WORK PLAN FOR REMEDIATION OF MW-6S AND MW-6D

AT THE

FORMER DOWELL FACILITY
3311 WALDEN AVENUE
DEPEW, NEW YORK

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NYSDEC REG 9
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Prepared for:

VOLUNTEERS
DOWELL, A DIVISION OF SCHLUMBERGER TECHNOLOGY CORPORATION
DOWELL SCHLUMBERGER INCORPORATED
THE DOW CHEMICAL COMPANY
(VCA INDEX NO. B9-0586-00-10)

Prepared by:

URS CORPORATION
77 GOODELL STREET
BUFFALO, NEW YORK 14203

MAY 2009

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1.0 INTRODUCTION

Dowell, a Division of Schlumberger Technology Corporation, the Dow Chemical Company and Dowell Schlumberger Incorporated (the Volunteers) completed a remedial action at the former Dowell facility located at 3311 – 3315 Walden Avenue in Buffalo, New York (Figure 1-1). This work was performed under the Voluntary Cleanup Agreement (VCA) between the Volunteers and the New York State Department of Environmental Conservation (NYSDEC) (VCA Index No. B9-0586-00-10).

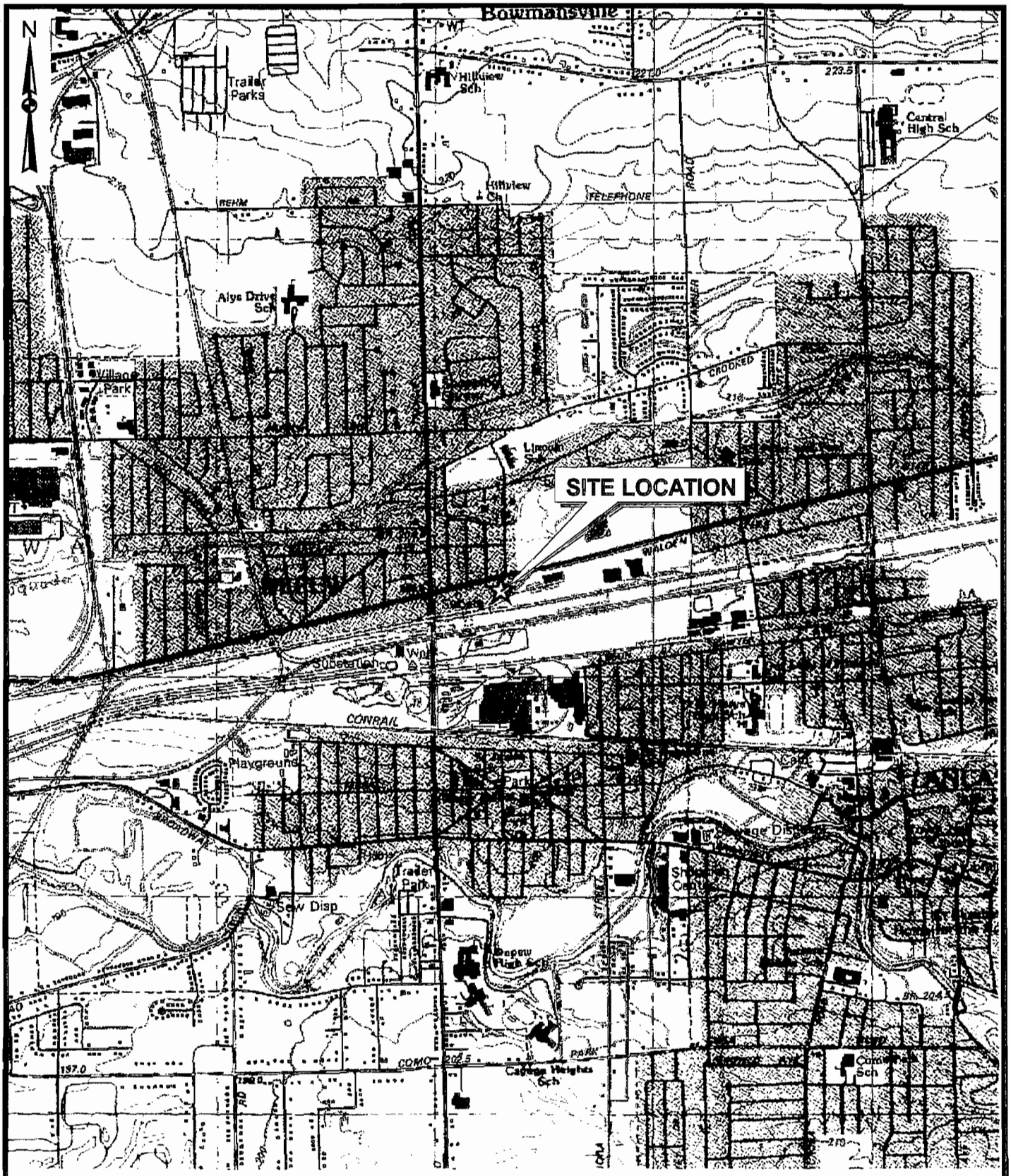
The remedial action was completed in accordance with the NYSDEC-approved Remedial Action Work Plan (RAWP) prepared by URS Corporation (URS), dated April 2003. The work performed at the site between October 2003 and May 2004 included asbestos abatement, building/structure demolition, contaminated soil excavation/disposal, monitoring well removal/installation and site restoration.

