezometers. A summary of historical analytical results for the site through December 2009, is presented in Table 1. The

analytical results show that the VOC concentrations in groundwater at the site have fallen below the SCGs in all of the on-site monitoring wells with the exception of monitoring wells MW-06S and MW-06D which are located at the north side of the site relatively close to Walden Avenue (Figure 11).

Off-site groundwater sampling conducted on the north side of Walden Avenue determined that no VOCs were present in groundwater, and that there was no risk to residents associated with potential volatilization of VOCs from the groundwater and vapor intrusion into their residences.

Additionally, supplemental remedial activities consisting of ISCO of MW-6S/6D reduced, but did not eliminate, the presence of VOCs in this area.

Based on the site conditions, the NYSDEC agreed that the site remediation had been completed in accordance with the VCA and RAWP, and that procedures for closing out the project could commence. To that end, the NYSDEC requested that a round of groundwater samples be collected from all the onsite wells and be analyzed for VOCs to document the existing water quality.

A final set of groundwater samples were collected from monitoring wells MW-1, MW-2, MW-4, MW-6S, MW-6D, MW-7S, and MW-7D as well as from recovery well RW-1, and the samples analyzed for TCL VOCs. The groundwater sampling, was performed on December 8, 2009 (4th Quarter) by URS.

A comparison of the results with the SCGs indicated the following:

- No VOCs were present at concentrations that exceeded the SCGs at monitoring wells MW-01, MW-02, MW-04 and MW-07S. No detectable VOCs have been observed in any of these wells since September of 2005 (51 months).

- No VOCs were present at concentrations that exceeded the SCGs at monitoring well MW-07D. No detectable VOCs have been observed since it was installed in November of 2005 (49 months).
- Two VOCs were present at concentrations that exceeded the SCGs at monitoring well MW-06S: 1,1-DCA at 16,000 µg/L which is slightly higher than the historical range, and 1,1,1-TCA at 670 µg/L which is within the range of historical values. In general, the number of detected parameters has decreased since remediation was completed in October 2003, but it should be noted that the concentrations of the detected parameters have fluctuated, generally increasing in the spring and decreasing in the fall/winter.
- One VOC was present at concentrations that exceeded the SCG at monitoring well MW-06D: 1,1- DCA at 5,200 µg/L. This concentration is within the historic range of concentrations observed since March 2005. In general, the number of detected parameters has decreased since remediation was completed in October 2003, but it should be noted that the concentrations of the detected parameters have fluctuated both up and down during this same period.
- One VOC was present at a concentrations that exceeded the SCG at recovery well RW-01: 1,1-DCA at 26 µg/L. In general, the concentration of 1,1-DCA has remained relatively constant.

Groundwater levels also were plotted to generate groundwater elevation contour maps (Figure 11). Flow in the Upper Till/Unconfined Unit is still generally from southeast to northwest which is consistent with historical data for the site. The "bathtub" effect from the excavation area being filled with groundwater continues to have a more significant impact on flow conditions in the Lower Till/Confined Unit as opposed to the upper unit. As indicated on the figures:

- Recharge to the site is still from the south and southeast.
- In the area southwest of the excavation, groundwater flow is directly to the southwest (towards monitoring well MW-01) while in the area northwest of

the excavation, groundwater flow is to the northwest (towards monitoring wells MW-06S, MW-06D, MW-07S and MW-07D).

- In the area northeast of the excavation, groundwater flow is to the east and north (towards monitoring wells MW-02 and MW-04).

1.4 DESCRIPTION OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved Remedial Action Work Plan (RAWP), dated April, 2003 and revised May, 2003.

The following sections present a summary of the Remedial Actions performed at the site.

1.4.1 Asbestos Abatement and Building Demolition Activities

- **Asbestos Abatement** – Asbestos Containing Materials (ACM) were removed from the former Chemical Storage Building, the Former Maintenance Shop, and the two-story Office Building in accordance with the RAWP. The Asbestos Abatement Project began on September 29, 2003 and received final clearance air sampling results on October 23, 2003. A total of 932 square feet of 9-inch by 9-inch vinyl asbestos tile (VAT), 1,048 square feet of 1-foot by 1-foot VAT, 966 linear feet of joint compound, 50 linear feet of caulking, 386 linear feet of window glazing, 28 square feet of transite panel debris, 20 square feet of built-up roofing material, and 1,359 linear feet of flashing were removed. The ACM was containerized and 5.21 tons of ACM was shipped to the High Acres Landfill in Fairport, New York for disposal. There were no changes from the RAWP. A detailed description of the asbestos abatement activities is presented in the, "*Asbestos Abatement Close-out Report*" prepared by URS and dated June 2004.

- **Demolition of Structures** - Upon certified completion of the ACM removal in all three buildings, the former Chemical Storage Building, the former Maintenance Shop and the two-story office building were demolished. Universal wastes, including 259 fluorescent lamps, 10 mercury batteries, 25 high intensive

discharge (HID) lights, and 561 electrical ballasts were shipped to RecycleTec in Tampa, Florida for recycling. Brick and cinderblock from the building walls were crushed onsite and staged in piles pending reuse as backfill and/or grading material. All scrap steel (i.e. steel beams, trusses, piping, sheet metal, etc.) was transported to Twin Village Salvage on Broadway in Depew, New York for recycling. An estimated 148 tons of C&D debris (e.g. wood, glass, plaster board, etc.) were transported to the Waste Management Chaffee Landfill in Chaffee, New York for disposal.

Following demolition of the structures, the concrete floor slabs and footers were demolished. The concrete was transported to Visone Construction Company at 79 Sheldon Avenue in Depew, New York where it was crushed to 2-inch minus and staged pending reuse at the facility. Following completion of the soil excavation onsite, the crushed concrete was returned to the site and used as backfill in the excavation area. This is a slight change from the RAWP, in that it was originally intended that the concrete would be crushed onsite. A lack of space to stage, crush and stockpile the concrete onsite made this change necessary.

- **Shut Off Gas and Water Service** - National Fuel Gas shut off gas service to the facility at the property line and the Erie County Water Authority shut off water service to the facility at the main. The deactivated gas and water lines, as well as the sanitary and storm sewer lines, were removed to the property line and transported to the Modern Disposal landfill in Model City, New York for disposal. The excavations were backfill with crusher run stone hauled to the site from the Buffalo Crushed Stone quarry in Lancaster, New York.

  This is a slight change from the RAWP that indicated that the pipes were going to be excavated and removed out to the property line. This change was made in that the utility lines were located in the northwestern portion of the site that did not exhibit any soil contamination. Additionally, the lines were set directly into the

soils and were not bedded in gravel. Consequently, it was concluded that these lines would not be likely to constitute preferential pathways for contaminant movement on site and, therefore did not need to be fully removed.

1.4.2 Contaminated Soil Excavation

Following the asbestos abatement of the former maintenance shop, the chemical storage building, and the office building, the following activities were performed:

- **Removal of Contaminated Sediment** - An estimated 4 cubic feet (cf) of VOC-contaminated sediment was removed from the floor drains in the former Maintenance Shop and placed in a 55 gallon drum. Following completion of the soil excavations, the sediments were mixed with the excavated soils and transported to Modern Landfill for disposal. There were no changes from the RAWP.

- **Excavation and Disposal of Contaminated Soil** - As indicated in the RAWP, three areas of the site were to be excavated to remove VOC contaminated soil. These areas included the northwest corner of the previously demolished Acid Plant, the area along the former railroad spur between the former Chemical Storage Building and the Acid Plant, and the area east of the former Maintenance Shop between the round sump and MW-03 (Figure 10). These areas were to be excavated to a maximum depth of 15 feet with the excavated soils being staged onsite and then being transported and disposed offsite at a permitted facility. Based on the investigation data, it was anticipated that the concentrations of trichloroethylene (TCE) in these soils would exceed the Land Disposal Restriction (LDR) levels and consequently, these soils would need to be disposed as hazardous waste.

  Excavation was initiated at the eastern end of the area between the former Chemical Storage Building and the Acid Plant (Figure 10). The soils were

screened continuously with a PID to determine the total VOC concentration. As indicated in the RAWP, excavation in the proposed soil removal areas was to be continued until PID readings < 10 ppm were obtained. However, in most areas of the excavation, the upper 3 – 4 feet of material exhibited no PID readings, or readings well below the 10 ppm criteria established in the RAWP. Consequently, those soils with readings < 10 ppm were considered "clean" and stockpiled separately for reuse as backfill. This is a change from the RAWP, in that it had originally been assumed that all soils within the proposed excavation areas were contaminated with VOCs at concentrations > 10 ppm. Those soils with PID readings > 10 ppm were staged in bermed cells lined with polyethylene sheeting for disposal offsite. The soil stockpile locations are shown on Figure 13.

The lateral extent of the VOC contamination was greater than expected. Based on PID readings the VOC contamination was shown to have extended further to the south under the concrete floor slabs of the former Chemical Storage Building and the former cement silo area. The excavation was extended about 35 feet to the south until soils with PID readings < 10 ppm were encountered. The concrete slab from the former cement silo area was removed, crushed offsite, and returned for use as excavation backfill.

Additionally, as the excavation proceeded to the north, it was determined that the soils in the western half of the former Acid Plant area, from a depth of 11 to about 15 feet still exhibited PID readings > 10 ppm. Consequently, gravel backfill that had previously been placed in the excavated area, was removed and stockpiled on polyethylene sheeting for reuse as backfill. The underlying soils in the western portion were then excavated to a depth of 15 feet.

The excavation was continued to the north into the area at the northwest corner of the former Acid Plant. As the excavation progressed, it was found that the VOC contamination extended beyond the originally proposed limits of excavation in

this area. Based on the PID readings, the excavation was continued to the north and west until soils exhibiting readings < 10 ppm were encountered. The final excavation limits extended north to the fence line and west to just beyond MW-03. Additionally, the excavation was continued southwesterly to incorporate the area along the clay tile pipe from the sump to MW-03, into the overall excavation. Monitoring well MW-03 was removed when the excavation reached that area.

The final limits of the excavation were surveyed and are shown on Figure 10. The total quantity of soils excavated was about 5,000 cy. Of this amount, approximately 1500 cy consisted of "clean" soils (i.e. PID readings < 10 ppm) and gravel backfill from the previous remedial activities. These materials were stockpiled for subsequent reuse as backfill in the excavation. The remaining 3,500 cy of VOC contaminated soils were stockpiled in bermed cells lined with polyethylene sheeting for subsequent testing and/or disposal. The stockpile areas are shown on Figure 13.

Confirmatory samples were obtained from the sidewalls and floor of the excavated areas once the PID readings indicated total VOCs < 10 ppm and submitted to Adirondack Environmental Services , Inc. for analysis. In cases where the analytical data indicated that the total VOC concentration was > 10 ppm, the area was re-excavated and an additional sample collected for analysis. This process was repeated until the total VOC concentration was < 10 ppm. The locations of the confirmatory samples and analytical results are shown on Figure 14.

A limited data validation was performed on all the analytical data associated with the confirmatory samples in accordance with the RAWP.

As indicated, the limits of contaminated soil excavation increased from those shown in the RAWP. Additionally, as noted previously, soil in the upper 3 – 4

feet of the excavation areas were excavated and stockpiled for reuse as backfill. The clean gravels previously used as backfill for the Former Acid Plant soil excavation also were stockpiled for reuse as backfill. There were no other changes from the RAWP.

1.4.3 Construction Dewatering

As the excavation depth progressed below the groundwater surface, there was continuous seepage of groundwater into the excavation. Groundwater samples collected and analyzed during the site investigations indicated that the groundwater in the vicinity of the proposed excavations contained VOCs. Consequently, in accordance with the RAWP, the groundwater was pumped into temporary on site storage tanks. A total of three 20,000 gallon Baker Tanks were utilized. The groundwater was treated onsite by pumping it through activated carbon canisters to remove any VOCs. The treated water was discharged into a designated clean storage tank. The contractor obtained a temporary discharge permit from the Town of Cheektowaga (Town) to allow the treated water to be discharged to the onsite sanitary sewer. The treated water was tested for VOCs and other parameters required by the Town and then "batch" discharged to the local sanitary sewer system. A total of 346,800 gallons of groundwater were collected, treated and subsequently discharged to the onsite sanitary sewer.

Following completion of all onsite water treatment, the activated carbon from the drums was combined with the VOC contaminated soils and transported to Modern Landfill for disposal. The empty carbon canisters were cleaned, crushed and disposed as C&D at Chaffee Landfill. There were no changes from the RAWP.

1.4.4 Backfill

After confirmatory sample data indicated that the cleanup objectives had been achieved, the excavations could not be immediately backfilled due to the presence of water and ice. Detectable levels of VOCs were present in the ice. Consequently, the ice was broken up and placed in a bermed cell lined with polyethylene sheeting to ablate. Remaining water was pumped through the onsite water treatment system and discharged to the Town of Cheektowaga sanitary sewer system.

As an enhancement to the source removal activities, a proposal was made to the NYSDEC on November 5, 2003 to utilize Hydrogen Release Compounds (HRC) in the bottom of the excavations as a polishing technique. It was felt that this would increase the effectiveness of the remediation program by reducing the levels of any residual contamination over the long term. The NYSDEC approved the use of the HRC in correspondence dated December 1, 2003.

Following removal of the water in the excavation, 319 tons of washed gravel from Buffalo Crushed Stone was placed on the bottom of the excavation from about 14 feet to 15 feet bgs. Subsequently, an estimated 100 gallons of HRC was spread uniformly over the washed gravel and a geotextile layer was installed on top of the washed gravel layer. Approximately 607 tons of bank run gravel from Buffalo Crushed Stone was then placed on top of the geotextile from about 13 feet to 14 feet bgs.

In the northern half of the excavation, an estimated 1,786 tons of concrete crushed offsite at Visone Construction Company in Depew, New York, was returned to the site and placed on top of the bank run gravel. The crushed concrete was placed in one-foot lifts and compacted with the trackhoe to within about 1 foot of final grade.

In the southern portion of the excavation, an estimated 1,500 cy of “clean” soil and gravel that had been previously excavated and staged for reuse, was placed on top of

the bank run gravel. The clean fill was placed in two-foot lifts and compacted with the trackhoe. Additionally, as discussed below, about 1,200 cy of soil that had been excavated and staged for offsite disposal, but subsequently was tested and approved by NYSDEC for use as backfill, also was placed in the excavation to within two feet of grade. An estimated 323 tons of crusher run stone from Buffalo Crushed Stone was used to backfill the remaining portions of the excavation to final grade. There were no other changes from the RAWP.

1.4.5 Removal of Contaminated Materials from the Site

In accordance with the RAWP, the excavated soil and fill materials were staged in stockpiles on site (Figure 13). The original plan was to transport the soils offsite following completion of the excavations and dispose them in a permitted disposal facility. Based on the concentrations of TCE detected in some of the soil samples during the investigations, it was anticipated that the VOC contaminated soils would likely be characterized as hazardous.

The size of the excavation increased due to the nature and extent of VOC contamination identified during onsite activities. The quantity of excavated soil increased from an estimated 1,200 cy (~1800 tons) to almost 5,000 cy (~7,500 tons). Of this amount, about 1,000 cy was "clean" soil that had been removed from the upper 3 - 4 feet of the excavation area and staged for reuse as backfill. In order to characterize the remaining staged soils for disposal, representative samples were collected and analyzed for VOCs. The sampling locations and analytical results are shown on Figure 13.

Results were evaluated in accordance with the criteria outlined in NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 3028 *"Contained-In" Criteria for Environmental Media* (November 1992). A request was submitted to the NYSDEC on February 27, 2004 citing the analytical data and the TAGM criteria to reclassify the excavated soils as non-hazardous. Based on the request, the NYSDEC issued a Letter of Determination on March 3, 2004 that stated that, "Soils excavated from

the former Dowell Facility, Depew, NY do not have to be managed as hazardous waste and can be transported offsite and disposed at Modern Landfill in Model City, NY or the CWM Landfill in Model City NY.

Additionally, the analytical data for the stockpiled soils (well below the 10 ppm criteria; Figure 13) supported a request to NYSDEC to allow these soils to be re-used on site as backfill in the excavation area. The request subsequently was approved.

Based on the above discussions, a total of about 1,200 cy of stockpiled soils were used as backfill in the excavation. The remaining 2800 cy of VOC contaminated soils were transported and disposed at Modern Landfill in Model City, NY as non-hazardous solid waste. Drill cuttings and PPE generated during the site investigation program and staged on site in drums pending site remediation were combined with the VOC contaminated soils and transported to Modern Landfill.

Following removal of all the stockpiled soils, six confirmatory samples were collected from surface soils within the footprint of the former stockpiles and analyzed for VOCs. The locations of the samples are shown on Figure 15. The analytical data, which also is shown on Figure 15, indicates that the total VOC concentrations in these samples ranged from ND to a maximum of 2.5 ppm in the soils under former stockpile CSP- 3. There were no other changes from the RAWP.

Following completion of the excavation backfilling and removal of the contaminated fill and soil from the site, the overall site was graded to ensure positive drainage. To the extent practicable, the original contours of the site were maintained with an overall slope towards Walden Avenue. Approximately 832 tons of crusher run stone from Buffalo Crushed Stone was placed in various areas of the site, and graded to create a uniform, smooth surface.

New sections of 6 foot high chain-link fence were installed along the property line along Walden Avenue and the fence posts for the western gate and sections of the fence along the northern edge of the excavation area were repaired and reset. A fence now completely encircles the site to prevent access.

1.4.6 Site-Related Treatment Systems

No long-term treatment systems were installed as part of the site remedy.

1.4.7 Remaining Contamination

As indicated on Figures 14 and 15, the confirmatory samples collected after completion of the Remedial Action indicate that there are no exceedances of the site specific SCOs of 10 ppm total VOCs. In December 2006 the NYSDEC promulgated new soil cleanup standards for use in site remediations. These are contained in 6NYCRR Part 375. The new soil cleanup objectives (SCOs) are risk based and take into account the actual site usage. A summary of the SCOs is presented in Table 2. A comparison of the analytical results with the 6NYCRR Part 375 SCOs indicates that there are a few sample locations in the bottom of the excavated area (depth of 15 feet) that exceed the unrestricted and residential use SCOs. None of the sidewall and/or surface stockpile soil samples exceed the unrestricted or residential use SCOs, with the exception of sample CSP-3, which slightly exceeds the unrestricted SCOs.

None of the confirmatory samples exhibited VOC concentrations that exceeded the SCOs for restricted commercial uses.

1.4.8 Additional Remedial Activities

In addition to the remedial activities listed above, the following were also performed:

- A Declaration of Covenants and Restrictions (Appendix B) was executed and filed with the Erie County Clerk's Office on June 22, 2005 to restrict land use and prevent future exposure to any contamination remaining at the site.

- This Site Management Plan was prepared for long term management of remaining contamination as required by the Declaration of Covenants and Restrictions, which includes plans for: (1) Institutional Controls, (2) monitoring, and (3) reporting;

Remedial activities were completed at the site in November, 2009.

2.0 INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Since remaining contaminated soil and groundwater exists beneath the site, Institutional Controls (ICs) are required to protect human health and the environment. This Institutional Control Plan describes the procedures for the implementation and management of all ICs at the site. The IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all ICs for the site;
- The basic implementation and intended role of each IC;
- A description of the key components of the ICs set forth in the Declaration of Covenants and Restrictions;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the ICs required by the site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

The site remedy does not rely on any engineering controls, such as sub-slab depressurization systems or air sparge/ soil vapor extraction systems to protect public health and the environment.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the Declaration of Covenants and Restrictions to: (1) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (2) limit the use and development of the site to commercial uses only. Adherence to these Institutional Controls on the site is required by the Declaration of Covenants and Restrictions and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Declaration of Covenants and Restrictions and this SMP by the Grantor and the Grantor's successors and assigns;
- Groundwater monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP;

Institutional Controls identified in the Declaration of Covenants and Restrictions may not be discontinued without an amendment to or extinguishment of the Declaration of Covenants and Restrictions.

The site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Declaration of Covenants and Restrictions. Site restrictions that apply to the Controlled Property are:

- The property may only be used for restricted commercial use provided that the long-term Institutional Controls included in this SMP are employed.

- The property may not be used for a higher level of use, such as unrestricted or restricted residential use without additional remediation and amendment of the Declaration of Covenants and Restrictions, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- The potential for vapor intrusion must be evaluated for any buildings developed on the site, and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the property are prohibited;
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by A Qualified Environmental Professional as defined by 6NYCRR Part 375-1.2 (ak).

2.3.1 Excavation Work Plan

The site has been, remediated for restricted commercial use. Any future intrusive work that will encounter or disturb the remaining contamination, will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix C to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. A sample HASP is attached as Appendix D to this SMP that has been prepared in general accordance with DER-10, and 29 CFR 1910, 29 CFR 1926, and other applicable Federal, State and local regulations. A copy of the standard NYSDEC CAMP is contained in Appendix E. Based on future changes to

State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section C-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of groundwater from excavation de-watering, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the institutional controls described in this SMP.

2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures on the site , a soil vapor intrusion (SVI) evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, an SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH "Guidance for Evaluating Vapor Intrusion in the State of New York". Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (unvalidated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. SVI sampling results, evaluations, and follow-up actions will also be summarized in the next Periodic Review Report.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- If the Institutional controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Declaration of Covenants and Restrictions;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the ICs implemented at the site by a qualified environmental professional.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Voluntary Cleanup Agreement (VCA), 6NYCRR Part 375, and/or Environmental Conservation Law.
- 15-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ICs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Voluntary Cleanup Agreement (VCA), and all approved work plans and reports, including this SMP
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency

response personnel should be contacted. These emergency contact lists must be maintained in an easily accessible location at the site.

Table 3: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
Maurice Moore – NYSDEC Project Manager	(716) 851-7220

* Note: Contact numbers subject to change and should be updated as necessary

2.5.2 Map and Directions to Nearest Health Facility

Site Location: 3311 Walden Avenue

Nearest Hospital Name: St. Joseph's Hospital

Hospital Location: 2605 Harlem Road

Hospital Telephone: (716) 891-2400

Directions to the Hospital:

1. Start out going west (left) on Walden Avenue toward Brewster Street. Go 4.7 miles.
2. Turn right onto Harlem Road/Route 240. Go 0.5 miles.

3. St. Joseph's Hospital is on the right just past McNaughton Avenue.

Total Distance: 5.2 Miles

Total Estimated Time: 9 Minutes

2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 3). During any onsite activities, the list will be posted prominently at the site and made readily available to personnel at all times.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, and all affected site media identified below. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards;
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Beginning after the Certificate of Completion is issued by the Department, quarterly monitoring of the performance of the remedy and overall reduction in contamination on-site will be conducted for six quarters for MW-6S/D and MW-7S/D. The remaining wells (i.e. MW-01, MW-02, MW-04) will be sampled annually (spring). The frequency thereafter will be determined in conjunction with the NYSDEC and NYSDOH. Trends in contaminant levels in groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in Table 4 and outlined in detail in Sections 3.2 below.

Table 4: Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Sampling Points	Analysis
Groundwater	Quarterly for six quarters	MW-6S/D and MW-7S/D	VOCs
Groundwater	Annual (Spring)	MW-01, MW-02, MW-04, MW-06S/06D, and MW-07S/07D	VOCs

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

3.2 MEDIA MONITORING PROGRAM

3.2.1 Groundwater Monitoring

Groundwater monitoring will be performed on a periodic basis to assess the performance of the remedy.

The network of monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the site.

Monitoring well construction logs are included in Appendix F.

The sampling frequency may be modified with the approval NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified below.

3.2.1.1 Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater-sampling log presented in Appendix G. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

3.2.1.2 Monitoring Well Repairs, Replacement And Decommissioning

If biofouling or silt accumulation occurs in the on-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.3 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. During these inspections, an inspection form will be completed (Appendix H). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Confirm that site records are up to date.

3.4 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the site (Appendix I). Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
    - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with the NYSDEC ASP requirements.
    - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:

- All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
- The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.

- Analytical Procedures;
- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

3.5 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file at the NYSDEC office. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report will also be prepared, subsequent to each sampling event. The report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;

- Type of samples collected (e.g., groundwater);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC.

A summary of the monitoring program deliverables are summarized in Table 5 below.

Table 5: Schedule of Monitoring/Inspection Reports

Task	Reporting Frequency*
Site-Wide Inspection	Quarterly for 1st six quarters, then annually thereafter.
Groundwater monitoring	Quarterly for 1st six quarters, then adjust accordingly thereafter.

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

The site remedy does not rely on any mechanical systems, such as sub-slab depressurization systems or air sparge/ soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan of this SMP. At a minimum, a site-wide inspection will be conducted annually.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

A general site-wide inspection form will be completed during the site-wide inspection (Appendix H). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the IC certification to confirm that the:

- ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The site remedy continues to be protective of public health and the environment and is performing as designed in the RAWP.

5.2 CERTIFICATION OF INSTITUTIONAL CONTROLS

For each institutional control identified for the site, I certify that all of the following statements are true:

- The institutional control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;
- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- Use of the site is compliant with the Declaration of Covenants and Restrictions.
- The information presented in this report is accurate and complete.
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] for the site.

The signed certification will be included in the Periodic Review Report described below.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the Department every year, beginning eighteen months after the [Certificate of Completion or equivalent document eg., Satisfactory Completion Letter, No Further Action Letter, etc.] is issued. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix A (Metes and Bounds). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ICs required by the remedy for the site;
- Results of the required annual site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the site during the reporting period in electronic format;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;
    - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
    - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
    - The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

TABLES

Table 1
Monitoring Well MW-01
Groundwater Analytical Results
Former Dowell Facility

Volatile Compounds	Units	Sep-96	Mar-97	Nov-97	Jul-98	Dec-98	Jul-99	Jan-00	Jul-01
Chloroethane	UG/L	U	U	NS	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	NS	U	U	U	U	U
Methylene Chloride	UG/L	20	U	NS	3*	U	U	U	U
Acetone	UG/L	U	U	NS	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	NS	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	NS	U	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	NS	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	NS	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	NS	U	U	U	U	U
Total VOCs	UG/L	20	U	NS	U	U	U	U	U

Volatile Compounds	Units	Jul-04	Mar-05	Jun-05	Sep-05	Dec-05	Mar-06	Jun-06	Sep-06
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	5*	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	15	5 J	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	U
Total VOCs	UG/L	U	U	15	5	U	U	U	U

Volatile Compounds	Units	Dec-06	Mar-07	Jun-07	Sep-07	Dec-07	Mar-08	Jun-08	Sep-08
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	U
Total VOCs	UG/L	U	U	U	U	U	U	U	U

Volatile Compounds	Units	Dec-08	Mar-09	Jun-09	Sep-09	Dec-09
Chloroethane	UG/L	U	U	NS	NS	U
Vinyl Chloride	UG/L	U	U	NS	NS	U
Methylene Chloride	UG/L	U	U	NS	NS	U
Acetone	UG/L	U	U	NS	NS	U
1,1-Dichloroethene	UG/L	U	U	NS	NS	U
1,1-Dichloroethane	UG/L	U	U	NS	NS	U
1,2-Dichloroethene (total)	UG/L	U	U	NS	NS	U
1,2-Dichloroethane	UG/L	U	U	NS	NS	U
1,1,1-Trichloroethane	UG/L	U	U	NS	NS	U
Total VOCs	UG/L	U	U	NS	NS	U

Notes:
VOC analysis by EPA Method 8260
U = not present above PQL
NS = not sampled
* Qualified as non-detect due to blank contamination
Site was remediated during October 2003 to May 2004.

Table 1 (Continued)
Monitoring Well MW-02
Groundwater Analytical Results
Former Dowell Facility

Volatile Compounds	Units	Sep-96	Mar-97	Nov-97	Jul-98	Dec-98	Jul-99	Jan-00	Jul-01
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	12	U	7	5*	U	U	1*	U
Acetone	UG/L	13	U	14	U	U	U	5*	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	U
Total VOCs	UG/L	25	U	21	U	U	U	U	U

Volatile Compounds	Units	Jul-04	Mar-05 (1)	Mar-05 (2)	Jun-05	Sep-05	Dec-05	Mar-06	Jun-06
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	5*	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	15	U	15	2 J	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	U
Total VOCs	UG/L	U	15	U	15	2	U	U	U

Volatile Compounds	Units	Sep-06	Dec-06	Mar-07	Jun-07	Sep-07	Dec-07	Mar-08	Jun-08
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	U
Total VOCs	UG/L	U	U	U	U	U	U	U	U

Volatile Compounds	Units	Sep-08	Dec-08	Mar-09	Jun-09	Sep-09	Dec-09
Chloroethane	UG/L	U	U	U	NS	NS	U
Vinyl Chloride	UG/L	U	U	U	NS	NS	U
Methylene Chloride	UG/L	U	U	U	NS	NS	U
Acetone	UG/L	U	U	U	NS	NS	U
1,1-Dichloroethene	UG/L	U	U	U	NS	NS	U
1,1-Dichloroethane	UG/L	U	U	U	NS	NS	U
1,2-Dichloroethene (total)	UG/L	U	U	U	NS	NS	U
1,2-Dichloroethane	UG/L	U	U	U	NS	NS	U
1,1,1-Trichloroethane	UG/L	U	U	U	NS	NS	U
Total VOCs	UG/L	U	U	U	NS	NS	U

Notes:
VOC analysis by EPA Method 8260
U = not present above PQL
NS = not sampled
(1) Samples collected for analysis by URS
(2) Split samples collected for analysis by NYSDEC
* Qualified as non-detect due to blank contamination
Site was remediated during October 2003 to May 2004.

Table 1 (Continued)
Monitoring Well MW-04
Groundwater Analytical Results
Former Dowell Facility

Volatile Compounds	Units	Sep-96	Mar-97	Nov-97	Jul-98	Dec-98	Jul-99	Jan-00	Jul-01
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	12	U	U	5*	U	U	2*	U
Acetone	UG/L	20	U	U	5*	U	U	6*	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	U	4	21	U	U	110
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	8
Total VOCs	UG/L	32	U	U	4	21	U	U	118

Volatile Compounds	Units	Jul-04	Mar-05	Jun-05	Sep-05	Dec-05	Mar-06	Jun-06	Sep-06
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	28	51	13	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	4 J	U	U	U	U	U
Total VOCs	UG/L	U	U	55	13	U	U	U	U

Volatile Compounds	Units	Dec-06	Mar-07	Jun-07	Sep-07	Dec-07	Mar-08	Jun-08	Sep-08
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	U
Total VOCs	UG/L	U	U	U	U	U	U	U	U

Volatile Compounds	Units	Dec-08	Mar-09	Jun-09	Sep-09	Dec-09
Chloroethane	UG/L	U	U	NS	NS	U
Vinyl Chloride	UG/L	U	U	NS	NS	U
Methylene Chloride	UG/L	U	U	NS	NS	U
Acetone	UG/L	U	U	NS	NS	U
1,1-Dichloroethene	UG/L	U	U	NS	NS	U
1,1-Dichloroethane	UG/L	U	U	NS	NS	U
1,2-Dichloroethene (total)	UG/L	U	U	NS	NS	U
1,2-Dichloroethane	UG/L	U	U	NS	NS	U
1,1,1-Trichloroethane	UG/L	U	U	NS	NS	U
Total VOCs	UG/L	U	U	NS	NS	U

Notes:
VOC analysis by EPA Method 8260
U = not present above PQL
NS = not sampled
* Qualified as non-detect due to blank contamination
Site was remediated during October 2003 to May 2004.

Table 1 (Continued)
Monitoring Well MW-06S
Groundwater Analytical Results
Former Dowell Facility

Volatile Compounds	Units	Sep-96	Mar-97	Nov-97	Jul-98	Dec-98	Jul-99	Jan-00	Jul-01
Chloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	U
Vinyl Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	U
Methylene Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	U
Acetone	UG/L	NI	NI	NI	NI	NI	NI	NI	U
1,1-Dichloroethene	UG/L	NI	NI	NI	NI	NI	NI	NI	6
1,1-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	490
1,2-Dichloroethene (total)	UG/L	NI	NI	NI	NI	NI	NI	NI	U
1,2-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	U
1,1,1-Trichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	190
Total VOCs	UG/L	NI	NI	NI	NI	NI	NI	NI	686

Volatile Compounds	Units	Jul-04	Mar-05 (1)	Mar-05 (2)	Jun-05	Sep-05	Dec-05	Mar-06	Jun-06
Chloroethane	UG/L	U	U	20	U	U	U	U	U
Vinyl Chloride	UG/L	19 J	U	10	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	490*	U	U	U	U
1,1-Dichloroethene	UG/L	120	U	110	210 J	170 J	470	U	110
1,1-Dichloroethane	UG/L	170	4,700	2,800	5,000	7,800	760	13,000	3,400
1,2-Dichloroethene (total)	UG/L	13 J	U	16	U	U	35	U	U
1,2-Dichloroethane	UG/L	26	U	2 J	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	360	890	550	860	1,000	700	1,300	510
Total VOCs	UG/L	708	5,590	2,958	6,070	8,970	1,495	14,300	4,020

Volatile Compounds	Units	Sep-06	Dec-06	Mar-07 (1)	Mar-07 (2)	Jun-07	Sep-07	Dec-07	Mar-08
Chloroethane	UG/L	U	U	U	39	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	70	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	180	U	U	73	130	390	310	U
1,1-Dichloroethane	UG/L	330	2,900	5,900	4,800	830	920	3,000	3,600
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	25	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	450	400	380	320	310	580	640	280
Total VOCs	UG/L	960	3,300	6,280	5,232	1,270	1,985	3,950	3,880

Volatile Compounds	Units	Jun-08	Sep-08	Dec-08	Mar-09	Sep-09	Dec-09
Chloroethane	UG/L	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	150	190	U	140	U	U
1,1-Dichloroethane	UG/L	1,900	1,700	5,700	2,000	9,900	16,000
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	390	480	330	270	310	670
Total VOCs	UG/L	2,440	2,370	6,030	2,410	10,210	16,670

Notes:
VOC analysis by EPA Method 8260
U = not present above PQL
NS = not sampled
NI = Not Installed
J = estimated value
E= Exceded the calibration range for that instrument
(1) Samples collected for analysis by URS
(2) Split samples collected for analysis by NYSDEC
* Qualified as non-detect due to blank concentration
Site was remediated during October 2003 to May 2004.

