V00410-9

Remedial Action Work Plan

for the
Former Dowell Facility
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
282 Delaware Avenue
Buffalo, New York 14202

April 2003
(Revised May 2003)

G3265A

REMEDIAL ACTION WORK PLAN

FOR THE

FORMER DOWELL FACILITY

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
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202

APRIL 2003

(Revised May 2003)

This Remedial Action Work Plan has been prepared by qualified individuals familiar with the relevant environmental regulations working under my direction. Information used in the development of this work plan was collected by URS using subcontractors, the findings from previous studies at the site, and our own staff. The recommendations included herein provide the basis for the responsible remediation of this former industrial site. This plan may not contain all the detailed design information required to conduct the site cleanup.

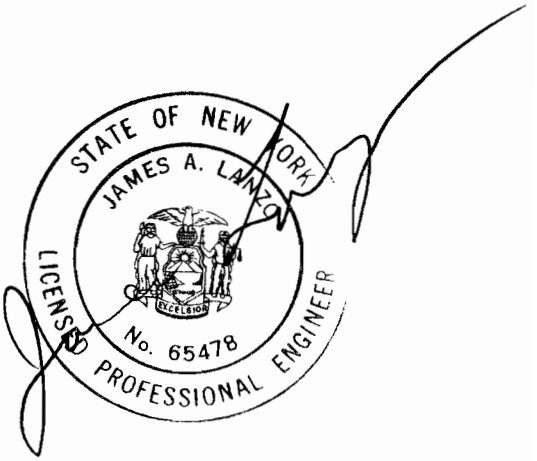


TABLE OF CONTENTS (Continued)

TABLES

FIGURES

APPENDICES

PART A

WORK PLAN

A1.0 INTRODUCTION

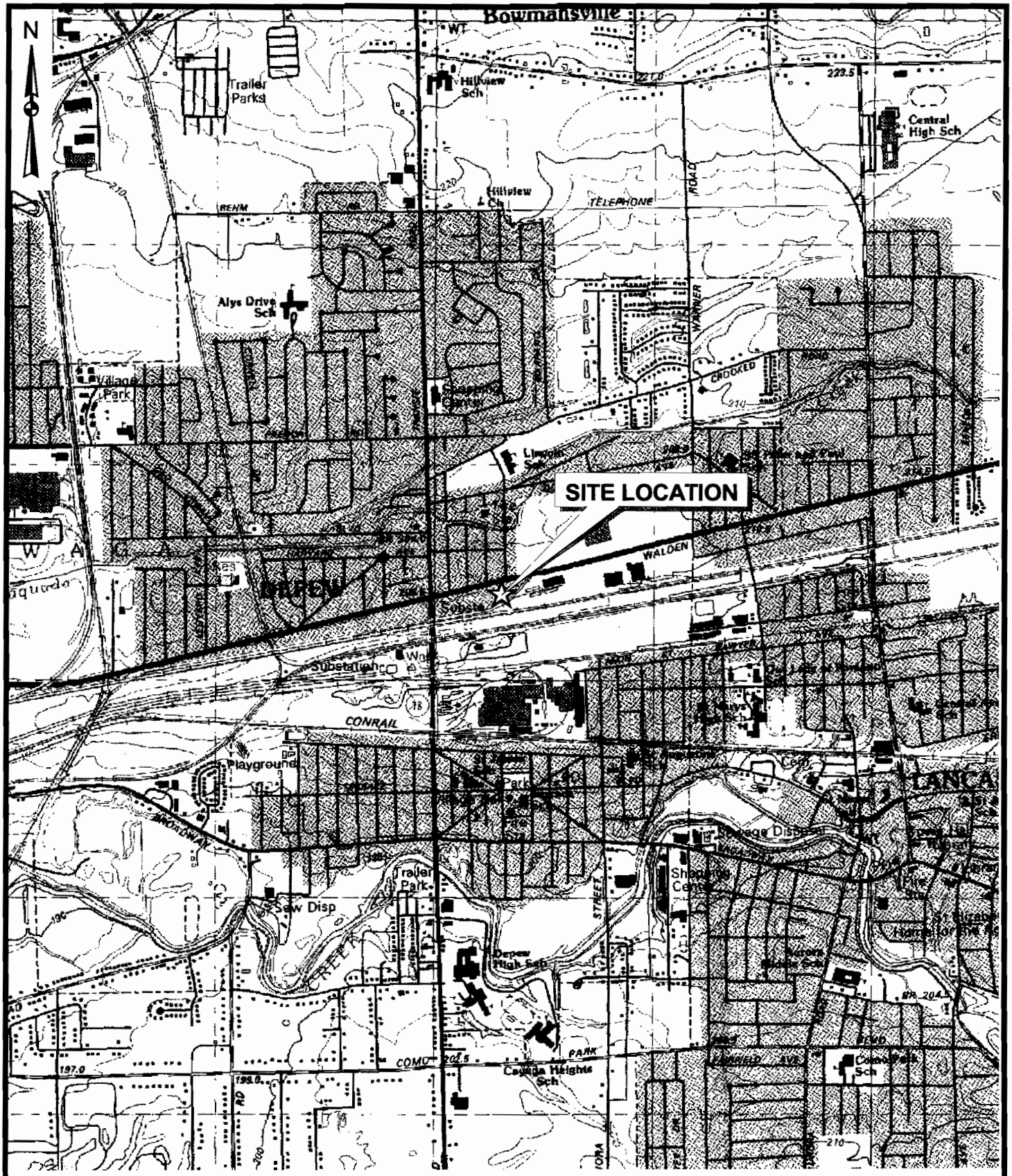
URS Corporation (URS) has prepared this Remedial Action Work Plan (RAWP) for Dowell, a division of Schlumberger Technology Corporation, at the Former Dowell Facility located at 3311 Walden Avenue in Buffalo, New York (Figure 1-1). This RAWP addresses the procedures and objectives of proposed remedial actions to be conducted at the Former Dowell Facility (site). The RAWP will be performed under the Voluntary Cleanup Agreement (VCA) between Dowell, the Dow Chemical Company, Dowell Schlumberger Incorporated (the Volunteers), and the New York State Department of Environmental Conservation (NYSDEC) (VCA Index No. B9-0586-00-10).

The remedial action addressed in this RAWP consists of asbestos abatement, building/structure demolition, soil excavation and offsite disposal, monitoring well removal/installation, and site restoration. The remedial action activities are discussed in detail in subsequent sections of this RAWP. Figure 1-2 presents the site plan.

A1.1 Purpose of Remedial Action Work Plan

The RAWP provides a comprehensive summary of project objectives, site description/history, previous investigations summary, along with a detailed description of remedial action activities proposed for the site. The RAWP will be used as a guidance document to be followed by URS and their subcontractors in order to ensure successful completion of this remedial action. The activities and procedures described in this document will be implemented in the field during remediation at the site.

URS has also prepared a Quality Assurance Project Plan (QAPP) and a Health and Safety Plan (HASP) associated with the remedial activities described in this RAWP. The QAPP defines quality assurance/quality control (QA/QC) procedures to be used during implementation of this RAWP. The QAPP presents policies, organization structures, methods and QA/QC procedures for analytical sampling and laboratory analysis of environmental samples collected during site remediation. The HASP identifies the potential risks associated with exposure to substances that may be present and outlines appropriate safety procedures to be followed during field activities. The HASP also presents the minimum health and safety requirements for the remedial contractor.



SOURCE:
USGS Topographic 7.5 Minute Quadrangles
Lancaster, New York

2000 0 2000 Feet

URS	FORMER DOWELL FACILITY SITE LOCATION MAP	FIGURE 1-1

J:\35824.00\db\Gis\dowell.apr SITE LOCATION
10/7/2002

N

WALDEN AVENUE

PROPERTY LINE

WATER-METER VAULT

SLIDING GATE

SIDEWALK

FORMER TANK

FORMER BULK CEMENT PLANT

FORMER ACID PLANT

FORMER 8000 GALLLON DIESEL TANK

MAINTENANCE SHOP

FORMER FUEL DISPENSER

HCL TANK

FORMER RAILROAD SPUR

OFFICE (3311 WALDEN AVE)

CORRUGATED STEEL BLDG.

BRICK BUILDING

OFFICE

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)

Legend

- Former Structure
- Floor Drain/Catch Basin or Sump Location
- Property Line
- Fence Line
- Drain Line

40 0 40 Feet

FORMER DOWELL FACILITY
SITE PLAN

URS

FIGURE 1-2

J:\35824.00\db\Gis\dowell.apr VOLUNTARY CLEANUP PROGRAM - SITE PLAN
1/15/2002

A1.2 Project Objectives

The objective of this remedial action is to remove contamination from the site to reduce or eliminate the potential human health risk posed by existing contaminants under the VCA with the NYSDEC. Specific areas requiring remediation, along with their associated remedial action objectives are presented below.

- Remove and dispose of asbestos from the Former Chemical Storage Building and Former Maintenance Shop prior to demolition of these structures. This will allow for a safe work environment for construction workers and for the proper disposal of the building materials as construction and demolition (C&D) debris. The concrete slabs and building footers will be completely removed. Asbestos will also be removed from the main office building, but this building will not be demolished.

- Remove (by excavation) and dispose of subsurface utility lines including gas, water, and sewer, as appropriate. These subsurface facilities will be removed out to the property line or disconnected at the main, and backfilled to eliminate potential contaminant migration pathways.

- Clean out and dispose of previously identified contaminated material from the floor drains in the Former Maintenance Shop. The sediments in the floor drains will be removed to eliminate the potential for encountering contaminated material during building demolition.

- Excavate previously identified contaminated soil from the following areas

    - East of the Former Maintenance Shop at the location of the clay-tile drain pipe.
    - At the northwest corner of the previously demolished Former Acid Plant.
    - At the northeast corner of the Former Chemical Storage Building in the area where the previously removed rail line traversed the site.
    - Around MW-03 to depths of about 12-14 feet.

Excavation of contaminated soil will eliminate and/or greatly reduce the risk to human health and the environment.

- Decommission MW-03 and install new deep monitoring well adjacent to MW-06. MW-03 will be removed during the excavation of the clay-tile pipe east of the Former Maintenance Shop. The new deep well will be installed to allow collection of groundwater elevations and environmental samples, and to monitor the effectiveness of the cleanup.

- Site restoration including backfilling and grading to make the site suitable for reuse.

A1.3 Organization of Remedial Action Work Plan

This RAWP presents an introduction in Section 1.0 followed by the site description and history in Section 2.0. Section 3.0 presents the remedial action plan and provides details and procedures to be implemented in the field. Section 4.0 discusses the permit application process while Section 5.0 provides an outline of the remedial action report that will document the remedial actions at the site. Section 6.0 provides a schedule for remediation.

A2.0 SITE DESCRIPTION AND HISTORY

A2.1 Site Description

The Former Dowell Facility is located to the east of Buffalo, New York on Walden Avenue in the Village of Depew (Figure 1-1). The site is situated in a mixed residential and industrial/commercial area. Properties surrounding the site include Walden Avenue to the north, a 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 facility is relatively flat-lying and covers approximately 3.5 acres. It is presently inactive and remaining vacant structures on the property include a former office building, a former chemical storage warehouse, and a former maintenance shop (Figure 1-2). A former railroad siding traverses the site from east to west through the center of the site. The property is secured with a locking 6-foot high chain-link fence around the entire perimeter of the site.

A2.2 Operational 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.

A2.3 Previous Investigations

Previous investigations at the facility were associated with various environmental-related projects. Previous investigation locations are shown in Figure 2-1. All these investigations were performed in conjunction with NYSDEC review and/or oversight. In September 1989, Geraghty & Miller (G&M) completed a tank removal project. This project involved the removal of one 1,000-gallon underground storage tank (UST) and its associated fuel dispenser, and one 8,000-gallon aboveground storage tank (AST). Both tanks were used for fuel storage. 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.

N

WALDEN AVENUE

PROPERTY LINE

WATER-METER VAULT

SLIDING GATE

SIDEWALK

MW-02

FORMER TANK

FORMER BULK CEMENT PLANT

MW-04

SB-01

MW-03

SB-02

MW-06

SB-03

3-X-2

SUMP-03

3-X-1

ROUND SUMP

MW-07

FORMER ACID PLANT

FORMER 8000 GALLON DIESEL TANK

SB-08

GPB-12

SB-06

GPB-13

SB-04

FORMER RAILROAD SPUR

MAINTENANCE SHOP

FORMER FUEL DISPENSER

GPB-11

SB-05

CHEM STOR.

HCL TANK

2-X-2

1-X-2

SUMP-02

RECTANGULAR SUMP

2-X-1

SUMP-01

1-X-1

SB-07

GPB-10

GPB-09

FORMER 1000 GALLON GASOLINE UST (REMOVED)

PZ-02/GPB-08

GPB-07

FORMER CEMENT SILOS

BRICK BUILDING

CORRUGATED STEEL BLDG.

OFFICE (3311 WALDEN AVE)

OFFICE

FORMER COMPRESSOR

GPB-06

GPB-05

GPB-04

WASH BAY

FORMER CHEMICAL STORAGE

MW-05

MW-08

TRAILER

FORMER OIL SEPARATOR (ABANDONED)

SUMP-04

4-X-2

SUMP-05

5-X-2

4-X-1

5-X-1

GPB-03

FORMER MUD SEPARATOR (ABANDONED)

GPB-02

PZ-01/GPB-01

MW-01

40 0 40 Feet

Legend

- Monitoring Well
- Geoprobe Boring
- Soil Boring
- Piezometer With Geoprobe Boring Location
- Former Structure
- Floor Drain/Catch Basin or Sump Location
- Property Line
- Fence Line
- Drain Line

n:\11171084.00000\db\gis\dowell_2003.apr PREVIOUS INVESTIGATION LOCATIONS
4/22/2003

FORMER DOWELL FACILITY
PREVIOUS INVESTIGATION LOCATIONS

URS

FIGURE 2-1

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 site. The objective of this investigation was to determine the presence of chemical constituents in site soils and groundwater. 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 a 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 2-1), 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. MW-3 showed detected concentrations of 1,1-dichloroethene (DCE), 1,1-dichloroethane (DCA), and 1,1,1-trichloroethane (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* (6/98). TPH and methylene chloride was detected in each of the four monitoring wells, but were attributed to an upgradient source. Lead was present in MW-02 and MW-04 at concentrations which exceeded their MCLs.

In November 1997, Radian performed a supplemental investigation which consisted of advancing three soil borings (SB-01, -02 & -03) around MW-03 and five soil borings (SB-04 to SB-08) around the perimeter of the Former Acid Plant (Figure 2-1). Groundwater samples also were collected from the four existing monitoring wells. Soil samples were collected from each

boring around 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* (1/94). SB-01 (4' to 6') and SB-03 (16' to 18') showed no VOC detections greater than TAGM 4046 Levels. SB-02 (6' to 8') exhibited a concentration of DCE greater than its TAGM 4046 level. Soil samples were also collected from various intervals at the five borings (SB-04, SB-05, SB-06, SB-07, and SB-08) around the Former Acid Plant. Analytical results from soil samples collected at SB-06 (10' - 12' and 14' - 16') and SB-08 (2' - 4' and 6' - 8') showed no VOC detections greater than the TAGM 4046 level. TCE was detected at SB-04 (8' - 10') and at SB-05 (6' - 8') at concentrations greater than its TAGM 4046 level. DCE was detected at 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 DCA (8' to 10') were also present at SB-07 at concentrations greater than their TAGM 4046 levels. Groundwater sample results showed no VOCs detected at concentrations which exceeded MCL's at MW-01, MW-02 and MW-04. DCA was present in MW-03 at a concentration which 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.

In July and December 1998, groundwater samples were collected from the four monitoring wells for VOC analysis. Analytical results for MW-01, MW-02 and MW-04 showed no VOCs at concentrations which exceeded the MCLs. DCA and TCA were detected at MW-03 at concentrations which exceeded their MCL's during both rounds.

In July 1999 and January 2000, groundwater samples were collected from the four monitoring wells for VOC analysis. Analytical results were similar to the 1998 results.

Following Department approval, In July 2001, URS performed a site investigation (SI) which consisted of the following activities:

- Preparation of a site investigation work plan;

- Excavation of one test trench from the round sump east of the Maintenance Shop to MW-3 along an existing clay tile drain line. Two soil samples (TP-01 and TP-02) were collected and analyzed;

- Collection of sediment samples at two floor drain/sump locations inside of the Former Maintenance Shop (Sump-01 and Sump-02) and at the round sump located east of the Former Maintenance Shop, and the rectangular sump located west of the Former Fuel Dispenser;

- Advancement of Geoprobe soil borings (1 x -1 to 5 x -2) at ten locations inside of the Former maintenance Shop and Former Chemical Storage Building immediately adjacent to existing floor drains/sumps with the collection of five soil samples from selected boring locations;

- Advancement of Geoprobe soil borings (GPB-01 through GPB-13) at 13 locations around the perimeter of the Former Chemical Storage Building and the Former Acid Plant with collection of ten soil samples from selected boring locations;

- Installation of four new shallow groundwater monitoring wells (MW-05, -06, -07 and -08) and two piezometers in GPB-01 (PZ-01) and GPB-08 (PZ-02);

- Performance of hydraulic conductivity testing in five monitoring wells;

- Collection of groundwater samples in eight groundwater monitoring wells (four new wells and four existing wells) and two piezometers;

- Collection of several rounds of groundwater readings and preparation of groundwater contour maps;

- Performance of an asbestos survey in the Former Maintenance Shop, Former Chemical Storage Building, and the two-story Office Building;

- Land surveying of all investigation locations performed during the SI and preparation of site maps.

The investigation locations are shown on Figure 2-1. Details of the SI are presented in the *Voluntary Cleanup Program Site Investigation/Remedial Alternatives Report for the Dowell Facility Depew, New York* (dated 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* (dated August 2002). A copy of this report can be found in Appendix B. Based on the data collected during this SI and review of data collected during previous investigations, the following conclusions were made.

- Sediments in the floor sumps of the Former Maintenance Shop are contaminated with 1,1,1-TCA, 1,1-DCA, and PCE (Figure 2-2). These chlorinated organic solvents are present in the floor sumps at concentrations that exceed the TAGM 4046 criteria. The sediments should be removed prior to demolition of the Former Maintenance Shop.

- Subsurface soil samples collected from the area between the Former Chemical Storage Building and the Former Acid Plant, as well as the area northwest of the Former Acid Plant, are contaminated with TCE and trans-1,2-DCE (Figure 2-2). These chlorinated organic solvents are present at concentrations that exceed the TAGM 4046 criteria. The soils in these areas should be removed via excavation and replaced with clean backfill.

- Groundwater was found to be present in two distinct water-bearing zones. There is an upper till/unconfined unit in which monitoring wells MW-05 to MW-08 and piezometers PZ-01 and PZ-02 are set. There is a confined bedrock/lower till unit in which monitoring wells MW-01 to MW-04 are set.

- Groundwater contamination is present in two distinct areas of the site (Figure 2-3). The groundwater sample collected from PZ-02, between the Former Chemical Storage Building and the Former Acid Plant, is primarily contaminated with TCE,

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

3-X-2
TP-01
TEST TRENCH
ROUND SUMP
2-X-1
RECTANGLE SUMP
GPB-11
GPB-10
GPB-13
FORMER ACID PLANT
HCl TANK
RAILROAD SPUR
MAINTENANCE SHOP
OFFICE (3311 WALDEN AVE)
CORRUGATED STEEL
BRICK BUILDING
OFFICE
TRAILER
GPB-04
MW-08
4-X-2
5-X-1
WASH BAY
FORMER CHEMICAL STORAGE
GPB-03
GPB-02

GPB-09
VOCs:
Trichloroethene, 53,000

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

GPB-07
VOCs:
Trichloroethene, 69,000

Legend

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

SUMP-01
1,1,1-Trichloroethane, 16,000

Location ID — Compound Exceeding Criteria — Concentration (UG/KG)

50 0 50 Feet

FORMER DOWELL FACILITY
SOIL/SEDIMENT ANALYTICAL RESULTS

URS

FIGURE 2-2

n:\11171084.00000\dbgis\dowell_2003.apr SOIL EXCEEDANCES
4/22/2003

N

WALDEN AVENUE

MW-03

VOCs:
1,1,1-Trichloroethane, 4200
1,1,2-Trichloroethane, 2
1,1-Dichloroethane, 50,000
1,1-Dichloroethene, 14
1,2-Dichloroethane, 11
Chloroethane, 130
cis-1,2-Dichloroethene, 9
Vinyl chloride, 9
SVOCs:
bis(2-Ethylhexyl)phthalate, 6
METALS:
Cadmium, 15.5
Iron, 4260
Magnesium, 164,000
Nickel, 497

MW-04

VOCs:
1,1,1-Trichloroethane, 8
1,1-Dichloroethane, 110

MW-02

WATER-METER VAULT

PROPERTY LINE

MW-06

VOCs:
1,1,1-Trichloroethane, 190
1,1-Dichloroethane, 490
1,1-Dichloroethene, 6

SLIDING GATE

TEST TRENCH

MW-07

FORMER ACID PLANT

MAINTENANCE SHOP

HCL TANK

RAILROAD SPUR

OFFICE (3311 WALDEN AVE)

CORRUGATED STEEL BLDG.

BRICK BUILDING

OFFICE

FORMER CHEMICAL STORAGE

WASH BAY

TRAILER

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

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

Legend

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

MW-06
1,1,1-Trichloroethane, 150

Location ID — Compound Exceeding Criteria — Concentration (UG/L)

50 0 50 Feet

FORMER DOWELL FACILITY
GROUNDWATER ANALYTICAL RESULTS (JULY 2001)

URS

FIGURE 2-3

n:\11171084.00000\dbgis\dowell_2003.apr JULY 01 GROUNDWATER EXCEEDANCES
4/22/2003

cis-1,2-DCE, and vinyl chloride. The groundwater samples collected from MW-03 and MW-06, east of the Former Maintenance Shop, are primarily contaminated with 1,1,1-TCA and 1,1-DCA. The contaminants in MW-03 and MW-06 are the same compounds present in the sump sediments of the Former Maintenance Shop. Groundwater contamination in the PZ-02 area is most likely associated with the elevated levels of VOCs in soils in these areas. Also, the primary contaminants in PZ-02 (TCE, cis-1,2-DCE, and vinyl chloride) were not present in the downgradient wells or were at significantly lower concentrations. The groundwater contamination from the PZ-02 area does not appear to have impacted perimeter, downgradient groundwater quality.

- Five remedial alternatives were evaluated and a preferred alternative (i.e., source removal) was selected with consultation with NYSDEC. Under this alternative, soil between the Former Chemical Storage Building and the Former Acid Plant will be excavated and hauled to an off-site disposal facility. Soil beneath the former railroad spur in the vicinity of GPB-07, -08 and -09 will be excavated to approximately 15 feet below ground surface (bgs) and the excavated soil stockpiled on-site on plastic sheeting. Soil outside the northwest corner of the Former Acid Plant near GPB-12, will also be excavated to approximately 15 feet bgs and the excavated soil stock piled on-site on plastic sheeting. Also, soil around MW-03 and the 4-inch clay-tile pipe and sediment in Sumps-01 and -02 in the Former Maintenance Shop will be removed. Post-excavation soil samples would be collected from the walls and floor of the excavations to confirm that residual levels of contaminants of concern are below the VCA remedial action levels which are identified in Section A3.4.1. Representative samples of the excavated soil will be collected and analyzed, and a waste profile prepared for the soil. The soil will then be transported to an approved off-site facility as either a hazardous waste or as a non-hazardous contaminated solid waste. This alternative complies with the remediation goals in that the contamination levels of organic compounds that exceed the SCG values are reduced and direct contact hazards are mitigated. By removing source areas, groundwater contaminant reduction will occur through the process of natural attenuation. The Source Removal alternative would prevent release of the organic compounds to the atmosphere.

- Asbestos-containing materials (ACM) are present in all the onsite buildings. The ACM is present in floor tile, joint compounds, caulking, window glazing, transite panel debris, and flashing.

Appendix A presents a summary of analytical results for soil and groundwater samples collected, and soil boring logs from the above-referenced previous investigations.

A2.4 Topography, Geology, and Groundwater

The site is comprised of three out of service structures including an office building, maintenance shop, and chemical storage building. The site is bordered by Walden Avenue to the north, Buffalo Batt and Felt to the west, CSX railroad to the south, and 84 Lumber to the east. A former railroad siding traverses the site from east to west, immediately north of the Former Chemical Storage Building. There are two out of service catch basins/sumps onsite and a filled in-place mud/oil separator. Additionally, there is an out-of-service water meter vault located about mid-way along the northern property line.

The site is relatively flat with a gentle slope to the north – northwest toward Walden Avenue. Maximum relief across the site (i.e., from MW-5 to MW-6) is on the order of 4 feet. The majority of the site is covered with grasses, with the exception of the main entranceway and the area in front (i.e., east) of the Former Maintenance Shop building, which consist of asphalt paving and concrete pads, respectively. Surface water flows from south to north across the site.

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.

Based on the geologic data obtained from the monitoring well and Geoprobe soil borings, the soils on site consist 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. The glacial till unit extends from approximately 4 to 30 feet bgs, the depth to the top of bedrock.

Based on the results of groundwater level measurements and review of the site geology described in the boring logs, 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 2-4) and a deeper, confined groundwater unit in the lower part of the till/upper bedrock as recorded in MW-01 to MW-04 (Figure 2-5). The depth to groundwater in the upper, unconfined water-bearing unit ranges from less than one foot to approximately 5 feet bgs. Water levels recorded in the confined, bedrock/till unit range from 3 to 14 bgs. 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.

In-situ hydraulic conductivity testing and analyses was performed on selected monitoring wells to provide data on the deeper, confined groundwater unit (MW-01 and MW-02) and the upper, unconfined groundwater unit (MW-05, MW-06, and MW-07). With the exception of MW-05, the results of the slug tests present a range of hydraulic conductivities that are representative of the clayey till unit which overlies the bedrock across the site. The average hydraulic conductivity of this unit is approximately 1.18×10^{-5} cm/sec. MW-05 is screened from 4 to 14 feet in silty clay fill which is underlain by silty clay with fine sand which grades to clayey silt at depth. The measured conductivity in MW-05 ranged between $1.57 \times 1\ 10^{-3}$ cm/sec and 1.85×10^{-3} cm/sec.

Although groundwater flow in the upper till/unconfined unit is to the north-northwest towards Walden Avenue, it is not anticipated that contaminants observed in MW-06 (i.e., TCE, cis-1,2,-DCE and vinyl chloride) will be transported across Walden Avenue to the residential areas on the north side of the street. This is primarily due to the presence of numerous utility lines (e.g., storm sewer, sanitary sewer, and natural gas) located along the southern edge and in the Right-of-Way on the south side of Walden Avenue.

Also, as noted, the shallow groundwater surface is typically only about 1 to 5 feet below the ground surface. Consequently, the utility trenches which typically vary in depth from about 3 to greater than 10 feet and are backfilled with crushed stone bedding materials, would most likely intersect groundwater and direct it to the east or west, thereby preventing flow across Walden Avenue. Additionally, the relatively low hydraulic conductivity of the clay till unit will minimize the movement of groundwater in the upper till/unconfined unit. With respect to contaminants, if any, in groundwater in the deeper, confined bedrock/till unit, flow has been shown (Figure 2-5) to be to the west-northwest. This indicates that contaminants, if any, will be transported roughly parallel to Walden Avenue, towards Transit Road and away from the residential areas located north of the site.

N

WALDEN AVENUE

PROPERTY LINE

WATER-METER VAULT

SLIDING GATE

FORMER BULK CEMENT PLANT

FORMER ACID PLANT

MW-06, 97.01
100.96

TEST TRENCH

MW-07, 96.21
100.64

MAINTENANCE SHOP

OFFICE (3311 WALDEN AVE)

CORRUGATED STEEL BLDG.

BRICK BUILDING

OFFICE

HCL TANK

RAILROAD SPUR

98

PZ-02, 99.66
101.37

TRAILER

MW-08, 97.83
100.10

WASH BAY

FORMER CHEMICAL STORAGE

100

MW-05, 102.92
104.54

102

PZ-01, 100.89
101.87

Legend

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

PZ-01, 100.89
Location ID
Groundwater Elevation(ft)

50 0 50 Feet

FORMER DOWELL FACILITY
GROUNDWATER ELEVATION CONTOUR MAP
UPPER TILL, UNCONFINED UNIT(DECEMBER 12, 2001)

URS

FIGURE 2-4

n:\11171084.00000\dbgis\dowell_2003.apr LAYER B 12/12/01 GROUNDWATER ELEVATIONS
4/22/2003

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 BULK CEMENT PLANT

FORMER ACID PLANT

HCL TANK

RAILROAD SPUR

MAINTENANCE SHOP

OFFICE (3311 WALDEN AVE)

CORRUGATED STEEL BLDG.

BRICK BUILDING

OFFICE

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 2-5

n:\11171084.00000\db\gis\dowell_2003.apr LAYER A 12/12/01 GROUNDWATER ELEVATIONS 4/22/2003

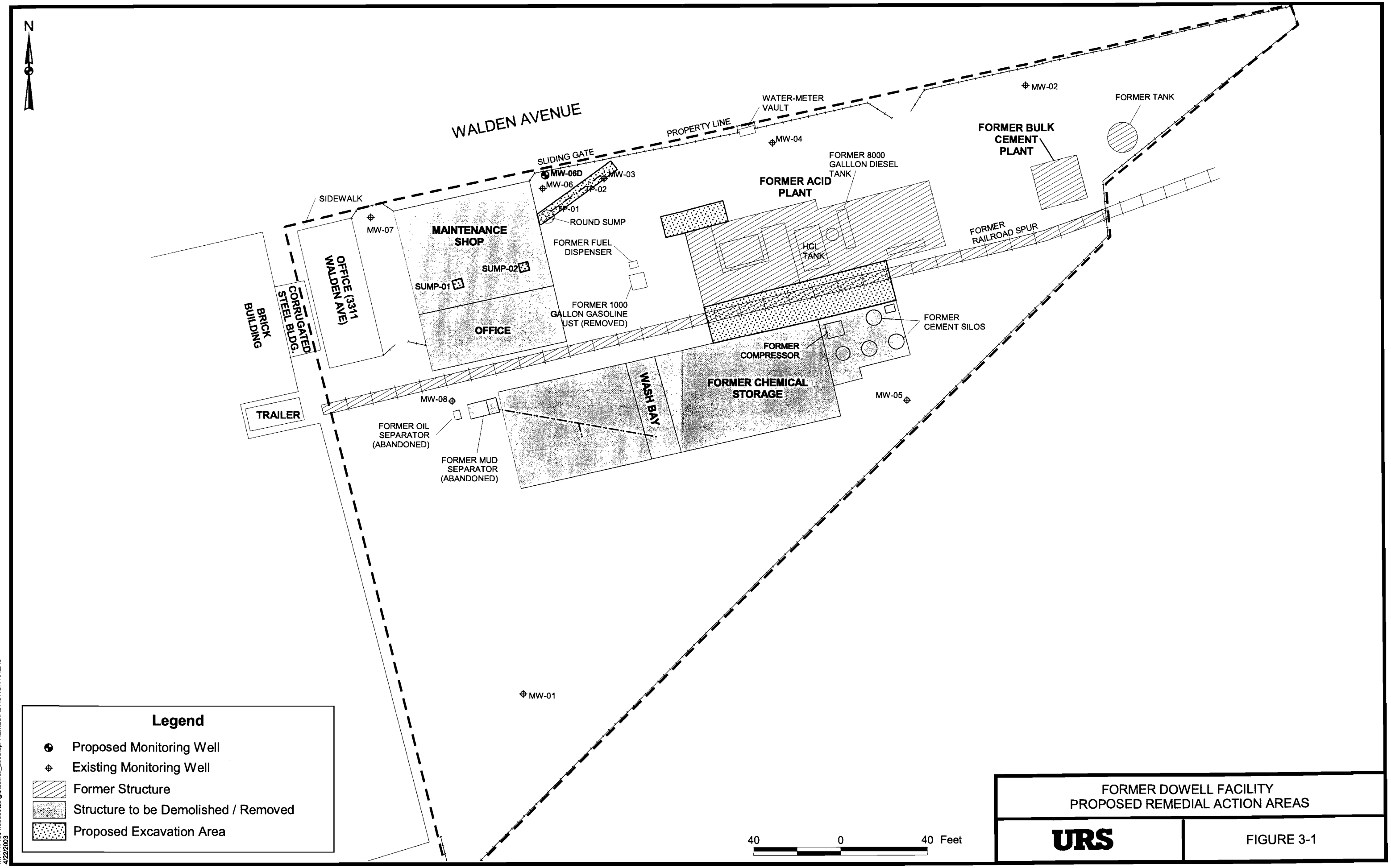
A3.0 REMEDIAL ACTION PLAN

A3.1 Overview

The primary objective of the remedial action at the site is to remove contamination from the site to reduce and/or eliminate the potential human health risk posed by existing contaminants in site soils. Prior to initiation of the soils remediation activities, the ACM will be removed from all the onsite buildings and the contaminated sediments will be removed from the floor drains/sumps. The Former Maintenance Building and Chemical Storage Building will be demolished. The two-story office building will be left in place. Once building demolition is complete, the floor slabs and footers will be removed and disposed of off site. Soil excavation will then commence in the three designated areas to remove contaminated soil from the site. The three areas shown in Figure 3-1 include:

- Northwest Corner of the previously demolished Former Acid Plant: This proposed excavation area is approximately 30 feet (ft) x 10 ft x 15 ft deep and will result in the removal and disposal of approximately 170 cubic yards of soil. The actual limits of excavation will be determined in the field. Excavated soil will be screened with a photoionization detector (PID) which measures volatile organic vapors in parts per million (ppm). Confirmatory soil samples will be collected from the bottom and sidewalls of the excavation once PID readings are less than 10 ppm above background levels and analyzed for VOCs. The excavation will be backfilled with clean fill to grade once the analytical results show total VOCs are less than 10 ppm.

- Northeast corner of the Former Chemical Storage Building: This proposed excavation area is approximately 90 ft x 20 ft x 15 ft deep and will result in the removal and disposal of approximately 1,000 cubic yards of soil. The actual limits of excavation will be determined in the field. Excavated soil will be screened with a photoionization detector (PID). Confirmatory soil samples will be collected from the bottom and sidewalls of the excavation once PID readings are <10 ppm above background levels and analyzed for VOCs. The excavation will be backfilled with clean fill to grade once the analytical results show total VOCs are less than 10 ppm.


N
WALDEN AVENUE
PROPERTY LINE
WATER-METER VAULT
MW-02
FORMER TANK
FORMER BULK CEMENT PLANT
MW-04
SLIDING GATE
MW-06D
MW-03
MW-06
TP-02
TP-01
ROUND SUMP
FORMER 8000 GALLLON DIESEL TANK
FORMER ACID PLANT
SIDEWALK
MW-07
MAINTENANCE SHOP
SUMP-02
SUMP-01
FORMER FUEL DISPENSER
HCL TANK
FORMER RAILROAD SPUR
BRICK BUILDING
CORRUGATED STEEL BLDG.
OFFICE (3311 WALDEN AVE)
OFFICE
FORMER 1000 GALLON GASOLINE UST (REMOVED)
FORMER CEMENT SILOS
FORMER COMPRESSOR
WASH BAY
FORMER CHEMICAL STORAGE
MW-05
MW-08
TRAILER
FORMER OIL SEPARATOR (ABANDONED)
FORMER MUD SEPARATOR (ABANDONED)
MW-01
Legend
Proposed Monitoring Well
Existing Monitoring Well
Former Structure
Structure to be Demolished / Removed
Proposed Excavation Area
40 0 40 Feet
FORMER DOWELL FACILITY
PROPOSED REMEDIAL ACTION AREAS
URS
FIGURE 3-1
n:\11171084.00000\dbi\gis\dowell_2003.apr REMEDIAL ACTION AREAS
4/22/2003

- East of the Former Maintenance Shop: This excavation area is approximately 40 ft x 5 ft x 5 feet deep and will result in the removal and disposal of approximately 40 cubic yards of soil. The actual limits of excavation will be determined in the field. Excavated soil will be screened with a photoionization detector (PID). Confirmatory soil samples will be collected from the bottom and sidewalls of the excavation once PID readings are <10 ppm above background levels and analyzed for VOCs. The excavation will be backfilled with clean fill to grade once the analytical results show total VOCs are less than 10 ppm.

