International Business Machines Corporation

9600 Godwin Drive
Manassas, VA 20110

February 26, 2002

Mr. Paul Merges
New York State Department of Environmental Conservation
Bureau of Radiation and Hazardous Waste Management
625 Broadway
Albany, NY 12233-7251

Reference: IBM Kingston Facility, Part 373 Permit No. 3-5154-00067/00090

Dear Mr. Merges:

Enclosed is a combined report for the *Expanded RCRA Facility Investigation (RFI) - Former Industrial Waste Sludge Lagoon Arsenic and VOC Plume Source Investigation* and *Deep Bedrock RCRA Facility Investigation*. The investigations were performed in accordance with previously approved work plans, the most recent work plan being the *Expanded RCRA Facility Investigation (RFI) - Former Industrial Waste Sludge Lagoon Arsenic and VOC Plume Source Investigation Work Plan*, dated December 9, 1999.

If you have any questions regarding the report, please call Dean Chartrand at (703) 367-1364.

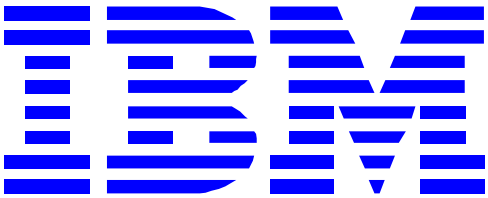
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely yours,

M. E. Meyers

Mitchell E. Meyers
Program Manager, Corporate Environmental Affairs

cc:	Rod Aldrich	NYSDEC Region 3	(w/1 enclosure)
	Gary Casper	NYSDEC Albany	(w/1 enclosure)
	James Reidy	EPA Region 2	(w/o enclosure)



Kingston, New York

EXPANDED RCRA FACILITY INVESTIGATION
Former Industrial Waste Sludge Lagoon
Arsenic and VOC Plume Source Investigation
and
DEEP BEDROCK RCRA FACILITY INVESTIGATION

Prepared for:

IBM Corporate Environmental Engineering
Manassas, VA

February 26, 2002

Prepared by:

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Table of Contents

Table of Tables

Table of Plates

Table of Figures

Table of Appendices

1 INTRODUCTION

This report has been prepared by Groundwater Sciences Corporation (GSC) at the request of the International Business Machines Corporation (IBM) to incorporate results of the remaining New York State Department of Environmental Conservation (NYSDEC) approved RCRA Facility Investigation (RFI) work plan elements into one comprehensive report. Previous RFI activities were performed and submitted, as decribed below. As such, this document provides information on recent activities at the site including monitoring well abandonment, the expanded Industrial Waste Sludge Lagoon (IWSL) RFI and the Deep Bedrock RFI.

1.1 Background Information

On December 14, 1988, the IBM Kingston site received a Part 373 Permit to cover the storage of hazardous waste in Building 029 (B029). The permit also called for the preparation of RFI work plans for various areas of the IBM Kingston site. In response to this requirement, a complete RFI Scope of Work (RFI SOW)[1] for these investigations was prepared and submitted to the NYSDEC on August 2, 1993. Implementation of these RFI was sequential, with the last RFI activities to be performed for the deep bedrock. As other RFI work elements were completed, this deep bedrock investigation work scope was refined and revisions were presented in subsequent RFI reports.

The last modification to the bedrock investigation SOW was the addition of one monitoring well in the former Industrial Waste Sludge Lagoon (IWSL) area. This modification was presented in the Expanded RFI SOW for the Former IWSL[2]. Therefore, the deep bedrock RFI SOW and the Expanded RFI SOW for the Former IWSL became linked. On April 3, 2000, IBM received NYSDEC approval to proceed with the RFI SOW for the deep bedrock and the Expanded RFI SOW for the Former IWSL.

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[1] *RCRA Facility Investigation Scope of Work*, July 30, 1993

[2] *Expanded RCRA Facility Investigation Scope of Work for the Former IWSL - Arsenic and VOC Plume Source Investigation, Former IBM Kingston Facility,* December 9, 1999.

A comprehensive work scope for the approved field activities was prepared and activities began during May 2000. The comprehensive work scope was prepared in an effort to compile all the approved work plan elements detailed in these successive reports, to incorporate RFI work elements from the approved Expanded RFI SOW for the Former IWSL and to include NYSDEC comments to these plans. For reference, Appendix A contains excerpts from the original documents.

Field activities were also completed at Solid Waste Management Unit (SWMU) AF, the Inactive West Debris Fill Area; however, the results of that investigation were submitted to the NYSDEC in a report dated August 8, 2000.

1.2 Purpose, Scope and Organization

The remainder of this report is organized into three sections. Section 2 contains information relating to the approved well abandonment at the site. Section 3 contains details relating to the expanded IWSL RFI at the site. Specifically, the expanded RFI for the Former IWSL includes several elements:

1) to determine if the Volatile Organic Compounds (VOCs), specifically Vinyl Chloride (VC), detected in the monitoring wells downgradient of the Former IWSL are from the Former IWSL or are from other sources, e.g. transport of VOCs in shallow groundwater, transformation of Trichloroethene (TCE) from an upgradient source or transport from the bedrock;

2) to determine if the Arsenic detected in the monitoring wells downgradient of the Former IWSL is from the Former IWSL or from other sources, e.g. background groundwater concentrations; changes in Arsenic concentrations due to redox condition and/ or dissolution/ precipitation between soil and groundwater;

3) to determine if the sanitary sewer is the source for the VOCs detected in groundwater monitoring wells in the northern IWSL area.

Section 4 describes the results of the deep bedrock investigation. The principal purpose of this investigation was to identify any VOC contamination that may have penetrated from the shallow sand unit, through the underlying varved silt and clay and into the deep bedrock unit.

2 WELL ABANDONMENT

On March 15, 1995, IBM submitted a revised Groundwater Monitoring Plan (GMP) and requested NYSDEC approval to decommission twenty-two wells at the former IBM Kingston site. Subsequently, NYSDEC requested additional chemical monitoring information for the list of wells IBM proposed to abandon and that information was transmitted to the NYSDEC on October 6, 1997. In response to that data, on January 22, 1998, IBM received conditional approval to abandon a select group of wells, with the requirement for additional chemical monitoring at four locations. This additional monitoring proceeded and was reported on within the 1998 Annual Groundwater Monitoring Report[3]. On September 29, 1999, IBM submitted a revised GMP in response to the completion of the Former IWSL RFI. Within that transmittal, IBM requested approval to abandon MW-803, located within the Former IWSL area. On October 29, 1999, NYSDEC approved this revised GMP and well abandonment request. In a letter dated March 13, 2000, the NYSDEC approved the decommissioning of the four wells in which additional sampling was completed.

With the exception of MW-5S and MW-225S, all wells were abandoned by April 30, 2000. Table 2-1 lists each of the wells abandoned. Figure 2-1 shows the location and Appendix B presents field documentation for well abandonment activities. All wells were abandoned as per the approved site-specific protocols.

Table 2-1. Well Abandonment Locations

MW-165S	MW-166S	MW-166M	MW-167S	MW-168S
MW-168M	MW-220S	MW-221S	MW-222S	MW-223S
MW-224S	MW-240S	MW-241S	MW-242S	MW-243S
MW-244S	MW-245S	MW-301S	MW-302S	MW-303S
MW-803				

[3] *1998 Annual Groundwater Monitoring Report*, IBM Kingston, March 31, 1999

Well MW-5S was not abandoned due to the additional sampling requirements of the Expanded RFI for the Former IWSL and MW-225S requires a track-mounted drilling rig to properly abandon this well. The results of the Former IWSL expanded RFI are presented in Section 3 of this report. Details relating to MW-5S are presented in that section which include a recommendation for well abandonment. MW-225S will be abandoned concurrently with another local project requiring the same type of drilling rig. A separate report will be prepared at that time regarding well abandonment. These two wells will continue to be maintained until abandonment.

3 EXPANDED RFI - FORMER IWSL

The results of the expanded RFI for the former Industrial Waste Sludge Lagoon are presented in the following subsections. Based on the results of the previously completed RFI, a revision to the Deep Bedrock Investigation work scope was recommended. In addition, it was recommended that soil and groundwater be sampled for arsenic (dissolved and total) where arsenic was detected previously. Furthermore, IWSL area wells were to be sampled for additional geochemical parameters to determine if conditions favor transformations (e.g. TCE to 1,2-DCE to VC) and also to determine if conditions exist which could increase the likelihood of mobilization of arsenic. To address the influence of the sanitary lines on groundwater chemistry detected in monitoring wells MW-106S and MW-820, recommendations from the RFI included additional sanitary sewer monitoring for volatile organic compounds.

3.1 Geochemical Monitoring

Arsenic is a redox-sensitive element, meaning that arsenic may gain or lose electrons in redox reactions. As a result, arsenic may be present in a variety of redox states. Arsenate and arsenite are the two forms of arsenic commonly found in ground water[4] . Arsenate generally dominates under oxidizing conditions whereas arsenite becomes dominant when conditions become sufficiently reducing. Both arsenate and arsenite adsorb to surfaces of a variety of aquifer materials, including iron oxides, aluminum oxides, and clay minerals. Adsorption and desorption reactions between arsenate and iron-oxide surfaces are particularly important controlling reactions because iron oxides are widespread in the hydrogeologic environment as coatings on other solids, and because arsenate adsorbs strongly to iron-oxide surfaces in acidic and near neutral pH water. Desorption of arsenate from iron-oxide surfaces becomes favored as pH values become alkaline[5]. As a result of the pH dependence of arsenic adsorption, changes in groundwater pH can promote adsorption or desorption of arsenic. Similarly, redox reactions can control

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[4]Masscheleyn, P.H., Delaune, R.D., and Patrick, W.H., Jr., 1991, Effect of redox potential and pH on arsenic speciation and solubility in a contaminated soil: Environmental Science and Technology, v. 25, p. 1414-1419.

[5]Dzombak, D.A., and Morel, F.M.M., 1990, Surface complexation modeling-Hydrous ferric oxide: New York, John Wiley & Sons, 393 p.

aqueous arsenic concentrations by their effects on arsenic speciation, and therefore, arsenic adsorption and desorption. For example, reduction of arsenate to arsenite can promote arsenic mobility because arsenite is generally less strongly adsorbed than is arsenate. Redox reactions involving either aqueous or adsorbed arsenic can affect arsenic mobility[6].

The interplay of redox reactions and solid-phase precipitation and dissolution of a variety of aquifer materials may be particularly important with regard to aqueous arsenic found within the Former IWSL area. Upon closure, the Former IWSL was backfilled with crushed limestone. The emplacement of limestone and its affect on the surrounding groundwater could drive dissolution of arsenic bearing compounds as waters become more alkaline. Likewise, transformations of TCE to 12-DCE and then VC indicate reducing conditions within and beneath the Former IWSL. Literature review suggests redox reactions also play a role in the mobility of arsenic by affecting arsenic speciation and therefore adsorption / desorption reactions.

3.1.1 Geochemical Monitoring Plan

To further address the distribution of arsenic in the Former IWSL area, geochemical monitoring was completed in wells in which arsenic had been consistently detected at concentrations that exceed the site's Groundwater Protection Concentration (GPC). These wells included MW-206S, MW-208S and MW-210S and MW-816R. Wells upgradient of the Former IWSL were also sampled for geochemical parameters, these wells included MW-816, MW-817 and MW-815. The parameter list for this monitoring included: iron (dissolved, total and ferrous); manganese (dissolved and total); dissolved oxygen, ammonia, chloride, nitrate, nitrite, sulfate, sulfide and total organic carbon. This geochemical monitoring was conducted concurrently with the sampling of these wells for arsenic and, concurrently with a routine compliance groundwater monitoring event.

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[6] Manning, B.A., and Goldberg, Sabine, 1997, Adsorption and stability of arsenic (III) at the clay mineral-water interface: Environmental Science and Technology, v. 31, p. 2005-2011.

In addition, to better understand the overall site-wide distribution of arsenic in groundwater, 16 monitoring well locations were selected site-wide for the analysis of groundwater samples for arsenic (dissolved and total) and geochemical monitoring parameters. The Expanded IWSL RFI Work Plan presented a detailed evaluation of historical arsenic detections in groundwater at the site and the criteria used to select the wells to be sampled.

Table 3-1 summarizes the wells selected for inclusion in the Former IWSL Area and site-wide arsenic sampling. Prior to the initiation of sampling, wells that were not routinely sampled were redeveloped following the protocols specified in the site's Quality Assurance Project Plan (QAPjP). Groundwater sampling followed the protocols specified in the site's most current approved GMP. It should be noted that one of the wells (MW-212S) selected for sampling is an abandoned location. Monitoring location MW-163S, which is in the same vicinity and is screened in the same interval as MW-212S was selected in place of MW-212S. Figure 3-1 shows the location for each of the selected wells.

Table 3-1. Monitoring Locations Selected for Arsenic Sampling (Groundwater)

Former IWSL Area			
MW-205S	***MW-210S***	***MW-816***	***MW-817***
MW-206S	***MW-815***	***MW-816R***	
Site-wide Monitoring			
MW-005S	MW-124S	***MW-210S***	MW-609S
MW-104S	***MW-125S***	MW-212S*	***MW-802***
MW-106S	***MW-205S***	***MW-505S***	MW-810
MW-109S	***MW-208S***	***MW-601S***	MW-821

Notes: * Sample to be collected at MW-163S
Monitoring locations that are currently sampled routinely are noted in bold and italicized text.

3.1.2 Geochemical Monitoring Results

This subsection presents the results of the geochemical sampling conducted in accordance with the plan described above. The results are first presented for arsenic in groundwater and then for TCE and its

daughter products (including vinyl chloride). A summary of all groundwater sampling results is presented in Appendix C.

3.1.2.1 Arsenic in Groundwater

In total, seventy-three samples were collected and analyzed for arsenic (dissolved and total) together with geochemical parameters. Forty-five of these samples were collected in the Former IWSL area and twenty-eight samples across the remainder of site. Several evaluations of these data were made to compare the results for the IWSL area with the remainder of the site in order to characterize the source of elevated arsenic concentrations in groundwater downgradient of the IWSL (i.e., leaching from the soil beneath the IWSL due to historical release from this unit or due to the site-wide presence of comparable arsenic concentrations in groundwater). These evaluations are summarized in the following paragraphs.

Plate 1 is a data posting of the maximum detected values for total and dissolved arsenic in groundwater. As can be seen on this Plate and in Table 3-2, the range in dissolved arsenic concentrations is non-detect to 25.8 ug/l (MW-104S) for samples collected site-wide and non-detect to 83.5 ug/l (MW-205S) for samples collected within the Former IWSL Area. The range in total arsenic concentrations is non-detect to 135 ug/l (MW-104S) for samples collected site-wide and non-detect to 94.0 ug/l (MW-205S) for samples collected within the Former IWSL Area. It should be noted, however, that although MW-205S is within the IWSL Area, it does not lie downgradient of the Former IWSL. Therefore, both wells which exhibit either the highest dissolved or total arsenic values are not affected by groundwater flow from beneath the IWSL, and by extension, do not exhibit elevated arsenic concentrations as a result of leaching from soils beneath the IWSL. As will be shown below, this is consistent with the results of analyses of soil for arsenic in both the IWSL and the remainder of the site.

Table 3-2a. Geochemical Monitoring Data - Former IWSL Area

Sampling Location	Date Sampled	Arsenic (dissolved) mg/l	Arsenic (total) mg/l	Iron (dissolved) mg/l	Ferrous Iron mg/l	Iron (total) mg/l	Manganese (dissolved) mg/l	Manganese (total) mg/l	Dissolved Oxygen	Ammonia (total) mg/l	Nitrite mg/l	Nitrate-Nitrite mg/l	Sulfate mg/l	Sulfide mg/l	Total Organic Carbon mg/l
MW-106-S	05/16/00	0.0664	0.0617	5.1500	5.0000	5.8800	0.9410	0.9280	1.9000	0.0000	0.0000	0.0000	11.5000	0.0000	13.9000
MW-106-S	06/22/00	0.0372	0.0321	4.8900	4.6000	5.2500	0.9100	0.8850	1.9000	0.2600	0.0000	0.0000	10.0000	0.0000	4.6000
MW-106-S	11/21/00	0.0447	0.0825	3.6100	5.6000	6.4500	0.8170	0.8920	0.0000	0.0000	0.0000	0.0000	12.0000	0.0000	6.0000
MW-205-S	05/16/00	0.0165	0.0193	1.5500	2.8000	2.7200	0.5770	0.7040	4.5000	0.0000	0.0000	0.0000	21.0000	0.0000	16.2000
MW-205-S	06/21/00	0.0049	0.0174	8.3300	10.0000	15.7000	2.0700	2.3000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	9.4000
MW-205-S	06/22/00	0.0228	0.0219	1.6400	2.5000	2.1900	0.6560	0.6110	4.6000	0.1900	0.0000	0.0000	22.5000	0.0000	7.4000
MW-205-S	11/15/00	***0.0835***	***0.0940***	2.1400	4.8000	4.7700	0.8030	0.7100	2.5000	0.0000	0.0000	0.0000	15.0000	0.0000	6.0000
MW-205-S	01/10/01	0.0187	0.0157	1.2500	1.8000	2.7200	0.6090	0.6120	5.4000	0.0000	0.0000	0.0000	13.0000	0.0000	8.6000
MW-205-S	01/25/01	0.0000	0.0000	1.0600	1.7000	2.4700	0.5660	0.5720	5.8000	0.0000	0.0000	0.0000	12.0000	0.0000	9.9000
MW-206-S	11/15/00	0.0068	0.0117	7.8700	16.5000	23.0000	1.7900	1.9300	0.0000	1.3000	0.0000	0.0000	8.0000	0.0000	11.6000
MW-206-S	01/10/01	0.0000	0.0078	5.8400	17.0000	27.1000	1.4800	1.8000	0.0000	0.0000	0.0000	0.0000	8.0000	***1.1000***	18.2000
MW-206-S	01/25/01	0.0000	0.0000	6.0800	15.0000	17.6000	1.4900	1.5800	0.0000	0.0000	0.0000	0.0000	17.0000	0.1600	23.7000
MW-208-S	05/16/00	0.0087	0.0101	9.7000	9.6000	15.6000	1.9800	1.9900	0.0000	0.0000	0.0000	0.0000	6.5000	0.0000	21.1000
MW-208-S	06/21/00	0.0028	0.0104	8.7400	9.6000	13.8000	2.1800	2.3100	0.0000	0.3400	0.0000	0.0000	5.5000	0.0000	8.1000
MW-208-S	11/21/00	0.0139	0.0436	13.9000	17.2000	21.5000	1.8200	1.9400	0.0000	1.5000	0.0000	0.0000	0.0000	0.0000	13.6000
MW-208-S	11/21/00	0.0208	0.0581	13.5000	17.2000	23.6000	1.7500	2.0300	0.0000	1.6000	0.0000	0.0000	6.0000	0.0000	11.5000
MW-210-S	05/16/00	0.0758	0.0866	22.8000	39.0000	36.2000	6.7900	7.3300	0.0000	4.6000	0.0000	0.0000	7.0000	0.0000	***33.0000***
MW-210-S	06/21/00	0.0815	0.0911	28.3000	***42.0000***	36.2000	7.1900	7.2930	0.0000	6.0000	0.0000	0.0000	9.0000	0.0000	19.3000
MW-210-S	11/15/00	0.0718	0.0550	25.5000	22.0000	18.1000	7.5200	7.2800	0.0000	5.6000	0.0000	0.0000	17.0000	0.0000	15.6000
MW-210-S	11/15/00	0.0597	0.0711	18.1000	20.0000	27.0000	***7.5500***	7.5000	0.0000	5.5000	0.0000	0.0000	20.0000	0.0000	16.4000
MW-210-S	01/10/01	0.0284	0.0445	15.0000	19.0000	24.2000	7.0600	7.3500	3.5000	***6.6000***	0.0000	0.0000	13.0000	0.0000	24.3000
MW-210-S	01/10/01	0.0294	0.0383	14.6000	21.0000	24.3000	6.9100	***7.5700***	3.2000	5.2000	0.0000	0.0000	22.0000	0.0000	24.7000
MW-210-S	01/25/01	0.0252	0.0217	15.0000	19.5000	16.2000	6.6000	5.8700	0.0000	5.5000	0.0000	0.0000	10.0000	0.0000	24.1000
MW-210-S	01/25/01	0.0251	0.0190	15.3000	18.0000	14.3000	6.6900	5.6600	0.0000	5.8000	0.0000	0.0000	8.0000	0.0000	25.4000
MW-802-S	05/17/00	0.0000	0.0077	0.0000	0.0000	0.7620	0.4400	4.3400	3.0000	0.0000	0.0000	0.0000	24.5000	0.0000	15.0000
MW-802-S	06/21/00	0.0000	0.0000	0.0131	0.0000	0.2960	0.6340	1.4700	2.3000	0.0000	0.0000	0.4000	23.0000	0.0000	3.1000
MW-802-S	11/21/00	0.0021	0.0020	0.0044	0.0000	0.8000	0.0586	3.1500	3.9000	0.0000	0.0000	1.4000	33.0000	0.0000	4.4000
MW-810-S	05/16/00	0.0239	0.0343	19.5000	27.0000	19.9000	1.6600	1.5000	0.0000	1.3000	0.0000	0.0000	24.5000	0.0000	31.8000
MW-810-S	06/22/00	0.0599	0.0639	***33.6000***	40.0000	40.6000	2.4400	2.4400	0.0000	4.6000	0.0000	0.0000	0.0000	0.0000	12.5000

Table 3-2a. Geochemical Monitoring Data - Former IWSL Area

Sampling Location	Date Sampled	Arsenic (dissolved) mg/l	Arsenic (total) mg/l	Iron (dissolved) mg/l	Ferrous Iron mg/l	Iron (total) mg/l	Manganese (dissolved) mg/l	Manganese (total) mg/l	Dissolved Oxygen	Ammonia (total) mg/l	Nitrite mg/l	Nitrate-Nitrite mg/l	Sulfate mg/l	Sulfide mg/l	Total Organic Carbon mg/l
MW-810	11/21/00	0.0546	0.0710	27.2000	34.0000	38.4000	2.0700	2.2500	0.0000	4.2000	0.0170	0.0000	10.0000	0.0000	17.5000
MW-815	11/15/00	0.0020	0.0062	0.0000	0.0000	5.5800	0.7520	0.6410	2.6000	0.0000	0.0280	1.0000	72.0000	0.0000	10.3000
MW-815	01/09/01	0.0000	0.0000	0.0126	0.0000	2.0800	0.0045	0.8590	6.0000	0.0000	0.0180	2.4000	64.0000	0.0000	18.9000
MW-815	01/24/01	0.0000	0.0000	0.0217	0.0000	14.3000	3.3200	3.8600	4.8000	0.0000	0.0100	0.9600	104.0000	0.0000	17.5000
MW-816	11/15/00	0.0000	0.0000	0.0000	0.0000	7.3600	0.0074	0.0275	6.6000	0.0000	0.0000	2.2000	52.0000	0.0000	10.7000
MW-816	01/09/01	0.0000	0.0000	0.0104	0.0000	1.0600	0.6110	0.0429	5.0000	0.0000	0.0000	1.2000	29.0000	0.0000	12.4000
MW-816	01/24/01	0.0000	0.0000	0.0070	0.0000	4.2500	0.0041	0.1130	6.3000	0.0000	0.0000	1.3000	39.0000	0.0000	10.2000
MW-816-R	11/15/00	0.0049	0.0295	26.8000	3.6000	***183.0000***	0.3130	2.1500	6.8000	0.0000	***0.0450***	0.0000	***196.0000***	0.2000	8.2000
MW-816-R	01/05/01	0.0046	0.0069	5.9100	1.5000	16.6000	0.0720	0.1960	3.1000	0.0000	0.0000	0.0000	54.0000	0.0000	8.5000
MW-816-R	01/24/01	0.0000	0.0000	12.8000	3.6000	44.5000	0.1380	0.5120	***7.8000***	0.0000	0.0000	0.0000	112.0000	0.0000	15.3000
MW-817	11/15/00	0.0000	0.0000	0.0000	0.0000	1.6200	0.0155	5.4700	5.4000	0.0000	0.0000	0.2400	34.0000	0.0000	6.2000
MW-817	01/09/01	0.0000	0.0000	0.0126	0.0000	0.4770	0.1790	1.0700	4.1000	0.0000	0.0000	0.2700	25.0000	0.0000	11.7000
MW-817	01/24/01	0.0000	0.0000	0.0082	0.0000	0.7150	0.0860	2.7500	4.4000	0.0000	0.0000	0.5600	33.0000	0.0000	16.8000
MW-821	05/16/00	0.0137	0.0221	8.9600	9.7000	15.0000	1.3400	1.3800	0.0000	0.0000	0.0200	5.9000	30.0000	0.0000	25.4000
MW-821	06/21/00	0.0051	0.0098	2.2900	2.8000	6.6000	0.4030	0.4950	1.6000	0.2400	0.0300	***9.2000***	24.0000	0.0000	12.4000
MW-821	11/21/00	0.0210	0.0313	11.0000	22.0000	21.9000	1.5900	1.7900	2.6000	0.0000	0.0230	0.6700	18.0000	0.0000	9.8000

Notes: Maxiumum sample results shown in italicized and underlined text.

Table 3-2b. Geochemical Monitoring Data Summary - Rest of Site

Sampling Location	Date Sampled	Arsenic (dissolved) mg/l	Arsenic (total) mg/l	Iron (dissolved) mg/l	Ferrous Iron mg/l	Iron (total) mg/l	Manganese (dissolved) mg/l	Manganese (total) mg/l	Dissolved Oxygen	Ammonia (total) mg/l	Nitrite mg/l	Nitrate-Nitrite mg/l	Sulfate mg/l	Sulfide mg/l	Total Organic Carbon mg/l
MW-005-S	05/15/00	0.0000	0.0232	0.1390	0.0000	79.9000	0.0047	1.4600	6.7000	0.0000	0.0000	0.0000	30.0000	0.0000	11.3000
MW-005-S	06/20/00	0.0000	0.0578	0.2490	0.0000	***141.0000***	0.0050	2.3500	6.7000	0.0000	0.0000	0.7000	46.0000	0.0000	9.0000
MW-005-S	11/16/00	0.0000	0.0129	0.0630	0.0000	35.7000	0.0056	1.5700	1.9000	0.0000	0.0000	1.3000	37.0000	0.0000	4.6000
MW-104-S	05/15/00	0.0136	0.0816	0.2040	4.0000	80.5000	0.4710	8.2500	3.2000	0.0000	0.0000	0.0000	36.0000	0.0000	10.1000
MW-104-S	06/20/00	***0.0258***	0.1120	1.1100	4.0000	126.0000	0.4060	8.0400	6.8000	0.0000	0.0000	0.0000	45.0000	0.0000	8.8000
MW-104-S	11/16/00	0.0210	***0.1350***	0.5610	3.3000	93.1000	0.3760	***12.4000***	7.8000	0.0000	0.0130	0.0000	60.0000	0.0000	7.9000
MW-109-S	05/17/00	0.0099	0.0228	***27.1000***	***33.5000***	35.7000	***3.5500***	3.6800	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	47.8000
MW-109-S	06/20/00	0.0172	0.0457	26.2000	30.0000	43.2000	3.3900	3.4300	0.0000	***1.7000***	0.0000	0.0000	10.0000	0.0000	***74.3000***
MW-109-S	11/16/00	0.0136	0.0333	22.5000	23.0000	29.4000	2.8200	2.9000	0.0000	1.7000	***0.0340***	0.7400	52.0000	0.0000	13.2000
MW-124-S	05/17/00	0.0079	0.0088	2.5200	4.2000	7.8300	1.6400	1.8300	1.6000	0.0000	0.0000	0.0000	46.5000	0.0000	27.3000
MW-124-S	06/20/00	0.0182	0.0344	0.4960	5.6000	49.7000	1.5000	3.2600	5.7000	0.0000	0.0000	3.0000	36.0000	0.0000	14.8000
MW-124-S	11/16/00	0.0253	0.0325	8.3700	7.0000	23.1000	1.3100	2.0000	5.7000	0.0000	0.0160	0.0000	26.0000	0.0000	5.4000
MW-125-S	05/17/00	0.0000	0.0000	0.0000	0.0000	1.9000	0.0012	0.0273	8.5000	0.0000	0.0000	1.3000	24.5000	0.0000	25.4000
MW-125-S	06/21/00	0.0000	0.0036	0.0083	0.0000	17.1000	0.0027	0.3330	6.5000	0.1200	0.0000	1.7000	26.0000	0.0000	7.9000
MW-125-S	11/16/00	0.0000	0.0000	0.0000	0.0000	1.9700	0.0020	0.0334	8.5000	0.0000	0.0000	3.2000	***27.0000***	***0.1200***	6.7000
MW-163-S	05/18/00	0.0000	0.0148	0.0210	0.0000	31.0000	1.1000	3.1800	***10.0000***	0.0000	0.0000	3.6000	***330.0000***	0.0000	7.8000
MW-163-S	06/20/00	0.0000	0.0091	0.2980	0.0000	14.6000	1.3500	2.5300	3.3000	0.0000	0.0000	0.0000	310.0000	0.0000	9.2000
MW-163-S	11/16/00	0.0000	0.0084	0.0000	0.0000	16.1000	1.2100	1.9900	2.4000	0.0000	0.0000	***5.3000***	320.0000	0.0000	3.6000
MW-505-S	05/18/00	0.0000	0.0000	0.0084	0.0000	2.3400	0.0088	0.3080	6.5000	0.0000	0.0000	0.0000	34.0000	0.0000	8.1000
MW-505-S	05/18/00	0.0000	0.0000	0.0082	0.0000	2.3500	0.0124	0.3670	6.3000	0.0000	0.0000	0.4700	34.0000	0.0000	4.8000
MW-505-S	06/20/00	0.0000	0.0000	0.0154	0.0000	0.4460	0.0038	0.0468	5.5000	0.0000	0.0000	0.0000	17.0000	0.0000	10.1000
MW-505-S	11/16/00	0.0000	0.0000	0.0108	0.0000	0.3260	0.0093	0.0628	3.4000	0.0000	0.0100	0.8900	33.0000	0.0000	7.9000
MW-601-S	05/18/00	0.0000	0.0106	0.3580	0.0000	9.8000	0.0142	0.2250	6.4000	0.0000	0.0000	2.9000	80.0000	0.0000	7.3000
MW-601-S	06/21/00	0.0000	0.0041	0.4720	0.0000	7.4600	0.0144	0.1690	6.1000	0.3500	0.0000	2.8000	72.0000	0.0000	5.6000
MW-601-S	11/16/00	0.0000	0.0095	0.3160	0.0000	6.2600	0.0097	0.1730	5.3000	0.0000	0.0110	2.2000	50.0000	0.0000	4.9000
MW-609-S	05/15/00	0.0000	0.0000	0.0063	0.0000	24.1000	0.0028	1.2500	9.3000	0.0000	0.0000	1.6000	32.0000	0.0000	5.3000
MW-609-S	06/20/00	0.0000	0.0126	0.0107	0.0000	42.1000	0.0028	2.1500	8.6000	0.0000	0.0000	1.6000	23.0000	0.0000	5.2000
MW-609-S	11/16/00	0.0000	0.0099	20.4000	0.0000	24.5000	0.0016	1.5000	8.5000	0.0000	0.0000	3.2000	19.0000	0.0000	3.3000

Notes: Maxiumum sample results shown in italicized and underlined text.

A further analysis was performed to calculate the clipped mean for dissolved and total arsenic in the IWSL area wells and the remainder of the site. For the purposes of this calculation, data for MW-205S was included in the clipped mean for the IWSL area even though this well is upgradient from the unit itself. The results show a clipped mean dissolved arsenic concentration in the IWSL area of 4.9 ug/l compared to a clipped mean for the remainder of the site equal to 19.8 ug/l. For total arsenic, the clipped mean of the IWSL area data is 21.1 ug/l versus 25.7 ug/l for the reminder of the site. Comparison of these clipped means clearly shows that the mean of arsenic concentrations within the IWSL area is not higher than that for the remainder of thesite. This analysis further supports the conclusion that the arsenic concentrations in groundwater in the IWSL are typical for the site as a whole and not adversely affected by leaching from soils associated with this closed unit.

A review of the associated geochemical monitoring data did not reveal any trends with detected arsenic concentrations. For example, higher recorded pH values did not consistently correspond with higher arsenic values in groundwater. In addition, redox measurement parameters corresponding to reduced conditions, did not correspond with higher arsenic values in groundwater. These observations suggest that the levels of arsenic in groundwater in the IWSL area are not a result of increased solubility and mobility associated with the geochemical conditions beneath the IWSL, but rather, as noted above, part of a general site-wide pattern of arsenic concentrations in groundwater.

3.1.2.2 Trichloroethene Series Compounds in Groundwater

The transformation of TCE to 12-DCE and then VC indicates reducing conditions within and beneath the Former IWSL. A review of the geochemical monitoring data showed several trends with respect to dissolved VOCs detected in groundwater in the Former IWSL Area. Higher dissolved oxygen content was found in the upgradient wells MW-816 and MW-817 (range from 4.1 to 6.6 mg/l) than in the downgradient well MW-210S (maximum 3.5 mg/l). Ammonia was consistently detected in the downgradient well MW-210S and was not detected in either of the upgradient wells (MW-816 and MW-817). In addition, ferrous iron was consistently detected in MW-210S and was not detected in MW-816 or MW-817. These geochemical monitoring data suggest that conditions in groundwater downgradient of the Former IWSL are more reducing. Based on these observations, the presence of

vinyl chloride in MW-210S is attributed to the transformation of TCE to VC under reducing conditions as groundwater containing TCE flows beneath the IWSL and encounters more reducing conditions. Therefore, the higher vinyl chloride concentrations in wells downgradient from the IWSL versus those upgradient can be attributed to transformation of TCE observed in upgradient wells rather than leaching of vinyl chloride from the IWSL itself.

3.2 Soil Sampling

Additional soil sampling for arsenic was recommended within the area of the Former IWSL and other areas of the site where filling has occurred. The purpose of this sampling was to show, if possible, that the concentrations of arsenic in the soil in the IWSL area is not significantly higher than it is over the remainder of the site. The following subsections detail the results of the additional soil sampling.

3.2.1 Expanded RFI Sampling Plan (Arsenic in Soils)

Based on the historical data review and results, soil samples were to be collected adjacent to wells MW-803, MW-802, MW-210S and MW-805S in the Former IWSL area and would be compared with arsenic results for the remainder of the site. For a site-wide arsenic comparison value, soil sampling locations from the remaining portions of the site were selected based on a random sampling technique. For the purposes of this sampling, only outside areas were considered and those portions of the site that lie within buildings were removed from consideration. The area to be sampled was divided into cells. Each cell was given equal weight in the selection process. In total, 23 sample locations were selected from 99 cells based on this criteria. The randomly-selected sampling locations as well as the location of the soil samples to be collected adjacent to the four wells in the Former IWSL area are shown on Figure 3-2.

3.2.2 Expanded RFI Sampling Results (Arsenic in Soils)

Samples were collected from three depth intervals within each cell and adjacent to each monitoring well shown on Figure 3-2. The three depth intervals correspond to fill (if present); native soil and monitoring well screened intervals. It should be noted that two cells (W and T) were inaccessible due to thick

vegetative overgrowth and were therefore not sampled as part of this RFI. Appendix D provides a summary for each sampling point, including depth sampled and sampling results.

The range in reported values for all samples collected from the Former IWSL Area is 2.9 to 8.5 mg/kg. The range for the samples collected from the remainder of the site is not detected at 0.68 to 32 mg/kg. Only two sample results (RC-A, 0-1 foot and RC-M, 0-1 foot) out of the overall 74 samples collected exceed the New York State Background Level (NYSBG) of 12 mg/kg, as presented in the NYSDEC Technical Administrative Guidance Memorandum 4046 (TAGM 4046)[7]. Both of these locations are outside of the IWSL area and are also not within the manufacturing area. There is no evidence that the results at these two locations have been affected by any release of arsenic at the site and the results must, therefore, be viewed as characteristic of concentrations in the upper range of background for the site.

In addition to comparing the range of values present at the site to the NYSBG, the clipped mean for samples collected within the IWSL and the remainder of the site were calculated. The calculated clipped mean arsenic concentration for the IWSL is 5.6 mg/kg, which is not significantly higher than the clipped mean for the remainder of the site (4.8 mg/kg). It should also be noted, however, that neither of these clipped means exceeds the NYSBG.

3.3 Additional Sanitary Sewer Monitoring - Northern VOC Plume

Review of the TCE-series concentration contour map presented in the Former IWSL RFI identifies a secondary plume north of the Former IWSL in the vicinity of the sanitary sewer line shown on Figure 3-3. This sewer line originates across Enterprise Drive, passes through the North Parking Lot Area (NPLA) plume, is piped under Enterprise Drive through pipe-trenches, runs through the former Industrial Waste Treatment facility (B036) and out to the town sanitary sewer line adjacent to the Esopus Creek (Figure 3-3). The northern plume appears to be associated with the sanitary sewer line, since no other possible sources for this plume have been identified.

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[7]New York State Department of Environmental Conservation Technical Administrative Guidance Memorandum 4046

As part of the proposed expanded investigation of the Former IWSL area and the northern plume, samples were collected from the four (4) locations along the sanitary sewer line shown on Figure 3-3 concurrently with groundwater quality samples from well MW-205S (upgradient of the sanitary sewer) and wells MW-106S (downgradient of the sanitary sewer) and MW-820 (immediately adjacent to the sewer line) , also shown on Figure 3-3. All samples were analyzed for VOCs by method SW-846 8021, plus Freon 113 and Freon 123a. Table 3-3 provides a summary of the sampling data. Overall, eight parameters were detected in either groundwater or the sanitary sewer. These parameters included: 1,1,1-Trichloroethane (111-TCA); Trichloroethene (TCE); 1,2-Dichloroethene, as total (12-DCE total); Vinyl Chloride (VC); 1,4-Dichlorobenzene (14-DCBZ); Toluene (TOL); Chloroform (TCM) and Bromodichloromethane (BDCM). A summary of all sampling results for this investigation is presented in Appendix E.

Four of the parameters (111-TCA, TOL, TCM and BDCM) were detected in the sanitary sewer, and not in the adjacent monitoring wells. One of the parameters (VC) was detected in the groundwater samples only, most likely indicating reductive dechlorination of TCE or 12-DCE in the groundwater. Three of the parameters (TCE, 12-DCE total and 14-DCBZ) were detected in both groundwater and the sanitary sewer. It should be noted that the concentrations detected in the groundwater were higher than in the sanitary sewer for TCE and 12-DCE total. 12-DCE total and VC were consistently detected in the wells that lie downgradient of the sanitary sewer (or, in the case of MW-820, adjacent to the sewerline). TCE was detected in the downgradient and in one of the upgradient samples collected. Table 3-2 includes a comparison of the detected concentrations to the site's Groundwater Protection Concentration (GPC), or for parameters detected where no site GPC exists, the results were compared with the New York State Part 703 standard for Class GA waters. This comparison shows that for well MW-106S that lies downgradient of the sanitary sewer, concentrations of VC and 12-DCE total were consistently detected above the GPC. In addition, for well MW-820, also adjacent to the sanitary sewer, one result exceeds the GPC for 12-DCE total.

Figures 3-4, 3-5 and 3-6 show detected concentrations for TCE, 12-DCE total and VC, respectively, for samples collected as part of this Expanded RFI. As shown in these figures, the pattern of detections

in groundwater adjacent to and downgradient from the sanitary sewer suggests that leaks from the sanitary sewer have been the source for the northern plume in the Former IWSL area. Nevertheless, the current concentrations observed in the sewer line are not sufficient to produce the concentrations observed in the groundwater. However, previous evaluations and investigations have addressed TCE series compound concentrations for various sampling points in the sanitary sewer. These investigations have shown that, following the installation of the Utility Trench Barrier Wall during April and May 1995, TCE series compound concentrations decreased for all sanitary sewer manhole sampling locations monitored downstream of that barrier wall ("CS" locations on Figure 3-3).

This historical pattern of concentrations in the sanitary sewer together with the current disparity between sewer concentrations and groundwater concentrations, strongly suggests that the current pattern of TCE series compounds in the Northern Plume result from desorption of TCE series compounds from soils surrounding the sewer line. These sorbed VOCs most likely originated from leakage out of the sanitary sewer before the barrier wall was installed. Since desorption is a slow process, it is consistent with the groundwater concentrations remaining higher than the sewer concentrations for years after the sewer concentrations declined. There does not, therefore, appear to be a continuing discharge of sewer flow to the surrounding groundwater. Rather, the current pattern reflects a tailing effect for groundwater concentrations resulting from desorption from surrounding soils.

Table 3-3. Summary of Sanitary Sewer and Groundwater Sampling Data									
Sampling Location	Date Sampled	111-TCA (ug/l)	TCE (ug/l)	12-DCE total (ug/l)	VC (ug/l)	14-DCBZ (ug/l)	TOL (ug/l)	TCM (ug/l)	BDCM (ug/l)
CS 214	05/05/00	ND@1	0.8	ND@1	ND@1	ND@1	ND@1	4.6	0.6
CS 214	05/19/00	ND@1	ND@1	ND@1	ND@1	ND@1	0.7	8.7	0.8
CS 214	11/17/00	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CS 215	05/05/00	ND@1	0.7	ND@1	ND@1	ND@1	ND@1	5.1	0.7
CS 215	05/19/00	ND@1	0.5	ND@1	ND@1	ND@1	ND@1	6.5	0.7
CS 215	11/17/00	ND@1	ND@1	ND@1	ND@1	1.4	1.5	2.9	ND@1
CS 221	05/05/00	0.6	1.1	0.7	ND@1	ND@1	ND@1	3.8	ND@1
CS 221	05/19/00	0.8	1.4	0.7	ND@1	ND@1	ND@1	2.6	ND@1
CS 221	11/17/00	ND@1	1	ND@1	ND@1	1	ND@1	2	ND@1
CS EFFL	05/05/00	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1	3.5	ND@1
CS EFFL	05/19/00	ND@1	0.8	ND@1	ND@1	ND@1	ND@1	2.8	ND@1
CS EFFL	11/17/00	ND@1	ND@1	ND@1	ND@1	1.9	0.9	2	ND@1
MW-106-S avg	05/05/00	ND@1	2.95	***13.5***	***3.65***	ND@1	ND@1	ND@1	ND@1
MW-106-S	05/19/00	ND@1	2.8	***10***	***3.6***	ND@1	ND@1	ND@1	ND@1
MW-106-S	11/17/00	ND@1	1.7	***8.4***	***2.8***	ND@1	ND@1	ND@1	ND@1
MW-205-S	05/05/00	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
MW-205-S avg	05/19/00	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
MW-205-S avg	11/17/00	ND@1	0.95	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
MW-820	05/05/00	ND@1	1.6	3.3	ND@1	ND@1	ND@1	ND@1	ND@1
MW-820	05/19/00	ND@1	1.4	5	ND@1	ND@1	ND@1	ND@1	ND@1
MW-820	11/17/00	ND@1	2.6	***6.2***	0.9	0.6	ND@1	ND@1	ND@1
Notes: Sample results that exceed the site's Groundwater Protection Concentration (GPC) are shown in bold and italicized text. There is not site specific GPC, therefore the comparison value used is the New York State Part 703 Standard for Class GA waters.									

4 BEDROCK INVESTIGATION

As noted previously, the bedrock RFI was proposed in the initial Part 373 permit for the facility. Over time, with the completion of other investigations at the facility, the scope of the Bedrock RFI was modified. The final modification to the investigation scope of work was the addition of a bedrock monitoring well in the Former IWSL area, adjacent to the shallow soil well, MW-816. This modification was presented in the Expanded RFI SOW for the Former IWSL. For reference, Appendix A contains excerpts from the original documents detailing the revisions to the RFI scope of work for the bedrock investigation.

The Bedrock RFI served three purposes: the first was to confirm that contaminants had not penetrated through the varved silt and clay unit and into the underlying bedrock; the second, was to identify any impacts that may have occurred to groundwater in the bedrock unit before the utility trench barrier wall was constructed adjacent to Enterprise Drive; and the third was to look for a potential bedrock source for the Southern TCE Plume in the IWSL area.

4.1 Site Geology

The following discussion of site geology is based on both literature sources (primarily Fisher and others, (1970)[8] and Cadwell and others, (1989)[9]) and numerous borings drilled on site.

4.1.1 Bedrock Geology

As shown in Fisher and others (1970), the eastern portion of the site is underlain by the Onondaga Limestone, and the western portion of the site is underlain by the Lower Hamilton Group. The logs

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[8]Fisher, D.W., et al., 1970, Geologic Map of New York: New York State Museum and Science Service, Map and Chart Series, No. 15.

[9]Caldwell, D.H. 1989, Surficial Geologic Map of New York: New York State Museum - Geological Survey map and Chart Series, No. 40.

from the monitoring wells which penetrated the Onondaga Limestone beneath the eastern portion of the site describe this unit as a light gray limestone with shaley interbeds.

Clastic bedrock of the Hamilton Group was encountered in the vicinity of Enterprise Drive, and in the area between Enterprise Drive and Esopus Creek. Well logs describe this unit as dark gray siltstone interbedded with shale and very fine-grained sandstone. This unit is described as both massive and as horizontally bedded. The location and nature of the contact between the Onondaga and Hamilton (i.e., a fault or conformable stratigraphic contact) is not known. The contact presumably trends north-south and lies between the eastern property line and Enterprise Drive.

The configuration and lithology of the bedrock surface is shown on Figure 4-1. This map indicates that the Onondaga Limestone (carbonate) surface slopes westward in the vicinity of the eastern site property line. In the east-central portion of the site (in the vicinity of Building 003), the elevation of the bedrock surface is not known, but is at an elevation lower than -40 feet amsl (approximately 220 feet below grade). The bedrock surface then slopes upward, to the west, in the vicinity of Building 001 (B001), and forms a north-northwest trending buried ridge composed of clastic rocks of the Hamilton Group. This ridge subcrops beneath Enterprise Drive near Building 202 (B202) and is covered by only a thin veneer of fill at this location.

4.1.2 Soils

The bedrock beneath the site is overlain in various areas by till, varved silt and clay, a sand and gravel unit, and a sand unit that otherwise generally occurs above the varved silt and clay. Beneath the eastern portion of the site, the bedrock is generally overlain by till described in well logs as subangular gray gravel with a gray silt or clay matrix, or as gray-black, silty, very fine sand. By contrast, in the southwestern portion of the site the bedrock is overlain by up to 20 feet of dark gray sand and gravel. The Layne No. 2 production well was completed in this sand and gravel unit and, on the basis of a constant-rate pumping test conducted in the late 1980s, it is capable of producing water at a rate of 81 gallons per minute (gpm) for at least 72 hours.

A varved clay and silt unit directly overlies the bedrock in the central and northwestern portions of the site, and overlies the till and sand and gravel previously described where they are present above the bedrock. Cadwell and others (1989) assigned a lacustrine (lake) origin to this unit and described it as generally laminated silt and clay deposited in proglacial lakes, generally calcareous, with a variable thickness of up to 330 feet. Its thickness beneath the site and presence everywhere across the site (except in a small area on top of the bedrock high beneath Enterprise Drive) support this interpretation of a lacustrine origin. Site well logs describe this unit generally as a gray-pink, varved silt and clay. Logs for wells in the south central portion of the site indicate that this unit may also contain fine to very fine sand laminations.

