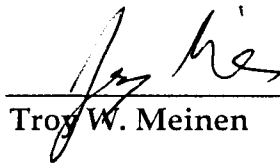


Whirlpool Corporation, Inc.

Conceptual Site Model
Fort Smith, Arkansas

August 2, 2002

W.O. #581-007



Troy W. Meinen



H. Reiffert Hedgcox, P.G.
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A BORING LOGS

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1.0 INTRODUCTION

1.1 SITE BACKGROUND

The Whirlpool Fort Smith facility is located at 6400 Jenny Lind Road on the south side of Fort Smith, Arkansas (Figure 1-1). The facility manufactures side-by-side household refrigerators, trash compactors and icemakers. The facility has been operated by Whirlpool for over 30 years.

A series of soil and ground water studies were initiated at the site as part of a project to remove an underground fuel storage tank (UST). That work indicated that there was no evidence of releases of petroleum hydrocarbons from the UST. However, the analytical data showed the presence of trichloroethylene (TCE) and other solvents not related to the UST in the shallow ground water. Subsequent investigations, including a soil investigation to assess the potential source area, have been conducted to delineate the ground water plume.

Whirlpool has implemented a voluntary semi-annual ground water sampling program to monitor ground water conditions at the site. Studies are also currently under way to evaluate options for remediation of the on-site affected ground water.

Data from wells in the northern part of the facility indicate that TCE affected ground water is present near the northern boundary of the facility and may extend off site. In addition, recent site investigations indicate that there may be a limited northerly component to ground water flow. Based on these data, Whirlpool initiated discussions with the Arkansas Department of Environmental Quality (ADEQ) to enter a letter of agreement (LOA) to implement a Corrective Action Strategy (CAS) at the Whirlpool Facility.

1.2 OBJECTIVES OF THE CSM

This Conceptual Site Model (CSM) has been prepared to fulfill the requirements specified in Section II. F. of the LOA dated (June 6). Based on the LOA, a CSM must be submitted at the scoping meeting that has been tentatively scheduled for August 14, 2002

Successful implementation of the CAS relies on the development of a complete, yet concise CSM. To that end, the CSM for the whirlpool facility was developed using readily available data to illustrate the relationship between potential constituents of concern (COCs), potential exposure pathways, and potential receptors. Specifically, this CSM will be used as the framework on which the implementation of the CAS will be based.

2.0 FACILITY PROFILE

2.1 SITE FEATURES

The facility consists of the main manufacturing building (approximately 1.3 million square feet), and adjoining warehouse and administrative offices (Figure 2-1). Additional buildings located on the north side of the property include a water treatment plant and boiler house. The majority of the property surrounding the buildings is covered with concrete or asphalt for parking. Some gravel parking areas are also present. An outdoor waste storage area is located on the south side of the manufacturing facility. This paved area is enclosed with a chain-link fence topped with razor wire.

As stated in the LOA, the focus of the CAS is the area north and northwest of the facility. The major structures in that portion of the facility are the water treatment plant and boiler house mentioned previously (Figure 2-2). However, historical records indicate that a small building located west of the boiler house was formerly used for degreasing operations. This small building has not been used since the mid 1980's.

2.2 FACILITY OPERATIONS

Whirlpool-Fort Smith is a refrigerator manufacturing facility. The manufacturing processes conducted at the site include polyurethane foaming, metal fabrication, plastic thermoforming and assembly operations. All storage of hazardous wastes is limited to 90 days or less in containers, no hazardous waste treatment activities are conducted on site. It is believed that constituents in the soils and groundwater identified in the facility investigation are the result of historical practices prior to 1980.

Dating back to approximately 1967, equipment degreasing operations utilizing trichloroethylene (TCE) were performed in the former degreaser building located near the northwestern corner of the main manufacturing building. The use of TCE was discontinued in the mid 1980's and the degreaser building is not currently used for any cleaning operations.

Based on verbal reports from former workers, the degreasing equipment consisted of a tank and a parts rack. The degreasing operations involved placing parts into the parts rack positioned over the tank. The TCE tank was then heated creating a TCE vapor in the area where the parts were placed. Following degreasing activities, the vapor was condensed and returned to the tank below the parts rack.

3.0 LAND USE AND EXPOSURE PROFILE

3.1 FACILITY AND ADJACENT PROPERTIES

The Whirlpool facility is a manufacturing and warehousing operation. No other specific land use categories are present on the property.

Surrounding property uses include light industrial/commercial activities to the south and east, residential to the north and undeveloped land to the west (Figure 3-1). Residential properties to the north include single-family homes and two multi-family units. No recreational or agricultural properties are located in the vicinity of the Whirlpool facility. In addition, schools, hospitals, day care centers, etc. are located at least 0.5 miles from the facility.

3.2 RESOURCE USE AND LOCATIONS

Based on the EPA ground water classification guidelines Ground water in the vicinity of the Whirlpool facility would be classified as Class IIB ground water (a potential drinking water source). Following EPA guidance, the area near the facility has been evaluated to identify potential groundwater use and ecological receptors.

As is detailed in Section 6.0 of this submittal, there are no ecologically vital areas within a two-mile radius of the Whirlpool facility.

A water well search was performed within a one-mile radius of the Whirlpool facility. No federal, state or public water supply wells were identified within the search distance (Figure 3-2). Drinking water and sanitary sewer services for both commercial/industrial and residential properties in the vicinity of the Whirlpool plant are supplied by the City of Fort Smith. Drinking water supplies include Lake Fort Smith, Lake Shepherd Springs and the Lee Creek Reservoir. These reservoirs are not located near the facility.

<http://www.fsark.com/NewsReleases/Archive/2001-07-24SpecialReportWaterSupplyPlanning.html>

Additionally, available literature indicates that the majority of shallow wells in the Fort Smith area are completed in the McAlester Shale. Apparently, the thin alluvial deposits in the Fort Smith area (specifically those not associated with the Arkansas River) yield insufficient quantities of water to justify shallow wells. Most wells completed in the McAlester Shale are completed to depths up to 475 feet and produce poor quality water with yields of 25 to 75 gallons per minute.

3.3 APPLICABLE EXPOSURE SCENARIOS AND PATHWAYS

Whirlpool has conducted a survey of the land use and potential exposure scenarios/pathways in the immediate vicinity of the impacted area. Based on this survey, both industrial and residential exposure scenarios are potentially applicable. Industrial exposure pathways may include incidental soil ingestion, dermal contact with soil or inhalation or volatiles by a construction or

maintenance worker. Residential pathways appear to be limited to inhalation of volatiles through the use of underground storm shelters at locations immediately north of the plant (across Ingersoll Avenue.).

4.0 *PHYSICAL PROFILE*

4.1 *TOPOGRAPHY*

The facility is situated near the crest of a low hill such that the topography of the Whirlpool facility gently slopes to the east-northeast along the northern portion of the facility, and to the south-southeast along the southern portion of the facility. The location of the site is identified on the USGS 7.5 min. topographic quadrangle for Fort Smith, Arkansas in Figures 3-1 and 3-2). The site is located outside the 100-year and 500-year floodplains.

Drainage ditches are located along Ingersoll Avenue on the north side of the facility and along Jenny Lind Road on the east side of the facility. Surface water generally flows toward the northeast corner of the facility where it enters the city storm sewer system under Jenny Lind Road and flows toward Mill Creek.

4.2 *GEOLOGY*

The geology of the Fort Smith area of Western Arkansas is generally characterized by Pennsylvanian age sediments. The Whirlpool facility, situated on the Northwestern flank of the Massard Prairie Anticline, overlies Quaternary Alluvium and gently dipping Pennsylvanian McAlester Shale.

Quaternary Alluvium is present from ground surface to a depth of 29 to 37 feet at the Whirlpool facility. Site boring logs and previous site literature indicate the alluvium is generally composed of a shallow fine-grained unit, and a coarse-textured basal unit (Figures 4-1 and 4-2).

The Upper Fine-Grained unit exhibits significant variations in lithologic texture throughout the site and with depth, generally varying from fine-grained silt to sandy clay. In general, the central portion of this unit (from 4 to 10 feet below ground surface (bgs)) consists of sandy clay. The thickness of this sandy-clay zone is highly variable; ranging from a maximum thickness of approximately 13 feet to 1 foot or less at many locations. This sandy-clay zone is not recognizable in approximately half of the borings at the site.

The lower unit of the alluvium at the site, commonly referred to as the Basal Aquifer, consists of sands and gravels. The upper portion of the Basal Aquifer unit is typically composed of a fine-grained silty sand to sandy silt. This sandy silt grades to a sandy gravel with depth in the lower portion. Where present, the silty sand portion of the unit is from 5 to 10 feet thick and forms a gradational transition between the Upper Fine-Grained unit and the Basal Aquifer.

The sandy gravel at the base of the Basal Aquifer is commonly 3 to 6 feet thick and has variable amounts of clay and silt. This sand and gravel layer is present in the majority of the borings at the site and it rests unconformably on either weathered shale or clay associated with the weathered shale.

The alluvial units are underlain by the McAlester Shale. This formation ranges up to 1000 feet thick in the Fort Smith region. In the vicinity of the Whirlpool facility the upper portion has been eroded leaving a thickness of 100 to 500 feet. The full thickness of the McAlester Shale immediately beneath the Whirlpool facility has not been determined.

Based on the site boring logs, the top of the shale is present from 26 to 35 feet bgs (Figure 4-3). The upper portion of the shale is typically silty, black to dark-gray, fissile, micaceous shale. Commonly, there is a thin veneer of friable red-orange to gray-brown clay between the base of the gravel zone and the weathered shale. This clay typically grades to the black or dark gray shale of the McAlester Formation.

Soil boring logs, cone penetrometer test logs and monitoring well completion details are provided in Appendix A.

4.3 *HYDROGEOLOGY*

The facility has been conducting ground water monitoring activities since 1989. Water level measurements from these sampling events, indicate that the predominate direction of shallow ground water flow during fall is to the south and southwest (Figure 4-4). This dominant flow direction, however, changes during the spring to the southeast (Figure 4-5). In addition, recent information implies that ground water flow in the northern portion of the site may have a limited northerly component.

Based on data from numerous ground water investigations at the site, the Basal Aquifer is semi-confined. Calculated hydraulic conductivity values for the Basal Aquifer unit range from 1.74×10^{-4} cm/s up to 1.0×10^{-2} cm/s. One aquifer pumping test conducted at the facility indicated that the average hydraulic conductivity for the north side of the facility is 4.6×10^{-3} cm/s based on an aquifer thickness of 16 feet. The storage coefficient was estimated at 6.5×10^{-3} .

Ground water flow velocity for the northern portion of the facility has been calculated at 24 feet per year. Based on a limited number of borings and piezometers installed north of the site, it appears the basal coarse-grained formation pinches out to the north and, consequently, additional studies are needed to assess the potential and characteristics of off-site, northerly ground water flow.

As discussed in Section 3, equipment degreasing operations utilizing TCE were previously performed at the facility. However, the use of TCE was discontinued in the mid 1980's and the degreaser building is no longer used for any cleaning operations.

There are no historical records that document any specific spills or other release incidents from the degreaser building. However, it is possible that historical leaks from the tank may have occurred, resulting in releases to the soil and ground water.

Based on historical process knowledge, and recent analytical data, the major constituent of concern (COC) is TCE. Daughter products (including tetrachloroethene, cis- and trans-1,2 dichloroethylene, 1,1-dichloroethylene, and vinyl chloride) resulting from degradation of TCE have also been periodically detected in site wells.

Analytical data from the monitoring well system show that the majority of the affected ground water has migrated from the apparent source area (near MW-25) in a southerly and southwesterly direction under the northwest corner of the main manufacturing building (Figure 5-1). The extent of affected ground water to the south and southwest appears to be limited to the Whirlpool property; that is, the ground water plume does not extend off site in that direction. However, recent data from wells north of the main building, along the north side of Ingersoll Avenue (MW-23, MW-31 through MW-33), indicate that affected ground water is present near the north boundary of the Whirlpool facility and extends off site in a limited area (Figure 5-1).

The Whirlpool Fort Smith facility consists of approximately 153 acres. Approximately 21 acres are undeveloped and consist of open grassy areas on the southwestern portion of the property. As indicated previously, the developed portion of the property consists of a warehouse, manufacturing facility and water treatment plant. Concrete driveways and concrete and asphalt parking areas surround the structures. Residential areas are located to the north and south of the property, and commercial industrial properties are located to the east and west.

City of Fort Smith stormwater drainage ditches are located along the northern and eastern boundaries of the property along Ingersoll Avenue and Jenny Lind Road, respectively.

In accordance with the requirements of the CAS an assessment to identify potential endangered and threatened species habitat in the vicinity of the facility has been requested from the U.S Fish and Wildlife Service.

There are no wetlands or gaining streams located north of the facility. Therefore, off-site migration of affected ground water to the north of the facility does not appear to impact any surface water features. Data collected during limited off-site investigation activities indicate that only off-site ground water is affected. Affected off-site soils have not been encountered.

An intermittent drainage channel is also located on the west side of the property and appears to drain to an unnamed tributary of the Poteau River approximately 1.0 mile to the west. The nearest major surface water body is Mill Creek located approximately 0.25-mile to 0.5-mile east of the property. All of these features are located outside of the limit of affected ground water. Based on this profile, it appears that there are no complete exposure pathways from the affected ground water to any ecological receptors in the vicinity of the facility.

RISK MANAGEMENT PROFILE

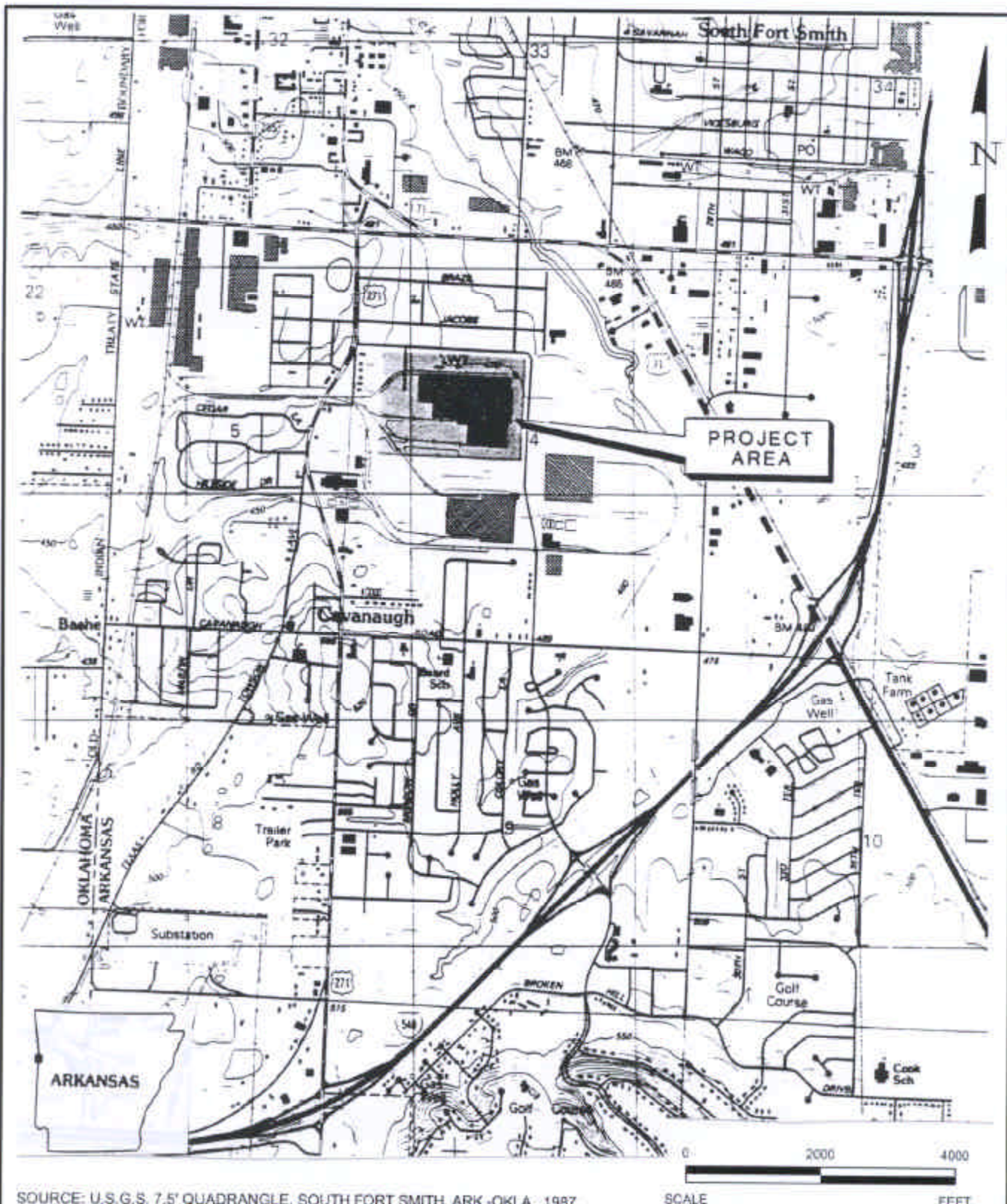
Once additional data is collected and this CSM will be updated. That additional information will then be used to develop a risk management profile for the site. The risk management profile will include the following components:

- Summary of risks
- Impact of a risk management activity on release and exposure characteristics
- Performance monitoring locations and media
- Contingency plans

Figures

August 2, 2002
W.O. # 581-007

Environmental Resources Management
16300 Katy Freeway, Suite 300
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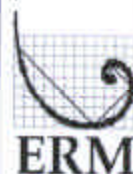


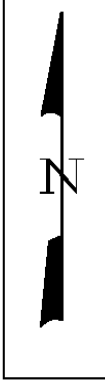
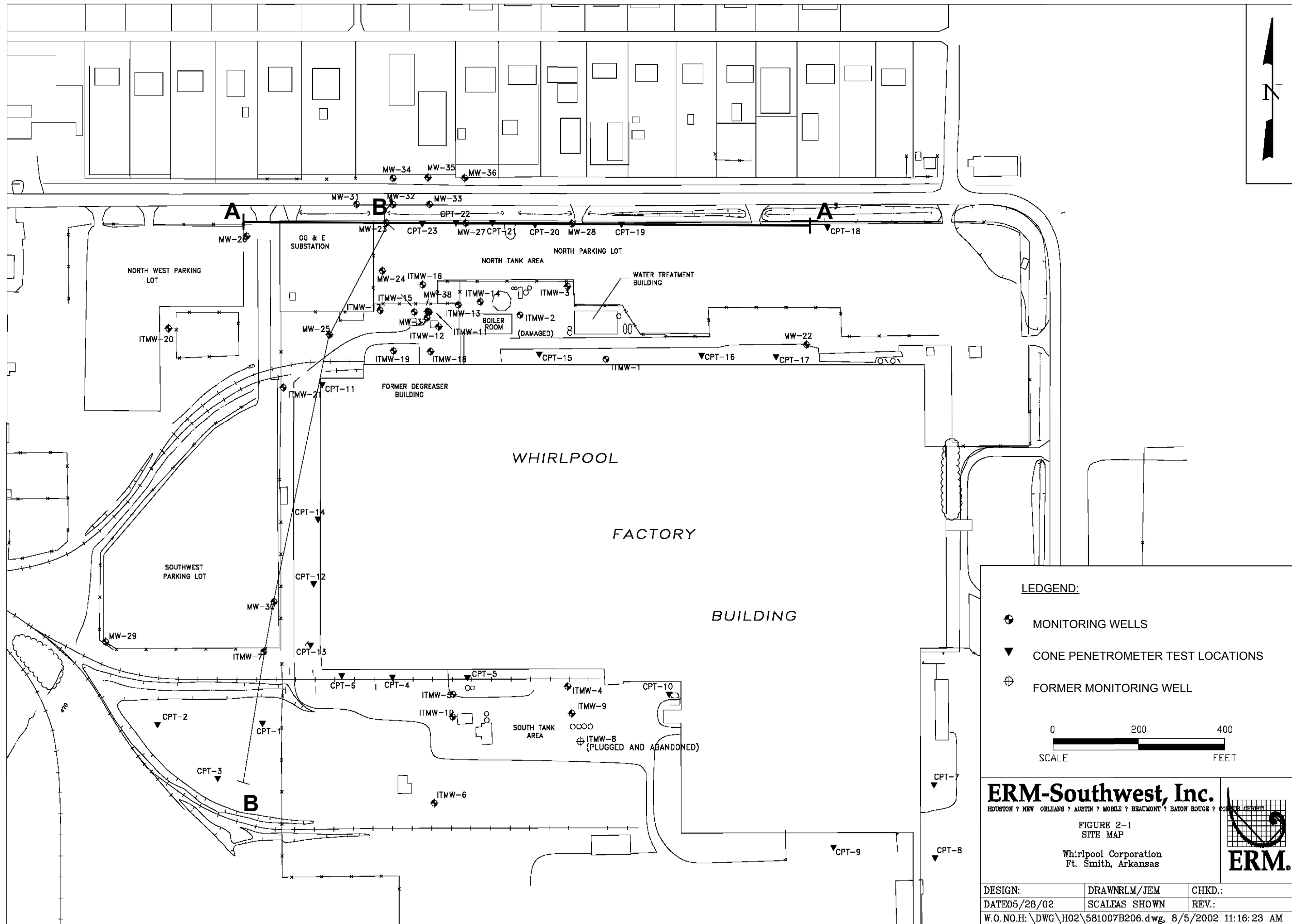
ERM-Southwest, Inc.

HOUSTON • NEW ORLEANS • AUSTIN • DALLAS • BEAUMONT • BATON ROUGE




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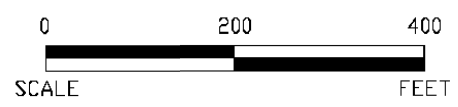
FIGURE 1-1
SITE LOCATION MAP
Whirlpool Corporation
Fort Smith, Arkansas





LEDGEND:

-  MONITORING WELLS
-  CONE PENETROMETER TEST LOCATIONS
-  FORMER MONITORING WELL



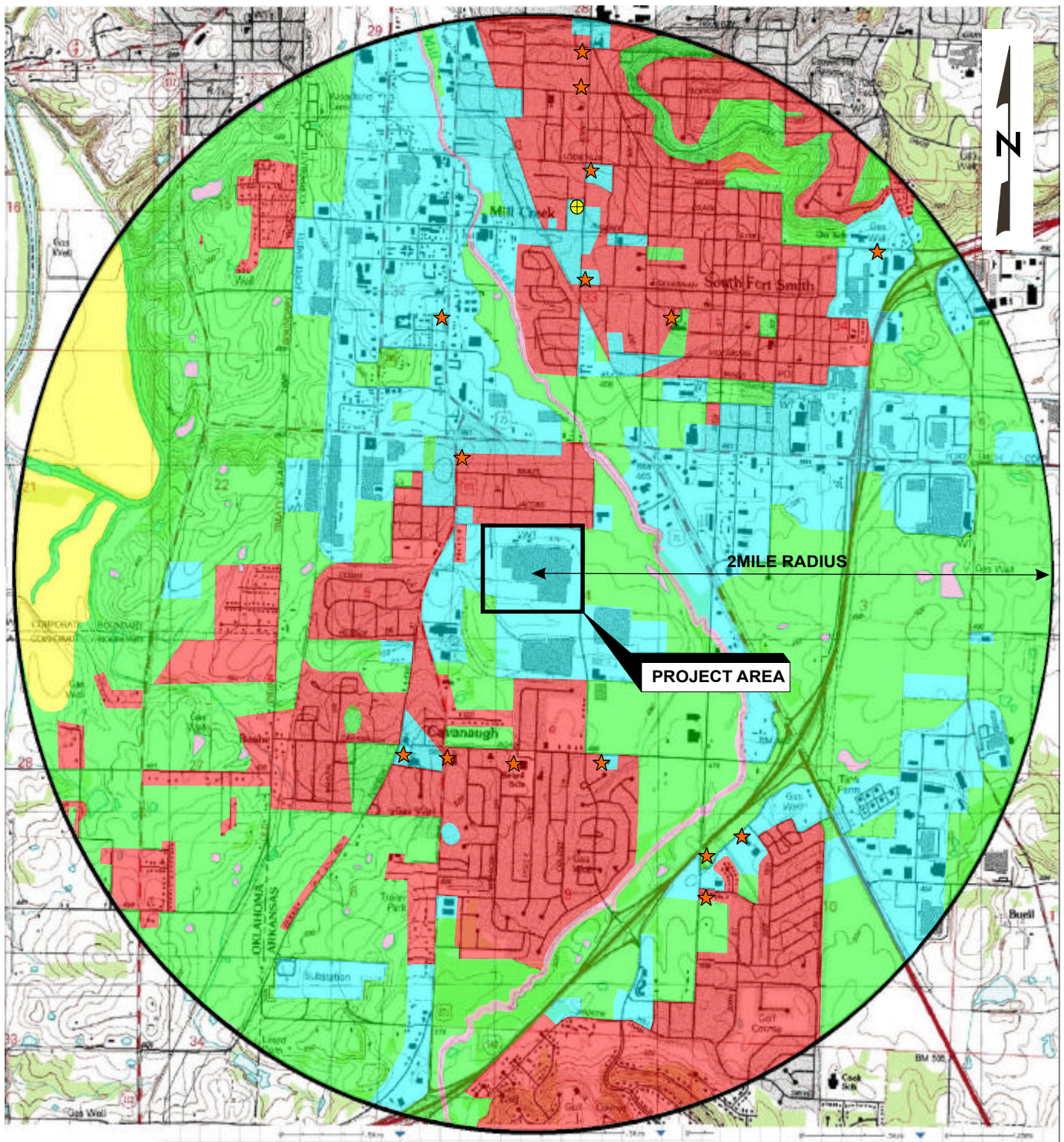
ERM-Southwest, Inc.
HOUSTON ? NEW ORLEANS ? AUSTIN ? MOBILE ? BEAUMONT ? BATON ROUGE ? CORPUS CHRISTI

FIGURE 2-1
SITE MAP

Whirlpool Corporation
Ft. Smith, Arkansas



DESIGN:	DRAWNRLM/JEM	CHKD.:
DATE05/28/02	SCALEAS SHOWN	REV.:
W.O.NO.H: \DWG\H02\581007B206.dwg, 8/5/2002 11:16:23 AM		



SOURCE: U.S.G.S. 7.5 Minute Quadrangle, South Fort Smith, Arkansas, 1973

LEGEND:

- | | |
|--|---|
| RESIDENTIAL | SURFACE WATER |
| UNDERDEVELOPED | HOSPITAL |
| AGRICULTURAL | SCHOOL / DAYCARE |
| COMMERCIAL / INDUSTRIAL | |

0 3000 6000
SCALE FEET

ERM-Southwest, Inc.

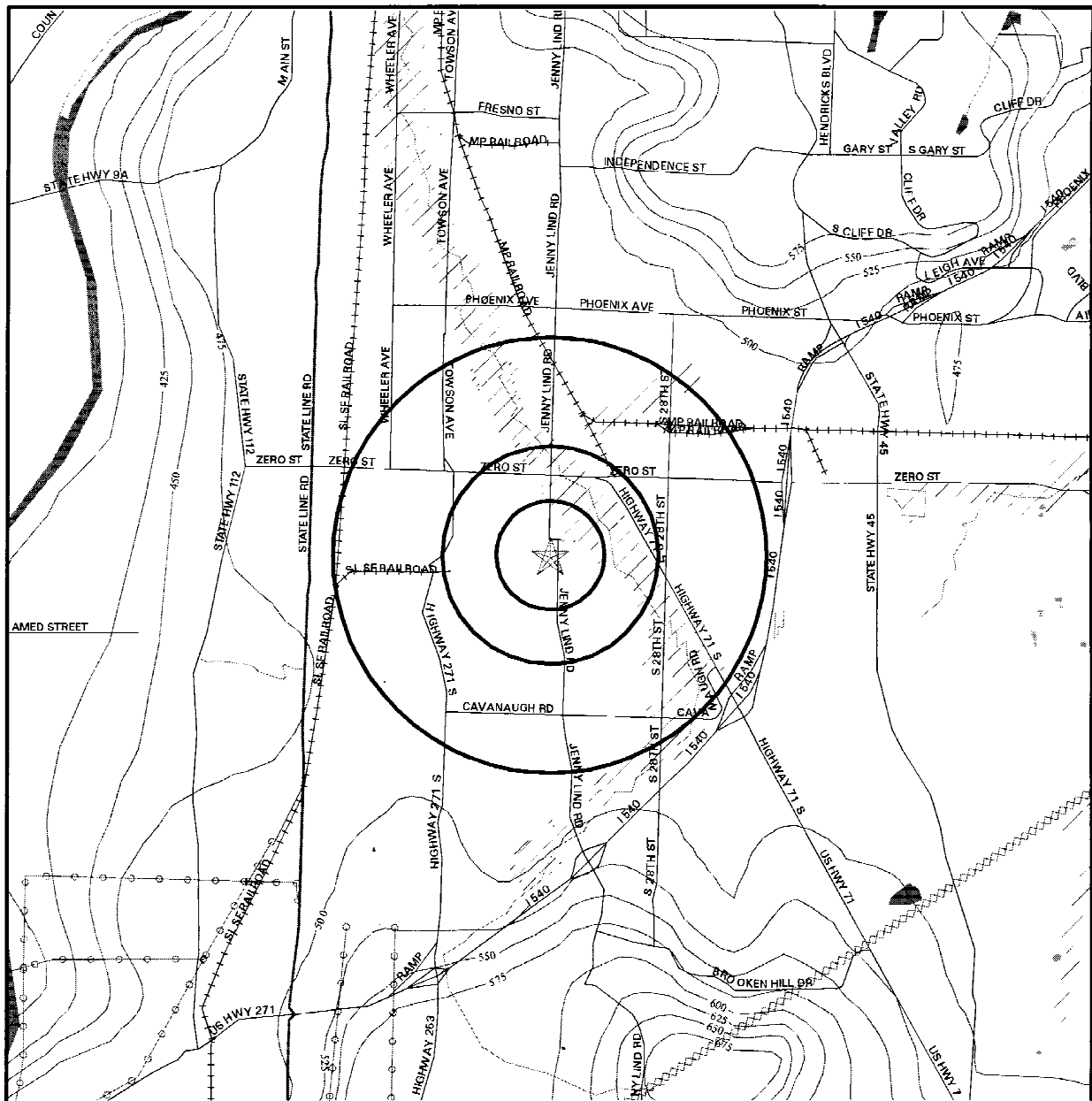
HOUSTON • NEW ORLEANS • AUSTIN • DALLAS • BEAUMONT • BATON ROUGE

FIGURE 3-1
LAND USE MAP
Whirlpool Corporation
Fort Smith, Arkansas



DESIGN: JCT	CHKD.: TM	DATE: 05/31/02	REV.: 0
DRAWN: JEM	SCALE: AS SHOWN	W.O.NO.: 581007A208 E02	

TOPOGRAPHIC MAP -591164.1s -'ERM -Southwest, Inc.'

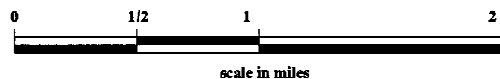


Source: US Geological Survey 1-Degree Digital Elevation Model
Compiled 09/15/92

- Major Roads
- Contour lines (25 foot interval unless otherwise shown)
- Waterways
- Wells within search distance to Target Property
- Earthquake Epicenters (Richter 5 or greater)

- Power lines
- Pipe lines
- Fault lines

- Water
- Wetlands
- 100-year flood zone
- 500-year flood zone



TARGET PROPERTY: Whirlpool Corporation
ADDRESS: 6400 Jenny Lind Rd
CITY/STATE/ZIP: Fort Smith AR 72908
LAT/LONG: 35.3224 / 94.4137

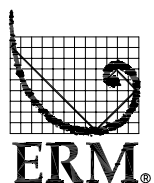
CUSTOMER: ERM -Southwest, Inc.
CONTACT: Roberta Smith
INQUIRY #: 591164.1s
DATE: February 02, 2001

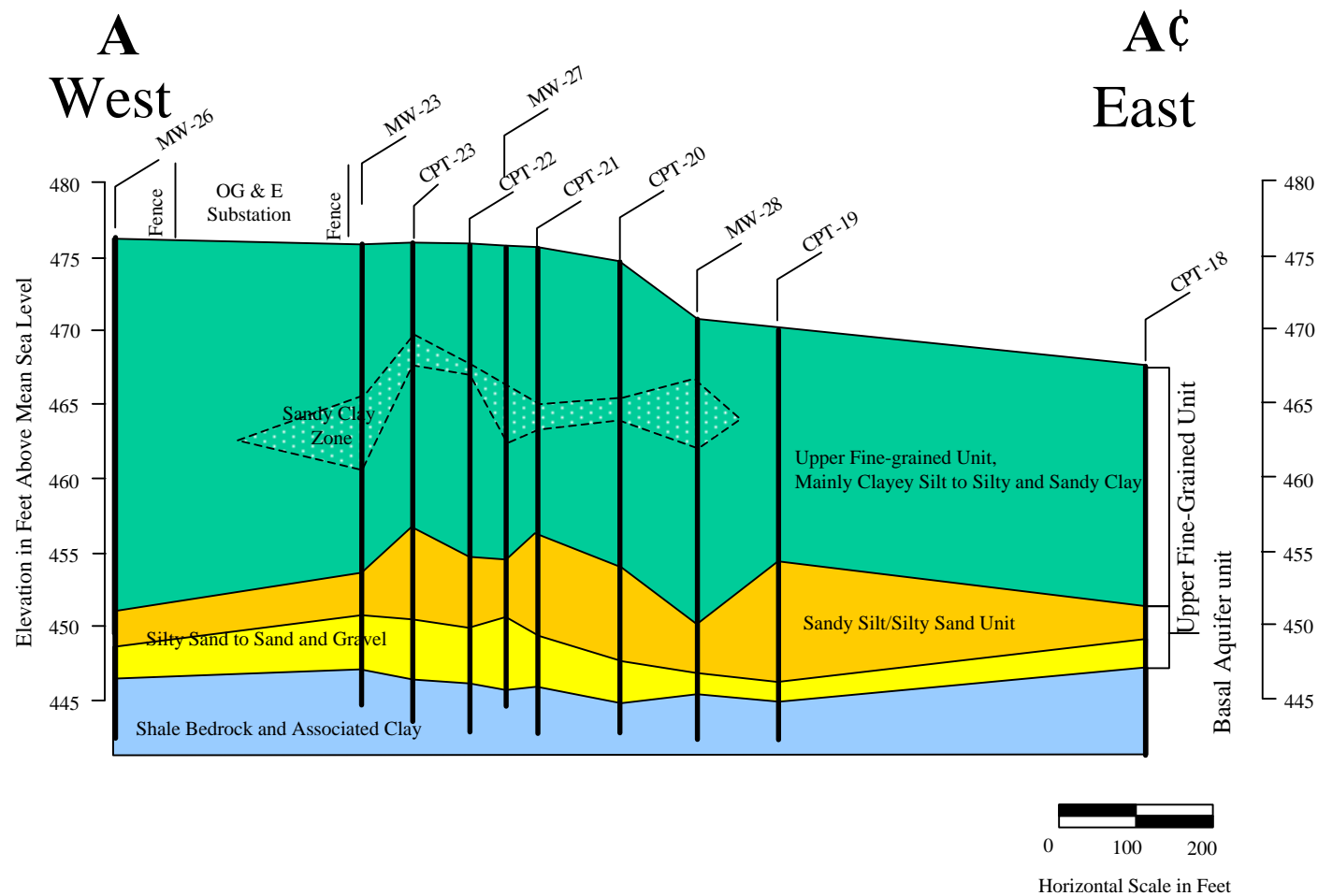
ERM-Southwest, Inc.

