

PHASE I
DOWNGRADIENT INVESTIGATION

UNIT E PLUME

PALL LIFE SCIENCES
ANN ARBOR, MICHIGAN

MARCH 30, 2006



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INTRODUCTION

This report summarizes data collected by Pall Life Sciences (PLS) during Part A of the approved downgradient investigation plan for the Unit E plume. The activities performed for this investigation were proposed to the Michigan Department of Environmental Quality (MDEQ) in a work plan titled *Work Plan for Downgradient Groundwater Investigations and Potential Underflow of the Huron River*, dated October 7, 2004 (DGWP). This work plan was approved by the MDEQ in February 2005. This investigation is intended to: (a) determine the probable migration pathway of the Unit E plume as it moves hydraulically downgradient; (b) establish that the pathway for 1,4-dioxane will remain within the Prohibition Zone; (c) and to determine whether 1,4-dioxane within the Unit E will eventually migrate to the Huron River.

The DGWP was divided into two sections, Part A and Part B. Part A of the DGWP investigates the migration pathway of the Unit E plume as it moves hydraulically downgradient of the Maple Road area. Part B investigates the potential for underflow of the Huron River and will be pursued unless Part A investigations conclude the Unit E plume is not migrating to the Huron River. PLS proposed an iterative process consisting of eight (8) tasks in Part A of the DGWP that were subdivided into separate phases of data collection, data analysis, and reporting as follows:

Phase 1

Task 1 – Boring/Well Installation

Task 2 – Groundwater Sampling

Task 3 – Water Level Data Collection

Task 4 – Data Analysis

Phase 2

Task 5 – Well/Boring Installation

Task 6 – Groundwater Sampling

Task 7 – Water Level Data Collection

Task 8 – Data Analysis

Phase 1 - Tasks 1 through 4 are the subject of this report which includes proposed investigations that will be undertaken during Phase 2 of Part A.

DATA COLLECTION

WELL BORING/WELL INSTALLATION

Four Task 1 test borings/monitoring wells were installed during Phase 1 of the DGWP including: MW-97s&d, MW-98s&d, MW-99s&d, and MW-102s&d. The locations of the wells are shown on Figure 1. The well locations are consistent with those proposed in the DGWP. All locations were approved by the MDEQ prior to installation. Additionally, as requested by MDEQ, PLS provided regular email updates of drilling progress for the Task 1 wells.

PLS initially proposed a boring/well in the vicinity of Mulholland Drive; however, the boring/well was not installed due to concerns regarding strong-flowing artesian conditions. PLS and the MDEQ agreed to postpone the decision to replace this boring/well location until data from the Phase I investigation were reviewed.

Hollow-stem auger (HSA) drilling methods were used at each boring/well location. Each boring/well was drilled to depths sufficient to encounter bedrock. Split-spoon and Simulprobe sampling methods were utilized for collection of soil and soil/groundwater, respectively. Split-spoon samples were collected at 10-foot intervals, beginning at ground surface to approximately 10 feet below the uppermost water-bearing zone. Below the uppermost water-bearing zone, soil/groundwater samples were collected at roughly 10-foot intervals using Simulprobe techniques and continued through the aquifer(s) to the total depth of the boring/well. All soil samples were described/classified by an onsite Fishbeck, Thompson, Carr & Huber, Inc. geologist. Soil samples were described based on their physical characteristics during the drilling of each boring. During the drilling of each boring/well, representative groundwater samples were collected using a Simulprobe sampler. Groundwater samples were transferred to PLS under chain-of-custody documentation. All groundwater samples were analyzed for 1,4-dioxane by PLS to a detection level of 1 microgram per liter.

Upon reaching the total depth of each boring, as determined by the onsite geologist, the borehole was geophysically logged using a natural gamma tool. Nested monitoring wells were installed at each boring location for the primary purpose of obtaining representative water level data. Each well was constructed of 2-inch galvanized steel casing, equipped with a 5-foot stainless-steel (10-slot) well screen. Wells were gravel packed and grouted, completed as flush mounts, and equipped with locking caps and locks.

Soil cuttings and development water, derived from the drilling, were containerized and transported back to PLS for appropriate management. Boring/well logs and natural gamma logs for each downgradient location are provided as Appendix 1.

GROUNDWATER SAMPLING

Groundwater samples have not yet been collected from the completed new wells. Simulprobe samples were collected from the well borings to guide the installation of the wells. PLS collected groundwater samples from other Unit E wells during the period January through March 2006. These data, along with the Simulprobe samples are provided in Appendix 2.

WATER LEVEL AND ELEVATION SURVEY

Geospatial data for the new wells were obtained by Atwell-Hicks. Top-of-casing and ground elevations for the new wells were referenced to NAVD88 and x, y coordinates were referenced to Michigan State Plane Coordinate System, Michigan South (NAD83).

PLS collected two rounds of static water level measurements from selected Unit E wells. Water levels were collected on February 6 and March 20, 2006. The first round included the new wells that were installed by that date. The second round included all the new downgradient wells. Water level data collection for the March 22, 2006, event includes both groundwater elevation and surface water elevations. Surface water elevations were surveyed at five locations along the Huron River, beginning immediately upstream from the Allen Creek Drain/Huron River confluence.

All elevation and water level data collected for this investigation are provided in Table 1. Water level data report sheets are provided in Appendix 3.

DATA ANALYSIS

PLS has conducted extensive investigations into the geology and hydrogeology of the Unit E plume area. Data from the current investigation augments the hydrogeological data available east of the current extent of the Unit E plume. These data have been used to assess the geologic and hydrogeologic character of the downgradient areas. The interpretations provided represent PLS' current analysis of the available data and are subject to change with the gathering of additional geologic and hydrogeologic data.

BEDROCK ELEVATION AND DRIFT THICKNESS

The bedrock underlying the Unit E plume and areas east to the Huron River is the Mississippian Coldwater shale. Kunkle (1960), Western Michigan University (1981), the State of Michigan, PLS, and others have generated maps interpreting the bedrock surface topography. These maps reveal a complexly-dissected terrain reflecting an erosional topography caused by paleo-surface water drainage.

Figure 2 shows a map of the bedrock surface in the area of the current Unit E plume and eastward from Maple Road that was generated using Surfer® version 8 (Surfer). The bedrock contours are based on information from PLS boring/wells (including the wells installed specifically for this investigation) and incorporates limited well and boring information from Kunkle. As shown, the bedrock surface generally slopes away from the Unit E plume area toward the Allen Creek Drain and Huron River. An eastward-trending bedrock low is present beginning in the Maple Village area and continues toward the Huron River. This data is consistent with the preliminary interpretation PLS offered in its DGWP.

A topographic surface map is provided as Figure 3. Data for the contours were provided by the City of Ann Arbor. The surface topography generally mimics the bedrock topography. Surface elevations generally decline eastward, away from the current position of the Unit E plume (918 feet [ft.]), toward the Allen Creek Drain (<820 ft.) and the Huron River (<787 ft.). East of the Allen Creek Drain, the surface elevations generally increase forming a channel-like depression along the Allen Creek Drain.

The drift thickness in the area of the Unit E plume and eastward range from approximately 120 to 300 ft. Figure 4 shows an Isopach Map of the drift thickness in the area of the current Unit E plume and eastward from Maple Road toward the Allen Creek Drain and Huron River. The drift thickness map was prepared by creating a residual map between the bedrock surface and the topographic surface. Drift thickness values are based on information from PLS boring/wells and contoured using Surfer. The map indicates a general thickening of the drift within the interpreted bedrock low. The drift thickness generally decreases with proximity to the Huron River, primarily because the topographic surface lowers from approximately 920 ft. above mean sea level (amsl) in the Unit E plume area to approximately 790 ft. amsl along the river. The bedrock elevations as augmented by the new borings, the topographic surface, and the drift thickness as determined with the information developed during this investigation, are all consistent with a flow channel from the Maple Road area east toward the Huron River at approximately the confluence of the Allen Creek.

HYDROGEOLOGICAL SETTING

To understand the relationships between the materials comprising the hydrostratigraphic units formed by these aquifers and their separating aquicludes/aquitards, a series of cross sections were prepared using boring/well information collected by, or available to, PLS. The location of each cross section is shown on Figure 5. Cross section A-A' (Figure 6) is constructed along a pathway toward the Allen Creek Drain and the Huron River. Cross sections B-B', C-C', D-D', and E-E' (Figures 7, 8, 9, and 10, respectively) are constructed to traverse cross section A-A'. In some areas, upper sections of the drift sequence become somewhat irrelevant to the Unit E

plume. In those areas, the upper drift deposits have been identified on the cross sections as “undifferentiated.”

To further illustrate the glacial drift materials, specifically the coarser water-bearing deposits/aquifers, a total sand isopach was prepared. This map is provided as Figure 11. Figure 11 was prepared by summing the total sand thickness below the “undifferentiated” deposits at the boring locations. This map is intended to help facilitate an understanding of the geometry of the water-bearing units within the glacial drift sequence.

Key interpretations made from the cross sections and total sand isopach are as follows:

- The Unit E aquifer system extends through the study area and its thickest sand/gravel sequences are positioned along an east-west trend that corresponds to a low in the bedrock surface. The sand/gravel sequences thin to the north as you move east of Veterans Park.
- The thickest sand sequence appears to be in the area of MW-76 (approximately 211 ft.).
- Thinly bedded, stacked sand/gravel sequences are found in the area of Maple Road, where a bedrock low is present.

GROUNDWATER FLOW

Water-level data collected on March 20, 2006, have been interpreted, along with other data, to prepare a potentiometric surface map (Figure 12) for the areas east of MW-72. This map represents the flow interpreted from wells completed in similar hydrofacies relevant to the Unit E plume. The map also recognizes water level data from measurements at the Montgomery well, and PLS Boring West Park-73. Based on this most recent potentiometric surface map, the horizontal groundwater flow direction east of Maple Road is generally toward the east and turns northeastward toward the Huron River with close proximity to the Allen Creek Drain. This flow direction is consistent with the underlying bedrock surface and the geometry of the drift deposits.

The hydraulic gradient of the potentiometric surface downgradient from Maple Road to the Huron River ranges between 0.0015 and 0.0139 foot/foot. Vertical hydraulic gradients were measured at well cluster locations and ranged from 0.0018 to 0.3594 foot/foot.

Comparison of the topographic surface map to the potentiometric surface map suggests that areas of artesian groundwater flow conditions may exist east of MW-98, toward the Huron River. PLS used Surfer to generate a residual between the topographic and potentiometric contours for this area. The resulting map is provided as Figure 13.

Key interpretations made from the March 2006 Potentiometric Surface Map are as follows:

- Steep horizontal gradients are observed in the area at, and immediately east of, Maple Road and generally coincide with a bedrock low and thinner sand sequences in the Maple Road area. Lower hydraulic gradients east of MW-83 again become generally steeper east of MW-82, toward the Huron River.
- Downward gradients are observed in the western portion of the study area. Upward hydraulic gradients are observed closer to the Huron River. This information may suggest that the western portion of the study area is a groundwater recharge area, while the eastern portion of the study area is a groundwater discharge zone.
- Groundwater artesian flow conditions in areas close to the Allen Creek Drain and the Huron River, plus a strong upward hydraulic gradient between the lower and upper hydrofacies, suggests groundwater discharge to the Huron River (rather than underflow) is likely.

1,4-DIOXANE DISTRIBUTION

An updated 1,4-dioxane isoconcentration map has been prepared using the most recent 1,4-dioxane data collected from Unit E wells and the newly installed boring/wells which was collected between January and March, 2006.. This map is presented as Figure 14. Since well sample data are were not available at the new well locations, Simulprobe data were used to assist in map preparation. The three map locations where Simulprobe data are shown are: the MW-98 cluster, the MW-103 cluster and MW-101. The values shown represent the highest concentrations detected in the vertical sampling at that given location.

The map differs from earlier maps in that it shows an the presence of the Unit E plume in the area north of the intersection of Dexter and Maple Roads, as determined by the recent installation of MW-101.

COMMENTS

Data from this investigation have provided considerable insight into the probable pathway of the Unit E plume as it migrates hydraulically downgradient.

Over the scale of the investigated area, the aquifer systems are not hydraulically isolated from each other. However, there are distinct separations in the aquifers throughout much of the investigated area. These separations are relevant to understanding the flow pathways of the Unit E plume as it migrates hydraulically downgradient.

1,4-Dioxane in the Unit E plume is expected to migrate along a pathway determined by the hydrogeological setting and groundwater flow regime. Indications are that continual aquifer systems are present from the Unit E plume area to the area of the Huron River. The geometry of these aquifer systems appears to be related to the bedrock surface. A low in the bedrock surface is mapped along an east-west trend from the area of Maple Road, through Veterans Park, to the MW-98 well cluster, then northeast along the Allen Creek Drain. Horizontal groundwater flow in

the aquifer systems generally follows this same trend. The investigation shows that the likely flow path for 1,4-dioxane will be within portions of the Unit E aquifer system (Unit E) toward the Huron River near the confluence of Allen Creek.

Upward vertical gradients proximal to the Huron River suggest groundwater discharge conditions. Additionally, groundwater appears to be flowing directly toward this regional hydraulic low. PLS will evaluate the potential for underflow of the Huron River after the completion of the second phase of this investigation.

The portion of 1,4-dioxane plume that has already migrated east of Maple Road and the reduced concentrations that will not be captured by TW-19 in the future are expected to migrate downgradient within the drift sequence. The 1,4-dioxane migrating through the upper portions of the drift sequence is expected to migrate toward the and enter the Huron River. To the extent 1,4-dioxane migrates through the lower portions of the drift sequence, upward hydraulic gradients proximal to the Huron River are anticipated to cause the plume to begin an upward migration as it moves toward the Huron River. Additional investigations to be conducted as part of Phase B of this investigation will further evaluate the vertical migration of the plume as it approaches the Huron River.

The findings of this investigation suggest there is no need to adjust the boundaries of the prohibition zone to accommodate the projected pathway of the Unit E plume. This conclusion will be revisited again with the collection of additional information in the next phase of the investigation.

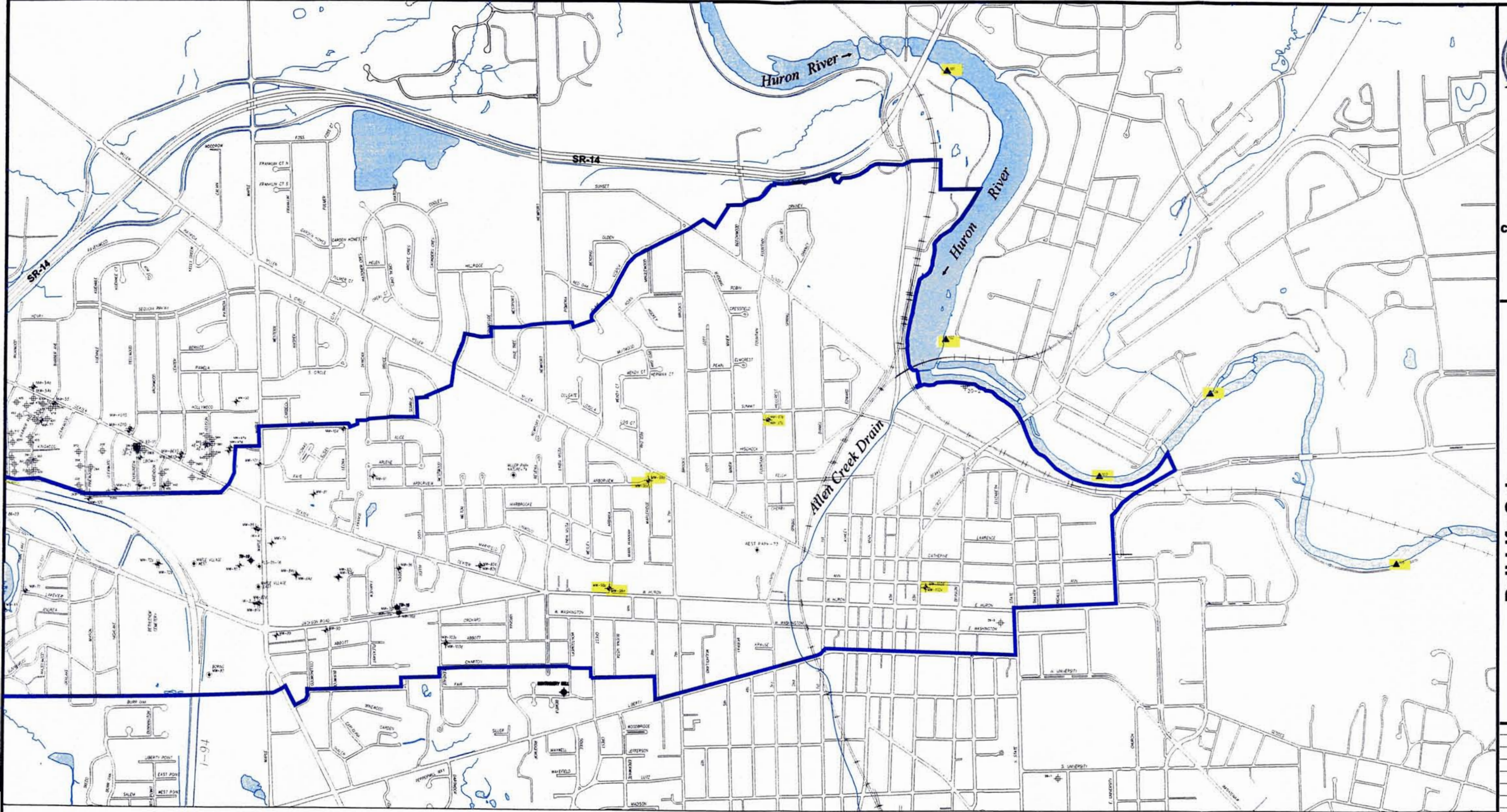
RECOMMENDATIONS FOR ADDITIONAL INVESTIGATIONS

PLS proposes to continue the investigation in areas downgradient of the Unit E plume between Maple Road and the Huron River. Data from the initial phase of the DGWP Part A investigation suggests the Unit E plume will migrate eastward, toward the Allen Creek Drain, then turn northeastward, toward the Huron River. Based on the PLS assessment of the available data, PLS

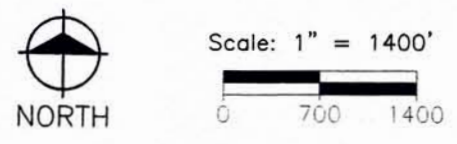
has identified two areas where more hydrogeological information would be valuable. These areas are: between the MW-97 and MW-102 clusters near the confluence of the Allen Creek Drain and the Huron River and Baemas Street, and in the area of Mulholland and Liberty. These two areas are shown on Figure 15.

PLS proposes to install nested well sets within each of the recommended well location areas. The proposed test borings will be drilled using HSA techniques to a depth sufficient to encounter bedrock. No Rotosonic Drilling methods (RSD) will be used during the remainder of this investigation. PLS feels that the geological resolution obtained from the RSD, although interesting, is not necessary.

The objectives for this portion of the investigation will be to further define the likely horizontal flow path for 1,4-dioxane as it approaches the Huron River within the Unit E and to obtain information on vertical gradients to determine whether groundwater at latitudes within the Unit E expected to contain 1,4-dioxane will discharge into the Huron River.



- LEGEND**
- ◆ - MONITOR WELL **NEW**
 - ⊕ - RESIDENTIAL WELL
 - ⊙ - PURGE WELL
 - ⊗ - HYDROGEOLOGIC TEST BORING
 - ⊠ - UV/O₃ TREATMENT SYSTEM
 - ⊘ - TEMPORARY PURGE WELL
 - ▲ - SURFACE WATER ELEVATION POINT
 - - PROHIBITION ZONE BOUNDARY

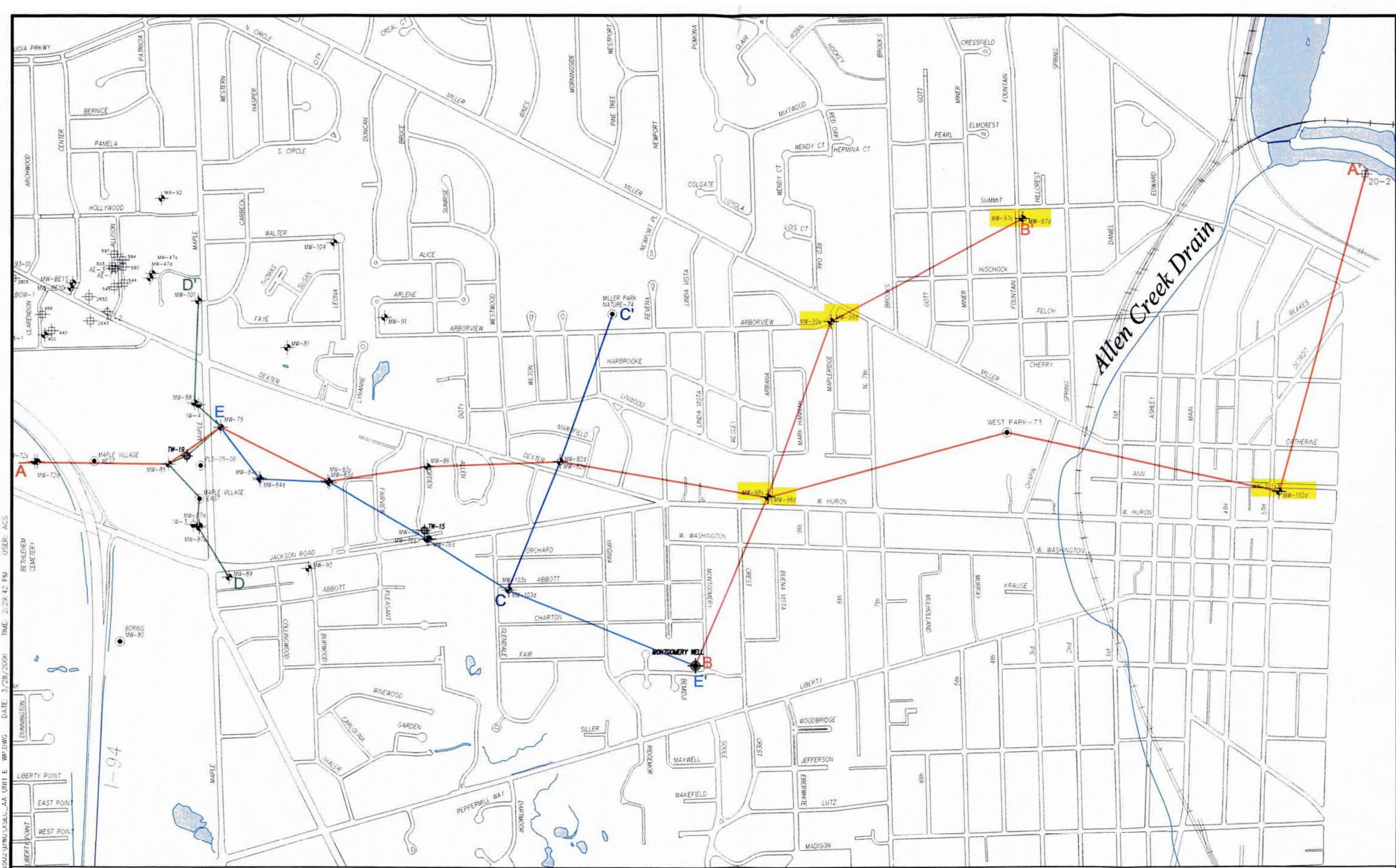


**LOCATION OF DOWNGRAIDENT WELLS AND
SURFACE WATER ELEVATION SURVEY POINTS**

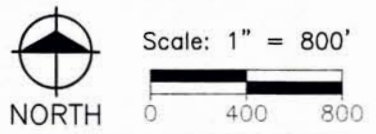
PROJECT NO.
F96502

FIGURE NO.