In addition to the asbestos abatement, building demolition and soil removal, some or all of the underground utilities will be removed from the site as deemed appropriate. Existing monitoring well MW-03 will be abandoned and a new deep monitoring well will be installed adjacent to existing monitoring well MW-06. Additionally, sumps will be installed at MW-03 and PZ-02 for future monitoring and/or pumping of groundwater if necessary. It is anticipated that excavation for these sumps will be on the order of 12 – 14 feet deep. Upon completion of the remedial action activities, the site will be restored and graded to allow for future reuse.

In order to accomplish the objectives, URS will subcontract an experienced remediation contractor that is capable of providing the services described in this document. URS will provide onsite direction and oversite of the remedial contractor to ensure compliance with this RAWP as well as applicable federal, state and local regulations and ordinances. Upon completion of the remedial action, the Volunteers will submit a report to NYSDEC that will include details of the work performed during the remedial action.

A3.2 Mobilization

The contractor will be required to mobilize the necessary equipment and personnel to the site. A centralized decontamination area with a decontamination pad will be constructed at the site to decontaminate equipment used during remedial activities. The decontamination pad must be constructed as detailed in Appendix C. The decontamination area must be large enough to allow equipment and material to be cleaned, as well as the staging of two 10,000-gallon water storage tanks for water storage purposes.

The proposed excavation areas will be staked and flagged prior to excavation. Utilities on the site will be marked through the Underground Facilities Protective Organization (UFPO). All utilities to the site have been de-energized and/or shut off, but they will be marked as they are slated for removal.

A3.2.1 Support Facilities

For logistical support of site remediation activities, temporary office space will be made available in the existing office building. This space will be used for office type work in support of the remedial action at the site and will not be used for storage or decontamination of equipment or personnel. Some space within the office will be designated for breaks and dining. The contractor will be responsible for electricity, telephone, potable water, and hookups, as necessary. Prior to entering the office, site personnel will be required to remove any personal protective equipment (PPE) and remove their overboots in the contamination reduction zone. The contractor will be required to maintain a supply trailer on site to be used for the storage of equipment and PPE necessary to support the remedial action. The contractor also will be required to provide sufficient portable toilets on site for all site workers.

The contractor will be responsible for supplying and maintaining temporary safety barriers around active work areas during demolition and excavation activities. Also, the existing chain-link fence around the facility will be maintained and repaired as necessary by the contractor.

A3.2.2 Air Monitoring Program

Real-time air monitoring for volatile organic vapors will be conducted at the perimeter of active excavation areas. Volatile organic vapors will be monitored at the downwind perimeter of active excavation areas with a PID on a routine basis. If total volatile organic vapors exceed 5 ppm above background levels, work activities will be halted and monitoring will be continued under the provisions of a Vapor Emission Response Plan.

The Vapor Emission Response Plan includes an intensification of perimeter monitoring and a temporary shut down of excavation activities. When the organic vapor levels drop below 5 ppm above background, work activities can resume. If organic vapor levels are greater than 5 ppm above background, but are less than 25 ppm above background at the perimeter of the excavation, activities can resume provided the organic vapor levels 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 above background.

Respirable dust (particulate) must be monitored at one upwind and one downwind location during all demolition and excavation activities. Temporary particulate monitoring stations will be set up and moved to the appropriate locations on a daily basis based on wind direction. If downwind particulate levels exceed the upwind particulate levels by 100 micrograms per cubic meter (mg/m3), then dust suppression measures must be employed.

The contractor will be required to provide their own health and safety plan that is both protective of their workers and the surrounding community. Any air monitoring that results in a work stoppage must be reported to the NYSDEC, the New York State Department of Health (NYSDOH) and the Volunteers via URS within 24-hours.

A3.2.3 Surveying and Mapping

Field surveys will be conducted by URS on an as-needed basis to document the horizontal and vertical extent of contamination removed during site remediation activities. A New York State-licensed surveyor will perform all land surveying.

A3.2.4 Site Clearing and Grubbing

The site will not require any clearing or grubbing prior to the commencement of remedial action activities. There are no trees on the site that will interfere with the proposed work/excavation/staging areas and most of the site is covered with gravelly soil that does not promote vegetative growth.

A3.3 Site Demolition Details

The Former Chemical Storage Building and the Former Maintenance Shop will be demolished upon certified completion of the asbestos abatement in both buildings, and floor sump cleaning in the Former Maintenance Shop. Also, all site utilities will be removed. The contractor will be responsible for completing the following activities associated with building demolition.

A3.3.1 Asbestos Abatement

Asbestos will be removed from the Former Chemical Storage Building, the Former Maintenance Shop, and the two-story office building. (The office building will not be demolished.). The locations and quantities of the asbestos to be removed are provided in the Asbestos Survey Report (by URS) which is presented in Appendix B. The asbestos will be removed, handled, and disposed of according to appropriate federal and state guidelines.

A3.3.2 Floor Drain Cleaning

Sediments from within the floor drains located in the Former Maintenance Shop will be removed and disposed of at a permitted solid waste facility. The contractor may use a vacuum truck to remove the sediments, or use some other destructive method that will allow access to the sediments.

A3.3.3 Building Demolition

The Former Chemical Storage Building will be demolished and the slab and concrete footer will be completely removed. The adjacent concrete slab formerly used during the cement mixing process also will be completely removed. The contractor will transport all of the building materials to an offsite permitted disposal facility. Upon completion of the building demolition, the area will be backfilled to grade with clean fill from an off site source.

The Former Maintenance Shop will be demolished and the slab and concrete footer will be completely removed. The contractor will transport all of the building materials to an offsite

disposal facility. Upon completion of the building demolition, the area will be backfilled to grade with clean fill from an off site source.

A3.3.4 Mud/Oil Separator

The previously closed in-place Mud/Oil Separator will be left in place. However, all subsurface piping associated with the former structure will be removed and transported by the contractor to an off site disposal facility. The excavation will be backfilled with clean fill from an off site source.

A.3.3.5 Utilities

All subsurface utility lines associated with structures other than the two-story office building will be excavated and removed from the site, as appropriate. The UFPO will mark the locations of the utility and service lines that are present on the site to assist the contractor with the removal process. The utility lines will be removed to the property line or disconnected at the main line. All utility lines removed from the site will be transported to an off site disposal facility by the contractor. Steel piping, if any, may be cleaned and/or decontaminated, as necessary, and salvaged.

A3.4 Contaminated Soil Excavation and Disposal

Three areas of the site will be excavated to remove contaminated soil and replace with clean backfill material. The three areas include:

- The northwest corner of the previously demolished Acid Plant;
- The northeast corner of the Former Chemical Storage Building; and,
- East of the Former Maintenance Shop.

Soils in these areas have been impacted with chlorinated organic solvents which have been detected in soil samples collected from these areas at concentrations that exceed the TAGM 4046 criteria.

The Contractor will be responsible for supplying the necessary equipment and personnel to complete the soil excavation as well as provide for the transport and disposal of the contaminated soil. The excavated soil will be loaded directly into tandem trucks and will be transported by a licensed waste hauler to a permitted disposal facility. As an option, the excavated soil may be stockpiled on site, on and under polyethylene sheeting, until all excavations are completed. Once the excavations are completed, the soil stockpile would be sampled for disposal parameters and the contractor would use a licensed solid waste hauler to transport the soil to a permitted disposal facility.

Excavated soil will be screened with a PID and any soil with PID readings that exceed background levels by more than 10 ppm will be considered to be contaminated and will either be loaded into trucks for off site disposal or transported to the soil staging area. Excavation activities will be discontinued when each of the walls and the bottom of the excavation exhibit background PID readings <10 ppm above background. One confirmatory soil sample will be collected from each wall and the bottom of the excavation for VOC analysis at a local laboratory. The laboratory will be requested to perform a 24-hour turnaround on the analysis so the excavation can continue or be backfilled within a two-day period.

If total VOC results exceed 10 ppm, the excavation will continue in the direction from where the sample was collected. If total VOC results are less than 10 ppm, the excavation will be backfilled to grade with clean fill.

A3.4.1 Soil Cleanup Levels

Soil analytical results will be compared to a Site Specific Remedial Goal of 10 ppm total VOCs. The analytical results must indicate that the total VOC level is less than 10 ppm for the excavation to be considered complete. Once each of the wall and bottom samples exhibit total VOC levels less than 10 ppm, the excavation will be backfilled with clean fill.

A3.4.2 Offsite Disposal of Contaminated Material

Contaminated soil excavated from the site will be disposed of at a facility permitted to accept the waste stream. Based on previous analytical data, the soil does not exhibit

characteristics of a Resource Conservation and Recovery Act (RCRA) hazardous waste and can be disposed of as a contaminated, non-hazardous solid waste at a 6 NYCRR Part 360 permitted solid waste landfill. The contractor will be responsible for coordinating disposal activities and is required to provide waste manifests or straight bills of lading for each shipment of excavated soil.

A3.5 Excavation Dewatering and Treatment

If groundwater is encountered during excavation, it will require special handling, storage, and pre-treatment on site prior to discharge. Groundwater that accumulates in the excavation will be pumped into temporary on site storage tanks. The stored water will be treated on-site by pumping it through activated carbon canisters to remove the VOCs. The treated water will be stored in a designated clean storage tank. The treated water will be tested for VOCs and/or any other parameters required by the Town of Cheektowaga (Town) for eventual disposal to the local sanitary sewer system. The contractor will be required to obtain a temporary discharge permit from the Town. The permit must state the anticipated volume of water to be discharged, the duration of discharge, and the acceptable contaminant concentrations for the treated water.

A3.6 Monitoring Well Decommissioning and Installation

Monitoring well MW-03 will be decommissioned during excavation of the clay-tile pipe east of the Former Maintenance Shop.

A replacement monitoring well, designated as MW-06D, will be installed upon completion of the remedial action excavation activities adjacent to existing monitoring MW-06. The well will be installed to a depth of 25-30 feet and screened from 15 to 25 feet (similar to MW-3) to monitor the deep aquifer. The new well will be installed and developed according to the procedures described in the Field Sampling Plan. Following installation, the well will be sampled and analyzed for VOCs.

Prior to excavating MW-3, the PVC screen and riser pipe will be tremie grouted to within a few feet of the ground surface and allowed to stand until the cement sets up. The riser pipe and surrounding soils will then be excavated to a depth of about 15 feet, or the maximum reach of the excavation, whichever is greater.

Following completion of the excavation around MW-03, a 4-inch diameter PVC pipe will be inserted in the excavation to allow for future collection of groundwater samples and/or groundwater pumping, should it ever be required. The pipe will be slotted from 10-15 feet bgs. The excavation will be backfilled with pea gravel to about 1 foot above the top of screen. A 1-foot layer of fine to coarse sand will be placed over the gravel and the remainder of excavation backfilled with clean, clayey fill. The same procedures will be implemented for PZ-02 at the northeast corner of the Former Chemical Storage Building, where PZ-02 will be removed during excavation activities.

A3.7 Backfill and Site Restoration

Following receipt of the analytical data for the confirmatory samples showing that the cleanup objectives have been achieved, certified clean fill will be used to backfill the excavated areas. All the excavations will be backfilled and compacted to grade. Soils will be placed in maximum 12-inch thick lifts and compacted. The excavation will be dewatered, as necessary, to allow placement of the soils in the dry. Alternatively, pea gravel or run-of-crush stone will be placed in the excavation until the backfill is above the water surface. Areas that originally had been paved or covered with concrete will not be repaved. Backfilled areas will be reseeded with native grasses, as appropriate.

A3.8 Groundwater Monitoring

Following installation of the new monitoring well MW-06D and completion of site remediation activities, a complete round of groundwater sampling and analysis will be conducted. Low-flow sampling methods will be utilized to minimize sample turbidity. The sampling event will be coordinated to coincide with the next routine semi-annual sampling event for the site (most probably in January 2004). All the onsite wells will be sampled and analyzed for VOCs. Additionally, both filtered and unfiltered groundwater samples will be collected from MW-05 and analyzed for lead.

The analytical data will be evaluated to determine if VOCs are present in the deeper groundwater in MW-06D. If the data indicates elevated VOC concentrations (i.e., > 1,000 ug/L)

in MW-06D, then an additional deep monitoring well will be installed adjacent to existing shallow well MW-07.

A4.0 PERMITS

The Remedial Contractor shall obtain all required permits prior to the commencement of remedial activities and must perform all work in compliance with the provisions of those permits.

A5.0 REMEDIAL ACTION REPORT

Following completion of the remedial action at the site, an engineering and remedial certification report will be prepared that will discuss the specifics of the remedial action activities at the site. Field and laboratory test results along with supportive graphical illustrations and work sheets will be included in the report as part of the record documentation. Additional information such as daily inspection/field reports, waste manifests, photographs and monitoring data will be appended as appropriate. A discussion of deed restrictions that will be placed on the property following completion of the remediation and operation and maintenance (O&M) requirements will be included. The report will be submitted to NYSDEC and certified by a professional engineer licensed to practice in New York State that the remedial activities have been performed in compliance with the remedial action work plan, and the VCA.

A6.0 REMEDIAL ACTION SCHEDULE

Following approval of the RAWP by the Volunteers and NYSDEC, the remedial action project will be initiated. This will consist of the implementation and monitoring of the approved RAWP. As outlined above, the anticipated scope of work will include remedial action activities including asbestos removal, floor drain cleaning, building demolition, contaminated soil excavation and site restoration. Extensive remedial design efforts and construction is not expected to be necessary. The following tasks will be performed during the remedial action.

Task 1 - Selection of Remedial Action Construction, Transportation and Disposal Contractors to perform the remedial action in conformance with the approved RAWP and executed Voluntary Cleanup Agreement.

Task 2 - Implementation of the approved RAWP.

Task 3 - Preparation of the Final Engineering Report and Certification that will discuss the field activities and certify that the remedial activities were performed in compliance with the NYSDEC approved RAWP, and the VCA between the Volunteers and the NYSDEC, Index No. B9-0586-00-10.

A projected schedule for the site remediation is presented in Table 6-1.

TABLE 6-1

PROJECT SCHEDULE
REMEDIAL ACTION WORK PLAN – FORMER DOWELL FACILITY – WALDEN AVENUE
BUFFALO, NEW YORK

WORK ELEMENT	DATE
Submit Draft Remedial Action Work Plan to NYSDEC	May 7, 2003
NYSDEC Review and Comment	May 30, 2003
Submit Final Remedial Action Work Plan to NYSDEC	June 6, 2003
NYSDEC Prepare Draft Fact Sheet for Site Remediation	May 19, 2003
Publish 30 Day Public Notice	June 7, 2003
Initiate Site Remediation Activities	July 7, 2003
Complete Site Remediation Activities	August 7, 2003
Conduct Full round of Groundwater Sampling	September 15, 2003
Issue Construction Monitoring Report (CMR)	November 15, 2003
NYSDEC Review and Comment	December 15, 2003
Submit Final CMR to NYSDEC	January 16, 2004

APPENDIX A

PREVIOUS INVESTIGATIONS DETAILS

Table 3

Soil Sample Results

DS-Depew, New York Facility

November 1997

Detected Volatile Compound	Soil Boring ID and Sample Depth Interval (feet)													
	SB-01 (4 - 6)	SB-02 (6 - 8)	SB-03 (12 - 14)	SB-03 (16 - 18)	SB-04 (8 - 10)	SB-04 (14 - 16)	SB-05 (6 - 8)	SB-05 (10 - 12)	SB-05 (14 - 16)	SB-06 (4 - 6)	SB-07 (8 - 10)	SB-07 (18 - 20)	SB-08 (2 - 4)	SB-08 (6 - 8)
	Constituent concentrations (mg/Kg)													
Vinyl Chloride	0.022	0.029	ND	ND	0.11	ND	0.10	0.042	ND	ND	0.16	ND	ND	ND
1,2-DCA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.006	ND	ND	ND
TCE	0.11	0.66 (*)	ND	ND	33.0 (*)	0.033	3.3 (*)	29.0 (*)	0.012	ND	17.0 (*)	9.7 (*)	ND (*)	0.008
1,1,1-TCA	0.017	ND	1.6 (*)	ND	ND	ND	ND	ND	ND	ND	0.37J (*)	ND (*)	ND	ND
1,2-DCE (total)	0.21 (*)	0.63 (*)	ND	ND	2.0 (*)	ND	0.87 (*)	ND (*)	ND	ND	0.61J (*)	ND (*)	ND	ND
Methylene Chloride	ND	ND	0.008	0.01	ND	0.013	ND	ND	0.009	ND	ND	0.006	0.023	ND
Acetone	ND	ND	0.02	0.016	ND	ND	0.033	ND	0.02	0.028	ND	ND	0.30 (*)	0.022
1,1-DCA	ND	ND	7.9 (*)	0.34 (*)	ND	ND	0.025	ND	ND	ND	0.21	ND	0.008	ND
Toluene	ND	ND	ND	0.01	ND	0.019	ND	ND	ND	ND	ND	ND	0.016	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14	ND	ND	ND	ND
Total Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.067	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.016	ND	ND	ND
PCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.38	ND	ND	ND
1,1-DCE	ND	ND	ND	ND	ND	ND	0.007	ND	ND	ND	0.38	ND	ND	ND
1,1,2-TCA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.013	ND	ND	ND
(*) - Dilute Analysis	1 : 2	1 : 5	1 : 125	1 : 2	1 : 250		1 : 125	1 : 250			1 : 125	1 : 125	1 : 2	

Notes:

Laboratory Analysis for Volatile Organic Compounds using EPA SW 846 Method 8260A
ND - Not Detected - Below Laboratory Quantification Limit
DCA - dichloroethane
TCE - trichloroethylene
TCA - trichloroethane
DCE - dichloroethene
PCE - tetrachloroethene
J - Present - Below the Quantification Limit in the Diluted Analysis

TABLE 4
MW-1
Groundwater Analytical Results
Former Dowell Schlumberger Facility, Depew, New York

Volatile Compounds	Sep-96 (Mg/L)	Mar-97 (Mg/L)	Nov-97 (Mg/L)	Jul-98 (Mg/L)	Dec-98 (Mg/L)	Jul-99 (Mg/L)	Jan-00 (Mg/L)
Chloroethane	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.001
Vinyl Chloride	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.001
Methylene Chloride	0.020	<0.005	NA	0.003[B]	<0.005	<0.005	0.001[J]
Acetone	<0.010	<0.010	NA	<0.025	<0.01	<0.010	0.006[B]
1,1-Dichloroethene	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.001
1,1-Dichloroethane	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.001
1,2-Dichloroethene (total)	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.001
1,2-Dichloroethane	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.001
1,1,1-Trichloroethane	<0.005	<0.005	NA	<0.005	<0.005	<0.005	<0.001
Total VOCs	0.020	ND	NA	ND	ND	ND	ND

Notes

Volatile Organic Analysis by EPA SW846 Method 8260A

NA= Not Analyzed

[B] Qualified as non-detect due to blank contamination

TABLE 5
MW-2
Groundwater Analytical Results
Former Dowell Schlumberger Facility, Depew, New York

Volatile Compounds	Sep-96 (Mg/L)	Mar-97 (Mg/L)	Nov-97 (Mg/L)	Jul-98 (Mg/L)	Dec-98 (Mg/L)	Jul-99 (Mg/L)	Jan-00 (Mg/L)
Chloroethane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
Vinyl Chloride	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
Methylene Chloride	**0.012**	<0.005	**0.007**	0.005[a]	<0.005	<0.005	0.001[a]
Acetone	**0.013**	<0.010	**0.014**	<0.025	<0.005	<0.010	0.005[a]
1,1-Dichloroethene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
1,1-Dichloroethane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
1,2-Dichloroethene (total)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
1,2-Dichloroethane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
1,1,1-Trichloroethane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
Total VOCs	**0.015**	**ND**	**0.021**	**ND**	**ND**	**ND**	**ND**

Notes

Volatile Organic Analysis by EPA SW846 Method 8260A

ND=Not Detected

[a] Qualified as non-detect due to blank contamination

TABLE 6

MW-3

Groundwater Analytical Results

Former Dowell Schlumberger Facility, Depew, New York

Volatile Compounds	Sep-96 (Mg/L)	Mar-97 (Mg/L)	Nov-97 (Mg/L)	Jul-98 (Mg/L)	Dec-98 (Mg/L)	Jul-99 (Mg/L)	Jan-00 (Mg/L)
Chloroethane	<0.005	<0.005	<0.005/0.010	0.021/<1	<0.005/0.006	0.007	<0.200/<0.200
Vinyl Chloride	<0.005	<0.005	<0.005/0.005	0.12/<1	<0.005/<0.005	<0.005	<0.200/<0.200
Methylene Chloride	0.011	<0.005	0.010/0.012	0.005[B]/0.930[B]	<0.005/<0.005	<0.005	0.27[B]/0.33[B]
Acetone	<0.010	<0.010	<0.010/0.030	0.007[B]/<5	<0.010/<0.010	<0.010	1.0[B]/1.0[B]
1,1-Dichloroethene	<0.005	0.019	0.013/0.028	0.068/<1	0.010/0.028	0.007	0.22*/0.28*
1,1-Dichloroethane	0.48	7.7	14.0*/18.0*	19/33	16/30	19.0*	18.0*/20.0*
1,2-Dichloroethene (total)	<0.005	<0.005	0.005/0.010	0.005/<1	<0.005/<0.005	<0.005	<0.200/<0.200
1,2-Dichloroethane	<0.005	0.005	.006/0.011	0.009/<1	0.006/0.010	0.006	<0.200/<0.200
1,1,1-Trichloroethane	0.1	1.000	2.0*/2.6*	3.7/5.5	3.3/5.4	2.4*	2.5*/2.6*
Total VOCs	0.591	8.724	20.696	38.723	35.450	21.42	22.88

Notes

Volitile Organic Analysis by EPA SW846 Method 8260A

<0.005 / 0.010 = Sample Result / Duplicate Result

(*) = Dilute Analysis

ND=Not Detected

[B] Qualified as non-detect due to blank contamination

TABLE 7

MW-4

Groundwater Analytical Results

Former Dowell Schlumberger Facility, Depew, New York

Volatile Compounds	Sep-96 (Mg/L)	Mar-97 (Mg/L)	Nov-97 (Mg/L)	Jul-98 (Mg/L)	Dec-98 (Mg/L)	Jul-99 (Mg/L)	Jan-00 (Mg/L)
Chloroethane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
Vinyl Chloride	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
Methylene Chloride	0.012	<0.005	<0.005	0.005[B]	<0.005	<0.005	0.002[B]
Acetone	0.020	<0.010	<0.010	0.005[B]	<0.010	<0.010	0.006[B]
1,1-Dichloroethene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
1,1-Dichloroethane	<0.005	<0.005	<0.005	0.004	0.021	<0.005	<0.001
1,2-Dichloroethene (total)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
1,2-Dichloroethane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
1,1,1-Trichloroethane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001
Total VOCs	0.032	ND	ND	0.004	0.021	ND	ND

Notes

Volitile Organic Analysis by EPA SW846 Method 8260A

ND= Not Detected

[B] Qualified as non-detect due to blank contamination

RADIAN INTERNATIONAL LLC

WELL NO. MW-1 PAGE 1 OF 1

PROJECT NAME DS - Dupont PROJECT NO. 00751

LOCATION GEOLOGIST DNM

BY DNM ORILLING CONTRACTOR Maxim DRILLER

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

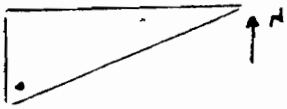
CHK BY DRILLING START DATE 9/10/96 DRILLING COMPLETION DATE 9/10/96

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	4	9 6 10 18				Medium Dense, Black-Brown Silty CINDERS and Fine to Coarse Angular GRAVEL, Moist	F				Flushmount Protective Cover	
2	SS2	6	24 12 3 3				Medium Dense to Very Loose, Fine to Medium CINDERS, Trace to Little Wood Frags, Crushed Sandstone, and Fine to Medium Gravel, Moist					Bentonite-Cement Grout	
4	SS3	12	3 3 5 7				Soft to Medium Stiff, Green-Gray Silty Clay Grading to Red-Brown CLAY Trace Silt, Plant Roots, Moist	CL					
6	SS4	20	14 16 20 28				Very Stiff, Red-Brown CLAY, Little Silt, Gray Along Fractures, Damp					2" PVC Sch 40 Riser	
8	SS5	0"	21 21 29 29				No RECOVERY	CL					
10	SS6	13	7 8 12 13				Stiff, Red-Brown and Gray CLAY, Orange-Brown Staining, Little Silt, Trace Fine to Medium Gravel, Moist	CL	9/12				
12													

Well located in S.E corner of property

ADDITIONAL REMARKS



RADIAN INTERNATIONAL LLC

WELL NO. MW-1 PAGE 1 OF 1

PROJECT NAME DS - Depew PROJECT NO. 007531

LOCATION Depew, NY GEOLOGIST DeM

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 41 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 13				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

RADIAN INTERNATIONAL LLC

WELL NO. MW-1 PAGE OF

PROJECT NAME DS - Depew PROJECT NO. 20351

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			41				Hard, Red-brown CLAY, Little to Some Silt, Little Very Fine to Fine Sand and Fine to Medium Gravel. Moist	CL					
	SS15	18	14										
			21										
			100/0										
30											30		PVC End Cap
							HSA Refusal @ 30.0'						

ADDITIONAL REMARKS

RADIAN INTERNATIONAL LLC

WELL NO. MW2 PAGE OF

PROJECT NAME D - Drive PROJECT NO.

LOCATION GEOLOGIST DNM

BY DNM ORILLING CONTRACTOR Maxim Tech. DRILLER

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

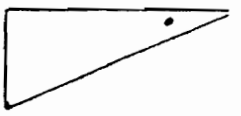
CHK BY ORILLING START DATE 9/11/96 ORILLING COMPLETION DATE 9/11/96

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 ROD. (%)	VISUAL CLASSIFICATION AND REMARKS	PROFILE	STATIC WATER LEVEL (FT)	BORING/CASING DIA. (IN.)	DEPTH (FEET)	WELL CONSTRUCTION DETAILS	REMARKS
0													
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	37 16 18 19				Very Stiff, Red-Brown, CLAY, Little Silt, Trace Fine Gravel, Gray Along Some Fractures, Damp		9/12			2" Sch 40 PVC Riser	
6	SS4	14	28 28 32 36				Hard, Red-Brown CLAY, Trace to Little Silt, Damp						
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													

Well located in N.E. Corner of Property

ADDITIONAL REMARKS



RADIAN INTERNATIONAL LLC

WELL NO. ~~MW~~ 2

PAGE 1 OF 2

PROJECT NAME DS - DEPW

PROJECT NO. 307531

LOCATION DEPW, 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	24	38 37 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 50/2"				No Recovery HSA to Refusal @ 28.3'				28.3		PVC End Cap
28													

ADDITIONAL REMARKS

A1SVORI 9

RADIAN INTERNATIONAL LLC

WELL NO. MW-3 PAGE OF

PROJECT NAME D. Wilson PROJECT NO. 62451.1

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.	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													
							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								CL					
	SS3	20	35 26 35 46				Hard, Red-Brown CLAY, Little Gray Along Fractures, Trace Silt, Very Fine Sand, and Fine Gravel, Damp						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 DJM

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
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					
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					
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													

WELL CONSTRUCTION DETAILS: Clean Filter Sand Pack; 2" Sch 40 PVC Well Screen (0.010" Slot)

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	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'

RADIAN INTERNATIONAL LLC

WELL NO. MW-4 PAGE 1 OF 1

PROJECT NAME [illegible] PROJECT NO. [illegible]

LOCATION [illegible] GEOLOGIST DNM

BY DNM DRILLING CONTRACTOR MAXIM TECH DRILLER [illegible]

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

CHK BY [illegible] DRILLING START DATE 9/11/96 DRILLING COMPLETION DATE 9/12/96

DATE [illegible] SURFACE ELEVATION [illegible] STICK-UP ELEVATION [illegible]

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													
	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					
9	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.	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	HSA						Red-Brown CLAY	CL		13		
14	SS4	12	7 8 9 13				Medium Stiff to Stiff, Red-Brown CLAY to 15.5', (15'-16') Gray CLAY, Sticky, Trace Gravel and Very Fine to Fine Sand, Moist	CL		15	Bentonite Seal	
16	HSA						Gray and Gray-Brown CLAY	CL		18.5		
18												
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

URS Corporation

GEOPROBE BORING LOG

BORING NO: Sump 1-X-2

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	Inside maintenance bldg
GROUND ELEVATION:	
DATE STARTED:	07/12/01
DATE FINISHED:	07/12/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Sheppard

GROUNDWATER:				CAS.	SAMPLER	CORE	TUBE
DATE	TIME	LEVEL	TYPE	TYPE		Macro core		
				Dia.		2"		
				Length		48"		
				Liner		Acetate		

DEPTH FEET	SAMPLE STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY / HARDNESS	DESCRIPTION MATERIAL	USCS	REMARKS PID (ppm)	
				Gray	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel	Fill	0	Moist-
				Black	Stiff	1.0-1.5' Silty clay with fine gravel	CL	210	Wet
		1	100%	Orange-Brown		1.5-4.5' Clayey silt	ML	4-8	
4									
						End of boring at 4.5 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly.

PROJECT NO.	05-00035824.00
BORING NO.	Sump 1-X-2

URS Corporation

GEOPROBE BORING LOG

BORING NO: Sump 1-X-1

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
ORING LOCATION:	Inside maintenance bldg
GROUND ELEVATION:	
DATE STARTED:	07/12/01
DATE FINISHED:	07/12/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Sheppard

GROUNDWATER:

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE		Macro core		
Dia.		2"		
Length		48"		
Liner		Acetate		

DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY / HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
		1	100%	Gray	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel	Fill	0	Moist-
				Black	Stiff	1.0-1.5' Silty clay with fine gravel	CL	220	Wet
4				Orange-Brown		1.5-4.5' Clayey silt	ML	3	
						End of boring at 4.5 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly. Sampled 1-1.5' interval for VOC analysis

PROJECT NO. 05-00035824.00

BORING NO. Sump 1-X-1

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: Sump 2-X-1	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Inside maintenance bldg.
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/12/01
				Dia.		2"			DATE FINISHED:	07/12/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

	SAMPLE					DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
		1	88%	Gray	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel and sand	Fill	0	Moist
					Stiff	1.0-2.0' Silty clay grading to...	CL	1500+	
4				Yellow Brn. Orange-Brown		2.0-4.5' Clayey silt	ML	0	Slightly Moist
						End of boring at 4.5 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push	PROJECT NO.	05-00035824.00
Assembly. Sampled 1.5-2' interval for VOC analysis	BORING NO.	Sump 2-X-1

URS Corporation									GEOPROBE BORING LOG			
									BORING NO: Sump 2-X-2			
PROJECT: Dowell Schlumberger Site, Depew, New York									SHEET: 1 of 1			
CLIENT: Dowell Schlumberger									PROJECT NO.: 05-00035824.00			
BORING CONTRACTOR: Nature's Way, Inc.									BORING LOCATION: Inside maintenance bldg.			
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:			
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED: 07/12/01			
				Dia.		2"			DATE FINISHED: 07/12/01			
				Length		48"			DRILLER: S. Gingrich			
				Liner		Acetate			GEOLOGIST: T. Burmeier			
									REVIEWED BY: D. Sheppard			

SAMPLE						DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
				Gray	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel and sand	Fill	0	Moist
		1	88%		Stiff	1.0-2.0' Silty clay grading to...	CL	300+	
				Yellow Brn.		2.0-4.5' Clayey silt	ML	0	Slightly Moist
4				Orange-Brown					
						End of boring at 4.5 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly.	PROJECT NO. 05-00035824.00
	BORING NO. Sump 2-X-2

URS Corporation									GEOPROBE BORING LOG			
									BORING NO: Sump 3-X-1			
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1		
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00		
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Inside maintenance bldg.		
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:			
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/12/01		
				Dia.		2"			DATE FINISHED:	07/12/01		
				Length		48"			DRILLER:	S. Gingrich		
				Liner		Acetate			GEOLOGIST:	T. Burmeier		
									REVIEWED BY:	D. Sheppard		

SAMPLE						DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
				Gray	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel and sand	Fill	0	Moist
		1	88%	Brown	Stiff	1.0-1.5' Fine sand	CL	35	
				Yellow Brn.		1.5-2.5' Clayey silt with fine sand	ML	8	Slightly
4				Reddish-Brown		2.5-4.5 Clayey silt		0	Moist
						End of boring at 4.5 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly.	PROJECT NO.	05-00035824.00
	BORING NO.	Sump 3-X-1

URS Corporation

GEOPROBE BORING LOG

BORING NO: Sump 3-X-2

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
GROUNDWATER:	
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	Inside maintenance bldg.
GROUND ELEVATION:	
DATE STARTED:	07/12/01
DATE FINISHED:	07/12/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Sheppard

DATE	TIME	LEVEL	TYPE	CAS.	SAMPLER	CORE	TUBE
			TYPE		Macro core		
			Dia.		2"		
			Length		48"		
			Liner		Acetate		

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE RECOVERY %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL	USCS	REMARKS PID (ppm)	
		1	88%	Gray Brown	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel and sand	Fill	0	Moist
					Stiff	1.0-1.5' Fine sand	CL	59	
				Yellow Brn.		1.5-2.5' Clayey silt with fine sand	ML	0	Slightly
4				Reddish-Brown				0	Moist
						End of boring at 4.5 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly. Sampled 1.5-2' interval for VOC analysis

PROJECT NO.	05-00035824.00
BORING NO.	Sump 3-X-2

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: Sump 4-X-1	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Inside chemical storage bldg.
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/12/01
				Dia.		2"			DATE FINISHED:	07/12/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

	SAMPLE					DESCRIPTION		
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)
				Gray	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel and sand	Fill	0
		1	50%	Brown		1.0-2.5' Fill:gravel, sand, and wood		0
4								Moist-wet
						End of boring at 4.5 feet		

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push	PROJECT NO.	05-00035824.00
Assembly.	BORING NO.	Sump 4-X-1

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: Sump 4-X-2	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Inside chemical storage bldg
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/12/01
				Dia.		2"			DATE FINISHED:	07/12/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

SAMPLE						DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
				Gray	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel and sand	Fill	0	
		1	63%	Lt. Brown		1.0-4.0' Fill:gravel, sand, silty clay and brick			Moist-wet
4				Brown					
					Stiff	4.0-6.5' Clayey silt	ML		
		2	100%			6.5-6.8' Coarse sand	SC		
				Black-Dark Gray		6.8-8.0' Clayey silt	ML		
8									
						End of boring at 8.0 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly. Sampled 2-2.5' interval for VOC analysis.	PROJECT NO.	05-00035824.00
	BORING NO.	Sump 4-X-2

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: Sump 5-X-1	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Inside chemical storage bldg
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/12/01
				Dia.		2"			DATE FINISHED:	07/12/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

	SAMPLE					DESCRIPTION		
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)
		1	75%	Gray Black	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel and sand 1.0-4.0' Fill:silt and fine -medium sand	Fill	0 Moist-wet
4						End of boring at 4.0 feet		

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly. Sampled 2.5-3.0' interval for VOC analysis	PROJECT NO.	05-00035824.00
	BORING NO.	Sump 5-X-1

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: Sump 5-X-2	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Inside chemical storage bldg
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/12/01
				Dia.		2"			DATE FINISHED:	07/12/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

SAMPLE						DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
4		1	75%	Gray Black	Dense	0-0.5': Concrete floor, 0.5-1' sub-base gravel and sand 1.0-4.0' Fill:silt and fine -medium sand	Fill	0	Moist-wet
						End of boring at 4.0 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly.	PROJECT NO.	05-00035824.00
	BORING NO.	Sump 5-X-2

URS Corporation

GEOPROBE BORING LOG

BORING NO: GPB-1

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	South of chemical storage bldg.
GROUND ELEVATION:	
DATE STARTED:	07/10/01
DATE FINISHED:	07/10/01
DRILLER:	S. Gingrich
GEOLOGIST:	S.Tivnan
REVIEWED BY:	D. Sheppard

GROUNDWATER:

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE		split-spoon		
Dia.		2"		
Length		24"		
Liner		Acetate		

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE RECOVERY %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL	USCS	REMARKS PID (ppm)	
		1	100%	Lt. Brown Brown-Black	Dense	0-3.0' Fill:crushed limestone, re-worked silty clay with cinders and fine gravel	Fill	0.0	moist
		2	50%						
4				Orange brown	Stiff	3.0-4.0' Silty clay	CL		wet@4'
		3	100%			4.0-11.5' Clayey silt	ML		moist
		4	100%						
8									
		5	60%						
		6	90%		Soft				
12						11.0-12.0' Silty clay	CL		
						End of boring at 12.0 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push
Assembly. Installed mini-well with screen from 2-12'

PROJECT NO.	05-00035824.00
BORING NO.	GPB-1

URS Corporation

GEOPROBE BORING LOG

BORING NO: GPB-2

PROJECT:	Dowell Schlumberger Site, Depew, New York	SHEET:	1 of 1
CLIENT:	Dowell Schlumberger	PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.	BORING LOCATION:	South of chemical storage bldg.
GROUNDWATER:		GROUND ELEVATION:	

DATE	TIME	LEVEL	TYPE	CAS.	SAMPLER	CORE	TUBE
			TYPE		split-spoon		
			Dia.		2"		
			Length		24"		
			Liner		Acetate		

DATE STARTED:	07/10/01
DATE FINISHED:	07/10/01
DRILLER:	S. Gingrich
GEOLOGIST:	S.Tivnan
REVIEWED BY:	D. Sheppard

DEPTH FEET	SAMPLE STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL	USCS	REMARKS PID (ppm)
		1	90%	Lt. Brown Brown-Black	Dense	0-3.0' Fill:crushed limestone, re-worked silty clay with cinders and fine gravel	Fill	0.0 moist
		2	15%					
4				Orange brown	Stiff	3.0-4.0' Silty clay	CL	wet@4'
		3	0%			4.0-11.5' Clayey silt	ML	
		4	100%					moist
8								
		5	70%					
		6	100%					
12					Soft	11.0-14.0' Silty clay	CL	
		7	100%					
						End of boring at 14.0 feet		

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly. Installed mini-well with screen from 2-12'

PROJECT NO.	05-00035824.00
BORING NO.	GPB-2

URS Corporation

GEOPROBE BORING LOG

BORING NO: GPB-3

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	South of chemical storage bldg.
GROUND ELEVATION:	
DATE STARTED:	07/10/01
DATE FINISHED:	07/10/01
DRILLER:	S. Gingrich
GEOLOGIST:	S.Tivnan
REVIEWED BY:	D. Sheppard

GROUNDWATER:

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE		split-spoon		
Dia.		2"		
Length		24"		
Liner		Acetate		

DEPTH FEET	STRATA	SAMPLE "S" NO.	RECOVERY %	COLOR	CONSISTENCY / HARDNESS	DESCRIPTION MATERIAL	USCS	REMARKS PID (ppm)	
		1	65%	Lt. Brown / Brown-Black	Dense	0-4.0' Fill:crushed limestone, re-worked silty clay with cinders and fine gravel	Fill	0.0 / 1-5	moist
4		2	50%	Orange brown				1-4	wet@4'
		3	100%		Stiff	4.0-11.5' Clayey silt	ML	0-0.5	moist
8		4	100%					0.0	
		5	100%						
12						Refusal at 10 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly. Installed mini-well with screen from 2-12'

PROJECT NO. 05-00035824.00

BORING NO. GPB-3

URS Corporation

GEOPROBE BORING LOG

BORING NO: GPB-4

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	North of chemical storage bldg.
GROUND ELEVATION:	
DATE STARTED:	07/12/01
DATE FINISHED:	07/12/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Sheppard

GROUNDWATER:

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE		Macro core		
Dia.		2"		
Length		48"		
Liner		Acetate		

DEPTH FEET	STRATA	SAMPLE "S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL	USCS	REMARKS PID (ppm)	
		1	68%	Dk brn./blk.	Dense	0-1.5' Fill: sand and fine gravel	Fill	320*	Moist
				Gray green	Soft	1.5-4.0' Silty clay	CL	0.2	
4									
		2	100%	Red brown to Orange brown	Stiff	4.0-11.5' Clayey silt	ML	0	Slightly moist
8									Moist
		3	88%		Soft				Very moist
12						11.5-12.0' silty clay	CL		
						End of boring at 12.0 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly. Sampled 3-3.5' interval for VOC analysis.