Table 1 (Continued)
Monitoring Well MW-06D
Groundwater Analytical Results
Former Dowell Facility

Volatile Compounds	Units	Sep-96	Mar-97	Nov-97	Jul-98	Dec-98	Jul-99	Jan-00	Jul-01
Chloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Vinyl Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Methylene Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Acetone	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,1-Dichloroethene	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,1-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,2-Dichloroethene (total)	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,2-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,1,1-Trichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Total VOCs	UG/L	NI	NI	NI	NI	NI	NI	NI	NI

Volatile Compounds	Units	Jul-04	Mar-05 (1)	Mar-05 (2)	Jun-05	Sep-05	Dec-05	Mar-06	Jun-06
Chloroethane	UG/L	U	U	29	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	520*	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	53	U	33 J	U	U	U
1,1-Dichloroethane	UG/L	230	9,700	5,700	4,900	3,600	8,400	9,100	12,000
1,2-Dichloroethene (total)	UG/L	U	U	8	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	87	970	610	400 J	280	430	500	850
Total VOCs	UG/L	317	10,670	6,400	5,300	3,913	8,830	9,600	12,850

Volatile Compounds	Units	Sep-06	Dec-06	Mar-07 (1)	Mar-07 (2)	Jun-07	Sep-07	Dec-07	Mar-08
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	64	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	19,000	22,000	9,800	9,300	13,000	18,000	13,000	5,000
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	1,200	U	U	250	U	U	U	U
Total VOCs	UG/L	20,200	22,000	9,800	9,614	13,000	18,000	13,000	5,000

Volatile Compounds	Units	Jun-08	Sep-08	Dec-08	Mar-09	Sep-09	Dec-09
Chloroethane	UG/L	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	730*	U	U	U
Acetone	UG/L	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	12,000	15,000	11,000	9,600	4,700	5,200
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U
Total VOCs	UG/L	12,000	15,000	11,000	9,600	4,700	5,200

Notes:
VOC analysis by EPA Method 8260
U = not present above PQL
NS = not sampled
NI = Not Installed
(1) Samples collected for analysis by URS
(2) Split samples collected for analysis by NYSDEC
* Qualified as non-detect due to blank contamination
Site was remediated during October 2003 to May 2004.

Table 1 (Continued)
Monitoring Well MW-07S
Groundwater Analytical Results
Former Dowell Facility

Volatile Compounds	Units	Sep-96	Mar-97	Nov-97	Jul-98	Dec-98	Jul-99	Jan-00	Jul-01
Chloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	U
Vinyl Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	U
Methylene Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	U
Acetone	UG/L	NI	NI	NI	NI	NI	NI	NI	U
1,1-Dichloroethene	UG/L	NI	NI	NI	NI	NI	NI	NI	U
1,1-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	U
1,2-Dichloroethene (total)	UG/L	NI	NI	NI	NI	NI	NI	NI	U
1,2-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	U
1,1,1-Trichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	U
Total VOCs	UG/L	NI	NI	NI	NI	NI	NI	NI	U

Volatile Compounds	Units	Jul-04	Mar-05	Jun-05	Sep-05	Dec-05	Mar-06	Jun-06	Sep-06
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	U	81	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	5 J	U	U	U	U
Total VOCs	UG/L	U	U	U	86	U	U	U	U

Volatile Compounds	Units	Dec-06	Mar-07	Jun-07	Sep-07	Dec-07	Mar-08	Jun-08	Sep-08
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	U
Total VOCs	UG/L	U	U	U	U	U	U	U	U

Volatile Compounds	Units	Dec-08	Mar-09	Jun-09	Sep-09	Dec-09
Chloroethane	UG/L	U	U	NS	U	U
Vinyl Chloride	UG/L	U	U	NS	U	U
Methylene Chloride	UG/L	U	U	NS	U	U
Acetone	UG/L	U	U	NS	U	U
1,1-Dichloroethene	UG/L	U	U	NS	U	U
1,1-Dichloroethane	UG/L	U	U	NS	U	U
1,2-Dichloroethene (total)	UG/L	U	U	NS	U	U
1,2-Dichloroethane	UG/L	U	U	NS	U	U
1,1,1-Trichloroethane	UG/L	U	U	NS	U	U
Total VOCs	UG/L	U	U	NS	U	U

Notes:
VOC analysis by EPA Method 8260
U = not present above PQL
NS = not sampled
NI = Not Installed
Site was remediated during October 2003 to May 2004.

Table 1 (Continued)
Monitoring Well MW-07D
Groundwater Analytical Results
Former Dowell Facility

Volatile Compounds	Units	Sep-96	Mar-97	Nov-97	Jul-98	Dec-98	Jul-99	Jan-00	Jul-01
Chloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Vinyl Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Methylene Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Acetone	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,1-Dichloroethene	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,1-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,2-Dichloroethene (total)	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,2-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,1,1-Trichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Total VOCs	UG/L	NI	NI	NI	NI	NI	NI	NI	NI

Volatile Compounds	Units	Jul-04	Mar-05	Jun-05	Sep-05	Nov-05	Dec-05	Mar-06	Jun-06
Chloroethane	UG/L	NI	NI	NI	NI	U	U	U	U
Vinyl Chloride	UG/L	NI	NI	NI	NI	U	U	U	U
Methylene Chloride	UG/L	NI	NI	NI	NI	U	U	U	U
Acetone	UG/L	NI	NI	NI	NI	35*	U	U	U
1,1-Dichloroethene	UG/L	NI	NI	NI	NI	U	U	U	U
1,1-Dichloroethane	UG/L	NI	NI	NI	NI	U	U	U	U
1,2-Dichloroethene (total)	UG/L	NI	NI	NI	NI	U	U	U	U
1,2-Dichloroethane	UG/L	NI	NI	NI	NI	U	U	U	U
1,1,1-Trichloroethane	UG/L	NI	NI	NI	NI	U	U	U	U
Total VOCs	UG/L	NI	NI	NI	NI	35*	U	U	U

Volatile Compounds	Units	Sep-06	Dec-06	Mar-07	Jun-07	Sep-07	Dec-07	Mar-08	Jun-08
Chloroethane	UG/L	U	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	U
Total VOCs	UG/L	U	U	U	U	U	U	U	U

Volatile Compounds	Units	Sep-08	Dec-08	Mar-09	Jun-09	Sep-09	Dec-09
Chloroethane	UG/L	U	U	U	NS	U	U
Vinyl Chloride	UG/L	U	U	U	NS	U	U
Methylene Chloride	UG/L	U	U	U	NS	U	U
Acetone	UG/L	U	U	U	NS	U	U
1,1-Dichloroethene	UG/L	U	U	U	NS	U	U
1,1-Dichloroethane	UG/L	U	U	U	NS	U	U
1,2-Dichloroethene (total)	UG/L	U	U	U	NS	U	U
1,2-Dichloroethane	UG/L	U	U	U	NS	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	NS	U	U
Total VOCs	UG/L	U	U	U	NS	U	U

Notes:

VOC analysis by EPA Method 8260

U = not present above PQL

NS = not sampled

NI = Not Installed

* Qualified as non-detect due to blank contamination

Site was remediated during October 2003 to May 2004.

Table 1 (Continued)
Recovery Well RW-01
Groundwater Analytical Results
Former Dowell Facility

Volatile Compounds	Units	Sep-96	Mar-97	Nov-97	Jul-98	Dec-98	Jul-99	Jan-00	Jul-01
Chloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Vinyl Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Methylene Chloride	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Acetone	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,1-Dichloroethene	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,1-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,2-Dichloroethene (total)	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,2-Dichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,1,1-Trichloroethane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Cyclohexane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Methylcyclohexane	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
1,2-Dichlorobenzene	UG/L	NI	NI	NI	NI	NI	NI	NI	NI
Total VOCs	UG/L	NI	NI	NI	NI	NI	NI	NI	NI

Volatile Compounds	Units	Jul-04	Mar-05	Jun-05	Sep-05	Dec-05	Mar-06	Jun-06	Sep-06
Chloroethane	UG/L	NI	NS	U	U	U	U	U	U
Vinyl Chloride	UG/L	NI	NS	5 J	3 J	U	U	U	U
Methylene Chloride	UG/L	NI	NS	U	U	U	U	U	U
Acetone	UG/L	NI	NS	6*	U	U	U	U	U
1,1-Dichloroethene	UG/L	NI	NS	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	NI	NS	35	39	18	35	23	23
1,2-Dichloroethene (total)	UG/L	NI	NS	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	NI	NS	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	NI	NS	11	7 J	5.2	5.6	6.3	5.9
Cyclohexane	UG/L	NI	NS	U	2 J	U	U	U	U
Methylcyclohexane	UG/L	NI	NS	U	2 J	U	U	U	U
1,2-Dichlorobenzene	UG/L	NI	NS	U	2 J	U	U	U	U
Total VOCs	UG/L	NI	NS	51	55	23.3	40.6	29.3	28.9

Volatile Compounds	Units	Dec-06	Mar-07	Jun-07	Sep-07	Dec-07	Mar-08	Jun-08	Sep-08
Chloroethane	UG/L	U	U	U	49	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	45	27	65	47	9.4	71	26	35
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U	U
Cyclohexane	UG/L	U	U	U	U	U	U	U	U
Methylcyclohexane	UG/L	U	U	U	U	U	U	U	U
1,2-Dichlorobenzene	UG/L	U	U	U	U	U	U	U	U
Total VOCs	UG/L	45	27	65	96	9.4	71	26	35

Volatile Compounds	Units	Dec-08	Mar-09	Jun-09	Sep-09	Dec-09
Chloroethane	UG/L	U	U	NS	33	U
Vinyl Chloride	UG/L	U	U	NS	U	U
Methylene Chloride	UG/L	U	U	NS	U	U
Acetone	UG/L	U	U	NS	U	U
1,1-Dichloroethene	UG/L	U	U	NS	U	U
1,1-Dichloroethane	UG/L	5.6	38	NS	29	26
1,2-Dichloroethene (total)	UG/L	U	U	NS	U	U
1,2-Dichloroethane	UG/L	U	U	NS	U	U
1,1,1-Trichloroethane	UG/L	U	6.2	NS	U	U
Cyclohexane	UG/L	U	U	NS	U	U
Methylcyclohexane	UG/L	U	U	NS	U	U
1,2-Dichlorobenzene	UG/L	U	U	NS	U	U
Total VOCs	UG/L	5.6	44.2	NS	62	26

Notes:

VOC analysis by EPA Method 8260

U = not present above PQL

NS = not sampled

NI = Not Installed

* Qualified as non-detect due to blank contamination

Site was remediated during October 2003 to May 2004.

TABLE 2
6NYCRR SUBPART 375.6 SOIL CLEAN-UP OBJECTIVES
FORMER DOWELL FACILITY - SITE MANAGEMENT PLAN

Contaminant	CAS Number	§375-6.8 (a) Unrestricted use soil cleanup objectives.	Table 375-6.8(b): Restricted Use Soil Cleanup Objectives					
			Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Unrestricted Use	Residential	Restricted-Residential	Commercial	Industrial		
Metals								
Aluminum	7429-90-5	--	--	--	--	--	--	--
Antimony	7440-36-0	--	--	--	--	--	--	--
Arsenic	7440-38-2	13 [c]	16[f]	16[f]	16[f]	16[f]	13[f]	16[f]
Barium	7440-39-3	350 [c]	350[f]	400	400	10,000 [d]	433	820
Beryllium	7440-41-7	7.2	14	72	590	2,700	10	47
Cadmium	7440-43-9	2.5 [c]	2.5[f]	4.3	9.3	60	4	7.5
Calcium	7440-70-2	--	--	--	--	--	--	--
Chromium, hexavalent [e]	18540-29-9	1[b]	22	110	400	800	1[e]	19
Chromium, trivalent [e]	16065-83-1	30 [c]	36	180	1,500	6,800	41	NS
Cobalt	7440-48-4	--	--	--	--	--	--	--
Copper	7440-50-8	50	270	270	270	10,000 [d]	50	1,720
Total Cyanide [e, f]	57-12-5	27	27	27	27	10,000 [d]	NS	40
Iron	7439-89-6	--	--	--	--	--	--	--
Lead	7439-92-1	63 [c]	400	400	1,000	3,900	63[f]	450
Manganese	7439-96-5	1600 [c]	2,000[f]	2,000[f]	10,000 [d]	10,000 [d]	1600[f]	2,000[f]
Magnesium	7439-95-4	--	--	--	--	--	--	--
Total Mercury	7439-97-6	0.18 [c]	0.81[j]	0.81[j]	2.8[j]	5.7[j]	0.18[f]	0.73
Nickel	7440-02-0	30	140	310	310	10,000 [d]	30	130
Potassium	7440-09-7	--	--	--	--	--	--	--
Selenium	7782-49-2	3.9[c]	36	180	1,500	6,800	3.9[f]	4[f]
Silver	7440-22-4	2	36	180	1,500	6,800	2	8.3
Sodium	7440-23-5	--	--	--	--	--	--	--
Thallium	7440-28-0	--	--	--	--	--	--	--
Vanadium	7440-62-2	--	--	--	--	--	--	--
Zinc	7440-66-6	109 [c]	2200	10,000 [d]	10,000 [d]	10,000 [d]	109[f]	2,480
PCBs/Pesticides								
2,4,5-TP Acid (Silvex)[f]	93-72-1	3.8	58	100[a]	500[b]	1,000[c]	NS	3.8
2,4,5-T	93-76-5	--	--	--	--	--	--	--
2,4-D	94-75-7	--	--	--	--	--	--	--
4,4'-DDE	72-55-9	0.0033 [b]	1.8	8.9	62	120	0.0033 [e]	17
4,4'-DDT	50-29-3	0.0033 [b]	1.7	7.9	47	94	0.0033 [e]	136
4,4'-DDD	72-54-8	0.0033 [b]	2.6	13	92	180	0.0033 [e]	14
Aldrin	309-00-2	0.005 [c]	0.019	0.097	0.68	1.4	0.14	0.19

TABLE 2
6NYCRR SUBPART 375.6 SOIL CLEAN-UP OBJECTIVES
FORMER DOWELL FACILITY - SITE MANAGEMENT PLAN

Contaminant	CAS Number	§375-6.8 (a) Unrestricted use soil cleanup objectives.	Table 375-6.8(b): Restricted Use Soil Cleanup Objectives					
			Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Unrestricted Use	Residential	Restricted-Residential	Commercial	Industrial		
alpha-BHC	319-84-6	0.02	0.097	0.48	3.4	6.8	0.04[g]	0.02
beta-BHC	319-85-7	0.036	0.072	0.36	3	14	0.6	0.09
Chlordane (alpha)	5103-71-9	0.094	0.91	4.2	24	47	1.3	2.9
gamma-Chlordane	5103-74-2	--	--	--	--	--	--	--
Chlordane	57-74-9	--	--	--	--	--	--	--
delta-BHC [g]	319-86-8	0.04	100[a]	100[a]	500[b]	1,000[c]	0.04[g]	0.25
Dibenzofuran [f]	132-64-9	7	14	59	350	1,000[c]	NS	210
Dieldrin	60-57-1	0.005[c]	0.039	0.2	1.4	2.8	0.006	0.1
Endosulfan I[d, f]	959-98-8	2.4	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan II[d, f]	33213-65-9	2.4	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan sulfate[d, f]	1031-07-8	2.4	4.8[i]	24[i]	200[i]	920[i]	NS	1,000[c]
Endrin	72-20-8	0.014	2.2	11	89	410	0.014	0.06
Heptachlor	76-44-8	0.042	0.42	2.1	15	29	0.14	0.38
Heptachlor epoxide	1024-57-3	--	--	--	--	--	--	--
Lindane	58-89-9	0.1	0.28	1.3	9.2	23	6	0.1
Methoxychlor	72-43-5	--	--	--	--	--	--	--
Parathion	56-38-2	--	--	--	--	--	--	--
PCBs - surface	1336-36-3	0.1	1	1	1	25	1	3.2
PCBs - subsurface	1336-36-3	0.1	1	1	1	25	1	3.2
2,3,7,8-TCDD (Dioxin)	1746-01-6	--						
Semivolatile organic compounds								
2-Chlorophenol	95-57-8	--	--	--	--	--	--	--
2-Methylnaphthalene	91-57-6	--	--	--	--	--	--	--
2-Nitroaniline	88-74-4	--	--	--	--	--	--	--
2-Nitrophenol	88-75-5	--	--	--	--	--	--	--
2,4-Dichlorophenol	120-83-2	--	--	--	--	--	--	--
2,4-Dinitrophenol	51-28-5	--	--	--	--	--	--	--
2,6-Dinitrotoluene	606-20-2	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	95-95-4	--	--	--	--	--	--	--
3-Nitroaniline	99-09-2	--	--	--	--	--	--	--
4-Chloroaniline	106-47-8	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	59-50-7	--	--	--	--	--	--	--
4-Nitrophenol	100-02-7	--	--	--	--	--	--	--
Acenaphthene	83-32-9	20	100[a]	100[a]	500[b]	1,000[c]	20	98
Acenaphthylene [f]	208-96-8	100 [a]	100[a]	100[a]	500[b]	1,000[c]	NS	107

TABLE 2
6NYCRR SUBPART 375.6 SOIL CLEAN-UP OBJECTIVES
FORMER DOWELL FACILITY - SITE MANAGEMENT PLAN

		§375-6.8 (a) Unrestricted use soil cleanup objectives.	Table 375-6.8(b): Restricted Use Soil Cleanup Objectives					
			Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
Contaminant	CAS Number	Unrestricted Use	Residential	Restricted-Residential	Commercial	Industrial		
Aniline	62-53-3	--	--	--	--	--	--	--
Anthracene [f]	120-12-7	100 [a]	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benzo(a)anthracene [f]	56-55-3	1[c]	1[f]	1[f]	5.6	11	NS	1[f]
Benzo(a)pyrene	50-32-8	1[c]	1[f]	1[f]	1[f]	1.1	2.6	22
Benzo(b)fluoranthene[f]	205-99-2	1[c]	1[f]	1[f]	5.6	11	NS	1.7
Benzo(g,h,i)perylene [f]	191-24-2	100	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benzo(k)fluoranthene[f]	207-08-9	0.8 [c]	1	3.9	56	110	NS	1.7
bis(2-Ethylhexyl)phthalate	117-81-7	--	--	--	--	--	--	--
Butylbenzylphthalate	85-68-7	--	--	--	--	--	--	--
Chrysene [f]	218-01-9	1[c]	1[f]	3.9	56	110	NS	1[f]
Dibenz(a,h)anthracene[f]	53-70-3	0.33 [b]	0.33[e]	0.33[e]	0.56	1.1	NS	1,000[c]
Diethylphthalate	84-66-2	--	--	--	--	--	--	--
Dimethylphthalate	131-11-3	--	--	--	--	--	--	--
Di-n-butylphthalate	84-74-2	--	--	--	--	--	--	--
Di-n-octylphthalate	117-84-0	--	--	--	--	--	--	--
Fluoranthene [f]	206-44-0	100 [a]	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Fluorene	86-73-7	30	100[a]	100[a]	500[b]	1,000[c]	30	386
Indeno(1,2,3-cd)pyrene [f]	193-39-5	0.5 [c]	0.5[f]	0.5[f]	5.6	11	NS	8.2
Isophorone	78-59-1	--	--	--	--	--	--	--
2-Methylphenol (m-Cresol) [f]	108-39-4	0.33 [b]	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
Naphthalene [f]	91-20-3	12	100[a]	100[a]	500[b]	1,000[c]	NS	12
Nitrobenzene	98-95-3	--	--	--	--	--	--	--
3-methylphenol (o-Cresol) [f]	95-48-7	0.33 [b]	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
4-Methylphenol (p-Cresol) [f]	106-44-5	0.33 [b]	34	100[a]	500[b]	1,000[c]	NS	0.33[e]
Pentachlorophenol	87-86-5	0.8[b]	2.4	6.7	6.7	55	0.8[e]	0.8[e]
Phenanthrene [f]	85-01-8	100	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Phenol	108-95-2	0.33[b]	100[a]	100[a]	500[b]	1,000[c]	30	0.33[e]
Pyrene[f]	129-00-0	100	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Volatile organic compounds								
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	--	--	--	--	--	--	--
1,1,1-Trichloroethane [f]	71-55-6	0.68	100[a]	100[a]	500[b]	1,000[c]	NS	0.68
1,1,2,2-Tetrachloroethane	79-34-5	--	--	--	--	--	--	--
1,1-Dichloroethane [f]	75-34-3	0.27	19	26	240	480	NS	0.27
1,1-Dichloroethene[f]	75-35-4	0.33	100[a]	100[a]	500[b]	1,000[c]	NS	0.33

TABLE 2
6NYCRR SUBPART 375.6 SOIL CLEAN-UP OBJECTIVES
FORMER DOWELL FACILITY - SITE MANAGEMENT PLAN

Contaminant	CAS Number	§375-6.8 (a) Unrestricted use soil cleanup objectives.	Table 375-6.8(b): Restricted Use Soil Cleanup Objectives					
			Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Unrestricted Use	Residential	Restricted-Residential	Commercial	Industrial		
1,2,3-Trichloropropane	96-18-4	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	120-82-1	--	--	--	--	--	--	--
1,2-Dichlorobenzene[f]	95-50-1	1.1	100[a]	100[a]	500[b]	1,000[c]	NS	1.1
1,2-Dichloroethane	107-06-2	0.02[c]	2.3	3.1	30	60	10	0.02[f]
cis -1,2-Dichloroethene [f]	156-59-2	0.25	59	100[a]	500[b]	1,000[c]	NS	0.25
trans-1,2-Dichloroethene [f]	156-60-5	0.19	100[a]	100[a]	500[b]	1,000[c]	NS	0.19
1,3-Dichlorobenzene[f]	541-73-1	2.4	17	49	280	560	NS	2.4
1,3-Dichloropropane	142-28-9	--	--	--	--	--	--	--
1,4-Dichlorobenzene	106-46-7	1.8	9.8	13	130	250	20	1.8
1,4-Dioxane	123-91-1	0.1 [b]	9.8	13	130	250	0.1[e]	0.1[e]
4-Methyl-2-Pentanone	108-10-1	--	--	--	--	--	--	--
Acetone	67-64-1	0.05	100[a]	100[b]	500[b]	1,000[c]	2.2	0.05
Benzene	71-43-2	0.06	2.9	4.8	44	89	70	0.06
Benzoic Acid	65-85-0	--	--	--	--	--	--	--
n-Butylbenzene [f]	104-51-8	12	100[a]	100[a]	500[b]	1,000[c]	NS	12
Carbon Disulfide	75-15-0	--	--	--	--	--	--	
Carbon tetrachloride [f]	56-23-5	0.76	1.4	2.4	22	44	NS	0.76
Chlorobenzene	108-90-7	1.1	100[a]	100[a]	500[b]	1,000[c]	40	1.1
Chloroethane	75-00-3	--	--	--	--	--	--	--
Chloroform	67-66-3	0.37	10	49	350	700	12	0.37
Dibromochloromethane	124-48-1	--	--	--	--	--	--	--
Ethylbenzene[f]	100-41-4	1	30	41	390	780	NS	1
Hexachlorobenzene [f]	118-74-1	0.33[b]	0.33[e]	1.2	6	12	NS	3.2
Isopropylbenzene	98-82-8	--	--	--	--	--	--	--
Methyl ethyl ketone	78-93-3	0.12	100[a]	100[a]	500[b]	1,000[c]	100[a]	0.12
Methyl tert-butyl ether [f]	1634-04-4	0.93	62	100[a]	500[b]	1,000[c]	NS	0.93
Methylene chloride	75-09-2	0.05	51	100[a]	500[b]	1,000[c]	12	0.05
n - Propylbenzene [f]	103-65-1	3.9	100[a]	100[a]	500[b]	1,000[c]	NS	3.9
sec-Butylbenzene [f]	135-98-8	11	100[a]	100[a]	500[b]	1,000[c]	NS	11
tert-Butylbenzene[f]	98-06-6	5.9	100[a]	100[a]	500[b]	1,000[c]	NS	5.9
Tetrachloroethene	127-18-4	1.3	5.5	19	150	300	2	1.3
Toluene	108-88-3	0.7	100[a]	100[a]	500[b]	1,000[c]	36	0.7
Trichloroethene	79-01-6	0.47	10	21	200	400	2	0.47
1,2,4-Trimethylbenzene [f]	95-63-6	3.6	47	52	190	380	NS	3.6

TABLE 2
6NYCRR SUBPART 375.6 SOIL CLEAN-UP OBJECTIVES
FORMER DOWELL FACILITY - SITE MANAGEMENT PLAN

Contaminant	CAS Number	§375-6.8 (a) Unrestricted use soil cleanup objectives.	Table 375-6.8(b): Restricted Use Soil Cleanup Objectives					
			Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Unrestricted Use	Residential	Restricted-Residential	Commercial	Industrial		
1,3,5-Trimethylbenzene[f]	108-67-8	8.4	47	52	190	380	NS	8.4
Vinyl chloride[f]	75-01-4	0.02	0.21	0.9	13	27	NS	0.02
Xylene (mixed)	1330-20-7	0.26	100[a]	100[a]	500[b]	1,000[c]	0.26	1.6

All soil cleanup objectives (SCOs) are in parts per million (ppm).

Unrestricted use Footnotes

[a] The SCOs for unrestricted use were capped at a maximum value of 100 ppm. See Technical Support Document (TSD), section 9.3.

[b] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO

[c] For constituents where the calculated SCO was lower than the rural soil background concentration, as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 1 SCO value for this use of the site.

[d] SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.

[e] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[f] Protection of ecological resources SCOs were not developed for contaminants identified in Table 375-6.8(b) with "NS". Where such contaminants appear in Table 375-6.8(a), the applicant may be required by the Department to calculate a protection of ecological resources SCO according to the (b) Restricted use soil cleanup objectives.

Restricted Use Footnotes

All soil cleanup objectives (SCOs) are in parts per million (ppm). NS=Not specified. See Technical Support Document (TSD). Footnotes

[a] The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

[b] The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

[d] The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

[e] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

[f] For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

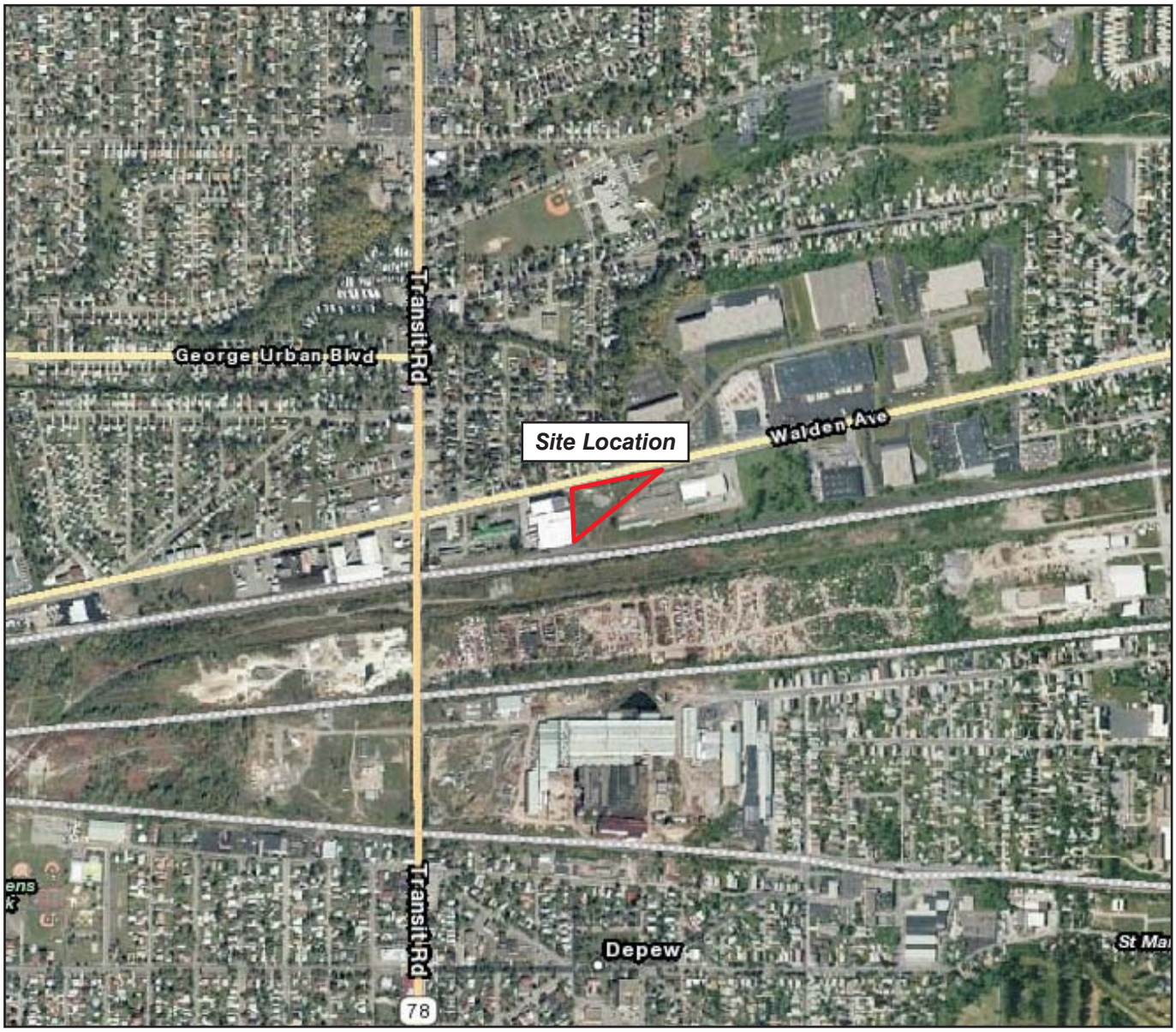
[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts). See TSD Table 5.6-1.

FIGURES



URS

FORMER DOWELL FACILITY
SITE LOCATION MAP

FIGURE 1

AG20573-11175848-042711-GCM

PROPERTY LINE

MW-3

MW-4

MW-2

OFFICE (3311 WALDEN AVENUE)

OFFICE

FORMER FUEL DISPENSER

FORMER 1000 GALLON GASOLINE UST (REMOVED)

FORMER ACID PLANT

FORMER 8000 GALLON DIESEL TANK

CHEM. STOR.

HCL TANK

FORMER BULK CEMENT PLANT

FORMER TANK

RAILROAD SPUR

FORMER OIL SEPARATOR

FORMER MUD SEPARATOR

WASH BAY

COMPRESSOR

FORMER CHEMICAL STORAGE

CEMENT SILOS

PROPERTY LINE

MW-1

0 40 80

SCALE IN FEET

LEGEND

FORMER STRUCTURES

MW-2 MONITORING WELL LOCATION

NOTE

1. MONITORING WELLS ARE APPROXIMATELY LOCATED.

SOURCE: RADIAN INTERNATIONAL, JULY 1998

AG20574-111175848-042711-GCM

FORMER DOWELL FACILITY
SITE PLAN AND
MONITORING WELL LOCATIONS

URS

FIGURE 2

N

WALDEN AVENUE

PROPERTY LINE

WATER-METER VAULT

SLIDING GATE

100.96

TEST TRENCH

MW-06, 97.350

MW-07, 96.670

100.64

MAINTENANCE SHOP

OFFICE (3311 WALDEN AVE)

CORRUGATED STEEL BLDG.

BRICK BUILDING

OFFICE

98

FORMER ACID PLANT

HCl TANK

FORMER BULK CEMENT PLANT

RAILROAD SPUR

PZ-02, 99.800

101.37

TRAILER

MW-08, 98.100

100.10

WASH BAY

FORMER CHEMICAL STORAGE

100

MW-05, 103.570

104.54

102

PZ-01, 101.070

101.87

Legend

- Monitoring Well / Piezometer
- 100.10 — Monitoring Well / Piezometer Ground Surface Elevation (ft)
- 92 — Groundwater Elevation Contours
- Groundwater Flow Direction

PZ-01, 101.07

Location ID

Groundwater Elevation(ft)

50 0 50 Feet

FORMER DOWELL FACILITY
GROUNDWATER ELEVATION CONTOUR MAP
UPPER TILL, UNCONFINED UNIT (NOVEMBER 6, 2001)

URS

FIGURE 3

N:\11171084.000000\GIS\dowell.apr LAYER:B 11/06/01 GROUNDWATER ELEVATIONS 4/27/2011

N

WALDEN AVENUE

PROPERTY LINE

SLIDING GATE

WATER-METER VAULT

MW-02, 99.09
102.53

MW-04, 96.53
101.65

MW-03, 90.04
101.11

TEST TRENCH

FORMER ACID PLANT

FORMER BULK CEMENT PLANT

MAINTENANCE SHOP

OFFICE (3311 WALDEN AVE)

CORRUGATED STEEL BLDG.