HOUSTON · NEW ORLEANS · AUSTIN · DALLAS · BRAUMONT · BATON ROUGE · CORPUS CHRISTI

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DATE: 05/23/02	SCALE: AS SHOWN	REV.:
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FIGURE 3-2
WATER WELL RADIUS SEARCH RESULTS
Whirlpool Corporation
Fort Smith, Arkansas





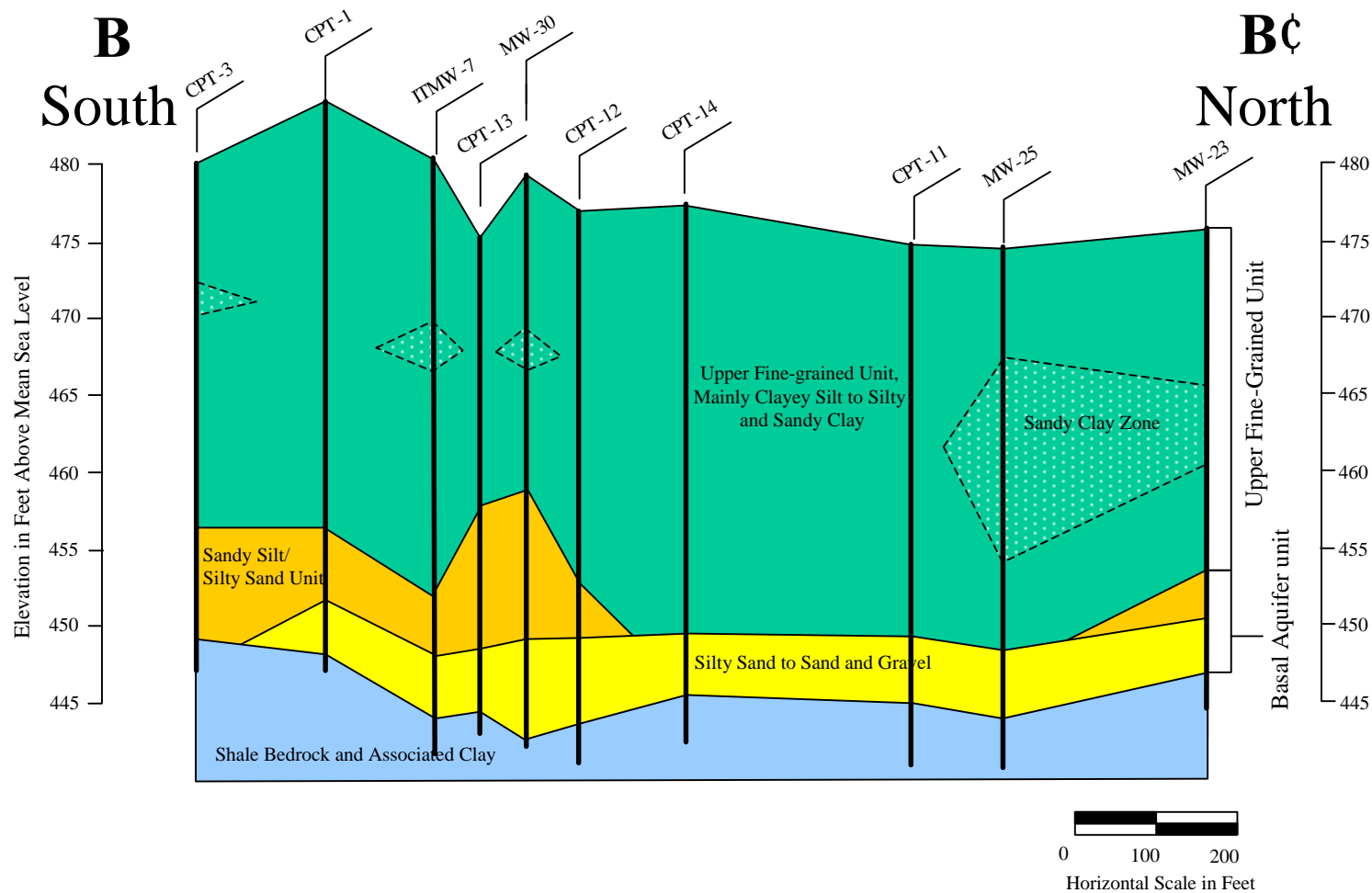
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DESIGN:	CHKD.:	DATE: 05/21/02	REV.:
DRAWN:	SCALE: AS SHOWN	W.O.NO.: 581007A205 H02	

FIGURE 4-1
Cross Section along Ingersoll Avenue
Whirlpool Corporation
Fort Smith, Arkansas



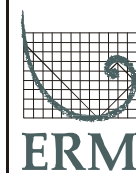


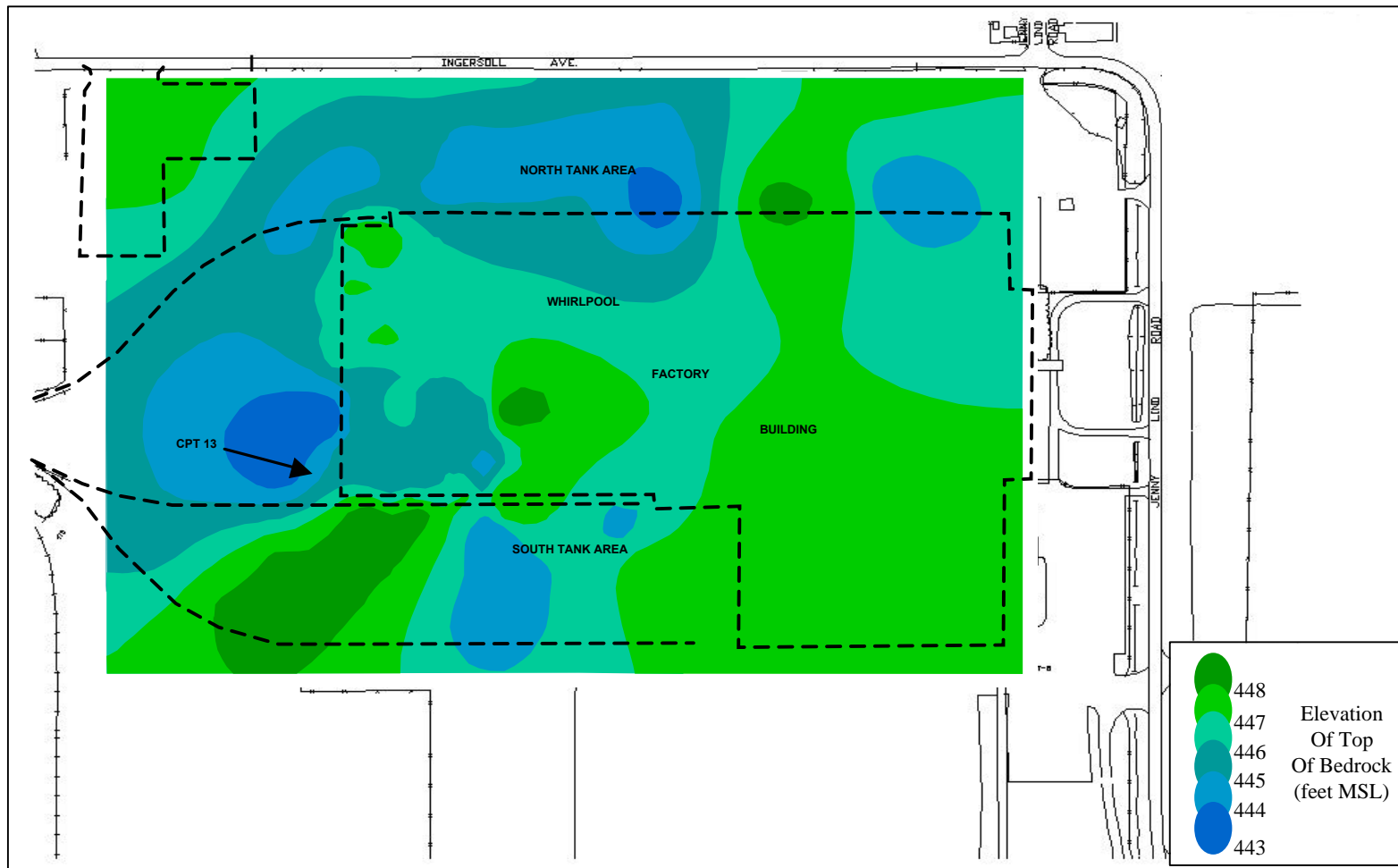
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DESIGN:	CHKD.:	DATE: 05/21/02	REV.:
DRAWN:	SCALE: AS SHOWN	W.O.NO.: 581007A205	E02

FIGURE 4-2
Cross Section Along West Side of Building
Whirlpool Corporation
Fort Smith, Arkansas





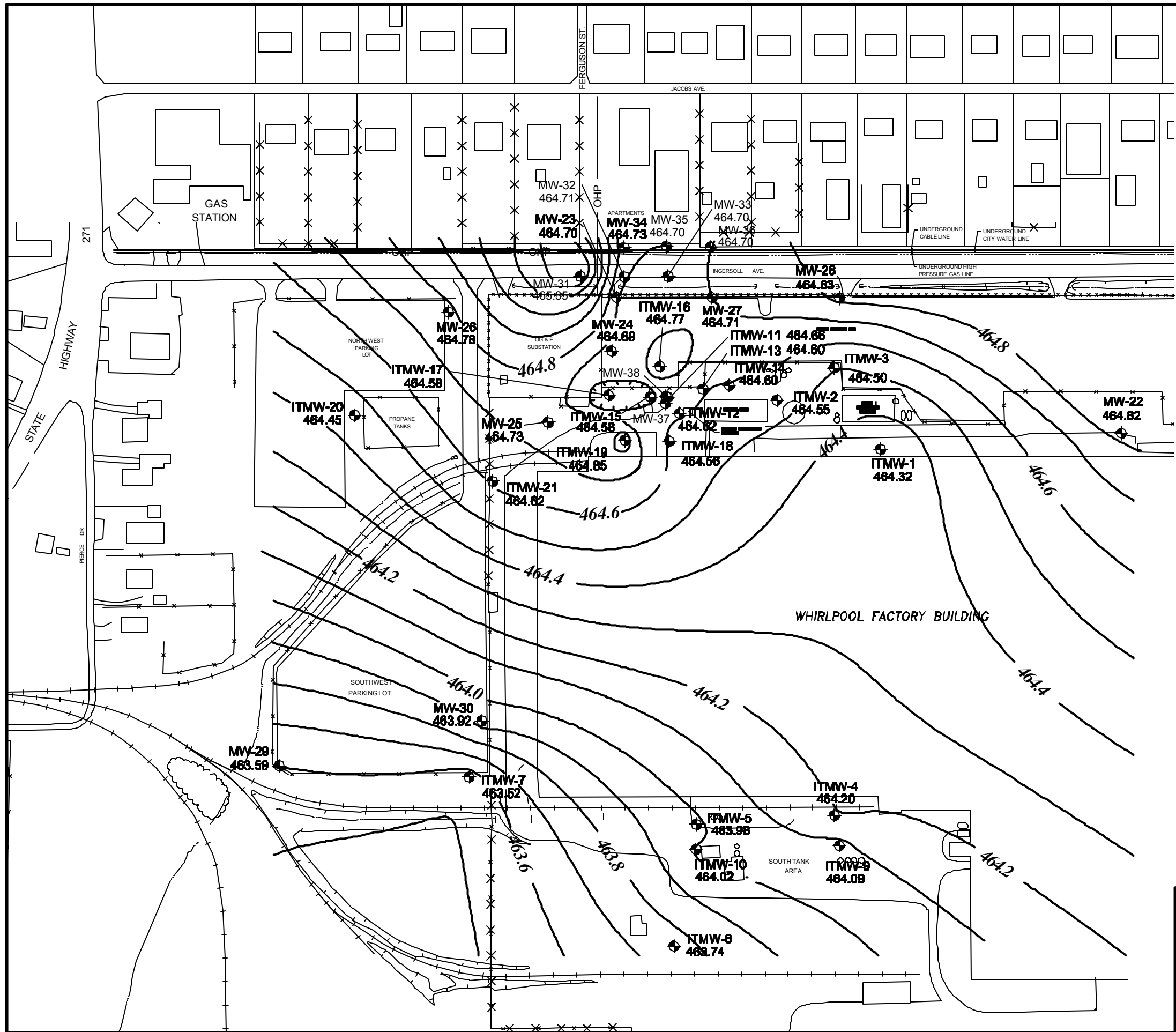
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FIGURE 4-3
Contour Map of McAlester Shale Surface
Whirlpool corporation
Fort Smith, Arkansas



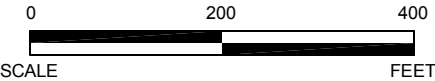


LEGEND

- MW-26 464.98 EXISTING MONITORING WELL
- 464.0— GROUND WATER CONTOUR LINE (FEET, MSL) (CONTOUR INTERVAL = 0.1 FEET)

NOTES:

1. DATA RECORDED ON SEPTEMBER 10, 2001.
2. CONTOURS UNDER THE FACTORY BUILDING ARE INFERRED.
3. LOCATIONS FOR WELLS ITMW-37 AND ITMW-38 ARE APPROXIMATE AND WILL BE UPDATED WHEN SURVEY DATA ARE RECEIVED.



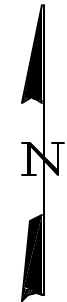
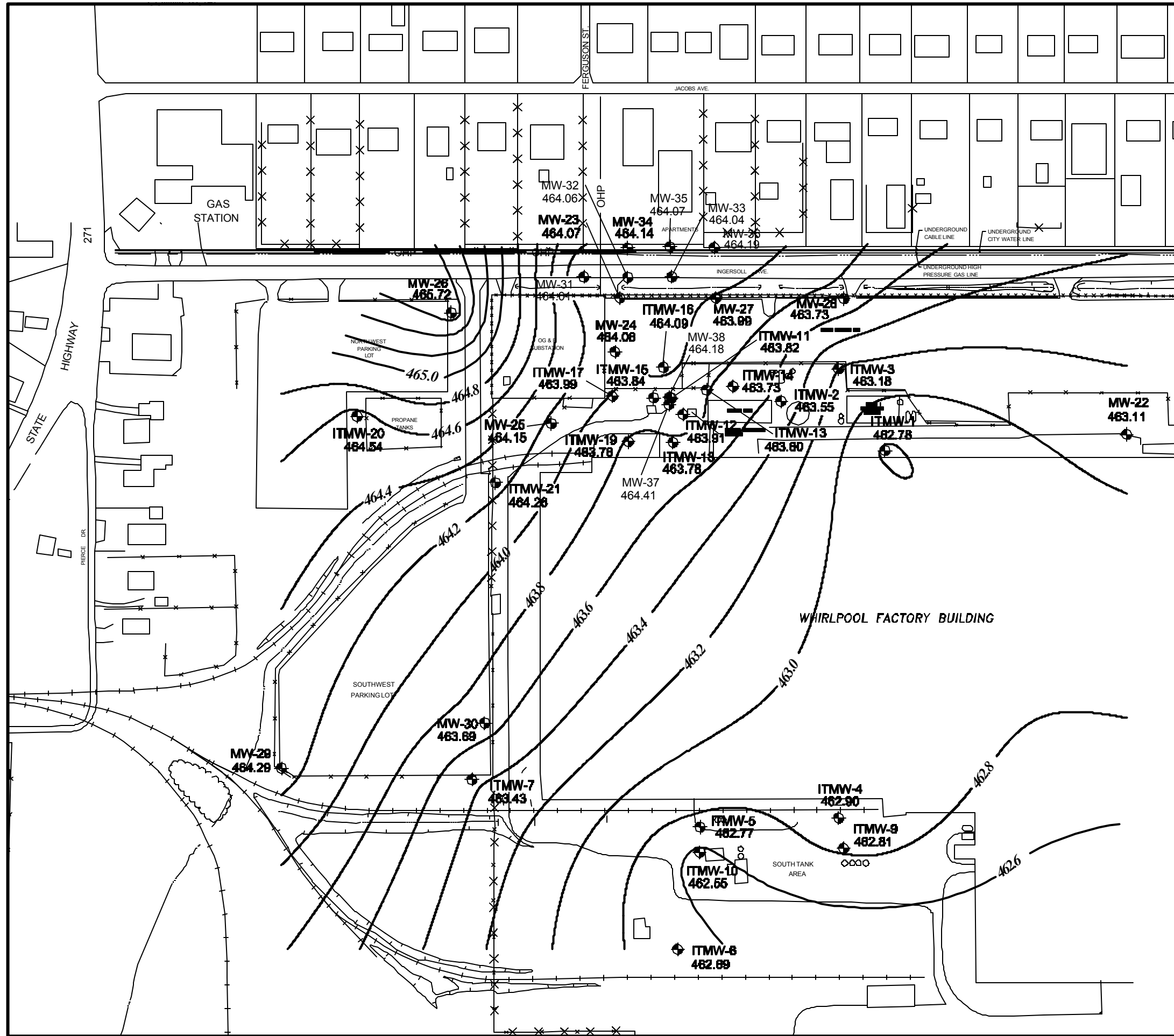
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FIGURE 4-4
POTENTIOMETRIC SURFACE MAP
SEPTEMBER 2001
Whirlpool Corporation
Fort Smith, Arkansas

DESIGN: JT	CHKD.:	DATE: 05/28/02	REV.:
DRAWN: LMc/JEM	SCALE: AS SHOWN	W.O.NO.: 581007B202 E02	





LEGEND

- MW-26 465.72 EXISTING MONITORING WELL
- 464.0 — GROUND WATER CONTOUR LINE (FEET, MSL) (CONTOUR INTERVAL = 0.2 FEET)

NOTES:

1. DATA RECORDED ON FEBRUARY 18, 2002.
2. CONTOURS UNDER THE FACTORY BUILDING ARE INFERRED.
3. MW-37 AND MW-38 WATER LEVELS WERE NOT USED TO CONTOUR THIS MAP DUE TO ANOMALOUS READINGS.

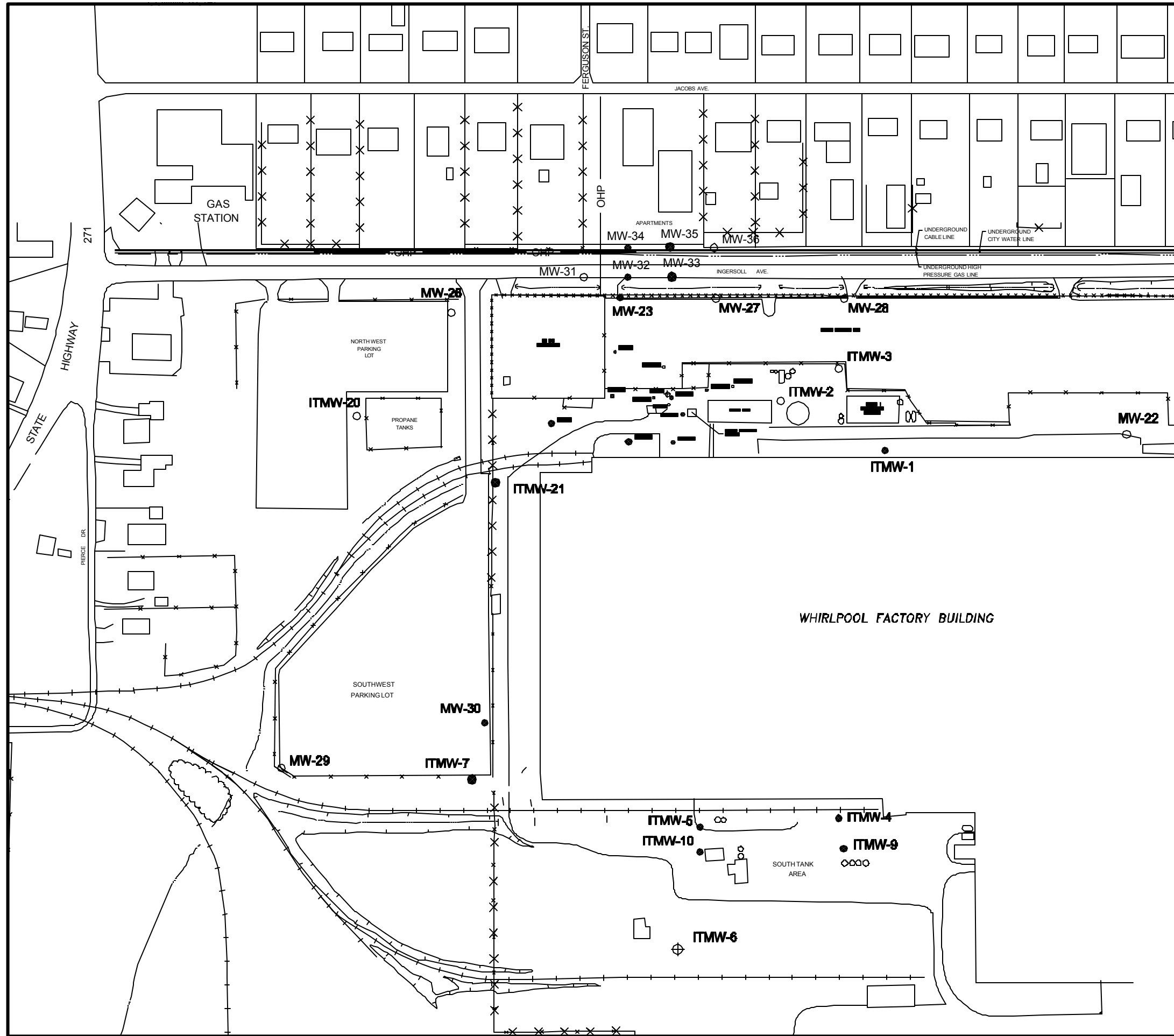


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FIGURE 4-5
POTENTIOMETRIC SURFACE MAP
FEBRUARY 2002
Whirlpool Corporation
Fort Smith, Arkansas

DESIGN: JT	CHKD.:	DATE: 05/20/02	REV.:
DRAWN: CAK	SCALE: AS SHOWN	W.O.NO.: 581007B203 E02	





LEGEND

- MW-26 ● EXISTING MONITORING WELL SAMPLED USING TRADITIONAL PURGE METHOD
- ⊕ EXISTING MONITORING WELL NOT SAMPLED USING TRADITIONAL PURGE METHOD

TCE CONCENTRATION (mg/l)
FEBRUARY 2002

- < 0.005
- 0.005 to 0.10
- 0.10 to 1.00
- 1.00 to 10.0
- > 10.0

NOTE:

- 1) MW-38 WAS USED AS AN INJECTION WELL FOR THE PILOT STUDY AND WAS NOT SAMPLED IN FEBRUARY 2002.



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FIGURE 5-1
TCE ISOCONCENTRATION MAP
FEBRUARY 2002
TRADITIONAL SAMPLE METHOD
Whirlpool Corporation
Fort Smith, Arkansas

DESIGN: JT	CHKD.:	DATE: 05/28/02	REV.:
DRAWN: LMC/JEM	SCALE: AS SHOWN	W.O.NO.: 581009B202 E02	

Boring Logs
Appendix A

August 2, 2002
W.O. # 581-007

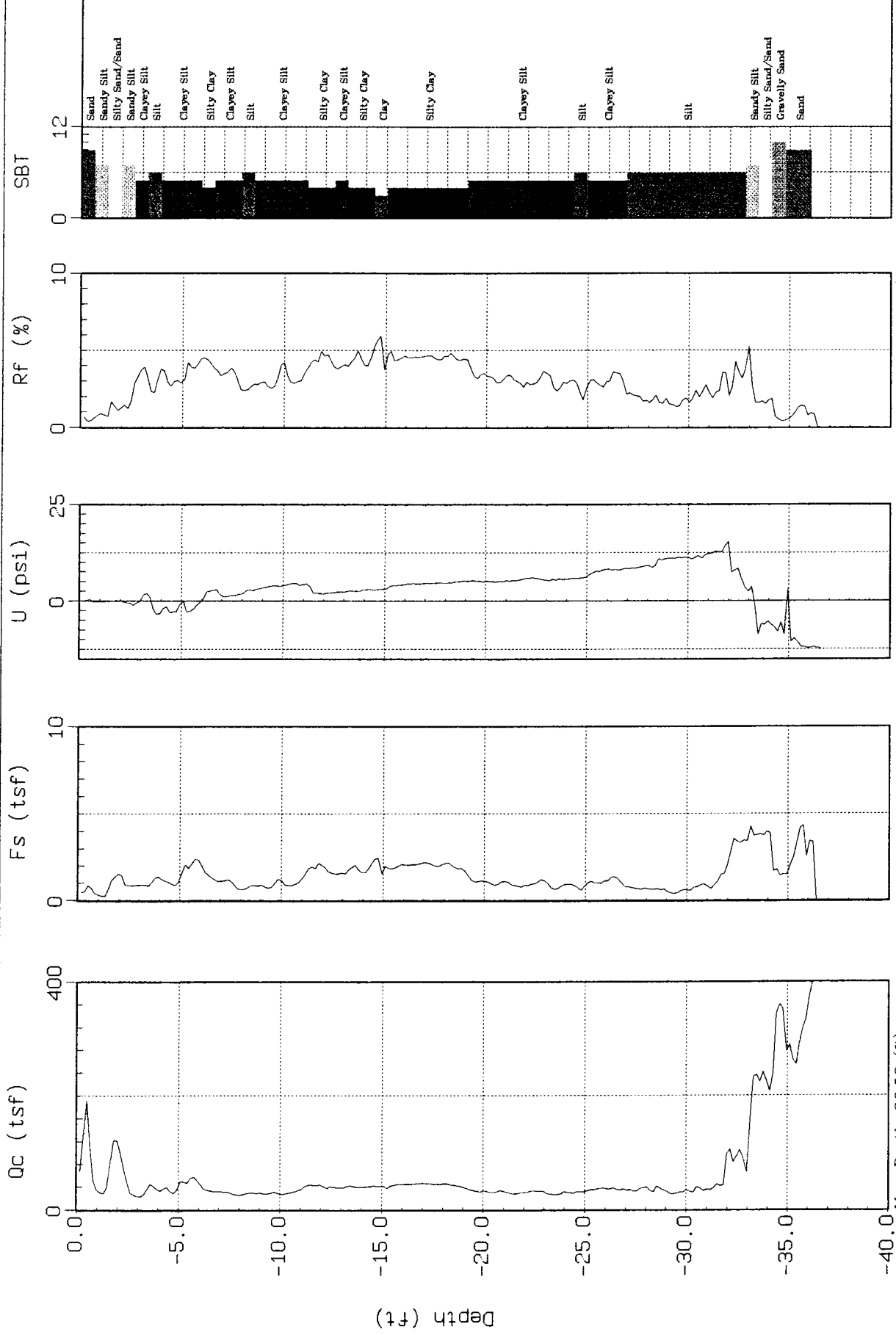
Environmental Resources Management
16300 Katy Freeway, Suite 300
Houston, Texas 77094-1611
(281) 600-1000



ERM Southwest

Site : WHIRLPOOL
Location : CPT-01

Geologist : Lori Pfeil
Date : 10:25:99 09:57



SBT: Soil Behavior Type (Robertson and Campanella 1988)

Max. Depth: 36.58 (ft)

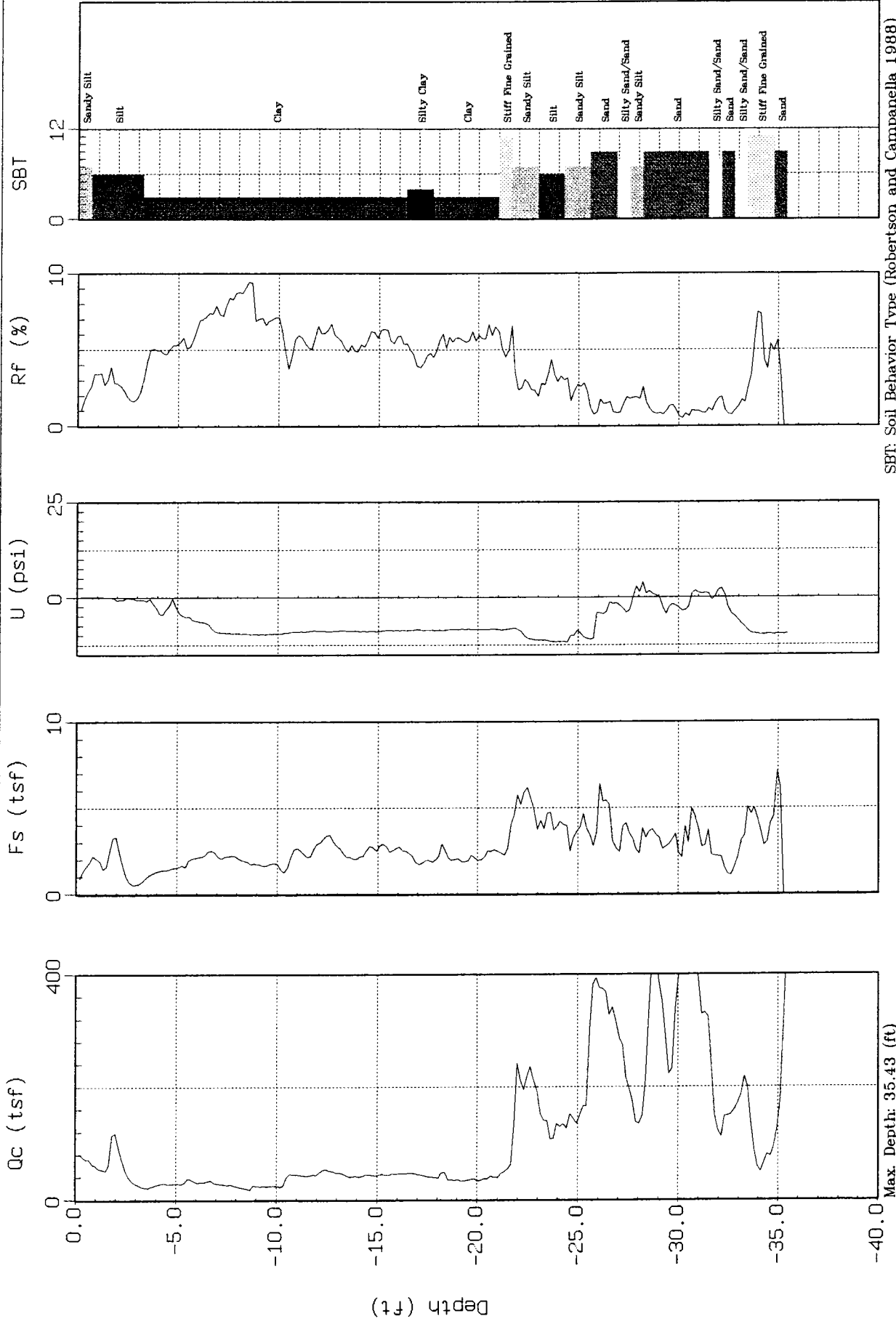
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-02

Geologist: Lori Pfeil
Date : 10:25:99 10:52



SBT: Soil Behavior Type (Robertson and Campanella 1988)

Max Depth: 35.43 (ft)

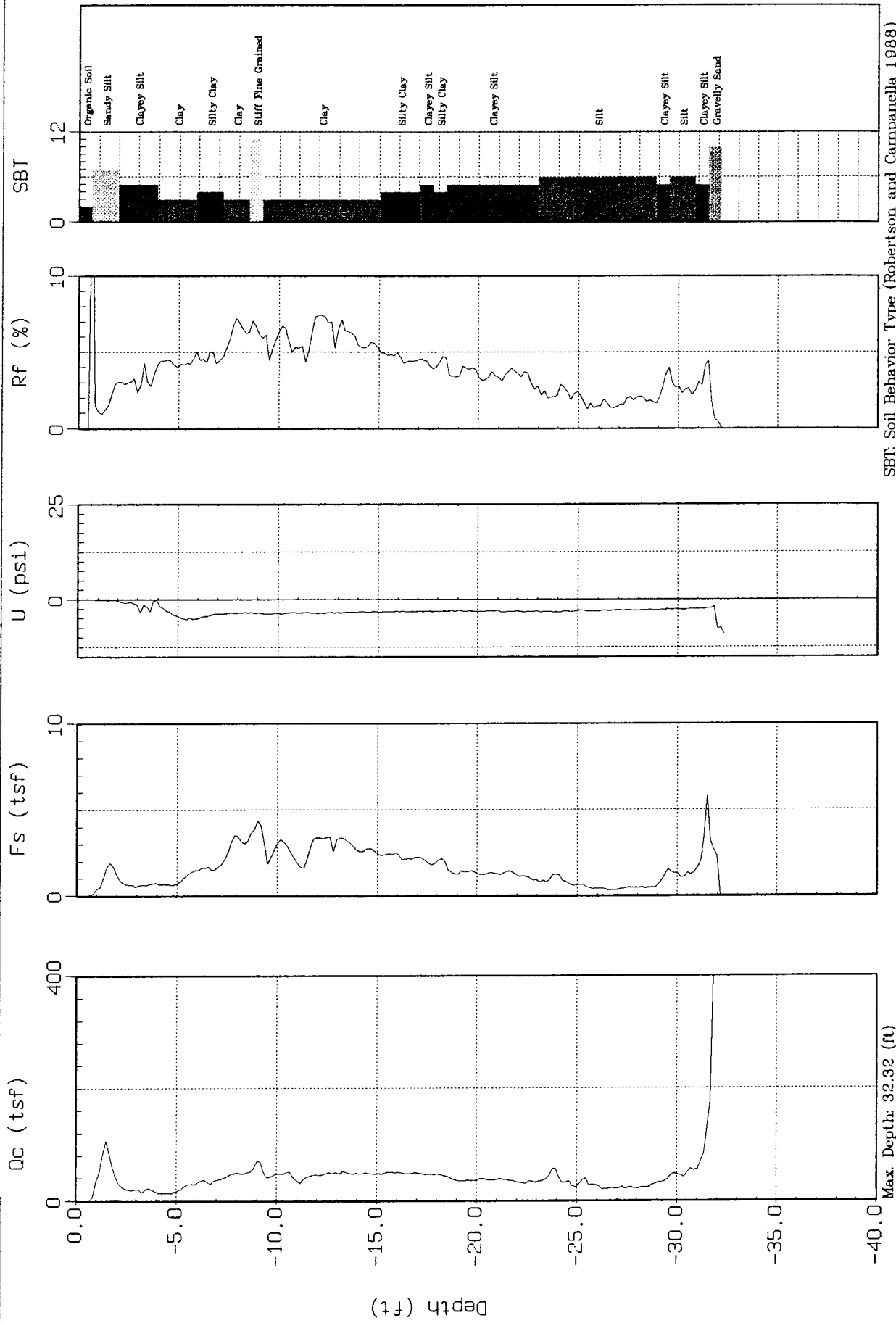
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-03

Geologist: Lori Pfeil
Date : 10:25:99 11:35



SBT: Soil Behavior Type (Robertson and Campanella 1988)

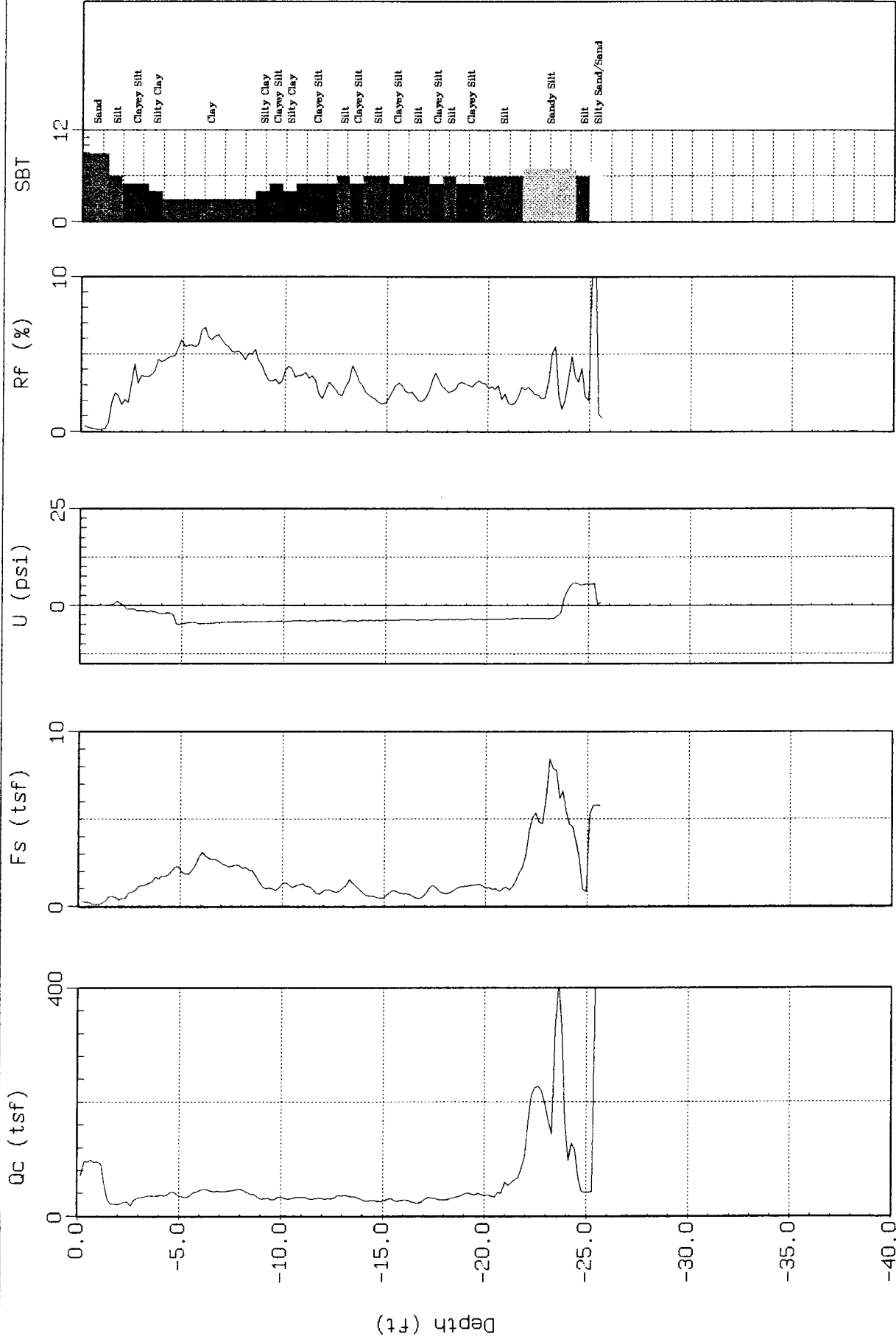
Max Depth: 32.32 (ft)
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-04

Geologist: Lori Pfeil
Date : 10:25:99 13:03



Max. Depth: 25.59 (ft)
Depth Inc.: 0.164 (ft)