In a very general sense, the surface of the silt and clay unit conforms to the bedrock surface in that it is highest beneath the eastern portion of the site and over the buried bedrock ridge beneath the central portion of the site and lowest beneath the area between Enterprise Drive and the eastern property line and in the area near Esopus Creek. This general topographic pattern on top of the silt and clay may be due to greater compaction and consolidation of this unit in areas where it is thicker, or may be due to erosion following deposition. Relatively steep sides have developed on the valleys in this essentially horizontally bedded unit in the vicinity of Building 025 (B025), and to the northwest of the IWTF. These relatively steep-sided valleys may be the result of erosion of the surface of this unit following deposition by streams which flowed preferentially in the low areas caused by differential compaction.

The unit overlying the silt and clay (and shallow bedrock in the small area where the silt and clay is not present) consists primarily of sand. Cadwell and others (1989) interpret this unit on a regional scale as lacustrine sand deposits associated with large bodies of water. He indicates that this unit is generally a well sorted (poorly graded), stratified, generally coarse sand with a thickness ranging from approximately 6 to 65 feet. This unit is generally described in site well logs as a clean (i.e., relatively few fines) brown sand, ranging from fine- to coarse-grained. Locally across the site, this unit is overlain by a thin veneer of fill typically described as a fine to medium, clean or silty sand. This lacustrine sand unit is present across most of the site except in the topographically low areas in the northwestern portion of the site,

where the sandy material present is likely of more recent alluvial origin, associated with Esopus Creek.

4.2 Location Selection

Previous investigations at the facility concluded there are elevated shallow soil concentrations associated with three SWMUs (refer to Figure 4-2): SWMU S, the Former Waste TCA Tank (located to the west of B001); SWMU T, the Former Waste Oil Tank, located to the north of B003 and; SWMU G, the Former Waste PCE Tank, located in the south west corner of B005.

The installation of the deep bedrock wells adjacent to these SWMUs was done to provide a better understanding of the underlying geology of the site as well as to confirm that contaminants have not penetrated through the varved silt and clay unit into the underlying bedrock. As these elevated soil concentrations were expected to be localized in the vicinity of the three SWMUs, each bedrock well was located approximately 20 feet upgradient and upslope from the associated SWMU (with respect to the varved silt and clay surface). The wells are located on the eastern side of Enterprise Drive and are MW-321R, MW-322R and MW-323R (Figure 4-2). As shown on Figure 4-2, MW-323R is located west of B001; MW-322R is north of B003 and; MW-321R lies south of B005S. Also as shown on Plate 3, MW-322R, located at the north end of B003, was located over the deepest part of the valley in the top of the varved silt and clay unit.

To identify impacts that may have occurred to groundwater in the bedrock unit before the utility trench barrier wall was constructed, two wells were proposed in the RFI SOW: MW-324R and MW-816R. MW-324R was located near Enterprise Drive (Figure 4-2) in an area of shallow bedrock where utility trenches cut through the rock and previously permitted groundwater from the TCA plume east of Enterprise Drive to flow westward toward the IWSL area. It should be noted that the installation of the utility trench barrier wall removed this transport pathway.

Finally, bedrock well location MW-816R (Figure 4-2) was selected to identify any contribution from the bedrock to the southern IWSL plume. It is located adjacent to MW-816, a soil monitoring well in the

southern portion of the Former IWSL plume area that shows elevated concentrations of halogenated VOCs.

4.3 Preliminary Borings and Well Installation

Installation of the bedrock monitoring wells was completed in two phases. The first phase included the installation of preliminary borings at each of the three locations selected to confirm that separate phase DNAPL is not present at the sand / varved silt and clay contact before drilling through that contact to construct deep bedrock wells. The installation of the bedrock well was completed during the second phase. The following sections provide additional details of field activities and results of the investigation.

4.3.1 Preliminary Borings

Prior to drilling these three bedrock wells, split-spoon soil samples were collected at the shallow sand/varved silt and clay contact (and at the top of the transition zone where present) and an additional split-spoon sample was collected from the varved silt and clay in each preliminary borehole and analyzed for Method 8010 VOCs, Freon®113 and Freon®123 by Severn-Trent Laboratories of Newburgh, New York, an ELAP certified laboratory.

Acceptance criteria for preliminary boring locations were established in the the RFI SOW and prohibited the use of a preliminary boring location for a bedrock monitoring well installation location should either field observations or laboratory analysis indicate potentially mobile separate-phase material is present. Neither field observations nor laboratory analysis of the soils encountered during the installation of the preliminary borings indicated the presence of separate phase and therefore all of the three locations were determined to be suitable for penetration through the varved silt and clay unit for the bedrock well installation. Sampling results from the preliminary borings were transmitted to the NYSDEC for review and approval of a contained-in demonstration prior to the initiation of the bedrock well installation. A copy of the contained-in demonstration transmittal and NYSDEC's response is presented in Appendix F.

As part of the RFI SOW, during the drilling of the preliminary borings an undisturbed sample was to be collected from each borehole in the varved silt and clay unit and submitted to a laboratory for analysis of vertical hydraulic conductivity. At each location, sampling was attempted using shelby tubes; however, due to the characteristics of the varved silt and clay unit, the drilling rig could not obtain a sample for analysis. A minimum of three attempts to collect a sample were logged for each borehole.

4.3.2 Bedrock Monitoring Well Installation

The installation of four of the five proposed bedrock wells (MW-321R, MW-323R, MW-324R and MW-816R) was completed during the second phase of field activities. One location (MW-322R) was unable to be completed as a monitoring well. As noted in the log, the final depth of this boring was 220 feet below ground surface. At this depth, the varved silt and clay is still present. The drilling was discontinued at this location after consultation with the NYSDEC.

Boring logs for each of the four wells and the one boring that could not be completed as a well are presented in Appendix G, Table 4-1 provides a summary of physical characteristics for each of the five locations and the following paragraphs provide a brief description of the conditions encountered at each location.

Several attempts were made to core the rock at each location for the purpose of determining the lithology of the bedrock and the occurrence of structural features such as joints, fractures, cleavage, and bedding planes. With the exception of less than two feet of core recovered from MW-816R, these attempts were unsuccessful.

A preliminary soil boring for well MW-321R revealed a layer of sand down to 12 feet, where a mixture of clay and silt became dominant. Clay and silt was present to a depth of 25 feet, where the thick varved clay unit began. A gravel layer 5 feet thick was observed from 92 to 97 feet below grade, where the limestone bedrock began. Two significant water bearing zones were located between 122 and 124 feet below grade. Total depth for this well is approximately 126.6 feet. The estimated yield for MW-321R

was 30 gallons per minute. The well was constructed using 8 inch steel casing and 4 inch PVC as shown on the corresponding well log.

The top 14 feet of proposed well MW-322R consisted primarily of sand. A transitional unit of clay, silt, and sand was observed from 14 feet to the top of the site varved clay unit at approximately 40 feet below ground surface. Varved clay was present to a depth of approximately 223 feet, when drilling was stopped.

A similar pattern of sand, silt, and clay were observed in the construction of well MW-323R. Sand dominated from 0 to 18 feet, with a combination of silt and clay present from 18 to 38 feet. The remainder of the overburden consisted of the site varved clay. Gray-black calcareous shale bedrock was encountered at 150 feet below grade. The primary water bearing zone was found at a depth of 187 feet below ground surface. Softer zones in the bedrock that may contribute relatively small volumes of water were noted at 181 and 196 feet. The well was completed as an 8 inch open borehole to a depth of 242 feet.

Well MW-324R was drilled through 4 feet of sand and gravel associated with parking lot fill and an additional 7.5 feet of clay that is part of a barrier wall. The underlying bedrock consists of a massive gray-black calcareous shale. A water bearing zone was located around 37 feet, with the well completed to a depth of 43.15 feet. The estimated yield for this well was 1 gallon per minute. The well was constructed as a 6 inch open hole, shown on the associated well log.

The overburden of well MW-816R consisted of approximately 7 feet of fill material, 5 feet of sand, and 37 feet of the site varved clay. Calcareous shale bedrock was encountered at 49.5 feet below grade. A rock core of about 5 feet in length revealed that the shale was massive, with no signs of bedding or fracturing. The well was drilled to a depth of approximately 162.75 feet below grade, and was constructed with 6 inch steel casing as shown. The well was completed as an open hole. Possible water bearing zones were noted at 77 feet and at 114 feet, with an estimated yield of several gallons per day.

Table 4-1. Summary of Physical Characteristics, Bedrock Monitoring Installations

Location	Varved Clay Interval (feet bgs)	Depth to Bedrock (feet bgs)	Total Depth of Boring (feet)	Bedrock Type	Yield
MW-321R	12-92	97	127.5	Limestone	20-40 gpm
MW-322R	9-220	not encountered	220	not encountered	not applicable
MW-323R	38-155	157.5	242	Calcareous Shale	< 0.25 gpm
MW-324R	none	11.5	43.15	Calcareous Shale	< 0.25 gpm
MW-816R	12-49	49.5	165.6	Calcareous Shale	< 0.25 gpm

Key:

bgs below ground surface

4.4 Chemical Monitoring

Each well was developed prior to sampling according to protocols specified in the approved site specific QAPjP. Three characterization samples were collected according to the protocol specified in the site's most recent approved Groundwater Monitoring Plan and included analysis of halogenated volatile organic compounds by method 8021 plus Freon 113 and Freon 123a. In addition, each sample collected from bedrock monitoring well MW-816R was analyzed for arsenic (dissolved and total).

Appendix C contains a printout of the chemical data obtained for each of the characterization samples collected from the bedrock monitoring wells. As shown in this printout, no site constituents (Freon 113; 1,1,1-Trichloroethane; 1,1-Dichloroethane; Chloroethane; Tetrachloroethene, Trichloroethene, 1,2-Dichloroethene or Vinyl Chloride) were detected in any of the samples collected. Based on these results, there is no evidence that contaminants have penetrated through the varved silt and clay unit into the underlying bedrock.

In addition, based on the absence of the detection of site volatile organic compounds in the groundwater at MW-816R, there is no evidence of contribution from the bedrock to the southern VOC plume in the Former IWSL area.

4.5 Bedrock Groundwater Elevation

Water levels were measured immediately following drilling and at appropriate locations on a quarterly basis in monitoring wells constructed throughout the site and at various depths. As per the April 3, 2000 correspondence from Mr. Gary Casper of the NYSDEC, water level measurements were added for the other site bedrock wells including MW-1R and 202-3R. These water level measurements were used to show the bedrock groundwater elevations (Figure 4-3). Due to the presence of declining head potential with depth in the bedrock and the variable depths of the bedrock monitoring wells at the site, it is not possible to contour the water levels for these wells together in plan view. Figure 4-3 does not, therefore, show such contours and it is not possible with the available data to characterize the direction of groundwater flow within the bedrock. The absence of site constituents in bedrock groundwater relieves any concern regarding the direction of groundwater flow in this unit.

4.6 Aquifer and Aquitard Characteristics

An aquifer test was to be performed in one of the bedrock wells, preferably the bedrock well proposed to be completed north of B003 (MW-322R). Due to the great thickness of the varved silt and clay unit, the very low potential for vertical leakage through the varved silt and clay unit, the low yield of the three bedrock wells installed in the shale, evidence of the healing of fractures with quartz and the absence of site constituents in the bedrock groundwater, no aquifer test was performed. The basis for this decision was previously discussed with and approved by the NYSDEC.

5 Conclusions

The following subsections summarize the conclusions reached regarding the results of the IWSL and Bedrock RFIs.

5.1 IWSL

Based on the results of investigations performed in the IWSL area and over the remainder of the site (with respect to arsenic occurrence) the following conclusions can be drawn:

1. There is no evidence that the concentrations of arsenic in soil and groundwater in the IWSL area have been affected by releases from the closed impoundment based on a comparison of arsenic concentrations in the IWSL area and those over the remainder of the site.

2. There is no evidence that the higher concentrations of vinyl chloride detected downgradient compared to upgradient of the IWSL are the result of releases from this closed impoundment. Rather, the data indicate that the increase in vinyl chloride results from transformation of TCE and 12-DCE as those constituents are transported beneath the IWSL from the upgradient area to the east of the IWSL.

3. The occurrence of TCE series compounds in the Northern IWSL Plume appears to be related to historical releases of these VOCs from the sanitary sewer, which caused these constituents to be adsorbed to the surrounding soils, from which they are gradually desorbing. The concentrations of these VOCs currently measured in the sewer flow are lower than those in the groundwater, confirming that the VOCs present in groundwater do not result from ongoing releases from this sewer.

4. Based on the results of the Bedrock RFI, the source of the TCE series VOCs in the Southern IWSL Plume is not in the bedrock. Previous RFIs had used soil gas, soil and groundwater investigations in an attempt to locate the source of these VOCs in groundwater. None of the investigations to date has been able to identify a source for this low concentration plume. It is likely, therefore, that the source of this plume is similar to that which produces the Northern IWSL Plume, i.e., VOCs adsorbed onto soils from a utility line-related source that is no longer discharging into this area. Importantly, surface water samples collected in the stream and wetland into which groundwater from both of these plumes discharges indicate there is no impact to surface water: the results of the previous RFI showed where detected, VOC concentrations in the surface water did not exceed the Part 703 New York State Surface Water Standards and; the calculated total flux from groundwater to surface water is on the order of 0.00032 pounds per day.

5.2 Bedrock

Based on the findings of the Bedrock RFI, the following conclusions may be drawn:

1. The substantial thickness of the varved silt and clay unit, the lack of water encountered in the three bedrock wells installed in the shale and the absence of site constituents in the bedrock groundwater, confirm the previous conclusion that contaminants have not penetrated through the varved silt and clay unit into the underlying bedrock.

2. Groundwater monitoring data collected from MW-324R, located adjacent to the former utility trench indicate there are no residual VOC impacts to groundwater in the bedrock unit after the utility trench barrier wall was constructed. Therefore, either there was no vertical leakage of contaminated groundwater into the shallow bedrock before the barrier wall was constructed or any such impacts have dissipated since that time.

3. Finally, as noted in the previous subsection, based on the absence of site VOCs in the groundwater at MW-816R, there is no evidence of contribution from the bedrock to the southern VOC plume in the Former IWSL area.

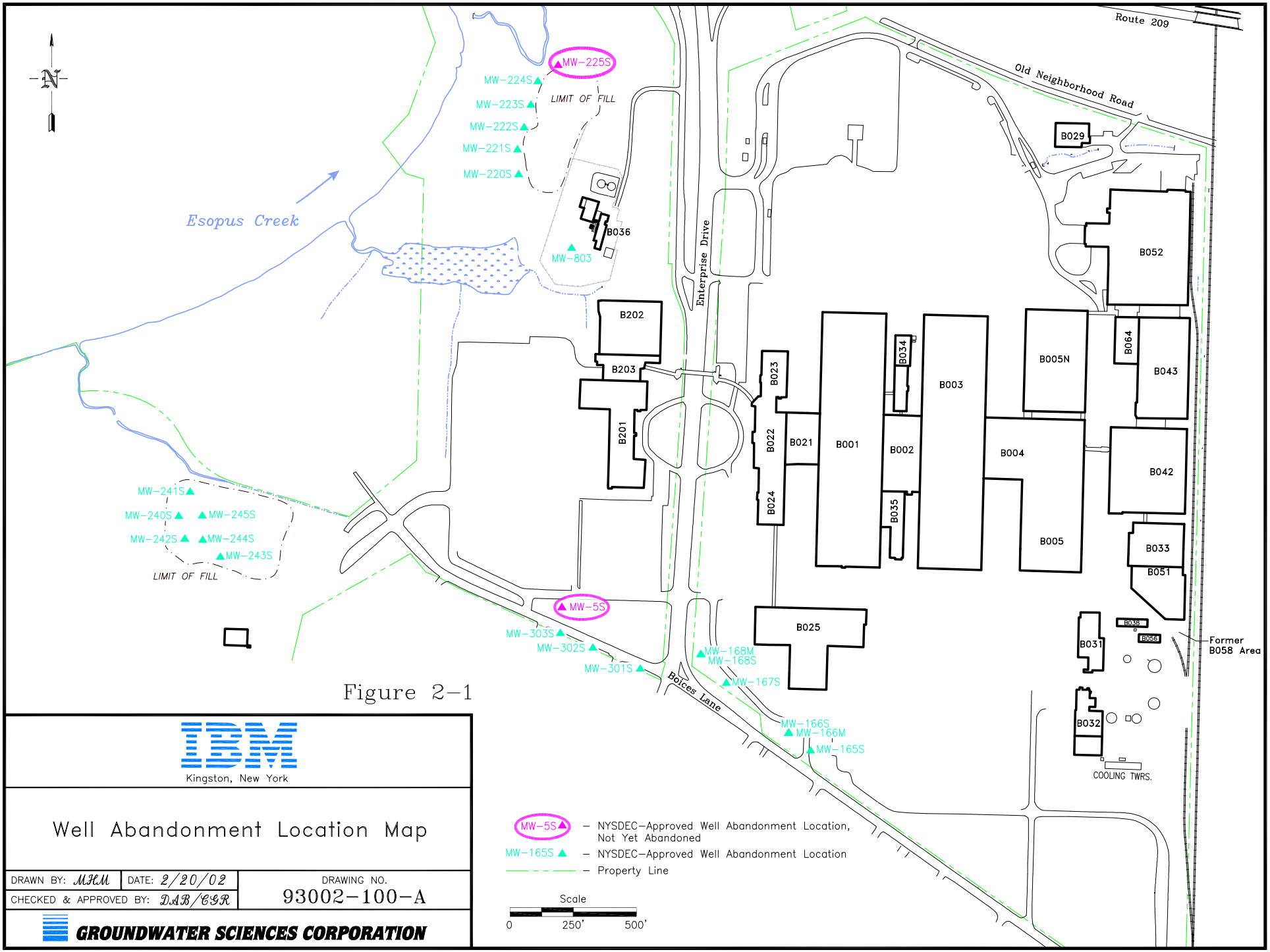

Figure 2-1

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Well Abandonment Location Map

DRAWN BY: MHM	DATE: 2/20/02	DRAWING NO. 93002-100-A
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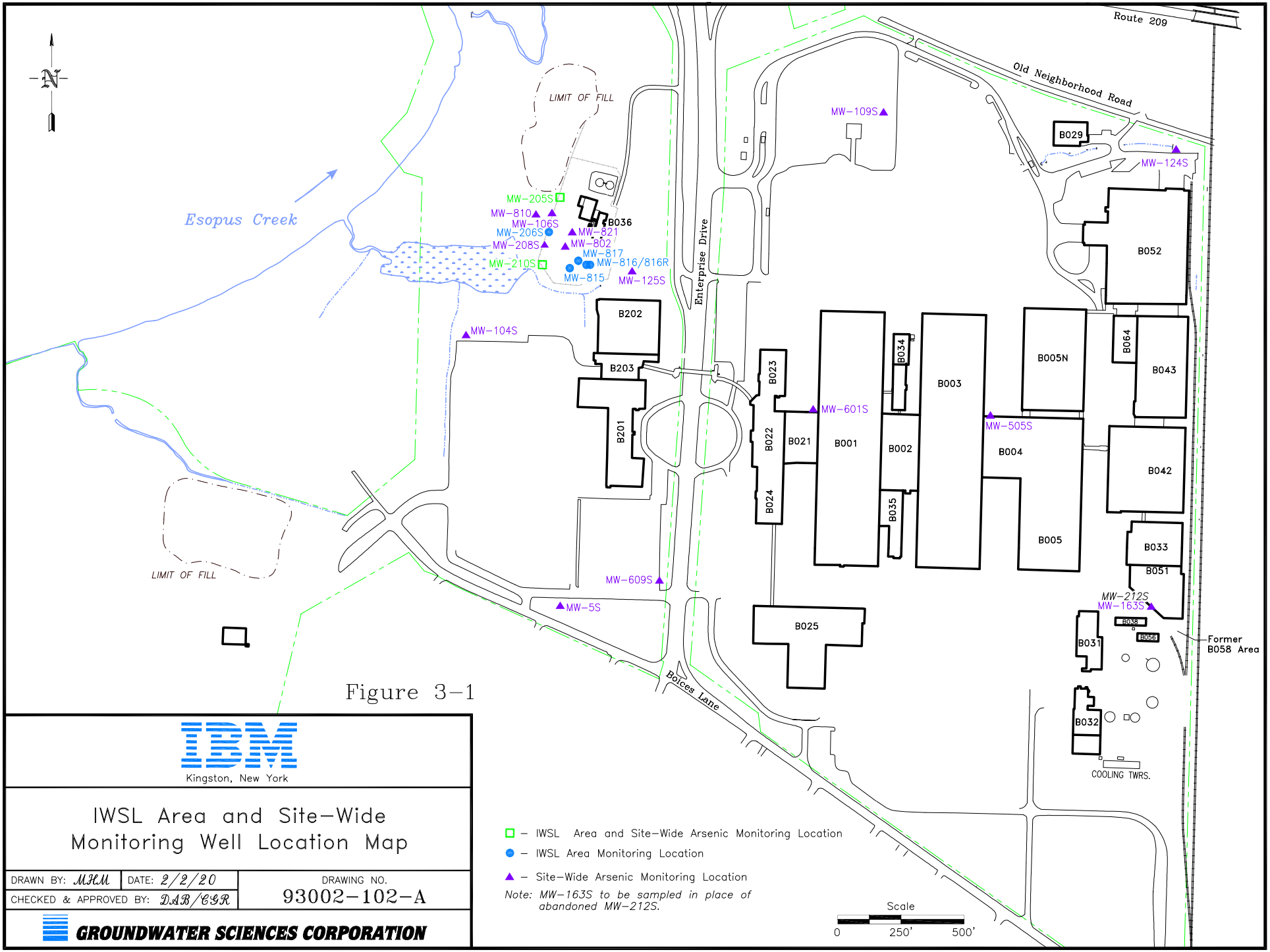

Figure 3-1

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IWSL Area and Site-Wide Monitoring Well Location Map

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□ – IWSL Area and Site-Wide Arsenic Monitoring Location

● – IWSL Area Monitoring Location

▲ – Site-Wide Arsenic Monitoring Location

Note: MW-163S to be sampled in place of abandoned MW-212S.

Figure 3-2

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Sampling Locations Selected for Arsenic Analysis (Soils)

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Scale
0 225' 450'

Note: Soil samples to be collected within shaded cells and adjacent to monitoring well locations shown.

C● – Sample Location

MW-802 ▲ – Sample Location

– Groundwater Collection System (GWCS)

– GWCS Trench Extension

– Railroad

– Property Line

▲ – Monitoring Well Location (installed in soil)

△ – Temporary Monitoring Point

▼ – Monitoring Well Location (installed in bedrock)

■ – Production Well Location (Layne)

– Abandoned Temporary Monitoring Point

B-416S ● – Soil Boring Location

– Former Structure

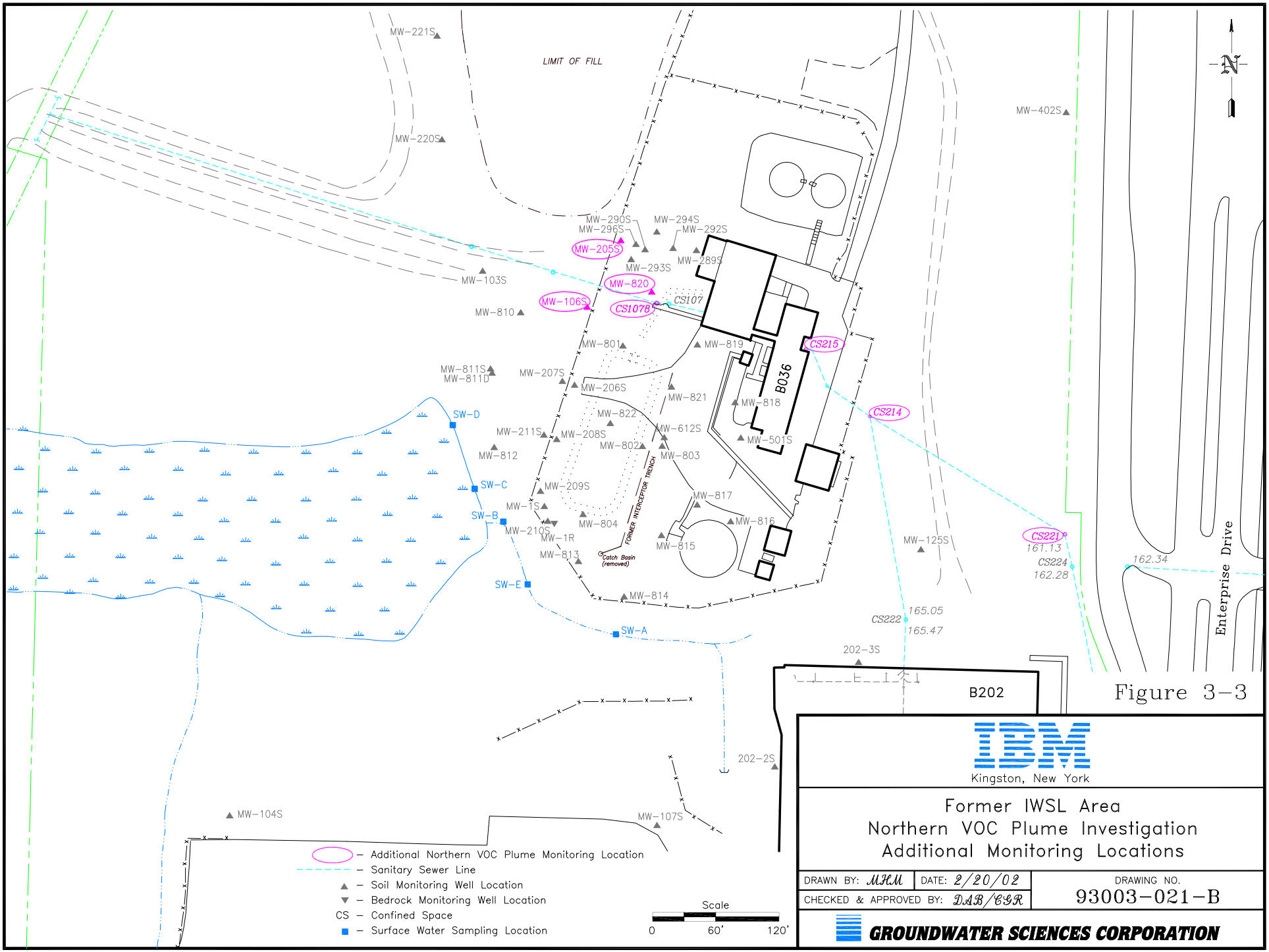

Figure 3-3

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Former IWSL Area
Northern VOC Plume Investigation
Additional Monitoring Locations

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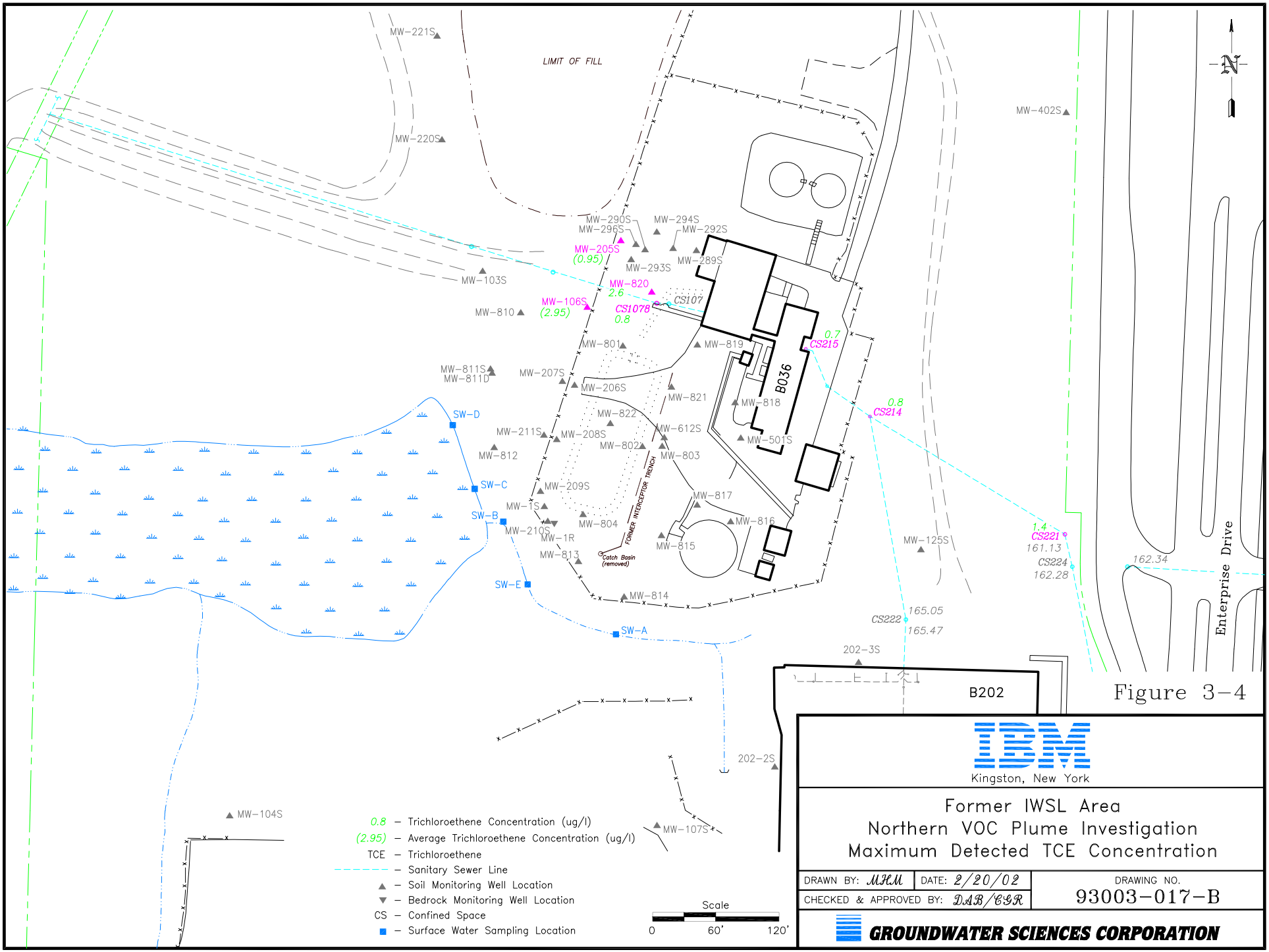

Figure 3-4

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Former IWSL Area
Northern VOC Plume Investigation
Maximum Detected TCE Concentration

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CHECKED & APPROVED BY: DAB/CGR		

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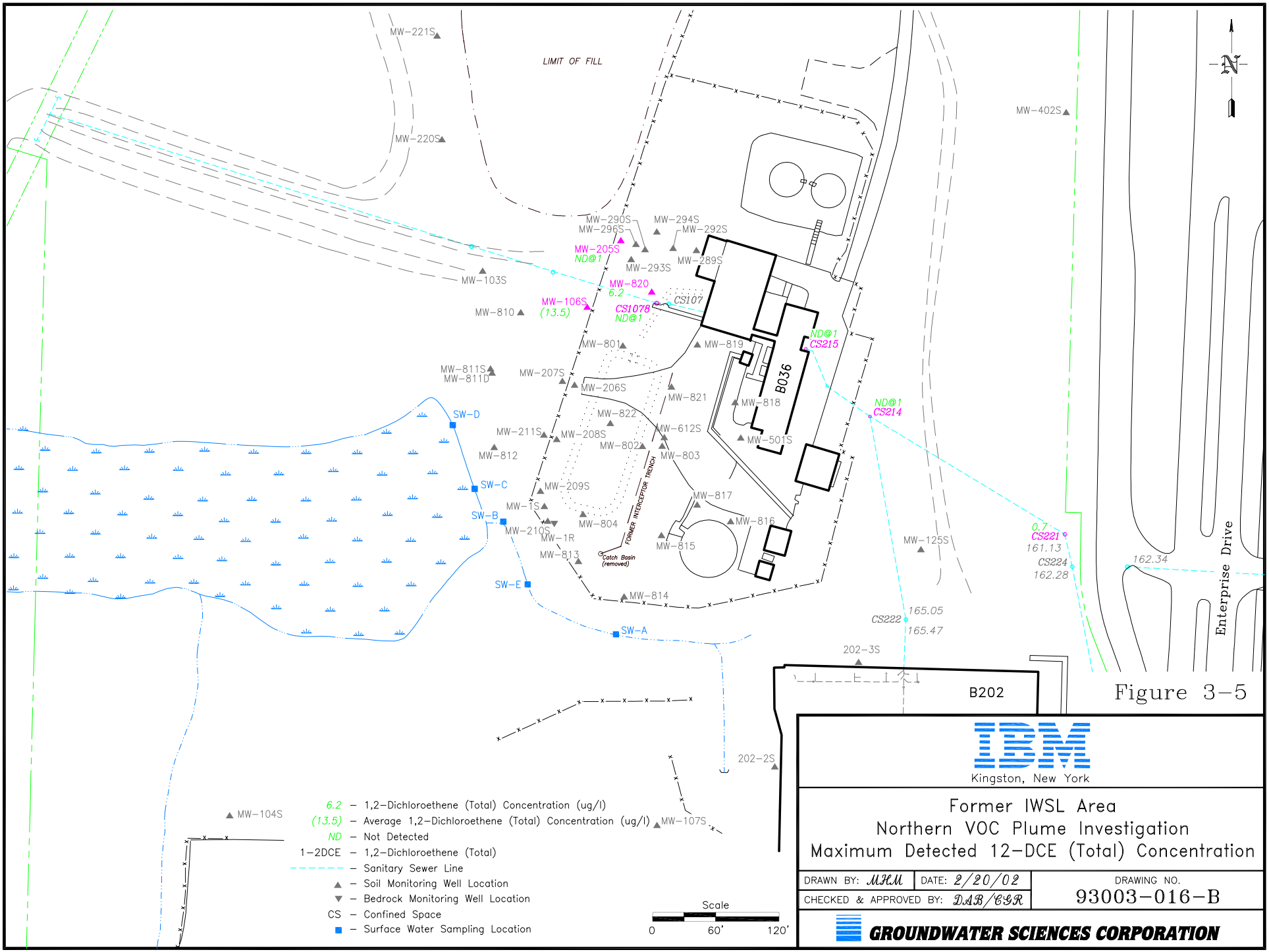

Figure 3-5

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Former IWSL Area
Northern VOC Plume Investigation
Maximum Detected 12-DCE (Total) Concentration

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CHECKED & APPROVED BY: DAB/CGR		

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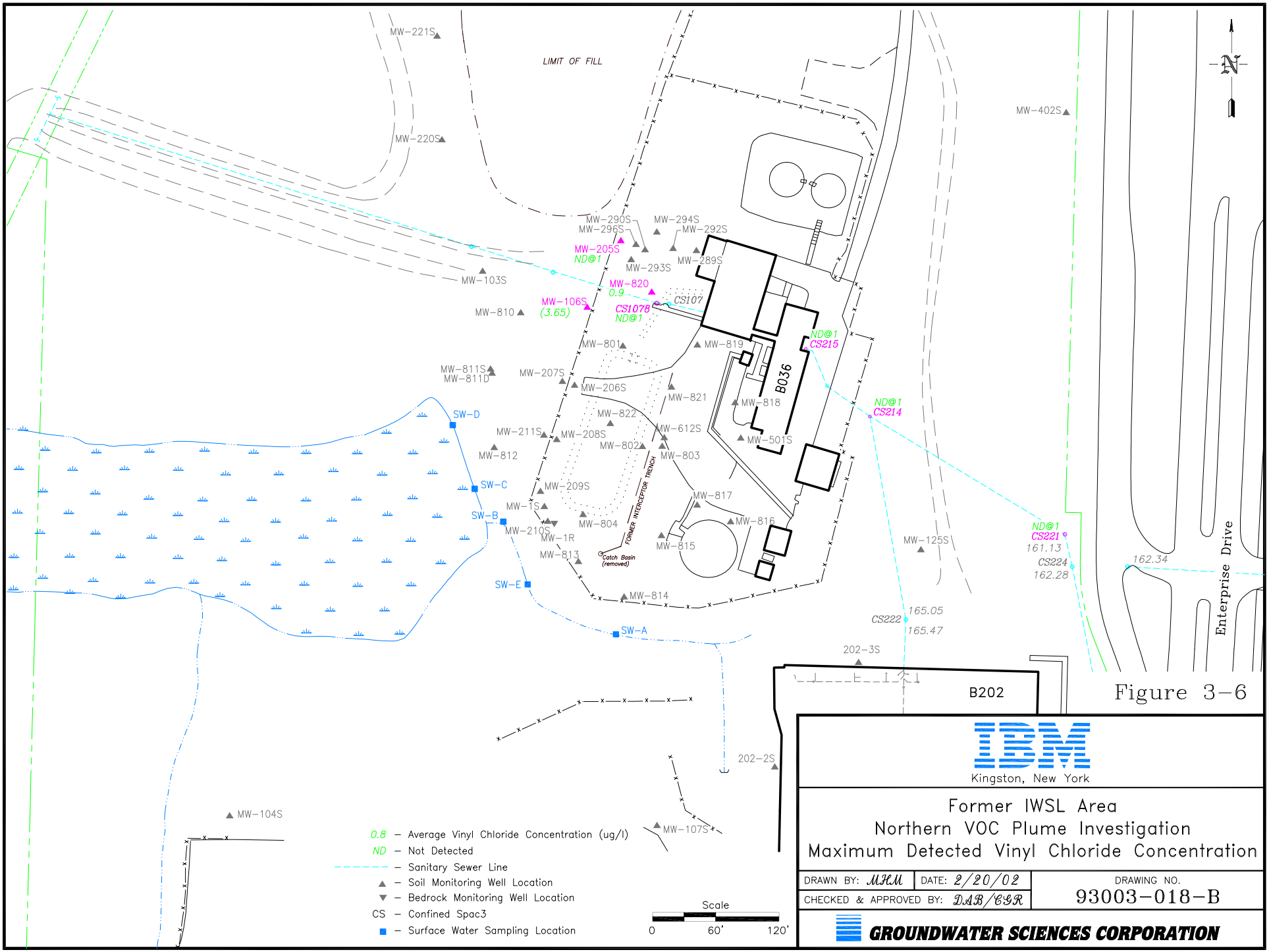

Figure 3-6

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Former IWSL Area
Northern VOC Plume Investigation
Maximum Detected Vinyl Chloride Concentration

DRAWN BY: MHM	DATE: 2/20/02	DRAWING NO. 93003-018-B
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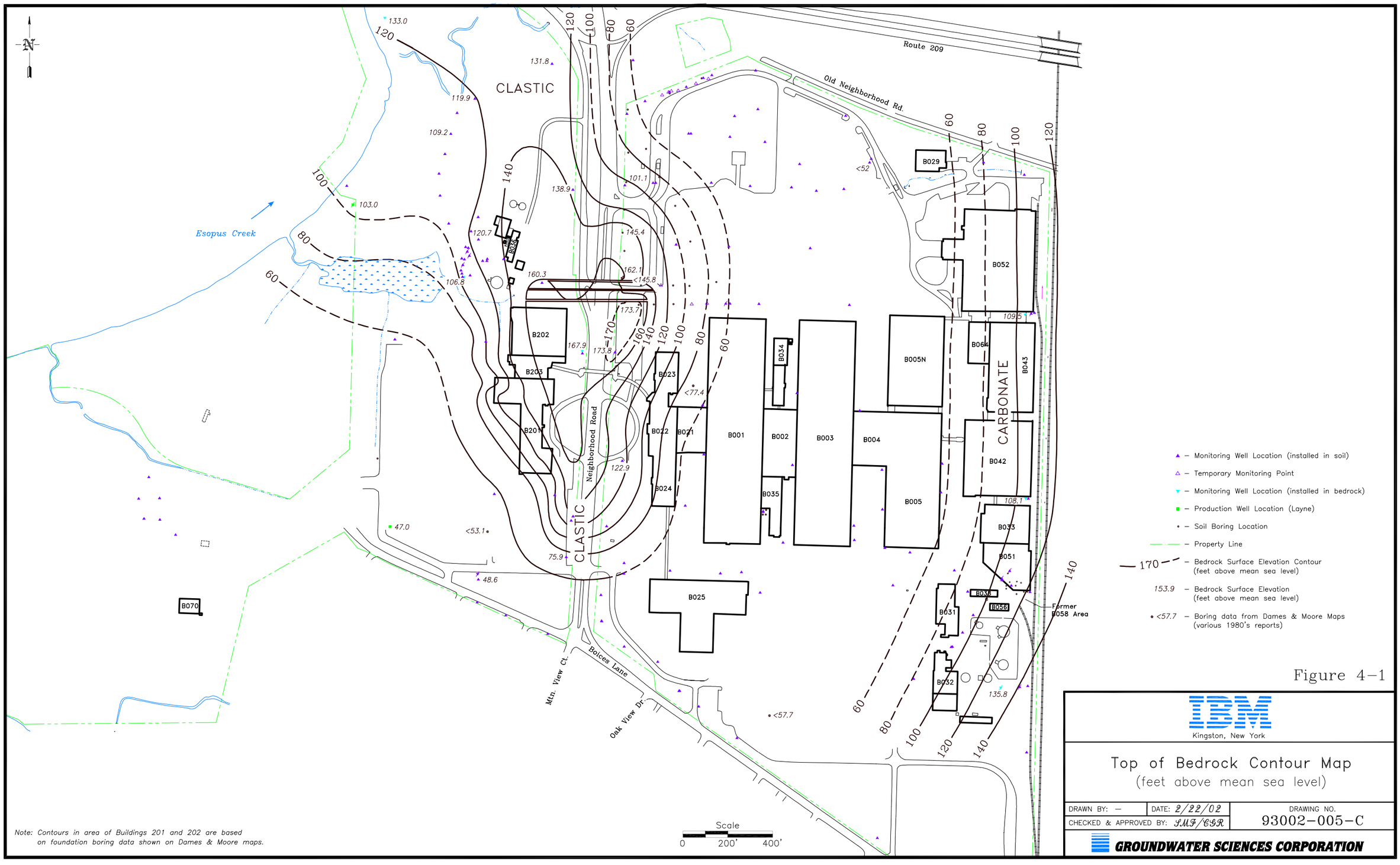

Note: Contours in area of Buildings 201 and 202 are based on foundation boring data shown on Dames & Moore maps.