A long-term monitoring program has been conducted at the site since the completion of the site remediation in May 2004, and includes quarterly groundwater sampling of the on-site monitoring wells and the collection of groundwater elevations from the monitoring wells and piezometers. The analytical results are compared with the applicable standards, criteria and guidance (SCG) values outlined in the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1: *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations,* June 1998. The SCGs are as follows:

Volatile Compounds	SCG (µg/L) *		Volatile Compounds	SCG (µg/L) *
1,1-Dichloroethane (1,1-DCA)	5		1,1,1-Trichloroethane (1,1,1-TCA)	5
1,1-Dichloroethene (1,1-DCE)	5		1,2-Dichloroethene (1,2-DCE)	5
Total VOCs	NS			

* µg/L = micrograms per liter

The monitoring has determined that the volatile organic compound (VOC) concentrations in groundwater at the site have fallen below the SCGs in all of the on-site monitoring wells with the exception of monitoring wells MW-06S and MW-06D which are located at the north side of the site



SOURCE:
USGS Topographic 7.5 Minute Quadrangles
Lancaster, New York

2000 0 2000 Feet

URS	FORMER DOWELL FACILITY SITE LOCATION MAP	FIGURE 1-1

N:\11171084.00000\DB\GIs\dowell_2003.apr SITE LOCATION
8/29/2005

relatively close to Walden Avenue (Figure 1-2). Monitoring well MW-06S is screened from 10 – 20' in the shallow water-bearing zone, and MW-06D is screened from 20 – 30' in the deep water-bearing zone. Copies of the boring logs and well construction details are included in Appendix A.

The analytical data over the past five years (Table 1-1) has shown: that

- Three VOCs have typically been present at concentrations that exceed the SCGs at monitoring well MW-06S: 1,1-DCE at ND – 470 µg/L, 1,1-DCA at 170 – 13,000 µg/L and 1,1,1-TCA at 190 – 1,300 µg/L.
- Two VOCs have typically been present at concentrations that exceed the SCGs at monitoring well MW-06D: 1,1- DCA at 230 - 22,000 µg/L and 1,1,1-TCA at ND – 1,200 µg/L.

Historic groundwater elevation data has shown that groundwater in both the shallow and deep aquifers typically flows to the north-northwest (Figures 1-3 and 1-4). As such, both the NYSDEC and the New York State Department of Health (NYSDOH) expressed concerns that the VOCs in the vicinity of monitoring wells MW-06S and MW-06D could potentially be migrating off-site, and that residential properties on the north side of Walden Avenue might be impacted by VOCs volatilizing from the groundwater.

Consequently, on April 17, 2008, a limited subsurface investigation was conducted on the north side of Walden Avenue between Lincoln Street and Brewster Street. The investigation consisted of installation of three soil borings, screening of soil samples for VOCs and, collection/analysis of groundwater samples for Target Compound List (TCL) VOC analysis.

The analytical data for the samples indicated that no chlorinated VOCs were present above detectable concentrations in any of the three groundwater samples. It was concluded that the chlorinated solvents associated with groundwater in the vicinity of MW-6S/6D have not migrated across Walden Avenue. Consequently, there is no potential for volatilization of chlorinated VOCs from the groundwater resulting in vapor intrusion to the residences on the North side of Walden Avenue

N

WALDEN AVENUE

PROPERTY LINE

SLIDING GATE

WATER-METER VAULT

MW-02

PZ-09S

FORMER TANK

FORMER BULK CEMENT PLANT

PZ-08S

MW-04

FORMER 8000 GALLON DIESEL TANK

FORMER ACID PLANT

PZ-07S

PZ-07D

RW-01

MW-03 (Removed)

MW-06D

MW-06S

SIDEWALK

SUMP-03

ROUND SUMP

MW-07S

MW-07D

MAINTENANCE SHOP

FORMER FUEL DISPENSER

FORMER RAILROAD SPUR

CHEM STOR

HCL TANK

RECTANGULAR SUMP

SUMP-02

SUMP-01

PZ-06S

PZ-05D

PZ-05S

BRICK BUILDING

CORRUGATED STEEL BLDG.

