WORK PLAN FOR CLOSING MONITORING WELLS G2U, G2M, AND G2L

HYDE PARK RRT PROGRAM
NIAGARA FALLS, NEW YORK

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REF. NO. 1069 (340)

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1.0 INTRODUCTION

Miller Springs Remediation Management, Inc. (MSRMI), an affiliate of Occidental Chemical Corporation (OxyChem), has assumed management responsibility for the Hyde Park Landfill Site. In reports presented to the United States Environmental Protection Agency (USEPA) and the New York State Department of Environmental Conservation (NYSDEC), data has indicated that many wells are open to numerous flow zones. These wells allow for movement of water among flow zones which can cause interference with the evaluation of groundwater levels used to determine whether or not containment is being achieved.

In the fall of 2003, a new multi-level monitoring well, G6, was installed near the location of the G2 well cluster. G6 has been fit with piezometers in flow zones 1, 2, 4, 5, 6, 7, 9, and 11.

It is believed that the long open interval wells G2U and G2M and well G2L are interconnecting flow zones and potentially influencing water levels in well G6. To eliminate this effect, wells G2U, G2M, and G2L will be closed.

This work plan provides a scope for closing these wells in accordance with NYSDEC recommendations. A plan view of these monitoring well locations is shown on Figure 1.

2.0 SPECIFIC WORK SCOPE

2.1 HYDRAULIC MONITORING

For 2 weeks prior to the start of any closing activities, the three wells, G2U, G2M, and G2L, will be fitted with transducers, and water levels will be continuously monitored. Continuous water level monitoring in the new G6 piezometers will be done simultaneously.

2.2 SOUNDING AND CLEANING

Each well to be closed will be sounded to determine if material has collected in the bottom of the well. If debris that will interfere with the well closing is found, the well shall be cleaned out prior to beginning work.

Approximate depths of wells are as follows:

G2U extends 69 feet below grade;
G2M extends 123 feet below grade; and
G2L extends 141 feet below grade. A stratigraphic log of this well is included as Appendix A.

2.3 VIDEOTAPING

Prior to closing, the well will be videotaped. Videotaping will be completed according to the "Procedures for Video Logging Wells" (Appendix B).

2.4 CLOSING

Each well shall be closed as follows:

1. a tremie pipe shall be extended to the bottom of the well;
2. bentonite chips (1/4 inch to 3/8 inch) will be poured into the well to fill the bottom 2 feet of the borehole;
3. the tremie pipe will be removed;
4. the chips will be tamped into position with a 15-pound cylindrical tamp supported on a cable;

5. the tremie pipe will be reinstalled, and another 2-foot lift of chips will be placed and tamped. This procedure will be repeated until the bentonite chips extend 2 feet up into the casing;
6. the tremie pipe will be reinstalled, and a cement bentonite grout will be pumped into the casing. The tremie pipe will be slowly removed from the well, while grout pumping is continuing to ensure that the tremie pipe void and casing is completely filled; and
7. grouting will continue to the top of the casing or to grade, whichever is less.

After the grout has set, the casing will be cut off 12 inches below grade and removed. The hole will be backfilled, and the surface will be repaired as per the surrounding area; i.e., grass, paving, etc.

Record keeping of the event will include times that bentonite chip placement and grouting began and ended, total depth and diameter of well that was closed, and total amount of bentonite chips and grout used.

In accordance with the NYSDEC Groundwater Monitoring Well Decommissioning Procedures, the grout mix will consist of:

- one 94-pound bag of Type I Portland cement;
- 3.9 pounds powdered bentonite; and
- 7.8 gallons potable water.

Bentonite chips shall be Puregold Medium Chips as provided by CETCO Drilling Products Group.

If the video shows that there is a large flow of water in the well, these procedures may be modified.

3.0 HEALTH AND SAFETY

During all work activities, MSRMI and Conestoga-Rovers & Associates (CRA) will be implementing a Health and Safety program as per the document entitled "Health and Safety Plan - Well Drilling/Packer Testing/Retrofitting/Video Logging - Hyde Park Landfill."