Figure 4-1

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Top of Bedrock Contour Map
(feet above mean sea level)

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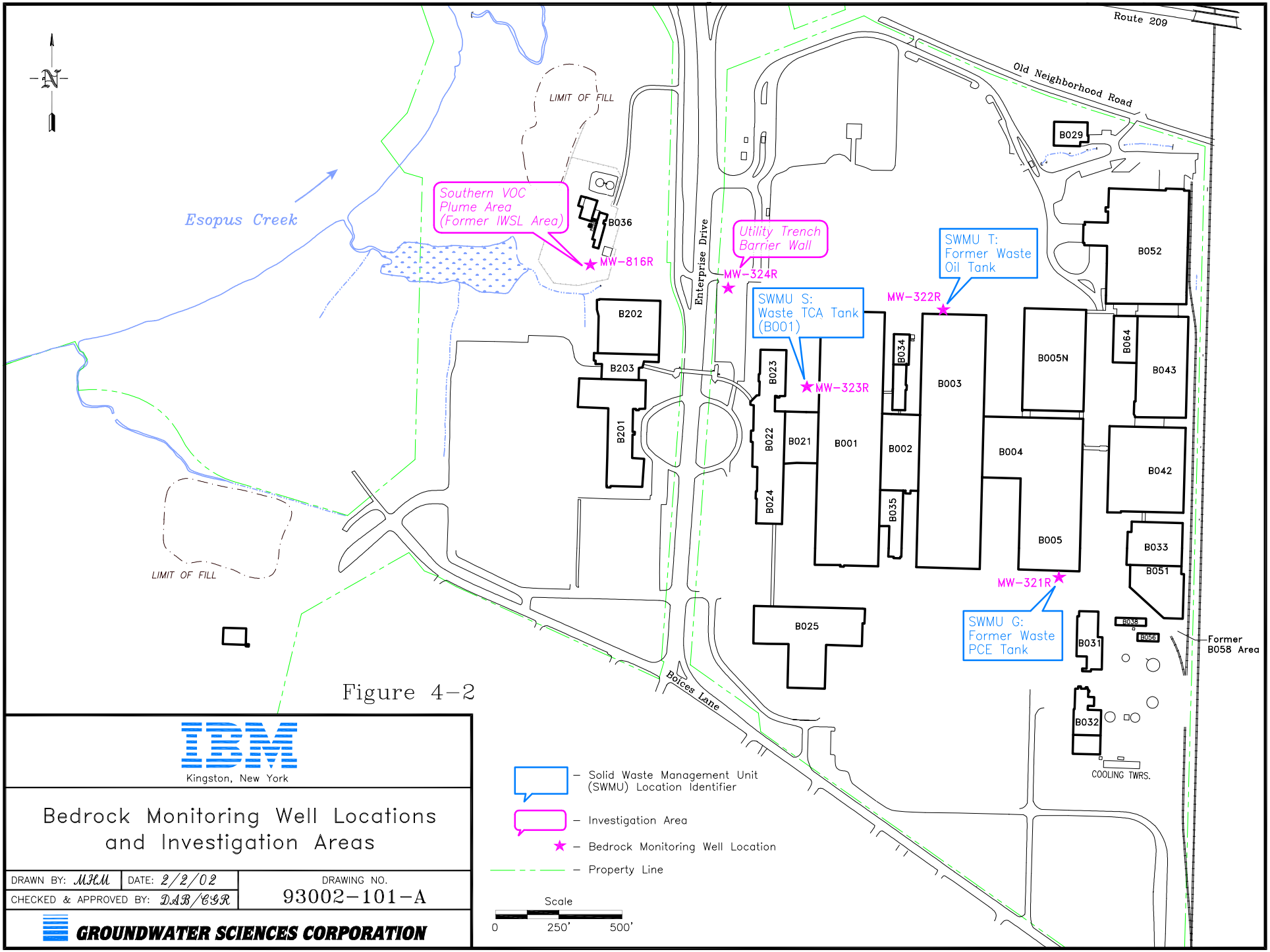

Figure 4-2

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Bedrock Monitoring Well Locations and Investigation Areas

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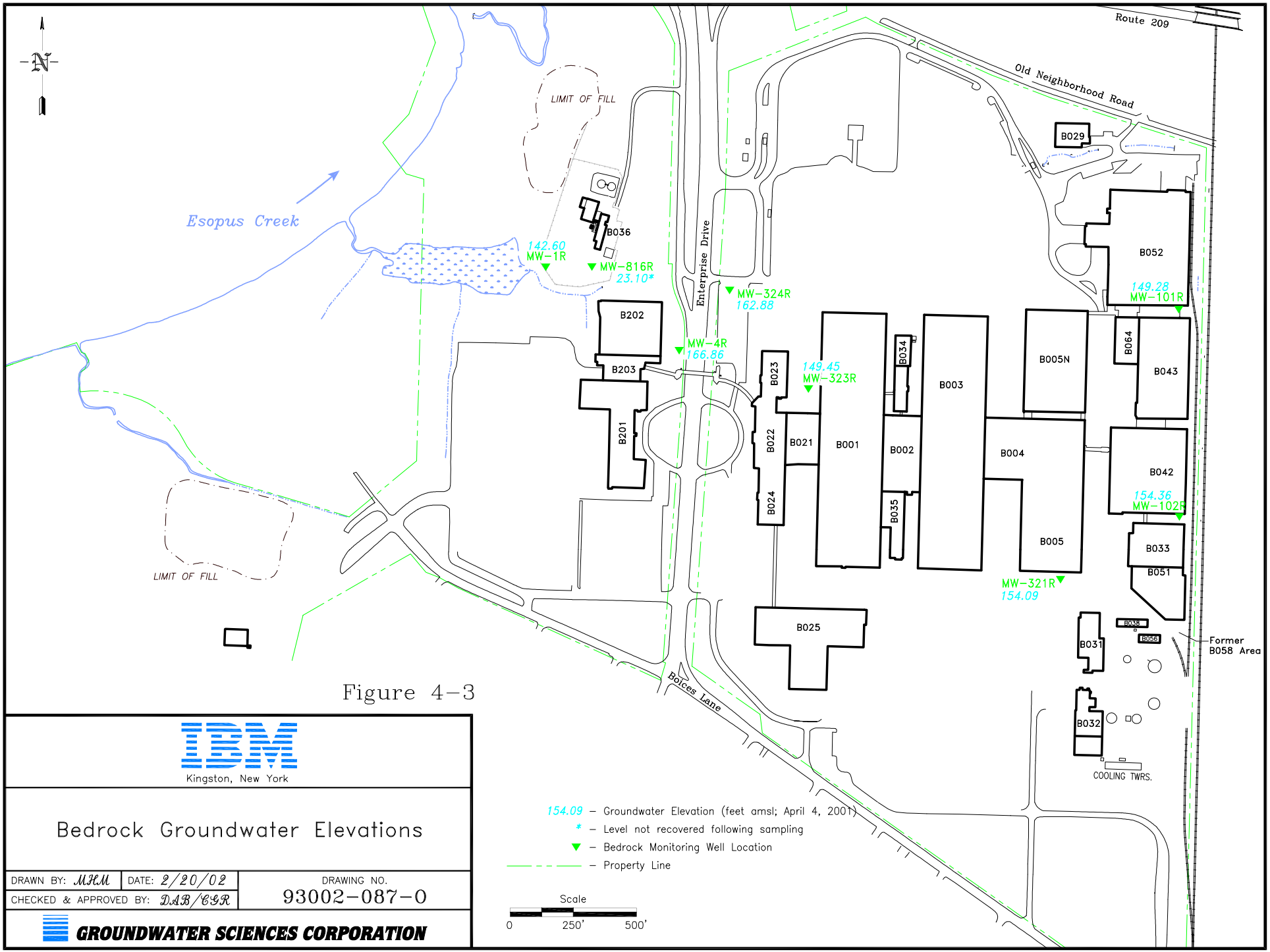

Figure 4-3

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Bedrock Groundwater Elevations

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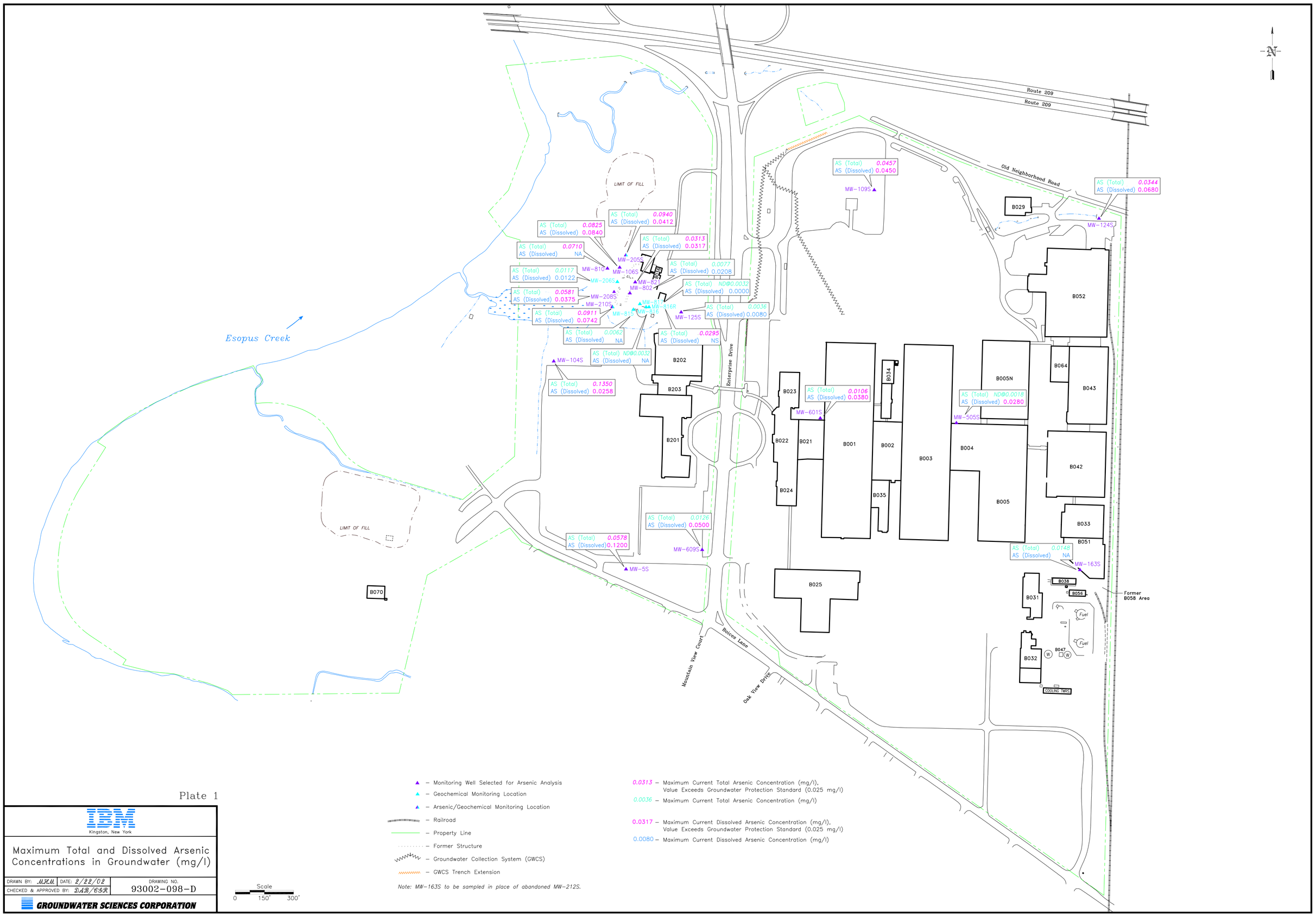

Plate 1

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Maximum Total and Dissolved Arsenic Concentrations in Groundwater (mg/l)

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Appendix A

Excerpts of Historical Work Plan Elements

2.3 Corrective Measures Study Data Requirements

In order to adequately evaluate each of the corrective measures that might be applicable to this site, it is necessary to collect many categories of data and other information during the RFI. The following subsections discuss the data collection requirements anticipated to be necessary for the corrective measures study.

2.3.1 Physical Data

Physical data needs for this site include information relative to the natural environment as well as subsurface facilities constructed to serve the use of this site. The following subsections discuss these various data needs.

2.3.1.1 Soil Sedimentology and Stratigraphy

During the RFI, continuous split-spoon samples will be collected and described by a qualified geologist to provide data on the soil sedimentology and stratigraphy beneath the site. In addition to these geologic logs, samples will be submitted to a qualified soils laboratory to determine the grain-size distribution of each of the important geologic units.

2.3.1.2 Bedrock Lithology and Structure

Also during the drilling of borings at this site which extend to bedrock, a minimum of five feet of rock core will be recovered for the purpose of determining the lithology of the bedrock at a given location and the occurrence of structural features such as joints, fractures, cleavage, and bedding planes. Other data that will be collected will include the rock quality designation (RQD) and the appearance of

weathering or mineralization on discontinuities. Finally, the depths to the top of weathered and competent bedrock will be determined for the purpose of contouring the elevation of the soil/bedrock interface and determining the thickness of the weathered bedrock zone.

2.3.1.3 Water Table and Potentiometric Levels

Water levels will be measured immediately following drilling and at appropriate locations on a quarterly basis in monitoring wells constructed throughout the site and at various depths. These water level measurements would then be used to contour the water table and potentiometric surfaces associated with various hydrogeologic units and to determine vertical and horizontal gradients across the site.

2.3.1.4 Sewer Line Locations, Invert Elevations, Construction and Flows

Although extensive work has already been done to document the location, invert elevations, and construction of the various buried sewer lines at the site, additional work is necessary to determine whether or not actual conditions match those on the drawings. Additionally, data must be collected on the flow characteristics of each of these sewer lines including, in particular, the storm drain lines which exhibit dry weather flows.

2.3.2 Chemical Concentration Data

The evaluation of the need for various corrective measures, as well as the assessment of their potential effectiveness, requires that concentration data be developed with regard to initial conditions at the site. Although considerable amounts of chemical concentration data have already been generated for this site over the past fourteen years, there are still areas in which additional data is necessary not only to define the extent and magnitude of chemical occurrence, but also to aid in the evaluation and selection

wells currently included in the site's quarterly and annual groundwater monitoring plan (GMP). Prior to that sampling round, a full round of water levels will be completed in all accessible on-site wells during one 24-hour period.

It is anticipated that any concentrations of VOCs in soil penetrated during the drilling of these plume monitoring wells would result from partitioning of these chemicals from the groundwater to the soil. However, during the drilling and installation of these wells, continuous soil samples will be collected using properly decontaminated split spoons. These samples will be subjected to the standard field screening procedure as described in the soil sampling protocol in an appendix to Appendix K. Should that field screening indicate that the concentrations in any given soil sample may indicate a source of VOCs other than by partitioning from the groundwater, that soil sample would be retained for laboratory analysis by SW-846 Method 8010.

In addition to the potential for this analysis of hazardous constituents in soil samples, 30 soil samples will be selected for analysis of grain size distribution to assist in characterizing the hydraulic conductivity of the shallow sand unit and transport factors such as the critical DNAPL head. Fifteen soil samples will also be selected for analysis of aquifer organic carbon, to provide the basis for better assessing retardation of chemical movement at this site by sorption. All of these soils analyses will be performed in accordance with the methods and procedures presented in Appendix K.

4.4 Deep Groundwater Investigation

A deep groundwater investigation will be performed to confirm that neither separate-phase nor dissolved-phase chemicals have penetrated through the varved silt and clay unit and into the underlying bedrock. Three monitoring wells will be drilled through the varved silt and clay unit into the upper part of the bedrock beneath this site. These monitoring wells are located east of B025,

between B003 and B005, and north of B001 adjacent to the 27-inch storm drain line. This places two of these wells in areas of probable high dissolved chemical concentrations in the sand unit, and one in a location which, as shown on Figure 1-4, is in the deepest part of the valley in the top of the varved silt and clay unit.

The drilling of the two wells in the areas where elevated concentrations may occur in the sand unit will require a multi-casing drilling plan. Initially, ten-inch casing will be set and grouted in place to a minimum depth of ten feet below the top of the varved silt and clay unit. Eight-inch casing will then be installed to the top of the bedrock using a drill-and-drive technique. A nominal eight-inch-diameter borehole with then be drilled to a maximum depth of 50 feet below the top of rock. The well will then be completed with four-inch, Schedule 40 PVC screen and riser pipe, utilizing the protocol contained in an appendix to Appendix K. This will include a maximum monitoring interval in the rock of 30 feet, including screen and sand pack; and a bentonite seal above the sand pack beginning no less than five feet below the top of rock and extending to within approximately three feet of ground surface. During the construction of the well, the eight-inch casing will be withdrawn, but the ten-inch casing will remain in place.

For the bedrock well to be drilled east of B025, the procedure will be identical to that described above with the exception of the setting and grouting of ten-inch shallow casing.

In addition to these three bedrock wells in the area where bedrock is overlain by a thick sequence of varved silt and clay, a fourth bedrock monitoring well will be installed northeast of B202 adjacent to Neighborhood Road. This well is positioned to be close to the utility trenches that pass through the bedrock high in this area as shown on Figure 1-8. This bedrock monitoring well is being installed to determine whether leakage of industrial wastewater directly from the clay tile IW sewers has resulted in direct discharge of hazardous constituents to the bedrock unit, and also to determine whether

groundwater potentially diverted from the North Parking Lot Area plume via these utility trenches might also be leaking downward in this area of shallow bedrock. In drilling this fourth bedrock monitoring well, six-inch steel casing will be set and grouted through the varved silt and clay and to a minimum depth of five feet into competent bedrock. A nominal six-inch diameter well will then be drilled below this casing to a maximum depth of 50 feet. This monitoring well will remain an open-hole, six-inch-diameter completion.

4.5 Determination of Aquifer and Aquitard Characteristics

In addition to the groundwater and soil investigations described above, work elements will also be performed to characterize the hydraulic properties of the various geological materials beneath this site. In addition to the performance of grain size distribution analyses to aid in determining hydraulic conductivity, pulse tests will also be performed in all of the new monitoring wells installed as part of this investigation. These pulse tests will be performed in accordance with the protocol described in an appendix to Appendix K.

As noted on Figure 4-2, a shutdown and restart test will be performed in extraction well MW-504S. Prior to performing this test, six shallow observation wells will be installed by hand augering to a minimum depth of three feet below the water table. These observation wells will be completed with two-inch, Schedule 40 PVC screen and pipe, with the screen extending a minimum of two feet above the water table. Sand pack will be placed to one foot above the top of the screen, and the remainder of the bore hole will be filled with bentonite pellets and slurry.

After these observation wells are in place, initial water level measurements will be taken and MW-504S will be shut down for a sufficient period of time to achieve full recovery of the water level in this area. At that time, pumping in this well will be resumed as part of a controlled aquifer test to

be performed in accordance with the aquifer test protocol contained in an appendix to Appendix K. The minimum duration of this test will be for a period of 24 hours, and monitoring of drawdown will be performed in accordance with the aquifer testing protocol. Recovery in both the test well and the observation wells will also be monitored for a minimum period of eight hours following shutdown of the test. The results of this test will be analyzed to determine the aquifer parameters in the vicinity of well MW-504S, and the observation well data will be analyzed to determine the area of influence of this extraction well during normal operations.

Another aquifer test will be performed in one of the deep groundwater investigation wells, preferably the bedrock well proposed to be completed between B005 and B003. However, the well to be used in this test will be selected on the basis of the available yield from each of the bedrock wells installed. This aquifer test will also be performed in accordance with the aquifer test protocol in Appendix K. During this test, water levels will be monitored in the extraction well and in available bedrock monitoring wells and nearby shallow sand unit wells, as shown on Figure 4-2. The test will be performed for a minimum period of 72 hours, with recovery monitored in the pumping well and available observation wells for a period of 24 hours following the end of the test. These data will be analyzed to determine the aquifer characteristics of the bedrock, as well as the existence of boundary conditions and the potential for vertical leakage through the varved silt and clay unit.

Finally, during the drilling of the bedrock borings that penetrate the varved silt and clay, a minimum of one undisturbed sample will be collected in each bore hole in the varved silt and clay unit and preserved for laboratory analysis of vertical hydraulic conductivity. A portion of each of these undisturbed samples will also be recovered for analysis of VOCs by SW-846 Method 8010.

5 REVISED RFI SOW FOR DEEP GROUNDWATER INVESTIGATION

The next phase of RFI activities is to perform a deep groundwater investigation to confirm that contaminants have not penetrated through the varved silt and clay unit and into the underlying bedrock. Four monitoring wells will be drilled through the varved silt and clay unit (where encountered) into the upper part of the bedrock beneath this site (Figure 5-1). Three of these monitoring wells are proposed for locations where the highest concentrations have been detected in the shallow sand: west of B001 (MW-323R), north of B003 (MW-322R), and south of B005S (MW-321R). In addition to placing these wells in the general area of high chemical concentrations in the shallow sand unit, one location, as shown on Plate 2, is in the deepest part of the valley in the top of the varved silt and clay unit (MW-322R). The fourth well (MW-324R) is located near Enterprise Drive in an area of shallow bedrock where utility trenches cut through the rock previously permitted groundwater from the TCA plume east of Enterprise Drive to flow westward toward the IWSL area. Although the installation of the utility trench barrier wall removed this transport pathway, this bedrock well is proposed to identify any impacts that may have occurred to groundwater in the bedrock unit before the barrier was constructed.

The drilling of the first three wells will occur in areas where elevated soil concentrations may be present. These elevated soil concentrations are expected to be localized in the vicinity of the SWMUs and so the three bedrock wells will be located approximately 20 feet upgradient and upslope (with respect to the varved silt and clay surface) from the SWMUs. Proposed well MW-323R will be located approximately 20 feet southwest of MW-277R; MW-322R will be located between the cutting oil IW pipe and B003 (approximately 25 feet southeast of MW-270S); and MW-321R will be located approximately 20 feet east of MW-250S. Prior to drilling these three bedrock wells, split-spoon soil samples will be collected at the shallow sand/varved silt and clay contact (and at the top of the transition zone where present) and analyzed for Method 8010 VOCs, Freon®113 and Freon®123. Soil concentrations greater than approximately 0.05 percent (500 mg/kg) will be considered indicative of potentially mobile separate-phase material and, if encountered, another nearby location will be

checked. If VOCs are not encountered above 500 mg/kg at the second location, then it will be used instead and a bedrock monitoring well will be installed at that location.

A nominal 8-inch borehole will be advanced to the top of bedrock using air rotary drilling methods with continuous casing advanced using Tubex or equivalent technology. The varved silt and clay is very soft ("weight of hammer," "weight of rods," or only one, two or three blows are most often noted in well logs) and should provide a temporary seal around the 8-inch casing during drilling. A nominal 8-inch diameter borehole will then be drilled to a maximum depth of 50 feet below the top of the bedrock. The well will then be completed with 4-inch, Schedule 40 PVC screen and riser pipe, using the protocol described in the 1993 RFI SOW. The protocol includes a maximum monitoring interval in the bedrock of 30 feet, including screen and sand pack, and a bentonite seal above the sand pack beginning no less that 5 feet below the top of rock and extending to within approximately 3 feet of ground surface. The 8-inch casing will remain in place.

In drilling the fourth bedrock monitoring well (MW-324R), 6-inch steel casing will be set and grouted through the varved silt and clay (if encountered) and to a minimum depth of 10 feet into competent bedrock. This well will be drilled using conventional air rotary methods. A nominal 6-inch diameter well will then be drilled below this casing to a maximum depth of 50 feet. This monitoring well will remain an open-hole, 6-inch diameter completion.

In addition to the bedrock groundwater investigations described above, the hydraulic properties of the bedrock and varved silt and clay will be characterized. During the drilling of the preliminary soil borings before the drilling of the bedrock borings, a minimum of one undisturbed sample will be collected in each borehole in the varved silt and clay unit and preserved for laboratory analysis of vertical hydraulic conductivity. An additional split-spoon sample from the varved silt and clay in each preliminary borehole will also be analyzed for Method 8010 VOCs, Freon®113 and Freon®123a analysis.

An aquifer test will be performed in one of the bedrock wells, preferably the bedrock well proposed to be completed north of B003 (MW-322R). However, the well to be used in this test will be selected on the basis of the available yield from each of the bedrock wells installed. This aquifer test will also be performed in accordance with the aquifer test protocol described in the 1993 RFI SOW. During this test, water levels will be monitored in the extraction well and in available bedrock monitoring wells and nearby shallow sand unit wells. The test will be performed for a minimum of 72 hours, with recovery monitored in the pumping well and available observation wells for a period of 24 hours following the end of the test. These data will be analyzed to determine the aquifer characteristics of the bedrock, as well as the existence of boundary conditions and the potential for vertical leakage through the varved silt and clay unit.

3 INVESTIGATION WORK SCOPE

The investigation workscope is outlined below and is discussed in detail in the following subsections. Based on the results of the previously completed RFI, a revision to the Deep Bedrock Investigation work scope was recommended. In addition, it was recommended that soil and groundwater be sampled for arsenic (dissolved and total) where arsenic was detected previously. Furthermore, IWSL area wells were to be sampled for additional geochemical parameters to determine if conditions favor transformations (e.g. TCE to 1,2-DCE to VC) and also to determine if conditions exist which could increase the likelihood of mobilization of arsenic. To address the influence of the sanitary lines on groundwater chemistry detected in monitoring wells MW-106S and MW-820, recommendations from the RFI included additional sanitary sewer monitoring for volatile organic compounds.

3.1 Deep Bedrock Investigation - Revised Scope of Work

To identify any contribution from the bedrock to the southern plume, a modification to the Bedrock Investigation Scope of Work is proposed to include a shallow bedrock monitoring well in the vicinity of soil monitoring well MW-816. This well would be installed using air-rotary drilling methods and would be sampled for VOCs and arsenic (dissolved and total). If saturated soil is encountered during the installation of this boring, a soil sample will be collected and analyzed for arsenic and halogenated volatile organic compounds plus Freon 113 and Freon 123a.

The well will be developed prior to sampling according to protocols specified in the approved site specific QAPjP. Three characterization samples will be collected from this well according to the protocol specified in the site's most recent GMP and will include the following parameters for analysis for each characterization sampling round: halogenated volatile organic compounds by method 8021 plus Freon 113 and Freon 123a and; arsenic (dissolved and total).

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
Bureau of Radiation & Hazardous Site Management, Room 460
50 Wolf Road, Albany, New York 12233-7255
Phone: (518) 457-9253 • **FAX:** (518) 457-9240
Website: www.dec.state.ny.us

John P. Cahill
Commissioner

Mr. Mitchell E. Meyers
Manager, Environmental Engineering
International Business Machines Corporation
9600 Godwin Drive
Manassas, VA 20110

Dear Mr. Meyers:

Re: Kingston, New York Facility
IWSL Expanded RFI & Deep Bedrock Investigation

At a meeting on March 16, 2000, between staff from IBM and Groundwater Sciences Corporation and myself, we reviewed the Expanded IWSL RFI Work Plan and the revisions to the deep bedrock investigation, contained within that Work Plan. The IWSL Work Plan is conditionally approved in accordance with the comments below. The Deep Bedrock Investigation is also conditionally approved as originally submitted and incorporating the subsequent revisions submitted on March 14, 1997 and December 9, 1999.

Conditions of Approval

1. Revised pages of the Expanded RFI Work Plan,related to the Arsenic Study, shall be submitted to accurately reference the corresponding Plates.

2. Water level measurements shall be added for the other site bedrock wells for the best possible interpretation of groundwater flow directions in this aquifer. These include, specifically, Wells MW-1R and 202-3R as discussed, but should also include other available site bedrock monitoring wells at the site, to obtain the best picture of groundwater flow.

3. The number of groundwater samples to be collected for the arsenic study were not specified in the Work Plan. As agreed, a minimum of 3 sample rounds will be performed.

4. As discussed, the cuttings from the actual bedrock well drilling (both soil and rock)

may be disposed to ground in the vicinity of the well or may be placed in the area upgradient of the collection trench, as done in the past for other slightly contaminated soils at the site. Overburden soils samples /drill cuttings from the preliminary borings shall be screened using head space methods previously approved for the site. A minimum of 25% of these samples shall be sent for laboratory analysis. Provided that the constituent levels are determined to be low, these soils may also be handled as above. The exception would be any soils that are determined to be above the Department's contained-in criteria. A final decision on disposal of such soils will rest on the analytical results, to be provided to NYSDEC.

In the event that elevated levels of hazardous constituents are indicated during the planned activity, IBM retains full responsibility to properly manage and dispose of any hazardous materials that may be generated.

If you have any questions, please call me at (518) 457-9253. As always, please provide me with timely advance notice (a minimum of 5 business days), prior to starting field work, so that oversight may be coordinated.

Sincerely,

Gary D. Casper
Senior Engineering Geologist

cc: J. Reidy, USEPA Reg. II
M. West, IBM

Appendix B

Well Abandonment Field Documentation

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 165 S Site Location Former IBM Kingston

Air Temperature 54 Skies Clear Wind Speed/Direction 4 NW

Date 4/18/00 Time Started 18:12 Time Completed 18:20

Personnel M. Rischin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Standpipe

Historical DTB 18.00 Current DTB 19.95 Current DTW 10.93

Calculate Volume in Well: 0.163 gal/ft X 19.95 = 3.25g

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 3.5 gal Depth of Casing Cut 18" below grade

Comments: All concrete surface completion was removed

March 14, 1995

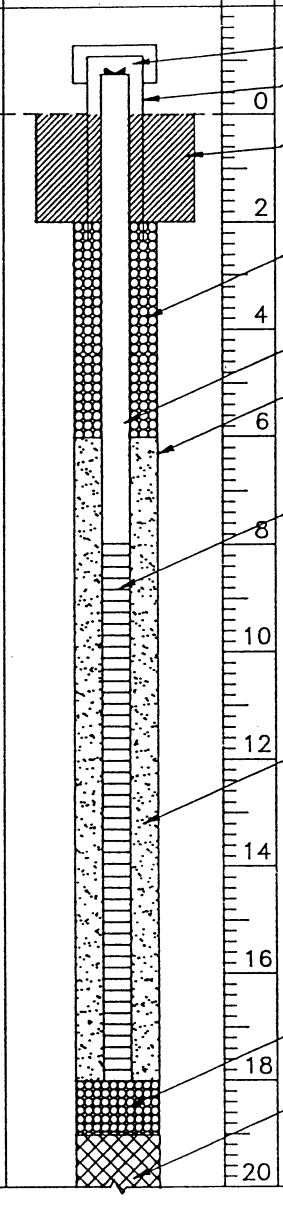
Soil Augering Log

Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 92041.04

Boring No. MW-165S
Location 120' SE of MW-166S

TOC Elev. 181.53'

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)
0	Ground Surface					
2	HAND AUGERED			SAND: well graded, m-f w/silt, occ. fine SA-SR pebble, loose, moist to dry, dark yellow brown.	SW	
4				SAND: well graded, med., little silt, tr fine SA-SR pebbles, loose, moist, med. brown.		
6				SAND: well graded, f-med., tr silt, very loose, dark yellow brown. : organic-rich lamination at 5.5'.		
8	5-6-6-6	1	14"	SAND: poorly graded, fine, trace silt, organic zones, loose, moist, dark yellow brown (lower 2" saturated).	SP	0
10	6-3-4-3	2	22"	SAND: poorly graded, fine, trace silt, organic zones upper 15", some br-gray-brown laminations, loose, saturated, dark yellow brown.		0
12	1/12"-2-2	3	22"	SAND: poorly graded, fine, trace silt, organic zones, brown-gray brown laminations, increase in med. sand lower 9", loose, saturated, dark yellow brown.		0
14	2-3-3-3	4	22"	SAND: well graded, f-med. little to tr silt zone, loose, saturated, dark yel. brown, silt zones are dark yellow orange.	SW	0
16	WOR-WOH-2-2	5	24"	SAND: well graded, f-med., tr silt, rootlet at 18", loose, saturated, dark yellow brown.		0
18	1-3-4-3	6	24"	SAND: well graded, f-m, little to trace silt, occ. silt and organic lamination 20-22", loose, saturated, light to med. yellow brown.		0
20	4-7-8-10	7	24"	SAND: well graded, f-m, lit silt, loose, saturated, dk yel br (18-18.25'). SILT: tr clay, little vf sand, stiff, varved, saturated, brown gray w/lt red to lt brown gray laminae.	ML	0



Well Construction Graphic

Well Construction Details

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 6-3-93
Drilling Completed: 6-3-93
Well Construction: 6-3-93
Well Developed: 6-7-93
Well Coords.: N716704.12
E591174.59

Notes:
* FID
Hand augered to 6.0'.
Water level at 10.0' at .5 hours after drilling completed.
WOR = Weight of Rod
WOH = Weight of Hammer

GROUNDWATER SCIENCES CORPORATION

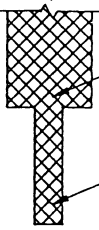
Geologic Log: MW-165S

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 92041.04

Boring No. MW-165S TOC Elev. 181.53'
Location 120' SE of MW-166S

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)
22	1-4-12-18	8	11"	SILTY SAND: very fine sand, slightly plastic, soft to very stiff, saturated, brown gray to med. dark gray.	SM-ML	0
24	5-4-4-4	9	9"	SILTY SAND: very fine sand, silt laminations 4-6", mod. plastic, firm, saturated, brown gray to med. dark gray.		0
				Total Depth: 24'.0		

Well Construction Graphic



Well Construction Details

- Collapsed formation
- 2" diameter split-spoon hole

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-165S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 166M Site Location Formar IBM Kingston

Air Temperature 55 Skies Clear Wind Speed/Direction 7 W

Date 4/18/00 Time Started 17:25 Time Completed 17:38

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Standpipe

Historical DTB 33.00 Current DTB 34.81 Current DTW 9.80

Calculate Volume in Well: 0.163 gal/ft X 34.81 = 5.67 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.20 lb/gal

Volume of Bentonite Pumped 6 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completon removel

March 14, 1995

Soil Augering Log

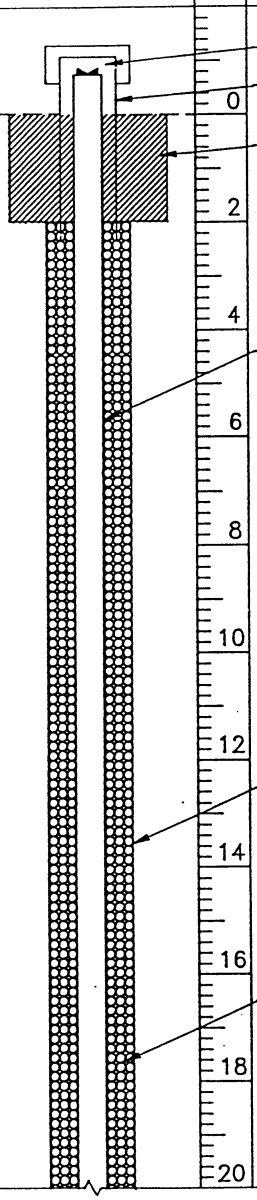
Client: IBM Mid-Hudson Valley, Kingston Site

Project No. 92041.04

Boring No. MW-166M TOC Elev. 180.18'

Location 150' SE of MW-8S

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)
0	Ground Surface					
2	HAND AUGERED			Grass and roots, 0-6". SAND: well graded, vf-med., tr fine subangular-subround pebbles, roots, loose, moist, dark yellow brown.		
4				SAND: well graded, f-med., occ. pebble, loose, moist, med. brown.	SW	
6				(4.5-5') SILT: with rootlets, loose, moist, yellow brown.	ML	
				(5-6') SAND: well graded, f-med., lit to tr silt, loose, moist.	SW	
8	5-3-5-6	1	24"	LAYERED SAND & SILT: SAND: well graded, f-med., loose, moist, mottled yellow brown to light gray; SILT: tr very fine sand, organics, dense, moist, mottled, dark brown to black.	SW and ML	0
10	7-7-5-6	2	24"	SAND: well graded, med. and fine, tr silt, loose, saturated, dark yellow brown to gray brown.		0
12	1-4-5-7	3	16"	SAND: well graded, med. and fine, tr silt, loose, saturated, increased very fine sand near 12', dark yellow br.		0
14	7-6-5-5	4	24"	SAND: well graded, f-med., tr silt, loose, saturated, dark yellow brown.		0
16	2-2-3-5	5	24"	SAND: well graded, f-med., tr silt, organic laminations (17-19"), loose, saturated, lt. brown to yellow brown.	SW	0
18	4-5-6-7	6	24"	SAND: well graded, f-med., silt and organic laminations, loose, saturated, dark yellow brown.		0
20	2-5-5-7	7	24"	SAND: well graded, f-med. little silt, increased silt with depth, loose, saturated, dark yellow brown and med. to light brown.		NR



Well Construction Graphic

Well Construction Details

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 6-3-93
Drilling Completed: 6-4-93
Well Construction: 6-4-93
Well Developed: 6-8-93
Well Coords.: N716774.31
E591089.30

Notes:

* FID

Hand augered to 6.0'.

NR = No Reading

Water level at 8.6' on 6-4-93.

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-166M

Soil Augering Log

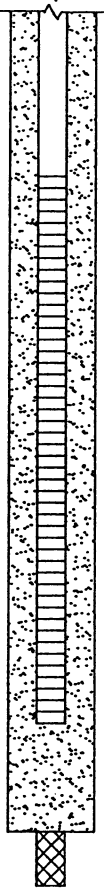
Client: IBM Mid-Hudson Valley, Kingston Site

Project No. 92041.04

Boring No. MW-166M TOC Elev. 180.18'

Location 150' SE of MW-8S

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)
22	2-4-7-12	8	24"	SAND: well graded, f-med., little silt, loose, saturated, light brown yellowish brown. (21.75') SILT: vf sand, varved w/pale red laminae, saturated, brown gray.	SW ML	0
24	4-1-2-4	9	6"	SAND: poorly graded, very fine to fine, some silt, occ. organics, loose, saturated, brown gray to yellow brown.	SM	0
26	4-2-3-5	10	24"	SAND: well graded, f-med., trace silt, occ. organics, loose, saturated, dark yellow brown.		0
28	2-3-12-15	11	24"	SAND: well graded, f-med., little silt, loose, saturated (very fine to fine sand below 18").		0
30	(washed out) 1-4-9-15	12	18"	SAND: well graded, f-med., occ. silt zone, loose, saturated, dark yellow brown to olive gray.	SW	0
32	1-1-1-8	13	9"	SAND: well graded, f-med., some silt, loose, saturated, dark yellow brown to brown gray.		0
34	6-5-6-10	14	24"	SAND: well graded, f-m, some silt, occ. silt lam. below 6", sl cohes., dk yel br-dk gray. SILT: tr vf sand layers, tr clay, v cohesive, dense, saturated, brown gray with pale red laminations.	ML	0
36	7-9-12-17	15	24"	SAND: well graded, f-m, lit silt, SA-SR pebble at 5", loose, saturated, dk gray. SILTY SAND: vf sand & silt, tr clay, pale red vert. lam's. (9-16"), horiz. varves below 16", dense, saturated, br. gray.	SW SM-ML	0
38				Total Depth: 36.0'		
40						
42						



Depth Feet	Well Construction Details
22	
24	
26	
28	
30	
32	
34	
36	
38	
40	
42	

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-166M

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 1665 Site Location Former IBM Kingston

Air Temperature 44 Skies Clear Wind Speed/Direction 5 NNE

Date 4/18/00 Time Started 17:45 Time Completed 1756

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Standpipe

Historical DTB 17.0 Current DTB 18.60 Current DTW 10.02

Calculate Volume in Well: 0.163 gal/ft X 18.60 = 3.03g

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 3.5 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed

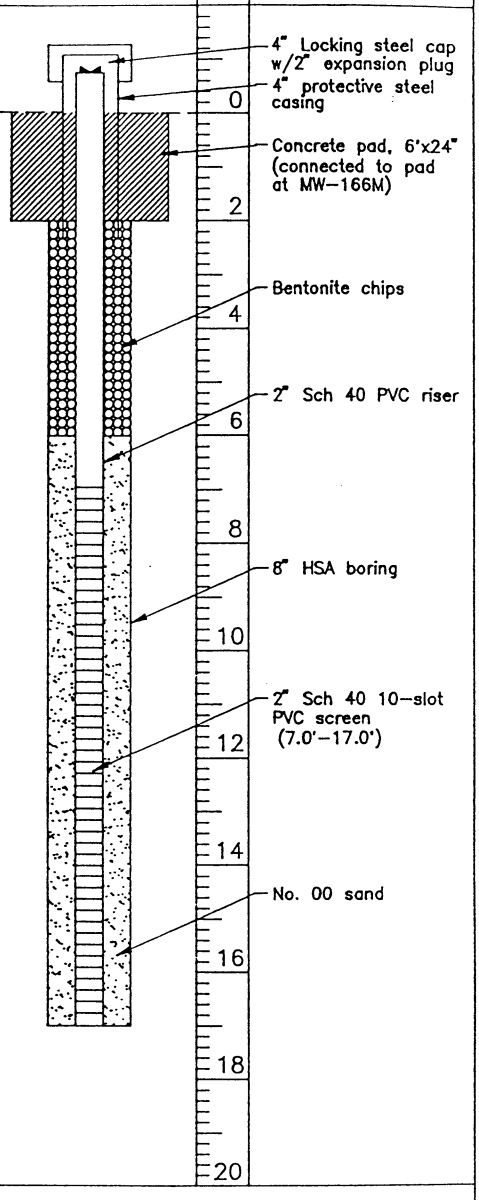
March 14, 1995

Soil Augering Log

Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 92041.04

Boring No. MW-166S TOC Elev. 180.45'
Location 150' SE of MW-8S

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)
0	Ground Surface					
2				SAND: well graded, vf-m, tr fine SA-SR pebbles, roots, loose, moist, dark yellow brown.		
4				SAND: well graded, f-m, occ. pebble, loose, moist, med. brown.	SW	
6				(4.5-5') SILT: roots, loose, moist, yellow brown.	ML	
				(5-6') SAND: well graded, f-m, lit-tr silt, loose, moist.	SW	
8				LAYERED SILT & SAND: SAND: well graded, f-m, loose, moist, mottl. yel br-lt gray; SILT: tr vf sand, organics, dense, moist, mottl dk brown-black. brown-black.	SW and ML	
10				SAND: well graded, f-m, trace silt, loose, saturated, dark yellow brown to gray brown.		
12				SAND: well graded, f-m, trace silt, loose, saturated, increased vf sand near 12', dark yellow brown.		
14				SAND: well graded, f-med., trace silt, loose, saturated, dark yellow brown.	SW	
16				SAND: well graded, f-m, trace silt, organic laminations (17-19"), loose, saturated, lt. brown to yellow brown.		
18				SAND: well graded, f-m, silt and organic laminations, loose, saturated, dark yellow brown.		
20				Total Depth: 17.0'		



Well Construction Details

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 6-8-93
Drilling Completed: 6-8-93
Well Construction: 6-8-93
Well Developed: 6-17-93
Well Coords.: N716773.19
E591086.36

Notes:

* FID

Located 3' southwest of MW-166M.

Log for MW-166M used for descriptions.

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-166S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 167 S Site Location Former IBM Kingston

Air Temperature 44 Skies clear Wind Speed/Direction 5 NNE

Date 4/18/00 Time Started 1725 Time Completed 1738

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Standpipe

Historical DTB 18.00 Current DTB 18.10 Current DTW 11.28

Calculate Volume in Well: 0.163 gal/ft X 18.10 = 2.95gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 3 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed.

March 14, 1995

Soil Augering Log

Client: IBM Mid-Hudson Valley, Kingston Site

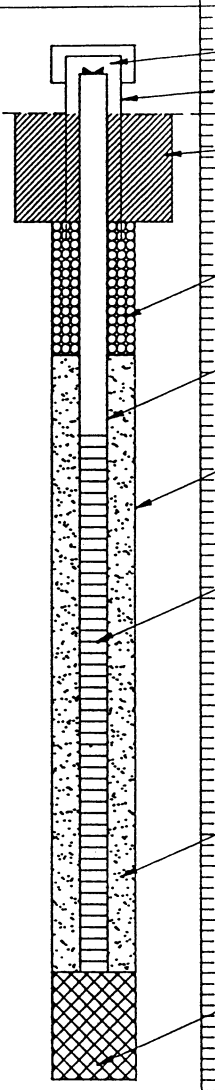
Project No. 92041.04

Boring No. MW-167S

Location 150' NW of MW-8S

TOC Elev. 181.38'

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)
0	Ground Surface					
2	HAND AUGERED			SAND: f-m, w/silt, roots, occ. fine pebble, loose, sl. moist, dk. yel. br.	SM	
				SAND: poorly graded, f-m, tr SA-SR pebbles, v. loose, moist, med. brown.	SP	
4				SAND: well graded, f-m, some c-vc (3-3.'), little silt, loose, moist, dark yellow brown.	SW	
6				SAND: well graded, f-m, lit silt, occ. f SA-SR, pebble, loose, moist, dk. yel. brown, change to lt. brown at 5.25', and pale yellow below 5.75'.		
8	4-4-3-4	1	18"	SAND: poorly graded, f-m, tr silt, occ. organics, loose, moist, mottled dark yellow brown to med. yellow brown.	SP	
10	5-3-3-5	2	15"	SAND: poorly graded, f-m, tr silt and peat, saturated, dark yellow brown to gray brown, silt layer at 8'10"-9'1".		
12	1-1-1-1	3	14"	LAYERED SAND & SILT: SAND: well graded, f-m, w/organics, loose, saturated, dk. yel. br.; SILT: (4-7"): varved, stiff, saturated, med. yel. br., lower 7" of sand vf-f, lit med. sand.	SW-ML	
14	2-2-4-6	4	18"	SAND: well graded, vf-m, little silt, loose, saturated, dk. yel. to dusky yel. br., (lt brown at 14"), trace organics at base, fining downward.	SW	
16	3-1-1-6	5	18"	SAND: well graded, vf-m, little silt, increased fining with depth, loose, saturated, br.-gray to med. dk. gray.		
18	4-4-3-4	6	15"	SILT: plastic, tr clay, v. fine sand, tr organics, varved, dense, saturated, brown gray with pale red laminations.	ML	
20				Total Depth: 18.0'		



Well Construction Graphic

Depth Feet: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20

Well Construction Details

- 4" Locking steel cap w/2" expansion plug
- 4" protective steel casing
- Concrete pad, 24"x24"
- Bentonite chips
- 2" Sch 40 PVC riser
- 8" HSA boring
- 2" Sch 40 10-slot PVC screen (6.0'-16.0')
- No. 00 sand
- Collapsed formation

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 6-4-93
Drilling Completed: 6-4-93
Well Construction: 6-4-93
Well Developed: 6-7-93
Well Coords.: N716974.84
E590842.00

Notes:

* FID

Hand augered to 6.0'.

Water Level at 9.7' on 6-4-93.

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-167S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 168M Site Location Former IBM Kingston

Air Temperature 44 Skies Clear Wind Speed/Direction 6 NNE

Date 4/18/00 Time Started 17:05 Time Completed 17:15

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Standpipe

Historical DTB 32.0 Current DTB 34.50 Current DTW 10.72

Calculate Volume in Well: 0.163 gal/ft X 34.50 = 5.62 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 6 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed

Soil Augering Log

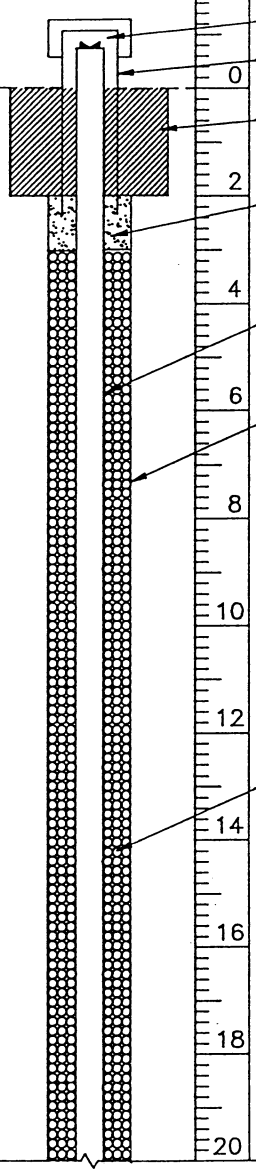
Client: IBM Mid-Hudson Valley, Kingston Site

Project No. 92041.04

Boring No. MW-168M TOC Elev. 180.61'

Location 150' NW of MW-167S

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)
0	Ground Surface					
2	HAND AUGERED			SILTY SAND: f-m, roots, loose, moist, dark yellow brown.	SM	
				SAND: well graded, vf-med., occ. SA-SR pebble, loose, moist, med. brown.	SW	
4				SAND: poorly graded, f-med., loose, soft, moist, brown.	SP	
6				SAND: poorly graded, f-med., loose, moist, yellow brown to light gray.		
8				SAND: well graded, f-med., tr silt, occ. organics, mottled, loose, dark yellow brown.	SW	
10				SAND: well graded, vf-med., little silt, loose, firm, saturated, yellow brown.		
12				SAND: well graded, f-med., little silt, silt laminations 13-14", fining with depth, occ. organic laminae, loose, saturated, dark yellow brown.		
14				SILTY SAND: vf-f, tr med. silt laminations & vf-f silty sand laminations, dense, saturated, yellow brown to br. gray, laminations br gray & pale red.	SM	
16				SILTY SAND: vf-f, little med. sand, silt laminations, occ. organics, very loose, saturated, dark yellow brown.		
18				Same as above.		
20				SILTY SAND: very fine, little fine sand, occ. organics, dense, saturated, color change at 18.75' from yellow brown-med. brown to brown gray-dark gray. Red varves from 7"-8".		



Well Construction Graphic

Well Construction Details

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 6-8-93
Drilling Completed: 6-8-93
Well Construction: 6-8-93
Well Developed: 6-17-93
Well Coords.: N717086.20
E590740.76

Notes:

* FID

Upper 24 feet described from MW-168S well log.