OFFICE

HCL TANK

RAILROAD SPUR

BRICK BUILDING

TRAILER

WASH BAY

FORMER CHEMICAL STORAGE

98

96

94

92

90

MW-01, 90.66
104.10

Legend

- Monitoring Well / Piezometer
- 100.10 Monitoring Well / Piezometer Ground Surface Elevation (ft)
- 92 Groundwater Elevation Contours
- Groundwater Flow Direction
- MW-01, 90.66 (Location ID / Groundwater Elevation(ft))

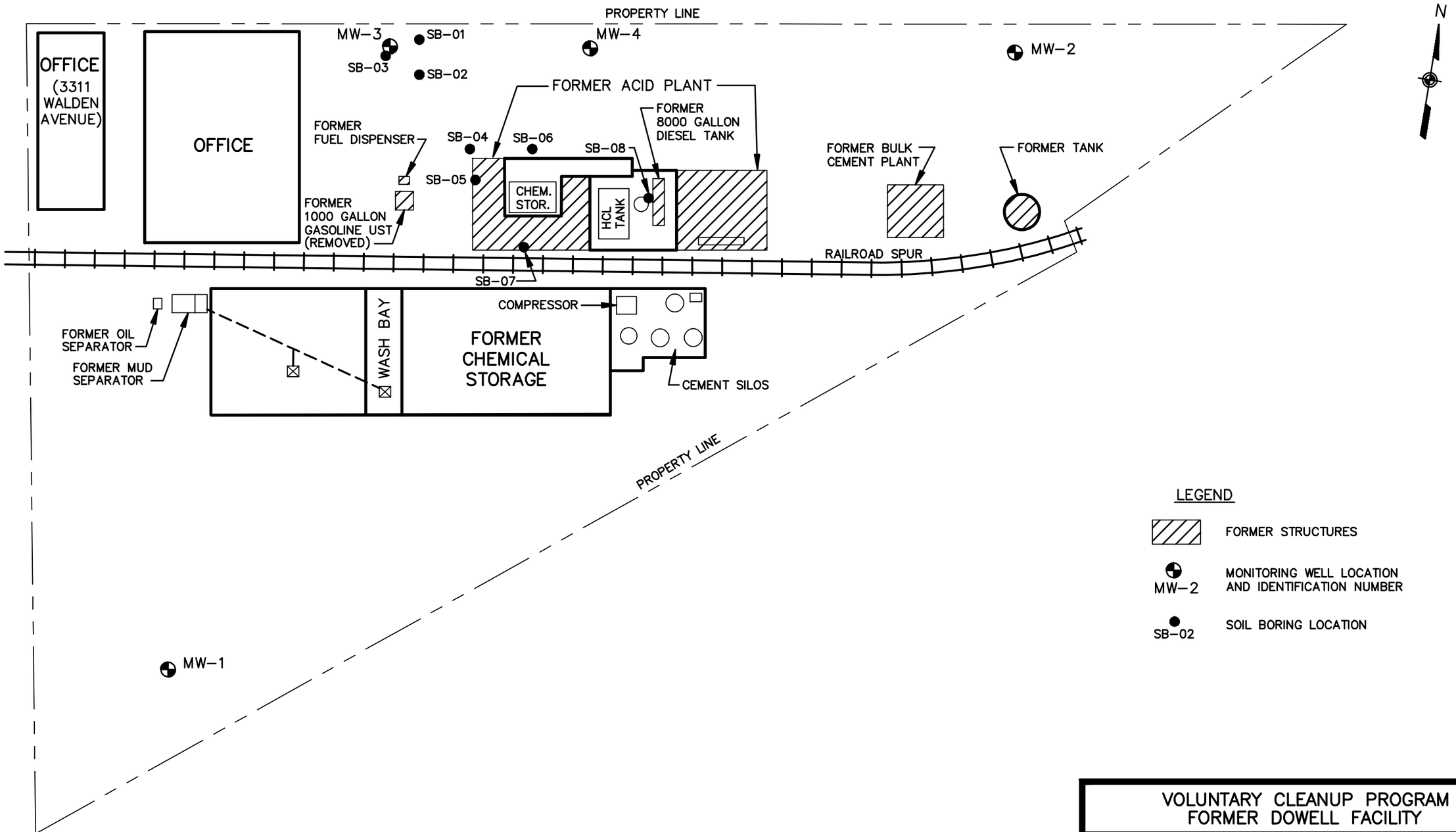
50 0 50 Feet

FORMER DOWELL FACILITY
GROUNDWATER ELEVATION CONTOUR MAP
CONFINED BEDROCK/LOWER TILL UNIT(DECEMBER 12, 2001)

URS

FIGURE 4

N:\11171084.00000\DBG\GIS\dowell.apr LAYER A 12/1/201 GROUNDWATER ELEVATIONS 4/27/2011



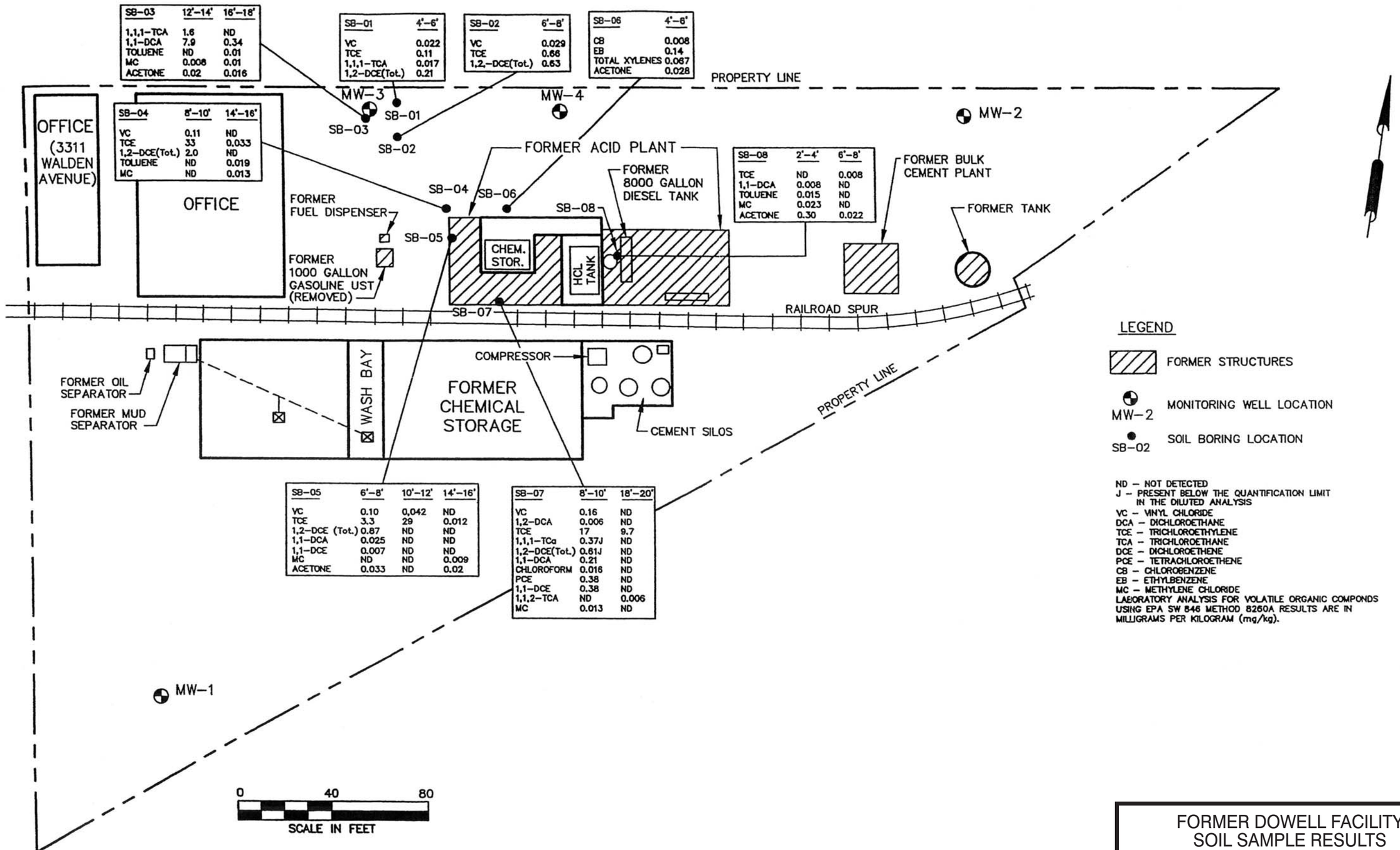
VOLUNTARY CLEANUP PROGRAM
FORMER DOWELL FACILITY

PREVIOUS INVESTIGATION LOCATIONS

URS

FIGURE 5

I:\11175848\CAD\FIGURE 5.dwg, 4/27/11 -1-RAL



SOURCE: RADIAN INTERNATIONAL, JULY 1998

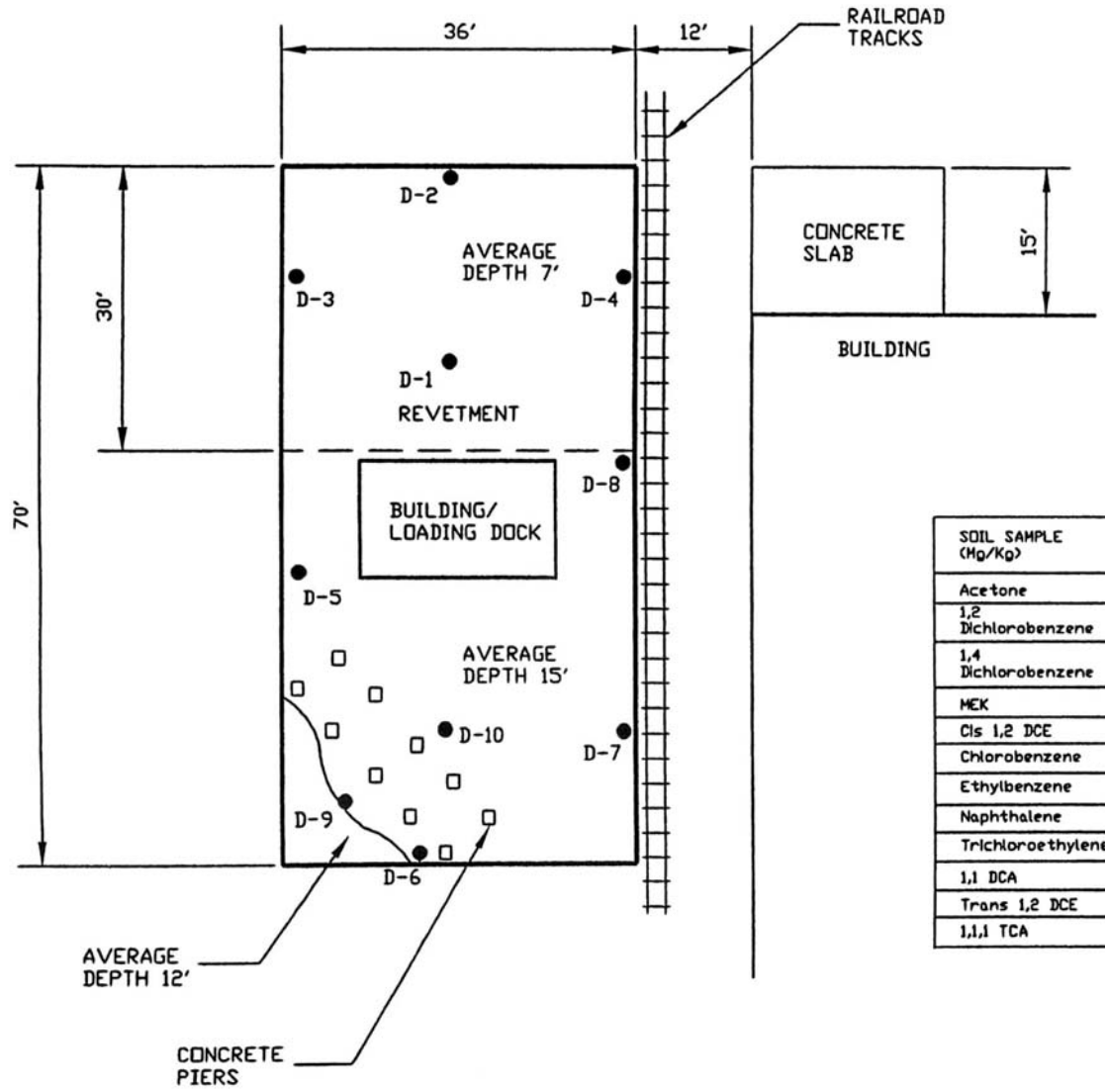
FORMER DOWELL FACILITY
SOIL SAMPLE RESULTS
NOVEMBER 1997

URS

FIGURE 6

AG20575-11175848-042711-GCM

AG20576-11175848-042711-GCM



SOIL SAMPLE (Mg/Kg)	D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	D-9	D-10
Acetone	0.033	0.231	0.136	0.123	0.188		0.139	0.042	0.031	0.033
1,2 Dichlorobenzene	0.033				0.002					0.051
1,4 Dichlorobenzene										0.002
MEK		0.026								
Cis 1,2 DCE				0.002		0.023		0.115	0.179	0.015
Chlorobenzene					0.002					
Ethylbenzene					0.006					0.002
Naphthalene					0.001					
Trichloroethylene						0.524	0.001	1.08	0.311	0.495
1,1 DCA								0.004	0.021	
Trans 1,2 DCE								0.005	0.004	
1,1,1 TCA									0.015	

SOURCE: RADIAN INTERNATIONAL, JULY 1998

URS

FORMER DOWELL FACILITY
ACID PLANT EXCAVATION

FIGURE 7

N

WALDEN AVENUE

PROPERTY LINE

SLIDING GATE

WATER-METER VAULT

GPB-12
VOCs:
Trichloroethene, 57,000

SUMP-02
VOCs:
1,1,1-Trichloroethane, 1600
1,1-Dichloroethane, 2600

SUMP-01
VOCs:
1,1,1-Trichloroethane, 16,000
1,1-Dichloroethane, 1100
Tetrachloroethene, 15,000

1-X-1
VOCs:
Acetone, 440

GPB-09
VOCs:
Trichloroethene, 53,000

GPB-08
VOCs:
trans-1,2-Dichloroethene, 1100
Trichloroethene, 3100

GPB-07
VOCs:
Trichloroethene, 69,000

3-X-2
2-X-1
4-X-2
5-X-1
TP-01
TEST TRENCH
ROUND SUMP
RECTANGLE SUMP
GPB-10
GPB-11
GPB-13
GPB-04
GPB-03
GPB-02
MW-08

FORMER ACID PLANT
HCl TANK
RAILROAD SPUR
MAINTENANCE SHOP
OFFICE (3311 WALDEN AVE)
OFFICE
BRICK BUILDING
CORRUGATED STEEL
TRAILER
WASH BAY
FORMER CHEMICAL STORAGE

Legend

- No Compounds Detected
- No Compounds Exceed Criteria
- At Least One Compound Exceeds Criteria

SUMP-01 (Location ID)
1,1,1-Trichloroethane, 16,000 (Compound Exceeding Criteria; Concentration (UG/KG))

50 0 50 Feet

N:\11171084.00000\DBGIS\dowell apr SOIL EXCEEDANCES 4/27/2011

FORMER DOWELL FACILITY
SOIL/SEDIMENT ANALYTICAL RESULTS

URS

FIGURE 8

N

WALDEN AVENUE

MW-03
VOCs:
1,1,1-Trichloroethane, 4500
1,1-Dichloroethane, 50,000
1,1-Dichloroethene, 14
1,2-Dichloroethane, 11
Chloroethane, 130
cis-1,2-Dichloroethene, 9
Vinyl chloride, 9
METALS:
Cadmium, 15.5
Iron, 4260
Magnesium, 164,000
Nickel, 497

MW-06
VOCs:
1,1,1-Trichloroethane, 190
1,1-Dichloroethane, 560
1,1-Dichloroethene, 6

MW-02

WATER-METER VAULT

PROPERTY LINE

MW-04

SLIDING GATE

TEST TRENCH

FORMER ACID PLANT

MW-07

MAINTENANCE SHOP

HCL TANK

RAILROAD SPUR

OFFICE (3311 WALDEN AVE)

CORRUGATED STEEL BLDG.

BRICK BUILDING

OFFICE

PZ-02
VOCs:
1,1,1-Trichloroethane, 12
1,1,2-Trichloroethane, 4
1,1-Dichloroethane, 9
1,1-Dichloroethene, 32
1,2-Dichloropropane, 4
Chloroform, 8
cis-1,2-Dichloroethene, 9500
trans-1,2-Dichloroethene, 380
Trichloroethene, 60,000
Vinyl chloride, 1000

WASH BAY

FORMER CHEMICAL STORAGE

TRAILER

MW-08
VOCs:
Vinyl chloride, 8

MW-05
METALS:
Iron, 17,900
Lead, 134
Manganese, 1900

PZ-01
VOCs:
Acetone, 63

MW-01
METALS:
Iron, 1550
Magnesium, 81,100
Thalium, 2.1

Legend

- No Compounds Detected
- No Compounds Exceed Criteria
- At Least One Compound Exceeds Criteria

MW-06
1,1,1-Trichloroethane, 190

Location ID
Compound Exceeding Criteria
Concentration (UG/L)

50 0 50 Feet

FORMER DOWELL FACILITY
GROUNDWATER ANALYTICAL RESULTS (JULY 2001)

URS

FIGURE 9

N:\11171084.00000\DBIGIS\dowell.apr JULY 01 GROUNDWATER EXCEEDANCES 4/27/2011

N

WALDEN AVENUE

PROPERTY LINE

SLIDING GATE

Point #1

Point #2

Point #3

Point #4

Point #5

WATER-METER VAULT

SIDEWALK

MW-02

MW-03

MW-04

MW-05

MW-06D

MW-06S

MW-07D

MW-07S

MW-08

MW-01

TP-01

TP-02

ROUND SUMP

FORMER TANK

FORMER BULK CEMENT PLANT

FORMER 8000 GALLON DIESEL TANK

FORMER ACID PLANT

FORMER RAILROAD SPUR

HCL TANK

MAINTENANCE SHOP

OFFICE (3311 WALDEN AVE)

CORRUGATED STEEL BLDG.

BRICK BUILDING

OFFICE

SUMP-01

SUMP-02

FORMER FUEL DISPENSER

FORMER 1000 GALLON GASOLINE UST (REMOVED)

FORMER CEMENT SILOS

FORMER COMPRESSOR

FORMER CHEMICAL STORAGE

WASH BAY

TRAILER

FORMER OIL SEPARATOR (ABANDONED)

FORMER MUD SEPARATOR (ABANDONED)

LIMITS OF EXCAVATION

Legend

- Perimeter PID and Dust Monitoring Points
- Existing Monitoring Well
- Former Structure (Previously Removed)
- Structure Demolished / Removed (2004)
- Proposed Excavation Area

40 0 40 Feet

FORMER DOWELL FACILITY
LIMITS OF SOIL REMOVAL

URS

FIGURE 10

N:\11171084.00000\DBGIS\dowell_2003.apr EXCAVATION AREA 4/27/2011

N

BREWSTER ST

LINCOLN ST

WALDEN AVENUE

BH-01
BH-02
BH-03

PROPERTY LINE

MW-02
PZ-09S
PZ-08S
MW-04
PZ-07D
PZ-07S
MW-06D
MW-06S
RW-01
MW-07S
MW-07D
PZ-05D
PZ-05S
RW-02
PZ-04D
PZ-04S
PZ-03D
PZ-03S
LIMITS OF EXCAVATION
PZ-01S
PZ-01D
APPROXIMATE PROPERTY LINE
MW-01
PZ-02S

92 93 94 95 96 97 98 99 100 101 102 103

Legend

- Off-Site Groundwater Sampling Location
- Monitoring Well Location
- Recovery Well Location
- Groundwater Flow Direction (Lower Till Unit, 3/18/2008)
- Groundwater Flow Direction (Upper Till Unit, 3/18/2008)
- 98 Groundwater Elevation Contours (Lower Till Unit, 3/18/2008)
- 98.5 Groundwater Elevation Contours (Upper Till Unit, 3/18/2008)

NOTE:
Groundwater elevation is set at 100.40' within the limits of the excavation area.

60 0 60 Feet

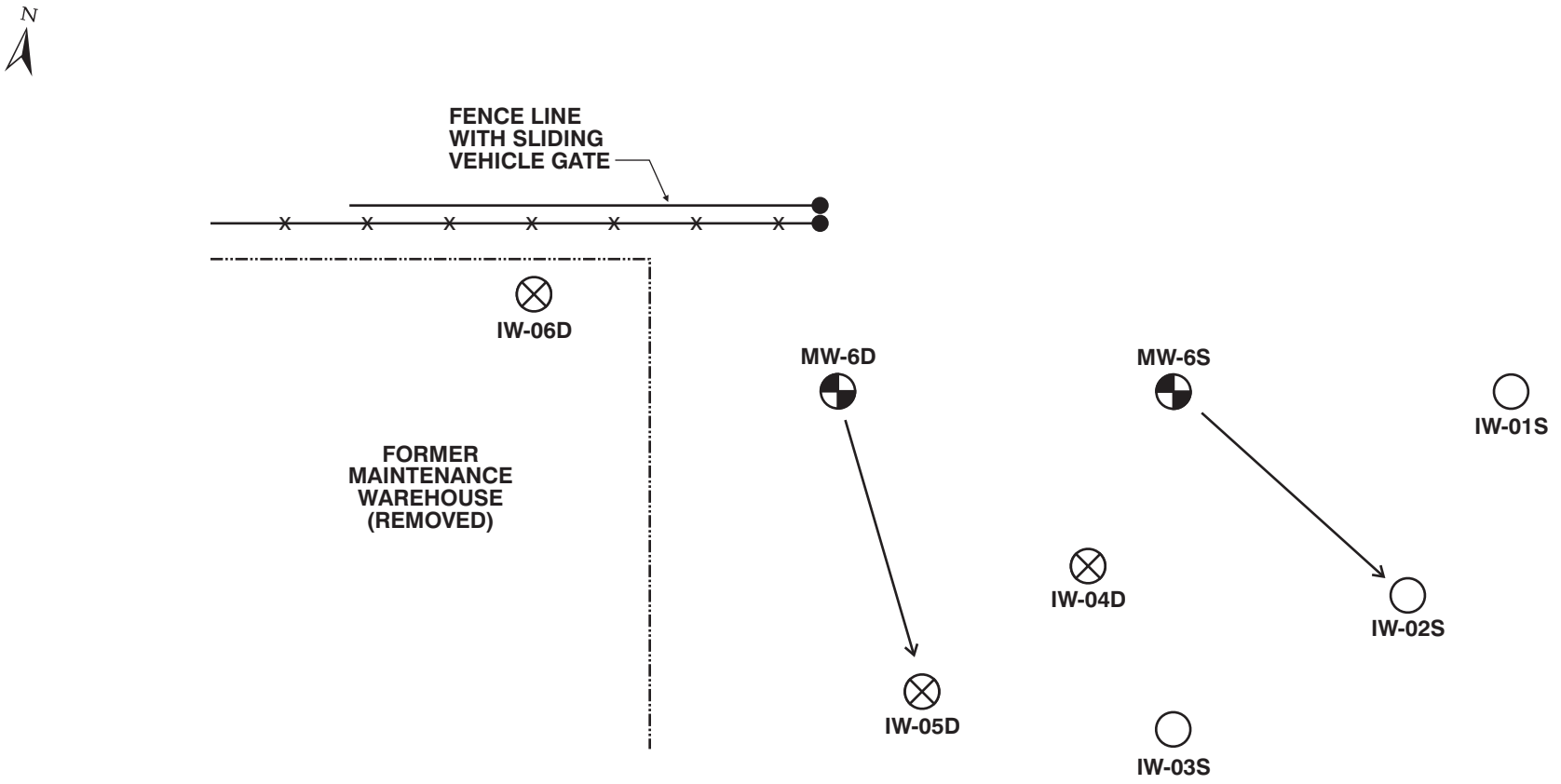
FORMER DOWELL FACILITY
GROUNDWATER SAMPLING LOCATIONS

URS

FIGURE 11

N:\11171084.00000\DB\GIS\AERIAL (GW CONTOURS 20080318).mxd 4/27/2011

AG20227A-11175848-060509-GCM



LEGEND

- EXISTING MONITORING WELLS
- SHALLOW INJECTION WELLS
- DEEP INJECTION WELLS

URS

FORMER DOWELL FACILITY
ISCO INJECTION WELL LOCATIONS

FIGURE 12

N

WALDEN AVENUE

PROPERTY LINE

WATER-METER VAULT

SLIDING GATE

SIDEWALK

FORMER TANK

FORMER BULK CEMENT PLANT

FORMER 8000 GALLLON DIESEL TANK

FORMER ACID PLANT

MAINTENANCE SHOP

ROUND SUMP

FORMER FUEL DISPENSER

SUMP-02

SUMP-01

HCL TANK

CSP5-A, 2.5

FORMER RAILROAD SPUR

CELL 5A

OFFICE (3311 WALDEN AVE)

CORRUGATED STEEL BLDG.

BRICK BUILDING

FORMER 1000 GALLON GASOLINE UST (REMOVED)

OFFICE

CSP5-B-2, 0.54

CSP4-C-BLU, 2.9

CSP4-C-PNK, 2.0

CSP5-B-1, 0.5

CSP4-C, 0.21

CSP5-B, 1.6

CELL 5B

FORMER CHEMICAL STORAGE

WASH BAY

TRAILER

CSP4-B-GRN, 0.3

CSP4-B, ND

LIMITS OF EXCAVATION

CELL 4

CSP6-A, 0.62

CELL 6

CSP6-B, 0.016

CSP3-A-PNK, 1.5

CSP3-B-BLU, 1.9

CELL 3

CSP3-A, 0.15

CSP4-A-2, 1.1

CSP4-A, 1.6

CSP2-B, 6.1

CSP3-A-GRN, 7.5

CSP4-A-1, 4.7

CELL 2

CSP2-A, 16.0

CSP1-B, 15.0

CELL 1

CSP1-A, 8.9

Legend

- Excavated Soil Stockpile Sampling Point
- Former Structure (Previously Removed)
- Structure Demolished / Removed (2004)
- Proposed Excavation Area
- Stockpile Soils Disposed Offsite
- Stockpile Soils Approved by NYSDEC for Re-Use on Site

Location ID — CSP1-A, 8.9 — TCE Concentration (ppm)

NOTE:
ND - Not Detected

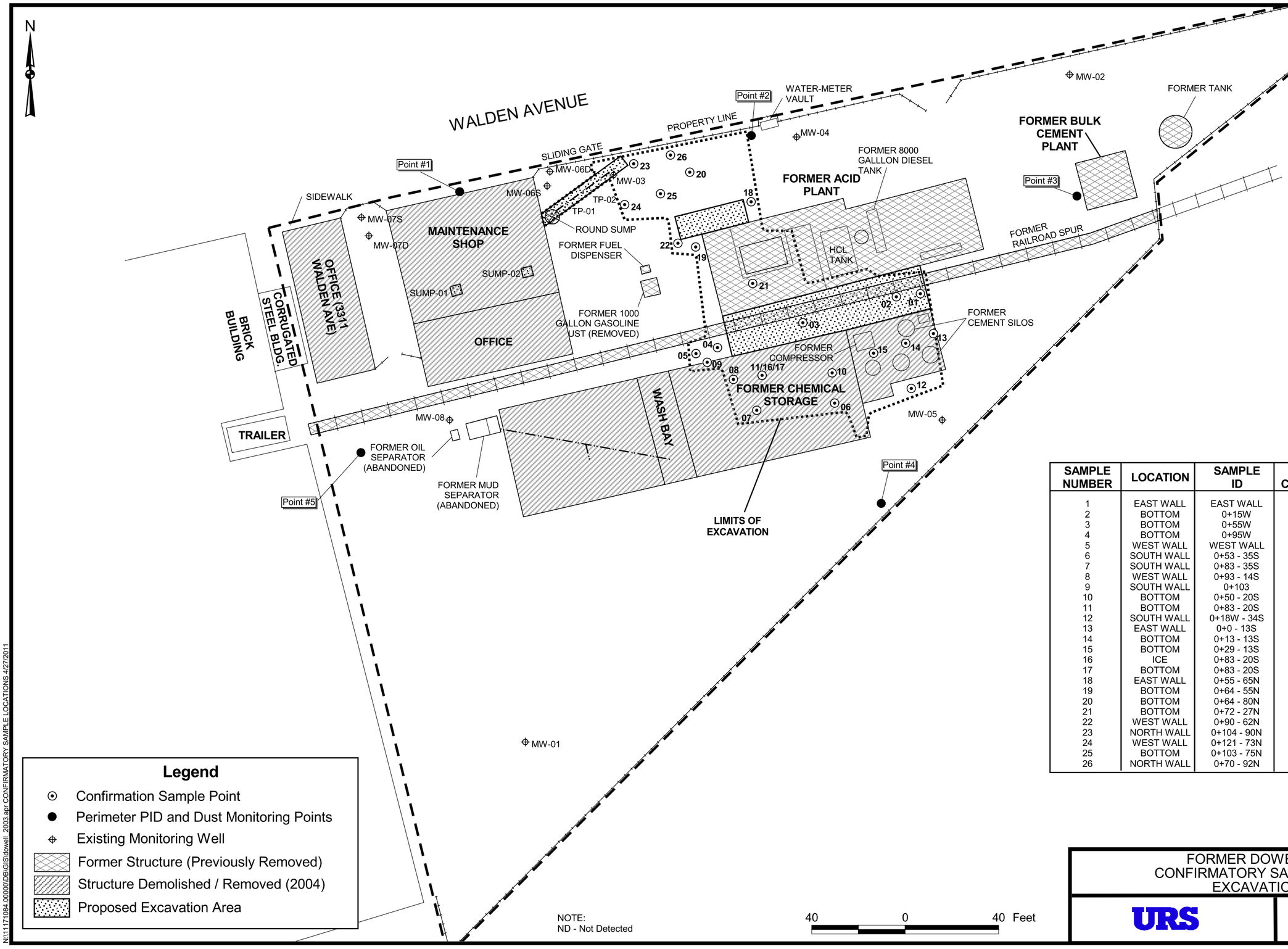
40 0 40 Feet

FORMER DOWELL FACILITY
EXCAVATED SOIL STOCKPILE
ANALYTICAL RESULTS

URS

FIGURE 13

N:\11171084.00000\DB\GIS\dowell_2003.apr EXCAVATED SOIL STOCKPILE ANALYTICAL RESULTS 4/27/2011



SAMPLE NUMBER	LOCATION	SAMPLE ID	TOTAL VOC CONCENTRATION (PPM)
1	EAST WALL	EAST WALL	ND
2	BOTTOM	0+15W	0.008
3	BOTTOM	0+55W	3.0
4	BOTTOM	0+95W	0.009
5	WEST WALL	WEST WALL	0.295
6	SOUTH WALL	0+53 - 35S	0.083
7	SOUTH WALL	0+83 - 35S	0.010
8	WEST WALL	0+93 - 14S	0.038
9	SOUTH WALL	0+103	0.026
10	BOTTOM	0+50 - 20S	6.5
11	BOTTOM	0+83 - 20S	27.0
12	SOUTH WALL	0+18W - 34S	0.017
13	EAST WALL	0+0 - 13S	ND
14	BOTTOM	0+13 - 13S	ND
15	BOTTOM	0+29 - 13S	ND
16	ICE	0+83 - 20S	0.038
17	BOTTOM	0+83 - 20S	7.060
18	EAST WALL	0+55 - 65N	1.028
19	BOTTOM	0+64 - 55N	ND
20	BOTTOM	0+64 - 80N	0.069
21	BOTTOM	0+72 - 27N	0.922
22	WEST WALL	0+90 - 62N	0.548
23	NORTH WALL	0+104 - 90N	1.2
24	WEST WALL	0+121 - 73N	0.255
25	BOTTOM	0+103 - 75N	ND
26	NORTH WALL	0+70 - 92N	0.404

Legend

- Confirmation Sample Point
- Perimeter PID and Dust Monitoring Points
- Existing Monitoring Well
- Former Structure (Previously Removed)
- Structure Demolished / Removed (2004)
- Proposed Excavation Area

NOTE:
ND - Not Detected

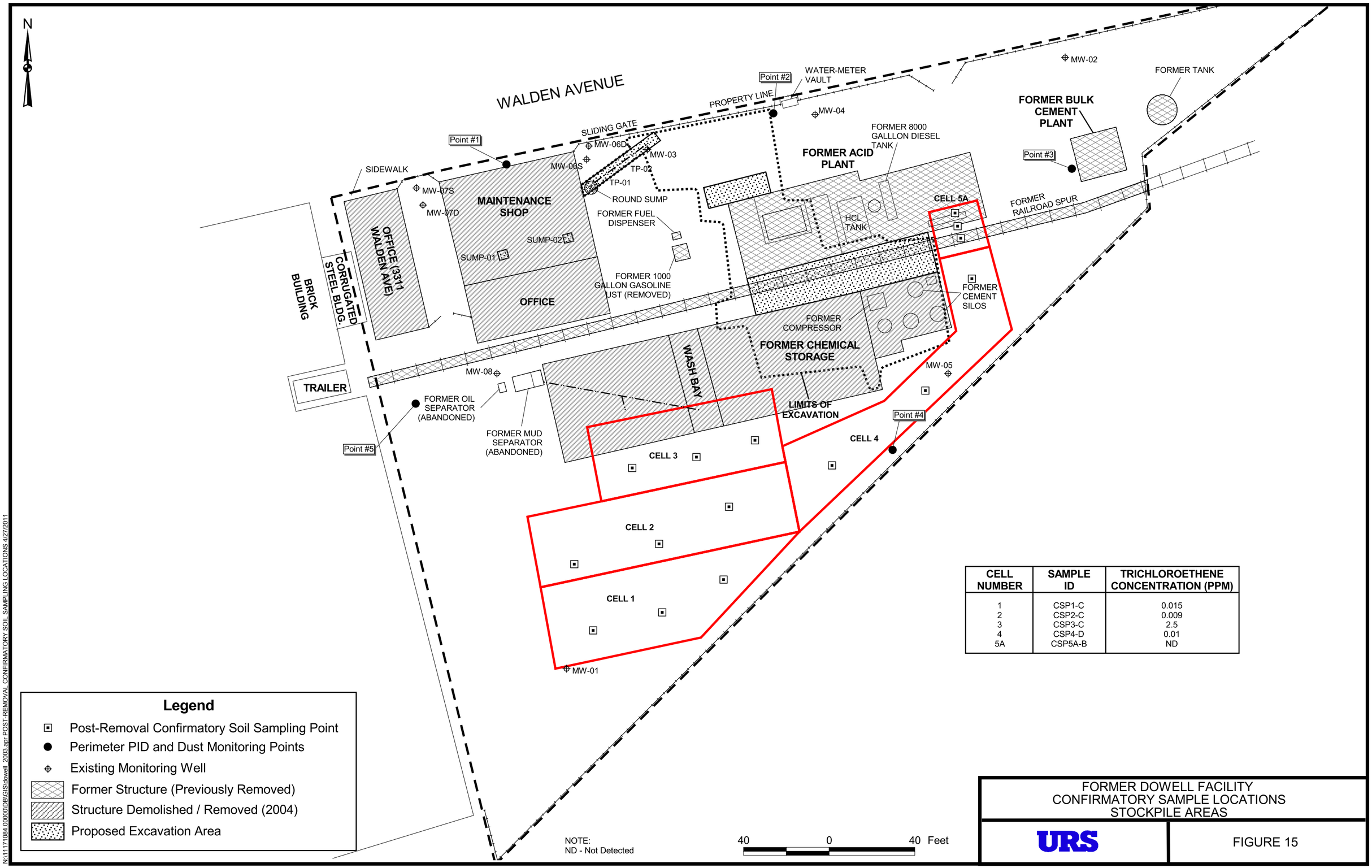
40 0 40 Feet

FORMER DOWELL FACILITY
CONFIRMATORY SAMPLE LOCATIONS
EXCAVATION AREAS

URS

FIGURE 14

N:\11171084.00000\DBG\GIS\dowell_2003.apr CONFIRMATORY SAMPLE LOCATIONS 4/27/2011



CELL NUMBER	SAMPLE ID	TRICHLOROETHENE CONCENTRATION (PPM)
1	CSP1-C	0.015
2	CSP2-C	0.009
3	CSP3-C	2.5
4	CSP4-D	0.01
5A	CSP5A-B	ND

FORMER DOWELL FACILITY
CONFIRMATORY SAMPLE LOCATIONS
STOCKPILE AREAS

URS

FIGURE 15

N:\11171084.00000\DB\GIS\dowell_2003.apr POST-REMOVAL CONFIRMATORY SOIL SAMPLING LOCATIONS 4/27/2011

APPENDIX A

METES AND BOUNDS

PROPOSED DESCRIPTION FOR PARCEL OF LAND
PRESENTLY OWNED BY
SCHLUMBERGER TECHNOLOGY CORPORATION
LIBER 10104, PAGE 433
(TAX ID # 104.09-1-14 & 15)

ALL THAT CERTAIN TRACT OR PARCEL OF LAND SITUATE in the Town of Lancaster, Village of Depew, County of Erie, State of New York, and being part of Lot No's Ten (10) and Twelve (12), Section Ten (10), Township Eleven (11) and Range Six (6) of the Holland Land Company's Survey and being more particularly described as follows:

Beginning at a point in the southerly line of Walden Avenue, formerly Ellicott Road, distant easterly nine hundred seventy six and two hundredths feet (976.02'Ms.,983.3'D.) as measured along same from the point of intersection of the southerly line of Walden Avenue with the center of Transit Road;

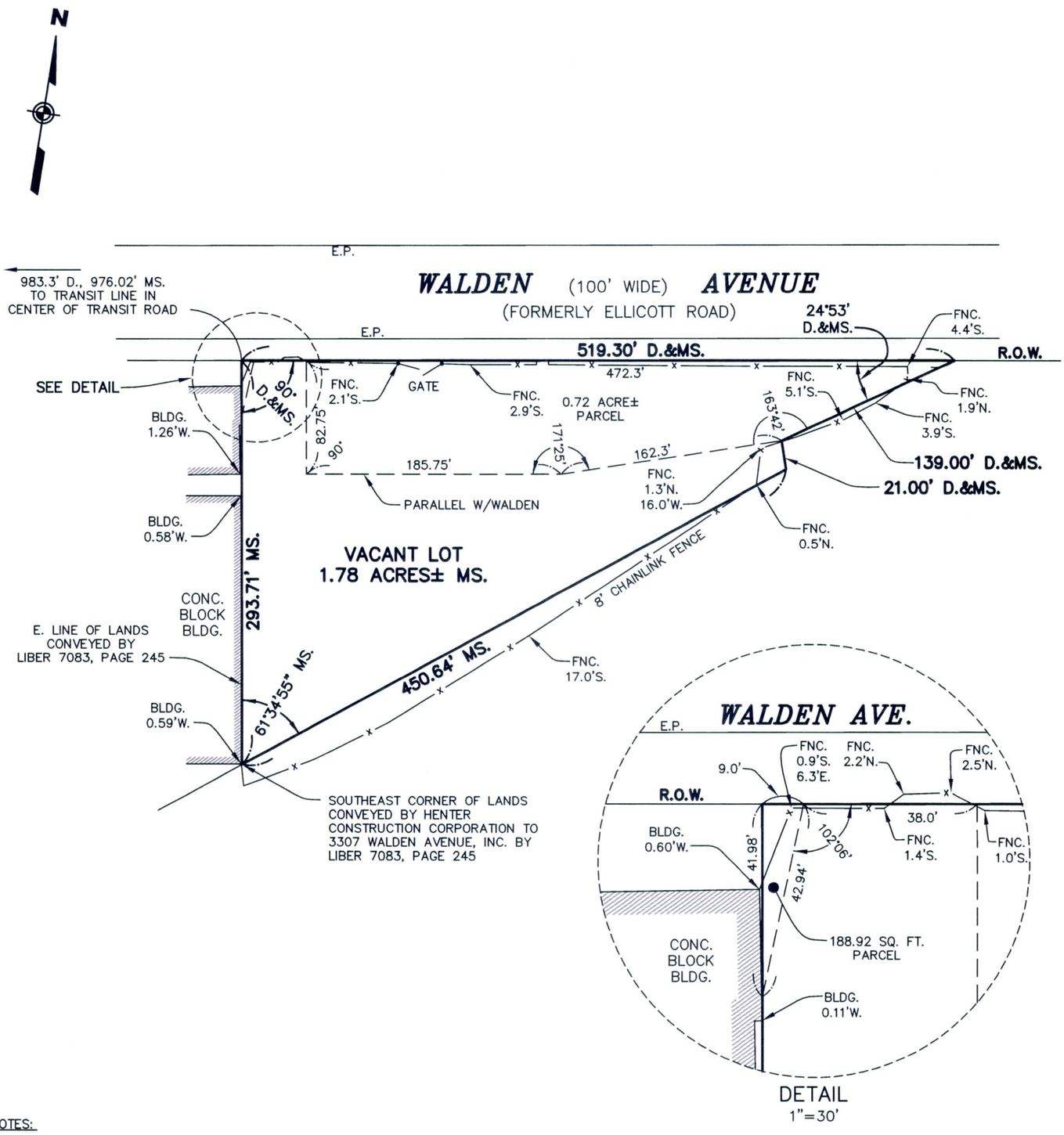
Thence easterly along the southerly line of said Walden Avenue, a distance of five hundred nineteen and thirty hundredths feet (519.30') to a point;

Thence southwesterly forming an interior angle of 24° 53' with the last described course, a distance of one hundred thirty nine and zero hundredths feet (139.00') to a point;

Thence southerly, a distance of twenty one and zero hundredths feet (21.00') to a point;

Thence southwesterly, a distance of four hundred fifty and sixty-four hundredths feet (450.64') to a point, said point being the southeast corner of lands conveyed by Henter Construction Corporation to 3307 Walden Avenue, Inc. by deed recorded in Erie County Clerk's Office in Liber 7083 at Page 245;

Thence northerly along east line of lands conveyed by said Henter Construction Corporation to 3307 Walden Avenue, Inc. by Liber 7083, Page 245, a distance of two hundred ninety three and seventy-one hundredths feet (293.71') to the true point or place of beginning, containing 1.78 acres of land, more or less.



