Appendix H
Well Rehabilitation Data/Nuclear Regulatory Commission Well Logs

Engineers
Planners
Economists
Scientists

January 7, 1992

NJO22948.ST.CY

Mr. Jeffrey Gratz, Project Manager
USEPA
Special Programs Branch
New York, NY 10278

Dear Mr. Gratz:

Subject: Maywood Chemical Company Site, Administrative Order Index No. II - CERCLA-10105; Sears and Adjacent Properties, Administrative Order on Consent, Index No. II - CERCLA-70104: Rehabilitation and Evaluation Survey of the Nuclear Regulatory Commission Wells Located on Stepan Co. Property, Maywood, New Jersey

Introduction

As per the conversations among Stepan Co., CH2M HILL, and EPA during the preparation of the **RI/FS Work Plan and RI Operations Plan For The Stepan Company Property**, Stepan has completed its rehabilitation and evaluation survey of the Nuclear Regulatory Commission (NRC) monitor wells, which were proposed to be used for the collection of groundwater samples during the RI on the Stepan properties. The intent of this survey was to determine if the monitor wells, located in the immediate vicinity of the radiological burial sites, are suitable for collecting representative groundwater samples from the overburden groundwater system. As agreed between Stepan and EPA, wells that are determined unsuitable for sampling, shall be replaced. EPA has agreed that existing wells constructed of polyvinyl chloride (PVC) are acceptable for sampling, however, the analytical results shall be qualified during final reporting.

Well Rehabilitation and Evaluation Survey

The well rehabilitation and evaluation survey was conducted from December 10 through 13, 1991, and included the following wells:

- Well 1 (B38W-8A)
- Well 2 (B38W-9A)
- Well 5 (B38W-11A)
- Well 6 (No B38W-series number assigned)
- Well 8 (No B38W-series number assigned).

The locations of these wells are shown on Figure 4-4 (see RI/FS Work Plan and RI Operations Plan). The boring logs (attached) indicate that the wells were installed in June 1983.

The rehabilitation was performed using the following procedure:

- Access the well and inspect the general integrity of the well and surface seals
- Determine the depth to water and the bottom depth of the well
- Scrub and surge the screened interval of the well using a dedicated laboratory brush attached to dedicated PVC pipe
- Bail and/or pump the well and observe changes in water quality, yield, and recovery.

Discussion of Results and Recommendations

The results of the survey indicate that all wells, except for Well 6, are acceptable for sampling. Data collected at Well 6 indicated the PVC well casing or screen may be structurally damaged. While rehabilitating the well, gravel and coarse sand were observed within the discharge water. Since the well was not locked, this material may have been introduced from the surface during previous sampling events. Although the well yield was sufficient, the presence of the coarse fragments mentioned above could compromise the integrity of groundwater samples collected from the well.

During the survey, it was determined that Well 6 is not located in the area, as shown on Figure 4-4. The well is actually located near the southwest corner of Burial Site No. 1 (see attached map). Since a shallow well is needed to supplement the hydrogeological conditions near bedrock well BRWM-17, Stepan recommends installing a replacement well (OBMW-17) at the location where Well 6 was originally shown on Figure 4-4, resulting in a OBMW-17/BRMW-17 well couplet. Stepan does not intend to install a new shallow well near the southwest corner of Burial Site No. 1.

Wells 1, 2, and 5 were capable of being pumped (approximately 0.3 to 0.5 gpm) and produced sufficient quantities of groundwater for sampling.

The yield, recovery rate, and the boring log associated with Well 8, indicate that the well is screened across an aquitard or a strata with limited water-bearing properties. It is unlikely that a new well installed in this area will yield a larger quantity of groundwater than the existing well. Therefore, Stepan recommends sampling the existing well. It should be noted that this well may need to be sampled over a two day period.

Should you have any questions or comments pertaining to this submittal, please call Scott Vozza or me at (201) 316-9300. If the recommendations are acceptable to you, please provide us with written notification.

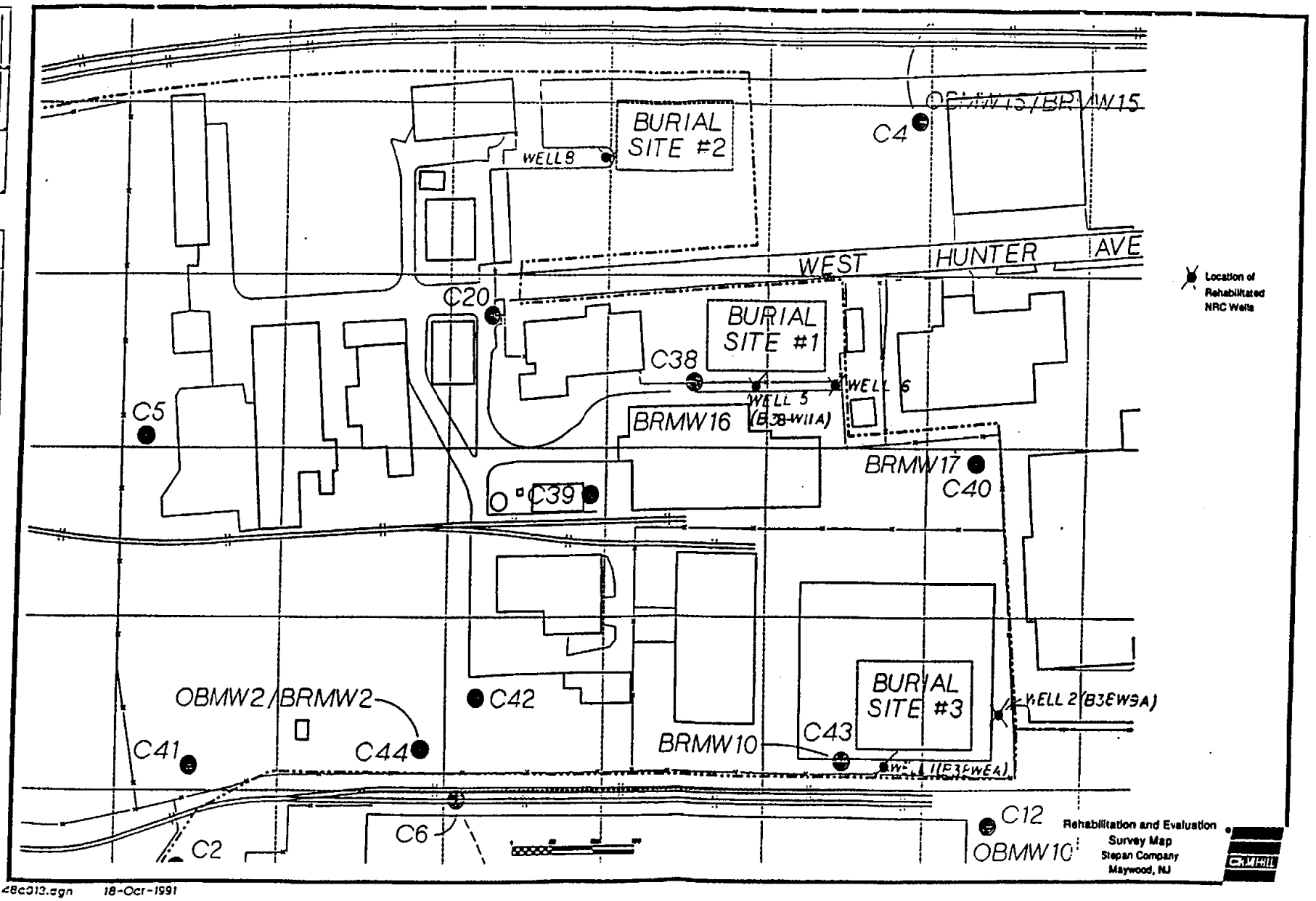
Sincerely,

CH2M HILL

Mary Manto
Project Manager

mtc/NJC9/006C9.51
cc: J. Bartlett/Stepan
Scott Vozza/NJO
Cliff Bell/NJO

Attachments



2948c013.dgn 18-Oct-1991

SUMMARY OF WELL REHABILITATION AND EVALUATION
STEPAN CO. RI/FS

WELL NO.		PURGE VOLUME (GAL)	WATER LEVEL (FEET)	TOTAL DEPTH FIELD MEAS.	TOTAL DEPTH WELL LOG	pH	COND. (UMHOS)	TEMP. (C)	TOTAL PURGE VOLUME (GAL)	PUMPING RATE (GAL/MIN)	P.I.D. READING (PPM)	GENERAL REMARKS
WELL 1	B38W8A	0	8.36	14.34	15.00	6.38	510	16	10	0.26	1.6	Well in good condition. Water quality parameters reasonable and stable although temperature was elevated. Able to obtain 10 well volumes. Turbidity decreased while pumping.
		4				6.86	550	18.7				
		6				6.80	575	18.7				
		8				6.85	606	17.9				
WELL 2	B38W9A	0	9.04	18.54	19.00	6.60	900	18.3	10	0.66	0	Well in good condition. Water quality parameters reasonable and stable although temperature was elevated. Able to obtain 6 well volumes. Water quality improved from black to tan while pumping.
		4.5				6.67	980	18.8				
		7.5				6.70	950	18.9				
		10				6.71	980	18.6				
WELL 5 (a)	B38W11A	0	6.24	11.14	12.00	4.16	600	14	13	(b)	0	Condition of well generally good. Needs new flushmount road box, lock, and concrete pad. Highly turbid throughout bailing. Able to obain 13 well volumes.
		5				4.22	780	15				
		9				4.34	800	15				
		13				3.73	810	14				
WELL 6 (a)	N/A	3	5.22	8.94	9.00	5.48	425	14	12	(b)	0.4	Needs new flushmount road box, lock, and concrete pad. Water remained highly turbid throughout bailing. Although parameters stablized, bailer took on copious amounts of sand and gravel. Well casing may be structurally damaged.
		5				5.68	420	14				
		8				4.76	405	13				
		12				4.73	420	14				
WELL 8	N/A	0	11.37	16.98	17.00	6.30	700	15.7	2	(c)	0	Well in good condition. Although well recoved less than 25% in 30 minutes, well produced 2 well volumes. Well partially screened in mudstone residuum,explaining low yield (compact, low permeability matrix with little to no fractures).

NOTES:

Well 5 and Well 6 pH readings were drifting during field measurments. Measurments may not be representive of actual conditions.

All wells are 2-inch in diameter and have a PVC inner casing.

N/A - B38 designation not applicable.