* instrument appeared to be affected by moisture

PROJECT NO. 05-00035824.00

BORING NO. GPB-4

URS Corporation

GEOPROBE BORING LOG

BORING NO: GPB-5

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
GROUNDWATER:	
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	North of chemical storage bldg.
GROUND ELEVATION:	
DATE STARTED:	07/12/01
DATE FINISHED:	07/12/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Sheppard

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE		Macro core		
Dia.		2"		
Length		48"		
Liner		Acetate		

DEPTH FEET	STRATA	SAMPLE "S" NO.	RECOVERY %	COLOR	CONSISTENCY / HARDNESS	DESCRIPTION: MATERIAL	USCS	REMARKS: PID (ppm)
		1	58%	Dk brown	Dense	0-2.0' Fill: silt, sand and fine gravel	Fill	0.0 Moist
4				Gray green	Soft	1.5-4.0' Silty clay	CL	
		2	100%	Orange brown	Stiff	4.0-11.5' Clayey silt	ML	Slightly moist
8								Moist
		3	100%		Soft			Very moist
12						11.5-12.0' silty clay	CL	
						End of boring at 12.0 feet		

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly.

PROJECT NO. 05-00035824.00

BORING NO. GPB-5

URS Corporation

GEOPROBE BORING LOG

BORING NO: GPB-6

PROJECT:	Dowell Schlumberger Site, Depew, New York	SHEET:	1 of 1
CLIENT:	Dowell Schlumberger	PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.	BORING LOCATION:	North of chemical storage bldg.
GROUNDWATER:		GROUND ELEVATION:	
DATE STARTED:	07/12/01		
DATE FINISHED:	07/12/01		
DRILLER:	S. Gingrich		
GEOLOGIST:	T. Burmeier		
REVIEWED BY:	D. Sheppard		

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE		Macro core		
Dia.		2"		
Length		48"		
Liner		Acetate		

DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)
				Gray	Dense	0-1.7' Fill:crushed limestone, silt, sand and fine gravel	Fill	0.0 Wet
				Dk brn./blk.				
		1	68%	Gray green	Soft	1.7-4.0' Silty clay	CL	Moist
4								
				Orange brown	Stiff	4.0-11.5' Clayey silt	ML	Slightly moist
		2	100%					
8								Moist
					Soft			Very moist
		3	100%					
12						11.5-12.0' silty clay	CL	
						End of boring at 12.0 feet		

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly.

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

URS Corporation									GEOPROBE BORING LOG		
									BORING NO: GPB-7		
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1	
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00	
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	North of chemical storage bldg.	
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:		
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/12/01	
				Dia.		2"			DATE FINISHED:	07/12/01	
				Length		48"			DRILLER:	S. Gingrich	
				Liner		Acetate			GEOLOGIST:	T. Burmeier	
									REVIEWED BY:	D. Sheppard	

	SAMPLE					DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
		1	63%	Gray / Black / Gray green / Orange brown	Dense	0-1.5' Fill:crushed limestone, sand and fine gravel	Fill	0.0	Wet
4					Soft	1.5-11.5' Clayey silt	CL		Moist
		2	100%		Stiff		ML	30	Slightly moist
8									Moist
		3	100%		Soft				Very moist
12						11.5-12.0' silty clay	CL	7	
						End of boring at 12.0 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly. Sampled 7-7.5' interval for VOC analysis.	PROJECT NO.	05-00035824.00
	BORING NO.	GPB-7

URS Corporation

GEOPROBE BORING LOG

BORING NO: GPB-8

PROJECT:	Dowell Schlumberger Site, Depew, New York
CLIENT:	Dowell Schlumberger
BORING CONTRACTOR:	Nature's Way, Inc.
SHEET:	1 of 1
PROJECT NO.:	05-00035824.00
BORING LOCATION:	North of chemical storage bldg.
GROUND ELEVATION:	
DATE STARTED:	07/13/01
DATE FINISHED:	07/13/01
DRILLER:	S. Gingrich
GEOLOGIST:	T. Burmeier
REVIEWED BY:	D. Sheppard

GROUNDWATER:

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE		Macro core		
Dia.		2"		
Length		48"		
Liner		Acetate		

DEPTH FEET	STRATA	SAMPLE "S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	DESCRIPTION MATERIAL	USCS	REMARKS PID (ppm)	
		1	63%	Gray / Black	Dense	0-2.0' Fill:crushed limestone, sand, silt, and fine gravel	Fill	600+	Moist-wet
4				Gray green	Soft	2.0-4.0' Silty clay	CL		
		2	100%	Orange brown	Stiff	4.0-11.5' Clayey silt	ML	67	Slightly moist
8									Moist
		3	100%		Soft				Very moist
12						11.5-12.0' silty clay	CL	2000	
						End of boring at 12.0 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push Assembly. Sampled 2-2.5' interval for VOC analysis. Set mini-well with screen from 2-12 feet

PROJECT NO. 05-00035824.00

BORING NO. GPB-8

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: GPB-9	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	North of chemical storage bldg.
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/13/01
				Dia.		2"			DATE FINISHED:	07/13/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

	SAMPLE					DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
		1	50%	Gray Black	Dense	0-2.0' Fill:crushed limestone, sand, silt, and fine grave	Fill	0.0	Moist-wet
4				Orange brown	Soft	2.0-4.0' Clayey silt	CL		
		2	100%		Stiff	4.0-12' Silty clay	ML		Slightly moist
8									Moist
		3	100%		Soft			27-30	Very moist
12							CL		
						End of boring at 12.0 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push	PROJECT NO.	05-00035824.00
Assembly. Sampled 11.5-12' interval for VOC analysis.	BORING NO.	GPB-9

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: GPB-10	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Former acid storage area
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/13/01
				Dia.		2"			DATE FINISHED:	07/13/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

	SAMPLE					DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
		1	100%	Gray / Gray brown	Dense	0-3.0' Fill:crushed limestone, re-worked silty clay with cinders and fine gravel	Fill	0.0	Moist-wet
4				Orange brown		3.0-4.0' Silty clay	CL		
		2	100%		Stiff	4.0-11.5' Clayey silt	ML		Slightly moist
8									Moist
		3	100%		Soft				Very moist
12						11.5-12.0' Silty clay	CL		
						End of boring at 12.0 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push	PROJECT NO.	05-00035824.00
Assembly. Sampled 7-7.5' interval for VOC analysis.	BORING NO.	GPB-10

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: GPB-11	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Former acid storage area
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/13/01
				Dia.		2"			DATE FINISHED:	07/13/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

	SAMPLE					DESCRIPTION		
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)
		1	95%	Gray	Dense	0-3.0' Fill:crushed limestone, re-worked silty clay	Fill	0.0 Moist
				Gray brown				
4				Orange brown		3.0-11.0' Clayey silt	CL ML	Slightly moist
		2	100%		Stiff			
8								
		3	88%		Soft			Moist
12						11.0-16.0' Silty clay	CL	
		4	100%					
16								
						End of boring at 16.0 feet		

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push	PROJECT NO.	05-00035824.00
Assembly. Sampled 14.5-16' interval for VOC analysis.	BORING NO.	GPB-11

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: GPB-12	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Former acid storage area
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/13/01
				Dia.		2"			DATE FINISHED:	07/13/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

	SAMPLE						DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS		MATERIAL	USCS	REMARKS PID (ppm)	
		1	95%	Gray	Dense		0-3.0' Fill:crushed limestone, re-worked silty clay	Fill	0.0	Moist
				Gray brown						
4		2	100%	Medium brown	Stiff		3.0-11.0' Clayey silt	CL ML		Slightly moist
8		3	88%						9-22	
					Soft					Moist
12		4	100%				11.0-14.0' Silty clay	CL	20-55	
16							End of boring at 14.0 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push	PROJECT NO.	05-00035824.00
Assembly. Sampled 13.5-14' interval for VOC analysis.	BORING NO.	GPB-12

URS Corporation									GEOPROBE BORING LOG	
									BORING NO: GPB-13	
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	Former acid storage area
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE		Macro core			DATE STARTED:	07/13/01
				Dia.		2"			DATE FINISHED:	07/13/01
				Length		48"			DRILLER:	S. Gingrich
				Liner		Acetate			GEOLOGIST:	T. Burmeier
									REVIEWED BY:	D. Sheppard

	SAMPLE					DESCRIPTION			
DEPTH FEET	STRATA	"S" NO.	RECOVERY %	COLOR	CONSISTENCY HARDNESS	MATERIAL	USCS	REMARKS PID (ppm)	
4		1	63%	Lt. Brown Black	Dense	0-4.0' Fill:silt, crushed limestone over fine sand	Fill	0.0	Moist
8		2	100%	Yellow brown	Stiff	4.0-12.0' Clayey silt	ML		Slightly moist
12		3	88%						Moist
		4	88%	Medium brown	Soft	12.0-15.5' Silty clay	CL		
						End of boring at 15.5 feet			

Comments: Boring advanced using a truck mounted Simco Earthprobe 200 Direct-Push	PROJECT NO.	05-00035824.00
Assembly. Sampled 13.5-15' interval for VOC analysis.	BORING NO.	GPB-13

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:					CAS.	SAMPLER	CORE	TUBE
DATE	TIME	LEVEL	TYPE	TYPE	HSA	Split spoon		
				DIA.	4¼ " ID	2"		
				WT.		140#		
				FALL		30"		
				* POCKET PENETROMETER READING				

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

URS Corporation

TEST BORING LOG

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

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 %	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

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:

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

DATE	TIME	LEVEL	TYPE

* 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	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	
								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. * Initial PID readings affected by humidity

PROJECT NO.	05-00035824.00
BORING NO.	MW-7

URS Corporation									TEST BORING LOG	
									BORING NO:	MW-8
PROJECT:	Dowell Schlumberger Site, Depew, New York								SHEET:	1 of 1
CLIENT:	Dowell Schlumberger								PROJECT NO.:	05-00035824.00
BORING CONTRACTOR:	Nature's Way, Inc.								BORING LOCATION:	
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:	
DATE	TIME	LEVEL	TYPE	TYPE	HSA	Split spoon			DATE STARTED:	07/10/01
				DIA.	4¼ " ID	2"			DATE FINISHED:	07/10/01
				WT.		140#			DRILLER:	S. Gingrich
				FALL		30"			GEOLOGIST:	T. Burmeier
				* POCKET PENETROMETER READING					REVIEWED BY:	D. Lenhardt

	SAMPLE						DESCRIPTION					
DEPTH FEET	STRATA	"S" NO.	"N" TYPE	BLOWS PER 6"		RECOVERY % RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS PID (ppm)	
		1	9	5	4	50%	Gray Black	Loose	0-2': Fill - fine gravel, silt, cinders, brick fragments	Fill	0	Moist
				5	3							
		2	7	1	2	90%	Orange Brown	Medium Soft	Silty Clay with gray mottles	CL	0	
				5	6							
5		3	13	5	5	80%		Stiff	Clayey silt	ML	0	Sli. Moist
				8	10							
		4	17	4	7	90%		Very Stiff	-clay content increases with depth		0	
				10	14							
		5	18	4	7	50%	Medium Brown				0	Moist
10				11	17							
		6	12	3	4	100%		Stiff	Silty Clay	CL	0	
				8	10							
		7	13	4	7	100%	Gray Brown		- 5 % fine to coarse sand and gravel		0	Wet
				6	7							
15		8	11	3	5	20%					0	
				6	7							
		9	9	2	4	95%					0	
				5	7							
		10	11	3	4	45%					0	
20				7	6							
									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	PROJECT NO.	05-00035824.00
HSA. Samples collected using 2" split spoon samplers.	BORING NO.	MW-8
WoH= Weight of hammer assembly. Sampled 4-5' interval for VOC analysis		

DRILLING SUMMARY

Geologist: Tim Burmeier

Drilling Company: Nature's Way

Driller: Steve Gingrich

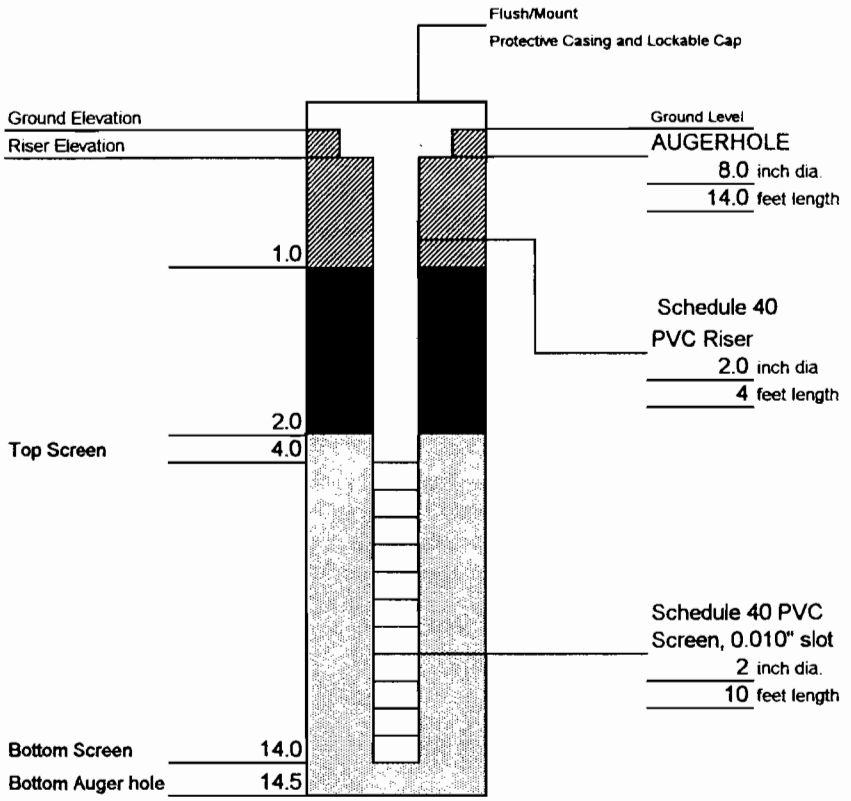
Rig Make/Model: Diedrich D-50

Date: 07/09/2001

GEOLOGIC LOG

DEPTH

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



WELL DESIGN

CASING MATERIAL		SCREEN MATERIAL		FILTER MATERIAL	
Surface:	Flush Mount Roadbox	Type:	Schedule 40 PVC	Type: Mone 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**		

DRILLING SUMMARY

Geologist: Tim Burmeier

Drilling Company: Nature's Way

Driller: Steve Gingrich

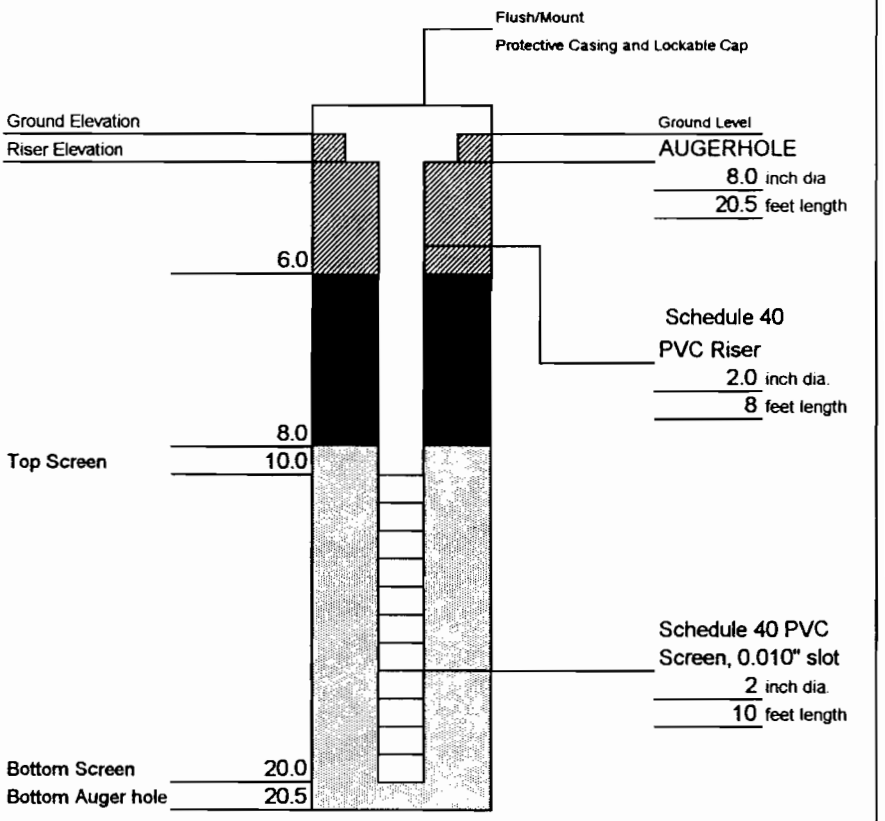
Rig Make/Model: Diedrich D-50

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: Monie 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**

DRILLING SUMMARY

Geologist:
Tim Burmeier

Drilling Company:
Nature's Way

Driller:
Steve Gingrich

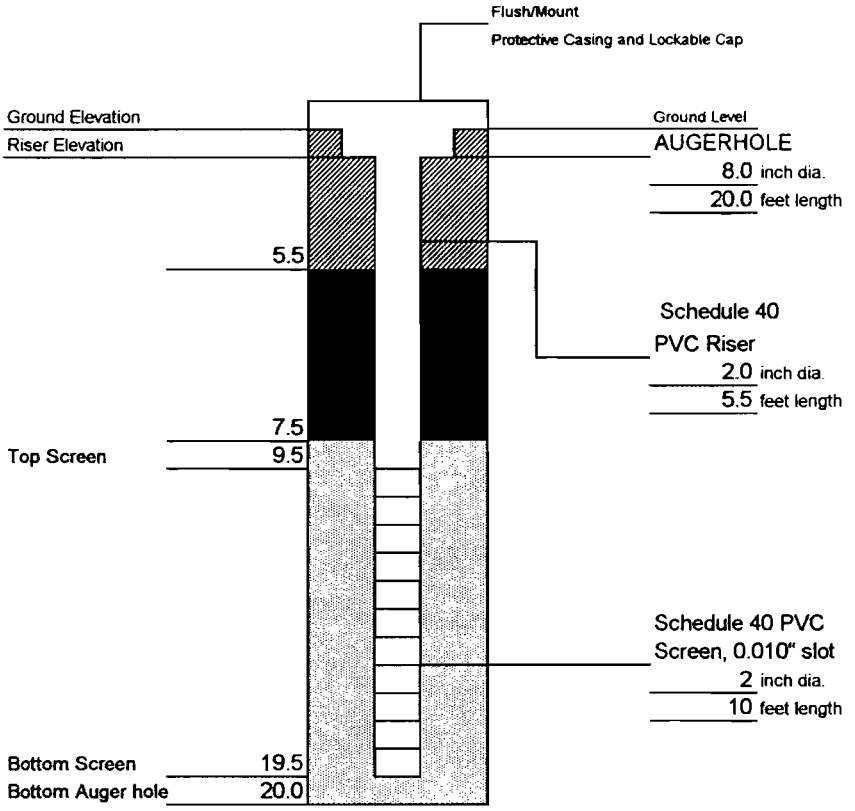
Rig Make/Model:
Diedrich D-50

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

D E P T H



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**

DRILLING SUMMARY

Geologist:
Tim Burmeier

Drilling Company:
Nature's Way

Driller:
Steve Gingrich

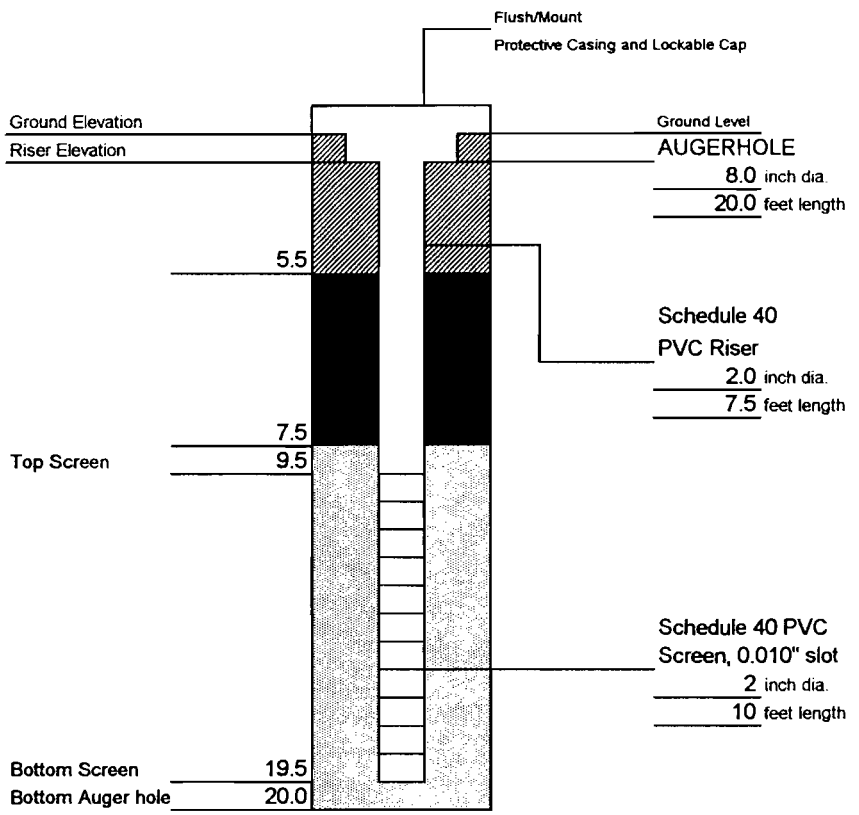
Rig Make/Model:
Diedrich D-50

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

Geologist:
Tim Burmeier

Drilling Company:
Nature's Way

Driller:
Steve Gingrich

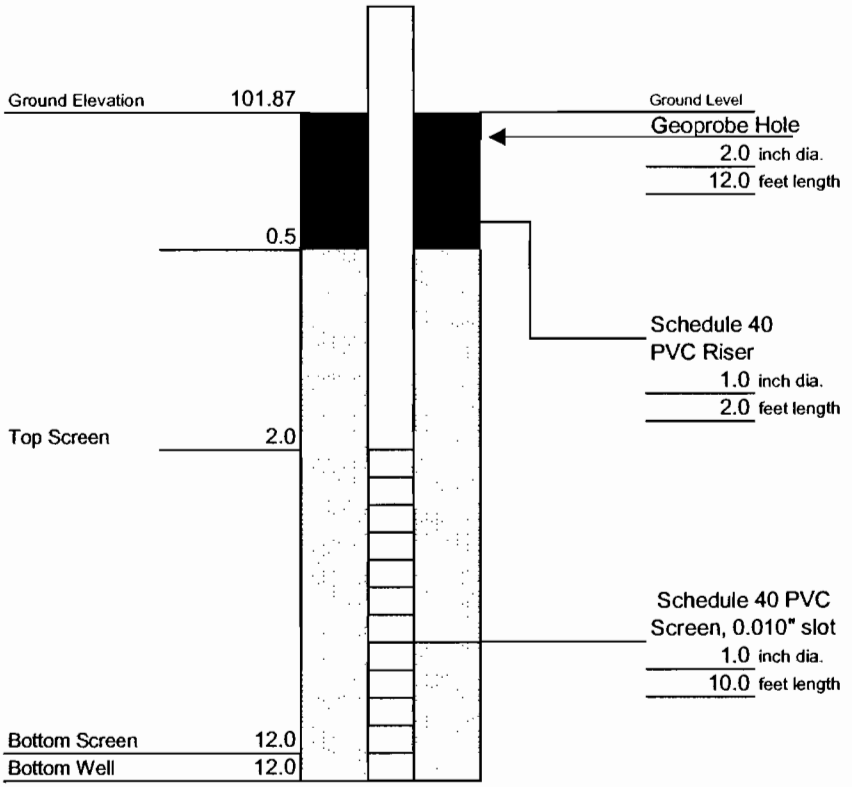
Rig Make/Model:
Simco Earth Probe 200

Date:
7/10/01

GEOLOGIC LOG

DEPTH

Depth(ft.)	Description
0-3.0	Fill- granular
3.0-4.0	Silty Clay
4.0-11.5	Clayey Silt
11.5-12.0	Silty Clay



WELL DESIGN

CASING MATERIAL		SCREEN MATERIAL		FILTER MATERIAL	
Surface:	Unprotected riser	Type:	Schedule 40 PVC	Type: Global #4 coarse sand	Setting: 0.5'-12.0'
Monitor	Schedule 40 PVC	Slot Size:	0.010"	SEAL MATERIAL	
				Type: Bentonite Chips	Setting: 0-0.5'
				Type: Concrete/ Bentonite Grout	Setting: None

COMMENTS: Geoprobe mini-well

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client:	**Dowell Schlumberger**	**Location:**	**3311 Walden Avenue Depew, New York**
URS Corporation		**MONITORING WELL CONSTRUCTION DETAILS**	
Project No.:	**05.000.35824.00**		
Well Number:	**PZ - 01 (GPB - 1)**		

DRILLING SUMMARY

Geologist:
Tim Burmeier

Drilling Company:
Nature's Way

Driller:
Steve Gingrich

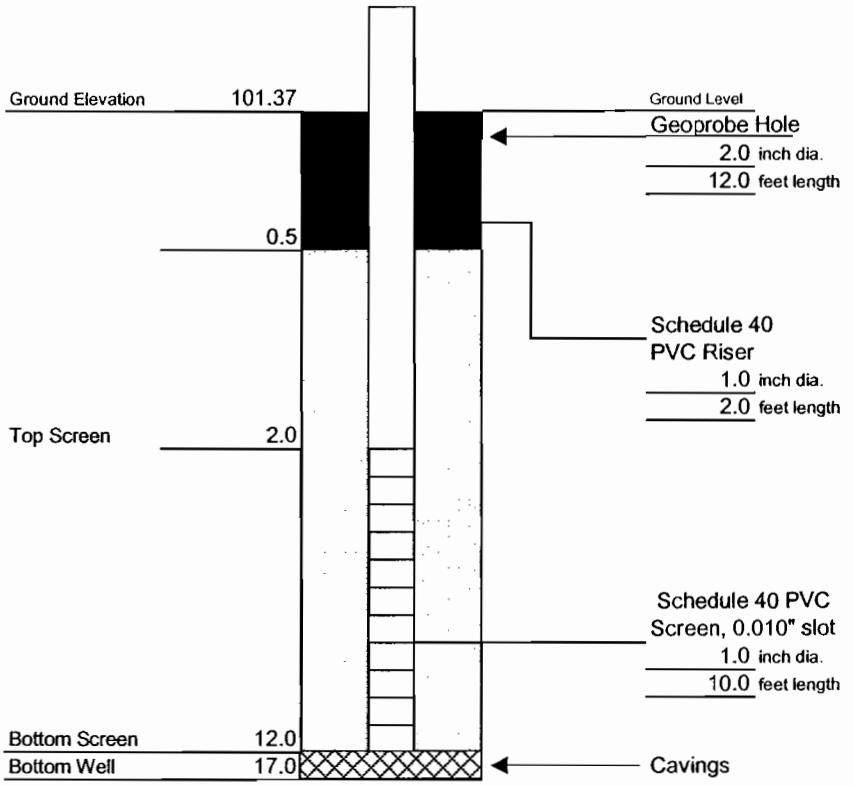
Rig Make/Model:
Simco Earth Probe 200

Date:
7/12/01

GEOLOGIC LOG

DEPTH

Depth(ft.)	Description
0-0.5	Crushed limestone
0.5-2.0'	Black granular fill
2.0-4.0	Silty Clay
4.0-12.0	Clayey Silt



WELL DESIGN

CASING MATERIAL		SCREEN MATERIAL		FILTER MATERIAL
Surface:	Unprotected riser	Type:	Schedule 40 PVC	Type: Global #4 coarse sand — Setting: 0.5-12.0
Monitor	Schedule 40 PVC	Slot Size:	0.010"	SEAL MATERIAL: Type: Bentonite Chips — Setting: 0.0-0.5'
				Type: Concrete/ Bentonite Grout — Setting: None

COMMENTS: Geoprobe mini-well

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

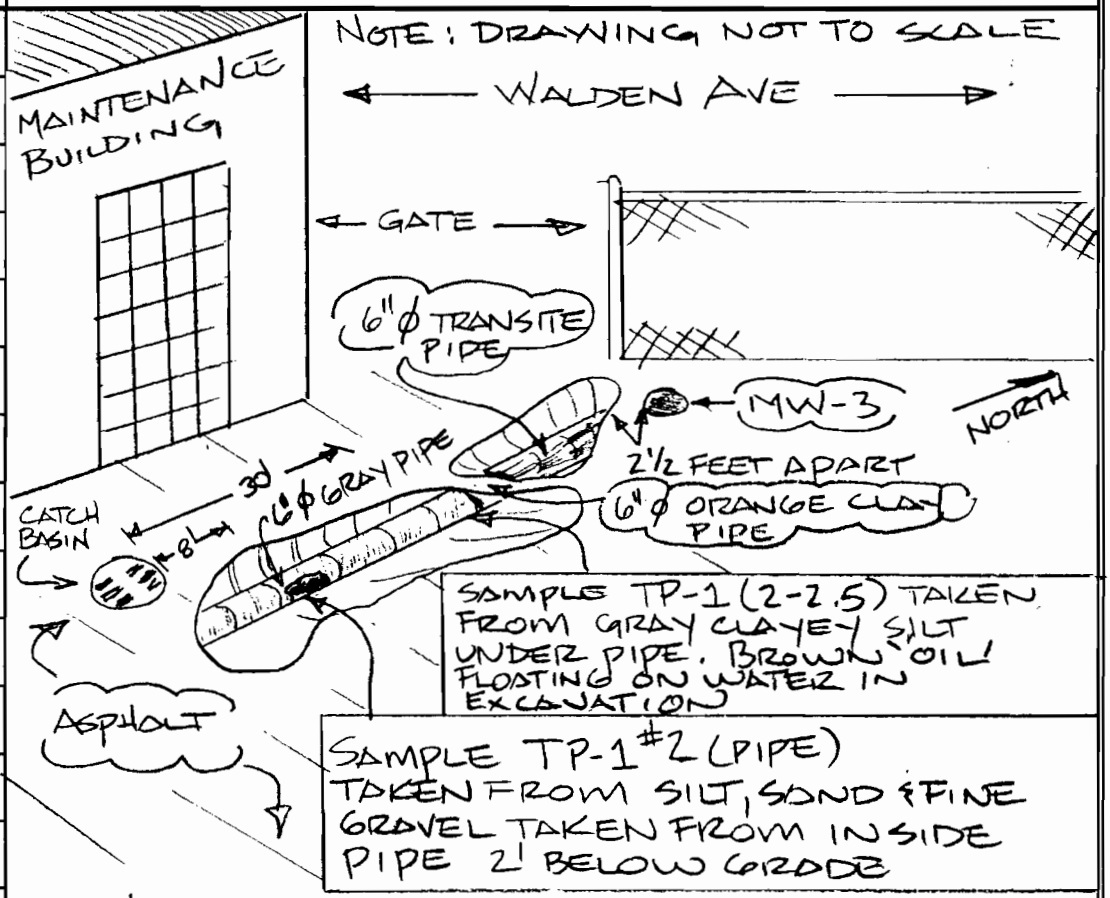
Client:	**Dowell Schlumberger**	**Location:**	**3311 Walden Avenue Depew, New York**	**Project No.:**	**05.000.35824.00**
URS Corporation		**MONITORING WELL CONSTRUCTION DETAILS**		**Well Number:**	**PZ - 02 (GPB-8)**

URS
282 Delaware Avenue
Buffalo, New York 14202
(716) 856-5636

TEST PIT LOG

PROJECT:	**3311 Walden Ave.**		Sheet 1 of 1
CLIENT:	Dowell Schlumberger	**JOB NUMBER:**	05-00035824.00
CONTRACTOR:	Nature's Way	**LOCATION:**	Depew, New York
DATE STARTED:	07/11/2001	**GROUND ELEVATION:**	not surveyed
DATE COMPLETED:	07/11/2001	**OPERATOR:**	Jamie Feldman
TRENCH NUMBER:	**TP-1**	**GEOLOGIST:**	Tim Burmeier

DEPTH (FT)	DESCRIPTION



COMMENTS: Excavated with Ford 655-A rubber-tire backhoe. Soil screened with Mini-Rae 2000 photoionizing detector

APPENDIX B

ASBESTOS SURVEY REPORT

PRE-DEMOLITION/RENOVATION BUILDING SURVEY FOR ASBESTOS-CONTAINING MATERIAL

FOR

FORMER DOWELL FACILITY
3311 WALDEN AVENUE
VILLAGE OF DEPEW, NEW YORK 14225

Prepared For:

VOLUNTEERS
DOWELL, A DIVISION OF SCHLUMBERGER TECHNOLOGY CORPORATION
DOWELL SCHLUMBERGER INCORPORATED
THE DOW CHEMICAL COMPANY

Prepared By:

URS CORPORATION
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202-1805

JUNE 2002

TABLE OF CONTENTS

TABLES
(Following Text)

TABLE OF CONTENTS (Con't)

FIGURES
(Following Tables)

APPENDICES
(Following Figures)

1.0 INTRODUCTION

URS Corporation (URS) was retained by Dowell, a division of Schlumberger Technology Corporation, to perform a Pre-Demolition/Renovation Building Survey for asbestos-containing material (ACM) at the former Dowell facility located at 3311 Walden Avenue, Village of Depew, New York (Figure 1-1). It is our understanding that two of the three existing buildings on site (i.e., the former maintenance shop & office building and the former chemical storage building) will be demolished. The asbestos will be removed from the third building (i.e., the main office). However, this building will be left standing for renovation and re-use. The site plan is shown on Figure 1-2.