OFFICE (431 WALDEN AVE)

OFFICE

FORMER 1000 GALLON GASOLINE UST (REMOVED)

RW-02

FORMER CEMENT SILOS

FORMER COMPRESSOR

FORMER CHEMICAL STORAGE

WASH BAY

PZ-04S

PZ-04D

MW-05 (Destroyed)

TRAILER

MW-08 (Destroyed)

FORMER OIL SEPARATOR (ABANDONED)

SUMP-04

SUMP-05

PZ-03D

PZ-03S

FORMER MUD SEPARATOR (ABANDONED)

LIMITS OF EXCAVATION

PZ-01S

PZ-01D

PZ-02S

MW-01

Legend

- Monitoring Well
- Recovery Well
- Piezometer With Geoprobe Boring Location
- 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

N:\11171084.00000\DB\Caldowell_2003.apr REVISED SITE PLAN 11/7/05 WITH WL & PZ
3/8/2006

N

WALDEN AVENUE

PROPERTY LINE

WATER-METER VAULT

SLIDING GATE

PZ-09S, 101.25
106.38

FORMER BULK CEMENT PLANT

PZ-08S, 100.47
105.08

FORMER ACID PLANT

PZ-07S, 100.68
105.25

RW-01, 101.29
103.9

MW-06S, 99.15
100.38

MW-07S, 95.61
100.1

TEST TRENCH

MAINTENANCE SHOP

RAILROAD SPUR

BRICK BUILDING

CORRUGATED STEEL BLDG.

OFFICE (3311 WALDEN AVE)

OFFICE

PZ-05S, 101.78
105.43

RW-02, 101.17
104.72

FORMER CHEMICAL STORAGE

PZ-04S, 99.06
104.67

WASH BAY

TRAILER

PZ-03S, 102.73
106.32

LIMITS OF EXCAVATION

PZ-01S, 101.15
104.97

PZ-02S, 103.26
107.86

101

102

103

96

97

98

99

100

Legend

- Monitoring Well / Piezometer
- Recovery Well
- —98— Groundwater Elevation Contours
- Groundwater Flow Direction

Location ID: **PZ-02S, 103.26** / 107.86
Ground Surface Elevation(ft) / Groundwater Elevation(ft)

NOTE:
Groundwater elevation is set at 101.23' within limits of excavation area

50 0 50 Feet

FORMER DOWELL FACILITY
GROUNDWATER ELEVATION CONTOUR MAP
UPPER TILL, UNCONFINED UNIT
(MARCH 31, 2009)

URS

FIGURE 1-3

N:\11171084.00000\DBGIS\GROUNDWATER ELEVATIONS LAYER B 033109.mxd 4/3/2009

N

WALDEN AVENUE

PROPERTY LINE

WATER-METER VAULT

MW-02, 90.67
102.25

FORMER BULK CEMENT PLANT

MW-04, 92.64
101.25

PZ-07D, 100.51
105.1

SLIDING GATE

MW-06D, 97.49
100.38

RW-01, 101.29
103.9

FORMER ACID PLANT

TEST TRENCH

MW-07D, 94.9
100.27

MAINTENANCE SHOP

RAILROAD SPUR

PZ-05D, 101.94
106.2

BRICK BUILDING

CORRUGATED STEEL BLDG.

OFFICE (3311 WALDEN AVE.)