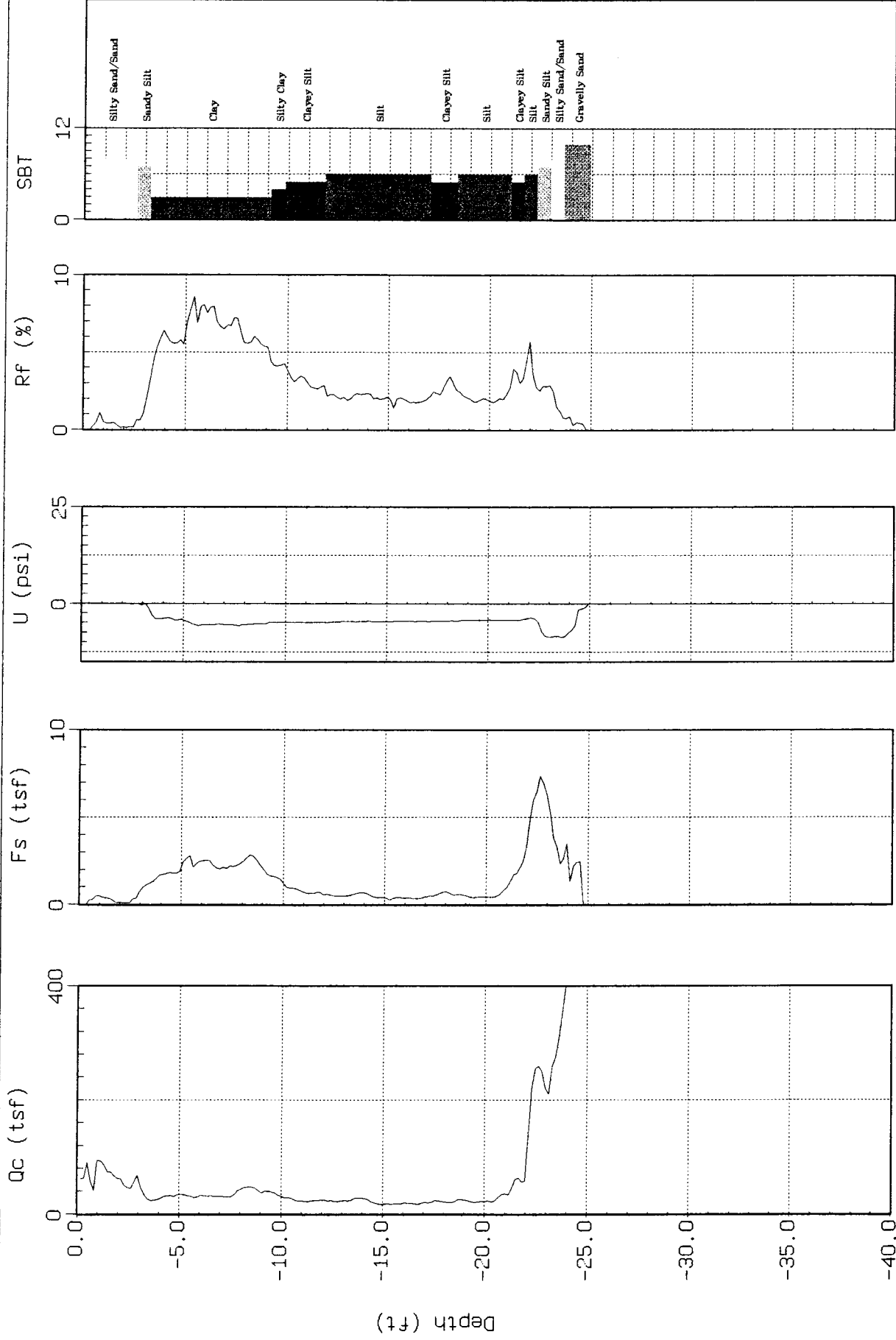
SBT: Soil Behavior Type (Robertson and Campanella 1988)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-05

Geologist: Lori Pfeil
Date : 10:25:99 13:41



Max. Depth: 24.93 (ft)
Depth Inc.: 0.164 (ft)

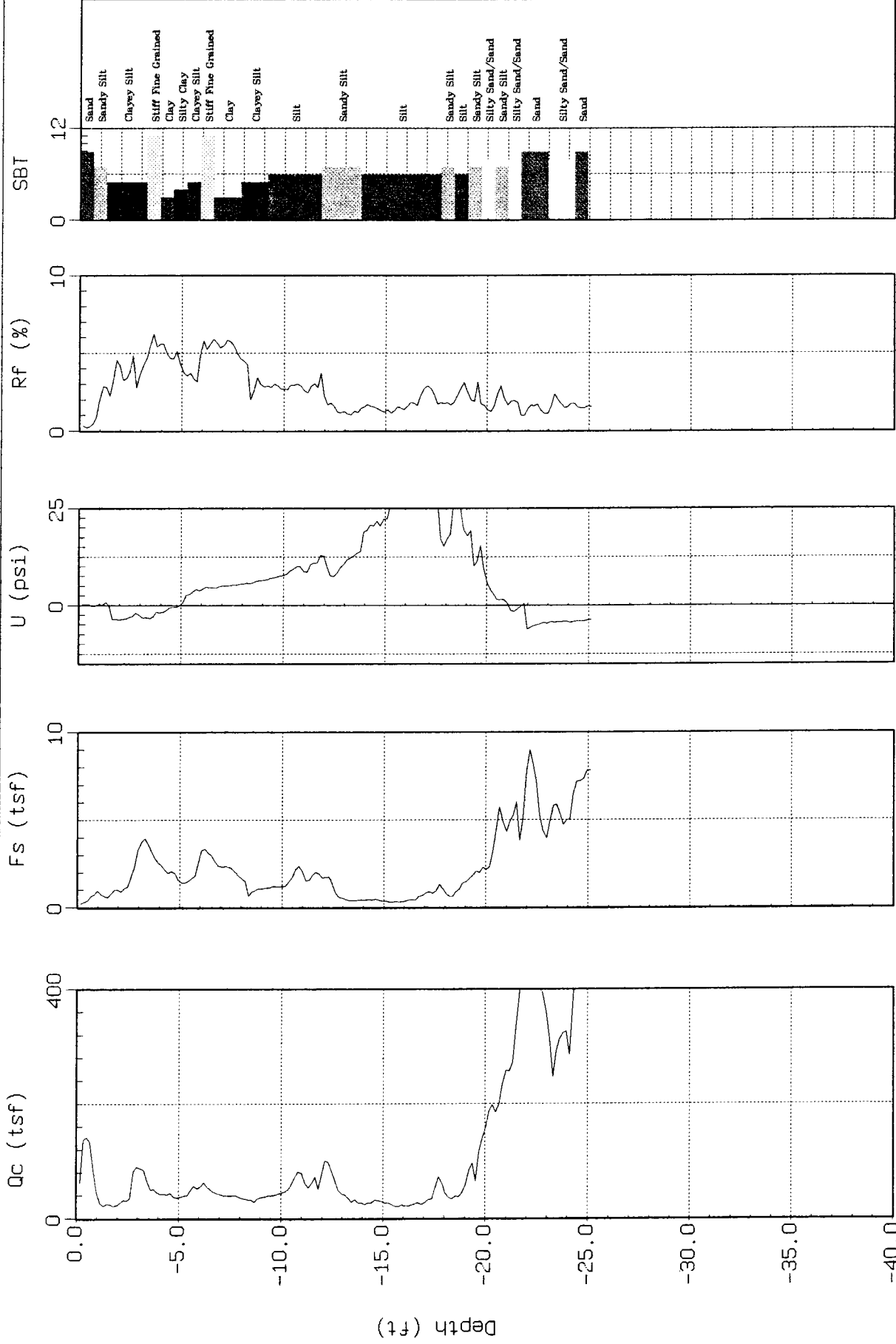
SBT: Soil Behavior Type (Robertson and Campanella 1988)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-06

Geologist: Lori Pfeil
Date : 10:25:99 14:34



Max. Depth: 25.10 (ft)
Depth Inc.: 0.164 (ft)

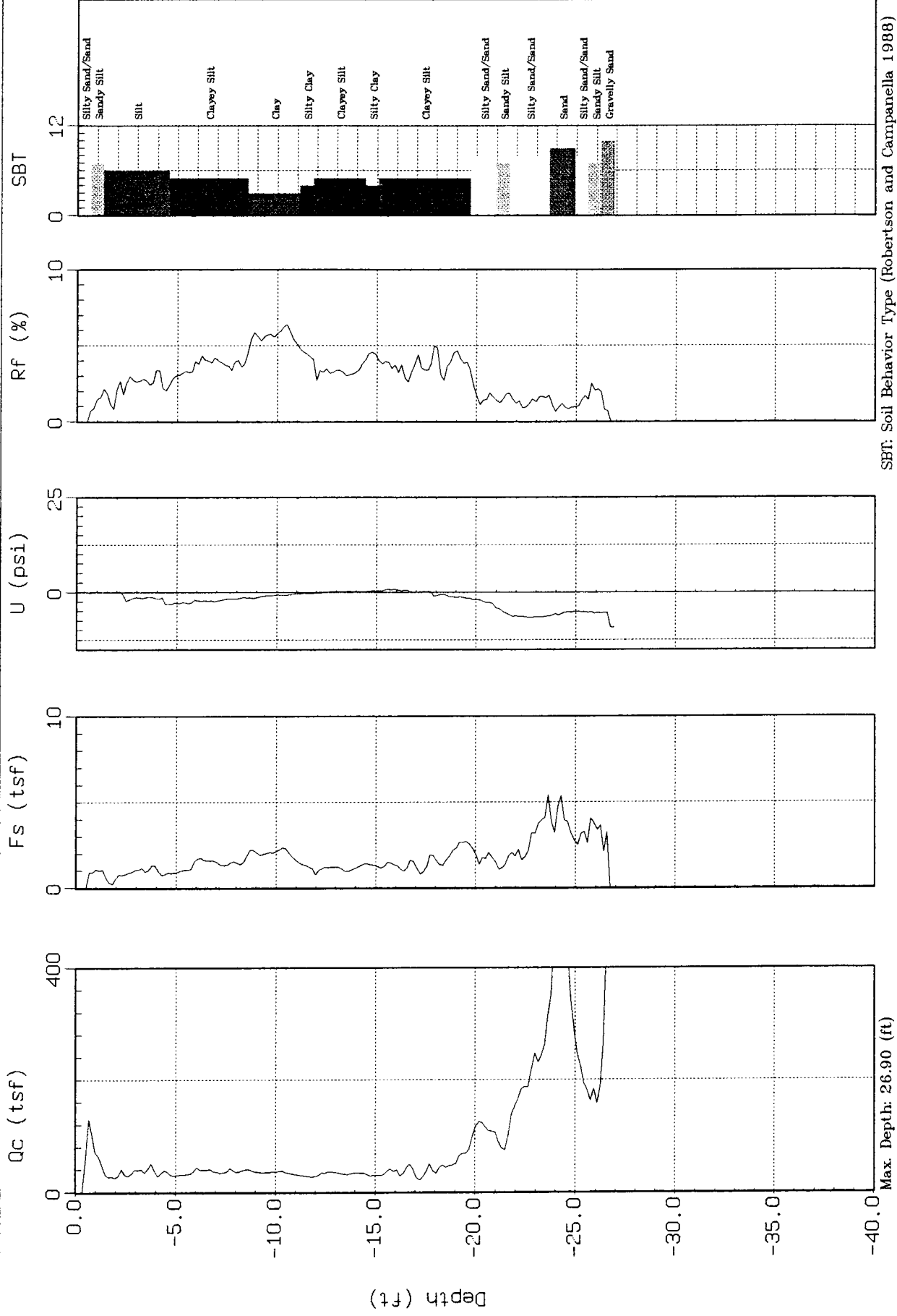
SBT: Soil Behavior Type (Robertson and Campanella 1988)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-07

Geologist: Lori Pfeil
Date : 10:25:99 15:28



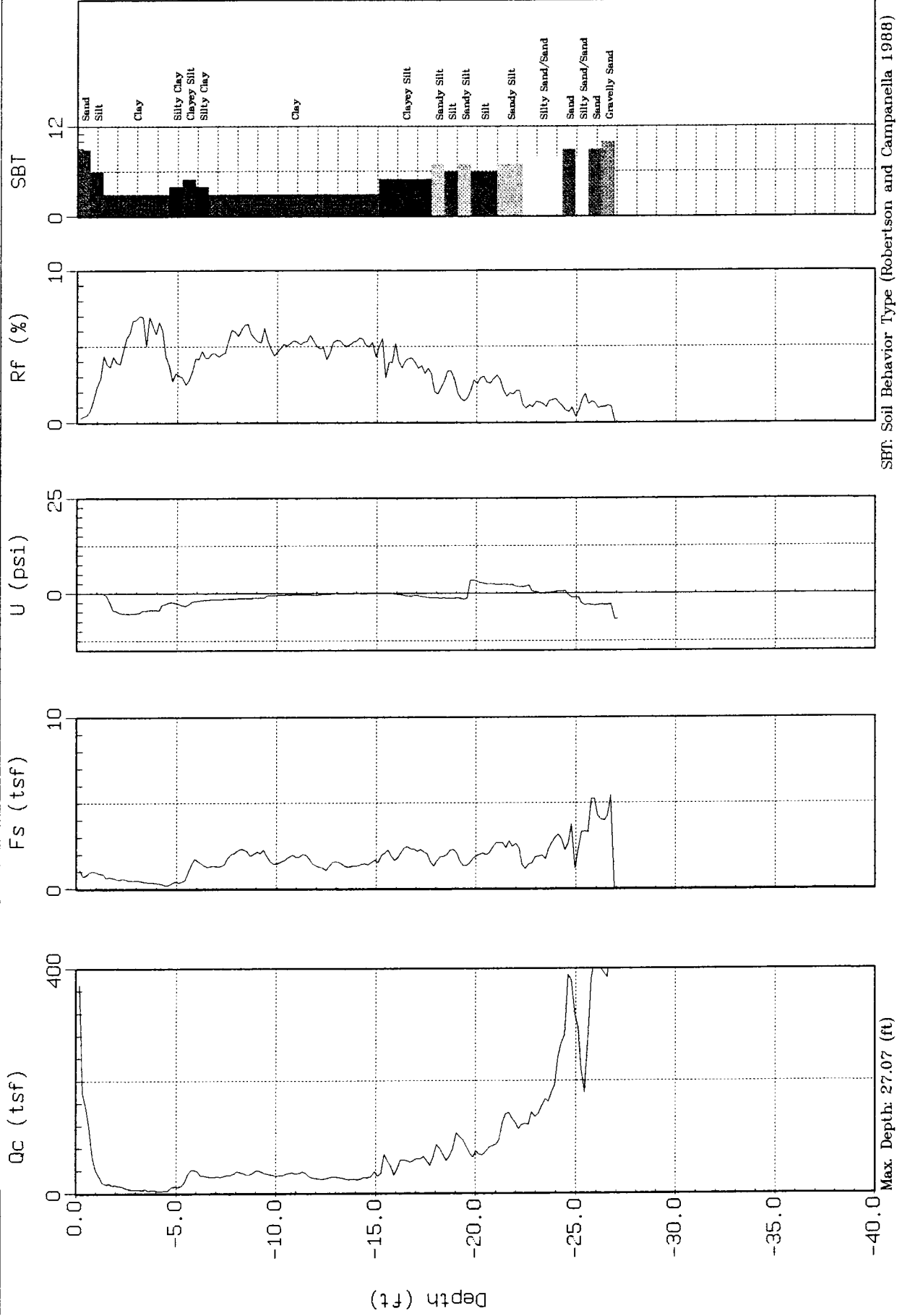
Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-08

Geologist: Lori Pfeil
Date : 10:25:99 16:02



SBT: Soil Behavior Type (Robertson and Campanella 1988)

Max. Depth: 27.07 (ft)

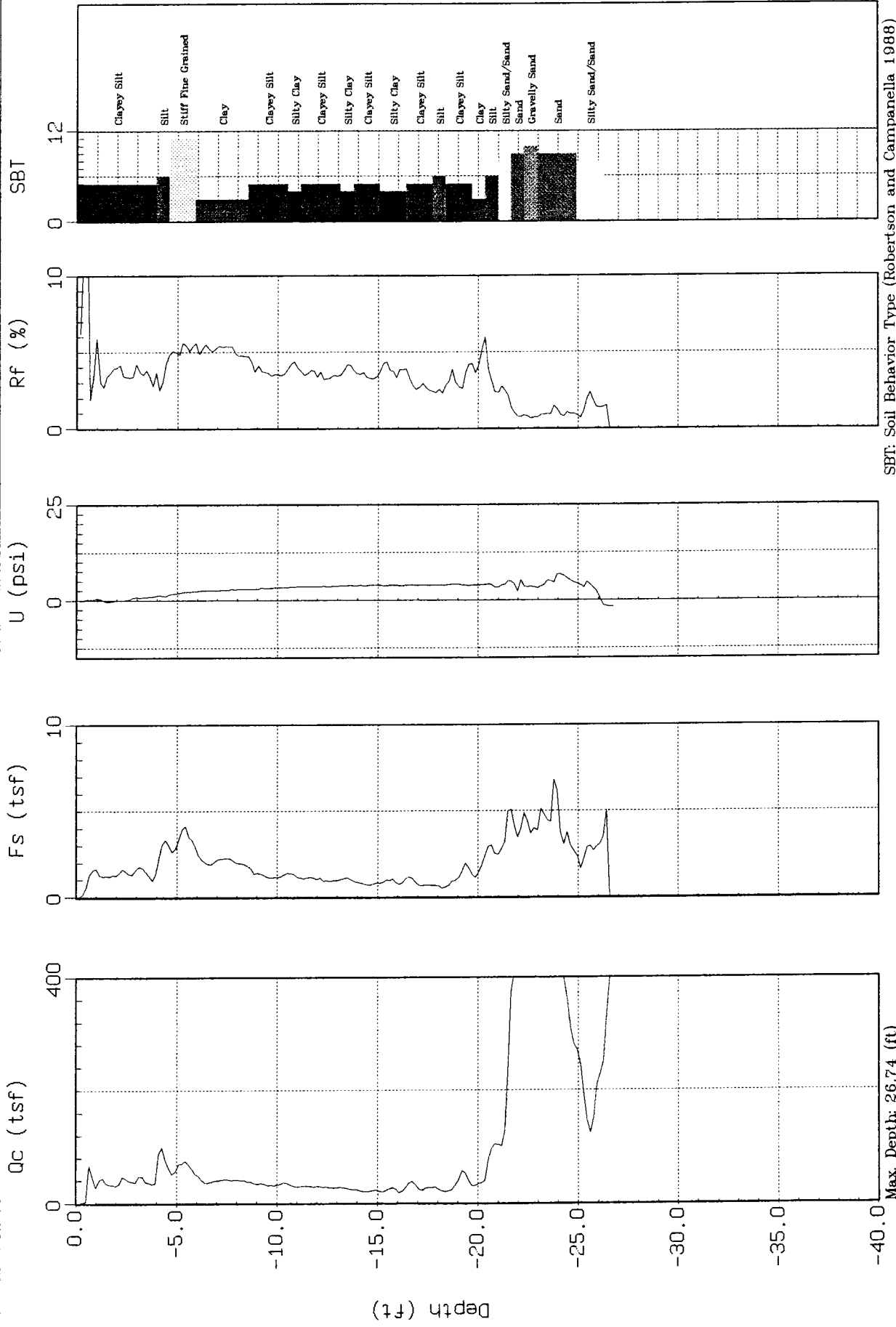
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-09

Geologist: Lori Pfeil
Date : 10:25:99 16:30



SBT: Soil Behavior Type (Robertson and Campanella 1988)

Max. Depth: 26.74 (ft)

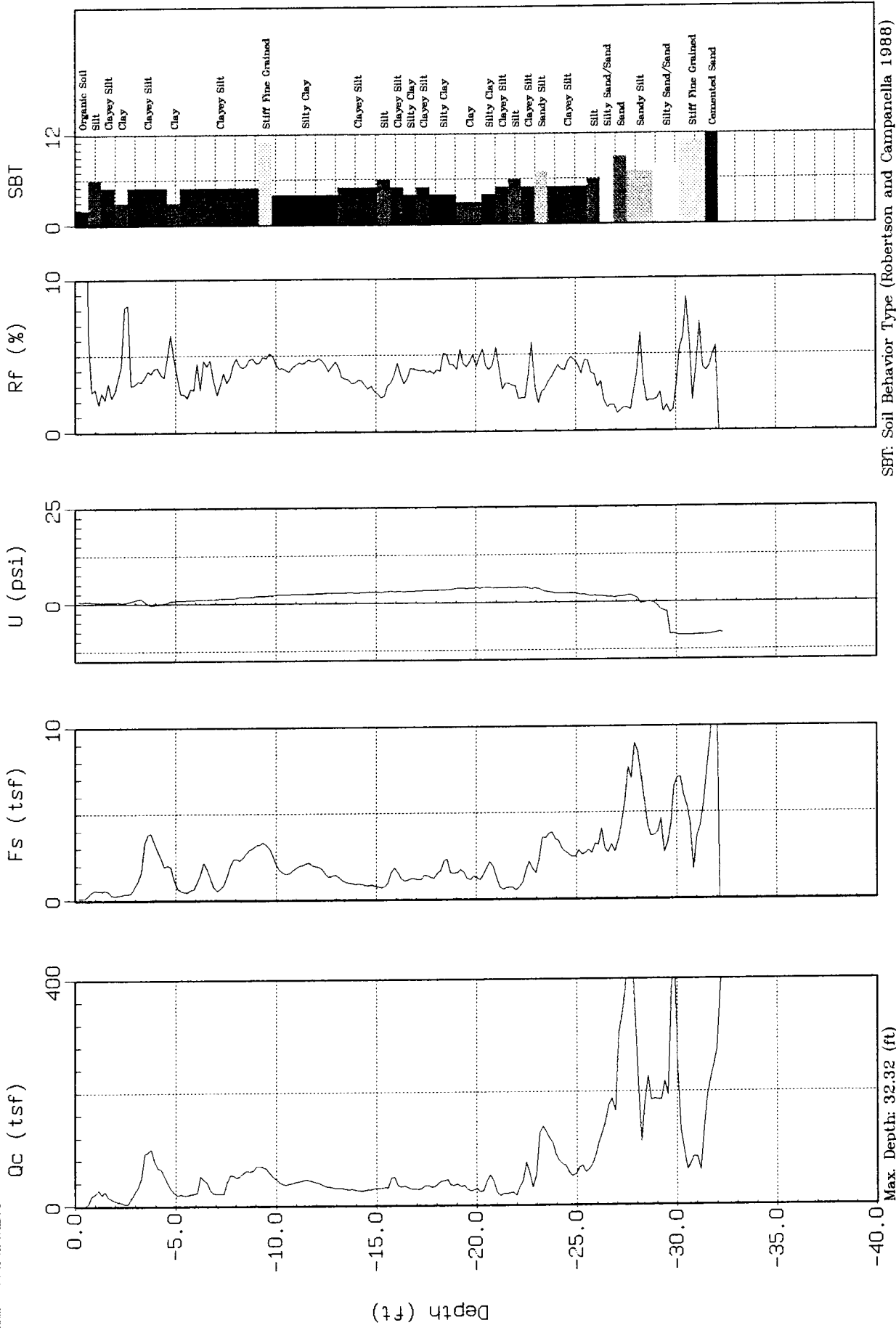
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-10

Geologist: Lori Pfeil
Date : 10:25:99 17:01



Max Depth: 32.32 (ft)
Depth Inc.: 0.164 (ft)

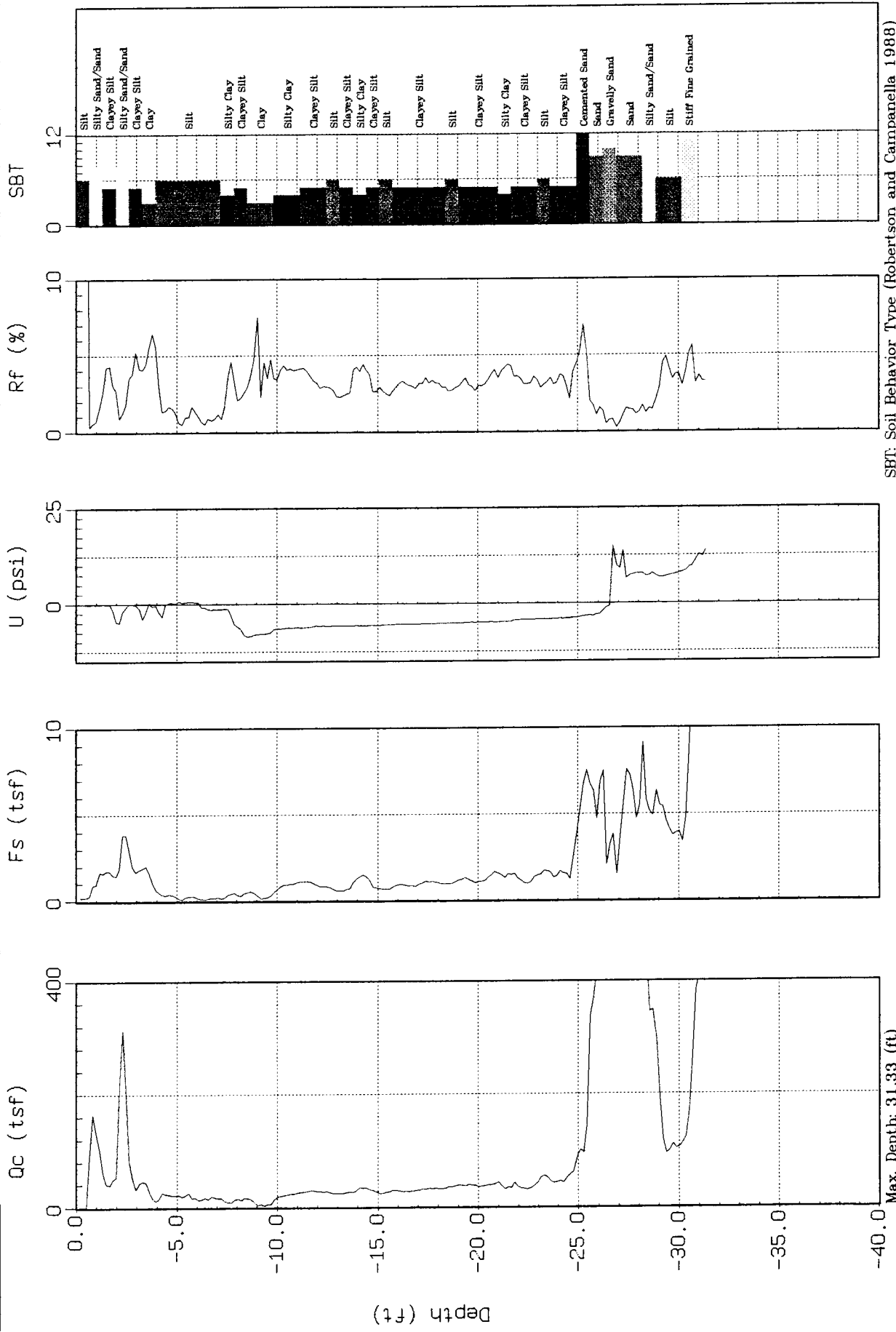
SBT: Soil Behavior Type (Robertson and Campanella 1988)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-11

Geologist: Lori Pfeil
Date : 10:25:99 17:55



Max. Depth: 31.33 (ft)
Depth Inc.: 0.164 (ft)

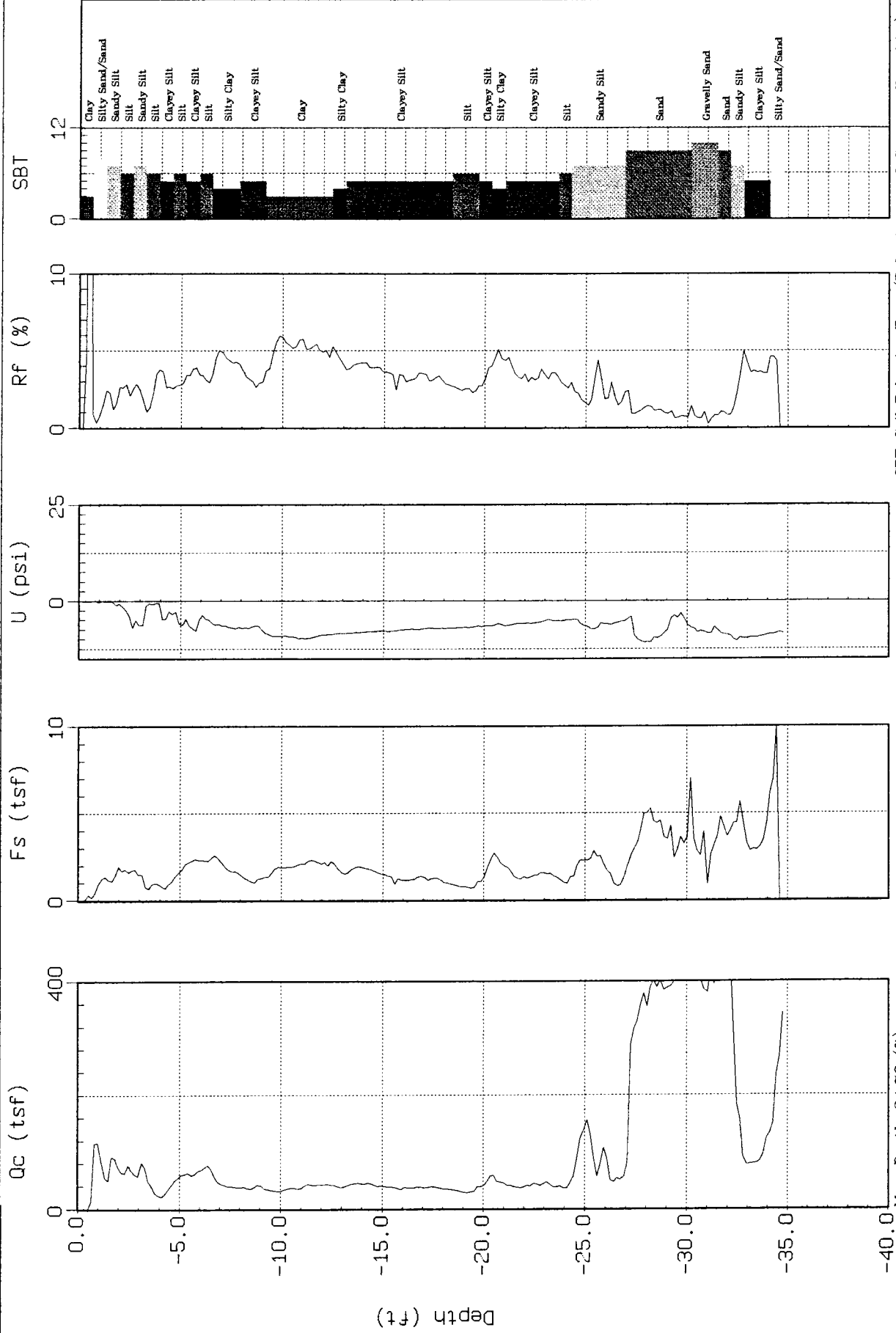
SBT: Soil Behavior Type (Robertson and Campanella 1988)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-12

Geologist: Lori Pfeil
Date : 10:26:99 08:42



SBT: Soil Behavior Type (Robertson and Campanella 1988)

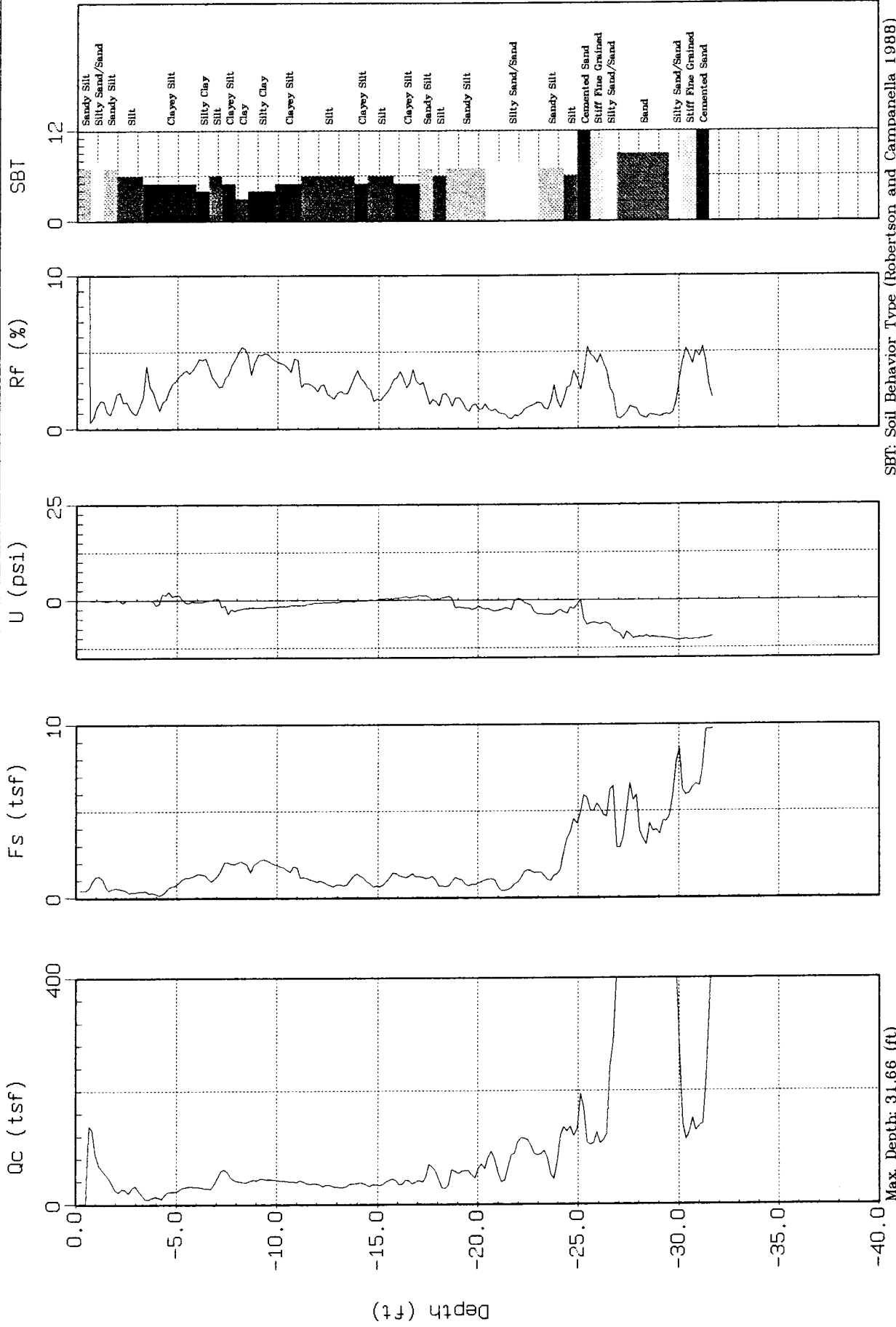
Max. Depth: 34.78 (ft)
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-13

Geologist: Lori Pfeil
Date : 10:26:99 09:24



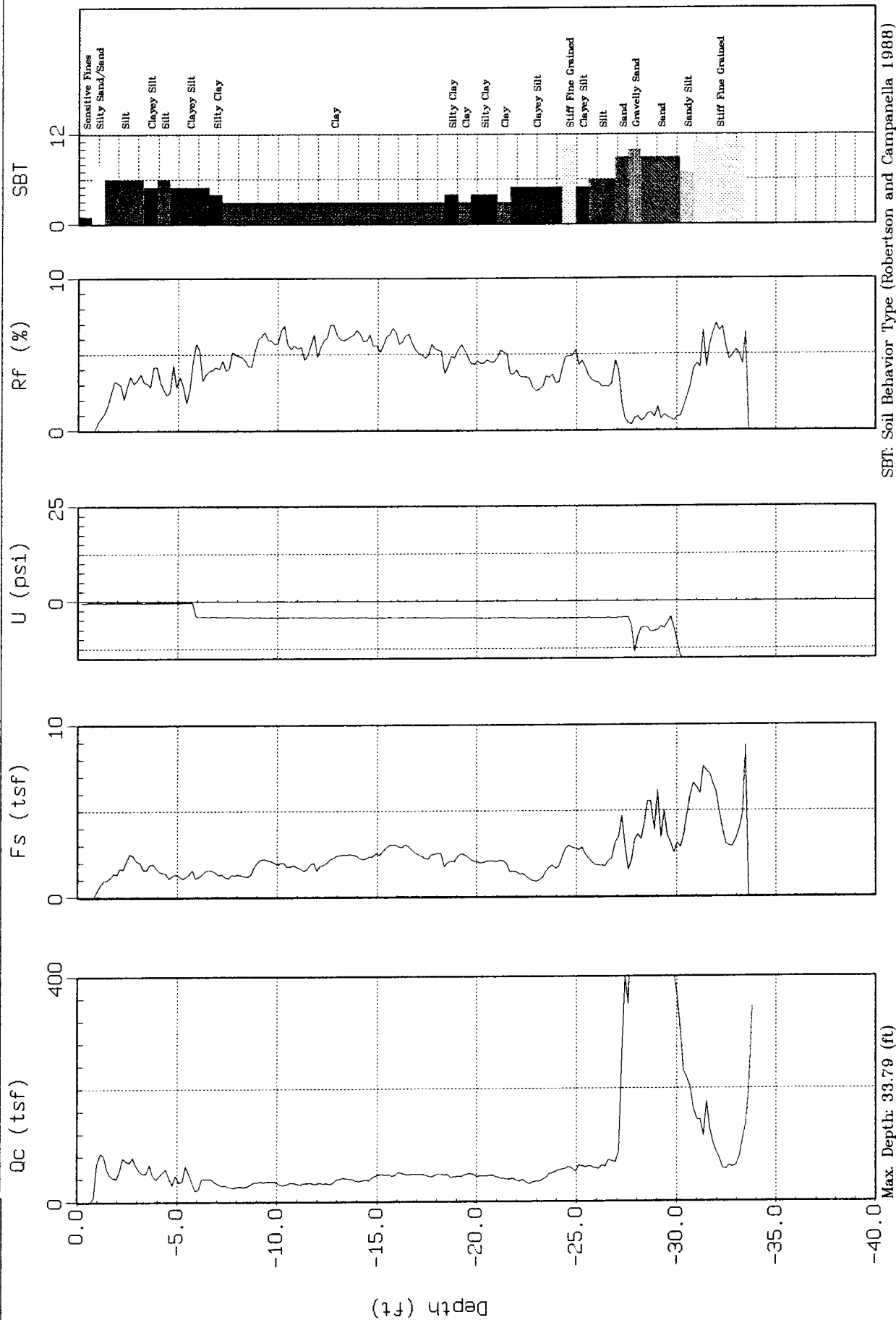
Max. Depth: 31.66 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)