1

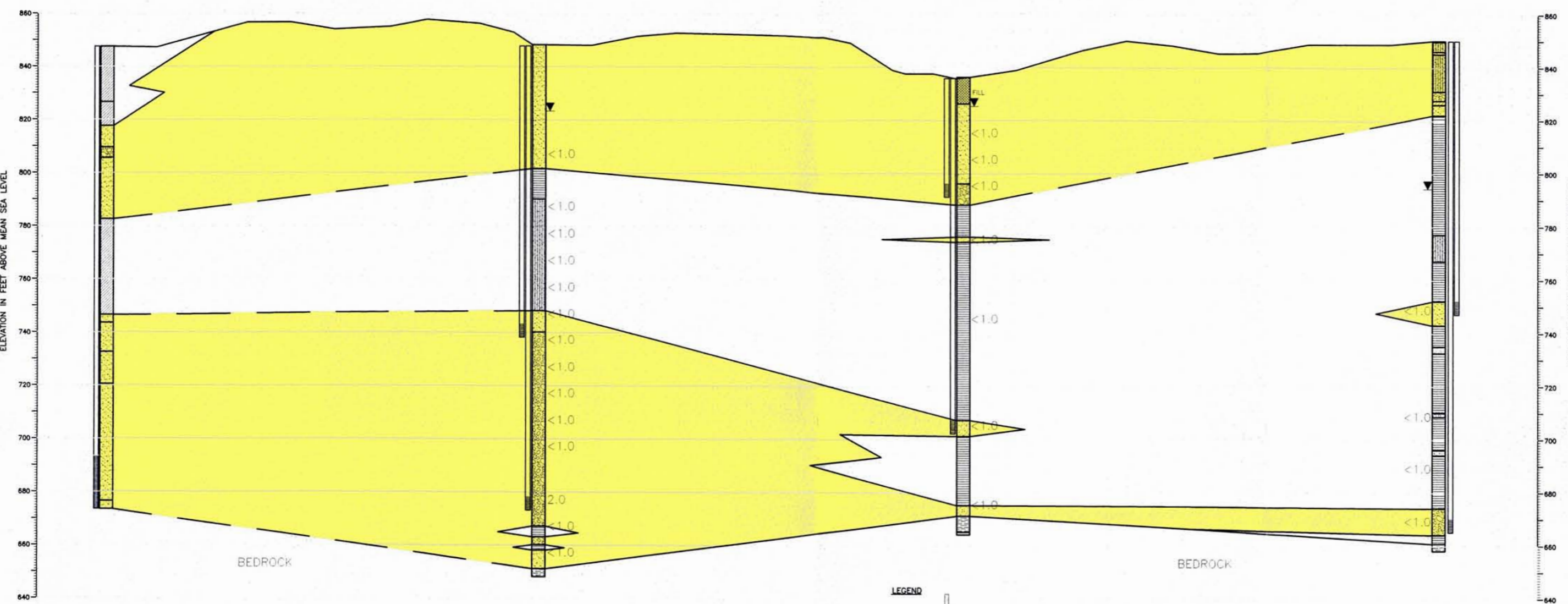


- LEGEND**
- ◆ - MONITOR WELL **NEW**
 - ⊕ - RESIDENTIAL WELL
 - ⊙ - PURGE WELL
 - ⊗ - HYDROGEOLOGIC TEST BORING
 - ⊕ - UV/O₃ TREATMENT SYSTEM
 - ⊙ - TEMPORARY PURGE WELL



**CROSS SECTION
LOCATION MAP**

B SOUTH **B'** NORTHEAST



LEGEND

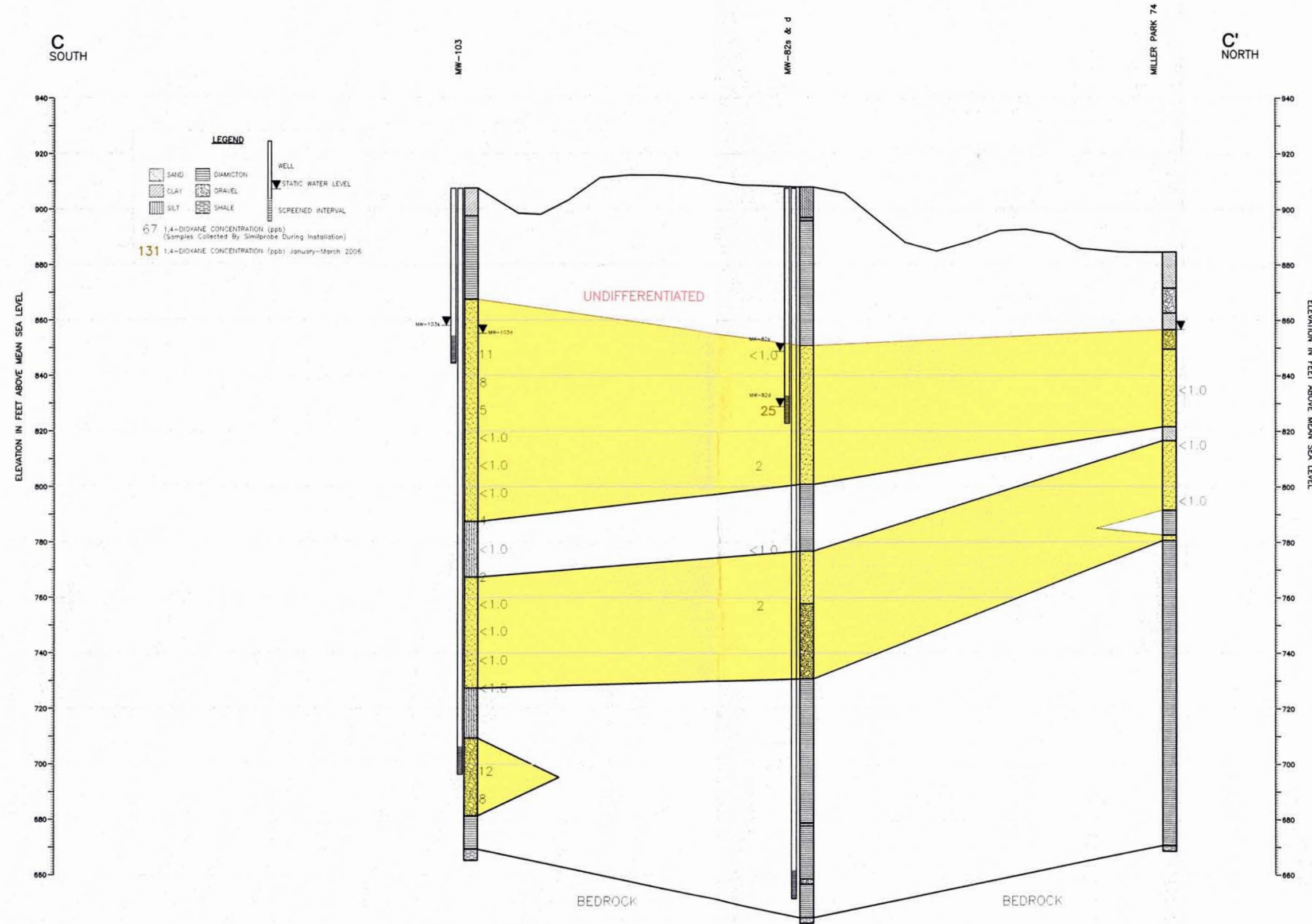
SAND	DIAMICTON	WELL
CLAY	GRAVEL	STATIC WATER LEVEL
SILT	SHALE	SCREENED INTERVAL

67 1,4-DIOXANE CONCENTRATION (ppb)
(Samples Collected By Simiprobe During Installation)

131 1,4-DIOXANE CONCENTRATION (ppb) January-March 2006

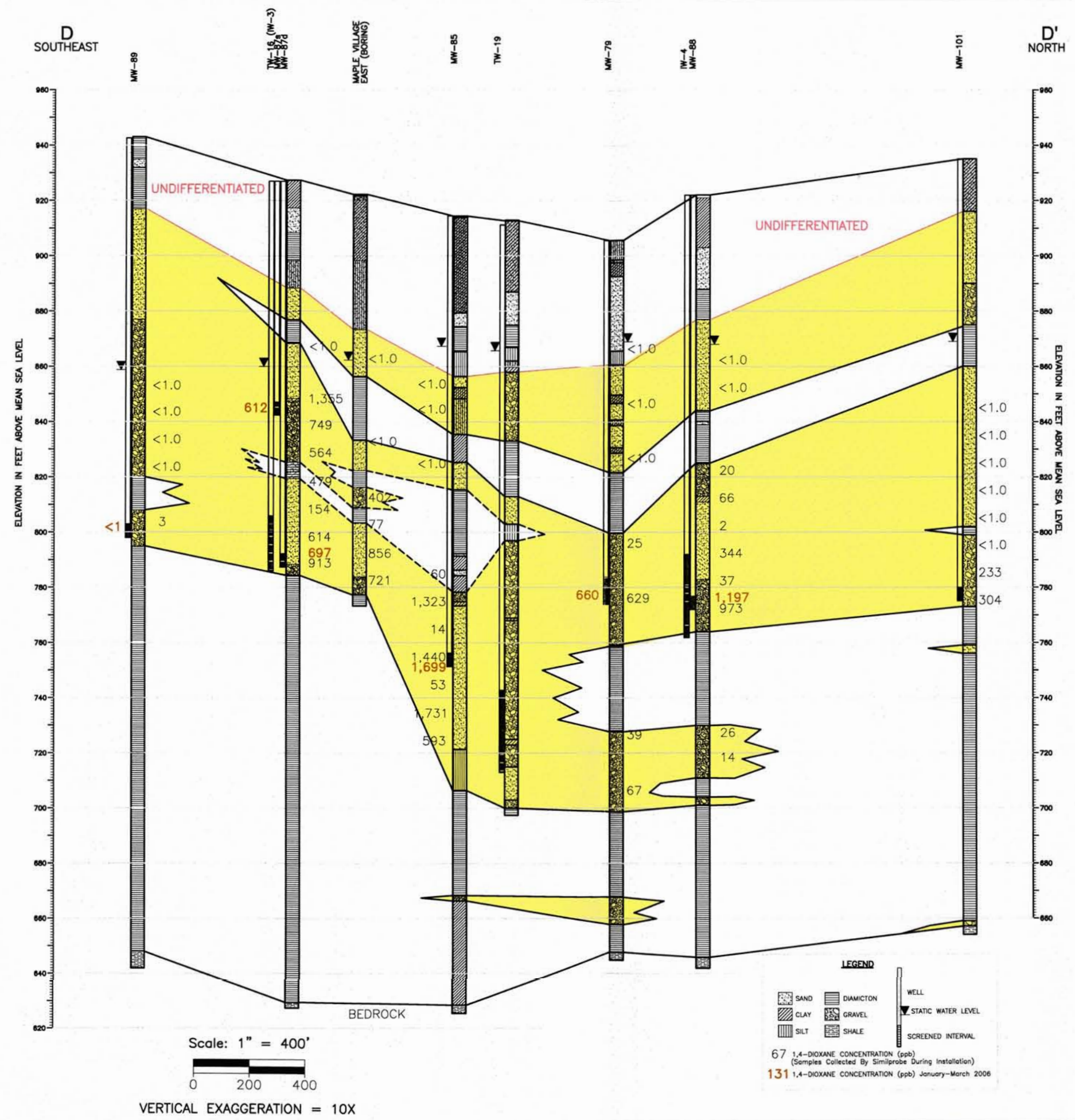
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VERTICAL EXAGGERATION = 10X

**CROSS SECTION
B-B'**



CROSS SECTION
C-C'

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**CROSS SECTION
 D-D'**



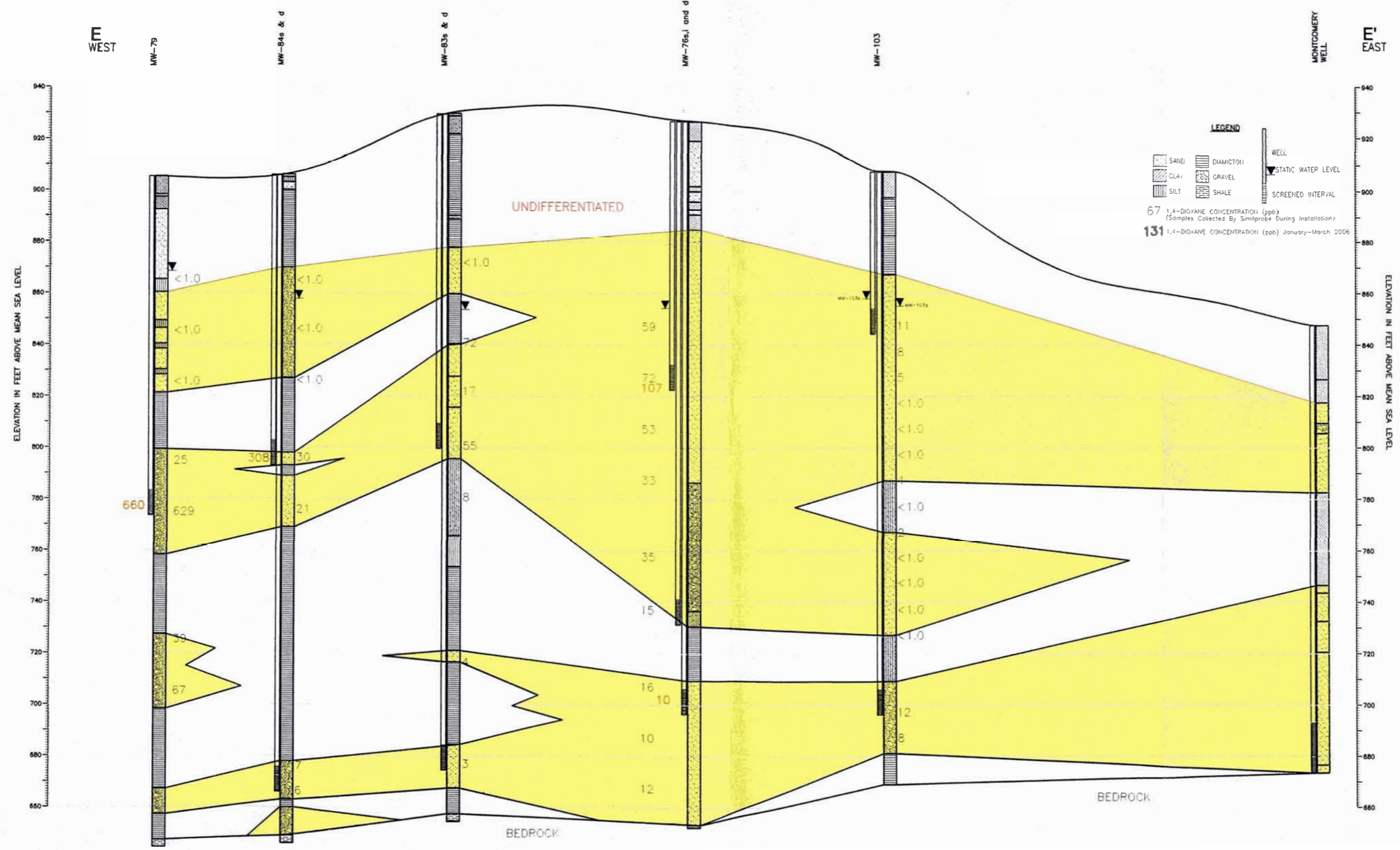
engineers
 scientists
 architects
 constructors

Pall Life Sciences
 Scio Twp., Washtenaw County, Michigan
 Unit E Plume Downgradient Investigation

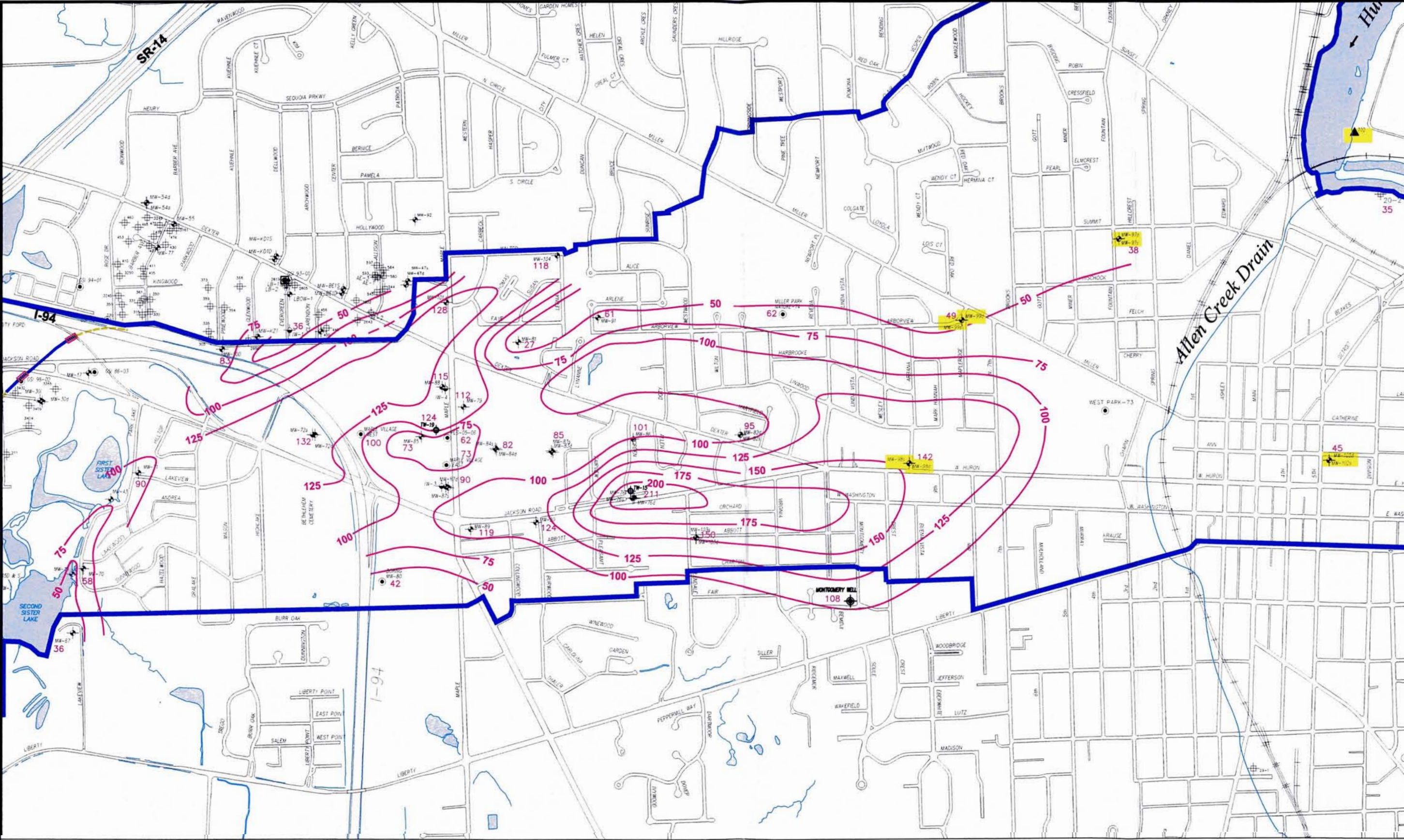
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 F96502

FIGURE NO.

9



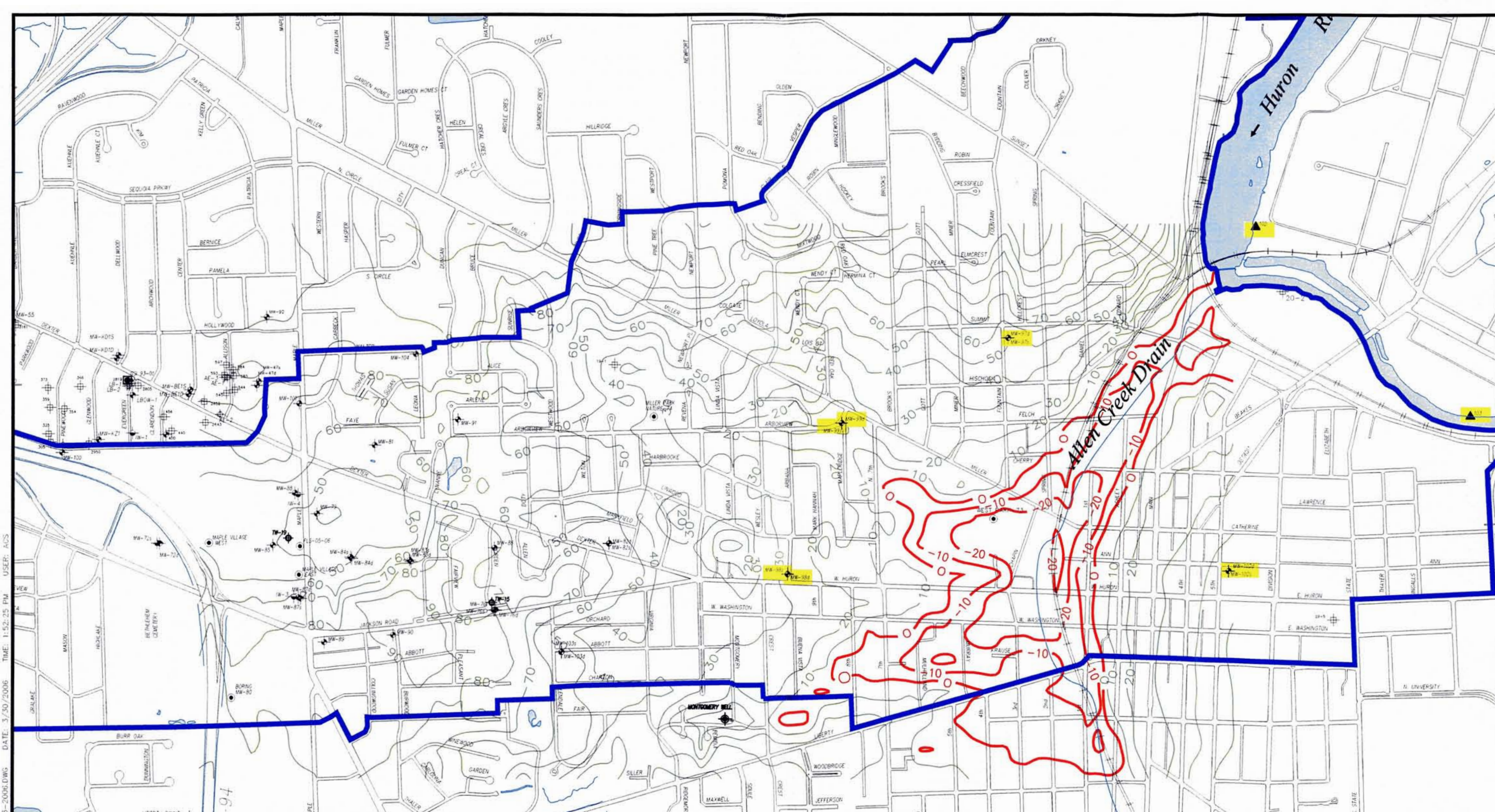
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VERTICAL EXAGGERATION = 10X



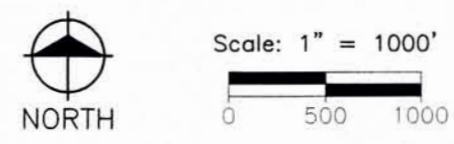
- LEGEND**
- ⊕ - MONITOR WELL
 - ⊙ - RESIDENTIAL WELL
 - ⊕ - PURGE WELL
 - ⊕ - HYDROGEOLOGIC TEST BORING
 - ⊕ - UV/O₃ TREATMENT SYSTEM
 - ⊕ - TEMPORARY PURGE WELL
 - - SURFACE WATER ELEVATION POINT
 - - SAND THICKNESS (FEET)
 - - PROHIBITION ZONE BOUNDARY



TOTAL SAND ISOPACH



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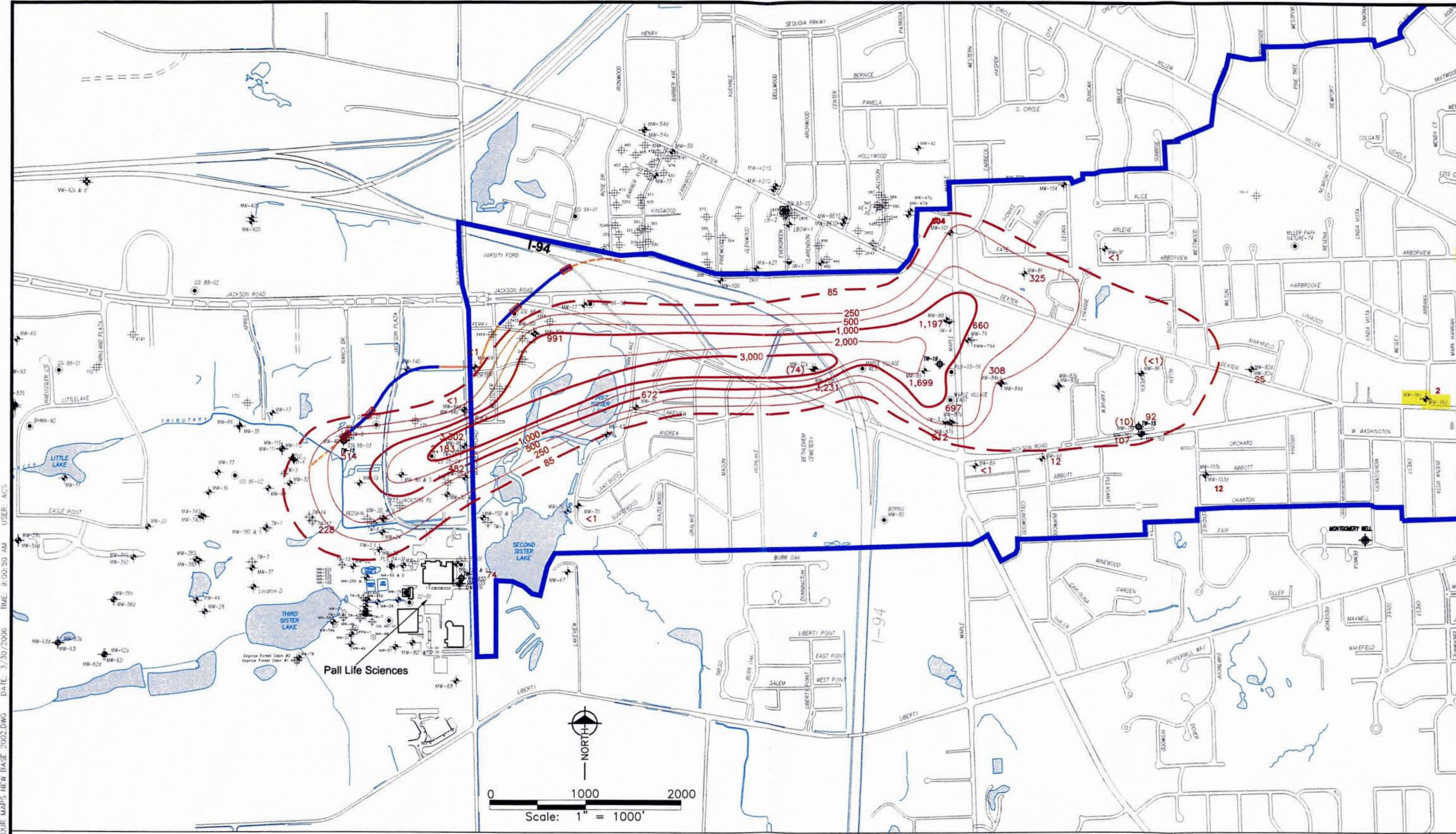
- LEGEND**
- ⊕ - MONITOR WELL NEW
 - ⊕ - RESIDENTIAL WELL
 - ⊕ - PURGE WELL
 - ⊕ - HYDROGEOLOGIC TEST BORING
 - ⊕ - UV/OX. TREATMENT SYSTEM
 - ⊕ - TEMPORARY PURGE WELL
 - ▲ - SURFACE WATER ELEVATION POINT
 - - PROHIBITION ZONE BOUNDARY
 - - RESIDUAL ABOVE 0 FEET
 - - RESIDUAL 0 FEET AND BELOW

RESIDUAL BETWEEN TOPOGRAPHIC AND POTENTIOMETRIC SURFACE ELEVATIONS

PROJECT NO. F96502

FIGURE NO.