1.1 Purpose and Scope

The purpose of this report is to inventory and quantify the ACM that are present both inside and outside of the building structures at the former Dowell facility. The information obtained during the survey will also be used for future renovation and/or demolition projects under 29 CFR Part 1926.58. The work during this ACM survey was performed in accordance with applicable federal, state, and local guidelines, rules, and regulations in accordance with the New York State Industrial Code Rule 56.

The scope of services for this ACM survey included the following tasks:

- Review of all available floor plans and past ACM studies at the facility
- Visual inspections to identify suspect ACM inside and outside of the buildings
- Collection of discrete physical samples of each type of suspected ACM (e.g., floor tiles, mastic, joint compound, covebase, window glazing, roofing, sheet rock, flashing, caulking, ceiling tiles, etc.)
- Documentation of each sample location and the locations where suspect ACM was identified
- Laboratory analysis of all samples to determine asbestos type and content
- Delineation of the locations and estimates of quantities of ACM in the buildings
- Preparation of a summary report

1.2 Background

The Former Dowell facility is located to the east of Buffalo, New York, on Walden Avenue in the Village of Depew. The site is situated in a mixed residential and industrial/commercial area. Adjacent properties include Walden Avenue to the north, a railroad track to the south, a lumber yard and supply store (84 Lumber) to the east, and an industrial manufacturer to the west (Buffalo Batt and Felt). A residential neighborhood is located across Walden Avenue to the north. The facility covers approximately 3.5 acres and is presently inactive. Remaining vacant structures on the property include a former maintenance shop & office building, a former chemical storage warehouse, and a former main office building. URS personnel performed this asbestos survey at the site during the period from July 17, 2001 through April 15, 2002.

1.3 Consultant's License and Certification

URS personnel conducting the ACM survey have completed the New York State mandated asbestos training and hold a current license and certification. Copies of the license and certification are contained in Appendix A.

1.4 Laboratory Accreditation

Chopra-Lee (Grand Island, New York) performed the laboratory analysis of the samples. The laboratory is approved by the New York State Department of Health (NYSDOH) and is accredited by the National Voluntary Accreditation Program by the National Institute of Standards and Technology to analyze bulk samples for asbestos. Copies of the laboratory's certifications are presented in Appendix B.

2.0 FIELD ACTIVITIES

A thorough visual inspection of the interior and exterior of each building was performed to identify suspected ACM. Suspected ACM observed included ceiling tile, joint compound, window glazing, cove base, caulking, roofing, flashing, floor tile, transite panel, ceiling paper, mastic, and sheetrock.

Following the visual inspection, a total of 54 bulk samples of suspected ACM were collected for analysis (see Section 3 for types of analysis performed). Representative bulk samples were collected from each type of material using an asbestos core sampler. Each sample was placed in a sample bag marked with the sample identification number. Following the collection of the bulk sample, the sampled surface was sealed to prevent possible ACM from becoming airborne. The samples were submitted to the laboratory under proper chain of custody. The chain of custody forms are contained in Appendix C. A discussion of the sampling performed in each area is presented in the following section.

2.1 Maintenance Shop & Office Building – Ground Floor

The ground floor was visually inspected for ACM. Possible asbestos-containing materials included 2' x 4' white fissured ceiling tile, window glazing, 1' x 1' beige speckled floor tile, 1' x 1' white textured ceiling tile, brown covebase and mastic, sheetrock, and white joint compound. Nine bulk samples (MSO-101 through MSO-109) were collected from the locations shown on Figure 2-1. ACM survey data for the ground floor is presented on Table 2-1.

2.2 Maintenance Shop & Office Building – Roof

The roof was visually inspected for ACM. Possible asbestos-containing materials included black rolled roofing, gray/black perimeter flashing, built-up roofing and gray caulking. Seven bulk samples (MSO-201 through MSO-207) were collected from the locations shown on Figure 2-2. ACM survey data for the roof is presented on Table 2-1.

2.3 Chemical Storage Building – Ground Floor

The ground floor was visually inspected for ACM. Possible asbestos-containing materials included gray/white window glazing and white window glazing. Two bulk samples (CS-101 and CS-102) were collected from the locations shown on Figure 2-3. ACM survey data for the ground floor is presented on Table 2-2.

2.4 Chemical Storage Building – Roof

The roof was visually inspected for ACM. Possible asbestos-containing materials included built-up roofing and black/gray perimeter flashing. Four bulk samples (CS-201 through CS-204) were collected from the locations shown on Figure 2-4. ACM survey data for the roof is presented on Table 2-2.

2.5 Main Office Building – 1st Floor

The first floor was visually inspected for ACM. Possible asbestos-containing materials included 9"x 9" gray marble floor tile and mastic, 2' x 2' white perforated ceiling tile, black/brown covebase and mastic, black ceiling paper, white window glazing, sheetrock, transite panel debris, gray/black built-up roofing, and black flashing. Seventeen bulk samples (OB-101 through OB-117) were collected from the locations shown on Figure 2-5. ACM survey data for the first floor is presented on Table 2-3.

2.6 Main Office Building – 2nd Floor

The second floor was visually inspected for ACM. Possible asbestos-containing materials included tan carpet mastic, 2' x 4' white perforated fiberglass ceiling tile, 1' x 1' white fissured ceiling tile, brown ceiling tile mastic, sheetrock, 9" x 9" white speckled floor tile, black floor tile mastic, white covebase, brown covebase mastic, and transite panel debris. Ten bulk samples (OB-201 through OB-210) were collected from the locations shown on Figure 2-6. ACM survey data for the 2nd floor is presented on Table 2-3.

2.7 Main Office Building - Roof

The roof was visually inspected for ACM. Possible asbestos-containing materials included black rolled-roofing, gray/black penetration flashing and black perimeter flashing. Five bulk samples (OB-301 through OB-305) were collected from the locations shown on Figure 2-7. ACM survey data for the roof is presented on Table 2-3.

3.0 ANALYTICAL RESULTS

The 54 bulk samples were analyzed for asbestos using Polarized Light Microscopy (PLM). Of the 54 bulk samples collected, 43 were considered Non Organically Bound (NOB) materials. Of the 43 bulk samples that were considered NOB material, ten samples tested positive for asbestos using PLM techniques. The remaining 33 NOB bulk samples underwent further analysis using Transmission electron Microscopy (TEM). TEM uses a more powerful microscope than PLM which allows the presence/absence of asbestos to be positively determined. Under New York State Department of Labor regulations, a material is considered to be asbestos-containing if the percentage of asbestos is greater than 1 percent (1%) by weight. The analytical data are contained in Appendix C and are summarized in Tables 2-1 through 2-3.

As indicated in the tables, the following materials at the site were determined to contain asbestos:

- 1' x 1' Beige Speckled Floor Tile
- White Joint Compound
- 9" x 9" Brown, Gray, White-Speckled Floor Tile
- Grey Caulking
- White Window Glazing
- Grey/Black Perimeter Flashing
- Transite Panel Debris
- Gray/Black Penetration Flashing
- Built-Up Roofing

4.0 ASBESTOS INVENTORY

Based on the analytical results, the areas identified as containing asbestos were re-inspected to delineate the locations and estimated quantities of ACM present.

The locations of the ACM are shown on Figures 2-1, and 2-2. An inventory of the ACM and the estimated quantities present in each area are presented in Tables 2-1, 2-2, and 2-3.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Asbestos-containing building materials are present at 3311 Walden Avenue (Former Dowell facility) Village of Depew, New York. ACM is present in floor tile, joint compound, gray caulking, window glazing, transite panel debris, built up roofing and flashing. Table 5-1 lists the ACMs and their estimated quantities.

5.2 Recommendations

Based on the results of the asbestos survey, URS recommends the following:

- Abatement of ACM must be completed prior to demolition activities commencing in the subject areas, unless all the demolition debris is to be managed as ACM for disposal purposes.
- All building materials identified herein as meeting the current regulatory definition of "asbestos-containing" must be handled only by Contractors licensed by the State of New York to do such work.
- Removal and disposal of ACM must be carried out in compliance with current applicable state, federal, and local laws.
- A Demolition Plan should be prepared outlining the proper procedures for working in areas that contain ACM.
- All ACM should be labeled to indicate the hazard, and warning notifications posted conspicuously in areas containing ACM.
- Areas where friable ACM is present or where the condition of the ACM is poor should be isolated and removed prior to general building ACM removal.

6.0 LIMITATIONS

URS Corporation conducted this Pre-Demolition/Renovation Building Survey for asbestos in accordance with applicable federal, state, and local guidelines, rules, and regulations in accordance with the New York State Industrial Code Rule 56. URS has endeavored to investigate the existing conditions at the facilities using general accepted asbestos survey methods and procedures. Regardless of the thoroughness of a survey, it is possible that some areas containing asbestos were inaccessible to the surveyor. This report presents general descriptions of various construction materials and the general locations where these materials were encountered. Intrusive sampling was not conducted for this survey; therefore, buried, covered, or inaccessible areas may contain asbestos not found during this survey. Buried materials may become visible during construction activities. If suspect materials that were not previously sampled are uncovered during construction activities, they should be tested prior to further disturbance of the area. Materials for which sampling and analysis has not been completed to determine asbestos content should be treated as ACM until analysis is completed.

The conclusions presented in this report are professional opinions based on the data described in this report. They are intended only for the purpose, the location, and the project indicated. Changes in applicable standards may occur as a result of legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond our control. Opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions.

TABLES

TABLE 2-1

FORMER DOWELL FACILITY
INVENTORY OF ACM
MAINTENANCE SHOP & OFFICE BUILDING

Area	Space ID	Material	Sample ID	% and Type of Asbestos	Est. Quantity	Friable	Condition
Ground Floor	101	2'x4' White Fissured Ceiling Tile	MSO-101	NAD	NA	No	Fair
	101	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**48 SF**	**No**	**Fair**
	101	**White Joint Compound**	**NA**	**PACM**	**28 LF**	**No**	**Fair**
	102	**White Joint Compound**	**NA**	**PACM**	**276 LF**	**No**	**Fair**
	103	**White Joint Compound**	**MSO-106**	**14% Chrysotile**	**114 LF**	**No**	**Poor**
	104	1'x1' Beige Speckled Floor Tile	MSO-102	20% Chrysotile	276 SF	No	Fair
	104	Brown Covebase and Mastic	MSO-103	Trace <1% Chrysotile	NA	No	Fair
	104	**White Joint Compound**	**NA**	**PACM**	**64 LF**	**No**	**Fair**
	105	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**12 SF**	**No**	**Fair**
	105	Brown Covebase and Mastic	NA	Trace <1% Chrysotile	NA	No	Fair
	106	**2'x4' White Ceiling Tile**	**NA**	**NAD**	**NA**	**No**	**Fair**
	106	**White Joint Compound**	**NA**	**PACM**	**40 LF**	**No**	**Fair**
	106	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**30 SF**	**No**	**Fair**
	107	2'x4' White Ceiling Tile	NA	NAD	NA	No	Fair
	107	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**42 SF**	**No**	**Fair**
	108	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**36 SF**	**No**	**Fair**
	108	**White Joint Compound**	**NA**	**PACM**	**20 LF**	**No**	**Fair**
	109	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**54 SF**	**No**	**Fair**
	109	**White Joint Compound**	**NA**	**PACM**	**48 LF**	**No**	**Fair**
	110	**White Window Glazing**	**MSO-104**	**3% Chrysotile**	**21 LF**	**No**	**Poor**
	111	1'x1' White Textured Ceiling Tile	MSO-105	NAD	NA	No	Fair
	111	**White Window Glazing**	**NA**	**PACM**	**21 LF**	**No**	**Fair**
	112	2'x2' White Fissured Ceiling Tile	NA	NAD	NA	No	Fair
	112	**White Joint Compound**	**NA**	**PACM**	**40 LF**	**No**	**Fair**
	112	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**48 SF**	**No**	**Fair**
	113	2'x3' White Fissured Ceiling Tile	NA	NAD	NA	No	Fair
	113	**White Joint Compound**	**NA**	**PACM**	**24 LF**	**No**	**Fair**
	113	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**12 SF**	**No**	**Fair**
	114	**9" x 9" Brown Floor Tile**	**NA**	**PACM**	**70 SF**	**No**	**Fair**
	115	No ACM Identified	NA	NA	NA	NA	NA
	116	1'x1' White Fissured Ceiling Tile	NA	NAD	NA	No	Poor

TABLE 2-1 (Continued)

FORMER DOWELL FACILITY
INVENTORY OF ACM
MAINTENANCE SHOP & OFFICE BUILDING

Area	Space ID	Material	Sample ID	% and Type of Asbestos	Est. Quantity	Friable	Condition
Ground Floor	**116**	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**154 SF**	**No**	**Poor**
	116	Brown Covebase and Mastic	NA	Trace <1% Chrysotile	NA	No	Fair
	116	**White Joint Compound**	**NA**	**PACM**	**104 LF**	**No**	**Fair**
	116A	No ACM Identified	NA	NA	NA	NA	NA
	117	**Possible White Joint Compound Under Paneling**	**NA**	**PACM**	**104 LF**	**No**	**NA**
	117	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**168 SF**	**No**	**Fair**
	117	1'x1' White Perforated Textured Ceiling Tile	MSO-107	NAD	NA	NA	Fair
	117	Ceiling Sheetrock	MSO-108	Trace <1% Chrysotile	NA	No	Fair
	118	1' x 1' Perforated Textured Ceiling Tile	NA	NAD	NA	No	Poor
	118	**Possible White Joint Compound Under Paneling**	**NA**	**PACM**	**104 LF**	**No**	**NA**
	118	**1'x1' Beige Speckled Floor Tile**	**NA**	**PACM**	**168 SF**	**No**	**Fair**
	118	Brown Covebase and Mastic	MSO-109	Trace <1% Chrysotile	NA	No	Fair
Roof	201	Black Rolled Roofing	MSO-201	NAD	NA	NA	Good
	201	**Grey/Black Perimeter Flashing**	**MSO-202**	**4% Chrysotile**	**404 SF**	**No**	**Fair**
	201	Black Penetration Flashing	MSO-203	NAD	NA	NA	Fair
	202	Built-up Roofing	MSO-204	NAD	NA	NA	Good
	202	**Black Flashing**	**MSO-205**	**18% Chrysotile**	**174 SF**	**No**	**Fair**
	202	Black Flashing Strips	MSO-206	Trace <1% Chrysotile	NA	NA	Fair
	202	**Grey Caulking**	**MSO-207**	**4% Chrysotile**	**50 LF**	**No**	**Fair**
	203	**Grey/Black Perimeter Flashing**	**NA**	**PACM**	**158 SF**	**No**	**Fair**

NOTE: Shading and bold indicates the presence of ACM >1%

SF = Square Feet
LF = Linear Feet
NA = Not Applicable
NAD = No Asbestos Detected
PACM = Presumed asbestos containing material

TABLE 2-2

FORMER DOWELL FACILITY
INVENTORY OF ACM
CHEMICAL STORAGE BUILDING

Area	Space ID	Material	Sample ID	% and Type of Asbestos	Est. Quantity	Friable	Condition
Ground Floor	101	No ACM Identified	NA	NA	NA	NA	NA
	102	Grey/White Window Glazing	CS-101	Trace <1% Chrysotile	NA	NA	NA
	103	No ACM Identified	NA	NA	NA	NA	NA
	104	**White Window Glazing**	**CS-102**	**2% Chrysotile**	**80 LF**	**No**	**Poor**
Roof	201	Built-up Roofing	CS-201	NAD	NA	NA	NA
	201	**Black/Grey Perimeter Flashing**	**CS-202**	**5% Chrysotile**	**207 SF**	**No**	**Fair**
	202	Built-up Roofing	CS-203	NAD	NA	NA	NA
	202	**Black/Grey Perimeter Flashing**	**CS-204**	**6% Chrysotile**	**188 SF**	**No**	**Fair**

NOTE: Shading indicates the presence of ACM >1%

SF = Square Feet
LF = Linear Feet
NA = No Applicable
NAD = No Asbestos Detected
PACM = Presumed Asbestos Containing Material

TABLE 2-3

FORMER DOWELL FACILITY
INVENTORY OF ACM
MAIN OFFICE BUILDING

Area	Space ID	Material	Sample ID	% and Type of Asbestos	Est. Quantity	Friable	Condition
1ST Floor	**101**	**9" x 9" Grey Marble Floor Tile**	**OB-101**	**1% Chrysotile**	**128 SF**	**No**	**Poor**
	101	Black Floor Tile Mastic	OB-102	NAD	N/A	N/A	N/A
	101	Brown Covebase	OB-106	NAD	N/A	N/A	N/A
	101	Tan Covebase Mastic	OB-107	NAD	N/A	N/A	N/A
	102	No ACM Identified	N/A	N/A	N/A	N/A	N/A
	103	2' x 2' White Perforated Ceiling Tile	OB-103	NAD	N/A	N/A	N/A
	103	**9" x 9" Grey Marble Floor Tile**	**N/A**	**PACM**	**208 SF**	**No**	**Fair**
	103	Black Covebase	OB-104	NAD	N/A	N/A	N/A
	103	Brown Covebase Mastic	OB-105	NAD	N/A	N/A	N/A
	103	Sheet Rock	OB-110	NAD	N/A	N/A	N/A
	104	Black Ceiling Paper	OB-108	NAD	N/A	N/A	N/A
	104	**White Window Glazing**	**OB-109**	**3.7% Chrysotile**	**75 LF**	**No**	**Poor**
	105	Tan Carpet Mastic	OB-112	NAD	N/A	N/A	N/A
	105	**White Window Glazing**	**N/A**	**PACM**	**39 LF**		**Poor**
	106	**9" x 9" Grey Marble Floor Tile**	**N/A**	**PACM**	**24 SF**	**N/A**	**N/A**
	107	No ACM Identified	N/A	N/A	N/A	N/A	N/A
	108	No ACM Identified	N/A	N/A	N/A	N/A	N/A
	109	No ACM Identified	N/A	N/A	N/A	N/A	N/A
	110	No ACM Identified	N/A	N/A	N/A	N/A	N/A
	111	**9" x 9" Grey Marble Floor**	**N/A**	**PACM**	**96 SF**	**N/A**	**N/A**
	111	Brown Covebase	OB-116	NAD	N/A	N/A	N/A
	111	Tan Covebase Mastic	OB-117	NAD	N/A	N/A	N/A
	112	**9" x 9" Grey Marble**	**N/A**	**PACM**	**336 SF**	**N/A**	**N/A**
	112	Window Glaze	OB-113	NAD	N/A	N/A	N/A
	113	**Transite Panel Debris**	**OB-111**	**9% Chrysotile**	**20 SF**	**No**	**Poor**
	113	**Built-Up Roofing**	**OB-114**	**2.9% Chrysotile**	**20 SF**	**No**	**Poor**
	113	**Black Flashing**	**OB-115**	**2% Chrysotile**	**20 SF**	**No**	**Poor**
2nd Floor	201	Tan Carpet Mastic	OB-201	NAD	N/A	N/A	N/A
	201	**White Window Glazing**	**N/A**	**PACM**	**111 LF**	**No**	**Fair**
	202	2' x 4' Perforated Ceiling Tile	OB-202	NAD	N/A	N/A	N/A
	202	**White Window Glazing**	**N/A**	**PACM**	**39 LF**	**No**	**Good**
	203	No ACM Identified	N/A	N/A	N/A	N/A	N/A
	204	1' x 1' White Fissured Ceiling Tile	OB-203	NAD	N/A	N/A	N/A
	204	Brown Ceiling Tile Mastic	OB-204	NAD	N/A	N/A	N/A
	204	**9" x 9" White Speckled Floor Tile**	**OB-206**	**16% Chrysotile**	**35 SF**	**No**	**Good**
	204	Black Floor Tile Mastic	OB-207	NAD	N/A	N/A	N/A
	204	White Covebase	OB-208	NAD	N/A	N/A	N/A
	204	Brown Covebase Mastic	OB-209	NAD	N/A	N/A	N/A
	205	**9" x 9" White Speckled Floor Tile**	**N/A**	**PACM**	**35 SF**	**No**	**Good**
	206	**Transite Panel Debris**	**OB-210**	**17% Chrysotile**	**8 SF**	**No**	**Poor**
	207	No ACM Identified	N/A	N/A	N/A	N/A	N/A

TABLE 2-3 (Continued)

FORMER DOWELL FACILITY
INVENTORY OF ACM
MAIN OFFICE BUILDING

Area	Space ID	Material	Sample ID	% and Type of Asbestos	Est. Quantity	Friable	Condition
Roof	301	Black Rolled Roofing	OB-301	NAD	N/A	N/A	N/A
	301	**Grey/Black Penetration Flashing**	**OB-302**	**3.5% Chrysotile**	**20 SF**	**No**	**Fair**
	301	**Black Perimeter Flashing**	**OB-303**	**3% Chrysotile**	**94 SF**	**No**	**Fair**
	301	Black Rolled Roofing	OB-304	NAD	N/A	N/A	N/A
	301	**Black Perimeter Flashing**	**OB-305**	**2% Chrysotile**	**94 SF**	**No**	**Fair**

NOTE: Shading indicates the presence of ACM >1%

SF = Square Feet
LF = Linear Feet
NA = No Applicable
NAD = No Asbestos Detected
PACM = Presumed Asbestos Containing Material

TABLE 5-1

FORMER DOWELL FACILITY

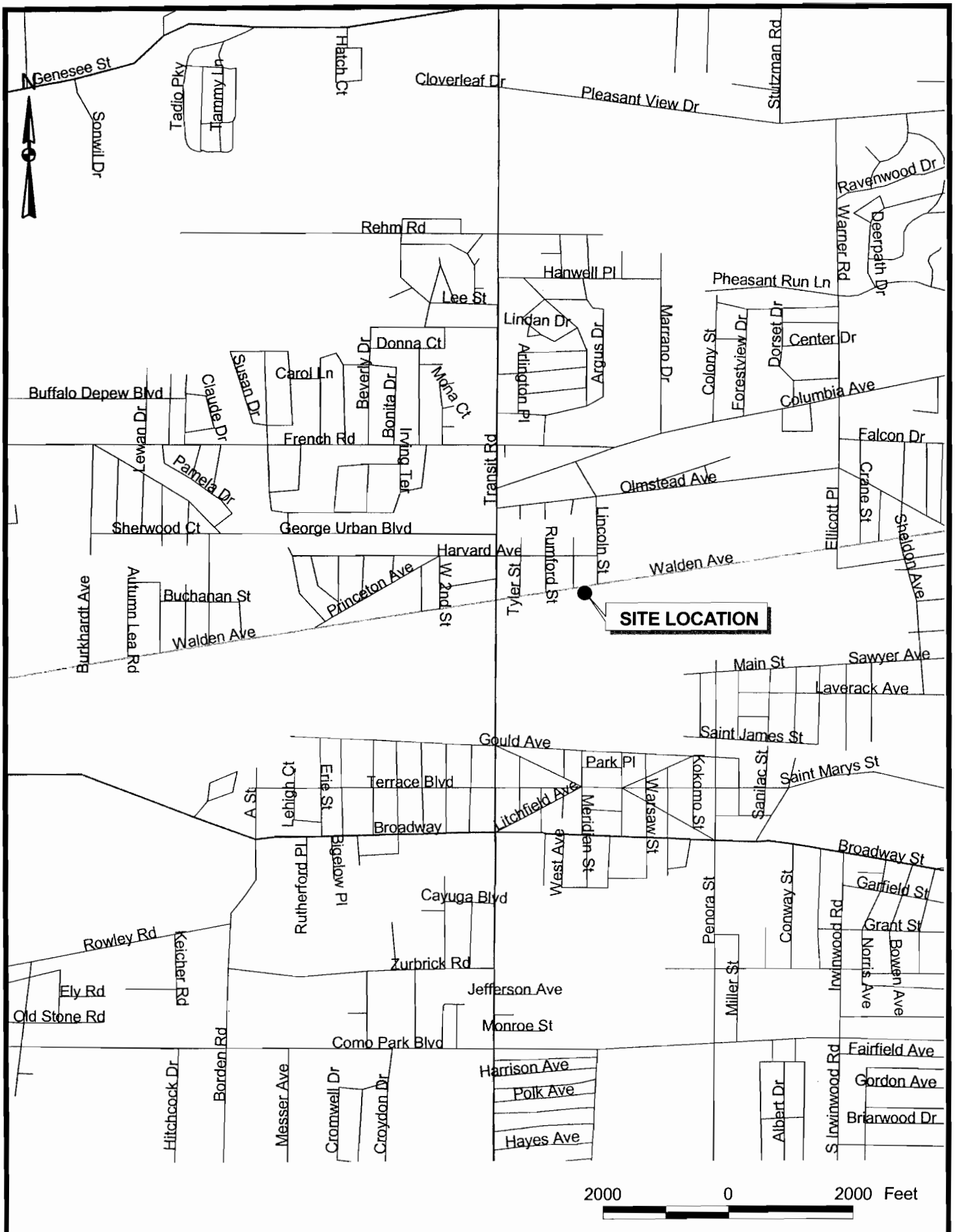
3311 WALDEN AVENUE

TYPE AND ESTIMATED QUANTITIES OF ACM

MATERIAL TYPE	ESTIMATED QUANTITY
1" x 1" Beige Speckled Floor Tile	1,048 SF
White Joint Compound	966 LF
9" x 9" Floor Tile	932 SF
Grey Caulking	50 LF
White Window Glazing	386 LF
Grey/Black Perimeter Flashing	1,339 SF
Transite Panel Debris	28 SF
Grey/Black Penetration Flashing	20 SF
Built-Up Roofing	20 SF

SF = Square Feet
LF = Linear Feet

FIGURES

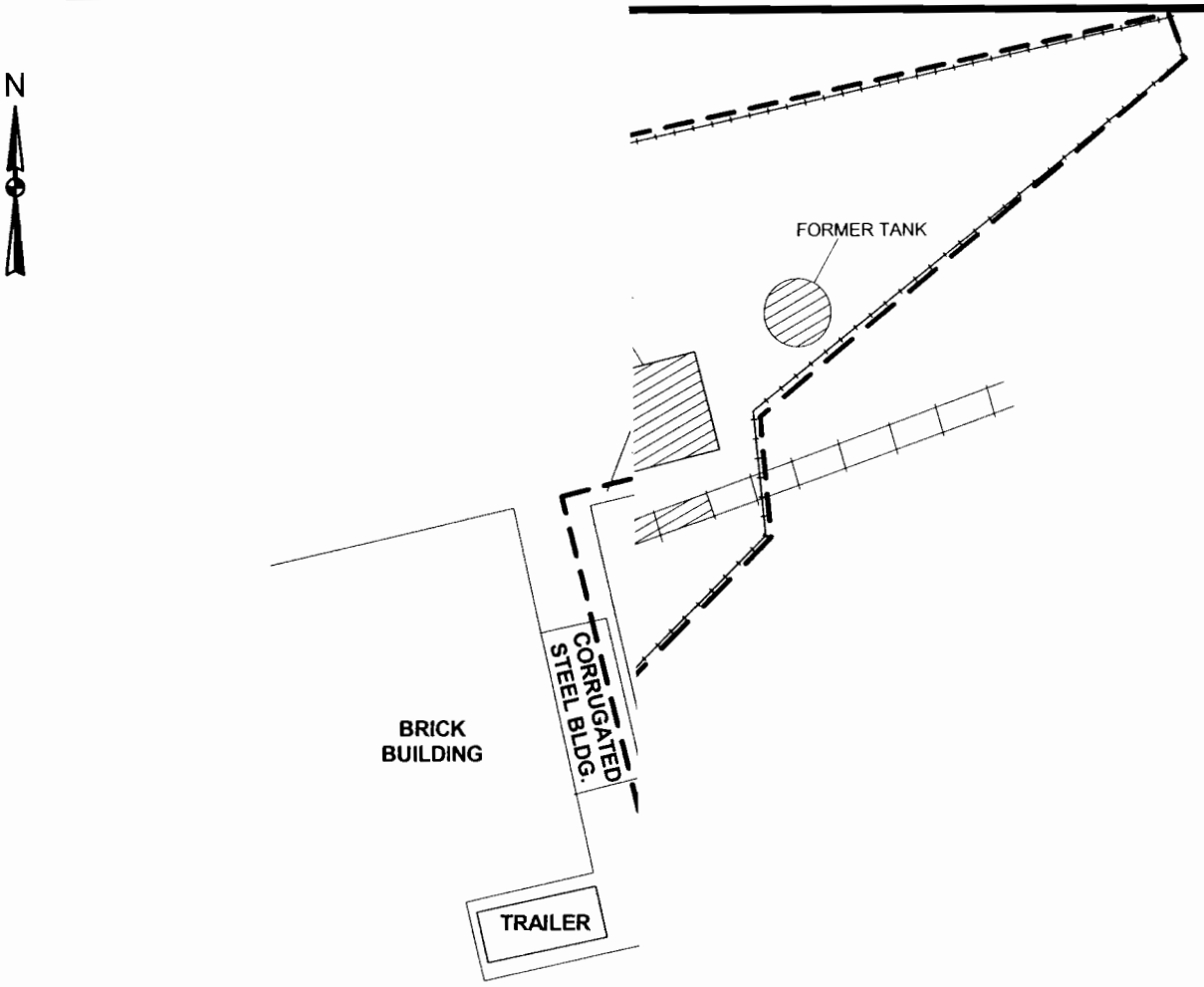


URS

FORMER DOWELL FACILITY
SITE LOCATION MAP

FIGURE 1-1

J:\35824.00\dbl\gis\sitelocation.apr SITE LOCATION
7/9/2002



Legend

- Former Structure
- Floor Drain/Catch Basin or Sump Location
- Property Line
- Fence Line
- Drain Line