FOOTNOTES:

(a) Denotes flushmount well.

(b) Used bailer to purge well.

(c) Well was evacuated after 30 seconds of pumping.

WELL LOG

WELL NO. 1

DATE DRILLED: 6/83

DEPTH (FT.)	DESCRIPTION
0 - 2	Asphalt cover underlain by fill containing concrete fragments and lumber (blow cts: 21-9-8-21)
2 - 4	Fill material containing concrete fragments and lumber (blow cts: 62-1-20-19)
4 - 6	Reddish brown silt with layer of fragmented, reddish brown mud/silt stone (blow cts: 16/2ft.)
6 - 8	Alternating layers of reddish brown clay, silt, and fine silty sand (blow cts: 9-19-16-22)
8 - 10	Sand grading to clay and poorly indurated mudstone, water at 9.5 ft. (blow cts:23-16-23-22)
10 - 12	Sand (10-11) underlain by reddish brown poorly indurated mudstone (11-12) (blow cts: 21-8-9-13)
12 - 14	Sand grading to silty sand with increasing clay content and mudstone fragments (blow cts: 14-20 -26-26)
14 - 16	Interbedded mudstone and clay (64-67-57-100/2")

Water level measured 10/18/83:

WELL CONSTRUCTION DETAILS: Well #1

DEPTH (FT.)	
5 - 15	Screen
4 - 15	Sand packing
2 - 4	Bentonite seal
0 - 2	Grout

WELL LOG

WELL NO. 2

DATE DRILLED: 6/83

DEPTH (FT.)	DESCRIPTION
0 - 2	Asphalt cover underlain by fill material, poor sample recovery (blow cts: 13-3-1-2)
2 - 4	Loose silty fill material with some gravel and brick fragments (blow cts: 3-2-2-2)
4 - 6	Apparent fill material but no sample recovery (blow cts: 2-1-1-1)
6 - 8	Silty fill material grading to fine black fill material (charcoal?) at 6.5 ft (blow cts: 3-2-5-5)
8 - 10	Grey silt with poor sample recovery; water encountered at approximately 9.5 ft. (blow cts: 7-11-9-5)
10 - 12	Clayey silt grading to silty sand and fine to medium sand at 12 ft. (blow cts: 4-4-11-10)
12 - 14	Silty sand grading to clayey silt (blow cts: 19-12-20-21)
14 - 16	Fine to medium sand (blow cts:22-19-20-25)
16 - 18	Fine sand (blow cts: 33-16-21-19)
18 - 20	Silty clay grading to weathered mudstone (blow cts: 32-26-19-60)

Water level measured 10/18/83: 11 ft. 2 in. from top of casing

WELL CONSTRUCTION DETAILS: Well #2

DEPTH (FT.)	
9 - 19	Screen
8 - 19	Sand packing
6 - 8	Bentonite seal
0 - 6	Grout

PROJECT NUMBER	BORING NUMBER	
NJ022948.SB.WI	OBMW11	SHEET 1 OF 1

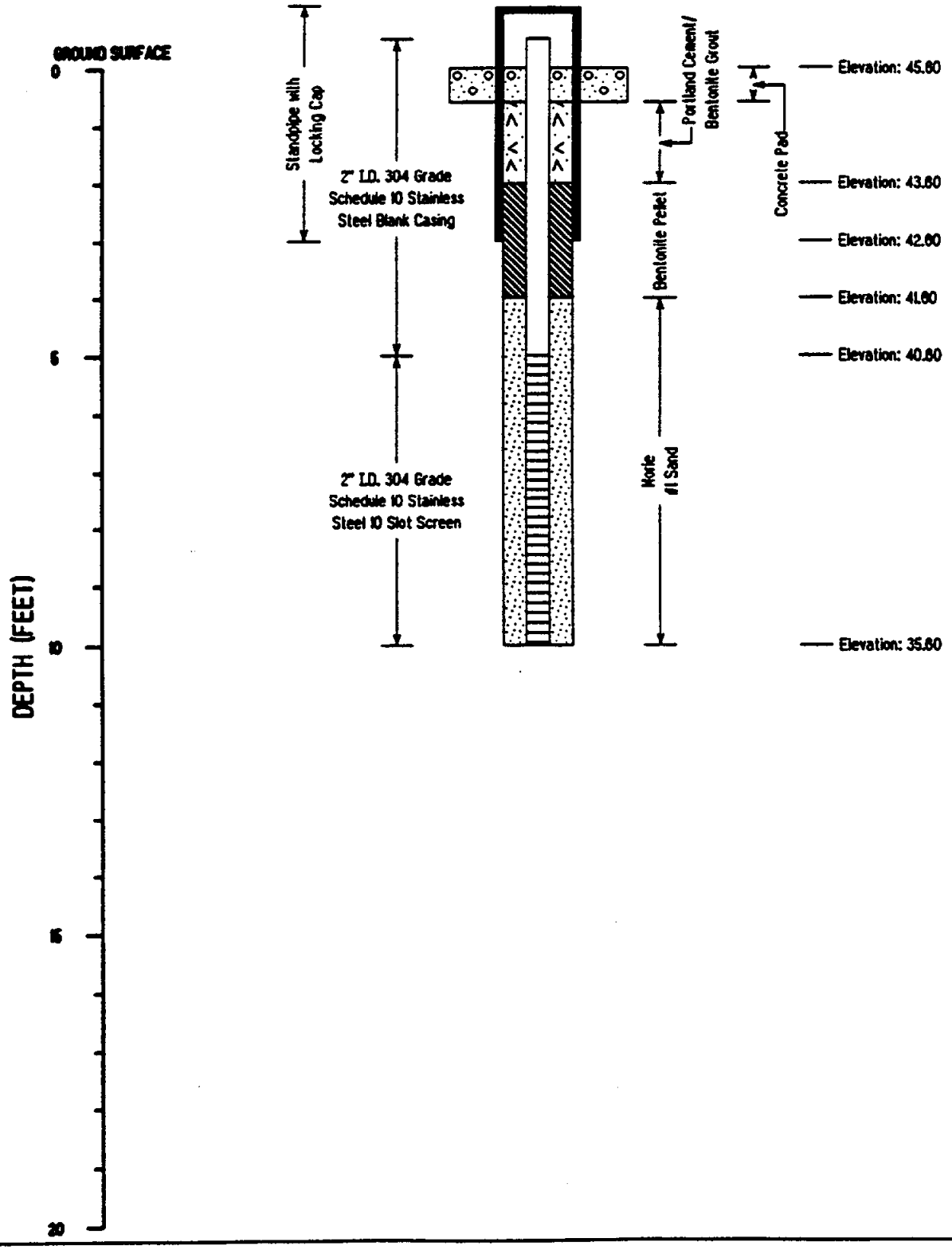
WELL COMPLETION LOG

PROJECT Stepan Co. and Sears and Adjacent Properties RI LOCATION Maywood, NJ

ELEVATION 45.6 (GS); 48.28 (inner casing) DRILLING CONTRACTOR Environmental Drilling Inc., West Creek, NJ

DRILLING METHOD AND EQUIPMENT CME ATV Rig 4 3/4" I.D. HSA

WATER LEVELS 2.57 (ft); 45.66 (MSL), 6/22/92 START 4-28-92 FINISH 4-28-92 LOGGER S. Repko



See Boring Log For Drilling Details

R-138 M
31

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 28 - 28455
Atlas Sheet Coordinates 28 : 09 : 535

WNER IDENTIFICATION - Owner IRM PROPERTIES
ddress 77 TARRYTOWN RD. SUITE 100
ity WHITE PLAINS State NY Zip Code 10607

VELL LOCATION - If not the same as owner please give address. Owner's Well No. ORMW-11
County Bergen Municipality HAYWOOD BORO Lot No. 30 Block No. 124
Address 149-151 Tarrytown Rd., Maywood, NJ

DEVELOPED 5/01/92 COMPLETED
TYPE OF WELL (as per Well Permit Categories) MONITORING Date well completed 4 / 15 / 92
Regulatory Program Requiring Well CERCLA Case I.D. # 10105
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) CH2M Hill Tele. # 201 316-9200

WELL CONSTRUCTION

Total depth drilled 10 ft.
Well finished to 10 ft.
Borehole diameter:
Top 8 in.
Bottom 8 in.
Well was finished: ☐ above grade ☒ flush mounted
If finished above grade, casing height (stick up) above land surface _____ ft.
Was steel protective casing installed? ☐ Yes ☒ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing	0'	5'	2"	Stainless Steel
Outer Casing (Not Protective Casing)	NA	NA	NA	
Screen (Note slot size)	5'	10'	2"	Stainless Steel
Tail Piece	NA	NA	NA	
Gravel Pack	3'	10'	8"	# 1 Gravel
Annular Seal/Grout	0'	3'	8"	Cement
Method of Grouting	Gravity			

Static water level after drilling 6 ft.
Water level was measured using M Scope
Well was developed for 1 hours at 2+ gpm
Method of development Submersible Pump
Was permanent pumping equipment installed? ☐ Yes ☒ No
Pump capacity NA gpm
Pump type: NA
Drilling Method Hollow Stem Auger
Drilling Fluid NA Type of Rig Mobile b-61
Name of Driller Robert Arkinson
Health and Safety Plan submitted? ☐ Yes ☐ No
Level of Protection used on site (circle one) None D C B A
N.J. License No. J 1478
Name of Drilling Company ENVIRONMENTAL DRILLING, INC.

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0'-4' fill
4'-9' sand and gravel
9'-10' weathered rock

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature _____ Date 6/12/92

COPIES: White & Green - DEPE Canary - Driller Pink - Owner Goldenrod - Health Dept.