NR = No Reading

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-168M

Soil Augering Log

Client: IBM Mid-Hudson Valley, Kingston Site

Project No. 92041.04

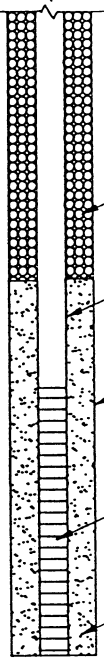
Boring No. MW-168M

TOC Elev. 180.61'

Location 150' NW of MW-167S

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)
22				SILTY SAND: vf-f, slightly plastic, occ. organics, organic zone 11-13", laminated br gray to pale red silt at bottom, dense, saturated, dark gray to dark gray brown.		
24				SILTY SAND: vf-f, slightly plastic, occ. organics, dense, saturated, color laminated dark gray to brown gray.	SM	
26	3-3-2-1	1m	20"	SILTY SAND: v-f, some layering, compact, saturated, med. dk. gray to dark gray.		NR
				SILT: tr clay, plastic, varved pale red laminae, dense, saturated, brown gray.	ML	
28	4-5-4-3	2m	16"	SILTY SAND: very fine, slightly plastic, loose, saturated.	SM	NR
30	2-1-3-4	3m	18"	SILT: trace clay, trace very fine sand, plastic, dense, saturated, varved brown gray and pale red.	ML	NR
32	2-1-4-4	4m	22"	SILT: trace clay, occ. very fine sand zones (6-8" and 18-20"), plastic, dense, saturated, varved brown gray and pale red.	ML-SM	NR
				Total Depth: 32.0'		
34						
36						
38						
40						
42						

Well Construction Graphic



Depth Feet

22 24 26 28 30 32 34 36 38 40 42

Well Construction Details

- Bentonite chips
- 2" Sch 40 PVC riser
- 8" HSA boring
- 2" Sch 40 10-slot PVC screen (27.0'-32.0')
- No. 00 sand

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-168M

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 168 S Site Location Former IBM Kingston

Air Temperature 44 Skies Clear Wind Speed/Direction 8 NE

Date 4/18/00 Time Started 1653 Time Completed 1700

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Standpipe

Historical DTB 19.00 Current DTB 20.73 Current DTW 10.91

Calculate Volume in Well: 0.163 gal/ft X 20.73 = 3.38g

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 3.5 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed

Soil Augering Log

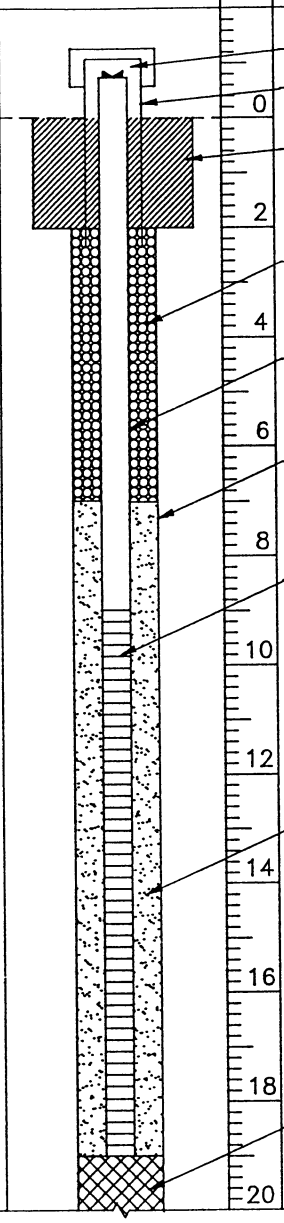
Client: IBM Mid-Hudson Valley, Kingston Site

Project No. 92041.04

Boring No. MW-168S TOC Elev. 180.86'

Location 150' NW of MW-167S

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)
0	Ground Surface					
2	HAND AUGERED			SILTY SAND: f-m, roots, loose, moist, dark yellow brown.	SM	
				SAND: well graded, vf-med., occ. SA-SR pebble, loose, moist, med. brown.	SW	
4				SAND: poorly graded, f-med., loose, soft, moist, brown.	SP	
6				SAND: poorly graded, f-med., loose, moist, yellow brown to light gray.		
8	7-6-6-6	1	15"	SAND: well graded, f-med., tr silt, occ. organics, mottled, loose, dark yellow brown.	SW	NR
10	4-4-5-5	2	10"	SAND: well graded, vf-med., little silt, loose, firm, saturated, yellow brown.		NR
12	1-1-3-2	3	18"	SAND: well graded, f-med., little silt, silt laminations 13-14", fining with depth, occ. organic laminae, loose, saturated, dark yellow brown.		NR
14	2-1-5-8	4	24"	SILTY SAND: vf-f, tr med. silt laminations & vf-f silty sand laminations, dense, saturated, yellow brown to br. gray, laminations br gray & pale red.	SM	NR
16	1-1-3-2	5	18"	SILTY SAND: vf-f, little med. sand, silt laminations, occ. organics, very loose, saturated, dark yellow brown.		NR
18	3-3-4-7	6	22"	Same as above.		NR
20	1-1-2-2	7	16"	SILTY SAND: very fine, little fine sand, occ. organics, dense, saturated, color change at 18.75' from yellow brown-med. brown to brown gray-dark gray. Red varves from 7"-8".		NR



Well Construction Graphic

Well Construction Details

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 6-7-93
Drilling Completed: 6-7-93
Well Construction: 6-7-93
Well Developed: 6-7-93
Well Coords.: N717083.89
E590742.47

Notes:

* FID

Hand augered to 6.0'.

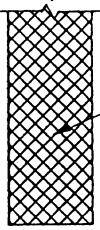
NR = No Reading

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-168S

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 92041.04

Boring No. MW-168S TOC Elev. 180.86'
Location 150' NW of MW-167S

Depth Feet	Blow Counts	Sample Number	Recovery	Overburden/Lithologic Description	USCS	Volatile Scan* (ppm)	Well Construction Graphic	Depth Feet	Well Construction Details
22	4-3-3-4	8	18"	SILTY SAND: vf-f, slightly plastic, occ. organics, organic zone 11-13", laminated br gray to pale red silt at bottom, dense, saturated, dark gray to dark gray brown.	SM	NR		22	Collapsed formation
24	3-3-3-5	9	14"	SILTY SAND: vf-f, slightly plastic, occ. organics, dense, saturated, color laminated dark gray to brown gray.		NR		24	
26				Total Depth: 24.0'				26	
28								28	
30								30	
32								32	
34								34	
36								36	
38								38	
40								40	
42								42	

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-168S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 301 Site Location former IBM Kingston

Air Temperature 44 Skies Clear Wind Speed/Direction 5 N

Date 4/18/00 Time Started 15:55 Time Completed 16:12

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Short Standpipe

Historical DTB 18.00 Current DTB 18.01 Current DTW 10.73

Calculate Volume in Well: 0.367 gal/ft X 18.01 = 6.60

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

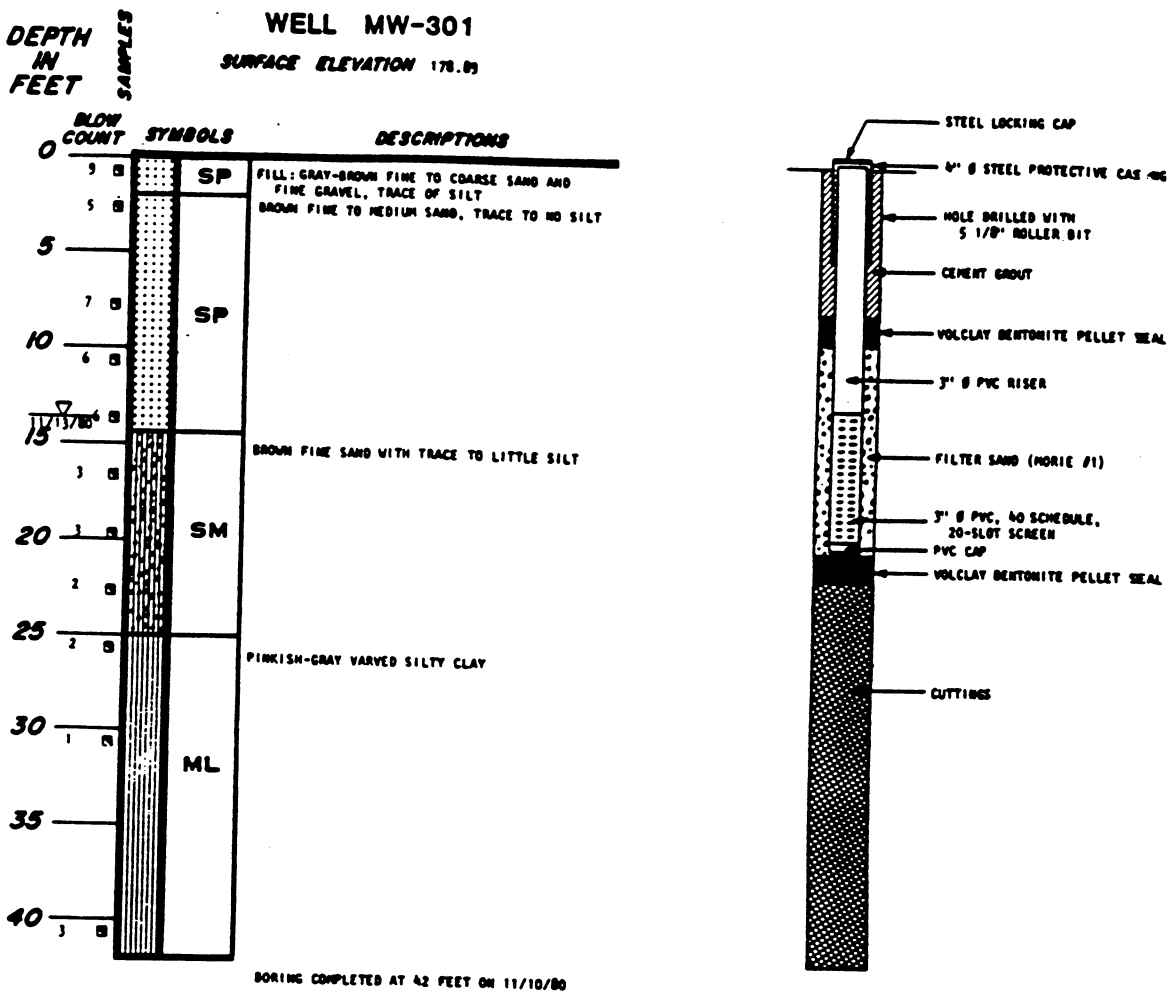
Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 7 gal Depth of Casing Cut 12" below grade

Comments: All of concrete surface completion was removed.
All protective I beam steel was removed (pulled)

March 14, 1995



LOG AND MONITORING WELL DETAIL

NOTES:

1. THE FIGURES IN THE COLUMN LABELED "BLOW COUNT" REFER TO THE NUMBER OF BLOWS REQUIRED TO DRIVE A SPLIT-SPOON SAMPLER A DISTANCE OF ONE FOOT USING A 300 POUND DRIVE WEIGHT FALLING 30 INCHES. THE UTILIZED SPLIT-SPOON SAMPLERS WERE 2 OR 3 INCHES O.D.

2. BECAUSE IN A STANDARD PENETRATION TEST ONLY A 2-INCH DIAMETER SPLIT-SPOON AND A 140-POUND HAMMER ARE USED, ALL BLOW COUNTS OBTAINED DURING THIS STUDY BY DRIVING 2 TO 3½-INCH DIAMETER SPLIT-SPOONS WITH A 300-POUND HAMMER FALLING 30-INCHES ARE NOT VALID FOR COMPARISON WITH STANDARD PENETRATION TEST BLOW COUNTS VALUES OBTAINED IN PREVIOUS INVESTIGATIONS.

3. ELEVATIONS REFER TO MEAN SEA LEVEL DATUM.

4. THE DISCUSSION IN THE TEXT OF THE REPORT IS NECESSARY FOR A PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 302 Site Location Former IBM Kingston

Air Temperature 44 Skies Clear Wind Speed/Direction 5 N

Date 4/18/00 Time Started 15:20 Time Completed 15:45

Personnel M Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Short Standpipe

Historical DTB 22.0 Current DTB 22.41 Current DTW 9.63

Calculate Volume in Well: 0367 gal/ft X 22.41 = 8.22 gal

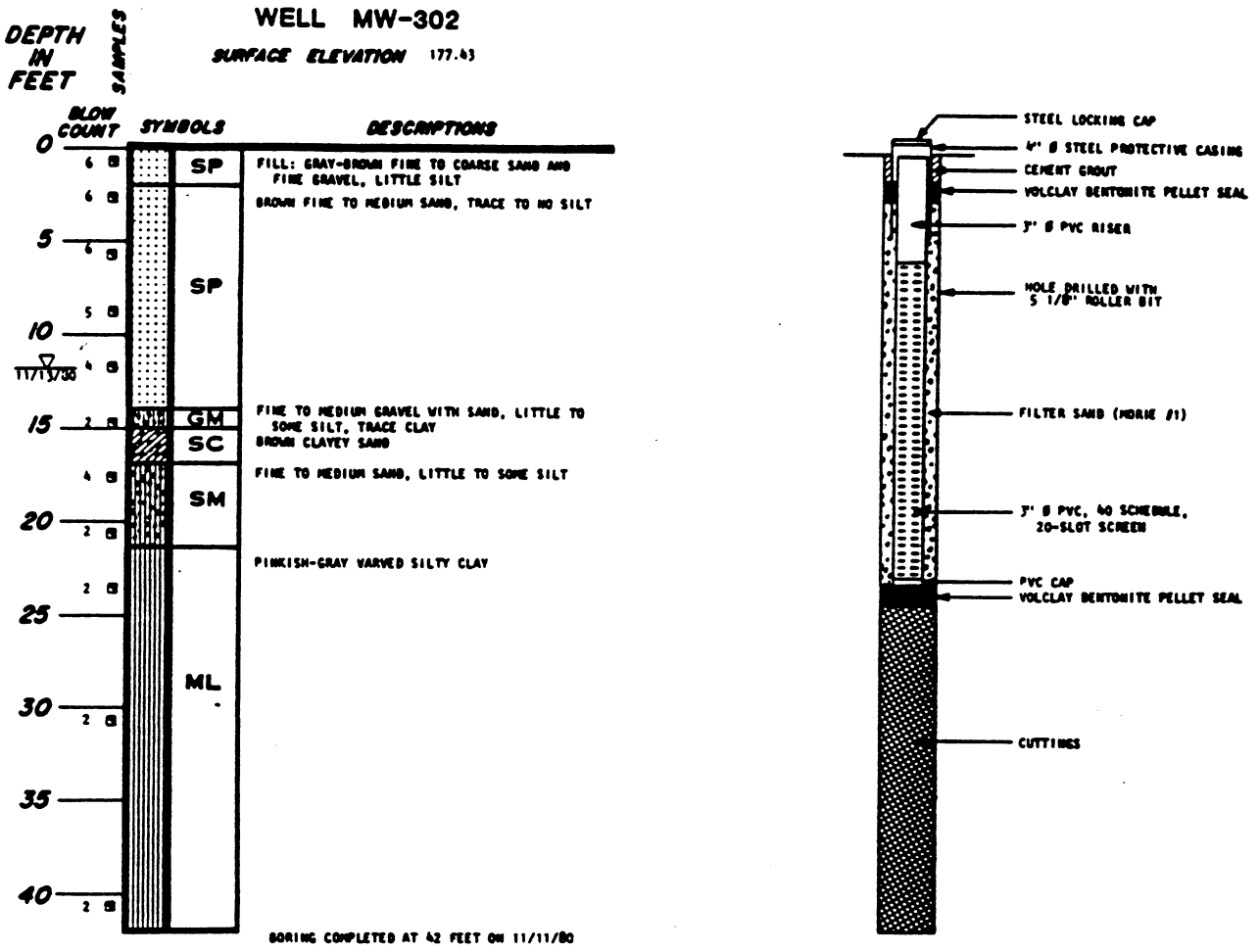
gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 8.5 gal Depth of Casing Cut 12" below grade

Comments: All concrete surface completion removed, protective steel cut 1' below grade



LOG AND MONITORING WELL DETAIL

DAMES & MOORE

FIGURE 20/28

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 303 Site Location Former IBM Kingston

Air Temperature 44 Skies Clear Wind Speed/Direction 7 NE

Date 4/18/00 Time Started 14:40 Time Completed 15:10

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Short Standpipe

Historical DTB 17.0 Current DTB 17.60 Current DTW 8.65

Calculate Volume in Well: 0.367 gal/ft X 17.60 = 6.46 gal

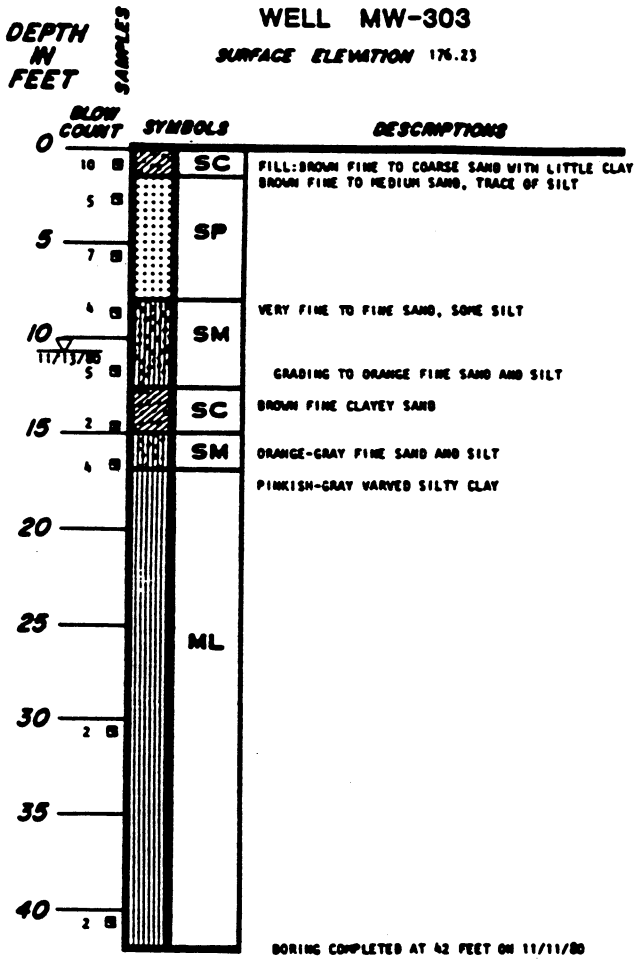
gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

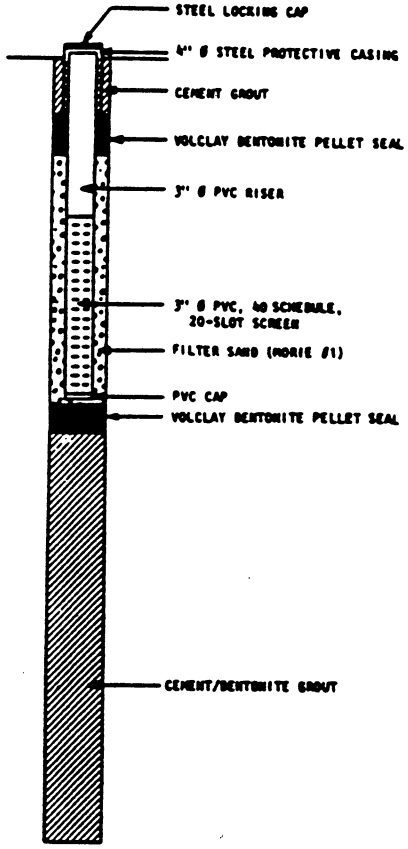
Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 6.5 gal Depth of Casing Cut 12" below grade

Comments: All concrete removed, Protective barricades cut 1' below grade,





LOG AND MONITORING WELL DETAIL

DAMES & MOORE

FIGURE 20/29

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 241 S Site Location Former IBM Kingston

Air Temperature 44 Skies Clear Wind Speed/Direction 8 NNE

Date 4/18/00 Time Started 15:58 Time Completed 14:10

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Standpipe

Historical DTB 16.00 Current DTB 19.07 Current DTW 12.08

Calculate Volume in Well: 0.163 gal/ft X 19.07 = 3.10 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 3.5 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed

March 14, 1995

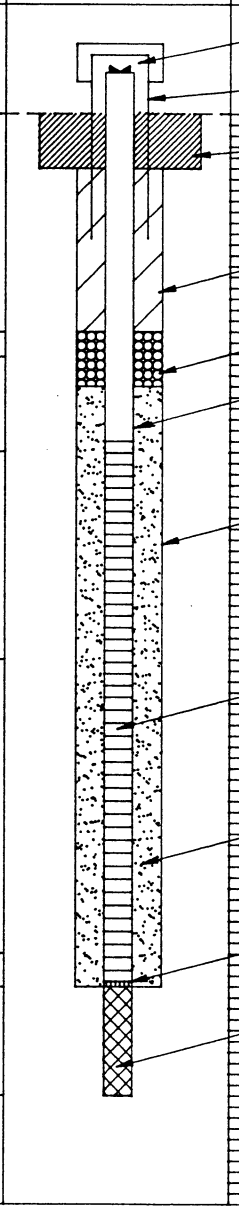
Soil Augering Log

Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-241S
Location NW edge of Salt Barn Area Landfill

TOC Elev. 165.86
GS Elev. 163.21

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	AUGERED				Sand and gravel fill to ~6". Dark brown gravelly sand with silt below 6".	
4						
6	4-4-8-11	0	1	14"	SILT: mod yel br, tr clay, dense, sl plastic, moist, 0-7". SAND & SILT: at 7", dk yel br to mod yel brown, vf-f sand, cohesive, tr organics, moist.	ML / SM
8	7-7-8-12	0	2	12"	: same as above, top 2". SAND: yellow gray, vf-m, tr silt, mottled, loose, grading into pred. m-c, some f, tr vc below 7", loose, moist, dark yellow brown.	SW
10	11-9-12-15	0	3	17"	SAND: pred dk yel br, f-m, some vf, w/vf-f sand layers at 2" and 4" (<0.5" thick), coarsening to m-c, lit vc below 4", fine R gravel below 10", increasing f gravel and vc sand below 15", sl cohesive, moist to wet.	
12	5-10-10-9	0	4	16"	SAND w/GRAVEL: dk yel brown to lt olive gray, f-m top 3", grading into pred c, some vc-m sand, tr fine R gravel below 3", dk yel orange zone at 3", incr silt and gravel 10-13", crumbly, wet.	GP/ SW
14	5-7-7-9	0	5	10"	SAND w/GRAVEL: dk yel brown to lt olive gray, c-vc, lit m, tr finer sands, f R gravel 0-4", loose, fining sl to m-c below 4", gravel absent, loose, homogeneous, wet.	
16	7-10-37-25	0	6	24"	SAND: m-c, some f, tr vf, tr f R gravel throughout, homogeneous, loose, wet, olive gray to dk yel br, large 1" R siltstone pebble at 9". SILT: at 16", weathered, varved, lit-some clay, mod yel br to pale yel br, some pale red laminations, dense, sl plastic, wet.	ML
18	4-3-2-6	0	7	16"	SILT & CLAY: mod yel br to lt olive gray 5-7", turning to brownish gray with pale red laminations, dense, plastic, wet.	MH/ CH
20					Total Depth: 18.0'.	



Well Construction Graphic

Well Construction Details

- 4" Locking Royer cap w/2" expansion plug
- 4" protective steel casing
- Concrete pad
- Bentonite slurry
- Bentonite chips
- 2" Sch 40 PVC riser
- 8" HSA borehole
- 2" Sch 40 10-slot PVC screen (6.0'-16.0')
- No. 00N sand
- Bottom end cap
- Collapsed/swelled formation

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-20-94
Drilling Completed: 10-20-94
Well Construction: 10-20-94
Well Developed: 10-28-94
Well Coords.: N717727.79
E588721.93

Notes:
*No response to PID jar headspace scan.

Measured DTB from grade (10/21/94): 16'.

SWL 10.35' (10/21/94, 09:41; from grade).

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-241S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 245 S Site Location Former IBM Kingston

Air Temperature 43 Skies Clear Wind Speed/Direction 5 NNE

Date 4/18/00 Time Started 13:40 Time Completed 13:45

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Standpipe

Historical DTB See log note Current DTB 11.86 Current DTW Dry

Calculate Volume in Well: 0.163 gal/ft X 11.86 = 1.93 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 2 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed

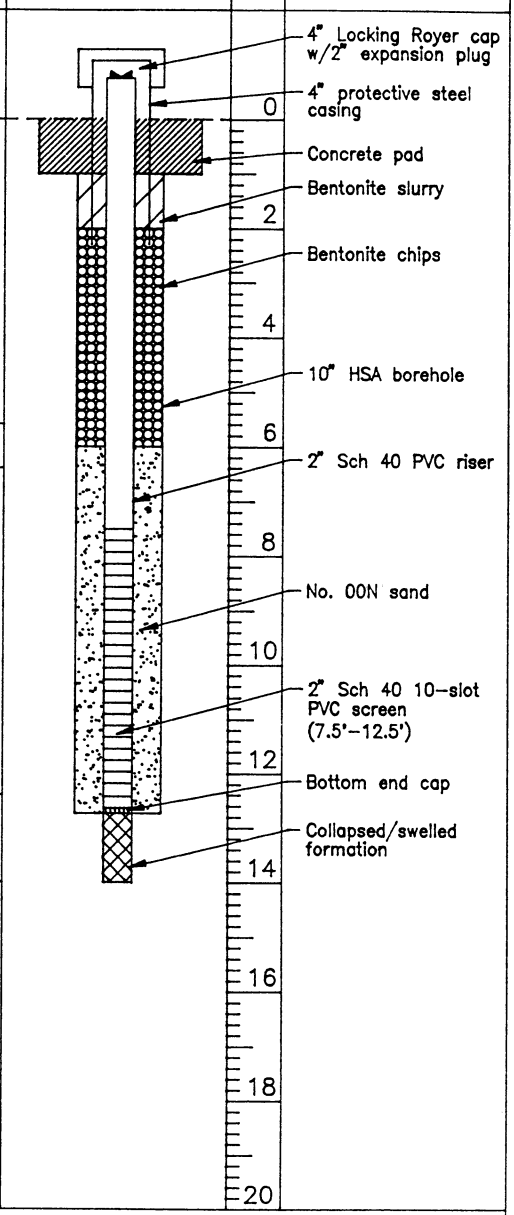
March 14, 1995

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-245S
Location 100 ft E of MW-240S
Salt Barn Area Landfill

TOC Elev. 166.76
GS Elev. 164.22
Page 1 of 1

Depth Feet	Blow Counts	PID * (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	AUGERED				Sand and gravel fill with asphalt, concrete, and cobbles.	FILL
4						
6	8-7-9-6	0 (0)	1	9"	SAND & SILT w/ROCK FRAGS: dk yellow brown, vf-m, some-lit c, tr vc, and f-m gravel, crumbly, moist. : pred silt lower 2".	
8	8-12-16-16	0 (0)	2	16"	: same as above, top 4". SAND: dk yel br, mottled, occ olive gray and dusky yel br zones, pred f-m, some vf, tr c, tr silt, organic lower 2", loose, moist.	ML
10	4-7-10-10	0 (0.2)	3	13"	SAND: dk yellow brown, pred f w/vf, lit m, tr silt, coarsening at 9" to m-c w/f, tr vf, tr silt, loose, crumbly, mottled throughout, wet below 10".	SW
12	8-9-11-11	0 (0)	4	16"	SAND: dk yel br, f-m w/vf, lit c, tr vc below 12", tr silt, homogeneous, loose, wet.	
14	5-5-6-7	0 (0)	5	23"	SAND: dk yel br, m-c, some f, lit-tr vf, tr vc, tr silt, tr f SR-R gravel, v gravelly at 7", loose, wet. SILT & CLAY: at 7", mod yel br to dk yel orange, weathered, varved, dense, plastic, brownish gray varve ~0.25" thick at 8", color grades to brownish gray w/pale red varves at 12", dense, plastic, wet.	MH/ CH
16					Total Depth: 14.0'.	
18						
20						



Well Construction Graphic

Well Construction Details

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-28-94
Drilling Completed: 10-28-94
Well Construction: 10-28-94
Well Developed: NA
Well Coords.: N717633.36
E588769.79

Notes:
* Number in parenthesis represents PID reading of jar headspace.
Measured DTB (10/28/94, 10:30): 11';
Well damaged during construction, later attempts to repair unsuccessful. Well to be abandoned.
SWL (10/28/94, 13:01): no water.

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-245S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 240 S Site Location Former IBM Kingston

Air Temperature 43 Skies Clear Wind Speed/Direction 4 NNE

Date 4/18/00 Time Started 1320 Time Completed 1330

Personnel M Ruchin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Standpipe

Historical DTB 18.00 Current DTB 21.44 Current DTW 12.56

Calculate Volume in Well: 0.163 gal/ft X 21.44 = 3.49 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 4 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed.

March 14, 1995

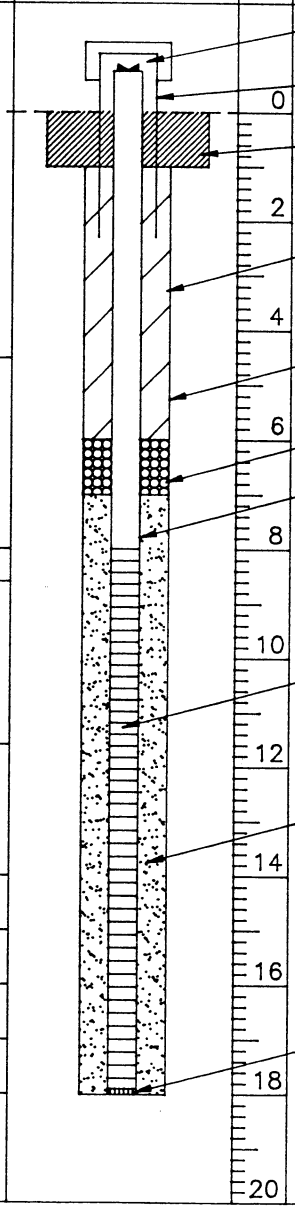
Soil Augering Log

Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-240S
Location W end of Salt Barn Area Landfill

TOC Elev. 167.20
GS Elev. 163.93

Depth Feet	Blow Counts	*PID (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	AUGERED				Grass with roots to 4". Silt, sand and gravel fill with occ. concrete, cinder block, and asphalt fragments.	FILL
4					: smoother drilling at 4.5'.	
6						
8	2-4-7-7	0	1	22"	SILT: dk to dusky yel br w/vf sand, organic-rich 3-8", sl mottled, frags of lacustrine clay and pale yel br silt to 15", pred pal yel br silt below 15" w/occ lt brown organic frags w/lt olive brown reduction aureoles, stiff, dense, moist.	ML/SM
10	9-14-13-14	0	2	18"	SILT & SAND: top 6", vf sand, lt olive gray w/sl mottling, sl crumbly, grades into unit below, moist. SAND: dk yel br, pred f w/vf, tr silt, loose, grades to pred m-c olive gray sand, homogeneous, moist.	SM / SW
12	7-8-10-11	0	3	19"	SAND w/GRAVEL: pred dk yel br, f-vf, occ m-c sand, tr silt, lams throughout (<1" thick), occ isolated f R pebbles, loose wet, coarsens w/depth to vc sand, some c-m, lit f R gravel in lower 4", pebbles up to 1" (siltstone), loose, wet.	
14	7-9-10-9	0	4	14"	SAND w/GRAVEL: dk yel br, pred m-c, some vc, lit fine, sl fining w/depth, f gravel throughout, rounded, <0.5", wthrd shale frag at 10", dk yel orange, sl cohesive, wet.	GP/SW
16	6-9-12-11	0	5	18"	SAND: similar to above, fining sl below 9", occ color bands, brownish gray silt lamination at 12", coarsening to pred c-vc sand 12-14". SILT: at 14", varved, weathered silt, tr clay, pale yel brown w/occ pale red laminations, cohesive, dense, wet.	SP / ML
18	3-2-4-17	0	6	22"	SAND: dk yel br, m-c, tr vc and finer sands, tr silt, occ silt mass, weathered silt layer 6-7". SILT & CLAY: at 12", brownish gray, varved, w/pale red and dk gray laminations w/clay, dense, plastic, wet.	SW / MH/CH
20					Total Depth: 18.0'.	



Well Construction Graphic

Well Construction Details

- 4" Locking Royer cap w/2" expansion plug
- 4" protective steel casing
- Concrete pad
- Bentonite slurry
- 8" HSA borehole
- Bentonite chips
- 2" Sch 40 PVC riser
- 2" Sch 40 10-slot PVC screen (8.0'-9.0')
- No. 00N sand
- Bottom end cap

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-20-94
Drilling Completed: 10-20-94
Well Construction: 10-20-94
Well Developed: 10-28-94
Well Coords.: N717631.79
E588676.97

Notes:

*No response to sample jar headspace scans.

Measured DTB from grade (10/21/94): 18'.

SWL 10.7' (10/21/94, 09:30; from grade).

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-240S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 242 S Site Location Formar IBM Kingston

Air Temperature 42 Skies Clear Wind Speed/Direction 6 NNE

Date 4/18/00 Time Started 1300 Time Completed 13:06

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Standpipe

Historical DTB 14.00 Current DTB 16.83 Current DTW 10.93

Calculate Volume in Well: 0.163 gal/ft X 16.83 = 2.74 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 3 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed.

March 14, 1995

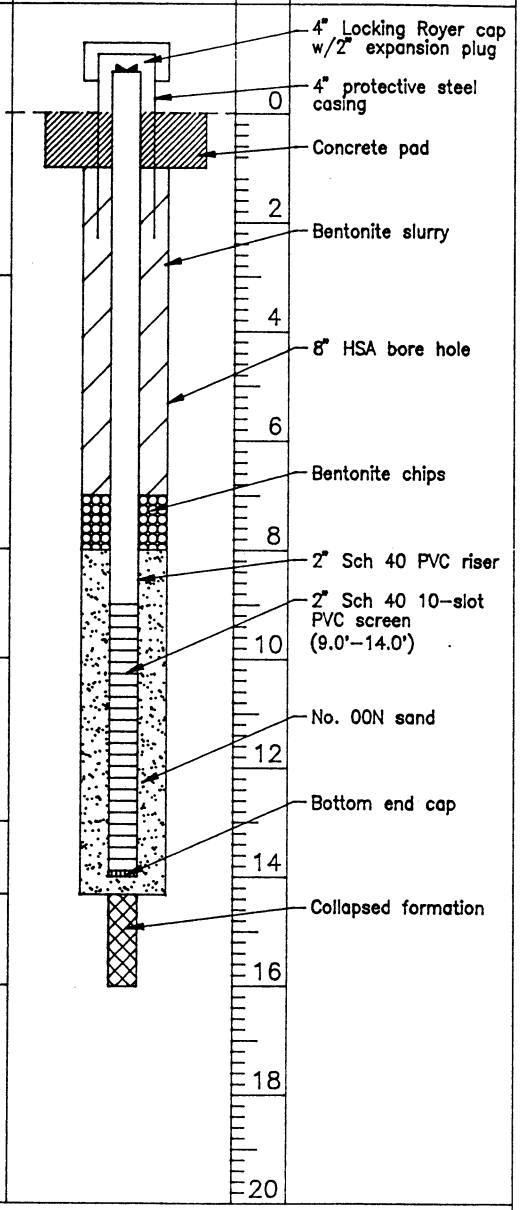
Soil Augering Log

Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-242S
Location SW edge of Salt Barn Area Landfill

TOC Elev. 166.10
GS Elev. 163.48
Page 1 of 1

Depth Feet	Blow Counts	FID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	AUGERED				Grass w/roots Sand & gravel fill w/occ concrete frag and metal wire.	FILL
4					Formation change at ~3 ft.	
6	4-3-2-4	0	1	18"	SILT: dk yel br to dusky yel br, vf-f sand, tr gravel & m-vc sand grains, cohesive, dense, stiff, charcoal frags & rootlets common, wood frags 6-8", 12-12" & 17-18", sandy top 4".	ML
8	1-3-4-6	0	2	18"	SILT: as above, turning pale yel br at 11", dense, stiff, sl plastic, tr sand, wood frags throughout, olive gray color lower 5", moist.	
10	10-9-11-10	0	3	15"	SAND: dk yel br, f-m, lit vf, tr silt, coarsens to pred c w/med sand below 12", sl cohesive, more lit br color in c sand, moist.	SW
12	9-13-15-10	0	4	19"	SAND: dk yel br, f-m, some vf, tr c, lit-some silt, loose, wet, coarsens to pred m-c, some vc, tr-lit f R gravel below 10", vc sand common between 13" & 15", loose, wet, appears cyclical in layers up to 2-3" thick, fining to f-m w/vc lower 4".	SW/ GP
14	3-9-9-11	0	5	21"	SAND: dk yel br, f-m w/c, lit-some vf, lit-tr silt, sl cohesive, vc grains, coarsens to pred c-vc below 10", lit m-f, tr vf & silt, occ f R gravel, loose, wet. SILT: at 12", mod yel br to pale yel br, tr clay & vf sand, faint color banding, tr organics, stiff, dense, wet.	ML
16	2-2-3-3	0	6	21"	SILT: dk yel orange, some clay, dense, plastic, wet top 2", weathered. SILT & CLAY: brownish gray w/pale red varves, v plastic, dense, wet.	MH/ CH
18					Total Depth: 16.0'.	
20						



Well Construction Details

- 4" Locking Royer cap w/2" expansion plug
- 4" protective steel casing
- Concrete pad
- Bentonite slurry
- 8" HSA bore hole
- Bentonite chips
- 2" Sch 40 PVC riser
- 2" Sch 40 10-slot PVC screen (9.0'-14.0')
- No. 00N sand
- Bottom end cap
- Collapsed formation

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-20-94
Drilling Completed: 10-21-94
Well Construction: 10-21-94
Well Developed: 10-28-94
Well Coords.: N717542.02
E588700.47

Notes:

*No response to jar headspace scan.

Measured DTB from grade (10/24/94, 07:36): 14.0'.

SWL 10.0' (10/24/94, 07:36; from grade).

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-242S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 244 S Site Location former IBM Kingston

Air Temperature 42 Skies Clear Wind Speed/Direction 7 N

Date 4/18/00 Time Started 12:38 Time Completed 12:48

Personnel M Ruchin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Standpipe

Historical DTB 11.50' Current DTB 14.24 Current DTW 10.90

Calculate Volume in Well: 0.163 gal/ft X 14.24 = 2.32 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 3 gal Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed

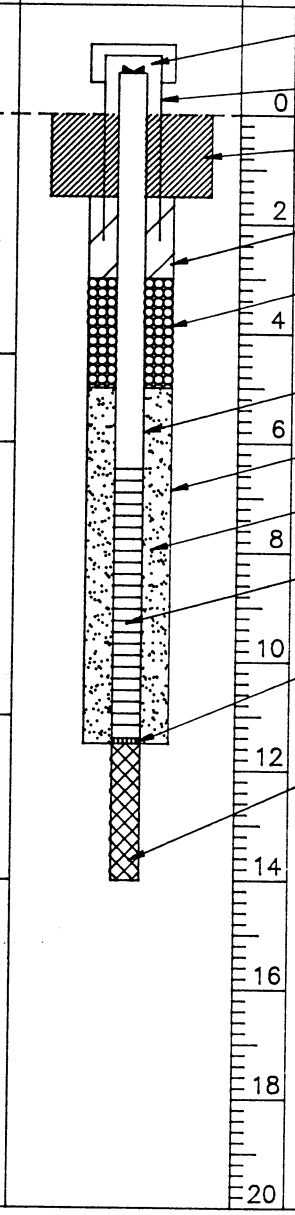
Soil Augering Log

Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-244S
Location 150' SW of MW-240S
Salt Barn Area Landfill

TOC Elev. 166.28
GS Elev. 163.46

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2-4	AUGERED				Fill with asphalt, concrete and cobbles.	FILL
6	2-4-6-8	0	1	17"	SAND & GRAVEL FILL: top 5". SAND: dk yel brown, vf-m, tr c, silty, crumbly, more mod yel br layer 4", moist.	SM
8	7-6-6-7	0	2	18"	SAND: dk yel br, f-c, some vf, tr vc, and f SR-R gravel, homogeneous appearance, silty top 2", crumbly, moist.	SW
10	5-8-9-11	0	3	14"	SAND: dk ye br, m-c w/f, some vf, tr vc, tr silt, and f SR-R gravel, loose, homogeneous, vc sand open lamination at 6", wet.	
12	7-7-8-9	0	4	15"	SAND: pred dk yel br, f-m, some vf, more c-vc 2-3" and 9-10", gravelly 9-10", silty finer sand 0-2", gravel is SR-R, fine, some-lit silt binder. SILT: at 10", dense, mod yel br to dk yel orange, weathered, varved, some clay, occ pale red lams, brownish gray lam at 12", dense, plastic, wet.	MH/ CH
14	4-3-4-6	0	5	18"	SILT & CLAY: brownish gray, varved, w/pale red laminations, v dense, v plastic, occ zone 1" thick of pale yel brown coloration, wet.	
16-20					Total Depth: 14.0'.	



Well Construction Details

- 4" Locking Royer cap w/2" expansion plug
- 4" protective steel casing
- Concrete pad
- Bentonite slurry
- Bentonite chips
- 2" Sch 40 PVC riser
- 10" HSA borehole
- No. 00N sand
- 2" Sch 40 10-slot PVC screen (6.0'-11.0')
- Bottom end cap
- Collapsed/swelled formation

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-28-94
Drilling Completed: 10-28-94
Well Construction: 10-28-94
Well Developed: 10-28-94
Well Coords.: N717537.27
E588771.49

Notes:

Measured DTB from grade (10/28/94, 13:00): 11.5'.

*No response to jar headspace scan.

SWL 10.25' (10/28/94, 12:59; from grade).

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-244S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 243S Site Location Former IBM Kingston

Air Temperature 42 Skies Clear Wind Speed/Direction 5 NNE

Date 4/18/00 Time Started 12:10 Time Completed 12:20

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Standpipe

Historical DTB 9.20 Current DTB 11.76 Current DTW 9.34

Calculate Volume in Well: 0.163 gal/ft X 11.76 = 1.91 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 2 gal Depth of Casing Cut 12" below grade

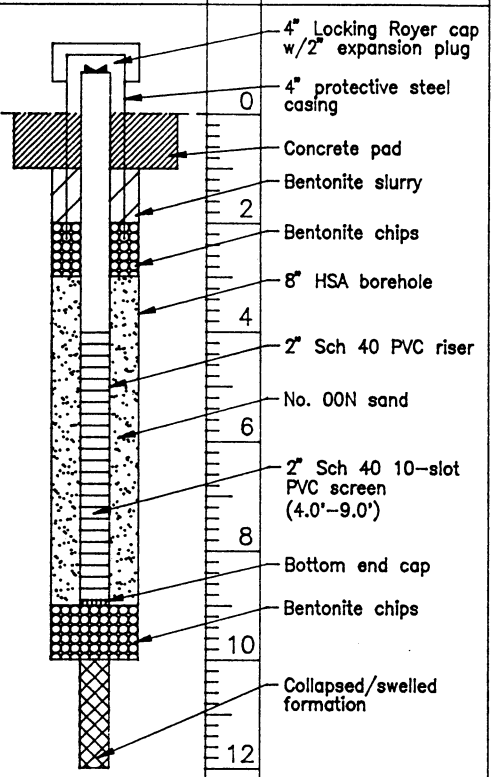
Comments: 12" of concrete surface completion removed

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-243S
Location S edge of Salt Barn Area Landfill

TOC Elev. 165.19
GS Elev. 162.64

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	AUGERED					FILL
4						
6	3-5-6-6	0	1	20"	SILT: sand and gravel, dk yel br, top 4" (fill). SAND: lt brown, silty, f-m w/vf, tr c, homogeneous, sl cohesive, moist, grades to dk yel br f-m sand, lit to no silt, tr-lit vf sand, loose, moist.	SM
8	9-7-8-8	0	2	16"	SAND: dk yel br, f-m, lit vf, tr silt, sl cohesive, coarsening to pred m sand, tr c, some f sand below 5", homogeneous, loose, moist.	SW
10	7-9-8-8	0	3	17"	SAND: dk yel br, f-m, some vf, lit-tr silt, grades to pred m-c w/vc sand, 2-8", f-m, some vf, lit-tr silt below 8", open pores between 2" & 8", dusky yel br, organic-rich zone 4-6", horiz. color banding in organic zone, sl cohesive to loose, wet. SILT: at 13", some clay, mod yel br w/faint pale red zones, tr organic flakes, dense, stiff, moist.	
12	4-6-8-12	0	4	16"	SILT w/CLAY: mod yel br, to dk yel orange, wthrd varved silt & clay top 2", color changes to brownish gray, varved w/pale red laminations, plastic, dense, wet.	MH/ CH
14					Total Depth: 12.0'.	
16						
18						
20						



Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-21-94
Drilling Completed: 10-21-94
Well Construction: 10-21-94
Well Developed: NA
Well Coords.: N717470.57
E588841.22

Notes:

*No FID jar headspace response.

Measured DTB from grade (10/24/94, 09:30): 9.2'.

SWL 8.6' (10/24/94, 09:30; from grade).

