

GUILFORD COUNTY
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
APPLICATION FOR PERMIT TO CONSTRUCT A MONITORING/RECOVERY
WELL SYSTEM

Date: 2/27/97 EXISTING WELLS

In accordance with the provisions of the Guilford County Board of Health Rules and Regulations Governing the Construction and Abandonment of Monitoring and Recovery Wells, application is hereby made for a permit to construct monitoring/recovery wells.

1. Site Name: EXXON 4-3998 Incident #: 10001
2. Address of Well: 4701 WEST MARKET STREET, GREENSBORO NC
3. Name of Well Owner: EXXON COMPANY USA Telephone: 704-529-4263
4. Owner's Mailing Address: P.O. BOX 30451, CHARLOTTE, N.C. 28230-0451
5. Property Owner (if different from well owner): SAME AS ABOVE
6. Property Owners' Mailing Address: SAME AS ABOVE
7. Reason for Monitoring Well(s): ENVIRONMENTAL ASSESSMENT
(e.g. nondischarge permit, suspected contamination, environmental assessment, etc.)
8. Type of facility for which the well is needed: UNDERGROUND STORAGE TANK SITE
(e.g. nondischarge facility, waste disposal site, landfill, underground storage tank, etc.)
9. Contaminant type (if applicable): GASOLINE CONSTITUENTS
(e.g. nutrients, organics, heavy metals, etc.)
10. Are there existing recovery wells associated with the monitoring well(s)? YES
If yes, how many? 13 Number of new/additional recovery well(s) to be installed NONE
11. Distance to a known waste or pollution source: 50 feet
12. Are any water supply wells located <500 feet from the proposed well? NO
If yes, give distance: _____ feet
13. Well Driller: Performance Design Systems
14. Registration #: 1337
15. Driller's Address: NOT KNOWN
Telephone: NOT KNOWN

Fee:	\$ <u>200.00</u>
Date Paid:	<u>3-4-97</u>
Receipt#:	<u>13141</u>

PROPOSED MONITORING/RECOVERY WELL CONSTRUCTION INFORMATION

1. Total number ~~of wells to be~~ constructed: 9 Number ~~to be~~ completed in bedrock: 1
Number ~~to be~~ completed in unconsolidated material: 8
2. Estimated depth of well(s): 30 feet
3. Gravel or sand pack interval (if appropriate): From See well logs feet to feet
4. Type of casing used: PVC
(i.e. PVC, stainless steel, galvanized steel, etc.)
5. Diameter of casing: 2 inches Thickness of casing: Sch 40 inches
6. How will the well(s) be secured? LOCKING CAPS
7. Beginning construction date: EXISTING WELLS
8. Completion date: EXISTING WELLS

ADDITIONAL INFORMATION

1. ATTACH A SITE MAP SHOWING THE LOCATIONS OF THE FOLLOWING:
 - (a) PROPOSED MONITORING/RECOVERY WELL(S)
 - (b) ALL EXISTING MONITORING/RECOVERY WELLS AND TEST BORINGS WITHIN THE PROPERTY BOUNDARY
 - (c) ALL WATER SUPPLY WELLS WITHIN 500 FEET OF THE WELL
 - (d) AT LEAST TWO REFERENCE POINTS (e.g. numbered roads, intersections, streams, etc.)
2. PROVIDE A WELL CONSTRUCTION DIAGRAM OF EACH WELL SHOWING DIAMETER, ESTIMATED DEPTH, SCREEN INTERVALS, SAND/GRAVEL PACKS, TYPE OF CASING MATERIAL, CASING WALL THICKNESS, WELL HEAD COMPLETION DETAILS, ETC.

The Applicant hereby agrees the proposed well(s) will be constructed in accordance with approved specifications and conditions of the Well Construction Permit as regulated under the Guilford County Board of Health Rules and Regulations Governing the Construction and Abandonment of Monitoring and Recovery Wells and accepts full responsibility for compliance with these rules.

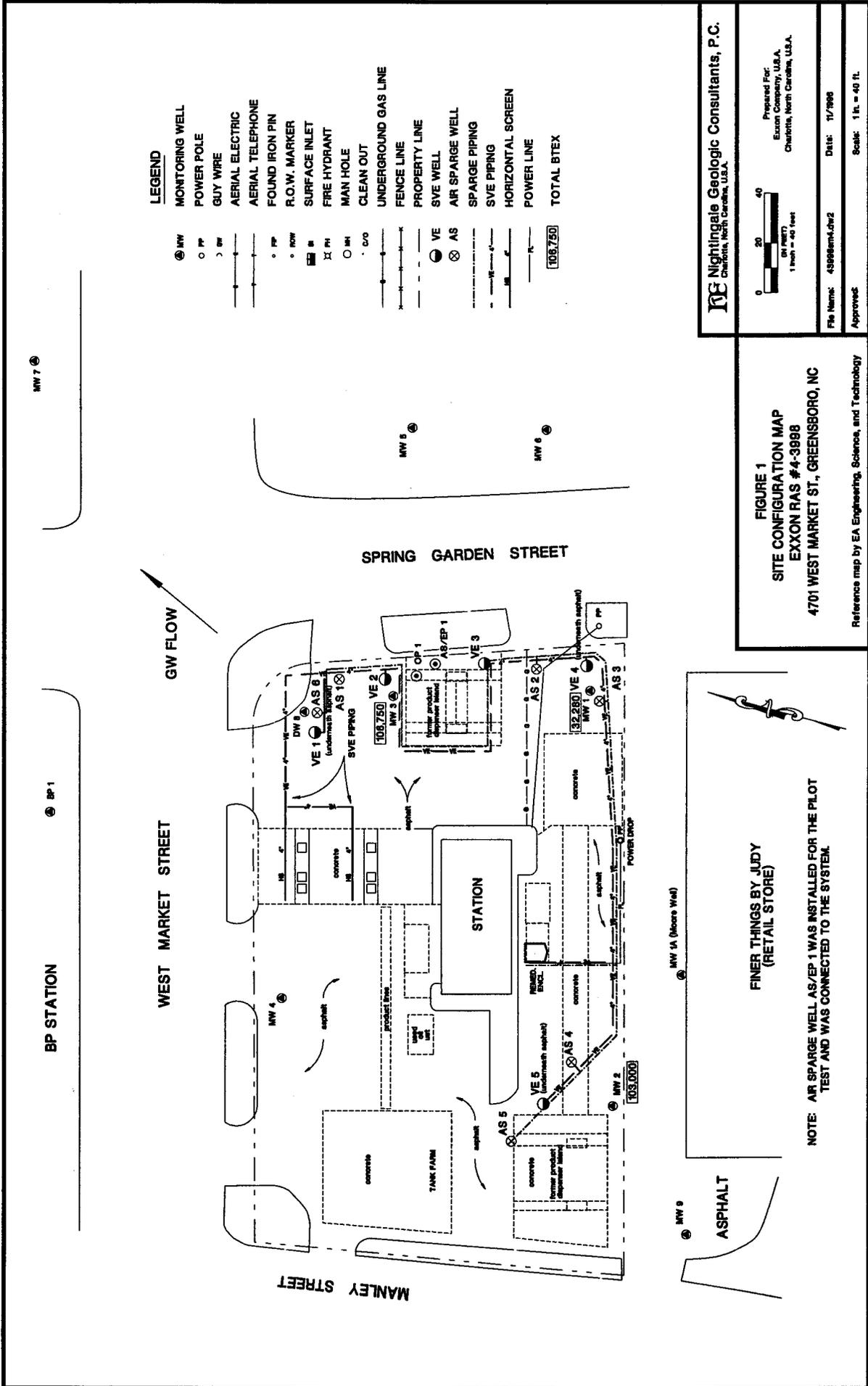
[Signature]
Signature of Applicant or Agent