CKM HILL

PROJECT NUMBER	BORING NUMBER	
NJ02294B.EA.WT	ORMW12	SHEET 1 OF 1

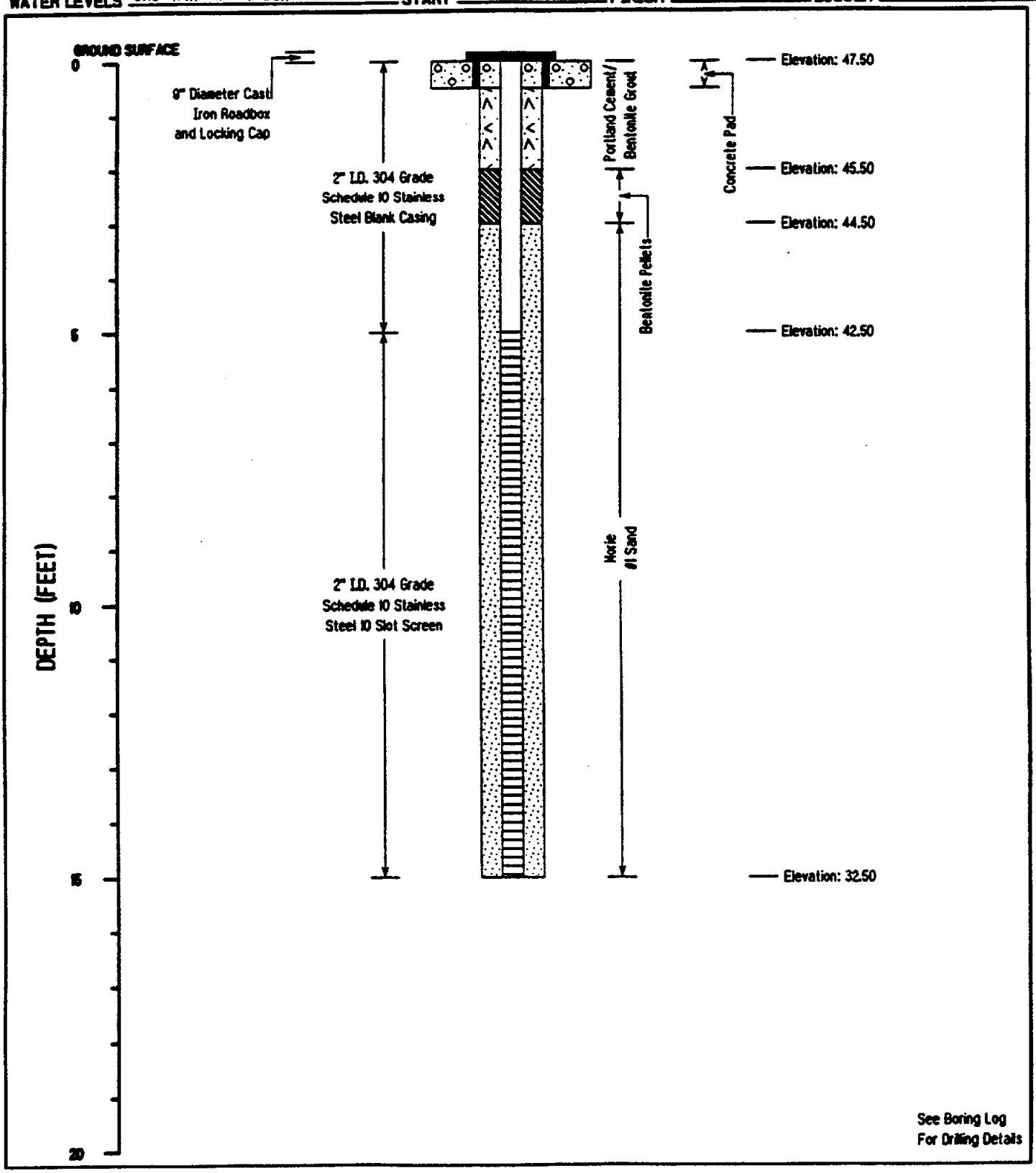
WELL COMPLETION LOG

PROJECT Stepan Co. and Sears and Adjacent Properties RI LOCATION Maywood, NJ

ELEVATION 47.5 (GS); 47.27 (inner casing) DRILLING CONTRACTOR Environmental Drilling Inc., West Creek, NJ

DRILLING METHOD AND EQUIPMENT Mobile B60 HSA 4 1/4" I.D.

WATER LEVELS 8.10 (ft); 41.17 (MSL), 8/22/92 START 4-29-92 FINISH 4-29-92 LOGGER L. Vogel



See Boring Log For Drilling Details

38 M

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 24- 28471
Atlas Sheet Coordinates 26 : 03 :

ER IDENTIFICATION - Owner M. H WEIL, TRUSTEE
ass 51 COMMERCE ST
SPRINGFIELD State NJ Zip Code
DEVELOPED 4/29/92 (COMPLETED)

L LOCATION - If not the same as owner please give address. Owner's Well No. OBMW-12
ty Bergen Municipality Lot No. Block No.
ass 29 Essex St., Maywood, NJ MAYWOOD BORO 5 124

E OF WELL (as per Well Permit Categories) Date well completed 3 / 5 / 92
latory Program Requiring Well MONITORING Case I.D. #
CERCLA
SULTING FIRM/FIELD SUPERVISOR (if applicable) CHZM Hill Tele. # 201 316-9300

L CONSTRUCTION

depth drilled 15 ft.
finished to 15 ft.
hole diameter:
Top 8 in.
tom 8 in.
was finished: ☐ above grade
☒ flush mounted
ished above grade, casing
ht (stick up) above land
ace ft.
steel protective casing installed?
Yes ☒ No
ic water level after drilling 7 ft.
er level was measured using M Scope
was developed for 1½ hours at 2+ gpm
nod of development submersible Pump
s permanent pumping equipment installed? ☐ Yes ☒ No
p capacity NA gpm
p type: NA
ing Method Hollow Stem Augers
ing Fluid NA Type of Rig Mobile B- 61
ne of Driller Robert Atkinson
lth and Safety Plan submitted? ☐ Yes ☐ No
el of Protection used on site (circle one) None D C B A
License No. J 1478
ne of Drilling Company ENVIRONMENTAL DRILLING INC

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing	0'	5'	2"	Stainless Steel
Outer Casing (Not Protective Casing)	NA	NA	NA	
Screen (Note slot size)	5'	15'	2"	Stainless Steel
Tail Piece	NA	NA	NA	
Gravel Pack	3'	15'	8"	# 1 Gravel
Annular Seal/Grout	0'	3'	8"	Cement
Method of Grouting	Gravity			

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0'-13' sand, medium and fine
13'-15' weathered rock

rtify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable te rules and regulations.

Driller's Signature _____ Date 6/18/92

COPIES: White & Green - DEPE Canary - Driller Pink - Owner Goldenrod - Health Dept.

WELL LOG

WELL NO. 5

DATE DRILLED: 6/83

DEPTH (FT.)	DESCRIPTION
0 - 4	Clayey silt with rock/mudstone fragments
4 - 6	Silty sand with rock fragments overlaying clayey silt with rock fragments (blow cts: 11-12-14-15) Water encountered at 4.5-5.0 ft.
6 - 8	Sandy silt overlaying clayey silt (blow cts: 16-19-16-23)
8 - 11	Indurated mudstone grading to fragmented rock with clayey silt (9-11 ft. blow cts: 95-60-46-36)
11 - 13	Indurated rock, rotary drilled with no samples

Water level measured 10/19/83: 8 ft. 1.5 in. from top of casing

WELL CONSTRUCTION DETAILS: Well #5

DEPTH (FT.)	
5 - 12	Screen
4 - 12	Sand packing
2 - 4	Bentonite seal
0 - 2	Grout

WELL LOG

WELL NO. 6

DATE DRILLED: 6/83

DEPTH (FT.)	DESCRIPTION
0 - 2	Gravel fill overlying fine sand (blow cts: 11-6-5-5)
2 - 4	Interbedded silty clays and silty sands with rock fragments grading to fractured silt/sandstone (blow cts:* 15-17-27-21)
4 - 6	Silty sand with some clay and rock fragments, water at 4 ft. (blow cts: 11-11-9-8)
6 - 8	Medium sand grading to silty clay with silt/mudstone fragments
8 - 9	Clay with mudstone fragments grading to indurated mudstone (blow cts:* 12-11-40/2 in.) refusal at 9 ft.

* 300 lb. hammer and large spoon used

Water level measured 10/19/83: 7 ft. .5 in. from top of casing

WELL CONSTRUCTION DETAILS: Well #6

DEPTH (FT.)	
4 - 9	Screen
3.5 - 9	Sand packing
2 - 3.5	Bentonite seal
0 - 2	Grout

WELL LOG

WELL NO. 8

DATE DRILLED: 6/83

DEPTH (FT.)	DESCRIPTION
0 - 2	Reddish-brown silt
2 - 4	Reddish-brown silt (blow cts: 8-11-14-15)
4 - 6	Reddish-brown clayey silt grading to siltstone at 6 ft. (blow cts: 16-11-22-15)
6 - 8	Partially indurated deposits, poor spoon recovery (blow cts:* 11-12-15 12)
8 - 17	Mud/silt/sandstone deposits with varying degrees of induration, rotary drilled with no samples

