SAMPLING & INVESTIGATION WORK PLAN

Former Paulsen-Holbrook CCA Lumber Treating Site Voluntary Agreement Guilderland, New York

November 1999

Prepared for:

Albany Miron Lumber Corporation
260 Titusville Road
Poughkeepsie, New York 12603

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Former Paulsen-Holbrook CCA Lumber Treating Site Voluntary Agreement Guilderland, New York

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THE Chazen COMPANIES

Prepared by:

The Dutchess County Office:
The Chazen Companies
P.O. Box 3479, 229-B Page Park
Poughkeepsie, NY 12603

1.0 INTRODUCTION

The Chazen Companies (TCC) have prepared this Work Plan to investigate the extent of Contaminants of Concern (COC) impacted soil and groundwater at the former Paulsen-Holbrook CCA Lumber Treating Site, currently owned by Albany Miron Lumber Corporation in the Town of Guilderland, Albany County, New York ("Paulsen-Holbrook Site"). See Figure 1. This Sampling and Investigation Work Plan is made part of the Voluntary Agreement between New York State Department of Environmental Conservation (NYSDEC) and Albany Miron Lumber Corporation.

2.0 PREVIOUS INVESTIGATIONS

2.1 Monitoring Wells

In August of 1996, five shallow test borings were installed at the Paulsen-Holbrook Site. The test borings were installed to visually inspect whether the former CCA operation or former site maintenance garage operations at the Paulsen-Holbrook Site had impacted the subsurface. Monitoring wells were installed in all five test borings.

A small area of visually impacted soil was identified and was investigated along the west side of a site maintenance building. Test boring B-2 / Monitoring Well MW-2 was installed in the discolored soil. Monitoring wells MW-1 and MW-3 were installed as upgradient wells and Monitoring Wells MW-4 and MW-5 were installed in areas thought to be generally downgradient of this area. See Figure 2. Monitoring well completion diagrams are included in Appendix A. (Note: These wells have also been referred to as ML-1 through ML-5 in previous documents.) In general, groundwater was encountered at a depth of 12-13 feet below grade in all of the monitoring wells. The wells were installed so that the screened interval started above the groundwater table with 5-8 feet of groundwater present in each well.

Groundwater samples collected from the monitoring wells were analyzed by EPA Methods 8021 and 8270 for volatile and semi-volatile organic compounds and EPA Methods 7060, 6010, 7421, 7471, and 7740 for Resource Conservation and Recovery Act (RCRA) metals plus copper. A summary of the compounds detected in groundwater from these monitoring wells is included as Table 1.

Table 1
Groundwater Analytical Results
Summary of Compounds Detected in Monitoring Wells

COMPOUND	MW-1 (ppb)	MW-2 (ppb)	MW-3 (ppb)	MW-4 (ppb)	MW-5 (ppb)
Chloroform	--	--	--	1	--
1,3,5-TMB	--	3	--	--	--
1,2,4-TMB	--	6	--	--	--
P-Cymene	--	1	--	--	--
N-Butylbenzene	--	5	--	--	--
Di-n-Butylpthalate	--	12	--	--	--
Tetrachloroethylene	8	4	--	--	--
Arsenic	--	393	--	450	200
Cadmium	--	32	--	--	--
Barium	120	150	100	70	30
Chromium	38	1940	8	750	150
Copper	--	280	--	--	150
Lead	8	--	--	--	9

Copper, chromium and arsenic were found to exist in site groundwater at concentrations greater than New York State (NYS) groundwater standards as presented in Table 1. 1,2,4-Trimethylbenzene, Tetrachloroethylene, and N-Butylbeneze were detected at a concentration only slightly above the NYS groundwater standard of 5 ppb. Trace levels of other volatile and semi-volatile compounds and RCRA metals were also detected, but at concentration below NYS groundwater standards.

Based on water level measurements collected from site monitoring wells, the local groundwater flow direction is towards the south and has a hydraulic gradient of approximately 0.017 or 1.7 feet per 100 feet.

Drinking water and sewer collection in the vicinity of the site is provided by combined City/Town system.

2.2 Test Pit Investigation

In December of 1996, a few shallow test pits were excavated at the site in an attempt to further visually investigate the subsurface conditions. See Figure 2. A concrete foundation which apparently contained the CCA treatment vessel and associated mechanics was discovered beneath a gravel surfaced area. The concrete foundation appears to contain some piping and may contain some type of abandoned tank system. The foundation was approximately 1-2 feet deep with a deeper sump

area on the south end. The foundation appeared to have been filled with soil which exhibited evidence of an oily petroleum contaminant. The foundation appears to be approximately 25 feet wide (east-west) and 50 feet long (north-south).