President
Title

If the property is owned by someone other than the applicant, the property owner hereby consents to allow the applicant to construct monitoring wells as outlined in this application and that it shall be the responsibility of the applicant to ensure that these monitoring/recovery wells conform to the Guilford County Board of Health well construction standards.

Signature of Property Owner (if different from applicant)

Attach agreements.



LEGEND

- ⊙ MW MONITORING WELL
- PP POWER POLE
- ⋈ GW GUY WIRE
- AERIAL ELECTRIC
- AERIAL TELEPHONE
- FP FOUND IRON PIN
- R.O.W. R.O.W. MARKER
- SURFACE INLET
- FIRE HYDRANT
- MH MAN HOLE
- CLEAN OUT
- UNDERGROUND GAS LINE
- FENCE LINE
- PROPERTY LINE
- ⊙ VE SIVE WELL
- ⊗ AS AIR SPARGE WELL
- SPARGE PIPING
- SIVE PIPING
- HORIZONTAL SCREEN
- POWER LINE
- 108.750 TOTAL BTEX

Nightingale Geologic Consultants, P.C.
 Charlotte, North Carolina, U.S.A.

Prepared For:
 Exxon Company, U.S.A.
 Charlotte, North Carolina, U.S.A.

File Name: 45908em4.dwg Date: 11/1998
 Scale: 1 in. = 40 ft.

FIGURE 1
SITE CONFIGURATION MAP
EXXON RAS #4-3998
4701 WEST MARKET ST., GREENSBORO, NC
 Reference map by EA Engineering, Science, and Technology

ASPHALT

FINER THINGS BY JUDY (RETAIL STORE)

NOTE: AIR SPARGE WELL AS/EP 1 WAS INSTALLED FOR THE PLOT TEST AND WAS CONNECTED TO THE SYSTEM.

North Carolina - Department of Environment, Health, and Natural Resources
 Division of Environmental Management - Groundwater Section
 P.O. Box 29535 - Raleigh, N.C. 27626-0535
 Phone (919) 733-3221

FOR OFFICE USE ONLY
 QUAD. NO. _____ SERIAL NO. _____
 Lat. _____ Long. _____ RO _____
 Minor Basin _____
 Basin Code _____
 Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR: Performance Design Systems

DRILLER REGISTRATION NUMBER: 1337

STATE WELL CONSTRUCTION PERMIT NUMBER: 40-1045-WM-0456

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: Greensboro County: Guilford
4701 W. Market St.

(Road, Community, or Subdivision and Lot No.)

2. OWNER Exxon
 ADDRESS P.O. Box 30451
Charlotte (Street or Route No.) 28230
 City or Town State Zip Code

DEPTH
 From To
0.0 - 30.0

DRILLING LOG
 Formation Description
Redish brown silty clay

3. DATE DRILLED 8-14-92 USE OF WELL Monitoring

4. TOTAL DEPTH 30.0'

5. CUTTINGS COLLECTED YES NO

6. DOES WELL REPLACE EXISTING WELL? YES NO

7. STATIC WATER LEVEL Below Top of Casing: N/A FT.

8. TOP OF CASING IS 0.0 (Use "-" if Above Top of Casing) FT. Above Land Surface*
 * Casing Terminated at or below land surface is illegal unless a variance is issued in accordance with 15A NCAC 2C .0118

9. YIELD (gpm): N/A METHOD OF TEST N/A

10. WATER ZONES (depth): N/A

11. CHLORINATION: Type N/A Amount _____

12. CASING:

From	Depth	To	Diameter	Wall Thickness or Weight/Ft.	Material
<u>8.0</u>	<u>15.0</u>	<u>15.0</u>	<u>2.0"</u>	<u>SCH 40</u>	<u>PVC</u>
From _____	To _____	Fl. _____	_____	_____	_____
From _____	To _____	Fl. _____	_____	_____	_____

13. GROUT:

From	Depth	To	Material	Method
<u>0.0</u>	<u>14.0</u>	<u>14.0</u>	<u>Portland/Bent</u>	<u>Slurry</u>
From _____	To _____	Fl. _____	_____	_____

14. SCREEN:

From	Depth	To	Diameter	Slot Size	Material
<u>15.0</u>	<u>30.0</u>	<u>30.0</u>	<u>2.0</u>	<u>.010</u>	<u>PVC</u>
From _____	To _____	Fl. _____	_____	_____	_____
From _____	To _____	Fl. _____	_____	_____	_____