* 300 lb. hammer used

Water level measured 11/7/83: 14 ft. .5 in. from top of casing

WELL CONSTRUCTION DETAILS: Well #8

DEPTH (FT.)	
7 - 17	Screen
6 - 17	Sand packing
4 - 6	Bentonite seal
0 - 4	Grout

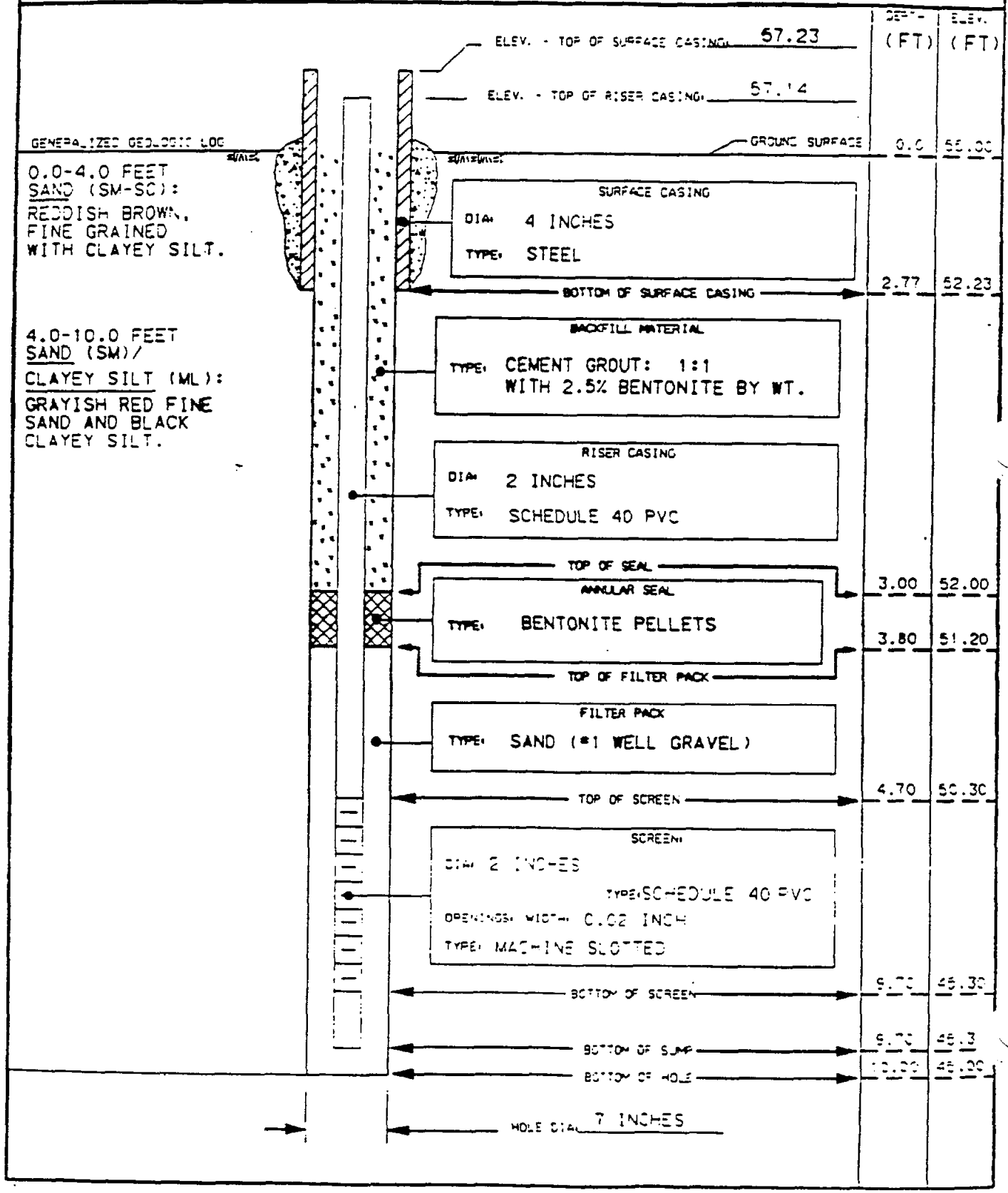
MONITORING WELL

PROJECT: FUSRAP

WELL NO.: MISS-4

JOB NO.	SITE	COORDINATES (IN FEET)
14501	MAYWOOD I.S.S.	N 9216.49 E 9996.87

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-26-84	10-26-84	P.H.NELSON	TOP OF RISER CASING



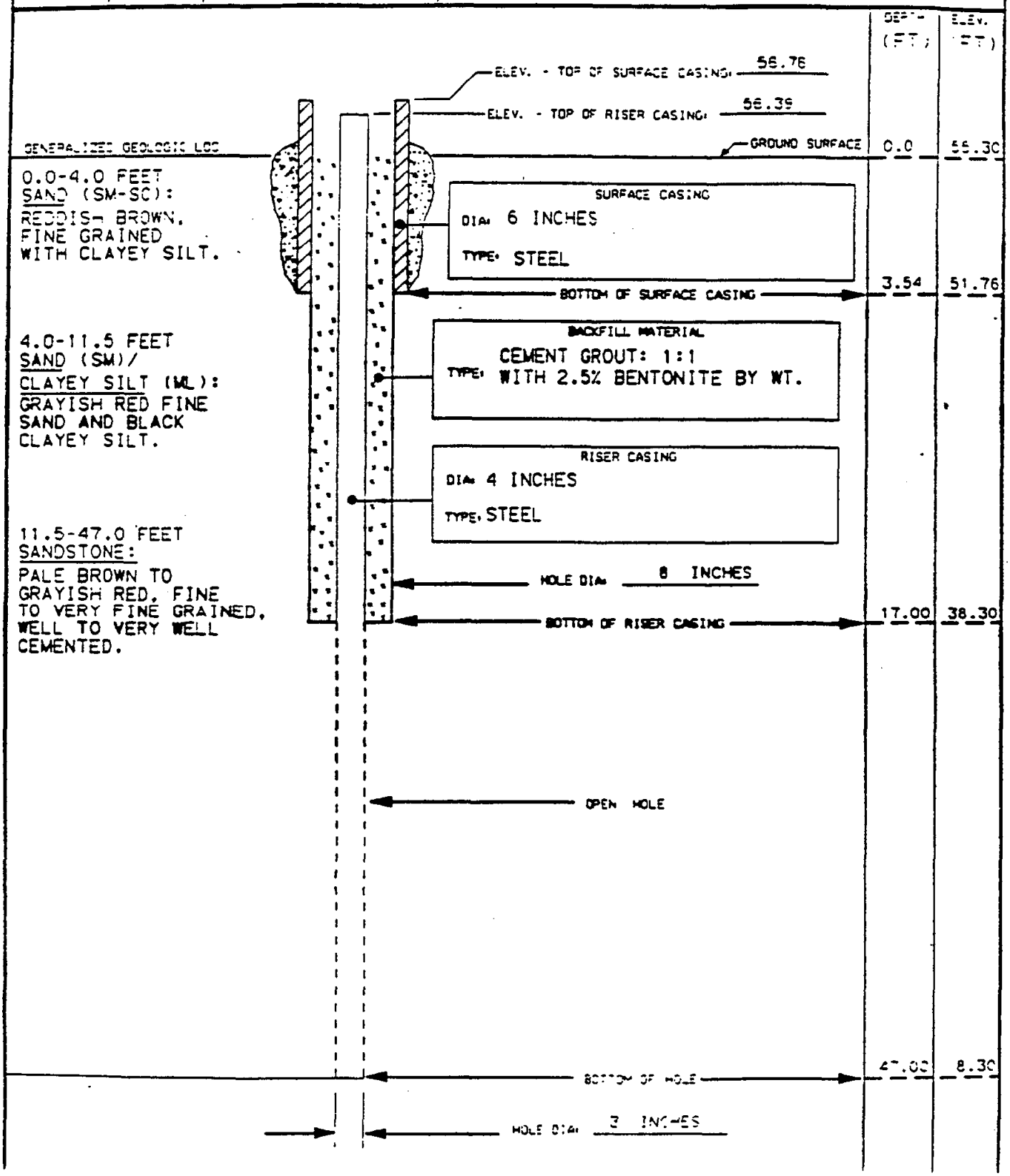
MONITORING WELL

PROJECT: FUSRAP

WELL NO.: MW3-4B

JOB NO.	SITE	COORDINATES (FEET)
14501	MAYWOOD I.S.S.	N 9208.16 E 10,008.36

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-25-84	11-10-84	R. H. NELSON	TOP OF RISER CASING

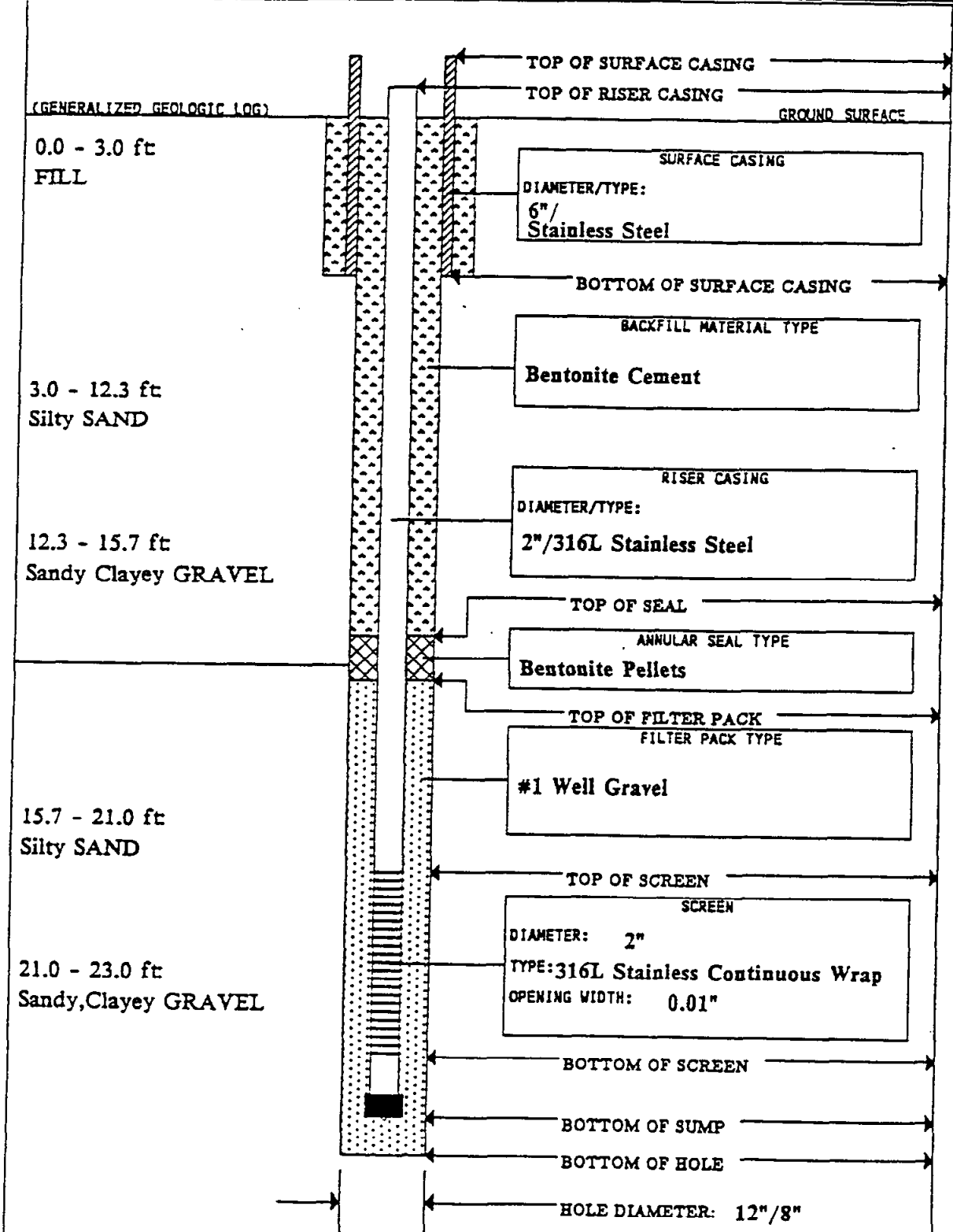


MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W1S

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	NY Susquehanna & Western RR	N 10,072 E 9,926