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-243S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 8035' Site Location Former IBM Kingston

Air Temperature 41 Skies Clear Wind Speed/Direction 5 N

Date 4/18/00 Time Started 11:20 Time Completed 11:30

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Standpipe

Historical DTB 18.00 Current DTB 24.80 Current DTW 14.21

Calculate Volume in Well: 0.367 gal/ft X 24.80 = 9.10 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

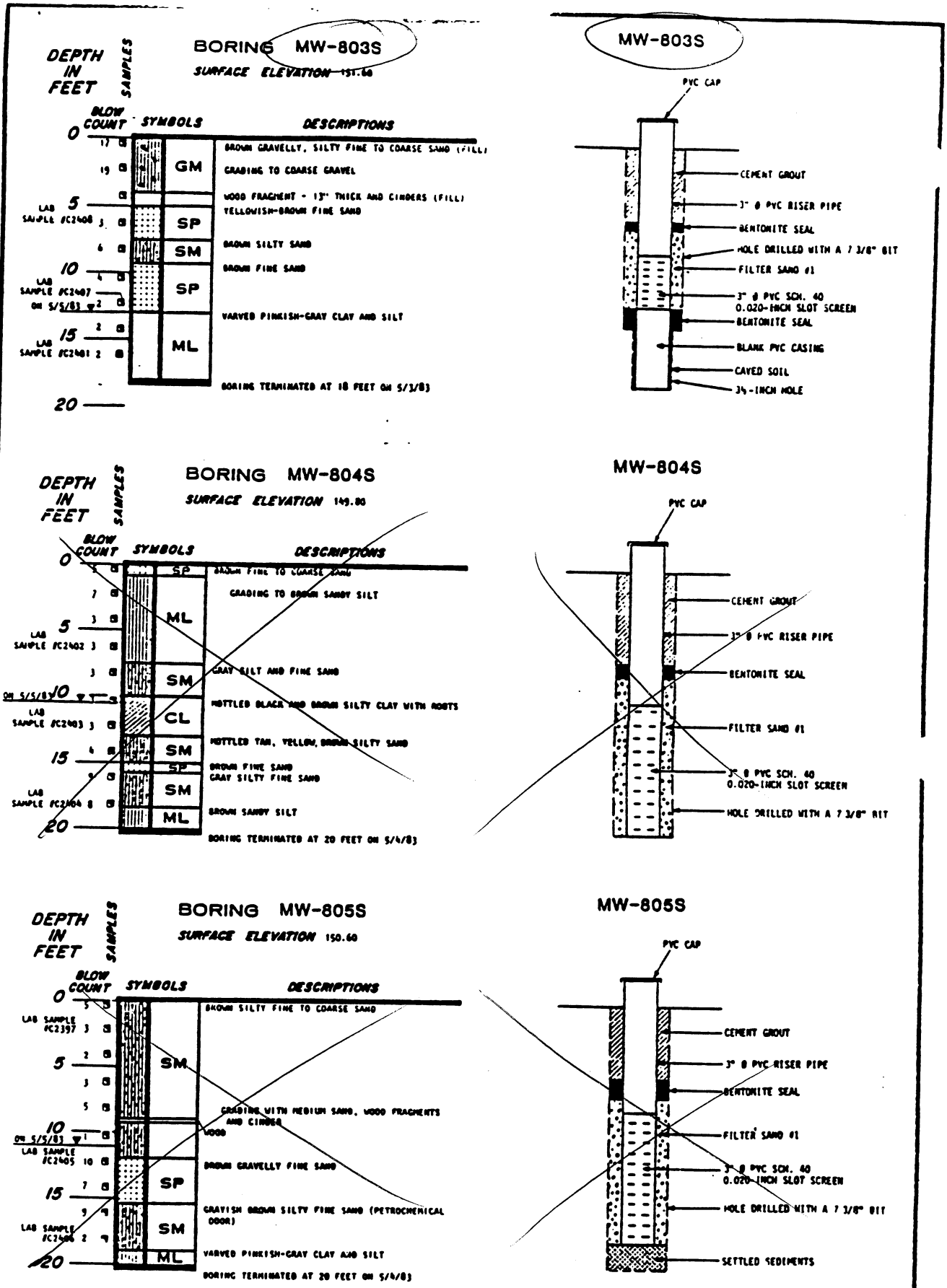
Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 10 gal Depth of PVC Casing Cut 24" below grade

Comments: All of the protective steel casing was removed, and all of concrete surface completion was removed

March 14, 1995



LOG OF BORINGS AND MONITORING WELL DETAILS

DAMES & MOORE

FIGURE B-3B

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 224 S Site Location Former IBM Kingston

Air Temperature 40 Skies Clear Wind Speed/Direction 8 N

Date 4/18/00 Time Started 10:40 Time Completed 10:50

Personnel M Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Standpipe

Historical DTB 16.50 Current DTB 18.50 Current DTW 5.85

Calculate Volume in Well: 0.163 gal/ft X 18.50 = 3.01 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 3 gal Depth of Casing Cut 12' below grade

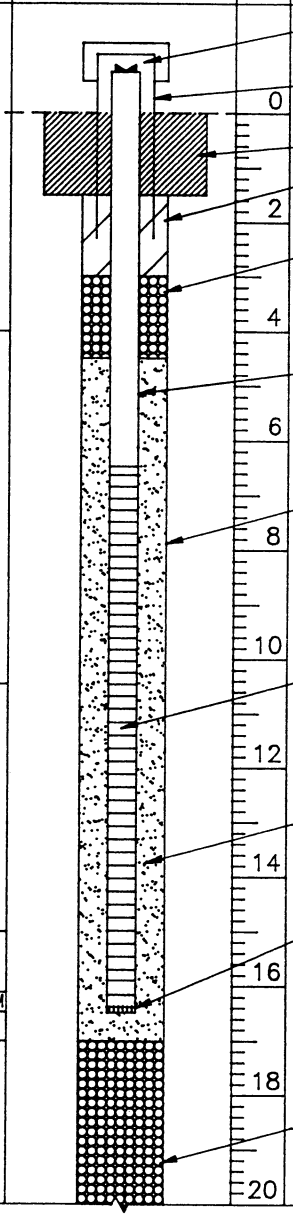
Comments: 12" of concrete surface completion removed

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-224S
Location C&D Landfill Area
N of MW-223S

TOC Elev. 140.52
GS Elev. 138.55

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	1-2-2-2	0	1	21"	SILT: brownish gray to dk yel br, lit vf sand, tr f sand 10-17", dk yel orange stained organic flakes and rootlets throughout, sl cohesive, crumbly, moist.	ML
4	3-3-3-4	0	2	18"	: same as above top 9" and bottom 4", occ pale red clay-rich, dusky yel br organic-rich and vf sand-rich layers, pred dusky yel br organic silt w/pale yel m-c w/f sand lams between 10-13", cohesive, moist.	
6	1-1-2-3	0	3	15"	SILT w/CLAY: brownish gray to pale yel brown, tr vf sand, plastic, dense, tree roots lower 4", moist to wet.	MH/OH
8	2-2-2-2	0	4	13"	SILT w/CLAY: v plastic, organic, wet.	
10	WOH/1'-2-3	0	5	24"	SILT & CLAY: organic-rich, plastic, wet in zones, moist elsewhere.	
12	WOR-1-1-1	0	6	14"	SILT w/CLAY: organic, plastic, wet. SILT w/SAND: below 6", brownish gray, vf, some f, tr clay, organic-rich, cohesive, wet.	SM
14	1-1-1-3	0	7	18"	SILT & SAND: brownish gray silt, tr pale red clay-rich layers, organic-rich, tr rootlets w/vf-m sand, pred dk med gray sand top 3", 10-12" and 15", pred silt below 12", stiff, moist to wet in silt, wet in sand.	
16	1-1-2-4	0	8	14"	: same as above top 12". SAND: at 12", dk med gray, m-c w/f, lit vf, tr silt, loose, tr roots, wet.	SW
18	2-2-3-4	0	9	24"	SILT: top 7", brownish gray, tr clay, tr-lit vf sand, rootlets and organic material common. SAND: dk med gray, m-c w/f, lit-some vf, tr silt 7-12", loose, wet, grading into adjacent units, 0.5" angular rock frag at 11".	ML/SM SM
20	1-3-3-4	0	10	24"	SILT: at 12", w/clay-rich horiz. lams, tr vf sand lams, dense, plastic, wet. SILT w/CLAY: brownish gray w/pale red and occ black organic-rich lams (varves?), dense, plastic, moist to wet.	ML/CH



Well Construction Details

- 4" Locking Royer cap w/2" expansion plug
- 4" protective steel casing
- Concrete pad
- Bentonite slurry
- Bentonite chips
- 2" Sch 40 PVC riser
- 8" HSA borehole
- 2" Sch 40 10-slot PVC screen (6.0'-16.0')
- No. 00N sand
- Bottom end cap
- Bentonite chips

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-27-94
Drilling Completed: 10-27-94
Well Construction: 10-27-94
Well Developed: 10-31-94
Well Coords.: N719352.25
E590096.85

Notes:
*No response to sample jar headspace scans.
WOH - Weight of Hammer
WOR - Weight of Rods

Measured DTB from grade (10/28/94, 11:55): 16.5'.

SWL 3.5' (10/28/94, 11:46; from grade).

GROUNDWATER SCIENCES CORPORATION

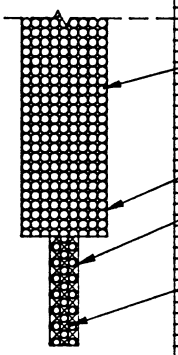
Geologic Log: MW-224S

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-224S
Location C&D Landfill Area N of MW-223S

TOC Elev. 140.52
GS Elev. 138.55

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
20						
22	3-3-3-3	0	11	24"	SILT w/CLAY: brownish gray, laminated, tr vf sandy zones, dense, plastic, moist to wet.	ML/CH
					SILT & SAND: brownish gray w/some vf sand, some faint horiz. clay-rich lams.	
24	WOR/1'-7-9	0	12	18"	SAND: 9-10" brownish gray to med dk gray, f-m w/vf, silty, loose, tr c sand, v wet.	SM
					SILT & GRAVEL: dk gray, some vf-c, tr vc, w/f SA-SR dk gray shale pebbles, striated (?), dense, stiff, moist to wet.	ML/GM
26	13-26-37-45	0	13	24"	SAND & GRAVEL: olive gray to med dk gray, pred m-c w/f, lit vc and vf, tr silt, wthrd silt mass 2-3", f SA-SR tr R gravel, loose, wet.	SW/GW
					SILT w/CLAY: at 8", dk med gray, lam w/lt gray to ol gray, clay-rich lams, dense, plastic, lit vf sandy zones 8-10" & 19-24", tr f A-SR silt-stone gravel, moist to wet.	ML/GM
					Total Depth: 26.0'.	
28						
30						
32						
34						
36						
38						
40						



Notes:

WOR - Weight of Rods

*No response to sample har headspace scan.

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-224S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW223S Site Location Former IBM Kingston Site

Air Temperature 40 Skies Clear Wind Speed/Direction 6 NNE

Date 4/18/00 Time Started 10:15 Time Completed 10:25

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Standpipe

Historical DTB 20.00 Current DTB 22.58 Current DTW 6.70

Calculate Volume in Well: 0.163 gal/ft X 22.58 = 3.68 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 4 gal Depth of Casing Cut 12" below grade

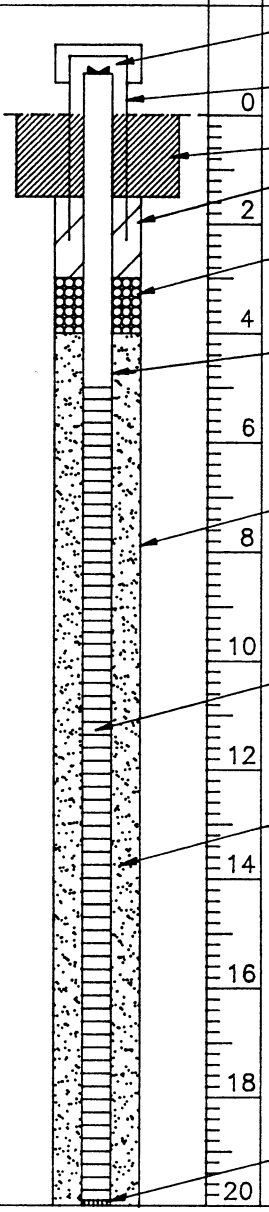
Comments: 12" of concrete surface completion removed

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-223S
Location C&D Landfill Area
N of MW-222S

TOC Elev. 140.17
GS Elev. 137.69

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	2-3-2-3	0	1	19"	SILT: dusky yel br, organic-rich top 2 w/lit vf-f sand, rootlets throughout, moist, pred dk yel br w/dk yel orange-stained rootlets, occ yel orange f-m, tr c sand lams below 16" & 19", cohesive, v. moist.	ML/ OL
4	2-2-3-4	0	2	13"	SILT: as above top 7", wet. SAND: dusky yel br, m w/f, lit c and vf, organic flakes throughout, crumbly, wet. SILT: bottom 1", dusky yel br, peaty organic-rich silt, some vf-f sand, wet.	SP
6	2-1-1-1	0	3	17"	SILT: dusky yel br to dk yel br, organic-rich, lit clay, rootlets throughout, tr vf-f sand, plastic, cohesive, color changing to pale yel br w/black rootlets & plant frags, clay-rich, plastic, wet.	ML/ MH Pt
8	WOH/1'-1-2	0	4	16"	SILT w/CLAY: brownish gray, tr vf sand, organic frags throughout, tr clay lams, dense, plastic, faint clay-rich layers, interbedded organic-rich layers, wet.	
10	WOH-1-1-1	0	5	19"	SILT w/CLAY: as above, w/occ pale red laminations and organic-rich laminations, plastic, some-lit vf sand below 12", wet.	
12	3-2-5-6	0	6	24"	: same as above top 14" w/color banding. SILT & SAND: at 14", br-gray, interlam w/vf-f med gray sand, cohesive, some organic debris/rootlets, wet. SAND: lower 2", med gray, c w/vc & m, lit f-vf, tr silt, loose, grains composed of qtz, and gray and red shale, graded contacts, wet.	SM
14	5-6-5-7	0	7	24"	SAND: vc-c w/m, tr f sand an f SA-SR gravel, v loose, fining to pred m-c w/vc, tr silt and fine sand, graded contacts, wet.	
16	6-8-11-12	0	8	22"	SAND: med gray, f-m, some c, lit vf 0-3", dk yel br, organic-rich silt, rip-up mass 3-5", w/vc-c at 5", fines to c-f, tr f SA-SR gravel at 5-6", grades to pred f-m, some c below 12", coarser zone 17-19", tr f SR-SA G, silt/clay lam at 20", tr silt thru-out, sl incr silt in finer zones, loose, sl cohesive, v wet.	SW
18	4-4-5-4	0	9	24"	SAND: med gray, loose, c-vc w/med top 5", mod yel br silt rip-up mass at 5-6", fining sl below 6", tr f SR-SA gravel, pred f-m, some c below 12", sl incr silt & vf-f sand content, lg dk red-stained wood chip at 21-22" angled 45", silty at bottom.	
20	3-4-7-9	0	10	15"	SAND: med gray, f-m w/vf & some c, lit silt, sl incr silt, pred c 11-13", tree root at 13-15", tr f-m SA-SR gravel, wet.	



Well Construction Graphic

Well Construction Details

- 4" Locking Royer cap w/2" expansion plug
- 4" protective steel casing
- Concrete pad
- Bentonite slurry
- Bentonite chips
- 2" Sch 40 PVC riser
- 8" HSA borehole
- 2" Sch 40 10-slot PVC screen (5.0'-20.0')
- No. 00N sand
- Bottom end cap

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-26-94
Drilling Completed: 10-26-94
Well Construction: 10-26-94
Well Developed: 10-31-94
Well Coords.: N719258.95
E590068.93

Notes:
*No response to sample jar headspace scans.
WOH - Weight of Hammer
Split-spoon refusal at 28.75'.
Measured DTB from grade (10/27/94, 08:00): 20.0'.
SWL 5.7' (10/27/94, 08:00; from grade).

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-223S

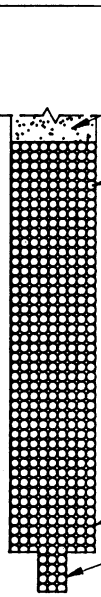
Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-223S
Location C&D Landfill Area N of MW-222S

TOC Elev. 140.17
GS Elev. 137.69

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
20						
22	WOH-4-6-11	0	11	14"	Decayed roots, 0-2". SILT: med dk gray, tr vf sand, w/f-m SA-SR gravel, shale pebbles 0-7", cohesive, wet. SILT & SAND: brownish gray, vf-m w/c, tr vc and silt, tr organic material, sl cohesive, wet.	SW ML/GM SM
24	11-10-14-13	0	12	9"	SILT w/GRAVEL: med dk gray, tr vf sand & clay, lg SA rock frag at 4-6" (dk gray shale), faint color lam below 6", tr vc sand to f gravel, dense, pebbles are matrix-supported, wet.	ML/ GM
26	9-11-13-14	0	13	18"	SILT w/GRAVEL: dk gray, tr vf sand top 9", SA-SR gray shale pebbles, occ qtz pebble, striated 0.75" dia R siltstone pebble at 14", dense, stiff, moist to wet.	
28	8-24-28-34	0	14	12"	SILT w/GRAVEL: dk gray w/SA-SR striated pebbles, lit-some vf sand, lit-tr f sand lower 3", faint layering to sandy zones, v dense, moist.	
30	21-50/5"	0	15	3"	SILT & GRAVEL: w/vf-f sand, dense, moist-wet. WEATHERED ROCK: at 28.5', dk gray siltstone.	
32					Total Depth: 28.75'.	
34						
36						
38						
40						

Well Construction Graphic



Depth Feet

Well Construction Details

- No. 00N sand
- Bentonite chips
- 8" HSA borehole
- 2" Split spoon borehole

Notes:

WOH – Weight of Hammer

*No response to sample jar headspace scan.

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-223S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 220S Site Location Former IBM Kingston

Air Temperature 39 Skies Clear Wind Speed/Direction 8 NNE

Date 4/18/00 Time Started 9:47 Time Completed 9:58

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @PVC Survey Mark Type of Completion Stickup

Historical DTB 19.60' Current DTB 22.34 Current DTW 11.18

Calculate Volume in Well: 0.163 gal/ft X 22.34 = 3.64 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 4 gallons Depth of Casing Cut 12" below grade

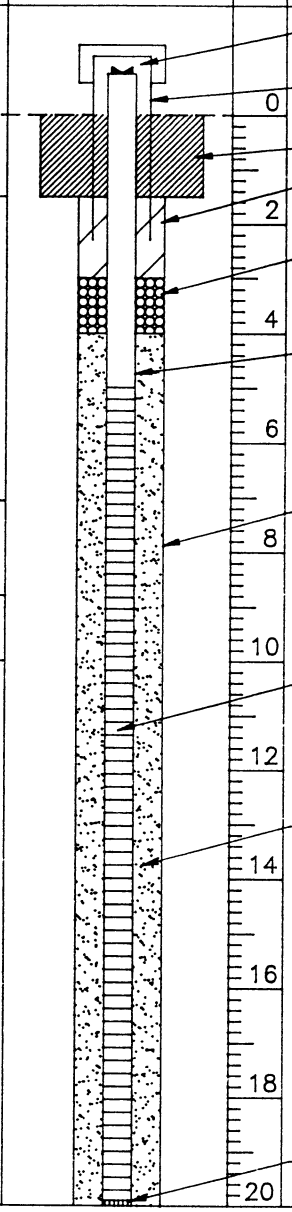
Comments: 12" of concrete surface completion removed

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-220S
Location C&D Landfill Area NW of IWTF

TOC Elev. 145.50
GS Elev. 142.96

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	4-5-5-6	0	1	21"	SILT & SAND: dk yel br, vf-m, tr-lit c-vc, rootlets throughout, cohesive, sl crumbly, moist. SAND: at 19", pred dk yel br, f-vf, lit-tr silt, no plant material, poorly graded, crumbly, moist.	SM
4	6-6-4-4	0	2	15"	SAND: dk yel br, f-m w/c 0-8", some vf, tr silt, loose, crumbly, homogeneous, pred f-vf w/m below 8", increase in silt, sl cohesive, moist.	SW
6	3-3-2-3	0	3	16"	SAND: f-vf, silty 0-3", more cohesive, dk yel br, coarsening to f-m, tr c, lit-some vf 3-10", less cohesive, pale yel br, vf-f, silty, dk yel brown below 10", cohesive, tr roots, moist.	
8	5-7-4-3	0	4	17"	SAND: dk yel br, f-m, w/vf, tr c, tr silt, loose, homogeneous, increase in silt content below 14", pred silty vf-f sand below 14", cohesive, tr roots, wet and sl darker color lower 2".	SM
10	3-2-3-4	0	5	16"	SAND: dk yel br, f-m w/vf, tr c, silty top 3", mottled to 10", turning wet at 10". SAND & SILT: olive gray, vf-f w/m, abundant decayed leaves, horizontally oriented, tr pale yel brown silt stringers, wet.	SM/ Pt
12	4-3-4-4	0	6	17"	SAND: med dk gray to olive gray, m-c w/f, lit-some vf, tr silt, tr organic fragments, tr red shale grains, loose, homogeneous, wet.	SW
14	WOH-1-1-2	0	7	14"	: same as above, saturated, sand grains composed of red shale, gray shale and quartz.	
16	4-6-5-6	0	8	24"	SAND: similar to above, brownish gray to olive gray, m-c w/f, some f, lit-tr vf, silt in zones, sl cohesive to loose, finer 6-11" w/sl more silt, weathered silt mass 4-5", wet.	
18	WOH-1-1-3	0	9	12"	SAND: as above, running, saturated.	
20	WOR/1.5'-WOH	0	10	6"	: same as above.	



Well Construction Graphic

Well Construction Details

Total Depth: 20.0'.

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-24-94
Drilling Completed: 10-24-94
Well Construction: 10-24-94
Well Developed: 10-31-94
Well Coords.: N718983.71
E590020.74

Notes:

*No response to sample jar headspace scans.
WOH - Weight of Hammer
WOR - Weight of Rods
Measured DTB from grade (10/25/94, 07:00): 19.6'.
SWL 10.95' (10/25/94, 07:00; from grade).

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-220S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 221 S Site Location Former IBM Kingston

Air Temperature 39 Skies Clear Wind Speed/Direction 7 NNE

Date 4/18/00 Time Started 9:30 Time Completed 9:36

Personnel M Ruchin Verify Site Map? Yes

Measuring Point @ PVC Survey Mark Type of Completion Stickup

Historical DTB 19.8 (Grade) Current DTB 21.95 (Survey Mark) Current DTW 11.04 (Survey Mark)

Calculate Volume in Well: 0.163 gal/ft X 21.95 = 3.58 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 4 gallons Depth of Casing Cut 12" below

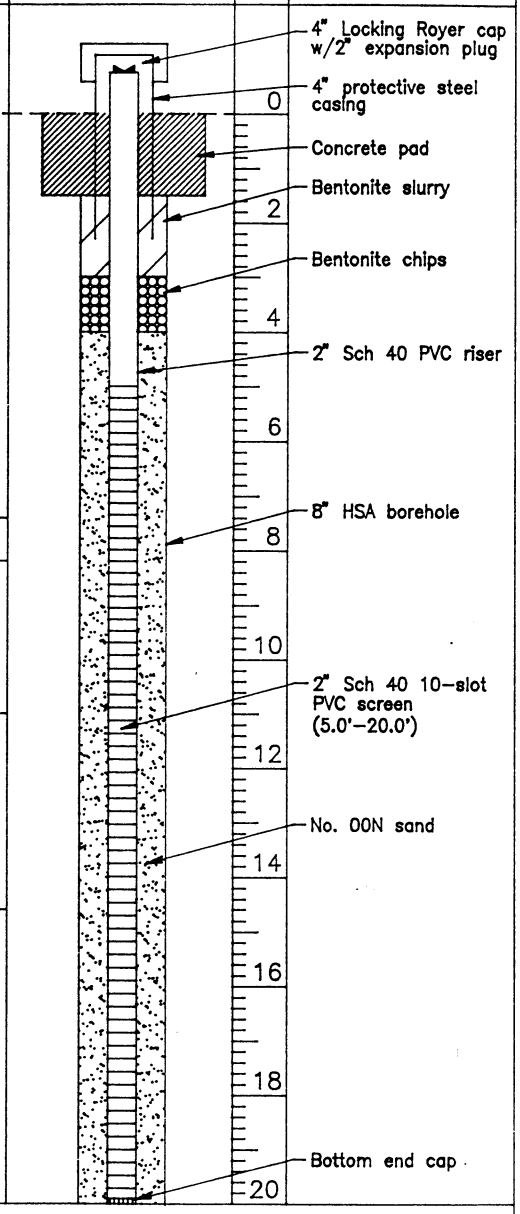
Comments: 12" of concrete surface completion removed

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-221S
Location C&D Landfill Area N of MW-220S

TOC Elev. 144.90
GS Elev. 142.54

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	4-7-8-9	0	1	22"	Grass with roots to 4-5". SILT & SAND: dk yel br to dusky yel br, f-m w/vf, tr c, silty, rootlets throughout. SAND: at 12" mod yel br to dk yel br, f-m w/vf, some c, tr rock fragments, moist. SILT: mod br w/roots 20-22", dense, crumbly, moist.	SM
4	7-15-14-12	0	2	8"	SILT & SAND: mod yellow brown, f-vf, tr med, homogeneous, very silty, cohesive, moist.	
6	4-4-5-4	0	3	16"	SILT & SAND: pale yel brown to mod yel br, vf-f, silty sand, tr m sand, homogeneous, crumbly to 11", coarse zone 11-13", f-m silty sand, tr organic flakes, loose, very silty, cohesive 13-14", moist.	
8	5-7-7-9	0	4	15"	SILT & SAND: mod yel brown to pale brown, f-vf, silty, tr med sand, tr roots, mottled grayish red 10-15", wet 10-15", tr roots. SAND: at 15", m-f w/vf, tr c, loose, dk yel br to olive gray, dk yel orng stained layer at 12", moist. : SAA, top 3", rapidly turning silty, cohesive, moist.	SW
10	2-1-2-4	0	5	23"	SILT & SAND: at 3", brownish gray, vf-f, tr med 4-6", v silty w/organic debris, pred silty, f-m sand, med gray 17-20", returning to silty vf-f below 20" w/much organic debris, peaty material oriented horizontally, wet throughout spoon.	SM/ Pt
12	3-4-5-3	0	6	15"	SILT & SAND: brownish gray, vf-f, organic-rich, sl cohesive, organic peaty layers ~0.5" thick from 7-12", wet, tr pale red silt laminations, tr clay, f-m med gray saturated loose sand 12-15".	
14	WOR/2'	0	7	8"	SAND: dk med gray to brownish gray, silt, vf-m w/tr pale red silt laminations 5-8", tr clay, formation, very wet and running.	SM/ SW
16	4-3-4-5	0	8	24"	SAND: dk med gray to brownish gray, silty, vf-m top 9". SAND: at 9", turning med dk gray, coarsening to m-c w/f, some-lit vf, lit-tr silt, loose, sand grains composed of quartz, and gray and red shale, wet.	
18	4-4-5-5	0	9	18"	SAND: as above, wet, running.	SW
20	6-6-7-7	0	10	24"	SAND: as above, sl increase in c sand percentage below 17", tr vc sand.	



Well Construction Graphic

Well Construction Details

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-25-94
Drilling Completed: 10-25-94
Well Construction: 10-25-94
Well Developed: 10-31-94
Well Coords.: N719082.00
E590016.20

Notes:
*No response to sample jar headspace scans.
WOR - Weight of Rods
SAA - Same As Above
Measured DTB from grade (10/28/94, 07:45): 19.8'.
SWL 10.45' (10/26/94, 07:45; from grade).

GROUNDWATER SCIENCES CORPORATION

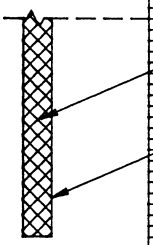
Geologic Log: MW-221S

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-221S
Location C&D Landfill Area N of MW-220S

TOC Elev. 144.90
GS Elev. 142.54
Page 2 of 2

Depth Feet	Blow Counts	PID (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
22	2-2-3-5	0	11	24"	SAND: dk med gray c w/m lit vf-f tr brownish gray silt sl. coarser than above, homogeneous, thin silt/clay fragment at 17" wood frag at 23" w/decayed leaf debris, loose, wet.	
24	3-5-5-7	0	12	24"	SAND: as above, wood frag at 14-15", lit vc sand below 20".	
					Total Depth: 24.0'.	



Notes:

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-221S

IBM Mid Hudson Valley
Well Abandonment Field Data Sheet

Well ID # MW 222 S Site Location Former IBM Kingston

Air Temperature 38 Skies Clear Wind Speed/Direction 6 N

Date 4/18/00 Time Started 9:07 Time Completed 9:18

Personnel M. Ruchin Verify Site Map? Yes

Measuring Point @PVC, Survey Mark Type of Completion Standpipe

Historical DTB 19.80 (Grade) Current DTB 22.15 (Survey Mark) Current DTW 5.96 (Survey Mark)

Calculate Volume in Well: 0.163 gal/ft X 22.15 = 3.61 gal

gal/ft: 1.5" = 0.092 2" = 0.163 4" = 0.653 6" = 1.469 8" 2.611

Well Evacuated? No WL end of purge N/A

Type of Bentonite Baroid Density Reading 10.2 lb/gal

Volume of Bentonite Pumped 4 gallons Depth of Casing Cut 12" below grade

Comments: 12" of concrete surface completion removed

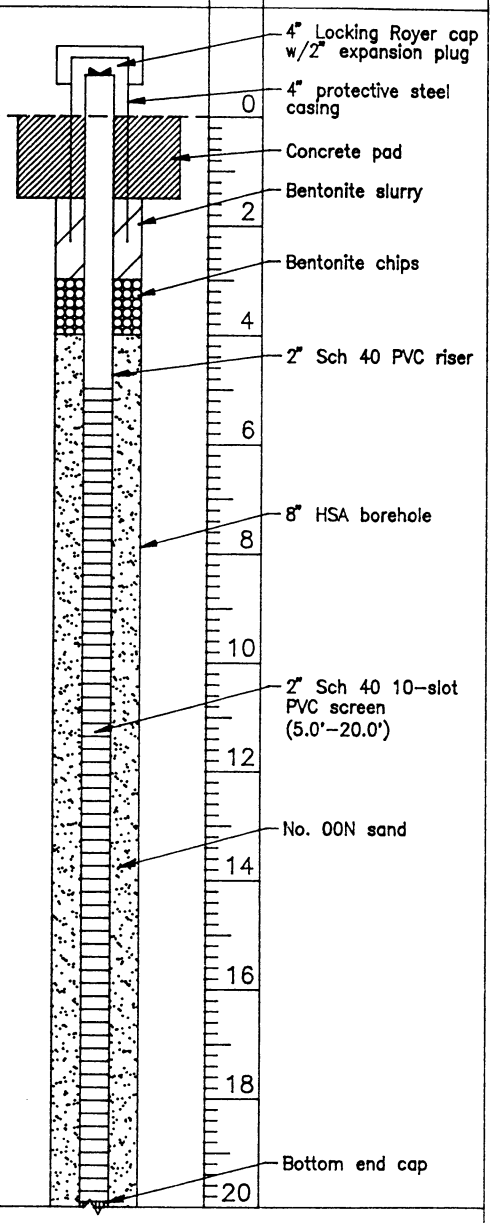
March 14, 1995

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-222S
Location C&D Landfill
N of MW-221S

TOC Elev. 140.54
GS Elev. 138.42

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
0	Ground Surface					
2	3-3-4-6	0	1	17"	SILT & SAND: dusky yel br, f-c w/vf, organic, cohesive, tr plant debris and roots, moist. SAND: at 2", mod yel br, f-c w/vf, silty, occ SA siltstone frags, crumbly, silt lams at 10", moist.	SM
4	2-2-3-2	0	2	14"	SILT & SAND: dusky yel br, vf-f, some m, organic-rich horiz. lams, organic debris & rootlets and br to orange mottl staining throughout, cohesive, moist. : SAA top 9" w/relatively clean m-c S lams at 5" & 6.5", organic debris thru-out, cohesive, moist-wet. SILT: at 9", br-gray, some vf S, rootlets & decayed plant material throughout, cohesive, stiff, moist-wet.	SM/ Pt
6	3-3-3-2	0	3	17"	SILT & CLAY: brownish gray, some clay, organic debris throughout, occ horiz. organic-rich layers w/a mod olive brown color, v organic lower 1", dense, plastic, moist to wet, sl pale brown to grayish color.	OL/ Pt
8	2-2-3-4	0	4	22"	: SAA, more olive gray w/large wood frags at 6" and 9", dense, moist to wet. SILT & SAND: at 12" brownish gray vf sand, tr f, lit to no organic debris, dense, sl plastic, homogeneous, dk f sand lam at 21", horizontal, wet.	SM
10	1-1-3-4	0	5	24"	SILT & SAND: dk yel br, vf-m, lit c, silty, tr organics, increase in silt, tr clay 3-4", grading into unit below, cohesive, wet. SAND: med dk gray, m-c w/f, lit vf, tr silt, loose, grains composed of qtz, gray and red shale, homogeneous, wet.	
12	4-3-3-3	0	6	10"	SAND: as above, wet.	
14	2-3-3-3	0	7	12"	SAND: as above, homogeneous, wet.	SW
16	4-4-4-4	0	8	18"	SAND: as above, homogeneous, v wet, running.	
18	1-1-2-2	0	9	24"	SAND: as above, with roots at 15".	
20	3-3-4-5	0	10	24"	SAND: as above, little vc sand below 18".	



Well Construction Graphic

Well Construction Details

Driller: SoilTesting, Inc.
Logged by: S. Fisher, GSC
Drilling Started: 10-25-94
Drilling Completed: 10-25-94
Well Construction: 10-25-94
Well Developed: 10-31-94
Well Coords.: N719169.25
E590042.59

Notes:
*No response to sample jar headspace scans.

SAA - Same As Above

Measured DTB (10/26/94, 07:47): 19.8'.

SWL 5.7' (10/26/94, 7:49; from grade).

GROUNDWATER SCIENCES CORPORATION

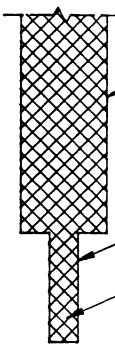
Geologic Log: MW-222S

Soil Augering Log
Client: IBM Mid-Hudson Valley, Kingston Site
Project No. 94013

Boring No. MW-222S
Location C&D Landfill
N of MW-221S

TOC Elev. 140.54
GS Elev. 138.42

Depth Feet	Blow Counts	PID* (ppm)	Sample Number	Recovery	Overburden/Lithologic Description	USCS
20						
22	WOR-5-7-8	0	11	24"	SAND: as above, incr vc sand below 15", wthrd silt/clay mass at 18", occ organic debris, tr roots.	SW
24	8-5-7-6	0	12	24"	: SAA 0-20" w/1" dk gray SR oblate siltstone pebble resting on bottom contact, loose, wet. SILT & CLAY: br gray, pred silt w/clay, plastic, horiz.-bedded, no distinct varves visible, top surf of unit is sloped ~30°, dense, wet to moist.	ML
26	10-12-17-15	0	13	9"	SILT w/GRAVEL: br gray, lit clay, dense, SA-SR gray shale/siltstone pebbles, lgst pebble at 4-5.5" measuring 1.5"long, typically f-m pebbles, stiff, moist.	GM/ GC
28					Total Depth: 26.0'.	
30						
32						
34						
36						
38						
40						



Notes:

WOR - Weight of Rods

*No response to sample jar headspace scan.

GROUNDWATER SCIENCES CORPORATION

Geologic Log: MW-222S

Mud Balance Calibration Record

Date	Initials	Adjustments	Comments
	MWR	None	Clean Water 8.0 lb/gal
	MWR	None	Post Abandonment Construction

March 14, 1995

Appendix C

Groundwater Sampling Data Report

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-005-S	MW-005-S	MW-005-S	MW-005-S	MW-005-S	MW-005-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/15/00	05/15/00	06/20/00	06/20/00	11/16/00	11/16/00
LABORATORY SAMPLE I.D.		216098-03	216098-06	217482-03	217482-04	223067-07	223067-08
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	6.7	NA	6.7	NA	1.9	NA
TOTAL ORGANIC CARBON	mg/l	11.3	NA	9	NA	4.6	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	260	NA	217	NA	193	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	0.7	NA	1.3	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	30	NA	46	NA	37	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	ND@0.0026	NA	ND@0.0026	NA	ND@0.0018
ARSENIC, TOTAL	mg/l	0.0232	NA	0.0578	NA	0.0129	NA
IRON, DISSOLVED	mg/l	NA	0.139 E	NA	0.249	NA	0.063 B
IRON, FERROUS	mg/l	ND@0.4	NA	ND@0.4	NA	ND@0.4	NA
IRON, TOTAL	mg/l	79.9	NA	141	NA	35.7	NA
MANGANESE, DISSOLVED	mg/l	NA	0.0047 B	NA	0.005 B	NA	0.0056 B
MANGANESE, TOTAL	mg/l	1.46	NA	2.35	NA	1.570	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-104-S	MW-104-S	MW-104-S	MW-104-S	MW-104-S	MW-104-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/15/00	05/15/00	06/20/00	06/20/00	11/16/00	11/16/00
LABORATORY SAMPLE I.D.		216098-01	216098-04	217482-01	217482-02	223067-05	223067-06
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	3.2	NA	6.8	NA	7.8	NA
TOTAL ORGANIC CARBON	mg/l	10.1	NA	8.8	NA	7.9	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	53	NA	57.9	NA	67.9	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	ND@0.2	NA	ND@0.2	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	0.013	NA
SULFATE	mg/l	36	NA	45	NA	60	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0136	NA	0.0258	NA	0.0210
ARSENIC, TOTAL	mg/l	0.0816	NA	0.112	NA	0.1350	NA
IRON, DISSOLVED	mg/l	NA	0.204 E	NA	1.11	NA	0.561
IRON, FERROUS	mg/l	4	NA	4	NA	3.3	NA
IRON, TOTAL	mg/l	80.5	NA	126	NA	93.1	NA
MANGANESE, DISSOLVED	mg/l	NA	0.471	NA	0.406	NA	0.376
MANGANESE, TOTAL	mg/l	8.25	NA	8.04	NA	12.400	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-106-S	MW-106-S	MW-106-S	MW-106-S	MW-106-S	MW-106-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/16/00	05/16/00	06/22/00	06/22/00	11/21/00	11/21/00
LABORATORY SAMPLE I.D.		216133-05	216133-06	217634-02	217634-05	223175-06	223175-07
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	1.9	NA	1.9	NA	ND@1	NA
TOTAL ORGANIC CARBON	mg/l	13.9	NA	4.6	NA	6	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	0.26	NA	ND@1	NA
CHLORIDE	mg/l	140	NA	124	NA	136	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	ND@0.2	NA	ND@0.2	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	11.5	NA	10	NA	12	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0664	NA	0.0372	NA	0.0447
ARSENIC, TOTAL	mg/l	0.0617 NJ	NA	0.0321	NA	0.0825	NA
IRON, DISSOLVED	mg/l	NA	5.15 E	NA	4.89	NA	3.61
IRON, FERROUS	mg/l	5	NA	4.6	NA	5.6	NA
IRON, TOTAL	mg/l	5.88 E	NA	5.25	NA	6.45	NA
MANGANESE, DISSOLVED	mg/l	NA	0.941 NJ	NA	0.910	NA	0.817
MANGANESE, TOTAL	mg/l	0.928 NJ	NA	0.885	NA	0.892	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-109-S	MW-109-S	MW-109-S	MW-109-S	MW-109-S	MW-109-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/17/00	05/17/00	06/20/00	06/20/00	11/16/00	11/16/00
LABORATORY SAMPLE I.D.		216200-05	216200-06	217482-11	217482-12	223067-09	223067-10
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
TOTAL ORGANIC CARBON	mg/l	47.8	NA	74.3	NA	13.2	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	1.7	NA	1.7	NA
CHLORIDE	mg/l	ND@5	NA	14.5	NA	217	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	ND@0.2	NA	0.74	NA
NITRITE	mg/l	ND@0.1	NA	ND@0.01	NA	0.034	NA
SULFATE	mg/l	ND@5	NA	10	NA	52	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0099 B	NA	0.0172	NA	0.0136
ARSENIC, TOTAL	mg/l	0.0228 NJ	NA	0.0457	NA	0.0333	NA
IRON, DISSOLVED	mg/l	NA	27.1 E	NA	26.2	NA	22.5
IRON, FERROUS	mg/l	33.5	NA	30	NA	23	NA
IRON, TOTAL	mg/l	35.7 E	NA	43.2	NA	29.4	NA
MANGANESE, DISSOLVED	mg/l	NA	3.55 NJ	NA	3.39	NA	2.820
MANGANESE, TOTAL	mg/l	3.68 NJ	NA	3.43	NA	2.900	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-124-S	MW-124-S	MW-124-S	MW-124-S	MW-124-S	MW-124-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/17/00	05/17/00	06/20/00	06/20/00	11/16/00	11/16/00
LABORATORY SAMPLE I.D.		216200-07	216200-08	217482-09	217482-10	223067-15	223067-16
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	1.6	NA	5.7	NA	5.7	NA
TOTAL ORGANIC CARBON	mg/l	27.3	NA	14.8	NA	5.4	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	11.6	NA	154	NA	165	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	3	NA	ND@0.2	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	0.016	NA
SULFATE	mg/l	46.5	NA	36	NA	26	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0079 B	NA	0.0182	NA	0.0253
ARSENIC, TOTAL	mg/l	0.0088 B	NA	0.0344	NA	0.0325	NA
IRON, DISSOLVED	mg/l	NA	2.52 E	NA	0.496	NA	8.37
IRON, FERROUS	mg/l	4.2	NA	5.6	NA	7	NA
IRON, TOTAL	mg/l	7.83 E	NA	49.7	NA	23.1	NA
MANGANESE, DISSOLVED	mg/l	NA	1.64 NJ	NA	1.50	NA	1.310
MANGANESE, TOTAL	mg/l	1.83 NJ	NA	3.26	NA	2.000	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-125-S	MW-125-S	MW-125-S	MW-125-S	MW-125-S	MW-125-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/17/00	05/17/00	06/21/00	06/21/00	11/16/00	11/16/00
LABORATORY SAMPLE I.D.		216200-01	216200-02	217546-01	217546-02	223067-01	223067-02
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	8.5	NA	6.5	NA	8.5	NA
TOTAL ORGANIC CARBON	mg/l	25.4	NA	7.9	NA	6.7	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	0.12	NA	ND@1	NA
CHLORIDE	mg/l	ND@5	NA	ND@5	NA	ND@5	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	0.12	NA
NITRATE-NITRITE	mg/l	1.3	NA	1.7	NA	3.2	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	24.5	NA	26	NA	27	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	ND@0.0026	NA	ND@0.0026	NA	ND@0.0018
ARSENIC, TOTAL	mg/l	ND@0.0026	NA	0.0036 B	NA	ND@0.0018	NA
IRON, DISSOLVED	mg/l	NA	ND@0.003	NA	0.0083 B	NA	ND@2.8
IRON, FERROUS	mg/l	ND@0.4	NA	ND@0.4	NA	ND@0.4	NA
IRON, TOTAL	mg/l	1.9 E	NA	17.1	NA	1.97	NA
MANGANESE, DISSOLVED	mg/l	NA	0.0012 B	NA	0.0027 B	NA	0.002 B
MANGANESE, TOTAL	mg/l	0.0273 NJ	NA	0.333	NA	0.0334	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-163-S	MW-163-S	MW-163-S	MW-163-S	MW-163-S	MW-163-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/18/00	05/18/00	06/20/00	06/20/00	11/16/00	11/16/00
LABORATORY SAMPLE I.D.		216233-07	216233-08	217482-07	217482-08	223067-17	223067-18
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	10	NA	3.3	NA	2.4	NA
TOTAL ORGANIC CARBON	mg/l	7.8	NA	9.2	NA	3.6	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	32.8	NA	217	NA	137	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	3.6	NA	ND@0.2	NA	5.3	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	330	NA	310	NA	320	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	ND@0.0026	NA	ND@0.0026	NA	ND@0.0018
ARSENIC, TOTAL	mg/l	0.0148	NA	0.0091 B	NA	0.0084 B	NA
IRON, DISSOLVED	mg/l	NA	0.021 B	NA	0.298	NA	ND@2.8
IRON, FERROUS	mg/l	ND@0.4	NA	ND@0.4	NA	ND@0.4	NA
IRON, TOTAL	mg/l	31.0 NJ	NA	14.6	NA	16.1	NA
MANGANESE, DISSOLVED	mg/l	NA	1.10	NA	1.35	NA	1.210
MANGANESE, TOTAL	mg/l	3.18	NA	2.53	NA	1.990	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-205-S	MW-205-S	MW-205-S	MW-205-S	MW-205-S	MW-205-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	REPLICATE	REPLICATE	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/16/00	05/16/00	06/21/00	06/21/00	06/22/00	06/22/00
LABORATORY SAMPLE I.D.		216133-07	216133-08	217546-11	217546-12	217634-01	217634-04
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	4.5	NA	ND@1	NA	4.6	NA
TOTAL ORGANIC CARBON	mg/l	16.2	NA	9.4	NA	7.4	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	0.3	NA	0.19	NA
CHLORIDE	mg/l	62.7	NA	28	NA	36	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	ND@0.2	NA	ND@0.2	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	21	NA	ND@5	NA	22.5	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0165	NA	0.0049 B	NA	0.0228
ARSENIC, TOTAL	mg/l	0.0193 NJ	NA	0.0174	NA	0.0219	NA
IRON, DISSOLVED	mg/l	NA	1.55 E	NA	8.33	NA	1.64
IRON, FERROUS	mg/l	2.8	NA	10	NA	2.5	NA
IRON, TOTAL	mg/l	2.72 E	NA	15.7	NA	2.19	NA
MANGANESE, DISSOLVED	mg/l	NA	0.577 NJ	NA	2.07	NA	0.656
MANGANESE, TOTAL	mg/l	0.704 NJ	NA	2.30	NA	0.611	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-205-S	MW-205-S	MW-205-S	MW-205-S	MW-205-S	MW-205-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/15/00	11/15/00	01/10/01	01/10/01	01/25/01	01/25/01
LABORATORY SAMPLE I.D.		223006-16	223006-15	224857-04	224857-05	225339-04	225339-05
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	NA	2.5	5.4	NA	5.8	NA
TOTAL ORGANIC CARBON	mg/l	NA	6	8.6	NA	9.9	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	NA	NDa1	NDa1	NA	NDa1	NA
CHLORIDE	mg/l	NA	32.1	36.8	NA	45.3	NA
HYDROGEN SULFIDE	mg/l	NA	NDa0.1	NDa0.1	NA	NDa0.1	NA
NITRATE-NITRITE	mg/l	NA	NDa0.2	NDa0.2	NA	NDa0.2	NA
NITRITE	mg/l	NA	NDa0.01	NDa0.01	NA	NDa0.01	NA
SULFATE	mg/l	NA	15	13	NA	12	NA
METALS							
ARSENIC, DISSOLVED	mg/l	0.0835	NA	NA	0.0187	NA	NDa0.0032
ARSENIC, TOTAL	mg/l	NA	0.0940	0.0157	NA	NDa0.0032	NA
IRON, DISSOLVED	mg/l	2.14	NA	NA	1.25	NA	1.06 EJ
IRON, FERROUS	mg/l	NA	4.8	1.8	NA	1.7	NA
IRON, TOTAL	mg/l	NA	4.77	2.72	NA	2.47 *J	NA
MANGANESE, DISSOLVED	mg/l	0.803	NA	NA	0.609	NA	0.566
MANGANESE, TOTAL	mg/l	NA	0.710	0.612	NA	0.572 *J	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-206-S	MW-206-S	MW-206-S	MW-206-S	MW-206-S	MW-206-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/15/00	11/15/00	01/10/01	01/10/01	01/25/01	01/25/01
LABORATORY SAMPLE I.D.		223006-09	223006-10	224857-03	224857-06	225339-03	225339-06
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
TOTAL ORGANIC CARBON	mg/l	11.6	NA	18.2	NA	23.7	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	1.3	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	79.2	NA	79.2	NA	78.3	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	1.1	NA	0.16	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	ND@0.2	NA	ND@0.2	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	8	NA	8	NA	17	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0068 B	NA	ND@0.0032	NA	ND@0.0032
ARSENIC, TOTAL	mg/l	0.0117	NA	0.0078 B	NA	ND@0.0032	NA
IRON, DISSOLVED	mg/l	NA	7.87	NA	5.84	NA	6.08 EJ
IRON, FERROUS	mg/l	16.5	NA	17	NA	15	NA
IRON, TOTAL	mg/l	23.0	NA	27.1	NA	17.6 *J	NA
MANGANESE, DISSOLVED	mg/l	NA	1.790	NA	1.480	NA	1.490
MANGANESE, TOTAL	mg/l	1.930	NA	1.800	NA	1.580 *J	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-208-S	MW-208-S	MW-208-S	MW-208-S	MW-208-S	MW-208-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/16/00	05/16/00	06/21/00	06/21/00	11/21/00	11/21/00
LABORATORY SAMPLE I.D.		216133-09	216133-10	217546-09	217546-10	223175-03	223175-10
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
TOTAL ORGANIC CARBON	mg/l	21.1	NA	8.1	NA	13.6	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	0.34	NA	1.5	NA
CHLORIDE	mg/l	ND@5	NA	16.4	NA	37.7	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	ND@0.2	NA	ND@0.2	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	6.5	NA	5.5	NA	ND@5	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0087 B	NA	0.0028 B	NA	0.0208
ARSENIC, TOTAL	mg/l	0.0101 NJ	NA	0.0104	NA	0.0436	NA
IRON, DISSOLVED	mg/l	NA	9.7 E	NA	8.74	NA	13.5
IRON, FERROUS	mg/l	9.6	NA	9.6	NA	17.2	NA
IRON, TOTAL	mg/l	15.6 E	NA	13.8	NA	21.5	NA
MANGANESE, DISSOLVED	mg/l	NA	1.98 NJ	NA	2.18	NA	1.750
MANGANESE, TOTAL	mg/l	1.99 NJ	NA	2.31	NA	1.940	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-208-S	MW-208-S	MW-210-S	MW-210-S	MW-210-S
SAMPLE DESCRIPTION		REPLICATE	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/21/00	11/21/00	05/16/00	05/16/00	06/21/00
LABORATORY SAMPLE I.D.		223175-04	223175-09	216133-11	216133-12	217546-13
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
DISSOLVED OXYGEN	mg/l	ND@1	NA	ND@1	NA	ND@1
TOTAL ORGANIC CARBON	mg/l	11.5	NA	33	NA	19.3
INORGANICS						
AMMONIA, TOTAL	mg/l	1.6	NA	4.6	NA	6
CHLORIDE	mg/l	28.3	NA	73.3	NA	86.8
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1
NITRATE-NITRITE	mg/l	ND@0.2	NA	ND@0.2	NA	ND@0.2
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01
SULFATE	mg/l	6	NA	7	NA	9
METALS						
ARSENIC, DISSOLVED	mg/l	NA	0.0139	NA	0.0758	NA
ARSENIC, TOTAL	mg/l	0.0581	NA	0.0866 NJ	NA	0.0911
IRON, DISSOLVED	mg/l	NA	13.9	NA	22.8 E	NA
IRON, FERROUS	mg/l	17.2	NA	39	NA	42
IRON, TOTAL	mg/l	23.6	NA	36.2 E	NA	36.2
MANGANESE, DISSOLVED	mg/l	NA	1.820	NA	6.79 NJ	NA
MANGANESE, TOTAL	mg/l	2.030	NA	7.33 NJ	NA	7.293