Site : WHIRLPOOL WHIRLPOOL
Location : CPT-14

Geologist: Lori Pfeil 20
Date : 10:26:99 15:58



Max. Depth: 33.79 (ft)
Depth Inc.: 0.164 (ft)

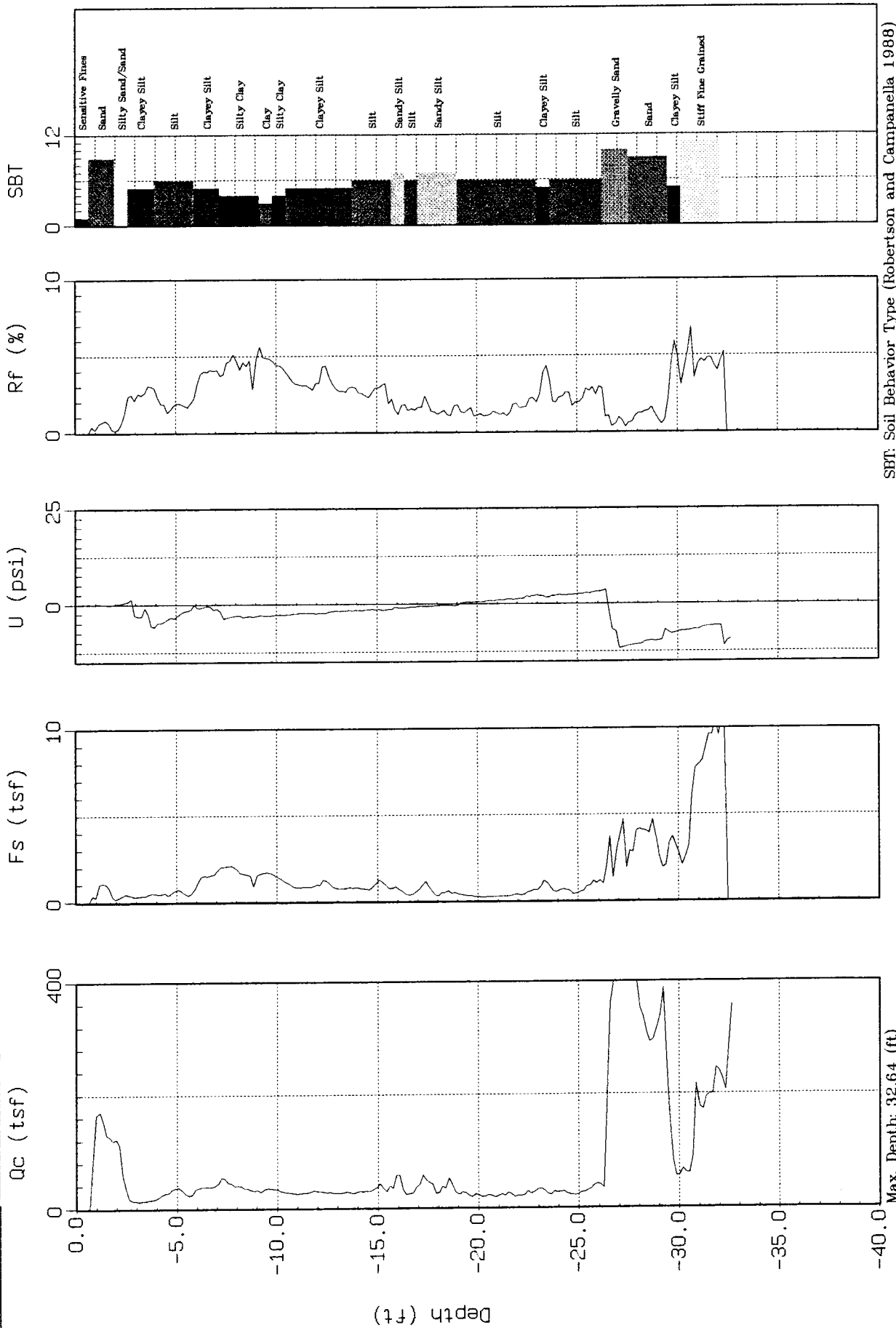
SBT: Soil Behavior Type (Robertson and Campanella 1988)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-15

Geologist: Lori Pfeil
Date : 10:26:99 10:20



SBT: Soil Behavior Type (Robertson and Campanella 1988)

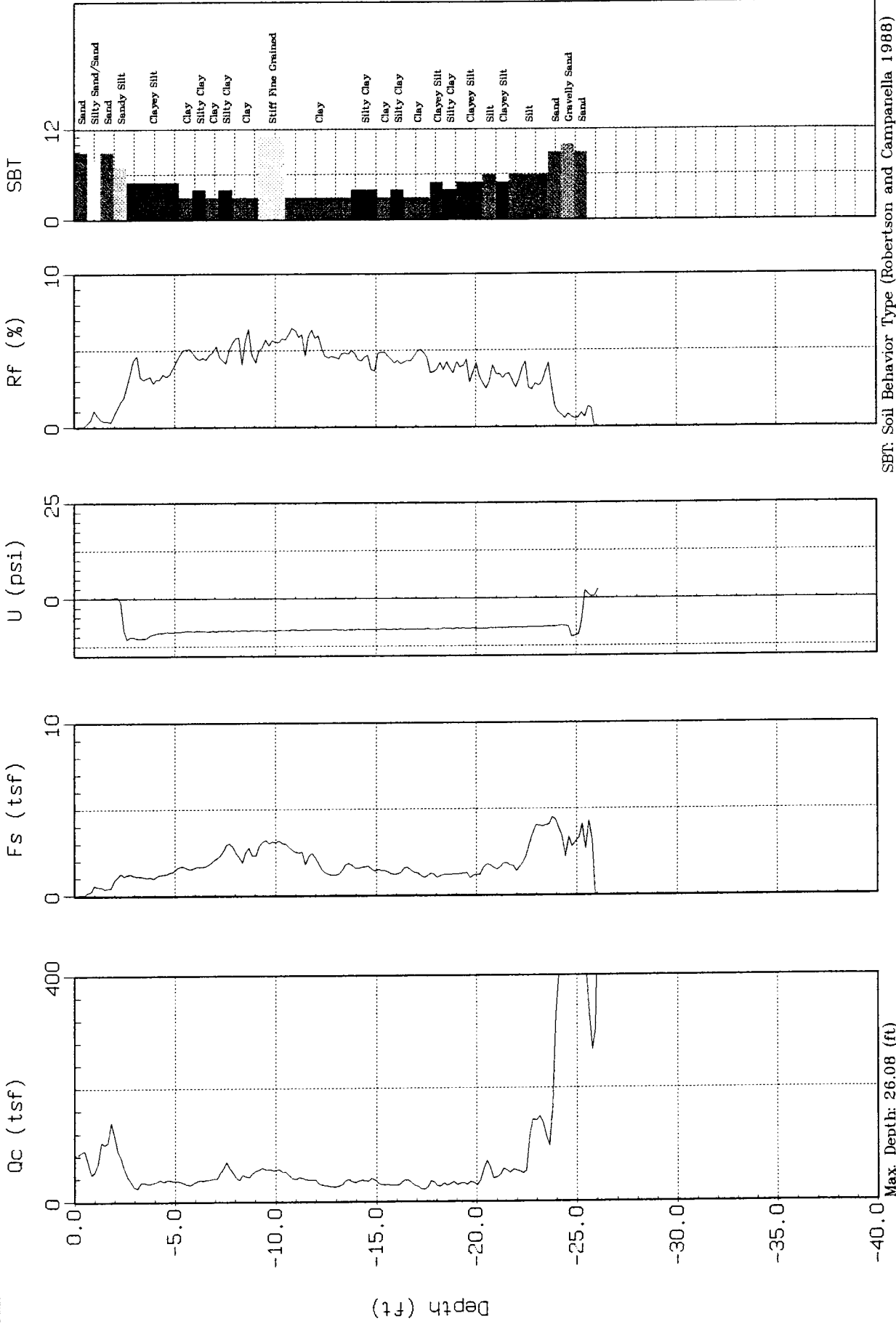
Max. Depth: 32.64 (ft)
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-16

Geologist: Lori Pfeil
Date : 10:26:99 11:16



Max. Depth: 26.08 (ft)
Depth Inc.: 0.164 (ft)

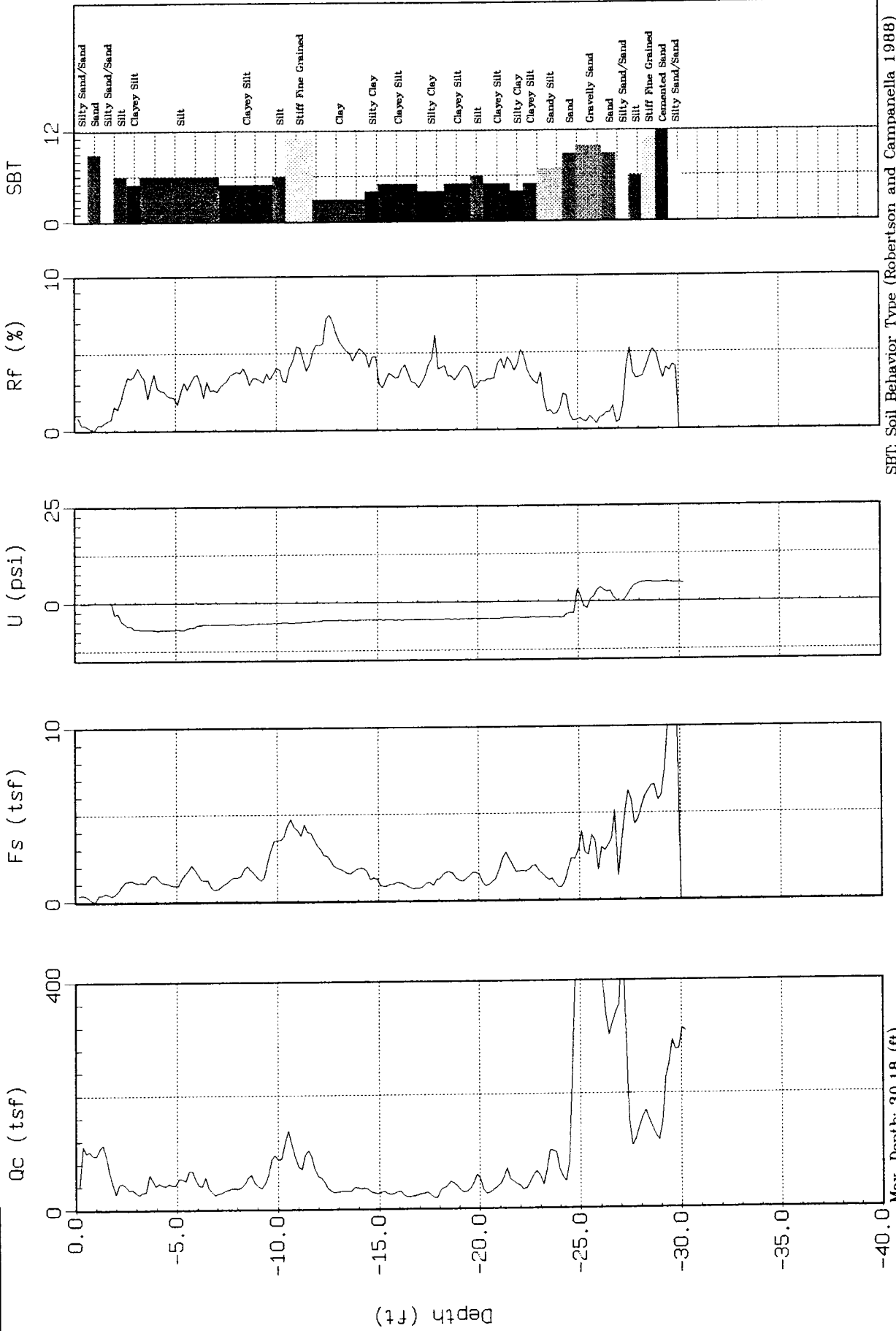
SBT: Soil Behavior Type (Robertson and Campanella 1988)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-17

Geologist: Lori Pfeil
Date : 10/26/99 11:47



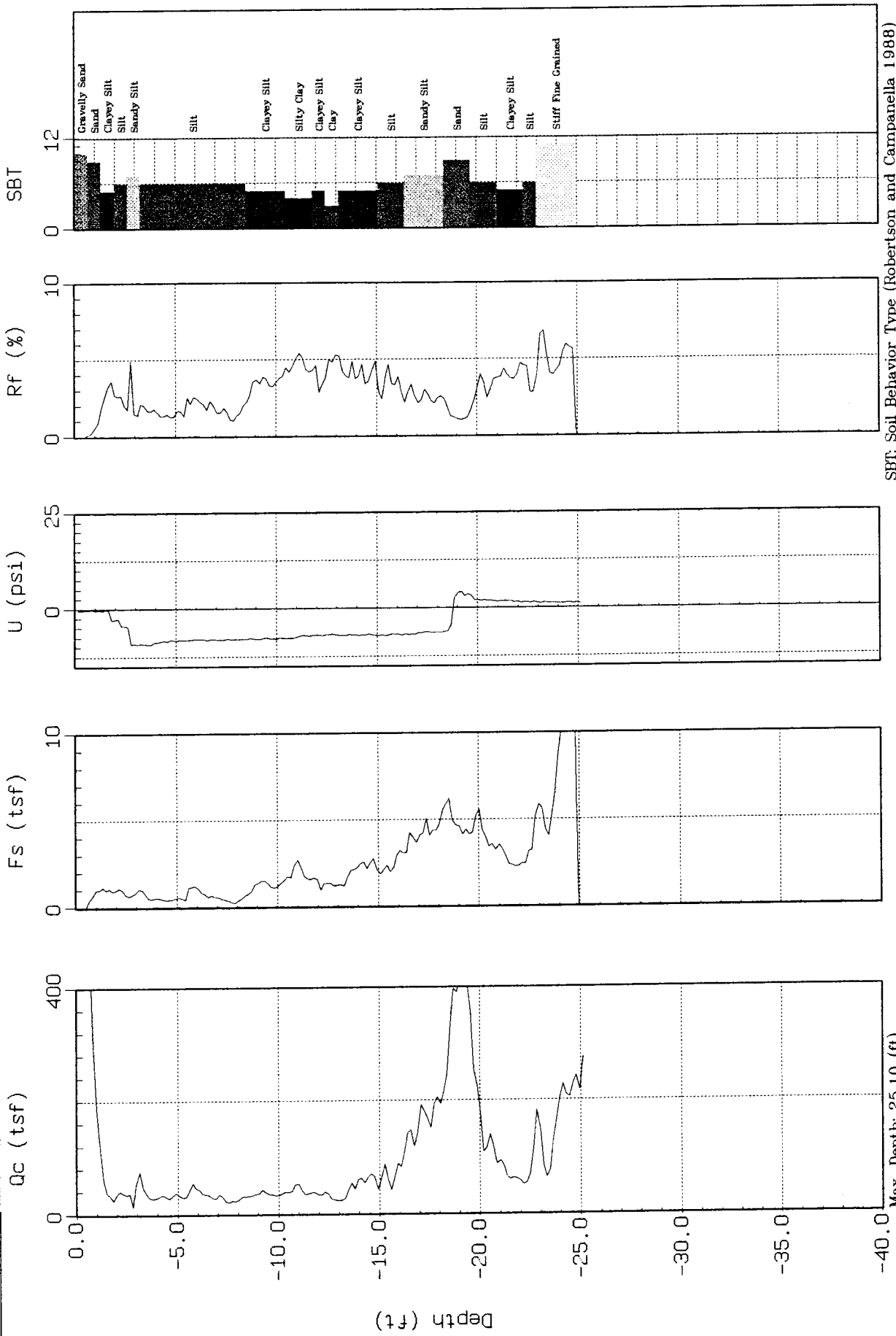
Max. Depth: 30.18 (ft)
Depth Inc.: 0.164 (ft)



ERM Southwest

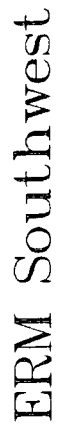
Site : WHIRLPOOL
Location : CPT-18

Geologist: Lori Pfeil
Date : 10:26:99 12:45



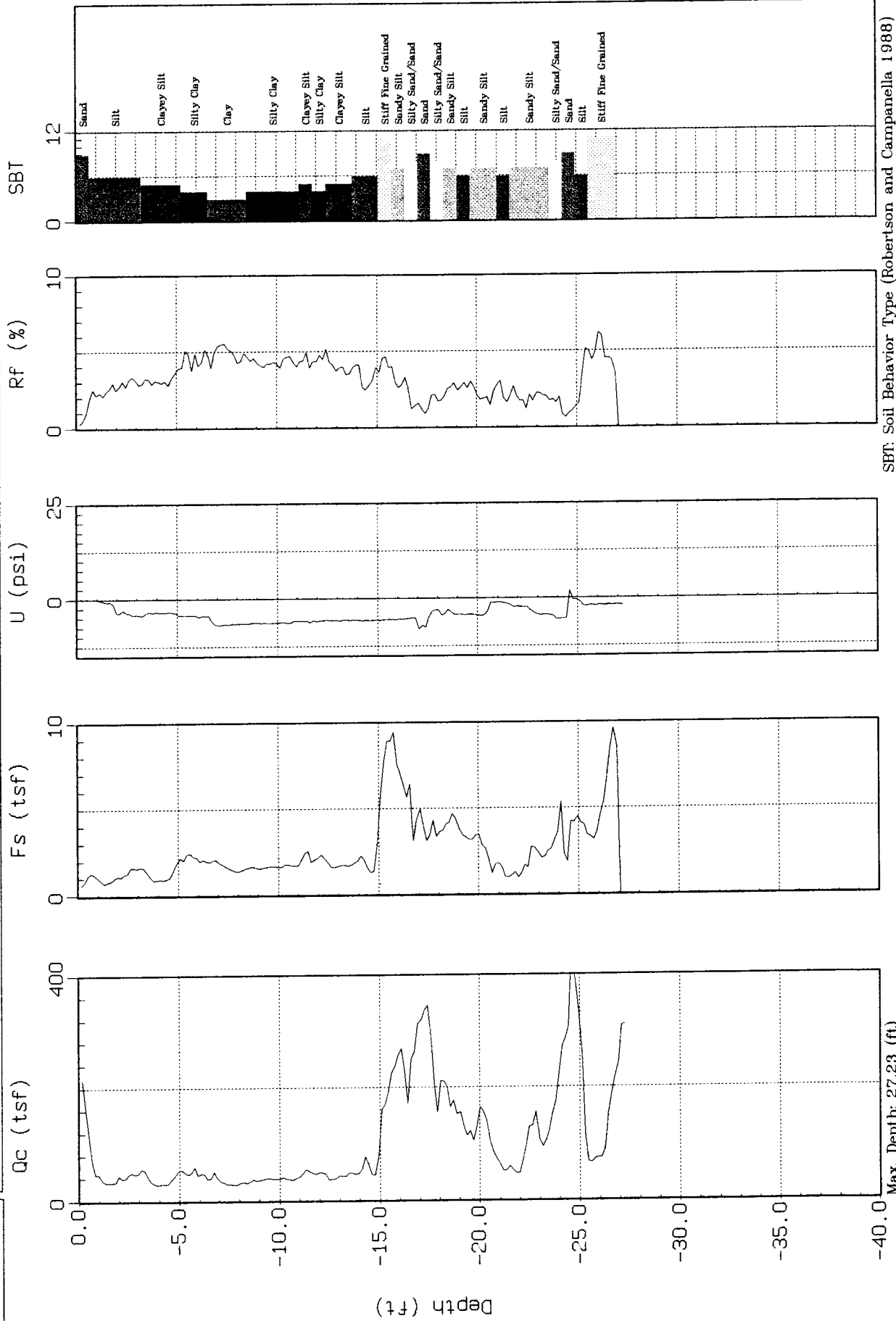
Max. Depth: 25.10 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)



Site : WHIRLPOOL
Location : CPT-19

Geologist: Lori Pfeil
Date : 10:26:99 13:14



SBT: Soil Behavior Type (Robertson and Campanella 1988)

Max. Depth: 27.23 (ft)

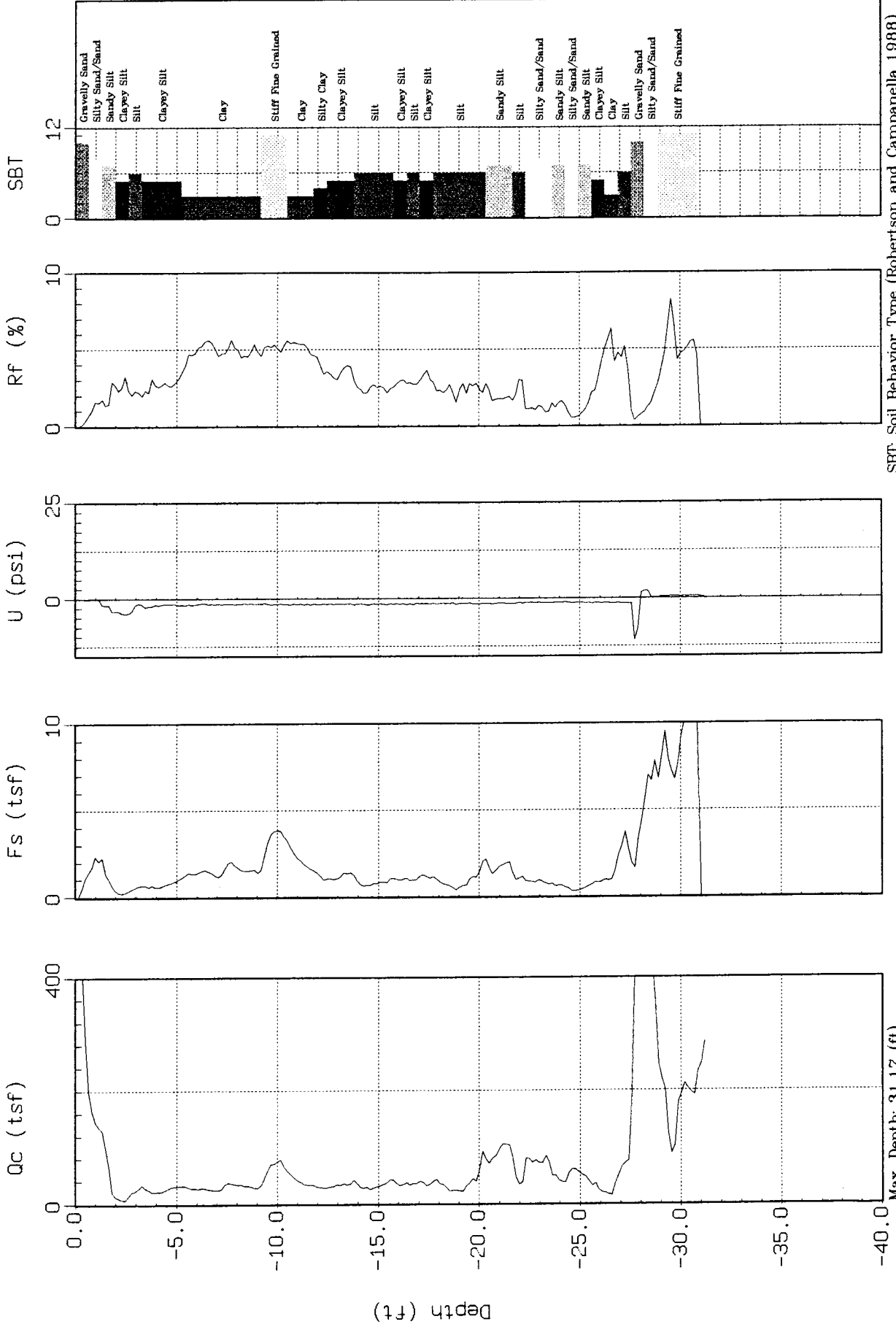
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-20

Geologist: Lori Pfeil
Date : 10:26:99 13:35



Max. Depth: 31.17 (ft)
Depth Inc.: 0.164 (ft)

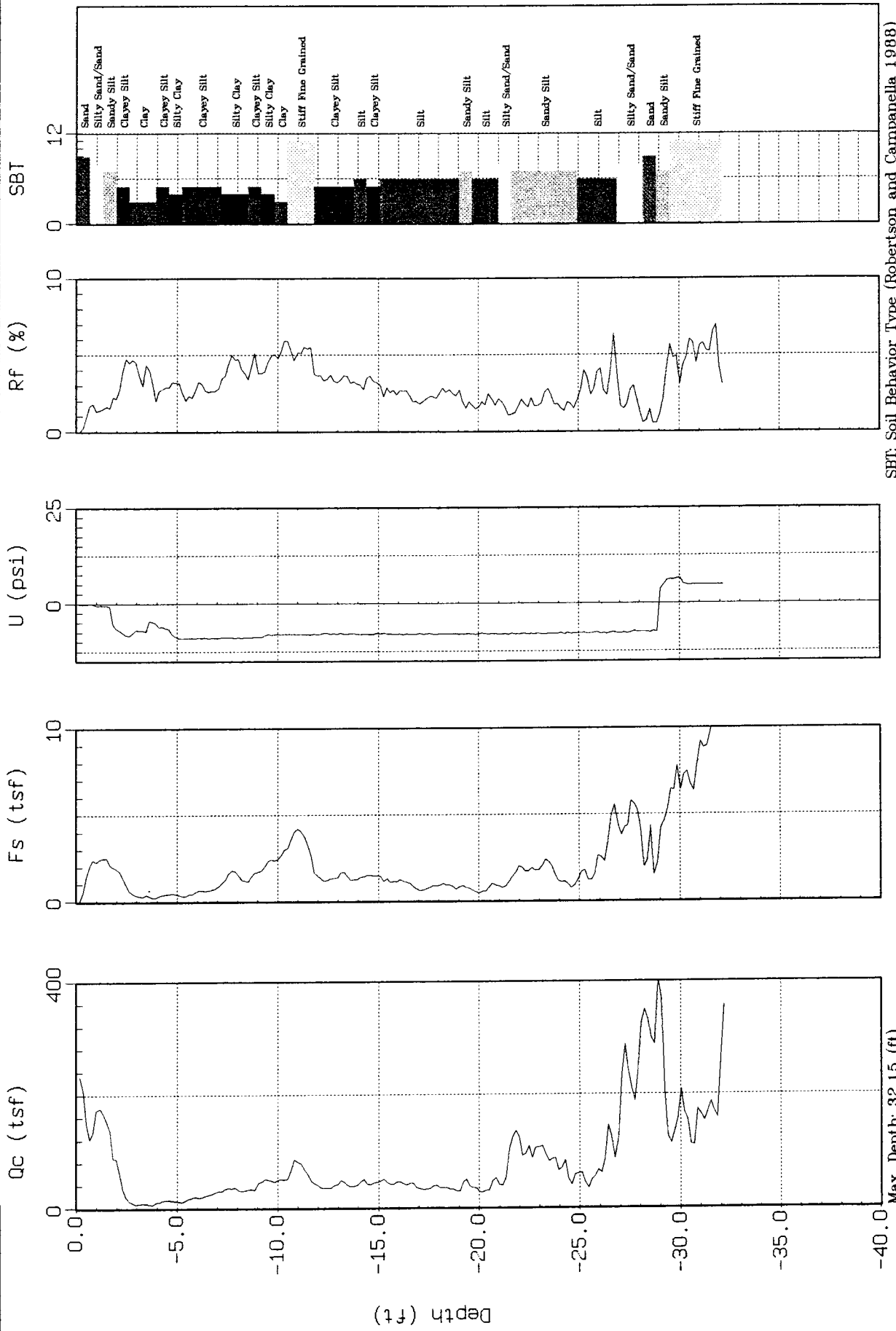
SBT: Soil Behavior Type (Robertson and Campanella 1988)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-21

Geologist: Lori Pfeil
Date : 10:26:99 14:05



Max. Depth: 32.15 (ft)
Depth Inc.: 0.164 (ft)

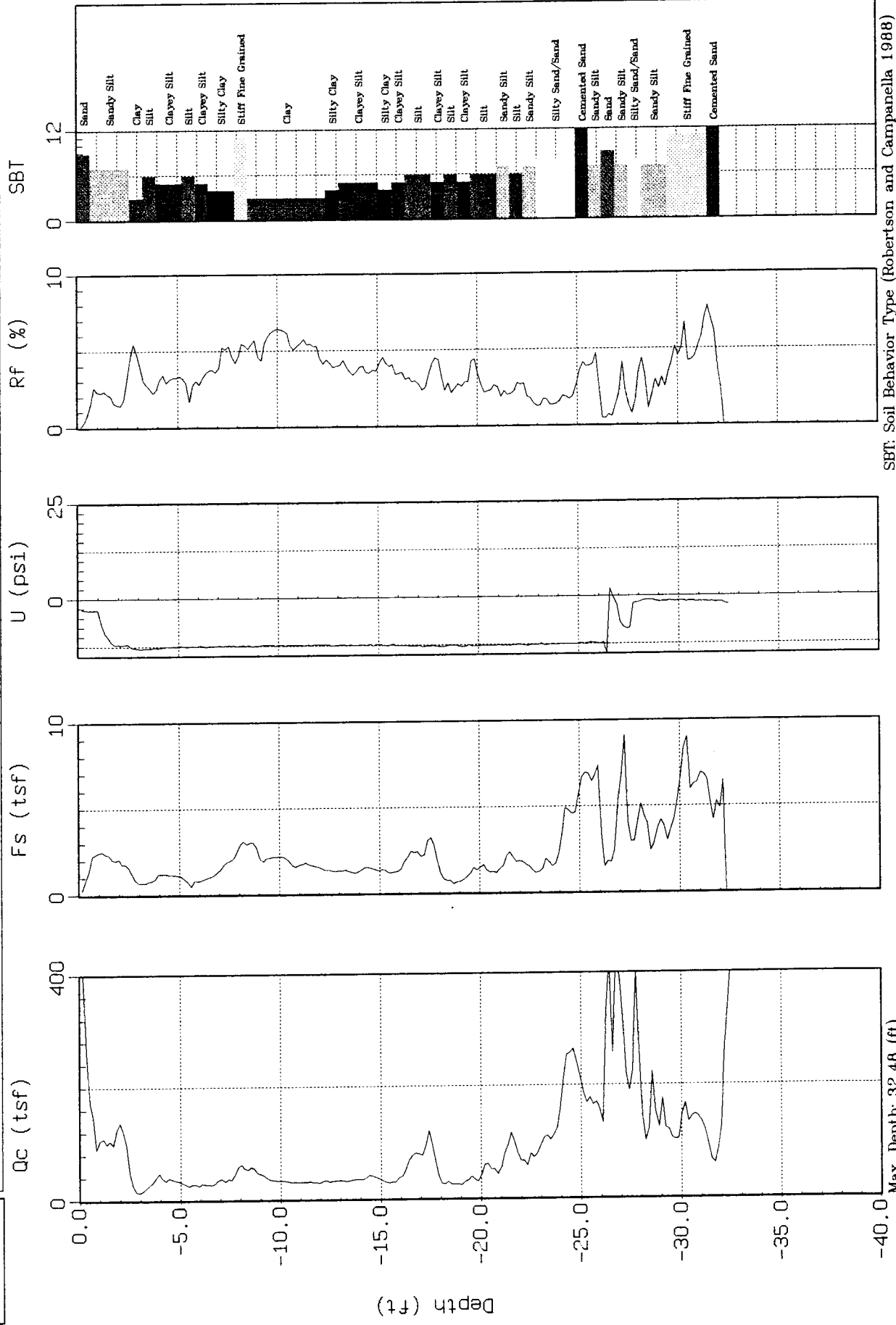
SBT: Soil Behavior Type (Robertson and Campanella 1988)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-22

Geologist: Lori Pfeil
Date : 10:26:99 14:34



SBT: Soil Behavior Type (Robertson and Campanella 1988)

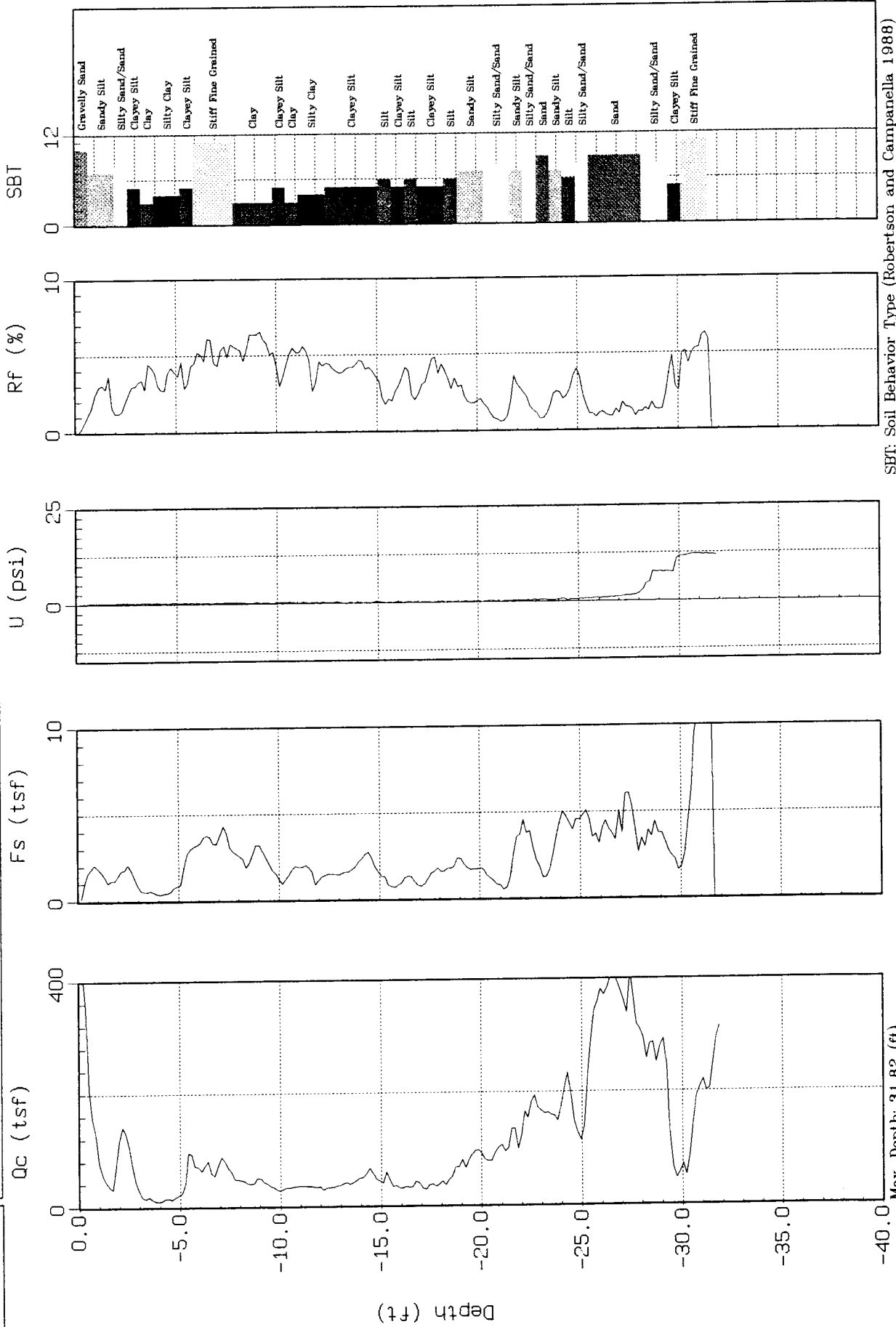
Max. Depth: 32.48 (ft)
Depth Inc.: 0.164 (ft)



ERM Southwest

Site : WHIRLPOOL
Location : CPT-23

Geologist: Lori Pfeil
Date : 10/26/99 15:11



SBT: Soil Behavior Type (Robertson and Campanella 1988)

Max. Depth: 31.82 (ft)
Depth Inc.: 0.164 (ft)