South and west of the foundation shallow test pits were installed in an adjacent gravel surfaced area in an attempt to determine if other evidence of the CCA operation was present. Generally, the subsurface area west, north and northeast of the foundation was not discolored and appeared to be native sandy soil. Adjacent to the southeast sides of the foundation, green discolored soils and gravel were observed at a depth of 1-2 feet below grade. In a small area east of the foundation, a mixture of green wood timbers, green soil and green sludge-like material was observed starting approximately 1 foot below grade. Green soils were observed up to the limits of the test pit investigation which was limited to the east by a garage building and storage trailer and to the south by the property fence line.

2.3 Limited Soil Sampling

In March of 1999 TCC conducted limited subsurface soil samples at the site. Sixteen soil boring (SB-1 through SB-16) were advanced using a Geoprobe® direct push sampler with a four foot sampling device. The approximate location of each boring is shown on Figure 2. Soil cores were obtained from each boring from the upper four foot interval. The soil cores were examined by a TCC geologist and a soil sample was collected from each core for analysis. The samples were packed in a cooler with ice and transported to the lab via overnight mail service. The soil samples were analyzed for Total and TCLP arsenic, chromium and copper. Analysis was performed by an ELAP-certified laboratory following contract lab protocols and assuming Level B QA/QC data requirements. A summary of the arsenic, chromium, and copper compounds detected in the soil from these borings is included as Table 2.

Table 2
Soil Analytical Results
Summary of Arsenic, Chromium and Copper Compounds Detected

Soil Sample Description	Arsenic Total / TCLP (ppm)	Chromium Total / TCLP (ppm)	Copper Total / TCLP (ppm)
SB-1 2'-4'	4,720 / 4.03	1,480 / 0.137	7,660 / 89.5
SB-2 2'-4'	2,410 / 1.07	3,540 / 0.309	471 / 0.481
SB-3 2'-4'	527 / 4.26	458 / 0.0738	737 / 4.92
SB-4 2'-4'	120 / 1.40	23.5 / 0.0231	5.81 / 0.02U
SB-5 2'-4'	3,350 / 4.60	2,480 / 0.248	1,050 / 6.07
SB-6 2'-4'	132 / 0.609	96.2 / 0.0307	9.79 / 0.02U
SB-7 2'-4'	13.1 / 0.329	113 / 0.0240	12.3 / 0.02U
SB-8 0'-4'	952 / 24.0	293 / 0.155	367 / 36.6
SB-9 1'-4'	331 / 0.937	228 / 0.0724	10.9 / 0.02U
SB-10 0'-4'	28.6 / 0.464	119 / 0.0107	13.0 / 0.02U
SB-14 0'-4'	5.38 / 0.0320	4.97 / 0.01U	6.33 / 0.02U
SB-15 3'-6'	3.50 / 0.01U	4.48 / 0.01U	5.79 / 0.02U
SB-16 1'-4'	4.03 / 0.01U	5.08 / 0.01U	6.05 / 0.02U

U – Indicates compound was analyzed for but not detected.

3.0 GEOLOGY

3.1 Regional Geology

According to the New York State Surficial Geology Map, the overburden is mapped as lacustrine sand deposited in a large body of water in a near-shore environment. Lacustrine sands are typically stratified, dominated by quartz grains, and well sorted. The thickness of these deposits is variable, ranging from 6.5 to 66 feet. Well sorted, fine grained sands tend to have a moderate permeability ranging from 1 to 10 feet/day ($3.5x10^{-4}$ to $3.5x10^{-3}$ cm/sec, (Heath, 1983)).

According to the New York State Bedrock Geology Map, the bedrock geology beneath the site area consists of the Utica, Canajoharie, and Normanskill shale that is part of the Lorraine, Trenton, and Black River Groups respectively.

3.2 Site Geology

The shallow soil borings installed at the former Paulsen-Holbrook lumber pressure treating facility confirmed published geologic information. A brown, fine sand was encountered from grade to a depth of approximately 10 feet below grade. The sand becomes finer in composition, containing a higher percentage of very fine sand and

silt from 10 feet to 17 feet below grade. Bedrock was not encountered in any of the soil borings and no nearby outcrops were identified.

Boring logs for the five test borings developed into monitoring wells MW-1 through MW-5 are included in Appendix A.