OFFICE

RW-02, 101.17
104.72

FORMER CHEMICAL STORAGE

PZ-04D, 99.22
104.8

WASH BAY

TRAILER

PZ-03D, 102.68
105.73

LIMITS OF EXCAVATION

PZ-01D, 100.99
105.21

MW-01, 88.82
103.8

Legend

- Monitoring Well / Piezometer
- Recovery Well
- —98— Groundwater Elevation Contours
- Groundwater Flow Direction

Location ID **MW-01, 88.82**
103.8
Ground Surface Elevation(ft)
Groundwater Elevation(ft)

NOTE:
Groundwater elevation is set at 101.23' within limits of excavation area

50 0 50 Feet

FORMER DOWELL FACILITY
GROUNDWATER ELEVATION CONTOUR MAP
CONFINED BEDROCK, LOWER TILL UNIT
(MARCH 31, 2009)

URS

FIGURE 1-4

N:\11171084.00000\DBG\GIS\GROUNDWATER ELEVATIONS LAYER A 033109.mxd 4/6/2009

In order to complete the remedial activities at the site and complete the project, the NYSDEC has requested in correspondence dated March 2, 2009 that an alternative analysis be performed to determine what, if any, additional measures are required to address the area surrounding MW-6S/6D. The following sections present the proposed remedial approach to be implemented at the site.

2.0 PROPOSED REMEDIAL APPROACH

2.1 In-Situ Chemical Oxidation

Based on the analytical data, it has been concluded that there is likely a localized residual source of chlorinated solvents in the soils and/or groundwater in the immediate vicinity of MW-6S/6D. Consequently, based on an assessment of applicable remedial technologies, in situ chemical oxidation (ISCO) was considered the most applicable, well-developed, and cost-effective technology for treating VOCs in soil and groundwater in the primary source area around MW-6S/6D. Because this technology relies on chemical reactions rather than biological processes to degrade the VOCs, it should produce the most substantial reduction in VOC concentrations in the shortest possible time as compared to other technologies.

2.2 Description of the Proposed Remedial Alternative

The proposed Remedial Alternative will consist of in situ chemical oxidation (ISCO) in the area around MW-6S/6D.

Chemical oxidizing reagents will be injected into the contaminated soil and/or groundwater via 6 injection points, installed in an arc approximately 5 - 10 feet upgradient of the MW-6S/6D cluster (Figure 2-1). Three of the injection wells will be screened in the upper water-bearing zone from a depth of 5 to 20'. The other three injection wells will be screened in the deep water-bearing zone from a depth of 20' to 30'.

The injection wells will be constructed by advancing the borings to the required depth using 6 ¼" hollow stem augers. The first hole will be advanced to 30' and will be continuously sampled using split-spoon sampling methods. The soils will be logged by a geologist to determine the stratigraphy, visually examined for staining or discoloration, and screened with a PID to identify any zones with elevated VOC concentrations. Particular attention will be given to zones exhibiting higher permeability (i.e. more sand content), visual or olfactory evidence of contamination, and/or elevated concentrations of VOCs.

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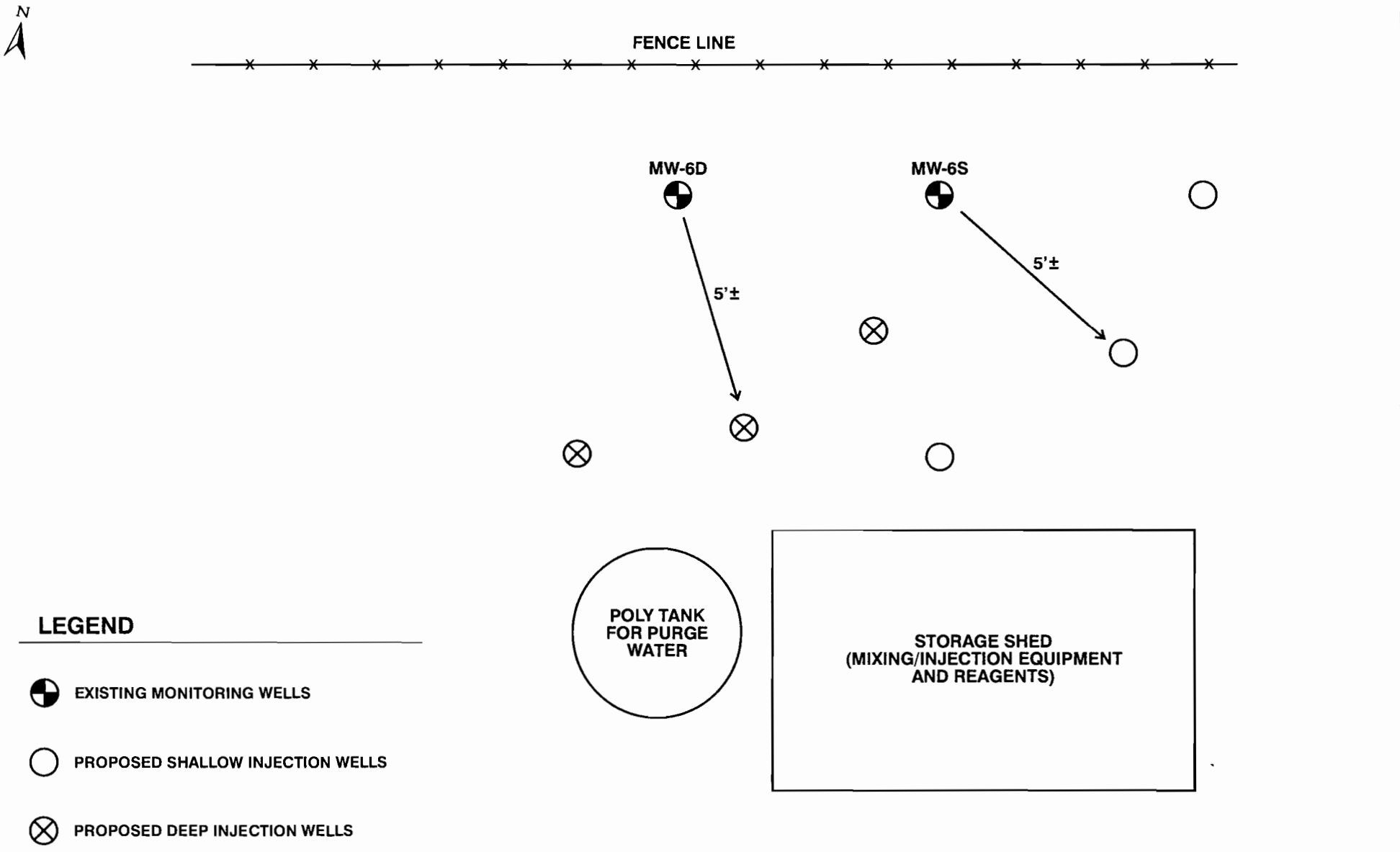