15. SAND/GRAVEL PACK:

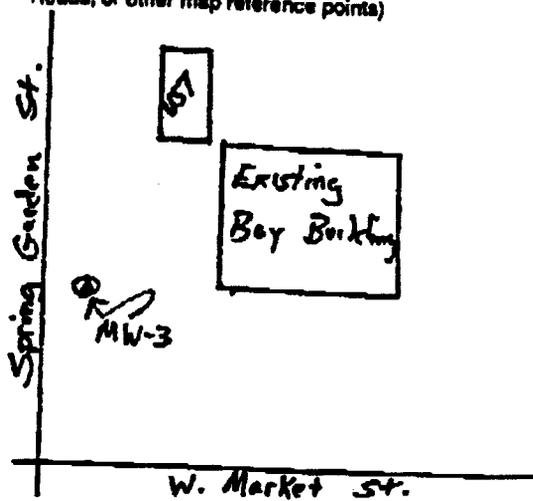
From	Depth	To	Size	Material
<u>14.0</u>	<u>30.0</u>	<u>30.0</u>	<u>20/60</u>	<u>Silica Sand</u>
From _____	To _____	Fl. _____	_____	_____

16. REMARKS: MW-1 BENTONITE SEAL FROM 12.0 to 14.0 feet

If additional space is needed use back of form

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)



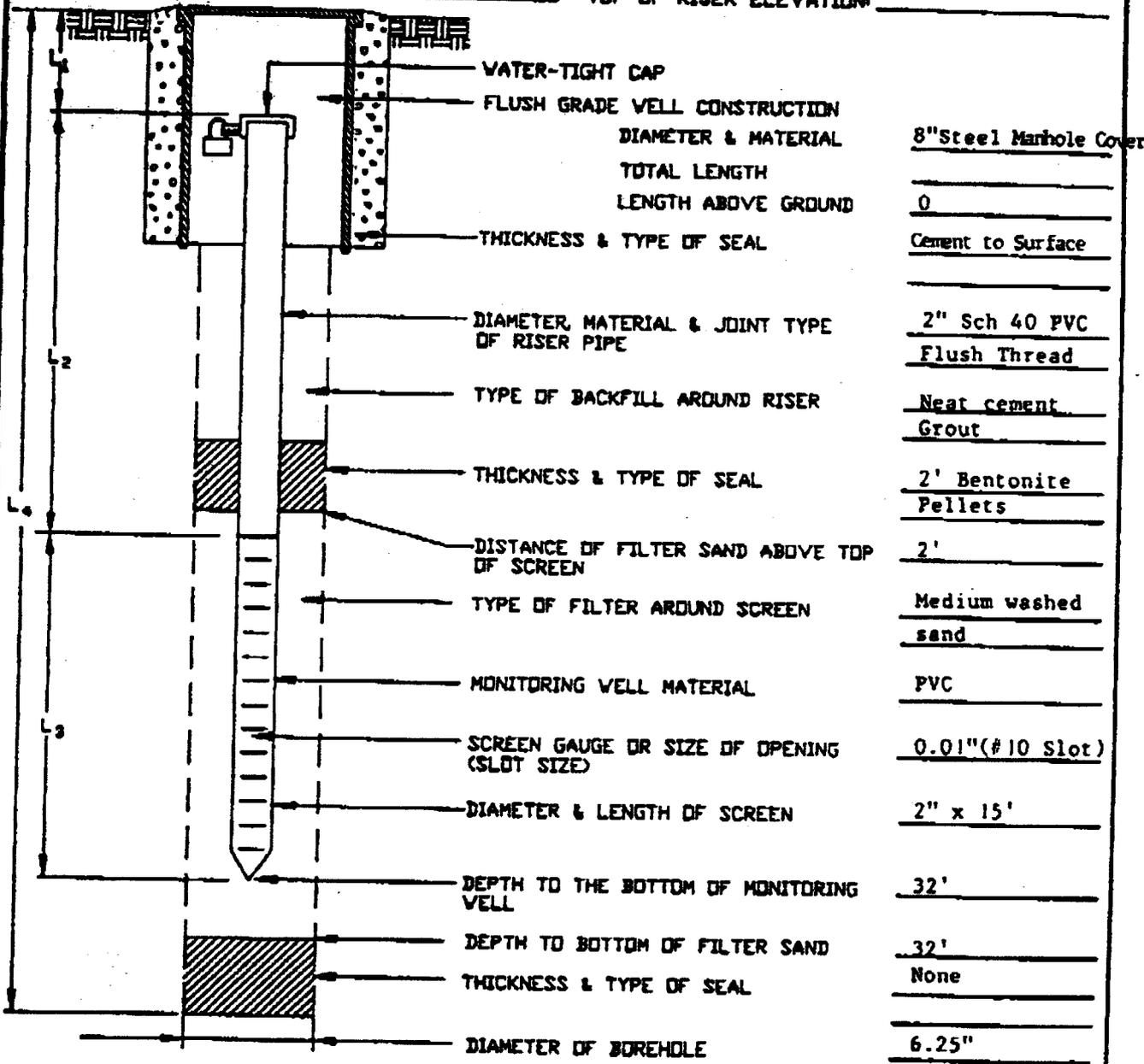
I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

[Signature]
 SIGNATURE OF CONTRACTOR OR AGENT

8-25-92
 DATE

INSTALLATION OF FLUSH GRADE MONITORING WELL

PROJECT: Exxon U.S.A. Greensboro, NC MONITORING WELL NO. MW-5
 JOB NO. 50-92-037.01 TOP OF RISER ELEVATION: _____



- WATER-TIGHT CAP
- FLUSH GRADE WELL CONSTRUCTION
 - DIAMETER & MATERIAL 8" Steel Manhole Cover
 - TOTAL LENGTH _____
 - LENGTH ABOVE GROUND 0
- THICKNESS & TYPE OF SEAL Cement to Surface
- DIAMETER, MATERIAL & JOINT TYPE OF RISER PIPE 2" Sch 40 PVC
Flush Thread
- TYPE OF BACKFILL AROUND RISER Neat cement Grout
- THICKNESS & TYPE OF SEAL 2' Bentonite Pellets
- DISTANCE OF FILTER SAND ABOVE TOP OF SCREEN 2'
- TYPE OF FILTER AROUND SCREEN Medium washed sand
- MONITORING WELL MATERIAL PVC
- SCREEN GAUGE OR SIZE OF OPENING (SLOT SIZE) 0.01" (#10 Slot)
- DIAMETER & LENGTH OF SCREEN 2" x 15'
- DEPTH TO THE BOTTOM OF MONITORING WELL 32'
- DEPTH TO BOTTOM OF FILTER SAND 32'
- THICKNESS & TYPE OF SEAL None
- DIAMETER OF BOREHOLE 6.25"