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
11-21-88	11-21-88	J. Lord	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+2.0	57.2
TOP OF RISER CASING	+2.0	57.2
GROUND SURFACE	0.0	55.2
BOTTOM OF SURFACE CASING	1.8	53.4
TOP OF SEAL	12.0	43.2
TOP OF FILTER PACK	14.0	41.2
TOP OF SCREEN	17.0	38.2
BOTTOM OF SCREEN	22.0	33.2
BOTTOM OF SUMP	23.0	32.2
BOTTOM OF HOLE	23.0	32.2

NOT TO SCALE

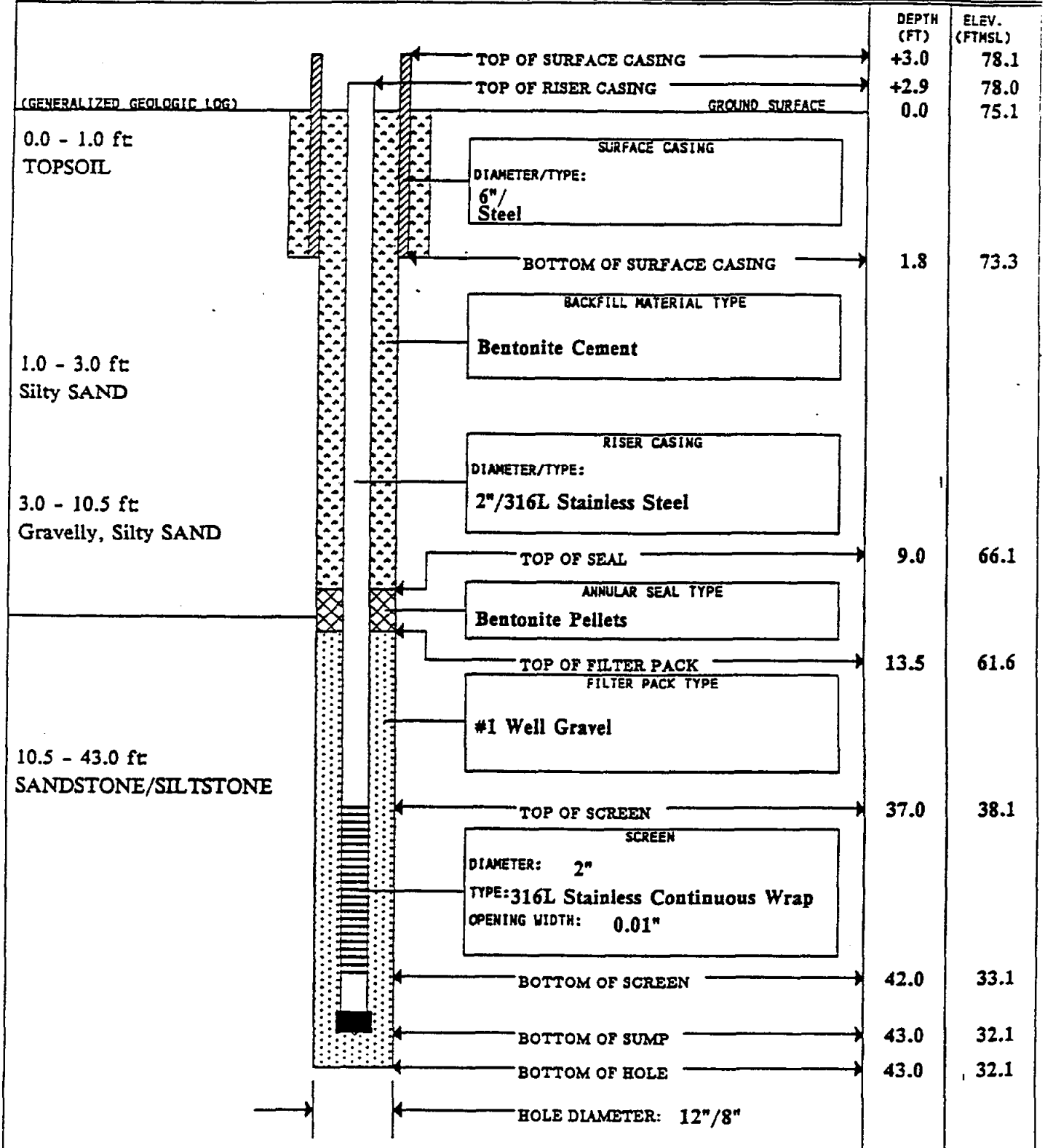
Update: 04-30-92
Template: 11WELLOG

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W2D

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	NY Susquehanna & Western RR	N 10,111 E 10,444

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
11-9-88	11-9-88	J. Lord	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+3.0	78.1
TOP OF RISER CASING	+2.9	78.0
GROUND SURFACE	0.0	75.1
BOTTOM OF SURFACE CASING	1.8	73.3
TOP OF SEAL	9.0	66.1
TOP OF FILTER PACK	13.5	61.6
TOP OF SCREEN	37.0	38.1
BOTTOM OF SCREEN	42.0	33.1
BOTTOM OF SUMP	43.0	32.1
BOTTOM OF HOLE	43.0	32.1

Update: 04-30-92
Template: 11WELLOG

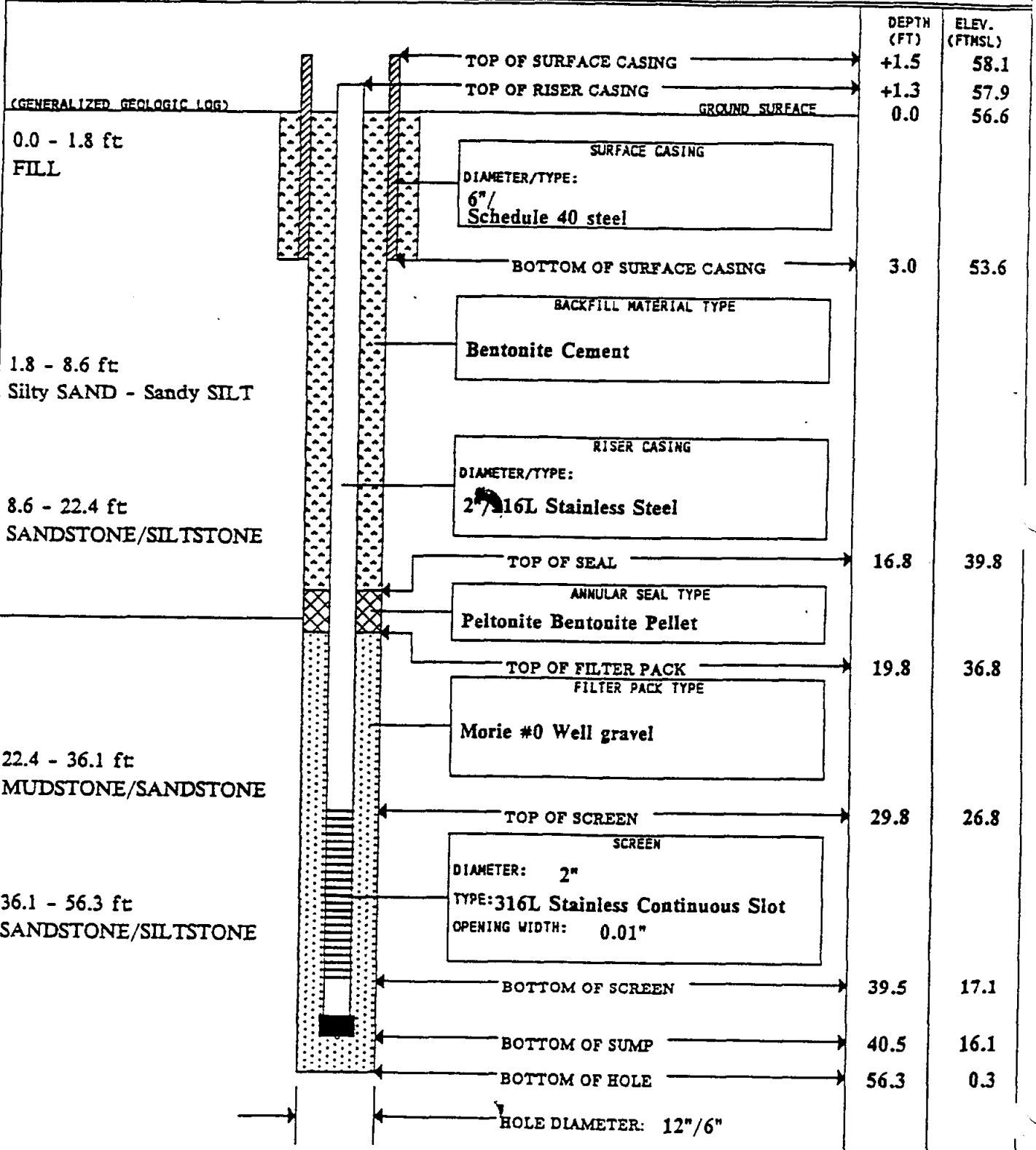
NOT TO SCALE

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W3B1

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	Stepan Property	N 9.428 E 10,043

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
8-24-87	8-31-87	C.A. Clark	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+1.5	58.1
TOP OF RISER CASING	+1.3	57.9
GROUND SURFACE	0.0	56.6
BOTTOM OF SURFACE CASING	3.0	53.6
TOP OF SEAL	16.8	39.8
TOP OF FILTER PACK	19.8	36.8
TOP OF SCREEN	29.8	26.8
BOTTOM OF SCREEN	39.5	17.1
BOTTOM OF SUMP	40.5	16.1
BOTTOM OF HOLE	56.3	0.3