4.0 SCHEDULE

The closing of these wells will commence after 1 month of continuous (with transducers) water level monitoring has been completed in all piezometers of well G6 and 2 weeks of continuous monitoring of the G2 wells is completed.

The closing of wells will be completed as soon as possible. It is presently anticipated that all work shall be done by the end of February 2004.

FIGURES

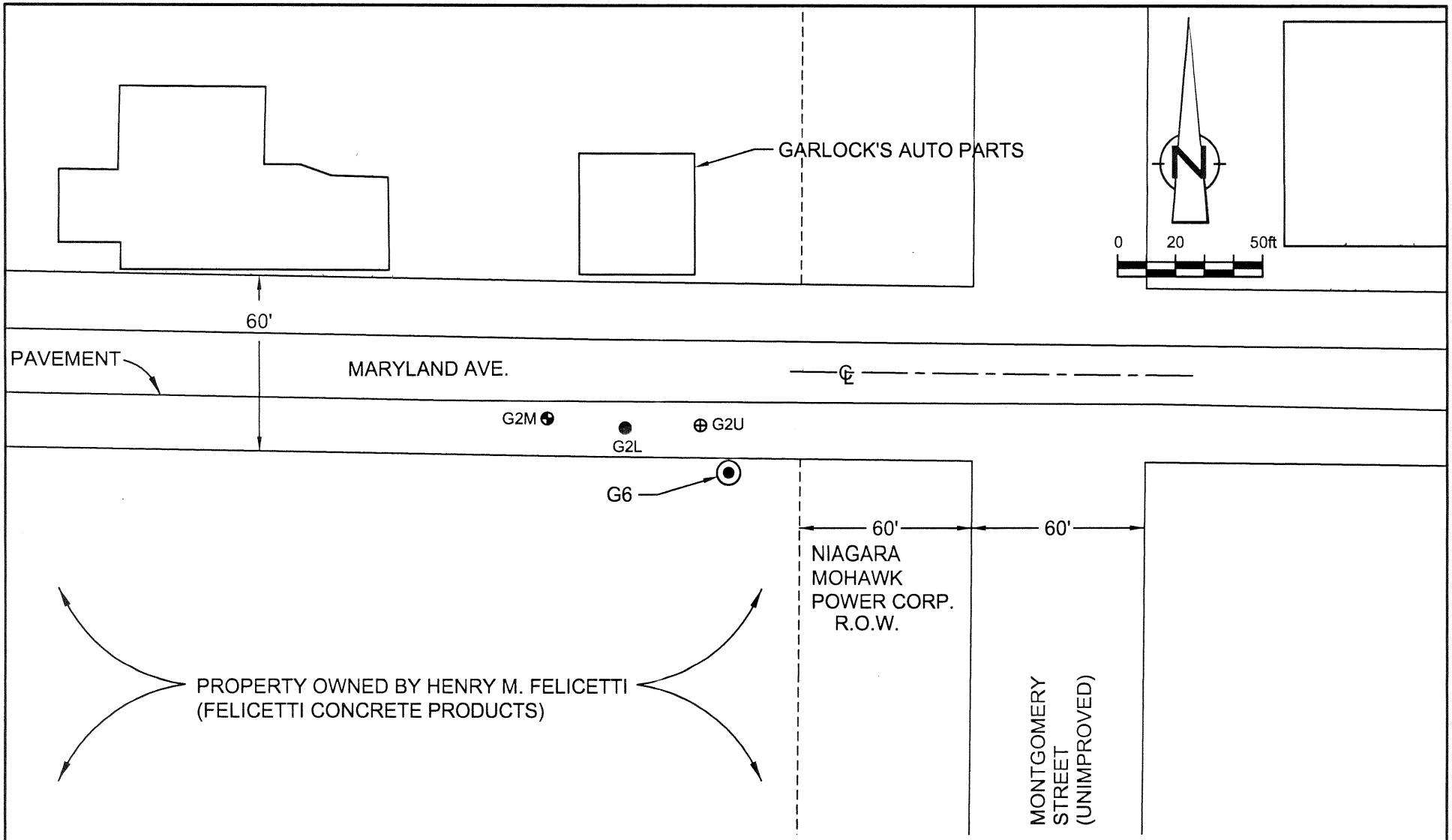


figure 1

G2 WELL LOCATIONS

Miller Springs Remediation Management - Hyde Park RRT Program

01069-00(340)GN-NF001 DEC 17/2003

APPENDIX A

STRATIGRAPHIC LOG

STRATIGRAPHIC AND INSTRUMENTATION LOG

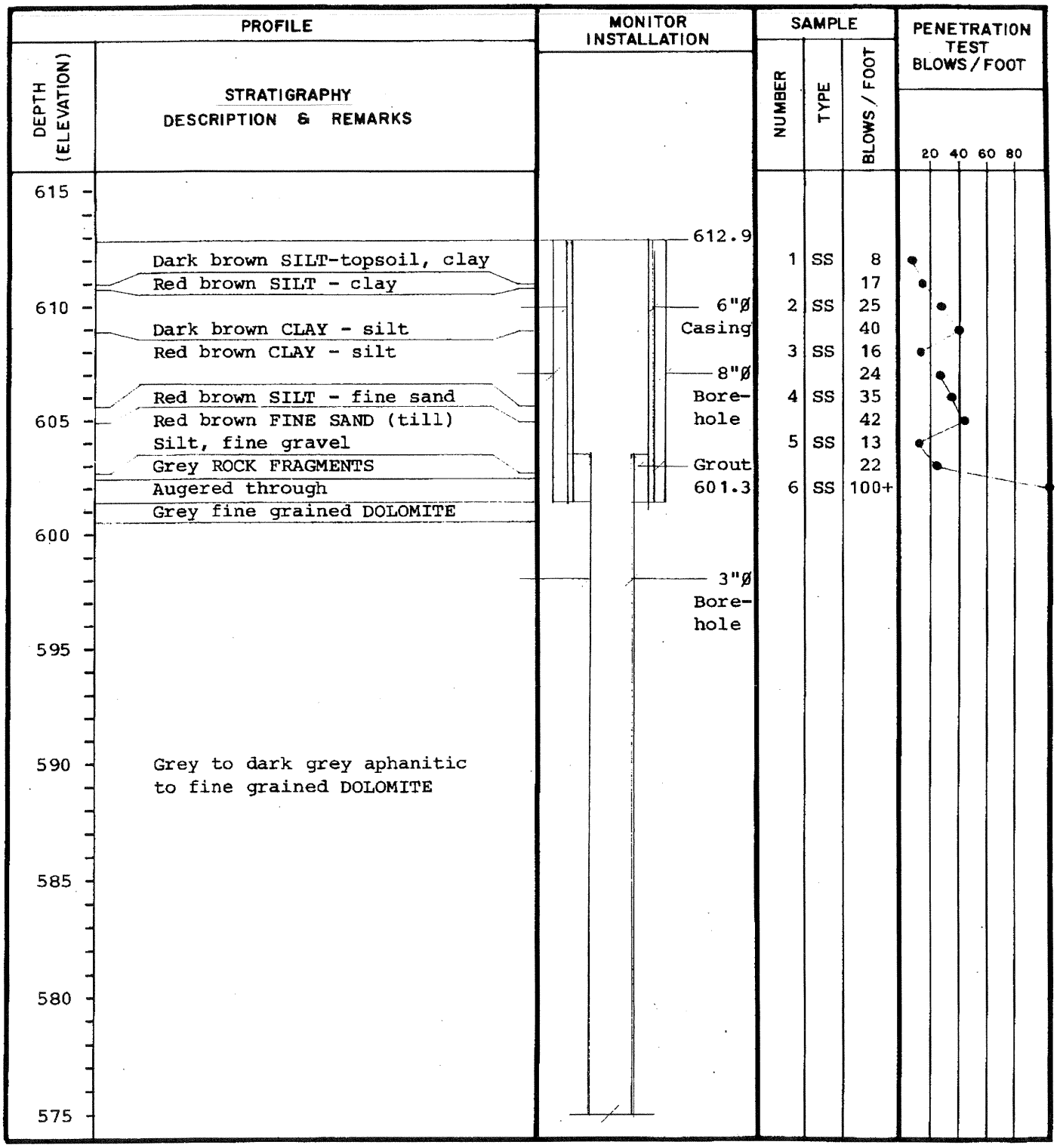
PROJECT NAME : HYDE PARK AQUIFER SURVEY — HOLE Nº: G-2 Page 1 of 4