URS

FORMER DOWELL FACILITY
PROPOSED ISCO INJECTION WELLS LOCATION PLAN

FIGURE 2-1

For the deeper wells, a 10 foot long, 2-inch diameter PVC screen connected to the surface with 2-inch PVC riser pipe will be installed from 20 – 30' in the boring. For the shallow wells, the screen will extend from 5 – 20'. (The screen lengths and/or depths may be adjusted accordingly based on the screening results of the soils samples.) A sandpack consisting of medium grained sand will be emplaced around and at least one foot above the screen as the augers are withdrawn. A bentonite seal a minimum of 3 feet thick will be emplaced. The remainder of the boring will be backfilled with a cement/bentonite grout to the ground surface. A 6-inch diameter PVC protective casing equipped with a locking cap will be installed to complete the installation. The riser pipe will be fitted with the appropriate fittings to allow injection of the oxidizing reagents.

Following completion of the injection wells they will be developed and bailed dry, if possible. The chemical oxidizing reagents will then be introduced into the wells. The reagents will be poured into the wells until the level is at, or slightly above the ground surface to produce a positive hydraulic head on the system. The level of reagents in the wells will be checked periodically (e.g. daily, weekly) and more reagents added, as necessary, to maintain the required level. The time and volume of reagents added to each well will be recorded.

Alternatively, the reagents may be 'injected' under low pressure into each well. The reagents would be combined in a mixing tank, if necessary, then pumped into each well. The volume of reagent injected and the injection pressure would be closely monitored and recorded.

Concurrent with injection of the reagents, monitoring wells MW-6S/6D will be pumped and/or bailed to lower the groundwater levels in the wells. The intent is to develop a 'cone of depression' around the wells that will help induce flow of the reagents towards the wells. There is presently no electric power onsite, so removal of groundwater from the monitoring wells will be done manually or with battery-powered equipment. The rate of withdrawal will be adjusted to maintain a positive gradient from the injection wells towards the monitoring wells. The well development and purge water will be containerized on site. Samples of the water will be obtained and analyzed for VOCs, and the water disposed accordingly.

The existing monitoring wells will be utilized to gauge the effectiveness of the approach in reducing the residual VOC concentrations. After the first two weeks of treatment, a sample of

the groundwater will be obtained from MW-6S and MW-6D and analyzed for VOCs. The results will be compared to the last quarterly sampling results to determine if any reduction in the VOC type and/or concentration has occurred. Subsequent samples will be collected monthly thereafter and submitted for analysis.