Update: 04-30-92
Template: 11WELLOG

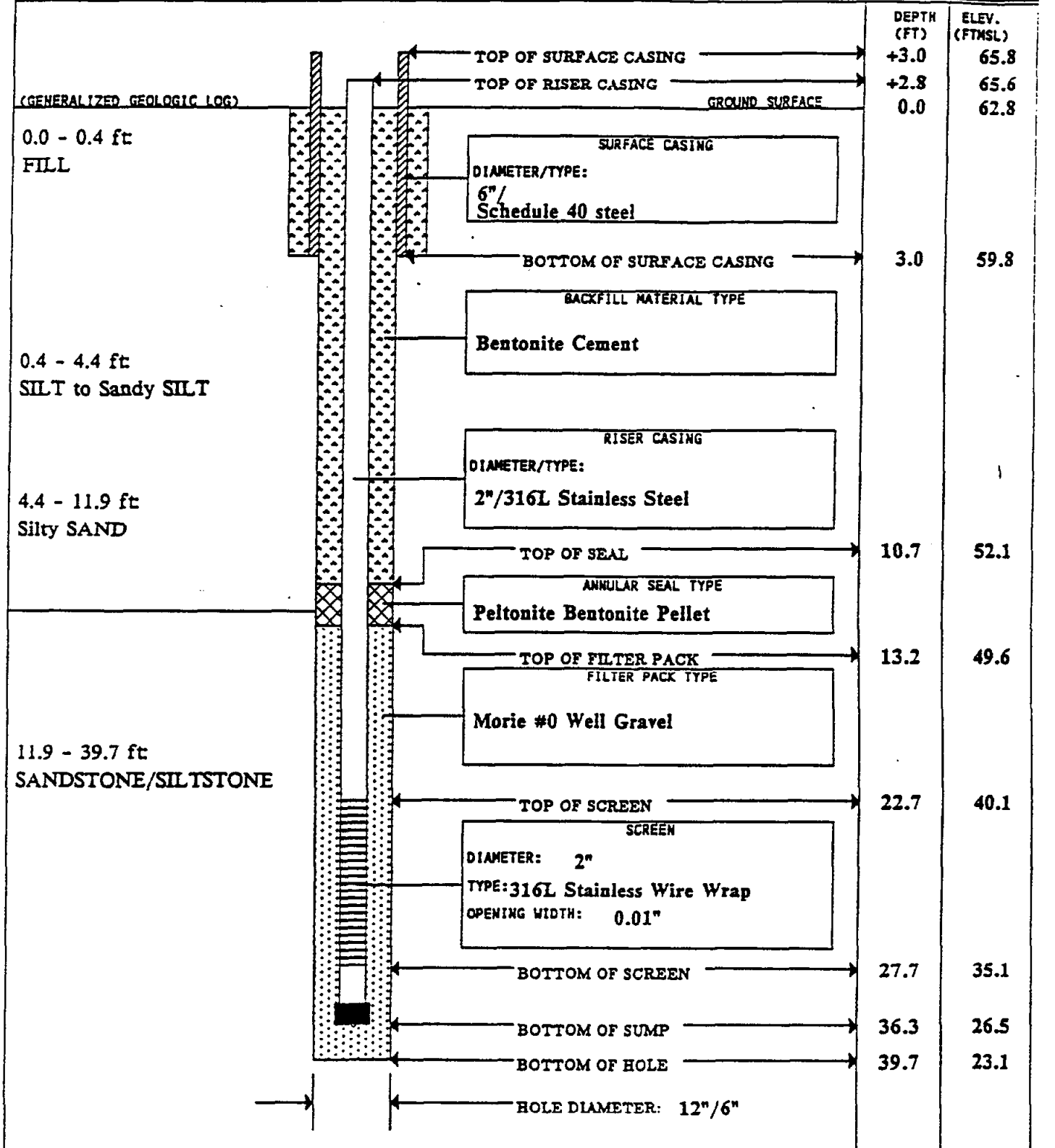
NOT TO SCALE

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W4B

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	Stepan Property	N 9.564 E 10,488

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
9-11-87	9-15-87	C.A. Clark	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+3.0	65.8
TOP OF RISER CASING	+2.8	65.6
GROUND SURFACE	0.0	62.8
BOTTOM OF SURFACE CASING	3.0	59.8
TOP OF SEAL	10.7	52.1
TOP OF FILTER PACK	13.2	49.6
TOP OF SCREEN	22.7	40.1
BOTTOM OF SCREEN	27.7	35.1
BOTTOM OF SUMP	36.3	26.5
BOTTOM OF HOLE	39.7	23.1

Update: 04-30-92
Template: 11WELLOG

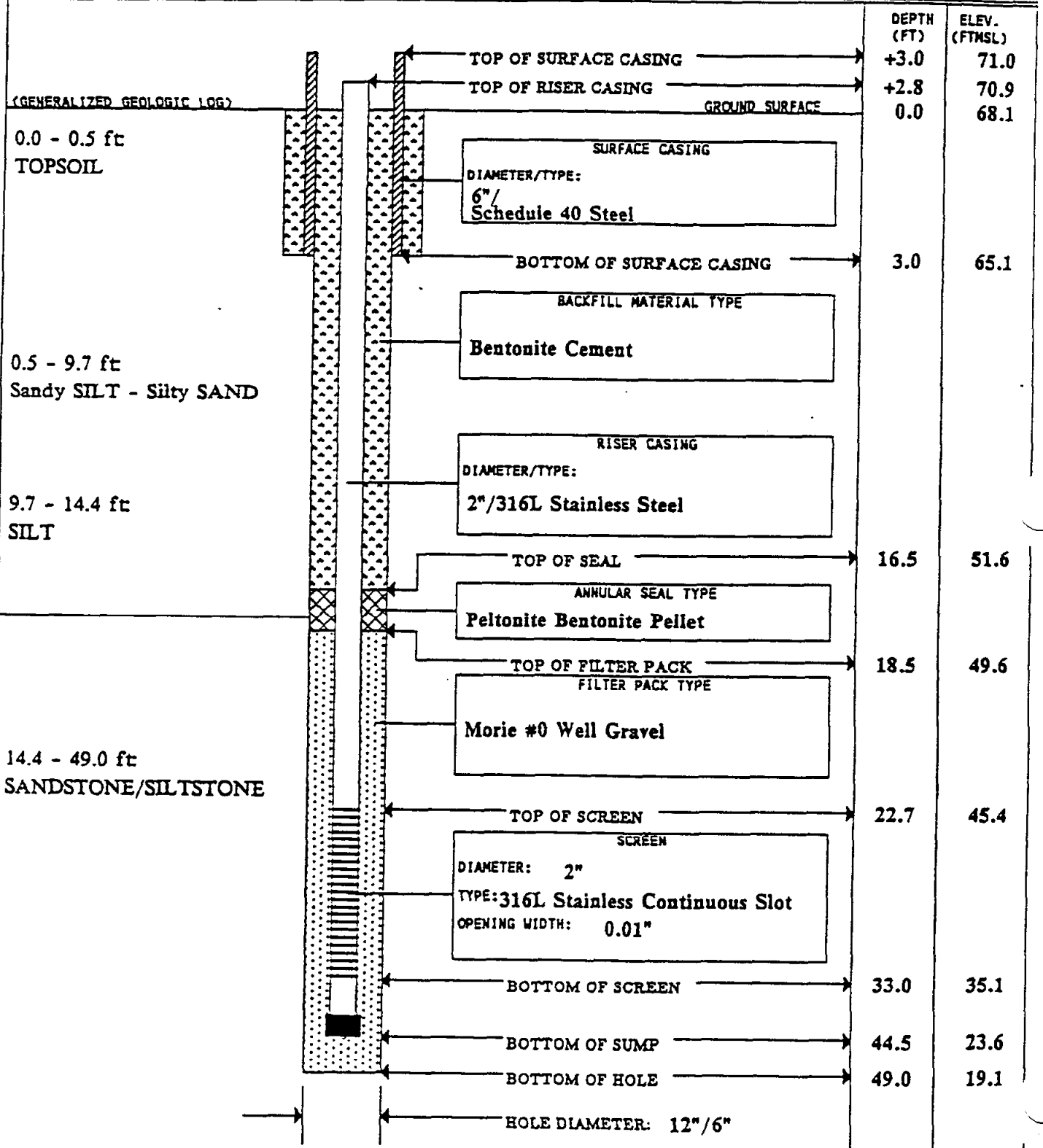
NOT TO SCALE

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W5B

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	Stepan Property	N 9.880 E 10.772

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
9-16-87	9-21-87	C.A. Clark	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+3.0	71.0
TOP OF RISER CASING	+2.8	70.9
GROUND SURFACE	0.0	68.1
BOTTOM OF SURFACE CASING	3.0	65.1
TOP OF SEAL	16.5	51.6
TOP OF FILTER PACK	18.5	49.6
TOP OF SCREEN	22.7	45.4
BOTTOM OF SCREEN	33.0	35.1
BOTTOM OF SUMP	44.5	23.6
BOTTOM OF HOLE	49.0	19.1