L₁ = 0.5 FT
 L₂ = 17 FT
 L₃ = 15 FT
 L₄ = 32 FT

MONITORING WELL WATER LEVEL MEASUREMENTS		
DATE	TIME	WATER LEVEL #

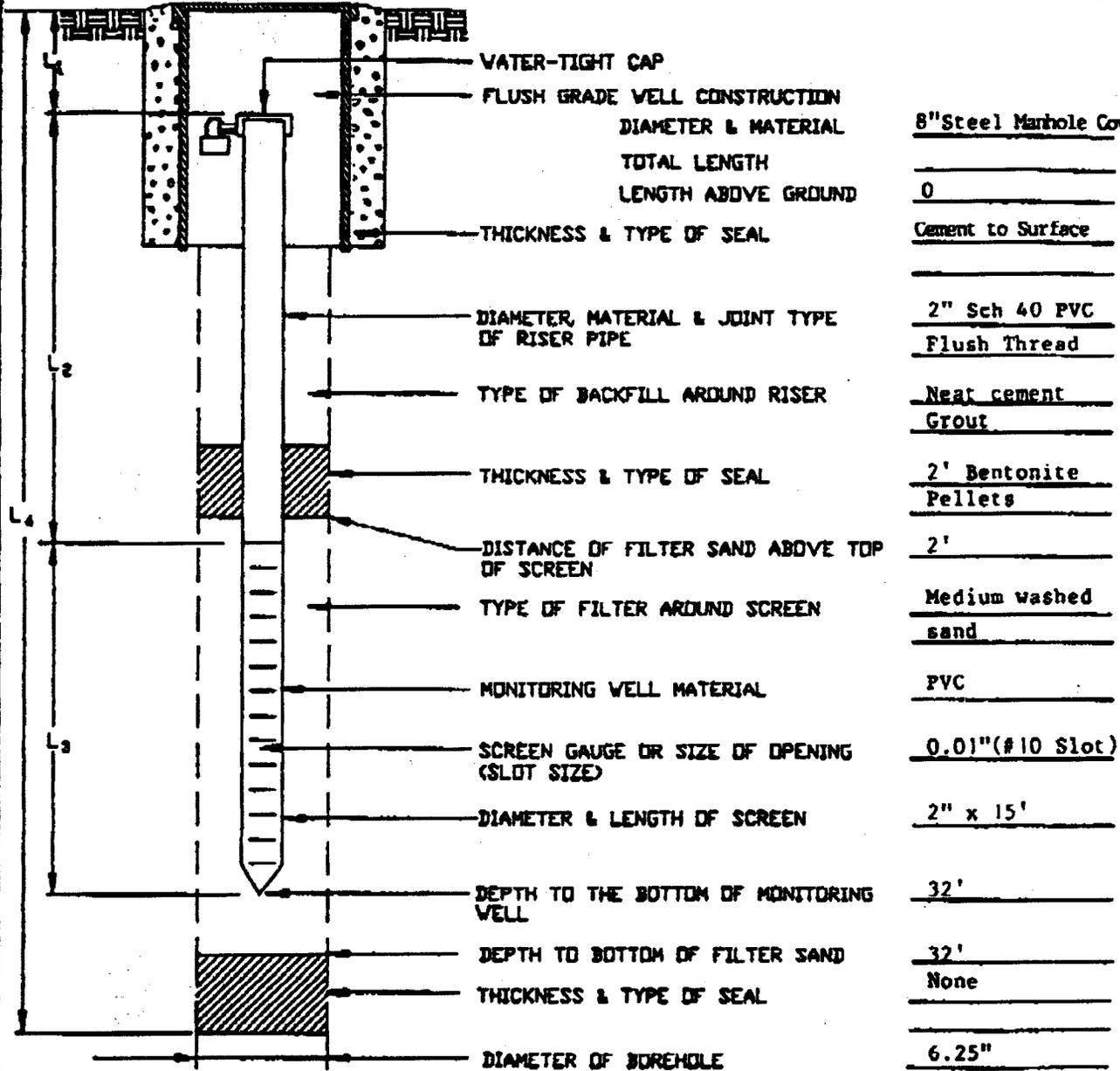
INSTALLATION COMPLETED:
 DATE: 3-29-93
 TIME: _____

(#) DEPTH BELOW TOP OF RISER BOX _____



INSTALLATION OF FLUSH GRADE MONITORING WELL

PROJECT: Exxon U.S.A. Greensboro, NC MONITORING WELL NO. MW-6
 JOB NO. 50-92-037.01 TOP OF RISER ELEVATION: _____



- WATER-TIGHT CAP
- FLUSH GRADE WELL CONSTRUCTION
 - DIAMETER & MATERIAL 8" Steel Manhole Cover
 - TOTAL LENGTH _____
 - LENGTH ABOVE GROUND 0
- THICKNESS & TYPE OF SEAL Cement to Surface
- DIAMETER, MATERIAL & JOINT TYPE OF RISER PIPE 2" Sch 40 PVC
Flush Thread
- TYPE OF BACKFILL AROUND RISER Neat cement Grout
- THICKNESS & TYPE OF SEAL 2' Bentonite Pellets
- DISTANCE OF FILTER SAND ABOVE TOP OF SCREEN 2'
- TYPE OF FILTER AROUND SCREEN Medium washed sand
- MONITORING WELL MATERIAL PVC
- SCREEN GAUGE OR SIZE OF OPENING (SLOT SIZE) 0.01" (#10 Slot)
- DIAMETER & LENGTH OF SCREEN 2" x 15'
- DEPTH TO THE BOTTOM OF MONITORING WELL 32'
- DEPTH TO BOTTOM OF FILTER SAND 32'
- THICKNESS & TYPE OF SEAL None
- DIAMETER OF BOREHOLE 6.25"