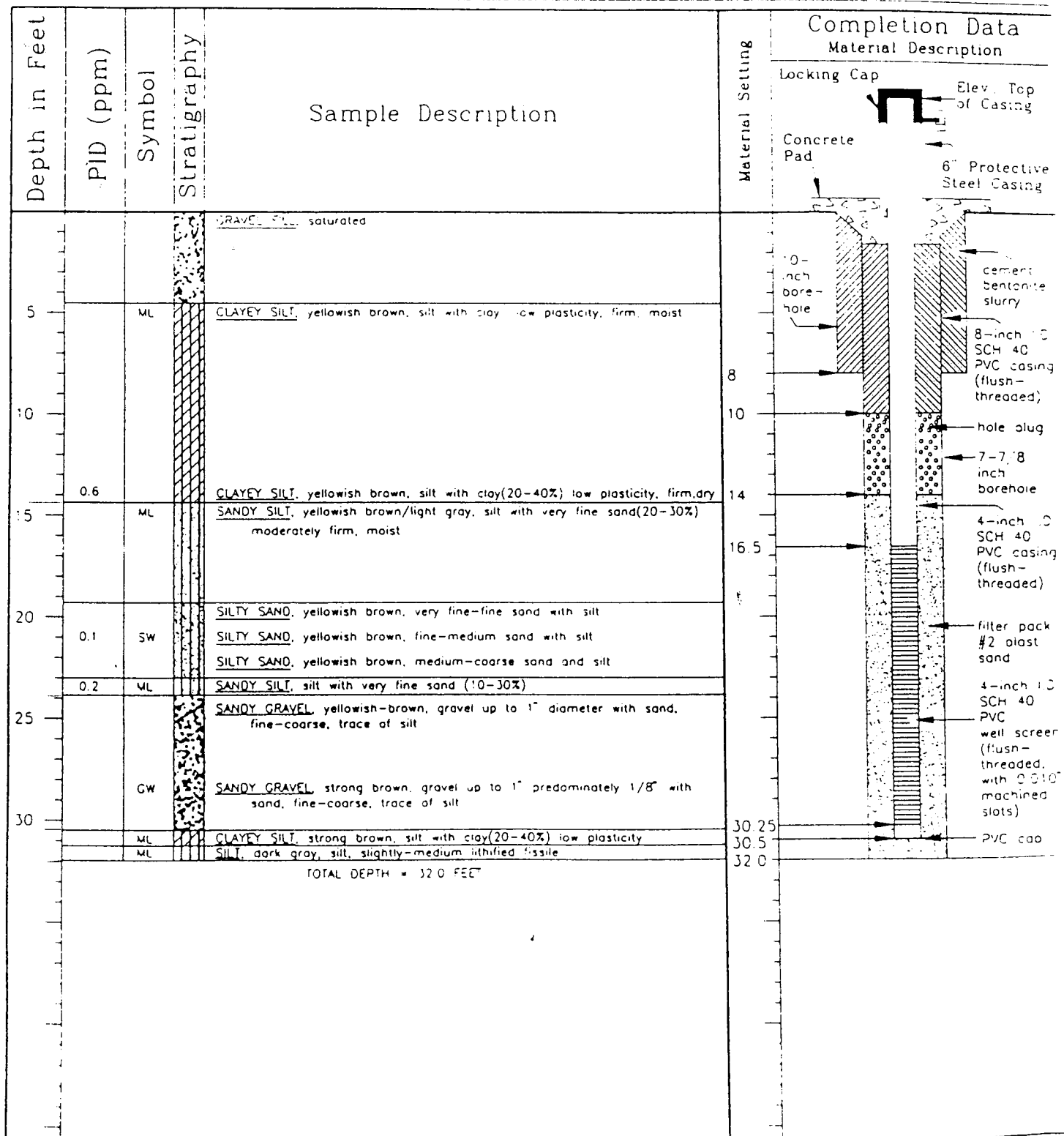


INTERNATIONAL
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Monitor Well Installation

STMW 1

Client: WADSWORTH Job No: 14448 Date Drilled: 7-2-82 Sheet 1 of 1
 Site: FORT SMITH AR Elevation: Pad 431.0 Top of PVC Casing: 428.2
 Total Depth: 32.0 Casing Size & Type: 4 inch SCH 40 Screen Size: 20/30 NO.
 Comments: 8" HOLLOW STEM AUGER, 10" HOLLOW STEM AUGER AND 6" ROTARY
2" PULP DRUM 5' CONTINUOUS SAMPLE



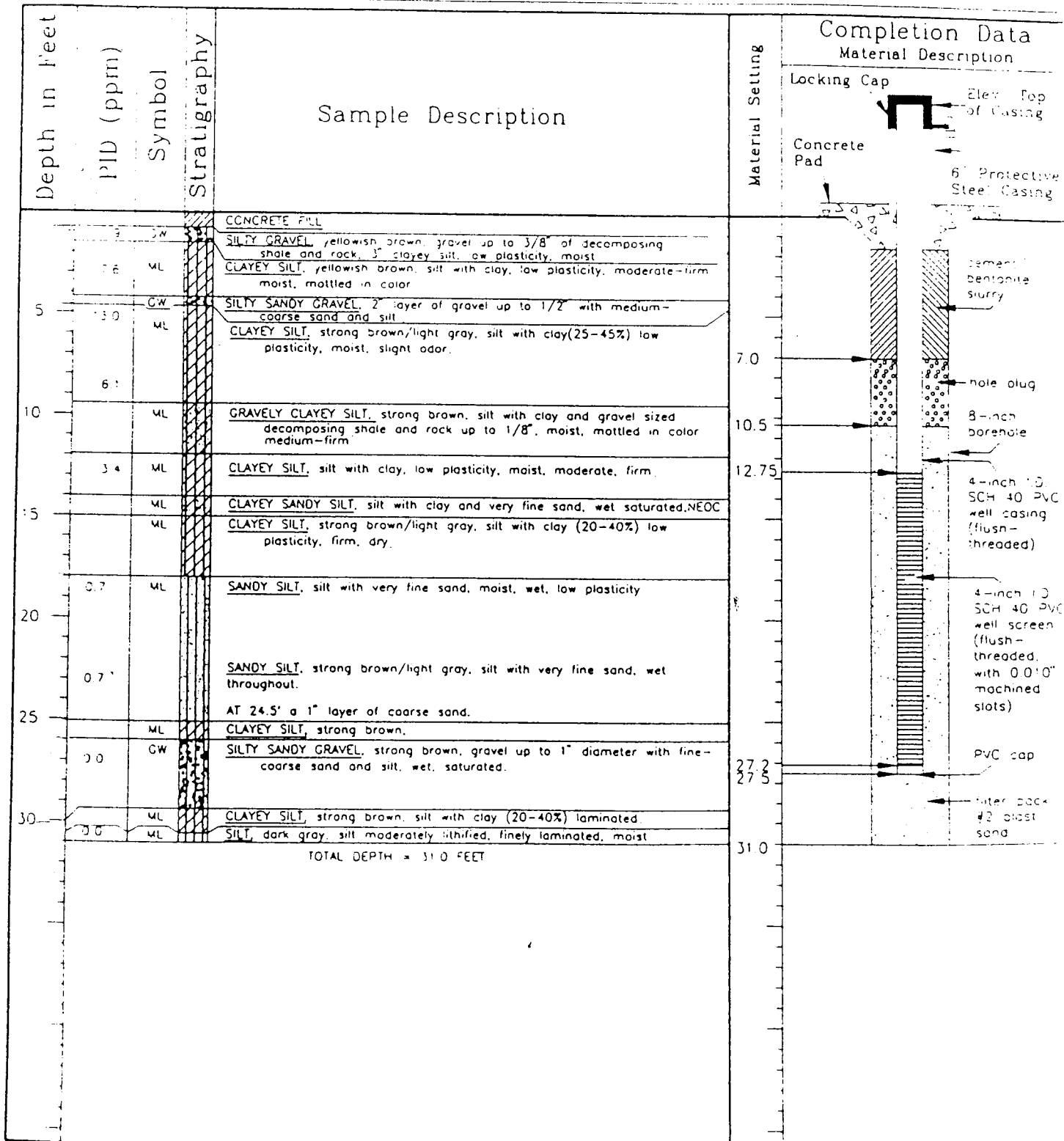


INTERNATIONAL
TECHNOLOGY
CORPORATION

Monitor Well Installation

ITMW 2

Client: WATERBURY Job No: 116416 Date Drilled: 12-14-89 Sheet: 1 of 1
 Site: PORTLAND, ME Elevation: Pad 425.14 Top of PVC Casing: 425.14
 Total Depth: 31.0 FEET Casing Size & Type: 4-INCH SCH 40 Screen Size: 20-40
 Comments: 3-INCH HOLLOW STEM AUGER
2" SPLIT-SPOON 5" CONTINUOUS SAMPLE



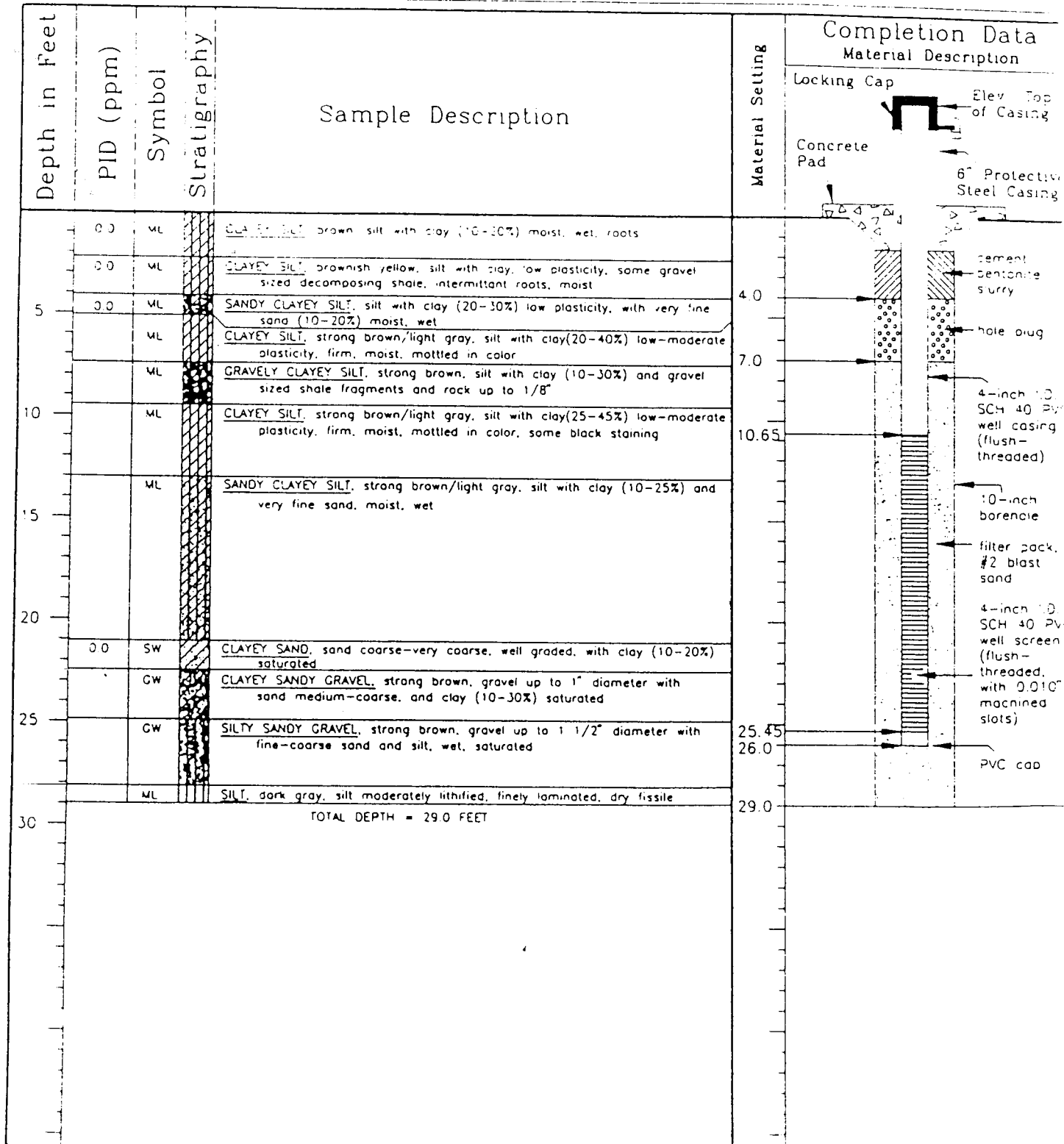


INTERNATIONAL
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CORPORATION

Monitor Well Installation

ITMW3

Client: WATERBURY Job No: 10-142 Date Drilled: 10/1/80 Sheet 1 of 1
 Site: CORTLANDT AVE Elevation: Pad 42.2 Top of PVC Casing: 42.2
 Total Depth: 29.0 Casing Size & Type: 4-INCH SCH 40 PVC Screen Size: 0.010"
 Comments: 10-INCH HOLLOW STEM AUGER AND 10-INCH HOLLOW STEM AUGER
10-INCH BOREHOLE IS CONTINUOUS SAMPLE



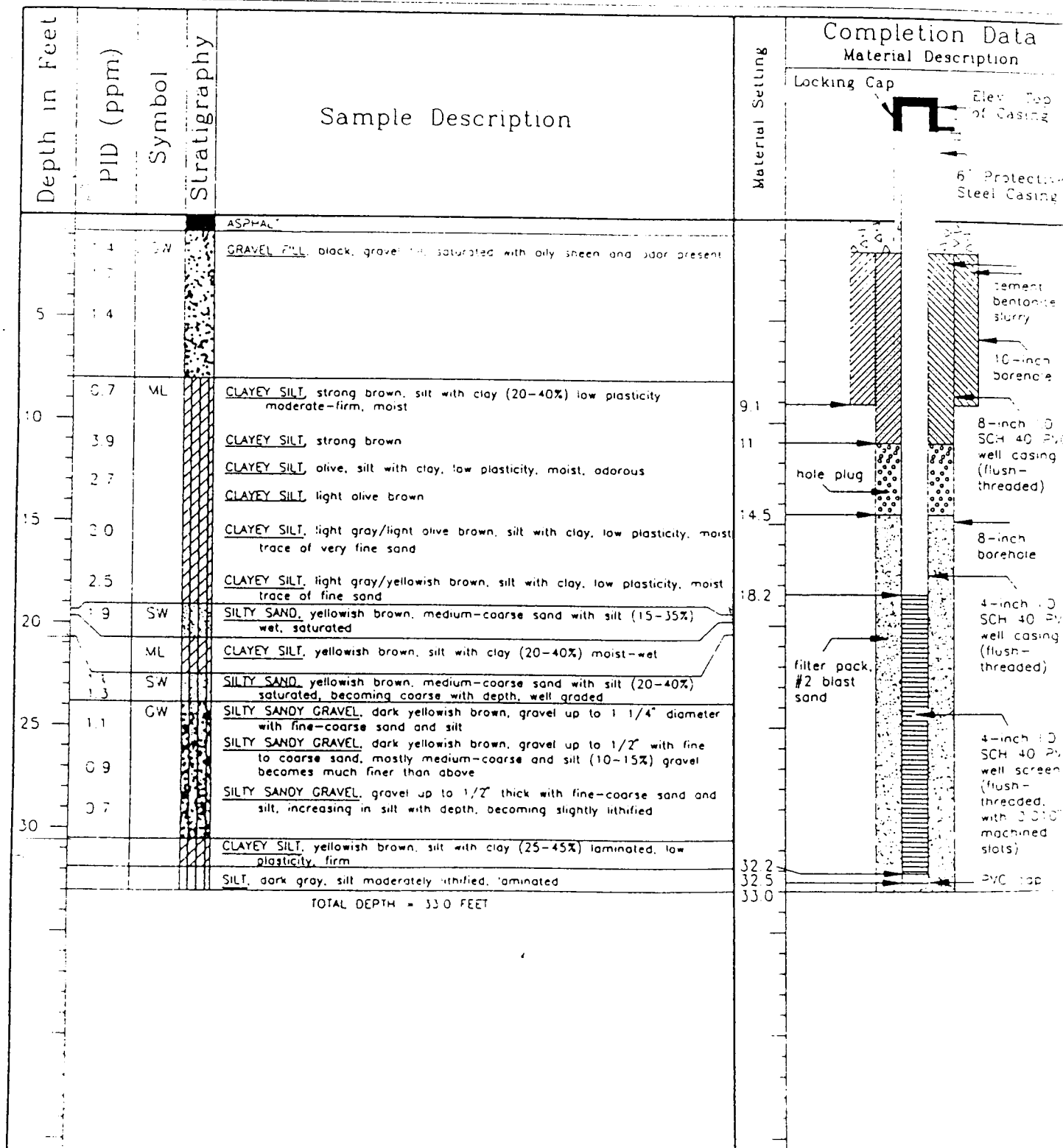


INTERNATIONAL
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CORPORATION

Monitor Well Installation

FMW4

Client: Metropolitan Job No: 146438 Date Drilled: 02/89 Sheet 1 of 1
 Site: 1001 MET. AR. Elevation: Asphalt 47.00 Top of PVC Casing: 48.1
 Total Depth: 33.0 FEET Casing Size & Type: 4-inch ID SCH 40 PVC Screen Size: 20/30
 Comments: 3-INCH HOLLOW STEM AUGER, 10-INCH HOLLOW STEM AUGER AND MILD ROTARY
2" SPLIT-SPOON 5" CONTINUOUS SAMPLE





INTERNATIONAL
TECHNOLOGY
CORPORATION

Monitor Well Installation

ITMW 5

Client WHIRLPOOL Job No. 446498 Date Drilled 12/2/89 Sheet 1 of 1
Site FORT SMITH, AR Elevation Pad 476.57 Top of PVC Casing 478.93
Total Depth 32.00 Casing Size & Type 4-INCH SCH 40 PVC Screen Size 20/60
Comments 8-INCH HOLLOW STEM AUGER, 10-INCH HOLLOW STEM AUGER AND MUD ROTARY
2" CHISEL POINT, 5' CONTINUOUS SAMPLE

				Completion Data	
Sample Description				Material Description	
Depth in Feet	PID (ppm)	Symbol	Stratigraphy	Material Setting	
0.0			<u>GRAVEL SILT</u>		Elev. Top of Casing
0.0			<u>CLAYEY SILT</u> , light gray/strong brown, silt with clay (20-40%) low plasticity moist-wet, mottled in color		Concrete Pad
5	0.0		<u>CLAYEY SILT</u> , light gray/strong brown, silt with clay (20-40%) low plasticity moist, some gravel sized shale fragments intermittent		6" Protective Steel Casing
	0.0		<u>CLAYEY SILT</u> , strong brown/light gray, silt with clay (20-40%) low plasticity dry, firm, gravel sized shale fragments intermittent		cement/bentonite slurry
	0.5		<u>CLAYEY SILT</u> , light gray/strong brown, silt with clay (30-45%) low plasticity firm, dry, mottled in color, some black staining		10-inch borehole
10	0.7	ML	<u>CLAYEY SILT</u> , light gray/strong brown, silt with clay (35-45%) low plasticity very firm, dry, slickensides at 13.5', black staining throughout mottled in color		4-inch I.D. SCH 40 PVC well casing (flush-threaded)
15			<u>CLAYEY SILT</u> , light gray/strong brown, silt with clay (35-45%) low plasticity very firm, dry, mottled in color, black staining		hole plug
20	0.5				filter pack, #2 blast sand
25		GW	<u>CLAYEY SANDY GRAVEL</u> , strong brown, gravel up to 1 1/2" with medium-coarse sand and clay, moist-wet		4-inch I.D. SCH 40 PVC well screen (flush-threaded, with 0.010" machined slots)
30			<u>CLAYEY SANDY GRAVEL</u> , strong brown, gravel with medium-coarse sand and clay, saturated		PVC cap
	0.0	ML	<u>CLAYEY SILT</u> , strong brown, silt finely laminated, crumbly with clay(10-25%)		
	0.0	ML	<u>SILT</u> , dark gray, silt, finely laminated, medium-well lithified, fissile		
TOTAL DEPTH = 32.0 FEET					



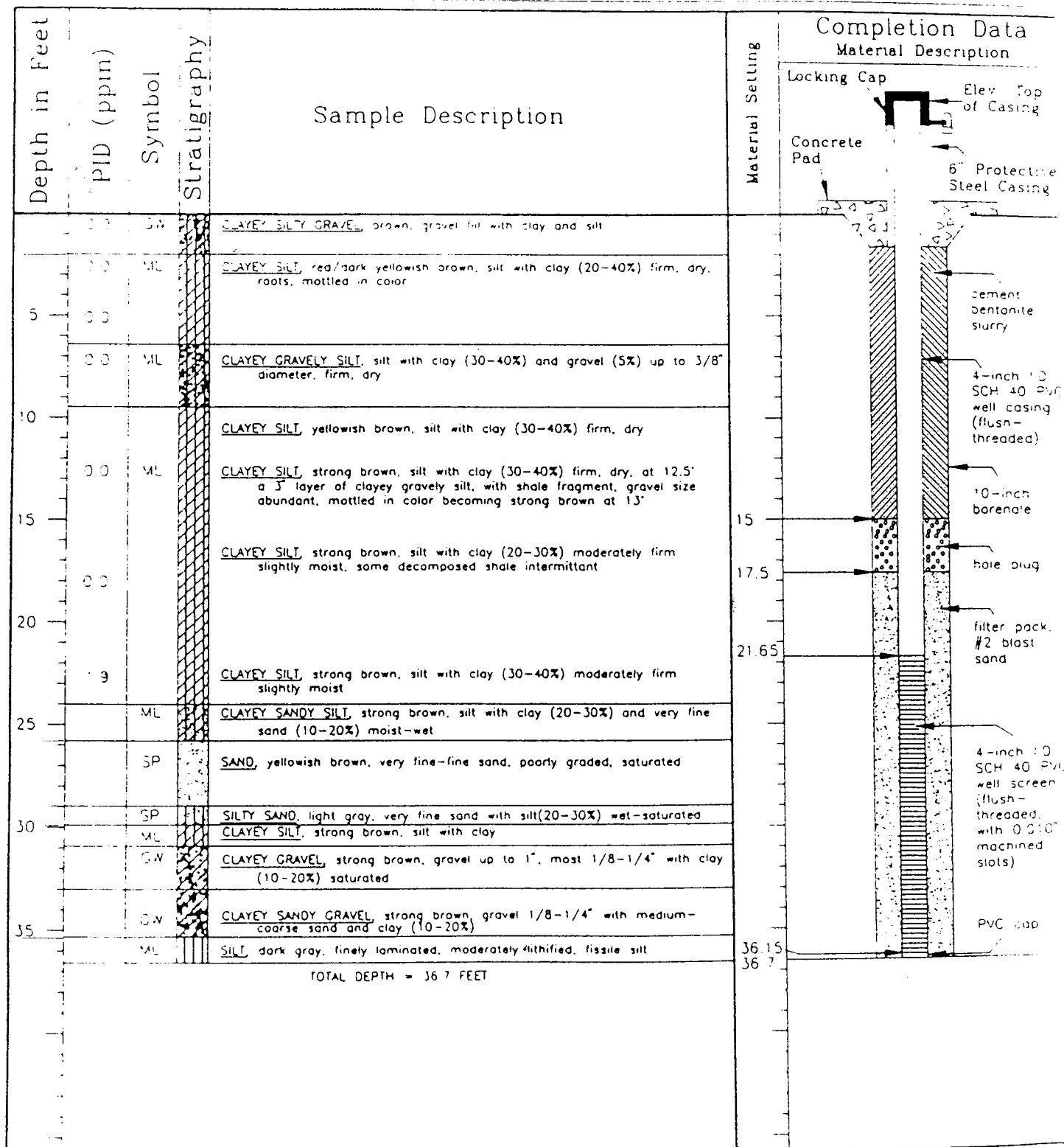
INTERNATIONAL
TECHNOLOGY
CORPORATION

Monitor Well Installation

ITMW 6

Well No. 1000

Client: W&A, Inc. Job No. 14498 Date Drilled: 10/19/89 Sheet 1 of 1
 Site: 100 MED. AR. Elevation: Pad 481.05 Top of PVC Casing: 481.1
 Total Depth: 36.7 FEET Casing Size & Type: 4-INCH SCH 40 PVC Screen Size: 10/20
 Comments: 4-INCH HOLLOW STEM AUGER
 100% SPLIT-SPOON, 5 CONTINUOUS SAMPLE



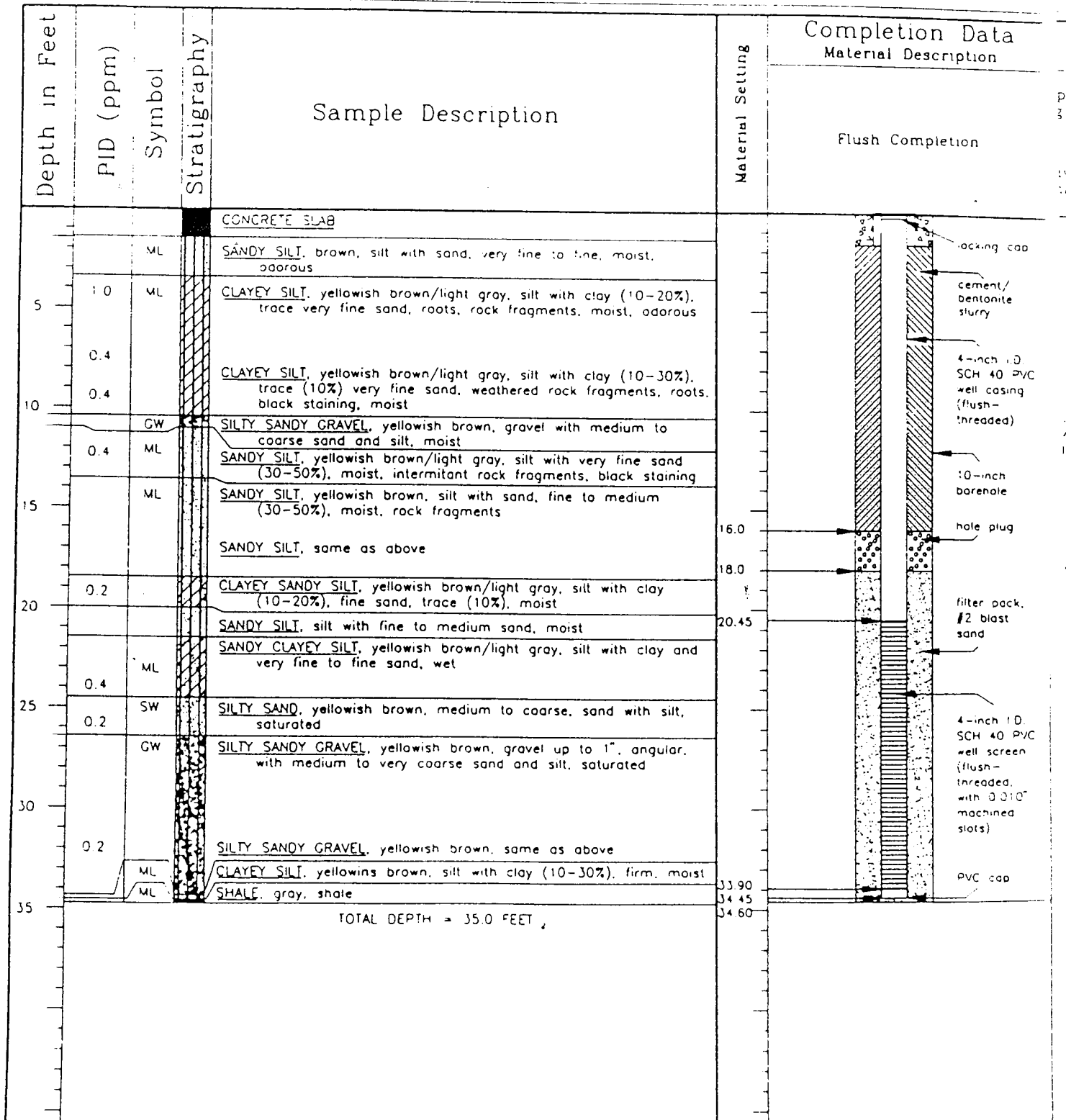


INTERNATIONAL
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Monitor Well Installation

ITMW8

Client: WATERBURY Job No: 446498 Date Drilled: 11/19/89 Sheet 1 of 1
 Site: MT. MITCHELL, NH Elevation Cover Rim: 482.33 Top of PVC Casing: 481.79
 Total Depth: 34.60 FEET Casing Size & Type: 4-INCH SCH 40 PVC Screen Size: 0.010 IN.
 Comments: 8-INCH HOLLOW STEM AUGGER 10-INCH HOLLOW STEM AUGGER
2' SPLIT-SPOON 5' CONTINUOUS SAMPLE



DRAFT

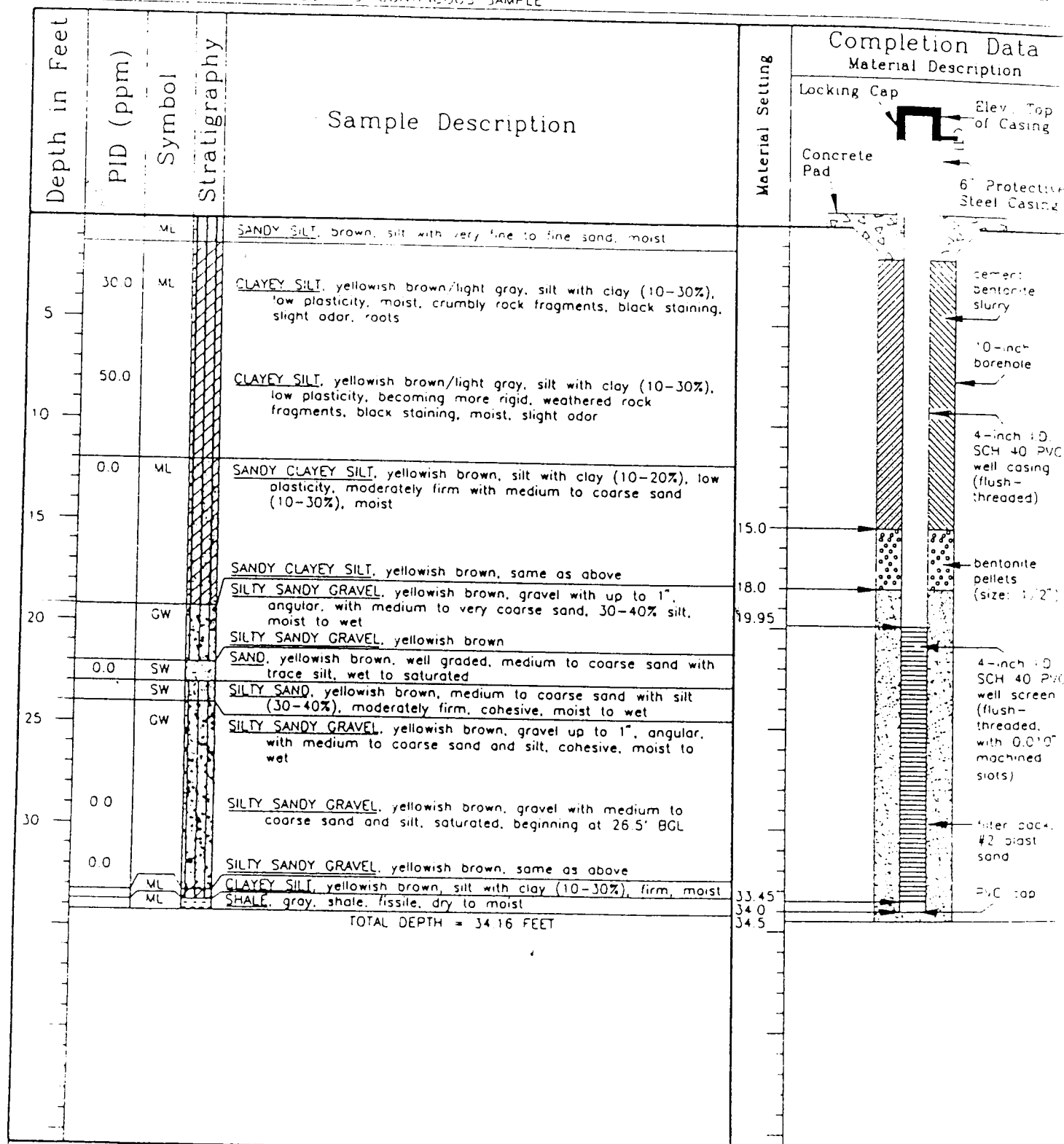


INTERNATIONAL
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Monitor Well Installation

ITMw9

Client WATERPOOL Job No. 446498 Date Drilled 12/29/89 Well No. MAW
 Site FORT MICHIGAN Elevation Ground 479.50 Top of PVC Casing 431.90
 Total Depth 34.5 FEET Casing Size & Type: 4-INCH SCH 40 PVC Screen Size 0.010" NO.
 Comments 3-INCH HOLLOW STEM AUGER
2 SPLIT-SPOON 5' CONTINUOUS SAMPLE



DRAWN BY MMH

6/30

CHECKED BY

APPROVED BY

DRAWING NUMBER 446498-01

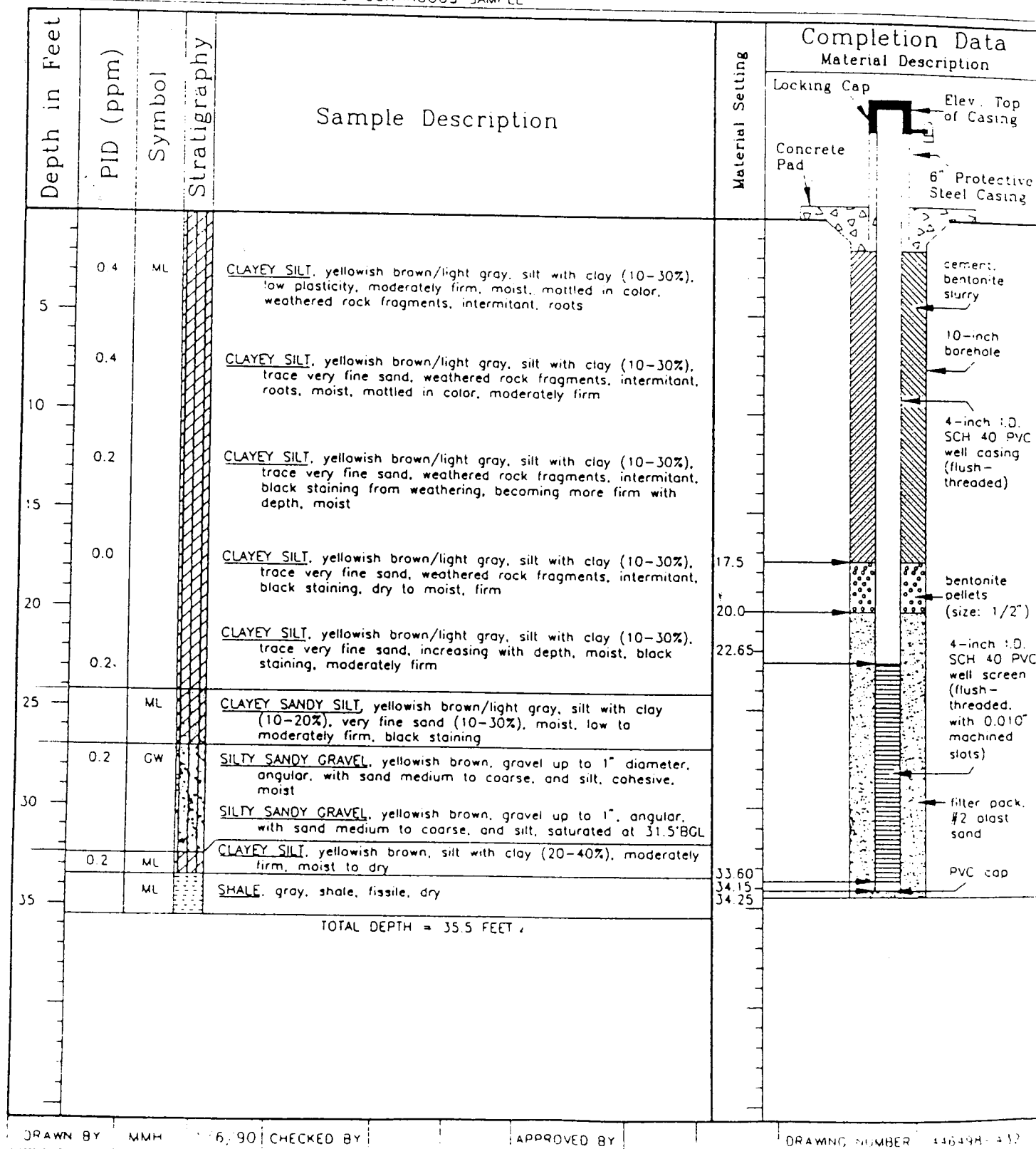


INTERNATIONAL
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CORPORATION

Monitor Well Installation

ITMW10

Client WHITFIELD Job No 446498 Date Drilled 12/20/89 Well No ITMW10
 Site: FORT SMITH, AR Elevation: Ground 478.60 Top of PVC Casing 480.84
 Total Depth 35.5 FEET Casing Size & Type 4-INCH SCH 40 PVC Screen Size 0.010 INCH
 Comments 3-INCH HOLLOW STEM AUGER
2" SPLIT-SPOON 5' CONTINUOUS SAMPLE