If it is determined that the treatment is having a positive impact on VOC concentrations in MW-6S/6D, then it will be continued with the goal of reducing the VOC concentrations to levels below the SCGs, or until the concentrations level off and no further reductions are observed. The level of effort and overall length of time for continuation of the program under these conditions will be discussed and agreed with the Department.

If no impact on the VOC concentrations in MW-6S/6D is observed after a maximum of 4 months, the program will be discontinued, and further remediation will be deemed "Technically Impracticable". As such, it is our understanding that no further remediation of this area will be required by the Department and any potential long-term risk posed by the residual contamination can be addressed by deed restrictions (e.g. no use of groundwater, site restricted to commercial/industrial uses, etc.) and a Soils Management Plan developed specifically for the Site.

3.0 SCHEDULE

The remediation of MW-6S and MW-6D will be initiated within two weeks following receipt of written approval of this Work Plan by the Department

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

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

Volatile Compounds	Units	Jul-01	Jul-04	Mar-05 (1)	Mar-05 (2)	Jun-05	Sep-05	Dec-05
Chloroethane	UG/L	U	U	U	20	U	U	U
Vinyl Chloride	UG/L	U	19 J	U	10	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	490*	U	U
1,1-Dichloroethene	UG/L	6	120	U	110	210 J	170 J	470
1,1-Dichloroethane	UG/L	490	170	4,700	2,800	5,000	7,800	760
1,2-Dichloroethene (total)	UG/L	U	13 J	U	16	U	U	35
1,2-Dichloroethane	UG/L	U	26	U	2 J	U	U	U
1,1,1-Trichloroethane	UG/L	190	360	890	550	860	1,000	700
Total VOCs	UG/L	686	708	5,590	2,958	6,070	8,970	1,495

Volatile Compounds	Units	Mar-06	Jun-06	Sep-06	Dec-06	Mar-07 (1)	Mar-07 (2)	Jun-07
Chloroethane	UG/L	U	U	U	U	U	39	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	110	180	U	U	73	130
1,1-Dichloroethane	UG/L	13,000	3,400	330	2,900	5,900	4,800	830
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	1,300	510	450	400	380	320	310
Total VOCs	UG/L	14,300	4,020	960	3,300	6,280	5,232	1,270

Volatile Compounds	Units	Sep-07	Dec-07	Mar-08	Jun-08	Sep-08	Dec-08	Mar-09
Chloroethane	UG/L	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	70	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	U	U
Acetone	UG/L	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	390	310	U	150	190	U	140
1,1-Dichloroethane	UG/L	920	3,000	3,600	1,900	1,700	5,700	2,000
1,2-Dichloroethene (total)	UG/L	25	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	580	640	280	390	480	330	270
Total VOCs	UG/L	1,985	3,950	3,880	2,440	2,370	6,030	2,410

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

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

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

Volatile Compounds	Units	Jul-01	Jul-04	Mar-05 (1)	Mar-05 (2)	Jun-05	Sep-05	Dec-05
Chloroethane	UG/L	NI	U	U	29	U	U	U
Vinyl Chloride	UG/L	NI	U	U	U	U	U	U
Methylene Chloride	UG/L	NI	U	U	U	U	U	U
Acetone	UG/L	NI	U	U	U	520*	U	U
1,1-Dichloroethene	UG/L	NI	U	U	53	U	33 J	U
1,1-Dichloroethane	UG/L	NI	230	9,700	5,700	4,900	3,600	8,400
1,2-Dichloroethene (total)	UG/L	NI	U	U	8	U	U	U
1,2-Dichloroethane	UG/L	NI	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	NI	87	970	610	400 J	280	430
Total VOCs	UG/L	NI	317	10,670	6,400	5,300	3,913	8,830

Volatile Compounds	Units	Mar-06	Jun-06	Sep-06	Dec-06	Mar-07 (1)	Mar-07 (2)	Jun-07
Chloroethane	UG/L	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	64	U
Acetone	UG/L	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	9,100	12,000	19,000	22,000	9,800	9,300	13,000
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	500	850	1,200	U	U	250	U
Total VOCs	UG/L	9,600	12,850	20,200	22,000	9,800	9,614	13,000