4.0 SITE INVESTIGATION ACTIVITIES

4.1 Define Compounds of Concern (COC)

As required by the National Contingency Plan ("NCP"), TCC will to identify the compounds of concern (COC) at the Paulsen-Holbrook Site prior to conducting the investigation. Three soil samples will be collected from a boring in the area of the site where previous investigations have shown the highest levels of CCA impact, adjacent to the former location of MW-2. This boring will be advanced to a depth of 20 feet using a conventional drill rig and split-spoon soil samples will be collected four foot intervals. The soil samples from the 0-4 foot, 4-8 foot and 8-12 foot intervals will be used to define COCs in the unsaturated soil zone. This boring will be developed as a groundwater monitoring well as described in the Field Sampling Plan (FSP) and a groundwater sample will be collected to define COCs in the saturated zone. The soil and groundwater samples will be collected as described in the FSP and analyzed for organics using the Target Compound List (TCL) and inorganics using the Target Analyte List (TAL).

The analytical results of this sampling effort will be submitted to the NYSDEC along with a recommendation for COCs. Based on the historical use of the site, it is anticipated that the list of COCs will be limited to Copper, Chromium, and Arsenic and the following investigation is based on this assumption.

4.2 Soil Sampling

Based on previous investigations, CCA impacts have been detected in the upper four feet of soil in the source area. Additional soil sampling will be conducted to investigate the COC impacts to the soil at the Paulsen-Holbrook Site. To meet the objectives described above, a total of 10 to 15 soil borings will be advanced along the southern property boundary and radially in increments of 10' to 15' from the boundary of the known CCA impacted area. Three soil samples will be collected from each boring at 0-4 foot, 4-8 foot and 8-12 foot intervals as described in the FSP. Initially, only the samples collected from borings along the radial arc nearest the known CCA impacted area will be analyszed. At locations where a sample shows concentrations of COC above TAGM 4046 soil cleanup objectives, the sample from the boring at the next radial increment further from the known CCA impacted soil

will be analyzed. This technique will assist in establishing the lateral extent of CCA impacts at the Paulsen-Holbrook Site.

4.3 Groundwater Sampling

As described in the FSP, a groundwater monitoring well will be installed down-gradient of the site, south of the ConRail Tracks and north of the Interstate, on City of Albany property. The monitoring well will be installed with a bottom depth of approximately 15 – 20 depending on field observations of groundwater levels. The well will be constructed using a 10 foot length of 2 inch ID. 20-slot, schedule 40 PVC screen and riser such that the screen intersects the water table with approximately two feet of screen above the water table and seven feet of screen below the water table. The well will be finished with a 4 - 6 inch diameter steel casing stick up above the ground 2 - 3 feet with locking cap. A groundwater sample will be collected as described in the field sampling plan and analyzed for COCs. In addition, a groundwater sample will be collected from monitoring wells MW-1, MW-3, and MW-5 in accordance with the FSP and analyzed for COCs. Filtered and unfiltered groundwater samples will be collected for comparison purposes.

4.3 Health and Safety

A site-specific Health and Safety Plan is attached to this work plan as Appendix B. Based on previous investigations conducted at the Former Paulson-Holbrook site, The Chazen Companies anticipates that all activities will be performed at personal protection Level D, with a sufficient level of monitoring to upgrade to Level C should conditions warrant.

4.5 Human Health Exposure Assessment

A Human Exposure Assessment will be performed to define the potential exposure pathways that may represent a public health risk based on conditions found during the investigation. The potential pathways include: 1) inhalation of dust impacted with hazardous wastes, 2) ingestion of contaminated soil or groundwater, and 3) dermal exposure via contact with contaminated soils or groundwater.

5.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

5.1 Data Quality Objectives

To meet the objectives of the Site Investigation Activities, data collected will meet Data Quality Objectives (DQOs) outlined in the Quality Assurance Project Plan (QAPP) included with the Sampling and Analysis Plan (SAP). The SAP ensures that all information, data and decisions are technically sound, properly documented,

and meet the DQOs established. Data will be collected using the protocols outlined in the SAP and QAPP. Adherence to these protocols ensures that the data will be representative. The data will be evaluated for Precision, Accuracy, Representation, Completeness and Comparability (PARCC parameters). Procedures based on EPA and NYSDEC guidance documents have been adopted to ensure that field data will conform to applicable standards.

The Quality Assurance Project Plan (QAPP) details numbers of duplicate samples, instrument calibration procedures, potential sources of data inaccuracies, lab methods, laboratory QC, data analysis requirements, independent data validation, completeness tests and the QA/QC management program organization.

5.2 Decontamination

Sampling procedures presented in the following sections at the Former Paulsen-Holbrook facility have been designed to be self-contained, thereby minimizing decontamination requirements and reducing the possibility of cross-contamination. Dedicated sampling devices will be used wherever possible. However, split spoons and other invasive testing equipment that will be used repeatedly will be thoroughly decontaminated between sampling events according to procedures recommended by NYSDEC and the EPA. Split-spoons will initially be steam cleaned prior to use. Split-spoon samplers will be decontaminated between samples by scrubbing with potable water and Alconox® or similar phosphate-free detergent, followed by a nitric acid rinse for metals decon, a methanol rinse for organic compounds and a final potable water rinse.