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-210-S	MW-210-S	MW-210-S	MW-210-S	MW-210-S	MW-210-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	REPLICATE	REPLICATE	GROUNDWATER
SAMPLE DATE		06/21/00	11/15/00	11/15/00	11/15/00	11/15/00	01/10/01
LABORATORY SAMPLE I.D.		217546-14	223006-11	223006-12	223006-13	223006-14	224857-01
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	NA	ND@1	NA	ND@1	NA	3.2
TOTAL ORGANIC CARBON	mg/l	NA	15.6	NA	16.4	NA	24.7
INORGANICS							
AMMONIA, TOTAL	mg/l	NA	5.6	NA	5.5	NA	5.2
CHLORIDE	mg/l	NA	88.6	NA	91.5	NA	77.3
HYDROGEN SULFIDE	mg/l	NA	ND@0.1	NA	ND@0.1	NA	ND@0.1
NITRATE-NITRITE	mg/l	NA	ND@0.2	NA	ND@0.2	NA	ND@0.2
NITRITE	mg/l	NA	ND@0.01	NA	ND@0.01	NA	ND@0.01
SULFATE	mg/l	NA	17	NA	20	NA	22
METALS							
ARSENIC, DISSOLVED	mg/l	0.0815	NA	0.0718	NA	0.0597	NA
ARSENIC, TOTAL	mg/l	NA	0.0550	NA	0.0711	NA	0.0383
IRON, DISSOLVED	mg/l	28.3	NA	25.5	NA	18.1	NA
IRON, FERROUS	mg/l	NA	22	NA	20	NA	21
IRON, TOTAL	mg/l	NA	18.1	NA	27.0	NA	24.3
MANGANESE, DISSOLVED	mg/l	7.19	NA	7.520	NA	7.550	NA
MANGANESE, TOTAL	mg/l	NA	7.280	NA	7.500	NA	7.570

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-210-S	MW-210-S	MW-210-S	MW-210-S	MW-210-S	MW-210-S
SAMPLE DESCRIPTION		GROUNDWATER	REPLICATE	REPLICATE	REPLICATE	REPLICATE	GROUNDWATER
SAMPLE DATE		01/10/01	01/10/01	01/10/01	01/25/01	01/25/01	01/25/01
LABORATORY SAMPLE I.D.		224857-08	224857-02	224857-07	225339-02	225339-07	225339-01
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	NA	3.5	NA	ND@1	NA	ND@1
TOTAL ORGANIC CARBON	mg/l	NA	24.3	NA	25.4	NA	24.1
INORGANICS							
AMMONIA, TOTAL	mg/l	NA	6.6	NA	5.8	NA	5.5
CHLORIDE	mg/l	NA	81.1	NA	86.8	NA	83
HYDROGEN SULFIDE	mg/l	NA	ND@0.1	NA	ND@0.1	NA	ND@0.1
NITRATE-NITRITE	mg/l	NA	ND@0.2	NA	ND@0.2	NA	ND@0.2
NITRITE	mg/l	NA	ND@0.01	NA	ND@0.01	NA	ND@0.01
SULFATE	mg/l	NA	13	NA	8	NA	10
METALS							
ARSENIC, DISSOLVED	mg/l	0.0284	NA	0.0294	NA	0.0251	NA
ARSENIC, TOTAL	mg/l	NA	0.0445	NA	0.0217	NA	0.0190
IRON, DISSOLVED	mg/l	15.0	NA	14.6	NA	15.3 EJ	NA
IRON, FERROUS	mg/l	NA	19	NA	19.5	NA	18
IRON, TOTAL	mg/l	NA	24.2	NA	16.2 *J	NA	14.3 *J
MANGANESE, DISSOLVED	mg/l	7.060	NA	6.910	NA	6.690	NA
MANGANESE, TOTAL	mg/l	NA	7.350	NA	5.870 *J	NA	5.660 *J

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-210-S	MW-505-S	MW-505-S	MW-505-S	MW-505-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		01/25/01	05/18/00	05/18/00	05/18/00	05/18/00
LABORATORY SAMPLE I.D.		225339-08	216233-01	216233-02	216233-03	216233-04
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
DISSOLVED OXYGEN	mg/l	NA	6.3	NA	6.5	NA
TOTAL ORGANIC CARBON	mg/l	NA	4.8	NA	8.1	NA
INORGANICS						
AMMONIA, TOTAL	mg/l	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	NA	40.5	NA	41.5	NA
HYDROGEN SULFIDE	mg/l	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	NA	0.47	NA	ND@0.2	NA
NITRITE	mg/l	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	NA	34	NA	34	NA
METALS						
ARSENIC, DISSOLVED	mg/l	0.0252	NA	ND@0.0026	NA	ND@0.0026
ARSENIC, TOTAL	mg/l	NA	ND@0.0026	NA	ND@0.0026	NA
IRON, DISSOLVED	mg/l	15.0 EJ	NA	0.0082 B	NA	0.0084 B
IRON, FERROUS	mg/l	NA	ND@0.4	NA	ND@0.4	NA
IRON, TOTAL	mg/l	NA	2.35 NJ	NA	2.34 NJ	NA
MANGANESE, DISSOLVED	mg/l	6.600	NA	0.0124 B	NA	0.0088 B
MANGANESE, TOTAL	mg/l	NA	0.367	NA	0.308	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-505-S	MW-505-S	MW-505-S	MW-505-S	MW-601-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		06/20/00	06/20/00	11/16/00	11/16/00	05/18/00
LABORATORY SAMPLE I.D.		217482-13	217482-14	223067-13	223067-14	216233-05
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
DISSOLVED OXYGEN	mg/l	5.5	NA	3.4	NA	6.4
TOTAL ORGANIC CARBON	mg/l	10.1	NA	7.9	NA	7.3
INORGANICS						
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1
CHLORIDE	mg/l	13.5	NA	43.4	NA	36.6
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1
NITRATE-NITRITE	mg/l	ND@0.2	NA	0.89	NA	2.9
NITRITE	mg/l	ND@0.01	NA	0.01	NA	ND@0.01
SULFATE	mg/l	17	NA	33	NA	80
METALS						
ARSENIC, DISSOLVED	mg/l	NA	ND@0.0026	NA	ND@0.0018	NA
ARSENIC, TOTAL	mg/l	ND@0.0026	NA	ND@0.0018	NA	0.0106
IRON, DISSOLVED	mg/l	NA	0.0154 B	NA	0.0108 B	NA
IRON, FERROUS	mg/l	ND@0.4	NA	ND@0.4	NA	ND@0.4
IRON, TOTAL	mg/l	0.446	NA	0.326	NA	9.8 NJ
MANGANESE, DISSOLVED	mg/l	NA	0.0038 B	NA	0.0093 B	NA
MANGANESE, TOTAL	mg/l	0.0468	NA	0.0628	NA	0.225

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Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-601-S	MW-601-S	MW-601-S	MW-601-S	MW-601-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/18/00	06/21/00	06/21/00	11/16/00	11/16/00
LABORATORY SAMPLE I.D.		216233-06	217546-03	217546-04	223067-11	223067-12
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
DISSOLVED OXYGEN	mg/l	NA	6.1	NA	5.3	NA
TOTAL ORGANIC CARBON	mg/l	NA	5.6	NA	4.9	NA
INORGANICS						
AMMONIA, TOTAL	mg/l	NA	0.35	NA	ND@1	NA
CHLORIDE	mg/l	NA	28	NA	22.6	NA
HYDROGEN SULFIDE	mg/l	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	NA	2.8	NA	2.2	NA
NITRITE	mg/l	NA	ND@0.01	NA	0.011	NA
SULFATE	mg/l	NA	72	NA	50	NA
METALS						
ARSENIC, DISSOLVED	mg/l	ND@0.0026	NA	ND@0.0026	NA	ND@0.0018
ARSENIC, TOTAL	mg/l	NA	0.0041 B	NA	0.0095 B	NA
IRON, DISSOLVED	mg/l	0.358	NA	0.472	NA	0.316
IRON, FERROUS	mg/l	NA	ND@0.4	NA	ND@0.4	NA
IRON, TOTAL	mg/l	NA	7.46	NA	6.26	NA
MANGANESE, DISSOLVED	mg/l	0.0142 B	NA	0.0144 B	NA	0.0097 B
MANGANESE, TOTAL	mg/l	NA	0.169	NA	0.173	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-609-S	MW-609-S	MW-609-S	MW-609-S	MW-609-S	MW-609-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/15/00	05/15/00	06/20/00	06/20/00	11/16/00	11/16/00
LABORATORY SAMPLE I.D.		216098-02	216098-05	217482-05	217482-06	223067-03	223067-04
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	9.3	NA	8.6	NA	8.5	NA
TOTAL ORGANIC CARBON	mg/l	5.3	NA	5.2	NA	3.3	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	251	NA	198	NA	114	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	1.6	NA	1.6	NA	3.2	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	32	NA	23	NA	19	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	ND@0.0026	NA	ND@0.0026	NA	ND@0.0018
ARSENIC, TOTAL	mg/l	ND@0.0026	NA	0.0126	NA	0.0099 B	NA
IRON, DISSOLVED	mg/l	NA	0.0063 B	NA	0.0107 B	NA	20.4 B
IRON, FERROUS	mg/l	ND@0.4	NA	ND@0.4	NA	ND@0.4	NA
IRON, TOTAL	mg/l	24.1	NA	42.1	NA	24.5	NA
MANGANESE, DISSOLVED	mg/l	NA	0.0028 B	NA	0.0028 B	NA	0.0016 B
MANGANESE, TOTAL	mg/l	1.25	NA	2.15	NA	1.500	NA

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Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-802	MW-802	MW-802	MW-802	MW-802	MW-802
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/17/00	05/17/00	06/21/00	06/21/00	11/21/00	11/21/00
LABORATORY SAMPLE I.D.		216200-03	216200-04	217546-07	217546-08	223175-02	223175-11
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	3	NA	2.3	NA	3.9	NA
TOTAL ORGANIC CARBON	mg/l	15	NA	3.1	NA	4.4	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	NDa1	NA	NDa0.1	NA	NDa1	NA
CHLORIDE	mg/l	69.4	NA	76.2	NA	103	NA
HYDROGEN SULFIDE	mg/l	NDa0.1	NA	NDa0.1	NA	NDa0.1	NA
NITRATE-NITRITE	mg/l	NDa0.2	NA	0.4	NA	1.4	NA
NITRITE	mg/l	NDa0.01	NA	NDa0.01	NA	NDa0.01	NA
SULFATE	mg/l	24.5	NA	23	NA	33	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	NDa0.0026	NA	NDa0.0026	NA	0.0021 B
ARSENIC, TOTAL	mg/l	0.0077 B	NA	NDa0.0026	NA	0.0020 B	NA
IRON, DISSOLVED	mg/l	NA	NDa0.003	NA	0.0131 B	NA	0.0044 B
IRON, FERROUS	mg/l	NDa0.4	NA	NDa0.4	NA	NDa0.4	NA
IRON, TOTAL	mg/l	0.762 E	NA	0.296	NA	0.800	NA
MANGANESE, DISSOLVED	mg/l	NA	0.440 E	NA	0.634	NA	0.0586
MANGANESE, TOTAL	mg/l	4.34 NJ	NA	1.47	NA	3.150	NA

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Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-810	MW-810	MW-810	MW-810	MW-810	MW-810
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/16/00	05/16/00	06/22/00	06/22/00	11/21/00	11/21/00
LABORATORY SAMPLE I.D.		216133-03	216133-04	217634-03	217634-06	223175-05	223175-08
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
TOTAL ORGANIC CARBON	mg/l	31.8	NA	12.5	NA	17.5	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	1.3	NA	4.6	NA	4.2	NA
CHLORIDE	mg/l	135	NA	45	NA	37.7	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	ND@0.2	NA	ND@0.2	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	0.017	NA
SULFATE	mg/l	24.5	NA	ND@5	NA	10	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0239	NA	0.0599	NA	0.0546
ARSENIC, TOTAL	mg/l	0.0343 NJ	NA	0.0639	NA	0.0710	NA
IRON, DISSOLVED	mg/l	NA	19.5 E	NA	33.6	NA	27.2
IRON, FERROUS	mg/l	27	NA	40	NA	34	NA
IRON, TOTAL	mg/l	19.0 E	NA	40.6	NA	38.4	NA
MANGANESE, DISSOLVED	mg/l	NA	1.66 NJ	NA	2.44	NA	2.070
MANGANESE, TOTAL	mg/l	1.50 NJ	NA	2.44	NA	2.250	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-815	MW-815	MW-815	MW-815	MW-815	MW-815
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/15/00	11/15/00	01/09/01	01/09/01	01/24/01	01/24/01
LABORATORY SAMPLE I.D.		223006-07	223006-08	224816-03	224816-04	225281-04	225281-05
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	2.6	NA	6	NA	4.8	NA
TOTAL ORGANIC CARBON	mg/l	10.3	NA	18.9	NA	17.5	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	8.5	NA	ND@5	NA	ND@5	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	1	NA	2.4	NA	0.96	NA
NITRITE	mg/l	0.028	NA	0.018	NA	0.01	NA
SULFATE	mg/l	72	NA	64	NA	104	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0020 B	NA	ND@0.0032	NA	ND@0.0032
ARSENIC, TOTAL	mg/l	0.0062 B	NA	ND@0.0032	NA	ND@0.0032	NA
IRON, DISSOLVED	mg/l	NA	ND@2.8	NA	0.0126 B	NA	0.0217 B
IRON, FERROUS	mg/l	ND@0.4	NA	ND@0.4	NA	ND@0.4	NA
IRON, TOTAL	mg/l	5.580	NA	2.080	NA	14.3 *J	NA
MANGANESE, DISSOLVED	mg/l	NA	0.752	NA	0.0045 B	NA	3.320 *J
MANGANESE, TOTAL	mg/l	0.641	NA	0.859	NA	3.860 *J	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-816	MW-816	MW-816	MW-816	MW-816	MW-816
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/15/00	11/15/00	01/09/01	01/09/01	01/24/01	01/24/01
LABORATORY SAMPLE I.D.		223006-05	223006-06	224816-01	224816-06	225281-01	225281-08
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	6.6	NA	5	NA	6.3	NA
TOTAL ORGANIC CARBON	mg/l	10.7	NA	12.4	NA	10.2	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	ND@5	NA	ND@5	NA	ND@5	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	2.2	NA	1.2	NA	1.3	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	52	NA	29	NA	39	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	ND@0.0018	NA	ND@0.0032	NA	ND@0.0032
ARSENIC, TOTAL	mg/l	ND@0.0018	NA	ND@0.0032	NA	ND@0.0032	NA
IRON, DISSOLVED	mg/l	NA	ND@2.8	NA	0.0104 B	NA	0.007 B
IRON, FERROUS	mg/l	ND@0.4	NA	ND@0.4	NA	ND@0.4	NA
IRON, TOTAL	mg/l	7.36	NA	1.06	NA	4.25 *J	NA
MANGANESE, DISSOLVED	mg/l	NA	0.0074 B	NA	0.611	NA	0.0041 B
MANGANESE, TOTAL	mg/l	0.0275	NA	0.0429	NA	0.113 *J	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-816-R	MW-816-R	MW-816-R	MW-816-R	MW-816-R	MW-816-R
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/15/00	11/15/00	01/05/01	01/05/01	01/24/01	01/24/01
LABORATORY SAMPLE I.D.		223006-01	223006-02	224705-01	224705-02	225281-03	225281-06
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	6.8	NA	3.1	NA	7.8	NA
TOTAL ORGANIC CARBON	mg/l	8.2	NA	8.5	NA	15.3	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	ND@10	NA	6.6	NA	5.6	NA
HYDROGEN SULFIDE	mg/l	0.2	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	ND@0.2	NA	ND@0.2	NA	ND@0.2	NA
NITRITE	mg/l	0.045	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	196	NA	54	NA	112	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0049 B	NA	0.0046 B	NA	ND@0.0032
ARSENIC, TOTAL	mg/l	0.0295	NA	0.0069 B	NA	ND@0.0032	NA
IRON, DISSOLVED	mg/l	NA	26.8	NA	5.91	NA	12.8 *J
IRON, FERROUS	mg/l	3.6	NA	1.5	NA	3.6	NA
IRON, TOTAL	mg/l	183	NA	16.6	NA	44.5 *J	NA
MANGANESE, DISSOLVED	mg/l	NA	0.313	NA	0.072	NA	0.138 *J
MANGANESE, TOTAL	mg/l	2.150	NA	0.196	NA	0.512 *J	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-817	MW-817	MW-817	MW-817	MW-817	MW-817
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/15/00	11/15/00	01/09/01	01/09/01	01/24/01	01/24/01
LABORATORY SAMPLE I.D.		223006-03	223006-04	224816-02	224816-05	225281-02	225281-07
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	5.4	NA	4.1	NA	4.4	NA
TOTAL ORGANIC CARBON	mg/l	6.2	NA	11.7	NA	16.8	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	ND@1	NA	ND@1	NA
CHLORIDE	mg/l	16	NA	12.2	NA	13.2	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	0.24	NA	0.27	NA	0.56	NA
NITRITE	mg/l	ND@0.01	NA	ND@0.01	NA	ND@0.01	NA
SULFATE	mg/l	34	NA	25	NA	33	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	ND@0.0018	NA	ND@0.0032	NA	ND@0.0032
ARSENIC, TOTAL	mg/l	ND@0.0018	NA	ND@0.0032	NA	ND@0.0032	NA
IRON, DISSOLVED	mg/l	NA	ND@2.8	NA	0.0126 B	NA	0.0082 B
IRON, FERROUS	mg/l	ND@0.4	NA	ND@0.4	NA	ND@0.4	NA
IRON, TOTAL	mg/l	1.62	NA	0.477	NA	0.715 *J	NA
MANGANESE, DISSOLVED	mg/l	NA	0.0155	NA	0.179	NA	0.086
MANGANESE, TOTAL	mg/l	5.470	NA	1.070	NA	2.750 *J	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-821	MW-821	MW-821	MW-821	MW-821	MW-821
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		05/16/00	05/16/00	06/21/00	06/21/00	11/21/00	11/21/00
LABORATORY SAMPLE I.D.		216133-01	216133-02	217546-05	217546-06	223175-01	223175-12
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
DISSOLVED OXYGEN	mg/l	ND@1	NA	1.6	NA	2.6	NA
TOTAL ORGANIC CARBON	mg/l	25.4	NA	12.4	NA	9.8	NA
INORGANICS							
AMMONIA, TOTAL	mg/l	ND@1	NA	0.24	NA	ND@1	NA
CHLORIDE	mg/l	28	NA	17.4	NA	61.3	NA
HYDROGEN SULFIDE	mg/l	ND@0.1	NA	ND@0.1	NA	ND@0.1	NA
NITRATE-NITRITE	mg/l	5.9	NA	9.2	NA	0.67	NA
NITRITE	mg/l	0.02	NA	0.03	NA	0.023	NA
SULFATE	mg/l	30	NA	24	NA	18	NA
METALS							
ARSENIC, DISSOLVED	mg/l	NA	0.0137	NA	0.0051 B	NA	0.0210
ARSENIC, TOTAL	mg/l	0.0221 NJ	NA	0.0098 B	NA	0.0313	NA
IRON, DISSOLVED	mg/l	NA	8.96 E	NA	2.29	NA	11.0
IRON, FERROUS	mg/l	9.7	NA	2.8	NA	22	NA
IRON, TOTAL	mg/l	15.0 E	NA	6.60	NA	21.9	NA
MANGANESE, DISSOLVED	mg/l	NA	1.34 NJ	NA	0.403	NA	1.590
MANGANESE, TOTAL	mg/l	1.38 NJ	NA	0.495	NA	1.790	NA

Former IBM Kingston Site
Geochemical Monitoring Data (Groundwater)
Former IWSL Expanded RFI

EXPLANATION OF REPORTING CONVENTIONS AND KEY TO COMMENT CODES

REPORTING CONVENTIONS

NA	Not Analyzed
ND@X	Not Detected at Detection Limit X
BMRL@X	Below Minimum Reporting Limit of X

CODE	EXPLANATION
^	Non-Standard Measurement Unit
c	Sample contained sediment which may have contributed to reported results
d	24 Hour Composite Sample
B	Organic analyte detected in both the sample and the laboratory blank
D	Compounds identifed at a secondary dilution factor
E	Concentration exceeds the calibration range of the GC/MS instrument
J	Estimated Value
N	Spiked sample recovery not within control limits
P	Lower of 2 GC column concentrations that have more than 25% difference
R	Reported value is less than the CRDL but greater than the IDL
S	Surrogate recoveries exceed acceptable control limits
W	Post digestion spike FAA out of control limits; sample absorbance < 50%
*	Manhole flooded when sediment sample collected

Former IBM Kingston Site
Groundwater Monitoring Data Report
Deep Bedkrock Investigation

SAMPLE LOCATION		MW-321-R	MW-321-R	MW-321-R	MW-321-R	MW-321-R	MW-321-R
SAMPLE DESCRIPTION		GROUNDWATER	DUPLICATE	GROUNDWATER	REPLICATE	GROUNDWATER	DUPLICATE
SAMPLE DATE		11/14/00	11/14/00	01/05/01	01/05/01	01/19/01	01/19/01
LABORATORY SAMPLE I.D.		222967-06	222967-07	224708-05	224708-06	225152-01	225152-02
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
BASE/NEUTRAL EXTRACTABLES							
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
VOLATILE ORGANICS							
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1	0.9J	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	NA	NA
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	ND@1	ND@1	1.3	1.4	1.1	0.8J
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	NA	NA
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
TOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	NA	NA
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Groundwater Monitoring Data Report
Deep Bedkrock Investigation

SAMPLE LOCATION		MW-321-R	MW-321-R	MW-321-R	MW-321-R	MW-321-R	MW-321-R
SAMPLE DESCRIPTION		GROUNDWATER	DUPLICATE	GROUNDWATER	REPLICATE	GROUNDWATER	DUPLICATE
SAMPLE DATE		11/14/00	11/14/00	01/05/01	01/05/01	01/19/01	01/19/01
LABORATORY SAMPLE I.D.		222967-06	222967-07	224708-05	224708-06	225152-01	225152-02
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
VOLATILE ORGANICS (Continued)							
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
XYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	NA	NA

Former IBM Kingston Site
Groundwater Monitoring Data Report
Deep Bedkrock Investigation

SAMPLE LOCATION		MW-323-R	MW-323-R	MW-323-R	MW-324-R	MW-324-R
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/14/00	01/01/01	01/23/01	11/14/00	01/04/01
LABORATORY SAMPLE I.D.		222967-03	224708-02	225235-03	222967-05	224708-04
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
BASE/NEUTRAL EXTRACTABLES						
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VOLATILE ORGANICS						
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TOLUENE	ug/l	ND@1	ND@1	ND@1	3.8	0.7J
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Groundwater Monitoring Data Report
Deep Bedkrock Investigation

SAMPLE LOCATION		MW-323-R	MW-323-R	MW-323-R	MW-324-R	MW-324-R
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/14/00	01/01/01	01/23/01	11/14/00	01/04/01
LABORATORY SAMPLE I.D.		222967-03	224708-02	225235-03	222967-05	224708-04
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
VOLATILE ORGANICS (Continued)						
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
XYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Groundwater Monitoring Data Report
Deep Bedkrock Investigation

SAMPLE LOCATION		MW-324-R	MW-816-R	MW-816-R	MW-816-R
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		01/19/01	11/14/00	01/04/01	01/23/01
LABORATORY SAMPLE I.D.		225152-04	222967-02	224708-01	225235-01
SAMPLE RUN NUMBER		01	01	01	01
SAMPLE COMMENT CODES					
PARAMETER	UNITS				
BASE/NEUTRAL EXTRACTABLES					
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1	ND@1
VOLATILE ORGANICS					
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1
BENZENE	ug/l	NA	ND@1	ND@1	ND@1
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
BROMOFORM	ug/l	ND@1	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	ND@1	ND@1	ND@1	ND@1
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	NA	ND@1	ND@1	ND@1
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1
TOLUENE	ug/l	NA	3.8	ND@1	2.8
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Groundwater Monitoring Data Report
Deep Bedkrock Investigation

SAMPLE LOCATION		MW-324-R	MW-816-R	MW-816-R	MW-816-R
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		01/19/01	11/14/00	01/04/01	01/23/01
LABORATORY SAMPLE I.D.		225152-04	222967-02	224708-01	225235-01
SAMPLE RUN NUMBER		01	01	01	01
SAMPLE COMMENT CODES					
PARAMETER	UNITS				
VOLATILE ORGANICS (Continued)					
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1
XYLENE, TOTAL	ug/l	NA	ND@1	ND@1	0.6J

Former IBM Kingston Site
Groundwater Monitoring Data Report
Deep Bedkrock Investigation

EXPLANATION OF REPORTING CONVENTIONS AND KEY TO COMMENT CODES

REPORTING CONVENTIONS

NA	Not Analyzed
ND@X	Not Detected at Detection Limit X
BMRL@X	Below Minimum Reporting Limit of X

CODE	EXPLANATION
^	Non-Standard Measurement Unit
c	Sample contained sediment which may have contributed to reported results
d	24 Hour Composite Sample
B	Organic analyte detected in both the sample and the laboratory blank
D	Compounds identifed at a secondary dilution factor
E	Concentration exceeds the calibration range of the GC/MS instrument
J	Estimated Value
N	Spiked sample recovery not within control limits
P	Lower of 2 GC column concentrations that have more than 25% difference
R	Reported value is less than the CRDL but greater than the IDL
S	Surrogate recoveries exceed acceptable control limits
W	Post digestion spike FAA out of control limits; sample absorbance < 50%
*	Manhole flooded when sediment sample collected

Appendix D

Soil Sampling Data Report and Boring Logs

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-210-S (B)	MW-210-S (B)	MW-210-S (B)	MW-802 (B)	MW-802 (B)
SAMPLE DEPTH		01-02 FEET	06-07 FEET	08-09 FEET	07-08 FEET	12-13 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/30/00	06/30/00	06/30/00	06/30/00	06/30/00
LABORATORY SAMPLE I.D.		218054-09	218054-10	218054-11	218054-12	218055-01
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
PERCENT SOLIDS	%	91.0	84.9	88.7	86.1	81.9
METALS						
ARSENIC, TOTAL	mg/kg	5.4 *J	5.1 *J	8.5 *J	4.4 *J	5.1

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-802 (B)	MW-803 (B)	MW-803 (B)	MW-803 (B)
SAMPLE DEPTH		18-19 FEET	00-01 FEET	06-07 FEET	07-08 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/30/00	07/05/00	07/05/00	07/05/00
LABORATORY SAMPLE I.D.		218055-02	218234-04	218234-05	218234-06
SAMPLE RUN NUMBER		01	01	01	01
SAMPLE COMMENT CODES					
PARAMETER	UNITS				
INDICATOR PARAMETERS					
PERCENT SOLIDS	%	86.6	81.1	92.6	94.0
METALS					
ARSENIC, TOTAL	mg/kg	2.9	6.9	5.0	5.4

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		MW-805 (B)	MW-805 (B)	MW-805 (B)	MW-805 (B)	MW-805 (B)	MW-805 (B)
SAMPLE DEPTH		02-03 FEET	07-08 FEET	09-10 FEET	02-03 FEET	12-13 FEET	17-18 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/30/00	06/30/00	06/30/00	07/05/00	07/05/00	07/05/00
LABORATORY SAMPLE I.D.		218055-03	218055-04	218055-05	218234-01	218234-02	218234-03
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
INDICATOR PARAMETERS							
PERCENT SOLIDS	%	91.8	74.8	76.9	92.1	79.5	73.1
METALS							
ARSENIC, TOTAL	mg/kg	5.4	6.5	5.2	6.8	3.4	7.8

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-A	RC-A	RC-A	RC-B	RC-B
SAMPLE DEPTH		00-01 FEET	02-03 FEET	08-09 FEET	01-02 FEET	10-11 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/29/00	06/29/00	06/29/00	06/26/00	06/26/00
LABORATORY SAMPLE I.D.		218054-02	218054-03	218054-04	217889-01	217889-02
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
PERCENT SOLIDS	%	85.4	89.5	80.7	96.6	81.0
METALS						
ARSENIC, TOTAL	mg/kg	32.0 *J	5.0 *J	4.2 *J	4.4	4.6

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-C	RC-C	RC-C	RC-D	RC-D
SAMPLE DEPTH		00-01 FEET	04-05 FEET	08-09 FEET	00-01	25-26 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/26/00	06/26/00	06/26/00	06/27/00	06/27/00
LABORATORY SAMPLE I.D.		217889-03	217889-04	217889-05	217889-21	217889-22
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
PERCENT SOLIDS	%	94.1	96.2	94.5	92.9	81.1
METALS						
ARSENIC, TOTAL	mg/kg	4.2	4.5	4.3	5.5	2.2 B

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-E	RC-E	RC-F	RC-F	RC-F
SAMPLE DEPTH		04-05 FEET	10-11 FEET	03-04 FEET	04-05 FEET	09-10 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		07/05/00	07/05/00	06/27/00	06/27/00	06/27/00
LABORATORY SAMPLE I.D.		218234-07	218234-08	217889-06	217889-07	217889-08
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
PERCENT SOLIDS	%	91.5	76.7	86.3	94.7	77.7
METALS						
ARSENIC, TOTAL	mg/kg	3.6	1.1	4.3	4.2	3.3

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Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-G	RC-G	RC-G	RC-H	RC-H
SAMPLE DEPTH		00-01 FEET	02-03 FEET	07-08 FEET	02-03 FEET	07-08 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/27/00	06/27/00	06/27/00	06/27/00	06/27/00
LABORATORY SAMPLE I.D.		217889-09	217889-10	217889-11	217889-12	217889-13
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
PERCENT SOLIDS	%	91.9	91.9	74.0	89.5	82.4
METALS						
ARSENIC, TOTAL	mg/kg	3.7	4.4	2.5 B	5.7	9.5

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-H	RC-I	RC-I	RC-I
SAMPLE DEPTH		11-12 FEET	02-03 FEET	05-06 FEET	09-10 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/27/00	06/28/00	06/28/00	06/28/00
LABORATORY SAMPLE I.D.		217889-14	217921-16	217921-17	217921-18
SAMPLE RUN NUMBER		01	01	01	01
SAMPLE COMMENT CODES					
PARAMETER	UNITS				
INDICATOR PARAMETERS					
PERCENT SOLIDS	%	78.7	94.1	75.8	80.6
METALS					
ARSENIC, TOTAL	mg/kg	4.5	6.0	5.9	5.3

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-J	RC-J	RC-K	RC-K	RC-K
SAMPLE DEPTH		01-02 FEET	09-10 FEET	00-01 FEET	01-02 FEET	05-06 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/28/00	06/28/00	06/28/00	06/28/00	06/28/00
LABORATORY SAMPLE I.D.		217921-08	217921-09	217921-02	217921-03	217921-04
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
PERCENT SOLIDS	%	82.4	76.2	89.5	86.4	76.7
METALS						
ARSENIC, TOTAL	mg/kg	8.1	6.2	3.0	2.2 B	2.1 B

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-L	RC-L	RC-L	RC-M	RC-M
SAMPLE DEPTH		00-01 FEET	02-03 FEET	07-08 FEET	00-01 FEET	02-03 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/27/00	06/27/00	06/27/00	06/28/00	06/28/00
LABORATORY SAMPLE I.D.		217889-15	217889-16	217889-17	217921-05	217921-06
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
PERCENT SOLIDS	%	96.9	76.6	80.2	91.3	86.7
METALS						
ARSENIC, TOTAL	mg/kg	6.5	ND@0.68	3.5	12.9	3.2

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-M	RC-N	RC-N	RC-N
SAMPLE DEPTH		07-08 FEET	01-02 FEET	04-05 FEET	17-18 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/28/00	06/28/00	06/28/00	06/28/00
LABORATORY SAMPLE I.D.		217921-07	217921-10	217921-11	217921-12
SAMPLE RUN NUMBER		01	01	01	01
SAMPLE COMMENT CODES					
PARAMETER	UNITS				
INDICATOR PARAMETERS					
PERCENT SOLIDS	%	83.6	91.3	95.3	66.9
METALS					
ARSENIC, TOTAL	mg/kg	2.9	5.4	3.0	2.4 B

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-O	RC-O	RC-O	RC-P	RC-P
SAMPLE DEPTH		00-01 FEET	01-02 FEET	10-11 FEET	01-02 FEET	03-04 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/27/00	06/27/00	06/27/00	06/28/00	06/28/00
LABORATORY SAMPLE I.D.		217889-18	217889-19	217889-20	217921-13	217921-14
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
PERCENT SOLIDS	%	97.0	95.4	79.5	91.9	93.8
METALS						
ARSENIC, TOTAL	mg/kg	5.6	3.5	0.88 B	4.8	5.1

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-P	RC-Q	RC-Q	RC-Q
SAMPLE DEPTH		10-11 FEET	00-01 FEET	02-03 FEET	10-11 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/28/00	06/29/00	06/29/00	06/29/00
LABORATORY SAMPLE I.D.		217921-15	218053-08	218053-09	218053-10
SAMPLE RUN NUMBER		01	01	01	01
SAMPLE COMMENT CODES					
PARAMETER	UNITS				
INDICATOR PARAMETERS					
PERCENT SOLIDS	%	82.6	91.3	93.7	73.8
METALS					
ARSENIC, TOTAL	mg/kg	3.9	5.4	5.6	6.6

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-R	RC-R	RC-R	RC-R	RC-S
SAMPLE DEPTH		01-02 FEET	01-02 FEET	10-11 FEET	10-11 FEET	01-02 FEET
SAMPLE DESCRIPTION		SOIL	REPLICATE	SOIL	REPLICATE	SOIL
SAMPLE DATE		06/29/00	06/29/00	06/29/00	06/29/00	06/29/00
LABORATORY SAMPLE I.D.		218053-04	218053-05	218053-06	218053-07	218053-02
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
INDICATOR PARAMETERS						
PERCENT SOLIDS	%	91.7	95.8	82.5	82.5	93.8
METALS						
ARSENIC, TOTAL	mg/kg	7.2	6.7	4.0	3.8	7.1

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-S	RC-U	RC-U	RC-U
SAMPLE DEPTH		10-11 FEET	02-03 FEET	04-05 FEET	10-11 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL	SOIL
SAMPLE DATE		06/29/00	06/29/00	06/29/00	06/29/00
LABORATORY SAMPLE I.D.		218053-03	218053-11	218053-12	218054-01
SAMPLE RUN NUMBER		01	01	01	01
SAMPLE COMMENT CODES					
PARAMETER	UNITS				
INDICATOR PARAMETERS					
PERCENT SOLIDS	%	72.7	98.1	91.2	77.9
METALS					
ARSENIC, TOTAL	mg/kg	3.8	5.8	6.6	3.0 *J

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

SAMPLE LOCATION		RC-V	RC-V	RC-V
SAMPLE DEPTH		00-01 FEET	01-02 FEET	10-11 FEET
SAMPLE DESCRIPTION		SOIL	SOIL	SOIL
SAMPLE DATE		06/29/00	06/29/00	06/29/00
LABORATORY SAMPLE I.D.		218054-05	218054-06	218054-07
SAMPLE RUN NUMBER		01	01	01
SAMPLE COMMENT CODES				
PARAMETER	UNITS			
INDICATOR PARAMETERS				
PERCENT SOLIDS	%	87.0	82.9	77.3
METALS				
ARSENIC, TOTAL	mg/kg	6.0 *J	9.5 *J	5.8 *J

Former IBM Kingston Site
Soils Sampling Data Report
Former IWSL Expanded RFI

EXPLANATION OF REPORTING CONVENTIONS AND KEY TO COMMENT CODES

REPORTING CONVENTIONS

NA	Not Analyzed
ND@X	Not Detected at Detection Limit X
BMRL@X	Below Minimum Reporting Limit of X

CODE	EXPLANATION
^	Non-Standard Measurement Unit
c	Sample contained sediment which may have contributed to reported results
d	24 Hour Composite Sample
B	Organic analyte detected in both the sample and the laboratory blank
D	Compounds identifed at a secondary dilution factor
E	Concentration exceeds the calibration range of the GC/MS instrument
J	Estimated Value
N	Spiked sample recovery not within control limits
P	Lower of 2 GC column concentrations that have more than 25% difference
R	Reported value is less than the CRDL but greater than the IDL
S	Surrogate recoveries exceed acceptable control limits
W	Post digestion spike FAA out of control limits; sample absorbance < 50%
*	Manhole flooded when sediment sample collected

Appendix E

Northern VOC Plume Investigation Area Sampling Data Summary Report

Former IBM Kingston Site
Northern VOC Plume Investigation Data Report
Former IWSL Area - Expanded RFI

SAMPLE LOCATION		CS 214	CS 214	CS 214	CS 215	CS 215
SAMPLE DESCRIPTION		SANITARY	SANITARY	SANITARY	SANITARY	SANITARY
SAMPLE DATE		05/05/00	05/19/00	11/17/00	05/05/00	05/19/00
LABORATORY SAMPLE I.D.		215860-04	216285-03	223111-04	215860-03	216285-02
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
BASE/NEUTRAL EXTRACTABLES						
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VOLATILE ORGANICS						
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	0.6J	0.8J	ND@1	0.7J	0.7J
BROMOFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	4.6	8.7	ND@1	5.1	6.5
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TOLUENE	ug/l	ND@1	0.7J	ND@1	ND@1	ND@1
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	0.8J	ND@1	ND@1	0.7J	0.5J

Former IBM Kingston Site
Northern VOC Plume Investigation Data Report
Former IWSL Area - Expanded RFI

SAMPLE LOCATION		CS 214	CS 214	CS 214	CS 215	CS 215
SAMPLE DESCRIPTION		SANITARY	SANITARY	SANITARY	SANITARY	SANITARY
SAMPLE DATE		05/05/00	05/19/00	11/17/00	05/05/00	05/19/00
LABORATORY SAMPLE I.D.		215860-04	216285-03	223111-04	215860-03	216285-02
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
VOLATILE ORGANICS (Continued)						
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
XYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1

SAMPLE LOCATION		CS 215	CS 221	CS 221	CS 221
SAMPLE DESCRIPTION		SANITARY	SANITARY	SANITARY	SANITARY
SAMPLE DATE		11/17/00	05/05/00	05/19/00	11/17/00
LABORATORY SAMPLE I.D.		223111-02	215860-05	216285-04	223111-05
SAMPLE RUN NUMBER		01	01	01	01
SAMPLE COMMENT CODES					
PARAMETER	UNITS				
BASE/NEUTRAL EXTRACTABLES					
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	1.4	ND@1	ND@1	1J
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1	ND@1
VOLATILE ORGANICS					
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	0.6J	0.8J	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	ND@1	0.7J	0.7J	ND@1
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1
BENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
BROMOFORM	ug/l	ND@1	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	2.9	3.8	2.6	2
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1
TOLUENE	ug/l	1.5	ND@1	ND@1	ND@1
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	ND@1	1.1	1.4	1J

Former IBM Kingston Site
Northern VOC Plume Investigation Data Report
Former IWSL Area - Expanded RFI

SAMPLE LOCATION		CS 215	CS 221	CS 221	CS 221
SAMPLE DESCRIPTION		SANITARY	SANITARY	SANITARY	SANITARY
SAMPLE DATE		11/17/00	05/05/00	05/19/00	11/17/00
LABORATORY SAMPLE I.D.		223111-02	215860-05	216285-04	223111-05
SAMPLE RUN NUMBER		01	01	01	01
SAMPLE COMMENT CODES					
PARAMETER	UNITS				
VOLATILE ORGANICS (Continued)					
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1
XYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Northern VOC Plume Investigation Data Report
Former IWSL Area - Expanded RFI

SAMPLE LOCATION		CS EFFL	CS EFFL	CS EFFL	MW-106-S	MW-106-S
SAMPLE DESCRIPTION		SANITARY	SANITARY	SANITARY	GROUNDWATER	REPLICATE
SAMPLE DATE		05/05/00	05/19/00	11/17/00	05/05/00	05/05/00
LABORATORY SAMPLE I.D.		215860-01	216285-01	223111-01	215860-08	215860-09
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
BASE/NEUTRAL EXTRACTABLES						
1,2-DICHLOROBENZENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,3-DICHLOROBENZENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,4-DICHLOROBENZENE	ug/l	NDa1	NDa1	1.9	NDa1	NDa1
2-CHLOROETHYLVINYL ETHER	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
VOLATILE ORGANICS						
1,1,1,2-TETRACHLOROETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,1,1-TRICHLOROETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,1,2,2-TETRACHLOROETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,1,2-TRICHLOROETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,1-DICHLOROETHANE	ug/l	NDa1	NDa1	NDa1	0.5J	NDa1
1,1-DICHLOROETHYLENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,2,3-TRICHLOROPROPANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,2-DICHLOROETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	NDa1	NDa1	NDa1	14	13
1,2-DICHLOROPROPANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
1-CHLOROHEXANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
4-CHLOROTOLUENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
BENZENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
BENZYL CHLORIDE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
BROMOBENZENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
BROMODICHLOROMETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
BROMOFORM	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
BROMOMETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
CARBON TETRACHLORIDE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
CHLOROBENZENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
CHLORODIBROMOMETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
CHLOROETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
CHLOROFORM	ug/l	3.5	2.8	2	NDa1	NDa1
CHLOROMETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
CIS-1,3-DICHLOROPROPYLENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
DIBROMOMETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
DICHLORODIFLUOROMETHANE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
ETHYLBENZENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
METHYLENE CHLORIDE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
TETRACHLOROETHYLENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
TOLUENE	ug/l	NDa1	NDa1	0.9J	NDa1	NDa1
TRANS-1,3-DICHLOROPROPENE	ug/l	NDa1	NDa1	NDa1	NDa1	NDa1
TRICHLOROETHYLENE	ug/l	NDa1	0.8J	NDa1	2.9	3

Former IBM Kingston Site
Northern VOC Plume Investigation Data Report
Former IWSL Area - Expanded RFI

SAMPLE LOCATION		CS EFFL	CS EFFL	CS EFFL	MW-106-S	MW-106-S
SAMPLE DESCRIPTION		SANITARY	SANITARY	SANITARY	GROUNDWATER	REPLICATE
SAMPLE DATE		05/05/00	05/19/00	11/17/00	05/05/00	05/05/00
LABORATORY SAMPLE I.D.		215860-01	216285-01	223111-01	215860-08	215860-09
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
VOLATILE ORGANICS (Continued)						
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	3.7	3.6
XYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1

SAMPLE LOCATION		MW-106-S	MW-106-S	MW-205-S	MW-205-S	MW-205-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	DUPLICATE
SAMPLE DATE		05/19/00	11/17/00	05/05/00	05/19/00	05/19/00
LABORATORY SAMPLE I.D.		216285-08	223111-09	215860-11	216285-09	216285-10
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
BASE/NEUTRAL EXTRACTABLES						
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VOLATILE ORGANICS						
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	10	8.4	ND@1	ND@1	ND@1
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	2.8	1.7	ND@1	ND@1	ND@1

SAMPLE LOCATION		MW-106-S	MW-106-S	MW-205-S	MW-205-S	MW-205-S
SAMPLE DESCRIPTION		GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	DUPLICATE
SAMPLE DATE		05/19/00	11/17/00	05/05/00	05/19/00	05/19/00
LABORATORY SAMPLE I.D.		216285-08	223111-09	215860-11	216285-09	216285-10
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
VOLATILE ORGANICS (Continued)						
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	3.6	2.8	ND@1	ND@1	ND@1
XYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Northern VOC Plume Investigation Data Report
Former IWSL Area - Expanded RFI

SAMPLE LOCATION		MW-205-S	MW-205-S	MW-820	MW-820	MW-820
SAMPLE DESCRIPTION		GROUNDWATER	REPLICATE	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/17/00	11/17/00	05/05/00	05/19/00	11/17/00
LABORATORY SAMPLE I.D.		223111-10	223111-11	215860-06	216285-05	223111-07
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
BASE/NEUTRAL EXTRACTABLES						
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	0.6J
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VOLATILE ORGANICS						
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	ND@1	ND@1	3.3	5	6.2
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	1.2	0.7J	1.6	1.4	2.6

SAMPLE LOCATION		MW-205-S	MW-205-S	MW-820	MW-820	MW-820
SAMPLE DESCRIPTION		GROUNDWATER	REPLICATE	GROUNDWATER	GROUNDWATER	GROUNDWATER
SAMPLE DATE		11/17/00	11/17/00	05/05/00	05/19/00	11/17/00
LABORATORY SAMPLE I.D.		223111-10	223111-11	215860-06	216285-05	223111-07
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
VOLATILE ORGANICS (Continued)						
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	0.9J
XYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Northern VOC Plume Investigation Data Report
Former IWSL Area - Expanded RFI

EXPLANATION OF REPORTING CONVENTIONS AND KEY TO COMMENT CODES

REPORTING CONVENTIONS

NA	Not Analyzed
ND@X	Not Detected at Detection Limit X
BMRL@X	Below Minimum Reporting Limit of X

CODE	EXPLANATION
^	Non-Standard Measurement Unit
c	Sample contained sediment which may have contributed to reported results
d	24 Hour Composite Sample
B	Organic analyte detected in both the sample and the laboratory blank
D	Compounds identifed at a secondary dilution factor
E	Concentration exceeds the calibration range of the GC/MS instrument
J	Estimated Value
N	Spiked sample recovery not within control limits
P	Lower of 2 GC column concentrations that have more than 25% difference
R	Reported value is less than the CRDL but greater than the IDL
S	Surrogate recoveries exceed acceptable control limits
W	Post digestion spike FAA out of control limits; sample absorbance < 50%
*	Manhole flooded when sediment sample collected

Former IBM Kingston Site
Northern VOC Plume Investigation Area Data Report
Field Quality Assurance and Quality Control Data