DETAIL
1"=30'

NOTES:

1. A VIOLATION OF SECTION 7290, TO ANY SURVEY, DRAWING, DESIGN, PROVISION 2 OF THE NEW YORK STATE SPECIFICATION, PLAN, OR REPORT IS EDUCATION LAW. UNAUTHORIZED ALTERATION OR ADDITION
2. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.
3. THIS MAP VOID UNLESS EMBOSSED WITH NEW YORK STATE LICENSED LAND SURVEYORS SEAL NO. 049531

5/25/11

EARLE C. NEWMAN LIC. NO. 049531

MAP SHOWING BOUNDARY SURVEY OF PROPERTY OWNED BY
SCHLUMBERGER TECHNOLOGY CORPORATION
AT 3311–3315 WALDEN AVENUE, LANCASTER, NEW YORK
RECORD TITLE LIBER 10104, PAGE 433

PART OF LOT NO.S 10 & 12, TWP. 11, RANGE 6 HOLLAND LAND COMPANY SURVEY
VILLAGE OF DEPEW, TOWN OF LANCASTER, COUNTY OF ERIE AND STATE OF NEW YORK

RESURVEY		
DATE	JOB	DECRIPTION

URS Corporation
New York
77 Goodell Street
Buffalo, New York 14203
(716)856–5636 – (716)856–2545 fax

DRAWN BY J.J.S. SCALE 1"=100'
CHECKED BY E.C.N. DATE 4/25/11

JOB #11176414 SHEET _____

APPENDIX B

DECLARATION OF COVENANTS AND RESTRICTIONS

DECLARATION of COVENANTS and RESTRICTIONS

THIS COVENANT, made the 20th day of April 2005, by Schlumberger Technology Corporation, a Texas Corporation having an office at 300 Schlumberger Drive, Sugar Land, Texas 77478:

WHEREAS, the former Dowell Facility Site is the subject of a Voluntary Agreement ("Agreement"), executed by Commissioner John P. Cahill, New York State Department of Environmental Conservation (the "Department"), as part of the Department's Voluntary Cleanup Program, namely that parcel of real property located at 3311-3315 Walden Avenue in the Town of Depew, New York, County of Erie, which is part of lands conveyed by Dow Chemical Company to Schlumberger Technology Corporation ("Schlumberger") by deed dated April 13, 1984 and recorded in the Erie County Clerk's Office on November 16, 1989 in Book 010104 of Deeds at Page 433 and being more particularly described in Appendix "A," attached to this declaration and made a part hereof, and hereinafter referred to as "the Property"; and

WHEREAS, the Department approved a remedy to eliminate or mitigate all significant threats to the environment presented by the contamination disposed at the Property and such remedy requires that the Property be subject to restrictive covenants.

NOW, THEREFORE, Schlumberger, for itself and its successors and/or assigns, covenants that:

First, the Property subject to this Declaration of Covenants and Restrictions, is as shown on a map attached to this declaration as Appendix "B" and made a part hereof, and consists of the property described in the deeds attached hereto at Appendix "A".

Second, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsequently created to protect the environment of the State and the health of the State's citizens, hereinafter referred to as "the Relevant Agency," is first obtained, there shall be no construction, use or occupancy of the Property that results in the disturbance or excavation of the Property, which threatens the integrity of the soil cover, or which results in unacceptable human exposure to contaminated soils.

Third, the owner of the Property shall be responsible for implementation of the Operation and Maintenance Plan as stipulated in Section 7.0 – Operation and Maintenance Plan located on page 7-1 of the "Remedial Action Report, for the Former Dowell facility 3311-3315 Walden Avenue, Depew, New York, Dated July 2004, authored by URS Corporation or implement any modifications to the Operation and Maintenance Plan after obtaining written approval of the Relevant Agency.

Fourth, the owner of the Property shall prohibit the Property from ever being used for purposes other than for restricted industrial use without the express written waiver of such prohibition by the Relevant Agency.

Fifth, the owner of the Property shall prohibit the use of the groundwater underlying the Property without treatment rendering it safe for drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the Relevant Agency.

Sixth, the owner of the Property shall continue in full force an effect, the prohibition against uses other than restricted commercial and/or industrial uses, and shall assure that any requirements stipulated in the Operation and Maintenance Plan, remains as institutional and engineering controls required under the Agreement, and shall continue to implement and annually report on the status, results and effectiveness of the operation, monitoring and maintenance requirements to the Relevant Agency unless the owner first obtains permission to discontinue such controls from the Relevant Agency.

Seventh, this Declaration is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Property, and shall provide that the owner, and its successors and assigns, consents to enforcement by the Relevant Agency of the prohibitions and restrictions that Paragraph X of the Agreement requires to be recorded, and hereby covenants not to contest the authority of the Relevant Agency to seek enforcement.

Eighth, any deed of conveyance of the Property, or any portion thereof, shall recite, unless the Relevant Agency has consented to the termination of such covenants and restrictions, that said conveyance is subject to this Declaration of Covenants and Restrictions.

IN WITNESS WHEREOF, the undersigned has executed this instrument the day written below.

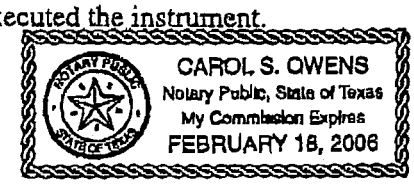
SCHLUMBERGER TECHNOLOGY CORPORATION

Dated: 04-29-05 By: _____

John Yearwood, President

STATE OF TEXAS)
COUNTY OF FORT BEND) ss.:

On this 29th day of April 2005, before me, the undersigned, a Notary Public in and for said State, personally appeared John Yearwood, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.



Carol S Owens
Notary Public

CONVEYANCE OF REAL PROPERTIES

TO DOWELL SCHLUMBERGER INCORPORATED

STATE OF NEW YORK :
:
COUNTY OF ERIE :

WHEREAS, pursuant to an Assets Agreement dated as of April 13, 1984, SCHLUMBERGER TECHNOLOGY CORPORATION ("STC"), a Texas corporation, whose principal place of business is located at 5000 Gulf Freeway, Houston, Texas 77023, acquired from THE DOW CHEMICAL COMPANY ("Dow"), a Delaware corporation, whose principal place of business is located at 2030 Willard H. Dow Center, Midland, Michigan 48640, an undivided one-half (1/2) interest in the "Dowell Business" as described in such Assets Agreement, including certain real properties situated in the above-named county and described in Exhibit "A" attached hereto;

WHEREAS, Dow and STC agreed in a Subscription Agreement dated as of April 13, 1984, that each would transfer its one-half interest in the Dowell Business, as previously acquired under the Assets Agreement, to Dowell Schlumberger Incorporated ("DSI"), a Delaware corporation, now located at 1125 North Dairy Ashford, Suite 600, Houston, Texas 77079;

WHEREAS, pursuant to such Subscription Agreement, Dow and STC now wish to convey to DSI their respective corporations' one-half interest to that part of the assets of the Dowell Business consisting of real properties located in the above-named county and described in Exhibit "A" attached hereto;

NOW, THEREFORE, in consideration of the premises and of ONE HUNDRED DOLLARS ($100.00) cash and other good and valuable consideration, the receipt of which is hereby acknowledged, Dow and STC do hereby GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER and DELIVER unto DSI, its successors and assigns, all right, title and interest of Dow and STC in and to the properties which are described in Exhibit A, attached hereto and made a part hereof for all purposes, together with the same interest in all improvements situated thereon; subject, however, to any restrictions, exceptions, reservations, conditions, limitations, contracts, agreements and other matters applicable to such properties. Dow and STC further give and grant unto DSI, its successors and assigns, all rights in and to all covenants and warranties by others heretofore given or made in respect of such properties, together with the power and right of substitution and subrogation in and to such covenants and warranties.

FOR DSI, its successors and assigns, to have and to hold the above-described properties in accordance with the terms hereof.

EXECUTED ON THE DATES OF THE RESPECTIVE ACKNOWLEDGMENTS HEREOF BUT EFFECTIVE as of April 13, 1984.

THE DOW CHEMICAL COMPANY

Attest:

By _____
E. H. Hancock
Vice President and
General Counsel
2020 Dow Center
Midland, Michigan 57802

Lois J. Eberlein
Assistant Secretary

SCHLUMBERGER TECHNOLOGY CORPORATION

By _____
Victor Grijalva, Vice President
5000 Gulf Freeway
Houston, Texas 77023

Attest:

_____
Robert F. Brant
Assistant Secretary

DOWELL SCHLUMBERGER INCORPORATED

By _____
Vice President
J. D. Calhoun
Executive Vice-President
1135 North Dairy Ashford, 5600
Houston, Texas 77079

Attest:

_____
Joan M. Payton
Assistant Secretary

RECEIVED
$ 16.00
REAL ESTATE
NOV 16 1989
TRANSFER TAX
9697 HARRIS COUNTY

STATE OF MICHIGAN :
: ss.
COUNTY OF MIDLAND :

On the 30th day of June, 1986, before me personally came [illegible] to me known, who, being by me duly sworn, did depose and say that he resides at Midland, Michigan, that he is the Vice President of THE DOW CHEMICAL COMPANY, the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

[illegible]
Notary Public, Midland County,
State of Michigan.

Name of Notary: [illegible]

My Commission Expires: _____

STATE OF TEXAS :
: ss.
COUNTY OF HARRIS :

On the 12 day of December, 1986, before me personally came [illegible] to me known, who, being by me duly sworn, did depose and say that he resides at Houston, Harris County, Texas, that he is the Vice President of SCHLUMBERGER TECHNOLOGY CORPORATION, the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

[illegible]
Notary Public, Harris County,
State of Texas.

Name of Notary: Ann Pek

My Commission Expires: 5/1/87

-4-

U-010104 F 434

STATE OF TEXAS :
:ss.
COUNTY OF HARRIS :

On the 12 day of December, 1986, before me personally came T.M. Matthews, to me known, who, being by me duly sworn, did depose and say that he resides at Houston, Texas (Harris County), that he is the Vice President of DOWELL SCHLUMBERGER INCORPORATED, the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

Cheryl A. Bowles
Notary Public, Harris County,
State of Texas.

Name of Notary: _____

My Commission Expires: _____

CHERYL A. BOWLES
NOTARY PUBLIC
STATE OF TEXAS
MY COMM. EXP. NOV. 22, 1987

FILED
1986 DEC 19 PM 3:18
COUNTY CLERK
HARRIS COUNTY, TEXAS

This instrument prepared by:

Carl Hendrix
Post Office Box 3307
Houston, Texas 77253-3307

-5-

U 010104 P 438

All that tract or Parcel of Land, situated in the Town ~~or City~~ of Depew, County of Erie, and State of New York.

OF LANCASTER, VILLAGE

LOCATION: Depew (Erie County), New York

GRANTOR: The New York Central Railroad Company

GRANTEE: The Dow Chemical Company

DOCUMENT NAME: Deed

DATE: 6-27-60

WHERE RECORDED: Liber 6567 Page 105

DESCRIPTION: 0.72 Acres

BEGINNING at a point in the southerly line of Walden Avenue (formerly Ellicott Road) distant easterly one thousand thirty and three tenths (1,030.3) feet as measured along the same from the point of intersection of the southerly line of Walden Avenue (formerly Ellicott Road) with the Transit Line in the center of the Transit Road; and running

Thence easterly, along the southerly line of Walden Avenue (formerly Ellicott Road), four hundred seventy-two and three tenths (472.3) feet;

Thence southwesterly, one hundred thirty-nine (139) feet along a line which on its northerly side forms an angle of 24°-53' with the last preceding course;

Thence southwesterly, one hundred sixty-two and three tenths (162.3) feet along a line which on its northerly side forms an angle of 163°-42' with the last preceding course;

Thence westerly, parallel with the southerly line of Walden Avenue (formerly Ellicott Road), one hundred eighty-five and seventy-five hundredths (185.75) feet, more or less, to a point in a line drawn southerly at right angles to the southerly line of Walden Avenue (formerly Ellicott Road) at the point of beginning;

Thence northerly, at right angles to the last preceding course, eighty-two and seventy-five hundredths (82.75) feet to the point and place of beginning;

CONTAINING seventy-two hundredths (0.72) of an acre of land, more or less.

Subject to an easement for the benefit of New York State Electric & Gas Corporation and New York Telephone Co. dated May 25, 1962.

All that tract or P cel of Land, situated in ' e Town of ~~City~~ of Depew, County of Erie, and State of New York.

LOCATION: Depew, New York (Erie County)

GRANTOR: Henry J. Gianadda and Peter J. Casarsa

GRANTEE: The Dow Chemical Company

DOCUMENT NAME: Warranty Deed DATE: 1/10/83

WHERE RECORDED: Liber 9199, Page 202, Erie County, N. Y.

DESCRIPTION: 1.25 Acre +/-

ALL THAT TRACT OR PARCEL OF LAND, situate in the Village of Depew, Town of Lancaster, County of Erie and State of New York, being parts of Lots Numbers ten (10) and twelve (12), Section ten (10), Township eleven (11), Range six (6) of the Holland Land Company's Survey, bounded and described as follows:-

BEGINNING at a point in the southerly line of New Walden Avenue, (formerly Ellicott Road), distant easterly nine hundred ninety-two and three tenths (992.3) feet as measured along the same from the point of intersection of the southerly line of New Walden Avenue, (formerly Ellicott Road) with the Transit Line in the center of the Transit Road, said point of beginning being the northeasterly corner of land conveyed by John F. C. Fahning and wife to Bernhard Fischer by deed dated September 28 1874 and recorded in the Erie County Clerk's Office in Liber 339 of Deeds at page 305, and running thence easterly along the southerly line of New Walden Avenue, (formerly Ellicott Road), thirty-eight (38) feet; thence southerly at right angles to the southerly line of New Walden Avenue, (formerly Ellicott Road), eighty-two and seventy-five hundredths (82.75) feet; thence easterly, parallel with the southerly line of New Walden Avenue, (formerly Ellicott Road) one hundred eighty-five and seventy-five hundredths (185.75) feet; thence northeasterly along a line making an exterior angle of 171° 25' with the last preceding course, one hundred sixty-two and three tenths (162.3) feet; thence southeasterly at right angles to the last preceding course, twenty-one (21) feet; thence southwesterly five hundred nineteen and one tenth (519.1) feet more or less to the northeasterly corner of that parcel of land conveyed by John Fahning, et al to The New York Central and Hudson River Railroad Company by deed dated April 6 1870 and recorded in the Erie County Clerk's Office in Liber 340 of Deeds at page 152; thence northerly three hundred thirty-four and thirty hundredths

Exhibit "A"
Page 2 of #1 010104 P 436

All that tract or Parcel of Land, situated in the Town ~~or City~~ OF LANCASTER, VILLAGE of Depew, County of Erie, and State of New York.

LOCATION: Depew, New York PAGE TWO

GRANTOR: Henry J. Gianadda and Peter J. Casarsa

GRANTEE:

DOCUMENT NAME: DATE:

WHERE RECORDED:

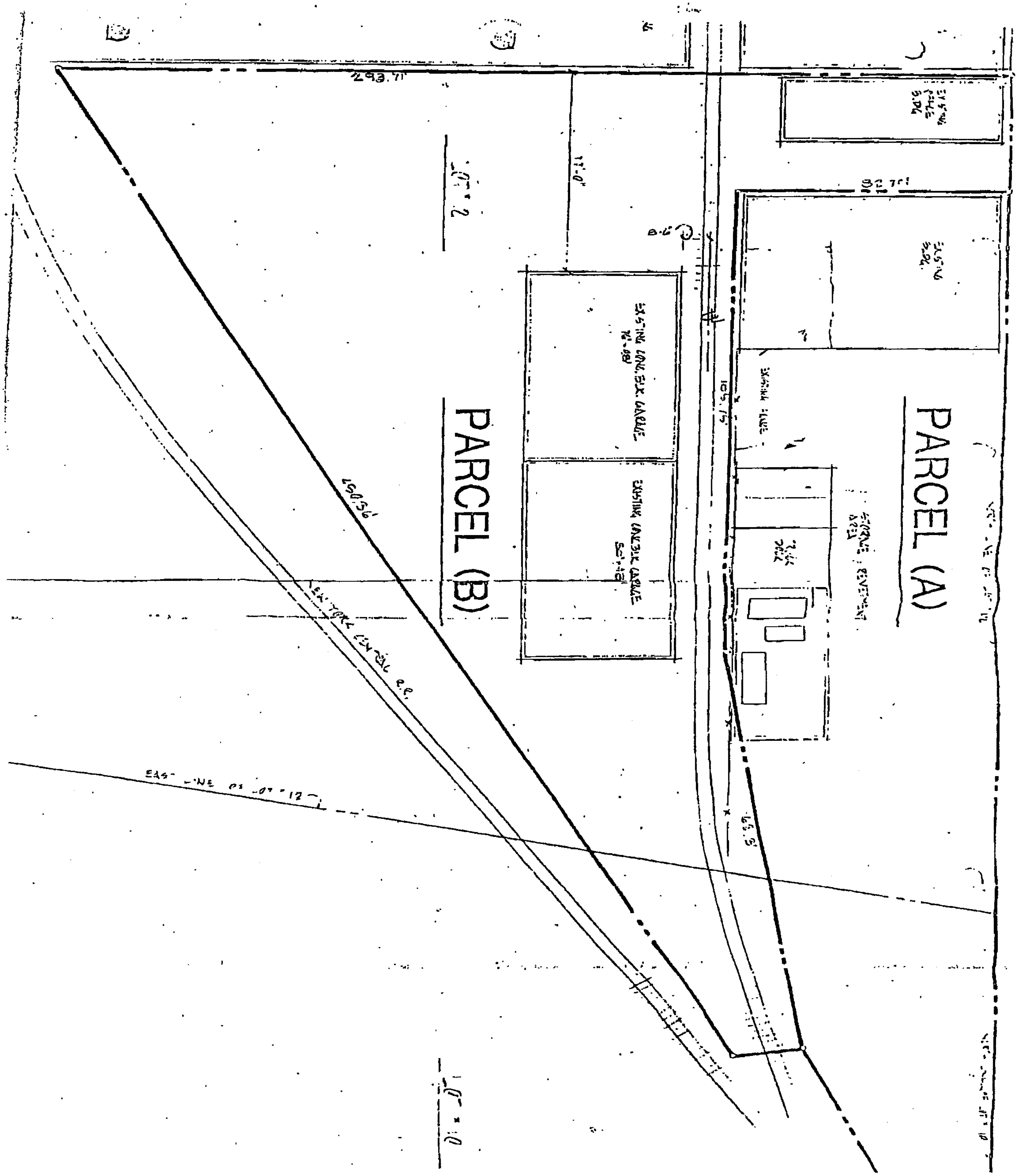
DESCRIPTION:

(334.30) feet more or less to the point and place of beginning, being also along the easterly line of land conveyed to Bernhard Fischer by deed dated and recorded as aforesaid, containing one and twenty-five hundredths (1.25) acres of land, more or less.

EXCEPTING AND RESERVING that part conveyed to 3307 Walden Avenue Inc. by deed recorded in Erie County Clerk's Office in Liber 7083 of Deeds at page 245.

ALSO ALL THAT TRACT OR PARCEL OF LAND situate in the Village of Depew, Town of Lancaster, County of Erie and State of New York, being part of Lot Number twelve (12), Section ten (10), Township eleven (11), Range six (6) of the Holland Land Company's Survey, bounded and described as follows:-

BEGINNING at a point in the southerly line of New Walden Avenue distant nine hundred eighty-three and three tenths (983.3) feet east from the Transit Line in the center line of Transit Rd said point of beginning being also nine (9) feet west of the nort easterly corner of lands conveyed by John F. C. Fanning to Bernha Fischer by deed recorded in the Erie County Clerk's Office in Lib 339 of Deeds at page 305; running thence easterly along the south line of New Walden Avenue, nine (9) feet to the northeasterly corner of said lands conveyed to Bernhard Fischer, said point bei also the northwesterly corner of lands conveyed to Hunter Constru tion Corporation by deed recorded in the Erie County Clerk's Off. in Liber 7033 of Deeds at page 463; running thence southerly for an exterior angle of 101° 06' and along the west line of lands s conveyed to Hunter Construction Corporation, forty-two and nine four hundredths (42.94) feet to their intersection with a line drawn at right angles from the point of beginning; running thenc northerly along said right angle line, forty-one and ninety-eig hundredths (41.98) feet to the place of beginning.


PARCEL (A)
PARCEL (B)

APPENDIX C

EXCAVATION WORK PLAN

APPENDIX C – EXCAVATION WORK PLAN

This Excavation Work Plan (EWP) is generated to provide guidance for the CONSULTANT or CONTRACTOR who is assigned to perform intrusive work at the Site or encounter or disturb the Remaining Contamination on site. As further discussed below, this EWP requires an Addendum from the CONSULTANT or CONTRACTOR be submitted to NYSDEC that includes project-specific details and supplements to this EWP as pertinent for the tasks to be completed.

This EWP is prepared in accordance with the guidelines provided in the New York State Department of Environmental Conservation (NYSDEC) Technical Guidance for Site Investigation and Remediation dated May 2010 (DER-10).

C-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the site owner or their representative will notify the Department. Currently, this notification will be made to:

Mr. Martin Doster, P.E.
Regional Hazardous Waste Remediation Engineer

NYSDEC – Region 9
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7220

This notification shall include an Addendum to this EWP that will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the ground surface, and estimated volumes of contaminated soil to be excavated,
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work,

- A summary of the applicable components of this EWP,
- The Addendum will define the scope of work (i.e., shallow excavation above the water table with immediate disposal, deeper excavation requiring fluid management and/or stockpiling soil on site) and identify the applicable components of an EWP for this scope. A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120,
- A copy of the contractor's health and safety plan, in electronic format, that meets the requirements of the HASP provided in Appendix D of this document,
- Identification of disposal facilities for potential waste streams,
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

C-2 SOIL SCREENING METHODS

Previous site investigations have identified volatile organic compounds (VOCs) in the soil at various locations across the site. These consist primarily of tetrachloroethene (PCE), trichloroethylene (TCE), 1,1,1–dichloroethane (1,1,1-DCA), and 1,1,1–dichloroethene (1,1,1-DCE). Figures 14 and 15 in the Site Management Plan (SMP) illustrate the confirmatory soil sample locations and the concentration of any detected VOCs remaining in the soil following site remediation. These figures only indicate the results of the soil samples collected and interpretation of impact is limited to only the sample locations. For the most part, the confirmatory data has indicated that VOC concentrations in soil at the site are below the 6NYCRR Part 375 SCOs for unrestricted use. During the development of the Addendum, the CONSULTANT or CONTRACTOR will evaluate whether the proposed excavation area extends into known or potentially contaminated material (Remaining Contamination), and whether additional sampling is required.

Visual, olfactory and instrument-based soil screening (i.e. photoionization detector or PID) will be performed by a qualified environmental professional during all remedial and development excavations into these areas or if the onsite crew identifies any signs of contamination during excavation activities). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive

work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

In addition to the field screening, potentially contaminated on-site soil/fill (i.e. material that is visibly stained, odorous, or produces elevated PID readings), should be properly stockpiled and sampled at a frequency dictated by the quantity excavated, in accordance with Table 5.4(e)10 of DER-10. At least one sample will be collected from each excavation if the soil/fill does not exhibit visible or olfactory evidence of contamination. These samples shall be tested for VOCs (as necessary), and the reported concentrations shall be compared to applicable (i.e., restricted commercial use) SCOs for the site, as listed in Table 2 of the SMP. The CONSULTANT or CONTRACTOR shall evaluate the potential for soil re-use or off-site disposal at a permitted facility based on the criteria presented in Table 5.4(e)4 of DER-10. If evaluation of the excavated soils concludes that the soil is not adequate for site re-use, additional testing may be required to further classify the material for hazardous characteristics for disposal purposes.

Soils will be segregated based on previous environmental data and field screening results and/or anticipated analytical results. Common segregation units include material that requires off-site disposal, material that can be returned to the subsurface, and material that can be used as cover soil. Please note that screening results for a defined segregated pile will be representative of the entire volume and if the CONSULTANT or CONTRACTOR elects to further segregate a defined pile, additional testing and evaluation will be required for each redistributed pile.

C-3 STOCKPILE METHODS

The Addendum shall provide the anticipated extent of stockpiling (anticipated cubic yards piled in a defined location on site covering a specified square area) for the scope of work and the proposed erosion and sedimentation controls for stockpiles.All stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC.

C-4 MATERIALS EXCAVATION AND LOAD OUT

The Addendum will provide details regarding the extent of excavation (i.e., cubic yards, location of excavation and depth) and load out as part of the scope of work and the proposed methods to be followed for materials loading and on-site management prior to leaving the siteA qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The current owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this EWP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

C-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks loaded with site materials will exit the vicinity of the site using only approved truck routes, to the extent practicable. When selecting the most appropriate route, the following factors are to be taken into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; (g) community input (where necessary). The Addendum will propose the routes to be used.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

C-6 MATERIALS DISPOSAL OFF-SITE

The Addendum will propose the methods to be followed for materials disposal off-site, including the off-site disposal locations for excavated soil. All soil/fill/solid waste excavated and removed from the site will be treated as contaminated and regulated material unless analytical data confirms otherwise. Any contaminated and regulated material will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic

Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at a minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

C-7 MATERIALS REUSE ON-SITE

Any material originating from the site can be reused on site provided sampling demonstrates compliance with the restricted commercial use SCOs defined in 6 NYCRR Part 375-6.8(b). Soil sampling will be conducted in accordance with Section C-2. The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site.

On site stockpiling or storage will follow the methods discussed in Section C-3. Planned sizes and locations of stockpiles on site will be provided in the Addendum.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

C-8 FLUIDS MANAGEMENT

Shallow groundwater on Site has historically been encountered at depths ranging from less than one foot to six feet below ground surface. Consequently, preparations should be made to address fluid management for all excavations.

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface

or subsurface of the site, but will be managed off-site unless otherwise approved by the NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

C-9 SITE RESTORATION

After the completion of soil removal and any other invasive activities the site will be restored in a manner that complies with the SMP, which serves as the controlling document for the ICs required in the Declaration of Covenants and Restrictions. If a "Remaining Contamination Zone", or newly identified area of contamination is encountered, a demarcation layer, consisting of orange snow fencing material or equivalent material will be placed in the excavation during backfilling activities to provide a visual reference to the top of the contaminated layer. The remainder of the excavation will be backfilled with onsite or imported soil/fill material meeting the requirements of this SMP (Sections C-7 and C-10).

C-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 1. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

C-11 STORMWATER POLLUTION PREVENTION

Silt fencing or hay bales will be installed around the entire perimeter of the construction area. Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

C-12 CONTINGENCY PLAN

Upon the discovery of an unknown source of contamination that may require remediation (i.e. underground storage tanks [USTs], stained soil, drums, etc.), all field activities shall be halted and appropriate notifications shall be made to ensure that emergency response and cleanup is conducted as necessary, including pumping fluids from discovered tanks, containers, or the excavation/pit and properly containing the fluids. Identification of unknown or unexpected contaminated media (confirmed by screening) during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. If applicable, reportable quantities of petroleum product

will also be reported to the NYSDEC spills hotline. The CONSULTANT will develop a remedial investigation work plan to investigate the nature and extent of the discovered source of contamination for NYSDEC review and approval. Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for full a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

C-13 COMMUNITY AIR MONITORING PLAN

Guidance for Community Air Monitoring is contained in Appendix E

In general, the prevailing winds at the site are out of the southwest. Consequently, the upwind stations should be established on the southwest side of the work areas, and the downwind stations located on the northeast side of the work area. The exact locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. If a sensitive receptor, such as a school, day care or residential area is adjacent to the site, a fixed monitoring station should be located at that site perimeter, regardless of wind direction, and discussed in the text.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

C-14 ODOR CONTROL PLAN

Based on the current understanding of the site conditions, it is not anticipated that a large scale odor nuisance will be encountered. Regardless, this odor control plan includes appropriate measures of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include limiting the size

of excavations and stockpiles and covering them when not active. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

Various control measures will be employed to prevent on- and off-site nuisances. At a minimum, these measures may include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils;. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances may be implemented, including: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

C-15 DUST CONTROL PLAN

The Addendum shall include a dust suppression plan that addresses the anticipated dust management during invasive on-site work, taking into account the scope of work, anticipated area to be affected, and the seasonal conditions. If the extent of anticipated excavation requires it, the dust control plan will include the items listed below:

- Dust suppression will be achieved though the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon

capable of spraying water directly onto off-road areas including excavations and stockpiles.

- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

C-16 OTHER NUISANCES

A plan for rodent control will be developed as part of the Addendum and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

TABLE 1
BACKFILL - SOIL QUALITY STANDARDS
FORMER DOWELL FACILITY - SITE MANAGEMENT PLAN

		Table 375-6.8(b): Restricted Use Soil Cleanup Objectives		
		Protection of Public Health	Protection of Ecological Resources	Protection of Ground-water
Contaminant	CAS Number	Commercial		
Metals				
Aluminum	7429-90-5	--	--	--
Antimony	7440-36-0	--	--	--
Arsenic	7440-38-2	16[f]	13[f]	16[f]
Barium	7440-39-3	400	433	820
Beryllium	7440-41-7	590	10	47
Cadmium	7440-43-9	9.3	4	7.5
Calcium	7440-70-2	--	--	--
Chromium, hexavalent [e]	18540-29-9	400	1[e]	19
Chromium, trivalent [e]	16065-83-1	1,500	41	NS
Cobalt	7440-48-4	--	--	--
Copper	7440-50-8	270	50	1,720
Total Cyanide [e, f]	57-12-5	27	NS	40
Iron	7439-89-6	--	--	--
Lead	7439-92-1	1,000	63[f]	450
Manganese	7439-96-5	10,000 [d]	1600[f]	2,000[f]
Magnesium	7439-95-4	--	--	--
Total Mercury	7439-97-6	2.8[j]	0.18[f]	0.73
Nickel	7440-02-0	310	30	130
Potassium	7440-09-7	--	--	--
Selenium	7782-49-2	1,500	3.9[f]	4[f]
Silver	7440-22-4	1,500	2	8.3
Sodium	7440-23-5	--	--	--
Thallium	7440-28-0	--	--	--
Vanadium	7440-62-2	--	--	--
Zinc	7440-66-6	10,000 [d]	109[f]	2,480
PCBs/Pesticides				
2,4,5-TP Acid (Silvex)[f]	93-72-1	500[b]	NS	3.8
2,4,5-T	93-76-5	--	--	--
2,4-D	94-75-7	--	--	--
4,4'-DDE	72-55-9	62	0.0033 [e]	17
4,4'-DDT	50-29-3	47	0.0033 [e]	136
4,4'-DDD	72-54-8	92	0.0033 [e]	14
Aldrin	309-00-2	0.68	0.14	0.19
alpha-BHC	319-84-6	3.4	0.04[g]	0.02
beta-BHC	319-85-7	3	0.6	0.09
Chlordane (alpha)	5103-71-9	24	1.3	2.9
gamma-Chlordane	5103-74-2	--	--	--
Chlordane	57-74-9	--	--	--
delta-BHC [g]	319-86-8	500[b]	0.04[g]	0.25

TABLE 1
BACKFILL - SOIL QUALITY STANDARDS
FORMER DOWELL FACILITY - SITE MANAGEMENT PLAN

		Table 375-6.8(b): Restricted Use Soil Cleanup Objectives		
		Protection of Public Health	Protection of Ecological Resources	Protection of Ground-water
Contaminant	CAS Number	Commercial		
Dibenzofuran [f]	132-64-9	350	NS	210
Dieldrin	60-57-1	1.4	0.006	0.1
Endosulfan I [d, f]	959-98-8	200[i]	NS	102
Endosulfan II [d, f]	33213-65-9	200[i]	NS	102
Endosulfan sulfate [d, f]	1031-07-8	200[i]	NS	1,000[c]
Endrin	72-20-8	89	0.014	0.06
Heptachlor	76-44-8	15	0.14	0.38
Heptachlor epoxide	1024-57-3	--	--	--
Lindane	58-89-9	9.2	6	0.1
Methoxychlor	72-43-5	--	--	--
Parathion	56-38-2	--	--	--
PCBs - surface	1336-36-3	1	1	3.2
PCBs - subsurface	1336-36-3	1	1	3.2
2,3,7,8-TCDD (Dioxin)	1746-01-6			
Semivolatile organic compounds				
2-Chlorophenol	95-57-8	--	--	--
2-Methylnaphthalene	91-57-6	--	--	--
2-Nitroaniline	88-74-4	--	--	--
2-Nitrophenol	88-75-5	--	--	--
2,4-Dichlorophenol	120-83-2	--	--	--
2,4-Dinitrophenol	51-28-5	--	--	--
2,6-Dinitrotoluene	606-20-2	--	--	--
2,4,5-Trichlorophenol	95-95-4	--	--	--
3-Nitroaniline	99-09-2	--	--	--
4-Chloroaniline	106-47-8	--	--	--
4-Chloro-3-methylphenol	59-50-7	--	--	--
4-Nitrophenol	100-02-7	--	--	--
Acenaphthene	83-32-9	500[b]	20	98
Acenaphthylene [f]	208-96-8	500[b]	NS	107
Aniline	62-53-3	--	--	--
Anthracene [f]	120-12-7	500[b]	NS	1,000[c]
Benzo(a)anthracene [f]	56-55-3	5.6	NS	1[f]
Benzo(a)pyrene	50-32-8	1[f]	2.6	22
Benzo(b)fluoranthene [f]	205-99-2	5.6	NS	1.7
Benzo(g,h,i)perylene [f]	191-24-2	500[b]	NS	1,000[c]
Benzo(k)fluoranthene [f]	207-08-9	56	NS	1.7
bis(2-Ethylhexyl)phthalate	117-81-7	--	--	--
Butylbenzylphthalate	85-68-7	--	--	--
Chrysene [f]	218-01-9	56	NS	1[f]
Dibenz(a,h)anthracene [f]	53-70-3	0.56	NS	1,000[c]

TABLE 1
BACKFILL - SOIL QUALITY STANDARDS
FORMER DOWELL FACILITY - SITE MANAGEMENT PLAN

		Table 375-6.8(b): Restricted Use Soil Cleanup Objectives		
		Protection of Public Health	Protection of Ecological Resources	Protection of Ground-water
Contaminant	CAS Number	Commercial		
Diethylphthalate	84-66-2	--	--	--
Dimethylphthalate	131-11-3	--	--	--
Di-n-butylphthalate	84-74-2	--	--	--
Di-n-octylphthalate	117-84-0	--	--	--
Fluoranthene [f]	206-44-0	500[b]	NS	1,000[c]
Fluorene	86-73-7	500[b]	30	386
Indeno(1,2,3-cd)pyrene [f]	193-39-5	5.6	NS	8.2
Isophorone	78-59-1	--	--	--
2-Methylphenol (m-Cresol) [f]	108-39-4	500[b]	NS	0.33[e]
Naphthalene [f]	91-20-3	500[b]	NS	12
Nitrobenzene	98-95-3	--	--	--
3-methylphenol (o-Cresol) [f]	95-48-7	500[b]	NS	0.33[e]
4-Methylphenol (p-Cresol) [f]	106-44-5	500[b]	NS	0.33[e]
Pentachlorophenol	87-86-5	6.7	0.8[e]	0.8[e]
Phenanthrene [f]	85-01-8	500[b]	NS	1,000[c]
Phenol	108-95-2	500[b]	30	0.33[e]
Pyrene [f]	129-00-0	500[b]	NS	1,000[c]
Volatile organic compounds				
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	--	--	--
1,1,1-Trichloroethane [f]	71-55-6	500[b]	NS	0.68
1,1,2,2-Tetrachloroethane	79-34-5	--	--	--
1,1-Dichloroethane [f]	75-34-3	240	NS	0.27
1,1-Dichloroethene [f]	75-35-4	500[b]	NS	0.33
1,2,3-Trichloropropane	96-18-4	--	--	--
1,2,4-Trichlorobenzene	120-82-1	--	--	--
1,2-Dichlorobenzene [f]	95-50-1	500[b]	NS	1.1
1,2-Dichloroethane	107-06-2	30	10	0.02[f]
cis -1,2-Dichloroethene [f]	156-59-2	500[b]	NS	0.25
trans-1,2-Dichloroethene [f]	156-60-5	500[b]	NS	0.19
1,3-Dichlorobenzene [f]	541-73-1	280	NS	2.4
1,3-Dichloropropane	142-28-9	--	--	--
1,4-Dichlorobenzene	106-46-7	130	20	1.8
1,4-Dioxane	123-91-1	130	0.1[e]	0.1[e]
4-Methyl-2-Pentanone	108-10-1	--	--	--
Acetone	67-64-1	500[b]	2.2	0.05
Benzene	71-43-2	44	70	0.06
Benzoic Acid	65-85-0	--	--	--
n-Butylbenzene [f]	104-51-8	500[b]	NS	12
Carbon Disulfide	75-15-0	--	--	

TABLE 1
BACKFILL - SOIL QUALITY STANDARDS
FORMER DOWELL FACILITY - SITE MANAGEMENT PLAN

		Table 375-6.8(b): Restricted Use Soil Cleanup Objectives		
		Protection of Public Health	Protection of Ecological Resources	Protection of Ground-water
Contaminant	CAS Number	Commercial		
Carbon tetrachloride [f]	56-23-5	22	NS	0.76
Chlorobenzene	108-90-7	500[b]	40	1.1
Chloroethane	75-00-3	--	--	--
Chloroform	67-66-3	350	12	0.37
Dibromochloromethane	124-48-1	--	--	--
Ethylbenzene [f]	100-41-4	390	NS	1
Hexachlorobenzene [f]	118-74-1	6	NS	3.2
Isopropylbenzene	98-82-8	--	--	--
Methyl ethyl ketone	78-93-3	500[b]	100[a]	0.12
Methyl tert-butyl ether [f]	1634-04-4	500[b]	NS	0.93
Methylene chloride	75-09-2	500[b]	12	0.05
n - Propylbenzene [f]	103-65-1	500[b]	NS	3.9
sec-Butylbenzene [f]	135-98-8	500[b]	NS	11
tert-Butylbenzene [f]	98-06-6	500[b]	NS	5.9
Tetrachloroethene	127-18-4	150	2	1.3
Toluene	108-88-3	500[b]	36	0.7
Trichloroethene	79-01-6	200	2	0.47
1,2,4-Trimethylbenzene [f]	95-63-6	190	NS	3.6
1,3,5-Trimethylbenzene [f]	108-67-8	190	NS	8.4
Vinyl chloride [f]	75-01-4	13	NS	0.02
Xylene (mixed)	1330-20-7	500[b]	0.26	1.6

All soil cleanup objectives (SCOs) are in parts per million (ppm).

Restricted Use Footnotes

All soil cleanup objectives (SCOs) are in parts per million (ppm). NS=Not specified. See

[a] The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

[b] The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD

[c] The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

[d] The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

[e] For constituents where the calculated SCO was lower than the contract required

[f] For constituents where the calculated SCO was lower than the rural soil background

[g] This SCO is derived from data on mixed isomers of BHC.

[h] The SCO for this specific compound (or family of compounds) is considered to be met if

[i] This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

[j] This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts).

APPENDIX D

SAMPLE HEALTH AND SAFETY PLAN

FORMER DOWELL FACILITY

SAMPLE HEALTH AND SAFETY PLAN

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APPENDICES

1.0 INTRODUCTION

This Health and Safety Plan (HASP) includes appropriate health and safety procedures to be followed by all personnel during site activities at and in the vicinity of the Former Dowell Facility in the Village of Depew, Erie County, New York. The objective of this Health & Safety Plan (HASP) is to assign responsibilities, establish personal protection standards and mandatory safety procedures, and provide for contingencies that may arise while performing various site activities. The goal of this HASP is to establish a practical and effective program for the prevention of and response of accidents, incidents, injuries, illnesses and the protection of employees and property. Achieving these goals and objectives requires the promotion of the attitude that injuries, illnesses and losses are "not an acceptable part of the work" in construction. Safety is a core value and will receive top priority, support, and the participation of Management and staff as well as that of all parties involved in site activities. This HASP is in general compliance with, but does not replace, Federal Occupational, Safety, and Health Administration (OSHA) Regulations, as set forth in 29 Code of Federal Regulations (CFR) Parts 1910 and 1926, and applicable state regulations.

Personnel who will be involved in intrusive activities on site will be required to complete the appropriate waste site worker training as required by OSHA 1910.120(e)(2), 1910.120(e)(3), and 1910.120(e)(8), as applicable, and the required medical surveillance as required by OSHA 1910.120(f). Copies of training certificates and medical surveillance certification for all personnel will be required to be maintained on site.

Anticipated field activities at the site may include the following:

A.

B.

C.

D.

E.

The procedures presented in this plan comply with (but are not limited to) the following regulatory or guidance documents:

- ACGIH-0111, 2011 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.
- ACGIH-0389, Guide to Occupational Exposure Values - 2011.
- ACGIH-9090, Quick Selection Guide of Chemical Protective Clothing, 5th Edition.
- 29 CFR Part 1904, Recording and Reporting Occupational Injuries and Illnesses.
- 29 CFR Part 1910, Occupational Safety and Health Standards, especially Part 1910.120-Hazardous Waste Site Operations and Emergency Response.
- 29 CFR Part 1926, Safety and Health Regulations for Construction, especially Part 1926.65-Hazardous Waste Site Operations and Emergency Response.
- 49 CFR Part 171, General Information, Regulations, and Definitions.
- 49 CFR Part 172, Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements.
- NIOSH Pub. No. 85-115, (October 1985) NIOSH/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.
- NIOSH Pub. No. 2005-149, (September 2005) NIOSH Pocket Guide to Chemical Hazards.

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2.0 RESPONSIBILITIES

The following is a summary of the health and safety responsibilities of various project personnel.

2.1 Project Manager

The Project Manager (PM) has overall responsibility for all onsite operations. The PM may delegate all or part of these duties to a properly qualified employee who is designated as the Site Manager or Site Superintendent. The PM, or as delegated, has primary responsibility for the following.

- Reviewing, approving, and assuring compliance with this project HASP.
- Seeing that appropriate PPE and monitoring equipment are available and properly used by all onsite employees.
- Establishing that personnel are aware of the provisions of this HASP, are instructed in the work practices necessary to ensure safety, and are familiar with planned procedures for dealing with emergencies.
- Establishing that all onsite personnel have completed a minimum of 40 hours of health and safety training (and appropriate annual refreshers), have appropriate medical clearance, as required by 29 CFR 1910.120, and have been fit tested for the appropriate respirators.
- Seeing that personnel are aware of the potential hazards associated with site operations.
- Monitoring the safety performance of all personnel to see that required work practices are employed.
- Correcting any work practices or conditions that may result in injury or exposure to hazardous substances.
- Preparing any accident/incident reports for activities.
- Seeing to the completion of Safety Plan Compliance Agreements by site personnel.
- Halting site operations, if necessary, in the event of an emergency or to correct unsafe work practices.
- Seeing that utility clearances are obtained prior to the commencement of work.

2.2 Project Health and Safety Officer

The responsibilities of the Project Health and Safety Officer (HSO) are to develop and coordinate the Site Health and Safety Program, and to provide necessary direction and supervision to the Site HSO. The Project HSO will conduct the initial site-specific training session (Onsite Health and Safety Briefing), and will review and confirm changes in personal protection requirements when site conditions are found to be different from those originally anticipated.

2.3 Site Health and Safety Officer

The responsibilities of the Site HSO are as follows:

- Implement this HASP
- Enforce day-to-day health and safety protocols in effect on the site

Require that all workers who will be involved in intrusive activities on the site have had appropriate waste site worker training and medical examinations, and review and maintain training and medical certifications on site

- Require that all personnel entering the site understand the provisions of this HASP
- Conduct periodic training sessions in proper use and maintenance of PPE and safety practices
- Conduct periodic emergency response drills
- Conduct daily health and safety meetings each morning
- Advise onsite personnel, visitors, and subcontractor HSO on all aspects, especially changes, related to health and safety requirements at the site
- Conduct necessary health and safety monitoring
- Monitor site conditions and determine all necessary changes in levels of personal protection and, if warranted, execute work stoppages
- Report changes in site conditions and changes in personal protection requirements to the Project HSO
- Prepare accident/incident reports

2.4 Field Team Personnel

Field team personnel will be responsible for understanding and complying with site health and safety requirements. Field team personnel on site will be trained in first aid and CPR, and will be certified by the American Red Cross. Field team personnel will have completed the required waste site worker training to comply with 29 CFR, Part 1910.120.

A chain-of-command chart for implementation of this Health and Safety Plan is presented in Figure D2-1.

3.0 SITE DESCRIPTION AND HISTORY

Site description and history is presented in Section 1.2 of the Site Management Plan for the Former Dowell Facility.

4.0 TRAINING REQUIREMENTS

All personnel conducting field activities on site are required to be certified in health and safety practices for hazardous waste operations as specified in the Federal OSHA Regulations (29 CFR 1910.120). Paragraph (e) (2) of the above-referenced regulations requires that each employee, at the time of job assignment, receive a minimum of 40 hours of initial instruction off the site, and a minimum of three days of supervised field experience.

Paragraph (e) (3) of the above-referenced regulations requires that all onsite management and supervisory personnel directly responsible for, or who supervise employees engaged in hazardous waste operations, must initially receive eight hours of additional specialized training. Management and supervisory training must emphasize health and safety practices related to managing hazardous waste work.

Paragraph (e)(8) of the above-referenced regulations requires that workers and supervisors receive eight hours of refresher training annually on the items specified in Paragraph (e)(1) and/or (e)(3).

Additionally, all personnel must receive adequate site-specific training, in the form of an Onsite Health and Safety Briefing given by the Project HSO or Site HSO prior to participating in onsite field work. This will involve a review of this HASP with emphasis on the following:

- Protection of the adjacent community from hazardous substances which may be released during intrusive activities

- Attention to health effects and hazards of substances known to be present on site

- Attention to physical hazards on site, and the importance of knowing proper means of avoiding these hazards

- Health hazards, protective measures, emergency and first aid measures, fire and explosion information, reactivity, incompatible materials, and emergency procedures for spills of hazardous chemicals brought onto the site for use during normal field operations

- Hazards and protection against heat/cold

- The need for vigilance in personal protection, and the importance of attention to proper use, fit, and care of personal protective equipment and the effectiveness and limitations of personal protective equipment

- Prescribed decontamination procedures

- Site control, including work zones, access, and security

- The proper observance of daily health and safety practices, such as the entry and exit of work zones and site, proper hygiene during lunch, break, etc.

- Recognition in oneself or in others of physical conditions requiring immediate medical attention, and application of simple first aid measures

- Emergency procedures to be followed (with rehearsals) in cases of fire, explosion, or sudden release of hazardous gases

Health and Safety Meetings (tailgate meetings) will be conducted daily by the Site HSO and will cover protective clothing and other equipment to be used that day, potential chemical and physical hazards, emergency procedures, and conditions and activities from the previous day.

All visitors entering the Exclusion Zone or Contamination Reduction Zone will be required to receive the necessary site-specific training from the Site HSO and must be equipped with the proper personal protective equipment.

5.0 MEDICAL SURVEILLANCE REQUIREMENTS

All personnel who engage in onsite activities for 30 days or more per year must participate in a Medical Surveillance Program which involves undergoing a medical examination once every year. The examination must be conducted by a physician who is board-certified in occupational medicine. The physician will have been made familiar with the job-related duties of each worker examined.

Typical components of the Medical Surveillance Program are shown in Table 5-1. The physician must state whether the individual is fit to conduct work on hazardous waste sites using personal protection, or whether he or she must work within certain restrictions. Personnel may be excluded from this site for medical reasons. Copies of medical examination reports are given to each employee who are encouraged to forward copies to their personal physician.

Any person exposed to high levels of hazardous substances will be required to undergo a repeat medical exam at or before the conclusion of the project to determine possible health impacts. Any person suffering a lost-time injury or illness must have medical approval prior to returning to work on site. When employment is terminated for any reason, the employee must receive an exit medical examination.

All medical records will be held by the employer for the period of employment plus at least 30 years, in accordance with OSHA regulations on confidentiality and any other applicable regulations and will be made available to OSHA upon request.

TABLE 5-1

TYPICAL COMPONENTS OF MEDICAL SURVEILLANCE PROGRAM

- Medical and occupational history

- Physical examination, with particular attention to the cardiopulmonary system, general physical fitness, skin, blood-forming, hepatic, renal, and nervous systems

- Urinalysis, to include:
  - color
  - appearance
  - specific gravity
  - pH
  - ketones
  - protein
  - glucose
  - blood
  - bilirubin
  - leukocyte esterase
  - nitrite
  - WBC
  - RBC
  - casts
  - bacteria
  - epithelial cells
  - crystals
  - yeasts

- Blood analysis, to include:
  - complete blood count
  - hemoglobin
  - albumin, globulin, total protein
  - bilirubin - direct and total
  - g-glutamyl transpeptidase
  - serum glutamic oxalacetic transaminase
  - lactic dehydrogenase
  - alkaline phosphatase
  - sodium
  - potassium
  - chloride
  - magnesium
  - calcium
  - phosphorus
  - uric acid
  - BUN (blood urea nitrogen)

TABLE 5-1 (Continued)

- creatinine
- cholesterol
- triglycerides
- glucose
- iron
- heavy metals - arsenic, lead, mercury, and zinc protoporphyrin (as necessary)

- Pulmonary function test

- Additional tests as appropriate, including:
  - chest X-ray
  - electrocardiogram
  - stress test

6.0 SITE HAZARD EVALUATION

6.1 Chemical Hazards

The primary chemicals of concern previously identified at the site included organic solvents (i.e., 1,1 dichloroethane, 1,2 dichloroethene, 1,1,1 trichloroethane, trichloroethene) based on detections of these compounds in soil and water samples from previous investigations. The health and safety characteristics and occupational exposure values of these compounds are summarized in Table 6-1. The risk of exposure to these contaminants can be by the dermal or respiratory route, depending on the type of contaminant and activity being conducted.

6.2 Physical Hazards

Physical hazards that may be present at all sites include:

- Heat stress and cold stress;
- Noise from the operation of site equipment;
- Slip-trip-fall types of accidents;
- Back injuries resulting from improper lifting;
- Being caught in or struck by moving equipment;
- Electrocution, explosion, or fire hazards associated with drilling or excavation activities, such as contact with overhead or underground power lines or pipelines;
- Excavation hazards; and
- Muscle strains from hand-auger work.

6.3 Biological Hazards

Animals and some insects may bite and thereby pose a health hazard in the form of irritation, illness, or poisoning. Anyone bitten should be given immediate first aid as necessary, and shall be transported to the nearest medical facility (if necessary). Members of the field investigation team will be properly briefed regarding the potential for encountering insects and animals. The potential threat of the deer tick and the possibility of contracting Lyme disease is a serious matter. The likelihood of

TABLE 6-1

HAZARD CHARACTERISTICS OF CONTAMINANTS OF CONCERN POTENTIALLY PRESENT AT THE FORMER DOWELL SITE

SUBSTANCE	TOXICITY/CARCINOGENICITY	OCCUPATIONAL EXPOSURE VALUES*
1,1 Dichloroethane	Irritant to skin and eyes via inhalation.	100 ppm (TLV-TWA and PEL)
1,2 Dichloroethene	Irritant to skin and eyes via inhalation.	200 ppm (TLV-TWA and PEL)
1,1,1 Trichloroethane	Irritant to eyes, nose, and central nervous system via inhalation.	350 ppm (TLV-TWA and PEL) 450 ppm (STEL) (1) (TLV)
Trichloroethene	Toxic by inhalation.	50 ppm (TLV-TWA) 100 ppm (STEL) (1) (TLV) 200 ppm (Ceiling) (2) (PEL)

*Occupational Exposure Values (TLVs and PELs) are 8-hour Time-Weighted Averages (TWAs) unless otherwise noted.

NOTES:

(1) STEL – Short Term Exposure Limit – 15-minute TWA exposure which should not be exceeded at any time during a workday.
(2) Ceiling – The concentration that should not be exceeded during any part of the working exposure.

Definitions

Threshold Limit Values (TLVs) - Refers to airborne concentrations of substances as issued by the ACGIH and represents conditions under which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effect.
Threshold Limit Value - Time-Weighted Average (TLV-TWA) - The Time-Weighted Average concentration as issued by ACGIH for a normal 8-hour work day and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.
Permissible Exposure Limits (PELs) - Exposure limits that are enforceable by OSHA as legal standards and cannot be exceeded over an 8-hour exposure.

References

- American Conference of Governmental Industrial Hygienists. *Guide to Occupational Exposure Values-2011*. Cincinnati, Ohio.
- American Conference of Governmental Industrial Hygienists. *2011 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents,* Cincinnati, Ohio.
- 29 CFR, Part 1910.1000, Tables Z-1 and Z-2, Limits for Air Contaminants..
- National Institute for Occupational Safety and Health. *NIOSH Pocket Guide to Chemical Hazards*. Publication No. 97-140, June 1997. Cincinnati, Ohio.
- Hawley, Gessner G. *The Condensed Chemical Dictionary*, Tenth Edition, New York: Van Nostrand Reinhold, 1981.
- Sax, R. Irving. *Dangerous Properties of Industrial Materials*, Sixth Edition, New York: Van Nostrand Reinhold, 1984.

contracting Lyme disease will be greatly decreased by field personnel wearing long pants, long sleeved shirts, and hard hats. All field personnel will be instructed to take a shower daily upon returning to the hotel or place of residence to further decrease the likelihood of contracting Lyme disease.

Improper lifting by workers is one of the leading causes of industrial injuries. Field workers in the drilling program will often be required to lift heavy objects (drill casings, auger flights, etc.). Therefore, all members of the field crew should be trained in the proper methods of lifting heavy objects. All workers should be cautioned against lifting objects too heavy for one person.

6.4 Temperature Stress

A Heat/Cold Stress Log will be kept and maintained on a daily basis for all personnel wearing protective ensembles on site.

6.4.1 Heat Stress

Heat stress monitoring will commence when personnel are wearing PPE, including Tyvek®-type coveralls, and the ambient temperature exceeds 70°F. If standard work garments (cotton coveralls) are worn, monitoring will commence at 85°F. Heat stress monitoring will typically involve the following procedures:

- Monitor ambient temperatures and conduct heat stress monitoring when threshold temperatures (see Section 1) are reached.
- Measure the air temperature with a standard thermometer with the bulb shielded from radiant heat; this yields T (actual).
- Monitor oral body temperature to determine if employees are adequately dissipating heat buildup. Ear probe thermometers which are adjusted to oral temperature are convenient and the preferred method of measurement. Oral body temperatures are to be obtained prior to the employee drinking water or other fluids
- If temperature exceeds 99.6 ^{o}F (37.5 ^{o}C), shorten the following work period by 1/3 without changing the rest period.
- If temperature still exceeds 99.6 ^{o}F (37.5 ^{o}C), shorten the following work period by 1/3.
- Do not allow a worker to wear impermeable PPE when his/her oral temperature exceeds 100.6 ^{o}F (38.1 ^{o}C). Take the radial (wrist) pulse as early as possible in the rest period.

- If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third. If the heart rate still exceeds 110 beats per minute at the next rest cycle, shorten the next work cycle by one third.
- Prevention measures include: adjusting work schedules, awareness training, use of auxiliary cooling devices, provide plenty of electrolyte replacement drinks and water.

6.4.2 Cold Stress

Protection against cold stress will be initiated when temperatures drop below 45°F. Exposure to cold working conditions can result in cold stress (hypothermia) and/or injury (frostbite) to hands, feet, and head. Hypothermia can result when the core body temperature drops below 36°C (96.8°F). Lower body temperature will be likely to result in dizziness, drowsiness, disorientation, slurred speech, or loss of consciousness, with possible fatal consequences. Pain in the extremities may be the first warning of danger from cold stress. Shivering develops when the body temperature falls to 35°C (95°F). Hypothermia can be brought on by exposure to cold air, immersion in cold water, or a combination of both. The wind chill factor, which is the cooling power of moving air, is a critical factor in cold stress.

Workers must wear adequate insulating clothing if work is performed in temperatures below 4°C (40°F). At temperatures of 2°C (35.6°F or less), workers whose clothing becomes wet will be provided immediately with a change of clothing and, if necessary, treated for hypothermia. Treatment includes warming the victim (with skin-to-skin contact or by providing warm blankets or other coverings) and providing warm liquids for the victim to drink. Skin exposure will not be permitted at temperatures of -32°C (-25°F) or below.

If fine work is to be performed with bare hands for more than 10 to 20 minutes at temperatures below 16°C (60°F), provisions will be made for keeping the workers' hands warm. If equivalent chill temperatures fall below 40°F, and fine manual dexterity is not required, gloves will be worn. Metal handles of tools will be covered with insulating material at air temperatures below -1°C (30°F).

If work is to be performed continuously in the cold when the wind chill factor is at or below -7°C (19°F), heated warming shelters (tents, trailers, vehicle cabs) will be made available nearby.

7.0 SITE CONTROL

In order to keep unauthorized personnel from entering work areas during site work, three work zones may be required to be established. The three work zones are the Support Zone, the Contamination Reduction Zone, and the Exclusion Zone. Actual Exclusion Zone size will be determined by optimal size of work area and by local obstructions.

7.1 Support Zone

The Support Zone will be established in a predetermined – generally upwind location from the work areas. The support facilities will contain typical items such as:

- personal protective equipment (disposable suits, gloves, boots, etc.),
- first aid kits,
- fire extinguisher(s),
- an eyewash station(s),
- drinking water,
- other supporting equipment.

7.2 Contamination Reduction Zones

A Contamination Reduction Zone (CRZ) will be established adjacent to each active work site Exclusion Zone. During site work, materials brought to the surface may come in contact with workers' boots or protective clothing and equipment. A mobile decontamination area could be set up adjacent to the active work area. All personnel in the active work area will be required to decontaminate themselves and light equipment prior to leaving the active Exclusion Zone.

7.3 Exclusion Zone

The Exclusion Zone is the area around each active work zone location. The exact size of this active Exclusion Zone will be determined by optimal size of work area and by local obstructions. All personnel leaving the active Exclusion Zone will be required to do so via the Contamination Reduction Zone, and to carry out proper decontamination procedures.

7.4 Site Visitation

It is possible that officials from NYSDEC and other regulating bodies and jurisdictions may visit the site during site operations. All such officials must meet the requirements of OSHA-approved training and site-specific training before going into any Exclusion Zone. All visitors must read this HASP prior to entering an Exclusion Zone. Visitors other than NYSDEC, OSHA, New York State Department of Health (NYSDOH), or Town or County government representatives will be subject to the additional requirement of having to receive written permission from Dow/Schlumberger to enter an Exclusion Zone. A Daily Site Visitors Log will be kept and all visitors to the site will sign in and provide their affiliation, the date of visit, affirmation that they have read and understood the HASP, arrival time, departure time, and purpose of visit.

8.0 PERSONAL PROTECTION

Since personnel working on site may be exposed to chemical contaminants released during intrusive activities, various levels of protection must be available. Components of all levels of personal protection that will be available are listed in Table 8-1. The anticipated levels of protection for various field activities should be detailed when site specific activities are determined.

In the event that unexpected levels of organic vapors are encountered, any personnel working at Level D or D+ protection will don their respirators (change to Level C). The Site HSO will consult with the Project HSO to decide if and when Level D or D+ protection may be resumed, or if a higher level of personal protection is required.

Some modification in safety equipment (e.g., switching from poly-coated disposable coveralls to standard disposable coveralls) may be implemented in order to balance concerns for full contaminant protection against concerns for the possibility of heat stress resulting from the need to wear more restrictive protective equipment. Such modifications may be implemented only if approved in advance by the Site HSO, following consultation with the Project HSO. Protective equipment which fully complies with the requirements of all required levels of protection will be immediately available at all times on the site.

Level C respiratory protection will normally be provided using NIOSH-approved full-face respirators, with high efficiency particulate air P-100 (HEPA) combination filter cartridges approved for removal of organic vapors, particulates, gases, and fumes. The filter cartridges will be changed at the end of each work day or when breakthrough occurs, whichever comes first. All URS field team members will have been fit-tested for respirators using irritant smoke prior to project assignment. Due to difficulties in achieving a proper seal between face and mask, persons with facial hair will not be allowed to work in areas requiring respiratory protection.

TABLE 8-1

TYPICAL COMPONENTS OF PERSONAL PROTECTION LEVELS

Level D Protection	Level D+ Protection	Level C Protection
ANSI-Approved Safety glasses with side shields (or goggles)	ANSI-Approved Safety glasses with side shields (or goggles)	Level D+ items, adding:
ANSI-Approved Hard hat	ANSI-Approved Hard hat	Full-face air-purifying respirator (to be worn)
Ordinary coveralls	Face shield (optional)	Duct-taping of gloves and boots to disposable coveralls
Ordinary work gloves	Disposable poly-coated coveralls (Tyvek or equivalent)	
ANSI-Approved Steel-toe, steel-shank work shoes or boots (chemical resistant)	Inner gloves of snug-fitting latex or vinyl	
Outer boots of neoprene or butyl rubber (optional)	Outer gloves of neoprene or nitrile	
	Outer boots of neoprene or butyl rubber	
	ANSI-Approved Steel-toe, steel-shank work shoes or boots (chemical resistant)	
	Full-face air-purifying respirator (immediately available)	

1. The use of optional equipment is dependent upon site conditions.

2. Respirator to be fitted with NIOSH-approved high-efficiency filter (P-100) combination respirator cartridges approved for organic vapors, particulates, gases, and fumes.

9.0 AIR MONITORING

Real-time air monitoring will be performed during all intrusive activities by properly trained personnel. Air monitoring equipment will be calibrated daily and all data will be recorded in the field notebook and transferred to Instrument Reading Logs (Appendix B). Each day, intrusive work will not begin until the instruments are calibrated and background levels are taken and recorded. Air monitoring will be performed with appropriately calibrated real-time field instruments. These instruments may include the following:

- Organic Vapor Monitor such as a photoionization detector with applicable ionization potential lamp.
- Dust/particulate monitor.
- Explosimeter which measures LEL.
- Oxygen monitor.
- Hydrogen sulfide monitor
- Other meters as appropriate.

9.1 Action Limits

Air monitoring action limits for contaminants of concern must be itemized prior to initiation of site work. Table 9-1 provides an example of possible action limits.

9.2 Work Stoppage Responses

Whenever one or more of the action levels necessitating a work stoppage is exceeded the following responses must be followed:

- The Site HSO will be consulted immediately.
- All personnel (except as necessary for continued monitoring and contaminant mitigation, if applicable) will be cleared from the work area (e.g., from within the Exclusion Zone).

Any chemical release to air, water, or soil must be reported to the Site HSO at once. Any

exposure resulting from protective equipment failure must be immediately reported to the Site HSO and to the Project HSO in writing within 24 hours.

9.3 Calibration of Air Monitoring Instruments

Photoionization Detector: The photoionization detector will be calibrated to a benzene surrogate daily (prior to field activities) and the results will be recorded in the field notebook and transferred to Instrument Reading Logs.

Explosimeter: Once a day, the explosimeter will be calibrated to a methane gas and hydrogen sulfide gas standard. Prior to each use, the oxygen sensor will be air-calibrated at an upwind location. This calibration involves adjusting the meter to read 20.9%, the concentration of oxygen in ambient air.

Particulate Monitor: All instrument operation checks will be performed prior to use each day according to manufacturer specifications.

9.4 Community Air Monitoring Plan

A real-time Community Air Monitoring Plan (CAMP) may be required pursuant to direction from the NYSDEC and/or the NYSDOH. Typical requirements for the CAMP are listed below:

- Volatile organic compounds and dust particulates will be monitored at the downwind perimeter of the exclusion zone on a periodic basis. If total organic vapor levels exceed 5 ppm above background, work activities will be halted and monitoring continued under the provisions of a Major Vapor Emission Response Plan (Section 9.6.2). All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review if requested.

- If particulate levels at the downwind station exceed particulate levels at the upwind station by more than 0.25 mg/m^3, work activities will be halted and appropriate dust suppression measures will be employed.

9.4.1 Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the Exclusion Zone, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the Exclusion Zone, activities can resume provided the organic vapor level 200 feet downwind of the Exclusion Zone or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 10 ppm at the perimeter of the Exclusion Zone, activities must be shut down. When work shutdown occurs, downwind air monitoring as directed by the Site HSO will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission Response Plan (Section 9.6.2).

9.4.2 Major Vapor Emission Response Plan

If any organic vapor levels greater than 5 ppm over background are identified 200 feet downwind from the Exclusion Zone or half the distance to the nearest residential or commercial property, whichever is less, all work activities will be halted.

If, following the cessation of work activities, or as the result of an emergency, organic vapor levels persist above 5 ppm above background 200 feet downwind from the Exclusion Zone or half the distance to the nearest residential or commercial property, then the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20-foot zone).

If efforts to abate the emission source are unsuccessful and organic vapor levels approaching 5 ppm persist for more than 30 minutes in the 20-foot zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect. Also, the Major Vapor Emission Response Plan shall be immediately placed into effect if 20-foot zone organic vapor levels are greater than 10 ppm above background.

Upon activation of the Major Vapor Emission Response Plan, the following activities will be undertaken:

- All Emergency Response authorities will immediately be contacted by the Site HSO and advised of the situation.

- Air monitoring will be conducted at 30 minute intervals within the 20-foot zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Site HSO.

TABLE 9-1

EXAMPLE ACTION LEVELS DURING INTRUSIVE SITE ACTIVITIES

Organic Vapors (PID)	Combustibles	Oxygen	Hydrogen Sulfide	Particulates	Responses
0-1 ppm Above Background, Sustained Reading	0-10% LEL	19.5-23.5%	0-5 ppm	<0.10 mg/m^3	• Continue intrusive activities. • Level D protection. • Continue monitoring every 10 minutes/every sample retrieved in work area.
1-5 ppm Above Background, Sustained Reading	0-10% LEL	19.5-23.5%	5-10 ppm	0.10- 0.25 mg/m^3	• Continue intrusive activities. • Level D+ protection. • Continuous monitoring for organic vapors in the work area and at the Exclusion Zone perimeter. • Continuous monitoring for LEL, O_2, and H_2S in the work area.
5-10 ppm Above Background, Sustained Reading	0-10% LEL	19.5-23.5%	5-10 ppm	>0.25 mg/m^3	• Continue intrusive activities. • Level C protection. • Continuous monitoring for organic vapors in the work area and at the Exclusion Zone perimeter. • Continuous monitoring for LEL, 0_2, and H_2S in the work area. • Employ dust suppression measures if particulate readings > 0.25 mg/m^3 above background are sustained over 15 minute period.
>10 ppm Above Background, Sustained Reading	>10% LEL	<19.5% or >23.5%	>10 ppm	>0.25 mg/m^3	• Temporarily suspend intrusive activities. • Withdraw from area; shut off all engine ignition sources. • Continuous monitoring for organic vapors at Exclusion Zone perimeter if organic vapor readings >10 ppm. • Continuous LEL monitoring in breathing zone if LEL reading >10%. • Employ dust suppression measures if particulate readings > 0.25 mg/m^3 above background are sustained over 15 minute period. • Consult with Project HSO.