Decontamination fluids and drilling fluids will be containerized and stored on site for later testing and disposal as appropriate. Transport and disposal of any hazardous materials encountered and containerized during the course of the investigation will be handled using appropriate waste management practices. Containers will be labeled as specified in 6 NYCRR, Part 371 for the site-specific contaminants encountered and disposed in accordance with the protocols outlined in 6 NYCRR Part 370.

5.3 QA/QC Samples

Equipment blanks will be obtained from all non dedicated sampling equipment at the frequency of one per day to test decontamination procedures. The equipment blanks will be prepared by pouring distilled/de-ionized water over decontaminated sampling equipment (i.e. spilt-spoons, sampling spoons and trowels) and allowed to run directly into laboratory bottles. Equipment blanks will not be obtained from pre-cleaned dedicated sampling equipment.

A trip blank sample will accompany each cooler containing samples for VOC analysis. Lab and method blanks will be obtained from the ELAP laboratory. Matrix spike, matrix spike duplicates and surrogate recovery data will be obtained for each sample run. This QA/QC data will be sufficient to validate the results of the sampling, should it be necessary.

5.4 Data Usability Summary Report (DUSR)

Independent data validation of analytical results provided by the laboratory will be performed in accordance with EPA SW-846 and/or ASTM procedures and protocols, in accordance with the recommendations outlined in "Laboratory Data Validation" Functional Guidelines for Evaluating Organic and Inorganic Analysis (USEPA, 1988) and other applicable guidelines.

6.0 REPORT

At the completion of the investigation, a sampling and investigation report will be prepared and submitted to the NYSDEC. This report will document the activities conducted, the data collected, and the assessment of human health exposures.

7.0 PROJECT ORGANIZATION

The project organization, including functions and responsibilities, are described below.

Project Manager – Kim Baines. Mr. Baines will be the primary contact with the NYSDEC. He will be responsible for establishing protocols to be used during the investigation activities, establishing sampling methods, and data validation procedures. He will confirm implementation of established protocols, maintain quality and consistency, and monitor the overall work assignment, schedules, and budgets.

Field Operations Leader – Jason Pelton. Mr. Pelton will be responsible for executing the scope of work and for task-specific budgeting and scheduling. During field activities, he will be the liaison among field staff, subcontractors, and on-site representatives from NYSDEC.

Field Staff – Tamara Girard, Ann-Marie Malena, Jennifer Mancinelli, Innocent Taziva, and Christopher Monaco. The field staff will be involved with the field activities, including adherence to and interpretation of the HASP and quality assurance protocols, oversight of site activities and sampling. The field staff will also be involved with data reduction, evaluation, and report preparation.

Additional or substitute field staff may be identified when the field schedule is finalized.

Health and Safety - Jennifer Mancinelli. Ms. Mancinelli will act as site Health and Safety Officer. She will be responsible for review and approval of the site-specific Health and Safety Plan and ensuring that throughout the duration of the field activities the Health and Safety Plan is implemented. Ms. Mancinelli will have authority to stop work should unacceptable health and safety risks occur.

Sample Management – Tamara Girard. Ms. Girard will manage laboratory subcontractors, supervise data validation, and provide assistance to the Site Manager when interpreting chemical data.

8.0 PROJECT SCHEDULE AND ASSUMPTIONS

Upon approval of the Investigation Work Plan by the NYSDEC, TCC anticipates that the investigation will take approximately four to eight weeks to complete. The Investigation is scheduled to be complete by the end of December 1999.

This schedule represents our best estimates for conducting activities and is based upon conducting the proposed activities at the level of effort and the extent of laboratory sampling provided in this Work Plan. If additional activities are warranted at the completion of any of the project tasks, then the project schedule may need to be adjusted. Potential delays that may be encountered during this investigation include: 1) unfavorable weather conditions; 2) laboratory turn-around times; 3) review and interpretation of results by interested parties; 4) subcontractor availability; and 5) other unforeseen and uncontrollable site conditions.