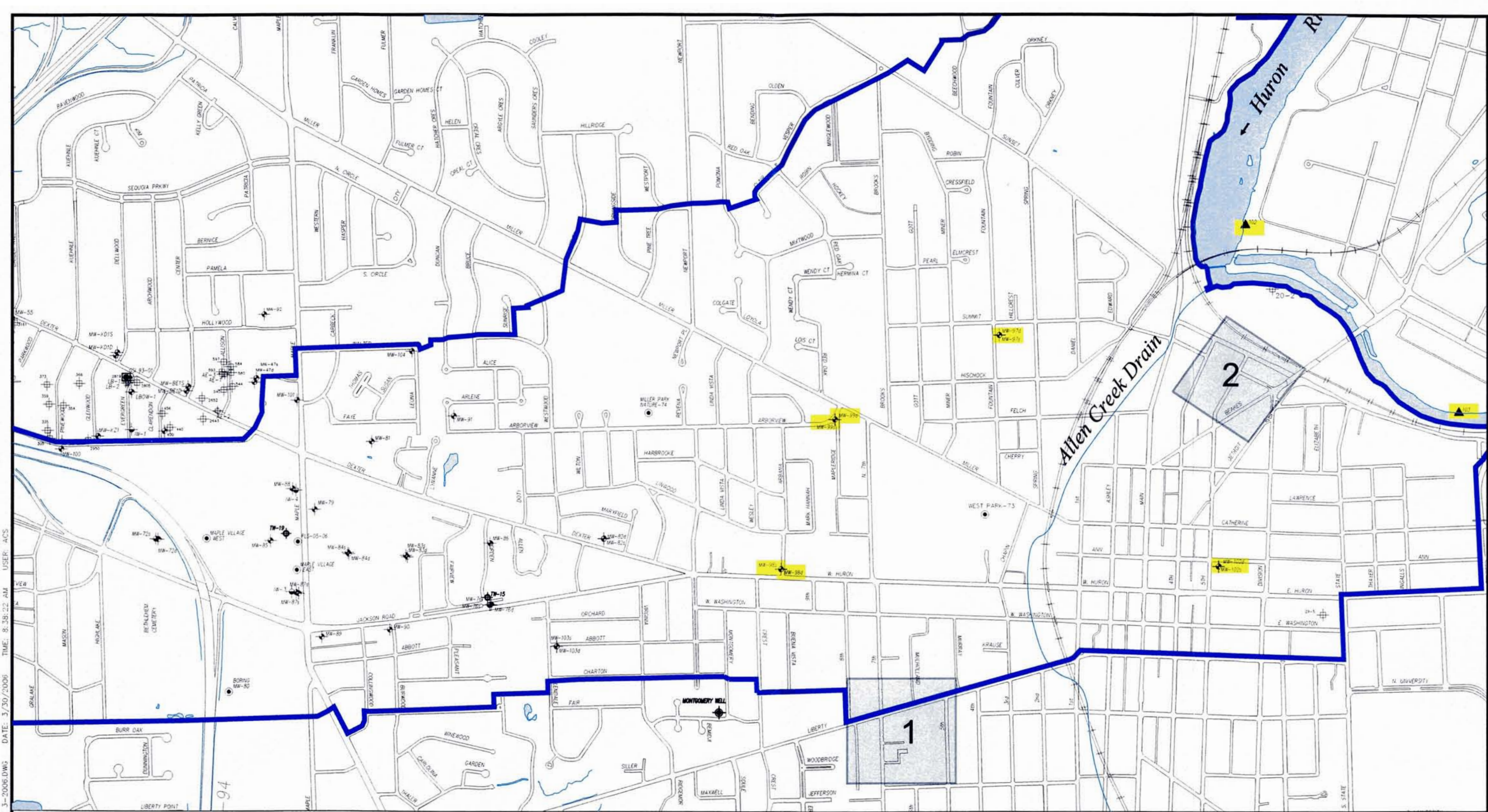
13



- LEGEND**
- MONITOR WELL (NEW)
 - RESIDENTIAL WELL
 - PURGE WELL
 - HYDROGEOLOGIC TEST BORING
 - UV/O₃ TREATMENT SYSTEM
 - TEMPORARY PURGE WELL
 - SURFACE WATER ELEVATION POINT
 - UNIT E 1,4-DIOXANE ISOCONCENTRATION CONTOUR (ug/L)
 - 1,4-DIOXANE CONCENTRATION (ug/L)
 - DATA NOT USED
 - MW-98d, MW-101 and MW-103d DATA FROM SIMULPROBE WATER SAMPLER (MAXIMUM VALUE AT BORING)
 - PROHIBITION ZONE BOUNDARY

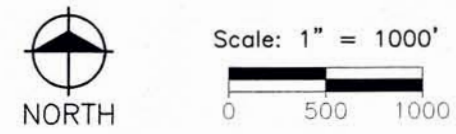
UNIT E
1,4-DIOXANE ISOCONCENTRATION MAP
January-March 2006

DATE: 3/30/2006 TIME: 9:00:50 AM
 FILE: F:\WORK\96502\DWG\CONTOUR MAPS NEW BASE 2002.DWG
 ©Copyright 2006 All Rights Reserved



- LEGEND**
- MONITOR WELL **NEW**
 - RESIDENTIAL WELL
 - PURGE WELL
 - HYDROGEOLOGIC TEST BORING
 - UV/OX. TREATMENT SYSTEM
 - TEMPORARY PURGE WELL
 - SURFACE WATER ELEVATION POINT
 - PROHIBITION ZONE BOUNDARY
 - RECOMMENDED AREAS FOR CONTINUED DOWNGRADIENT INVESTIGATION

**RECOMMENDED AREAS FOR CONTINUED
DOWNGRADIENT INVESTIGATION**



**Table 1 – Elevation Survey
Downgradient Investigation**
Pall Life Sciences, Ann Arbor, Michigan

Well ID	Location		02/06/06				03/20/06			
	X	Y	Static Water Level (ft bgs)	SWL Elevation (ft amsl)	Vertical Gradient (ft/ft)	Vertical Gradient (up or down)	Static Water Level (ft bTOC)	SWL Elevation (ft amsl)	Vertical Gradient (ft/ft)	Vertical Gradient (up or down)
MW-BEId	13280817.00	287412.00					78.64	864.44		
MW-BEIs	13280833.00	287457.00					78.71	864.37		
MW-30d	13277580.00	286269.00								
MW-30i	13277557.00	286283.00					65.27	872.31		
MW-47d	13281488.51	287514.54	81.72	866.91			81.80	866.83		
MW-47s	13281507.60	287555.43	80.50	867.28			80.62	867.16		
MW-70	13277977.52	284485.47					39.14	872.82		
MW-71	13278587.77	285511.08	41.74	872.47			42.10	872.11		
MW-72d	13280561.00	285943.00	71.56	870.96			72.29	870.23		
MW-72s	13280450.66	285914.03	71.53	871.42	0.0060	Downward	72.07	870.88	0.0085	Downward
MW-76d	13283895.00	285247.00	74.27	851.83			74.25	851.85		
MW-76i	13283886.00	285245.00	73.12	853.48			73.00	853.60		
MW-76s	13283877.00	285243.00	72.83	853.87	0.0032	Downward	72.72	853.98	0.0034	Downward
MW-79	13282106.30	286211.65	38.42	868.36			39.14	867.64		
MW-81	13282694.71	286905.14	54.07	866.56			54.71	865.92		
MW-82d	13285078.05	285912.18	78.73	827.87			78.52	828.08		
MW-82s	13285078.78	285917.52	56.52	850.38	0.1356	Downward	56.44	850.46	0.1348	Downward
MW-83d	13283035.92	285727.65	75.98	852.02			79.95	848.05		
MW-83s	13283020.96	285742.59	73.47	854.03	0.0161	Downward	56.44	871.06	0.1848	Downward
MW-84d	13282430.28	285756.63	47.86	857.61			48.72	856.75		
MW-84s	13282418.72	285770.49	51.22	854.30	0.0262	Upward	51.15	854.37	0.0189	Upward
MW-85	13281625.11	285893.11	48.51	869.13			50.23	867.41		
MW-86	13283890.06	285870.06	71.44	851.86			71.38	851.92		
MW-87d	13281893.88	285353.17	73.70	853.64			63.70	863.64		
MW-87s	13281893.88	285353.17	68.78	858.91	0.0958	Downward	68.17	859.52	0.0749	Upward
MW-88	13281851.24	286424.29	52.22	868.52			52.88	867.86		
MW-89	13282153.20	284905.06	84.45	858.99			83.74	859.70		
MW-90	13282854.50	284980.20	96.17	855.55			95.94	855.78		
MW-91	13283517.40	287168.20	61.59	852.31			61.54	852.36		
MW-92	13281561.60	288208.00					79.62	866.49		
MW-97d	13289125.06	288002.42	55.36	803.42			55.22	803.56		
MW-97s	13289125.44	287997.79	83.71	774.88	0.3589	Upward	83.61	774.98	0.3594	Upward
MW-98d	13286903.47	285603.72	24.37	826.74			24.18	826.93		
MW-98s	13286903.86	285609.34	24.08	827.13	0.0060	Downward	23.87	827.34	0.0063	Downward

Well ID	Location		02/06/06				03/20/06			
	X	Y	Static Water Level (ft bgs)	SWL Elevation (ft amsl)	Vertical Gradient (ft/ft)	Vertical Gradient (up or down)	Static Water Level (ft bTOC)	SWL Elevation (ft amsl)	Vertical Gradient (ft/ft)	Vertical Gradient (up or down)
MW-99d	13287463.40	287136.57	10.25	827.36	0.0658	Downward	10.08	827.53	0.0663	Downward
MW-99s	13287458.93	287133.37	4.51	833.22			4.29	833.44		
MW-100	13279418.00	286855.00					70.19	870.70		
MW-101	13281896.00	287328.00					66.47	866.61		
MW-102d	13291351.20	285647.08	46.60	797.02	0.0022	Upward	46.50	797.12	0.0018	Upward
MW-102s	13291377.35	285632.20	46.48	796.91			46.36	797.03		
MW-103d	13284569.84	284811.47					52.18	851.27	0.0225	Downward
MW-103s	13284564.15	284811.70					49.14	854.60		
MW-104	13283085.80	287931.98								
Huron River										
101	292918.174	13291674.5						772.92	Top of Water	
102	289129.213	13291658.9						772.92	Top of Water	
103	287204.765	13293848.3						759.02	Top of Water	
104	288373.346	13295417.3						756.90	Top of Water	
105	285974.813	13298069.1						750.29	Top of Water	

ft bgs = feet below ground surface

ft amsl = ft above mean sea level

ft/ft = foot per foot

ft bTOC = feet below top of casing

Geospatial data for the new wells were obtained by Atwell-Hicks.

Top of casing and ground elevations for the new wells were referenced to NAVD88

x, y coordinates were referenced to State Plan Coordinate System, Michigan South (NAD83)

Appendix 1



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Grand Rapids (616) 575-3824
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Kalamazoo (269) 375-3824
Farmington Hills (248) 324-2090

BOREHOLE LOG

BORING/WELL ID: MW-97s

TOTAL DEPTH (ft.): 103'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 1-9-06
END DATE: 1-13-06
TOC ELEV.: 858.59' AMSL
GROUND ELEV.: 858.90' AMSL
STATIC WATER LVL.: 84.75' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Belize Park, Fountain Street Right of Way.
5' South of MW-97d. Soil descriptions based on PLS-06-01 soil boring.

▼ Static Water Level Page 1 of 2

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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TOPSOIL: Clayey Sand. Brown, dry

SILTY SAND: Sand, fine to medium grained; Silt; Gravel, fine. Brown, dry

GRAVEL: Gravel; fine to coarse; Sand, medium to fine grained. Brown, moderately sorted, dry

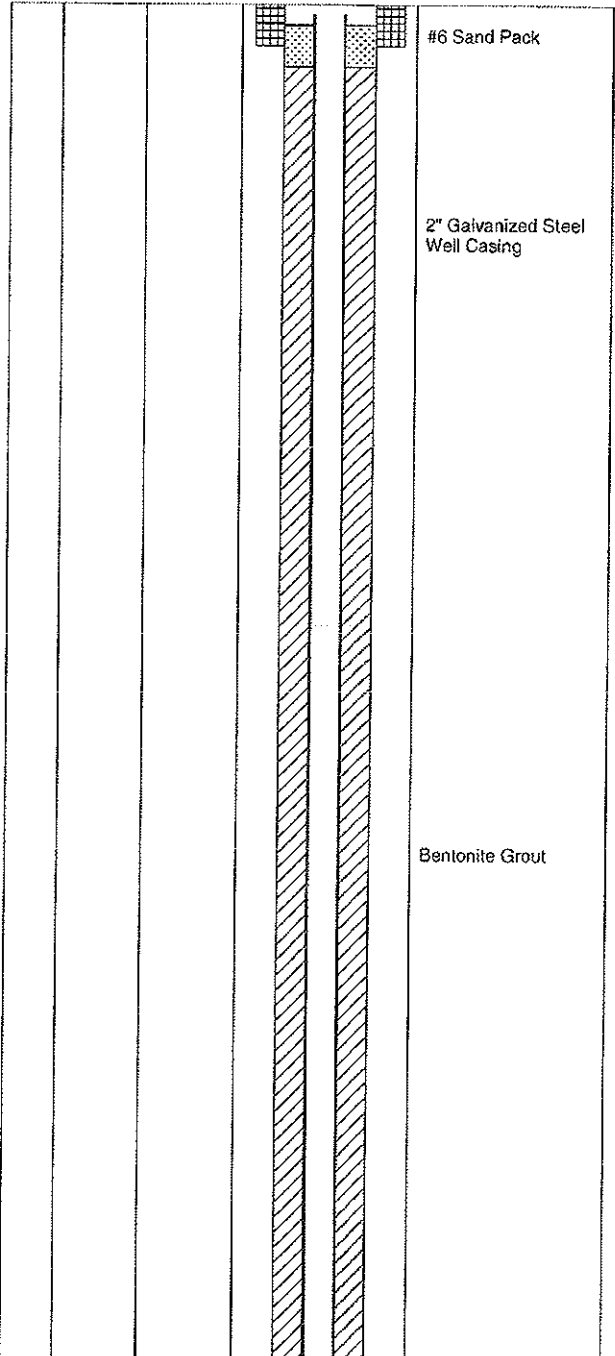
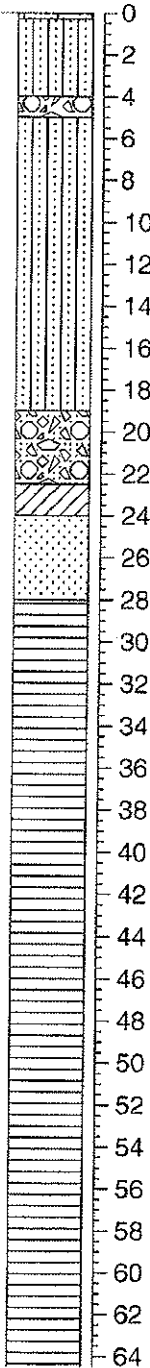
SANDY SILT: Silt; Sand, fine grained; Clay, fine Gravel (20%). Brown, very stiff, moderately sorted, friable, dry

GRAVEL AND SAND: Gravel, fine with some coarse; Sand, fine to coarse grained; Silt. Grayish brown, poorly sorted, very dense, wet

CLAY: Driller notes Clay

SAND: Driller notes Sand

DIAMICTON: Clay; Silt; trace fine grained Sand; trace fine Gravel. Gray, hard, dry





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Farmington Hills (248) 324-2090

BOREHOLE LOG

BORING/WELL ID: MW-97s

TOTAL DEPTH (ft.): 103'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

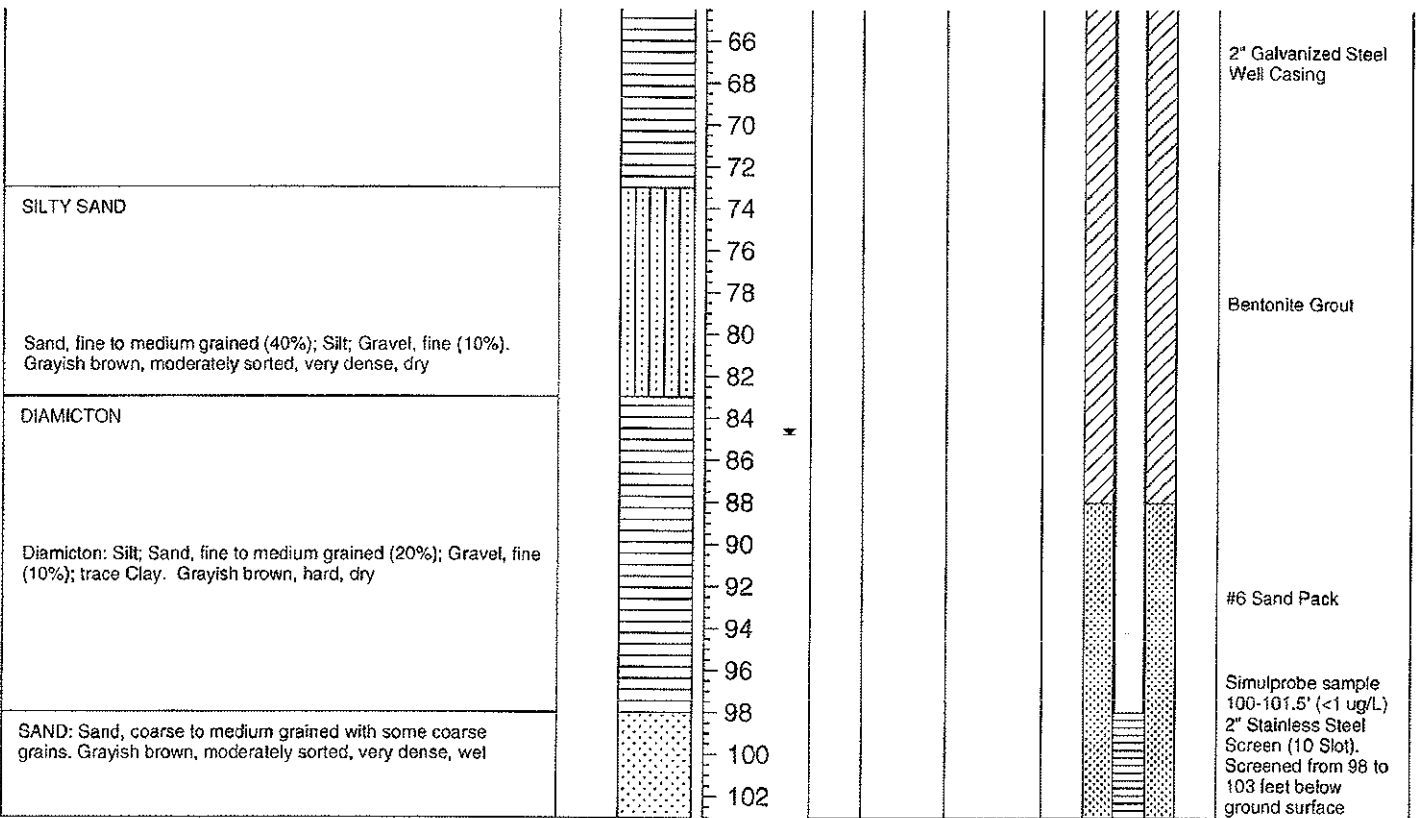
START DATE: 1-9-06
END DATE: 1-13-06
TOC ELEV.: 858.59' AMSL
GROUND ELEV.: 858.90' AMSL
STATIC WATER LVL.: 84.75' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Belize Park, Fountain Street Right of Way.
5' South of MW-97d. Soil descriptions based on PLS-06-01 soil boring.

▼ Static Water Level Page 2 of 2

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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Farmington Hills (248) 324-2090

BOREHOLE LOG

BORING/WELL ID: MW-97d

TOTAL DEPTH (ft.): 193'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 1-9-06
END DATE: 1-13-06
TOC ELEV.: 858.78' AMSL
GROUND ELEV.: 859.37' AMSL
STATIC WATER LVL.: 56.32' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Belize Park, Fountain Street Right of Way. PLS-06-01 boring location.
Field GPS Coordinates (N42.28872, W083.75405), Acc. 25'.