Notes:

Air monitoring for action levels will occur in the breathing zone.

If action levels for any one of the monitoring parameters is exceeded, the appropriate responses listed in the right hand column should be taken.

10.0 HANDLING OF SAMPLES

The collection and analysis of environmental samples will require caution, not only to ensure safety of site sampling and support personnel, but also to ensure accuracy of results. To minimize hazards to lab personnel, sample volumes will be no larger than necessary, and the outside of all sample containers will be wiped clean prior to shipment.

11.0 DECONTAMINATION PROCEDURES

11.1 Decontamination of Personnel

Non-disposable protective clothing, boots, and gloves, will be decontaminated before entering the Support Zone by a thorough soap-and-water wash prior to leaving the Exclusion Zone. Personnel performing intrusive tasks in potentially contaminated areas (e.g., soil excavation, drilling or environmental sampling) will be advised that all clothing worn under protective clothing (i.e., underwear, shirts, socks, trousers) should be laundered separately from street clothing before re-wearing. If protective clothing is breached and personal clothing becomes contaminated, the personal clothing will be disposed.

11.2 Decontamination of Equipment

Decontamination of sampling equipment shall be performed prior to removing equipment from the site. Other light equipment (such as tools, containers, monitoring instruments, radios, clipboards, etc.) will be segregated and deposited on plastic drop cloths or in plastic-lined containers placed in the Contamination Reduction Zone and will be wiped off with damp cloths.

Decontamination of excavation equipment, drilling equipment, and vehicles, will be carried out at a designated decontamination pad by high-pressure water in the Contamination Reduction Zone. Appropriate PPE must be used during all decontamination activities.

12.0 EMERGENCY PROCEDURES

The most likely incidents for which emergency measures might be required are:

- an exposure-related worker illness
- a sudden release of hazardous gases/vapors during excavation or drilling
- an explosion or fire occurring during demolition, excavation or drilling
- a heavy equipment-related accident, or other accident resulting in personal injury
- slipping, tripping, or falling resulting in personal injury
- spill of contaminated liquid or solid

Emergency procedures established to respond to these incidents are covered under the sections that follow.

12.1 Communications

A formal communication plan should be prepared prior to initiation of site work. Components may include a cellular telephone for direct outside communications with emergency response organizations, and two-way radios.

12.2 Escape Routes

In the event of a sudden release of hazardous gases, or a fire, all personnel will be required to move upwind or at 90 degrees away from the location of the release or fire, toward the site exit point. This may require personnel to move from the Exclusion Zone directly into an offsite area without proper decontamination. At the conclusion of the emergency, they should perform proper decontamination.

12.3 Emergency Hand Signals

Emergency hand signals for use by personnel wearing air-purifying respirators are summarized in Table 12-1.

12.4 Fire

In the event of a fire that cannot be controlled with available equipment, the local fire department will be summoned immediately by the Site HSO or his designee, who shall apprise them of the situation upon their arrival (See Table 12-2 for typical telephone numbers of emergency response agencies).

12.5 First Aid

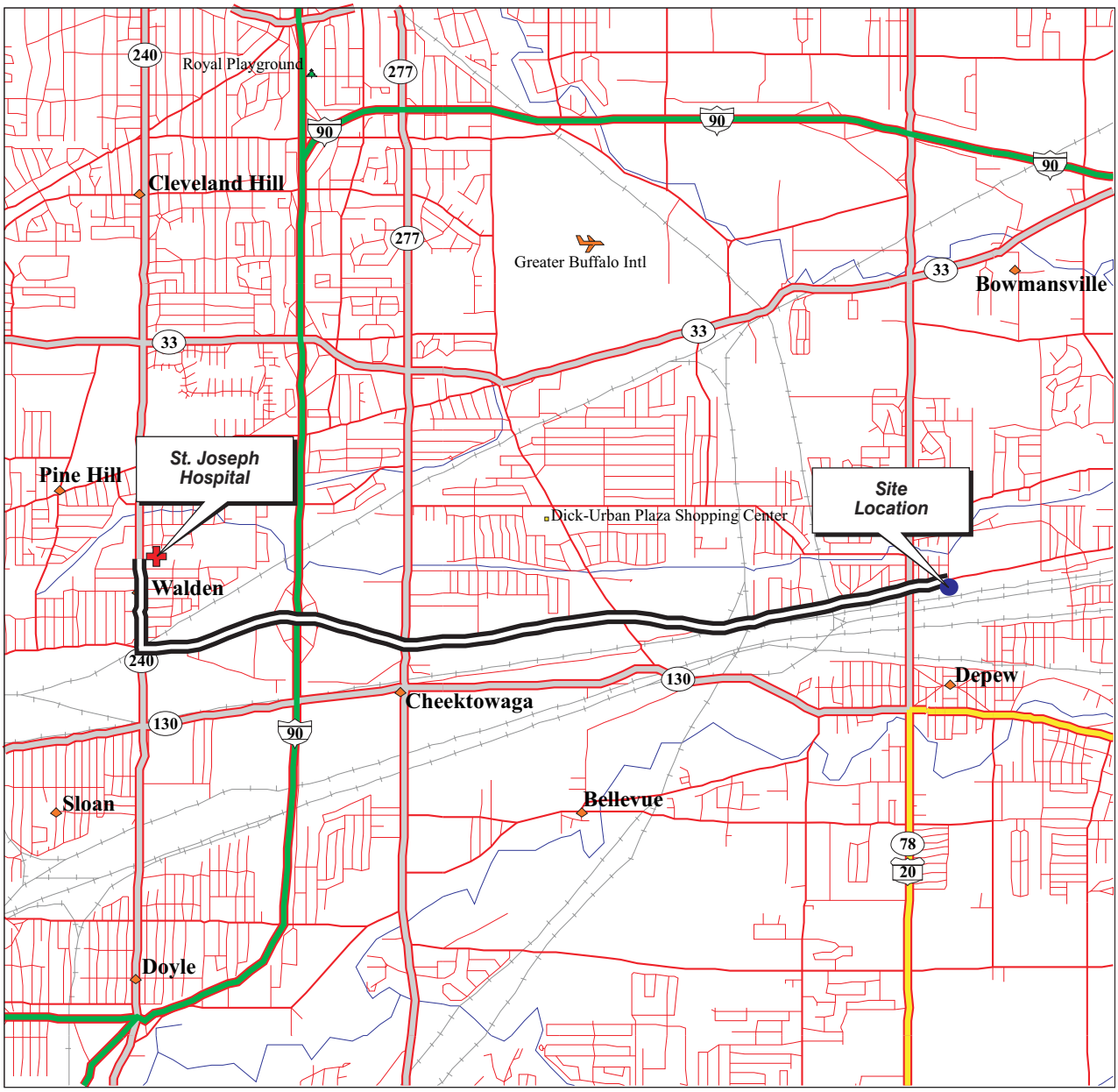
At the startup of field activities, the Project HSO will contact hospital personnel regarding the potential hazards at the site. First aid for personal injuries will be administered, if possible, at the site by the Site HSO or his designee. If a site worker should require further treatment, he or she will be transported to the hospital via ambulance. The route to the Hospital is shown on Figure 12-1.

All accidents, however insignificant, will be reported to the Site HSO, who will report the accident to the Project HSO. All personnel designated to administer first aid will have received a minimum of eight hours training in first aid and CPR, and be certified by the American Red Cross.

In the event of a serious personal injury requiring offsite medical attention, the injured person will first be moved to the Contamination Reduction Zone, where an attempt will be made to go through the decontamination procedures, including removal of protective clothing. If the injury is life-threatening, decontamination will be of secondary importance, and the injured party will be taken directly to the hospital. If a head, neck, back, or spinal injury is suspected, the injured person will not be moved and an ambulance will be summoned to the site.

12.6 Emergency Assistance

The name, telephone number, and location of police, fire, hospital, and other agencies whose services might be required, or from whom information might be needed, will be kept in the support zone. The list is presented in Table 12-2.



APPROXIMATE SCALE IN FEET

1000 0 1000

From site location head west left out of site on Walden Avenue for approximately 5 miles. Turn right and head north on Harlem Road (Route 240) for approximately one mile. The hospital will be on your right.

St. Joseph Hospital
2605 Harlem Road
Cheektowaga, New York 14225

General - (716) 891-2400
Emergency - (716) 891-2450

URS

ROUTE TO THE HOSPITAL

FIGURE D12-1

AG15631-35824.00-092000-NPV

If an ambulance should have to be called to the site, the injured person should meet the ambulance outside the Exclusion Zone if possible. If a head or spinal injury is suspected or the person is unconscious for any reason, medical personnel may have to come into the Exclusion Zone.

12.7 Spills

The potential for spills to occur during onsite work at the site is minimal, since the direct handling of hazardous waste containers (drums, tanks, etc.) is not expected to be part of the scope of work. In the event that residual materials are spilled on site, the following procedures will be implemented:

12.7.1 Liquid Spills

If a liquid (decontamination water, well development water, etc.) is spilled on a permeable surface, 2 inches of surface soil will be removed where the spill occurred and drummed. The area will later be either backfilled with clean soil or regraded. If liquid is spilled on an impermeable surface, a sorbent material will be applied to the spill area. The sorbent material will be swept up and drummed, and the spill area washed down with clean water.

12.7.2 Soil Spills

Contaminated soil spilled on a permeable surface will be shoveled into a drum, and the top 2 inches of soil where the spill occurred will also be removed and drummed. The area will then be either backfilled with clean topsoil or regraded. If soil is spilled on an impermeable surface, the material will be shoveled (or swept) back into a drum, and the area washed with clean water.

All spills will be reported to the Project HSO within 24 hours. The Project HSO in turn will inform Dowell of the incident.

12.8 Reports

Any emergencies, spills, or releases that occur on the site will be reported to the Project HSO and Dowell within one hour and will be followed by written notification to NYSDEC within 24 hours.

12.9 Accident Investigation and Reporting

12.9.1 Accident Investigations

All accidents requiring first aid which occur incidental to activities on site will be investigated. Standard OSHA formats will be used for reporting any accidents/injuries/illness that occur on the site. The investigation format will be as follows:

- interviews with witnesses,
- pictures, if applicable, and
- necessary actions to alleviate the problem.

12.9.2 Accident Reports

In the event that an accident or some other incident such as an explosion or exposure to toxic chemicals occurs during the course of the project, the Project HSO will be telephoned within one hour and receive a written notification within 24 hours. The report shall include the following items:

- Name, telephone number, and location of the contractor.
- Name and title of person(s) reporting.
- Date and time of accident/incident.
- Location of accident/incident, (i.e., building number, facility name).
- Brief summary of accident/incident giving pertinent details including type of operation ongoing at the time of the accident/incident.
- Cause of accident/incident.
- Casualties (fatalities, disabling injuries).

- Details of any existing chemical hazard or contamination.
- Estimated property damage, if applicable.
- Nature of damage; effect on contract schedule.
- Action taken by contractor to ensure safety and security.
- Other damage or injuries sustained (public or private).

TABLE 12-1

EMERGENCY HAND SIGNALS

• Hand gripping throat	- Can't breathe.
• Grip partner's wrist, or place both hands around wrist	- Leave area immediately, no debate!
• Hands on top of head	- Need assistance.
• Thumbs up	- I am all right, OK, I understand.
• Thumbs down	- No, negative.

TABLE 12-2

EMERGENCY TELEPHONE NUMBERS

Emergency Response Agencies	
Fire	911
Police	911
Ambulance	911
Medical Facilities	
St. Joseph Hospital 2605 Harlem Road Cheektowaga, New York 14225	(716) 891-2450
Environmental and Health Agencies	
New York State Department of Environmental Conservation	(716) 851-7220
New York State Department of Health	(716) 851-4385
USEPA National Response Center (Chemical spills, oil spills, pollutant discharges)	1-800-424-8802

APPENDICES

APPENDIX A

WASTE SITE WORKER TRAINING PROGRAMS

APPENDIX A

TABLE 1

WASTE SITE WORKER TRAINING PROGRAM (40 HOURS)

Introduction to Program
Sources of Reference
Hazardous Waste Operations and Emergency Response (29 CFR 1910.120)
Heat Stress/Cold Exposure
Chemical & Physical Hazards
Chemical Protective Clothing (CPC)

Toxicology
Respiratory Protection Principles
Air-Purifying Respirators (APR)
APR Inspection, Donning, and Doffing
Self Contained Breathing Apparatus (SCBA)
SCBA Checkout
SCBA Field Exercise
Review of SCBA Lab and Field Exercise
Air-Line Respirators (ALR)

Site Safety
Site Control
Decontamination
Air Monitoring Equipment
Permit Required Confined Spaces (29 CFR 1910.146)
Entry Permit Development
Confined Space Entry
Review of Confined Space Lab and Field Exercise
Material Handling and Spill Containment

Health and Safety Plans (HASP)
Emergency Response Plans (ERP)
HASP & ERP Development

Level A/B Field Exercise
Level B/C Field Exercise
Air Monitoring Equipment Lab
SCBA Proficiency Checkout

Review of Lab & Field Exercises
Review of Air Monitoring Equipment Lab
Medical Monitoring
Hazard Communication (29 CFR 1910.120)
Risk Assessment
APR Fit Test Demonstration and Certification
Written Test

APPENDIX A

TABLE 2

WASTE SITE WORKER SUPERVISORY TRAINING PROGRAM (8 HOURS)

Record keeping Requirements Under Standard 29 CFR 1910.120
OSHA Inspections
Establishing Community Relations
Employee Training and Motivation
Management Traits
Dermal Protection Program
Respiratory Protection Program
Preventative Heat Stress and Cold Exposure Management
Medical Monitoring Requirements
Reporting and Recording Occupational Injuries, Illnesses, and Exposures
Accident Prevention
Spill Containment Program
Permit Required Confined Spaces (29 CFR 1910.146)
Determining the Effectiveness of Decontamination Procedures
Implementation of Site Health and Safety Plans
Implementation of Emergency Response Plans
Implementation of the Hazard Communication Standard (29 CFR 1910.120)
Responsibilities of the Site Safety and Health Supervisor and Project Manager
Personnel Sampling
Interpretation of Air Monitoring Data

APPENDIX A

TABLE 3

WASTE SITE WORKER ANNUAL REFRESHER TRAINING PROGRAM (8 HOURS)

OSHA Requirements
Hazardous Wastes
Toxicology
Exposure Limits
Chemical Hazards
Temperature Stress
Other Physical Hazards
Radiation
Site Control at Hazardous Waste Sites
Decontamination Procedures
Personal Protective Equipment
Confined Spaces
Air Monitoring Equipment
Field Exercises

APPENDIX B

FIELD ACTIVITY FORMS

HAZARDOUS WASTE ACTIVITIES HEALTH & SAFETY CHECKLIST

URS
77 Goodell Street
Buffalo, New York 14203
(716) 856-5636

Project: _____

Project Manager: _____

Onsite Health & Safety Officer: _____

The Project manager, or onsite health and safety officer will signify the completion of the following items by initialing and dating each item.

	Initial	Date
Site health and safety plan prepared and approved by health and safety manager		
All employees who will be onsite:		
- Have received initial (24 or 40 hr.) Training		
- Have received annual 8 hr. refresher training		
- Have reviewed the site health & safety plan and received pre-job briefing		
- Have received respiratory protective equipment training including SCBA if required		
- Have received negative pressure respirator fit test		
- Have had a medical exam within the past 12 months		

This form is to be submitted to the health and safety director prior to onsite work which may involve exposure to hazardous materials.

URS

RESPIRATOR FIT TEST

77 GOODELL STREET
BUFFALO, NEW YORK 14203
PHONE: (716) 856-5636

TODAY'S DATE _____

TESTED BY: _____

EMPLOYEE NAME _____ SEX _____

DATE OF BIRTH _____ MEDICAL APPROVAL DATE _____

RESTRICTIONS _____

_____

TYPE OF RESPIRATOR(S) SELECTED

MODEL _____

SIZE _____

COMPLETE ONE FORM FOR EACH TYPE OF RESPIRATOR USED

ENTER A CHECK (✓) FOR "ACCEPTABLE" OR "U" FOR "UNACCEPTABLE" FOR EACH OF THE FOLLOWING:

_____ CHIN PROPERLY PLACED

_____ STRAP TENSION

_____ ROOM TO TALK

_____ RESPIRATOR SLIPPAGE

_____ ROOM FOR SAFETY GLASSES

_____ FIT ACROSS NOSE BRIDGE

ENTER "T" (TRUE) OR "F" (FALSE) FOR EACH OF THE FOLLOWING. (IF "F" TO ANY ONE, SUBJECT FAILS FIT TEST.)

_____ EMPLOYEE HAS COMPLETED REQUIRED TRAINING PROGRAM

_____ EMPLOYEE IS CLEAN SHAVEN IN AREA WHERE RESPIRATOR CONTACTS SKIN

_____ GLASSES AND/OR TEMPLE BARS DO NOT INTERFERE WITH SEAL

_____ FACIAL SCARS DO NOT INTERFERE WITH SEAL

_____ OTHER FACIAL FEATURES DO NOT INTERFERE WITH SEAL

_____ EMPLOYEE DOES NOT COMPLAIN OF DISCOMFORT DUE TO RESPIRATOR

_____ EMPLOYEE IS ABLE TO "SEAT" RESPIRATOR PROPERLY

_____ EMPLOYEE IS ABLE TO DEMONSTRATE ADEQUATE POSITIVE PRESSURE TEST

_____ EMPLOYEE IS ABLE TO DEMONSTRATE ADEQUATE NEGATIVE PRESSURE FIT TEST

_____ EMPLOYEE HAS WORN RESPIRATOR FOR THE TEN MINUTES PRIOR TO INITIATING THE "TEST ATMOSPHERE FIT TEST".

DAILY SAFETY MEETING

URS
77 Goodell Street
Buffalo, New York 14203
(716) 856-5636

DATE: _____ CUSTOMER: _____

SPECIFIC: _____

_____

SAFETY TOPICS PRESENTED:

PROTECTIVE CLOTHING/EQUIPMENT: _____

_____

CHEMICAL HAZARDS: _____

_____

PHYSICAL HAZARDS: _____

_____

EMERGENCY PROCEDURES: _____

_____

HOSPITAL/CLINIC: _____ PHONE: _____

PARAMEDIC PHONE: _____

HOSPITAL ADDRESS: _____

SPECIAL EQUIPMENT: _____

_____

OTHER: _____

_____

ATTENDEES:

NAME PRINTED: _____ SIGNATURE: _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

MEETING CONDUCTED BY:

_____ _____

Name Printed *Signature*

METEOROLOGICAL DATA LOG

URS
77 Goodell Street
Buffalo, New York 14203
(716) 856-5636

DATE ____/____/____ __________ TIME __________

B.P. __________ .______ mm Hg

TEMP. ________ .____ °C

WIND ____________ AT ________MPH

DESCRIPTION ______________________________

Precip. since last reading ____________________ in.

DATE ____/____/____ __________ TIME __________

B.P. __________ .______ mm Hg

TEMP. ________ .____ °C

WIND ____________ AT ________MPH

DESCRIPTION ______________________________

Precip. since last reading ____________________ in.

DATE ____/____/____ __________ TIME __________

B.P. __________ .______ mm Hg

TEMP. ________ .____ °C

WIND ____________ AT ________MPH

DESCRIPTION ______________________________

Precip. since last reading ____________________ in.

DATE ____/____/____ __________ TIME __________

B.P. __________ .______ mm Hg

TEMP. ________ .____ °C

WIND ____________ AT ________MPH

DESCRIPTION ______________________________

Precip. since last reading ____________________ in.

DATE ____/____/____ __________ TIME __________

B.P. __________ .______ mm Hg

TEMP. ________ .____ °C

WIND ____________ AT ________MPH

DESCRIPTION ______________________________

Precip. since last reading ____________________ in.

DATE ____/____/____ __________ TIME __________

B.P. __________ .______ mm Hg

TEMP. ________ .____ °C

WIND ____________ AT ________MPH

DESCRIPTION ______________________________

Precip. since last reading ____________________ in.

DATE ____/____/____ __________ TIME __________

B.P. __________ .______ mm Hg

TEMP. ________ .____ °C

WIND ____________ AT ________MPH

DESCRIPTION ______________________________

Precip. since last reading ____________________ in.

DATE ____/____/____ __________ TIME __________

B.P. __________ .______ mm Hg

TEMP. ________ .____ °C

WIND ____________ AT ________MPH

DESCRIPTION ______________________________

Precip. since last reading ____________________ in.

REPORT OF ACCIDENT/INJURY

URS
77 Goodell Street
Buffalo, New York 14203
(716) 856-5636

PROJECT: _____ DATE OF OCCURRENCE: _____

LOCATION: (be specific) _____

_____

TYPE OF OCCURRENCE: (check all that apply)

- ☐ DISABLING INJURY
- ☐ OTHER INJURY
- ☐ PROPERTY DAMAGE
- ☐ EQUIPMENT FAILURE
- ☐ CHEMICAL EXPOSURE
- ☐ FIRE
- ☐ EXPLOSION
- ☐ VEHICLE ACCIDENT
- ☐ OTHER (explain) _____

_____

WITNESSES TO ACCIDENT / INJURY: (and office)

_____ _____

_____ _____

_____ _____

_____ _____

INJURIES:

NAME OF INJURED: _____ OFFICE: _____

WHAT WAS BEING DONE AT THE TIME OF THE ACCIDENT/INJURY? _____

_____

_____

_____

_____

_____

_____

Occupational Safety and Health Administration
Supplementary Record of Occupational Injuries and Illnesses

U.S. Department of Labor

This form is required by Public Law 91-596 and must be kept in the establishment for 5 years. Failure to maintain can result in the issuance of citations and assessment of penalties.

Case or File No.

Form Approved
O.M.B. No. 1218-0176

See OMB Disclosure Statement on reverse.

Employer

1. Name

2. Mail address (No. and street, city or town, State, and zip code)

3. Location, if different from mail address

Injured or Ill Employee

4 Name (First, middle, and last)

Social Security No.

5. Home address (No. and street, city or town, State, and zip code)

6. Age

7. Sex (Check one) Male ☐ Female ☐

8. Occupation (Enter regular job title, not the specific activity he was performing at the time of injury.)

9. Department (Enter name of department or division in which the injured person is regularly employed, even though he may have been temporarily working in another department at the time of injuiry.)

The Accident or Exposure to Occupational Illness

If accident or exposure occurred on employer's premises, give address of plant or establishment in which it occurred. Do not indicated department or division within the plant or establishment. If accident occurred outside employer's premises at an identifiable address, give that address. If it occurred on a public highway or at any other place which cannot be identified by number and street, please provide place references locating the place of injury as accurately as possible.

10. Place of accident or exposure (No. and street, city or town, State, and zip code)

11. Was place of accident or exposure on employer's premises? Yes ☐ No ☐

12. What was the employee doing when injured? (Be specific. If he was using tools or equipment or handling material, name them and tell what he was doing with them.)

13. How did the accident occur? (Describe fully the events which resulted in the injury or occupational illness. Tell what happened and how it happened. Name any objects or substances involved and tell how they were involved. Give full details on all factors which led or contributed to the accident. Use separate sheet for additional space.)

Occupational Injury or Occupational Illness

14. Describe the injury or illness in detail and indicate the part of body affected. (E.g., amputation of right index finger at second joint; fracture of ribs; lead poisoning; dermatitis of left hand, etc.)

15. Name the object or substance which directly injured the employee. (For example, the machine or thing he struck against or which struck him; the vapor or poison he inhaled or swallowed; the chemical or radiation which irriatated his skin; or in cases of strains, hernias, etc., the thing he was lifting, pulling, etc.)

16. Date of injury or initial diagnosis of occupational illness

17. Did employee die? (Check one) Yes ☐ No ☐

Other

18. Name and address of physician

19. If hospitalized, name and address of hospital

Date of report	Prepared by	Official position

OSHA No. 101 (Feb. 1981)

(See Next Page/Reverse)

APPENDIX C

STANDARD OPERATING SAFETY PROCEDURES

APPENDIX C STANDARD OPERATING SAFETY PROCEDURES

Rules for onsite personal safety are shown in Appendix C, Table 1; rules for operational safety appear in Appendix C, Table 2.

APPENDIX C

TABLE 1

PERSONAL SAFETY RULES

- Visual contact must be maintained between crew members on site.

- Any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in any area designated as contaminated. These practices include as a minimum, eating, drinking, chewing gum or tobacco, and smoking.

- Hands and face must be thoroughly washed upon leaving the work area, and before engaging in any other activities, especially eating or drinking.

- Due to interference of facial hair with the mask-to-face seal on air-purifying respirators, personnel working on site will not be permitted to wear facial hair that interferes with the seal.

- Contact with contaminated surfaces or surfaces suspected of contamination should be avoided. Site personnel should avoid walking through puddles, mud, or other discolored areas, and should not kneel or sit on the ground.

- Field personnel shall be familiar with the physical characteristics of the site, including:

  - wind direction in relation to the working area
  - accessibility to associates, equipment, and vehicles
  - communications
  - work zones
  - site access

- Medicine and alcohol can exacerbate the effect from exposure to toxic chemicals. Prescribed drugs should not be taken by field personnel where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified physician. Alcoholic beverage and controlled substance intake is strictly forbidden during onsite operations.

APPENDIX C

TABLE 2

OPERATIONAL SAFETY RULES

- No visitors shall be allowed into any Exclusion Zone without the permission of the NYSDEC.

- Onsite personnel must use the buddy system when wearing respiratory protective equipment. A third person, suitably equipped, is required as a safety backup during initial site entries.

- During day-to-day operations, onsite workers will act as a safety backup to each other. Offsite personnel will provide emergency assistance.

- Wind indicators will be set up so as to be visible from the Exclusion Zone.

- Daily briefings will be held to review site hazards, changes in level of personal protection required, special safety precautions for assigned work activities, and emergency response.

- All personnel going on site must be thoroughly briefed on anticipated hazards, and trained on equipment to be worn, safety procedures, emergency procedures, and communications.

APPENDIX E

NYSDOH – COMMUNITY AIR MONITORING PLAN

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

APPENDIX F

MONITORING WELL

BORING AND CONSTRUCTION LOGS

RADIAN INTERNATIONAL LLC

WELL NO. MW-1 PAGE 1 OF 3

PROJECT NAME DS - Depew PROJECT NO. 027531

LOCATION Depew, NY GEOLOGIST DNM

DEPTH FEET	SOIL SAMPLE NO.	REC. (IN.)	BL./6"	ROCK SAMPLE RUN (FT)	REC. (%)	RQD. (%)	VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT)	BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
12	SS7	0	18 18 20 16				No Recovery	CL					
14	SS8	24	5 11 11 12				Stiff, Red-Brown CLAY, Little Silt, Trace very Fine Sand and Fine to Medium Gravel, Iron-Stained, Moist	CL			14		Bentonite Seal
16	SS9	22	18 20 21 18				Very Stiff, Gray-Brown CLAY, Little Silt, Trace to Little Fine to Medium Gravel, Trace Very Fine to Medium Sand and very Coarse Gravel Moist				17		Clean Filter Sand Pack
18	SS10	1	5 9 12 15				Stiff, Gray-Brown, CLAY, Little Silt, Trace Very Fine to Medium Sand and Fine to Medium Gravel, Moist	CL					
20	SS11	22	3 6 31 6				Soft, Red-Gray CLAY Little Silt and Very Fine Sand, Little Fine to Medium Gravel, Moist	CL			20		2" Sch 40 PVC Well Screen (0.010" Slot)
22	SS12	24	10 10 14 18				Stiff, Gray-Brown CLAY, Little Silt and Very Fine to Fine Sand, Little Fine to Medium Gravel, 2" Sandy Gravel Seam @ 21.5', Wet	CL					
24	SS13	20	16 8 11 16				Stiff, Gray-Brown CLAY, Some Silt, Little Fine to Medium Sand and Fine to Medium Gravel, Spoon-Wet	SP CL					
26	SS14	13	10 10 30 42				Stiff to Hard, As Above to 27.0', Red-Brown, CLAY Little Silt and Fine to Medium Gravel, Moist						
28													

ADDITIONAL REMARKS

A15\FORM

RADIAN INTERNATIONAL LLC

WELL NO. MW-1 PAGE OF

PROJECT NAME DS - DePew PROJECT NO. 203531

LOCATION DePew, NY GEOLOGIST DNM

DEPTH FEET	SOIL SAMPLE NO.	SOIL SAMPLE REC. (IN.)	SOIL SAMPLE BL./6"	ROCK SAMPLE RUN (FT)	ROCK SAMPLE REC. (%)	ROCK SAMPLE ROD. (%)	VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT)	BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
28	SS15	18	41 14 21 10%0				Hard, Red-brown CLAY, Little to Some Silt, Little Very Fine to Fine Sand and Fine to Medium Gravel, Moist	CL			30		PVC End Cap
30							HSA Refusal @ 30.0'						

ADDITIONAL REMARKS

RADIAN INTERNATIONAL LLC

WELL NO. MW2 PAGE OF

PROJECT NAME D.I. - Dublin PROJECT NO.

LOCATION GEOLOGIST DNM

BY DNM DRILLING CONTRACTOR Maxim Tech. DRILLER

DATE 10/23/96 DRILLING METHOD HSA w/ SS Sampling RIG TYPE CME-75

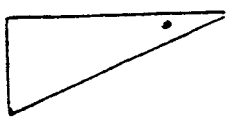
CHK BY DRILLING START DATE 9/11/96 DRILLING COMPLETION DATE 9/11/96

DATE SURFACE ELEVATION STICK-UP ELEVATION

DEPTH FEET	SOIL SAMPLE NO.	REC. (IN.)	BL./6"	ROCK SAMPLE RUN (FT)	REC. (%)	ROD. (%)	VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT) / BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
0	SS1	15	33 60 80 22				Very Dense, Black-Brown Medium to Coarse CINDERS Some Fine to Coarse Sand. Little Coarse Sand, Moist				Flushmount Protective Cover	
2	SS2	8	3 3 5 7				Medium Stiff, Red-Brown. CLAY, Little Silt, Trace Fine Sand and Fine Gravel, Plant Roots, Wet on Top				Bentonite-Cement Grout	
4	SS3	4	33 16 18 19				Very Stiff, Red-Brown, CLAY, Little Silt, Trace Fine Gravel, Gray Along Some Fractures, Damp		9/12 ▼			
6	SS4	14	28 28 32 36				Hard, Red-Brown CLAY, Trace to Little Silt, Damp				2" Sch 40 PVC Riser	
8	SS5	20	16 19 27 47				Very Stiff to Hard, Red-Brown CLAY, Trace Silt, Very Fine Gravel, Fine Sand, Trace Gray Mottles and Iron Staining, Damp					
10	SS6	8	30 28 20 21				Very Stiff, Red-brown CLAY, Little Silt, Trace Fine Gravel, Damp					
12												

ADDITIONAL REMARKS

- Well located in N.E. Corner of Property



RADIAN INTERNATIONAL LLC

WELL NO. MW-2

PAGE 1 OF 2

PROJECT NAME DS - DEPEW

PROJECT NO. 207531

LOCATION DEPEW, NY

GEOLOGIST DNM

DEPTH FEET	SOIL SAMPLE NO.	SOIL SAMPLE REC. (IN.)	SOIL SAMPLE BL./6"	ROCK SAMPLE RUN (FT)	ROCK SAMPLE REC. (%)	ROCK SAMPLE ROD. (%)	VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT)	BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
12	SS7	24	38 57 31 30				Hard, Red-Brown CLAY, Trace to Little Silt, Trace Fine Sand and Fine Gravel, Little Iron-Staining, Damp to Moist				13.5		
14	SS8	0	7 11 11 10				No Recovery				15		Bentonite Seal
16	SS9	23	8 10 13 13				Stiff, Red-Brown, Gray-Brown CLAY, Little Silt and Very Fine to Medium Sand, Little Fine Gravel, Moist to Wet						Clean Filter Sand Pack
18	SS10	24	6 6 10 13				Medium Stiff to Stiff, Red-Brown CLAY, Little Silt and Very Fine to Fine Sand, Little Fine Gravel, Moist to Wet				18.3		
20	SS11	24	6 6 10 14				As Above w/ Coarser Gravel						2" Sch 40 PVC Well Screen (0.010" Slot)
22	SS12	22	6 6 10 13				Medium Stiff to Stiff, Red-Brown CLAY, Little Fine to Medium Gravel and Silt, Little Very Fine to Medium Sand, Wet @ 23.0'						
24	SS13	0	5 8 9 15				No Recovery						
26	SS14	0	11 13 50/1"				No Recovery HSA to Refusal @ 28.3'				28.3		PVC End Cap
28													

ADDITIONAL REMARKS

RADIAN INTERNATIONAL LLC

WELL NO. MW-3 PAGE OF

PROJECT NAME D. Wright PROJECT NO. 60151.1

LOCATION GEOLOGIST DNM

BY DNM DRILLING CONTRACTOR Maxim Tech DRILLER

DATE 10/23/96 DRILLING METHOD HSA w/SS Samples RIG TYPE CME-75

CHK BY DRILLING START DATE DRILLING COMPLETION DATE

DATE SURFACE ELEVATION STICK-UP ELEVATION

DEPTH FEET	SOIL SAMPLE NO.	REC. (IN.)	BL/6"	ROCK SAMPLE RUN (FT)	REC. (%)	ROD. (%)	VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT)	BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
0													
							ASPHALT						
	HSA						Black-Brown, Fine Cinders, Gravel and Sand	(F)					
2	SS1	7	4 10 20 23				Very Stiff, Red-Brown CLAY, Trace Silt, Gray Along Fractures, Damp	CL					
4	SS2	16	15 17 22 26				Very Stiff, Red-Brown, Gray Along Fractures, CLAY, Little Silt, Trace Fine Gravel, Damp						Bentonite-Cement Grout
6	SS3	20	35 26 35 46				Hard, Red-Brown CLAY, Little Gray Along Fractures, Trace Silt, Very Fine Sand, and Fine Gravel, Damp	CL					2" Sch 40 PVC Riser
8	SS4	22	14 22 28 36				Very Stiff, Red-Brown CLAY, Trace Silt and Very Fine Sand, Trace Fine Gravel, Iron-Staining @ 10.5', Damp	CL			9.5		
10	SS5	24	11 18 19 18				Very Stiff, Brown and Red-Brown CLAY, Little Silt, Trace Very Fine Sand and Fine Gravel, Some Iron-Staining, Damp	CL					Bentonite Seal
12											12		