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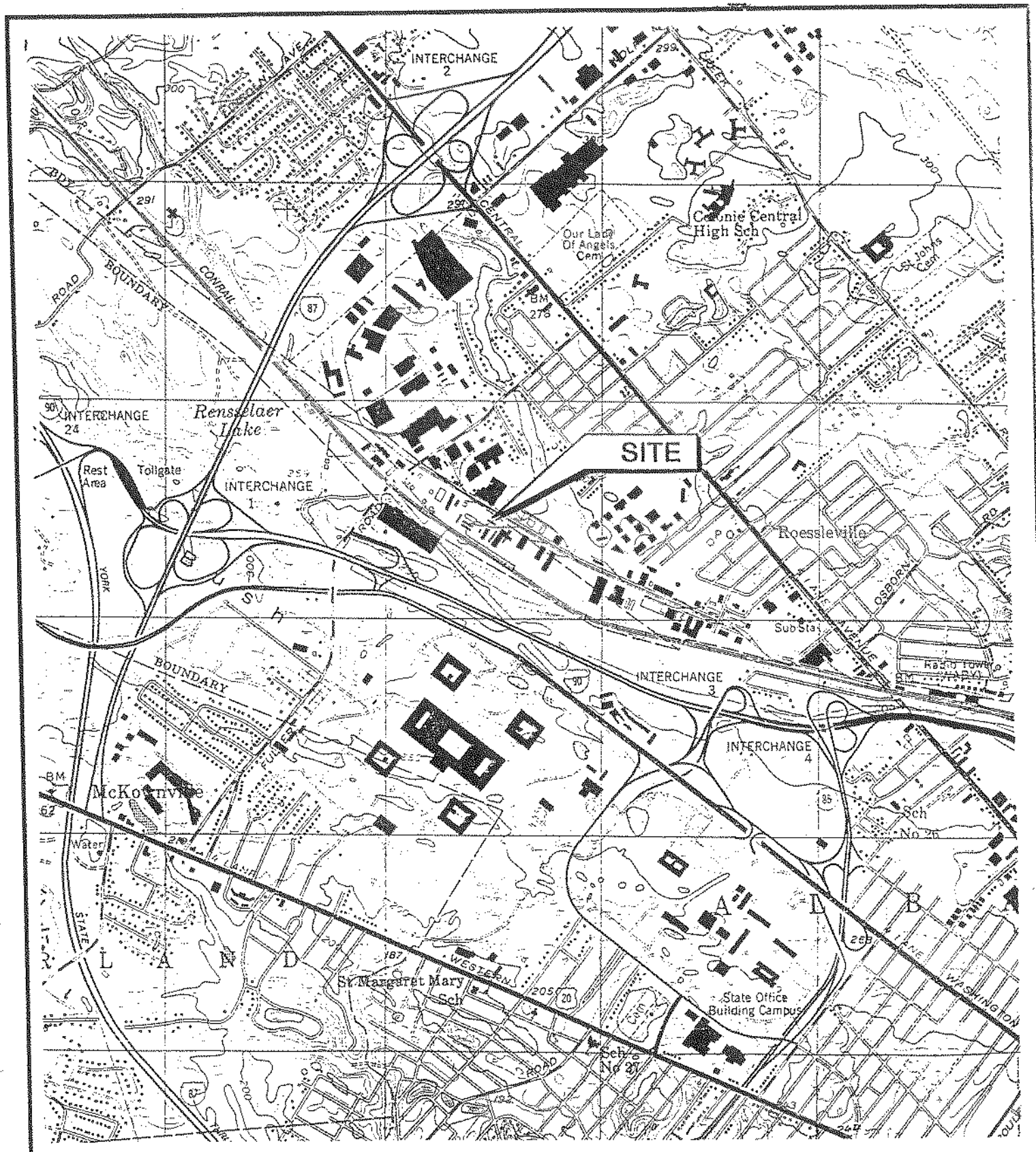


CHAZEN ENGINEERING & LAND SURVEYING CO., P.C.

Orange County Office:
Suite G, 201 Ward Street
Montgomery, NY 12549
Phone: (914) 457-1521

Dutchess County Office:
Manchester Rd. PO Box 3479
Poughkeepsie, NY 12603
Phone: (914) 454-3980

Capital District Office:
1407 Route 9, Bldg. 2
Clifton Park, NY 12065
Phone: (518) 371-0929

SCALE: 1"=2000'

MIRON LUMBER CO.