Static Water Level Page 1 of 3

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sampler/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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TOPSOIL: Clayey Sand. Brown, dry

SILTY SAND: Sand, fine to medium grained; Silt; Gravel, fine. Brown, dry

GRAVEL: Gravel; fine to coarse; Sand, medium to fine grained. Brown, moderately sorted, dry

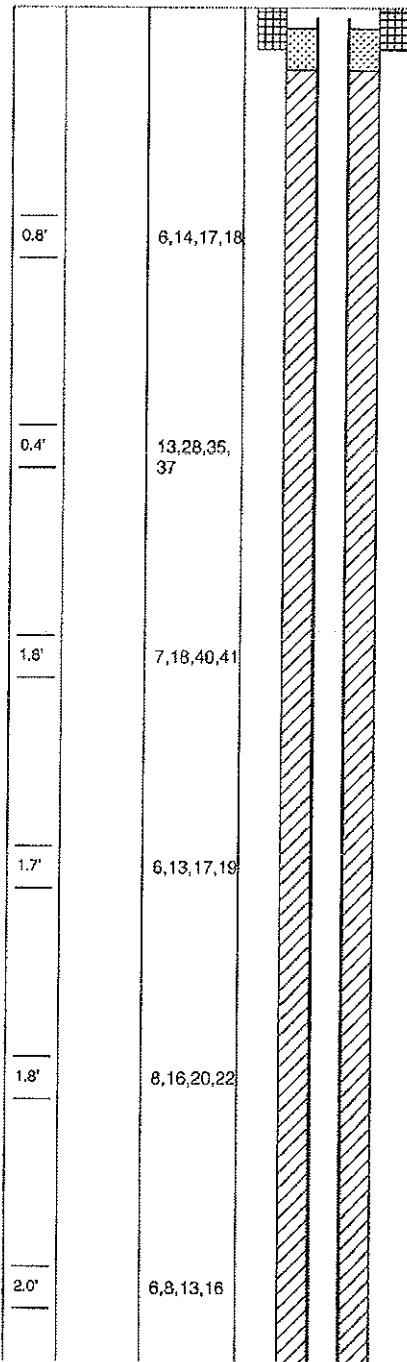
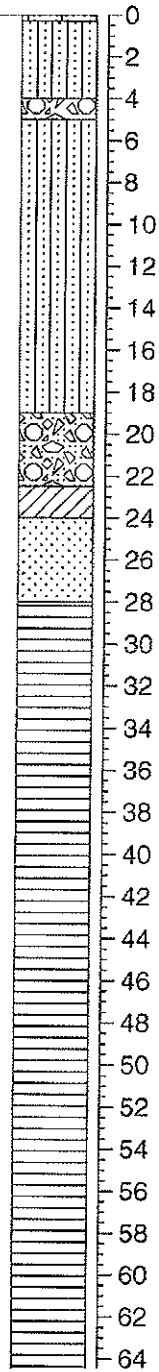
SANDY SILT: Silt; Sand, fine grained; Clay; fine Gravel (20%). Brown, very stiff, moderately sorted, friable, dry

GRAVEL AND SAND: Gravel, fine with some coarse; Sand, fine to coarse grained; Silt. Grayish brown, poorly sorted, very dense, wet

CLAY: Driller notes Clay

SAND: Driller notes Sand

DIAMICTON: Clay; Silt; trace fine grained Sand; trace fine Gravel. Gray, hard, dry



#6 Sand Pack

2" Galvanized Steel Well Casing

Bentonite Grout

2" Galvanized Steel Well Casing



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BOREHOLE LOG

BORING/WELL ID: MW-97d

TOTAL DEPTH (ft.): 193'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

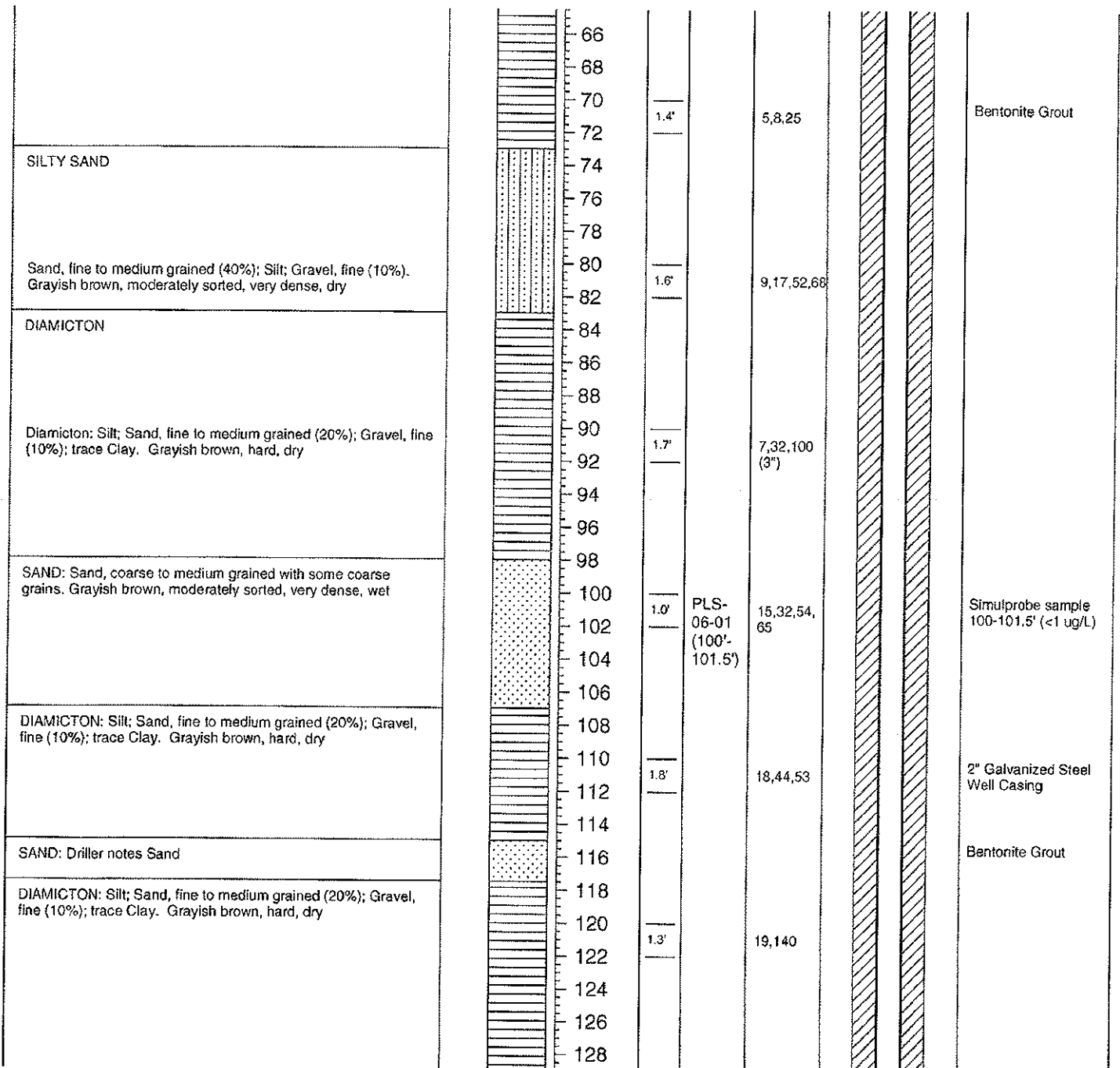
START DATE: 1-9-06
END DATE: 1-13-06
TOC ELEV.: 858.78' AMSL
GROUND ELEV.: 859.37' AMSL
STATIC WATER LVL.: 56.32' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Belize Park, Fountain Street Right of Way, PLS-06-01 boring location.
Field GPS Coordinates (N42.28872, W083.75405), Acc. 25'

▼ Static Water Level Page 2 of 3

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-97d

TOTAL DEPTH (ft.): 193'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

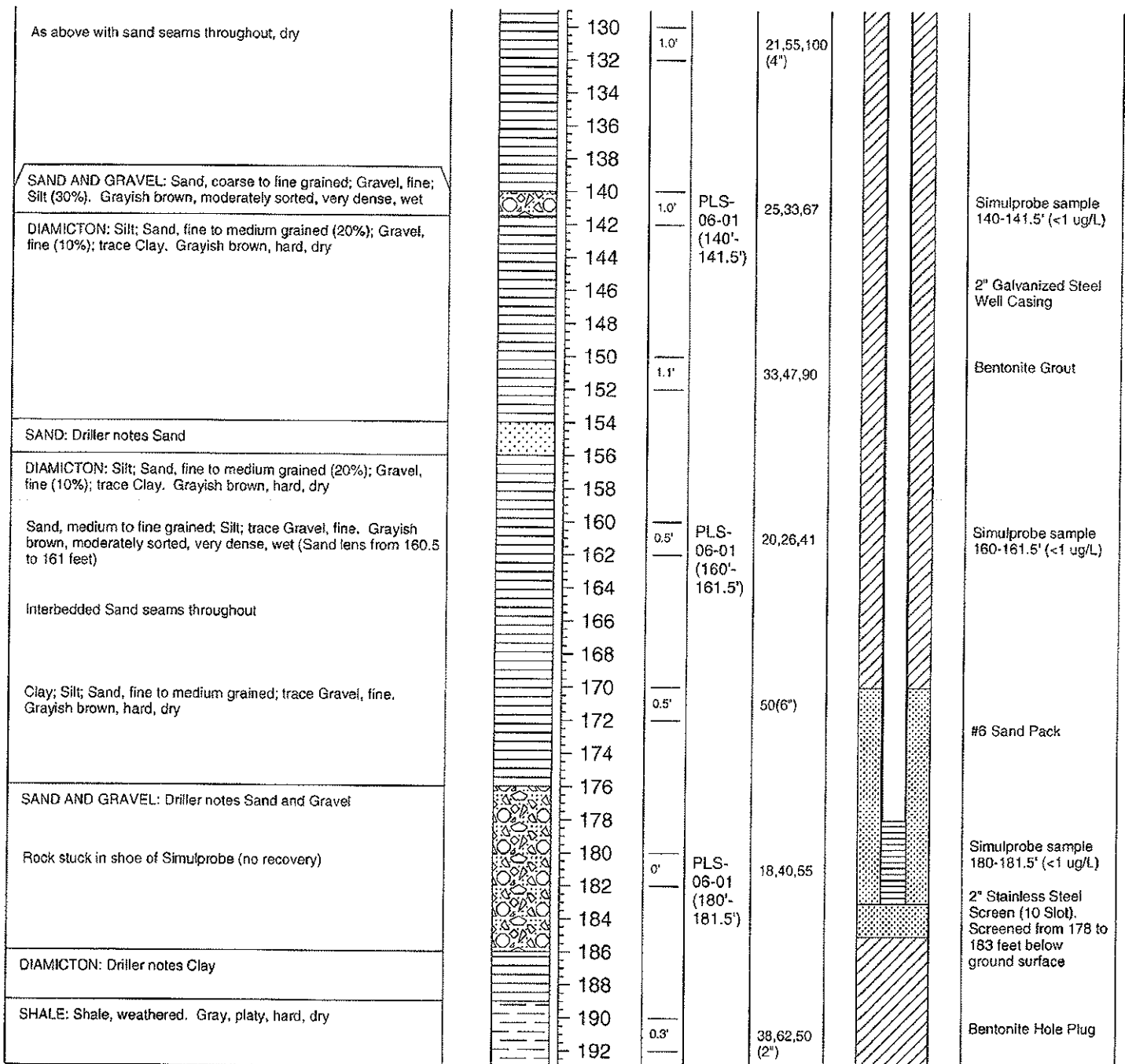
START DATE: 1-9-06
END DATE: 1-13-06
TOC ELEV.: 858.78' AMSL
GROUND ELEV.: 859.37' AMSL
STATIC WATER LVL.: 56.32' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Belize Park, Fountain Street Right of Way. PLS-06-01 boring location.
Field GPS Coordinates (N42.28872, W083.75405), Acc. 25'.

Static Water Level Page 3 of 3

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-98s

TOTAL DEPTH (ft.): 110'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: P96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

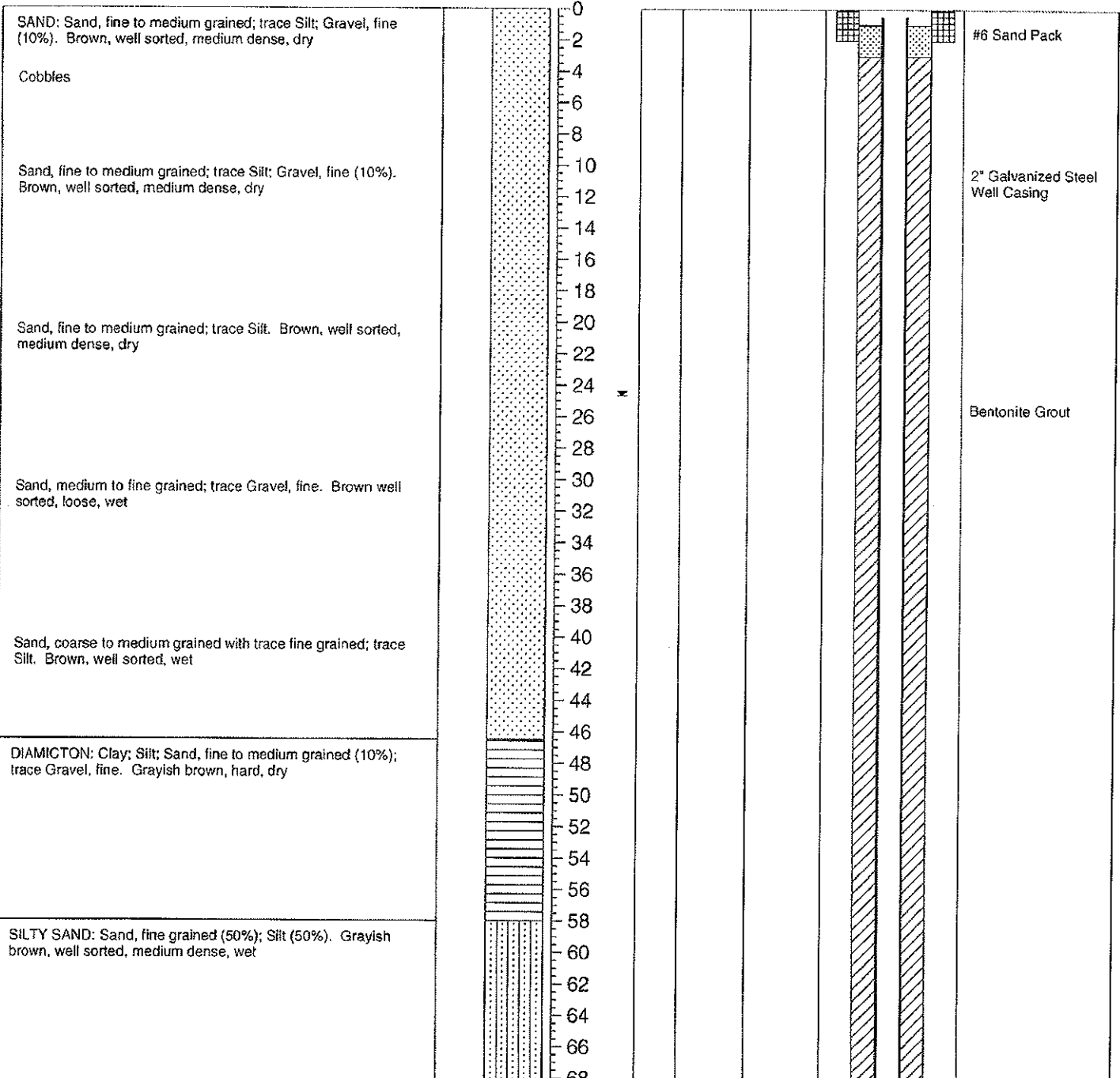
START DATE: 1-24-06
END DATE: 1-24-06
TOC ELEV.: 850.78' AMSL
GROUND ELEV.: 851.21' AMSL
STATIC WATER LVL.: 24.6' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Arbana Street Right of Way (West Side of Road), North of Huron
6' North of MW-98d. Soil descriptions based on PLS-06-02 soil boring.

Static Water Level Page 1 of 2

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-98s

TOTAL DEPTH (ft.): 110'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

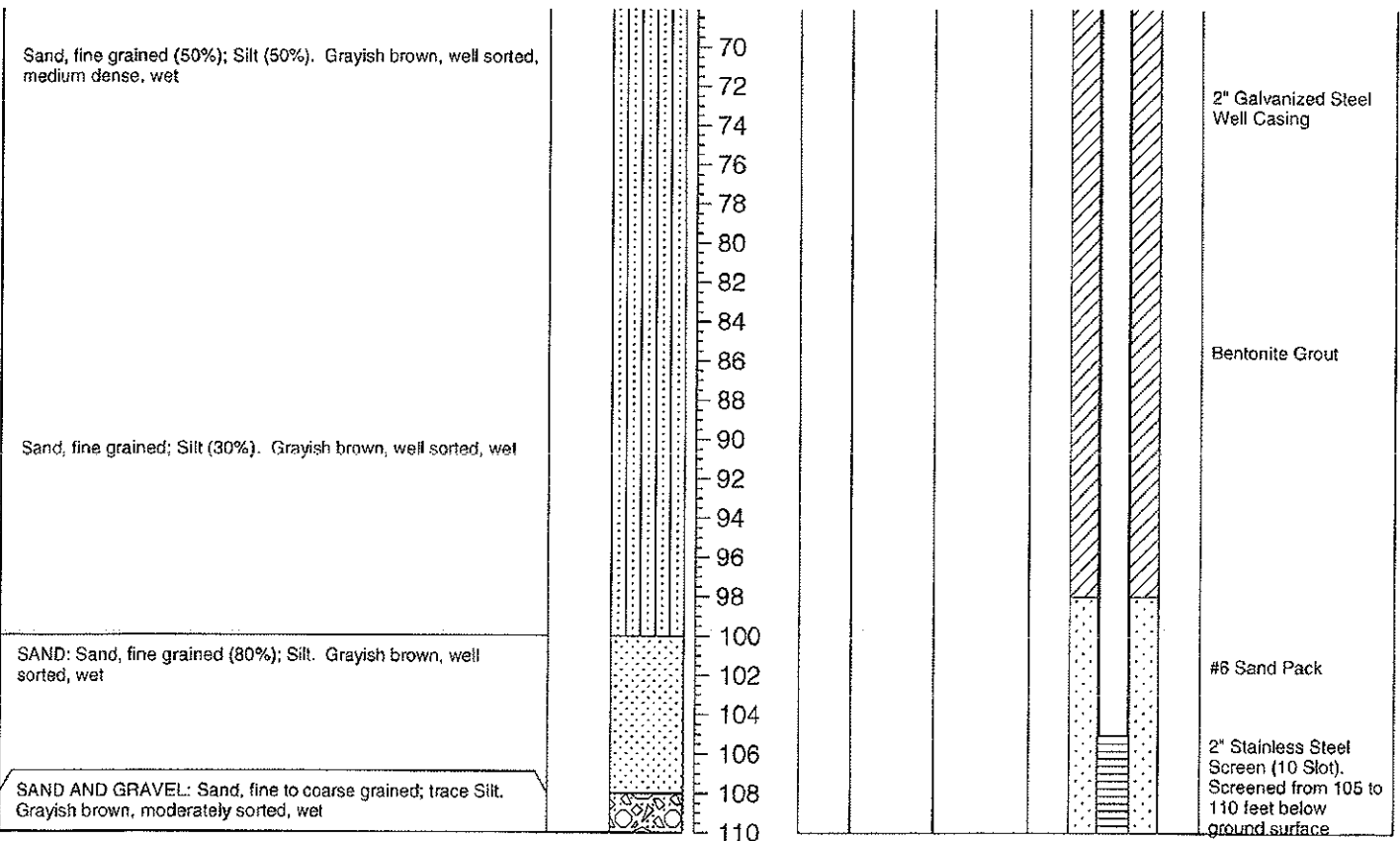
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END DATE: 1-24-06
TOC ELEV.: 850.78' AMSL
GROUND ELEV.: 851.21' AMSL
STATIC WATER LVL.: 24.6' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Arbana Street Right of Way (West Side of Road), North of Huron
6' North of MW-98d. Soil descriptions based on PLS-06-02 soil boring.

▼ Static Water Level Page 2 of 2

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgs)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-98d

TOTAL DEPTH (ft.): 200'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 1-17-06
END DATE: 1-24-06
TOC ELEV.: 851.11' AMSL
GROUND ELEV.: 851.43' AMSL
STATIC WATER LVL.: 24.83' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Arbana Street Right of Way (West Side of Road), North of Huron
Field GPS Coordinates (N42.28213, W083.76221), Acc. 25'. PLS-06-02 boring.

Static Water Level Page 1 of 3

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. Bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL

SAND: Sand, fine to medium grained; trace Silt; Gravel, fine (10%). Brown, well sorted, medium dense, dry

Cobbles

Sand, fine to medium grained; trace Silt; Gravel, fine (10%). Brown, well sorted, medium dense, dry

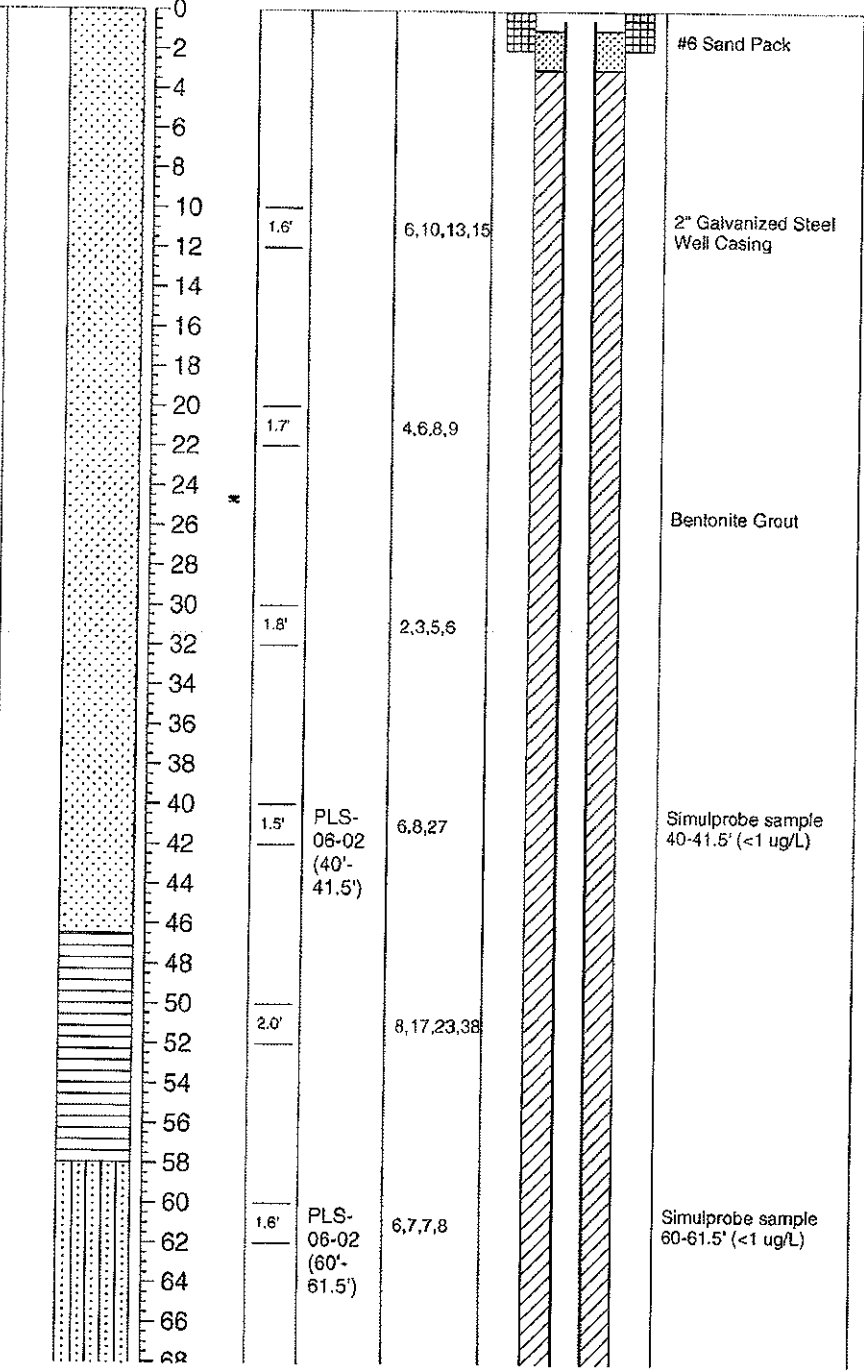
Sand, fine to medium grained; trace Silt. Brown, well sorted, medium dense, dry

Sand, medium to fine grained; trace Gravel, fine. Brown well sorted, loose, wet

Sand, coarse to medium grained with trace fine grained; trace Silt. Brown, well sorted, wet

DIAMICTON: Clay; Silt; Sand, fine to medium grained (10%); trace Gravel, fine. Grayish brown, hard, dry

SILTY SAND: Sand, fine grained (50%); Silt (50%). Grayish brown, well sorted, medium dense, wet





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BOREHOLE LOG

BORING/WELL ID: MW-98d

TOTAL DEPTH (ft.): 200'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 1-17-06
END DATE: 1-24-06
TOC ELEV.: 851.11' AMSL
GROUND ELEV.: 851.43' AMSL
STATIC WATER LVL.: 24.83' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CMB 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Arbana Street Right of Way (West Side of Road), North of Huron
Field GPS Coordinates (N42.28213, W083.76221), Acc. 25'. PLS-06-02 boring.

Static Water Level Page 2 of 3

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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Sand, fine grained (50%); Silt (50%). Grayish brown, well sorted, medium dense, wet			70						
			72	1.5'	PLS-06-02 (70'-71.5')	7,8,11		Simulprobe sample 70-71.5' (<1 ug/L)	
			74						
			76					Bentonite Grout	
			78						
			80	1.5'	PLS-06-02 (80'-81.5')	6,7,12		Simulprobe sample 80-81.5' (<1 ug/L)	
			82						
			84					2" Galvanized Steel Well Casing	
			86						
			88						
Sand, fine grained; Silt (30%). Grayish brown, well sorted, wet			90	1.5'	PLS-06-02 (90'-91.5')	8,14,30		Simulprobe sample 90-91.5' (<1 ug/L)	
			92						
			94						
			96						
			98						
			100	1.0'	PLS-06-02 (100'-101.5')	18,40,41		Simulprobe sample 100-101.5' (<1 ug/L)	
			102						
			104						
			106						
			108					Natural Collapse	
SAND AND GRAVEL: Sand, fine to coarse grained; trace Silt. Grayish brown, moderately sorted, wet			110	1.5'	PLS-06-02 (110'-111.5')	28,50,55		Simulprobe sample 110-111.5' (<1 ug/L)	
			112						
			114						
			116						
			118						
	Gravel, fine; Sand, fine to coarse grained. Grayish brown, moderately sorted, wet			120	0.5'	PLS-06-02 (120'-121.5')	20,54,65		Simulprobe sample 120-121.5' (<1 ug/L)
				122					
				124					
				126					
				128					
			130	1.5'	PLS-06-02 (130'-131.5')	20,48,53		Simulprobe sample 130-131.5' (<1 ug/L)	
GRAVEL AND SAND: Gravel, fine (60%); Sand, fine to coarse grained; Cobbles. Grayish brown, moderately sorted, wet			132						
			134						
			136						
			138						



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BOREHOLE LOG

BORING/WELL ID: MW-98d

TOTAL DEPTH (ft.): 200'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 1-17-06
END DATE: 1-24-06
TOC ELEV.: 851.11' AMSL
GROUND ELEV.: 851.43' AMSL
STATIC WATER LVL.: 24.83' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Arbana Street Right of Way (West Side of Road), North of Huron
Field GPS Coordinates (N42.28213, W083.76221). Acc. 25'. PLS-06-02 boring.