JOB Nº : 9-1069 — DATE COMPLETED: JANUARY 12, 1983

CLIENT : OCCIDENTAL CHEMICAL CORPORATION — GEOLOGIST/ENGINEER : W. CLARKE/J. KAY

HOLE TYPE : 8"Ø AUGER/NX CORE — GROUND ELEVATION: 612.9

LOCATION : DELAWARE AVE. - EAST OF HYDE PARK BLVD. — TOP OF PIPE ELEVATION:



○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

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LOCATION : DELAWARE AVE. - EAST OF HYDE PARK BLVD.
TOP OF PIPE ELEVATION:

PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT	20 40 60 80
575						
570	Grey aphanitic to fine grained DOLOMITE					
565		3"Ø Bore-hole				
560						
555						
550	Grey fine grained DOLOMITE					
545						
540						
535						

○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

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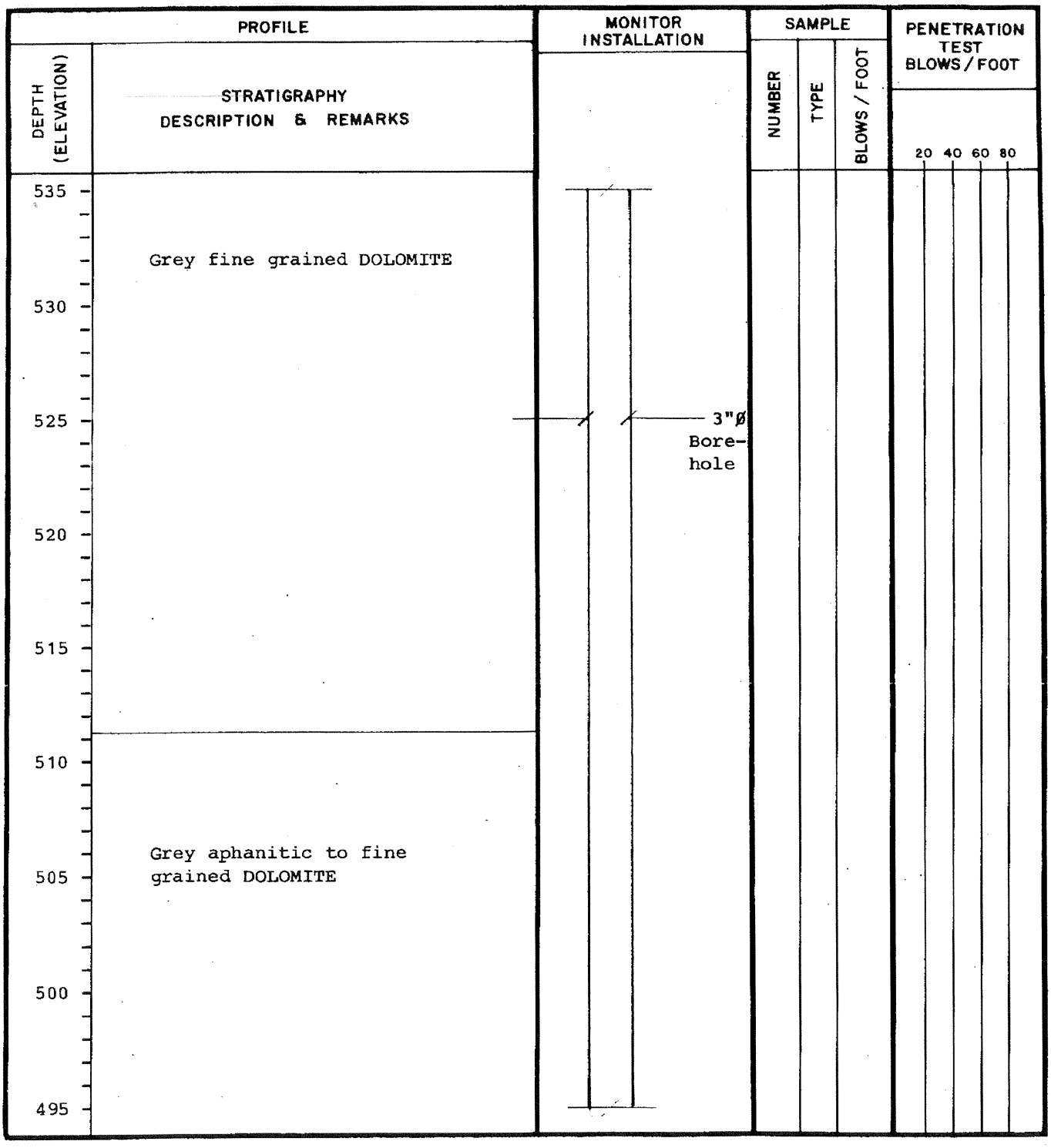