Volatile Compounds	Units	Sep-07	Dec-07	Mar-08	Jun-08	Sep-08	Dec-08	Mar-09
Chloroethane	UG/L	U	U	U	U	U	U	U
Vinyl Chloride	UG/L	U	U	U	U	U	U	U
Methylene Chloride	UG/L	U	U	U	U	U	730*	U
Acetone	UG/L	U	U	U	U	U	U	U
1,1-Dichloroethene	UG/L	U	U	U	U	U	U	U
1,1-Dichloroethane	UG/L	18,000	13,000	5,000	12,000	15,000	11,000	9,600
1,2-Dichloroethene (total)	UG/L	U	U	U	U	U	U	U
1,2-Dichloroethane	UG/L	U	U	U	U	U	U	U
1,1,1-Trichloroethane	UG/L	U	U	U	U	U	U	U
Total VOCs	UG/L	18,000	13,000	5,000	12,000	15,000	11,000	9,600

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

APPENDIX A

BORING LOGS AND WELL CONSTRUCTION DETAILS

URS Corporation

TEST BORING LOG

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

PROJECT: Dowell Schlumberger Site, Depew, New York

CLIENT: Dowell Schlumberger

BORING CONTRACTOR: Nature's Way, Inc.

GROUNDWATER:

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

DEPTH FEET	STRATA	SAMPLE "S" NO.	SAMPLE "N" TYPE	BLOWS PER 6"	RECOVERY % RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	REMARKS PID (ppm)	
		1	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	
10		5	21	4 7 / 14 19	95%	Medium Brown				0	Sli. moist
		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	
								End of boring at 20.5 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. *= jar headspace, probably cause by sample moisture

PROJECT NO. 05-00035824.00

BORING NO. MW-6

URS

TEST BORING LOG

PROJECT:	Former Dowell Facility, Depew NY
CLIENT:	Dowell Schlumberger Incorporated
BORING CONTRACTOR:	Marcor Remediation
BORING NO:	MW-6D
SHEET:	1 of 1
JOB NO.:	11171084.00000
BORING LOCATION:	
GROUNDWATER:	
GROUND ELEVATION:	
DATE STARTED:	04/22/04
DATE FINISHED:	04/22/04
DRILLER:	Keith
GEOLOGIST:	Rob Murphy
REVIEWED BY:	

DATE	TIME	LEVEL	TYPE

	CAS.	SAMPLER	CORE	TUBE
TYPE	4 1/4"	split spoon		
DIA.	HSA	2"		
WT.	-	140#		
FALL	-	30"		