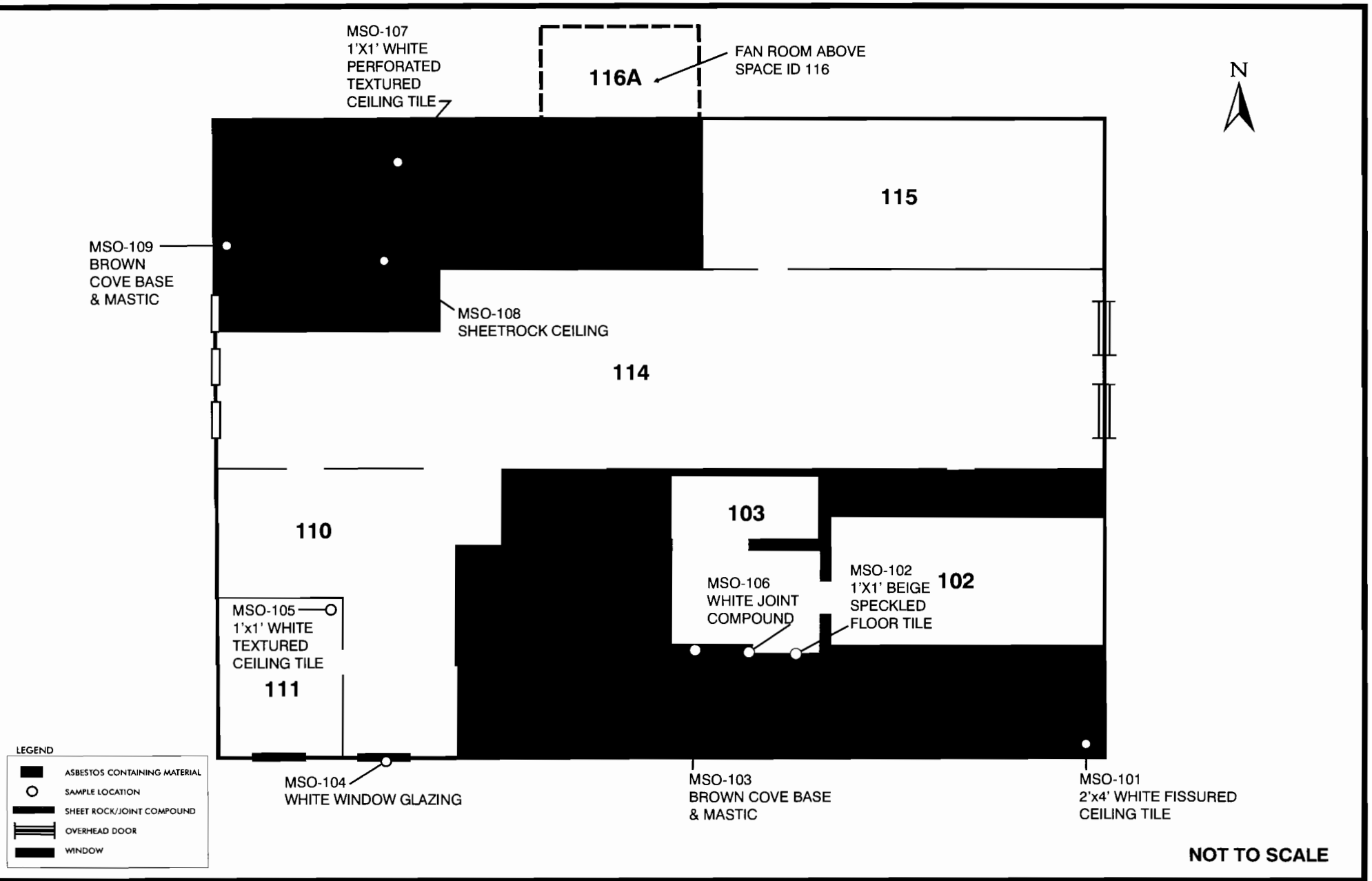
FORMER DOWELL FACILITY
SITE PLAN

URS

FIGURE 1-2

J:\35824.00\db\Gis\dowell.apr VOLUNTARY CLEANUP PROGRAM - SITE PLAN
1/15/2002

AG16878-35824.00-081601-CYT

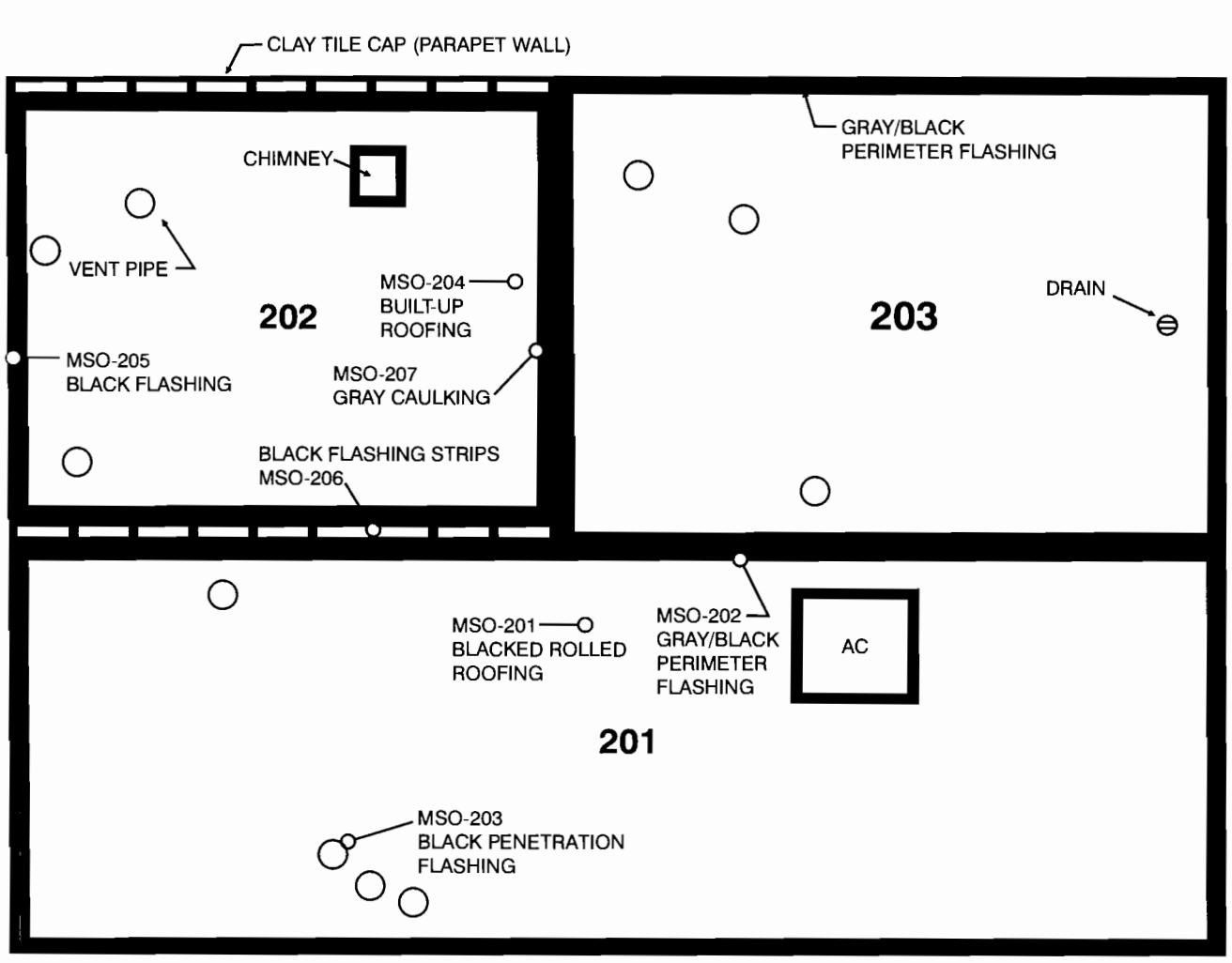


URS

FORMER DOWELL FACILITY
MAINTENANCE SHOP & OFFICE BUILDING
GROUND FLOOR SAMPLE LOCATIONS

FIGURE 2-1

AG16879-35824.00-081601-CYT



LEGEND

- ASBESTOS CONTAINING MATERIAL
- SAMPLE LOCATION

NOT TO SCALE

URS

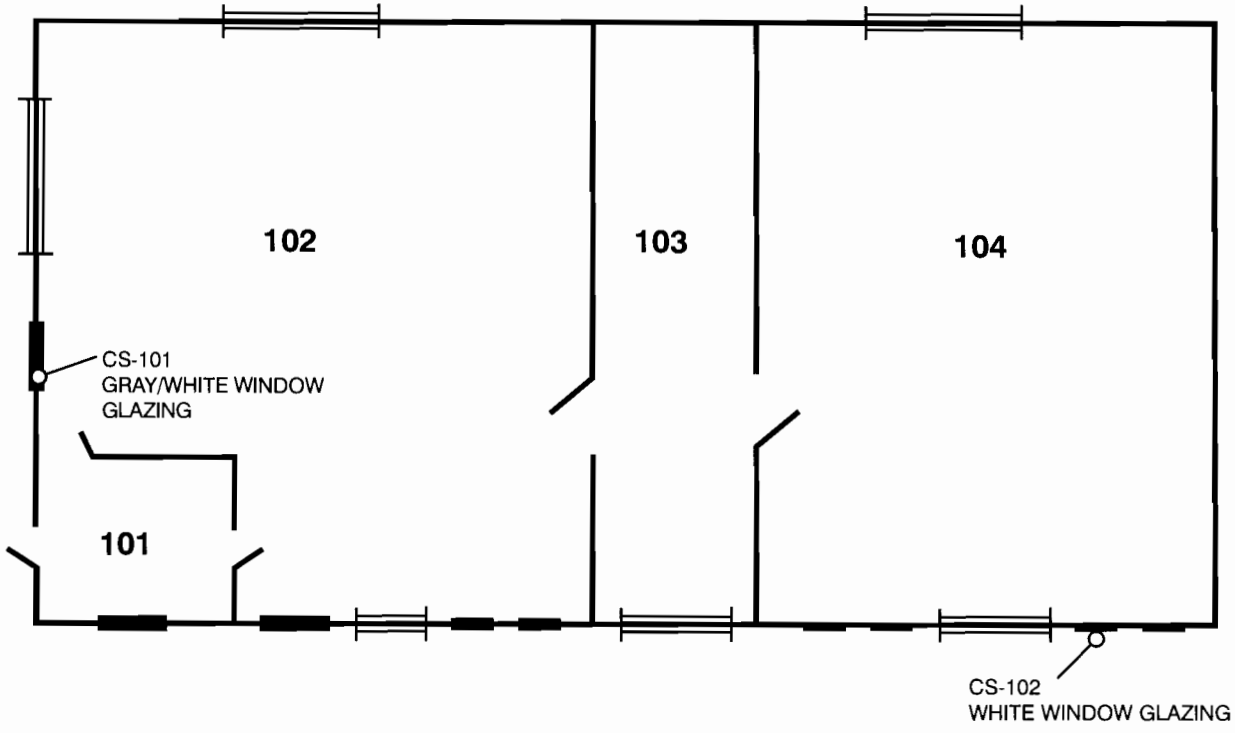
FORMER DOWELL FACILITY
MAINTENANCE SHOP & OFFICE BUILDING
ROOF LEVEL SAMPLE LOCATIONS

FIGURE 2-2

AG16876-35824.00-081601-CYT

N

GROUND LEVEL



LEGEND

- ASBESTOS CONTAINING MATERIAL
- SAMPLE LOCATION
- OVERHEAD DOOR
- WINDOW

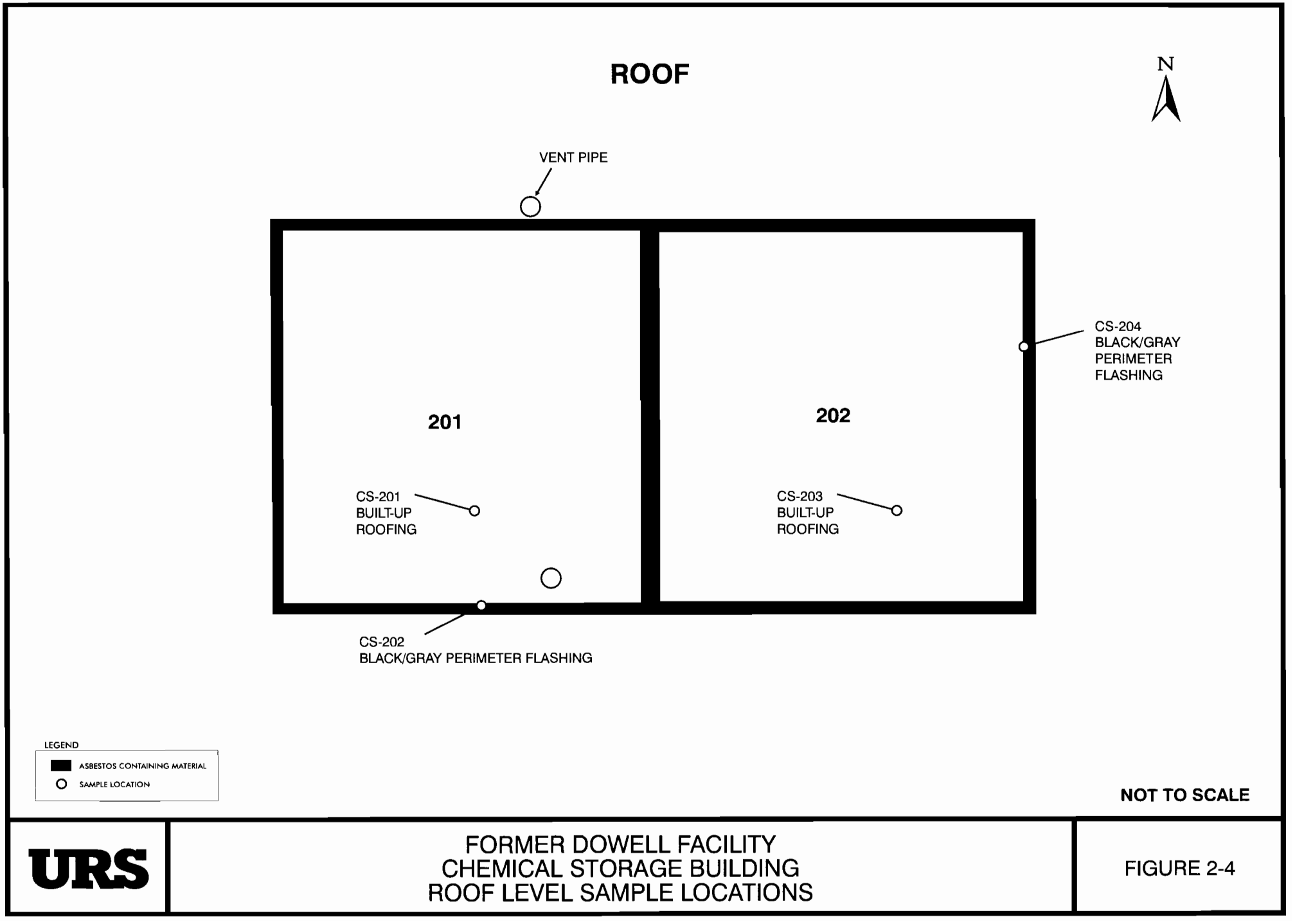
NOT TO SCALE

URS

FORMER DOWELL FACILITY
CHEMICAL STORAGE BUILDING
GROUND FLOOR SAMPLE LOCATIONS

FIGURE 2-3

AG16877-35824.00-081601-CYT

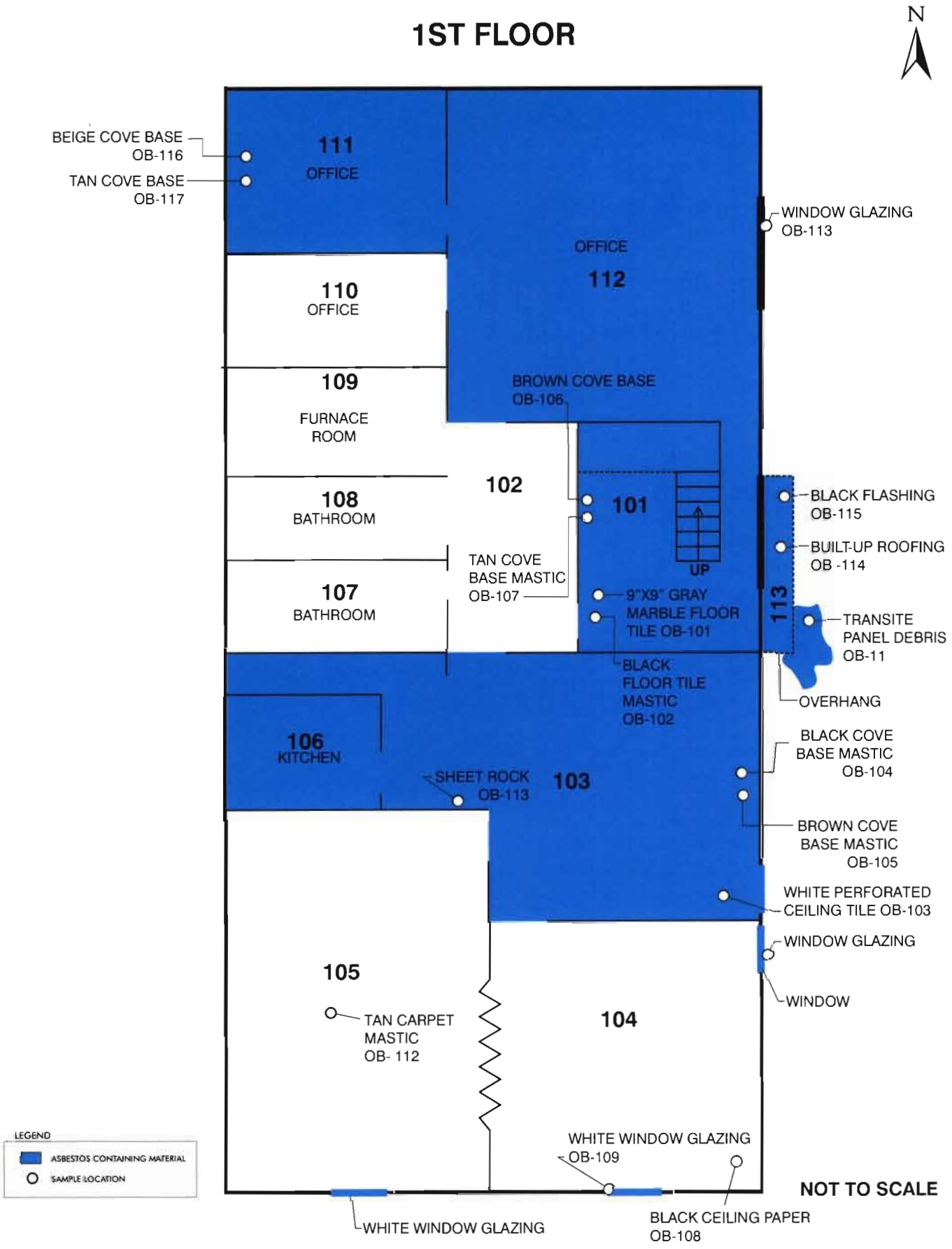


URS

FORMER DOWELL FACILITY
CHEMICAL STORAGE BUILDING
ROOF LEVEL SAMPLE LOCATIONS

FIGURE 2-4

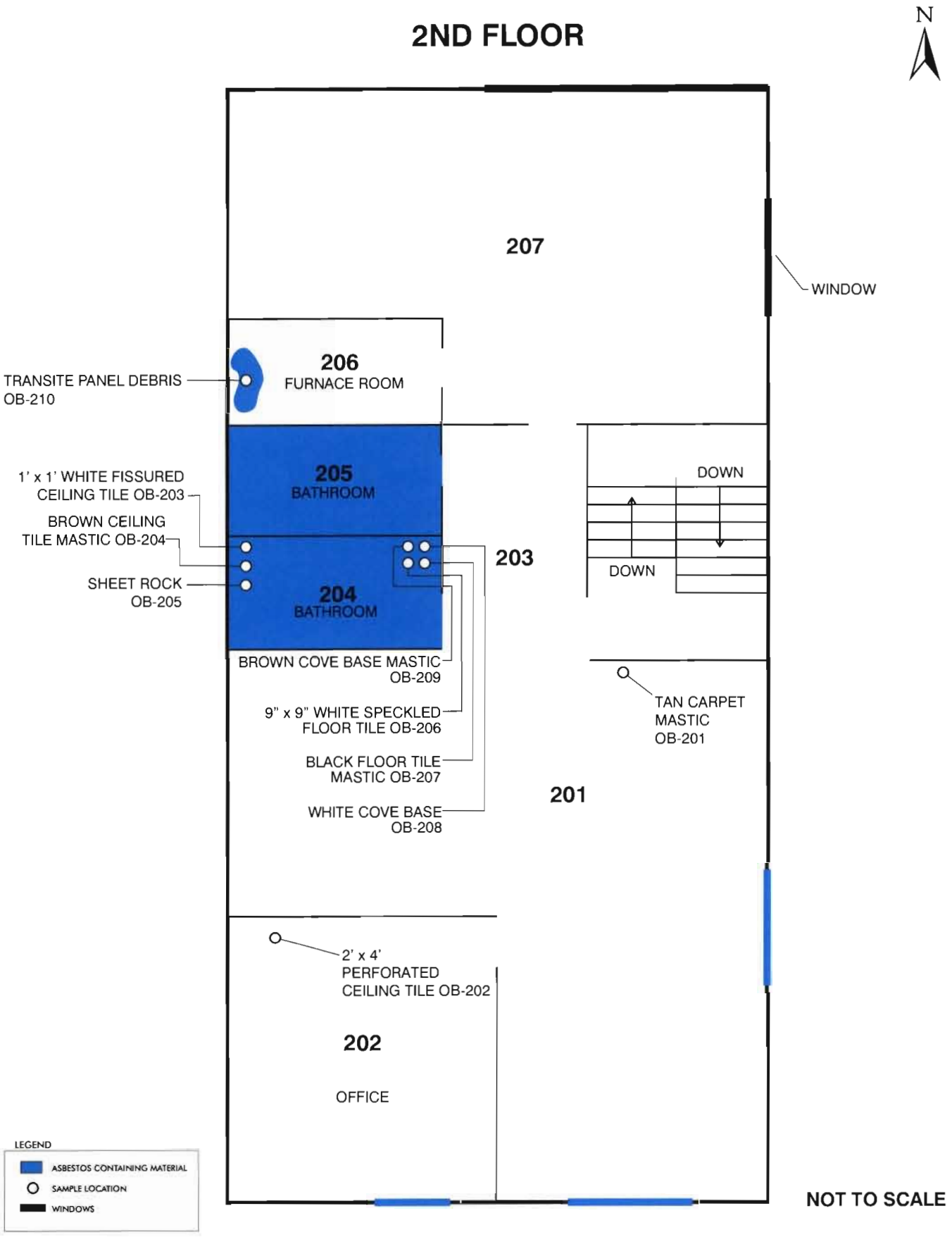
1ST FLOOR



URS	MAIN FORMER DOWELL FACILITY OFFICE BUILDING 1ST FLOOR	FIGURE 2-5

AG17528-35824.00-041902-GCM

2ND FLOOR



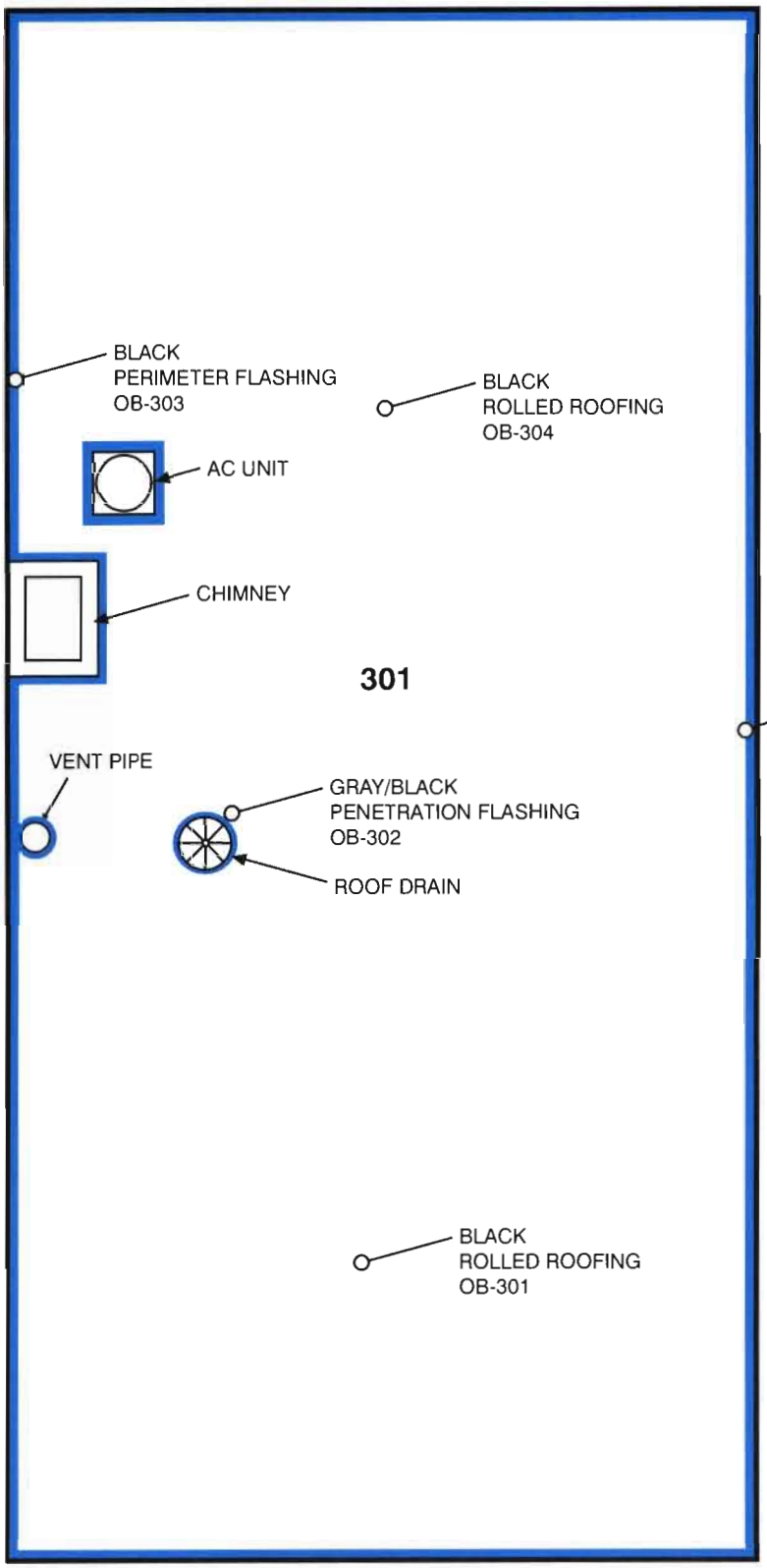
URS

MAIN FORMER DOWELL FACILITY
OFFICE BUILDING 2ND FLOOR

FIGURE 2-6

AG17529-35824.00-041902.GCM

ROOF



NOT TO SCALE

URS	MAIN FORMER DOWELL FACILITY OFFICE BUILDING ROOF	FIGURE 2-7

AG17530-35824.00-041902-GCM

APPENDIX A

URS CERTIFICATIONS

STATE OF NEW YORK - DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
License and Certificate Unit
BUILDING 12, Room 161
STATE CAMPUS
ALBANY, NY 12240

ASBESTOS HANDLING LICENSE

LICENSE NUMBER: 99-0085
DATE OF ISSUE: 03-26-01
EXPIRATION DATE: 03-31-02

Contractor: URS Corporation Group Consultants

Address:
One Penn Plaza Suite 610
New York, NY 10119

Duly Authorized Representative: Dominick Fickeria

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. The licensee verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Richard Cucolo, Director
FOR THE COMMISSIONER OF LABOR

SH 432 (10-00)

STATE OF NEW YORK - DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
License and Certificate Unit
BUILDING 12, Room 161
STATE CAMPUS
ALBANY, NY 12240

ASBESTOS HANDLING LICENSE

LICENSE NUMBER: 99-0085
DATE OF ISSUE: 4/1/02
EXPIRATION DATE: 4/30/03

RESTRICTED LICENSE - NO ASBESTOS REMOVAL PERMITTED

Contractor: URS Corporation Group Consultants

Address: One Penn Plaza, Suite 610
New York, NY 10119

Duly Authorized Representative: Thomas J. Clancy

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. The licensee verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Richard Cucolo, Director
FOR THE COMMISSIONER OF LABOR

SH 432 (10-00)

MUST BE CARRIED ON ASBESTOS PROJECTS

CERTIFICATE NUMBER	
AH 21-06345	
EXPIRES	
SOCIAL SECURITY NUMBER	
120-54-2493	
EYES	HAIR
BRO	BLK
WEIGHT	HEIGHT
180 lbs.	5 ft. 07 in.

ADDRESS CORRESPONDENCE TO:
(include certificate number)
NYS Department of Labor
DOSH - License and Certificate Unit
PO Box 687, New York, NY 10014-0687

1764083

DOSH-442 (01/91)

STATE OF NEW YORK
DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH

ASBESTOS HANDLING CERTIFICATE
AUTHORIZED CLASSES
C (11/02), D (11/02), H (11/02)
I (11/02)

DAVID D COFIELD JR.
51 PAVONIA STREET
APT. 1
BUFFALO, NY 14207

RICHARD CUCOLO, Director - For the Commissioner of Labor

1. **ASBESTOS CERTIFICATION REQUESTED** (*Check the box for each type of certificate for which you are submitting separate training documentation; circle the certificate title being requested, if you are applying for more than one certificate using a single training course.*)

- [A] ASBESTOS HANDLER
- [B] RESTRICTED - ALLIED TRADES
- [C] AIR SAMPLING TECHNICIAN
- [D] INSPECTOR
- [E] MANAGEMENT PLANNER
- [F] OPERATIONS AND MAINTENANCE
- [G] SUPERVISOR
- [H] PROJECT MONITOR
- [I] PROJECT DESIGNER

STATE UNIVERSITY OF NEW YORK AT BUFFALO
TOXICOLOGY RESEARCH CENTER
3435 Main Street, 134 Cary Hall, Buffalo, NY 14214-3000
(716) 829-2125

This Certifies that on February 01, 2001

David D. Cofield, Jr.

Attended and Successfully Completed the

ASBESTOS INSPECTOR RECERTIFICATION TRAINING PROGRAM

This course is approved by the U.S.E.P.A. and N.Y.S. D.O.H. for 4 hours.

Please note the official record of successful completion is the DOH-283 Certificate of Completion Asbestos Safety Training

Certification Number: AIR-01/02/01-680

Examination Date: 02/01/01 Issue Date: 02/01/01 Expiration Date: 02/01/02

Director, Hazardous Materials Education

Director, Toxicology Research Center

APPENDIX B

LABORATORY CERTIFICATIONS

STATE OF NEW YORK - DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
License and Certificate Unit
BUILDING 12, STATE CAMPUS
ALBANY, NY 12240

ASBESTOS HANDLING LICENSE

LICENSE NUMBER: 99-0932
DATE OF ISSUE: 10/13/00
EXPIRATION DATE: 10/31/01

Contractor: Chopra-Lee, Inc.

Address: 1815 Love Road
Grand Island, New York 14072

Duly Authorized Representative: Paul S. Chopra

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. The licensee verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Richard Cucolo, Director
FOR THE COMMISSIONER OF LABOR

DOSH 432 (1-98)

APPENDIX C

ANALYTICAL RESULTS

Laboratory Report

Client: **URS Corp**
282 Delaware Avenue
Buffalo, NY 14202-1805

Attention: Bob Henschel
Project Ref #
Purchase Order #
Project: **Bulk Sample Analysis for Asbestos**
Former Dowell Facility - Walden Ave - Depew

Laboratory Project # NY107175
Project Manager: Daniel Miller, Manager of Microscopy Services
Start Date: 7/23/2001
Report Date: 8/2/2001
Analysis Type: **Bulk Asbestos Analysis by Polarized Light Microscopy**

Authorized Signature Daniel Miller

☑ Daniel Miller, Manager of Microscopy Services
☐ Paul S. Chopra, Laboratory Director

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description *Material Description(s)*	*Asbestos Content*	Analyst Comment *Non-Asbestos Content*	Analyst - Date
The following 9 sample(s) were submitted by URS Corp on 7/23/2001 and analyzed in accordance with PLM - ELAP Method 198.1					
MSO-101	520550	SE corner of foyer ceiling 2x4 white fissured ceiling tile			DM 7/23/2001
		100% Tan fibrous	*<1% Chrysotile*	*3% Cellulose 42% Mineral Wool 54.9% Non-Fibrous Material*	
Less than 1% asbestos in composite sample					
MSO-102	520551	N side in hallway Beige speckled floor tile 1x1			DM 7/23/2001
		100% Gray solid	*2% Chrysotile*	*98% Non-Fibrous Material*	
2.0% asbestos in composite sample - NOB Material					
MSO-103	520552	N side in hallway Brown basecove			DM 7/23/2001
		95% Brown solid	*<1% Chrysotile*	*99.9% Non-Fibrous Material*	
		5% Tan solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
Less than 1% asbestos in composite sample - NOB Material					
MSO-104	520553	S window in space ID 110 White window glazing			DM 7/23/2001
		100% Gray solid	*3% Chrysotile*	*97% Non-Fibrous Material*	
3.0% asbestos in composite sample - NOB Material					

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description *Material Description(s)*	*Asbestos Content*	Analyst Comment *Non-Asbestos Content*	Analyst - Date
MSO-105	520554	NE corner of office ceiling 1x1 white textured ceiling tile			DM 7/23/2001
		100% Brown fibrous	*No Asbestos Detected using PLM*	*80% Cellulose 20% Non-Fibrous Material*	
No asbestos detected in sample					
MSO-106	520555	N side in hallway White joint compound			DM 7/23/2001
		100% Gray solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
MSO-107	520556	W side of ceiling 1x1 perforated textured ceiling tile			DM 7/23/2001
		100% Brown fibrous	*No Asbestos Detected using PLM*	*70% Cellulose 30% Non-Fibrous Material*	
No asbestos detected in sample					
MSO-108	520557	SW corner in office Sheet rock ceiling			DM 7/23/2001
		100% Gray solid	*No Asbestos Detected using PLM*	*2% Cellulose 98% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
MSO-109	520558	W side wall in office Brown large basecove			DM 7/23/2001
		95% Maroon solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
		5% Brown solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					

Additional testing is recommended for any material which contains <1% asbestos or NOB (non-friable organically bound) bulk materials which are negative or <1% asbestos. Analysis by Polarized Light Microscopy (PLM) has a degree of uncertainty that is dependent on the sample matrix, non-asbestos minerals present, size of the asbestos present, the sample homogeneity and analyst variability. PLM coefficients of variance range from approx. 1.8, at the quantitation limit of 1%, to 0.1 at high fiber concentrations. All PLM analyses must be reviewed with these factors taken into consideration.

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Laboratory Report

Client: **URS Corp**
282 Delaware Avenue
Buffalo, NY 14202-1805

Attention: Bob Henschel
Project Ref #
Purchase Order #
Project: **Bulk Sample Analysis for Asbestos**
Former Dowell Facility - Walden Ave - Depew

Laboratory Project # NY107175
Project Manager: Daniel Miller, Manager of Microscopy Services
Start Date: 7/23/2001
Report Date: 8/2/2001
Analysis Type: **Bulk Asbestos Analysis by Polarized Light Microscopy**

Authorized Signature Daniel Miller

☑ Daniel Miller, Manager of Microscopy Services
☐ Paul S. Chopra, Laboratory Director

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description *Material Description(s)*	*Asbestos Content*	Analyst Comment *Non-Asbestos Content*	Analyst - Date
The following 7 sample(s) were submitted by URS Corp on 7/23/2001 and analyzed in accordance with PLM - ELAP Method 198.1					
MSO-201	520543	S roof N side Black rolled roofing			DM 7/23/2001
		100% Black solid	*No Asbestos Detected using PLM*	*10% Cellulose 3% Synthetic 87% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
MSO-202	520544	S roof N side perimeter Grayish black flashing			DM 7/23/2001
		100% Black solid	*4% Chrysotile*	*96% Non-Fibrous Material*	
4.0% asbestos in composite sample - NOB Material					
MSO-203	520545	S roof vent pipe Black penetration flashing			DM 7/23/2001
		100% Black solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
MSO-204	520546	W roof E side Built-up roofing			DM 7/23/2001
		100% Gray solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description *Material Description(s)*	*Asbestos Content*	Analyst Comment *Non-Asbestos Content*	Analyst - Date
MSO-205	520547	W roof W side perimeter	Black flashing		DM 7/23/2001
		100% Black solid	*18% Chrysotile*	*82% Non-Fibrous Material*	
18% asbestos in composite sample - NOB Material					
MSO-206	520548	W roof S parapet wall	Black strip flashing		DM 7/23/2001
		100% Black solid	*<1% Chrysotile*	*99.9% Non-Fibrous Material*	
Less than 1% asbestos in composite sample - NOB Material					
MSO-207	520549	W roof E wall between metal facia and concrete	Gray caulking		DM 7/23/2001
		100% Gray solid	*4% Chrysotile*	*96% Non-Fibrous Material*	
4.0% asbestos in composite sample - NOB Material					

Additional testing is recommended for any material which contains <1% asbestos or NOB (non-friable organically bound) bulk materials which are negative or <1% asbestos. Analysis by Polarized Light Microscopy (PLM) has a degree of uncertainty that is dependent on the sample matrix, non-asbestos minerals present, size of the asbestos present, the sample homogeneity and analyst variability. PLM coefficients of variance range from approx. 1.8, at the quantitation limit of 1%, to 0.1 at high fiber concentrations. All PLM analyses must be reviewed with these factors taken into consideration.