Static Water Level Page 3 of 3

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgs)	Static Water Level	Sampler/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
-------------	---------	-------------	-----------------	--------------------	-------------------	-----------	-------------	--------------------------

Gravel, coarse; Cobbles; Sand, fine to medium grained. Brown, moderately sorted, very dense, wet			138						
			140	1.0'	PLS-06-02 (140'-141.5')	70,88,100 (2")	Simulprobe sample 140-141.5' (<1 ug/L)		
			142						
			144						
			146					2" Galvanized Steel Well Casing	
			148					Natural Collapse	
	Sand, coarse to fine grained; Gravel, fine; Cobbles. Grayish brown, moderately sorted, very dense, wet			150	0.5'	PLS-06-02 (150'-151.5')	28,66,120	Simulprobe sample 150-151.5' (<1 ug/L)	
				152					
				154					
				156					
Coarse Gravel		160	1.0'	PLS-06-02 (160'-161.5')	37,68,95	Simulprobe sample 160-161.5' (<1 ug/L)			
		162							
		164							
		166							
		168							
		170	0.3'	PLS-06-02 (170'-171.5')	25,100 (2")	Simulprobe sample 170-171.5' (2 ug/L)			
Lead auger broke off while drilling to 180'		172					2" Stainless Steel Screen (10 Slot). Screened from 170 to 175 feet below ground surface		
		174							
		176							
		178							
		180	0'	PLS-06-02 (180'-181.5')	70,150	Simulprobe sample 180-181.5' (<1 ug/L)			
	DIAMICTON: Driller notes Clay		182						
	SAND AND GRAVEL: Driller notes Sand and Gravel		184						
	DIAMICTON: Driller notes hard drilling		186						
		188							
	SAND: Sand, coarse to fine grained; fine Gravel. Grayish brown, moderately sorted, loose, wet		190	0.1'	PLS-06-02 (190'-191.5')	3,3,4,5	Simulprobe sample 190-191.5' (<1 ug/L)		
	192								
	194								
	196								
SHALE: Shale; trace fine Gravel. Gray, weathered, hard, dry		198							
	200		0.5'		80				



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BOREHOLE LOG

BORING/WELL ID: MW-99s

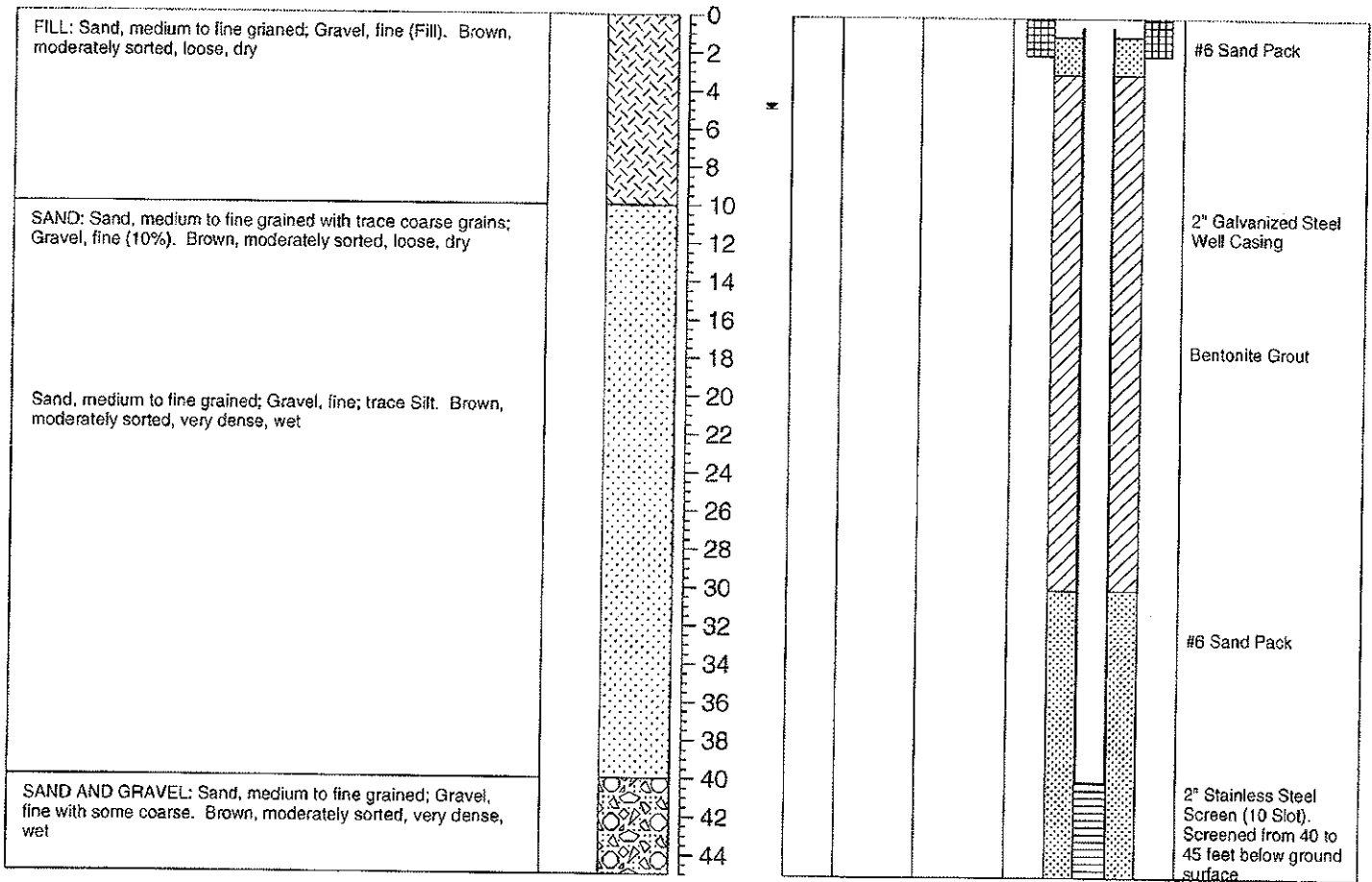
TOTAL DEPTH (ft.): 45'

PROJECT: Pall Life Sciences Inc. SITE LOCATION: Ann Arbor, Michigan PROJECT NO.: F96502 PROJECT MANAGER: James W. Brode, Jr., C.P.G. LOGGED BY: Todd Campbell, C.P.G.	START DATE: 1-30-06 END DATE: 1-30-06 TOC ELEV.: 837.34' AMSL GROUND ELEV.: 837.73' AMSL STATIC WATER LVL.: 4.86' BGS	DRILLING CO.: Stearns Drilling DRILLER: Dennis/John, Jerry RIG TYPE: CMB 95 METHOD OF DRILLING: Hollow Stem Auger SAMPLING METHODS: Split Spoon, Simulprobe
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NOTES: Arborview and Mapleridge "Island"; South of Miller 5' SW of MW-99d. Soil descriptions based on PLS-06-03 soil boring.

▼ Static Water Level Page 1 of 1

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-99d

TOTAL DEPTH (ft.): 171'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

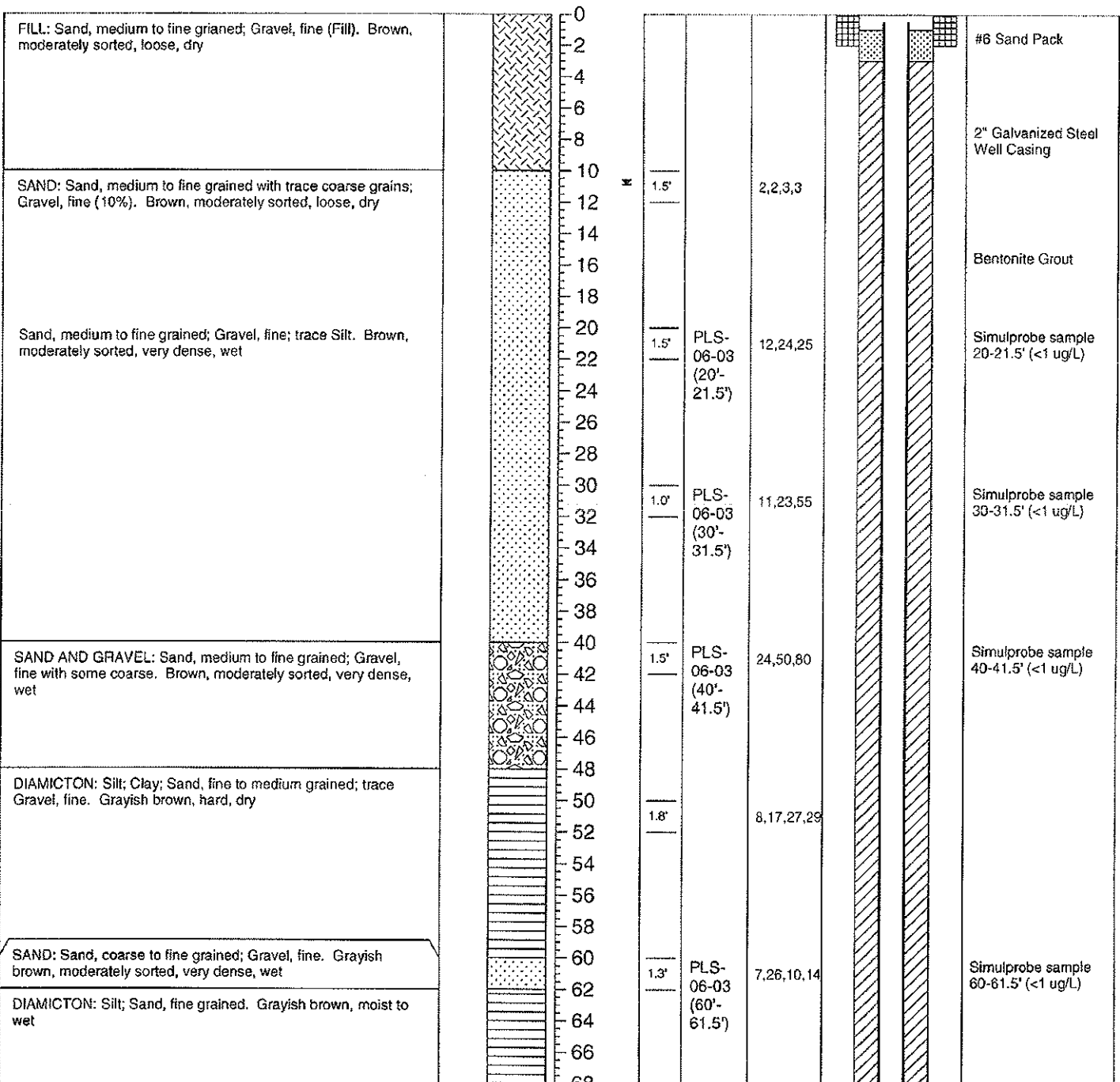
START DATE: 1-25-06
END DATE: 1-30-06
TOC ELEV.: 837.00' AMSL
GROUND ELEV.: 837.61' AMSL
STATIC WATER LVL.: 10.86' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Arborview and Mapleridge "Island"; South of Miller. PLS-06-03 boring location. Field GPS Coordinates (N42.28630, W083.76024), Acc. 25'.

Static Water Level Page 1 of 3

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-99d

TOTAL DEPTH (ft.): 171'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

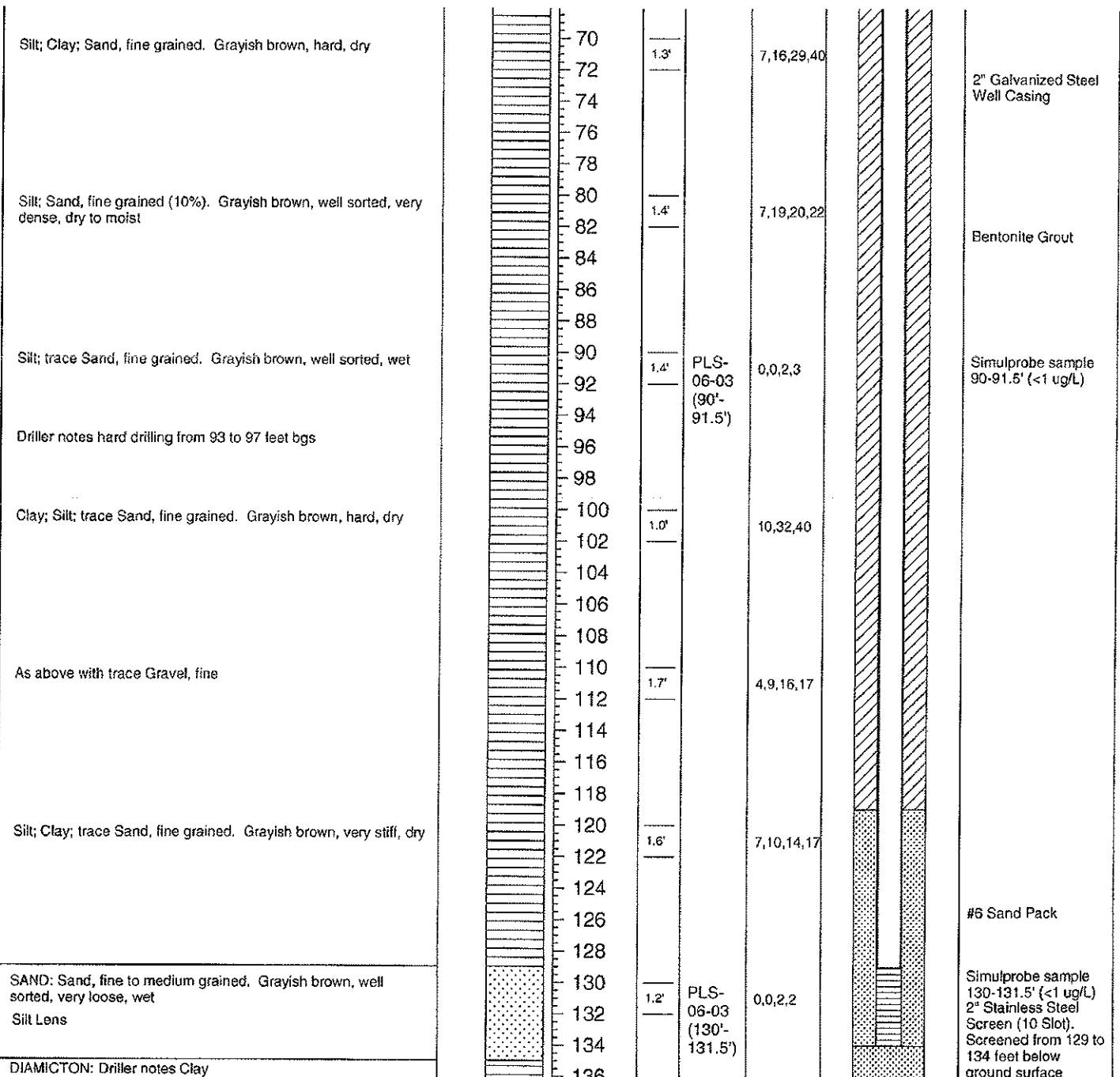
START DATE: 1-25-06
END DATE: 1-30-06
TOC ELEV.: 837.00' AMSL
GROUND ELEV.: 837.61' AMSL
STATIC WATER LVL.: 10.86' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Arborview and Mapleridge "Island"; South of Miller. PLS-06-03 boring location. Field GPS Coordinates (N42.28630, W083.76024), Acc. 25'.

Static Water Level Page 2 of 3

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-99d

TOTAL DEPTH (ft.): 171'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 1-25-06
END DATE: 1-30-06
TOC ELEV.: 837.00' AMSL
GROUND ELEV.: 837.61' AMSL
STATIC WATER LVL.: 10.86' BGS

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Arborview and Mapleridge "Island"; South of Miller. PLS-06-03 boring location. Field GPS Coordinates (N42.28630, W083.76024), Acc. 25'.

▼ Static Water Level Page 3 of 3

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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Silt; Sand, fine to medium grained; trace Clay; trace Gravel, fine. Grayish brown, hard, dry			138				40,100	#6 Sand Pack
			140					
Silt; Sand, fine to medium grained (30%); Gravel, fine (10%); trace Clay. Grayish brown, hard, dry			142	1.0'			33,54,67	Bentonite Hole Plug
			144					
			146					
			148					
Cobbles in Silt			150	1.5'				
			152					
SAND: Sand, medium to fine grained; Silt. Grayish brown, dense, wet <i>Driller notes Sand and Gravel</i>			154			PLS-06-03 (160'-161.5')	4,15,18,21	Simulprobe sample 160-161.5' (<1 ug/L)
			156					
SHALE: Shale, weathered. Gray, platy, hard, dry			158	1.0'				
			160					
			162					
			164	0.1'			100 (2")	
			166					
			168					
			170					



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BOREHOLE LOG

BORING/WELL ID: MW-101

TOTAL DEPTH (ft.): 281'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

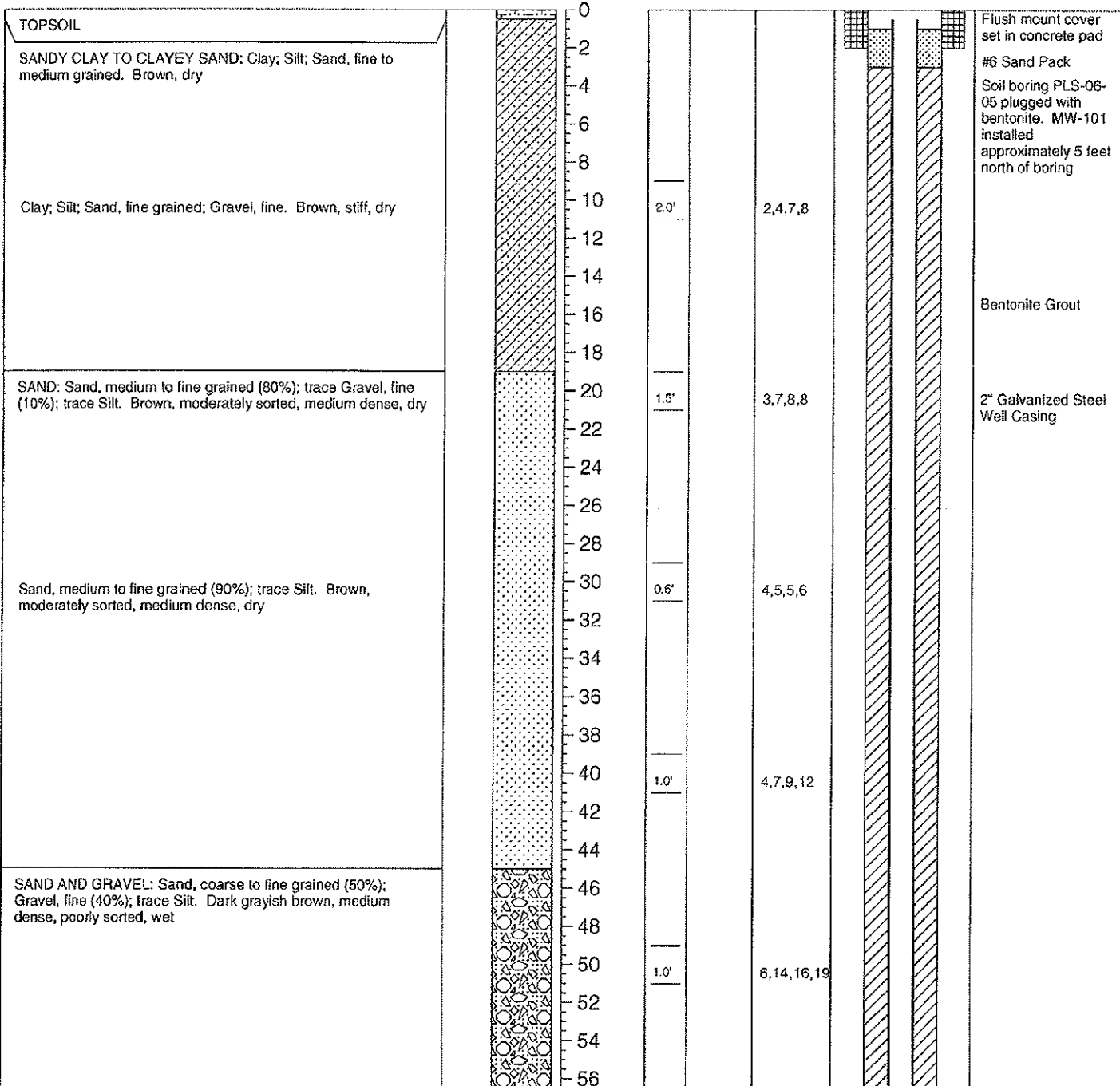
START DATE: 2-7-06
END DATE: 2-15-06
TOC ELEV.: 933.08'
GROUND ELEV.: App. 934' AMSL
STATIC WATER LVL.: 66.06'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions based on PLS-06-05 which is 5' South of well MW-101.
Field GPS Coordinates (N42.28686, W083.78066), Acc. 20'.

Static Water Level Page 1 of 5

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sampler Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-101

TOTAL DEPTH (ft.): 281'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: P96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 2-7-06
END DATE: 2-15-06
TOC ELEV.: 933.08'
GROUND ELEV.: App. 934' AMSL
STATIC WATER LVL.: 66.06'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions based on PLS-06-05 which is 5' South of well MW-101.
Field GPS Coordinates (N42.28686, W083.78066), Acc. 20'.

▼ Static Water Level Page 2 of 5

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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			58					
DIAMICTON: Silt; Clay; Sand, fine to medium grained (20%); Gravel, fine (10%). Grayish brown, very stiff, moist			60	1.5'			60,110,50 (1')	
			62					
			64					
			66					
			68					2" Galvanized Steel Well Casing
Clay; Silt; Sand, fine grained; trace Gravel, fine. Grayish brown, very stiff, dry			70	1.5'			6,10,12	
			72					
			74					
			76					Bentonite Grout
SAND: Sand, medium to fine grained; trace Gravel, fine. Grayish brown, well sorted, loose, wet			78					
			80	1.6'	PLS-06-05 (79'-80.5')		4,5,5,10	Simulprobe sample 79-80.5' (<1 ug/L)
			82					
			84					
			86					
Sand, fine to medium grained. Grayish brown, well sorted, very dense, wet			88					
			90	1.5'	PLS-06-05 (89'-90.5')		22,35,65	Simulprobe sample 89-90.5' (<1 ug/L)
			92					
			94					
			96					
			98					
			100	1.5'	PLS-06-05 (99'-100.5')		1,1,1	Simulprobe sample 99-100.5' (<1 ug/L)
			102					
			104					
			106					
			108					
Sand, fine grained with some medium grains; Gravel, fine (10%). Grayish brown, moderately sorted, very dense, wet			110	1.5'	PLS-06-05 (109'-110.5')		25,40,42	Simulprobe sample 109-110.5' (<1 ug/L)
			112					



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BOREHOLE LOG

BORING/WELL ID: MW-101

TOTAL DEPTH (ft.): 281'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

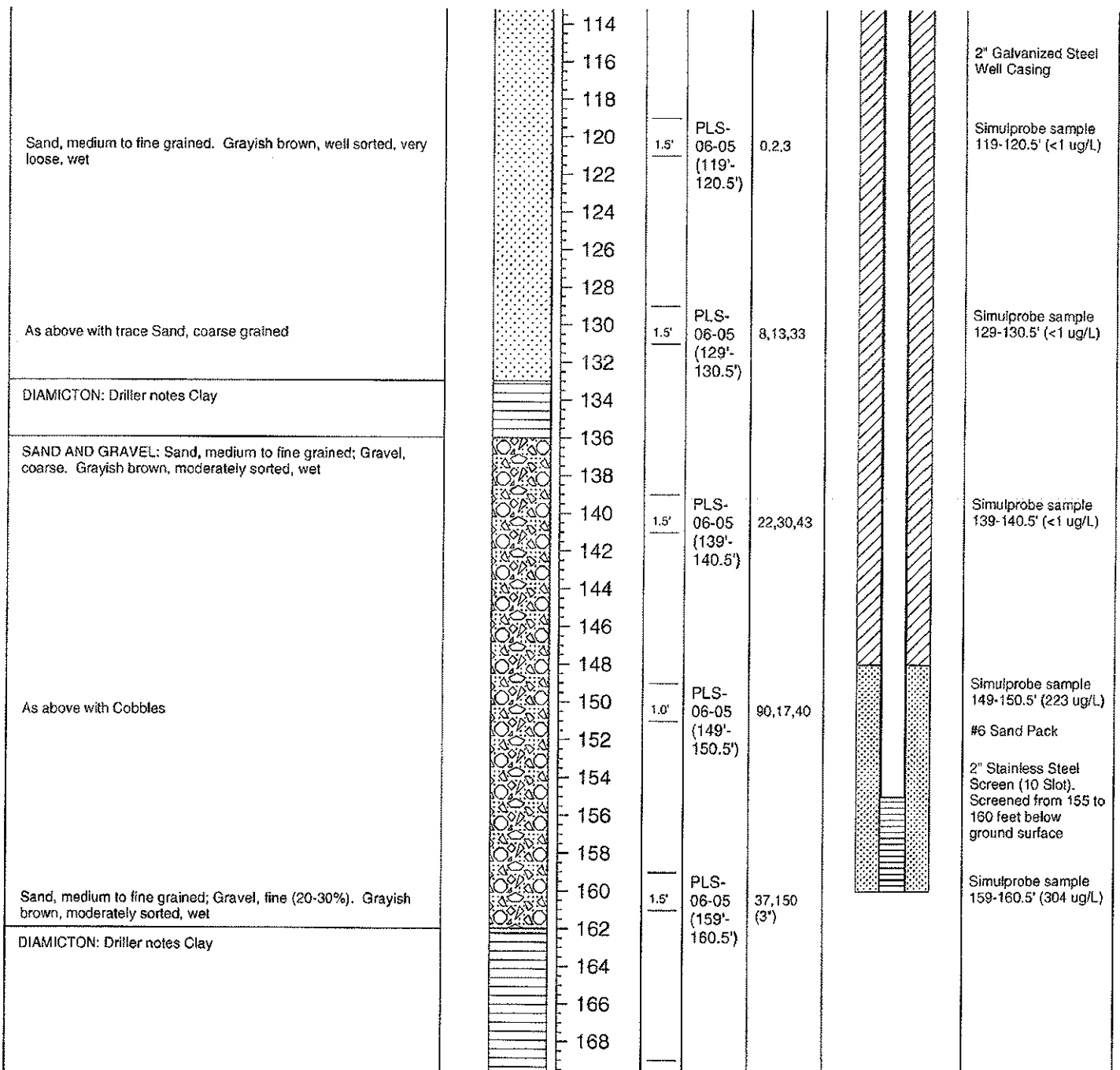
START DATE: 2-7-06
END DATE: 2-15-06
TOC ELEV.: 933.08'
GROUND ELEV.: App. 934' AMSL
STATIC WATER LVL.: 66.06'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John. Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions based on PLS-06-05 which is 5' South of well MW-101.
Field GPS Coordinates (N42.28686, W083.78066), Acc. 20'.