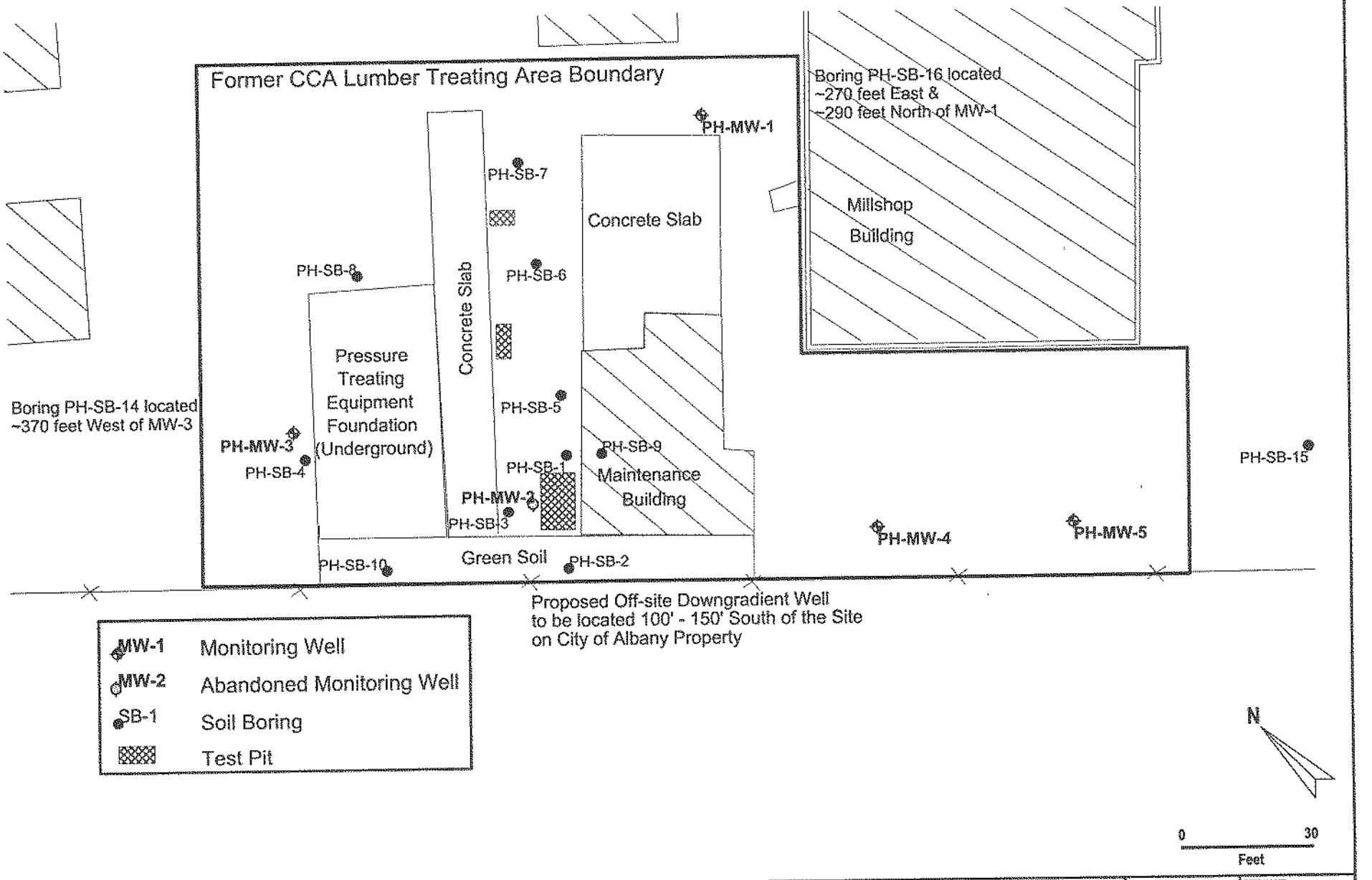
FIGURE 1
SITE LOCATION MAP
MIRON-PAULSEN DIV. PROPERTY

TOWN OF GUILDERLAND, ALBANY COUNTY, NEW YORK

sheet no.

date
11/96

project no.
39645



The Chazen Companies 1407 Route 9, bldg. 1 Clifton Park, NY 12065	TITLE: **Existing Boring, Well, & Test Pit Locations**	DRAWING:	SITE NAME: PaulsenHolbrook
		DATE: 11/09/99	PROJECT NO: 39545.01
		CHKD: / APPD:	FIGURE NO: 2

APPENDIX A
MONITORING WELL LOGS

Former Paulson-Holbrook CCA Lumber Treating Site Guilderland, New York

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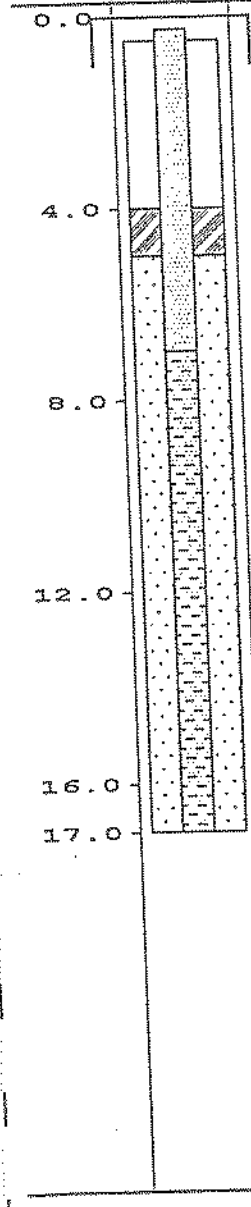
Prepared by:

The Dutchess County Office:
The Chazen Companies
P.O. Box 3479, 229-B Page Park
Poughkeepsie, NY 12603

Boring Log
(MW-1)

ite name: Paulsen - Holbrook	Project number: 39645.01
tent name: Miron Lumber	Depth to water at drilling time: 12.75
cation: N.E. of Green Soil	Screen size/unit: two inches
te drilled: 8/7/96	Screen Type: PVC slotted
ate finished: 8/7/96	Drill method: Hollow Stem Auger
rface elevation:	Notes: Elevation T.O.C. = 100.03
gged by: Lorraine Zeller	
rilling Co.: T&K Drilling	
riller: Kevin Kennedy	
tal depth of hole: 17 ft	



Depth (ft)	Well	(PID) PPM	Samples: Number	Condition	Recovery	Blows	Graphic Log	USCS symbol	Description
0.0			SS-1			6 8 11		SP	Gray - Brown fine SAND
			SS-2			2 2 4		SP	Yellow - Brown fine SAND
4.0			SS-3			3 2 5		SP	Yellow - Brown fine SAND
			SS-4			5 6 10		SM	Brown fine - very fine SAND
8.0			SS-5			9 9 8		SM	Brown fine - very fine SAND
			SS-6			5 7 7		SM	Brown fine - very fine SAND
12.0			SS-7			6 4 5		SM	Brown fine - very fine SAND
			SS-8			4 5 3		SM	Brown fine - very fine SAND
16.0						3 5 6		SM	Brown fine - very fine SAND
17.0						0 2 3 4			

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Boring Log
(MW-2)

Site name: Paulsen - Holbrook	Project number: 39645.01
Client name: Miron Lumber	Depth to water at drilling time: 13.09
Location: Green Soil Area	Screen size/unit: two inches
Date drilled: 8/7/96	Screen Type: PVC Slotted
Date finished: 8/7/96	Drill method: Hollow Stem Auger
Surface elevation:	Notes: Elevation T.O.C. = 99.98
Logged by: Lorraine Zeller	
Drilling Co.: T&K Drilling	
Driller: Kevin Kennedy	
Total depth of hole: 17 ft	

Depth (ft)	Well	(PID) PPM	Samples: Number	Condition	Recovery	Blows	Graphic Log	USCS Symbol	Description
0.0			SS-1			6 8 8 11		SP	Gray/Brown fine SAND
4.0			SS-2			5 5 7 9		SP	Yellow/Brown fine SAND, trace gravel
			SS-3			5 7 9 10		SP	Yellow/Brown fine SAND
8.0			SS-4			10 10 8 10		SP	Yellow/Brown fine SAND
			SS-5			12 10 8 9		SP	Yellow/Brown fine SAND
12.0			SS-6			4 4 6 6		SM	Brown fine - very fine SAND
			SS-7			3 4 6 4		SM	Brown fine - very fine SAND
16.0									
17.0									

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Boring Log
(MW-3)

Site name: Paulsen - Holbrook	Project number: 39645.01
Client name: Miron Lumber	Depth to water at drilling time: 13.09
Location: West of Green Soil	Screen size/unit: two inches
Date drilled: 8/7/96	Screen Type: PVC Slotted
Date finished: 8/7/96	Drill method: Hollow Stem Auger
Surface elevation:	Notes: Elevation T.O.C. = 100.47
Logged by: Lorraine Zeller	
Drilling Co.: T&K Drilling	
Driller: Kevin Kennedy	
Total depth of hole: 17 ft	

Depth (ft)	Well	(PID) PPM	Samples: Number	Samples: Condition	Samples: Recovery	Samples: Blows	Graphic Log	USCS Symbol	Description
0.0			SS-1			5 4 5 4		SP	Brown fine SAND
			SS-2			2 2 5 4		SP	Brown fine SAND
4.0			SS-3			3 3 5 6		SP	Yellow/Brown fine SAND
			SS-4			7 8 10 4		SP	Yellow/Brown fine SAND
8.0									
			SS-5			3 3 4 4		SP	Brown fine SAND
12.0									
			SS-6			1 2 3 4		SM	Brown fine - very fine SAND
16.0									
17.0									