SAMPLE LOCATION		EQ RINSE BLK	EQ RINSE BLK	EQ RINSE BLK	EQ RINSE BLK	EQ RINSE BLK	EQ RINSE BLK
SAMPLE DESCRIPTION		DIP CUP	WTR LVL IND	DIP CUP	WTR LVL IND	WTR LVL IND	NONDED SMPLR
SAMPLE DATE		05/05/00	05/05/00	05/19/00	05/19/00	11/14/00	11/17/00
LABORATORY SAMPLE I.D.		215860-02	215860-10	216285-06	216285-07	222967-01	223111-03
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
BASE/NEUTRAL EXTRACTABLES							
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
VOLATILE ORGANICS							
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	0.5J
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
TOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	0.7J

Former IBM Kingston Site
Northern VOC Plume Investigation Area Data Report
Field Quality Assurance and Quality Control Data

SAMPLE LOCATION		EQ RINSE BLK	EQ RINSE BLK	EQ RINSE BLK	EQ RINSE BLK	EQ RINSE BLK	EQ RINSE BLK
SAMPLE DESCRIPTION		DIP CUP	WTR LVL IND	DIP CUP	WTR LVL IND	WTR LVL IND	NONDED SMPLR
SAMPLE DATE		05/05/00	05/05/00	05/19/00	05/19/00	11/14/00	11/17/00
LABORATORY SAMPLE I.D.		215860-02	215860-10	216285-06	216285-07	222967-01	223111-03
SAMPLE RUN NUMBER		01	01	01	01	01	01
SAMPLE COMMENT CODES							
PARAMETER	UNITS						
VOLATILE ORGANICS (Continued)							
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1
XYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Northern VOC Plume Investigation Area Data Report
Field Quality Assurance and Quality Control Data

SAMPLE LOCATION		EQ RINSE BLK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
SAMPLE DESCRIPTION		WTR LVL IND	5/5-5/6/00	5/19/2000	11/14/2000	11/17/2000
SAMPLE DATE		11/17/00	05/05/00	05/19/00	11/14/00	11/17/00
LABORATORY SAMPLE I.D.		223111-06	215860-07	216285-11	222967-04	223111-08
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
BASE/NEUTRAL EXTRACTABLES						
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VOLATILE ORGANICS						
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TOLUENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	0.9J	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Northern VOC Plume Investigation Area Data Report
Field Quality Assurance and Quality Control Data

SAMPLE LOCATION		EQ RINSE BLK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
SAMPLE DESCRIPTION		WTR LVL IND	5/5-5/6/00	5/19/2000	11/14/2000	11/17/2000
SAMPLE DATE		11/17/00	05/05/00	05/19/00	11/14/00	11/17/00
LABORATORY SAMPLE I.D.		223111-06	215860-07	216285-11	222967-04	223111-08
SAMPLE RUN NUMBER		01	01	01	01	01
SAMPLE COMMENT CODES						
PARAMETER	UNITS					
VOLATILE ORGANICS (Continued)						
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1
XYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1	ND@1	ND@1

Former IBM Kingston Site
Northern VOC Plume Investigation Area Data Report
Field Quality Assurance and Quality Control Data

SAMPLE LOCATION		TRIP BLANK	TRIP BLANK	TRIP BLANK
SAMPLE DESCRIPTION		01/04-05/01	1/19/2001	1/23-24/2001
SAMPLE DATE		01/04/01	01/19/01	01/23/01
LABORATORY SAMPLE I.D.		224708-03	225152-03	225235-02
SAMPLE RUN NUMBER		01	01	01
SAMPLE COMMENT CODES				
PARAMETER	UNITS			
BASE/NEUTRAL EXTRACTABLES				
1,2-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1
1,3-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1
1,4-DICHLOROBENZENE	ug/l	ND@1	ND@1	ND@1
2-CHLOROETHYLVINYL ETHER	ug/l	ND@1	ND@1	ND@1
VOLATILE ORGANICS				
1,1,1,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1
1,1,1-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1
1,1,2,2-TETRACHLOROETHANE	ug/l	ND@1	ND@1	ND@1
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1
1,1,2-TRICHLOROETHANE	ug/l	ND@1	ND@1	ND@1
1,1-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1
1,1-DICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1
1,2,3-TRICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1
1,2-DICHLORO-1,2,2-TRIFLUOROETHANE	ug/l	ND@1	ND@1	ND@1
1,2-DICHLOROETHANE	ug/l	ND@1	ND@1	ND@1
1,2-DICHLOROETHYLENE, TOTAL	ug/l	ND@1	ND@1	ND@1
1,2-DICHLOROPROPANE	ug/l	ND@1	ND@1	ND@1
1-CHLOROHEXANE	ug/l	ND@1	ND@1	ND@1
4-CHLOROTOLUENE	ug/l	ND@1	ND@1	ND@1
BENZENE	ug/l	ND@1	NA	ND@1
BENZYL CHLORIDE	ug/l	ND@1	ND@1	ND@1
BROMOBENZENE	ug/l	ND@1	ND@1	ND@1
BROMODICHLOROMETHANE	ug/l	ND@1	ND@1	ND@1
BROMOFORM	ug/l	ND@1	ND@1	ND@1
BROMOMETHANE	ug/l	ND@1	ND@1	ND@1
CARBON TETRACHLORIDE	ug/l	ND@1	ND@1	ND@1
CHLOROBENZENE	ug/l	ND@1	ND@1	ND@1
CHLORODIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1
CHLOROETHANE	ug/l	ND@1	ND@1	ND@1
CHLOROFORM	ug/l	ND@1	ND@1	ND@1
CHLOROMETHANE	ug/l	ND@1	ND@1	ND@1
CIS-1,3-DICHLOROPROPYLENE	ug/l	ND@1	ND@1	ND@1
DIBROMOMETHANE	ug/l	ND@1	ND@1	ND@1
DICHLORODIFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1
ETHYLBENZENE	ug/l	ND@1	NA	ND@1
METHYLENE CHLORIDE	ug/l	ND@1	ND@1	ND@1
TETRACHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1
TOLUENE	ug/l	ND@1	NA	ND@1
TRANS-1,3-DICHLOROPROPENE	ug/l	ND@1	ND@1	ND@1
TRICHLOROETHYLENE	ug/l	ND@1	ND@1	ND@1

Former IBM Kingston Site
Northern VOC Plume Investigation Area Data Report
Field Quality Assurance and Quality Control Data

SAMPLE LOCATION		TRIP BLANK	TRIP BLANK	TRIP BLANK
SAMPLE DESCRIPTION		01/04-05/01	1/19/2001	1/23-24/2001
SAMPLE DATE		01/04/01	01/19/01	01/23/01
LABORATORY SAMPLE I.D.		224708-03	225152-03	225235-02
SAMPLE RUN NUMBER		01	01	01
SAMPLE COMMENT CODES				
PARAMETER	UNITS			
VOLATILE ORGANICS (Continued)				
TRICHLOROFLUOROMETHANE	ug/l	ND@1	ND@1	ND@1
VINYL CHLORIDE	ug/l	ND@1	ND@1	ND@1
XYLENE, TOTAL	ug/l	ND@1	NA	ND@1

Former IBM Kingston Site
Northern VOC Plume Investigation Area Data Report
Field Quality Assurance and Quality Control Data

EXPLANATION OF REPORTING CONVENTIONS AND KEY TO COMMENT CODES

REPORTING CONVENTIONS

NA	Not Analyzed
ND@X	Not Detected at Detection Limit X
BMRL@X	Below Minimum Reporting Limit of X

CODE	EXPLANATION
^	Non-Standard Measurement Unit
c	Sample contained sediment which may have contributed to reported results
d	24 Hour Composite Sample
B	Organic analyte detected in both the sample and the laboratory blank
D	Compounds identifed at a secondary dilution factor
E	Concentration exceeds the calibration range of the GC/MS instrument
J	Estimated Value
N	Spiked sample recovery not within control limits
P	Lower of 2 GC column concentrations that have more than 25% difference
R	Reported value is less than the CRDL but greater than the IDL
S	Surrogate recoveries exceed acceptable control limits
W	Post digestion spike FAA out of control limits; sample absorbance < 50%
*	Manhole flooded when sediment sample collected

Appendix F

Contained-in Demonstration

Rec'd 9/18/00

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
Bureau of Radiation & Hazardous Site Management, Room 460
50 Wolf Road, Albany, New York 12233-7252
Phone: (518) 457-9253 • **FAX:** (518) 457-9240
Website: www.dec.state.ny.us

John P. Cahill
Commissioner

SEP 1 2 2000

Mr. Mitchell E. Meyers
Manager, Environmental Engineering
International Business Machines Corporation
9600 Godwin Drive
Manassas, VA 20110

Dear Mr. Meyers:

Re: Kingston, New York Facility
Deep Bedrock Investigation - Contained-In Request

The New York State Department of Environmental Conservation has reviewed your letter of August 8, 2000, and the attached soil sampling data, pertaining to the referenced project. Your request for handling of the soils and bedrock drill cuttings from the proposed borings as non-hazardous waste is approved. These materials may be replaced to the area surrounding the well boring locations or in the area upgradient from the collection trench as done in the past for similar projects at the site.

In the unlikely event that elevated levels of hazardous constituents are indicated during the planned activity, IBM retains full responsibility to properly manage and dispose of any hazardous materials that may be generated.

If you have any further questions on this matter, you may reach me at (518) 457-0253.

Sincerely,

Gary D. Casper
Senior Engineering Geologist

cc: J. Reidy, USEPA Reg. II
M. West, IBM
D. Chartrand, IBM

International Business Machines Corporation

9600 Godwin Drive
Manassas, VA 20110

August 8, 2000

Mr. Gary Casper
New York State
Department of Environmental Conservation
Bureau of Eastern Hazardous Waste Programs
Division of Hazardous Substances Regulations
50 Wolf Road
Albany, New York 12233

Re: IBM Kingston Facility, Part 373 Permit No. 3-5154-67/1-0
Deep Bedrock Investigation - Preliminary Borings
Contained-In Criteria Request

Dear Mr. Casper:

The purpose of this letter is to transmit soil sample analytical results for the deep bedrock investigation project and to request a "contained-in" determination by NYSDEC so that soils and rock cuttings generated during well drilling for the above referenced project can be handled as nonhazardous waste for use as on-site fill.

PROJECT BACKGROUND

The bedrock investigation serves two purposes, the first is to confirm that contaminants have not penetrated through the varved silt and clay unit and into the underlying bedrock. The second, is to identify any impacts that may have occurred to groundwater in the bedrock unit prior to the installation of the barrier wall.

The first phase of the bedrock investigation included the installation of preliminary borings at four locations. Observed field conditions combined with analytical sampling results will help determine the presence of separate phase and, therefore, the suitability of each location for penetration through the varved silt and clay unit. The second phase of the project is the installation of the bedrock monitoring wells.

In order to determine how soil and drill cuttings generated as part of this project would be handled, and per your conditional approval letter, dated April 3, 2000, IBM collected soil samples from the preliminary borings. A total of twelve soil samples were collected at various depths from the four borings. These preliminary borings were completed and soil samples were collected according to NYSDEC approved site-specific protocols described in the site's Quality

Assurance Project Plan. Jar headspace measurements for volatile organic compounds in the soil samples were made and a subset of the soil samples were submitted to a NYDOH ELAP certified laboratory for analysis. The results of the soil analyses and headspace measurements are presented in Tables 1 and 2 respectively. Attachment 1 includes copies of the laboratory Form Is for each of the samples collected, including field QA/QC samples. In total, fourteen parameters were detected; however, none of the concentrations exceeded the contained-in criteria.

Based on the results of these soil analyses, IBM is requesting that NYSDEC approve the handling of soils and bedrock drill cuttings during the monitoring well installation project as nonhazardous waste so that soil and rock cuttings may be placed on the ground in the vicinity of the well or placed in the area upgradient of the collection trench, as done in the past for similar projects at the site. In the event that elevated levels of hazardous constituents are indicated during the bedrock monitoring well installation, IBM will properly manage and dispose of any hazardous materials that may be generated.

After reviewing this information, should you have any questions please call Dean Chartrand at (703) 367-1364.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely yours,

M. E. Meyers

Mitchell E. Meyers
Manager, Corporate Environmental Engineering

MEM:db

Attachments: Figure 1: Bedrock Monitoring Well Location Map
Attachment 1: Soil Sampling Results (Laboratory Form Is)

Table 1 - Deep Bedrock Investigation - Summary of Preliminary Boring Soil Sample Results

Soil Samples

Preliminary Boring ID	Sample Depth (ft bgs)	DCM (ug/kg)	TCFM (ug/kg)	11-DCE (ug/kg)	11-DCA (ug/kg)	12-DCE (ug/kg)	TCM (ug/kg)	12-DCA (ug/kg)	111-TCA (ug/kg)	TCE (ug/kg)	112-TCA (ug/kg)	TBM (ug/kg)	PCE (ug/kg)	Fr123A (ug/kg)	TOL (ug/kg)
B-321	11 - 12	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3
	12 - 13	ND@1.2	ND@1.2	ND@1.2	1 J	ND@1.2	ND@1.2	ND@1.2	1.6	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2
	13 - 14	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3
B-322	13 -14	0.7 J	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	ND@1.3	4.8	ND@1.3	ND@1.3	0.8 J	ND@1.3	ND@1.3
	18 - 19	1.4	ND@1.2	3	3.4	10	1 J	4.1	2.5	34	ND@1.2	ND@1.2	2.1	ND@1.2	ND@1.2
	21 - 22	9.4	ND@1.2	ND@1.2	ND@1.2	ND@1.2	0.7 J	ND@1.2	ND@1.2	0.6 J	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2
	35 - 36	12	ND@1.2	ND@1.2	ND@1.2	ND@1.2	1.6	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2
B-323	18 - 19	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	1 J	5.2	1.8	0.8 J	ND@1.2	ND@1.2	ND@1.2	ND@1.2
	18 - 19a	4.3	1 J	23 D	32	4.9	2.9	21	100 D	53	17	2.9	4.2	1 J	0.6 J
B-324	4 - 5	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1	ND@1.1
	5 - 6	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2
	11 - 12	0.6 J	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2	ND@1.2

Field QA/QC Sampling Results		***Laboratory Data Qualifier Explanation:***
Trip Blank (7/5-7/6/2000)	All Parameters ND@1	D - Sample result obtained at a secondary dilution factor
Trip Blank 7/6-7/7/2000	All Parameters ND@1	J - Estimated value
EQ Rinse Blank (Split Spoon) 7/5/2000	All Parameters ND@1	ND - Not detected at
EQ Rinse Blank (Split Spoon) 7/6/2000	DCM 0.6 J, All other parameters ND@1	

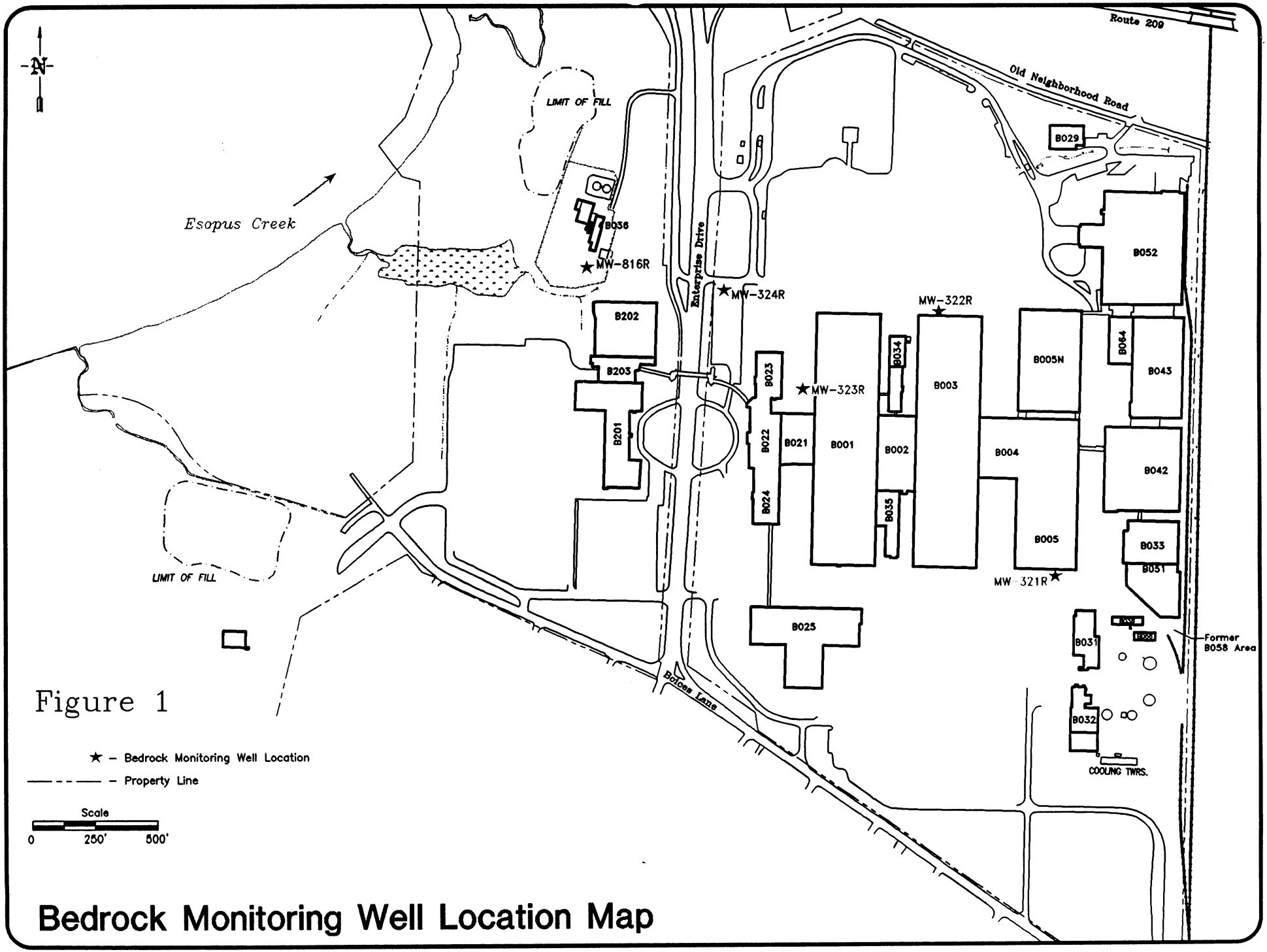
Notes (explanation of constituent abbreviations used in this table):

DCM	Methylene Chloride	111-TCA	1,1,1-Trichloroethane
TCFM	Trichlorofluoromenthane	TCE	Trichloroethene
11-DCE	1,1-Dichloroethene	112-TCA	1,1,2-Trichloroethane
11-DCA	1,1-Dichloroethane	TBM	Bromoform
12-DCE	1,2-Dichloroethene (total)	PCE	Tetrachloroethane
TCM	Chloroform	Fr123A	Freon 123A
12-DCA	1,2-Dichloroethane	TOL	Toluene

Table 2 - Deep Bedrock Investigation
Summary of Field Monitoring Results (Volatile Scan of Split Spoon and Jar Headspace)

Preliminary Boring ID	Geologic Description	Present (Y/N)	Depth Interval (ft)	*Sampling Interval (ft)	Volatile Scan of Split Spoon (ppm)	Jar Headspace (ppm)
321	Shallow sand	Y	0-12	11-12	0	0
	Clay/silt transiton zone	Y	12-12.5	12-13	0	1
	Varved clay	Y	12.5-16	13-14	0	1
322	Shallow sand	Y	0-14	13-14	1	6
	Clay/silt transiton zone	Y	14-36	18-19	0	0.6
	Clay/silt transiton zone	Y	14-36	21-22	0	0
	Clay/silt transiton zone	Y	14-36	35-36	0	0
	Varved clay	N	N/A	N/A	N/A	N/A
323	Shallow sand	Y	0-18.5	18-19	0	6
	Clay/silt transiton zone	N	N/A	N/A	N/A	N/A
	Varved clay	Y	18.5-23	18-19	0	3
324	Shallow sand (fill)**	Y	0-5.5	4-5	0	0
	Clay (fill)**	Y	5.5-12	5-6	0	1
	Clay (fill)**	Y	5.5-12	11-12	0	1

*Sampled by method 8021B-FBTEX.
**No native soil present.



Bedrock Monitoring Well Location Map

Attachment 1
Soil Sampling Results

CHAIN OF CUSTODY

315 Fullerton Avenue
Newburgh, NY 12550
TEL (914) 562-0890
FAX (914) 562-0841

Committed To *Your* Success

CUSTOMER NAME	Groundwater Sciences Corporation
ADDRESS	3 Summit Court, Suite 204
CITY, STATE, ZIP	Fishkill, NY 12524
NAME OF CONTACT	Dorothy Bergman
PHONE NO.	896-0288
PROJECT LOCATION	Kingston
PROJECT NUMBER / PO NO.	93002.33.0002

REPORT TYPE
STANDARD ☐ ISRA ☒
NYASP A ☐ B ☐ CLP ☐
OTHER IBM Kingston Special Deliverables

TURNAROUND
☒ NORMAL Package deliverables
☒ QUICK Preliminary results
☐ VERBAL _____

REPORT # (Lab Use Only)

SAMPLE TEMP. _____ °C
pH CHECK Y N
REVIEWED BY

NY PUBLIC WATER SUPPLIES
SOURCE ID ___ ___ ___
ELRP TYPE ___ ___ ___
FEDERAL ID ___ ___ ___ ___ ___ ___ ___

NOTE: SAMPLE TEMPERATURE UPON RECEIPT MUST BE 4°C.

Matrix
DW = DRINKING WATER S = SOIL O = OIL
WW = WASTE WATER SL = SLUDGE GW = GROUND WATER

LAB USE ONLY

STL #	SAMPLING DATE	SAMPLING TIME AM PM	COMP	GRAB	MATRIX	CLIENT I.D.	Total Number of Containers	40ml Glass HCL	Liter Amber Sulfuric Acid	Liter Amber Organic Washed	Liter Plastic Nitric Acid	Liter Plastic Sodium Hydroxide	Liter Plastic	Liter Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	250ml Amber	2 oz. Qorpak	ANALYSIS REQUESTED
01	7/5/00	1430		✓	S	KB32107051112	1											1	8021B-FBTEX
02	7/5/00	1445		✓	S	KB32107051213	1											1	8021B-FBTEX
03	7/5/00	1430		✓	S	KB32107051314	1											1	8021B-FBTEX
04	7/5/00	N/A		✓	WW	KTB00705070C	3	3											8021B-FBTEX
05	7/5/00	1750		✓	WW	KEQ00705SPOW	3	3											8021B-FBTEX

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
[signature]	GSC	7/5/00	10:15	[signature]	GSC	7/5/00	1015
[signature]	GSC	7/5/00	1315	[signature]	GSC	7/5/00	1315
[signature]	GSC	7/5/00	2130	[signature]	GSC	7/5/00	2130
[signature]	GSC	7/7/00	11:45	[signature]	STL	7/7/00	1145

COMMENTS
All Samples Received Intact & in Good Condition. Thank You.

STL
Committed To *Your* Success

CHAIN O. CUSTODY

315 Fl on Avenue
Newbu NY 12550
TEL (914) 562-0890
FAX (914) 562-0841

CUSTOMER NAME	Groundwater Sciences Corporation
ADDRESS	2 Summit Court Suite 204
CITY, STATE, ZIP	Fishkill, NY 12524
NAME OF CONTACT	Dorothy Bergman
PHONE NO.	896-0288
PROJECT LOCATION	Kingston
PROJECT NUMBER / PO NO.	93000.33.0002

REPORT TYPE
STANDARD ☐ ISRA ☒
NYASP A ☐ B ☐ CLP ☐
OTHER IBM Kingston Special Deliverables

TURNAROUND
☒ NORMAL Deliverables Packages
☒ QUICK Preliminary Results
☐ VERBAL _____

REPORT # (Lab Use Only)

SAMPLE TEMP. 4°C
pH CHECK Y ___ N ___
REVIEWED BY

NY PUBLIC WATER SUPPLIES
SOURCE ID ___ ___ ___
ELRP TYPE ___ ___ ___
FEDERAL ID ___ ___ ___ ___ ___ ___ ___

NOTE: SAMPLE TEMPERATURE UPON RECEIPT MUST BE 4°C.

Matrix
DW = DRINKING WATER S = SOIL O = OIL
WW = WASTE WATER SL = SLUDGE GW = GROUND WATER

LAB USE ONLY

STL #	SAMPLING DATE	TIME AM PM	COMP	GRAB	MATRIX	CLIENT I.D.	Total Number of Containers	40ml Glass HCL	Liter Amber Sulfuric Acid	Liter Amber Organic Washed	Liter Plastic Nitric Acid	Liter Plastic Sodium Hydroxide	Liter Plastic	Liter Plastic Sulfuric Acid	250ml Plastic	125ml Plastic Sterile	250ml Amber	2 oz. Qorpak	ANALYSIS REQUESTED
	7/6/00	1030		✓	S	KB323070061819	1											1	8021B-FBTEX
	7/6/00	1038		✓	S	KB3230706181A	1											1	8021B-FBTEX
	7/6/00	1334		✓	S	KB324070600405	1											1	8021B-FBTEX
	7/6/00	1337		✓	S	KB324070600506	1											1	8021B-FBTEX
	7/6/00	1349		✓	S	KB324070601112	1											1	8021B-FBTEX
	7/6/00	NA		✓	WW	KTB00706 0707	3	3											8021B-FBTEX
	7/6/00	1445		✓	WW	KEQ00706SAON	3	3											8021B-FBTEX
	7/6/00	1600		✓	S	KB322070613 14	1											1	8021B-FBTEX
	7/6/00	1812			S	KB322070061819	1											1	8021B-FBTEX
	7/6/00	1814			S	KB322070623122	1											1	8021B-FBTEX
	7/6/00	1830			S	KB322070633536	1											1	8021B-FBTEX

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
		7/5/00	10:15		GSC	7/5/00	1015
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
Dorothy Bergman	GSC	7/5/00	1315		GSC	7/5/00	1315
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
	GSC	7/7/00	1:20			7/7/00	1:20

COMMENTS All Samples Received Intact and in Good Condition

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KB32107051112	Date Collected:	05-JUL-00
STL Sample Number:	218235-01	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	10-JUL-00
% Solid:	79.5	Report Date:	20-JUL-00
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5ml	Lab File Id:	A2427.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.3		U
74-83-9	Bromomethane	1.3		U
75-71-8	Dichlorodifluoromethane	1.3		U
75-01-4	Vinyl Chloride	1.3		U
75-00-3	Chloroethane	1.3		U
75-09-2	Methylene Chloride	1.3		U
75-69-4	Trichlorofluoromethane	1.3		U
75-35-4	1,1-Dichloroethene	1.3		U
75-34-3	1,1-Dichloroethane	1.3		U
540-59-0	Total-1,2-Dichloroethene	1.3		U
67-66-3	Chloroform	1.3		U
107-06-2	1,2-Dichloroethane	1.3		U
71-55-6	1,1,1-Trichloroethane	1.3		U
56-23-5	Carbon Tetrachloride	1.3		U
75-27-4	Bromodichloromethane	1.3		U
78-87-5	1,2-Dichloropropane	1.3		U
10061-01-5	cis-1,3-Dichloropropene	1.3		U
79-01-6	Trichloroethene	1.3		U
124-48-1	Dibromochloromethane	1.3		U
10061-02-6	trans-1,3-Dichloropropene	1.3		U
79-00-5	1,1,2-Trichloroethane	1.3		U
110-75-8	2-Chloroethylvinyl Ether	1.3		U
75-25-2	Bromoform	1.3		U
79-34-5	1,1,2,2-Tetrachloroethane	1.3		U
127-18-4	Tetrachloroethene	1.3		U
108-90-7	Chlorobenzene	1.3		U
541-73-1	1,3-Dichlorobenzene	1.3		U
95-50-1	1,2-Dichlorobenzene	1.3		U
106-46-7	1,4-Dichlorobenzene	1.3		U
74-95-3	Dibromomethane	1.3		U
630-20-6	1,1,1,2-Tetrachloroethane	1.3		U
96-18-4	1,2,3-Trichloropropane	1.3		U
544-10-5	1-Chlorohexane	1.3		U
108-86-1	Bromobenzene	1.3		U
100-44-7	Benzyl Chloride	1.3		U
95-49-8	4-Chlorotoluene	1.3		U
76-13-1	Freon 113	1.3		U
354-23-4	Freon 123A	1.3		U
71-43-2	Benzene	1.3		U
108-88-3	Toluene	1.3		U
100-41-4	Ethylbenzene	1.3		U
1330-20-7	Xylenes, total	1.3		U

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID: KB32107051213
STL Sample Number: 218235-02
Client Name: GROUNDWATER SCIENCES CORP.
Project Name: 93002.33.0002
% Solid: 81.7
Matrix: 3 Soil/Sldg
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 05-JUL-00
Date Received: 07-JUL-00
Date Extracted:
Date Analyzed: 10-JUL-00
Report Date: 20-JUL-00
Column: RTX-502.2
Lab File Id: A2429.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.2		U
74-83-9	Bromomethane	1.2		U
75-71-8	Dichlorodifluoromethane	1.2		U
75-01-4	Vinyl Chloride	1.2		U
75-00-3	Chloroethane	1.2		U
75-09-2	Methylene Chloride	1.2		U
75-69-4	Trichlorofluoromethane	1.2		U
75-35-4	1,1-Dichloroethene	1.2		U
75-34-3	1,1-Dichloroethane	1.2	1	J
540-59-0	Total-1,2-Dichloroethene	1.2		U
67-66-3	Chloroform	1.2		U
107-06-2	1,2-Dichloroethane	1.2		U
71-55-6	1,1,1-Trichloroethane	1.2	1.6	
56-23-5	Carbon Tetrachloride	1.2		U
75-27-4	Bromodichloromethane	1.2		U
78-87-5	1,2-Dichloropropane	1.2		U
10061-01-5	cis-1,3-Dichloropropene	1.2		U
79-01-6	Trichloroethene	1.2		U
124-48-1	Dibromochloromethane	1.2		U
10061-02-6	trans-1,3-Dichloropropene	1.2		U
79-00-5	1,1,2-Trichloroethane	1.2		U
110-75-8	2-Chloroethylvinyl Ether	1.2		U
75-25-2	Bromoform	1.2		U
79-34-5	1,1,2,2-Tetrachloroethane	1.2		U
127-18-4	Tetrachloroethene	1.2		U
108-90-7	Chlorobenzene	1.2		U
541-73-1	1,3-Dichlorobenzene	1.2		U
95-50-1	1,2-Dichlorobenzene	1.2		U
106-46-7	1,4-Dichlorobenzene	1.2		U
74-95-3	Dibromomethane	1.2		U
630-20-6	1,1,1,2-Tetrachloroethane	1.2		U
96-18-4	1,2,3-Trichloropropane	1.2		U
544-10-5	1-Chlorohexane	1.2		U
108-86-1	Bromobenzene	1.2		U
100-44-7	Benzyl Chloride	1.2		U
95-49-8	4-Chlorotoluene	1.2		U
76-13-1	Freon 113	1.2		U
354-23-4	Freon 123A	1.2		U
71-43-2	Benzene	1.2		U
108-88-3	Toluene	1.2		U
100-41-4	Ethylbenzene	1.2		U
1330-20-7	Xylenes, total	1.2		U

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID: KB32107051314
STL Sample Number: 218235-03
Client Name: GROUNDWATER SCIENCES CORP.
Project Name: 93002.33.0002
% Solid: 76.0
Matrix: 3 Soil/Sldg
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 05-JUL-00
Date Received: 07-JUL-00
Date Extracted:
Date Analyzed: 10-JUL-00
Report Date: 20-JUL-00
Column: RTX-502.2
Lab File Id: A2431.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.3		U
74-83-9	Bromomethane	1.3		U
75-71-8	Dichlorodifluoromethane	1.3		U
75-01-4	Vinyl Chloride	1.3		U
75-00-3	Chloroethane	1.3		U
75-09-2	Methylene Chloride	1.3		U
75-69-4	Trichlorofluoromethane	1.3		U
75-35-4	1,1-Dichloroethene	1.3		U
75-34-3	1,1-Dichloroethane	1.3		U
540-59-0	Total-1,2-Dichloroethene	1.3		U
67-66-3	Chloroform	1.3		U
107-06-2	1,2-Dichloroethane	1.3		U
71-55-6	1,1,1-Trichloroethane	1.3		U
56-23-5	Carbon Tetrachloride	1.3		U
75-27-4	Bromodichloromethane	1.3		U
78-87-5	1,2-Dichloropropane	1.3		U
10061-01-5	cis-1,3-Dichloropropene	1.3		U
79-01-6	Trichloroethene	1.3		U
124-48-1	Dibromochloromethane	1.3		U
10061-02-6	trans-1,3-Dichloropropene	1.3		U
79-00-5	1,1,2-Trichloroethane	1.3		U
110-75-8	2-Chloroethylvinyl Ether	1.3		U
75-25-2	Bromoform	1.3		U
79-34-5	1,1,2,2-Tetrachloroethane	1.3		U
127-18-4	Tetrachloroethene	1.3		U
108-90-7	Chlorobenzene	1.3		U
541-73-1	1,3-Dichlorobenzene	1.3		U
95-50-1	1,2-Dichlorobenzene	1.3		U
106-46-7	1,4-Dichlorobenzene	1.3		U
74-95-3	Dibromomethane	1.3		U
630-20-6	1,1,1,2-Tetrachloroethane	1.3		U
96-18-4	1,2,3-Trichloropropane	1.3		U
544-10-5	1-Chlorohexane	1.3		U
108-86-1	Bromobenzene	1.3		U
100-44-7	Benzyl Chloride	1.3		U
95-49-8	4-Chlorotoluene	1.3		U
76-13-1	Freon 113	1.3		U
354-23-4	Freon 123A	1.3		U
71-43-2	Benzene	1.3		U
108-88-3	Toluene	1.3		U
100-41-4	Ethylbenzene	1.3		U
1330-20-7	Xylenes, total	1.3		U

Field QA/QC:
Trip Blank

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KTB007050706	Date Collected:	05-JUL-00
STL Sample Number:	218235-04	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	10-JUL-00
% Solid:	NA	Report Date:	20-JUL-00
Matrix:	2 GW/WW	Column:	RTX-502.2
Sample Wt/Vol:	5ml	Lab File Id:	A2433.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1		U
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U
354-23-4	Freon 123A	1		U
71-43-2	Benzene	1		U
108-88-3	Toluene	1		U
100-41-4	Ethylbenzene	1		U
1330-20-7	Xylenes, total	1		U

Field QA/QC:
Equipment Rinse Blank-
Split Spoon Sampler

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KEQ00705SPON	Date Collected:	05-JUL-00
STL Sample Number:	218235-05	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	10-JUL-00
% Solid:	NA	Report Date:	20-JUL-00
Matrix:	2 GW/WW	Column:	RTX-502.2
Sample Wt/Vol:	5ml	Lab File Id:	A2435.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1		U
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U
354-23-4	Freon 123A	1		U
71-43-2	Benzene	1		U
108-88-3	Toluene	1		U
100-41-4	Ethylbenzene	1		U
1330-20-7	Xylenes, total	1		U

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KB32307061819	Date Collected:	06-JUL-00
STL Sample Number:	218246-01	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	13-JUL-00
% Solid:	80.6	Report Date:	27-JUL-00
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	C1740.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.2		U
74-83-9	Bromomethane	1.2		U
75-71-8	Dichlorodifluoromethane	1.2		U
75-01-4	Vinyl Chloride	1.2		U
75-00-3	Chloroethane	1.2		U
75-09-2	Methylene Chloride	1.2		U
75-69-4	Trichlorofluoromethane	1.2		U
75-35-4	1,1-Dichloroethene	1.2		U
75-34-3	1,1-Dichloroethane	1.2		U
540-59-0	Total-1,2-Dichloroethene	1.2		U
67-66-3	Chloroform	1.2		U
107-06-2	1,2-Dichloroethane	1.2	1	J
71-55-6	1,1,1-Trichloroethane	1.2	5.2	
56-23-5	Carbon Tetrachloride	1.2		U
75-27-4	Bromodichloromethane	1.2		U
78-87-5	1,2-Dichloropropane	1.2		U
10061-01-5	cis-1,3-Dichloropropene	1.2		U
79-01-6	Trichloroethene	1.2	1.8	
124-48-1	Dibromochloromethane	1.2		U
10061-02-6	trans-1,3-Dichloropropene	1.2		U
79-00-5	1,1,2-Trichloroethane	1.2	.8	J
110-75-8	2-Chloroethylvinyl Ether	1.2		U
75-25-2	Bromoform	1.2		U
79-34-5	1,1,2,2-Tetrachloroethane	1.2		U
127-18-4	Tetrachloroethene	1.2		U
108-90-7	Chlorobenzene	1.2		U
541-73-1	1,3-Dichlorobenzene	1.2		U
95-50-1	1,2-Dichlorobenzene	1.2		U
106-46-7	1,4-Dichlorobenzene	1.2		U
74-95-3	Dibromomethane	1.2		U
630-20-6	1,1,1,2-Tetrachloroethane	1.2		U
96-18-4	1,2,3-Trichloropropane	1.2		U
544-10-5	1-Chlorohexane	1.2		U
108-86-1	Bromobenzene	1.2		U
100-44-7	Benzyl Chloride	1.2		U
95-49-8	4-Chlorotoluene	1.2		U
76-13-1	Freon 113	1.2		U
354-23-4	Freon 123A	1.2		U
71-43-2	Benzene	1.2		U
108-88-3	Toluene	1.2		U
100-41-4	Ethylbenzene	1.2		U
1330-20-7	Xylenes, total	1.2		U

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KB3230706181A	Date Collected:	06-JUL-00
STL Sample Number:	218246-02	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	12-JUL-00
% Solid:	80.9	Report Date:	27-JUL-00
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	C1710.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.2		U
74-83-9	Bromomethane	1.2		U
75-71-8	Dichlorodifluoromethane	1.2		U
75-01-4	Vinyl Chloride	1.2		U
75-00-3	Chloroethane	1.2		U
75-09-2	Methylene Chloride	1.2	4.3	
75-69-4	Trichlorofluoromethane	1.2	1	J
75-35-4	1,1-Dichloroethene	1.2	~~69~~ D	~~E~~
75-34-3	1,1-Dichloroethane	1.2	32	
540-59-0	Total-1,2-Dichloroethene	1.2	4.9	
67-66-3	Chloroform	1.2	2.9	
107-06-2	1,2-Dichloroethane	1.2	21	
71-55-6	1,1,1-Trichloroethane	1.2	~~160~~ 100 D	E
56-23-5	Carbon Tetrachloride	1.2		U
75-27-4	Bromodichloromethane	1.2		U
78-87-5	1,2-Dichloropropane	1.2		U
10061-01-5	cis-1,3-Dichloropropene	1.2		U
79-01-6	Trichloroethene	1.2	53	
124-48-1	Dibromochloromethane	1.2		U
10061-02-6	trans-1,3-Dichloropropene	1.2		U
79-00-5	1,1,2-Trichloroethane	1.2	17	
110-75-8	2-Chloroethylvinyl Ether	1.2		U
75-25-2	Bromoform	1.2	2.9	
79-34-5	1,1,2,2-Tetrachloroethane	1.2		U
127-18-4	Tetrachloroethene	1.2	4.2	
108-90-7	Chlorobenzene	1.2		U
541-73-1	1,3-Dichlorobenzene	1.2		U
95-50-1	1,2-Dichlorobenzene	1.2		U
106-46-7	1,4-Dichlorobenzene	1.2		U
74-95-3	Dibromomethane	1.2		U
630-20-6	1,1,1,2-Tetrachloroethane	1.2		U
96-18-4	1,2,3-Trichloropropane	1.2		U
544-10-5	1-Chlorohexane	1.2		U
108-86-1	Bromobenzene	1.2		U
100-44-7	Benzyl Chloride	1.2		U
95-49-8	4-Chlorotoluene	1.2		U
76-13-1	Freon 113	1.2		U
354-23-4	Freon 123A	1.2	1	J
71-43-2	Benzene	1.2		U
108-88-3	Toluene	1.2	.6	J
100-41-4	Ethylbenzene	1.2		U
1330-20-7	Xylenes, total	1.2		U

VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID: KB3230706181ADL
STL Lab No.: 218246-02DL
Client Name: Groundwater Sciences Corp.
Project Name: 93002.33.0002
% Solid: 80.9
Matrix: Soil
Sample Wt/Vol.: 1g
Level: Low

(Sample result obtained by a secondary dilution factor)

Date Collected: 07/06/00
Date Received: 07/07/00
Date Extracted:
Date Analyzed: 07/13/00
Report Date: 07/27/00
Column: RTX-502.2
Lab File ID: C1744.D
Dilution Factor: 5

CAS No.	Compound	Detection Limit ug/kg	Conc ug/kg
74-87-3	Chloromethane	6.2	U
74-83-9	Bromomethane	6.2	U
75-71-8	Dichlorodifluoromethane	6.2	U
75-01-4	Vinyl Chloride	6.2	U
75-00-3	Chloroethane	6.2	U
75-09-2	Methylene Chloride	6.2	U
75-69-4	Trichlorofluoromethane	6.2	U
75-35-4	1,1-Dichloroethene	6.2	23.0
75-34-3	1,1-Dichloroethane	6.2	17.0
540-59-0	Total- 1,2-Dichloroethene	6.2	U
67-66-3	Chloroform	6.2	U
107-06-2	1,2-Dichloroethane	6.2	24.0
71-55-6	1,1,1-Trichloroethane	6.2	100.0
56-23-5	Carbon Tetrachloride	6.2	U
75-27-4	Bromodichloromethane	6.2	U
78-87-5	1,2-Dichloropropane	6.2	U
10061-01-5	cis-1,3-Dichloropropene	6.2	U
79-01-6	Trichloroethene	6.2	59.0
124-48-1	Dibromochloromethane	6.2	U
10061-02-6	trans-1,3-Dichloropropene	6.2	U
79-00-5	1,1,2-Trichloroethane	6.2	18.0
110-75-8	2-Chloroethylvinyl ether	6.2	U
75-25-2	Bromoform	6.2	U
79-34-5	1,1,2,2-Tetrachloroethane	6.2	U
127-18-4	Tetrachloroethene	6.2	3.3 J
108-90-7	Chlorobenzene	6.2	U
541-73-1	1,3-Dichlorobenzene	6.2	U
95-50-1	1,2-Dichlorobenzene	6.2	U
106-46-7	1,4-Dichlorobenzene	6.2	U
74-95-3	Dibromomethane	6.2	U
630-20-6	1,1,1,2-Tetrachloroethane	6.2	U
96-18-4	1,2,3-Trichloropropane	6.2	U
544-10-5	1-Chlorohexane	6.2	U
108-86-1	Bromobenzene	6.2	U
100-44-7	Benzyl chloride	6.2	U
95-49-8	4-Chlorotoluene	6.2	U
76-13-1	Freon 113	6.2	U
354-23-4	Freon 123A	6.2	U
71-43-2	Benzene	6.2	U
108-88-3	Toluene	6.2	U
100-41-4	Ethylbenzene	6.2	U
1330-20-7	Xylenes, total	6.2	U

FORM I - VOA

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KB32407060405	Date Collected:	06-JUL-00
STL Sample Number:	218246-03	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	13-JUL-00
% Solid:	89.6	Report Date:	27-JUL-00
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	C1736.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.1		U
74-83-9	Bromomethane	1.1		U
75-71-8	Dichlorodifluoromethane	1.1		U
75-01-4	Vinyl Chloride	1.1		U
75-00-3	Chloroethane	1.1		U
75-09-2	Methylene Chloride	1.1		U
75-69-4	Trichlorofluoromethane	1.1		U
75-35-4	1,1-Dichloroethene	1.1		U
75-34-3	1,1-Dichloroethane	1.1		U
540-59-0	Total-1,2-Dichloroethene	1.1		U
67-66-3	Chloroform	1.1		U
107-06-2	1,2-Dichloroethane	1.1		U
71-55-6	1,1,1-Trichloroethane	1.1		U
56-23-5	Carbon Tetrachloride	1.1		U
75-27-4	Bromodichloromethane	1.1		U
78-87-5	1,2-Dichloropropane	1.1		U
10061-01-5	cis-1,3-Dichloropropene	1.1		U
79-01-6	Trichloroethene	1.1		U
124-48-1	Dibromochloromethane	1.1		U
10061-02-6	trans-1,3-Dichloropropene	1.1		U
79-00-5	1,1,2-Trichloroethane	1.1		U
110-75-8	2-Chloroethylvinyl Ether	1.1		U
75-25-2	Bromoform	1.1		U
79-34-5	1,1,2,2-Tetrachloroethane	1.1		U
127-18-4	Tetrachloroethene	1.1		U
108-90-7	Chlorobenzene	1.1		U
541-73-1	1,3-Dichlorobenzene	1.1		U
95-50-1	1,2-Dichlorobenzene	1.1		U
106-46-7	1,4-Dichlorobenzene	1.1		U
74-95-3	Dibromomethane	1.1		U
630-20-6	1,1,1,2-Tetrachloroethane	1.1		U
96-18-4	1,2,3-Trichloropropane	1.1		U
544-10-5	1-Chlorohexane	1.1		U
108-86-1	Bromobenzene	1.1		U
100-44-7	Benzyl Chloride	1.1		U
95-49-8	4-Chlorotoluene	1.1		U
76-13-1	Freon 113	1.1		U
354-23-4	Freon 123A	1.1		U
71-43-2	Benzene	1.1		U
108-88-3	Toluene	1.1		U
100-41-4	Ethylbenzene	1.1		U
1330-20-7	Xylenes, total	1.1		U

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID: KB32407060506
STL Sample Number: 218246-04
Client Name: GROUNDWATER SCIENCES CORP.
Project Name: 93002.33.0002
% Solid: 79.7
Matrix: 3 Soil/Sldg
Sample Wt/Vol: 5g
Level: LOW

Date Collected: 06-JUL-00
Date Received: 07-JUL-00
Date Extracted:
Date Analyzed: 13-JUL-00
Report Date: 27-JUL-00
Column: RTX-502.2
Lab File Id: C1742.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.2		U
74-83-9	Bromomethane	1.2		U
75-71-8	Dichlorodifluoromethane	1.2		U
75-01-4	Vinyl Chloride	1.2		U
75-00-3	Chloroethane	1.2		U
75-09-2	Methylene Chloride	1.2		U
75-69-4	Trichlorofluoromethane	1.2		U
75-35-4	1,1-Dichloroethene	1.2		U
75-34-3	1,1-Dichloroethane	1.2		U
540-59-0	Total-1,2-Dichloroethene	1.2		U
67-66-3	Chloroform	1.2		U
107-06-2	1,2-Dichloroethane	1.2		U
71-55-6	1,1,1-Trichloroethane	1.2		U
56-23-5	Carbon Tetrachloride	1.2		U
75-27-4	Bromodichloromethane	1.2		U
78-87-5	1,2-Dichloropropane	1.2		U
10061-01-5	cis-1,3-Dichloropropene	1.2		U
79-01-6	Trichloroethene	1.2		U
124-48-1	Dibromochloromethane	1.2		U
10061-02-6	trans-1,3-Dichloropropene	1.2		U
79-00-5	1,1,2-Trichloroethane	1.2		U
110-75-8	2-Chloroethylvinyl Ether	1.2		U
75-25-2	Bromoform	1.2		U
79-34-5	1,1,2,2-Tetrachloroethane	1.2		U
127-18-4	Tetrachloroethene	1.2		U
108-90-7	Chlorobenzene	1.2		U
541-73-1	1,3-Dichlorobenzene	1.2		U
95-50-1	1,2-Dichlorobenzene	1.2		U
106-46-7	1,4-Dichlorobenzene	1.2		U
74-95-3	Dibromomethane	1.2		U
630-20-6	1,1,1,2-Tetrachloroethane	1.2		U
96-18-4	1,2,3-Trichloropropane	1.2		U
544-10-5	1-Chlorohexane	1.2		U
108-86-1	Bromobenzene	1.2		U
100-44-7	Benzyl Chloride	1.2		U
95-49-8	4-Chlorotoluene	1.2		U
76-13-1	Freon 113	1.2		U
354-23-4	Freon 123A	1.2		U
71-43-2	Benzene	1.2		U
108-88-3	Toluene	1.2		U
100-41-4	Ethylbenzene	1.2		U
1330-20-7	Xylenes, total	1.2		U