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Laboratory Report

Client: **URS Corp**
282 Delaware Avenue
Buffalo, NY 14202-1805

Attention: Bob Henschel
Project Reference #
Purchase Order # 0516803
Project: **Bulk Sample Analysis for Asbestos**
Former Dowell Facility - Walden Ave - Depew

Laboratory Project # NY107175
Project Manager: Daniel Miller, Manager of Microscopy Services
Start Date: 7/23/2001
Report Date: 8/8/2001
Analysis Type: **Non-Friable Organically Bound Bulk (NOB) Material Analysis by NYS ELAP Method 198.4 using Polarized Light Microscopy -Transmission Electron Microscopy**

Authorized Signature Daniel Miller
☑ Daniel Miller, Manager of Microscopy Services
☐ Paul S. Chopra, Laboratory Director

Analysis Results Table

Client Sample # / Sample Location / Type	Lab Sample #	Sample Description	% Organic	% Acid Soluble	% Acid Insoluble	% Asbestos by type	Total % Asbestos	Analyst Date
Samples provided by URS Corp, received on 8/2/2001, samples were prepared and analyzed in accordance with TEM/PLM - ELAP # 198.4 (NOB)								
MSO-201 S roof N side Black rolled roofing	521617	Tar	82.7%	14.9%	2.3%		**No Asbestos Detected**	DM 8/8/2001
MSO-203 S roof vent pipe Black penetration flashing	521618	Tar	85.2%	9.1%	5.6%		**No Asbestos Detected**	DM 8/8/2001
MSO-204 W roof E side Built-up roofing	521619	Tar	27.1%	25.0%	47.8%		**No Asbestos Detected**	DM 8/8/2001
MSO-206 W roof S parapet wall Black strip flashing	521620	Tar	84.3%	11.0%	4.7%	<1 % Chrysotile	**Trace Asbestos Detected**	DM 8/8/2001

CHOPRA-LEE Incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 fax 716-773-7624
NYS DOH ELAP Lab # 10954

Laboratory Report

Client: **URS Corp**
282 Delaware Avenue
Buffalo, NY 14202-1805

Attention: Bob Henschel
Project Reference #
Purchase Order # 0516803
Project: **Bulk Sample Analysis for Asbestos**
Former Dowell Facility - Walden Ave - Depew

Laboratory Project # NY107175
Project Manager: Daniel Miller, Manager of Microscopy Services
Start Date: 7/23/2001
Report Date: 8/8/2001
Analysis Type: **Non-Friable Organically Bound Bulk (NOB) Material Analysis by NYS ELAP Method 198.4 using Polarized Light Microscopy -Transmission Electron Microscopy**

Authorized Signature Daniel Miller

☑ Daniel Miller, Manager of Microscopy Services
☐ Paul S. Chopra, Laboratory Director

Analysis Results Table

Client Sample # / Sample Location / Type	Lab Sample #	Sample Description	% Organic	% Acid Soluble	% Acid Insoluble	% Asbestos by type	Total % Asbestos	Analyst Date
Samples provided by URS Corp, received on 8/2/2001, samples were prepared and analyzed in accordance with TEM/PLM - ELAP # 198.4 (NOB)								
MSO-103a N side in hallway Brown basecove	521611	Basecove	40.9%	0.1%	59.0%		**No Asbestos Detected**	DM 8/8/2001
MSO-103b N side in hallway Mastic from brown basecove	521612	Adhesive	47.5%	0.4%	52.1%	<1 % Chrysotile	**Trace Asbestos Detected**	DM 8/8/2001
MSO-106 N side in hallway White joint compound	521613	Caulk	17.0%	15.0%	67.9%	14 % Chrysotile	**14% Asbestos**	DM 8/8/2001
MSO-108 SW corner in office Sheet rock ceiling	521614	Floor tile	17.9%	54.6%	27.5%	<1 % Chrysotile	**Trace Asbestos Detected**	DM 8/8/2001
MSO-109a W side wall in office Brown large basecove	521615	Basecove	35.9%	62.9%	1.1%		**No Asbestos Detected**	DM 8/8/2001
MSO-109b W side wall in office Mastic from brown large basecove	521616	Adhesive	32.1%	34.2%	33.7%	<1 % Chrysotile	**Trace Asbestos Detected**	DM 8/8/2001

CHOPRA-LEE Incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 fax 716-773-7624

NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample # / Sample Location / Type	Lab Sample # / Sample Description	% Organic	% Acid Soluble	% Acid Insoluble	% Asbestos by type	Total % Asbestos	Analyst / Date

These results are submitted pursuant to Chopra-Lee, Inc.'s current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. These results pertain only to the items tested. Certification by New York State through ELAP does not constitute government endorsement of this testing facility. Unless notified in writing to return the samples covered by this report, Chopra-Lee, Inc. will store what remains of the samples for a period of 15 days before discarding, unless otherwise required by law.

CHOPRA-LEE Incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 fax 716-773-7624

NYS DOH ELAP Lab # 10954

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Client: URS CORP
Project: FORMER Dowell FACILITY
Building / Location: WALDEN AVE IN DEPEW
Contact: DAVID COFIELD JR at 716 856-5636
Fax Preliminary Results to: 716 856-2545
Mail Report & Invoice to: BOB HENSCHEL

Date: 7/20/01
Project No.: 35824.00

Turnaround Requested:
___ RUSH
___ 24 Hr
___ 48 Hr
X 3-5 Day

Sample Number	Material Description	Sample Location	Laboratory Results	
			PLM	TEM
MSO-101	2X4 FISSURED CEILING TILE (WHITE)	S.E. CORNER OF FOYER CEILING (101)		
MSO-102	1X1' BEIGE SPECKLED FLOOR TILE	NORTH SIDE IN HALLWAY (104)		
MSO-103	BROWN COVER BASE MOLDING	NORTH SIDE IN HALLWAY (104)		
MSO-104	WHITE WINDOW GLAZING	SOUTH WINDOW IN SPACE ID 110 (110)		
MSO-105	1X1' WHITE TEXTURED CEILING TILE	N.E. CORNER OF OFFICE CEILING (111)		
MSO-106	WHITE JOINT COMPOUND	NORTH SIDE IN HALLWAY (104)		
MSO-107	1X1 PERFERATED TEXTURED CEILING TILE	WEST SIDE OF CEILING (116)		
MSO-108	SHEET ROCK CEILING	S.W. CORNER IN OFFICE (117)		
MSO-109	BROWN COVE BASE MOLDING (LARGE)	WEST SIDE WALL IN OFFICE. (118)		

Sampled By: DAVID COFIELD JR Date: 7/20/01 Time: : Received By: Date: / / Time: :

Relinquished By: DAVID COFIELD JR Date: 7/20/01 Time: 20:15 Received By: JRL 7/23/01 6:30 AM Date: / / Time: :

Comments:

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Client: URS CORP
Project: FORMER Dowell FACILITY
Building / Location: WALDEN AVENUE IN DEPEW
Contact: DAVID COFIELD JR at 716 856-5636
Fax Preliminary Results to: DAVID COFIELD JR
Mail Report & Invoice to: Bob Henschel

Date: 7/17/01
Project No.: 38824.00

Turnaround Requested:
___ RUSH
___ 24 Hr
___ 48 Hr
X 3-5 Day

Sample Number	Material Description	Sample Location	Laboratory Results PLM	Laboratory Results TEM
MSO-201	BLACK ROLLED ROOFING	SOUTH ROOF NORTH SIDE (201)		
MSO202	BLACK FLASHING (GRAYISH)	SOUTH ROOF NORTH SIDE PERIMETER (201)		
MSO-203	BLACK PENETRATION FLASHING	SOUTH ROOF VENT PIPE (201)		
MSO-204	BUILT-UP ROOFING	WEST ROOF EAST SIDE (202)		
MSO-205	BLACK FLASHING	WEST ROOF WEST SIDE PERIMETER (202)		
MSO-206	BLACK STRIP FLASHING	WEST ROOF SOUTH PARAPET WALL (202)		
MSO207	GRAY CAULKING	WEST ROOF EAST WALL BETWEEN METAL FACIA and concrete BLOCK (202)		

Sampled By: DAVID COFIELD JR Date: 7/17/01 Received By: ___ Date: / /
Time: : Time: :
Relinquished By: DAVID COFIELD JR Date: 7/20/21 Received By: JRL 7/23/01 6:30 AM Date: / /
Time: 20:15 Time: :

Comments:

Laboratory Report

Client: **URS Corp**
282 Delaware Avenue
Buffalo, NY 14202-1805

Attention: Bob Henschel
Project Ref #
Purchase Order #
Project: **Bulk Sample Analysis for Asbestos**
Former Dowell Facility - Walden Ave - Depew

Laboratory Project # NY107175
Project Manager: Daniel Miller, Manager of Microscopy Services
Start Date: 7/23/2001
Report Date: 8/2/2001
Analysis Type: **Bulk Asbestos Analysis by Polarized Light Microscopy**

Authorized Signature

☑ Daniel Miller, Manager of Microscopy Services
☐ Paul S. Chopra, Laboratory Director

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description *Material Description(s)*	*Asbestos Content*	Analyst Comment *Non-Asbestos Content*	Analyst - Date
The following 6 sample(s) were submitted by URS Corp on 7/23/2001 and analyzed in accordance with PLM - ELAP Method 198.1					
CS-201	520537	W roof S side Built-up roofing			DM 7/23/2001
		95% Black solid	*No Asbestos Detected using PLM*	*20% Cellulose 80% Non-Fibrous Material*	
		5% Brown fibrous	*No Asbestos Detected using PLM*	*60% Cellulose 40% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
CS-202	520538	W roof S perimeter Black flashing			DM 7/23/2001
		100% Black solid	*5% Chrysotile*	*95% Non-Fibrous Material*	
5.0% asbestos in composite sample - NOB Material					
CS-203	520539	E roof S side Built-up roofing			DM 7/23/2001
		95% Black fibrous	*No Asbestos Detected using PLM*	*45% Cellulose 55% Non-Fibrous Material*	
		5% Brown fibrous	*No Asbestos Detected using PLM*	*3% Cellulose 97% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
CS-204	520540	E roof E perimeter Black flashing			DM 7/23/2001
		100% Black solid	*6% Chrysotile*	*2% Cellulose 92% Non-Fibrous Material*	
6.0% asbestos in composite sample - NOB Material					

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description *Material Description(s)*	*Asbestos Content*	Analyst Comment *Non-Asbestos Content*	Analyst - Date
CS-101	520541	W side window	Gray white window glazing		DM 7/23/2001
		100% Gray solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
CS-102	520542	S side window	White window glazing		DM 7/23/2001
		100% Gray solid	*2% Chrysotile*	*98% Non-Fibrous Material*	
2.0% asbestos in composite sample - NOB Material					

Additional testing is recommended for any material which contains <1% asbestos or NOB (non-friable organically bound) bulk materials which are negative or <1% asbestos. Analysis by Polarized Light Microscopy (PLM) has a degree of uncertainty that is dependent on the sample matrix, non-asbestos minerals present, size of the asbestos present, the sample homogeneity and analyst variability. PLM coefficients of variance range from approx. 1.8, at the quantitation limit of 1%, to 0.1 at high fiber concentrations. All PLM analyses must be reviewed with these factors taken into consideration.

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Laboratory Report

Client: **URS Corp**
282 Delaware Avenue
Buffalo, NY 14202-1805

Attention: Bob Henschel
Project Reference #
Purchase Order # 0516803
Project: **Bulk Sample Analysis for Asbestos**
Former Dowell Facility - Walden Ave - Depew

Laboratory Project # NY107175
Project Manager: Daniel Miller, Manager of Microscopy Services
Start Date: 7/23/2001
Report Date: 8/8/2001
Analysis Type: **Non-Friable Organically Bound Bulk (NOB) Material Analysis by NYS ELAP Method 198.4 using Polarized Light Microscopy -Transmission Electron Microscopy**

Authorized Signature

☑ Daniel Miller, Manager of Microscopy Services
☐ Paul S. Chopra, Laboratory Director

Analysis Results Table

Client Sample # / Sample Location / Type	Lab Sample #	Sample Description	% Organic	% Acid Soluble	% Acid Insoluble	% Asbestos by type	Total % Asbestos	Analyst Date
Samples provided by URS Corp, received on 8/2/2001, samples were prepared and analyzed in accordance with TEM/PLM - ELAP # 198.4 (NOB)								
CS-201 W roof S side Built-up roofing	521608	Tar	91.2%	3.5%	5.3%		**No Asbestos Detected**	DM 8/8/2001
CS-203 E roof S side Built-up roofing	521609	Tar	65.7%	10.0%	24.3%		**No Asbestos Detected**	DM 8/8/2001
CS-101 W side window Gray white window glazing	521610	Glaze	8.8%	87.5%	3.7%	<1 % Chrysotile	**Trace Asbestos Detected**	DM 8/8/2001

These results are submitted pursuant to Chopra-Lee, Inc.'s current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. These results pertain only to the items tested. Certification by New York State through ELAP does not constitute government endorsement of this testing facility. Unless notified in writing to return the samples covered by this report, Chopra-Lee, Inc. will store what remains of the samples for a period of 15 days before discarding, unless otherwise required by law.

CHOPRA-LEE Incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 fax 716-773-7624
NYS DOH ELAP Lab # 10954

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY

Client: URS CORP
Project: FORMER Dowell Facility
Building / Location: WALDEN AVENUE IN DEPEW
Contact: DAVID COFIELD JR at 716 856-5636
Fax Preliminary Results to: DAVID COFIELD JR 716 856-2545
Mail Report & Invoice to: BOB Henschel

Date: 7/17/01
Project No.: 35824.60

Turnaround Requested:
___ RUSH
___ 24 Hr
___ 48 Hr
X 3-5 Day

Sample Number	Material Description	Sample Location	Laboratory Results	
			PLM	TEM
CS-201	Built-up Roofing	West Roof South Side (201)		
CS-202	Black Flashing	West Roof South Perimeter (201)		
CS-203	Built-up Roofing	East Roof South Side (202)		
CS-204	Black Flashing	East Roof East Perimeter (202)		
CS-101	Window Glazing (Gray White)	West Side Window (102)		
CS-102	Window Glazing (White)	South Side Window (104)		

Sampled By: DAVID COFIELD JR Date: 7/17/01 Time: :
Relinquished By: DAVID COFIELD JR Date: 7/20/01 Time: 20:15
Received By: TRL 7/23/01 6:30AM Date: / / Time: :
Received By: Date: / / Time: :

Comments:

Laboratory Report

Client: **URS Corp**
282 Delaware Avenue
Buffalo, NY 14202-1805

Attention: Bob Henscel
Project Ref # 05-00035824.00
Purchase Order #
Project: **Bulk Sample Analysis for Asbestos**
Dowell Facility - Walden Avenue

Laboratory Project # NY204097
Project Manager: Paul S. Chopra, Laboratory Director
Start Date: 4/16/2002
Report Date: 4/18/2002
Analysis Type: **Bulk Asbestos Analysis by Polarized Light Microscopy**

Authorized Signature

☑ Daniel Miller, Manager of Microscopy Services
☐ Paul S. Chopra, Laboratory Director

Analysis Results Table

Client Sample	CLI Sample # Sample Location / Description *Material Description(s)*	*Asbestos Content*	Analyst Comment *Non-Asbestos Content*	Analyst - Date
The following 32 sample(s) were submitted by URS Corp on 4/16/2002 and analyzed in accordance with PLM - ELAP Method 198.1				
OB-101	536213 Space ID 101 - stairway SW corner Gray marble floor tile 9x9			AW 4/16/2002
	100% Gray solid	*1% Chrysotile*	*99% Non-Fibrous Material*	
1.0% asbestos in composite sample - NOB Material				
OB-102	536214 Space ID 101 - stairway SW corner Black floor tile mastic			AW 4/16/2002
	100% Black solid	*No Asbestos Detected using PLM*	*2% Cellulose 98% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				
OB-103	536215 Space ID 103 - SE corner 2x4 white perforated ceiling tile			AW 4/16/2002
	100% Gray fibrous	*No Asbestos Detected using PLM*	*25% Cellulose 40% Mineral Wool 35% Non-Fibrous Material*	
No asbestos detected in sample				
OB-104	536216 Space ID 103 - E wall Black basecove			AW 4/16/2002
	100% Brown solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description	Analyst Comment	Analyst - Date
	Material Description(s)	*Asbestos Content*	*Non-Asbestos Content*	
OB-105	536217	Space ID 103 - E wall Brown basecove mastic		AW 4/16/2002
	100% Brown solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				
OB-106	536218	Space ID 101 - W wall Brown basecove		AW 4/16/2002
	100% Brown solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				
OB-107	536219	Space ID 101 - W wall Tan basecove mastic		AW 4/16/2002
	100% Brown solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				
OB-108	536220	Space ID 104 - ceiling SE corner Black ceiling paper		AW 4/16/2002
	100% Black fibrous	*No Asbestos Detected using PLM*	*40% Cellulose 5% Synthetic 55% Non-Fibrous Material*	
No asbestos detected in sample				
OB-109	536221	Space ID 104 - S interior window White window glazing		AW 4/16/2002
	100% White solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				
OB-110	536222	Space ID 103 - SW wall Sheet rock		AW 4/16/2002
	100% Gray solid	*No Asbestos Detected using PLM*	*15% Cellulose 85% Non-Fibrous Material*	
No asbestos detected in sample				
OB-111	536223	Space ID 113 - center area Transite debris		AW 4/16/2002
	100% Gray solid	*9% Chrysotile*	*91% Non-Fibrous Material*	
9.0% asbestos in composite sample				
OB-112	536224	Space ID 105 - center area Tan carpet mastic		AW 4/16/2002
	100% Tan solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624
NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description *Material Description(s)*	*Asbestos Content*	Analyst Comment *Non-Asbestos Content*	Analyst - Date
OB-113	536225	Space ID 112 - E exterior window White window glazing			AW 4/16/2002
		100% White solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
OB-114	536226	Space ID 113 - overhang Built-up roofing (gray/black)			AW 4/16/2002
		100% Tar	*No Asbestos Detected using PLM*	*20% Cellulose 80% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
OB-115	536227	Space ID 113 - perimeter overhang Black flashing			AW 4/16/2002
		100% Tar	*2% Chrysotile*	*2% Cellulose 96% Non-Fibrous Material*	
2.0% asbestos in composite sample - NOB Material					
OB-116	536228	Space ID 111 - W wall Beige basecove			AW 4/16/2002
		100% Beige solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
OB-117	536229	Space ID 111 - W wall Tan basecove mastic			AW 4/16/2002
		100% Tan solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
OB-201	536230	Space ID 201 - NE corner Tan carpet mastic			AW 4/16/2002
		100% Tan solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
OB-202	536231	Space ID 202 - NW corner 3x4 white perforated fiberglass ceiling tile			AW 4/16/2002
		100% Yellow fibrous	*No Asbestos Detected using PLM*	*2% Cellulose 80% Fiberglass 18% Non-Fibrous Material*	
No asbestos detected in sample					
OB-203	536232	Space ID 204 - ceiling W 1x1 white fissured ceiling tile			AW 4/16/2002
		100% Tan fibrous	*No Asbestos Detected using PLM*	*70% Cellulose 30% Non-Fibrous Material*	
No asbestos detected in sample					

CHOPRA-LEE Incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description	Analyst Comment	Analyst - Date
	Material Description(s)	*Asbestos Content*	*Non-Asbestos Content*	
OB-204	536233	Space ID 204 - ceiling W Brown ceiling tile mastic		AW 4/16/2002
	100% Brown solid	*<1% Chrysotile*	*99.9% Non-Fibrous Material*	
Less than 1% asbestos in composite sample - NOB Material				
OB-205	536234	Space ID 204 - ceiling W Sheet rock		AW 4/16/2002
	100% White solid	*No Asbestos Detected using PLM*	*10% Cellulose 90% Non-Fibrous Material*	
No asbestos detected in sample				
OB-206	536235	Space ID 204 - NE corner White speckled floor tile 9x9		AW 4/16/2002
	100% Gray solid	*No Asbestos Detected using PLM*	*1% Cellulose 99% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				
OB-207	536236	Space ID 204 - NE corner Black floor tile mastic		AW 4/16/2002
	100% Black solid	*No Asbestos Detected using PLM*	*1% Cellulose 99% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				
OB-208	536237	Space ID 204 - NE corner White basecove		AW 4/16/2002
	100% White solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				
OB-209	536238	Space ID 204 - NE corner Brown basecove mastic		AW 4/16/2002
	100% Brown solid	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				
OB-210	536239	Space ID 206 - W floor area Transite debris		AW 4/16/2002
	100% Gray solid	*17% Chrysotile*	*83% Non-Fibrous Material*	
17% asbestos in composite sample				
OB-301	536240	Space ID 301 - S 1/2 center area Black rolled roofing - 3 layers over horsehair insul		AW 4/16/2002
	100% Tar	*No Asbestos Detected using PLM*	*4% Cellulose 96% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material				

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample	CLI Sample #	Sample Location / Description *Material Description(s)*	*Asbestos Content*	Analyst Comment *Non-Asbestos Content*	Analyst - Date
OB-302	536241	Space ID 301 - roof drain Gray/black penetration flashing			AW 4/16/2002
		100% Tar	*No Asbestos Detected using PLM*	*100% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
OB-303	536242	Space ID 301 - W side perimeter Black perimeter flashing (metal) 2-3 layers			AW 4/16/2002
		100% Tar	*3% Chrysotile*	*2% Cellulose 5% Fiberglass 90% Non-Fibrous Material*	
3.0% asbestos in composite sample - NOB Material					
OB-304	536243	Space ID 301 - N 1/2 central area Black rolled roofing - 3 layers over horsehair insul			AW 4/16/2002
		100% Tar	*No Asbestos Detected using PLM*	*4% Cellulose 96% Non-Fibrous Material*	
No asbestos detected in sample - NOB Material					
OB-305	536244	Space ID 301 - E side perimeter Black perimeter flashing (metal) 2-3 layers			AW 4/16/2002
		100% Tar	*2% Chrysotile*	*98% Non-Fibrous Material*	
2.0% asbestos in composite sample - NOB Material					

Additional testing is recommended for any material which contains <1% asbestos or NOB (non-friable organically bound) bulk materials which are negative or <1% asbestos. Analysis by Polarized Light Microscopy (PLM) has a degree of uncertainty that is dependent on the sample matrix, non-asbestos minerals present, size of the asbestos present, the sample homogeneity and analyst variability. PLM coefficients of variance range from approx. 1.8, at the quantitation limit of 1%, to 0.1 at high fiber concentrations. All PLM analyses must be reviewed with these factors taken into consideration.

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 FAX 716-773-7624

NYS DOH ELAP Lab # 10954

Laboratory Report

Client: **URS Corp**
282 Delaware Avenue
Buffalo, NY 14202-1805

Attention: Bob Henscel
Project Reference # 05-00035824.00
Purchase Order #
Project: **Bulk Sample Analysis for Asbestos**
Dowell Facility - Walden Avenue

Laboratory Project # NY204097
Project Manager: Paul S. Chopra, Laboratory Director
Start Date: 4/16/2002
Report Date: 4/24/2002
Analysis Type: **Non-Friable Organically Bound Bulk (NOB) Material Analysis by NYS ELAP Method 198.4 using Polarized Light Microscopy .Transmission Electron Microscopy**

Authorized Signature Daniel Miller

☑ Daniel Miller, Manager of Microscopy Services
☐ Paul S. Chopra, Laboratory Director

Analysis Results Table

Client Sample # / Sample Location / Type	Lab Sample #	Sample Description	% Organic	% Acid Soluble	% Acid Insoluble	% Asbestos by type	Total % Asbestos	Analyst Date
Samples provided by URS Corp, received on 4/18/2002, samples were prepared and analyzed in accordance with TEM/PLM - ELAP # 198.4 (NOB)								
OB-102 Space ID 101 - stairway SW corner	536498 Black floor tile mastic	Adhesive	80.0%	5.7%	14.3%	<1 % Chrysotile	**Trace Asbestos Detected**	DM 4/23/2002
OB-104 Space ID 103 - E wall	536499 Black basecove	Basecove	38.9%	24.5%	36.6%		**No Asbestos Detected**	DM 4/23/2002
OB-105 Space ID 103 - E wall	536500 Brown basecove mastic	Adhesive	54.9%	0.3%	44.9%		**No Asbestos Detected**	DM 4/23/2002
OB-106 Space ID 101 - W wall	536501 Brown basecove	Basecove	37.6%	15.2%	47.2%		**No Asbestos Detected**	DM 4/23/2002
OB-107 Space ID 101 - W wall	536502 Tan basecove mastic	Adhesive	51.0%	0.6%	48.4%		**No Asbestos Detected**	DM 4/23/2002
OB-109 Space ID 104 - S interior window	536503 White window glazing	Glaze	14.2%	67.3%	18.5%	3.7 % Chrysotile	**3.7% Asbestos**	DM 4/23/2002

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 fax 716-773-7624

NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample # / Lab Sample # / Sample Location / Type	Sample Description	% Organic	% Acid Soluble	% Acid Insoluble	% Asbestos by type	Total % Asbestos	Analyst Date
OB-112 536504 Space ID 105 - center area Tan carpet mastic	Adhesive	56.8%	2.3%	40.9%		**No Asbestos Detected**	DM 4/23/2002
OB-113 536505 Space ID 112 - E exterior window White window glazing	Caulk	10.7%	52.9%	36.3%		**No Asbestos Detected**	DM 4/23/2002
OB-114 536506 Space ID 113 - overhang Built-up roofing (gray/black)	Tar	66.8%	4.0%	29.2%	2.9 % Chrysotile	**2.9% Asbestos**	DM 4/23/2002
OB-116 536507 Space ID 111 - W wall Beige basecove	Basecove	31.6%	28.7%	39.7%		**No Asbestos Detected**	DM 4/23/2002
OB-117 536508 Space ID 111 - W wall Tan basecove mastic	Adhesive	88.7%	8.0%	3.3%		**No Asbestos Detected**	DM 4/23/2002
OB-201 536509 Space ID 201 - NE corner Tan carpet mastic	Adhesive	67.9%	7.3%	24.8%		**No Asbestos Detected**	DM 4/23/2002
OB-204 536510 Space ID 204 - ceiling W Brown ceiling tile mastic	Adhesive	51.3%	0.3%	48.4%		**No Asbestos Detected**	DM 4/23/2002
OB-206 536511 Space ID 204 - NE corner White speckled floor tile 9x9	Floor tile	30.1%	4.9%	65.0%	16 % Chrysotile	**16% Asbestos**	DM 4/23/2002
OB-207 536512 Space ID 204 - NE corner Black floor tile mastic	Adhesive	78.1%	9.6%	12.3%		**No Asbestos Detected**	DM 4/23/2002
OB-208 536513 Space ID 204 - NE corner White basecove	Basecove	39.2%	55.4%	5.4%		**No Asbestos Detected**	DM 4/23/2002
OB-209 536514 Space ID 204 - NE corner Brown basecove mastic	Basecove	39.1%	56.5%	4.3%		**No Asbestos Detected**	DM 4/23/2002
OB-301 536515 Space ID 301 - S 1/2 center area Black rolled roofing - 3 layers over horsehair insul	Tar	88.2%	4.5%	7.3%		**No Asbestos Detected**	DM 4/23/2002
OB-302 536516 Space ID 301 - roof drain Gray/black penetration flashing	Tar	87.3%	2.8%	9.9%	3.5 % Chrysotile	**3.5% Asbestos**	DM 4/23/2002

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 fax 716-773-7624

NYS DOH ELAP Lab # 10954

Analysis Results Table

Client Sample # / Sample Location / Type	Lab Sample #	Sample Description	% Organic	% Acid Soluble	% Acid Insoluble	% Asbestos by type	Total % Asbestos	Analyst Date
OB-304	536517	Tar	76.5%	10.1%	13.4%		**No Asbestos Detected**	DM
Space ID 301 - N 1/2 central area Black rolled roofing - 3 layers over horsehair insul								4/23/2002

These results are submitted pursuant to Chopra-Lee, Inc.'s current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. These results pertain only to the items tested. Certification by New York State through ELAP does not constitute government endorsement of this testing facility. Unless notified in writing to return the samples covered by this report, Chopra-Lee, Inc. will store what remains of the samples for a period of 15 days before discarding, unless otherwise required by law.

CHOPRA-LEE incorporated
1815 Love Road
Grand Island, NY 14072
716-773-7625 fax 716-773-7624

NYS DOH ELAP Lab # 10954

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Client: Dowell Facility
Project: Former Dowell Facilitty
Building/Location: Walden Avenue
Contact: David Cofield at 716 856-5636
Fax Results to: David Cofield at 716 856-2545
Mail Report and Invoi Bob Henschel

Page 1 of 6
Date: 4/11/02
Project Number: 05-00035824.00
Turnaround Requested: ____ RUSH
____ 24 Hour
____ 48 Hour
X 3-5 Day

Sample Number	Material Description	Sample Location	Laboratory Results PLM	Laboratory Results TEM
03-101	9"x9" Gray Marble floor tile	Space I.D. 101 Stair way S.W. Corner		
03-102	Black floor tile mastic	" 101 " "		
03-103	2'x4' white perforated Ceiling tile	" 103 S.E. Corner		
03-104	Black Cove base	" 103 East wall		
03-105	Brown cove base mastic	" 103 East wall		
03-106	Brown cove base	" 101 west wall		

Sampled By: David Cofield II Date: 4/11/02 Time: ____
Reliquished By: David Cofield II Date: 4/15/02 Time: ____
Received By: ____ Date: 1/1 Time: ____
Received By: Karen Quendenan Date: 4/16/02 Time: 10A

Comments: ____

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Client: Dowell Facility
Project: Former Dowell Facilitty
Building/Location: Walden Avenue
Contact: David Cofield at 716 856-5636
Fax Results to: David Cofield at 716 856-2545
Mail Report and Invoi Bob Henschel

Page 2 of 6
Date: 4/11/02
Project Number: 05-00035824.00
Turnaround Requested:
_____ RUSH
_____ 24 Hour
_____ 48 Hour
X 3-5 Day

Sample Number	Material Description	Sample Location	Laboratory Results PLM	Laboratory Results TEM
OB - 107	Tan cove base mastic	SPACE I.D. 101 west wall		
OB - 108	Black ceiling paper	" 104 Ceiling S.E. corner		
OB - 109	White window Glazing	" 104 South interior window		
OB - 110	sheet rock	" 103 S.W. wall		
OB - 111	Transite debris	" 113 center area		
OB - 112	Tan carpet mastic	" 105 center area		

Sampled By: David Cofield II Date: 4/11/02 Received By: _____ Date: __/__/__
Time: _____
Reliquished By: David Cofield II Date: 4/15/02 Received By: Karen Abramowski Date: 4/16/02
Time: _____ Time: 4:10A

Comments: _____

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Client: Dowell Facility
Project: Former Dowell Facilitty
Building/Location: Walden Avenue
Contact: David Cofield at 716 856-5636
Fax Results to: David Cofield at 716 856-2545
Mail Report and Invoi Bob Henschel

Page 3 of 6
Date: 4/11/02
Project Number: 05-00035824.00
Turnaround Requested:
_____ RUSH
_____ 24 Hour
_____ 48 Hour
X 3-5 Day

Sample Number	Material Description	Sample Location	Laboratory Results PLM	Laboratory Results TEM
OB - 113	White window Glazing	Space I.D 112 East exterior window		
OB - 114	Built-up roofing (GRAY/BLK)	" 113 Over Hang		
OB - 115	Black flashing	" 113 perimeter over hang		
OB - 116	Beige cove base	" 111 west wall		
OB - 117	Tan cove base mastic	" 111 west wall		
OB -				

Sampled By: David Cofield Date: 4/11/02 Time: _____
Reliquished By: David Cofield II Date: 4/15/02 Time: _____
Received By: _____ Date: _____ Time: _____
Received By: Karen Allen-Loiner Date: 4 Mo 02 Time: 4.10A

Comments: _____

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Client: Dowell Facility
Project: Former Dowell Facilitty
Building/Location: Walden Avenue
Contact: David Cofield at 716 856-5636
Fax Results to: David Cofield at 716 856-2545
Mail Report and Invoi Bob Henschel

Page 4 of 6
Date: 4/12/02
Project Number: 05-00035824.00
Turnaround Requested:
_____ RUSH
_____ 24 Hour
_____ 48 Hour
X 3-5 Day

Sample Number	Material Description	Sample Location	Laboratory Results PLM	Laboratory Results TEM
OB-201	Tan carpet mastic	Space I.D. 201 N.E. corner		
OB-202	2'x4' white perforated Fiberglass	" 202 NW corner		
	ceiling tile			
OB-203	1'x1' white Fissured ceiling tile	" 204 ceiling west		
OB-204	Brown ceiling tile mastic	" 204 ceiling west		
OB-205	sheet rock	" 204 ceiling west		
OB-206	9"x9" white speckled floor tile	" 204 N.E. corner		

Sampled By: David Cofield I Date: 4/12/02 Time: _____
Received By: _____ Date: 1/1 Time: _____
Reliquished By: David Cofield II Date: 4/15/02 Time: _____
Received By: [signature] Date: 4/16/02 Time: 4:10A

Comments: _____

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Client: Dowell Facility
Project: Former Dowell Facilitty
Building/Location: Walden Avenue
Contact: David Cofield at 716 856-5636
Fax Results to: David Cofield at 716 856-2545
Mail Report and Invoi Bob Henschel

Page 5 of 6
Date: 4/12/02
Project Number: 05-00035824.00
Turnaround Requested:
_____ RUSH
_____ 24 Hour
_____ 48 Hour
X 3-5 Day

Sample Number	Material Description	Sample Location	Laboratory Results PLM	Laboratory Results TEM
OB - 207	Black floor tile mastic	Space I.D. 204 N.E. corner		
OB - 208	White cove base	" 204 N.E. corner		
OB - 209	Brown cove base mastic	" 204 N.E. corner		
OB - 210	Transite debris	" 206 west floor area		

Sampled By: David Cofield Date: 4/12/02 Time: _____
Reliquished By: David Cofield Date: 4/15/02 Time: _____
Received By: _____ Date: _____ Time: _____
Received By: Karen Quendschen Date: 4/16/02 Time: 4:10

Comments: _____

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Client: Dowell Facility
Project: Former Dowell Facilitty
Building/Location: Walden Avenue
Contact: David Cofield at 716 856-5636
Fax Results to: David Cofield at 716 856-2545
Mail Report and Invoi Bob Henschel

Date: 4/15/02
Project Number: 05-00035824.00
Turnaround Requested:
RUSH
24 Hour
48 Hour
X 3-5 Day

Sample Number	Material Description	Sample Location	Laboratory Results PLM	TEM
06-301	Black Rolled Roofing, 3	SPACE ID 301 SOUTH ½ CENTER AREA		
	Layers of Roofing over Horse Hair Insl.			
06-302	GRAY/BLK Penetration FLASHing	" " Roof Drain		
03-303	BLACK Perimeter Flashing	" " WEST SIDE Perimeter		
	(METAL) 2-3 LAYERS			
03-304	BLACK Rolled Roofing, 3	" " NORTH ½ CENTRAL AREA		
	LAYERS OF ROOFING OVER Horse Hair Insl.			
03-305	BLACK Perimeter FLASHING	" " EASTSIDE Perimeter		
	(METAL) 2-3 LAYERS			

Sampled By: David Cofield Date: 4/15/02 Received By: Date: / /
Time: Time:
Reliquished By: Date: 1/5/ Received By: [signature] Date: 4/16/02
Time: Time: 4.10A

Comments:

APPENDIX C

DECONTAMINATION PAD CONSTRUCTION DETAILS

Decontamination Pad Construction

One temporary decontamination pad shall be constructed for decontamination of the excavator/backhoe and drill rig. The decontamination pad shall be left in place for subsequent decontamination of drilling equipment and any other vehicles entering the site. The decontamination pad will be located near the site entrance with the exact location to be specified by the URS site coordinator. The area where the decontamination pad will be located will be graded flat by the excavator/backhoe, but the grade will slope slightly so water will collect in one corner of the pad. The decontamination pad will consist of a rectangular curb 14 feet wide by 20 feet long constructed from 6-inch by 6-inch wooden timbers that are drilled and staked with 18-inch long rebar rods approximately every 5 feet. A 60 mil high density polyethylene (HDPE) liner will be placed within and over the timber curbing and will be secured to the outside of the timbers with ferrule strips. Six 4-foot by 8-foot overlapping sheets of ½-inch thick plywood will be placed over the liner for equipment access. Onsite soils will be graded to form entrance and exit ramps at opposite ends of the pad.