DRAFT

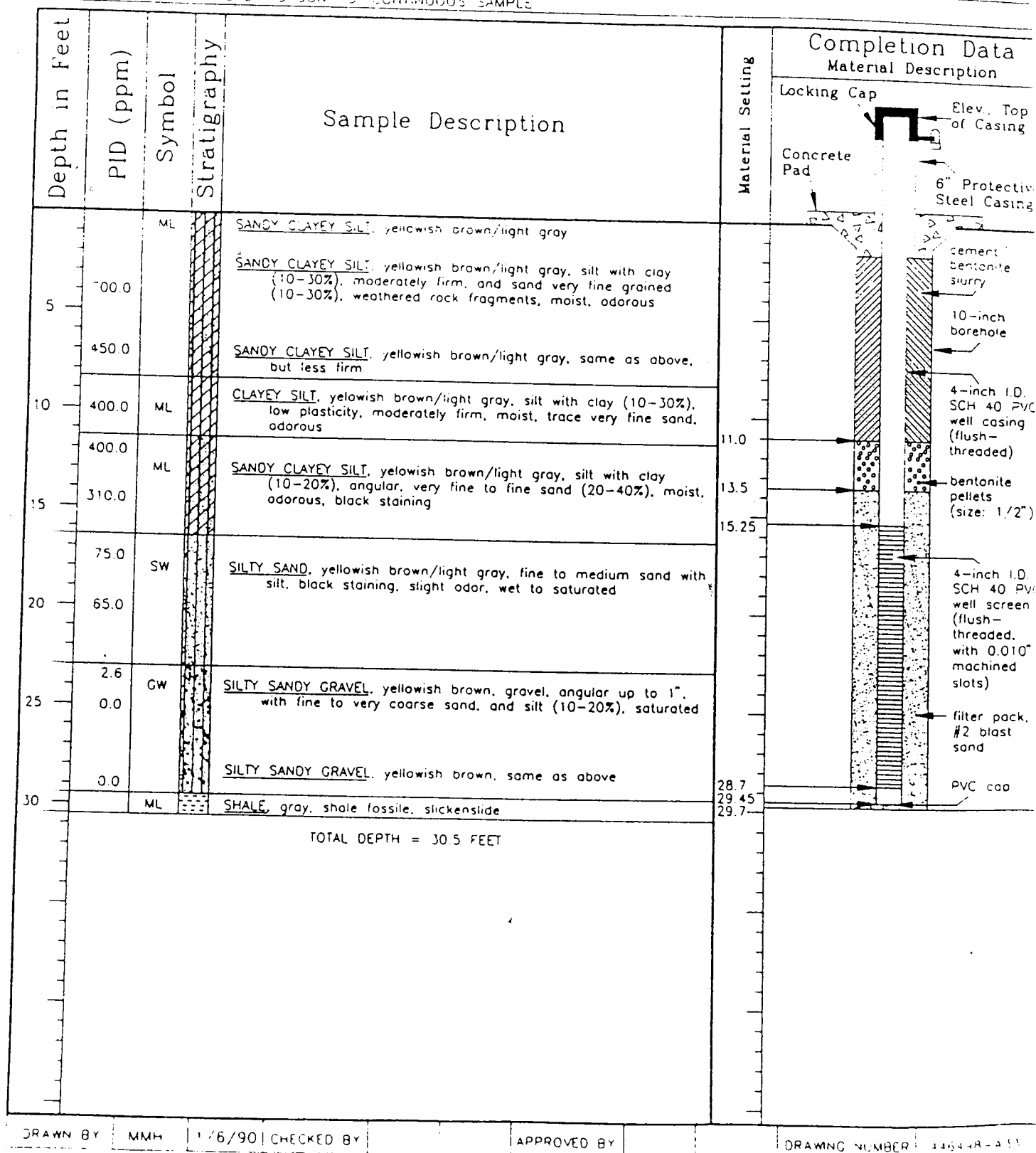


INTERNATIONAL
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Monitor Well Installation

ITMW 11

Client WHIRLPOOL Job No. 446498 Date Drilled 12.30.89 Sheet 1 of 1
 Site FORT SMITH, AR Elevation Ground 474.00 Top of PVC Casing 476.50
 Total Depth 30.5 FEET Casing Size & Type: 4-INCH SCH 40 PVC Screen Size 0.010 IN.
 Comments 8-INCH HOLLOW STEM AUGER
2" SPLIT-SPOON 5' CONTINUOUS SAMPLE



Client: WHIRLPOOL
Project Name: WHIRLPOOL

Project Location: FORT SMITH, ARK.
Project Number: 446498

DRAFT

MONITOR WELL ITMW12

DRILLING AND SAMPLING INFORMATION

Boring Location: ITMW12
SURFACE ELEV.(FT.): 474.72
TOTAL DEPTH(FT.): 30.5
Logged By: L. JOHNSON
Date Started: 10/30/90
Drilled By: J. LANDEROS
Date Completed: 10/30/90

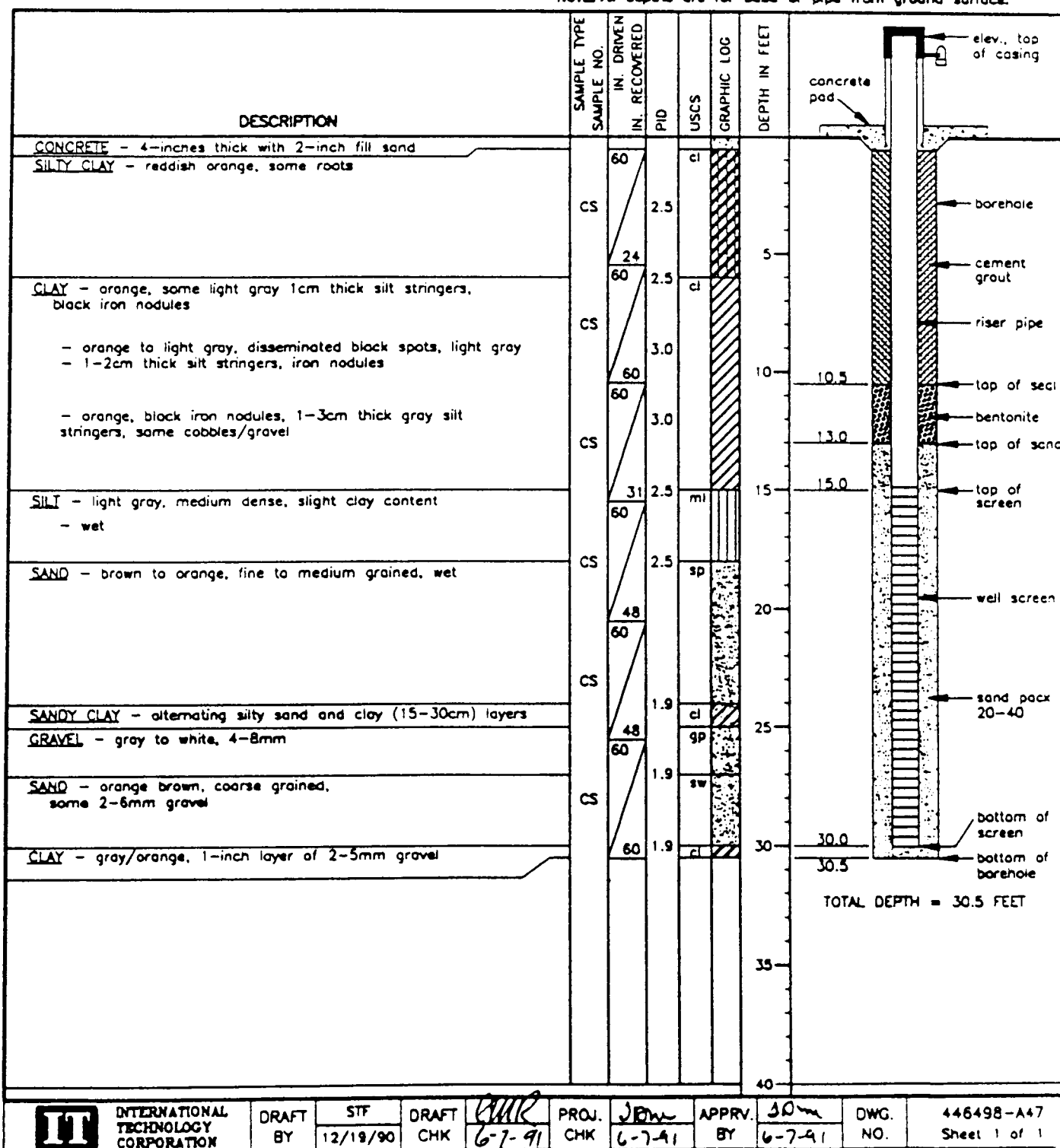
Drill Rig Type: B-53 MOBILE DRILL
Drilling Method: 8-INCH HOLLOW STEM AUGER, 10-INCH HOLLOW STEM AUGER
Sampling Method: 5-FOOT CONTINUOUS SAMPLE

Notes: -

WELL COMPLETION DATA

Elev-Top of Casing(FT.): 476.67
Ref. Datum: MSL
1. Riser Pipe-Dia(In.): 4
Depth(FT.): 15
Type: Sch 40 PVC
Centralizers-Type: NA
Depth(FT.): NA
2. Screen Dia.(In.): 4
Type: Sch 40 PVC FJT
Depth Interval(FT.): 15-30
Slot Size(In.): .010
Centralizers-Type: NA
Depth(FT.): NA
3. Filter Pack Type: 20-40 Silica
Depth Interval(FT.): 13-30.5
Conc. Pod Size: 3'x3'x6"

NOTE: All depths are for base of pipe from ground surface.



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DRAFT
BY

STF
12/19/90

DRAFT
CHK

6-7-91

PROJ.
CHK

6-7-91

APPR.
BY

6-7-91

DWG.
NO.

446498-A47
Sheet 1 of 1

DRAFT

Client: WHIRPOOL
Project Name: WHIRPOOL

Project Location: FORT SMITH, ARK.
Project Number: 446498

MONITOR WELL ITMW13

DRILLING AND SAMPLING INFORMATION

Boring Location: ITMW13
Lugged By: L. JOHNSON
Drilled By: J. LANDERS
SURFACE ELEV.(FT.): 475.39
TOTAL DEPTH(FT.): 29.5
Date Started: 11/6/90
Date Completed: 11/7/90

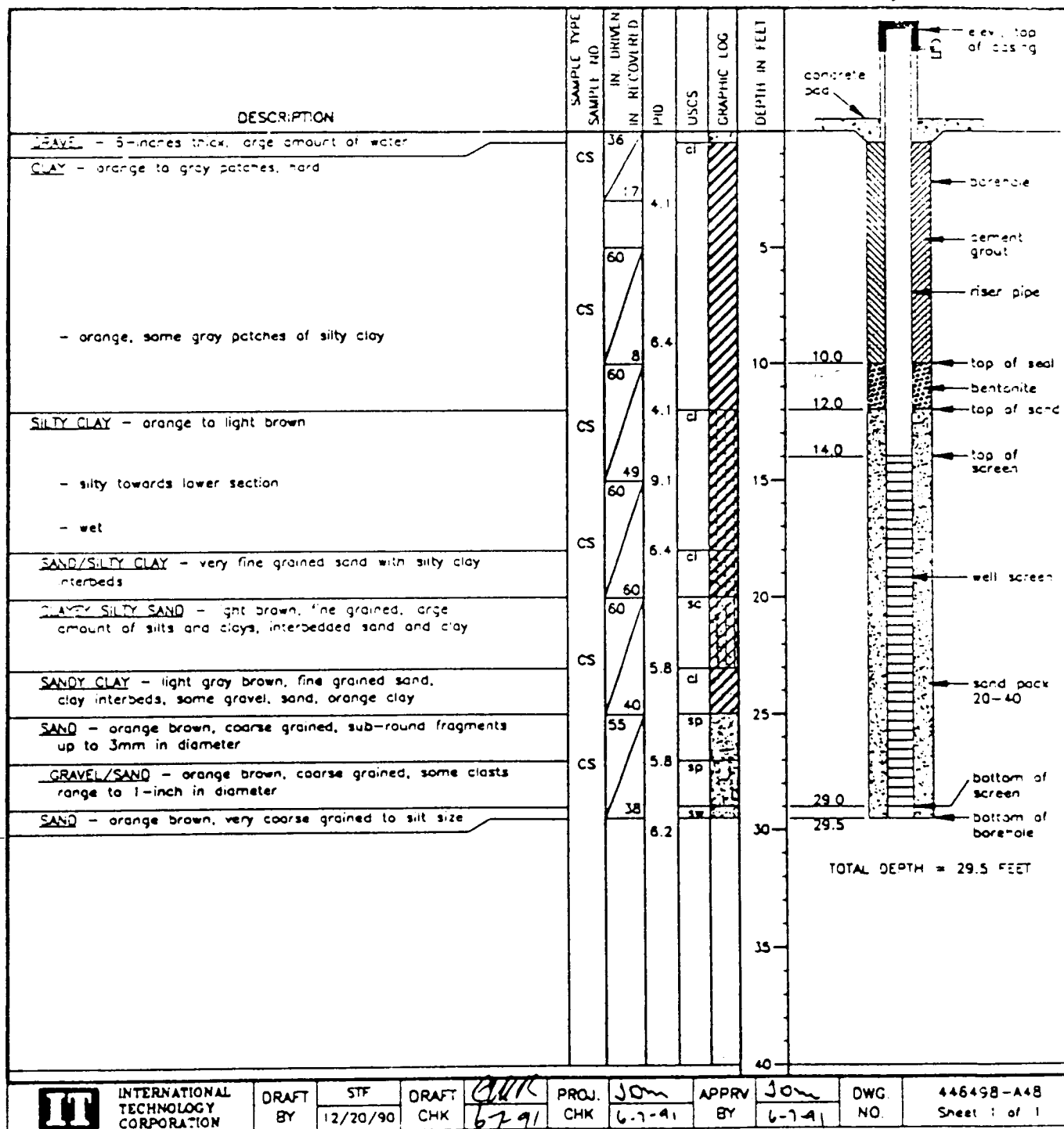
Drill Rig Type: DEEP ROCK
Drilling Method: 8-INCH HOLLOW STEM AUGER, 10-INCH HOLLOW STEM AUGER
Sampling Method: 5-FOOT CONTINUOUS SAMPLE

WELL COMPLETION DATA

Elev-Top of Casing(FT.): 477.79
1. Riser Pipe-Dia(In.): 4
Centralizers-Type: NA
2. Screen Dia.(In.): 4
Depth Interval(FT.): 14-29
Centralizers-Type: NA
3. Filter Pack Type: 20-40 silica
Cone. Pod Size: 3'x3'x5'
Ref. Datum: MSL
Depth(FT.): 14
Type: Sch 40 PVC
Depth(FT.): NA
Type: Sch 40 PVC ELT
Slot Size(In.): 0.10
Depth(FT.): NA
Depth Interval(FT.): 12-29.5

Notes:

NOTE: All depths are for base of pipe from ground surface.



Client: WHIRLPOOL
Project Name: WHIRLPOOL

Project Location: FORT SMITH, ARK.
Project Number: 446498

DRAFT

MONITOR WELL ITMW14

DRILLING AND SAMPLING INFORMATION

Boring Location: ITMW14
SURFACE ELEV.(FT): 475.68
TOTAL DEPTH(FT.): 30
Logged By: L. JOHNSON
Date Started: 10/30/90
Drilled By: J. LANDEROS
Date Completed: 10/31/90

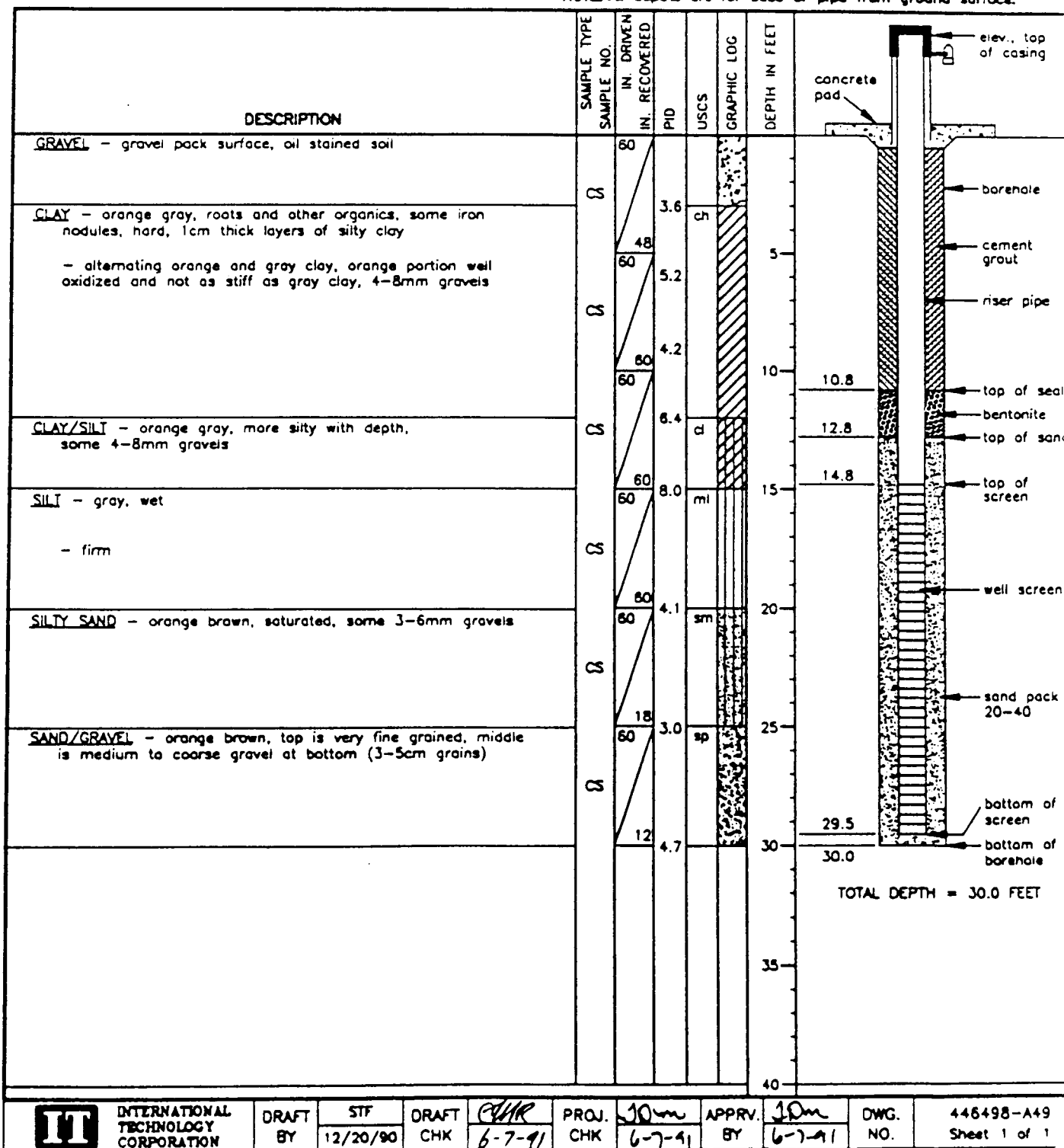
Drill Rig Type: 8-53 MOBILE DRILL
Drilling Method: 8-INCH HOLLOW STEM AUGER, 10-INCH HOLLOW STEM AUGER
Sampling Method: 5-FOOT CONTINUOUS SAMPLE

Notes: -

WELL COMPLETION DATA

Elev-Top of Casing(FT.): 477.30
Ref. Datum: MSL
1. Riser Pipe-Dia(in.): 4
Centralizers-Type: NA
Depth(FT.): 14.8
Type: Sch 40 PV
Depth(FT.): NA
2. Screen Dia.(in.): 4
Type: Sch 40 PVC FJT
Depth Interval(FT.): 14.8-29.5
Slot Size(in.): .010
Centralizers-Type: NA
Depth(FT.): NA
3. Filter Pack Type: 20-40 Silica
Depth Interval(FT.): 12.8-30
Conc. Pad Size: 3'x3'x6"

NOTE: All depths are for base of pipe from ground surface.



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DRAFT
BY

STF
12/20/90

DRAFT
CHK

CHK
6-7-91

PROJ.
CHK

10m
6-7-91

APPR.
BY

10m
6-7-91

DWG.
NO.

446498-A49
Sheet 1 of 1

Client: WHIRLPOOL
Project Name: WHIRLPOOL

Project Location: FORT SMITH, ARK.
Project Number: 446498

DRAFT

MONITOR WELL ITMW15

DRILLING AND SAMPLING INFORMATION

Boring Location: ITMW15
SURFACE ELEV.(FT): 474.79
TOTAL DEPTH(FT.): 30
Logged By: L. JOHNSON
Date Started: 10/31/90
Drilled By: J. LANDEROS
Date Completed: 10/31/90

Drill Rig Type: B-53 MOBILE DRILL
Drilling Method: 8-INCH HOLLOW STEM AUGER, 10-INCH HOLLOW
STEM AUGER

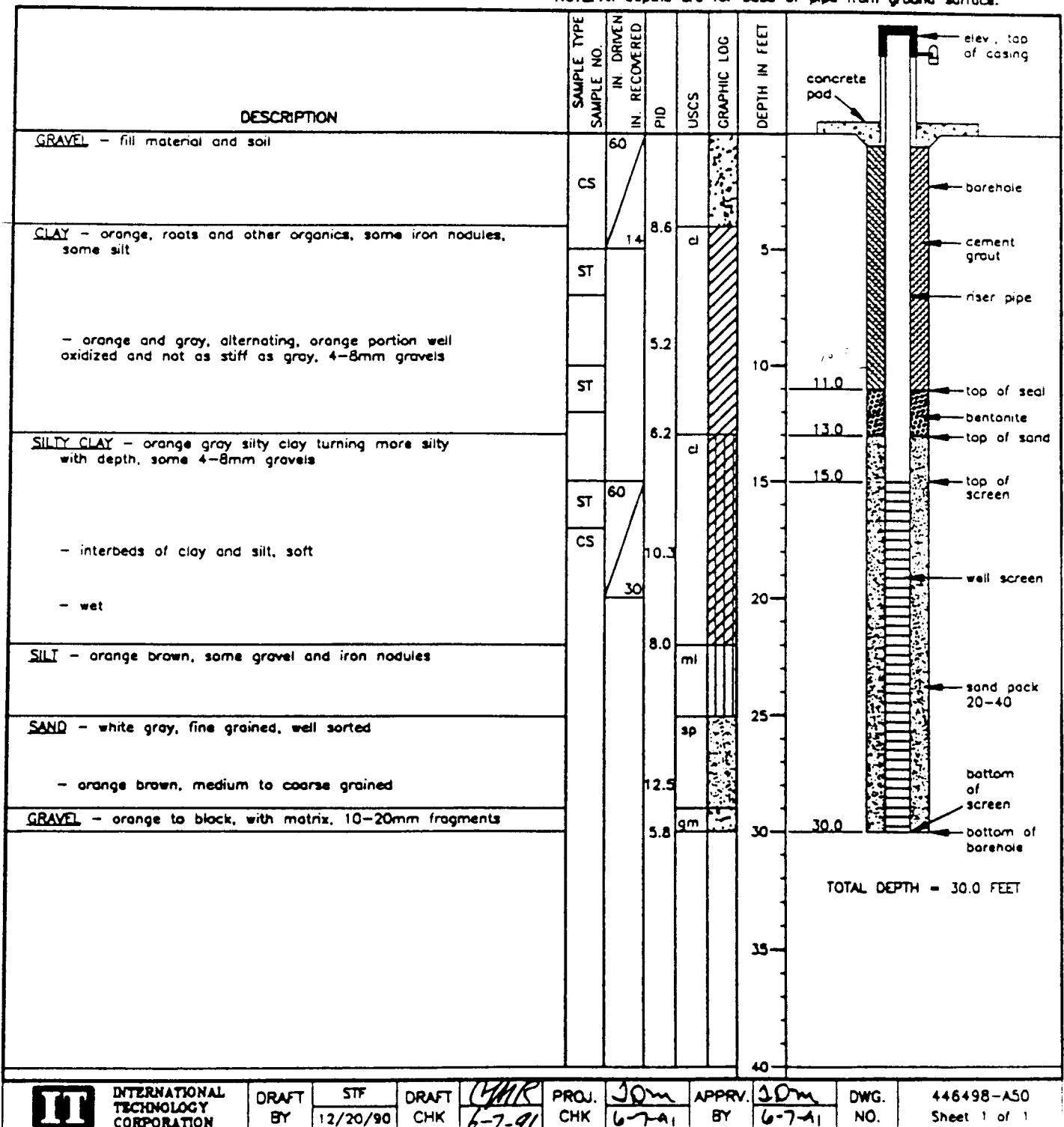
Sampling Method: 5-FOOT CONTINUOUS SAMPLE - CS
2-FOOT SHELBY TUBE - ST

Notes: -

WELL COMPLETION DATA

Elev-Top of Casing(FT.): 476.49
Ref. Datum: MSL
1. Riser Pipe-Dia(in.): 4
Depth(FT.): 15
Type: Sch 40 PVC
Centralizers-Type: NA
Depth(FT.): NA
2. Screen Dia.(in.): 4
Type: Sch 40 PVC FJT
Depth Interval(FT.): 15-30
Slot Size(in.): .010
Centralizers-Type: NA
Depth(FT.): NA
3. Filter Pack Type: 20-40 Silica
Depth Interval(FT.): 13-30
Conc. Pod Size: 3'x3'x6"

NOTE: All depths are for base of pipe from ground surfaces.



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DRAFT
BY

STF
12/20/90

DRAFT
CHK

CHK
6-7-91

PROJ.
CHK

30m
6-7-91

APPRV.
BY

30m
6-7-91

DWG.
NO.

446498-A50
Sheet 1 of 1

Client: WHIRLPOOL
Project Name: WHIRLPOOL

Project Location: FORT SMITH, ARK.
Project Number: 446498

DRAFT

MONITOR WELL ITMW16

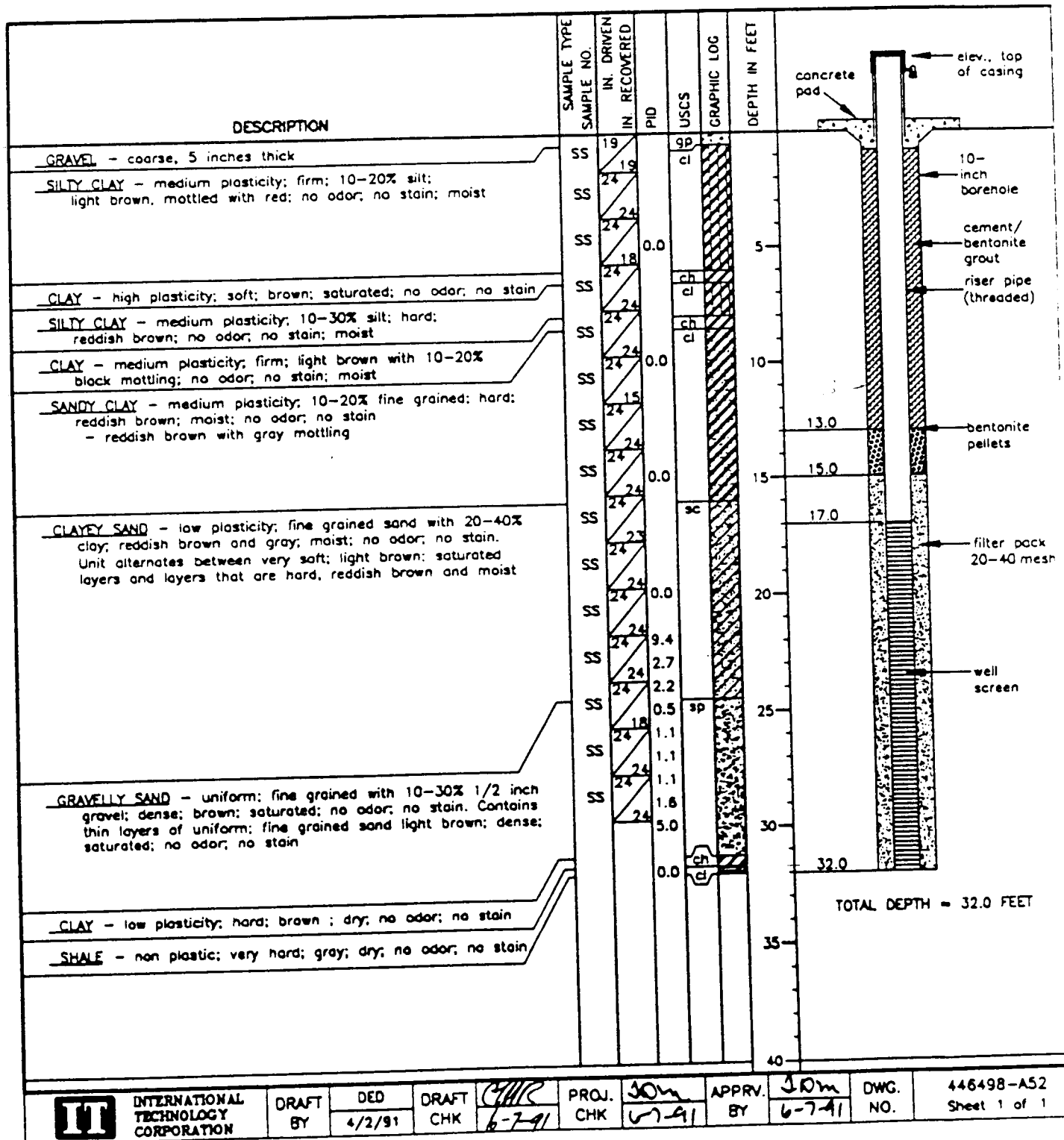
DRILLING AND SAMPLING INFORMATION

Boring Location: ITMW16
Logged By: B. HUEY
Drilled By: B. HOUSTON
Drill Rig Type: 8-61 HD TRUCK MOUNTED MOBILE RIG
Drilling Method: 8-INCH HOLLOW STEM AUGERS,
10-INCH HOLLOW STEM AUGERS
Sampling Method: 2 FOOT SPLIT SPOON (SS)

WELL COMPLETION DATA

Elev-Top of Casing(FT.): 478.79
1. Riser Pipe-ID.(in.): 4
Centralizers-Type: NA
2. Screen Dia.(in.): 4
Depth Interval(FT.): 17-32
Centralizers-Type: NA
3. Filter Pack Type: 20-40 Silica
Conc. Pad Size: 3'x3'x6"
Ref. Datum: MSL
Depth(FT.): 17
Type: Sch 40 PVC
Depth(FT.): NA
Type: Sch 40 PVC FJT
Slot Size(in.): .010
Depth(FT.): NA
Depth Interval(FT.): 15-32

Notes: -



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DRAFT
BY

DED
4/2/91

DRAFT
CHK

6-7-91

PROJ.
CHK

6-7-91

APPRV.
BY

6-7-91

DWG.
NO.

446498-A52
Sheet 1 of 1

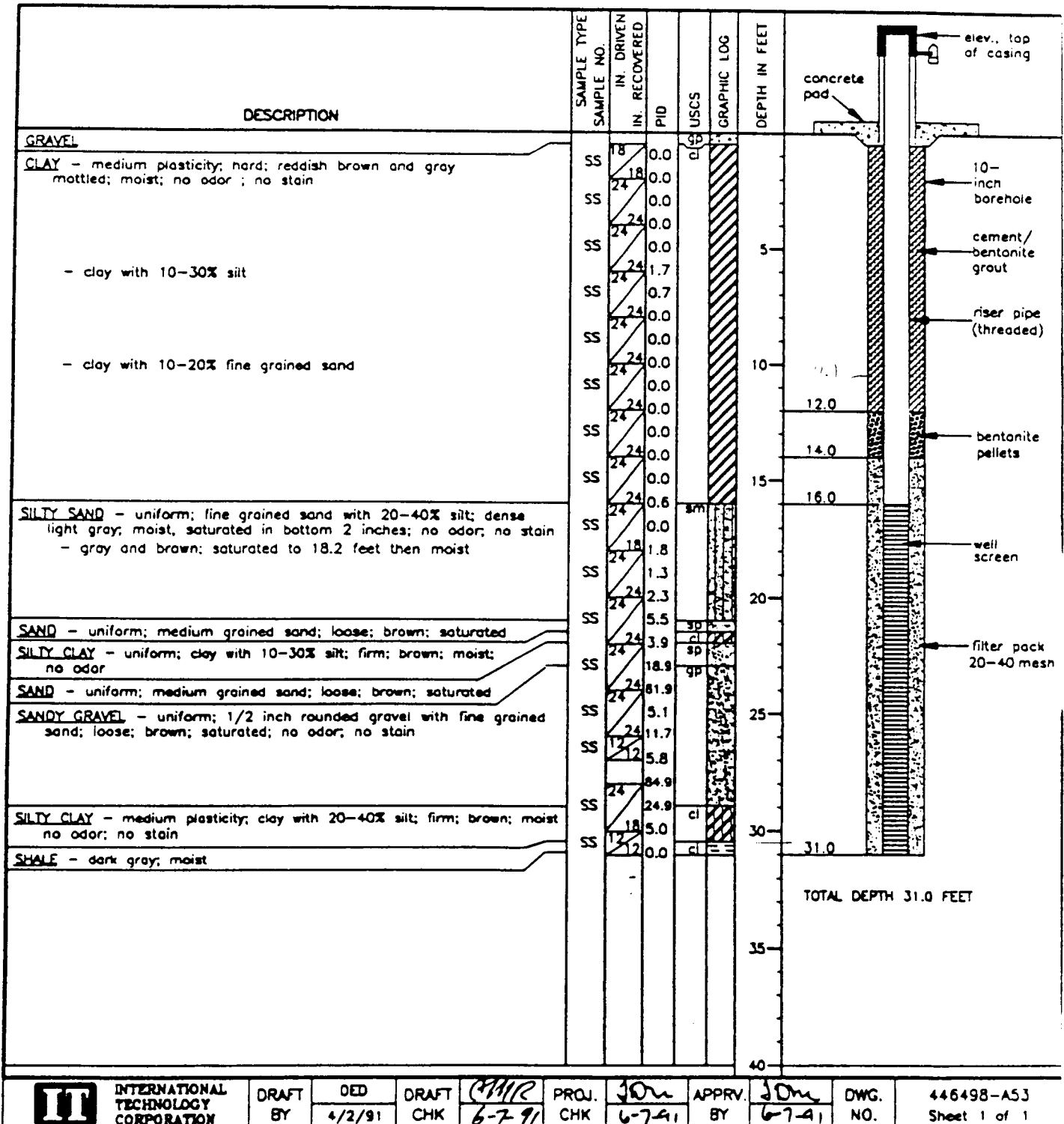
Project Location: FORT SMITH, ARK
Project Number: 446498

WELL COMPLETION DATA

Elev-Top of Casing(ft.): 477.90 Ref. Datum: MSL

1. Risers Pipe-LD(in.): 4	Depth(ft.): 18	Type: Sch 40 PVC
Centralizers-Type: NA	Depth(ft.): NA	
2. Screen Dia.(in.): 4	Type: Sch 40 PVC FJT	
Depth Interval(ft.): 16-31	Slot Size(in.): .010	
Centralizers-Type: NA	Depth(ft.): NA	
3. Filter Pack Type: 20-40 Silica	Depth Interval(ft.): 14-31	
Conc. Pod Size: 3'x3'x6"		

Notes: -



Client: WHIRLPOOL
Project Name: WHIRLPOOL

Project Location: FORT SMITH, ARK.
Project Number: 446498

DRAFT

MONITOR WELL ITMW18

DRILLING AND SAMPLING INFORMATION

Boring Location: ITMW18
SURFACE ELEV.(FT.): 473.90
TOTAL DEPTH(FT.): 30.0
Logged By: B. HUEY
Date Started: 2/28/91
Drilled By: B. HOUSTON
Date Completed: 2/28/91

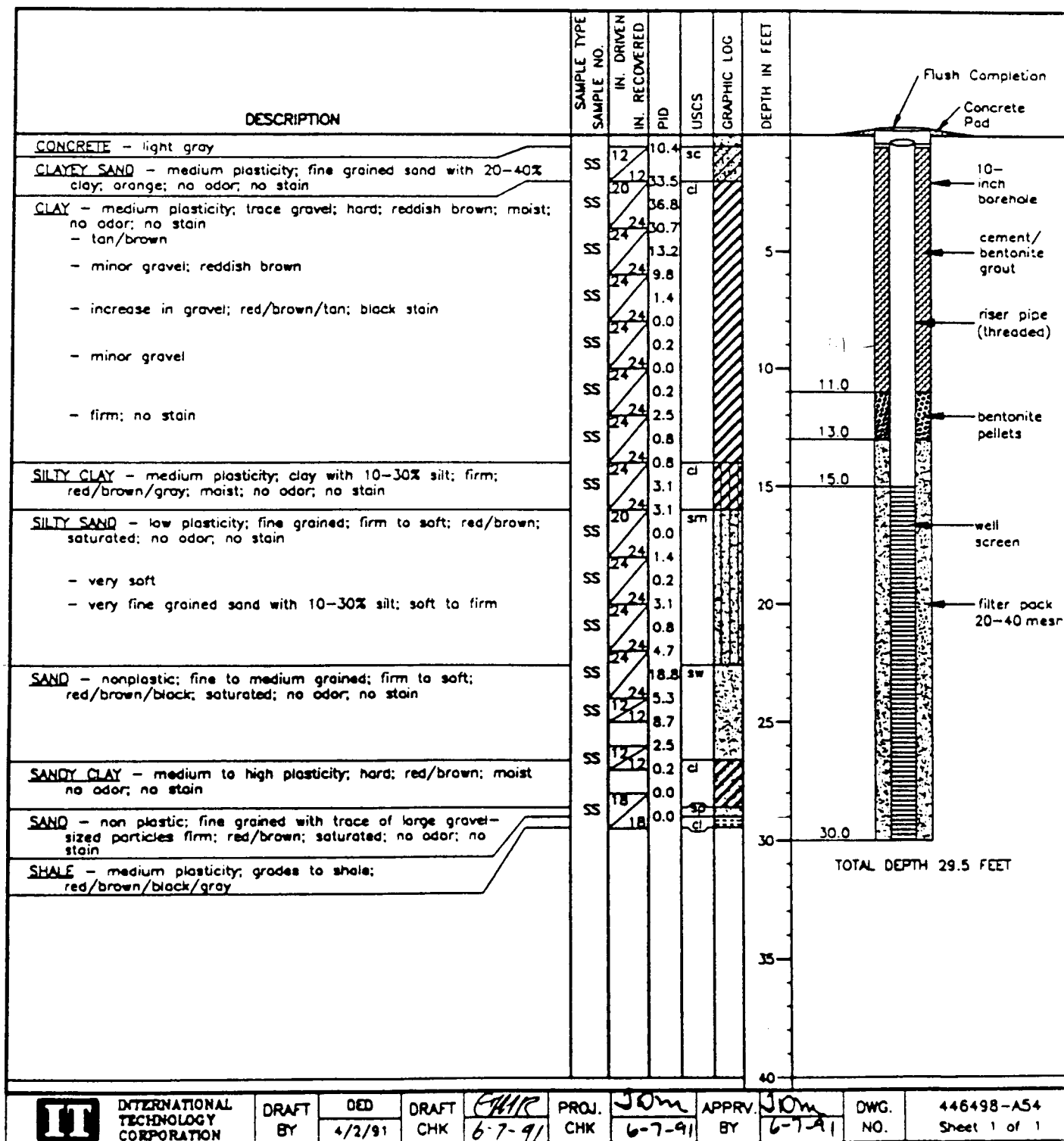
Drill Rig Type: B-81 HD TRUCK MOUNTED RIG
Drilling Method: 8-INCH HOLLOW STEM AUGER,
10-INCH HOLLOW STEM AUGER