▼ Static Water Level Page 3 of 5

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-101

TOTAL DEPTH (ft.): 281'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 2-7-06
END DATE: 2-15-06
TOC ELEV.: 933.08'
GROUND ELEV.: App. 934' AMSL
STATIC WATER LVL.: 66.06'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions based on PLS-06-05 which is 5' South of well MW-101.
Field GPS Coordinates (N42.28686, W083.78066), Acc. 20'.

Static Water Level Page 4 of 5

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sampler Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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Interbedded Sand seams throughout			170				140	
			172					
SAND: Driller notes Sand			174					
DIAMICTON: Silt; Clay; Sand, fine grained (20%); trace Gravel, fine. Grayish brown, hard, dry			176					
			178					
As above			180	0.5'			150	
			182					
As above			184					
			186					
Interbedded Sand seams throughout			188					
			190	0.5'			100	
As above, with no Sand seams			192					
			194					
As above, with no Sand seams			196					
			198					
As above, with no Sand seams			200	1.0'			28,55	
			202					
As above, with no Sand seams			204					
			206					
As above, with no Sand seams			208					
			210	1.0'			19,30	
As above, with no Sand seams			212					
			214					
Silt; Clay; Sand, fine grained; trace Gravel, fine. Grayish brown, hard, dry			216					
			218					
Silt; Clay; Sand, fine grained; trace Gravel, fine. Grayish brown, hard, dry			220	1.0'			27,45	
			222					
Silt; Clay; Sand, fine grained; trace Gravel, fine. Grayish brown, hard, dry			224					
			226					



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BOREHOLE LOG
BORING/WELL ID: MW-101
TOTAL DEPTH (ft.): 281'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 2-7-06
END DATE: 2-15-06
TOC ELEV.: 933.08'
GROUND ELEV.: App. 934' AMSL
STATIC WATER LVL.: 66.06'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions based on PLS-06-05 which is 5' South of well MW-101.
Field GPS Coordinates (N42.28686, W083.78066), Acc. 20'.

Static Water Level Page 5 of 5

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sampler/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
-------------	---------	-------------	-----------------	--------------------	-------------------	-----------	-------------	--------------------------

As above with trace Clay			228					
			230	1.0'			24,75	
			232					
			234					
Driller notes Gravel mixed in with Clay			236					
			238					
Silt; Clay; Gravel, fine (30%); trace Sand, fine grained. Grayish brown, hard, dry			240	0.5'			27,50 (1")	
			242					
			244					
Cobbles from 246 to 248 feet			246					
			248					
Driller notes very hard drilling Silt; Clay; Gravel, fine (30%); trace Sand, fine grained. Grayish brown, hard, dry			250	0.2'			100 (3")	
			252					
			254					
			256					
			258	0.2'			150 (2")	
			260					
			262					
			264					
			266					
			268					
Silt; Sand, fine to medium grained; Clay; Gravel, fine. Grayish brown, hard, dry			270	0.5'			140 (6")	
			272					
			274					
			276					
SAND AND GRAVEL: Easier drilling, driller notes Sand			278					
SHALE: Shale, weathered. Bluish gray, platy, hard, dry			280	0.2'			100 (1")	
			282					



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BOREHOLE LOG

BORING/WELL ID: MW-102s

TOTAL DEPTH (ft.): 113'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

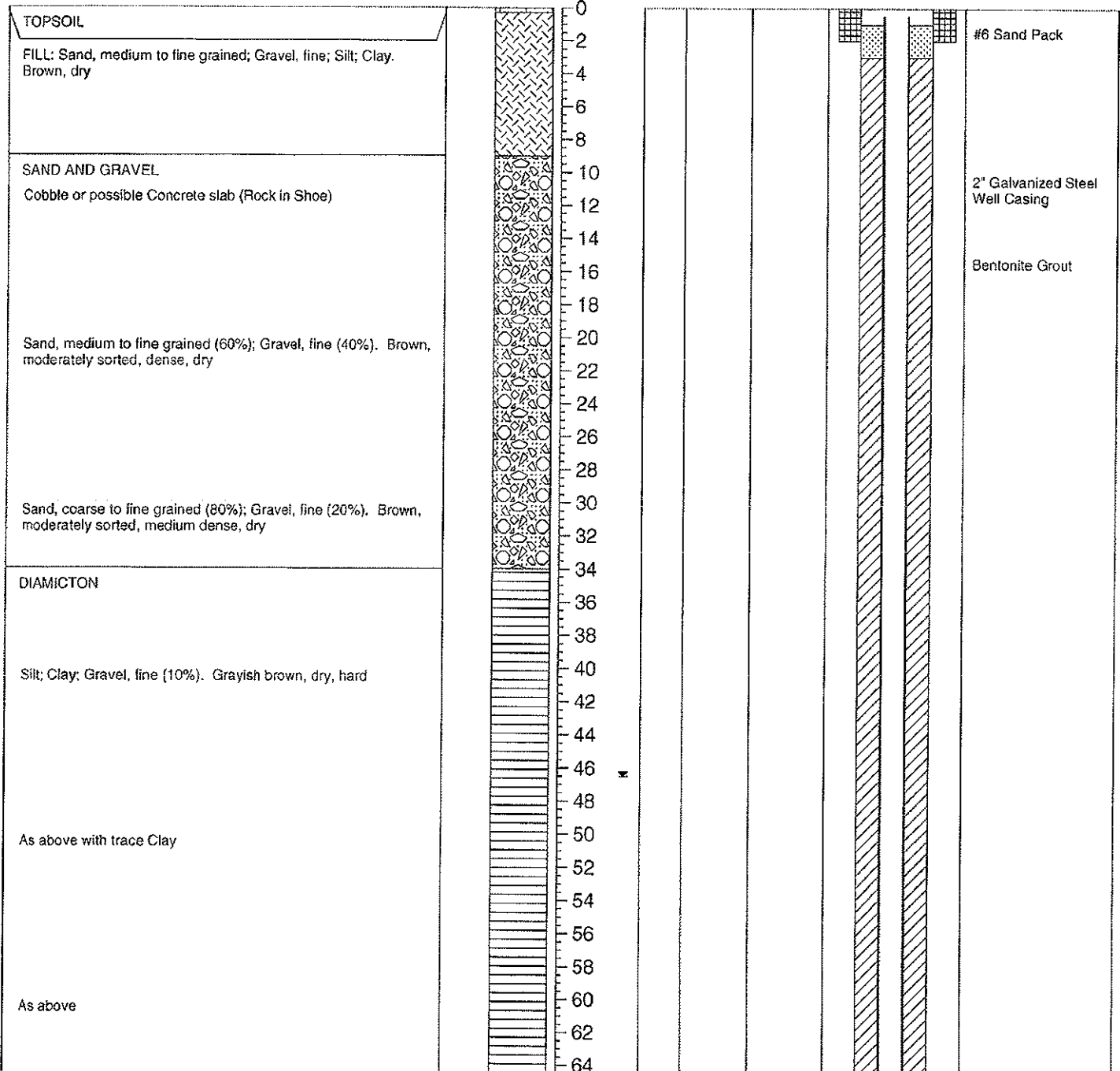
START DATE: 2-22-06
END DATE: 2-23-06
TOC ELEV.: 843.39'
GROUND ELEV.: App. 844' AMSL
STATIC WATER LVL.: 46.48'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: City Hall, Northwest Portion of Property in Grass Area
5' SW of MW-102d. Soil descriptions based on PLS-06-06 soil boring.

▼ Static Water Level Page 1 of 2

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sampler/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-102s

TOTAL DEPTH (ft.): 113'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

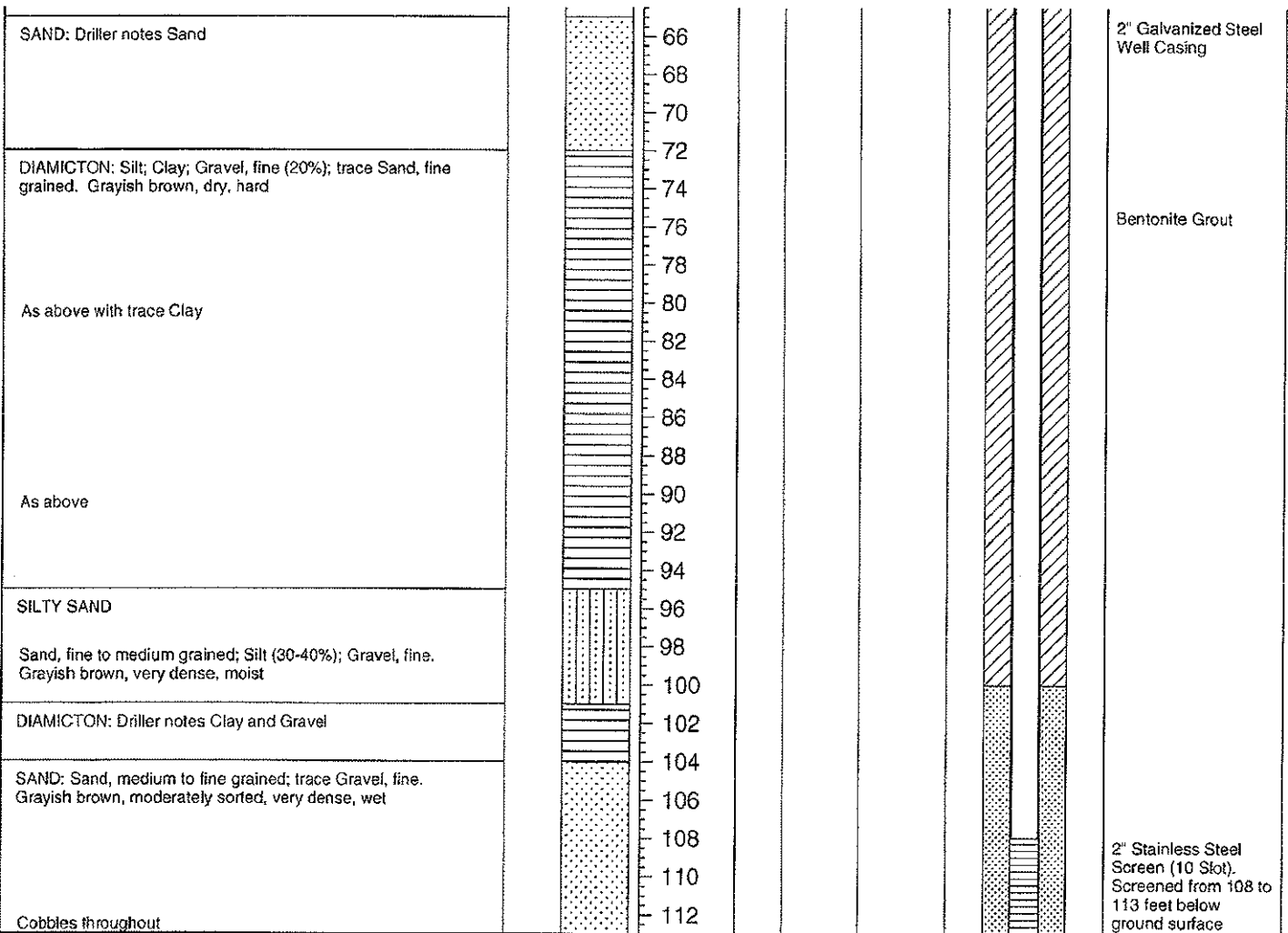
START DATE: 2-22-06
END DATE: 2-23-06
TOC ELEV.: 843.39'
GROUND ELEV.: App. 844' AMSL
STATIC WATER LVL.: 46.48'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: City Hall, Northwest Portion of Property in Grass Area
5' SW of MW-102d. Soil descriptions based on PLS-06-06 soil boring.

▼ Static Water Level Page 2 of 2

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sampler/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-102d

TOTAL DEPTH (ft.): 173'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

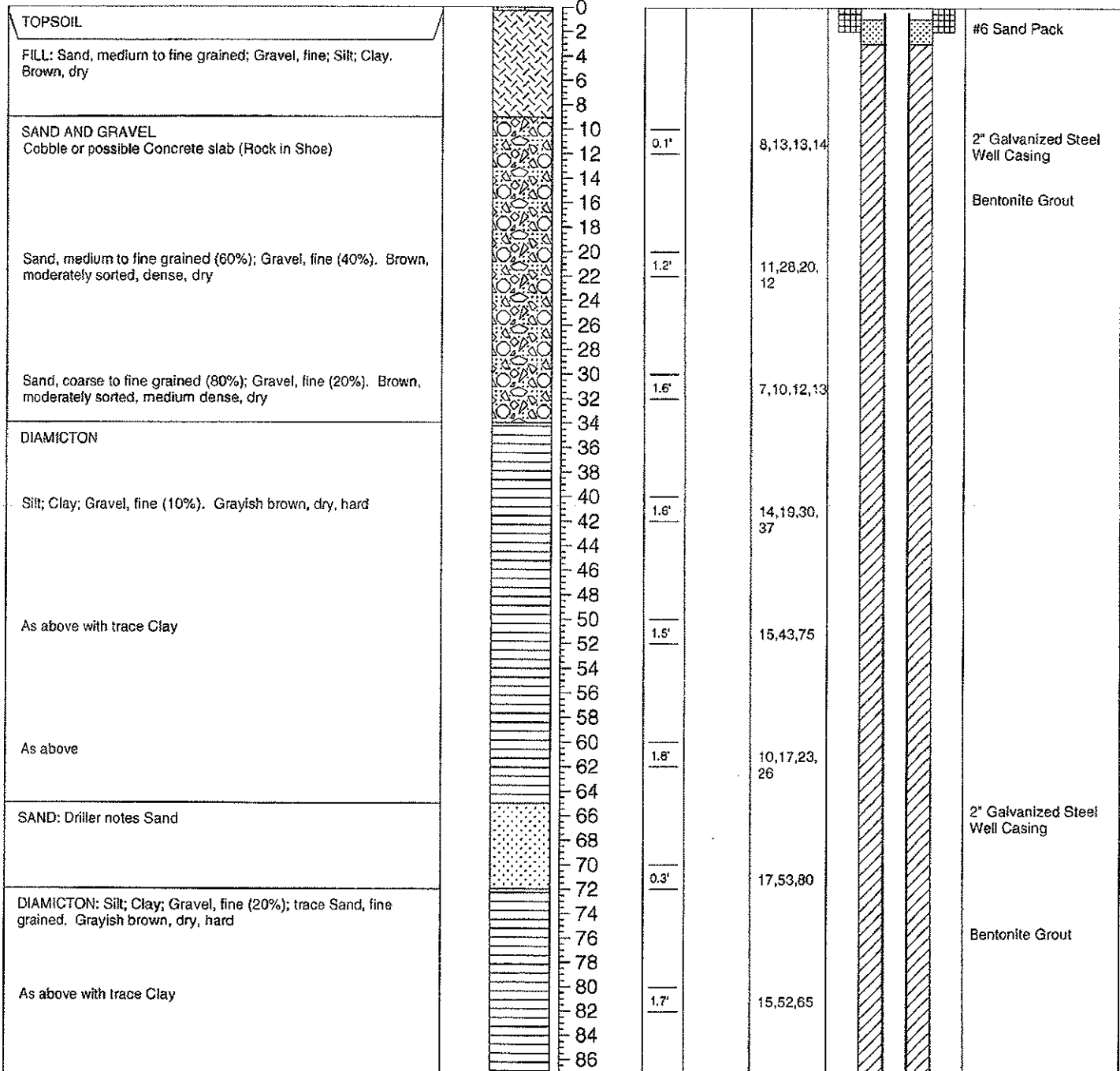
START DATE: 2-16-06
END DATE: 2-23-06
TOC ELEV.: 843.62'
GROUND ELEV.: App. 844' AMSL
STATIC WATER LVL.: 46.60'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: City Hall, Northwest Portion of Property in Grass Area
Field GPS Coordinates (N42.28211, W083.74586), Acc. 20'. PLS-06-06 boring.

Static Water Level Page 1 of 2

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-102d

TOTAL DEPTH (ft.): 173'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G.

START DATE: 2-16-06
END DATE: 2-23-06
TOC ELEV.: 843.62'
GROUND ELEV.: App. 844' AMSL
STATIC WATER LVL.: 46.60'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: City Hall, Northwest Portion of Property in Grass Area
Field GPS Coordinates (N42.28211, W083.74586), Acc. 20'. PLS-06-06 boring.

Static Water Level Page 2 of 2

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
-------------	---------	-------------	-----------------	--------------------	-----------------	-----------	-------------	--------------------------

As above			88 90 92 94				33,40,35	
SILTY SAND Sand, fine to medium grained; Silt (30-40%); Gravel, fine. Grayish brown, very dense, moist			96 98 100					
DIAMICTON: Driller notes Clay and Gravel			102 104				23,53,62	
SAND: Sand, medium to fine grained; trace Gravel, fine. Grayish brown, moderately sorted, very dense, wet			106 108 110 112 114 116 118					
Cobbles throughout			120 122 124 126 128 130 132 134 136 138			PLS-06-06 (110'-111.5')	3,6,9,20	Simulprobe sample 110-111.5' (<1 ug/L)
DIAMICTON Silt; Sand, fine to medium grained (20-30%); Gravel, fine (10%). Grayish brown, hard, dry			140 142 144 146 148			PLS-06-06 (120'-121.5')	15,19,40	2" Galvanized Steel Well Casing Bentonite Grout Simulprobe sample 120-121.5' (<1 ug/L)
Silt; Clay; Sand, fine grained (20%); trace Gravel, fine. Grayish brown, hard, dry			150 152				45,100 (3")	
6 inch Sand and Gravel seam			154 156 158				120	
SAND AND GRAVEL: Cobbles throughout			160 162 164 166 168			PLS-06-06 (160'-161.5')	55,100 (4")	#6 Sand Pack
Sand, fine to coarse grained; Gravel, fine; Silt (20-30%); Cobbles. Grayish brown, very dense, wet			170 172				18,140	2" Stainless Steel Screen (10 Slot). Screened from 158 to 163 feet below ground surface
Cobbles throughout								Simulprobe sample 160-161.5' (<1 ug/L)
SHALE: Shale, weathered, platy. Gray to bluish gray, hard, dry							34,150	



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BOREHOLE LOG

BORING/WELL ID: MW-103s

TOTAL DEPTH (ft.): 63'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G./Tony Alati

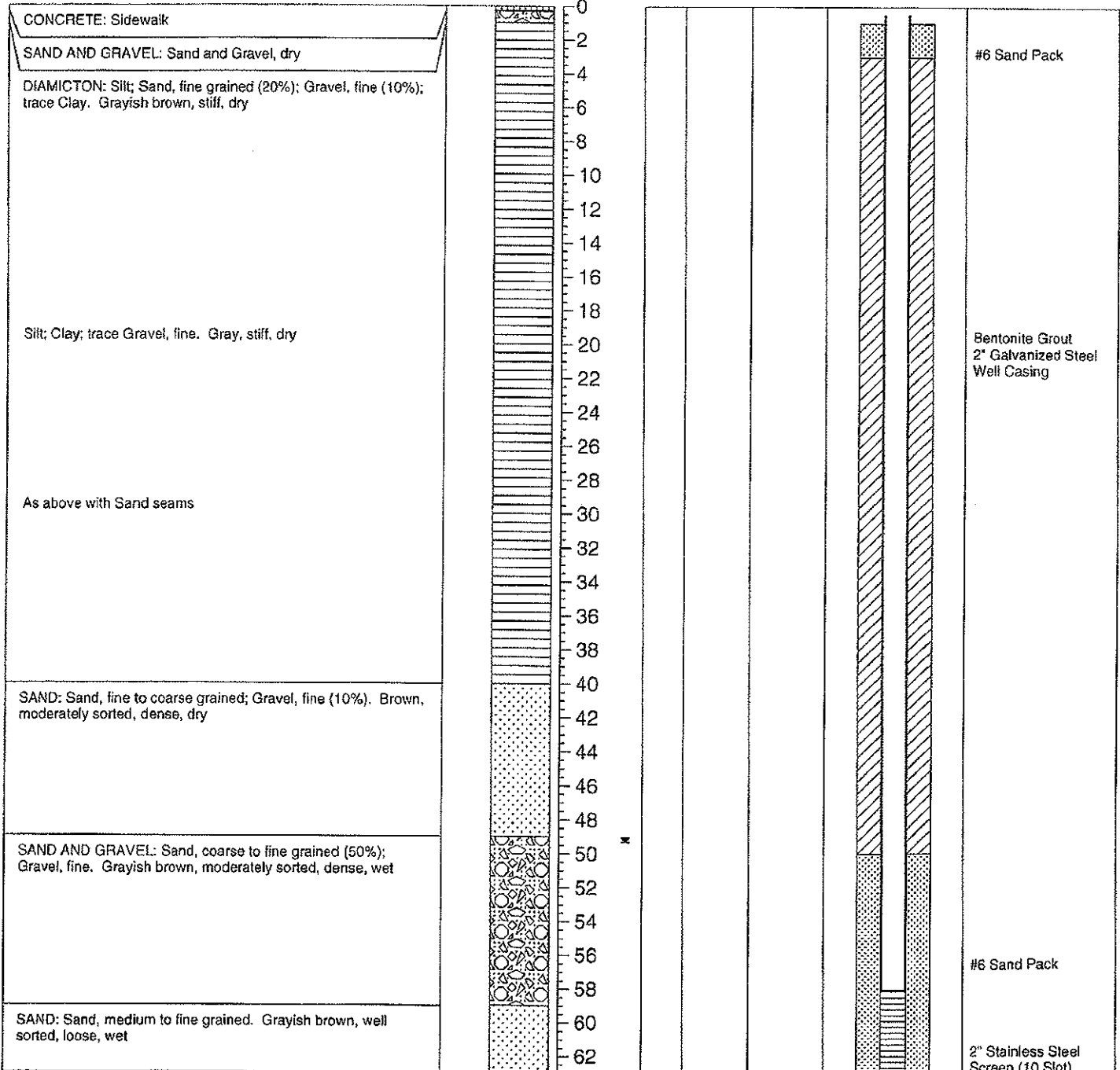
START DATE: 2-23-06
END DATE: 3-6-06
TOC ELEV.: 903.74'
GROUND ELEV.: App. 924' AMSL
STATIC WATER LVL.: 49.30'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions from 0-227' based on PLS-06-07; 5' West of MW-103d.
Field GPS Coordinates (N42.28000, W083.77098), Acc. 20'. ROW at 1817 Abbott.