Monitoring Well Construction Procedures

Summary: A method for construction of groundwater monitoring within unconsolidated material which enables monitoring of groundwater elevation and acquisition of groundwater samples for laboratory testing. Two monitoring wells will be installed during the remedial design using the procedures described below.

Procedure:

1) Advance the subsurface boring to the desired depth by means of hollow-stem auger drilling.
2) Remove the center plug from augers and verify borehole depth using a weighted measuring tape.
3) Add washed and graded medium sand as needed to the bottom of the borehole.
4) Insert the well screen and riser pipe into borehole through the hollow stem augers. Cap the riser to prevent well construction materials from entering the well.
5) Add sand to the screen section of the well while slowly removing the augers. The sand pack should extend at least two feet above the top of the screen section. Measure with a weighted tape.
6) Slowly add bentonite pellets to seal the borehole as the augers are slowly removed. The bentonite seal should extend at least two feet above the top of the sand pack section. Measure with a weighted tape.

Note: The rate of removal of the auger from the borehole should closely follow the rate that the sand pack and bentonite pellets fill the borehole.

7) If the bentonite seal is placed above the groundwater level within the borehole, add water to the borehole to hydrate the bentonite pellets. Allow the pellets to hydrate for at least 30 minutes.
8) Mix cement/bentonite grout per the Manufacturer's specifications.
9) Add grout to the borehole through a tremie pipe or hose from the top of the bentonite seal to the ground surface.
10) Remove the remaining augers from the borehole.

11) Top off the grout in the borehole. The grout should extend to approximately two feet below the ground surface.

12) The flush-mount well risers will be cut off just below the ground surface.

13) Backfill to 6 inches below the top of the well riser with concrete.

14) Install a protective casing (road box) over the well riser pipe and set it into the concrete backfill.

15) Lock the protective casing cover.

16) Document well construction in the field notebook and later on a Monitoring Well Construction Detail diagram (Appendix A).

Reference: ASTM Standard Practice for Design and Installation of Groundwater Monitoring Wells in Aquifers D5092-90.

Monitoring Well Development Procedures

Summary: Following completion of drilling and well installation, each monitoring well will be developed by pumping until the discharged water is relatively sediment free and the indicator parameters (pH, temperature, and specific conductivity) have reached steady state. Developing the well not only removes any sediment but also may improve the hydraulic properties of the formation. The effectiveness of the development measures will be closely monitored in order to keep the volume of discharged water to the minimum necessary to obtain sediment-free samples. A portable turbidimeter will be used to monitor effectiveness of development. A turbidity reading of < 50 Nephelometric Turbidity Units (NTU) and steady state pH, temperature, and specific conductivity readings will be used as a guide for discontinuing well development. The two monitoring wells installed during the remedial design field work will be developed as described below.

Procedure:

1) An appropriate well development method should be selected, depending on water level depth, well productivity, and sediment content of water. Well development options include: (a) manual pumping; and (b) powered suction-lift or hydrolift pumping.
2) Equipment should be assembled, decontaminated (if necessary), and installed in the well. Care should be taken not to introduce contaminants to the equipment during installation.
3) Well development should proceed by repeated removal of water from the well until the discharged water is relatively sediment-free. All development waters will be containerized. Effectiveness of development should be monitored at regular intervals using a portable turbidimeter. The volume of water removed and turbidity, pH, temperature, and conductivity measurements will be recorded on a Well Development/Purging Log form (Appendix A).
4) Well development will be discontinued when the turbidity of the discharged water is below 50 NTU.

Reference: ASTM Standard Practice for Design and Installation of Groundwater Monitoring Wells in Aquifers D5092-90.

PART B

QUALITY ASSURANCE PROJECT PLAN

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLES

B1.0 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 the SI activities as described in the SI Work Plan. It will give specific methods and QA/QC procedures for chemical testing of environmental samples obtained from the site. In addition, it will ensure the quality of the data produced during the SI/RAR. All samples will be analyzed at a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory.

The URS organizational structure for this project is described in Section A4.0 of the SI Work Plan. It identifies the names of key project personnel. The URS 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 groundwater and soil samples shall be currently certified by NYSDOH ELAP for the appropriate categories (i.e., CLP). 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.

B2.0 DATA QUALITY OBJECTIVES

B2.1 Background

Data quality objectives (DQOs) are qualitative and quantitative statements which specify the quality of data required to support the SI for 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 (September 1994). 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 this SI are:

- to further characterize the site and determine the nature and extent of contamination;
- to identify, evaluate, and select a long-term remedial action that is cost-effective and environmentally sound;
- to maintain the highest possible scientific/professional standards for each procedure be maintained; and,
- to assure the ultimate defensibility of the data produced during the SI.

Soil and groundwater analytical results will be compared to the applicable SCGs that are protective of human health and the environment. For the soil matrix, the SCG's will be the NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4046: *Determination of Soil Cleanup Objectives and Cleanup Levels* (dated January 1994, revised). 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 B2-1
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	OLM04.2	1	1/1/1	0	1
II. Subsurface Soil TCL Volatiles + TICs	OLM04.6	15	1/1/1	1	0

NOTES:

[1]NYSDEC Analytical Services Protocol, 6/00 edition.

TIC – Tentatively Identified Compounds

B2.2 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.

B2.2.1 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.

B2.2.2 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.

B2.2.3 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.

B2.2.4 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.

B2.2.5 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, URS project personnel will determine whether the deviations might cause the data to be rejected.

B3.0 SAMPLING LOCATIONS, CUSTODY, HOLDING TIMES, AND ANALYSIS

Sampling locations and procedures are discussed in Section A2.0 of the Work Plan. Procedures addressing field and laboratory sample chain-of-custody and holding times are presented in Section C6.0 of the FSP. Table B3-1 of the contains sample methods and container, preservation, and holding time requirements. All analyses will be performed in accordance with the NYSDEC Analytical Services Protocol, 6/2000 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 B3-1
ANALYTICAL METHODS, CONTAINER, PRESERVATION, AND HOLDING TIME REQUIREMENTS
FORMER DOWELL FACILITY

PARAMETER	ANALYTICAL METHOD	VOLUME REQUIREMENT	PRESERVATION	HOLDING TIME*
Water				
TCL Volatiles	ASP 95-1	2 x 40 ml VOA vials	HCl to pH<2, Cool 4° C	10 days preserved
Soil/Sediment				
TCL Volatiles	ASP 95-1	2 x 4 oz. wide mouth glass	Cool 4° 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), 6/00 Edition.

B4.0 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.

B4.1 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 Class "S" 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.

B4.2 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.

B5.0 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.

B5.1 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.

B5.2 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.

B5.3 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.

B6.0 CALCULATION OF DATA QUALITY INDICATORS

B6.1 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.

B6.2 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

B6.3 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

B7.0 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.

B7.1 Incoming Samples

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

B7.2 Sample Holding Times

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

B7.3 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.

B7.4 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 URS 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, URS Project Chemist will be immediately notified so that appropriate corrective actions can be initiated.

B7.5 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 cost to the URS. URS shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

B7.6 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.

B8.0 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.

B8.1 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.

B8.2 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) Organic Data Review, SOP Nos. HW-6, Revision #12, March 2001.* This document will be used with the following exceptions:

- Technical holding times will be in accordance with NYSDEC ASP, 6/00 edition, and

- Tentatively identified compounds (TICs) will be qualified by the analytical laboratory only

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

B8.3 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 SI 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). The DUSR will obtain information regarding deviations, discrepancies and unusable data along with the validation summary tables.

B9.0 PREVENTIVE MAINTENANCE AND PERFORMANCE/SYSTEM AUDITS

B9.1 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.

B9.2 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.

B9.2.1 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.

B9.2.2 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

Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Manual, Final Copy, Revision 1, October 1989.

National Enforcement Investigations Center of USEPA Office of Enforcement. *NEIC Policies and Procedures.* Washington: USEPA.

New York State Department of Environmental Conservation (NYSDEC). 1995. *Analytical Services Protocol* (ASP), 10/95 Edition. Albany: NYSDEC.

USEPA. 1987. *A Compendium of Superfund Field Operations Methods,* EPA/540/P-87-001, (OSWER Directive 9355.0-14). December. Cincinnati, OH: USEPA.

USEPA. 1994. *Guidance for the Data Quality Objective Process,* EPA QA/G-4. September. Washington: USEPA.

PART C

FIELD SAMPLING PLAN

TABLE OF CONTENTS

C1.0 INTRODUCTION

This Field Sampling Plan (FSP) is designed to provide detailed step-by-step procedures for the field activities outlined in the Remedial Action Work Plan (RAWP) for the Former Dowell Facility. It will serve as the field procedures manual to be strictly followed by all URS personnel. Adherence to these procedures will ensure the quality and defensibility of the field data collected. In addition to the field procedures outlined in this document, all personnel performing field activities must do so in compliance with: (1) the appropriate Health and Safety guidelines found in the Health and Safety Plan (Part D); (2) the Quality Assurance/Quality Control measures outlined in Part B; (3) the scope of work outlined in the RAWP (Part A); and (4) the time schedule outlined in the RAWP.

C2.0 MOBILIZATION

A centralized decontamination area with a decontamination pad will be constructed near the site entrance to decontaminate vehicles/heavy equipment/drill rigs entering and leaving the site. The decontamination area will be large enough to allow storage of cleaned equipment and materials prior to use.

Proposed excavation locations will be staked, labeled and flagged, as appropriate, prior to start of work. Utilities in areas designated for intrusive activities will be cleared through the Underground Facilities Protective Organization (UFPO). Vehicle access routes to excavation, drilling and boring locations shall be determined and cleared prior to any field activities.

C3.0 SUBSURFACE INVESTIGATION

C3.1 General Drilling Program

As part of the site remediation activities, monitoring well MW-03 and piezometer PZ-02 will be abandoned. A new deep replacement monitoring MW-06D will be installed adjacent to MW-06.

A list of applicable investigation and monitoring well installation procedures, and the appropriate section where they are discussed, follows:

- hollow-stem auger drilling procedures (Section C3.2);
- split-spoon sampling procedures (Section C3.3);
- Geoprobe procedures (Section C3.4)
- disposal of drill cuttings (Section C3.5);
- well construction procedures (Section C3.6);
- well development procedure (Section C3.7);
- slug testing (Section C3.8); and
- documentation (Section C3.9);

C3.2 Hollow-Stem Auger Drilling Procedures

Summary: A standard method of subsurface drilling which enables the recovery of representative subsurface samples for identification and laboratory testing.

Procedure:

1) Advance the boring by rotating and advancing the augers the desired distance into the subsurface. The borings will be advanced incrementally to permit continuous or intermittent sampling as required.
2) Remove center plug from augers and sample subsurface per method stipulated by the project geologist or hydrogeologist. Sampling methods are presented in Section C3.3.

Reference: American Society of Testing Materials (ASTM) Standard Practice for Soil Investigation and Sampling by Auger Borings D1452-80, and Standard Method for Penetration Test and Split Barrel Sampling of Soils D1586-84.

C3.3 Split-Spoon Sampling Procedures

Summary: Split-spoon sampling is a standard method of soil sampling to obtain representative samples for identification and laboratory testing as well as to serve as a measure of resistance of soil to sampler penetration.

Procedure:

1) Measure the sampling equipment lengths to ensure that they conform to specifications. Confirm the weight of the hammer (140 pounds.).
2) Clean out the auger flight to the bottom depth prior to sampling. Select additional components as required (i.e., leaf spring core retainer for clays or a sand trap for non-cohesive sands).
3) Lower the sampler to the bottom of the auger column and check the depth against length of the rods and the sampler.
4) Attach the drive head and hammer to the drill rods without the weight resting on the rods.
5) Lower the weight and allow the sampler to settle up to 6 inches. If it settles more, consider use of another sampler.
6) Mark four 6-inch intervals on the drill rods relative to a drive reference point on the rig. With the sampler resting on the bottom of the hole, drive the sampler with the 140 pound hammer falling freely over its 30-inch fall until 24 inches have been penetrated or 100 blows applied.
7) Record the number of blows per 6 inches. Determine the "N" value by adding the blows for the 6-to 12-inch and 12-to 18-inch interval of each sample attempt.
8) After penetration is complete, remove the sampler.
9) Open sampler and describe the soil.
10) Document all properties and sample locations in the field notebook and later on the Boring Log form (Appendix A).

11) Place sample in suitable container, label (Section C10.0), and store on site until onsite work has been completed, at which time the samples will be properly disposed.

Reference: American Society of Testing Materials (ASTM) Standard Method for Penetration Test and Split Barrel Sampling of Soils D1586-84.

C3.3.1 Unified Soil Classification System

Soils are classified for engineering purposes according to the Unified Soil Classification System (USCS) adopted by the U.S. Army Corps of Engineers and U.S. Department of the Interior Bureau of Reclamation. Soil properties which form the basis for the USCS are:

- Percentage of gravel, sand, and fines;
- Shape of the grain-size distribution curve; and
- Plasticity and compressibility characteristics.

According to this system, all soils are divided into three major groups: coarse-grained, fine-grained, and highly-organic (peaty). The boundary between coarse-grained and fine-grained soils is taken to be the 200-mesh sieve (0.074 mm). In the field the distinction is based on whether the individual particles can be seen with the unaided eye. If more than 50% of the soil by weight is judged to consist of grains that can be distinguished separately, the soil is considered to be coarse-grained.

The coarse-grained soils are divided into gravelly (G) or sandy (S) soils, depending on whether more or less than 50% of the visible grains are larger than the No. 4 sieve (3/16 inch). They are each divided further into four groups:

W: Well graded; fairly clean (<5% finer than 0.074 mm)

P: Poorly graded (gap-graded); fairly clean (<5% finer than 0.074mm)

C: Clayey (>12% finer than 0.074mm); plastic (clayey) fines. Fine fraction above the A- line with plasticity index above 7.

M: Silty (>12% finer than 0.074 mm); nonplastic or silty fines. Fine fraction below the A- line and plasticity index below 4.

The soils are represented by symbols such as GW or SP. Borderline materials are represented by a double symbol, as GW-GC.

The fine-grained soils are divided into three groups: inorganic silts (M), inorganic clays (C), and organic silts and clays (O). The soils are further divided into those having liquid limits lower than 50% (L), or higher than 50% (H).

The distinction between the inorganic clays (C), the inorganic silts (M), and organic soils (O) is made on the basis of a modified plasticity chart. Soils CH and CL are represented by points above the A-line, whereas soils OH, OL, and MH correspond to positions below the A-line. Soils ML, except for a few clayey fine sands, are also represented by points below the A-line. The organic soils O are distinguished from the inorganic soils M and C by their characteristic odor and dark color.

C3.3.2 Visual Identification

Soil properties required to define the USCS classification of a soil are the primary features to be considered in field identification. These properties and other observed characteristics normally identified in describing a soil are defined below:

a. Color
b. Moisture conditions
c. Grain size
   (1) Estimated maximum grain size
   (2) Estimated percent by weight of fines (material passing No. 200 sieve)
d. Gradation
e. Grain shape
f. Plasticity
g. Predominant soil type

h. Secondary components of soil

i. Classification symbol

j. Other features such as:

- organic, chemical, or metallic content;
- compactness;
- consistency;
- cohesiveness near plastic limit;
- dry strength; and source - residual, or transported (aeolian, water borne, glacial deposit, etc.)

C3.4 Geoprobe Procedures

A Geoprobe direct push sampling system will be used to complete the twenty-three soil borings and collect soil and groundwater samples. The Geoprobe does not bring subsurface soil to the surface as does conventional hollow stem augering.

Procedure:

1) Inspect the sampling equipment (macrocore) to ensure proper working condition.
2) Select additional components for the sampler as required (i.e., leaf spring core retainer for clays, or a sand trap for non-cohesive sands).
3) Lower the sampler to the ground surface, or bottom of hole previously made by the sampler, and check the depth against length of the rods and the sampler.
4) Attach the drive head assembly to the sample rods.
5) Push sampler into the subsurface with a hydraulic press.
6) After penetration is complete, rotate the sampling rods clockwise and remove the sampler.
7) Extrude the sample, describe the soil, and collect any necessary samples into appropriate containers and label the containers. The sample fraction with obvious soil staining or highest organic vapor concentration will be collected for analysis.

8) Groundwater samples will be collected by inserting 3/16 ID tubing through the hollow Geoprobe rods. Groundwater will be brought to the surface using a vacuum pump and will be placed into appropriate sample vials.

9) Document all soil descriptions and sample information in the sampling log book.

C3.5 Disposal of Drill Cuttings

Summary: Disposal of drill cuttings will be performed in accordance with New York State Department of Environmental Conservation Technical and Administrative Guidance Memorandum (TAGM) HWR-89-4032, November 21, 1989.

Procedure:

1) Cuttings will be stored/disposed on site in bulk and monitored for volatile emissions and fugitive dust with on site instruments. If any action level specified in the HASP is exceeded, corrective action such as an interim cover or placement in containers will be implemented.

2) If wastes are present in the cuttings, cuttings will be placed in a segregated storage or disposal area. These cuttings will be combined with the contaminated soils from the three excavation areas for off-site disposal.

3) Drill cuttings generated near or adjacent to the site will be collected and transported to the site for disposal.

4) If materials are found to be hazardous, cuttings will be disposed of off site at a properly permitted treatment, storage or disposal facility.

C3.6 Well Construction Procedures

Summary: A method for construction of groundwater monitoring wells within unconsolidated material which enables monitoring of groundwater elevation and acquisition of groundwater samples for laboratory testing. Four monitoring wells will be installed during this SI using the procedures described below.

Procedure:

1) Advance subsurface boring to the desired depth by means of hollow-stem auger drilling.
2) Remove center plug from augers and verify borehole depth using weighted measuring tape.
3) Add washed and graded medium sand as needed to base of borehole.
4) Insert the well screen and riser pipe into borehole through the hollow stem augers. Cap the riser to prevent well construction materials from entering the well.
5) Add sand to screen section of well while slowly removing augers. Sand pack should extend at least two feet above the top of the screen section. Measure with a tape.
6) Slowly add bentonite pellet seal to borehole as augers are slowly removed. The bentonite seal should extend at least two feet above the top of the sand pack section. Measure with tape.

Note: The rate of removal of the auger from the borehole should closely follow the rate that the sand pack and bentonite pellets fill the borehole.

7) If bentonite seal is placed above the groundwater level within the borehole, add potable water to the borehole to hydrate the bentonite pellets. Allow pellets to hydrate for at least 30 minutes.
8) Mix cement/bentonite grout per Manufacturer's specifications.
9) Add grout to borehole through tremie pipe or hose from the top of the bentonite seal to the ground surface.
10) Remove remaining augers from the borehole.
11) Top off grout in borehole. Grout should extend to approximately two feet below ground surface.
12) Cut well riser pipe to about three feet above the ground surface for stickup type wells. Flush-mount well risers should be cut off just below surface grade.
13) Backfill the remaining two feet of the borehole with concrete.
14) Install a protective casing over the well riser pipe and set it into the concrete backfill.

15) Lock the protective casing cover.

16) Document well construction in the field notebook and later on a Monitoring Well Construction Detail diagram (Appendix A).

C3.7 Well Development Procedures

Summary: Following completion of drilling and well installation, each monitoring well will be developed by pumping until the discharged water is relatively sediment free and the indicator parameters (pH, temperature, and specific conductivity) have reached steady state. Developing the well not only removes any sediment but also may improve the hydraulic properties of the formation. The effectiveness of the development measures will be closely monitored in order to keep the volume of discharged water to the minimum necessary to obtain sediment-free samples. A portable turbidimeter will be used to monitor effectiveness of development. A turbidity reading of < 50 Nepheliomatic Turbidity Units (NTU) and steady state pH, temperature, and specific conductivity readings will be used as a guide for discontinuing well development.

Procedure:

1) An appropriate well development method should be selected, depending on water level depth, well productivity, and sediment content of water. Well development options include: (a) manual pumping; and (b) powered suction-lift or hydrolift pumping.

2) Equipment should be assembled, decontaminated (if necessary), and installed in the well. Care should be taken not to introduce contaminants to the equipment during installation.

3) Well development should proceed by repeated removal of water from the well until the discharged water is relatively sediment-free. All development waters will be containerized. Effectiveness of development should be monitored at regular intervals using a portable turbidimeter. Volume of water removed and turbidity, pH, temperature, and conductivity measurements will be recorded on a Well Development/Purging Log form (Appendix A).

4) Well development will be discontinued when the turbidity of the discharged water is below 50 NTU and the other indicator parameters have stabilized.

C3.8 Slug Testing Procedures

Summary: Slug testing is a rapid and inexpensive procedure for estimating the horizontal hydraulic conductivity of an aquifer material screened by a monitoring well. Equipment consists of dedicated/disposable nylon rope, a decontaminated stainless steel slug and pressure transducer, a Hermit Data logger, and a water level indicator.

Procedure (rising-head test):

1) Record the initial water level in the well (static water level).
2) Lower the pressure transducer into the well to the well bottom. Pull the transducer up one foot. Connect the transducer to the Hermit Data Logger.
3) Insert a stainless steel slug into the well, below the water table, with nylon rope. Allow the water level in the well to return to static condition.
4) Monitor water level recovery in the well with the Hermit Data Logger until the static water level has recovered.
6) Download data from the Hermit Data Logger and record the data in the field notebook. Review the data to verify that the slug test was successful.
7) Remove equipment from the well and decontaminate.
8) Analyze the data in office using a computer.

C3.9 Documentation

Each subsurface boring will be logged in a bound field notebook during drilling by the supervising geologist. Field notes will include descriptions of subsurface materials encountered during drilling, sample numbers, and types of samples recovered from the borehole. Additionally, the geologist will note time and material expenditures for later verification of contractor invoices.

Upon completion of daily drilling activities, the geologist will complete the daily drilling record form and initiate chain-of-custody on any samples recovered for chemical laboratory testing. Following completion of the drilling program, the geologist will transfer field notes onto standard forms for the SI report.

On a weekly basis the project geologist will submit a summary report to the project manager containing at a minimum the following: (1) a summary of the daily drilling records; (2) progress report on field activities; and (3) a record of site visitors.

The proper completion of the following forms/logs will be considered correct procedure for documentation during the drilling program:

1) Field Log Book - weather-proof hand-bound field book
2) Daily Drilling Records (Appendix A)
3) Test Pit and Boring Logs (Appendix A)
4) Monitoring Well Construction Details and Piezometer Installation Diagrams (Appendix A)

C4.0 GROUNDWATER WELL PURGING/SAMPLING

Summary: To collect representative groundwater samples, groundwater wells must be adequately purged prior to sampling. Purging will require the removal of three to five volumes of standing water in rapidly recharging wells and at least one volume from wells with slow recharge rates. Shallow wells in which the screen intersects the water table should require a minimum amount of purging since the groundwater would flow through the screen and not be entrapped in the casing. Deeper wells should be purged more thoroughly since they may be located in confined aquifers and water may rise up into the casing. A thorough purging would require the removal of several volumes of this trapped water to ensure that representative groundwater is brought into the casing for sampling. Sampling should commence immediately after purging as soon as adequate recharge has occurred.

Groundwater sampling will be performed as indicated in Section A3.6 of the RAWP. The wells will be sampled following procedures found in Section C4.2. The samples will be labeled and shipped following procedures outlined in Sections C7.0 and C8.0 and analyzed according to the program outlined in the RAWP.

C4.1 Well Purging Procedures

1) The well cover will be unlocked and carefully removed to avoid having any foreign material enter the well. The interior of the riser pipe will be monitored for organic vapors using a photoionization detector (PID). If a reading of greater than 5 ppm is recorded, the well will be vented until levels are below 5 ppm before purging begins.
2) Using an electronic water level detector, the water level below top of casing will be measured. Knowing the total depth of the well, it will be possible to determine the volume of water in the well. The end of the probe will be soap-and-water-washed and deionized-water-rinsed between wells.
3) On wells with water levels that remain 25 feet or less below the top of casing, a suction-lift pump will be used to remove three to five times the well volume, measured into a calibrated pail. (A well volume will be defined as the volume of water standing inside the casing measured prior to evacuation.) Dedicated new

polyethylene discharge and intake tubing (½" I.D. high-density polyethylene [HDPE]) will be used for each well.

During this evacuation of the well, the intake opening of the pump tubing will be positioned just below the surface of the well water. If the water level drops, then the tubing will be lowered as needed to maintain flow. Pumping from the top of the water column will ensure proper flushing of the well. Pumping will continue until the required volumes are removed. All water removed from the well will be containerized.

If the well purges to dryness and recharges rapidly (within 15 minutes), water will continue to be removed as it recharges until the required volumes are removed. If the well purges to dryness and is slow to recharge (greater than 15 minutes), evacuation will be terminated.

A dedicated HDPE bailer could also be used to evacuate the well. The line for the bailer will be dedicated new ¼-inch nylon. The bailers and rope would be discarded after use.

An optional method to purge deeper wells will be the use of the Waterra Hydrolift pump with dedicated HDPE tubing and check valve.

4) Purging will continue until three to five well volumes of water have been removed. The discharge volume will be established on a well-by-well basis. Measurements for pH, temperature, turbidity, and specific conductivity will be recorded during purging. The stability of these measurements with time will also be used to guide the decision to discontinue purging.

5) Well purging data are to be recorded in the field notebook and on the Well Development/Purging Log (Appendix A).

C4.2 Groundwater Sampling Procedures

1) Well sampling may be performed on the same date as purging at any time after the well has recovered sufficiently to sample, or within 24 hours after evacuation, if the well recharges slowly. If a well does not contain or yield sufficient volume

for all required laboratory analytical testing (including quality control), then a decision will be made to prioritize analyses. If a well takes longer than 24 hours to recharge, then a decision will be made whether or not the sample will be considered valid.

2) After well purging is completed and the well has recharged sufficiently per the previous item, a sample will be collected into appropriate containers using a dedicated teflon bailer. The bailer will have a 5-foot teflon-coated stainless steel "leader" which will be attached to a clean, dedicated ¼-inch nylon line. The bailer will be lowered below the surface of the water so as to allow the water to touch only the "leader" and not the nylon rope.

3) All sample bottles will be labeled in the field using a waterproof permanent marker. Procedures outlined in Sections C7.0 will be followed. Labels will include:

- Site name
- Sample identification code
- Project number
- Date/time
- Sampler's initials
- Preservation added (if any)
- Analysis to be performed

4) Samples will be collected into verifiably clean sample bottles (containing required preservatives) and placed on ice in coolers for processing (preservation and packing) prior to shipment to the analytical laboratory. Chain-of-custody will be initiated. The analytical laboratory will certify that the sample bottles are analyte-free.

5) A separate sample of approximately 200 mls will be collected into a 16-ounce plastic bottle to measure pH, conductivity, turbidity, and temperature of the groundwater sample in the field.

6) Well sampling data are to be recorded in the field notebook and on the Well Development/Purging Log (Appendix A).

C4.3 Water Level Monitoring Procedures

Summary: Determination of groundwater surface elevations throughout a monitoring well network makes possible the construction of a potentiometric surface contour map and determination of groundwater flow patterns.

Water levels in all monitoring wells will be measured using an electronic water level indicator or weighted tape. Initially, measurements will be taken following well development until the well has recovered to anticipated static conditions. Water levels will also be measured prior to groundwater sampling. Water level measurement procedures are presented below.

Procedure:

1) Clean the water level probe and the lower portion of cable following standard decontamination procedures (Section C6.0) and test water level meter to ensure that the batteries are charged.
2) Lower the probe slowly into the monitoring well until the audible alarm indicates water.
3) Read the depth to the nearest hundredth of a foot from the graduated cable using the V-notch on the riser pipe as a reference.
4) Repeat the measurement for confirmation and record the water level.
5) Remove the probe from the well slowly, drying the cable and probe with a clean "Chem Wipe" or paper towel.
6) Replace monitoring well cap and lock protective cap in place.
7) Decontaminate the water level meter (Section C6.0) if additional measurements are to be taken.

C5.0 SURVEYING AND MAPPING

Project control surveying will provide for location of the limits of excavation and sampling points. All surveying will be performed under the supervision of a New York State licensed Land surveyor, following the requirements of the RAWP, (Section A3.2.3) and the HASP.

5.1 Establishing Horizontal Primary Project Control

Summary: In order to determine the horizontal locations of site features, horizontal control will be established by surveying to/from established survey monuments in the New York State Plane Coordinate System, Transverse Mercator Projection, East Zone, North American Datum of 1983. This information will be used on all site maps.

Procedure:

1) Research for monuments.
2) Recover monuments in field.
3) Set and reference points on primary traverse.
4) Turn angles and measure distances.
5) Compute closures and adjust traverse.

C5.2 Establishing Vertical Primary Project Control

Summary: In order to determine site elevations, vertical control must be established by surveying to/from established survey monuments in the North American Vertical Datum of 1988 network.

Procedure:

1) Research for monuments.
2) Recover monuments in field.
3) Set project benchmarks.
4) Run level line from monuments to set project benchmarks and back.

5) Reduce notes and adjust benchmark elevations.

6) Prepare recovery sketches.

C5.3 Global Positioning System (GPS) Surveying

Most of the surveying will be performed using GPS systems methodologies. This data will be converted into the horizontal and vertical coordinate systems noted in Sections C5.1 and C5.2.

C6.0 SAMPLING EQUIPMENT CLEANING PROCEDURES

Summary: To assure that no outside contamination will be introduced into the samples/data, thereby invalidating the samples/data, the following cleaning protocols will apply for all equipment used to collect samples/ data during the field investigations. Drilling equipment and heavy machinery will be steam cleaned on the decontamination pad.

Procedures:

1) Thoroughly clean equipment with laboratory-grade soap and water, until all visible contamination is gone.
2) Rinse with tap water, until all visible evidence of soap is removed.
3) Rinse several times with deionized water.
4) Air dry before using. If equipment will not be used immediately, wrap in aluminum foil.

C7.0 SAMPLE LABELING

Summary: In order to prevent misidentification and to aid in the handling of environmental samples collected during the field investigation, the following procedures will be used:

Procedure:

1) Affixed to each sample container will be a non-removable (when wet) label. Apply label and wrap with 2-inch cellophane tape to cover label. The following information will be written on each label with permanent marker:

- Site name
- Sample identification
- Project number
- Date/time
- Sampler's initials
- Sample preservation
- Analysis required

2) Each sample of each matrix will be assigned a unique identification alpha-numeric code. An example of this code and a description of its components is presented below:

Examples

1. MW1-GW
   MW1 = Monitoring Well 1
   GW = Groundwater

2. SB1 - 2'-4'
   SB1 = Soil Boring 1
   2' - 4' = Two-foot to four-foot soil sample

List of Abbreviations

Monitor Type

MW = Monitoring Well

Sample Type

GW	=	Groundwater
SB	=	Soil Boring
MSB	=	Matrix Spike Blank
EB	=	Equipment Rinse Blank
TB	=	Trip Blank
RB	=	Rinse Blank
MS	=	Matrix Spike
MSD	=	Matrix Spike Duplicate

C8.0 SAMPLE SHIPPING

Summary: Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presentation of sample analytical chemistry results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in this SI follow the chain-of-custody guidelines outlined in NEIC Policies and Procedures, prepared by the National Enforcement Investigations Center (NEIC) of the U.S. Environmental Protection Agency Office of Enforcement.

Procedure:

1) The chain-of-custody (COC) record (Appendix A) should be completely filled out, with all relevant information.
2) The original COC goes with the samples. It should be placed in a ziplock bag and taped inside the sample cooler. Sampler should retain a copy of the COC.
3) Place inert cushioning material such as vermiculite or bubble-wrap in bottom of cooler.
4) Place bottles in cooler in such a way that they do not touch (use cardboard dividers or bubble-wrap).
5) Wrap VOA vials securely in bubble-wrap and tape. Place them in the center of the cooler.
6) Pack cooler with ice in doubled ziplock plastic bags.
7) Pack cooler with cushioning material.
8) Tape the drain shut.
9) Wrap cooler completely with strapping tape at two locations securing the lid. Do not cover any labels.

10) Place lab address on top of cooler. For out-of-town laboratory, add the following: Put "This side up" labels on all four sides and "Fragile" labels on at least two sides. Affix numbered custody seals on front right and left of cooler. Cover seals with wide, clear tape.

11) Ship samples via overnight carrier the same day that they are collected.

APPENDIX A

FIELD ACTIVITY FORMS

DAILY DRILLING RECORD

URS

PROJECT: _____ DATE: _____

CLIENT: _____ CONTRACTOR: _____

FROM	TO	PRODUCTIVE HOURS	ACTIVITY / COMMENTS
TOTAL PRODUCTIVE HRS.			LEVEL B / LEVEL C / LEVEL D (circle selection)

LABOR:		MATERIALS / SUPPLIES:	
UNITS	ACTIVITY	UNITS	ITEM

WEATHER:

URS ON-SITE COORDINATOR	*CONTRACTOR REPRESENTATIVE*

Figure C8-4

WELL DEVELOPMENT LOG

URS

PROJECT TITLE: _____

PROJECT NO.: _____

STAFF: _____

DATE(S): _____

WELL NO.: _____

1. TOTAL CASING AND SCREEN LENGTH (FT.): _____

2. CASING INTERNAL DIAMETER (IN.): _____

3. WATER LEVEL BELOW TOP OF CASING (FT.): _____

4. VOLUME OF WATER IN CASING (GAL.): _____

#1-#3 x #2 (Gal./Ft.)

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	0										
pH											
SPEC. COND. (μmhos)											
TURBIDITY (NTU)											
TEMPERATURE (°C)											
DISSOLVED OXYGEN (mg/L)											

COMMENTS:

Figure C3-3

WELL DEVELOPMENT LOG

URS

PROJECT TITLE: _____

PROJECT NO.: _____

STAFF: _____

DATE(S): _____

WELL NO.: _____

1. TOTAL CASING AND SCREEN LENGTH (FT.): _____

2. CASING INTERNAL DIAMETER (IN.): _____

3. WATER LEVEL BELOW TOP OF CASING (FT.): _____

4. VOLUME OF WATER IN CASING (GAL.): _____

#1-#3 x #2 (Gal./Ft.)