Update: 04-30-92
Template: 11WELLOG

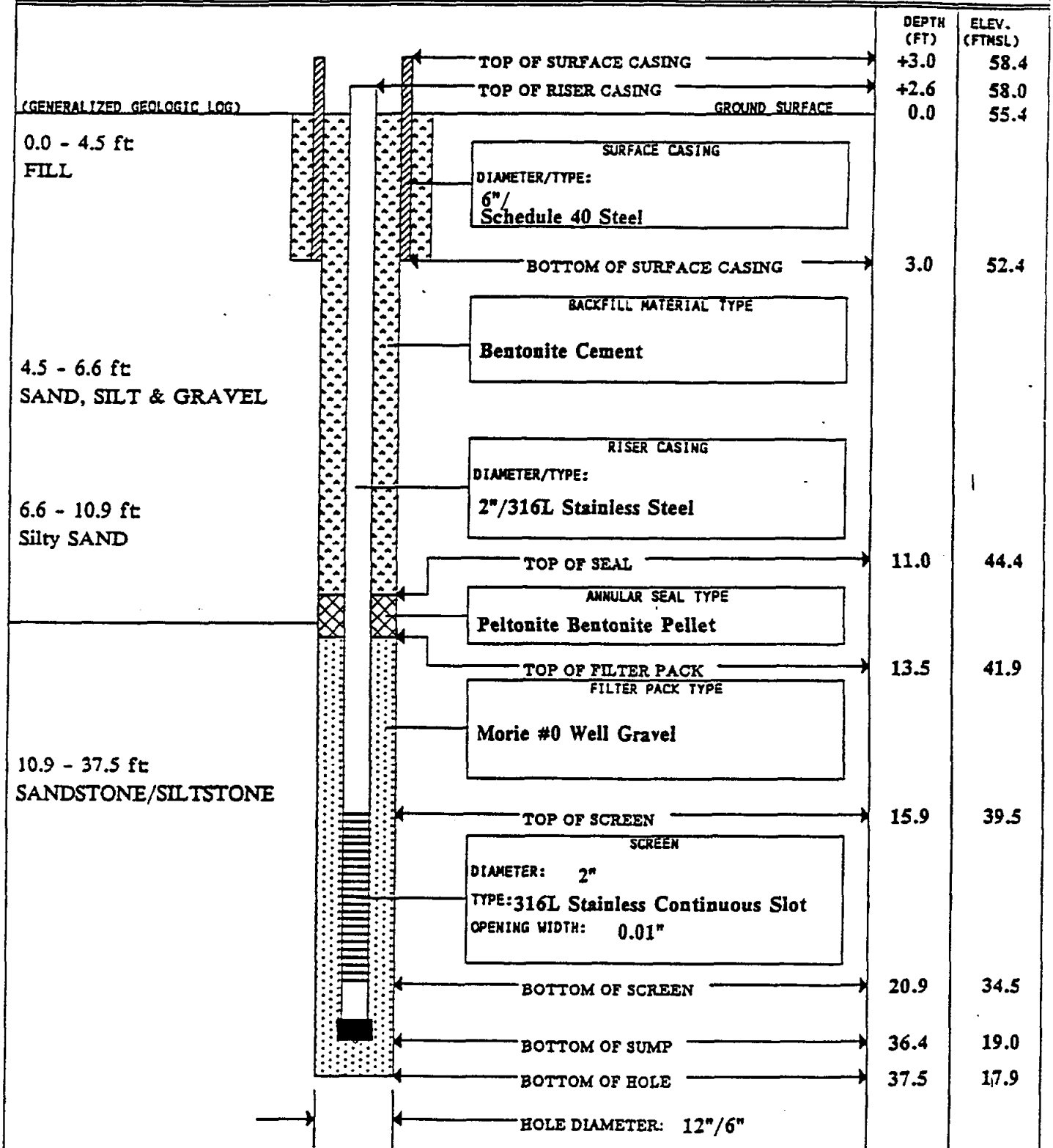
NOT TO SCALE

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W6B

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	Stepan Property	N 9,335 E 10,311

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
9-3-87	9-10-87	C.A. Clark	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+3.0	58.4
TOP OF RISER CASING	+2.6	58.0
GROUND SURFACE	0.0	55.4
BOTTOM OF SURFACE CASING	3.0	52.4
TOP OF SEAL	11.0	44.4
TOP OF FILTER PACK	13.5	41.9
TOP OF SCREEN	15.9	39.5
BOTTOM OF SCREEN	20.9	34.5
BOTTOM OF SUMP	36.4	19.0
BOTTOM OF HOLE	37.5	17.9

Update: 04-30-92
Template: 11WELLOG

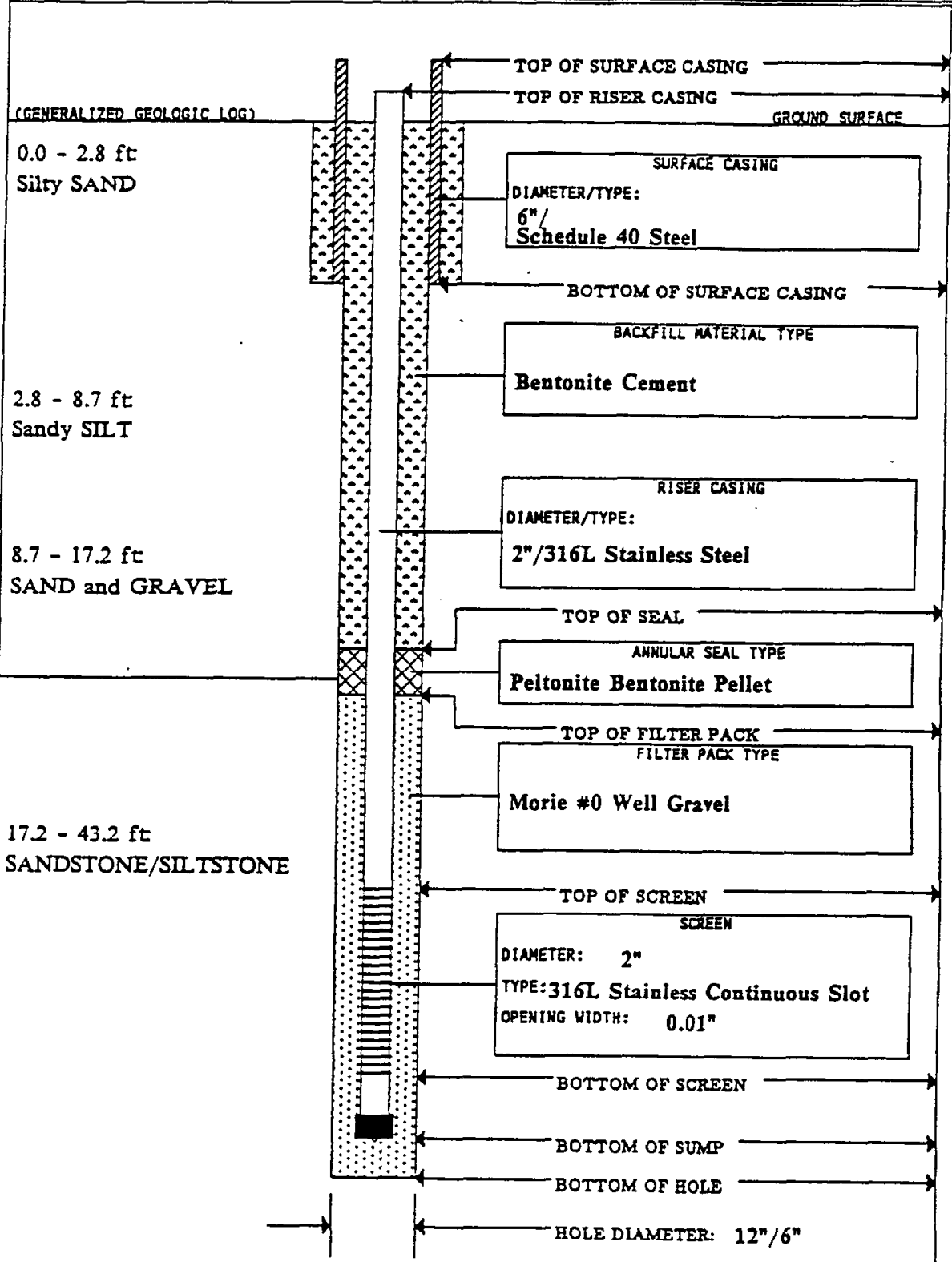
NOT TO SCALE

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W7B

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	Stepan Property	N 8.999 E 9.933

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
9-22-87	9-30-87	C.A. Clark	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+1.3	52.7
TOP OF RISER CASING	+2.0	53.4
GROUND SURFACE	0.0	51.4
BOTTOM OF SURFACE CASING	13.0	48.4
TOP OF SEAL	13.0	38.4
TOP OF FILTER PACK	16.0	35.4
TOP OF SCREEN	18.5	32.9
BOTTOM OF SCREEN	28.8	22.6
BOTTOM OF SUMP	39.2	12.2
BOTTOM OF HOLE	43.2	8.2

Update: 04-30-92
Template: 11WELLOG

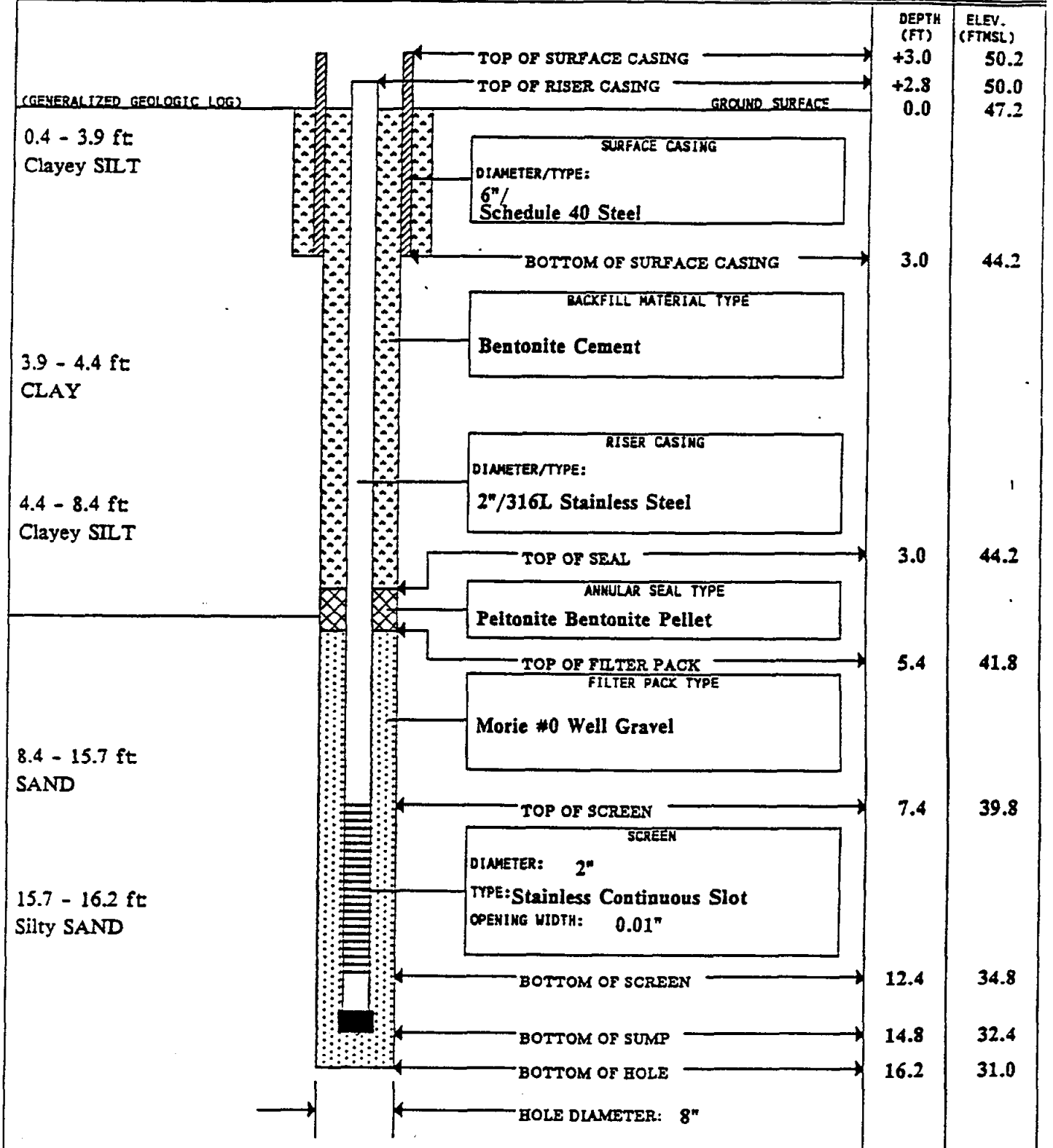
NOT TO SCALE

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W12A

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	Desaussure Property	N 8.773 E 11.631