Sampling Method: 2 FOOT SPLIT SPOON (SS)

Notes: -

WELL COMPLETION DATA

Elev-Top of Casing(FT.): 473.55
Ref. Datum: MSL
1. Riser Pipe-I.D.(in.): 4
Depth(FT.): 15
Type: Sch 40 PVC
Centralizers-Type: NA
Depth(FT.): NA
2. Screen Dia.(in.): 4
Type: Sch 40 PVC FJT
Depth Interval(FT.): 15-30
Slot Size(in.): .010
Centralizers-Type: NA
Depth(FT.): NA
3. Filter Pack Type: 20-40 Silica
Depth Interval(FT.): 13-30
Conc. Pod Size: 3"x3"x6"



Client: WHIRLPOOL
Project Name: WHIRLPOOL

Project Location: FORT SMITH, ARK.
Project Number: 446498

DRAFT

MONITOR WELL ITMW19

DRILLING AND SAMPLING INFORMATION

Boring Location: ITMW19
Logged By: B. HUEY
Drilled By: B. HOUSTON

SURFACE ELEV.(FT.): 474.30
TOTAL DEPTH(FT.): 31.0
Date Started: 2/26/91
Date Completed: 2/26/91

Drill Rig Type: B-61 HD TRUCK MOUNTED RIG
Drilling Method: 8-INCH HOLLOW STEM AUGERS,
10-INCH HOLLOW STEM AUGERS

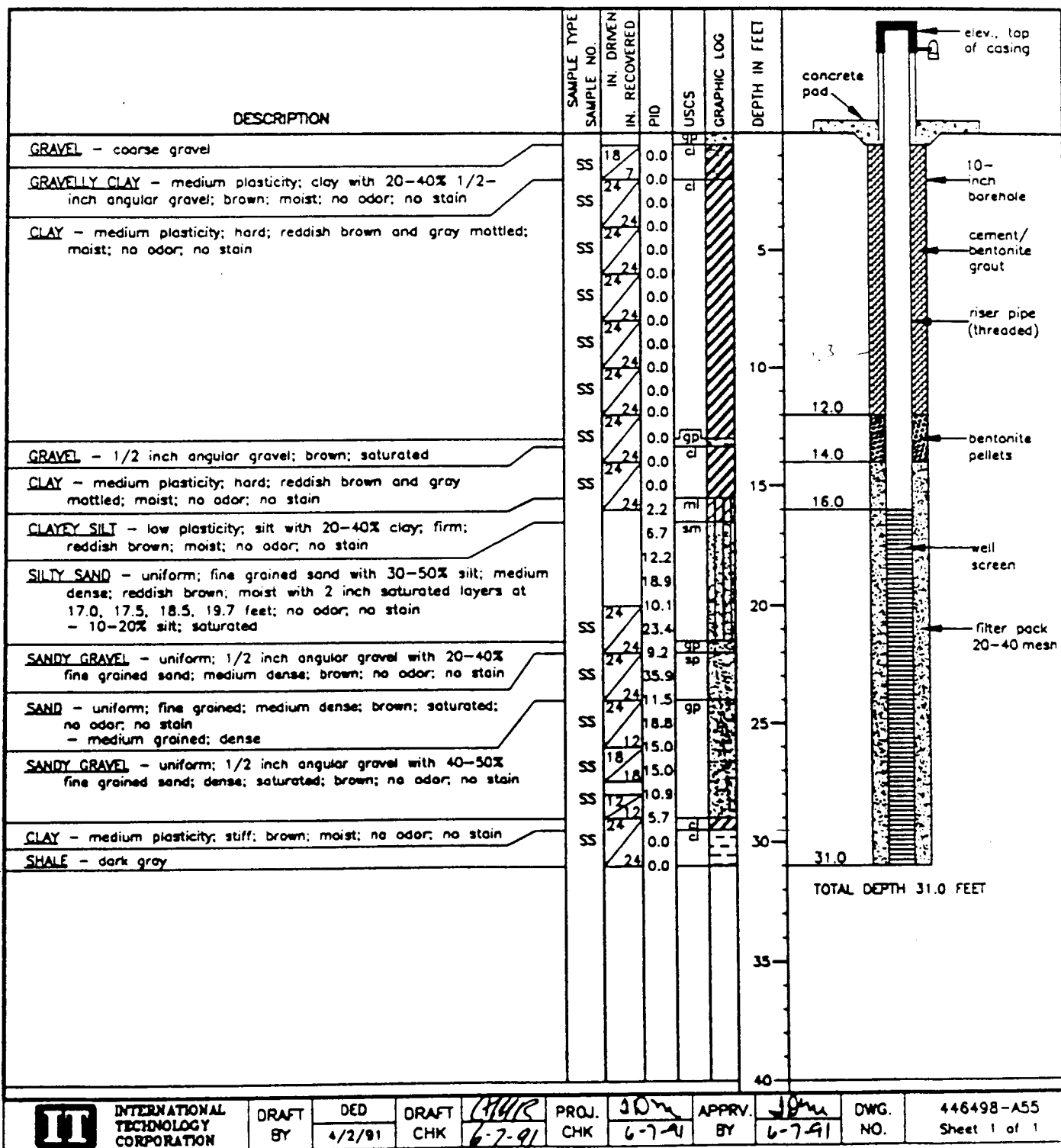
Sampling Method: 2 FOOT SPLIT SPOON (SS)

Notes: -

WELL COMPLETION DATA

Elev-Top of Casing(ft.): 476.25
1. Riser Pipe-LD.(in.): 4
Centralizers-Type: NA
2. Screen Dia.(in.): 4
Depth Interval(ft.): 16-31
Centralizers-Type: NA
3. Filter Pack Type: 20-40 Silica
Conc. Pad Size: 3'x3'x6"

Ref. Datum: MSL
Depth(ft.): 16
Type: Sch 40 PVC
Depths(ft.): NA
Type: Sch 40 PVC FJT
Slot Size(in.): .010
Depths(ft.): NA
Depth Interval(ft.): 14-31



Client: WHIRLPOOL
Project Name: WHIRLPOOL

Project Location: FORT SMITH, ARK.
Project Number: 446498

DRAFT

MONITOR WELL ITMW20

DRILLING AND SAMPLING INFORMATION

Boring Location: ITMW20
SURFACE ELEV.(FT.): 475.73
TOTAL DEPTH(FT.): 29.0
Logged By: B. HUEY
Date Started: 3/5/91
Drilled By: B. HOUSTON
Date Completed: 3/6/91

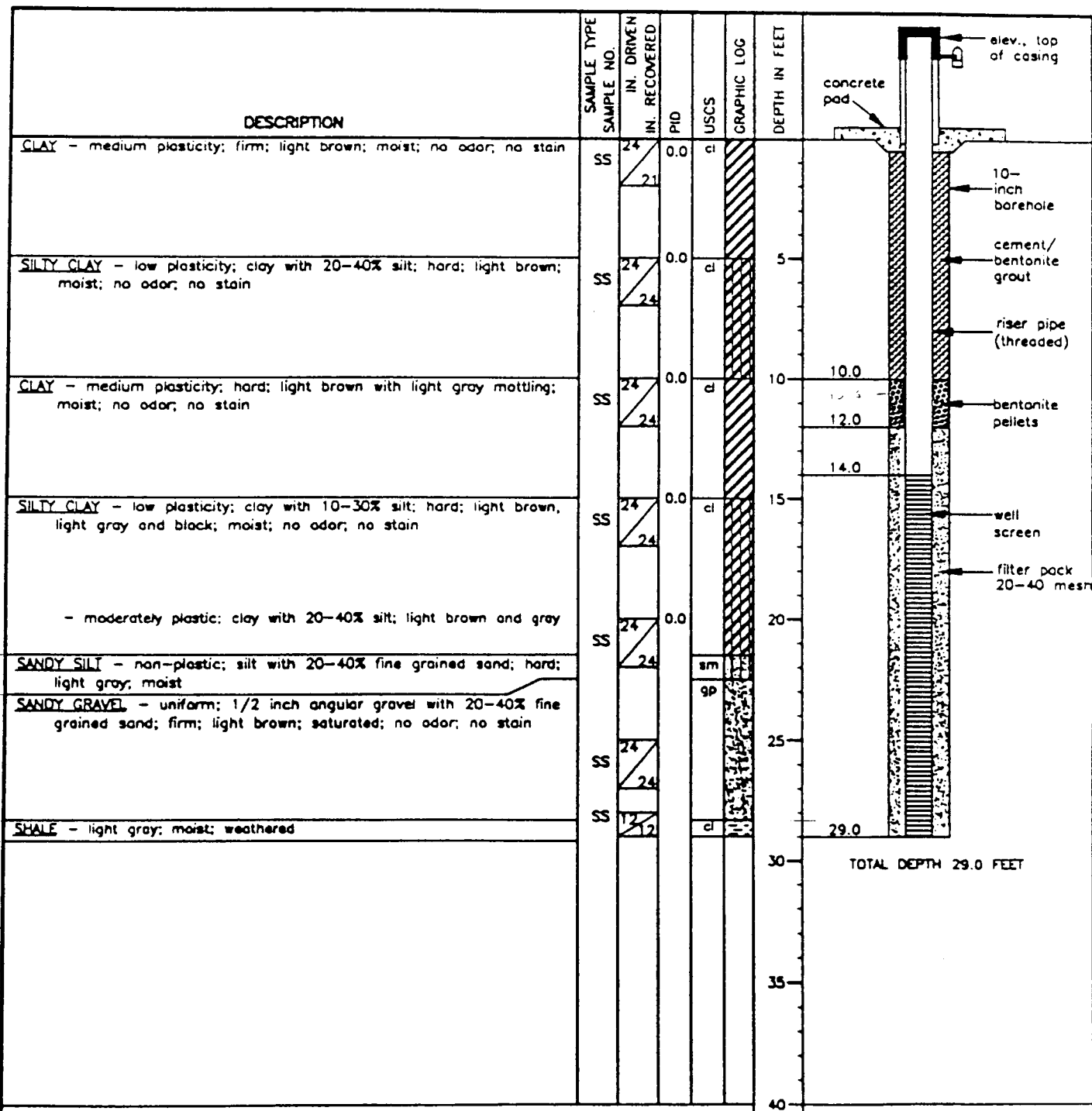
Drill Rig Type: B-61 HD TRUCK MOUNTED RIG
Drilling Method: 10 INCH O.D. HOLLOW STEM AUGER

Sampling Method: 2 FOOT SPLIT SPOON (SS)

WELL COMPLETION DATA

Elev-Top of Casing(FT.): 477.87 Ref. Datum: MSL
1. Riser Pipe-LD.(in.): 4 Depth(FT.): 14 Type: Sch 40 PVC
Centralizers-Type: NA Depths(FT.): NA
2. Screen Dia.(in.): 4 Type: Sch 40 PVC FJT
Depth Interval(FT.): 14-29 Slot Size(in.): .010
Centralizers-Type: NA Depths(FT.): NA
3. Filter Pack Type: 20-40 Silica Depth Interval(FT.): 12-29
Conc. Pod Size: 3'x3'x6"

Notes: -



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DRAFT
BY

OED
4/2/91

DRAFT
CHK

6-7-91

PROJ.
CHK

6-7-91

APPRV.
BY

6-7-91

DWG.
NO.

446498-A56
Sheet 1 of 1

Client: WHIRLPOOL
Project Name: WHIRLPOOL

Project Location: FORT SMITH, ARK.
Project Number: 446498

DRAFT

MONITOR WELL ITMW21

DRILLING AND SAMPLING INFORMATION

Boring Location: ITMW21
SURFACE ELEV.(FT.): 474.37
TOTAL DEPTH(FT.): 31.0
Logged By: B. HUEY
Date Started: 3/7/91
Drilled By: B. HOUSTON
Date Completed: 3/7/91

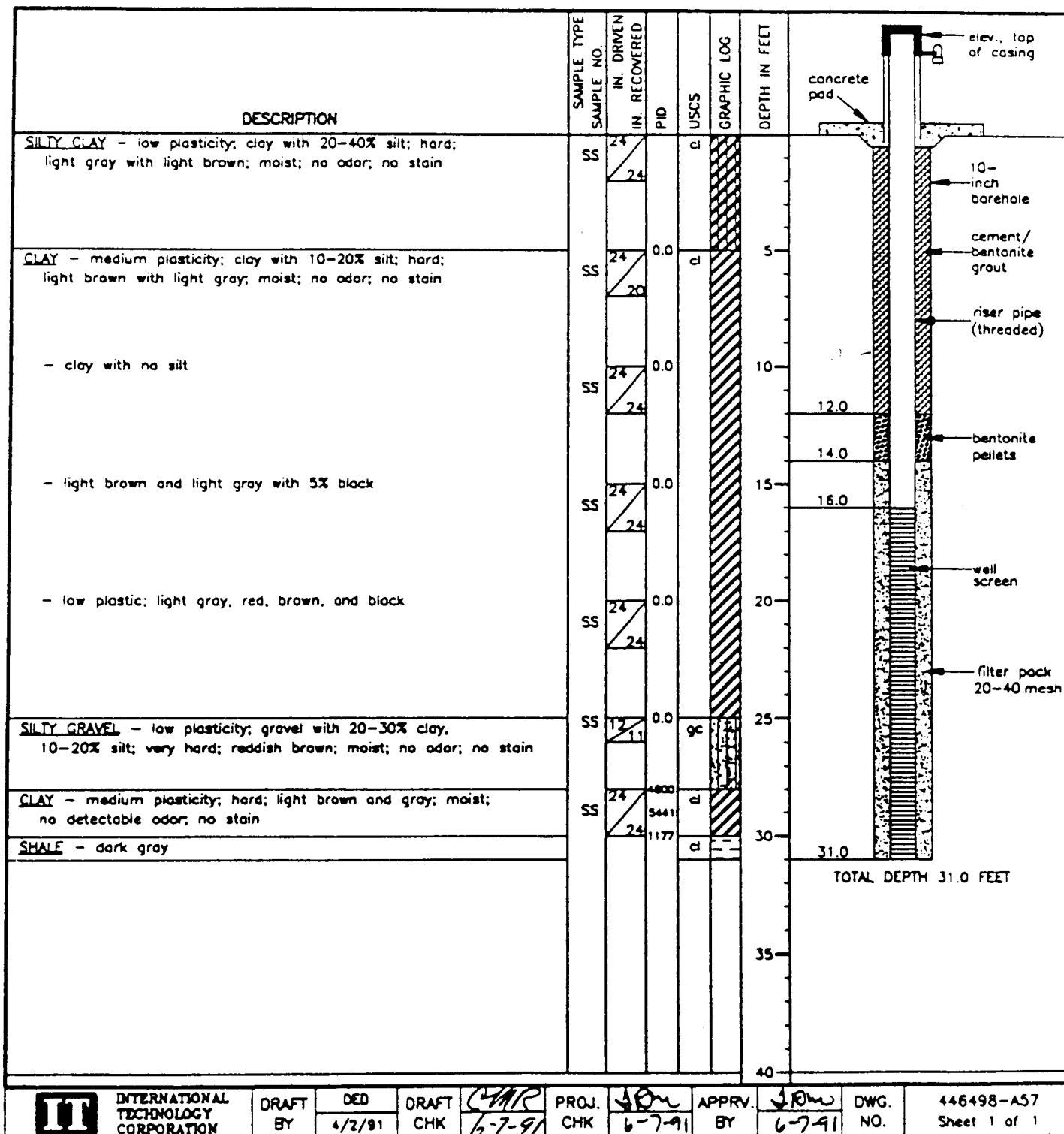
Drill Rig Type: B-61 HD MOBILE TRUCK MOUNTED RIG
Drilling Method: 10 INCH O.D. HOLLOW STEM AUGERS

Sampling Method: 2 FOOT SPLIT SPOONS

Notes: -

WELL COMPLETION DATA

Elev-Top of Casing(FT.): 478.52
Ref. Datum: MSL
1. Riser Pipe-LD.(in.): 4
Depth(FT.): 14
Type: Sch 40 PVC
Centralizers-Type: NA
Depth(FT.): NA
2. Screen Dia.(in.): 4
Type: Sch 40 PVC FJT
Depth Interval(FT.): 16-31
Slot Size(in.): .010
Centralizers-Type: NA
Depth(FT.): NA
3. Filter Pack Type: 20-40 Silica
Depth Interval(FT.): 14-31
Conc. Pod Size: 3'x3'x6"



BORING LOG

CLIENT	Whirlpool	PROJECT #	2172-047-100	
PROJECT	Remedial Investigation	CONTRACTOR	MHC	
LOCATION	Ft. Smith, Ark	DRILLER	Todd Wages	
START DATE	12/05/96	DRILLING METHOD	6" I.D. H.S. A.	
FINISH DATE	12/05/96	HYDROGEOLOGIST	R.B. Hernandez	

DEPTH	SAMPLE DESCRIPTION	USCS	PID	Notes
	(0' - 2') Very Dark Brown (10 YR, 2/2) Silty Gravel, Very Stiff to Hard, Damp to Very Damp	Fill	2.7	
5	(2' - 5') Dark Yellowish Brown (10YR, 3/6) Silty Slightly Sandy CLAY with some Iron ('Fe") Staining, Very Stiff, Dry to Damp	CH CL	2.7	
10	(5' - 10') Brownish Yellow (10 YR, 6/8) CLAY with Fe Nodules, Very Stiff, Damp	CL	2.7	
	(10' - 12') Light Grey (7.5 YR, 7/1) to Brownish Yellow (10 YR, 6/8) Silty CLAY, Stiff, Dry to Damp	CL	2.7	Silty from (10' - 12')
15	(12' - 18') Light Grey (7.5 YR, 7/1) to Brownish Yellow (10 YR, 6/8) Slightly Sandy Silty CLAY, Stiff to Very Stiff, Damp	CH CL	2.7	
20	(18' - 23') Light Grey (7.5 YR, 7/1) to Brownish Yellow (10 YR, 6/8) Sandy SILT, Stiff, Damp to Moist	ML	2.7	H2O @ 18' (20' - 23') Sticky Clays
25	(23' - 24') Dark Reddish Brown (5 YR, 3/4) Clayey Gravel, Very Dense, Wet	GC		
	(24' - 28') Brownish Yellow (10 YR, 6/8) Gravelly CLAY, Very Stiff to Hard, Moist	CL GC	2.7	
30	(28' - 29') Brownish Yellow (10 YR, 6/8) Very Silty CLAY, Very Hard, Dry	CL ML	2.7	
35	(29' - 30') Very Dark Grey (7.5 YR, 3/10) to Black (10 YR, 2/1) SILT (McAlester Shale) Very Hard, Dry	ML	2.7	

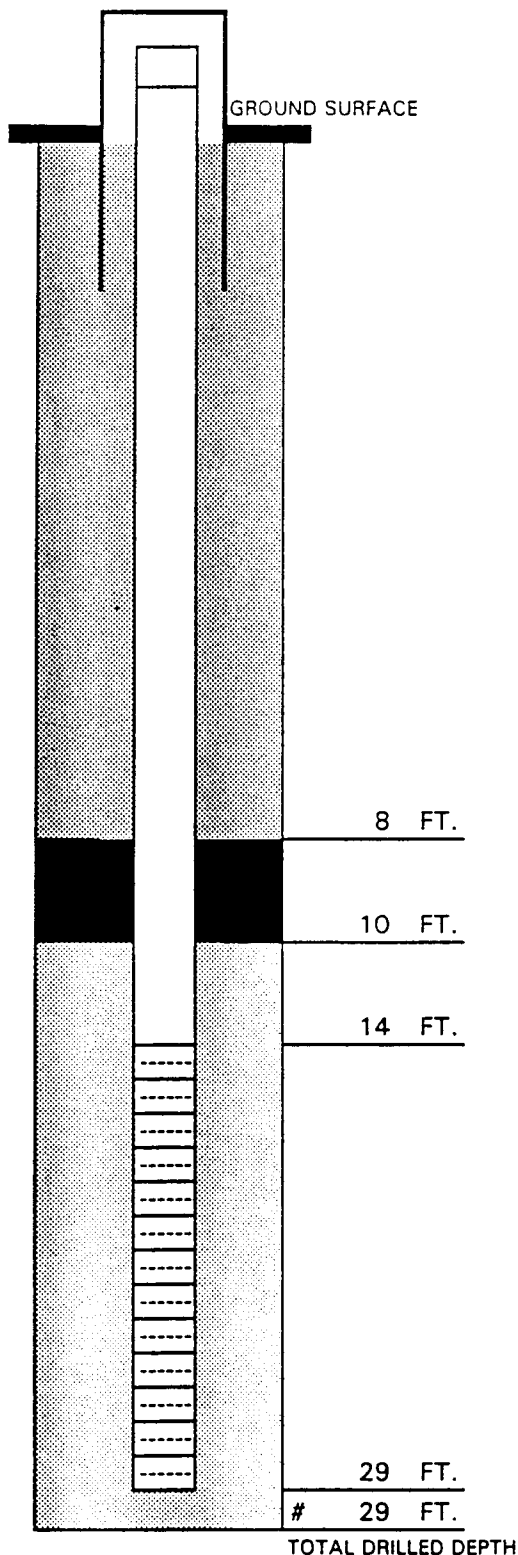
Notes:

Set up on MW-22 at 1515 hrs.

TD boring at 29' below grade at 1835 hrs. construct MW-22

Well ID MW-22

Monitoring Well Construction Log



CLIENT NAME	Whirlpool
PROJECT NAME	Remedial Investigation
PROJECT #	2172-047-100
PROJECT LOCATION	Ft. Smith, Arkansas
WELL LOCATION	5' North and 12' East of Hydrant # 7
DRILLING DATE	12-5-96
COMPLETION DATE	12-5-96
DRILLING CONT.	MHC
DRILLER	Todd Wages
BOREHOLE DIA.	12"
DRILLING METHOD	6" I.D., HSA's
DEPTH TO WATER	approximately 18'
DEVELOPMENT (date/vol.)	12-7-96, 110 gallons

WELL MATERIALS:

SURFACE CASING	Flush Mount cover
----------------	-------------------

RISER

LENGTH	14'
DIAMETER	4"
MATERIAL	Sch 40, PVC
WELL SEAL	2' bentonite pellets

SCREEN:

LENGTH	15'
DIAMETER	4"
MATERIAL	PVC
SLOT SIZE	0.010"

SAND PACK	10 bags , (20-40)
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REMARKS

HYDROGEOLOGIST	R.B. Hernandez
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All measurments are from TOC
Unless noted otherwise noted

BORING LOG

CLIENT	Whirlpool	PROJECT #	2172-047-100
PROJECT	Remedial Investigation	CONTRACTOR	MHC
LOCATION	Ft. Smith, Ark	DRILLER	Todd Wages
START DATE	12/06/96	DRILLING METHOD	6" I.D. H.S. A.
FINISH DATE	12/06/96	HYDROGEOLOGIST	R.B. Hernandez

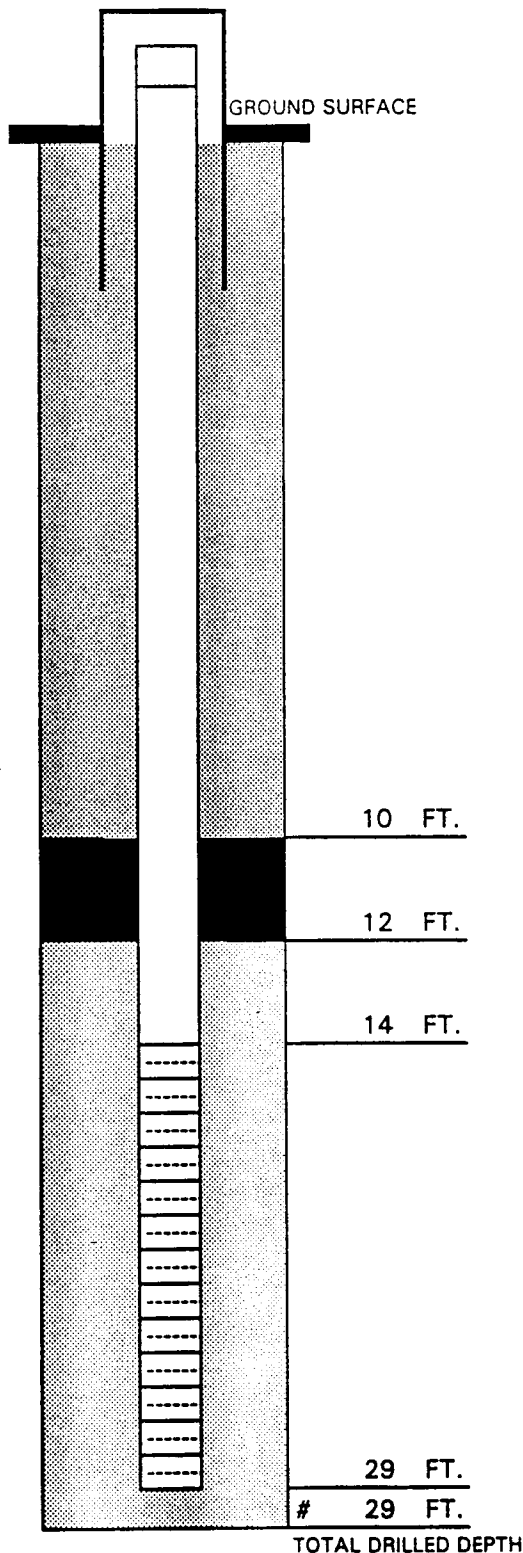
DEPTH	SAMPLE DESCRIPTION	USCS	PID	Notes
	(0 - 3") Asphaltic Concrete			
5	(3" - 5') Brownish Yellow (10YR, 6/8), Very Silty CLAY, Firm to Stiff, Dry to Damp	CL	2.7	
10	(8' - 10') Light Grey (7.5 YR, 7/1) to Brownish Yellow (10 YR, 6/8) Sandy silty CLAY, Stiff to V. Stiff, Moist	CL		Shelby Tube is wet
	(10' - 11') Brownish Yellow (10 YR, 6/8) Sandy CLAY with abundant Iron nodules, Very Stiff, Damp	CL	2.7	Wet seam at 10.2 ft. associated w/ drainage ditch north of fence
15	(11' - 12') Brownish Yellow (10 YR, 6/8) Slightly Sandy CLAY Very Stiff, Damp	CH CL		
20	(15' - 17') Brownish Yellow (10 YR, 6/8) CLAY, Very stiff, Dry to Damp	CH	2.7	H2O @ 19'
25	(22' - 23.5') Dark Brown (10 YR, 3/3) Sand with Gravel, Very Dense, Wet	GW GC	2.7	Chert & FeO2 gravels @ 22'
	(23.5' - 28') Dark Reddish Brown (5 YR, 3/4) Clayey Gravel, Very Dense, Wet	GC	2.7	
30	(28' - 29.4') Brownish Yellow (10 YR, 6/8) SILT, Very Hard, Dry	ML		
35	(29.4 - 30.5') Very Dark Grey (7.5 YR, 3/10) to Black (10 YR, 2/1) SILT (McAlester Shale) Very Hard, Dry	ML	2.7	

Notes: Set up on MW-23 at 0650 hrs.

TD boring at 30.5 below grade at 0955 hrs. construct MW-23

Well ID MW-23

Monitoring Well Construction Log



CLIENT NAME	<u>Whirlpool</u>
PROJECT NAME	<u>Remedial Investigation</u>
PROJECT #	<u>2172-047-100</u>
PROJECT LOCATION	<u>Ft. Smith, Arkansas</u>
WELL LOCATION	<u>5' East and 11' South of Gate # 12</u>
DRILLING DATE	<u>12-6-96</u>
COMPLETION DATE	<u>12-6-96</u>
DRILLING CONT.	<u>MHC</u>
DRILLER	<u>Todd Wages</u>
BOREHOLE DIA.	<u>12"</u>
DRILLING METHOD	<u>6" I.D., HSA's</u>
DEPTH TO WATER	<u>approximately 19'</u>
DEVELOPMENT (date/vol.)	<u>12-7-96, 110 gallons</u>

WELL MATERIALS:

SURFACE CASING Flush Mount cover

RISER

LENGTH	<u>14'</u>
DIAMETER	<u>4"</u>
MATERIAL	<u>Sch 40, PVC</u>

WELL SEAL 2' bentonite slurry

SCREEN:

LENGTH	<u>15'</u>
DIAMETER	<u>4"</u>
MATERIAL	<u>PVC</u>
SLOT SIZE	<u>0.010"</u>

SAND PACK 10 bags , (20-40)

REMARKS

HYDROGEOLOGIST R.B. Hernandez

Project No: 9808.183

Log of Borehole: MW24

Project: Fort Smith Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

Engineer: LP

SUBSURFACE PROFILE				SAMPLE			Well Data
Depth	Symbol	Description	Elev.	Number	Type	Volatile Organic Concentration	
0		Ground Surface	476.61				
0		ASPHALT					
5		SILTY CLAY, red-orange with grey, black and red staining, plastic, slightly moist, no odour.	467.44	3-4		6.2	
				4-6		1.6	
				6-8		1.2	
				8-10		1.4	
10		GRAVELLY SILTY CLAY (fine gravel), reddish orange with grey mottling, moist, no odour. Gravel absent 10.2 - 10.5 feet.	464.11	10-12		1.2	
				12-14		0.6	
15		GRAVELLY SAND, coarse, very moist, no odour.		14-16		1.4	
		SILTY SANDY CLAY, reddish orange with grey mottling and black staining, plastic, moist, no odour.	459.81	16-18		0.8	
		SILTY SAND TO SAND, silty from 16.8 to 18 feet and 18.8 to 19.8 feet, saturated, no odour.	456.61	18-20		1.6	
20		SANDY TO SILTY CLAY (silty in lower 0.8 foot), brown with black staining becoming reddish orange with grey mottling, moist.	453.61	20-22		3	
				22-24		1.6	
25		SANDY GRAVEL, coarse sand in lower 0.3 foot, brown, saturated.		24-26		5.6	
				26-28		6.8	
			447.11	28-30		3.8	
30		CLAY, reddish orange with grey and brown, slightly moist, no odour, friable.	445.61	30-32		1.8	
		WEATHERED SHALE (McAlester Formation), black to dark grey.	443.61	32-33		1	
35		End of Borehole					

Drill Method: Hollow Stem Augers

Drill Date: 23 February 1999

Hole Size: 10 in.



ERM
Suite 201
50 Queen Street West
Brampton, Ontario

Datum: Mean Sea Level

Checked by: SJH

Sheet: 1 of 1

Project No: 9808.183

Log of Borehole: MW25

Project: Fort Smith Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

Engineer: LP

SUBSURFACE PROFILE				SAMPLE			Well Data
Depth	Symbol	Description	Elev.	Number	Type	Volatile Organic Concentration	
						100 ppm 200 300	
0		Ground Surface	474.65				
		GRAVEL and sub-base.		0-2		36	
		SILTY CLAY, grey, plastic, moist, slight odour.		2-4		24	
			470.65				
5		SILTY SANDY CLAY, red-brown with grey mottling, plastic, moist, solvent odour.		4-6			348
			467.45	6-8			343
		SANDY CLAY with gravel, red-brown, moist but friable, red and black streaks. Inclusion of grey clay at 12.5 feet, solvent odour.		8-10			38
10				10-12			356
				12-14			333
15				14-16			320
				16-18			319
20			454.85	18-20			277
		CLAY, red-brown with grey mottling, black streaks, hard, slightly moist, weak odour.	453.85	20-22			330
		SILTY CLAY, red-brown with grey mottling, black streaks, slightly moist, weak odour.		22-24			352
25			449.15	24-26			290
		GRAVELLY SANDY CLAY, brown, slightly moist, weak odour.	446.65	26-28		53.1	
		GRAVELLY SAND, brown to red-brown, saturated, weak odour.	444.95	28-30		28.7	
30		CLAY, red-brown, hard, no odour, moist.		30-32		4.8	
			442.65				
10		WEATHERED SHALE (McAlester Formation), black to dark grey.					
35		End of Borehole					

Drill Method: Hollow Stem Augers

Drill Date: 23 February 1999

Hole Size: 10 in.



ERM
Suite 201
50 Queen Street West
Brampton, Ontario

Datum: Mean Sea Level

Checked by: SJH

Sheet: 1 of 1

Project No: 9808.183

Log of Borehole: MW26

Project: Fort Smith Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

Engineer: LP

SUBSURFACE PROFILE				SAMPLE			Well Data
Depth	Symbol	Description	Elev.	Number	Type	Volatile Organic Concentration	
ft m						● 4 ppm 8 12 ●	
0		Ground Surface	476.11				
		SILTY CLAY with organic debris, brown, moist to damp, plastic, no odour.	473.11				
5		CLAY, mottled grey/red-brown, slightly plastic, no odour. Reduced grey colour and black staining below 6.5 feet.		3-4		6.3	
				4-6		5	
				6-8		0.7	
				8-10		0.3	
10				10-12		0.5	
			461.61	12-14		2	
15		SILTY CLAY, reddish orange, minor grey, black staining, slightly moist, slightly plastic, no odour.		14-16		1.8	
				16-18		1.1	
			456.31	18-20			
20		SANDY CLAY, mottled red-orange/grey, some black streaks, moist. Sand content increases with depth.		20-22		2	
				22-24		2	
25			451.11	24-26		1.1	
		SAND, red-brown, medium-grained, saturated.	449.11	26-28		1.8	
		GRAVELLY SAND, red-brown with black staining, saturated.	446.91	28-30		1.3	
30		WEATHERED SHALE (McAlester Formation) and derived clay, red-brown to black, friable.		30-32		1.3	
			443.11	32-33		1.1	
35		End of Borehole					

Drill Method: Hollow Stem Augers

Drill Date: 22 February 1999

Hole Size: 10 in.



ERM
Suite 201
50 Queen Street West
Brampton, Ontario

Datum: Mean Sea Level

Checked by: SJH

Sheet: 1 of 1

Project No: 9908.189

Log of Borehole: MW-27

Project: Additional Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

Geologist: LP

SUBSURFACE PROFILE				SAMPLE			Well Data
Depth	Symbol	Description	Elev.	Number	Type	PID Reading	
0		Ground Surface	475.42				
0		ASPHALT (2") over aggregates.					
		SILTY CLAY, reddish brown with frequent red streaks, occasional black nodules, friable.	473.42	0-2		2	
		SANDY SILTY CLAY, reddish orange-brown, red streaks, friable, soft, damp.		2-4		2.5	
5			469.92	4-6		1.6	
		CLAY, mottled reddish orange and light gray, frequent red and black streaks, black nodules, hard.		6-8		1.5	
			466.02	8-10		3.1	
10		SILTY SANDY CLAY, inclusions of gravel, reddish orange-brown with black streaks, friable, dry to moist.		10-12		1.8	
			462.42	12-14		2.2	
		SILTY CLAY with variable sand content (increases with depth), reddish orange-brown with black streaks, moist.		14-16		1.5	
15				16-18		0.7	
			455.62	18-20		0.8	
20							

Drill Method: Hollow Stem Augers

Drill Date: 07 December 1999

Hole Size: 8.25 inch



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Suite 201
50 Queen Street West
Brampton, Ontario

Datum: Mean Sea Level

Checked by: SJH

Sheet: 1 of 2

Project No: 9908.189

Log of Borehole: MW-27

Project: Additional Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

Geologist: LP

SUBSURFACE PROFILE

SAMPLE

Depth	Symbol	Description	Elev.	Number	Type	PID Reading	Well Data
						▲ 0 2.5 ppm 5 7.5 10 ▲	
25		SANDY CLAY, reddish brown with black streaks, isolated clay lenses, moist.	450.92	20-22		0.3	
				22-24		0.7	
		SAND, coarse, reddish orange-brown, no odor, wet.	450.22	24-26		0.5	
		GRAVELLY SAND, wet.	446.92	26-28		1.4	
		27.2-27.4': light gray clay.		28-30		0.2	
30		GRAVELLY SANDY CLAY, occasional cobbles, reddish orange brown, hard, moist to damp.	446.02				
		CLAY, reddish-orange, hard.	445.32				
		WEATHERED SHALE.	444.92				
35		End of Borehole					
40							

Drill Method: Hollow Stem Augers

Drill Date: 07 December 1999

Hole Size: 8.25 inch



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Sheet: 2 of 2

Project No: 9908.189

Log of Borehole: MW-28

Project: Additional Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

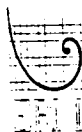
Geologist: LP

SUBSURFACE PROFILE				SAMPLE			Well Data
Depth	Symbol	Description	Elev.	Number	Type	PID Reading	
						▲ 0 2.5 ppm 5 7.5 10 ▲	
0		Ground Surface	476.2				
		ASPHALT (2") over aggregates.					
		SILTY CLAY, trace gravel, dark brown, damp, no odor.		0-2			
		CLAY, brown with red and black streaks, plastic.	473.7				
		SILTY CLAY, reddish orange with red streaks; soft, no odor.	472.7	2-4			
		CLAY, mottled reddish orange and gray, black streaks, hard, damp, no odor.		4-6			
5		SANDY SILTY CLAY, dark reddish orange with frequent black streaks, friable. Sandier zone 6.4-7.0 ft.		6-8			
			467.7	8-10			
10		SILTY CLAY, mottled reddish orange and gray, friable, hard, damp.		10-12			
			465	12-14			
		SILTY SANDY CLAY, dark reddish orange with some light gray sandy areas, soft.		14-16			
15		14.0-17.0': hard.		16-18			
			458.2	18-20			
20		SANDY CLAY, light gray with minor reddish orange, damp. CLAYEY SAND, reddish orange to brown, in lower 0.2 ft.					