* POCKET PENETROMETER READING

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

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

PROJECT NO. 11171084.00000

BORING NO. MW-6D

DRILLING SUMMARY

Geologist:
Tim Burmeier

Drilling Company:
Nature's Way

Driller:
Steve Gingrich

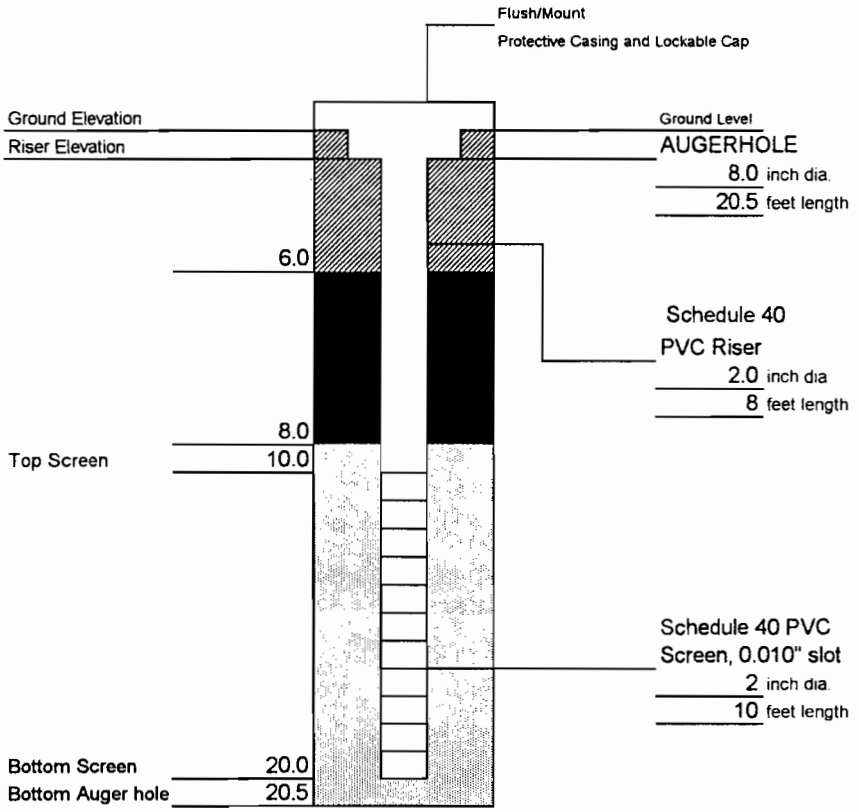
Rig Make/Model:
Diedrich D-50

Date:
07/09/2001

GEOLOGIC LOG

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

DEPTH



WELL DESIGN

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

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

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

DRILLING SUMMARY

Geologist:
Rob Murphy

Drilling Company:
Marcor Remediation

Driller:
Keith

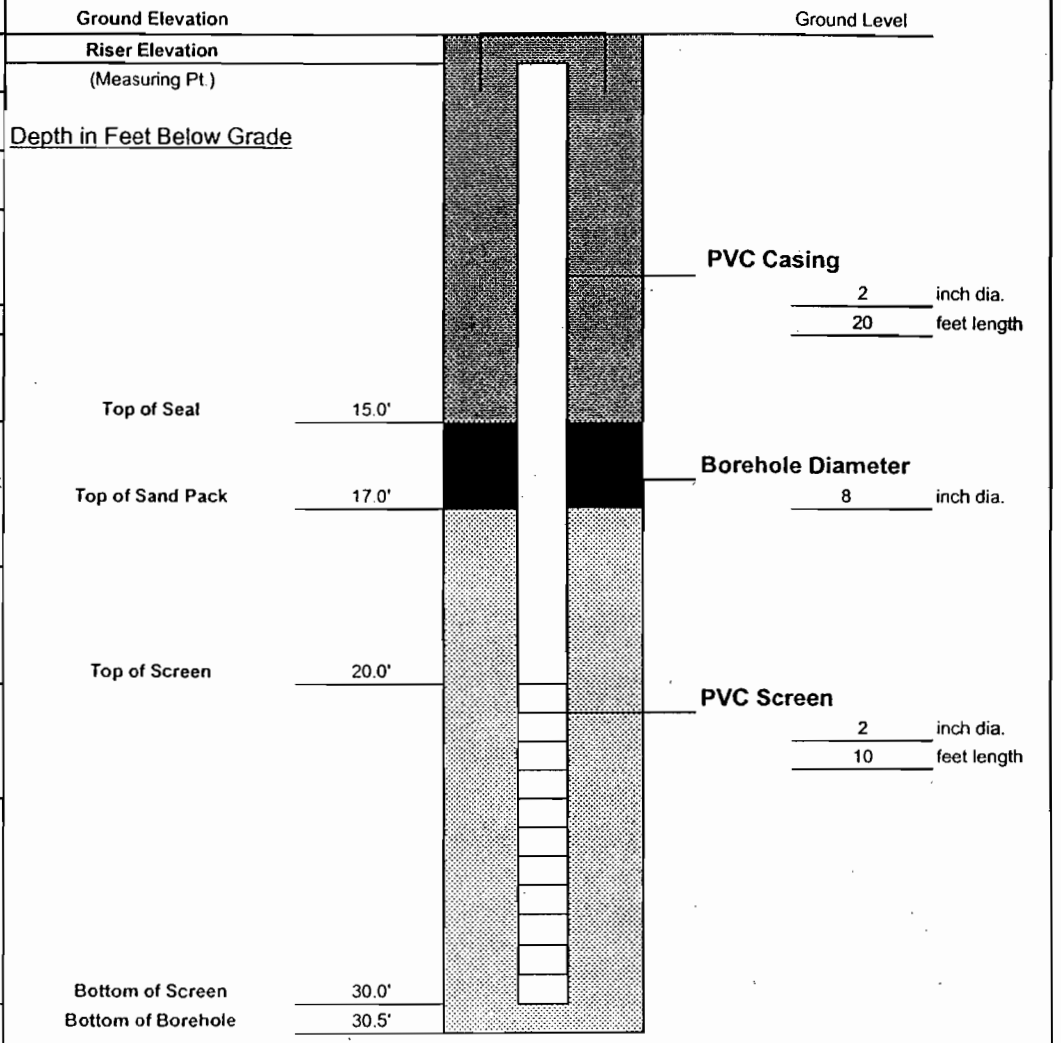
Rig Make/Model:
Canterra 150 Trailer Mounted

Date:
4/22/2004

GEOLOGIC LOG

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

WELL DESIGN



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

COMMENTS:

LEGEND

- Cement Grout
- Bentonite Seal
- Sand Pack

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