ADDITIONAL REMARKS

RADIAN INTERNATIONAL LLC

WELL NO. MW-3 PAGE OF

PROJECT NAME DS-Depew PROJECT NO. 007531

LOCATION Depew, N.Y. GEOLOGIST DNM

DEPTH FEET	SOIL SAMPLE NO.	SOIL SAMPLE REC. (IN.)	SOIL SAMPLE BL./6"	ROCK SAMPLE RUN (FT)	ROCK SAMPLE REC. (%)	ROCK SAMPLE ROD. (%)	VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT)	BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
12	SS6	20	18 17 16 21				Very Stiff, Brown to Red-Brown CLAY, Little Silt, Trace Very Fine Sand and Fine Gravel, Little Iron-Staining, Moist	CL					Clean Filter Sand Pack
14	SS7	23	4 4 5 8				Soft to Medium Stiff, Red-Brown CLAY, Some Silt, Little Very Fine to Medium Sand and Fine to Medium Gravel, Moist to Wet	CL			15		
16	SS8	23	6 7 9 14				Medium Stiff, Red-Brown CLAY, Little to Some Silt, Little Very Fine to Medium Sand, Little Fine to Medium Gravel, Wet	CL					
18	SS9	22	4 5 6 10				Medium Stiff, Red-Brown, CLAY, Little to Some Silt, Little Very Fine to Medium Sand, Little Fine to Medium Gravel, Wet	CL					2" Sch 40 PVC Well Screen (0.010" Slot)
20	SS10	20	4 9 9 14				Medium Stiff, Red-Brown and Grey-Brown CLAY, Little to Some Silt, Little Very Fine to Medium Sand and Gravel, Wet	CL					
22	SS11	21	6 11 11 15				Medium Stiff, Red-Brown CLAY, Some Silt, Little Very Fine to Medium Sand and Fine to Medium Gravel, Moist	CL					
24	SS12	0	6 9 10 15				No Recovery - Coarse Gravel in Shoe	CL	-		25		
26	SS13	22	11 11 14 18				Medium Stiff, Red-Brown CLAY, Little to Some Silt, Little Very Fine to Medium Sand, Little Fine to Coarse Gravel, Moist to Wet						
28													

ADDITIONAL REMARKS

MW01.SLW FORM

RADIAN INTERNATIONAL LLC

WELL NO. MW-3 PAGE OF

PROJECT NAME DS- Defew PROJECT NO. 027531

LOCATION Defew, N.Y. GEOLOGIST DNM

DEPTH	SOIL SAMPLE			ROCK SAMPLE			VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT)	BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
FEET	NO.	REC. (IN.)	BL./6"	RUN (FT)	REC. (%)	ROD. (%)							
28	SS14	6	4 6 50/2				As Above with Weathered Limestone Fragment in Shoe. Damp to Moist						
29													

ADDITIONAL REMARKS

Split Spoon Refusal @ 29.0'

ATS\FORM1

RADIAN INTERNATIONAL LLC

WELL NO. MW-4 PAGE 1 OF 1

PROJECT NAME [illegible] PROJECT NO. [illegible]

LOCATION GEOLOGIST DNM

BY DNM DRILLING CONTRACTOR MAXIM TECH DRILLER

DATE 10/23/96 DRILLING METHOD HSA w/ S.S. Sampling RIG TYPE CME-75

CHK BY DRILLING START DATE 9/12/96 DRILLING COMPLETION DATE 9/12/96

DATE SURFACE ELEVATION STICK-UP ELEVATION

DEPTH FEET	SOIL SAMPLE NO.	SOIL SAMPLE REC. (IN.)	SOIL SAMPLE BL./6"	ROCK SAMPLE RUN (FT)	ROCK SAMPLE REC. (%)	ROCK SAMPLE RQD. (%)	VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT)	BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
0	HSA						Black-Brown CINDERS and GRAVEL, Some Clay, Moist	F				Flushmount Protective Casing	
2	SS1	14	9 9 19 20				Medium Stiff to Stiff, Red-Brown CLAY, Little Silt, Trace Fine Sand, Gray Along Fractures, Moist	CL				Bentonite-Cement Grout	
4	SS2	19	12 16 25 27				Stiff to Very Stiff, Red-Brown CLAY, Little Silt, Trace Fine Gravel and Fine Sand, Gray Along Fractures, Damp	CL				2" Sch 40 PVC Riser	
6	HSA						Red-Brown CLAY	CL					
8	SS3	20	16 18 30 36				Very Stiff to Hard, Red-Brown CLAY, Little Silt, Trace Fine Sand and Gravel, Iron-Staining, Damp	CL					
11	HSA												

ADDITIONAL REMARKS

RADIAN INTERNATIONAL LLC

WELL NO. MW-4 PAGE 1 OF 2

PROJECT NAME DS - Depew PROJECT NO. 207531

LOCATION Depew, NY GEOLOGIST DNM

DEPTH FEET	SOIL SAMPLE NO.	SOIL SAMPLE REC. (IN.)	SOIL SAMPLE BL./6"	ROCK SAMPLE RUN (FT)	ROCK SAMPLE REC. (%)	ROCK SAMPLE RQD. (%)	VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT)	BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
12	HSA						Red-Brown CLAY	CL			13		Bentonite Seal
14	SS4	12	7 8 9 13				Medium Stiff to Stiff, Red-Brown CLAY to 15.0', (15'-16') Gray CLAY, Sticky, Trace Gravel and Very Fine to Fine Sand, Moist	CL			15		
16	HSA						Gray and Gray-Brown CLAY	CL			18.0		
20	SS5	12	4 8 11 10				Stiff, Gray-Brown CLAY, Little Silt and Very Fine to Coarse Sand, Little Fine to Medium Gravel, Wet	CL					2" Sch 40 PVC Well Screen (0.010" Slot)
22	HSA						Gray-Brown CLAY	CL					Clean Filter Sand Pack
24	SS6	0	16 17 12 15				No Recovery	CL					
26	HSA						Gray-Brown CLAY	CL					
28							HSA Refusal @ 28.4'				28.0		PVC End Cap

ADDITIONAL REMARKS

MATSVOR1.DWG

URS Corporation

TEST BORING LOG

BORING NO:	MW-5
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	
GROUND ELEVATION:	
DATE STARTED:	07/09/01
DATE FINISHED:	07/09/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Lenhardt

PROJECT: Dowell Schlumberger Site, Depew, New York

CLIENT: Dowell Schlumberger

BORING CONTRACTOR: Nature's Way, Inc.

GROUNDWATER:

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split spoon		
DIA.	4¼ " ID	2"		
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" TYPE	BLOWS PER 6"	RECOVERY % RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS PID (ppm)
		1	33	5 17 / 16 9	55%	Gray Brown	Dense	0-6': Fill - silt with coarse sand and fine to medium gravel	Fill	0 Sli. moist
		2	4	3 2 / 2 1	70%	Black	Loose			0 Vy. moist
5		3	5	2 1 / 4 2	10%	Red Brown	Medium Soft	Fill- clay with brick fragments		0 Wet
		4	5	WoH 2 / 3 4	70%	Blue Gray		Silty Clay with fine sand	CL	0 Sli. moist
10		5	14	4 6 / 8 9	85%	Medium Brown	Stiff	Clayey Silt	ML	0
		6	20	6 8 / 12 18	100%		Very Stiff	-clay content increases with depth		0
		7	13	4 6 / 7 10	85%		Stiff			0 moist
15								End of boring at 14.0 feet		
20										
25										
30										
35										

Comments: Boring advance using a truck mounted Diedrich D-50; utilizing 4-1/4 inch ID HSA. Samples collected using 2" split spoon samplers.
WoH= Weight of hammer assembly

PROJECT NO. 05-00035824.00

BORING NO. MW-5

DRILLING SUMMARY

Geologist: Tim Burmeier

Drilling Company: Nature's Way

Driller: Steve Gingrich

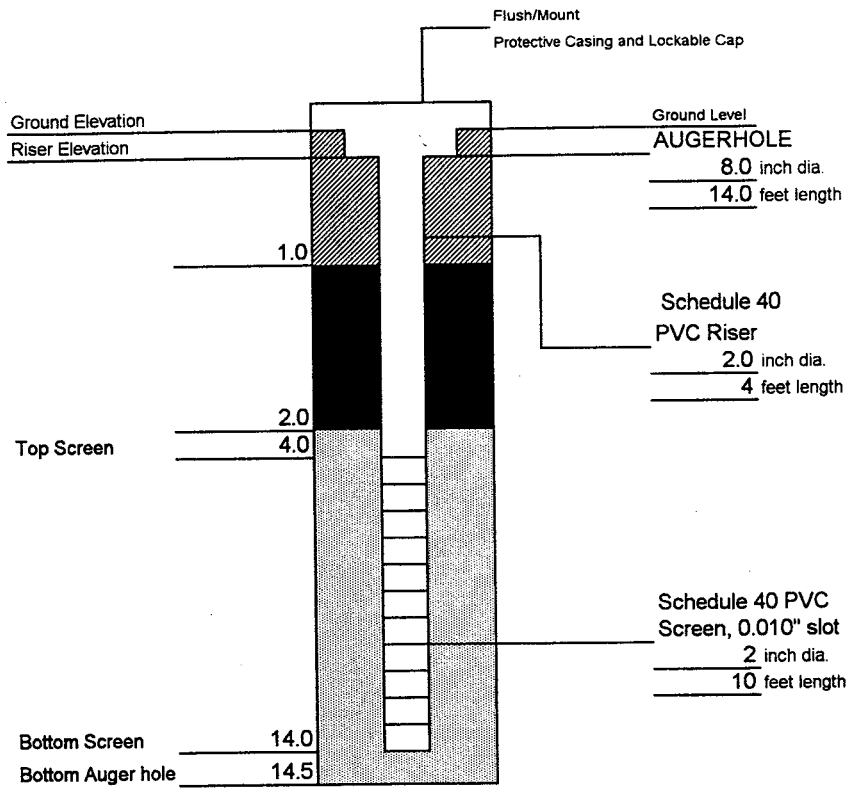
Rig Make/Model: Diedrich D-50

Date: 07/09/2001

GEOLOGIC LOG

Depth(ft.)	Description
0-6.0	Fill- granular
6.0-8.0	Silty Clay
8.0-14.0	Clayey Silt

DEPTH



WELL DESIGN

CASING MATERIAL		SCREEN MATERIAL		FILTER MATERIAL
Surface:	Flush Mount Roadbox	Type:	Schedule 40 PVC	Type: Morie Equivalent "00N" Setting: 2.0'-14.5
Monitor	Schedule 40 PVC	Slot Size:	0.010"	SEAL MATERIAL Type: Bentonite Chips Setting: 1.0'-2.0' Type: Concrete/ Bentonite Grout Setting: 0.0-1.0'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client: Dowell Schlumberger	**Location:** 3311 Walden Avenue Depew, New York	**Project No.:** 05.000.35824.00
URS Corporation	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number:** MW-05

URS Corporation

TEST BORING LOG

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
GROUNDWATER:	

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split spoon		
DIA.	4¼ " ID	2"		
WT.		140#		
FALL		30"		

DATE	TIME	LEVEL	TYPE

* POCKET PENETROMETER READING

BORING NO:	MW-6
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	
GROUND ELEVATION:	
DATE STARTED:	07/09/01
DATE FINISHED:	07/09/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Lenhardt

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" TYPE	BLOWS PER 6"	RECOVERY % / RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS PID (ppm)	
		1	71	10 29 / 42 50/1	5%	Gray Brown	Very Dense	0-6': Fill - asphalt paving over silt and fine to coarse gravel	Fill	507*	Sli. moist
		2	20	7 9 / 11 16	0%		Medium Dense			0	Vy. moist
5		3	19	10 8 / 11 17	95%	Yellow Brown	Very Stiff	Clayey Silt, trace fine gravel	ML	0	Wet
		4	18	5 7 / 11 15	90%			-clay content increases with depth		0	Sli. moist
10		5	21	4 7 / 14 19	95%	Medium Brown				0	
		6	15	5 7 / 8 12	90%		Stiff	Silty Clay	CL	0	
		7	12	6 5 / 7 8	55%			-clay content increases with depth		0	moist
15		8	11	3 5 / 6 5	45%	Gray Brown		- with 5% fine to coarse sand		0	Wet
		9	7	2 3 / 4 6	100%		Medium Soft			0	
20		10	6	1 3 / 3 5	100%					0	
25								End of boring at 20.5 feet			
30											
35											

Comments: Boring advance using a truck mounted Diedrich D-50; utilizing 4-1/4 inch ID HSA. Samples collected using 2" split spoon samplers.
WoH= Weight of hammer assembly. *= jar headspace, probably cause by sample moisture

PROJECT NO.	05-00035824.00
BORING NO.	MW-6

DRILLING SUMMARY

Geologist:
Tim Burmeier

Drilling Company:
Nature's Way

Driller:
Steve Gingrich

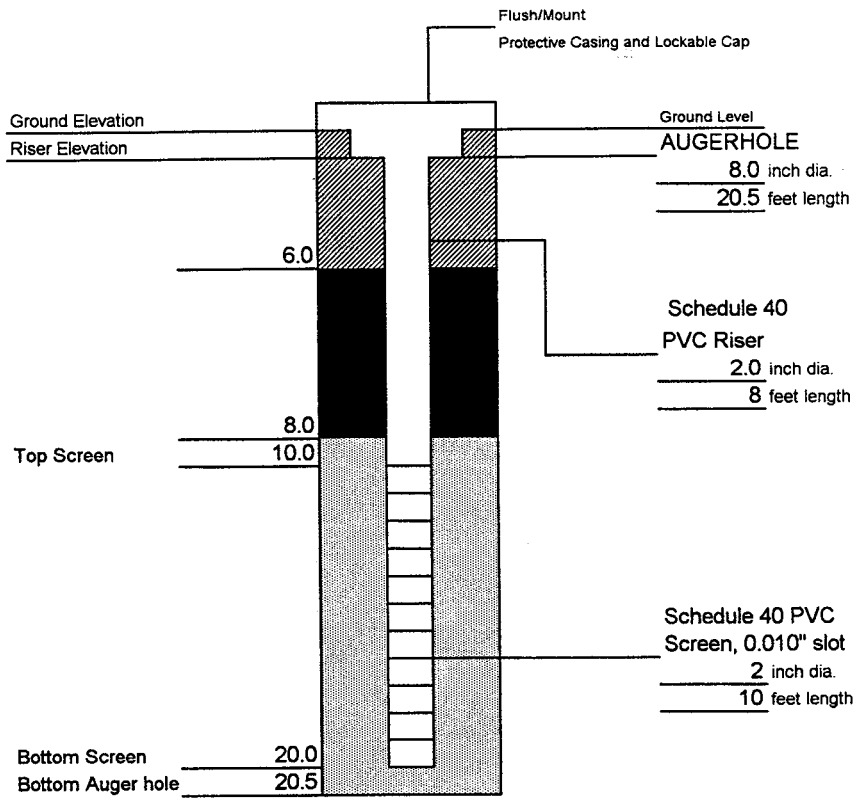
Rig Make/Model:
Diedrich D-50

Date:
07/09/2001

GEOLOGIC LOG

Depth(ft.)	Description
0-4.0	Fill- granular
4.0-10.0	Clayey Silt
10.0-20.5	Silty Clay

DEPTH



WELL DESIGN

CASING MATERIAL		SCREEN MATERIAL		FILTER MATERIAL	
Surface:	Flush Mount Roadbox	Type:	Schedule 40 PVC	Type: Morie Equivalent "00N"	Setting: 8.0'-20.5
Monitor	Schedule 40 PVC	Slot Size:	0.010"	SEAL MATERIAL	
				Type: Bentonite Chips	Setting: 6.0'-8.0'
				Type: Concrete/ Bentonite Grout	Setting: 0.0-6.0'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client:	**Dowell Schlumberger**	**Location:**	**3311 Walden Avenue Depew, New York**
Project No.:	**05.000.35824.00**		
URS Corporation		**MONITORING WELL CONSTRUCTION DETAILS**	
Well Number:	**MW-06**		

URS

TEST BORING LOG

BORING NO:	MW-6D
SHEET:	1 of 1
JOB NO.:	11171084.00000
BORING LOCATION:	
GROUND ELEVATION:	
DATE STARTED:	04/22/04
DATE FINISHED:	04/22/04
DRILLER:	Keith
GEOLOGIST:	Rob Murphy
REVIEWED BY:	

PROJECT:	Former Dowell Facility, Depew NY
CLIENT:	Dowell Schlumberger Incorporated
BORING CONTRACTOR:	Marcor Remediation

GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE
DATE	TIME	LEVEL	TYPE	TYPE	4 1/4"	split spoon		
				DIA.	HSA	2"		
				WT.	-	140#		
				FALL	-	30"		
				* POCKET PENETROMETER READING				

DEPTH FEET	SAMPLE STRATA	NO.	TYPE	BLOWS PER 6"	REC% RQD%	DESCRIPTION COLOR	CONSIST HARD	MATERIAL DESCRIPTION	USCS	REMARKS PID	REMARKS
						Gray Brown		FILL: 0-0.5' Asphalt, 0.5'-2.0': Coarse gravel, some silt, sand and clay.	FILL	ND	Moist
		1	ss	2 10 / 19 20	90%	Red Brown		Silty CLAY, trace gray mottles.	CL	ND	Wet / Moist
5		2	ss	3 13 / 20 24	90%			- trace fine rounded to subrounded gravel, trace black organic specks (m-sand sized)		ND	
		3	ss	3 13 / 18 20	100%	Brown		-trace coarse sand (rounded)		ND	
10		4	ss	8 16 / 22 27	100%			-Iron staining and black organic specks (9.8-10.0')		ND	
		5	ss	3 5 / 10 12	90%			- Iron staining on vertical dessication crack (11.8-12.0'), more plastic (13-14')		ND	Very moist to wet
		6	ss	3 7 / 9 9	95%			13.5'-15.0': Silty Clay with alternating 2-5mm thick gray silt beds.		ND	
15		7	ss	1 3 / 6 5	90%	Gray Brown		Very Clayey SILT, some medium to coarse sand and fine rounded to subrounded gravel. Plastic	ML	ND	
		8	ss	2 4 / 5 6	100%					ND	
20		9	ss	1 2 / 5 7	80%	Gray/ Red Brown				ND	
		10	ss	5 6 / 8 8	25%					ND	
		11	ss	2 7 / 13 7	70%					ND	
25		12	ss	8 7 / 10 9	90%			Silty CLAY, some medium to coarse sand and fine rounded to subrounded gravel. Plastic	CL	ND	
		13	ss	7 10 / 10 11	100%					ND	
		14	ss	3 9 / 9 11	20%					ND	
30								End of boring at 30.5'			
35											

Comments: Boring advanced with trailer-mounted Canterra 150 Rig using 4 1/4" ID HSAs and 2" split spoons to 30.5'. Set 2" PVC well at 30' with 10' screen and 20' riser.

PROJECT NO.	11171084.00000
BORING NO.	MW-6D

DRILLING SUMMARY

Geologist:
Rob Murphy

Drilling Company:
Marcor Remediation

Driller:
Keith

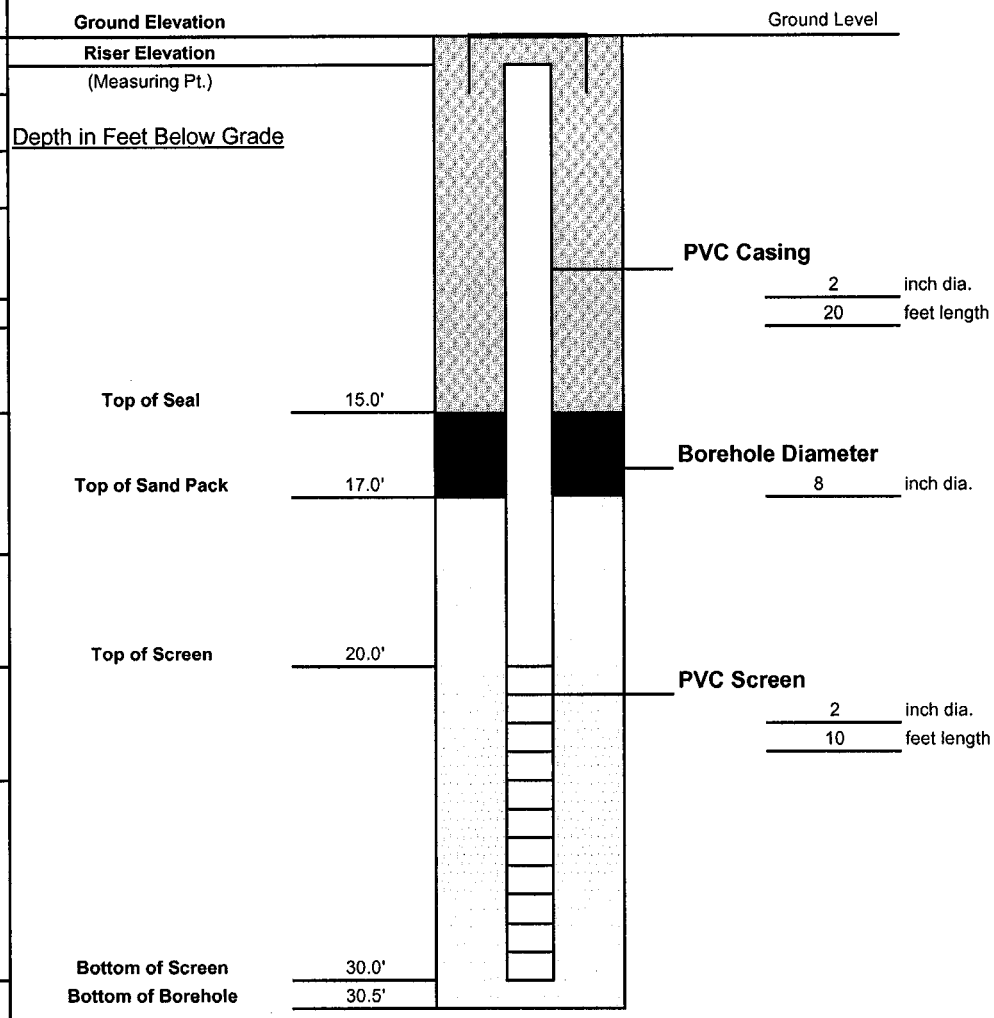
Rig Make/Model:
Canterra 150 Trailer Mounted

Date:
4/22/2004

GEOLOGIC LOG

Depth(ft.)	Description
0'-2'	FILL: Asphalt, gravel, concrete, sand, silt and clay.
2'-15'	CL: Silty CLAY, trace gray mottles, trace fine rounded to subrounded gravel, trace black organic specks, trace iron staining
15'-24'	ML: Very Clayey SILT, some medium to coarse sand and fine rounded to subrounded gravel. Plastic
24'-30.5'	CL: Silty CLAY, some medium to coarse sand and fine rounded to subrounded gravel. Plastic
	End of boring

WELL DESIGN



CASING MATERIAL		SCREEN MATERIAL		FILTER MATERIAL
Surface:	8" Road Box	**Type:**	Schedule 40 PVC	**Type:** #00 Silica well sand (Ricci Bros.) **Setting:** 17.0'-30.5'
Monitor:	PVC	**Slot Size:**	0.010"	**SEAL MATERIAL** **Type 1:** Medium Bentonite Pellets (Pure Gold) **Setting:** 15.0'-17.0'

COMMENTS:

LEGEND

- Cement Grout
- Bentonite Seal
- Sand Pack

Client: Dowell Schlumberger Incorporated	**Location: Fomer Dowell Facility**	**Project No.: 11171084.00000**
URS	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number: MW-6D**

URS Corporation

TEST BORING LOG

BORING NO:	MW-7
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	
GROUND ELEVATION:	
DATE STARTED:	07/10/01
DATE FINISHED:	07/10/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Lenhardt

PROJECT: Dowell Schlumberger Site, Depew, New York

CLIENT: Dowell Schlumberger

BORING CONTRACTOR: Nature's Way, Inc.

GROUNDWATER:

DATE	TIME	LEVEL	TYPE

TYPE	CAS.	SAMPLER	CORE	TUBE
HSA	Split spoon			
DIA.	4¼ " ID	2"		
WT.		140#		
FALL		30"		

* POCKET PENETROMETER READING

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" TYPE	BLOWS PER 6"	RECOVERY % RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS PID (ppm)	
		1	25	X 11 14 8	10%	Dark Gray	Medium Dense	0-2': Fill - asphalt paving and sub-base gravel with silt	Fill	0*	Sli. moist
		2	13	6 5 8 12	85%	Yellow Brown	Stiff	Silty clay with gray mottles	CL	0*	moist
5		3	27	15 12 15 14	0%	Medium Brown	Very Stiff	Clayey Silt	ML	0*	Sli. moist
		4	16	2 5 11 14	85%			-clay content increases with depth		0	
10		5	41	12 19 22 26	95%					0	
		6	18	3 7 11 21	0%					0	Moist
		7	8	1 3 5 7	100%	Gray Brown	Medium Soft	Silty Clay trace subrounded fine gravel	CL	0	
15		8	6	1 2 4 8	100%			- with 1" thick fine sand and silt layers and 3-5% fine to coarse sand		0	Wet
		9	11	2 4 7 9	100%		Stiff	- with 10% fine angular gravel		0	
20		10	12	3 4 8 10	60%					0	
25								End of boring at 20.0 feet			
30											
35											

Comments: Boring advance using a truck mounted Diedrich D-50; utilizing 4-1/4 inch ID

HSA. Samples collected using 2" split spoon samplers.

WoH= Weight of hammer assembly. * Initial PID readings affected by humidity

PROJECT NO. 05-00035824.00

BORING NO. MW-7

DRILLING SUMMARY

Geologist: Tim Burmeier

Drilling Company: Nature's Way

Driller: Steve Gingrich

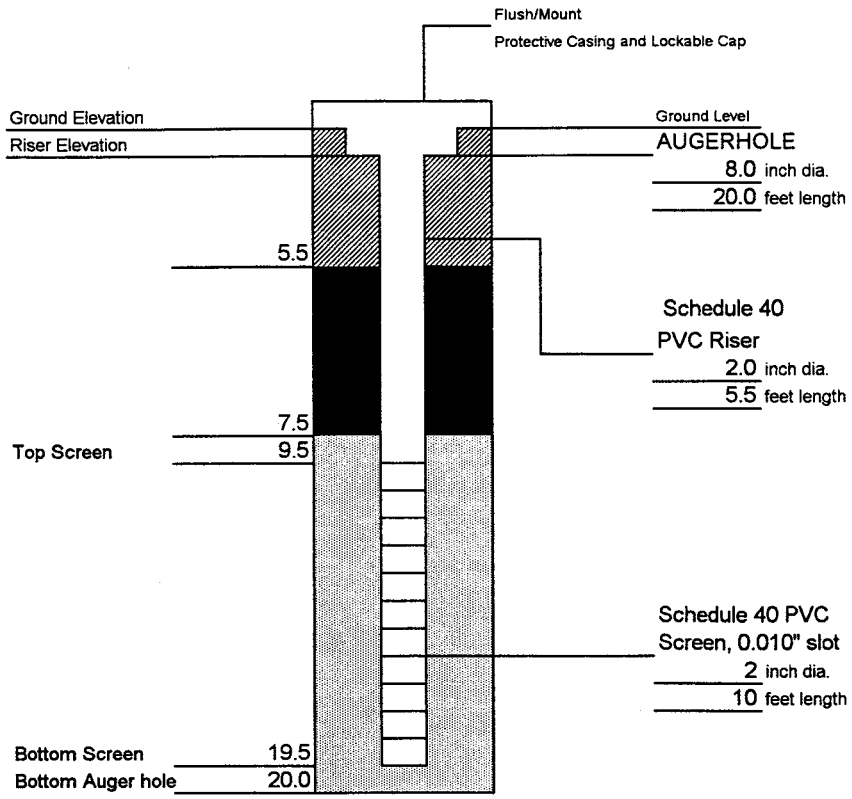
Rig Make/Model: Diedrich D-50

Date: 07/10/2001

GEOLOGIC LOG

Depth(ft.)	Description
0-2.0	Fill- granular
2.0-4.0	Silty Clay
4.0-12.0	Clayey Silt
12.0-20.0	Silty Clay

DEPTH



WELL DESIGN

CASING MATERIAL		SCREEN MATERIAL		FILTER MATERIAL	
Surface:	Flush Mount Roadbox	Type:	Schedule 40 PVC	Type: Morie Equivalent "00N"	Setting: 7.5'-20.0'
Monitor	Schedule 40 PVC	Slot Size:	0.010"	SEAL MATERIAL	
				Type: Bentonite Chips	Setting: 5.5'-7.5'
				Type: Concrete/ Bentonite Grout	Setting: 0.0-5.5'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client: Dowell Schlumberger	**Location:** 3311 Walden Avenue Depew, New York	**Project No.:** 05.000.35824.00
URS Corporation	**MONITORING WELL CONSTRUCTION DETAILS**	**Well Number:** MW-07

URS Corporation

TEST BORING LOG

BORING NO:	MW-7D
SHEET:	1 of 1
JOB NO.:	11171084.00000
BORING LOCATION:	
GROUND ELEVATION:	
DATE STARTED:	10/28/05
DATE FINISHED:	10/28/05
DRILLER:	D. Gramza
GEOLOGIST:	J. Doerr
REVIEWED BY:	T. Burmeier

PROJECT: Former Dowell Facility
CLIENT: Dowell Schlumberger Inc.
BORING CONTRACTOR: Nature's Way

GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE
DATE	TIME	LEVEL	TYPE	TYPE	HSA	Split spoon		
10/30/05	9:11	25.51	Static	DIA.	4 1/4"	2"		
				WT.		140#		
				FALL		30"		
				* POCKET PENETROMETER READING				

DEPTH FEET	SAMPLE STRATA	NO.	TYPE	BLOWS PER 6"	RECOVERY RQD	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS PID	REMARKS MOISTURE
		1	SS					0.0-20.0 See log MW-7			
		2	SS								
5		3	SS								
		4	SS								
		5	SS								
10		6	SS								
		7	SS								
15		8	SS								
		9	SS								
		10	SS								
20											
		11	SS	4 7 / 10 16	50%	Red-Brown	Very Stiff	SILTY CLAY, trace fine to medium SAND, and fine, sub-rounded gravel, plastic	CL	0.0	Moist
		12	SS	4 7 / 10 15	60%					0.0	
25		13	SS	5 14 / 12 13	40%			coarse gravel-size angular limestone fragment		0.0	
		14	SS	3 7 / 9 15	70%					0.0	
		15	SS	5 8 / 9 10	60%					0.0	
30											
		16	SS					End boring at 30' BGS			
		17	SS								
35		18	SS								

Comments: Boring advanced with a truck mounted Acker AD-11 drill rig, utilizing 4 1/4" ID HSA, and 2" split spoon sampler. No samples were collected for laboratory analysis

PROJECT NO.	11171084.00
BORING NO.	MW-7D

DRILLING SUMMARY

Geologist:
J. Doerr

Drilling Company:
Nature's Way

Driller:
Dale Gramza

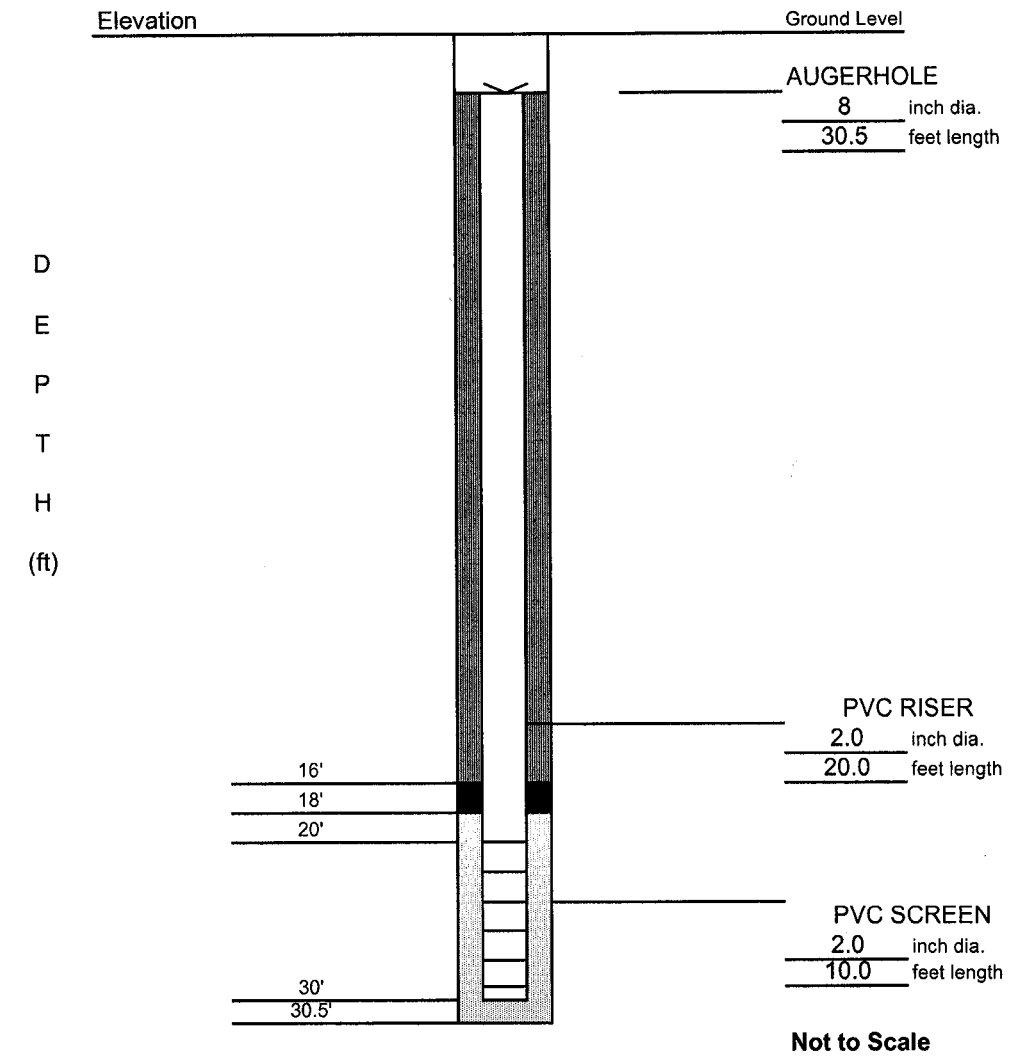
Rig Make/Model:
Acker AD-11

Date:
10/28/2005

GEOLOGIC LOG

Depth(ft.)	Description
0.0-20.0	See MW-7
20.0-30.0	SILTY CLAY, trace fine to medium SAND and fine sub rounded gravel

WELL DESIGN



CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL
Surface: Steel	Type: 2" Schedule 40 PVC	Type: #2 Sand Setting: 18'-30.5'
Monitor: " Schedule 40 PVC	Slot Size: # 10; 0.010"	SEAL MATERIAL Type: Bentonite Setting:16'-18'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client: Dowell Schlumberger Inc.	**Location: Former Dowell Facility**	**Project No.: 11171084.00000**
URS Corporation	**OVERBURDEN MONITORING WELL CONSTRUCTION DETAILS**	**Well Number: MW-7D**