Drill Method: Hollow Stem Augers

Drill Date: 07 December 1999

Hole Size: 8.25 inch



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Sheet: 1 of 2

Project No: 9908.189

Log of Borehole: MW-28


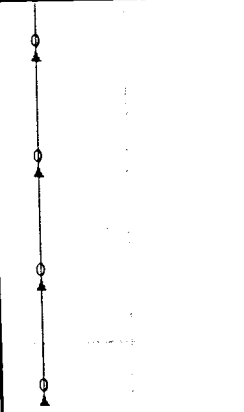
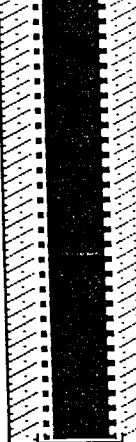





Project: Additional Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

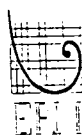
Geologist: LP

SUBSURFACE PROFILE				SAMPLE			Well Data
Depth	Symbol	Description	Elev.	Number	Type	PID Reading	
			455.5	20-22			
		CLAY, reddish orange and light gray, hard, moist.	454.7				
		CLAYEY SAND, coarse, soft, moist.	452.7	22-24			
		GRAVELLY SAND, coarse, brown to reddish brown, wet. 1" layer of cemented sand and gravel at 24'.	451.4	24-26			
25		CLAY, reddish brown to brown, hard, moist, no odor.	450.7				
		WEATHERED SHALE over 0.3 ft. competent shale.	448.4	26-28			
		End of Borehole					
30							
35	11						
40							

Drill Method: Hollow Stem Augers

Drill Date: 07 December 1999

Hole Size: 8.25 inch



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Sheet: 2 of 2

Project No: 9908.189

Project: Additional Groundwater Investigation

Client: Whirlpool Corporation

Location: Fort Smith, Ar

Log of Borehole: MW-29

Enclosure:

Geologist: LP

SUBSURFACE PROFILE				SAMPLE			Well Data
Depth	Symbol	Description	Elev.	Number	Type	PID Reading ▲ 0 2.5 ppm 5 7.5 10 ▲	
0		Ground Surface	474.91				
0		ASPHALT (2") over aggregates.		0-2		3.4	
		SILTY CLAY, brown with isolated red and black streaks, slightly plastic, damp.		2-4		2.7	
			470.11	4-6		3.3	
5		SILTY SANDY CLAY, brown with black streaks, friable, soft, damp.		6-8		3	
			467.71	8-10		2.6	
		SILTY CLAY, mottled reddish orange and gray, hard.	466.91	10-12		3	
		CLAY, mottled reddish orange and gray, blocky texture, hard, dry to moist.		12-14		3.4	
10		8.0-8.2' and 13-16': abundant black and red nodules.		14-16		3.8	
15		15.2-16.0': silty, soft.		16-18		4.3	
20			455.51	18-20			

Drill Method: Hollow Stem Augers

Drill Date: 06 December 1999

Hole Size: 8.25 inch



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Sheet: 1 of 2

Project No: 9908.189

Log of Borehole: MW-29

Project: Additional Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

Geologist: LP

SUBSURFACE PROFILE				SAMPLE			Well Data
Depth	Symbol	Description	Elev.	Number	Type	PID Reading ▲ 0 2.5 ppm 5 7.5 10 ▲	
25		GRAVELLY SANDY CLAY, isolated coarse gravel, moist.	451.91	20-22			
		21.8-22.0': clay, hard.					
		GRAVELLY SAND, coarse, brown to reddish brown, saturated.	448.91	22-24			
		CLAY, light gray to white, plastic.	448.11	24-26			
		GRAVELLY SANDY CLAY, coarse, brown to reddish brown, saturated.	446.91	26-28			
		SAND, coarse, brown.	445.91	28-30			
	GRAVELLY SANDY CLAY, coarse gravel, brown to reddish brown.	445.31					
	CLAY, reddish orange becoming dark gray in lower half, compacted.	444.41					
	WEATHERED SHALE.	443.91					
	End of Borehole						
35	11						
40							

Drill Method: Hollow Stem Augers

Drill Date: 06 December 1999

Hole Size: 8.25 inch



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Datum: Mean Sea Level

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Sheet: 2 of 2

Project No: 9908.189

Log of Borehole: MW-30

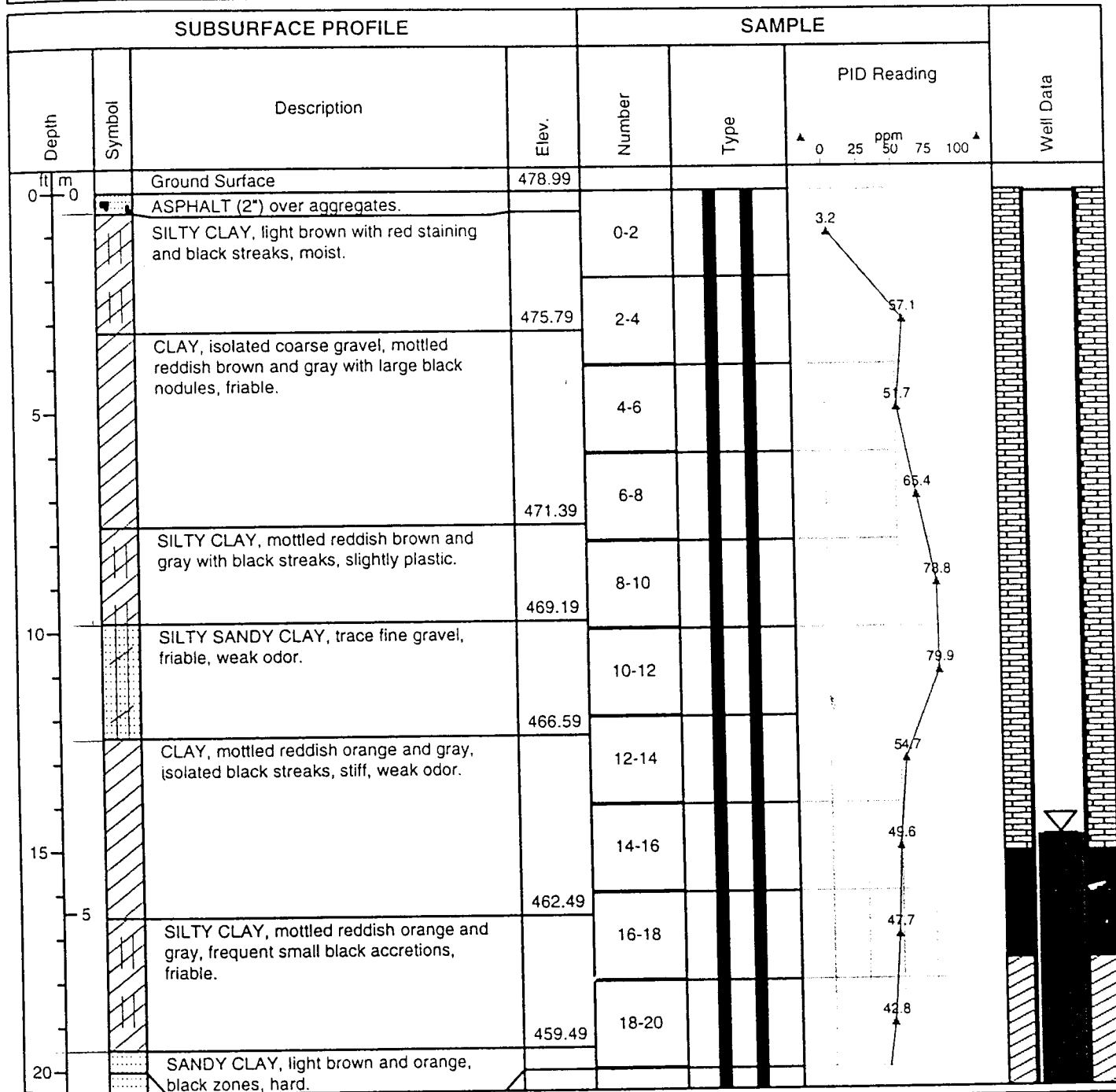
Project: Additional Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

Geologist: LP



Drill Method: Hollow Stem Augers

Drill Date: 06 December 1999

Hole Size: 8.25 inch



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Datum: Mean Sea Level

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Sheet: 1 of 2

Project No: 9908.189

Log of Borehole: MW-30

Project: Additional Groundwater Investigation

Client: Whirlpool Corporation

Enclosure:

Location: Fort Smith, Ar

Geologist: LP

SUBSURFACE PROFILE				SAMPLE			Well Data
Depth	Symbol	Description	Elev.	Number	Type	PID Reading ▲ 0 25 50 75 100 ▲	
		SAND, white, moist, no odor.	457.99	20-22		34.9	
		CLAYEY SAND, fine, reddish-orange and gray, friable.	455.99	22-24		28.4	
25		SANDY CLAY, reddish orange, moist to damp.		24-26		37.9	
				26-28		37	
			449.99	28-30		8.3	
30		SAND, light reddish-orange, soft, damp.		30-32		22.5	
		CLAYEY GRAVEL, coarse, reddish orange, moist, weak odor. Light gray to white clay 30.5-31.0 ft.	447.49				
		CLAY, isolated gravel, mottled reddish orange and gray, hard, moist.	446.49	32-34		12.3	
		SANDY GRAVEL, brown, wet.		34-36		4.7	
35	11		443.39				
		CLAY, reddish orange to brown becoming gray with depth, fissile.	442.79				
		WEATHERED SHALE.					
		End of Borehole					
40							

Drill Method: Hollow Stem Augers

Drill Date: 06 December 1999

Hole Size: 8.25 inch



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MW-31 DRILLING LOG

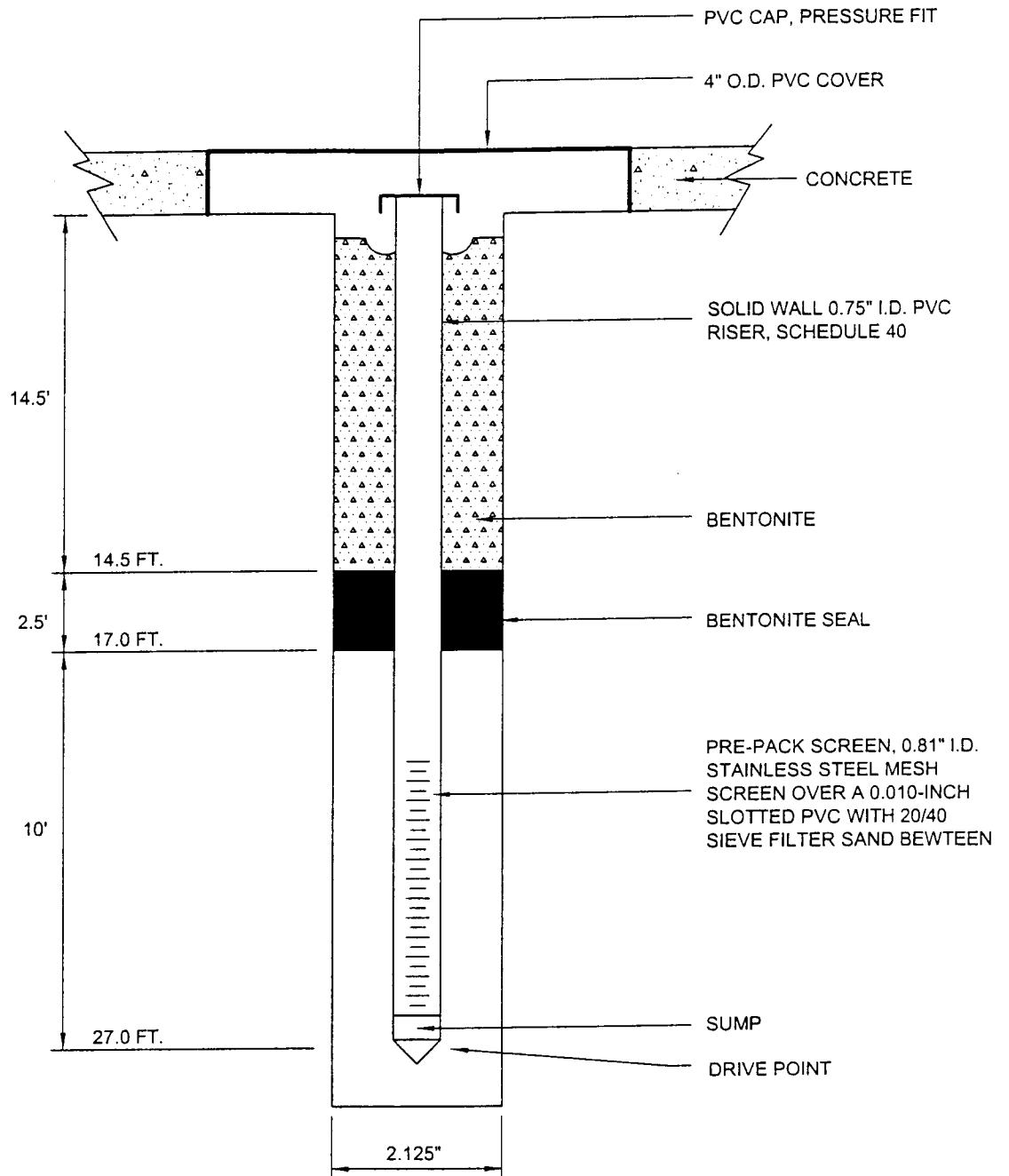
W.O. NO. 58102 Boring/Well ID MW-31 Date Drilled 1/4/01
Project Whirlpool, Ft. Smith Owner Whirlpool Corporation
Location Fort Smith, Arkansas Boring T.D. 30' Boring Diam. 2.125"
N. Coord. 9348.48' E. Coord. 7675.35' Surface Elevation 476.03' MSL Datum
Screen: Type Slotted Schedule 40 PVC Diam. 0.81" Length 10' Slot Size 0.010"
Casing: Type Schedule 40 PVC Diam. 0.75" Length 17.6' Sump Length 0.1'
Top of Casing Elevation 476.03' Stickup 0.2'
Depth to Water: 1. Ft. 10 (Boring) 2. Ft. 3.7 (Well)
Drilling Company Tri-State Testing Svcs., Inc. Driller Ken Smith
Drilling Method GeoProbe Log By Roberta Smith

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
476.03	0				0-4	0-0.5	SILTY SAND: dark brown, slightly moist, soft, organic rich with grass and rootlets
475						0.5-2	SILTY SAND: medium brown, moist, soft, rocks up to 0.75 inches in diameter present
						2-3	
					4-8	3-4.5	SILTY CLAY: grayish brown, slightly moist, firm, some iron nodules and orange streaking present
	5					4.5-8	SILTY SAND: black, dry, gravel and rock inclusions up to 1 inch in diameter are present
470							SILTY CLAY: silty clay grading to clay, medium brown, moist, firm, massive
					8-12	8-8.5	GRAVEL: medium brown, moist, loose, soft, mixture with rocks up to 1 inch in diameter
						8.5-9	
	10					9-12	SILTY SAND: medium brown, moist, loose, soft, rock inclusions up to 1 inch in diameter
465					12-16	12-12.5	SILTY CLAY: medium brown grading to reddish brown at 11 feet, moist, firm, gray and red inclusions present beginning at 11 feet
						12.5-13.5	GRAVEL: medium brown, loose, wet, with rocks up to 0.5 inches in diameter
						13.5-16	SILTY CLAY: medium brown, wet, fluffy, with rock inclusions up to 0.5 inches in diameter
460	15				16-20	16-17	SILTY CLAY: reddish brown with gray and orange streaking, moist, firm, massive
						17-24	GRAVEL: medium brown, loose
							SILTY CLAY: medium brown grading to reddish brown and gray, very moist grading to slightly moist, soft from 17 - 18 feet, firm from 18-24 feet
455	20				20-24		
					24-28	24-24.5	SILTY CLAY: medium reddish brown, moist, loose
						24.5-25.5	GRAVEL: medium brown, moist, loose
	25					25.5-26	SILTY CLAY: medium reddish brown, moist, soft, loose
450						26-27	SANDY CLAY: light brown, moist, soft
						27-28	SILTY CLAY: reddish light brown, firm, with rock inclusions up to 0.5 inches in diameter
					28-30	28-29	SANDY CLAY: light brown, wet, soft, some gravel present
						29-29.5	Other: reddish, dry, brittle, iron-rich material
	30					29.5-30	SHALE: gray, slightly moist, firm, weathered
							T.D. = 30'

MW-32



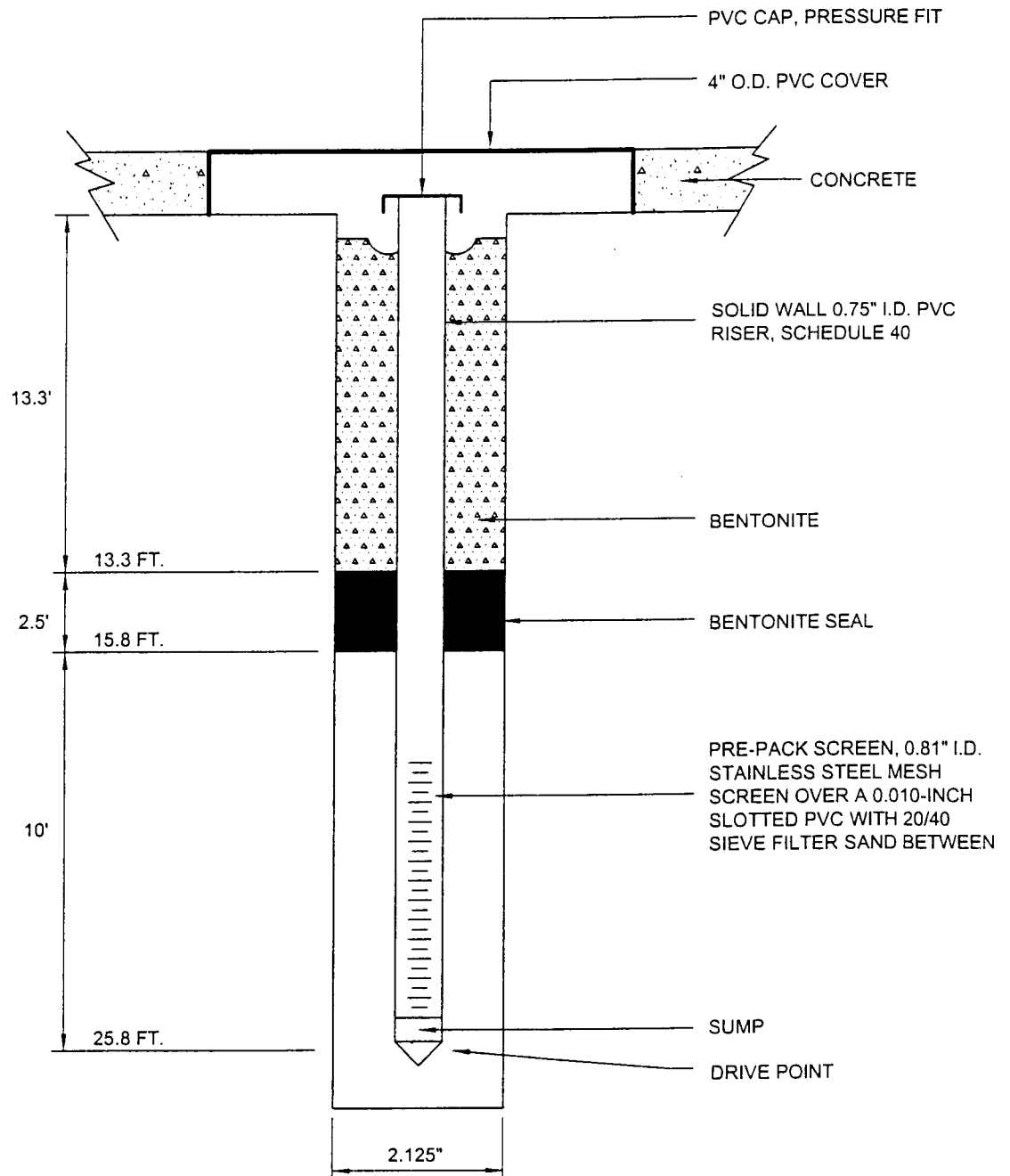
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FIGURE 2
MW-32 CONSTRUCTION DETAIL
OFFSITE INVESTIGATION
Whirlpool Corporation
Fort Smith, Arkansas



DESIGN: RS	CHKD.:	DATE: 01/23/01	REV.:
DRAWN: LMc	SCALE: N.T.S.	W.O.NO.: 581002A020 A01	

MW-33



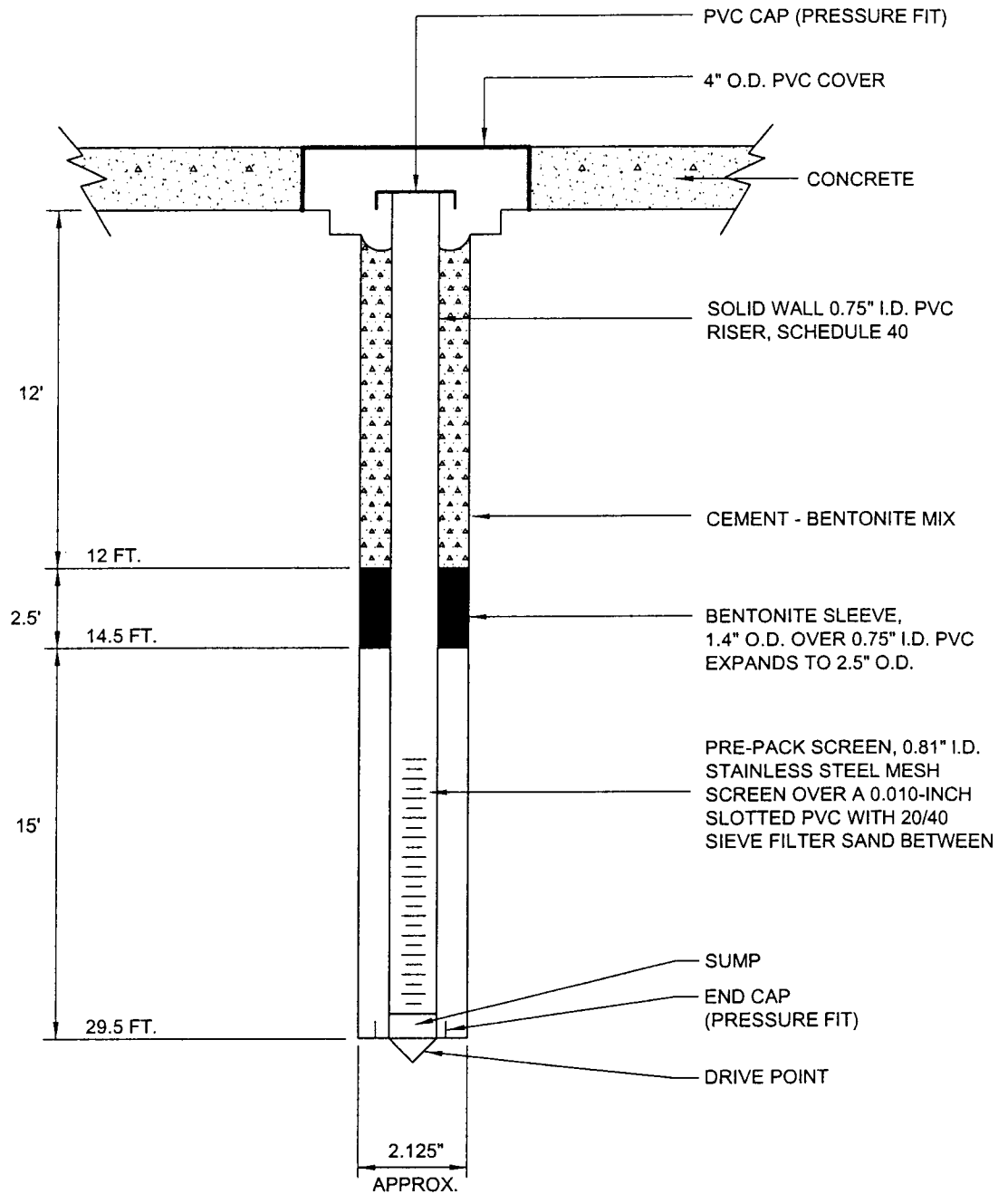
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FIGURE 3
MW-33 CONSTRUCTION DETAIL
OFFSITE INVESTIGATION
Whirlpool Corporation
Fort Smith, Arkansas



DESIGN: RS	CHKD.:	DATE: 01/23/01	REV.:
DRAWN: LMc	SCALE: N.T.S.	W.O.NO.: 581002A021 A01	

MW-34



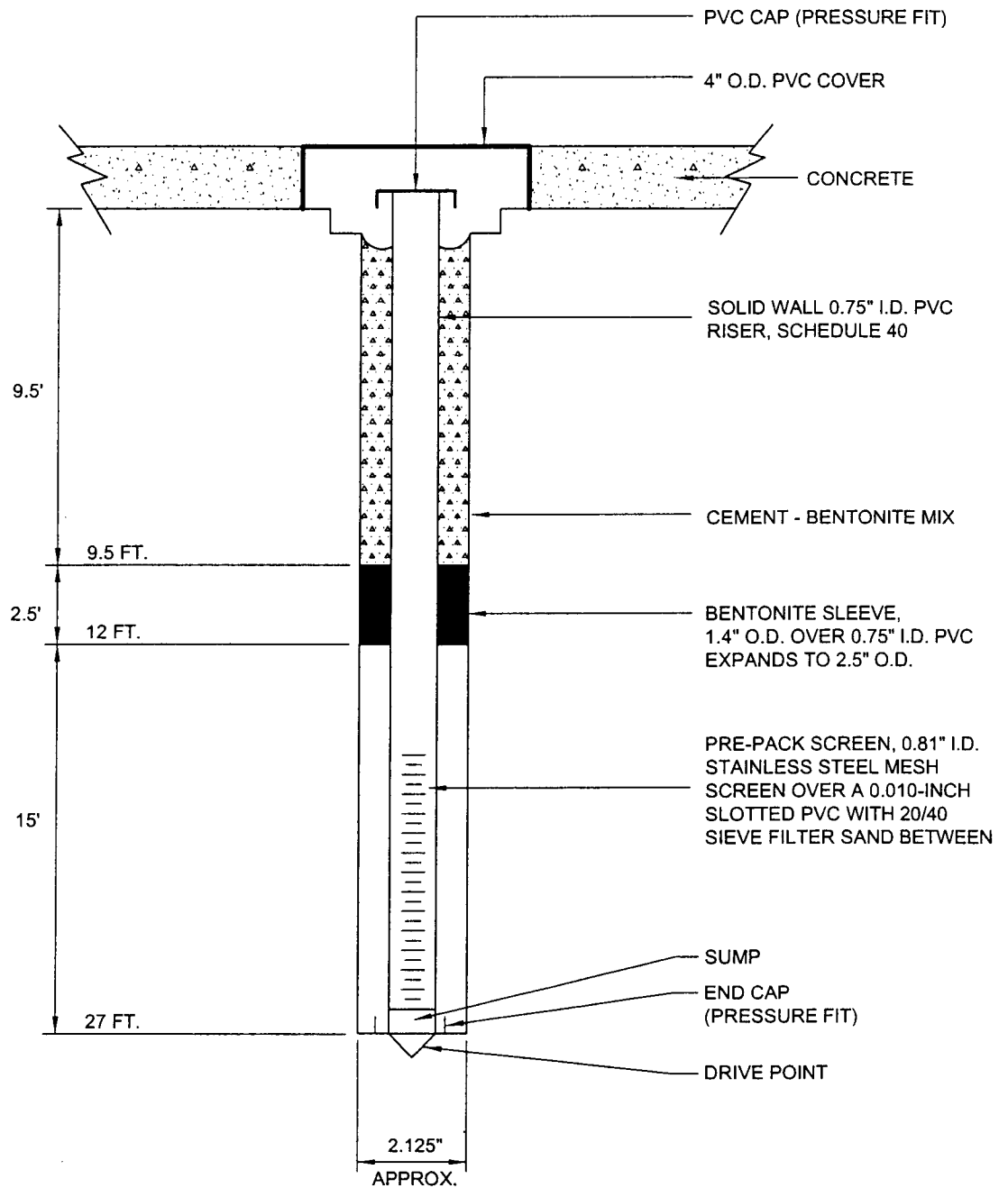
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FIGURE 1
MW-34 CONSTRUCTION DETAIL
OFFSITE INVESTIGATION
Whirlpool Corporation
Fort Smith, Arkansas



DESIGN: RS	CHKD.:	DATE: 04/02/01	REV.:
DRAWN: LMc	SCALE: N.T.S.	W.O.NO.: 581005A203 D01	

MW-35



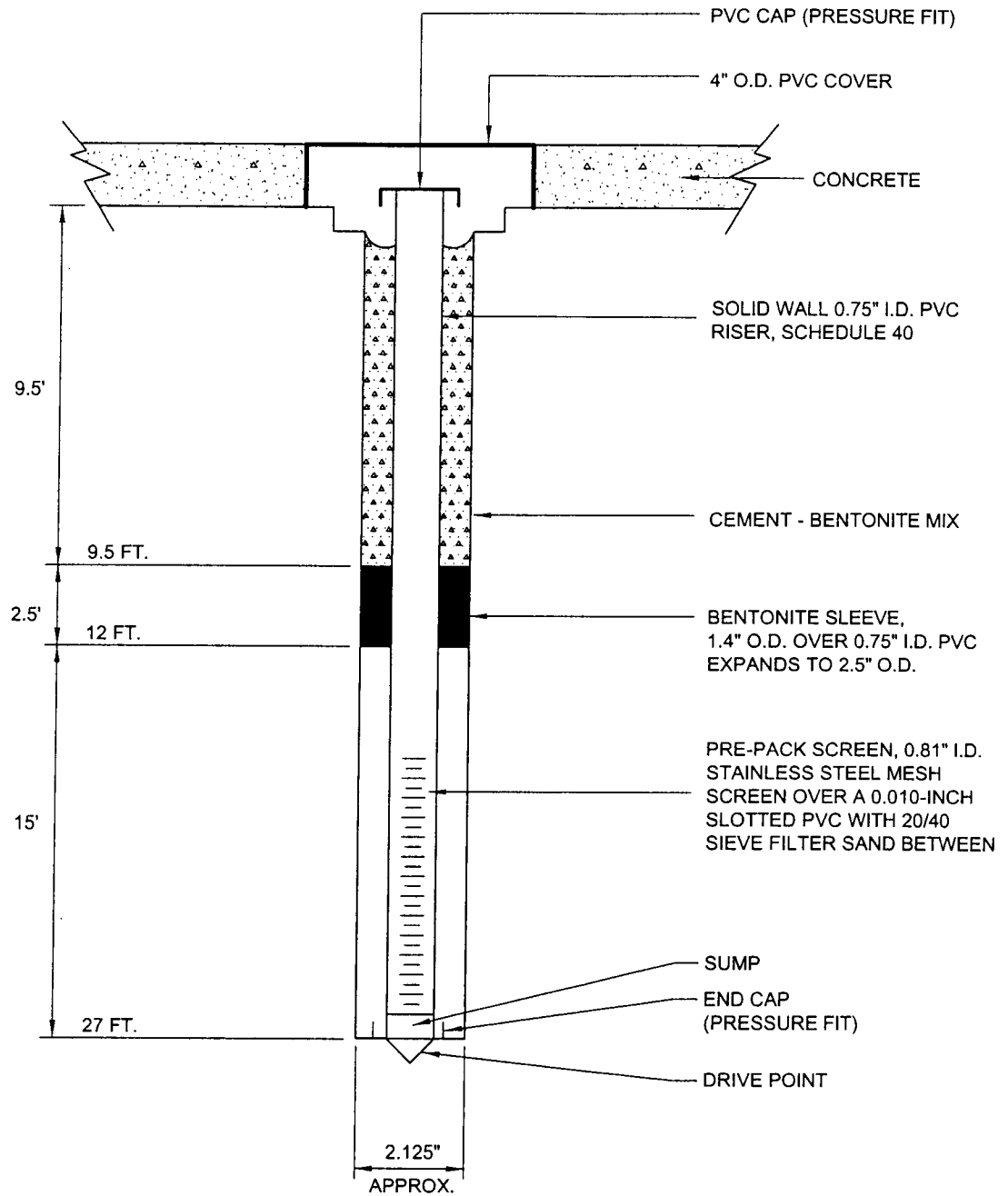
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FIGURE 2
MW-35 CONSTRUCTION DETAIL
OFFSITE INVESTIGATION
Whirlpool Corporation
Fort Smith, Arkansas



DESIGN: RS	CHKD.:	DATE: 03/02/01	REV.:
DRAWN: LMc	SCALE: N.T.S.	W.O.NO.: 581005A201	D01

MW-36



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FIGURE 3
MW-36 CONSTRUCTION DETAIL
OFFSITE INVESTIGATION
Whirlpool Corporation
Fort Smith, Arkansas



DESIGN: RS	CHKD.:	DATE: 04/02/01	REV.:
DRAWN: LMc	SCALE: N.T.S.	W.O.NO.: 581005A202 D01	



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MW-37 DRILLING LOG

W.O. NO. 581007 Boring/Well ID MW-37 Date Drilled 09/13/01
Project CAS Support Owner Whirlpool
Location Ft. Smith, Arkansas Boring T.D. 30' Boring Diam. 5"
N. Coord. _____ E. Coord. _____ Surface Elevation _____ MSL Datum
Screen: Type Schedule 40 PVC Diam. 2" Length 15' Slot Size 0.010"
Casing: Type Schedule 40 PVC Diam. 2" Length 15' Sump Length 0'
Top of Casing Elevation _____ Stickup 0'
Depth to Water: 1. Ft. _____ (_____) 2. Ft. _____ (_____)
Drilling Company MHC Driller Ken Wages
Drilling Method Split spoon Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	PID HEADSPACE READINGS (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0	0					0-5	0-0.33 0.33-0.63 0.63-1.21 1.21-1.33 2.5-5	GRAVEL: Sandy silty gravel, 1" diameter quartzite gravel GRAVEL: Sandy silty gravel, reddish-brown to red, 1" diameter quartzite gravel CLAYEY SILT: Strong brown and gray, firm to hard, plastic, moist, occasional rootlets CLAYEY SILT: Gray, soft, crumbly, moist; with plastic and rubber fragments
5	5				142	5-10	5-9	SILTY CLAY: Pale gray and strong brown, firm to hard, moist occasional calcareous nodules up to .25" in diameter SILTY CLAY: Strong brown with occasional gray mottling, stiff to hard, moist, occasional calcareous nodules up to 0.5" diameter SILTY CLAY: Strong brown, slightly crumbly, moist to dry, stiff, occasional pale gray mottling; pale gray silt pocket at 6" (1" diameter), occasional calcareous and iron nodules up to 0.25" diameters, moderate chemical-like odor
10	10				24.2	10-15	9-15	SILTY CLAY TO CLAY: strong brown to reddish-brown, very plastic, occasional pale gray mottling, moist, hard, moderate chemical-like odor
15	15				1.4	15-20	15-16.3	SILTY SANDY CLAY: Strong brown and pale gray, soft to firm, occasional dark gray speckles and streaks, mottling appears bedded in 0.5" thick beds
20	20				4.2		16.3-16.5 16.5-17 17-17.7 17.7-21	SILTY CLAY: Strong brown and pale gray mottled, moist to dry, stiff CLAYEY SILT: Sandy clayey silt to sandy silty clay, soft to firm, occasional dark gray and pale gray mottling, moist to wet CLAYEY SILTY SAND to clayey sandy silt: strong brown to brown, slightly plastic, wet to water saturated, soft, occasional calcareous nodules to 0.25" diameter
25	25				4.2	20-25	21-23	NO RECOVERY: No recovery
					1.4		23-24 24-25	SILTY SAND: Brown, fine to medium grained sand, loose to dense, mostly quartz, some reddish-brown grains SILTY SAND AND SILT: Brown, loose to dense, moist to wet; with pale gray and strong brown silty clay interclasts up to 0.5" diameter, occasional pale gray sandy clay pockets, stiff crumbly



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MW-37 DRILLING LOG

W.O. NO. 581007 Boring/Well ID MW-37 Date Drilled 09/13/01
Project CAS Support Owner Whirlpool
Location Ft. Smith, Arkansas Boring T.D. 30' Boring Diam. 5"
N. Coord. _____ E. Coord. _____ Surface Elevation _____ MSL Datum
Screen: Type Schedule 40 PVC Diam. 2" Length 15' Slot Size 0.010"
Casing: Type Schedule 40 PVC Diam. 2" Length 15' Sump Length 0'
Top of Casing Elevation _____ Stickup 0'
Depth to Water: 1. Ft. _____ (_____) 2. Ft. _____ (_____)
Drilling Company MHC Driller Ken Wages
Drilling Method Split spoon Log By Troy Meinen

SKETCH MAP

NOTES

Elevation (Feet)	Depth (Feet)	Graphic Log	Well Construction	Sample Type	PID HEADSPACE READINGS (PPM)	Sample Interval (Feet)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
25					0.0	25-30	25-28.5	GRAVEL: Dark brown, water saturated; gravel is rounded to sub-angular quartzite < 0.25", coarsens downward to 1" diameter gravel at base.
					0.0		28.5-29.5	SILTY SANDY GRAVEL: Dark brown, water saturated; with increasing silt and clay content with depth, gravel up to 2-3" diameter at 27.5', 28' and 28.5'
30					0.0		29.5-30	SILTY CLAY: Abundant gravel up to 3" diameter, yellowish-brown, stiff to plastic, wet; finely bedded 29.3 to 29.5 SHALE: Shale fissile, crumbly, very dark gray, moist to dry, weathered zone from 29.5 to 29.7 T.D. = 30'
35								
40								
45								
50								