- L₁ = 0.5 FT
- L₂ = 17 FT
- L₃ = 15 FT
- L₄ = 32 FT

MONITORING WELL WATER LEVEL MEASUREMENTS		
DATE	TIME	WATER LEVEL ■

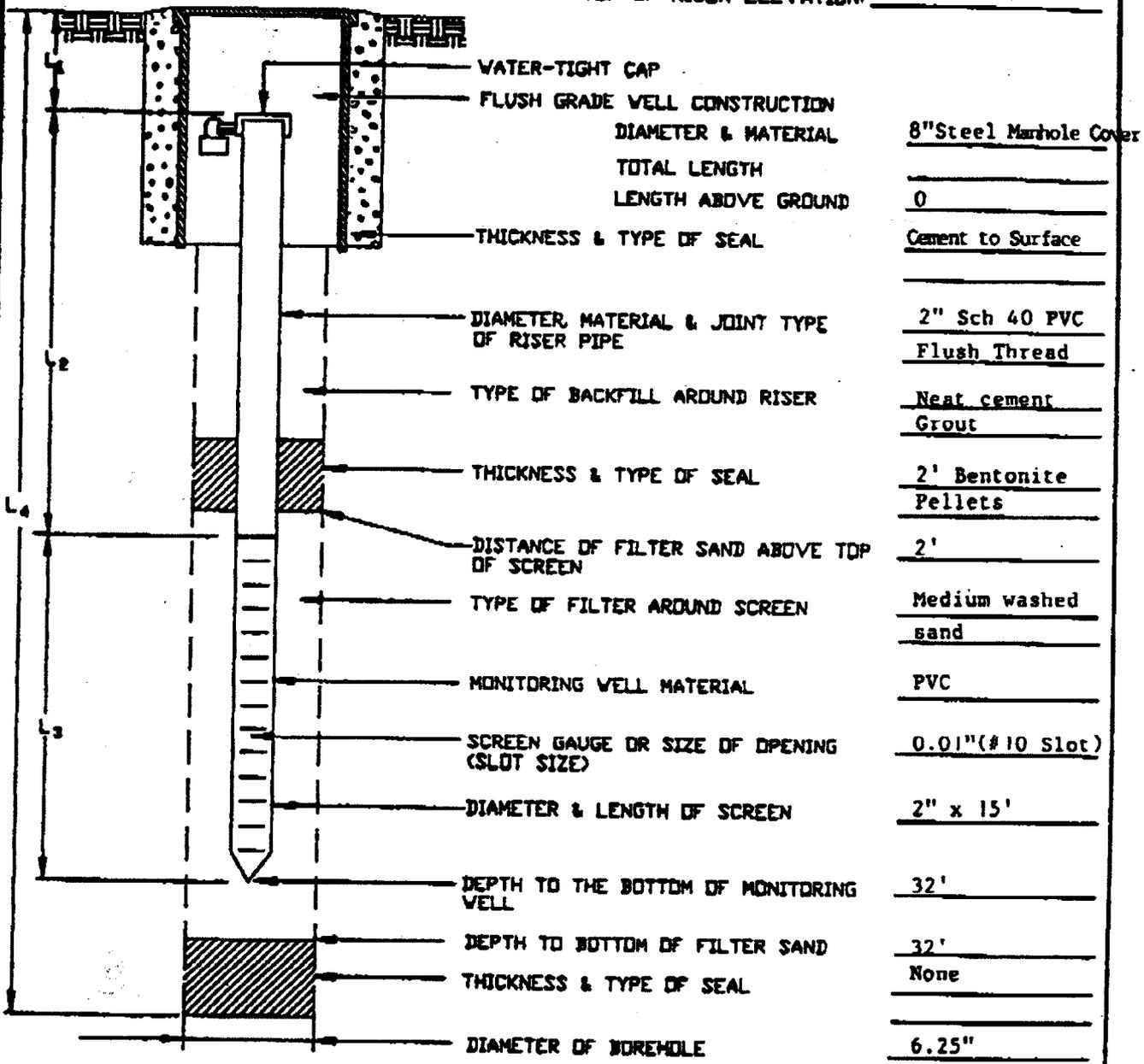
INSTALLATION COMPLETED:
 DATE: 3-29-93
 TIME: _____

(■) DEPTH BELOW TOP OF RISER BOX _____



INSTALLATION OF FLUSH GRADE MONITORING WELL

PROJECT: Exxon U.S.A. Greensboro, NC MONITORING WELL NO. MW-7
 JOB NO. 50-92-037.01 TOP OF RISER ELEVATION: _____



- 8" Steel Manhole Cover
- 0
- Cement to Surface
- 2" Sch 40 PVC
- Flush Thread
- Neat cement Grout
- 2' Bentonite Pellets
- 2'
- Medium washed sand
- PVC
- 0.01" (#10 Slot)
- 2" x 15'
- 32'
- 32'
- None
- 6.25"