Static Water Level Page 1 of 1

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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Lansing (517) 627-1141
Kalamazoo (269) 375-3824
Farmington Hills (248) 324-2090

BOREHOLE LOG

BORING/WELL ID: MW-103d

TOTAL DEPTH (ft.): 242'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G./Tony Alati

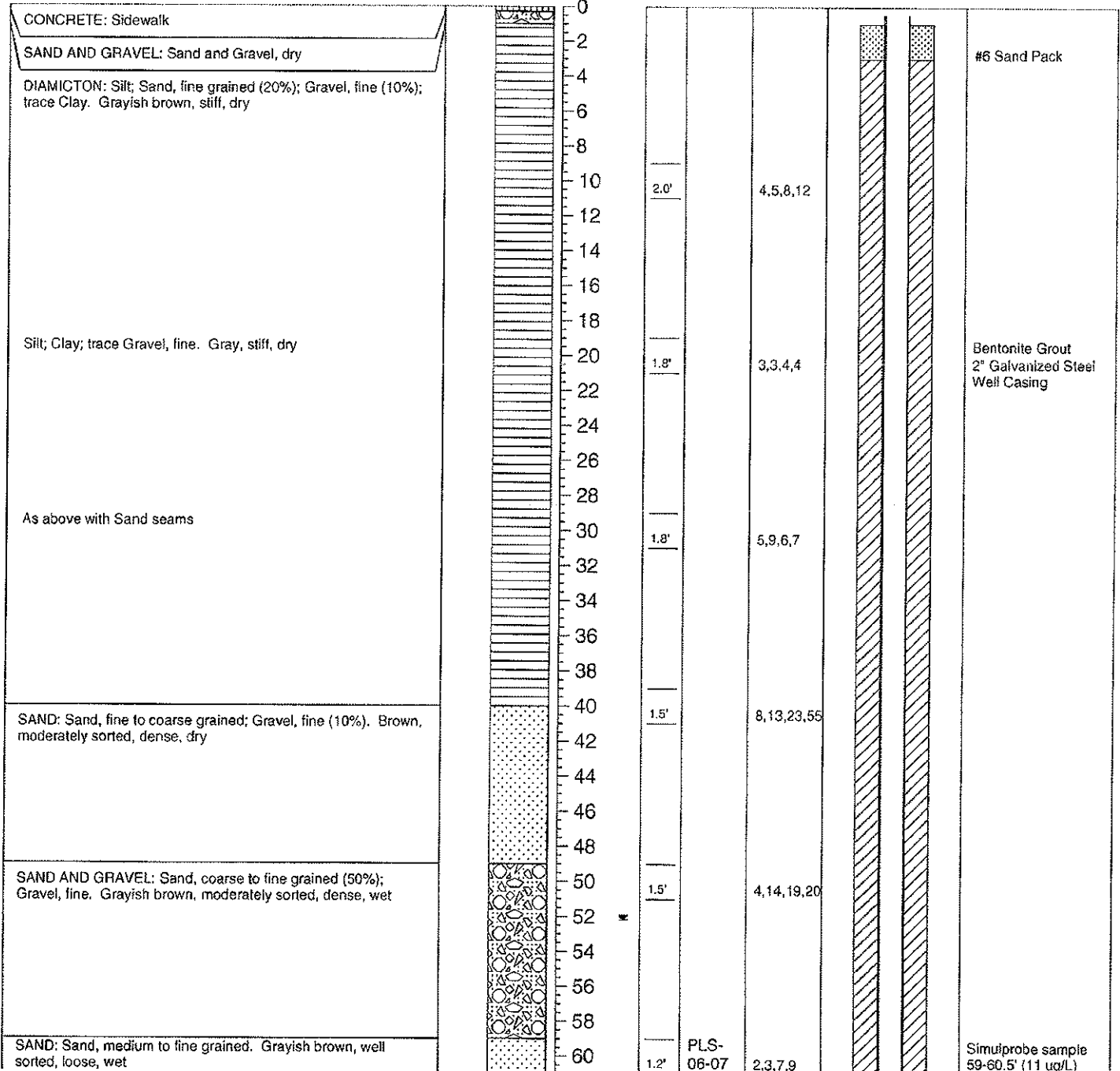
START DATE: 2-23-06
END DATE: 3-13-06
TOC ELEV.: 903.45'
GROUND ELEV.: App. 904' AMSL
STATIC WATER LVL.: 52.18'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions from 0-227' based on PLS-06-07; 5' West of MW-103d.
Field GPS Coordinates (N42.28000, W083.77098), Acc. 20' ROW at 1817 Abbott.

Static Water Level Page 1 of 4

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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BOREHOLE LOG

BORING/WELL ID: MW-103d

TOTAL DEPTH (ft.): 242'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G./Tony Alati

START DATE: 2-23-06
END DATE: 3-13-06
TOC ELEV.: 903.45'
GROUND ELEV.: App. 904' AMSL
STATIC WATER LVL.: 52.18'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions from 0-227' based on PLS-06-07; 5' West of MW-103d.
Field GPS Coordinates (N42.28000, W083.77098), Acc. 20'. ROW at 1817 Abbott.

Static Water Level Page 2 of 4

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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Sand, medium to fine grained with coarse grains; Gravel, fine (10-20%). Grayish brown, moderately sorted, very dense, wet			62			(59'-60.5')		2" Galvanized Steel Well Casing	
			64						
			66						
			68						
			70	1.5'	PLS-06-07 (69'-70.5')	15,43,85	Simulprobe sample 69-70.5' (8 ug/L)		
			72						
			74						
			76						Bentonite Grout
			78						
	As above with trace Gravel, fine			1.0'	PLS-06-07 (79'-80.5')	10,48,50	Simulprobe sample 79-80.5' (5 ug/L)		
			82						
			84						
Sand, medium to fine grained. Grayish brown, well sorted, wet		1.0'	PLS-06-07 (89'-90.5')	14,80,125	Simulprobe sample 89-90.5' (<1 ug/L)				
		88							
		90							
		92							
Sand, fine grained. Grayish brown, well sorted, wet		1.0'	PLS-06-07 (99'-100.5')	7,23,85	Simulprobe sample 99-100.5' (<1 ug/L)				
		96							
		98							
		100							
As above		1.5'	PLS-06-07 (109'-110.5')	9,13,48	Simulprobe sample 109-110.5' (<1 ug/L)				
		102							
		104							
		106							
DIAMICTON: Driller notes Clay		1.0'	PLS-06-07 (119'-120.5')	28,87,100	Simulprobe sample 119-120.5' (4 ug/L)				
		108							
		110							
		112							
Silt; Sand, fine grained (10-20%). Grayish brown, hard, moist							2" Galvanized Steel Well Casing		
		114							
		116							
		118							



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BOREHOLE LOG

BORING/WELL ID: MW-103d

TOTAL DEPTH (ft.): 242'

PROJECT: Pall Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G./Tony Alati

START DATE: 2-23-06
END DATE: 3-13-06
TOC ELEV.: 903.45'
GROUND ELEV.: App. 904' AMSL
STATIC WATER LVL.: 52.18'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions from 0-227' based on PLS-06-07; 5' West of MW-103d.
Field GPS Coordinates (N42.28000, W083.77098), Acc. 20' ROW at 1817 Abbott.

Static Water Level Page 3 of 4

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sampler Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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Interbedded Sand seams throughout			122					
Gravelly			124					
Cobbles throughout			126					
			128					
			130	0'		PLS-06-07 (129'-130.5')	12,27,108	Bentonite Grout
			132					Simulprobe sample 129-130.5' (<1 ug/L)
			134					
			136					
SAND: Driller notes Sand			138					
Sand, fine grained. Grayish brown, well sorted, very dense, wet			140	1.5'		PLS-06-07 (139'-140.5')	20,60,68 (2")	
			142					Simulprobe sample 139-140.5' (2 ug/L)
			144					
			146					
Sand as above			148					
			150	1.0'		PLS-06-07 (149'-150.5')	15,37,100	
			152					Simulprobe sample 149-150.5' (<1 ug/L)
			154					
			156					
			158					
SILTY SAND: Sand, fine grained; Silt (20-30%). Grayish brown, well sorted, wet			160	1.0'		PLS-06-07 (159'-160.5')	25,38,100 (5")	
			162					Simulprobe sample 159-160.5' (<1 ug/L)
			164					
			166					Bentonite Grout
			168					
SAND: Sand, fine grained; trace Silt. Grayish brown, well sorted, wet			170	1.0'		PLS-06-07 (169'-170.5')	31,46,68	
			172					Simulprobe sample 169-170.5' (<1 ug/L)
			174					
			176					
			178					
Sand, fine grained; Silt (20%). Grayish brown, well sorted, wet			180	0.5'		PLS-06-07 (179'-180.5')	41,31,63	
			182					Simulprobe sample 179-180.5' (<1 ug/L)
DIAMICTON: Driller notes Clay								



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Farmington Hills (248) 324-2090

BOREHOLE LOG
BORING/WELL ID: MW-103d
TOTAL DEPTH (ft.): 242'

PROJECT: PalI Life Sciences Inc.
SITE LOCATION: Ann Arbor, Michigan
PROJECT NO.: F96502
PROJECT MANAGER: James W. Brode, Jr., C.P.G.
LOGGED BY: Todd Campbell, C.P.G./Tony Alati

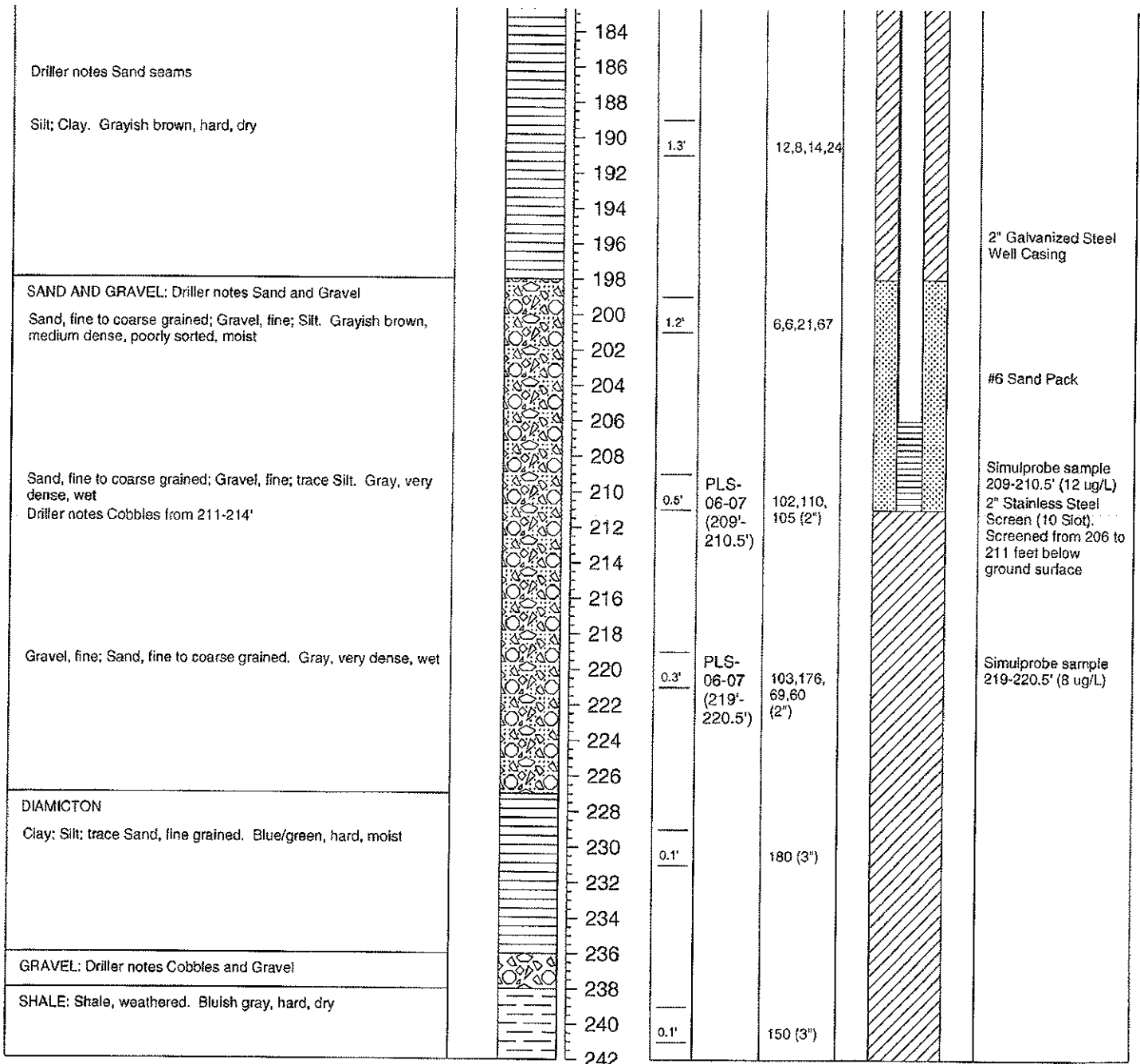
START DATE: 2-23-06
END DATE: 3-13-06
TOC ELEV.: 903.45'
GROUND ELEV.: App. 904' AMSL
STATIC WATER LVL.: 52.18'

DRILLING CO.: Stearns Drilling
DRILLER: Dennis/John, Jerry
RIG TYPE: CME 95
METHOD OF DRILLING: Hollow Stem Auger
SAMPLING METHODS: Split Spoon, Simulprobe

NOTES: Soil boring descriptions from 0-227' based on PLS-06-07; 5' West of MW-103d.
Field GPS Coordinates (N42.28000, W083.77098), Acc. 20'. ROW at 1817 Abbott.

Static Water Level Page 4 of 4

DESCRIPTION	PID ppm	GRAPHIC LOG	DEPTH (ft. bgl)	Static Water Level	Sample/ Recovery	Sample ID	Blow Counts	WELL CONSTRUCTION DETAIL
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MW-97 (PLS-06-01) NATURAL GAMMA LOG

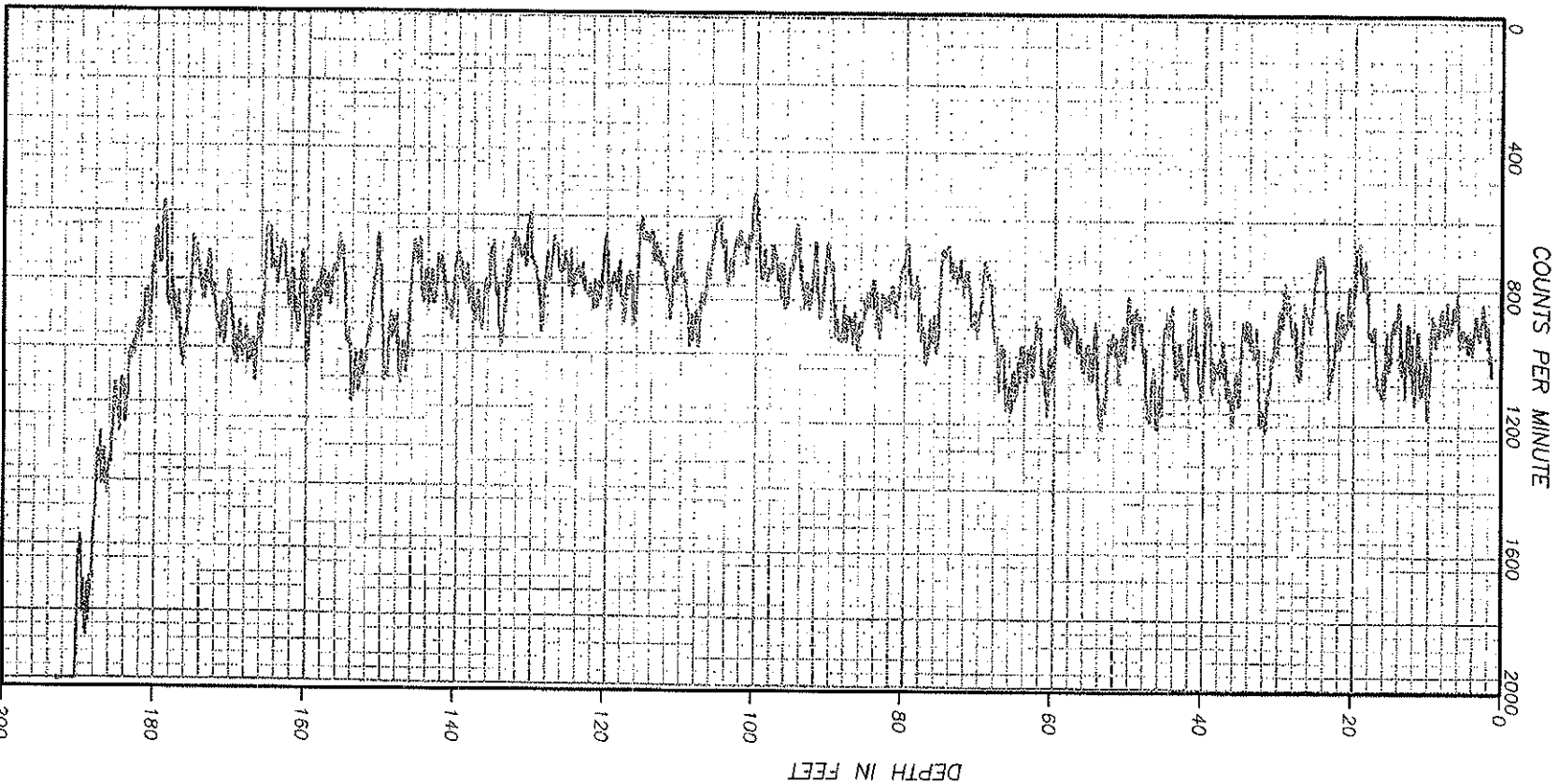
GROUND ELEVATION (AMSL): ~861'

LOGGING DATE: 1-11-06

TIME CONSTANT = 5 SECONDS

LOGGING SPEED = 10 FEET PER MINUTE

LOGGED BY BLACKHAWK GEOPHYSICAL SERVICES



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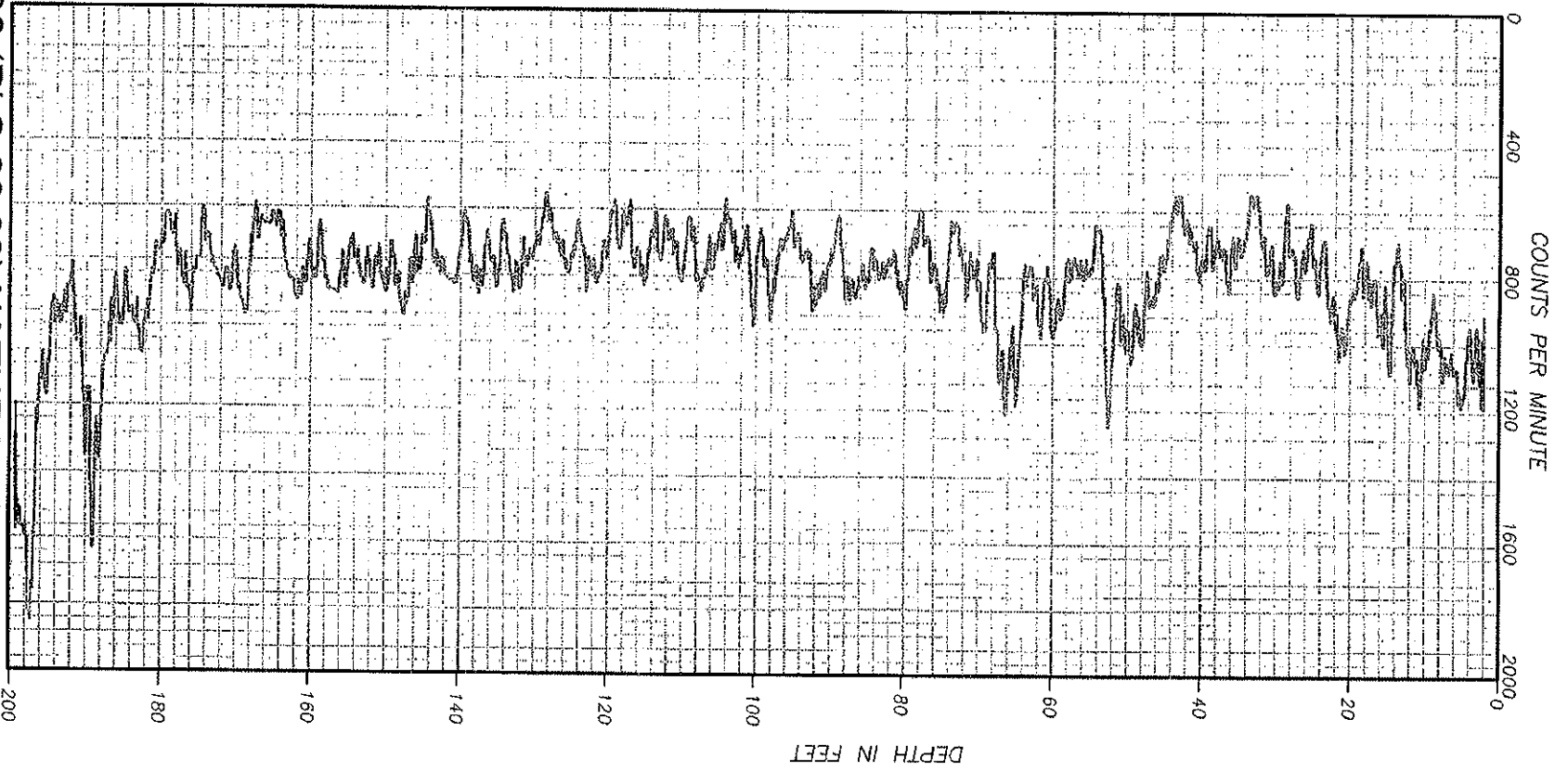
Pall Life Sciences
 Scio Twp., Washtenaw County, Michigan
 Unit E Plume Downgradient Investigation

PROJECT NO.
 F96502

APPENDIX
 1

fastback, lindsay, car kumar, inc.

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MW-98 (PLS-06-02) NATURAL GAMMA LOG

GROUND ELEVATION (AMSL): ~850'

LOGGING DATE: 1-23-06
TIME CONSTANT = 5 SECONDS
LOGGING SPEED = 10 FEET PER MINUTE
LOGGED BY BLACKHAWK GEOPHYSICAL SERVICES



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Scio Twp., Washtenaw County, Michigan

Unit E Plume Downgradient Investigation

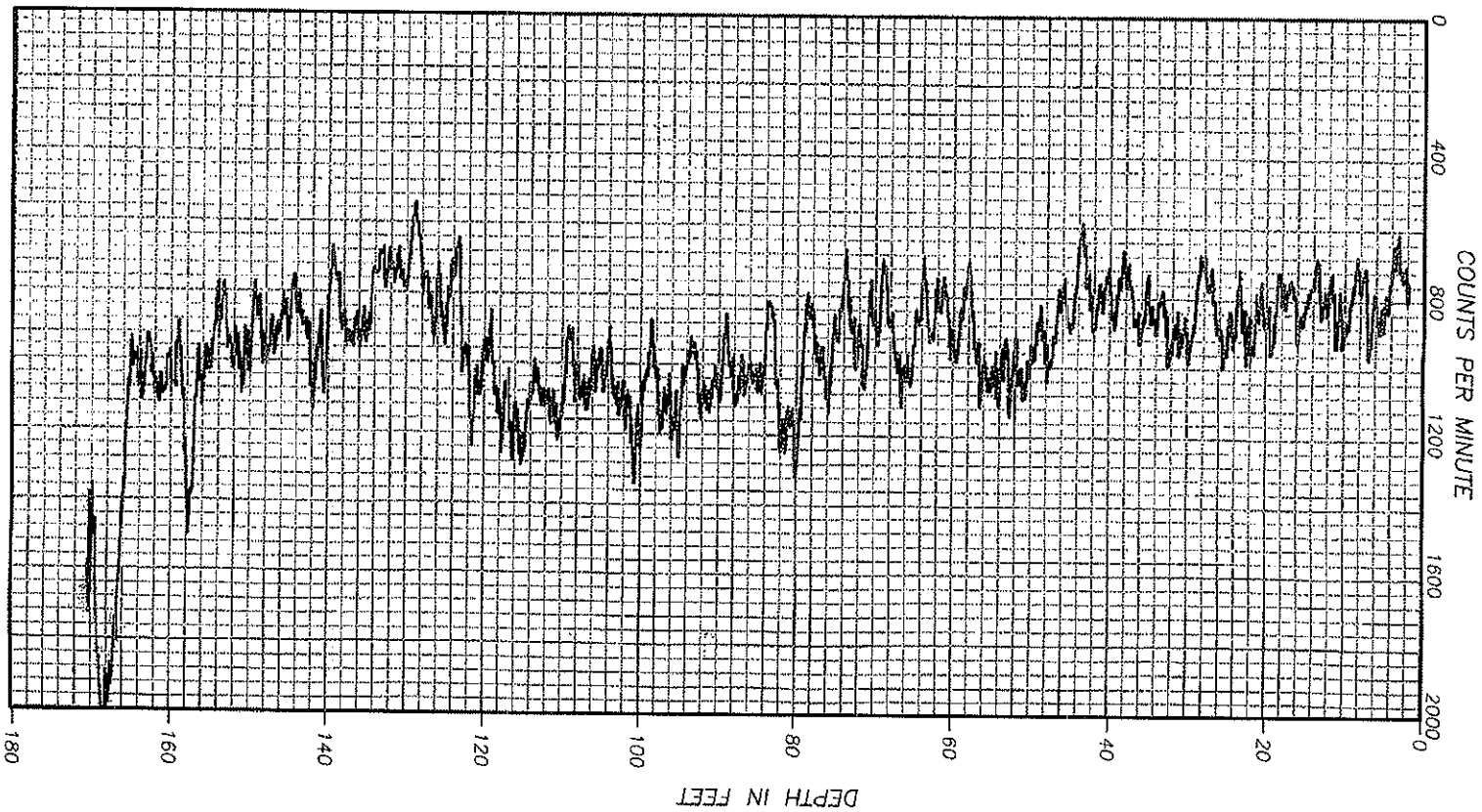
PROJECT NO.
F96502

Geotrack, Thompson, Carr & Hubert, Inc.