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KB32407061112	Date Collected:	06-JUL-00
STL Sample Number:	218246-05	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	13-JUL-00
% Solid:	83.1	Report Date:	27-JUL-00
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	C1746.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.2		U
74-83-9	Bromomethane	1.2		U
75-71-8	Dichlorodifluoromethane	1.2		U
75-01-4	Vinyl Chloride	1.2		U
75-00-3	Chloroethane	1.2		U
75-09-2	Methylene Chloride	1.2	.6	J
75-69-4	Trichlorofluoromethane	1.2		U
75-35-4	1,1-Dichloroethene	1.2		U
75-34-3	1,1-Dichloroethane	1.2		U
540-59-0	Total-1,2-Dichloroethene	1.2		U
67-66-3	Chloroform	1.2		U
107-06-2	1,2-Dichloroethane	1.2		U
71-55-6	1,1,1-Trichloroethane	1.2		U
56-23-5	Carbon Tetrachloride	1.2		U
75-27-4	Bromodichloromethane	1.2		U
78-87-5	1,2-Dichloropropane	1.2		U
10061-01-5	cis-1,3-Dichloropropene	1.2		U
79-01-6	Trichloroethene	1.2		U
124-48-1	Dibromochloromethane	1.2		U
10061-02-6	trans-1,3-Dichloropropene	1.2		U
79-00-5	1,1,2-Trichloroethane	1.2		U
110-75-8	2-Chloroethylvinyl Ether	1.2		U
75-25-2	Bromoform	1.2		U
79-34-5	1,1,2,2-Tetrachloroethane	1.2		U
127-18-4	Tetrachloroethene	1.2		U
108-90-7	Chlorobenzene	1.2		U
541-73-1	1,3-Dichlorobenzene	1.2		U
95-50-1	1,2-Dichlorobenzene	1.2		U
106-46-7	1,4-Dichlorobenzene	1.2		U
74-95-3	Dibromomethane	1.2		U
630-20-6	1,1,1,2-Tetrachloroethane	1.2		U
96-18-4	1,2,3-Trichloropropane	1.2		U
544-10-5	1-Chlorohexane	1.2		U
108-86-1	Bromobenzene	1.2		U
100-44-7	Benzyl Chloride	1.2		U
95-49-8	4-Chlorotoluene	1.2		U
76-13-1	Freon 113	1.2		U
354-23-4	Freon 123A	1.2		U
71-43-2	Benzene	1.2		U
108-88-3	Toluene	1.2		U
100-41-4	Ethylbenzene	1.2		U
1330-20-7	Xylenes, total	1.2		U

Field QA/QC:
Trip Blank

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID: KTB007060707
STL Sample Number: 218246-06
Client Name: GROUNDWATER SCIENCES CORP.
Project Name: 93002.33.0002
% Solid: NA
Matrix: 2 GW/WW
Sample Wt/Vol: 5ml
Level: LOW

Date Collected: 06-JUL-00
Date Received: 07-JUL-00
Date Extracted:
Date Analyzed: 14-JUL-00
Report Date: 27-JUL-00
Column: RTX-502.2
Lab File Id: C1762.D
Dilution Factor: 1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1		U
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U
354-23-4	Freon 123A	1		U
71-43-2	Benzene	1		U
108-88-3	Toluene	1		U
100-41-4	Ethylbenzene	1		U
1330-20-7	Xylenes, total	1		U

Field QA/QC:
Equipment Rinse Blank-
Split Spoon Sampler

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KEQ00706SPON	Date Collected:	06-JUL-00
STL Sample Number:	218246-07	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	14-JUL-00
% Solid:	NA	Report Date:	27-JUL-00
Matrix:	? GW/WW	Column:	RTX-502.2
Sample Wt/Vol:	5ml	Lab File Id:	C1764.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/l	Conc. ug/l	Data Qualifier
74-87-3	Chloromethane	1		U
74-83-9	Bromomethane	1		U
75-71-8	Dichlorodifluoromethane	1		U
75-01-4	Vinyl Chloride	1		U
75-00-3	Chloroethane	1		U
75-09-2	Methylene Chloride	1	.6	J
75-69-4	Trichlorofluoromethane	1		U
75-35-4	1,1-Dichloroethene	1		U
75-34-3	1,1-Dichloroethane	1		U
540-59-0	Total-1,2-Dichloroethene	1		U
67-66-3	Chloroform	1		U
107-06-2	1,2-Dichloroethane	1		U
71-55-6	1,1,1-Trichloroethane	1		U
56-23-5	Carbon Tetrachloride	1		U
75-27-4	Bromodichloromethane	1		U
78-87-5	1,2-Dichloropropane	1		U
10061-01-5	cis-1,3-Dichloropropene	1		U
79-01-6	Trichloroethene	1		U
124-48-1	Dibromochloromethane	1		U
10061-02-6	trans-1,3-Dichloropropene	1		U
79-00-5	1,1,2-Trichloroethane	1		U
110-75-8	2-Chloroethylvinyl Ether	1		U
75-25-2	Bromoform	1		U
79-34-5	1,1,2,2-Tetrachloroethane	1		U
127-18-4	Tetrachloroethene	1		U
108-90-7	Chlorobenzene	1		U
541-73-1	1,3-Dichlorobenzene	1		U
95-50-1	1,2-Dichlorobenzene	1		U
106-46-7	1,4-Dichlorobenzene	1		U
74-95-3	Dibromomethane	1		U
630-20-6	1,1,1,2-Tetrachloroethane	1		U
96-18-4	1,2,3-Trichloropropane	1		U
544-10-5	1-Chlorohexane	1		U
108-86-1	Bromobenzene	1		U
100-44-7	Benzyl Chloride	1		U
95-49-8	4-Chlorotoluene	1		U
76-13-1	Freon 113	1		U
354-23-4	Freon 123A	1		U
71-43-2	Benzene	1		U
108-88-3	Toluene	1		U
100-41-4	Ethylbenzene	1		U
1330-20-7	Xylenes, total	1		U

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KB32207061314	Date Collected:	06-JUL-00
STL Sample Number:	218246-08	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	13-JUL-00
% Solid:	78.0	Report Date:	27-JUL-00
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	C1748.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.3		U
74-83-9	Bromomethane	1.3		U
75-71-8	Dichlorodifluoromethane	1.3		U
75-01-4	Vinyl Chloride	1.3		U
75-00-3	Chloroethane	1.3		U
75-09-2	Methylene Chloride	1.3	.7	J
75-69-4	Trichlorofluoromethane	1.3		U
75-35-4	1,1-Dichloroethene	1.3		U
75-34-3	1,1-Dichloroethane	1.3		U
540-59-0	Total-1,2-Dichloroethene	1.3		U
67-66-3	Chloroform	1.3		U
107-06-2	1,2-Dichloroethane	1.3		U
71-55-6	1,1,1-Trichloroethane	1.3		U
56-23-5	Carbon Tetrachloride	1.3		U
75-27-4	Bromodichloromethane	1.3		U
78-87-5	1,2-Dichloropropane	1.3		U
10061-01-5	cis-1,3-Dichloropropene	1.3		U
79-01-6	Trichloroethene	1.3	4.8	
124-48-1	Dibromochloromethane	1.3		U
10061-02-6	trans-1,3-Dichloropropene	1.3		U
79-00-5	1,1,2-Trichloroethane	1.3		U
110-75-8	2-Chloroethylvinyl Ether	1.3		U
75-25-2	Bromoform	1.3		U
79-34-5	1,1,2,2-Tetrachloroethane	1.3		U
127-18-4	Tetrachloroethene	1.3	.8	J
108-90-7	Chlorobenzene	1.3		U
541-73-1	1,3-Dichlorobenzene	1.3		U
95-50-1	1,2-Dichlorobenzene	1.3		U
106-46-7	1,4-Dichlorobenzene	1.3		U
74-95-3	Dibromomethane	1.3		U
630-20-6	1,1,1,2-Tetrachloroethane	1.3		U
96-18-4	1,2,3-Trichloropropane	1.3		U
544-10-5	1-Chlorohexane	1.3		U
108-86-1	Bromobenzene	1.3		U
100-44-7	Benzyl Chloride	1.3		U
95-49-8	4-Chlorotoluene	1.3		U
76-13-1	Freon 113	1.3		U
354-23-4	Freon 123A	1.3		U
71-43-2	Benzene	1.3		U
108-88-3	Toluene	1.3		U
100-41-4	Ethylbenzene	1.3		U
1330-20-7	Xylenes, total	1.3		U

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KB32207061819	Date Collected:	06-JUL-00
STL Sample Number:	218246-09	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	13-JUL-00
% Solid:	82.5	Report Date:	27-JUL-00
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	C1722.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.2		U
74-83-9	Bromomethane	1.2		U
75-71-8	Dichlorodifluoromethane	1.2		U
75-01-4	Vinyl Chloride	1.2		U
75-00-3	Chloroethane	1.2		U
75-09-2	Methylene Chloride	1.2	1.4	
75-69-4	Trichlorofluoromethane	1.2		U
75-35-4	1,1-Dichloroethene	1.2	3	
75-34-3	1,1-Dichloroethane	1.2	3.4	
540-59-0	Total-1,2-Dichloroethene	1.2	10	
67-66-3	Chloroform	1.2	1	J
107-06-2	1,2-Dichloroethane	1.2	4.1	
71-55-6	1,1,1-Trichloroethane	1.2	2.5	
56-23-5	Carbon Tetrachloride	1.2		U
75-27-4	Bromodichloromethane	1.2		U
78-87-5	1,2-Dichloropropane	1.2		U
10061-01-5	cis-1,3-Dichloropropene	1.2		U
79-01-6	Trichloroethene	1.2	~~170~~ 34	ED
124-48-1	Dibromochloromethane	1.2		U
10061-02-6	trans-1,3-Dichloropropene	1.2		U
79-00-5	1,1,2-Trichloroethane	1.2		U
110-75-8	2-Chloroethylvinyl Ether	1.2		U
75-25-2	Bromoform	1.2		U
79-34-5	1,1,2,2-Tetrachloroethane	1.2		U
127-18-4	Tetrachloroethene	1.2	2.1	
108-90-7	Chlorobenzene	1.2		U
541-73-1	1,3-Dichlorobenzene	1.2		U
95-50-1	1,2-Dichlorobenzene	1.2		U
106-46-7	1,4-Dichlorobenzene	1.2		U
74-95-3	Dibromomethane	1.2		U
630-20-6	1,1,1,2-Tetrachloroethane	1.2		U
96-18-4	1,2,3-Trichloropropane	1.2		U
544-10-5	1-Chlorohexane	1.2		U
108-86-1	Bromobenzene	1.2		U
100-44-7	Benzyl Chloride	1.2		U
95-49-8	4-Chlorotoluene	1.2		U
76-13-1	Freon 113	1.2		U
354-23-4	Freon 123A	1.2		U
71-43-2	Benzene	1.2		U
108-88-3	Toluene	1.2		U
100-41-4	Ethylbenzene	1.2		U
1330-20-7	Xylenes, total	1.2		U

VOLATILE ORGANICS ANALYSIS DATA SHEET

Client ID: KB322070618 19DL
STL Lab No.: 218246-09DL
Client Name: Groundwater Sciences Corp.
Project Name: 93002.33.0002
% Solid: 82.5
Matrix: Soil
Sample Wt/Vol.: 1g
Level: Low

(Sample result obtained by a secondary dilution factor)

Date Collected: 07/06/00
Date Received: 07/07/00
Date Extracted:
Date Analyzed: 07/13/00
Report Date: 07/27/00
Column: RTX-502.2
Lab File ID: C1750.D
Dilution Factor: 5

CAS No.	Compound	Detection Limit ug/kg	Conc ug/kg
74-87-3	Chloromethane	6.1	U
74-83-9	Bromomethane	6.1	U
75-71-8	Dichlorodifluoromethane	6.1	U
75-01-4	Vinyl Chloride	6.1	U
75-00-3	Chloroethane	6.1	U
75-09-2	Methylene Chloride	6.1	U
75-69-4	Trichlorofluoromethane	6.1	U
75-35-4	1,1-Dichloroethene	6.1	U
75-34-3	1,1-Dichloroethane	6.1	U
540-59-0	Total- 1,2-Dichloroethene	6.1	U
67-66-3	Chloroform	6.1	U
107-06-2	1,2-Dichloroethane	6.1	U
71-55-6	1,1,1-Trichloroethane	6.1	U
56-23-5	Carbon Tetrachloride	6.1	U
75-27-4	Bromodichloromethane	6.1	U
78-87-5	1,2-Dichloropropane	6.1	U
10061-01-5	cis-1,3-Dichloropropene	6.1	U
79-01-6	Trichloroethene	6.1	34.0
124-48-1	Dibromochloromethane	6.1	U
10061-02-6	trans-1,3-Dichloropropene	6.1	U
79-00-5	1,1,2-Trichloroethane	6.1	U
110-75-8	2-Chloroethylvinyl ether	6.1	U
75-25-2	Bromoform	6.1	U
79-34-5	1,1,2,2-Tetrachloroethane	6.1	U
127-18-4	Tetrachloroethene	6.1	U
108-90-7	Chlorobenzene	6.1	U
541-73-1	1,3-Dichlorobenzene	6.1	U
95-50-1	1,2-Dichlorobenzene	6.1	U
106-46-7	1,4-Dichlorobenzene	6.1	U
74-95-3	Dibromomethane	6.1	U
630-20-6	1,1,1,2-Tetrachloroethane	6.1	U
96-18-4	1,2,3-Trichloropropane	6.1	U
544-10-5	1-Chlorohexane	6.1	U
108-86-1	Bromobenzene	6.1	U
100-44-7	Benzyl Chloride	6.1	U
95-49-8	4-Chlorotoluene	6.1	U
76-13-1	Freon 113	6.1	U
354-23-4	Freon 123A	6.1	U
71-43-2	Benzene	6.1	U
108-88-3	Toluene	6.1	U
100-41-4	Ethylbenzene	6.1	U
1330-20-7	Xylenes, total	6.1	U

FORM I - VOA

315 Fullerton Avenue
Newburgh, NY 12550
Tel: (914) 562-0890
Fax (914) 562-0841

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KB32207062122	Date Collected:	06-JUL-00
STL Sample Number:	218246-10	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	13-JUL-00
% Solid:	84.1	Report Date:	27-JUL-00
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	C1752.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.2		U
74-83-9	Bromomethane	1.2		U
75-71-8	Dichlorodifluoromethane	1.2		U
75-01-4	Vinyl Chloride	1.2		U
75-00-3	Chloroethane	1.2		U
75-09-2	Methylene Chloride	1.2	9.4	
75-69-4	Trichlorofluoromethane	1.2		U
75-35-4	1,1-Dichloroethene	1.2		U
75-34-3	1,1-Dichloroethane	1.2		U
540-59-0	Total-1,2-Dichloroethene	1.2		U
67-66-3	Chloroform	1.2	.7	J
107-06-2	1,2-Dichloroethane	1.2		U
71-55-6	1,1,1-Trichloroethane	1.2		U
56-23-5	Carbon Tetrachloride	1.2		U
75-27-4	Bromodichloromethane	1.2		U
78-87-5	1,2-Dichloropropane	1.2		U
10061-01-5	cis-1,3-Dichloropropene	1.2		U
79-01-6	Trichloroethene	1.2	.6	J
124-48-1	Dibromochloromethane	1.2		U
10061-02-6	trans-1,3-Dichloropropene	1.2		U
79-00-5	1,1,2-Trichloroethane	1.2		U
110-75-8	2-Chloroethylvinyl Ether	1.2		U
75-25-2	Bromoform	1.2		U
79-34-5	1,1,2,2-Tetrachloroethane	1.2		U
127-18-4	Tetrachloroethene	1.2		U
108-90-7	Chlorobenzene	1.2		U
541-73-1	1,3-Dichlorobenzene	1.2		U
95-50-1	1,2-Dichlorobenzene	1.2		U
106-46-7	1,4-Dichlorobenzene	1.2		U
74-95-3	Dibromomethane	1.2		U
630-20-6	1,1,1,2-Tetrachloroethane	1.2		U
96-18-4	1,2,3-Trichloropropane	1.2		U
544-10-5	1-Chlorohexane	1.2		U
108-86-1	Bromobenzene	1.2		U
100-44-7	Benzyl Chloride	1.2		U
95-49-8	4-Chlorotoluene	1.2		U
76-13-1	Freon 113	1.2		U
354-23-4	Freon 123A	1.2		U
71-43-2	Benzene	1.2		U
108-88-3	Toluene	1.2		U
100-41-4	Ethylbenzene	1.2		U
1330-20-7	Xylenes, total	1.2		U

Volatile Organics Analysis Data Sheet
Form I VOA
8021B-FBTEX

Client ID:	KB32207063536	Date Collected:	06-JUL-00
STL Sample Number:	218246-11	Date Received:	07-JUL-00
Client Name:	GROUNDWATER SCIENCES CORP.	Date Extracted:	
Project Name:	93002.33.0002	Date Analyzed:	14-JUL-00
% Solid:	80.1	Report Date:	27-JUL-00
Matrix:	3 Soil/Sldg	Column:	RTX-502.2
Sample Wt/Vol:	5g	Lab File Id:	C1760.D
Level:	LOW	Dilution Factor:	1.00

CAS NO.	Compound	Detection Limit ug/kg	Conc. ug/kg	Data Qualifier
74-87-3	Chloromethane	1.2		U
74-83-9	Bromomethane	1.2		U
75-71-8	Dichlorodifluoromethane	1.2		U
75-01-4	Vinyl Chloride	1.2		U
75-00-3	Chloroethane	1.2		U
75-09-2	Methylene Chloride	1.2	12	
75-69-4	Trichlorofluoromethane	1.2		U
75-35-4	1,1-Dichloroethene	1.2		U
75-34-3	1,1-Dichloroethane	1.2		U
540-59-0	Total-1,2-Dichloroethene	1.2		U
67-66-3	Chloroform	1.2	1.6	
107-06-2	1,2-Dichloroethane	1.2		U
71-55-6	1,1,1-Trichloroethane	1.2		U
56-23-5	Carbon Tetrachloride	1.2		U
75-27-4	Bromodichloromethane	1.2		U
78-87-5	1,2-Dichloropropane	1.2		U
10061-01-5	cis-1,3-Dichloropropene	1.2		U
79-01-6	Trichloroethene	1.2		U
124-48-1	Dibromochloromethane	1.2		U
10061-02-6	trans-1,3-Dichloropropene	1.2		U
79-00-5	1,1,2-Trichloroethane	1.2		U
110-75-8	2-Chloroethylvinyl Ether	1.2		U
75-25-2	Bromoform	1.2		U
79-34-5	1,1,2,2-Tetrachloroethane	1.2		U
127-18-4	Tetrachloroethene	1.2		U
108-90-7	Chlorobenzene	1.2		U
541-73-1	1,3-Dichlorobenzene	1.2		U
95-50-1	1,2-Dichlorobenzene	1.2		U
106-46-7	1,4-Dichlorobenzene	1.2		U
74-95-3	Dibromomethane	1.2		U
630-20-6	1,1,1,2-Tetrachloroethane	1.2		U
96-18-4	1,2,3-Trichloropropane	1.2		U
544-10-5	1-Chlorohexane	1.2		U
108-86-1	Bromobenzene	1.2		U
100-44-7	Benzyl Chloride	1.2		U
95-49-8	4-Chlorotoluene	1.2		U
76-13-1	Freon 113	1.2		U
354-23-4	Freon 123A	1.2		U
71-43-2	Benzene	1.2		U
108-88-3	Toluene	1.2		U
100-41-4	Ethylbenzene	1.2		U
1330-20-7	Xylenes, total	1.2		U

Appendix G

Boring Logs

Air Rotary Drilling Log

Client: IBM Kingston
Project No. 93002.33.0002

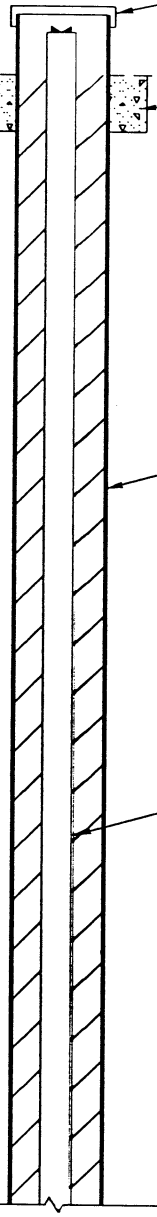
Boring No. 321-R
Location South of B005

TOC Elev. 177.5'
GS Elev. ~175.5'

Depth Feet		Overburden/Lithologic Description
0	Ground Surface	
0	Northstar Drilling, Inc.: 7/5-6/00.	SAND: dark yellow brown, m-c, tr gravel near top, moist.
4		SAND: as above.
8		SAND: as above, saturated.
12		SAND: as above, light brown to orange at 18", saturated.
16		CLAY & SILT: at 19", med gray, saturated. SAND: at 20", med gray, f, saturated. SAND: dky ellow brown, f-m, saturated. CLAY: at 4", med dark gray and light red, varved, tr silt, saturated
16		CLAY: as above.
20		CLAY & SILT: varved, occasional sand zones.
24		
28		CLAY: at 25', med dark gray to dark gray, varved, tr silt.
32		
36		
40		

Graphic

Well Construction Graphic



Depth Feet	Well Construction Details
0	8" Locking Royer cap w/2" expansion plug Stickup = 1'9"
0	Temporary surface completion
16	8" stainless-steel casing
28	4" Sch 40 PVC riser

Driller: Eichelbergers, Inc.
Logged by: C.E. Stoner, GSC
Drilling Started: 10-24-00
Drilling Completed: 10-25-00
Well Coords.: N717403.1
E592191.7

Notes:
Scale interval changes on following page.

Measured DTW: 43.7' from grade.
Estimated Blown Yield: >20 gpm.

GROUNDWATER SCIENCES CORPORATION

Well Log: 321-R

Air Rotary Drilling Log

Client: IBM Kingston

Project No. 93002.33.0002

Boring No. 321-R

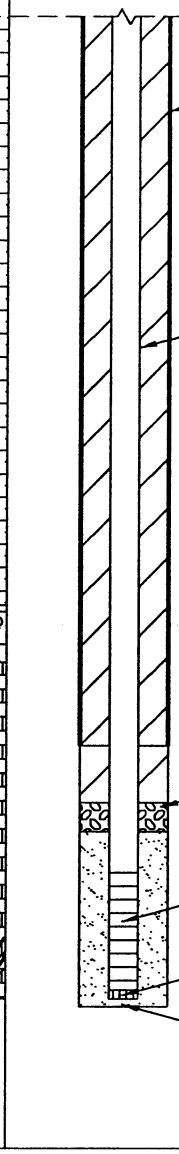
Location South of B005

TOC Elev. 177.5

GS Elev. ~175.5'

Depth Feet	Overburden/Lithologic Description
40	
50	CLAY: med dark gray to dark gray, varved, tr. silt
60	
70	
80	
90	
100	GLACIAL TILL/GRAVEL: at 92', dusky yellow green quartzite, dk gray shale (matrix) -some w/calcite veins, tr dusky red shale, some gravel, well to v well rounded. BEDROCK: at 97', dk gray to gray black limestone, tr med gray to light gray limestone, small calcite veins (tr).
110	: limestone, as above, at 105'.
120	: water-bearing zone (~4") at 122'; smaller WBZ at 124' (yield: ~20-40 gpm). WEATHERED BEDROCK: from ~122-125', dusky yellow clay and brittle limestone, two coral species present.
130	BEDROCK: at 125', limestone, as above.
140	

Graphic



Well Construction Graphic

Depth Feet

Well Construction Details

- 8" stainless-steel casing
- 4" Sch 40 PVC riser
- Hydrated bentonite chips
- 4" Sch 40 20-slot PVC screen [126.2'-115.7']
- Bottom end cap [126.6']
- Collapsed formation [127.5'-126.6']

Note: Scale inverval changes on this page.

GROUNDWATER SCIENCES CORPORATION

Well Log: 321-R

Air Rotary Drilling Log

Client: IBM Kingston

Project No. 93002.33.0002

Boring No. 322-R

Location North of B003

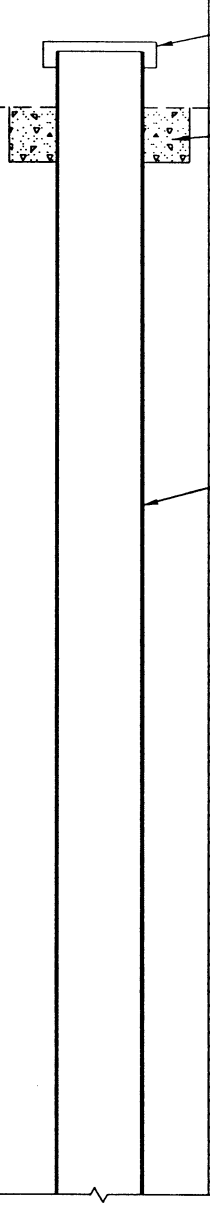
TOC Elev. 172.8'

GS Elev. 169.8'

Depth Feet		Overburden/Lithologic Description
0	Ground Surface	
	Northstar Drilling, Inc.: 7/6/00.	SAND: dk yellow brown, f-m, organic frags, clay frags top 2" sod/topsoil, moist.
		SAND: dk yellow brown, m-f, orange and clay frags, tr coarse sand/ v fine gravel, moist.
4		SAND: as above, moist.
		SAND: as above, moist to saturated.
8		: water at 7'.
		SAND: as above, red brick frags, petro. odor, sat.; CLAY: at 5", light brown, tr silt, petro. odor, sat.; caved at 9'; SAND: at 13", dk yellow brown, m-f, petroleum odor, saturated.
		CLAY: light brown, tr silt, petroleum odor, saturated.
12		SAND: at 10", gray brown, m, petroleum odor, saturated.
		SAND: as above.
		CLAY: dk gray, brown clay lens near 5", saturated.
		SAND: at 5", gray brown, m grading to f, tr fines, iron staining at base, faint petro. odor, saturated.
16		SAND: as above.
		CLAY & SILT: at 5", 5-10" dk gray, 10-13" light brown 13-15" med brown, varved.
		SAND: dk yellow brown, vf.
		CLAY & SILT: at 3", dk gray clayey silt w/lt br clay at base, varved.
20		SAND: at 6", dk yellow brown, f-m.
		SAND: as above.
		CLAY & SILT: dk gray, light brown lens near top, cohesive, v faint petroloeum odor, saturated.
		CLAY & SILT: as above.
24		SAND: at 10", dk gray, vf, saturated.
		SAND: as above, varved, less cohesive at base, saturated.
		CLAY & SILT: dk gray, varved, clay with tr silt in top half, bottom half is clayey silt, saturated.
28		CLAY & SILT: dk gray, top 3" clayey silt, 3"-9" clay with some silt, saturated.
		CLAY: dk gray & lt red, varved, firm, tr silt, saturated; CLAY: at 3", dk gray, clayey, saturated; CLAY: at 4", as above, saturated;
32		SILT: at 7", dk gray, tr clay, less cohesive at base, saturated.
		CLAY & SILT: dk gray, mix of clayey silt and silty clay, v firm clay lens at 1", clayey silt grading to vf sand at base.
		SAND: at 4", dk gray, vf.
36		SAND: as above.
		CLAY/SILT/SAND: mix.
40		

Graphic

Well Construction Graphic



Depth Feet

Well Construction Details

Driller: Eichelbergers, Inc.

Logged by: C.E. Stoner, GSC

Drilling Started: 10-30-00

Drilling Completed: 10-30-00

Well Coords.: N718445.5
E591698.9

Notes:

Scale interval changes on following page.

GROUNDWATER SCIENCES CORPORATION

Well Log: 322-R

Air Rotary Drilling Log

Client: IBM Kingston
Project No. 93002.33.0002

Boring No. 322-R
Location North of B003

TOC Elev. 172.8'
GS Elev. 169.8'

Depth Feet	Overburden/Lithologic Description	Graphic	Well Construction Graphic	Depth Feet	Well Construction Details
40				40	
	CLAY & SILT: med dark gray to dark gray clay, tr silt.				8" stainless-steel casing
60				60	
80	: organic fragments at ~80'.			80	
100				100	
120				120	
	: 130' sample stringy compared to clay chunks in previous samples.				
140	: 140' sample stringy compared to clay chunks in previous samples.			140	
160				160	
180				180	
200				20	
220	: small pieces of med dark gray to dark gray calcareous shale at 220'.			220	
	BEDROCK: at ~223'.				Drive shoe [222'11.5" bgs]
240				240	

Note: Scale inverval changes on this page.

GROUNDWATER SCIENCES CORPORATION

Well Log: 322-R

Air Rotary Drilling Log

Client: IBM Kingston
Project No. 93002.33.0002

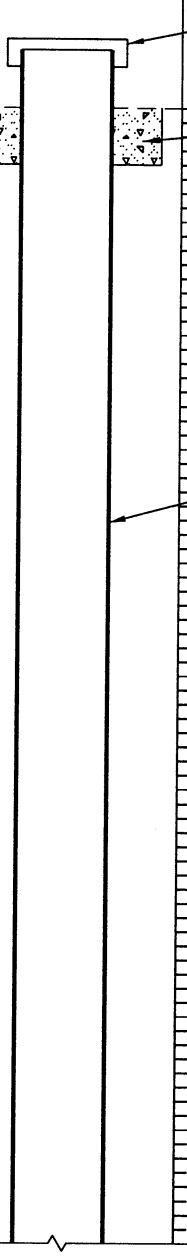
Boring No. 323-R
Location B023/B001 Alcove

TOC Elev. ~175'
GS Elev. ~172'

Depth Feet		Overburden/Lithologic Description
0	Ground Surface	
0	Northstar Drilling, Inc.: 7/6/00.	SAND: dark yellow brown, m-c, crushed limestone at 9", moist.
4		SAND: as above, moist.
8		SAND: dk yel brown, f-m, tr c sand, tr clay, tr gravel, poorly sorted, clay-rich lens at 11", fewer fines & tr organics 11"-20", moist.
8		SAND: as above, crushed gravel layer 6"-7", moist to saturated; water table at 7.5'.
12		SAND & GRAVEL: sand and concrete chunks. SAND: at 5", dk yel brown, tr fines, iron staining near top, saturated.
12		SAND: dark yellow brown, f-m, tr clay frags, saturated.
16		SAND: as above, no clay fragments.
16		SAND: as above.
20		SAND: as above, some iron laminations.
20		CLAY: at 7", mod dark gray, some silt, varved. CLAY & SILT: dk gray/light red, interbedded clay & silt, varved, firm.
24		CLAY & SILT: as above.
36		CLAY.
40		

Graphic

Well Construction Graphic



Depth Feet	Well Construction Details
0	10" Locking Royer cap w/2" expansion plug Stickup = 3'
0	Temporary surface completion
16	8" stainless-steel casing

Driller: Eichelbergers, Inc.
Logged by: CES/DAB, GSC
Drilling Started: 10-28-00
Drilling Completed: 10-29-00
Well Coords.: N718114.4
E591207.9

Notes:
Scale interval changes on page 2.

Measured DTW: 25.96' from grade.
Estimated Blown Yield: <0.2 gpm.

GROUNDWATER SCIENCES CORPORATION

Well Log: 323-R

Air Rotary Drilling Log

Client: IBM Kingston

Project No. 93002.33.0002

Boring No. 323-R

Location B023/B001 Alcove

TOC Elev. ~175'

GS Elev. ~172'

Depth Feet	Overburden/Lithologic Description	Graphic	Well Construction Graphic	Depth Feet	Well Construction Details
40				40	
	CLAY.				8" stainless-steel casing
50				50	
60				60	
70				70	
80				80	
90				90	
100				100	
110	CLAY: at 110' with limestone shale, SR/A inclusions.			110	
120	CLAY.			120	
130				130	
140				140	

Note: Scale inverval changes on this page.

GROUNDWATER SCIENCES CORPORATION

Well Log: 323-R

Air Rotary Drilling Log

Client: IBM Kingston
Project No. 93002.33.0002

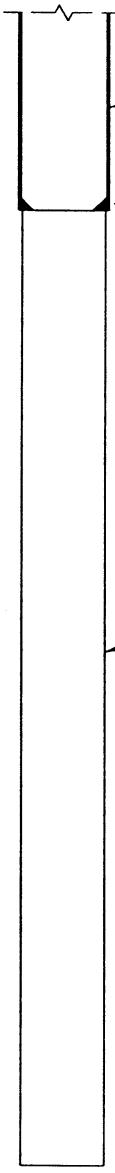
Boring No. 323-R
Location B023/B001 Alcove

TOC Elev. ~175'
GS Elev. ~172'

Depth Feet	Overburden/Lithologic Description
140	
150	CLAY: at 142', gray-brown, very dry, plastic. SHALE: at 147' with SR/SA erratics. SHALE: with clay at 148'. SHALE: at 149'.
160	SHALE: at 155', black, SR/SA calcareous limestone/argilaceous dolostone. BEDROCK: at 157.5', grayish-black calcareous shale.
170	: as above, black.
180	: as above, black, limestone calcite veins.
190	SHALE: as above; calcite infilling, softer from 181-182'. : fines. : water-bearing zone at 187'. SHALE: at 189', black.
200	: trace calcite crystals. : trace calcite. : trace calcite, softer zone, including fines in returns.
210	: as above, black shale with calcite. : calcite infilling at 208'.
220	
230	
240	
250	Total Depth: 242' (bgs).

Graphic

Well Construction Graphic



Depth Feet

Well Construction Details

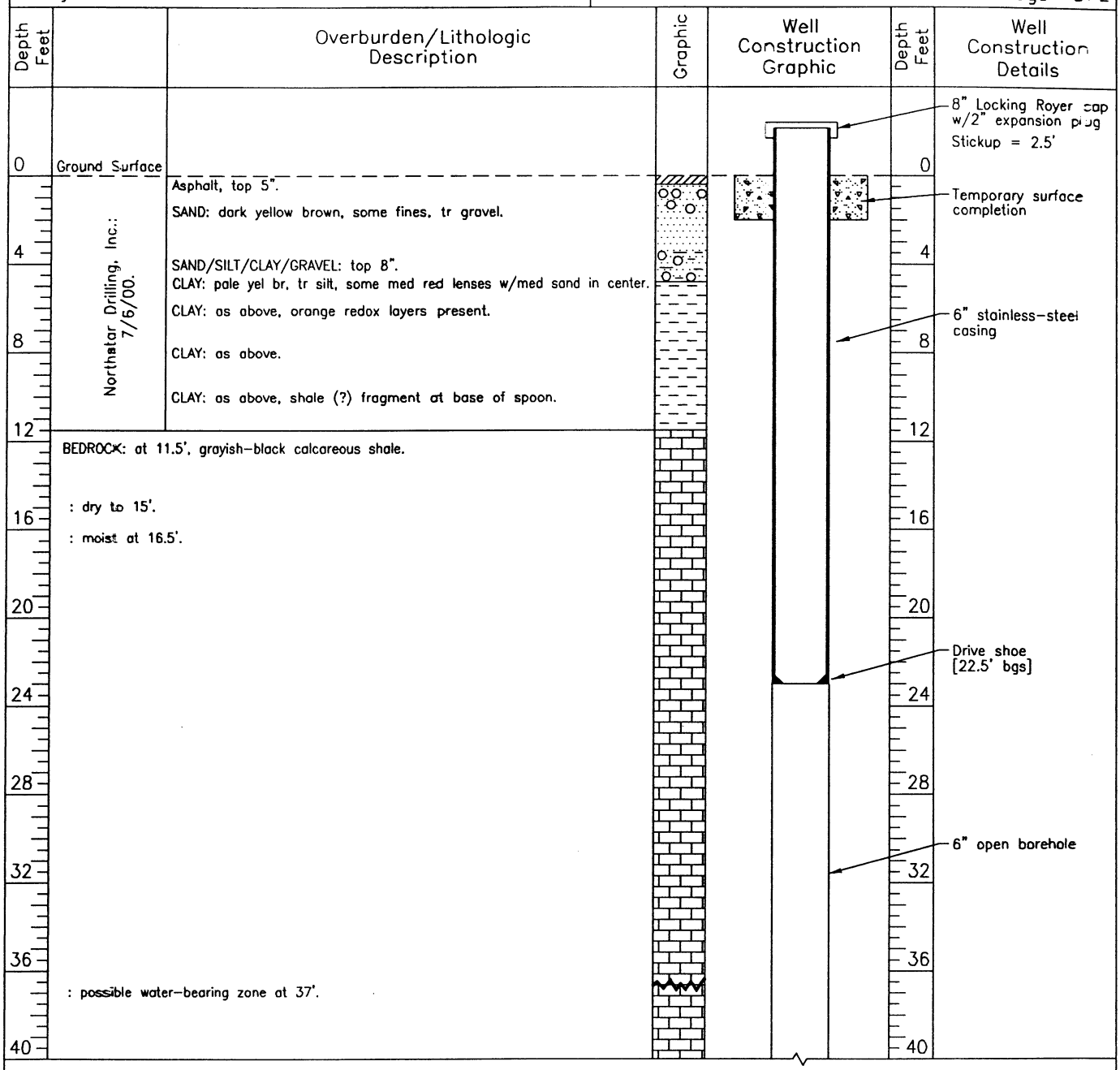
GROUNDWATER SCIENCES CORPORATION

Well Log: 323-R

Air Rotary Drilling Log

Client: IBM Kingston
Project No. 93002.33.0002

Boring No. 324-R TOC Elev. 175'
Location Parking Lot NW of B023 GS Elev. 172.5'
Near Enterprise Drive



Driller: Eichelbergers, Inc.
Logged by: C.E. Stoner, GSC
Drilling Started: 10-26-00
Drilling Completed: 10-26-00
Well Coords.: N718528.5
E590854.4

Notes:

Measured DTW: 25.96' from grade.
Estimated Blown Yield: <0.25 gpm.

GROUNDWATER SCIENCES CORPORATION

Well Log: 324-R

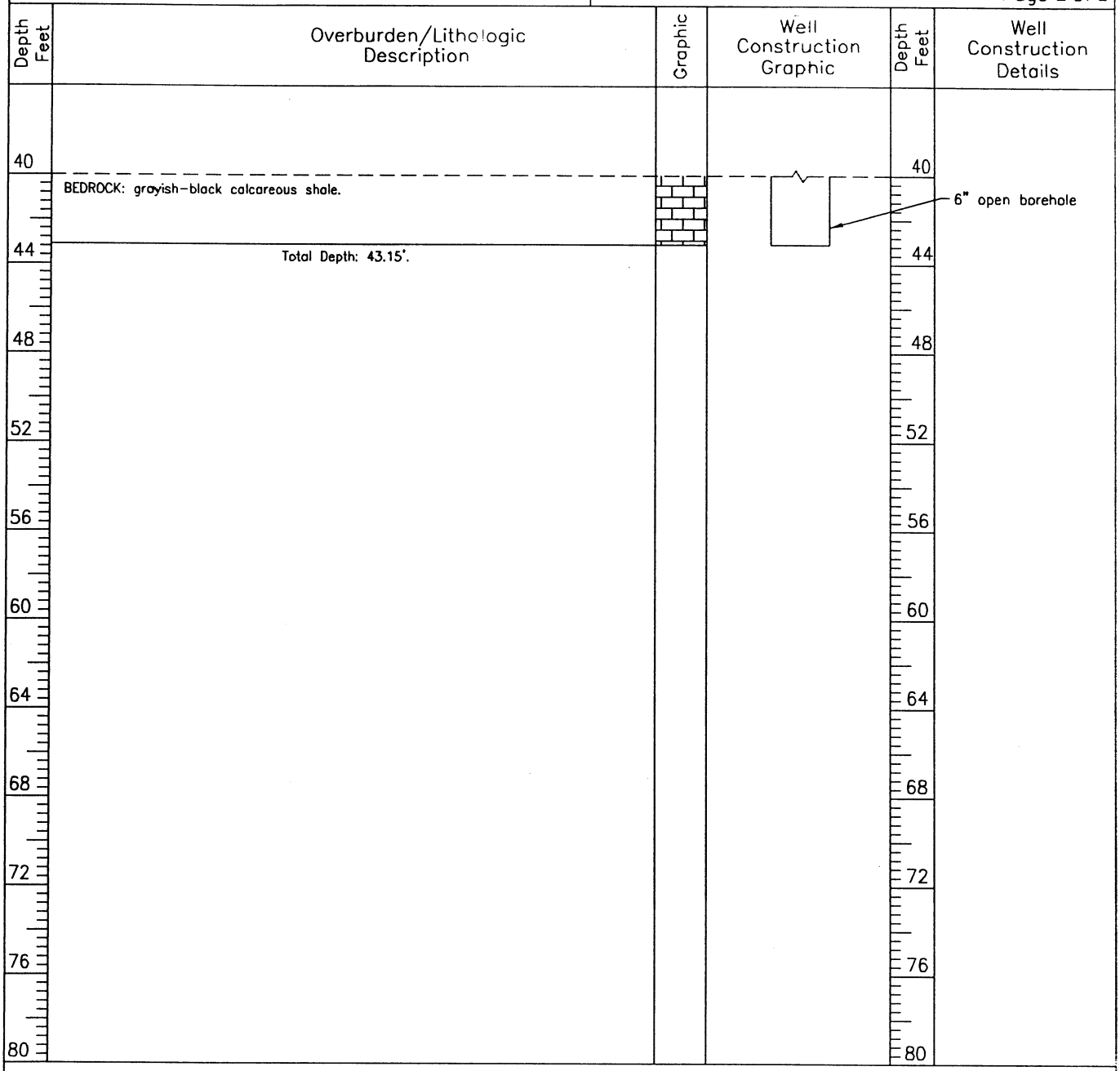
Air Rotary Drilling Log

Client: IBM Kingston

Project No. 93002.33.0002

Boring No. 324-R TOC Elev. 175'

Location Parking Lot NW of B023 GS Elev. 172.5'
Near Enterprise Drive



GROUNDWATER SCIENCES CORPORATION

Well Log: 324-R

Air Rotary Drilling Log

Client: IBM Kingston

Project No. 93002.33.0002

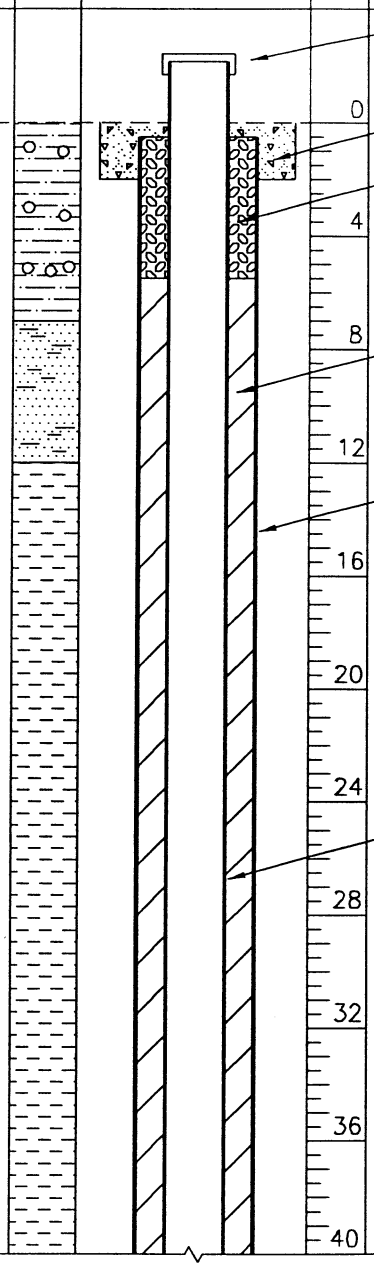
Boring No. 816-R

Location Former IWSL Area ~15'E of 816S

TOC Elev. 161.4'

GS Elev. 158.7'

Depth Feet	Overburden/Lithologic Description
0	Ground Surface
	SAND/SILT/CLAY/GRAVEL: mix, top 7', woodchips, gravel layers present.
	SAND: at 7', dark yellow brown, f-med, tr silt and clay.
	CLAY: at 12', gray brown to dark gray, varved clay, tr silt (site varved clay).



Driller: Eichelbergers, Inc.

Logged by: C.E. Stoner, GSC

Drilling Started: 10-17-00

Drilling Completed: 10-23-00

Well Coords.: N718620.9
E590309.6

Notes:

Scale interval changes on page 3.

Measured DTW: 91.9' from grade.

Estimated Blown Yield: <0.2 gpm.

GROUNDWATER SCIENCES CORPORATION

Well Log: 816-R

Air Rotary Drilling Log

Client: IBM Kingston

Project No. 93002.33.0002

Boring No. 816-R

Location Former IWSL Area ~15'E of 816S

TOC Elev. 161.4'

GS Elev. 158.7'

Depth Feet	Overburden/Lithologic Description	Graphic	Well Construction Graphic	Depth Feet	Well Construction Details
40				40	Bentonite grout
44				44	10" stainless-steel casing
48				48	Hydrated bentonite chips
	SHALE: at 49', grayish black pieces.				
	BEDROCK: at 49.5', grayish black calcareous shale, appears massive.				
52				52	6" stainless-steel casing
56				56	6" stainless-steel drive shoe
60	SHALE: as above.			60	6" open borehole
64				64	
68				68	
72				72	
76				76	
	: possible water-bearing zone at 77'.				
80				80	

Note: Scale inverval changes on page 3.

GROUNDWATER SCIENCES CORPORATION

Well Log: 816-R

Air Rotary Drilling Log

Client: IBM Kingston

Project No. 93002.33.0002

Boring No. 816-R

Location Former IWSL Area ~15'E of 816S

TOC Elev. 161.4'

GS Elev. 158.7'

Depth Feet	Overburden/Lithologic Description	Graphic	Well Construction Graphic	Depth Feet	Well Construction Details
80				80	
90	SHALE: as above.			90	
100				100	
110				110	
120	: slightly softer at 114'.			120	
130				130	6" open borehole
140				140	
150				150	
160				160	
170	Total Depth: 162'9" (bgs; 165.6' from TOC).			170	
180				180	

Note: Scale inverval changes on this page.

GROUNDWATER SCIENCES CORPORATION

Well Log: 816-R