L₁ = 0.5 FT
 L₂ = 17 FT
 L₃ = 15 FT
 L₄ = 32 FT

MONITORING WELL WATER LEVEL MEASUREMENTS		
DATE	TIME	WATER LEVEL

INSTALLATION COMPLETED:
 DATE: 3-29-93
 TIME: _____

(*) DEPTH BELOW TOP OF RISER BOX _____



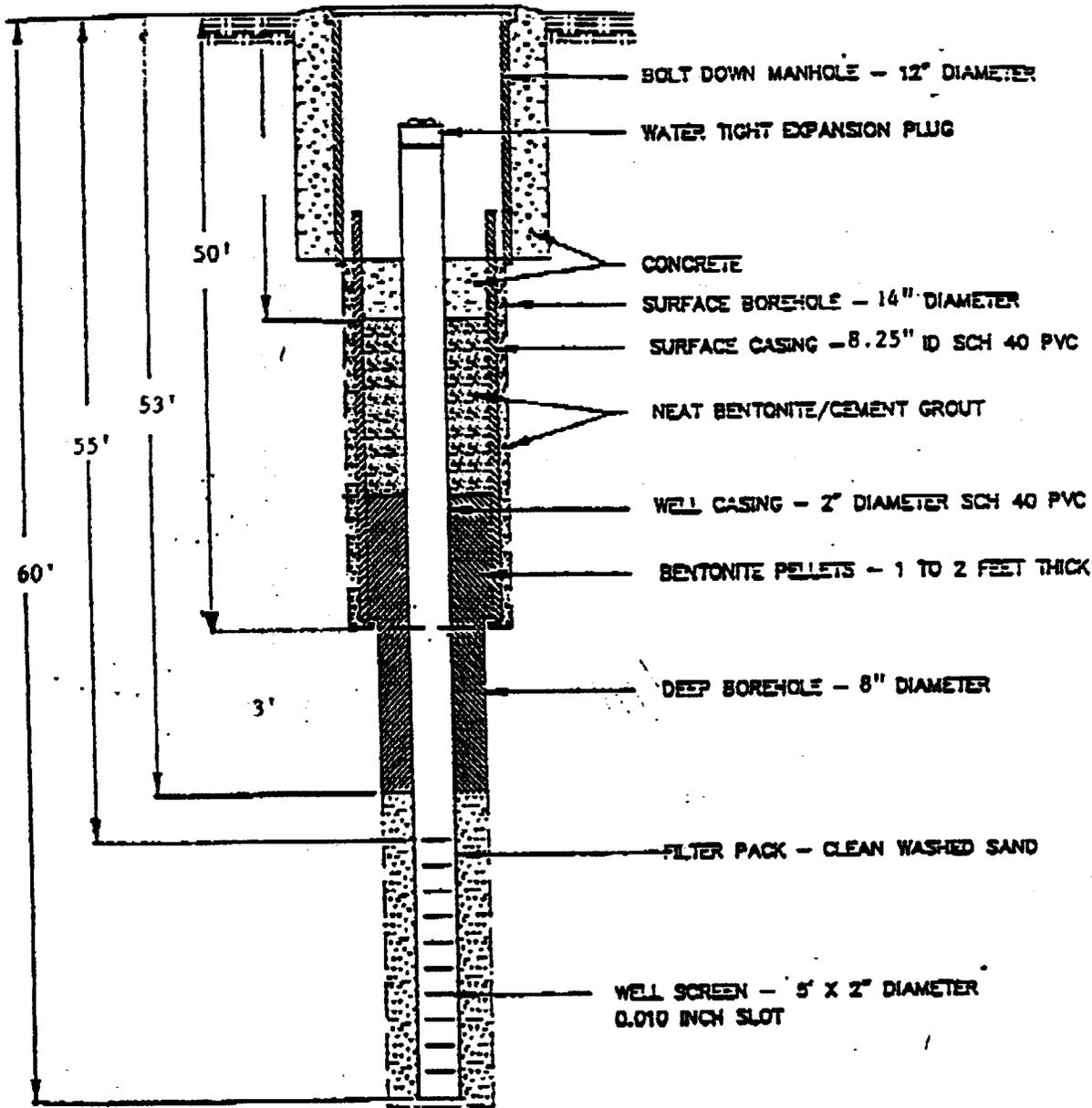


FIGURE
INSTALLED DETAIL MONITORING WELL

DW-8

NOTE: DRAWING NOT TO SCALE

PROJECT NO

DRAWN BY

C.S.G.

DATE

CAD NO.

REVIEW BY

7-15-91

027-IDMW



Delta
Environmental
Consultants, Inc.

DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27687 - RALEIGH, N.C. 27611, PHONE (919) 733-5083

Quad. No. _____	Serial No. _____
Lat. _____	Long. _____ Pa. _____
Minor Basin _____	
Basin Code _____	
Header Ent. _____	GW-1 Ent. _____

WELL CONSTRUCTION RECORD MW-9

DRILLING CONTRACTOR Groundwater Protection Inc.

DRILLER REGISTRATION NUMBER 1105

STATE WELL CONSTRUCTION PERMIT NUMBER: NM 0400140

WELL LOCATION: (Show sketch of the location below)

Nearest Town: Greensboro
4141 Spring Garden Street
(Road, Community, or Subdivision and Lot No.)

OWNER Exxon Company USA

ADDRESS PO Box 30451
Charlotte (Street or Route No.)
City or Town State Zip Code

DATE DRILLED 12/6/95 USE OF WELL monitor

TOTAL DEPTH 30' CUTTINGS COLLECTED Yes No

DOES WELL REPLACE EXISTING WELL? Yes No

STATIC WATER LEVEL: 20.6 FT. above TOP OF CASING.
TOP OF CASING IS 0 FT. below ABOVE LAND SURFACE.

YIELD (gpm): _____ METHOD OF TEST _____

WATER ZONES (depth): _____

CHLORINATION: Type _____ Amount _____

1. CASING:

From	To	Depth	Diameter	Wall Thickness or Weight/Ft.	Material
From <u>0</u>	To <u>15</u>	Fl. <u>2"</u>	<u>SCH 40</u>	<u>PVC</u>	
From _____	To _____	Fl. _____	_____	_____	_____
From _____	To _____	Fl. _____	_____	_____	_____

2. GROUT:

From	To	Depth	Material	Method
From <u>0</u>	To <u>11</u>	Fl. <u>_____</u>	<u>concrete</u>	<u>pour</u>
From _____	To _____	Fl. _____	_____	_____

3. SCREEN:

From	To	Depth	Diameter	Slot Size	Material
From <u>15</u>	To <u>30</u>	Fl. <u>2"</u>	<u>in. .01</u>	<u>in. PVC</u>	
From _____	To _____	Fl. _____	_____	_____	_____
From _____	To _____	Fl. _____	_____	_____	_____

4. GRAVEL PACK:

From	To	Depth	Size	Material
From <u>13</u>	To <u>30</u>	Fl. <u>medium</u>	<u>sand</u>	
From _____	To _____	Fl. _____	_____	_____

5. REMARKS: Denture seal 11-13 ft.

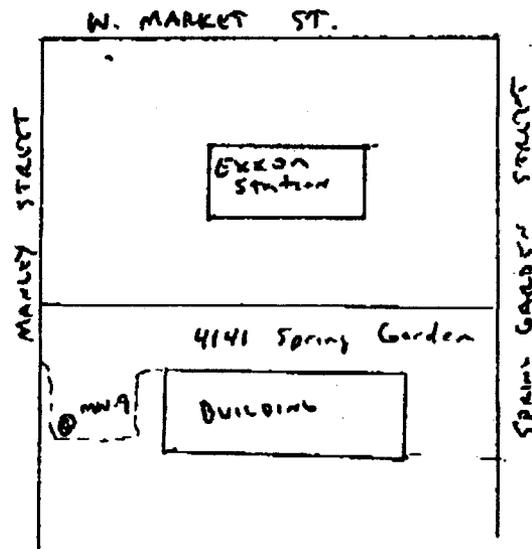
County: Guilford

Depth		DRILLING LOG Formation Description
From	To	
<u>0</u>	<u>16</u>	<u>Orange-red silty clay</u>
<u>16</u>	<u>30</u>	<u>Gray-red clayey silt sparite w/ relic struc</u>

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)



I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT [Signature] DATE 12/18/95

Submit original to Division of Environmental Management and copy to well owner.