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MW-99 (PLS-06-03) NATURAL GAMMA LOG

GROUND ELEVATION (AMSL): ~840'
LOGGING DATE: 1-27-06
TIME CONSTANT = 5 SECONDS
LOGGING SPEED = 10 FEET PER MINUTE
LOGGED BY BLACKHAWK GEOPHYSICAL SERVICES



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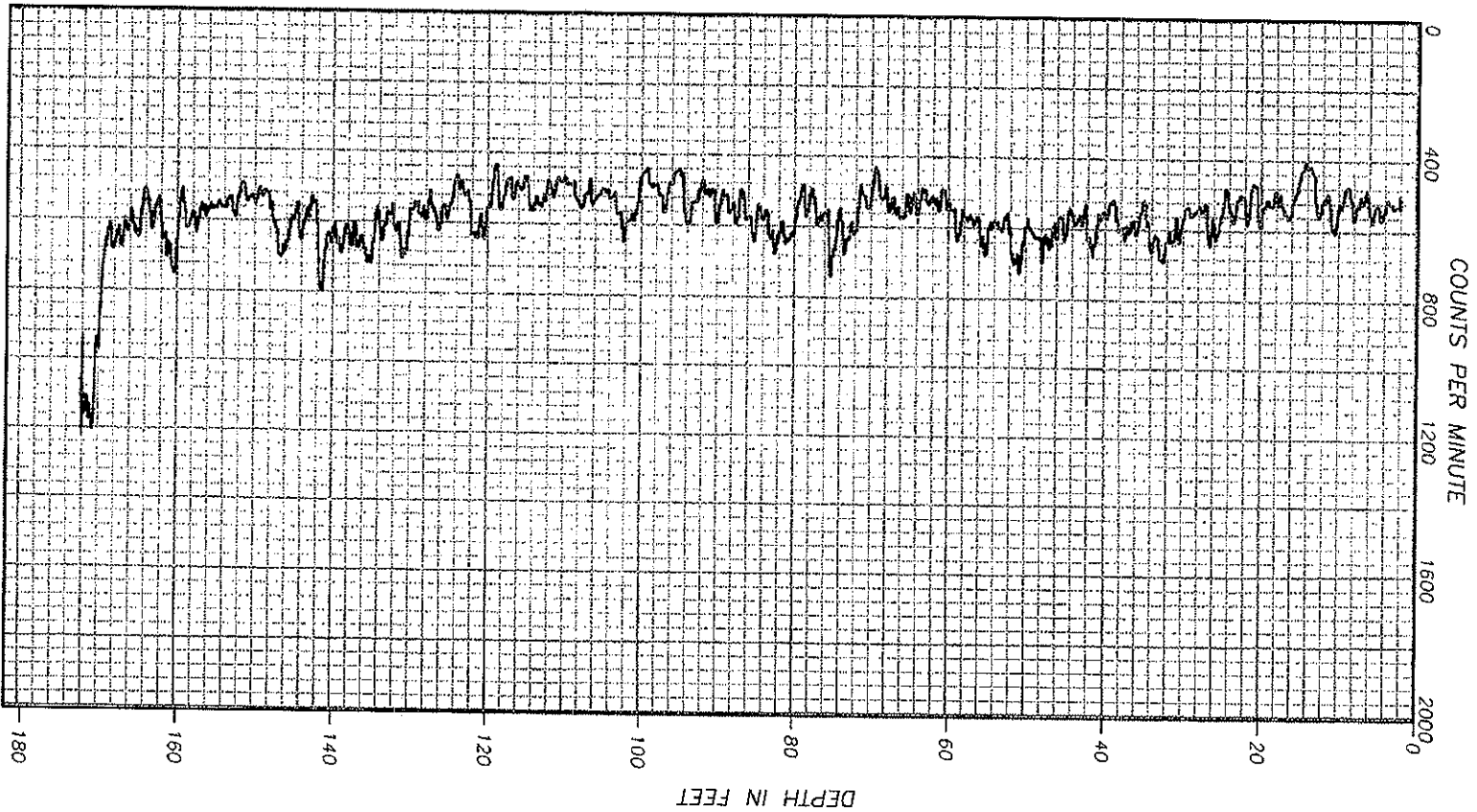
Unit E Plume Downgradient Investigation

PROJECT NO.
F96502
APPENDIX

1

Harbeck, Thompson, Carr & Inoué, Inc.

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MW-102 (PLS-06-06) NATURAL GAMMA LOG
 GROUND ELEVATION (AMSL): ~850'
 LOGGING DATE: 2-21-06
 TIME CONSTANT = 5 SECONDS
 LOGGING SPEED = 10 FEET PER MINUTE
 LOGGED BY BLACKHAWK GEOPHYSICAL SERVICES



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 Scio Twp., Washtenaw County, Michigan
 Unit E Plume Downgradient Investigation

PROJECT NO.
 F96502

APPENDIX
 1

Intertek, Thompson, Carr & Nease, Inc.

Appendix 2

First Quarter of 2006

Aquifer: E

1,4-Dioxane results in ppb

Well Name	January	February	March
IW-2			
MW-30d	991		
MW-56d			
MW-59d			
MW-62d			
MW-63d			
MW-64			
MW-65s			
MW-65i			
MW-65d			
MW-66			
MW-67			
MW-68			
MW-69	nd		
MW-70	nd		
MW-71	672		
MW-72s		74	
MW-72d		3231	
MW-76s	107		
MW-76i	10		
MW-76d			
MW-79			660
MW-81	325		
MW-82s	25		
MW-82d			
MW-83s			
MW-83d			
MW-84s	308		
MW-84d			
MW-85		1699	
MW-86	nd		
MW-87s		612	

First Quarter of 2006

Aquifer: E

1,4-Dioxane results in ppb

Well Name	January	February	March
MW-87d		697	
MW-88		1197	
MW-89	nd		
MW-90	12		
MW-91	nd		
MW-94d	nd		
MW-95	482		
MW-96	3302		
TW-11	514	456	469
TW-12	74	69	70
TW-15	92	97	99
TW-17	228	204	247
TW-18	2183	1848	1778
	2710		
	2445		
373 Pinewood Deep			
Saginaw Forest Cabin #1			
Saginaw Forest Cabin #2			

Well Drilling Analytical Results

Sample ID	Depth in Feet	Date Received	Date Analyzed	Detection Limit (ppb)	1,4-Dioxane Results ppb	Reporting Lab	Sampled By
TW-19-12-20-05-0810	NA	12/21/05	12/21/05	1.0	388	PLS	Todd
TW-19-12-20-05-1300	NA	12/21/05	12/21/05	1.0	575	PLS	Todd
TW-19-12-20-05-1800	NA	12/21/05	12/21/05	1.0	667	PLS	Todd
TW-19-12-20-05-2200	NA	12/21/05	12/21/05	1.0	726	PLS	Todd
TW-19-12-21-05-0200	NA	12/21/05	12/21/05	1.0	758	PLS	Todd
TW-19-12-21-05-0600	NA	12/21/05	12/21/05	1.0	791	PLS	Todd
PLS-06-01-01-10-06-1045 (MW-97s&d)	100-101.5	01/10/06	01/10/06	1.0	nd	PLS	Todd
PLS-06-01-01-10-06-1530	140-141.5	01/10/06	01/10/06	1.0	nd	PLS	Todd
PLS-06-01-01-11-06-0935	160-161.5	01/11/06	01/11/06	1.0	nd	PLS	Todd
PLS-06-01-01-11-06-1105	180-181.5	01/11/06	01/11/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1005 (MW-98s&d)	40-41.5	01/17/06	01/17/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1158	60-61.5	01/17/06	01/17/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1235	70-71.5	01/17/06	01/17/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1305	80-81.5	01/17/06	01/17/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1345	90-91.5	01/17/06	01/17/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1445	100-101.5	01/17/06	01/17/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1535	110-111.5	01/18/06	01/18/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1625	120-121.5	01/18/06	01/18/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-0915	130-131.5	01/18/06	01/18/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1000	140-141.5	01/18/06	01/18/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1040	150-151.5	01/18/06	01/18/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1215	160-161.5	01/18/06	01/18/06	1.0	nd	PLS	Todd
PLS-06-02-01-17-06-1255	170-171.5	01/18/06	01/18/06	1.0	2	PLS	Todd
PLS-06-02-01-23-06-1200	180-181.5	01/23/06	01/24/06	1.0	nd	PLS	Todd
PLS-06-02-01-23-06-1310	190-191.5	01/23/06	01/24/06	1.0	nd	PLS	Todd
PLS-06-03-01-25-06-1025 (MW-99s&d)	20-21.5	01/25/06	01/25/03	1.0	nd	PLS	Todd
PLS-06-03-01-25-06-1100	30-31.5	01/25/06	01/25/03	1.0	nd	PLS	Todd
PLS-06-03-01-25-06-1225	40-41.5	01/25/06	01/25/03	1.0	nd	PLS	Todd
PLS-06-03-01-25-06-1340	60-61.5	01/25/06	01/25/03	1.0	nd	PLS	Todd
PLS-06-03-01-25-06-1530	90-91.5	01/25/06	01/25/03	1.0	nd	PLS	Todd
PLS-06-03-01-25-06-1100	130-131.5	01/27/06	01/27/06	1.0	nd	PLS	Todd
PLS-06-03-01-26-06-1450	160-161.5	01/27/06	01/27/06	1.0	nd	PLS	Todd
PLS-06-04-02-01-06-0935 (MW-100)	90-91.5	02/01/06	02/01/06	1.0	nd	PLS	Todd
PLS-06-04-02-01-06-1020	100-101.5	02/01/06	02/01/06	1.0	nd	PLS	Todd
PLS-06-04-02-01-06-1055	110-111.5	02/01/06	02/01/06	1.0	nd	PLS	Todd
PLS-06-04-02-01-06-1310	120-121.5	02/01/06	02/01/06	1.0	nd	PLS	Todd
PLS-06-04-02-01-06-1415	130-131.5	02/02/06	02/02/06	1.0	nd	PLS	Todd
PLS-06-04-02-01-06-1515	140-141.5	02/02/06	02/02/06	1.0	nd	PLS	Todd
PLS-06-04-02-02-06-1445	210-211.5	02/02/06	02/02/06	1.0	2	PLS	Todd
PLS-06-04-02-02-06-1605	220-221.5	02/02/06	02/02/06	1.0	2	PLS	Todd
PLS-06-05-02-08-06-0950 (MW-101)	79-80.5	02/08/06	02/08/06	1.0	nd	PLS	Todd
PLS-06-05-02-08-06-1025	89-90.5	02/08/06	02/08/06	1.0	nd	PLS	Todd
PLS-06-05-02-08-06-1050	99-100.5	02/08/06	02/08/06	1.0	nd	PLS	Todd
PLS-06-05-02-08-06-1210	109-110.5	02/08/06	02/08/06	1.0	nd	PLS	Todd
PLS-06-05-02-08-06-1250	119-120.5	02/08/06	02/08/06	1.0	nd	PLS	Todd
PLS-06-05-02-08-06-1335	129-130.5	02/08/06	02/08/06	1.0	nd	PLS	Todd
PLS-06-05-02-08-06-1440	139-140.5	02/08/06	02/08/06	1.0	nd	PLS	Todd
PLS-06-05-02-08-06-1540	149-150.5	02/09/06	02/09/06	1.0	223	PLS	Todd
PLS-06-05-02-08-06-1625	159-160.5	02/09/06	02/09/06	1.0	304	PLS	Todd
PLS-06-06-02-20-06-1210 (MW-102s&d)	110-111.5	02/20/06	02/20/06	1.0	nd	PLS	Todd
PLS-06-06-02-20-06-1325	120-121.5	02/20/06	02/21/06	1.0	nd	PLS	Todd
PLS-06-06-02-20-06-1650	160-161.5	02/21/06	02/21/06	1.0	nd	PLS	Todd

nd - Not detected at or above the Detection Limit

Sample ID	Depth in Feet	Date Received	Date Analyzed	Detection Limit (ppb)	1,4-Dioxane Results ppb	Reporting Lab	Sampled By
PLS-06-07-02-23-06-1540 (MW-103s&d)	59-60.5	02/24/06	02/24/06	1.0	11	PLS	Todd
PLS-06-07-02-24-06-0840	69-70.5	02/24/06	02/24/06	1.0	8	PLS	Todd
PLS-06-07-02-24-06-0950	79-80.5	02/24/06	02/24/06	1.0	5	PLS	Todd
PLS-06-07-02-24-06-1030	89-90.5	02/24/06	02/24/06	1.0	nd	PLS	Todd
PLS-06-07-02-27-06-1245	99-100.5	02/27/05	02/24/06	1.0	nd	PLS	Todd
PLS-06-07-02-27-06-1355	109-110.5	02/27/05	02/27/05	1.0	nd	PLS	Todd
PLS-06-07-02-27-06-1520	119-120.5	02/27/05	02/27/05	1.0	4	PLS	Todd
PLS-06-07-02-27-06-1705	129-130.5	02/27/05	02/27/05	1.0	nd	PLS	Todd
PLS-06-07-02-28-06-0915	139-140.5	02/28/05	02/28/05	1.0	2	PLS	Todd
PLS-06-07-02-28-06-1035	149-150.5	02/28/05	02/28/05	1.0	nd	PLS	Todd
PLS-06-07-02-28-06-1150	159-160.5	02/28/05	02/28/05	1.0	nd	PLS	Todd
PLS-06-07-02-28-06-1515	169-170.5	02/28/05	03/01/06	1.0	nd	PLS	Todd
PLS-06-07-02-28-06-1735	179-180.5	02/28/05	03/01/06	1.0	nd	PLS	Todd
PLS-06-07-03-01-06-1240	209-210.5	03/01/06	03/01/06	1.0	12	PLS	Todd
PLS-06-07-03-01-06-1535	219-220.5	03/01/06	03/01/06	1.0	8	PLS	Todd
PLS-06-08-03-15-06-1305 (MW-104)	90-91.5	03/15/06	03/15/06	1.0	nd	PLS	Todd
PLS-06-08-03-15-06-1405	100-101.5	03/15/06	03/15/06	1.0	nd	PLS	Todd
PLS-06-08-03-15-06-1455	110-111.5	03/15/06	03/15/06	1.0	nd	PLS	Todd
PLS-06-08-03-15-06-1600	120-121.5	03/15/06	03/15/06	1.0	nd	PLS	Todd
PLS-06-08-03-16-06-0845	130-131.5	03/16/06	03/16/06	1.0	nd	PLS	Todd
PLS-06-08-03-16-06-1000	140-141.5	03/16/06	03/16/06	1.0	nd	PLS	Todd
PLS-06-08-03-16-06-1050	150-151.5	03/16/06	03/16/06	1.0	nd	PLS	Todd

nd - Not detected at or above the Detection Limit

Appendix 3

Water Level Elevations

3/20/2006

Aquifer: E

Well Name	Date	Static Level	T.O.C. Elevation (Ft)	Water Level Elevation
IW-2	3/20/2006	67.23	937.25	870.02
MW-30d	3/20/2006	65.3	937.6	872.30
MW-56d	3/20/2006	46.74	926.09	879.35
MW-59d	3/20/2006	35.23	914.79	879.56
MW-62d	3/20/2006	31.55	911.22	879.67
MW-63d	3/20/2006	32.68	912.57	879.89
MW-64	3/20/2006	56.02	931.59	875.57
MW-65s	3/20/2006	54.99	929.43	874.44
MW-65i	3/20/2006	55.15	929.35	874.20
MW-65d	3/20/2006	54.87	928.97	874.10
MW-66	3/20/2006	35.36	911.73	876.37
MW-67	3/20/2006	52.52	925.42	872.90
MW-68	3/20/2006	64.85	945.74	880.89
MW-69	3/20/2006	49.15	922.11	872.96
MW-70	3/20/2006	39.14	911.96	872.82
MW-71	2/3/2006	41.74	914.21	872.47
MW-71	3/20/2006	42.1	914.21	872.11
MW-72s	2/6/2006	71.85	942.95	871.10
MW-72s	2/3/2006	71.53	942.95	871.42
MW-72s	3/20/2006	72.09	942.95	870.86
MW-72d	2/6/2006	71.9	942.52	870.62
MW-72d	2/3/2006	71.56	942.52	870.96
MW-72d	3/20/2006	72.28	942.52	870.24
MW-76s	2/3/2006	72.83	926.7	853.87
MW-76s	3/20/2006	72.76	926.7	853.94
MW-76i	2/3/2006	73.12	926.59	853.47
MW-76i	3/20/2006	73.08	926.59	853.51
MW-76d	2/3/2006	74.27	926.05	851.78
MW-76d	3/20/2006	74.28	926.05	851.77
MW-79	3/15/2006	39.34	906.78	867.44
MW-79	3/20/2006	39.16	906.78	867.62
MW-79	3/7/2006	38.85	906.78	867.93
MW-79	2/3/2006	38.42	906.78	868.36
MW-81	3/20/2006	54.73	920.63	865.90
MW-81	2/3/2006	54.07	920.63	866.56
MW-82s	2/3/2006	56.52	906.85	850.33
MW-82s	3/20/2006	56.45	906.85	850.40
MW-82d	2/3/2006	78.73	906.56	827.83
MW-82d	3/20/2006	78.53	906.56	828.03

Water Level Elevations

2/3/2006

Aquifer: E

Well Name	Date	Static Level	T.O.C. Elevation (Ft)	Water Level Elevation
MW-83s	2/3/2006	73.47	927.54	854.07
MW-83s	3/20/2006	73.38	927.54	854.16
MW-83d	2/3/2006	75.98	927.98	852.00
MW-83d	3/20/2006	75.98	927.98	852.00
MW-84s	3/20/2006	51.15	905.52	854.37
MW-84s	3/15/2006	51.3	905.52	854.22
MW-84s	3/7/2006	51.23	905.52	854.29
MW-84s	2/3/2006	51.22	905.52	854.30
MW-84d	3/20/2006	48.33	905.47	857.14
MW-84d	3/15/2006	48.53	905.47	856.94
MW-84d	3/7/2006	48.05	905.47	857.42
MW-84d	2/3/2006	47.86	905.47	857.61
MW-85	2/3/2006	48.51	917.64	869.13
MW-85	3/7/2006	48.93	917.64	868.71
MW-85	3/15/2006	50.45	917.64	867.19
MW-85	2/6/2006	48.84	917.64	868.80
MW-85	3/20/2006	50.26	917.64	867.38
MW-86	2/3/2006	71.44	923.28	851.84
MW-86	3/20/2006	71.44	923.28	851.84
MW-87s	2/3/2006	68.78	927.69	858.91
MW-87s	2/7/2006	69.05	927.69	858.64
MW-87s	3/7/2006	68.77	927.69	858.92
MW-87s	3/15/2006	68.72	927.69	858.97
MW-87s	3/20/2006	68.36	927.69	859.33
MW-87d	2/7/2006	67.82	927.34	859.52
MW-87d	3/7/2006	67.52	927.34	859.82
MW-87d	3/15/2006	64.08	927.34	863.26
MW-87d	3/20/2006	63.87	927.34	863.47
MW-87d	2/3/2006	73.7	927.34	853.64
MW-88	3/15/2006	53.08	920.74	867.66
MW-88	3/7/2006	52.65	920.74	868.09
MW-88	3/20/2006	52.95	920.74	867.79
MW-88	2/3/2006	52.22	920.74	868.52
MW-88	2/7/2006	52.75	920.74	867.99
MW-89	2/3/2006	84.45	943.44	858.99
MW-89	3/20/2006	83.95	943.44	859.49
MW-90	2/3/2006	96.17	951.72	855.55
MW-90	3/20/2006	95.99	951.72	855.73
MW-91	2/3/2006	61.59	913.85	852.26

Water Level Elevations

3/20/2006

Aquifer: E

Well Name	Date	Static Level	T.O.C. Elevation (Ft)	Water Level Elevation
MW-91	3/20/2006	61.61	913.85	852.24
MW-94d	3/20/2006	45.72	918.74	873.02
MW-94d	2/16/2006	45.58	918.74	873.16
MW-94d	2/24/2006	45.84	918.74	872.90
MW-94d	3/3/2006	45.84	918.74	872.90
MW-94d	2/10/2006	45.76	918.74	872.98
MW-95	3/3/2006	42.78	915.45	872.67
MW-95	3/20/2006	42.66	915.45	872.79
MW-95	2/24/2006	42.8	915.45	872.65
MW-95	2/10/2006	42.71	915.45	872.74
MW-95	2/16/2006	42.52	915.45	872.93
MW-96	2/10/2006	54.62	927.36	872.74
MW-96	2/16/2006	54.43	927.36	872.93
MW-96	2/24/2006	54.69	927.36	872.67
MW-96	3/3/2006	54.7	927.36	872.66
MW-96	3/20/2006	54.57	927.36	872.79
TW-15	3/20/2006	76.52	930.07	853.55
TW-15	2/8/2006	76.75	930.07	853.32
TW-15	3/2/2006	76.54	930.07	853.53
373 Pinewood Deep	3/20/2006	65.29	936.47	871.18
Saginaw Forest Cabin #1	3/20/2006	35.13	913.92	878.79
Saginaw Forest Cabin #2	3/20/2006	32.79	911.58	878.79

Water Level Elevations

3/20/2006

Aquifer: D2

Well Name	Date	Static Level	T.O.C. Elevation (Ft)	Water Level Elevation
LBOW-1	3/20/2006	73.61	941.07	867.46
MW-4d	3/20/2006	39.62	911.52	871.90
MW-9d	3/20/2006	41.92	916.2	874.28
MW-11d	3/20/2006	40.21	913.65	873.44
MW-13	3/20/2006	33.48	908.94	875.46
MW-14d	3/20/2006	56.31	924.24	867.93
MW-17	3/20/2006	63.12	933.64	870.52
MW-30i	3/20/2006	65.27	937.58	872.31
MW-34d	3/20/2006	43.14	921.63	878.49
MW-38d	3/20/2006	38.23	917.01	878.78
MW-38d	2/2/2006	37.95	917.01	879.06
MW-39d	3/20/2006	32	910.11	878.11
MW-43	3/20/2006	24.57	909.03	884.46
MW-44	3/20/2006	32.47	911.7	879.23
MW-47s	2/9/2006	80.5	947.78	867.28
MW-47s	3/20/2006	80.62	947.78	867.16
MW-47d	3/20/2006	81.8	948.63	866.83
MW-47d	2/9/2006	81.72	948.63	866.91
MW-54s	3/20/2006	70.74	941.2	870.46
MW-54d	3/20/2006	71.28	941.27	869.99
MW-54d	2/8/2006	71.34	941.27	869.93
MW-55	3/20/2006	61.92	931.43	869.51
MW-56s	3/20/2006	46.6	926.22	879.62
MW-56s	2/14/2006	46.98	926.22	879.24
MW-62i	3/20/2006	31.67	911.26	879.59
MW-63i	3/20/2006	30.41	912.9	882.49
MW-77	2/1/2006	61.06	932.01	870.95
MW-77	3/20/2006	61.63	932.01	870.38
MW-92	3/20/2006	79.62	946.11	866.49
MW-94s	2/16/2006	45.61	918.56	872.95
MW-94s	3/20/2006	45.78	918.56	872.78
MW-94s	2/24/2006	45.89	918.56	872.67
MW-94s	3/3/2006	45.88	918.56	872.68
MW-94s	2/10/2006	45.79	918.56	872.77
MW-BE-1s	3/20/2006	78.71	943.08	864.37
MW-BE-1d	3/20/2006	78.64	943.08	864.44
MW-KD-1s	3/20/2006	75.41	943.4	867.99
MW-KD-1d	3/20/2006	75.16	943.64	868.48
MW-KZ-1	3/20/2006	55.93	931.12	875.19

Water Level Elevations

3/20/2006

Aquifer: D2

Well Name	Date	Static Level	T.O.C. Elevation (Ft)	Water Level Elevation
544 Allison	3/20/2006	85.76	953.16	867.40
593 Allison	3/20/2006	87	953.84	866.84
430 Barber East	3/20/2006	64.36	929.92	865.56
430 Barber West	3/20/2006	64.29	929.93	865.64
430 Barber West	2/1/2006	63.95	929.93	865.98
MW-400 Clarendon	3/20/2006	63.47	935.85	872.38
MW-400 Clarendon	2/1/2006	62.96	935.85	872.89
2652 Dexter Rd	3/20/2006	83.88	951.47	867.59
2819 Dexter Rd	3/20/2006	73.21	933.66	860.45
465 Dupont	3/20/2006	59.31	930.14	870.83
3365 Jackson Rd	3/20/2006	65.87	938.07	872.20
3245 Kingwood	3/20/2006	59.96	930.85	870.89