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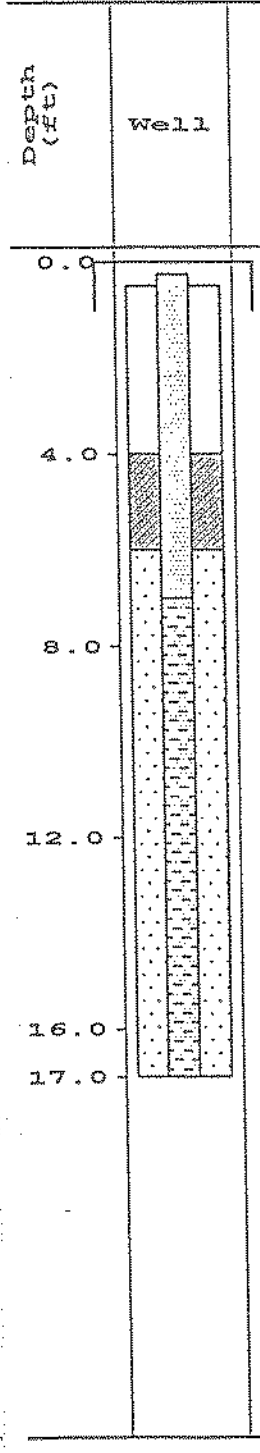
Boring Log
(MW-4)

Site name: Paulsen - Holbrook	Project number: 39645.01
Client name: Miron Lumber	Depth to water at drilling time: 12.57
Location: East of Green Soil	Screen size/unit: two inches
Date drilled: 8/7/96	Screen Type: PVC Slotted
Date finished: 8/7/96	Drill method: Hollow Stem Auger
Surface elevation:	Notes: Elevation T.O.C. = 98.67
Logged by: Loraine Zeller	
Drilling Co.: T&K Drilling	
Driller: Kevin Kennedy	
Total depth of hole: 17 ft	



Depth (ft)	Well	(PID) PPM	Samples: Number	Condition	Recovery	Blows	Graphic Log	USCS symbol	Description
0.0			SS-1			10 8 6 6		SP	Brown fine SAND
4.0			SS-2			2 2 5 6		SP	Yellow/Brown fine SAND
8.0			SS-3			2 3 6 4		SP	Brown fine SAND
12.0			SS-4			1 1 2 3		SM	Brown fine - very fine SAND
16.0									
17.0									

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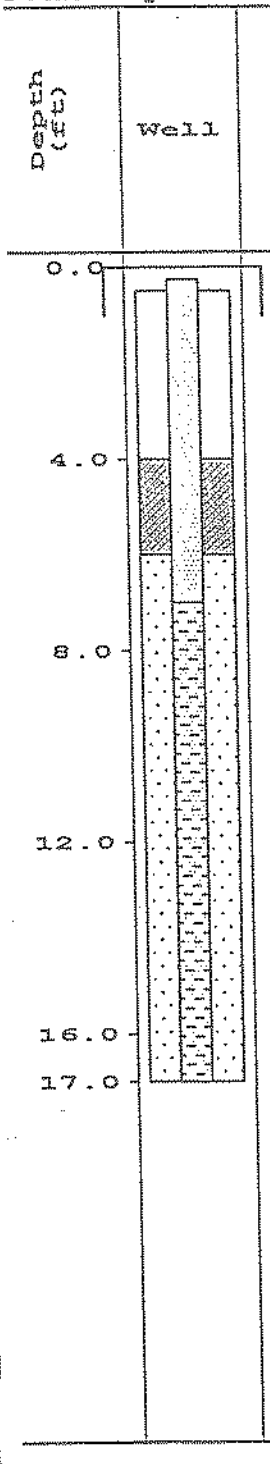
Boring Log
(MW-5)

Site name: Paulsen - Holbrook	Project number: 39645.01
Client name: Miron Lumber	Depth to water at drilling time: 12.17
Location: East of ML-4	Screen size/unit: two inches
Date drilled: 8/8/96	Screen Type: PVC Slotted
Date finished: 8/8/96	Drill method: Hollow Stem Auger
Surface elevation:	Notes: Elevation T.O.C. = 97.96
Logged by: Lorraine Zeller	
Drilling Co.: T&K Drilling	
Driller: Kevin Kennedy	
Total depth of hole: 17 ft	



Depth (ft)	Well	(PID) PPM	Samples: Number	Condition	Recovery	Blows	Graphic Log	USCS Symbol	Description
0.0			SS-1			3 3 4 5		SP	Brown fine SAND
4.0			SS-2			2 4 5 5		SP	Yellow/Brown fine SAND
8.0			SS-3			3 2 2 3		SP	Brown fine SAND
12.0			SS-4			1 1 1 2		SM	Brown fine - very fine SAND
16.0									
17.0									

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