DIVISION OF ENVIRONMENTAL MANAGEMENT - GROUNDWATER SECTION
P.O. BOX 27667 - RALEIGH, N.C. 27611, PHONE (919) 733-5063

FOR OFFICE USE ONLY

Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD AS/EP-1

DRILLING CONTRACTOR Southeastern Environmental Services
DRILLER REGISTRATION NUMBER 1141

STATE WELL CONSTRUCTION PERMIT NUMBER: _____

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: Greensboro
4701 W. Market Street
(Road, Community, or Subdivision and Lot No.)

County: Guilford

2. OWNER Exxon Company USA
ADDRESS PO Box 30451
Charlotte NC 28230
(Street or Route No.)
City or Town State Zip Code

Depth		DRILLING LOG Formation Description
From	To	
0	8'	red clay - very firm
8'	40'	orange, brown, red w/ tan clayey silt, saprolite

3. DATE DRILLED 3-8-94 USE OF WELL Air Spore Pilot Test

4. TOTAL DEPTH 40' CUTTINGS COLLECTED Yes No

5. DOES WELL REPLACE EXISTING WELL? Yes No

6. STATIC WATER LEVEL: _____ FT. above TOP OF CASING, below TOP OF CASING IS _____ FT. ABOVE LAND SURFACE.

7. YIELD (gpm): _____ METHOD OF TEST _____

8. WATER ZONES (depth): _____

9. CHLORINATION: Type _____ Amount _____

10. CASING:

	Depth	Diameter	Wall Thickness or Weight/Ft.	Material
AS	From 0 To 38 Ft.	2"	SCH 40	PVC
EP	From 0 To 8 Ft.	2"	SCH 40	PVC
	From _____ To _____ Ft.			

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

1. GROUT:

	Depth	Material	Method
	From 0 To 4 Ft.	neat cement	pour
	From _____ To _____ Ft.		

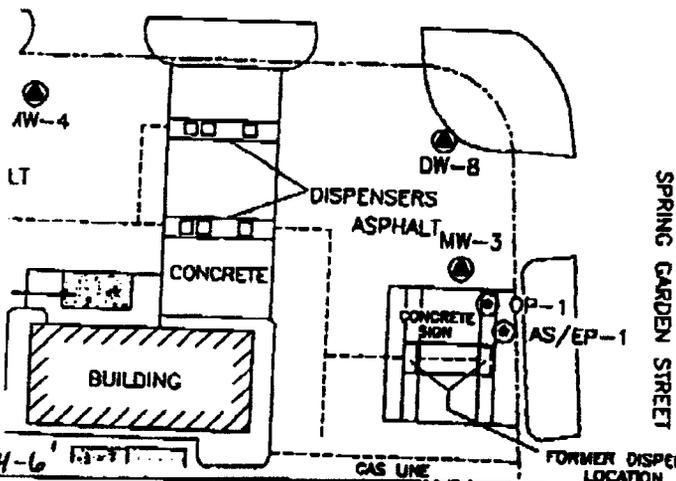
2. SCREEN:

	Depth	Diameter	Slot Size	Material
AS	From 38 To 40 Ft.	2"	.010 in.	PVC
EP	From 8 To 25 Ft.	2"	.010 in.	PVC
	From _____ To _____ Ft.			

3. GRAVEL PACK:

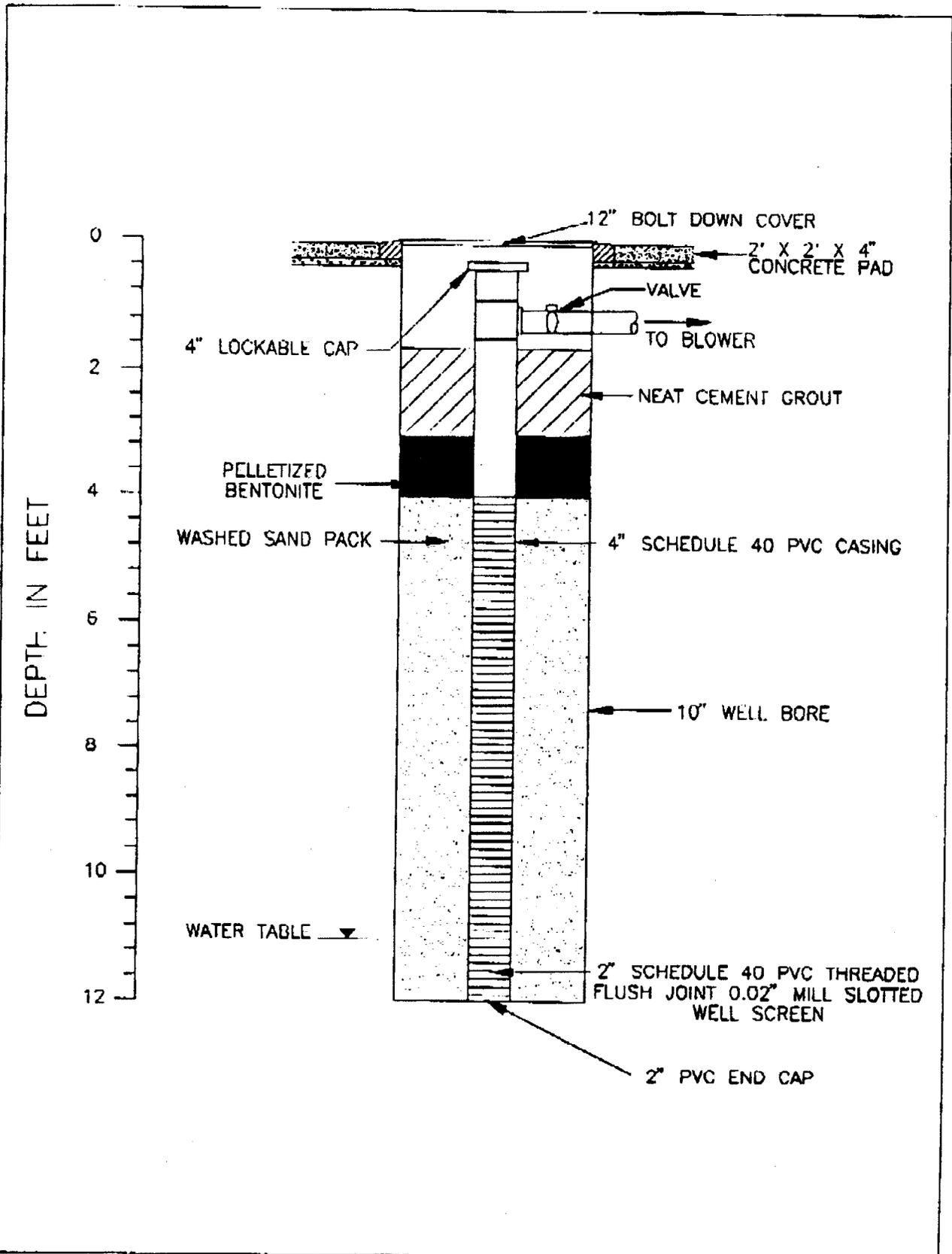
	Depth	Size	Material
AS	From 35 To 40 Ft.	6	sand
EP	From 6 To 25 Ft.	6	sand