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-13-87	10-14-87	C.A. Clark	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+3.0	50.2
TOP OF RISER CASING	+2.8	50.0
GROUND SURFACE	0.0	47.2
BOTTOM OF SURFACE CASING	3.0	44.2
TOP OF SEAL	3.0	44.2
TOP OF FILTER PACK	5.4	41.8
TOP OF SCREEN	7.4	39.8
BOTTOM OF SCREEN	12.4	34.8
BOTTOM OF SUMP	14.8	32.4
BOTTOM OF HOLE	16.2	31.0

Update: 04-30-92
Template: 11WELLOG

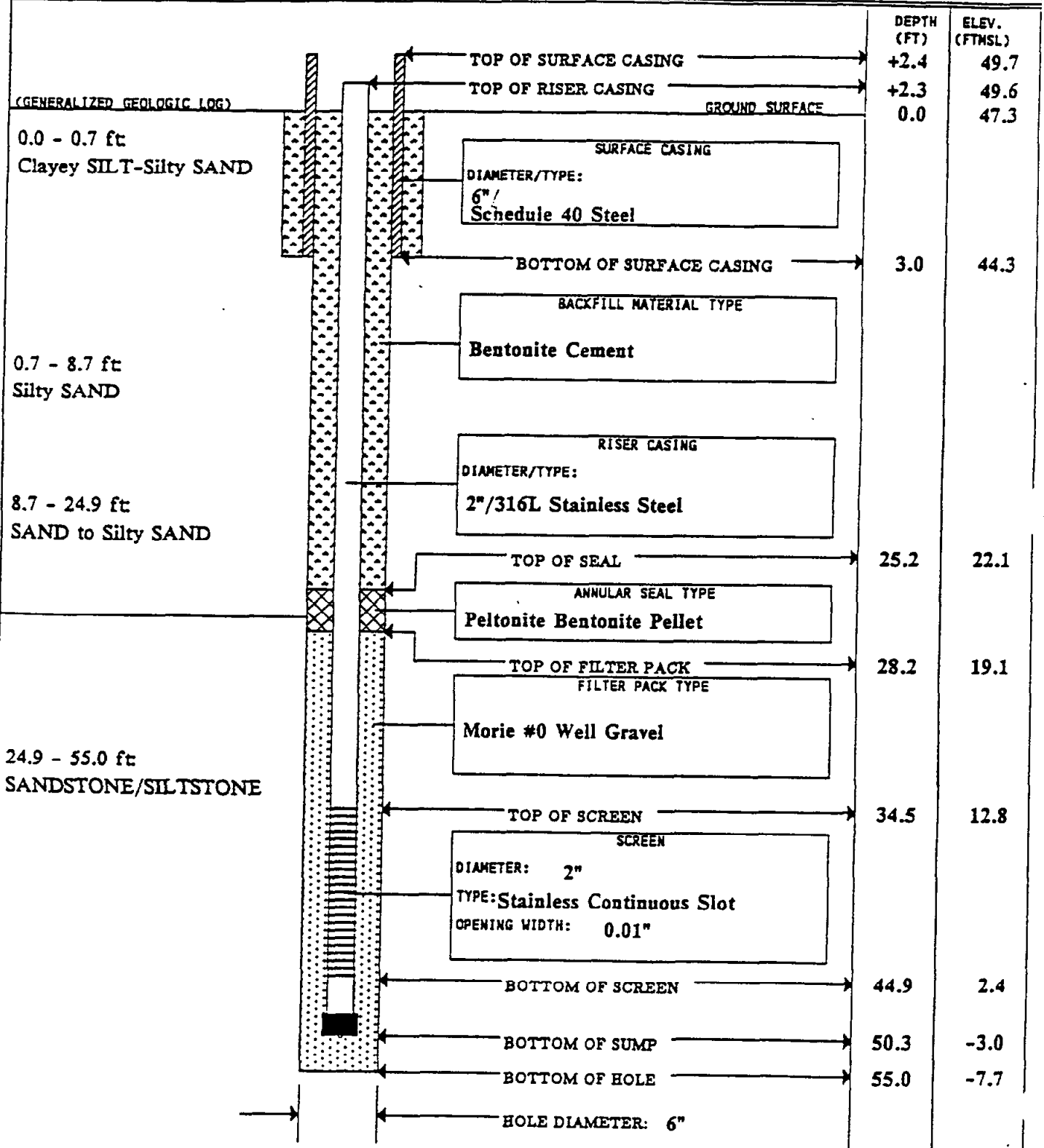
NOT TO SCALE

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W12B

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	Desaussure Property	N 8,768 E 11,638

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-14-87	10-14-87	C.A. Clark	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+2.4	49.7
TOP OF RISER CASING	+2.3	49.6
GROUND SURFACE	0.0	47.3
BOTTOM OF SURFACE CASING	3.0	44.3
TOP OF SEAL	25.2	22.1
TOP OF FILTER PACK	28.2	19.1
TOP OF SCREEN	34.5	12.8
BOTTOM OF SCREEN	44.9	2.4
BOTTOM OF SUMP	50.3	-3.0
BOTTOM OF HOLE	55.0	-7.7

Update: 04-30-92
Template: 11WELLOG

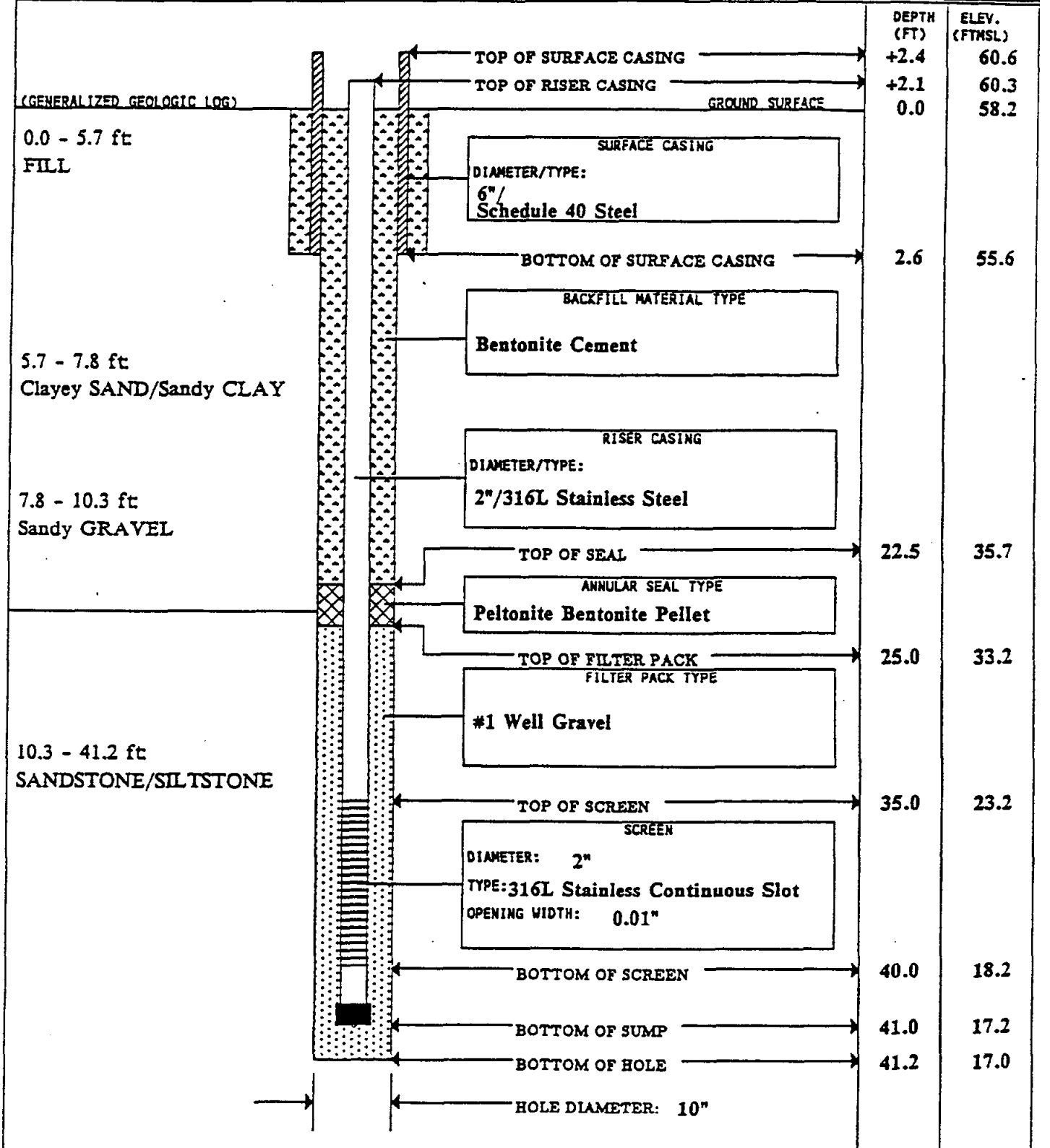
NOT TO SCALE

MONITORING WELL

PROJECT	WELL NO.
FUSRAP	B38W18D

JOB NO.	SITE	COORDINATES and/or STATIONING
14501	MISS on Site	N 9,793 E 10,108

BEGUN	COMPLETED	PREPARED BY	REFERENCE POINT FOR MEASUREMENTS
10-18-88	10-21-88	R. Talmage	Ground Surface



	DEPTH (FT)	ELEV. (FTMSL)
TOP OF SURFACE CASING	+2.4	60.6
TOP OF RISER CASING	+2.1	60.3
GROUND SURFACE	0.0	58.2
BOTTOM OF SURFACE CASING	2.6	55.6
TOP OF SEAL	22.5	35.7
TOP OF FILTER PACK	25.0	33.2
TOP OF SCREEN	35.0	23.2
BOTTOM OF SCREEN	40.0	18.2
BOTTOM OF SUMP	41.0	17.2
BOTTOM OF HOLE	41.2	17.0

Update: 04-30-92
Template: 11WELLOG

NOT TO SCALE