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	0										
pH											
SPEC. COND. (μmhos)											
TURBIDITY (NTU)											
TEMPERATURE (°C)											
DISSOLVED OXYGEN (mg/L)											

COMMENTS:

WELL PURGING LOG

URS

PROJECT TITLE: _____ WELL NO.: _____

PROJECT NO.: _____

STAFF: _____

DATE(S): _____

			WELL ID.	VOL. (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 _____)	=	_____	6"	1.50
7. VOLUME OF WATER ACTUALLY REMOVED (GAL.)	=	_____	8"	2.60

OR

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

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	0										
pH											
SPEC. COND. (μmhos)											
TURBIDITY (NTU)											
TEMPERATURE (°C)											

COMMENTS:

URSF-115/1 OF 1/WPL/GCM
04/23/03

FIGURE 3.2-1

FIELD SAMPLING REPORT

URS
282 Delaware Avenue
Buffalo, New York 14202
(716) 856-5636

LOCATION: _____ PROJECT NO.: _____

SITE: _____

SAMPLE INFORMATION

MATRIX: _____ SAMPLE ID: _____

SAMPLING METHOD: _____ DUP.REP. OF: _____

BEGINNING DEPTH: _____ MATRIX SPIKE/MATRIX SPIKE DUPLICATE

END DEPTH: _____ YES ( ) NO ( )

GRAB ( ) COMPOSITE ( ) DATE: _____ TIME: _____

CONTAINER		PRESERVATIVE/	EXTRACTION	ANALYTICAL	ANALYSIS
SIZE/TYPE	#	PREPARATION	METHOD		

NOTABLE OBSERVATIONS

PID READINGS	SAMPLE CHARACTERISTICS	MISCELLANEOUS
1st	COLOR:	
2nd	ODOR:	
	OTHER:	

GENERAL INFORMATION

WEATHER: SUN/CLEAR ____ OVERCAST/RAIN ____ WIND DIRECTION _____ AMBIENT TEMP. _____

SHIPMENT VIA: FED-X ____ HAND DELIVER ____ COURIER ____ OTHER _____

SHIPPED TO: _____

COMMENTS: _____

SAMPLER: _____ OBSERVER: _____

MATRIX TYPE CODES

DC = DRILL CUTTINGS
SL = SLUDGE
WG = GROUND WATER
SO = SOIL
LH = HAZARDOUS LIQUID WASTE
GS = SOIL GAS
SH = HAZARDOUS SOLID WASTE
WS = SURFACE WATER
SE = SEDIMENT
SW = SWAP/WIPE

SAMPLING METHOD CODES

B = BAILER
G = GRAB
BR = BRASS RING
HA = HAND AUGER
CS = COMPOSITE SAMPLE
H = HOLLOW STEM AUGER
C = CONTINUOUS FLIGHT AUGER
HP = HYDRO PUNCH
DT = DRIVEN TUBE
SS = SPLIT SPOON
W = SWAB/WIPE
SP = SUBMERSIBLE PUMP

WATER LEVEL ELEVATIONS

URS

PROJECT NO. _____

DATE				___/___/___		___/___/___		___/___/___		___/___/___		___/___/___	
TIME				AM PM		AM PM		AM PM		AM PM		AM PM	
Borehole No. ___	MONITOR			DEPTH FROM TOP OF MONITOR	WATER ELEVATION	DEPTH FROM TOP OF MONITOR	WATER ELEVATION	DEPTH FROM TOP OF MONITOR	WATER ELEVATION	DEPTH FROM TOP OF MONITOR	WATER ELEVATION	DEPTH FROM TOP OF MONITOR	WATER ELEVATION
Ground Elevation	No.	Type	Top of Monitor Elev.										

○ PIEZOMETER ● MONITORING WELL

TABLE _____ SHEET _____ of _____

URSF-138/1 OF 1/WLE/NPV
04/23/03

HYDRAULIC CONDUCTIVITY LOG

URS

PROJECT TITLE: _____

PROJECT NO.: _____

STAFF: _____

DATE: _____ START TIME: _____ STOP TIME: _____

WELL NO.: _____ RISER PIPE ID: _____

SLUG TYPE: _____ SLUG VOLUME: _____

V = (0.0408)(DIAMETER[IN])(LENGTH[FT.])

SLUG IN/OUT (CIRCLE ONE)

TIME	SPV	TIME	SPV	TIME	SPV	COMMENTS
		1.91		O.25		
		1.83		0.23		
20.00		1.75		0.21		
18.00		1.66		0.20		
16.00		1.58		0.18		
14.00		1.50		0.16		
12.00		1.41		0.15		
10.00		1.33		0.13		
9.50		1.25		0.11		
9.00		1.16		0.10		
8.50		1.08		0.08		
8.00		1.00		0.06		
7.50		0.91		0.05		
7.00		0.83		0.03		
6.50		0.75		0.03		
6.00		0.66		0.02		
5.50		0.58		0.02		
5.00		0.50		0.02		
4.50		0.41		0.01		
4.00		0.33		0.01		
3.50		0.31		0.00		
3.00		0.30		0.00		
2.50		0.28		0.00		
2.00		0.26		0.00		

PART D

HEALTH AND SAFETY PLAN

TABLE OF CONTENTS

PART D – HEALTH AND SAFETY PLAN

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

FIGURES

TABLES

APPENDICES

D1.0 INTRODUCTION

This Health and Safety Plan (HASP) includes appropriate health and safety procedures to be followed by all URS Corporation (URS) personnel during remedial activities at and in the vicinity of the Former Dowell Facility in the Village of Depew, Erie County, New York. Anticipated field activities at the site will include:

- setting up of support facilities/mobilization
- building demolition
- contaminated soil excavation
- subsurface soil sampling
- groundwater monitoring well installation, development, and sampling
- land surveying
- real-time air monitoring

The procedures presented in this plan comply with the following regulatory or guidance documents:

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH-0028	2002 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.
ACGIH-0376	Guide to Occupational Exposure Values - 2002
ACGIH-0460	Guidelines for the Selection of Chemical Protective Clothing, 3rd Edition.

CODE OF FEDERAL REGULATIONS (CFR)

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.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)

No Publication No.	(1984) Standard Operating Safety Guides, Office of Emergency and Remedial Response.
USEPA Order 1440.2	(1981) Health and Safety Requirements for Employees Engaged in Field Activities.

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

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. 97-140	(June 1997) NIOSH Pocket Guide to Chemical Hazards.

URS personnel who will be involved in intrusive activities on site have completed 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 URS field personnel will be maintained on site.

D2.0 RESPONSIBILITIES

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

D2.1 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.

D2.2 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 URS 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 personal protective equipment and safety practices
- Conduct periodic emergency response drills
- Conduct daily health and safety meetings each morning
- Direct and advise onsite URS 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
- Administer the air monitoring program

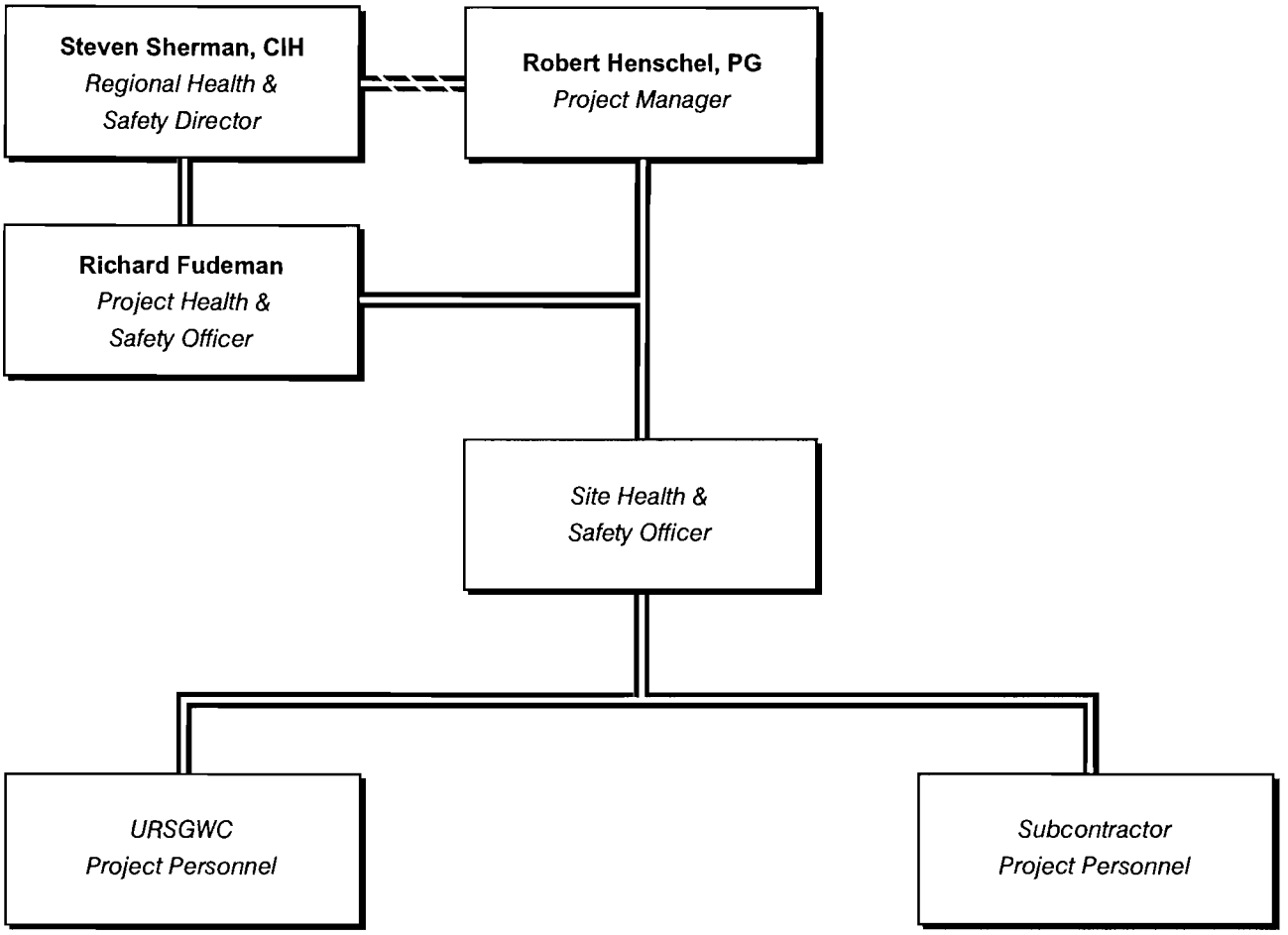
- Monitor site conditions and determine all necessary changes in levels of personal protection and, if warranted, execute work stoppages
- Report changes in site conditions and changes in personal protection requirements to the Project HSO
- Prepare accident/incident reports

The Site HSO reports directly to the Project HSO. URS will designate a qualified backup for the Site HSO prior to the initiation of onsite activities.

D2.3 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.



AG18085-11171084-050503-GCM

URS

DOWELL SITE INVESTIGATION
HEALTH & SAFETY CHAIN-OF-COMMAND

FIGURE D2-1

D3.0 SITE DESCRIPTION AND HISTORY

Site description and history is presented in Section A2.0 of the Remedial Action Work plan (Part A) for the Former Dowell Facility.

D4.0 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) (revised March 6, 1990). 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 prior to participating in onsite field work. This will involve a review of this Health and Safety Plan 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

- 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 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.

D5.0 MEDICAL SURVEILLANCE REQUIREMENTS

All URS personnel who engage in onsite activities for 30 days or more per year participate in the 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. All URS project personnel involved in onsite activities in the Exclusion Zone at the site participate in the Medical Surveillance Program.

Components of the Medical Surveillance Program are shown in Table D5-1. 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 D5-1

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 D5-1 (Continued)

- creatinine
- cholesterol
- triglycerides
- glucose
- iron
- heavy metals - arsenic, lead, mercury, and zinc protoporphyrin

- Pulmonary function test

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

D6.0 SITE HAZARD EVALUATION

D6.1 Chemical Hazards

The primary chemicals of concern on site are 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 D6-1. 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.

D6.2 Physical Hazards

Physical hazards range from the dangers of tripping and falling on uneven ground to those associated with the operation of heavy equipment such as trackhoes, bulldozers, dump trucks, and drill rigs. Physical hazards also include scattered debris, scrap metal, and open excavations.

During site activities, workers may have to work on demolition or drilling equipment. The remedial subcontractor will conform with any applicable OSHA and NIOSH recommendations for climbing activities. These activities will be overseen by the remedial subcontractor supervisor and URS field technicians.

Field activities that involve demolition, excavation and drilling usually involve contact with various types of machinery. At least two people on site must be currently American Red Cross-certified in first aid and CPR. Personnel trained and certified in first aid should be prepared to take care of cuts and bruises as well as other minor injuries. A first aid kit approved by the American Red Cross will be present and available during all field activities.

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

TABLE D6-1

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-2002*. Cincinnati, Ohio.
- American Conference of Governmental Industrial Hygienists. *2002 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, July 1, 1995.
- 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.

of the deer tick and the possibility of contracting Lyme disease is a serious matter. The likelihood of 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.

D6.3 Temperature Stress

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

D6.3.1 Heat Stress

The combination of high ambient temperature, high humidity, physical exertion, and personal protective apparel which limits the dissipation of body heat and moisture can cause heat stress. The Site HSO is responsible for monitoring heat stress in the field team personnel.

The following prevention, recognition, and treatment strategies will be implemented to protect personnel from heat stress. Personnel will be trained to recognize the symptoms of heat stress, and to apply the appropriate treatment.

A. Prevention

1. Provide plenty of liquids. Available in the Support Zone will be a 50% solution of fruit punch in water, or the like, or plain water.

2. Provide cooling devices. A portable, pump-activated sprayer and containers of tap water will be available in the Contamination Reduction Zone to reduce body temperature, cool protective clothing, and/or act as a quick-drench shower in case of an exposure incident.

3. Adjustment of the work schedule. During the hot summer days, labor intensive tasks which pose a high potential risk of heat stress can be performed during the coolest part of the day.

B. Recognition and Treatment

Any person who observes any of the following forms of heat stress, either in themselves or in another worker, will report this information to the Site HSO immediately after implementing treatment, if possible.

1. Heat Rash (prickly heat):

Cause:	Continuous exposure to hot and humid air, aggravated by chafing clothing.
Symptoms:	Eruption of red pimples around sweat ducts, accompanied by intense itching and tingling.
Treatment:	Remove source of irritation and cool the skin with water or wet cloths.

2. Heat Syncope (fainting):

Cause:	Sun rays beating down on victim's head and prolonged upright position can lead to mild dehydration and contraction of the blood vessels resulting in a temporary deficiency of blood to the brain.
Symptoms:	Brief loss of consciousness.

Treatment: Worker should assume a horizontal position and drink ½ liter to one liter of fluid (not alcohol). Elevate the legs and cover the head.

3. Heat Cramps (heat prostration):

Cause: Profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.

Symptoms: Sudden development of pain and/or muscle spasms in the abdominal region.

Treatment: Move the worker to the Contamination Reduction Zone. Remove protective clothing. Provide fluids orally. Decrease body temperature and allow a period of rest in a cool location.

4. Heat Exhaustion (heat toxemia, sunstroke):

Cause: Overexertion in a hot environment and profuse perspiration accompanied by inadequate replenishment of body water and electrolytes. A serious condition.

Symptoms: Muscular weakness, tiredness, staggering gait, nausea, dizziness, shallow breathing, pale and clammy skin, approximately normal body temperature.

Treatment: Perform the following while simultaneously making arrangements for transport to a medical facility: Move the worker to the Contamination Reduction Zone. Remove protective clothing. Lie the worker down on his or her back, in a cool place, and raise the feet 6 to 12 inches. Keep warm, but loosen all clothing. If conscious, provide sips of a salt water solution using one teaspoon of salt in 12 ounces of water. Transport the worker to a medical facility.

5. Heat Stroke:

Cause: Same as heat exhaustion. An extremely serious condition.

Symptoms: Dry, red, hot skin, dry mouth, dizziness, nausea, headache, rapid pulse. Temperature continues to rise unless treatment is implemented.

Treatment: The basic principle is to lower the body temperature rapidly.

1. Move the victim out of the sun.
2. Remove clothes.
3. Soak victim completely with water, wet hair as well.
4. Place victim in front of a fan or in a breeze, if possible.
5. If ice is available, apply directly to the victim, especially under the arms and on the head.
6. Monitor body temperature with available thermometers. Temperature should start to decrease within minutes.
7. As temperature approaches 101°F, stop cooling measures and initiate transport to a hospital or declare an emergency response. The temperature should continue to fall, often to subnormal, during this period.

Other considerations in treating heat stroke are:

1. Rub skin briskly during cooling process.
2. If cardiac arrest occurs, perform CPR (ONLY IF CERTIFIED) and continue cooling.
3. If a seizure occurs, continue cooling; the seizure will stop.

4. No drugs of any kind are to be given to the victim.

D. Heat Stress - Predisposing Factors

Preventing heat stress is clearly preferred to treatment. The following factors increase the individual's risk of heat stress:

- Physically unfit
- Age
- Not accustomed to heat
- Sunburn
- Alcohol and drugs
- Dehydration
- Heavy or non-breathable clothing
- Not covering one's head

D6.3.2 Cold Stress

Personnel can be susceptible to cold stress while conducting field work during cold weather months. To guard against cold stress and to prevent cold injuries, appropriate warm clothing should be worn, warm shelter must be previously identified and readily available, rest periods should be adjusted as needed, and the physical conditions of onsite field personnel should be closely monitored. All personnel working onsite must be able to recognize the signs and symptoms of cold stress and apply first aid as needed. The Site HSO is responsible for monitoring the signs and symptoms of cold stress among field personnel.

The development of cold stress and cold injuries is influenced by three factors: the ambient temperature, the velocity of the wind, and the amount of sunshine. Fingers, toes, and ears are the most susceptible parts of the body affected by cold.

A. Frost Nip: Frost nip is the first sign of frost bite and is the only form of local cold injury that can be definitively treated in the field.

Symptoms: A whitened area of the skin which is slightly burning or painful.

Treatment: Rewarming the affected part.

B. Frost Bite: Local damage is caused by exposure to low temperature environmental conditions. It results at temperatures when ice crystals form, either superficially or deeply, in the fluids and underlying soft tissues of the skin. The nose, cheeks, ears, fingers, and toes are most commonly affected.

Symptoms: Skin is cold, hard, white, and numb. There may also be blisters. The affected parts will feel intensely cold; however, there may not be any pain. The victim may not know that he or she is frost-bitten. As time goes on, the victim may experience mental confusion and impairment of judgment. The victim may stagger and eyesight may fail. The victim may fall and become unconscious. Shock is evident and breathing may cease. If death occurs, it is usually due to heart failure.

Treatment: Generally, definitive thawing should not be performed in the field, because if re-freezing occurs, it could result in severe damage. The victim should be transported to a medical facility after the following measures are instituted:

<u>Do Not</u>:

- Do not walk on a thawed foot or toes or use thawed hands.
- Do not allow victim to smoke or drink alcohol.
- Do not rub affected area with anything.
- Do not break any blisters.
- Do not apply heat of any kind.

Do:

- Do place victim in protected environment.
- Do prevent further heat loss (warmer clothes).
- Do protect from further damage (warm covering).

C. Mild Hypothermia

Symptoms: The single most important sign of mild hypothermia is a change in behavior. Some signs that can be observed are:

- Decrease in work efficiency
- Decreased level of communication
- Forgetfulness
- Poor judgment
- Poor motor skills (difficulty in handling objects, dropping tools)

The target organ of mild hypothermia is the brain. During mild hypothermia, most of the body's protective mechanisms for temperature control are intact. Shivering is usually present and "goose flesh" and pale skin persist. When asked directly, the victim will usually say that he feels cold. A worker impaired by mild hypothermia can be a danger to himself and co-workers.

Treatment:

- The victim should be moved indoors or into a heated vehicle.
- Remove all wet or damp clothing, dry skin, and apply dry clothing.
- The head should be covered with a hat or blanket.
- Blankets should be put on the victim.
- The victim should be given hot fluids (no alcohol).
- If possible, monitor the victim's temperature at 15 minute intervals.

D. Moderate Hypothermia: For field purposes, this may be defined as the stage at which the patient is clearly incapable of functioning effectively, but is conscious.

Symptoms: The victim's body temperature is well below normal and some mental changes may occur which include:

- Disorientation to people, place, and time
- Hallucinations
- Inappropriate laughing or crying
- Bizarre behavior for that individual

During moderate hypothermia, shivering is absent, "goose flesh" disappears, and the heart rate may slow down. The victim does not "feel" cold.

Treatment:

- First, treat the patient for mild hypothermia.
- Provide warming with hot blowers or heaters.
- Use human body heat.
- Watch for signs of returning to normal (e.g., shivering, goose flesh, teeth chattering).
- Monitor mental status.

After these steps are initiated, the victim should be taken to a medical facility. The patient should not return to work for at least 48 hours.

E. Severe Hypothermia:

Symptoms: Characterized by a decrease in the body temperature which results in a deep coma in which even vital signs become very weak and finally undetectable. Most occupational cases occur when the victim is alone or lost. These victims, for all practical purpose, appear to be dead, but the saying "not dead until warm and dead" applies to severe hypothermia. Many of these victims can survive.

Treatment:

1. The patient is not to be considered dead.
2. Remove wet clothes, dry skin, and apply dry clothes.
3. Activate rewarming.
4. Prepare to transfer the victim to a medical facility.
5. If the patient is pulse-less and is not breathing, perform CPR (ONLY IF CERTIFIED), while enroute to the medical facility.
6. Very cold victims often tolerate long periods of arrest, even without CPR. The victim must be handled very carefully because of extreme susceptibility to even minor trauma.

D7.0 SITE CONTROL

In order to keep unauthorized personnel from entering the work area during demolition, excavation, drilling or environmental sampling activities, and for good control of overall site safety, three work zones will 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.

D7.1 Support Zone

The Support Zone for the Former Dowell Facility will be established inside of the two-story office building. The support facilities will contain personal protective equipment (disposable suits, gloves, boots, etc.), a first aid kit, a fire extinguisher, a stretcher, an eyewash station, sampling equipment, sample containers, and 50% solution of fruit punch or the like in water (or plain drinking water).

D7.2 Contamination Reduction Zones

A Mobile Contamination Reduction Zone will lie adjacent to each active remediation/drilling Exclusion Zone. During remediation (i.e., demolition/foundation removal, contaminated soil excavation) and drilling operations, materials brought to the surface may come in contact with workers' boots or protective clothing and equipment. A mobile decontamination area will be set up adjacent to the active remediation/drilling area. All personnel in the active remediation/drilling area will be required to decontaminate themselves and light equipment prior to leaving the active Exclusion Zone.

D7.3 Exclusion Zone

The Exclusion Zone is the area around each active remediation/drilling or sampling 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 Mobile Contamination Reduction Zone, and to carry out proper decontamination procedures.

D7.4 Site Visitation

It is expected that officials from NYSDEC and other regulating bodies and jurisdictions will visit the site during operations. It is also possible that an OSHA representative will wish to inspect the 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.

D8.0 PERSONAL PROTECTION

Since personnel working on site may be exposed to chemical contaminants released during intrusive activities, or may come in contact with contaminants in wastes, drill cuttings, or soils, various levels of protection must be available. Components of all levels of personal protection that will be available are listed in Table D8-1. The anticipated levels of protection for various field activities are given in Table D8-2.

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 D8-1

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.

TABLE D8-2

PLANNED LEVELS OF PERSONAL PROTECTION FOR EACH MAJOR ACTIVITY

Field Activity	Level of Protection*
A. Non-Intrusive Activities	
1. Setting up Support Facilities/Mobilization	D
2. Land Surveying ..	D
3. Staging of Drummed IDW	D
4. Support Zone Activities	D
B. Intrusive Activities	
1. Building Demolition/Foundation Removal	D
2. Contaminated Soil Excavation	D+/C
3. Drilling/Monitoring Well Installation	D+/C
4. Environmental Sampling	D+/C
5. Equipment Decontamination	D+/C

* These are the levels of protection at which work will commence during the various activities on the site. Due to onsite conditions, and as directed by the Site Health and Safety Officer, it may become necessary to upgrade, or it may be possible to downgrade, the level of personal protection.

D9.0 AIR MONITORING

Real-time air monitoring will be performed during all intrusive activities (e.g., foundation removal, soil excavation, drilling and monitoring well installation) by trained URS personnel. While sampling activities are in progress, monitoring frequencies will be as summarized in Table D9-1. 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 will be monitored for total volatiles with a photoionization detector (PID) (HNu Model PI 101, or equivalent). Explosive atmosphere, oxygen content, and hydrogen sulfide will be monitored with an explosimeter (Bacharach Sentinel 44, or equivalent). Particulates will be monitored during building demolition and soil excavation using a MIE PDM-2 Miniram dust/aerosol monitor, or equivalent. All real-time air monitoring results and meteorological data (e.g., temperature range, wind speed, wind direction, etc. obtained from onsite measurements and/or national weather service, radio, or airport) will be recorded in the field notebook and will be transferred to Instrument Reading Logs.

D9.1 Total Volatiles

Air monitoring for total volatiles (organic vapors) will be performed using a PID (HNu Model PI 101, or equivalent) equipped with the standard probe which contains a 10.2 eV lamp. When readings less than 1 part per million (ppm) above background in the breathing zone are observed consistently, monitoring will take place at least every 10 minutes or for every sample retrieved and Level D protection will be utilized. When readings between 1 ppm and 5 ppm above background in the breathing zone are observed consistently, monitoring will be continuous and Level D+ protection will be utilized. If readings from 5 to 10 ppm above background in the breathing zone are observed, and all other action levels indicate that intrusive activities can proceed, monitoring will be continuous and Level C protection will be utilized. If organic vapor readings exceed 10 ppm above background in the breathing zone, or other instrument readings necessitate work suspension, intrusive activities will be halted and the level of protection used by onsite personnel will be reassessed. Monitoring frequencies during intrusive activities will be as summarized in Table 9-1.

TABLE D9-1

ACTION LEVELS DURING INTRUSIVE 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.

D9.2 Explosive Atmosphere/Oxygen Content/Hydrogen Sulfide Gas

A Bacharach Sentinel 44 combustible gas indicator (CGI), or equivalent, will be used to monitor for explosive atmosphere, percent oxygen, and hydrogen sulfide content. Readings greater than 10% LEL, less than 19.5% oxygen, greater than 23.5% oxygen, or greater than 10 ppm hydrogen sulfide will require temporary suspension of intrusive activities until the Project SHO determines a safe re-entry level.

D9.3 Particulates

Particulate monitoring will be conducted during building demolition, soil excavation and drilling. Particulates will be monitored in the active work area upwind and downwind from the active location. If particulate levels, integrated over a period not to exceed two minutes under windy conditions or 10 minutes under calm conditions, at the downwind location are in excess of 0.25 mg/m^3, the upwind station will be monitored immediately using the same monitor. If the downwind measurement exceeds the background measurement by more than 0.25 mg/m^3, operations will be temporarily suspended and water may be used to suppress the dust. Operations will be continued once ambient conditions improve, as determined by the Site HSO.

D9.4 Work Stoppage Responses

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage is exceeded:

- 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.

D9.5 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.

D9.6 Community Air Monitoring Plan

Real-time air monitoring for volatile organic compounds will be conducted at the perimeter of the Exclusion Zone during the soil excavation and drilling programs as follows:

- 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.

D9.6.1 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 D9.6.2).

D9.6.2 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.

D10.0 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.

D11.0 DECONTAMINATION PROCEDURES

D11.1 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.

D11.2 Decontamination of Equipment

Decontamination of sampling equipment is described in the Field Sampling Plan (Part C). 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 the decontamination pad by high-pressure water in the Contamination Reduction Zone. Appropriate PPE must be used during all decontamination activities.

D12.0 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.

D12.1 Communications

Communications will be centered in the field vehicle, one of which will contain a cellular telephone for direct outside communications with emergency response organizations. The support facilities will also contain two-way radios for contact with personnel working on site. If the site HSO or his designee leaves the immediate area, a radio will be carried by him at all times. A radio will be maintained with each individual group of personnel who are performing tasks on site (e.g., excavation, drilling, environmental sampling).

D12.2 Escape Routes

Flags will be positioned near excavation equipment and drill rigs to indicate wind direction. 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.

D12.3 Evacuation Signal

In the event of a sudden release or fire requiring immediate evacuation of the site, three quick blasts will be sounded on an air horn. Sounding the air horn will be the responsibility of the equipment operator or the supervising personnel. The horns will be kept in a conspicuous place for quick access by personnel. The person will also contact the Site HSO via the two-way radio to report the incident and request aid if necessary. An air horn will also be kept in the Contamination Reduction Zone. Dowell and the Project HSO will be notified by telephone, and a written report, prepared whenever a site evacuation is executed.

D12.4 Other Signals

Emergency hand signals for use by personnel wearing air-purifying respirators are summarized in Table D12-1.

D12.5 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. Dowell will also be notified. (See Table D12-2 for telephone numbers of emergency response agencies).

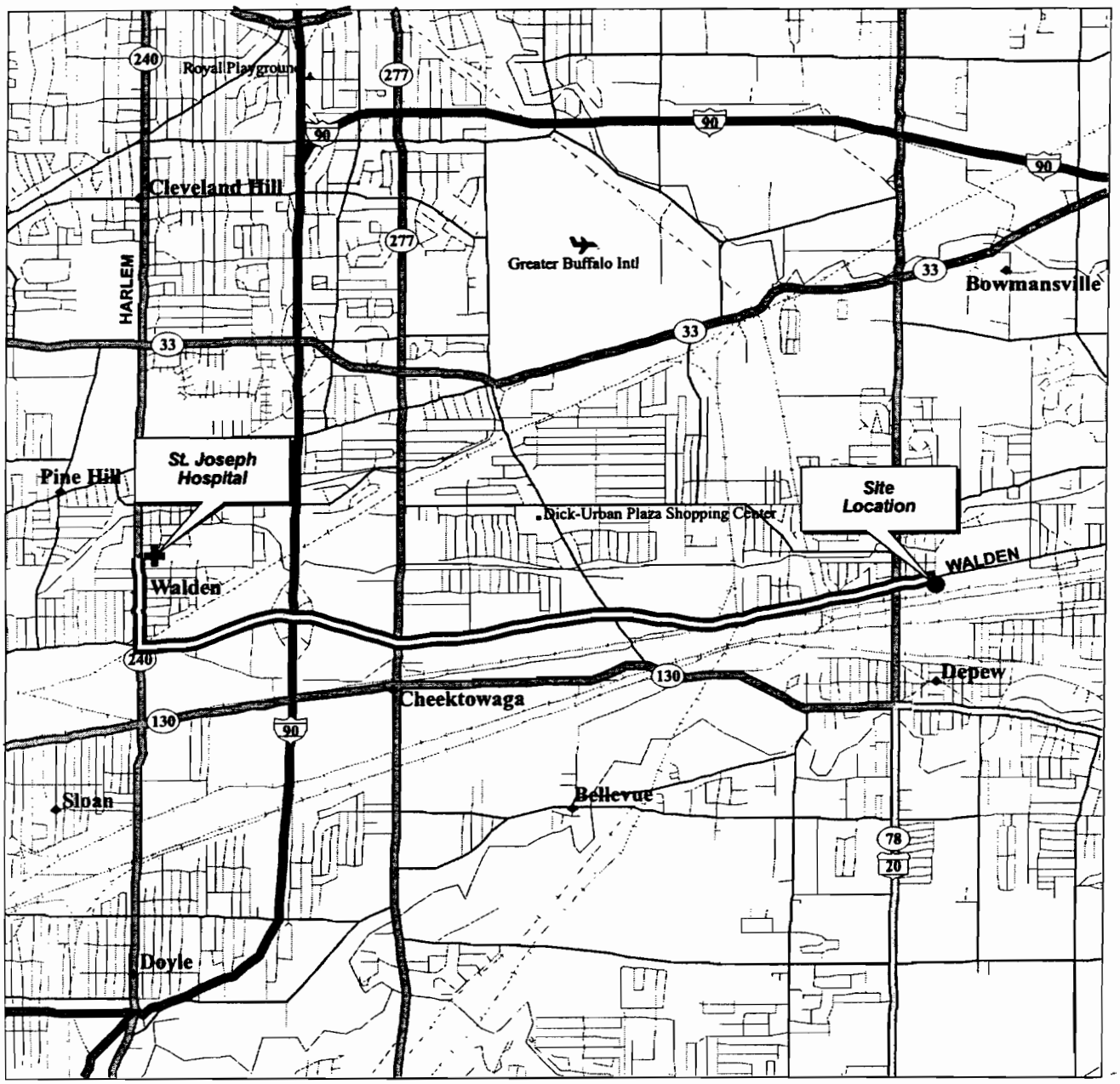
D12.6 First Aid

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 in the URS vehicle located on site or an ambulance will be summoned. The onsite vehicle will carry written directions to the hospital as well as a copy of Figure D12-1 showing the route.

TABLE D12-1

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.



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

AG15631-35824.00-092000-NFV

URS

ROUTE TO THE HOSPITAL

FIGURE D12-1

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.

D12.7 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 D12-2.

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.

D12.8 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:

TABLE D12-2

EMERGENCY TELEPHONE NUMBERS

Emergency Response Agencies	
Fire	911
Police	911
Ambulance	911
Medical Facilities	
St. Joseph Hospital	(716) 891-2450
2605 Harlem Road	
Cheektowaga, New York 14225	
Environmental and Health Agencies	
New York State Department of Environmental Conservation (Marty Doster)	(716) 851-7220
New York State Department of Health (Matt Forcucci)	(716) 851-4385
USEPA National Response Center (Chemical spills, oil spills, pollutant discharges)	1-800-424-8802
URS Corporation	
Robert Henschel	(716) 856-5636
Richard Fudeman	(716) 856-5636

D12.8.1 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.

D12.8.2 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.

D12.9 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.

D12.10 Accident Investigation and Reporting

D12.10.1 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.

D12.10.2 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, if not URS personnel.
- 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/URS to ensure safety and security.
- Other damage or injuries sustained (public or private).

D13.0 SAFETY CONCERNS AND CONTINGENCY MEASURES DURING DRILLING OPERATIONS

Remedial activities (i.e., building demolition, foundation removal, contaminated soil excavation and drilling) at this site will be conducted under the OSHA Safety and Health Standards (29 CFR 1926/1910) relative to heavy equipment operation. The following sections describe site-specific safety measures to be implemented during various phases of remedial activities.

General precautionary measures that should be taken to prevent accidents and injuries during remedial activities are:

- All underground utilities should be clearly marked.
- The equipment operators are the only people who should operate the heavy equipment.
- Keep hands away from moving parts.
- Do not wear loosely-fitting clothing when working near any heavy equipment and/or the drill rig to avoid entanglement in cables, ropes, etc.
- Personnel working near any heavy equipment and/or the drill rig should look upward from time to time and generally be aware of what is overhead.
- Personnel should not stand directly behind any heavy equipment and/or the drill rig to avoid falling or projected objects.
- No work within 25' of overhead utilities
- All personnel will be shown operation and location of "kill-switches" daily

An active remediation/drilling Exclusion Zone is established by the initiation of intrusive activities. A photoionization detector calibrated to a benzene surrogate, an explosimeter calibrated to methane, and a particulate meter will be used in this zone. As described in Table D9-1, readings will be made at the excavation face/borehole at timed intervals or every time material is removed from the excavation or a sample is retrieved from the borehole. Monitoring with real-time instrumentation will be performed at all intrusive activity locations. Action levels will be considered to have been reached when a continuous, steady reading at or above an action level has been observed.

If at any time during the remedial program, buried drums or cylinders, are encountered, intrusive activities will cease immediately. After obtaining instrument readings, the project geologist and the Site HSO will decide whether to continue or discontinue the work.

D14.0 CONFINED SPACE ENTRY

Because it is not presently part of the scope of work, confined space entry requirements will not be necessary. If it does become necessary, the URS project manager will be notified prior to any confined space entry and all confined space entry will be performed in accordance with 29 CFR 1910.146.

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

URS Greiner Woodward Clyde
282 Delaware Avenue
Buffalo, New York 14202
(716) 856-5636

HAZARDOUS WASTE ACTIVITIES HEALTH & SAFETY CHECKLIST

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 Greiner Woodward Clyde
282 DELAWARE AVE.
BUFFALO, NEW YORK 14202-1805
PHONE: (716) 856-5636
E-MAIL: URSCONS@URS-BUFFALO.COM

RESPIRATOR FIT TEST

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".

URS Greiner Woodward Clyde
282 Delaware Avenue
Buffalo, New York 14202
(716) 856-5636

DAILY SAFETY MEETING

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*

URS Greiner Woodward Clyde
282 Delaware Avenue
Buffalo, New York 14202
(716) 856-5636

METEOROLOGICAL DATA LOG

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.

URS Greiner Woodward Clyde
282 Delaware Avenue
Buffalo, New York 14202
(716) 856-5636

REPORT OF ACCIDENT/INJURY

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? _____

_____

_____

_____

_____

_____

_____

_____

Supplementary Record of Occupational Injuries and Illnesses

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 App
O.M.B. No. 1220

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 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 injury.)*

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 indicate 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 irritated 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 (Rev. 1981)

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.