4. REMARKS: AS - bentonite seal 33-35; EP bentonite seal 4-6'



I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT



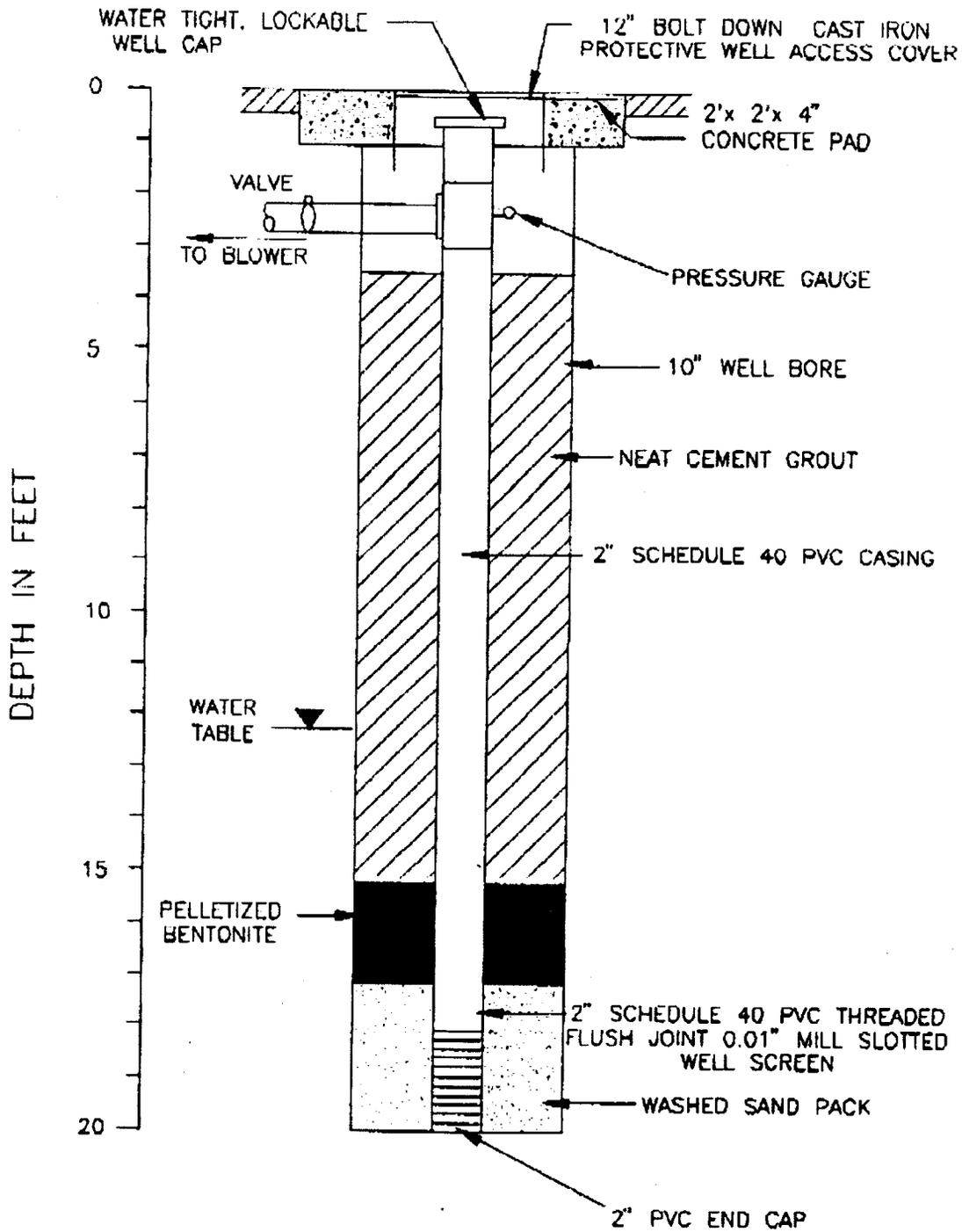
EXXON COMPANY, U.S.A.
 EXXON COMPANY, U.S.A.
 RETAIL LOCATION 4-399B
 GREENSBORO, NORTH CAROLINA

FIGURE 11.
 TYPICAL VAPOR EXTRACTION
 POINT CONSTRUCTION DIAGRAM



ERM-SOUTHEAST, INC
 CHARLOTTE, NC

75445VE.DWG
 1/25/94:KH/JP



ROXON COMPANY, U.S.A.
RETAIL LOCATION 4-399B
GREENSBORO, NORTH CAROLINA

FIGURE 10.
TYPICAL AIR SPARGING POINT
CONSTRUCTION DIAGRAM

7544AS.DWG
1/27/84 KH/JP

ERM-SOUTHEAST, INC
CHARLOTTE, NC