◯ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

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PROJECT NAME : HYDE PARK AQUIFER SURVEY — HOLE Nº: G-2 —

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HOLE TYPE : 8"Ø AUGER/NX CORE — GROUND ELEVATION: 612.9

LOCATION : DELAWARE AVE. - EAST OF HYDE PARK BLVD. — TOP OF PIPE ELEVATION:

PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT	20 40 60 80
495	Grey aphanitic DOLOMITE					
		3"Ø Bore-hole				
490	Dark grey fine to medium grained DOLOMITE					
485	GASPORT MEMBER					
	Grey aphanitic DOLOMITE					
480						
475	DECEW MEMBER					
	Dark grey dolomitic SHALE					
470	ROCHESTER FORMATION					
		466.3				
465						
460						
455						

◯ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

APPENDIX B

PROCEDURES FOR VIDEO LOGGING WELLS

PROCEDURES FOR VIDEO LOGGING WELLS

Original Document by S. Sayko, April 5, 2002
Revised by J. Thornton, October 14, 2003

The following procedures were developed to ensure that the video logs are as useful as possible.

The purpose of the video logging is twofold:

- To determine an accurate location of the flow zones in the wells to be retrofit with piezometers. To make an accurate measurement (+/- 0.2 feet), we need to have an accurate reference datum (top of casing) and an accurate depth measurement. The depth reading from the video camera does not meet our accuracy requirements.
- To provide an archive document of the borehole.

The video logging should be done in dry weather so there is not a rush to get the well done. Only the downhole portion of the GeoVision video system is waterproof. The camera and electronics are not.

A white board should be used to note the well name, date of the video, initials of the field crew, depth to water, the reference depth for the measuring tape (described below), and a note defining the reference point. We will standardize on the top of casing, the depth to water measuring point, as the reference point. However, a note to that affect should be on every white board.

To achieve an accurate measurement of the well bore features, a measuring tape will be lowered into the well. The tape should be weighted and lowered to the bottom of the well, then lifted slightly to ensure that the tape is taut. The tape should rest against the side of the well bore. This may take some practice to achieve. The tape is then clamped to the top of casing, and the tape measure reading at the top of casing reference should be recorded on the white board.

The measuring tape will provide a permanent and accurate measurement for the entire borehole.

Once the tape is in the well, securely clamped to the well casing, and the tape reference and depth to water are noted on the white board, the camera should go into the well. The camera shall be lowered slowly down the well at approximately 10 feet per minute until the bottom of the well casing is reached. The bottom of the casing should be clearly visible on the video, and the tape should be readable. Once the bottom of the well is reached, the video log can stop, and the well is complete. If the tape is not readable for the entire borehole length, measurements of a discrete fracture with a second tape may be necessary.

The camera equipment should be removed from the well, wiping the camera cable with paper towels as it is retrieved. At a minimum, decontamination procedures should conform to the same standards used for depth to water measuring equipment.

At the end of each day, the videotapes should be labeled and left with Jon Williams of Conestoga-Rovers & Associates (CRA) for storage and transfer to a VHS videocassette. A new tape should be used every day. Copies of each day's videotape should be made and express mailed to:

- Steve Sayko: SEI
- Chris Neville: SSP&A

The original videotapes should be stored in CRA archives.