URS Corporation

TEST BORING LOG

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
GROUNDWATER:	

	CAS.	SAMPLER	CORE	TUBE
TYPE	HSA	Split spoon		
DIA.	4¼ " ID	2"		
WT.		140#		
FALL		30"		

DATE	TIME	LEVEL	TYPE

* POCKET PENETROMETER READING

BORING NO:	MW-8
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	
GROUND ELEVATION:	
DATE STARTED:	07/10/01
DATE FINISHED:	07/10/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Lenhardt

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" TYPE	BLOWS PER 6"	RECOVERY % RQD %	DESCRIPTION COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS PID (ppm)	
		1	9	5 4 / 5 3	50%	Gray Black	Loose	0-2': Fill - fine gravel, silt, cinders, brick fragments	Fill	0	Moist
		2	7	1 2 / 5 6	90%	Orange Brown	Medium Soft	Silty Clay with gray mottles	CL	0	
5		3	13	5 5 / 8 10	80%		Stiff	Clayey silt	ML	0	Sli. Moist
		4	17	4 7 / 10 14	90%		Very Stiff	-clay content increases with depth		0	
10		5	18	4 7 / 11 17	50%	Medium Brown				0	Moist
		6	12	3 4 / 8 10	100%		Stiff	Silty Clay	CL	0	
		7	13	4 7 / 6 7	100%	Gray Brown		- 5 % fine to coarse sand and gravel		0	Wet
15		8	11	3 5 / 6 7	20%					0	
		9	9	2 4 / 5 7	95%					0	
20		10	11	3 4 / 7 6	45%					0	
								End of boring at 20.0 feet			
25											
30											
35											

Comments: Boring advance using a truck mounted Diedrich D-50; utilizing 4-1/4 inch ID
HSA. Samples collected using 2" split spoon samplers.
WoH= Weight of hammer assembly. Sampled 4-5' interval for VOC analysis

PROJECT NO.	05-00035824.00
BORING NO.	MW-8

DRILLING SUMMARY

Geologist:
Tim Burmeier

Drilling Company:
Nature's Way

Driller:
Steve Gingrich

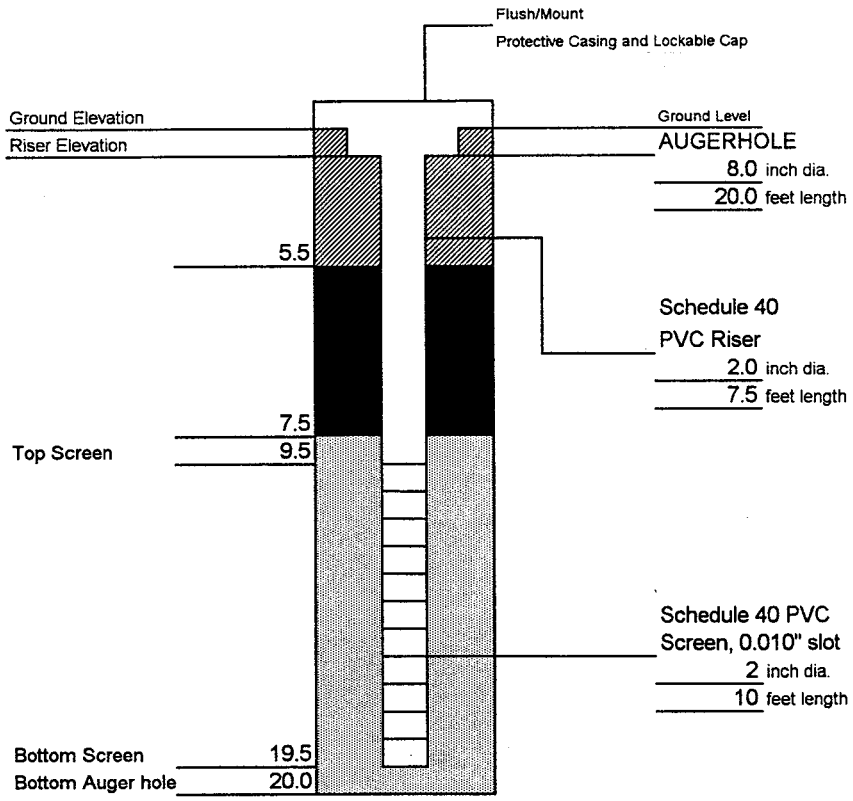
Rig Make/Model:
Diedrich D-50

Date:
07/10/2001

GEOLOGIC LOG

DEPTH

Depth(ft.)	Description
0-2.0	Fill- granular
2.0-4.0	Silty Clay
4.0-10.0	Clayey Silt
10.0-20.0	Silty Clay



WELL DESIGN

CASING MATERIAL		SCREEN MATERIAL		FILTER MATERIAL	
Surface:	Flush Mount Roadbox	Type:	Schedule 40 PVC	Type: Morie Equivalent "00N"	Setting: 7.5-20.0'
Monitor	Schedule 40 PVC	Slot Size:	0.010"	SEAL MATERIAL	
				Type: Bentonite Chips	Setting: 5.5-7.5'
				Type: Concrete/ Bentonite Grout	Setting: 0.0-5.5'

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client:	**Dowell Schlumberger**	**Location:**	**3311 Walden Avenue Depew, New York**
Project No.:	**05.000.35824.00**		
URS Corporation		**MONITORING WELL CONSTRUCTION DETAILS**	
Well Number:	**MW-08**		

DRILLING SUMMARY

URS Representative: Scott McCone

Contractor: Marcor Remediation Inc.

Operator:

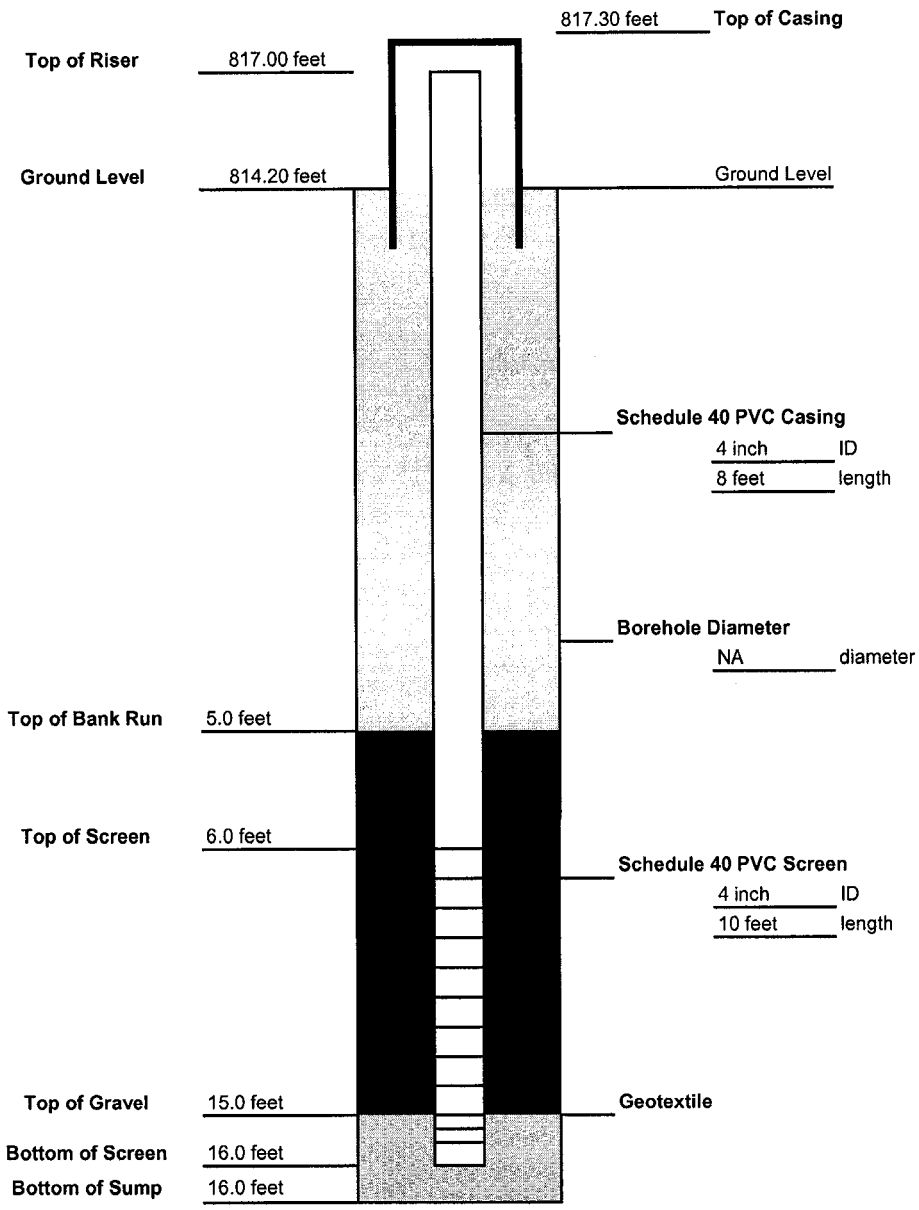
Model: Excavator

Date:

GEOLOGIC LOG

Depth(ft.)	Description
0.0-2.0	Asphalt and slag
2.0-15.0	Silty clay, some fine sand and fine gravel
15.0 - 16.0	Clay

DEPTH



WELL DESIGN

CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL
Surface: 6" Steel	**Type:** 4" Schedule 40 PVC	**Type:** Washed Gravel / Bank Run **Setting:** 5.0' to 16.0'
Monitor: 4" Schedule 40 PVC	**Slot Size:** 0.010"	**SEAL MATERIAL** **Type 1:** NA **Setting:** NA **Type 2:** NA **Setting:** NA

COMMENTS:

Well was installed in the center of the excavation
Well was placed in a sump in the open excavation
Gravel was installed from 14.0' to 16.0'
Bank Run was installed from 5.0' to 14.0'
Clean fill was installed from 0.0' to 5.0'
Geotextile liner placed between the gravel and bank run layers

LEGEND

- Clean Fill
- Bank Run
- Washed Gravel

Client: Dowell Schlumberger Inc.	**Location:** Former Dowell Site	**Project No.:** 11171084.00000
URS Corporation	**RECOVERY WELL CONSTRUCTION DETAILS**	**Well Number:** RW-4

APPENDIX G

GROUNDWATER MONITORING WELL SAMPLING LOG FORMS

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: _____ **Site:** Former Dowell Site **Well I.D.:** _____

Date: _____ **Sampling Personnel:** _____ **Company:** _____

Purging/ Sampling Device: Low Flow Peristaltic Pump Tubing Type: LDPE and Silicone Pump/Tubing Inlet Location: Midpoint of Screen

Measuring Point: TOIC Initial Depth to Water: _____ Depth to Well Bottom: _____ Well Diameter: _____ Screen Length: _____

Casing Type: PVC Volume in 1 Well Casing: _____ Estimated Purge Volume: _____

Sample ID: _____ Sample Time: _____ QA/QC: _____

Sample Parameters: _____

PURGE PARAMETERS

TIME	pH	TEMP (°C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	ORP (millivolts)	FLOW RATE (ml/min.)	TO WATER (btor)
Tolerance:	**0.1**	**---**	**3%**	**10%**	**10%**	**+ or - 2.0**	**---**	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

Comments: _____

WELL PURGING LOG

PROJECT TITLE: _____ WELL NO.: _____

PROJECT NO.: _____

STAFF: _____

DATE(S): _____

			WELL ID.	GAL/FT)
1. TOTAL CASING AND SCREEN LENGTH (FT.)	=		1"	0.04
2. WATER LEVEL BELOW TOP OF CASING (FT.)	=		2"	0.17
3. NUMBER OF FEET STANDING WATER (#1 - #2)	=		3"	0.38
4. VOLUME OF WATER/FOOT OF CASING (GAL.)	=		4"	0.66
5. VOLUME OF WATER IN CASING (GAL.)(#3 x #4)	=		5"	1.04
6. VOLUME OF WATER TO REMOVE (GAL.)(#5 x 3)	=		6"	1.50
7. VOLUME OF WATER ACTUALLY REMOVED (GAL.)	=		8"	2.60

OR

$V=0.0408 \times (\text{CASING DIAMETER})^2$

	ACCUMULATED VOLUME PURGED (GALLONS)										
PARAMETERS	INITIAL										INSTRUMENT
pH											
SPEC. COND. (umhos)											
APPEARANCE											
TEMPERATURE (°C)											
TURBIDITY (NTU)											
DISSOLVED OXYGEN											
WATER LEVEL											
TIME											

COMMENTS:

APPENDIX H

SITE-WIDE INSPECTION FORM

FORMER DOWELL FACILITY – DEPEW, NEW YORK
SITE MANAGEMENT PLAN

NYSDEC SITE NO. V-00410-9

SITE-WIDE INSPECTION FORM

Date: _____ **Inspector:** _____

Weather: _____ **Signature:** _____

Temperature:_____ **Company:** _____

Quarter: First Second Third Fourth
(Circle One)

Item Inspected	**Maintenance Needed (Y/N)**	**Comments**
General Site Access		
Soil /Grass Cover		
Security Fencing, Gates and Locks		
Monitoring Wells		
Site Drainage		
Trees, Bushes, Other Vegetation		
Miscellaneous		

APPENDIX I

QUALITY ASSURANCE PROJECT PLAN

TABLE OF CONTENTS

Page No.

QUALITY ASSURANCE PROJECT PLAN

TABLE OF CONTENTS (Continued)

TABLES

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is designed to provide an overview of QA/QC procedures and programs which will be adhered to during any future intrusive activities conducted on the site. It will give specific methods and QA/QC procedures for chemical testing of environmental samples obtained from the site, and it will ensure the quality of the data produced during future intrusive site activities. All samples will be analyzed at a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory.

The organizational structure for future intrusive activities will be described by the site owner. It identifies the names of key project personnel. The QA/QC Officer is responsible for verifying that corporate QA procedures are followed. The Onsite Coordinator is responsible for verifying that QA procedures are followed in the field. This will provide for the valid collection of representative samples. The Project Chemist will be in direct contact with the analytical laboratory to monitor laboratory activities so that holding times and other QA/QC requirements are met.

In addition to overall project coordination, the Project Manager will be responsible for overseeing both the analytical and field QA/QC activities. The ultimate responsibility for maintaining quality throughout the project rests with the Project Manager.

The analytical laboratory proposed to be used for the analysis of aqueous and solid environmental samples shall be currently certified by NYSDOH ELAP for the appropriate categories (e.g., potable water; non-potable water; air and emissions; solid and hazardous waste; etc.). The laboratory QA Manager will be responsible for overseeing the quality control data generated. Also, the laboratory QA Manager will be in daily communication with the Project Chemist.

2.0 DATA QUALITY OBJECTIVES

2.1 Background

Data quality objectives (DQOs) are qualitative and quantitative statements which specify the quality of data required to support any future intrusive activities conducted at the site. DQOs focus on the identification of the end use of the data to be collected. The project DQOs will be achieved utilizing the definitive data category, as outlined in *Guidance for the Data Quality Objectives Process,* EPA QA/G-4 (August 2000, or most current version). All sample analyses will provide definitive data which are generated using rigorous analytical methods, such as reference methods approved by the U.S. Environmental Protection Agency (USEPA). A summary of the analytical methods to be used are presented in Table B2-1.

The project DQOs for data collected during any future intrusive activities are:

- to characterize the nature and extent of contamination present, if any, in the proposed work area;
- to protect workers and onsite users and/or onsite reuse and/or off-site disposal;
- to maintain the highest possible scientific/professional standards for each procedure be maintained; and
- to assure the ultimate defensibility of the data produced during any field activities.

Soil and groundwater analytical results will be compared to the applicable site cleanup goals (SCGs) that are protective of human health and the environment. For the soil matrix, the SCG's will be the NYSDEC's 6 NYCRR Subpart 375-6, *Remedial Program Soil Cleanup Objectives,* Table 375-6.8 (b): Restricted Use Soil Cleanup Objectives, Commercial Category (effective December 14, 2006). For the groundwater matrix, the SCG's will be the NYSDEC's Technical and Operational Guidance Series (TOGS) 1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (dated June 1998).

TABLE 2-1

SUMMARY OF ANALYTICAL PARAMETERS

FORMER DOWELL SITE

Parameter	Method Number / Reference[1]	Estimated Number of Samples	QA/QC Samples		
			MS/MSD/MSB	Rinse Blanks	Trip Blanks
I. Groundwater Target Compound List (TCL) Volatiles + TICs	SOM01.0 (or most current version)	TBD	TBD	0	TBD
II. Subsurface Soil TCL Volatiles + TICs	SOM01.0 (or most current version)	TBD	TBD	TBD	0

NOTES:

[1]NYSDEC Analytical Services Protocol, July 2005 Edition (or most current version).

TIC – Tentatively Identified Compounds

TBD – To Be Determined

2.2 QA Objectives for Chemical Data Measurement

In order to achieve the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, comparability, and completeness will be measured during offsite chemical analysis.

2.2.1 Precision

Precision examines the distribution of the reported values about their mean. The distribution of reported values refers to how different the individual reported values are from the average reported value. Precision may be affected by the natural variation of the matrix or contamination within that matrix, as well as by errors made in field and/or laboratory handling procedures. Precision is evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (for organics) and matrix duplicates (for inorganics), which not only exhibit sampling and analytical precision, but indicate analytical precision through the reproducibility of the analytical results. Relative Percent Difference (RPD) is used to evaluate precision. RPD criteria must meet the method requirements identified in Table B2-1.

2.2.2 Accuracy

Accuracy measures the analytical bias in a measurement system. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques. Sampling accuracy may be assessed by evaluating the results of rinse and trip blanks. These data help to assess the potential concentration contribution from various outside sources. The laboratory objective for accuracy is to equal or exceeds the accuracy demonstrated for the applied analytical methods on samples of the same matrix. The percent recovery criterion is used to estimate accuracy based on recovery in the matrix spike/matrix spike duplicate and matrix spike blank samples. The spike and spike duplicate, which will give an indication of matrix effects that may be affecting target compounds, are also a good gauge of method efficiency. For VOC analysis surrogate recovery results will also be measured. Acceptable ranges of recovery are reported in the referenced methods identified in Table B2-1.

2.2.3 Representativeness

Representativeness expresses the degree to which the sample data accurately and precisely represent the characteristics of a population of samples, parameter variations at a sampling point, or environmental conditions. Representativeness is a qualitative parameter which is most concerned with the proper design of the sampling program or subsampling of a given sample. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the investigative objectives (i.e., determination of vertical and horizontal extent of contamination). The sampling procedures, as described in the FSP (Part C), have been selected with the goal of obtaining representative samples for the media of concern.

2.2.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. A DQO for this program is to produce data with the greatest possible degree of comparability. This goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. Complete field documentation using standardized data collection forms will support the assessment of comparability. Comparability is limited by the other parameters (e.g., precision, accuracy, representativeness, completeness, comparability) because only when precision and accuracy are known can data sets be compared with confidence. In order for data sets may be comparable, it is imperative that contract-required methods and procedures be explicitly followed.

2.2.5 Completeness

Completeness is defined as a measure of the amount of valid data obtainable from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is important that appropriate QA procedures be maintained to verify that valid data are obtained in order to meet project needs. For the data generated, a goal of 90% is required for completeness (or usability) of the analytical data. If this goal is not met, project personnel will determine whether the deviations might cause the data to be rejected.

3.0 SAMPLING LOCATIONS, CUSTODY, HOLDING TIMES, AND ANALYSIS

Sampling locations and procedures for future intrusive activities will be determined prior to commencing any field work, and will be subject to approval by the NYSDEC prior to implementation. Procedures addressing field and laboratory sample chain-of-custody and holding times are presented in Section C6.0 of the FSP. Table B3-1 contains sample methods and container, preservation, and holding time requirements. All analyses will be performed in accordance with the NYSDEC Analytical Services Protocol, July 2005 Edition.

Table B2-1 identifies the specific methods to be performed on the individual matrices. All holding times begin with validated time of sample receipt (VTSR) at the laboratory. The laboratory must meet the method required detection limits which are referenced within the methods listed in these tables.

TABLE 3-1

ANALYTICAL METHODS, CONTAINER, PRESERVATION,

AND HOLDING TIME REQUIREMENTS

FORMER DOWELL FACILITY

PARAMETER	ANALYTICAL METHOD	VOLUME REQUIREMENT	PRESERVATION	HOLDING TIME*
Water				
TCL Volatiles	SOM01.0 (or most current version)	2 x 40 ml VOA vials	HCl to pH<2, Cool 4^{o} C	10 days preserved
Soil				
TCL Volatiles	SOM01.0 (or most current version)	2 x 4 oz. wide mouth glass	Cool 4^{o} C	10 days

NOTES:

* - All holding times begin with the Validated Time of Sample Receipt (VTSR) at the laboratory.

New York State Department of Environmental Conservation, Analytical Services Protocol (ASP), July 2005 Edition (or most current version).

4.0 CALIBRATION PROCEDURES AND FREQUENCY

In order to obtain a high level of precision and accuracy during sample processing procedures, laboratory instruments must be calibrated properly. Several analytical support areas must be considered so the integrity of standards and reagents is upheld prior to instrument calibration. The following sections describe the analytical support areas and laboratory instrument calibration procedures.

4.1 Analytical Support Areas

Prior to generating quality data, several analytical support areas must be considered:

Standard/Reagent Preparation - Primary reference standards and secondary standard solutions shall be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished according to the methods referenced in Table B2-1. All standards and standard solutions are to be formally documented (i.e., in a bound logbook) and should identify the supplier, lot number, purity/concentration, receipt/ preparation date, preparer's name, method of preparation, expiration date, and any other pertinent information. All standard solutions shall be validated prior to use. Care shall be exercised in the proper storage and handling of standard solutions (e.g., separating volatile standards from nonvolatile standards). The laboratory shall continually monitor the quality of the standards and reagents through well documented procedures.

Balances - The analytical balances shall be calibrated and maintained in accordance with manufacturer specifications. Calibration is conducted with two American Society of Testing Materials (ASTM) Class 1 weights that bracket the expected balance use range. The laboratory shall check the accuracy of the balances daily and they must be properly documented in permanently bound logbooks.

Refrigerators/Freezers – The temperature of the refrigerators and freezers within the laboratory shall be monitored and recorded daily. This will verify that the quality of the standards and reagents is not compromised and the integrity of the analytical samples is upheld.

Appropriate acceptance ranges (2 to 6° C for refrigerators) shall be clearly posted on each unit in service.

Water Supply System - The laboratory must maintain a sufficient water supply for all project needs. The grade of the water must be of the highest quality (analyte-free) in order to eliminate false-positives from the analytical results. Ultraviolet cartridges or carbon absorption treatments are recommended for organic analyses and ion-exchange treatment is recommended for inorganic tests. Appropriate documentation of the quality of the water supply system(s) will be performed on a regular basis.

4.2 Laboratory Instruments

Calibration of instruments is required to verify that the analytical system is operating properly and at the sensitivity necessary to meet established quantitation limits. Each instrument for organic and inorganic analyses shall be calibrated with standards appropriate to the type of instrument and linear range established within the analytical method(s). Calibration of laboratory instruments will be performed according to methods specified in Table B2-1. In addition to the requirements stated within the analytical methods, the contract laboratory will be required to analyze an additional low level standard at or near the detection limits. In general, standards will be used that bracket the expected concentration of the samples. This will require the use of different concentration levels, which are used to demonstrate the instrument's linear range of calibration.

Calibration of an instrument must be performed prior to the analysis of any samples and then at periodic intervals (continuing calibration) during the sample analysis to verify that the instrument is still calibrated. If the contract laboratory cannot meet the method required calibration requirements, corrective action shall be taken as discussed in Section B7.0. All corrective action procedures taken by the contract laboratory are to be documented, summarized within the case narrative, and submitted with the analytical results.

5.0 INTERNAL QUALITY CONTROL CHECKS

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed and are described as batch QC and matrix-specific QC procedures. The type and frequency of specific QC samples performed by the contract laboratory will be according to the specified analytical method and project specific requirements. Acceptable criteria and/or target ranges for these QC samples are presented within the analytical methods referenced in Table B2-1.

QC results which vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. Quality control samples including any project-specific QC will be analyzed are discussed below.

5.1 Batch QC

Method Blanks - A method blank is defined as laboratory-distilled or deionized water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples - A matrix spike blank (MSB) sample is an aliquot of water spiked (fortified) with all the elements being analyzed for calculation of precision and accuracy to verify that the analysis that is being performed is in control. A MSB will be performed for each matrix and organic parameter only.

5.2 Matrix-Specific QC

Matrix Spike Samples - An aliquot of a matrix is spiked with known concentrations of specific compounds as stipulated by the methodology. The matrix spike (MS) and matrix spike duplicate (MSD) are subjected to the entire analytical procedure in order to assess both accuracy and precision of the method for the matrix by measuring the percent recovery and relative percent

difference of the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are analyzed at a frequency of one each per 20 samples per matrix. MS/MSDs will be performed for all parameters listed in Table B2-1.

5.3 Additional QC

Rinsate (Equipment) Blanks - A rinsate blank is a sample of laboratory demonstrated analyte-free water passed through and over the cleaned sampling equipment. A rinsate blank is used to indicate potential contamination from ambient air and from sample instruments used to collect and transfer samples. This water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. The rinsate blank should be collected, transported, and analyzed in the same manner as the samples acquired that day. Rinsate blanks for nonaqueous matrices should be performed at a rate of 10 percent of the total number of samples collected throughout the sampling event. Rinse blanks will not be performed on samples (i.e., groundwater) where dedicated disposable equipment is used.

Trip Blanks - Trip blanks are not required for nonaqueous matrices. Trip blanks are required for aqueous sampling events. They consist of a set of sample bottles filled at the laboratory with laboratory-demonstrated analyte free water. These samples then accompany the bottles that are prepared at the lab into the field and back to the laboratory, along with the collected samples for analysis. These bottles are never opened in the field. Trip blanks must return to the lab with the same set of bottles they accompanied to the field, and will be analyzed for volatile organic parameters. Trip blanks must be included at a rate of one per volatile sample shipment.

6.0 CALCULATION OF DATA QUALITY INDICATORS

6.1 Precision

Precision is evaluated using analyses of a field duplicate and/or a laboratory MS/MSD which not only exhibit sampling and analytical precision, but indicate analytical precision through the reproducibility of the analytical results. RPD is used to evaluate precision by the following formula:

$$RPD = \frac{(X_1 - X_2)}{[(X_1 + X_2)/2]} \times 100\%$$

where:

X_1 = Measured value of sample or matrix spike

X_2 = Measured value of duplicate or matrix spike duplicate

Precision will be determined through the use of MS/MSD analyses. RPD criteria for this project must meet the method requirements listed in Table B2-1.

6.2 Accuracy

Accuracy is defined as the degree of difference between the measured or calculated value and the true value. The closer the numerical value of the measurement comes to the true value or actual concentration, the more accurate the measurement is. Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at known concentrations before analysis. Analytical accuracy may be assessed through the use of known and unknown QC samples and spiked samples. It is presented as percent recovery. Accuracy will be determined from matrix spike, matrix spike duplicate, and matrix spike blank samples, as well as from surrogate compounds added to organic fractions (i.e., volatiles), and is calculated as follows:

$$Accuracy\ (\%R) = \frac{(X_s - X_u)}{K} \times 100\%$$

where:

X_s = Measured value of the spike sample

X_u = Measured value of the unspiked sample

K = Known amount of spike in the sample

6.3 Completeness

Completeness is calculated on a per matrix basis for the project and is calculated as follows:

$$Completeness\ (\%C) = \frac{(X_v - X_n)}{N} \times 100\%$$

where:

X_v = Number of expected valid measurements

X_n = Number of invalid measurements

N = Number of valid measurements expected to be obtained

7.0 CORRECTIVE ACTIONS

Laboratory corrective actions shall be implemented to resolve problems and restore proper functioning to the analytical system when errors, deficiencies, or out-of-control situations exist at the laboratory. Full documentation of the corrective action procedure needed to resolve the problem shall be filed in the project records, and the information summarized in the case narrative. A discussion of the corrective actions to be taken is presented in the following sections.

7.1 Incoming Samples

Problems noted during sample receipt shall be documented by the laboratory. The Project Chemist shall be contacted immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.2 Sample Holding Times

If any sample extraction and/or analyses exceed method holding time requirements, the Project Chemist shall be notified immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.3 Instrument Calibration

Sample analysis shall not be allowed until all initial calibrations meet the appropriate requirements. All laboratory instrumentation must be calibrated in accordance with method requirements. If any initial/continuing calibration standards exceed method QC limits, recalibration must be performed and, if necessary, reanalysis of all samples affected back to the previous acceptable calibration check.

7.4 Reporting Limits

The laboratory must meet the method required detection limits listed in Table B2-1. If difficulties arise in achieving these limits due to a particular sample matrix, the laboratory must notify project personnel for problem resolution. In order to achieve those detection limits, the laboratory must utilize all appropriate cleanup procedures in an attempt to retain the project required detection limits. When any sample requires a secondary dilution due to high levels of target analytes, the laboratory must document all initial analyses and secondary dilution results. Secondary dilution will be permitted only to bring target analytes within the linear range of calibration. If samples are analyzed at a secondary dilution with no target analytes detected, the Project Chemist will be immediately notified so that appropriate corrective actions can be initiated.

7.5 Method QC

All QC, including blanks, matrix spikes, matrix spike duplicates, surrogate recoveries, matrix spike blank samples, and other method-specified QC samples, shall meet the method requirements referenced in Table B2-1. Failure of method-required QC will result in the review and possible qualification of all affected data. If the laboratory cannot find any errors, the affected sample(s) shall be reanalyzed and/or re-extracted/redigested, then reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed and/or re-extracted/redigested, then reanalyzed at no additional cost. The Project Chemist shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

7.6 Calculation Errors

All analytical results must be reviewed systematically for accuracy prior to submittal. If upon data review calculation and/or reporting errors exist, the laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative.

8.0 DATA REDUCTION, VALIDATION, AND USABILITY

For all analyses, NYSDEC ASP Category B deliverable requirements will be employed for documentation and reporting of all data. The standard NYSDEC report forms (see Appendix) will be completed by the analytical laboratory and included in the deliverable data packages.

8.1 Data Reduction

Laboratory analytical data are first generated in raw form at the instrument. These data may be either in a graphic or printed tabular format. Specific data generation procedures and calculations are found in each of the referenced methods. Analytical results must be reported consistently. Data for water samples will be reported in concentrations of micrograms per liter (µg/L). Data for soils will be reported in concentrations of micrograms per kilogram (µg/kg) for organics and reported on a dry weight basis.

Identification of all analytes must be accomplished with an authentic standard of the analyte traceable to NIST or USEPA sources. Data reduction will be performed by individuals experienced with a particular analysis and knowledgeable of requirements.

8.2 Data Validation

Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of validity prior to its intended use. Data validation will be performed by environmental chemists under the supervision of the QA/QC Officer. All analytical samples collected will receive a limited data review. The data validation will be limited to a review of holding times, completeness of all required deliverables, review of QC results (surrogates, spikes, duplicates) and a 10% check of all samples analyzed to ensure they were analyzed properly. The methods referenced in Table B3-1 as well as the general guidelines presented in the following documents will be used to aide the chemist during the data review USEPA *Contract Laboratory Program (CLP)National Functional Guidelines for Superfund Methods Organic Data Review, EPA-540—R-08-01,* June 2008. This document will be used with the following exceptions:

- Technical holding times will be in accordance with NYSDEC ASP, July 2005 Edition, and
- Tentatively identified compounds (TICs) will be qualified by the analytical laboratory only

Where possible, discrepancies will be resolved by the Project Chemist (i.e., no letters will be written to laboratory). A complete analytical data validation is not anticipated. However, if the initial limited data audit reveals significant deviations and problems with the analytical data, the Project Chemist may recommend complete validation of the data.

8.3 Data Usability

Two sets of data usability tables will be submitted. One set of tables will be only detected values reported, which will be incorporated into the text of the intrusive activity report. The second set of tables will be a complete listing of the validated analytical results. These validation summary tables will be included in the Data Usability Summary Report (DUSR), as identified in NYSDEC Division of Environmental Remediation *DER-10, Technical Guidance for Site Investigation and Remediation, Appendix 2B - Guidance for Data Deliverables and Development of Data Usability Summary Reports*, May 2010. The DUSR will obtain information regarding deviations, discrepancies and unusable data along with the validation summary tables.

9.0 PREVENTIVE MAINTENANCE AND PERFORMANCE/SYSTEM AUDITS

9.1 Preventative Maintenance

The laboratory is responsible for the maintenance of its analytical equipment. Preventive maintenance is provided on a regular basis to minimize down-time and the potential interruption of analytical work. Instruments are maintained in accordance with the manufacturer's recommendations. If instruments require maintenance, only trained laboratory personnel or manufacturer-authorized service specialists are permitted to do the work. Maintenance activities will be documented and kept in permanent logs. These logs will be available for inspection by auditing personnel.

9.2 Performance/System Audits

Audits will include a careful evaluation of both field and laboratory quality control procedures and will be performed before or shortly after systems are operational. The audits will be conducted by an individual who is technically knowledgeable about the operation(s) under review. Performance audits are conducted by introducing control samples into the data production process. These control samples may include performance evaluation samples, field samples spiked with known amounts of analyte, and split field samples that are analyzed by two or more analysts within or outside the organization.

Systems audits are onsite qualitative inspections and reviews of the quality assurance system used by some part of or the entire measurement system. They provide a quantitative measure of the quality of the data produced by one section or the entire measurement process. The audits are performed against a set of requirements, which may be a quality assurance project plan or work plan, a standard method, or a project statement of work. The primary objective of the systems audits is to verify that the QA/QC procedures are being followed.

9.2.1 Performance and External Audits

In addition to conducting internal reviews and audits, as part of its established quality assurance program, the laboratory is required to take part in regularly-scheduled performance evaluations and laboratory audits from state and federal agencies. They are conducted as part of the certification process and to monitor the laboratory performance. The audits also provide an external quality assurance check of the laboratory and provide reviews and information on the management systems, personnel, standard operating procedures, and analytical measurement systems. Acceptable performance on evaluation samples and audits is required for certification and accreditation. The laboratory shall use the information provided from these audits to monitor and assess the quality of its performance. Problems detected in these audits shall be reviewed by the QA Manager and Laboratory Management, and corrective action shall be instituted as necessary.

9.2.2 Systems/Internal Audits

As part of its quality assurance program, the Laboratory QA Manager shall conduct periodic checks and audits of the analytical systems. The purpose of these is to verify that the analytical systems are working properly, and that personnel are adhering to established procedures and documenting the required information. These checks and audits also assist in determining or detecting where problems are occurring.

The QA Manager periodically will submit laboratory control samples. These samples will serve to check the entire analytical method, the efficiency of the preparation method, and the analytical instrument performance. The results of the control samples are reviewed by the QA Manager who reports the results to the analyst and the Laboratory Director. When a problem is indicated, the QA Manager will assist the analyst and laboratory management in determining the reason and in developing solutions. The QA Manager will also recheck the systems as required.

REFERENCES

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